



**CTOS**

**OFIS® Spreadsheet  
Reference Manual**

**UNISYS**

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**CTOS<sup>®</sup>  
OFIS<sup>®</sup> Spreadsheet  
Reference Manual**

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# About This Manual

This manual contains procedures and reference information that enable you to use OFIS Spreadsheet's many features.

If you are using OFIS Spreadsheet for the first time, you should read the *CTOS OFIS Spreadsheet Training Guide* first. The training guide introduces basic spreadsheet concepts and contains exercises that familiarize you with basic spreadsheet operations.

If you want to find out about the new features in this release of OFIS Spreadsheet, refer to "What's New in OFIS Spreadsheet" in Section 1.

This reference manual is more helpful to you if:

- you want detailed information on OFIS Spreadsheet's functions and how to use them
- you have read the training guide and you want information on how to perform a specific operation

## Who Should Use This Manual

This document will help you learn OFIS Spreadsheet if you are a new user of OFIS Spreadsheet or an experienced user of other electronic spreadsheet programs such as Enhanced or Extended Multiplan, or Lotus 1-2-3.

## How to Use This Manual

You do not need to read this manual from cover-to-cover. It contains procedural information on a wide range of features, and you may be interested in only some of them at this time.



If you are using OFIS Spreadsheet for the first time, you should read Sections 1 and 2. They contain the basic information you need to use OFIS Spreadsheet.

Before you start working on your spreadsheet, you may also find it helpful to look at the table of contents and read the topics of interest to you.

## How This Manual Is Arranged

This manual is divided into sections, with related subjects grouped together. Sections 1 and 2 describe the basic concepts involved in using OFIS Spreadsheet. Sections 3 through 15 contain procedures for using OFIS Spreadsheet operations in the order that a typical user might need them.

## Conventions

The following conventions apply to all procedures:

When two or more keys perform the same function, only one key is specified in the procedures. An exception is the specification of both **RETURN** and **GO** keys to execute options.

The term character includes spaces (blanks) you enter with the **SPACEBAR**.

The terms *worksheet* and *spreadsheet* are used interchangeably to refer to the electronic file you create and manipulate your data in.

Except in tables, this manual presents the following terms in boldface:

- keyboard key name  
For example, **GO** is the name of a key.
- entries you type  
For example, text that reads: Enter \= means that you type \= in the place indicated.
- addresses of individual cells and ranges of cells  
For example, **a1** names the cell in the first column, first row. **a1..f1** names the range of cells from the first column, first row to the sixth column, tenth row.

The following items are printed in italics:

- new terms and the names of fields and forms

For example, when the term *graphic software* is first mentioned, it is italicized.

- volume, directory, and file names

For example, *[Sys]<Spreadsheet>Budget.wkt* is the name of a spreadsheet file.

**Note:** *Throughout this manual, figures are used to show you the displays that appear in OFIS Spreadsheet. These figures are examples only, not exact replicas of displayed text or screens. Your displays may differ from them in minor details.*

## Terminology

The following terms appear throughout this manual:

<i>CTOS</i>	Applies to the family of workstation and shared resource processor operating systems, including BTOS, CTOS, and CTOS/XE operating systems.
<i>server</i>	Describes the workstation or shared resource processor that controls resources within a cluster.
<i>shared resource processor (SRP)</i>	Describes the multiprocessor, floor-model computer that functions as a server. It encompasses the XE-530 and the CTOS shared resource processor.
<i>release documentation</i>	Refers to the paper or electronic documents that accompany the distribution media and contain various information about OFIS Spreadsheet.

## Reference Material

This manual contains appendixes with reference information, a glossary, and an index.

For information about spreadsheet comparisons, refer to Appendix A.

For information about system requirements, installation procedures, and the OFIS Spreadsheet configuration file, refer to Appendix B.

For information about macro key representation, refer to Appendix C.

For definitions of unfamiliar terms, refer to the glossary.

## Related Product Information

For training exercises that teach you how to get started using OFIS Spreadsheet, refer to the *CTOS OFIS Spreadsheet Training Guide*.

For additional information about related products, you can refer to the following documentation:

For detailed information about configuring system software on workstations and shared resource processors, you can refer to the *CTOS System Administration Guide*.

For information on how to install, configure, and use Context Manager, refer to the *CTOS Context / Window Manager Installation and Configuration Guide Volume 1: Real Mode* and the *CTOS Context / Window Manager Installation and Configuration Guide Volume 2: Protected Mode*.

For information on the most commonly used CTOS Executive utilities and commands, refer to the *CTOS Executive User's Guide*. For detailed information about all the CTOS Executive commands, refer to the *CTOS Executive Reference Manual*.

For information on the CTOS Generic Print System (GPS), you can refer to the *CTOS Generic Print System Administration Guide*.

For information on CTOS OFIS Graphics, you can refer to the *CTOS OFIS Graphics Operations Guide*.

For information on configuring the chaining configuration file for use with BTOS OFIS Designer, you can refer to the *BTOS OFIS Designer Operations Guide, Volume 3: Advanced Operations*

For information on configuring the chaining configuration file for use with CTOS OFIS Document Designer, you can refer to the *CTOS OFIS Document Designer / OFIS Document Writer System Administration Guide*.



# Section 1

## Introducing OFIS Spreadsheet

### Basic Features

OFIS Spreadsheet's basic features let you:

- Enter text and numbers
- Calculate formulas and functions automatically, or on demand
- Format text or numerical data
- Manipulate data
- Print spreadsheet reports

### Advanced Features

OFIS Spreadsheet also allows you to perform advanced spreadsheet operations. For example, you can:

- Manipulate database data
- Automate spreadsheet functions with macros
- Link data between spreadsheets
- Use built-in functions to perform complicated computations
- Access data from Enhanced or Extended Multiplan spreadsheets or Lotus 1-2-3 worksheets
- Interface with graphic software
- Access online help

# Accessing OFIS Spreadsheet

**Note:** *If you need to install OFIS Spreadsheet, refer to Appendix B.*

You can access OFIS Spreadsheet in two ways: from the Executive command line, or from Context Manager.

## Accessing OFIS Spreadsheet from the Executive Command Line

1. At the Executive command line, type OFIS Spreadsheet and press **RETURN**.

The OFIS Spreadsheet command form displays:

```
OFIS Spreadsheet
  [Worksheet]
```

2. If you know the name of the spreadsheet you want to create or edit, enter it in the [Worksheet] field.
3. Press **GO**.
4. OFIS Spreadsheet loads and one of the following occurs:

If you entered the name of an existing spreadsheet, it appears on your screen and you can begin entering data.

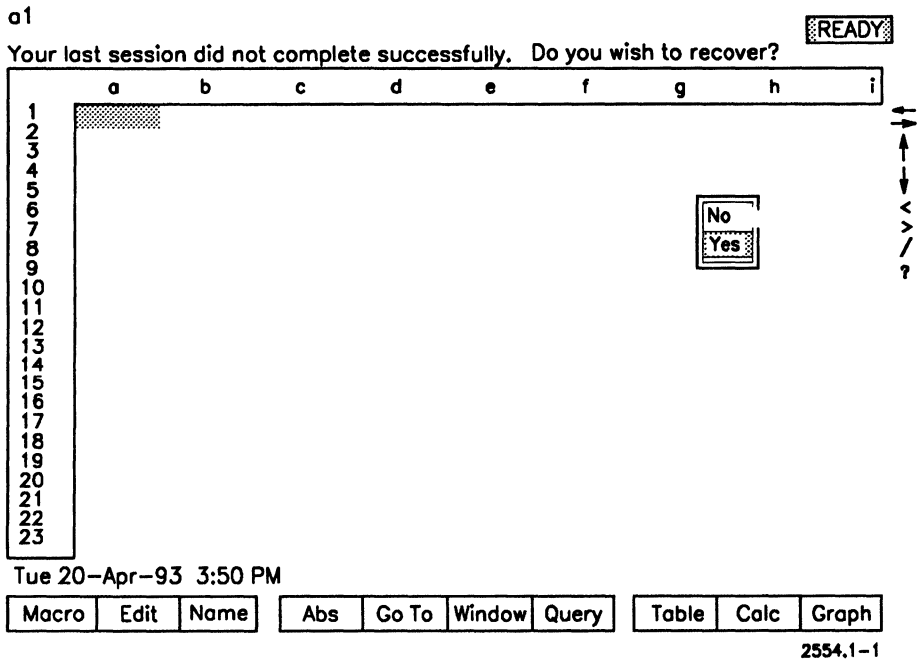
If you did not enter the name of an existing spreadsheet, a blank spreadsheet appears on your screen. You can then begin entering data or retrieve an existing spreadsheet.

If your last session terminated abnormally and you had AutoSave enabled, if you select the file you were editing, OFIS Spreadsheet prompts you to recover your lost work (refer to figure 1-1). Choose one of the following:

- If you want to recover your lost work, select **Yes**.
- If you do not want to recover your lost work, select **No**.

(For more information on AutoSave, refer to "Using AutoSave" in Section 5.)

Figure 1-1. AutoSave Recovery Prompt



## Accessing OFIS Spreadsheet from Context Manager

If, during installation, you chose to add OFIS Spreadsheet to the list of applications you can start from Context Manager (or you added it yourself manually), you can access OFIS Spreadsheet by either:

- Highlighting the **OFIS Spreadsheet** entry and pressing **GO**
- Pressing the function key you assigned to OFIS Spreadsheet and pressing **GO**

A blank spreadsheet appears on your screen. You can then begin entering data or retrieve an existing spreadsheet.



### Using Passwords with OFIS Spreadsheet

You cannot create a password during an OFIS Spreadsheet session; however, OFIS Spreadsheet does support system signon passwords or those set with Executive-level commands outside of OFIS Spreadsheet. (Refer to the *CTOS System Administration Guide* for more information on assigning passwords.)

### OFIS Spreadsheet Pop-up Menus

OFIS Spreadsheet offers pop-up menus that give you options to manipulate information in the worksheet or alter the look of the worksheet. The pop-up menus appear on the right side of your screen and vary in size, shape, and content; the length and width of the pop-up menus accommodate the options within the menu.

The items within the pop-up menu are in alphabetical order and represent the options you can choose.

When you access a pop-up menu, one option is highlighted. This is the default, or most commonly selected option. OFIS Spreadsheet displays information about the highlighted option at the top of the spreadsheet. This information can be:

- The next level of options that you can access
- A prompt asking you to define a range
- An explanation of how the highlighted option works

You can use the Arrow keys or the mouse to move the highlight over the options within the menus. You select menu options by one of four ways:

- Type the first letter of the option
- Use the Arrow keys to move to the option; then press the **RETURN** key
- Use the Arrow keys to move to the option; then press the **GO** key
- Move the mouse cursor over the option and click the mouse button

To exit the pop-up menus, you:

- Press **CANCEL**
- Press **CODE-CANCEL**
- Select the Quit option, if available in the currently displayed pop-up menu, by typing **Q**, **RETURN**, or **GO** (The Quit option functions differently depending on the menu you select it from).

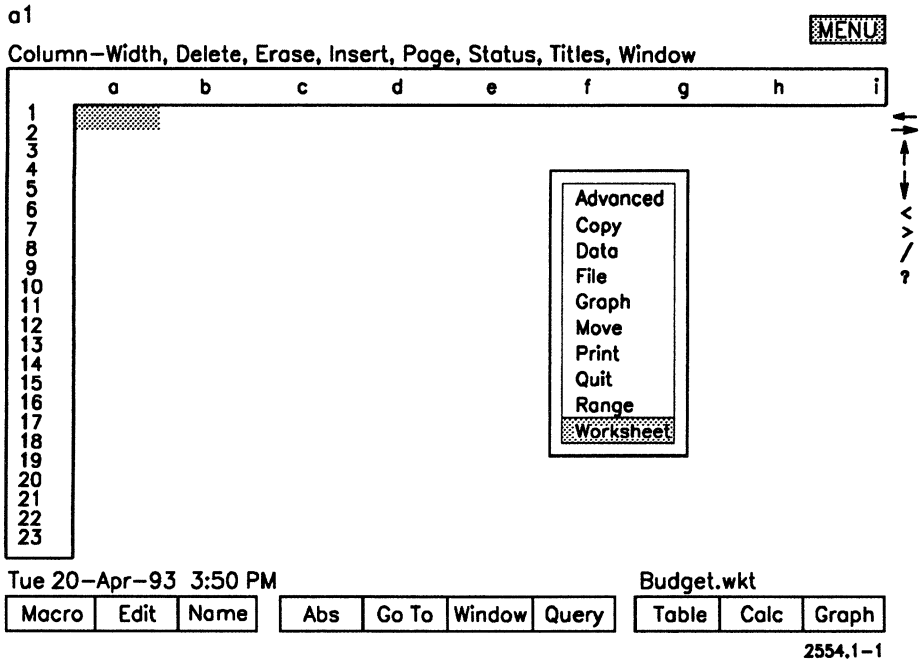
Pressing **CANCEL** takes you back to the previous menu; pressing **CODE-CANCEL** takes you back to the Ready mode, where OFIS Spreadsheet displays no pop-up menus.

### Main Pop-up Menu

When you first open a spreadsheet, you press the slash key (/) to access the Main pop-up menu.

The Worksheet option is the default and appears highlighted. The next level of Worksheet options (or submenu) appears at the top of the spreadsheet screen. (Refer to Figure 1-2.)

Figure 1-2. Main Pop-up Menu



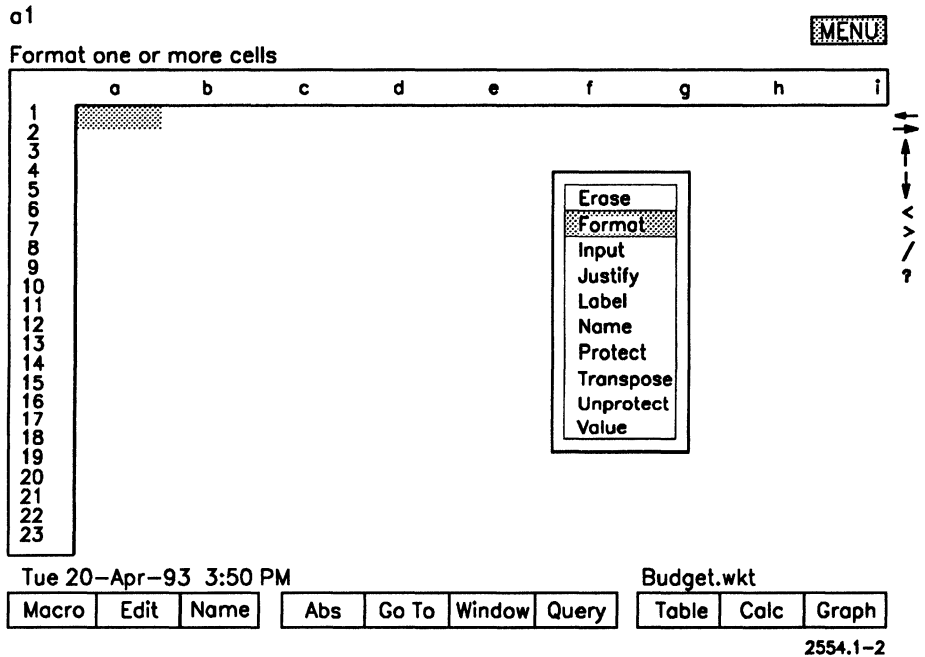
## Submenus

If you select an item in the Main pop-up menu (Advanced, Copy, Data, File, Graph, Move, Print, Quit, Range, or Worksheet), OFIS Spreadsheet may display a pop-up submenu that offers more options.

The submenus have the same basic form as the Main menu. The options you can choose appear in alphabetical order with one option highlighted. If there are no further options, information about the highlighted option appears. If the option has additional options, those options appear in alphabetical order just above the worksheet. For example, if you select the Range option, the submenu shown in Figure 1-3 appears.

This manual refers to each submenu as the pop-up menu for the selected option; for example, it refers to the Range submenu as the Range pop-up menu or the Currency submenu within the Range submenu as the Range Currency pop-up menu.

Figure 1-3. Range Pop-up Menu



You make selections from submenus in the same way that you make selections from the Main pop-up menu. You make a selection by:

- Moving the highlight to the option you want using the Arrow keys, then pressing **RETURN** or **GO**
- Typing the first letter of the option
- Moving the mouse cursor over the option and clicking the mouse button

## Selecting Options By Typing Characters

OFIS Spreadsheet offers several different types of options in its various menus. You can select options within each menu by accessing the menu, moving the highlight to the option, then pressing **RETURN** or **GO**; however, you may prefer to type the first character only of the options to access them.

By typing the first character of several options consecutively, you can access options quicker than if you go through each menu to find the correct option. For example, to fix the format for your spreadsheet, you can access several levels of menus, selecting these options:

Worksheet, Global, Format, Fixed

Instead of accessing the menus, you can type:

**/WGFF**

The slash (/) brings up the Main menu, the characters after the slash are the first letters of the options. You do not press **RETURN** or **GO** between the characters.

As you type each character, OFIS Spreadsheet rapidly displays the pop-up menus that each option is offered in.

Throughout this guide, whenever a string of options is presented that take you through the various pop-up menus, the options are shown in full with the first character in boldface, and no space between each option. An example of this is:

**/WorksheetGlobalFormatFixed**

## The Help Function

OFIS Spreadsheet provides you with online Help information that you access by pressing the **HELP** key.

The Help function provides information about the spreadsheet. It offers:

- An Index
- A display telling you how to use the available information
- Function keys to assist you in topic selection

If you access the Help function while a pop-up menu displays, OFIS Spreadsheet displays a description of alphabetized options and function keys.

To exit the Help function, you press **CANCEL**.

## OFIS Spreadsheet Graphics

OFIS Spreadsheet uses version 2.0 or higher of OFIS Graphics for creating and displaying graphs. Throughout this guide the term *graphic software* refers to this application.

## What's New in this Release of OFIS Spreadsheet

This release of OFIS Spreadsheet contains the following new features:

- File Locking

File Locking prevents other users from changing a spreadsheet you are working on. This eliminates the possibility of two users unknowingly editing the same spreadsheet at the same time, and saving one on top of the other, eliminating one user's changes. If a spreadsheet file is locked, its name displays in reverse video on the information line of the screen (file name display is also a new feature in this release). For more information on File Locking, refer to "Using File Locking" in Section 5.

- **Mouse Support**

You can use a mouse in OFIS Spreadsheet to:

- display the pop-up menu and select options from it
- activate function keys
- respond to a command prompt
- move the cell pointer
- scroll and page through a spreadsheet
- mark data
- display the online help

For more information on using a mouse in OFIS Spreadsheet, refer to "Using the Mouse" in Section 2.

- **Selectable Printing Font**

You can select a font from those available to your system from GPS, and print a spreadsheet in that font. For more information, refer to "Typeface" in Section 11.

- **Displayed Filename**

OFIS Spreadsheet displays the name of the spreadsheet you are working on in the information line of the screen. If the spreadsheet is locked (preventing other users from accessing it), the name displays in reverse video. For more information, refer to "Information Line" in Section 2.

- **Automatic Backup (-old) File Creation**

OFIS Spreadsheet automatically creates a backup version of the spreadsheet you are working on. When you save a spreadsheet, OFIS Spreadsheet makes a backup copy of the file as it was the previous time it was saved. The backup has the same name as the spreadsheet you have open, plus the suffix *-old*. For more information on backup files, refer to "Backup (-old) Files" in Section 10.

- **Filename Parameter**

The OFIS Spreadsheet command form contains an optional parameter, [Worksheet], which enables you to specify a worksheet that OFIS Spreadsheet opens when you start it. The OFIS Spreadsheet command form is:

```
OFIS Spreadsheet  
[Worksheet]
```

For more information on the OFIS Spreadsheet command form, refer to "Accessing OFIS Spreadsheet" in this Section.

- **Configurable Display Colors**

You can change the colors of the OFIS Spreadsheet display. For more information on changing the screen colors, refer to "Screen Colors" in Section 5.

- **AutoSave**

The AutoSave feature periodically saves the spreadsheet you are working on. In the event that your system encounters an error which causes OFIS Spreadsheet to terminate abnormally, AutoSave protects you from losing all the changes you made to a spreadsheet. For more information about AutoSave, refer to "Using AutoSave" in Section 5.





# Section 2

## Getting Started

Before you enter information in a spreadsheet, there are a few basic concepts you need to know:

- Names of the spreadsheet display areas
- Using the keyboard keys in the spreadsheet
- Moving the highlight in pop-up menus and the cursor in the spreadsheet

This section covers these concepts.

### Viewing the Spreadsheet Display

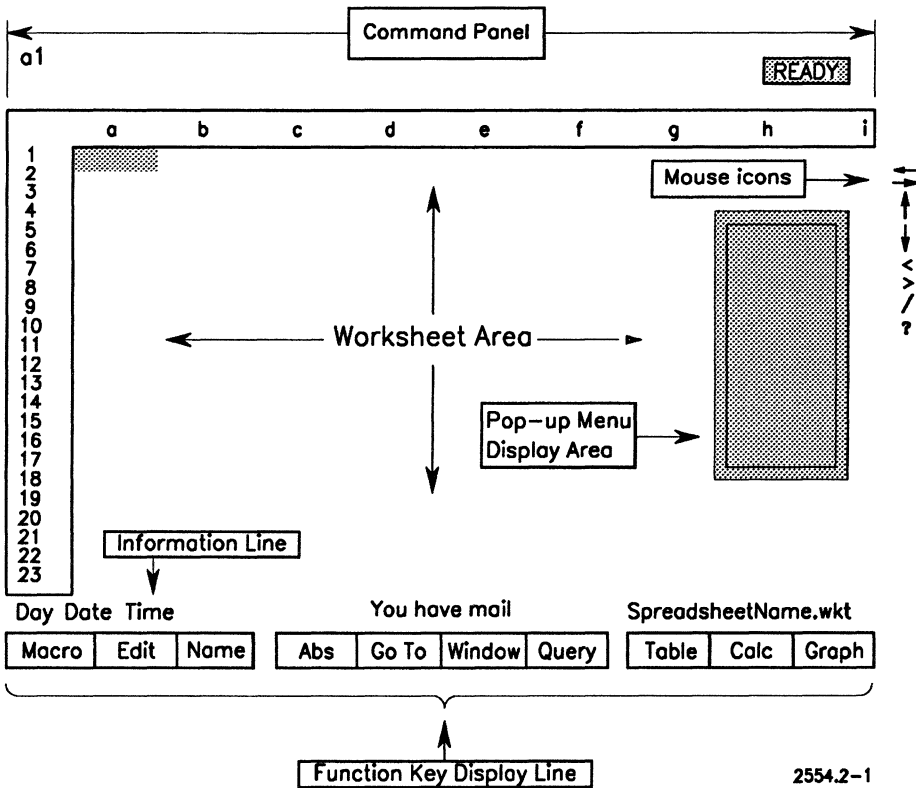
Once you start OFIS Spreadsheet, if you specified an existing spreadsheet, it displays on your screen. Otherwise, a blank spreadsheet appears on your screen.

The OFIS Spreadsheet display has six basic areas:

- Worksheet area
- Pop-up menu display area
- Command panel
- Information line
- Function key display line
- Mouse icons

Each of these areas has specific functions (refer to Figure 2-1).

Figure 2-1. The Spreadsheet Display



## The Worksheet Area

The worksheet area is set off by a horizontal lettered bar and a vertical numbered bar, which display in reverse video. The lettered bar represents the spreadsheet columns; the numbered bar represents the spreadsheet rows. The spreadsheet work area consists of 512 vertical columns, **a** through **sr**, and 8192 horizontal rows, **1** through **8192**.

## Cells

The area where a column and row intersect is called a cell. The column letter and row number at the intersection make up the cell address. For example, the cell address **a1** tells you that the location of the cell is in column **a**, row **1**.

## The Cell Pointer

When you first access a blank spreadsheet, there is a highlighted box in the upper left corner of the spreadsheet work area. This is the cell pointer. The cell pointer always highlights the current cell. You enter data into the current cell, so it is important to know where the cell pointer is prior to entering data.

In Figure 2-1, the cell pointer (the shaded rectangle in the work area) is at cell **a1**.

## Spreadsheet Window

The spreadsheet is much larger than what appears on your screen. The portion of the spreadsheet you see is called a window.

## Mouse Icons and Cursor

When you start OFIS Spreadsheet, the mouse icons appear in the upper-right corner of your screen, if you have the Mouse Service installed and have enabled the mouse. The place where the mouse cursor first appears depends on where the mouse was on the screen of your previous application.

You use the mouse icons together with the mouse cursor to access many functions in OFIS Spreadsheet. You can click on mouse icons to:

- display the pop-up menu
- activate function keys
- move the cell pointer
- scroll and page through a spreadsheet

## Getting Started

---

By moving the mouse cursor and clicking the mouse button, you can:

- select options from the pop-up menu
- activate function keys
- mark data
- display the online help

For more information on using the mouse, refer to "Using the Mouse" in this Section.

### Pop-up Menu Area

OFIS Spreadsheet's pop-up menu area appears within the upper right side of the worksheet area. Since the pop-up menus vary in size, they may cover several rows and columns.

If you chose to display worksheet files (files from any directory), the file display may cover most or all of the spreadsheet display. The file display size depends upon the longest file name and the number of files in the directory.

## Command Panel

The area at the top of the spreadsheet display is the command panel. The command panel displays the following information:

- In the top left corner, you always see the cell address of the current cell. For that cell, you may also see the cell's contents or information about formatting or cell protection. When you first access a blank spreadsheet, it contains no data, so only the cell address displays.
- In the right corner is the mode indicator. This provides you with information regarding the status of the spreadsheet. It always displays. For example, in Figure 2-1 the mode indicator is displaying **READY**. When the spreadsheet is in this mode, it is ready to accept your entries. Other mode indicators are:
  - MENU
  - POINT
  - EDIT
  - VALUE
  - LABEL
  - WAIT
  - ERROR
- To the left of the mode indicator is the submode indicator. This indicator displays only under certain circumstances. For example, when you press **BOUND**, the submode indicator displays **END**. This indicator also displays when you create or test a macro.
- The entry or edit line for cell data is on the left side of the command panel. As you enter data, the characters display under the cell address. When you edit the cell data, the contents of the cell display in this area.
- The line just above the worksheet area displays prompts or provides information for the highlighted options displaying in the pop-up menu.

### Information Line

The information line is located directly below the work area. This line displays the day, date, time, new mail notice, error messages (if they occur), and the name of the spreadsheet you are working on.

The spreadsheet name displays as follows:

- If the name of the spreadsheet displays in reverse video, that indicates that the spreadsheet is locked, and no other user can open it until you close it or unlock it
- If the name of the spreadsheet is too long to fit (more than 24 characters; 22 if you are using the mouse), OFIS Spreadsheet displays the first portion of the name, followed by ellipsis (...), followed by the last portion of the name
- If you have created a new spreadsheet but have not saved it yet, no name displays.

When OFIS Spreadsheet displays an error message, the message overlays the Information Line. To remove the error message, you press one of the following keys:

- **CANCEL**
- **GO**
- **RETURN**

### Function Key Display Line

The last line of the spreadsheet is the function key display line. This line shows the spreadsheet functions assigned to the variable function keys on your keyboard. You press these keys to activate the functions. For example, to access the Edit function, you press **Edit (F2)**. Table 2-1 lists the variable function keys available for use in OFIS Spreadsheet.

**Table 2-1. Variable Function Keys**

---

<b>Key</b>	<b>Name</b>	<b>Function</b>
F1	Macro	Begins execution of a macro
F2	Edit	Initiates Edit mode for modification of cell content
F3	Name	Displays a list of range names
F4	Abs	Makes cell reference absolute
F5	Go To	Initiates cell pointer movement to a specific cell
F6	Window	Moves cell pointer between two windows
F7	Query	Repeats the most recent query operation
F8	Table	Recomputes a data table
F9	Calc	Recalculates spreadsheet data
F10	Graph	Displays the graph associated with the current spreadsheet

---

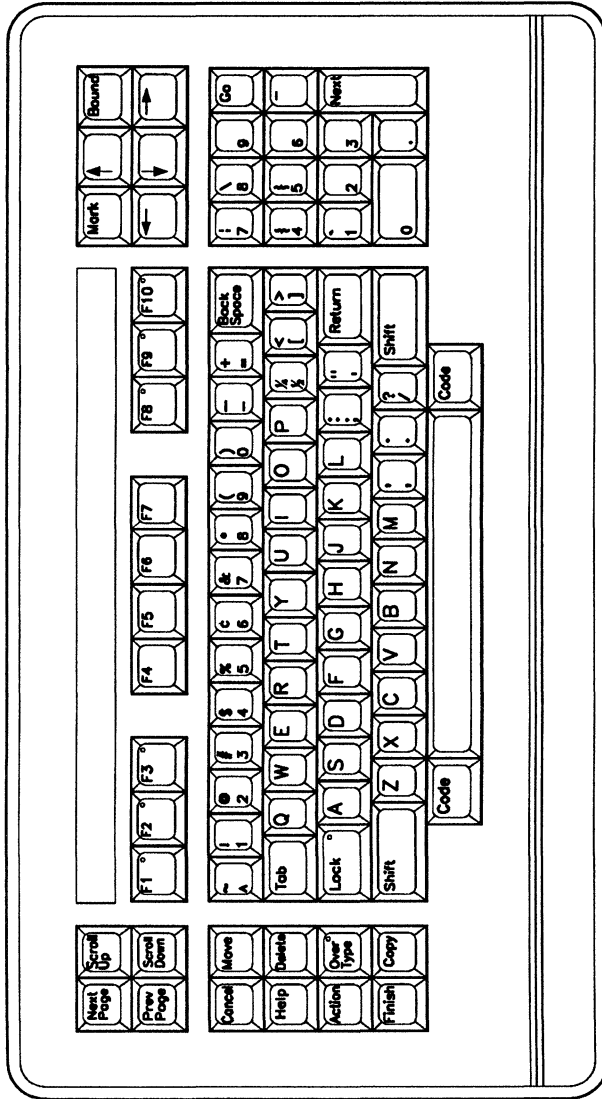
## The Keyboard

Your workstation has a K1, K2, K3, K5, SG-101-K, or SG-102-K keyboard. Figures 2-2 through 2-7 illustrate these keyboards. The keyboard is similar to a typewriter keyboard, with the exception of a few additional keys. The keyboard keys can be divided into three basic groups:

- Alphanumeric keys
- Movement keys
- Function keys

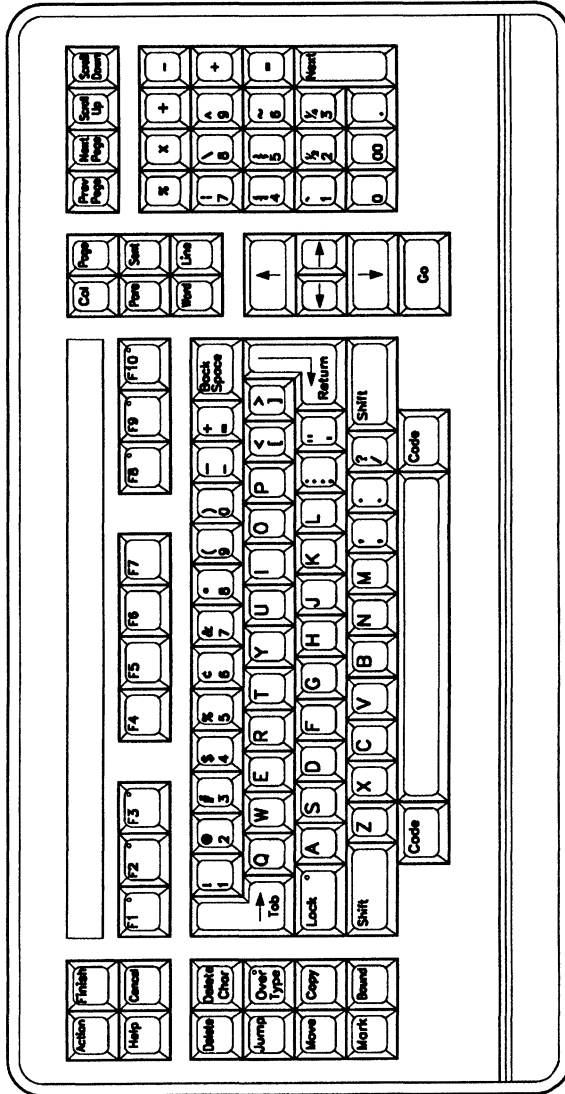


Figure 2-2. K1 Keyboard



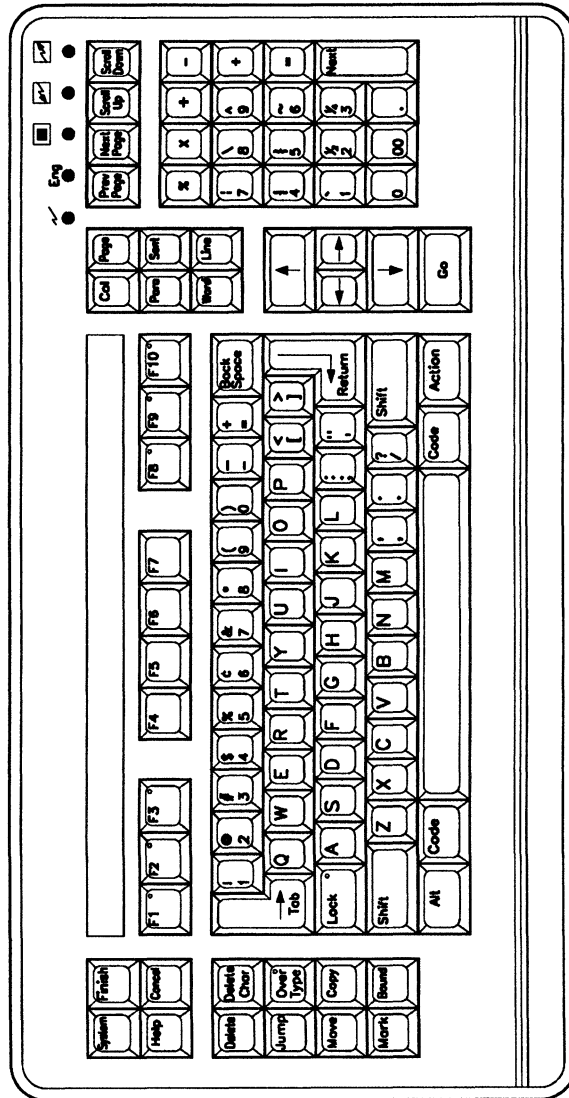
2554.2-2

Figure 2-3. K2 Keyboard



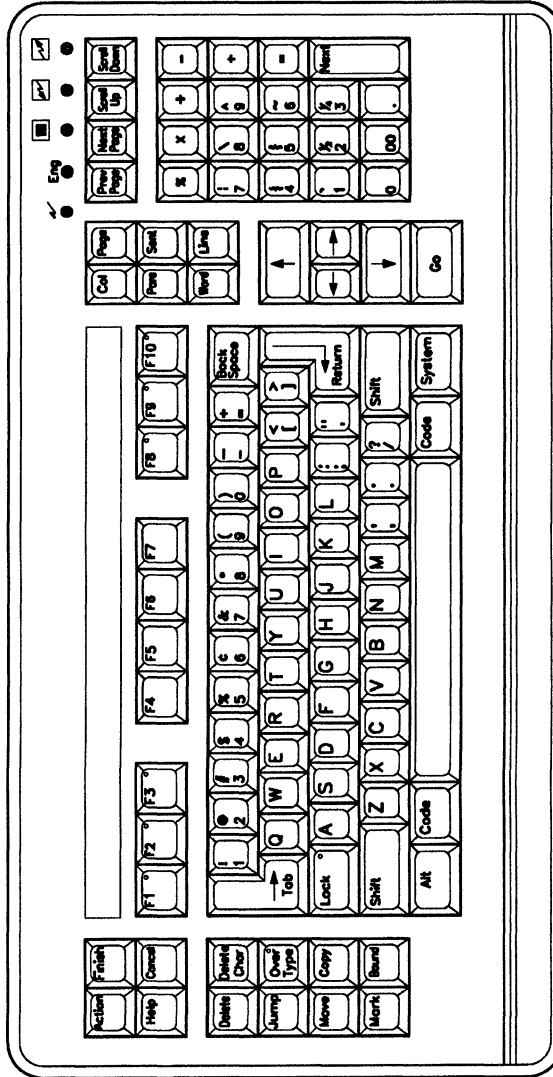
2554.2-3

Figure 2-4. K3 Keyboard



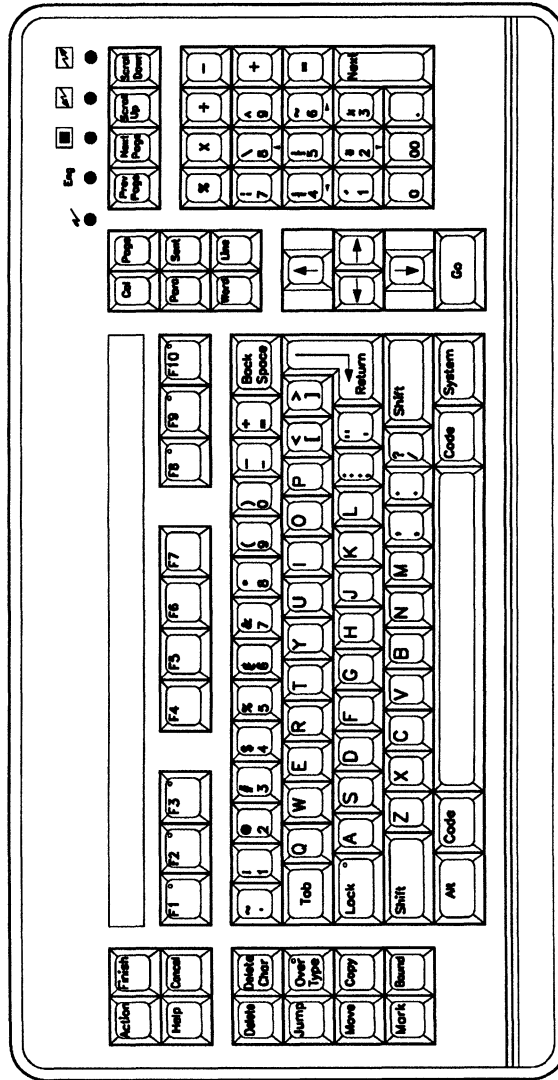
2554.2-4

Figure 2-5. K5 Keyboard



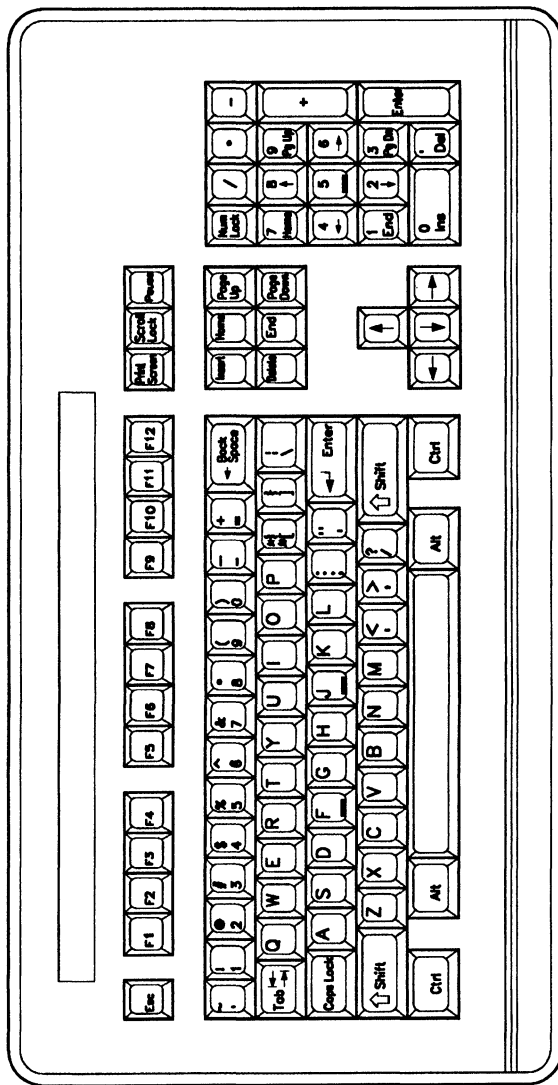
2554.2-5

Figure 2-6. SG-101-K Keyboard



2554.2-6

Figure 2-7. SG-102-K Keyboard



2554.2-7

### Alphanumeric Keys

The alphanumeric keys occupy most of the keyboard. These keys are similar to the keys on a typewriter. They consist of letter keys, number keys, special character keys, punctuation keys and the **SPACEBAR**. You use these keys to enter text and numbers in the spreadsheet.

When you press and release an alphanumeric key, it enters a character once. If you hold the key down, the character repeats until you release the key.

### Movement Keys

You use the movement keys to:

- Move the highlight within pop-up menus
- Move the cell pointer within the spreadsheet
- Move the cursor in Edit mode

### Pop-up Menu Movement Keys

The highlight is always on the default option within the pop-up menus. The pop-up menu movement keys allow you to move the highlight while in Menu mode. Table 2-2 lists the pop-up menu movement keys available in OFIS Spreadsheet.

**Table 2-2. Pop-up Menu Movement Keys**

---

<b>Key</b>	<b>Highlight Movement in Menu</b>
UP ARROW	Moves up one option
RIGHT ARROW	Moves down one option
SCROLL UP	Moves up one option
SCROLL DOWN	Moves down one option
CODE-UP ARROW	Moves to first option
CODE-DOWN ARROW	Moves to last option
BOUND	Moves to last option
CANCEL	Returns to previous menu
CODE-CANCEL	Returns to Ready mode from any menu

---

**Cell Pointer Movement Keys**

You can move the cell pointer in a variety of ways. Some movement keys are best for moving within a small area, while others are meant for moving to distant parts of the spreadsheet. Table 2-3 lists the cell pointer movement keys available in OFIS Spreadsheet.



**Table 2-3. Cell Pointer Movement Keys**

<b>Key</b>	<b>Function</b>
BACKSPACE	In Point mode, moves back to the original current cell and displays the address of the original current cell after the prompt
CANCEL	In Point mode, moves back to the first reference cell and removes the ending cell address after the prompt
BOUND, Arrow Key	Moves in direction of Arrow key to border cell, if there is one, or to the end of the row or column if there is no border cell
TAB	Moves one window to the right
CODE-TAB	Moves one window to the left
NEXT PAGE	Moves up one window
PREV PAGE	Moves down one window
SCROLL UP	Scrolls up one row
SCROLL DOWN	Scrolls down one row
UP ARROW	Moves up one cell
DOWN ARROW	Moves down one cell
LEFT ARROW	Moves left one cell
RIGHT ARROW	Moves right one cell
SHIFT-UP ARROW	Moves to the top row of the spreadsheet in the same column
SHIFT-DOWN ARROW	Moves down to the last cell in the same column of the area you are working in
SHIFT-RIGHT ARROW	Moves to the last cell on the right side of the area you are working in
SHIFT-LEFT ARROW	Moves to the first column in the same row

continued

Table 2-3. Cell Pointer Movement Keys (cont.)

---

Key	Function
CODE-RIGHT ARROW	Performs the same function as the <b>TAB</b> key, moving one window to the right
CODE-LEFT ARROW	Performs the same function as the <b>CODE-TAB</b> key, moving one window to the left
CODE-UP ARROW	Moves to cell in first column and first row ( <b>a1</b> )
CODE-DOWN ARROW	Moves to the lower right cell in the area you are working in
Go To (F5)Cell Address	Moves to the specified cell

---

### Cursor Movement Keys

The cursor is the flashing underline that appears in the command panel. The cursor movement keys allow you to move the cursor while in Edit mode. Table 2-4 lists the cursor movement keys available in OFIS Spreadsheet.

**Table 2-4. Cursor Movement Keys**

Key	Edit Mode
LEFT ARROW	Moves left one position
RIGHT ARROW	Moves right one position
SHIFT-UP ARROW	Moves to first position
SHIFT-DOWN ARROW	Moves immediately after the last character
CODE-RIGHT ARROW	Moves five characters to the right
CODE-LEFT ARROW	Moves five characters to the left
CODE-UP ARROW	Moves to the first character

### Dedicated Function Keys

You use dedicated function keys to activate OFIS Spreadsheet procedures such as canceling an unexecuted option, deleting data, and moving data in the spreadsheet. These keys are known as dedicated function keys because they always perform the same function.

Some dedicated function keys combine with other keys on the keyboard to perform a variation of the main function (for example, **CODE-CANCEL**). To use the dedicated function keys, you press the key. OFIS Spreadsheet provides prompts (instructions) to assist you with some function keys; others simply execute the function.

Table 2-5 lists the dedicated function keys available for use in OFIS Spreadsheet.

Table 2-5. Dedicated Function Keys

Key	Function
BACKSPACE	In Label, Value, or Edit mode, erases character to the left of the highlight (or cursor)
BOUND	Marks the end of a selection
CANCEL	In Label or Value mode, erases cell content In Menu mode, returns to previous menu In Edit mode, terminates editing
CODE	Combines with other keys to select and execute options
COPY	Initiates the Copy option
DELETE	In Edit mode, erases the character at the current cursor position
FINISH	In Menu mode, returns to previous menu or, if on Main menu, returns to Ready mode In OFIS Graphics, exits and returns to OFIS Spreadsheet Prompts you to confirm exiting OFIS Spreadsheet
GO	Executes an operation or selects a menu option (interchangeable with <b>RETURN</b> key)
HELP	Accesses an online Help function
LOCK	Sets letter input in uppercase
MARK	Marks the beginning of a selection
MOVE	Initiates the Move option
NEXT PAGE	Displays the next screen of worksheet data, Help information, and file lists
OVERTYPE	Causes characters entered to replace existing characters in Edit mode

continued

**Table 2-5. Dedicated Function Keys (cont.)**

<b>Key</b>	<b>Function</b>
PREV PAGE	Displays the previous screen of worksheet data, Help information, and file lists
RETURN	Executes an operation or selects a menu option (interchangeable with <b>GO</b> key)
SCROLL DOWN	Moves display down several lines in Help and one line in file lists
SCROLL UP	Moves display up several lines in Help and one line in file lists up on the screen
SHIFT	Allows you to type uppercase letter or symbols (on number keys) and combines with other keys to execute operations
ACTION-GO	Displays Context Manager if installed on your system

---

## Using the Mouse

You may find it convenient to use a mouse in OFIS Spreadsheet, especially for tasks involving movement or selection. You can use a mouse to:

- display the pop-up menu and select options from it
- activate function keys
- respond to a command prompt
- move the cell pointer
- scroll and page through a spreadsheet
- mark data
- display the online help

If the Mouse Service is loaded when you start OFIS Spreadsheet, the mouse cursor and mouse icons appear automatically.

Tables 2-6 through 2-8 describe what the mouse icons do when you click on them.

### Displaying the Pop-up Menu and Selecting Options From It

To display the pop-up menu using the mouse, click on the pop-up menu mouse icon (refer to table 2-6). To select an option from a pop-up menu, click on the option.

**Table 2-6. Pop-up and Help Icons**

<b>Icon</b>	<b>Description</b>
/	Displays the pop-up menu
?	Displays the online help

### Displaying the Online Help

To display the online help using the mouse, click on the online help mouse icon (refer to table 2-6).

### Activating Function Keys

To activate a function key using the mouse, move the mouse cursor to the function key and click on it.

### Responding to a Command Prompt

To respond to a prompt from a command, click on the command panel.

### Moving the Cell Pointer

To move the cell pointer using the mouse, you can either:

- click on the cell (in either window, if you have more than one open) you want to move the cell pointer to
- click on the cell pointer mouse icon that points in the direction you want to move the cell pointer (refer to table 2-7 for a description of the cell pointer mouse icons)

**Table 2-7. Cell Pointer Icons**

---

<b>Icon</b>	<b>Description</b>
←	Moves the cell pointer one cell to the left
→	Moves the cell pointer one cell to the right
↑	Moves the cell pointer up one cell
↓	Moves the cell pointer down one cell

---

## Scrolling and Paging Through a Spreadsheet

To scroll through a spreadsheet using the mouse, use the following procedure:

1. Move the cell pointer to edge of the window in the direction you want to scroll.
2. Click on the cell pointer mouse icon that points in that direction.

To page through a spreadsheet using the mouse,

- click on the previous page icon (<) to move to the previous page
- click on the next page icon (>) to move to the next page

**Table 2-8. Paging Icons**

---

<b>Icon</b>	<b>Description</b>
<	Moves the window to the previous page of the spreadsheet
>	Moves the window to the next page of the spreadsheet

---



### Marking Data

Unless the data you want to mark is contained wholly within one complete column or row, you use a technique called *clicking and dragging* to mark data using the mouse. To click and drag, you do the following:

1. Press and hold down the button on your mouse that makes selections (on a right-handed mouse, this is the left button, on a left-handed mouse, it is the right button).
2. Move the mouse to mark the data you want.
3. Release the selection button.

Table 2-9 describes how to mark different combinations of data in a spreadsheet.

**Table 2-9 How to Mark Data Using the Mouse**

---

<b>To mark ...</b>	<b>click on the ...</b>
a range	a. cell in one corner of the range, and b. drag the mouse cursor to the cell in the opposite corner of the range and release the mouse button
a row	row label
a column	column label
several rows	row label and drag the mouse cursor across the rows
several columns	column label and drag the mouse cursor across the columns

---

## Configuring the Mouse

You can configure a mouse for right-handed operation (referred to as a *right-handed* mouse, the default) or left-handed operation. The difference between the two is in the functioning of the mouse buttons; table 2-10 shows the differences.

**Table 2-10 Operation of the Mouse Buttons**

	Left Button	Right Button
<b>Left-handed mouse</b>	Functions like the <b>CANCEL</b> key; you click it to cancel a selection or backtrack through the pop-up menus	Selection button; you click it to indicate your choice
<b>Right-handed mouse</b>	Selection button; you click it to indicate your choice	Functions like the <b>CANCEL</b> key; you click it to cancel a selection or backtrack through the pop-up menus

You can configure a mouse for right- or left-handed operation by assigning a value to the `SSMOUSEHAND` keyword in your *SDConfig.sys* file. Add the following entry to configure a mouse as right-handed:

```
:SSMOUSEHAND:RIGHT
```

Add the following entry to configure a mouse as left-handed:

```
:SSMOUSEHAND:LEFT
```

## Suppressing the Mouse Icons and Cursor

If you want to use the mouse in other applications but not in OFIS Spreadsheet, you can suppress display of the mouse icons and cursor by adding the following keyword to your *SDConfig.sys* file:

```
:SSIGNOREMOUSE:YES
```



# Section 3

## Entering and Editing Data in a Spreadsheet

You can make three types of entries in a spreadsheet:

- Labels
- Numbers
- Formulas

Labels are text entries, and numbers are numeric entries. Formulas are entries that enable you to make computations, or join labels or strings. Numbers and formulas are known as values.

### Entering Data

OFIS Spreadsheet determines what type of entry you are making by the first character. It interprets an entry as a value if the first character is:

1, 2, 3, 4, 5, 6, 7, 8, 9, 0, -, +, ., (, \$, @

These characters are known as value characters. Whenever the first character of an entry is not a value character, OFIS Spreadsheet automatically interprets it as a label entry. The mode indicator displays **VALUE** for value entries, and **LABEL** for label entries.

As you are typing the entry, the characters appear in the left of the command panel. When you finish the entry, you transfer it, or enter it into the spreadsheet.

You can enter data by using:

- **RETURN**
- **GO**
- Any cell pointer movement keys

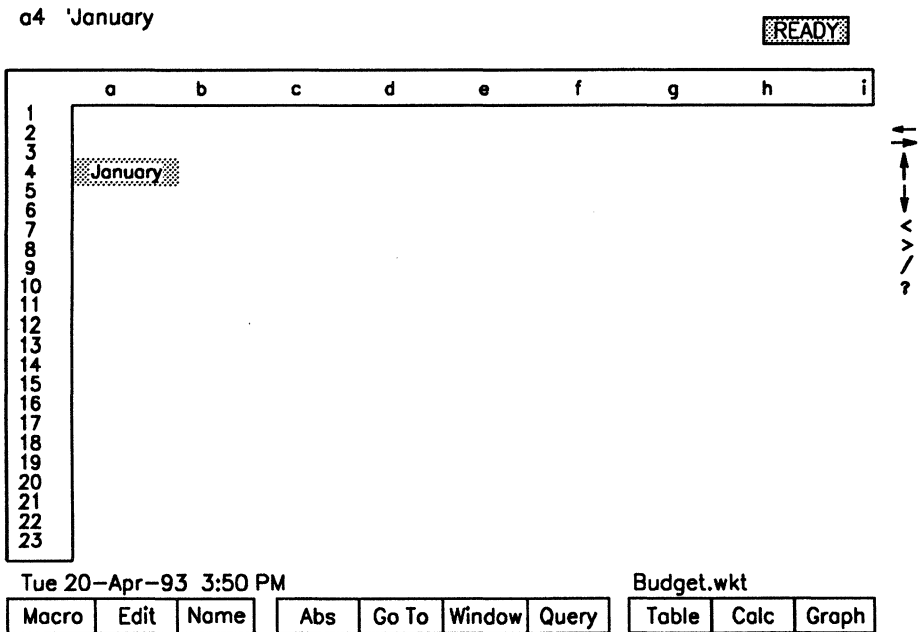
## Entering and Editing Data in a Spreadsheet

When you use any of these methods, OFIS Spreadsheet transfers the entry from the entry line of the command panel and displays it in the current cell. The characters in the entry line disappear and appear in the current cell and in the top line of the command panel, next to the cell address. Figure 3-1 shows how the spreadsheet looks after you enter cell data.

You can save keystrokes by using the cell pointer movement keys to enter data when making a series of entries in a row or column. These keys position the cell pointer in the next cell, ready for your next entry.

You can cancel an entry before you enter it in the worksheet area by pressing **CANCEL**. This removes all characters from the command panel and returns the spreadsheet to Ready mode.

Figure 3-1. Spreadsheet Entry



## Entering Labels

Labels are text entries, frequently used as column headers, row labels, titles, messages, or memos. They assist you in reading and understanding the spreadsheet. OFIS Spreadsheet automatically assumes that an entry is a label if a value character is not the first character.

To enter a label, use the following procedure:

1. Position the cell pointer where you want to enter the label.
2. Type the entry.
3. Press **RETURN** or **GO**.

The label displays in the cell and next to the cell address in the command panel preceded by a label prefix.

## Label Prefixes

When you enter a label, OFIS Spreadsheet automatically precedes the entry with a label prefix. Label prefixes specify an entry as a label and the alignment of the label text in the cell. You have four label prefix selections. Table 3-1 shows the symbols for each and what they do to the label entry.

**Table 3-1. Label Prefixes**

Symbol	Function
' (apostrophe)	Align at left edge of the cell (the default)
" (double quotation mark)	Align at right edge of the cell
^ (caret)	Center in cell

The default label prefix is left-aligned; therefore, if you enter a label without specifying a prefix, OFIS Spreadsheet automatically aligns it to the left edge of the cell.

## Entering and Editing Data in a Spreadsheet

---

You can alter the label prefix for specific cells or for the entire spreadsheet.

To alter the label prefix for specific cells, use the following procedure:

1. Position the cell pointer at the cell that contains the left-aligned label.
2. Type the first character of the following options:

**/RangeLabel**

The Label menu appears with three options: Center, Left, and Right.

3. Choose one of the following:
  - Type the first letter of your choice.
  - Using the Arrow keys, move the highlight to the desired alignment option, then press **RETURN** or **GO**.
  - Using the mouse, move the highlight to the desired alignment option, then click the mouse button.

The following prompt appears in the command panel: Enter range of labels: x1..x1

4. Choose one of the following:
  - Press **RETURN** or **GO** to accept the range.
  - Using the Arrow keys, expand the range, then press **RETURN** or **GO**.
  - Backspace over the displayed range or place the cursor over the first cell in the displayed range, and type the first cell in the desired range, then two periods, and the last cell of the desired range.
  - Click and drag the mouse to select the range.

OFIS Spreadsheet realigns the labels.

To alter the default label prefix for the entire spreadsheet, use the following procedure:

1. Type the first character of the following options:

**/WorksheetGlobalLabel-Prefix**

The Label-Prefix menu appears with three options: Center, Left, and Right.

2. Choose one of the following:

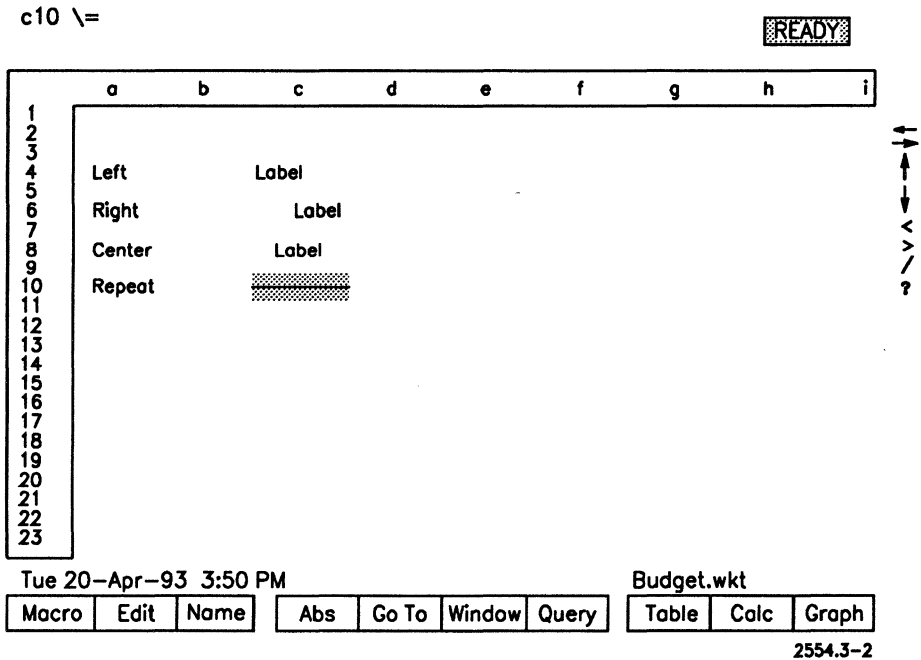
- Type the first letter of your choice.
- Using the Arrow keys, move the highlight to the desired alignment; then press **RETURN** or **GO**.
- Using the mouse, move the highlight to the desired alignment option, then click the mouse button.

OFIS Spreadsheet changes the default label prefix from left aligned to your choice.

Figure 3-2 illustrates how each type of label alignment appears in the spreadsheet. Notice that the label prefix appears in the command panel, but not in the spreadsheet entry.



Figure 3-2. Label Alignment



In Figure 3-2, cell **c10** contains a repeating label. The first line of the command panel shows the cell entry as **\=**.

You can use repeating labels when entering a total line, dividing the spreadsheet, or underlining. When entering a repeating label you need to type only the repeating label prefix and the characters you want to repeat.

To enter a total line with the character =, use the following procedure:

1. Position the cell pointer at the cell.
2. Type: \=
3. Press **RETURN** or **GO**.

The character = fills the cell.

If you change the width of a cell containing a repeating label, OFIS Spreadsheet automatically adjusts the number of characters in the cell to fit the new width.

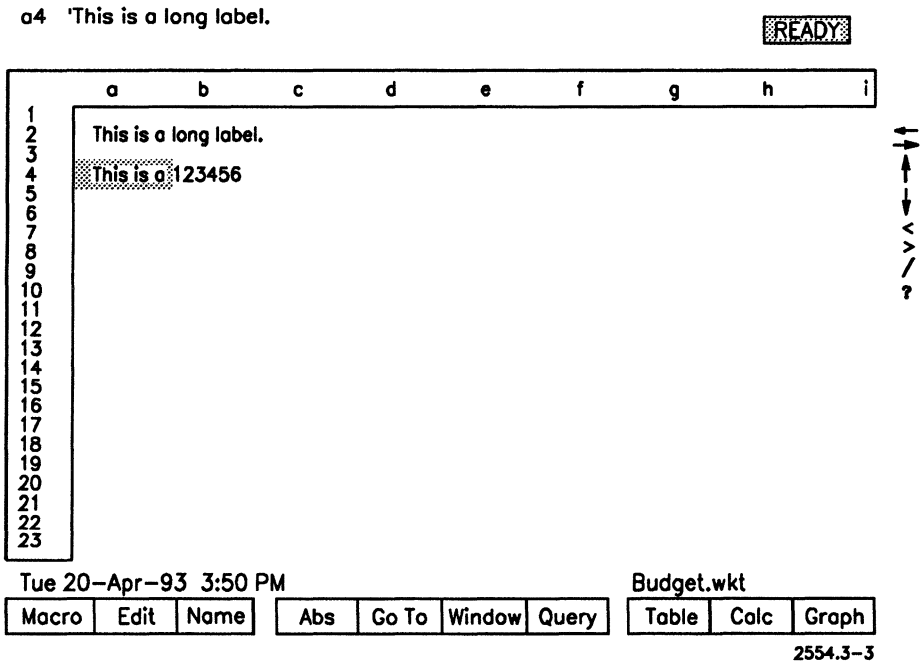
Once you create a label cell, you can use the Copy option to copy it to adjacent cells. (Refer to Section 6.)

### Label Size

You can have up to 247 characters in a label. If the label is longer than the cell width, it overlaps adjacent empty cells; however, the label content is only in the original cell, not the adjacent cells. If the adjacent cells have entries, OFIS Spreadsheet does not display the portion of the label too large to fit in the cell. OFIS Spreadsheet overlaps right-justified and centered labels on the left.

In Figure 3-3, cell **a2** shows how a long label appears in the spreadsheet when the adjacent cells are empty. Cell **a4** shows how a long label appears when the adjacent cells are not empty.

Figure 3-3. Long Label Display



## Numeric Labels

You can use numbers as labels as well as alphabetic characters; however, since the first character signifies the type of entry you are making, you must be careful to specify a label prefix when entering a numeric label so OFIS Spreadsheet does not interpret it as a value. Examples of numeric labels are zip codes, telephone numbers, or customer numbers.

To enter numeric labels, use the following procedure:

1. Position the cell pointer at the cell.
2. Enter the label prefix character (refer to Table 3-1).
3. Enter the numeric label.
4. Press **RETURN** or **GO**.

Since some numeric labels are made up entirely of numbers (for example, the telephone number 805-555-0321), if you do not precede it with a label prefix, OFIS Spreadsheet interprets the entry as a value and handles it accordingly (805 minus 555 minus 0321).

## Entering Values

OFIS Spreadsheet determines that an entry is a value entry if it has one of the following as the first character:

1, 2, 3, 4, 5, 6, 7, 8, 9, 0, -, +, ., (, \$, @,

You usually use a number, addition sign, open parenthesis, or decimal as the first character when entering a numeric value. To designate a negative number, you use the subtraction sign as the first character.

## Numeric Entries

Numeric entries are numbers you enter directly in the spreadsheet. You cannot have spaces, commas, or alphabetical characters in numeric entries. However, you can use **E** or **e** to enter a number in scientific notation, and **%** to designate percentage when entering numbers.

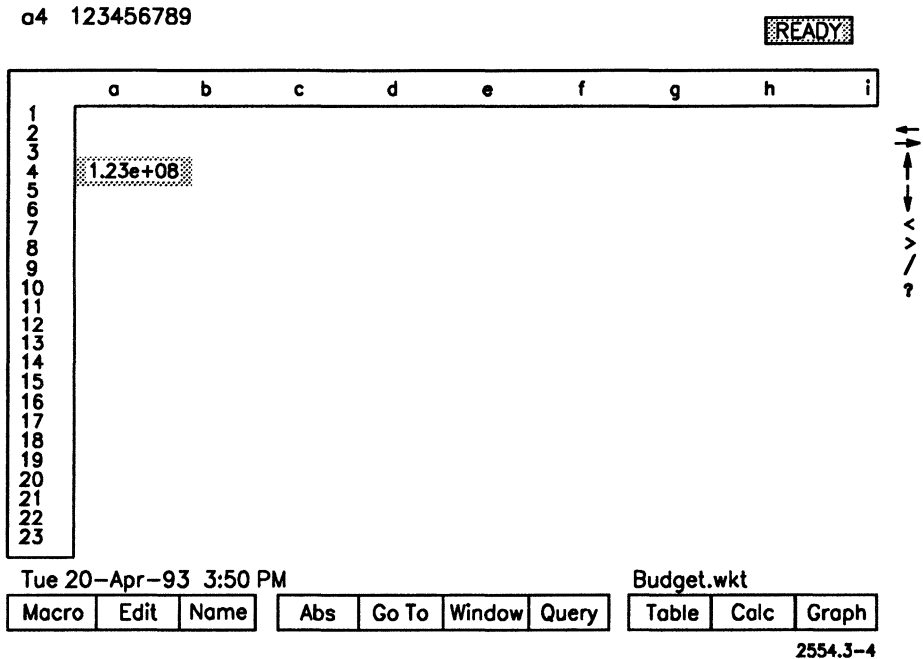
## Number Size

You can enter a number up to 63 characters long. However, OFIS Spreadsheet can display only as much of the number as the column width allows. (To change a column width, refer to Section 6.)

Figure 3-4 shows how the entry **123456789** displays in a spreadsheet using the default column width of 9.

In Figure 3-4, the number appears in scientific notation, but the cell contents appear in the command panel exactly as you entered it. It is very important to keep in mind that what appears in the spreadsheet, and how OFIS Spreadsheet internally stores a value can be entirely different. When performing calculations, OFIS Spreadsheet uses the internal representation of the value.

Figure 3-4. Numeric Display



## Entering Formulas

OFIS Spreadsheet is most efficient when it is performing calculations using the functions and formulas that you create.

A formula can consist of numbers, cell references, range names, strings, functions, or other formulas. In addition to these, a formula contains one or more operators. OFIS Spreadsheet has three types of operators:

- Mathematical
- Intersection
- String

## Mathematical Operators

Mathematical operators perform mathematical functions in a formula. The mathematical operators available in OFIS Spreadsheet and the operations they perform are listed in Table 3-2.

**Table 3-2. Mathematical Operators**

Character	Function
+	Addition
-	Subtraction; also negates a number
*	Multiplication
/	Division
^	Raises a number a specified power

## Precedence of Mathematical Operators

When you use a mathematical operator in a formula, OFIS Spreadsheet assigns a priority, or precedence to each operator. It then performs the calculations in the precedence the operator sets. OFIS Spreadsheet assigns precedence in the following order:

- ^, exponentiation
- -, negation
- \*, multiplication or /, division
- +, addition or -, subtraction

OFIS Spreadsheet assigns precedence from left to right for different operators in the same formula.

When you are creating long, complex formulas, the order in which OFIS Spreadsheet calculates them is critical. You can override the built-in mathematical operator precedence by using parentheses to specify the order of calculation. OFIS Spreadsheet calculates whatever is in the parentheses first, regardless of the precedence of the mathematical operator.

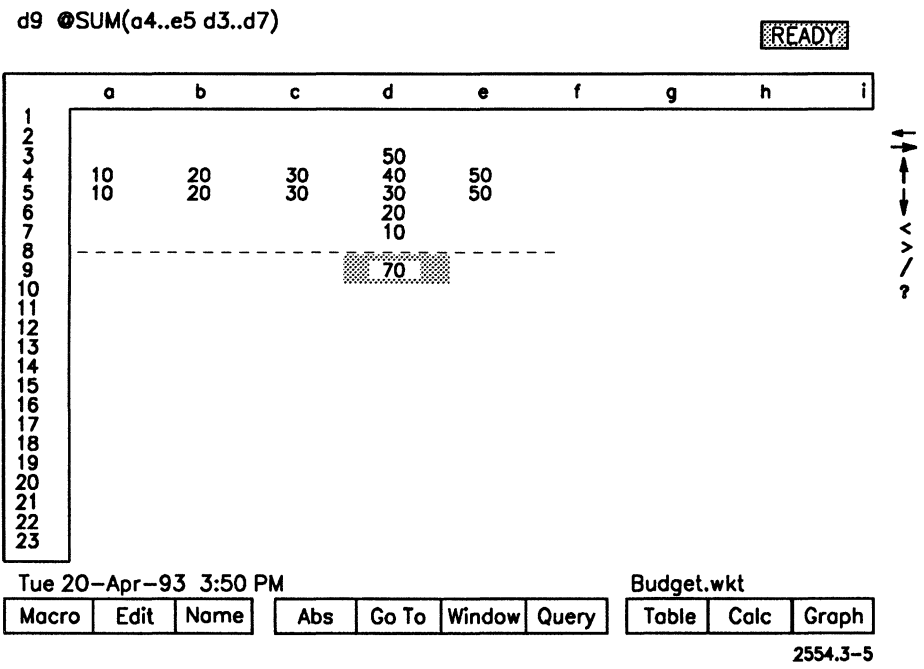
### The Intersection Operator

You can use ranges (groups of cells) in a formula or function, and specify that OFIS Spreadsheet use only the values in the intersecting cells. To set up this type of formula or function, you use the intersection operator, which is a space.

Figure 3-5 illustrates a function using the intersection operator.

In this figure, the formula displaying in the command panel is adding two ranges together. The space between **d3** and **e5** is the intersection operator. The value resulting from the formula is shown in cell **d9**. This is the result of adding the values in the intersecting cells; cell **d4** and cell **d5**.

Figure 3-5. Intersection Operator



### The String Operator

You can create formulas that refer to cells containing labels. This type of formula is known as a string formula. You can join labels and strings together by using the string operator in a string formula. Whenever you are including literal strings in a formula, you must place them in quotation marks.

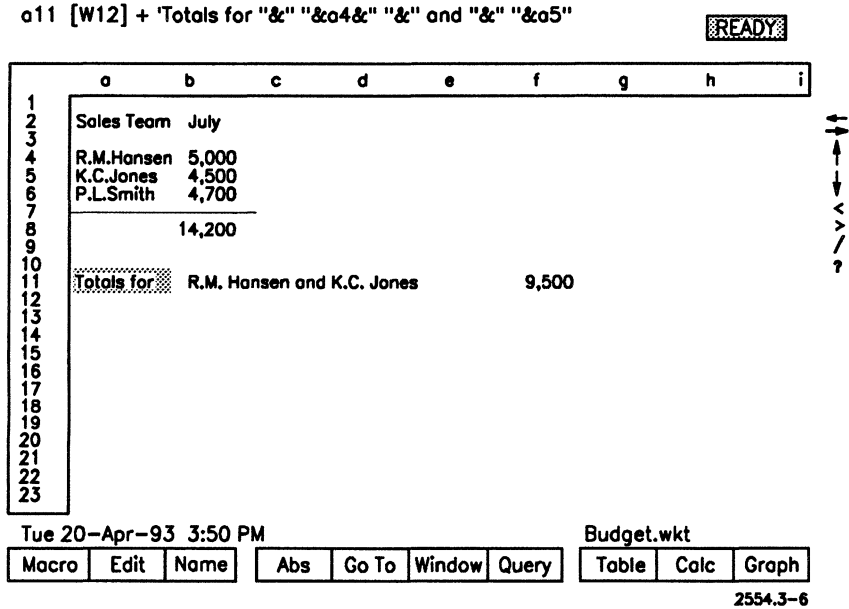
Figure 3-6 shows an example of the string operator. The formula in cell **a11** is a string formula. This formula is stringing together:

- The literal string **Totals for**
- A space
- Cell **a4**, **R.M. Hanson**
- A space
- The literal string **and**
- A space
- Cell **a5**, **K.C. Jones**



# Entering and Editing Data in a Spreadsheet

Figure 3-6. String Formula



If you try to string together any of the following, OFIS Spreadsheet displays an error message, ERR, in the cell containing the formula:

- Value to label
- Value to value
- Label or string to an empty cell

### Cell References

You can refer to cell addresses in a formula instead of a cell value. This links the formulas to the spreadsheet cells, making the value of the formula dependent on the source cell's value.

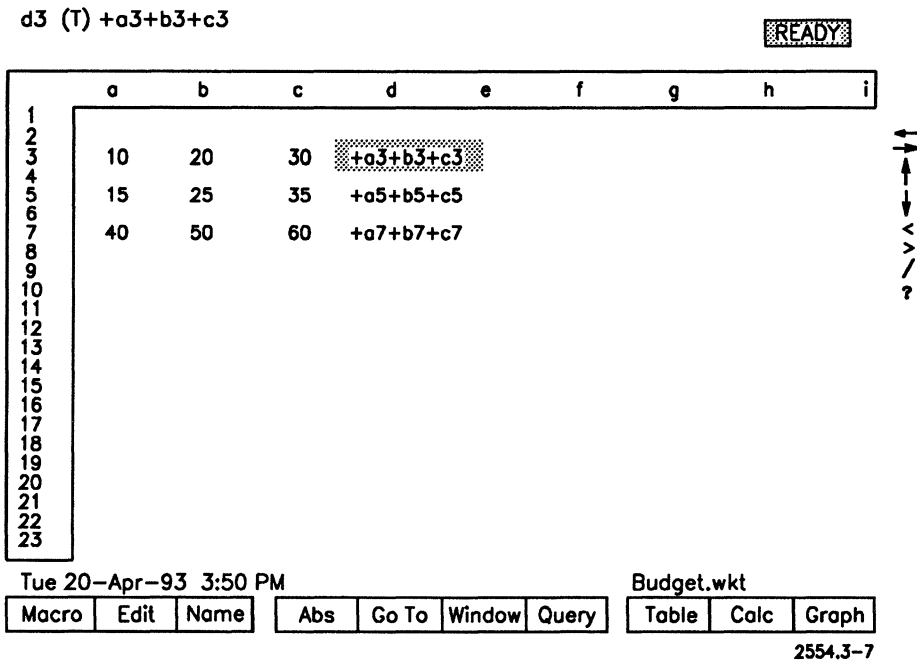
If you use a formula that references a cell address, you make the first character a value character. OFIS Spreadsheet automatically interprets the entry as a label since the first character of a cell address is a letter. You can choose one of the following value characters:

- +
- -
- (

As long as you do not move the formula, or insert or delete a row or column, the cell references remain exactly the same. For example, you can create a formula, then use the Copy option to copy the formula for a series of entries requiring the same formula. When you copy the formula, OFIS Spreadsheet automatically adjusts the cell references to correspond with the new location. This is because when you copy a formula, you are copying the relationship of the cells, not the location of the cells.

Figure 3-7 demonstrates this concept. In this figure, the formulas in column d are identical except for the cell references. OFIS Spreadsheet changes the cell references to correspond to the row containing the formula.

**Figure 3-7. Cell Reference**



OFIS Spreadsheet interprets the formula in cell **d3** by adding the three cells to the left of the current cell. It does not look at the cell's address, instead it looks at the location of the referenced cells relative to the location of the cell containing the formula. So when you copy a formula, the cell references change, but the relationship of the cells remains the same. However, you can control this by using different cell references in a formula.

OFIS Spreadsheet provides three types of cell references:

- Relative
- Absolute
- Mixed

### Relative Cell Reference

When you copy a formula containing relative cell references, the references change to reflect the new location. The formulas shown in Figure 3-7 are examples of relative cell references. OFIS Spreadsheet copies the relationship of the cells, not their location.

Unless you indicate otherwise, when you enter a cell address, it is a relative cell reference.

### Absolute Cell Reference

You can copy a formula and keep the cell references from changing. For example, you may reference a total value in a different section of the spreadsheet, copying the total formula, but keeping the cell references the same. You do that by making the cell references absolute.

You make a cell reference absolute by placing a dollar sign (\$) before the column or row reference. Table 3-3 lists the possible combinations of absolute cell references, and explains what happens when you copy the cell reference.

**Table 3-3. Absolute Cell References**

Cell Reference	Explanation
\$a3	Reference to column a remains constant; reference to row 3 changes
a\$3	Reference to column a changes; reference to row 3 remains constant
\$a\$3	Reference to column a and row 3 remain constant

### Mixed Cell Reference

You can use relative and absolute cell references in the same formula. This type of cell referencing is known as a mixed cell reference. The formula **+\$a\$7+b\$7+c7** is an example of a mixed cell reference.

### Pointing to Cells

When you create a formula you can type each cell reference, or you can point to the cell. You point to a cell by using the Arrow keys or the mouse to move the cell pointer to the cell. Pointing offers the following advantages:

- Saves time
- Avoids typing errors
- Lets you see the positions of the cells you are referencing

To create a formula by pointing, use the following procedure:

1. Position the cell pointer at the cell where you want the formula.
2. Type a value character.
3. Using the Arrow keys or the mouse, move the cell pointer to the first cell you are referencing in the formula.

The mode indicator changes to **POINT**, and the contents of the cells you reference display in the command panel.

4. Type the mathematical operator you want to use.

The cell pointer returns to the cell containing the formula. Continue with steps 2 through 4 until you finish referencing all of the cells you want to use in the formula.

5. Press **RETURN** or **GO**.

Once you have finished a formula, the mode indicator returns to **READY**. The cell reference is not placed in the formula until you type a mathematical operator, or press **RETURN** or **GO**.

While in Point mode, to make a cell reference absolute, you press **Abs (F4)**. You then continue pressing **Abs (F4)** until the cell reference is correct.

You can use any of the cell pointer movement keys to define a range in a formula. When you define a formula by pointing, you do not need to keep track of the cell addresses you want to use, only their relative locations in the spreadsheet.

### Error Values

When you create a formula, an error may display in the worksheet area. The most common causes of this are:

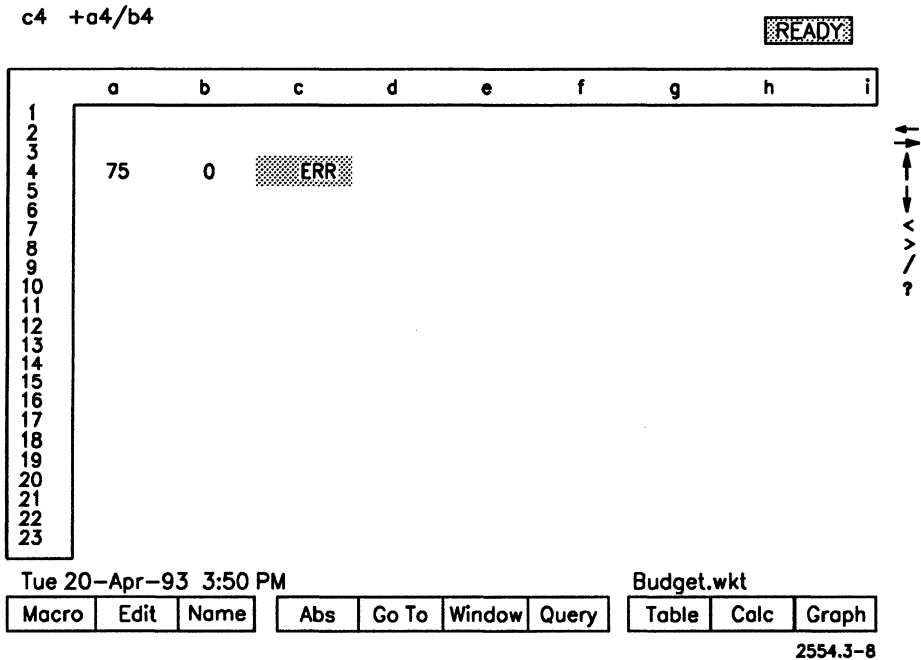
- Dividing by a blank cell
- Dividing by a cell containing the number 0
- Linking a value to a label

Figure 3-8 illustrates an error condition. In this example, cell **b4** is the divisor in the formula. However, since cell **b4** contains a **0**, OFIS Spreadsheet displays **ERR** instead of a numeric value.

Refer to Appendix D for OFIS Spreadsheet error conditions and procedures to rectify the condition.

# Entering and Editing Data in a Spreadsheet

Figure 3-8. Error Condition



## Editing Entries

At some point, you will have to correct an entry. This may be an existing entry, or an entry you are creating.

### Correcting an Entry You Are Creating

You can edit an entry while you are creating it, before you enter it into the spreadsheet. If it is a fairly simple entry, use the **BACKSPACE** key to move the cursor to the error, and retype the entry from that point. For example, if you want to enter **1840 State Street**, and instead enter **1840 Satte**, press the **BACKSPACE** key four times to erase the error, then complete the entry.

If the entry is a very short one, or has several mistakes in it, press **CANCEL**. This deletes the entire entry so you can type it in again correctly.

### Correcting an Existing Entry

You can correct an entry already in the spreadsheet by replacing it with a new entry, or by moving the cell pointer to the cell containing the entry, and pressing **Edit (F2)** to enter Edit mode.

### Replacing an Entry

You can replace an existing entry. This is the best method to correct a short entry.

To replace an existing entry, use the following procedure:

1. Move the cell pointer to the cell you want to correct.
2. Type the new entry.
3. Press **RETURN** or **GO**.

The new entry replaces the old entry and appears in the command panel, next to the cell address.



### Correcting an Entry in Edit Mode

To correct an entry that is long or complex, you use Edit mode. In this mode, you can correct the erroneous portion without retyping the entire entry.

To correct an entry using Edit mode, use the following procedure:

1. Move the cell pointer to the cell you want to correct.
2. Press **Edit (F2)**.

The cell contents display in the command panel. The cursor is positioned immediately to the right of the last character in the entry.

3. Use the **LEFT ARROW** key or the mouse to move the cell cursor to the portion of the entry you want to correct.
4. Type the correction.
5. Press **RETURN** or **GO**.

The corrected entry appears in the command panel and in the spreadsheet. The spreadsheet returns to Ready mode.

### Moving the Cursor in Edit Mode

You can move the cursor in Edit mode by using the keys listed in Table 3-4.

**Table 3-4. Edit Mode Cursor Movement Keys**

<b>Key</b>	<b>Function</b>
LEFT ARROW	Moves left one character
RIGHT ARROW	Moves right one character
SHIFT-UP ARROW	Moves to first character
SHIFT-DOWN ARROW	Moves to position immediately after last character
CODE-RIGHT ARROW	Moves five characters to the right
CODE-LEFT ARROW	Moves five characters to the left
CODE-UP ARROW	Moves to first character

In Edit mode, you can move only the cursor left to the first character in the entry, and to the right only to the space immediately after the last entry.

### Deleting Characters

You can delete characters in an entry while you are creating the entry or when you are in Edit mode by using the following keys:

- **BACKSPACE**
- **DELETE**

The **BACKSPACE** key erases a character to the left of the cursor each time you press it. This works well with simple, small entries.

To delete a character with the **BACKSPACE** key, press the key until you have erased the error.

The **DELETE** key erases the character at the cursor. This works well with larger entries.

To delete a character with the **DELETE** key, move the cursor to the incorrect character, and press **DELETE**.

### Inserting Characters

OFIS Spreadsheet defaults to Insert mode. This means that to insert a character in an entry, you place the cursor where you want to begin inserting and type the character. The character is inserted at the cursor position, and the character originally at the cursor moves to the right.

### Using Overtyping

To replace characters in an entry when the spreadsheet is in Edit mode, you use the Overtyping mode.

When you are in Overtyping mode the text you type replaces existing characters and spaces at the cursor position. The **BACKSPACE** key moves the cursor to the left without deleting characters or spaces.

To enter Overtyping mode, press **OVERTYPING**; the key light goes on.

To exit Overtyping mode, press **OVERTYPING**; the key light goes off.

### Entering Changes

Once you have made changes in the Edit mode, you must enter the changes in the spreadsheet for them to take effect. You do this using many of the same keys you use when creating an entry. However, some of the keys act as cursor movement keys, not entry keys, in Edit mode. Table 3-5 lists the entry keys and tells where the cell pointer resides after entry.

**Table 3-5. Edit Mode Data Entry Keys**

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<b>Key</b>	<b>Cell Pointer Position</b>
RETURN	Remains in originating cell
GO	Remains in originating cell
UP ARROW	Moves up one cell
DOWN ARROW	Moves down one cell
PREV PAGE	Remains in same relative cell position in previous window
NEXT PAGE	Remains in the same relative cell position in next window

---

## Editing Formulas

To edit formulas, you use the same techniques you use to edit labels and values. To edit a formula while creating it, you can use the **BACKSPACE** key until you erase the error, or use the **CANCEL** key to cancel the entry and start over. To edit an existing formula, you can replace the entire formula, or press **Edit (F2)** to enter the Edit mode and make your corrections.

You can also add cell references to an existing formula.

To add a cell reference to an existing formula, use the following procedure:

1. Position the cell pointer at the cell containing the formula.
2. Press **Edit (F2)**.

The current cell content displays at the top of the command panel next to the cell address. It also displays in the middle of the command panel.

3. Move the cursor to the location where you want to add the cell reference.
4. Type a mathematical operator.
5. Type the cell reference.
6. Press **RETURN** or **GO**.

You can add the cell reference at the end of the formula by pointing to the cell reference.

## Entering and Editing Data in a Spreadsheet

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To add a cell reference to an existing formula, use the following procedure:

1. Position the cell pointer at the cell containing the formula.
2. Press **Edit (F2)**.  
The formula displays in the command panel.
3. Type a mathematical operator.
4. Choose one of the following keys to point to the cell reference:
  - **UP ARROW**
  - **DOWN ARROW**
  - **PREV PAGE**
  - **NEXT PAGE**
5. Press **RETURN** or **GO**.

## Recalculating a Spreadsheet After Editing

Whenever you make changes to the values in cells, OFIS Spreadsheet automatically updates any formulas or functions referencing those cells and displays the results in the source cell. This is known as recalculating the spreadsheet. Depending on the size of your spreadsheet and the changes you are making, you may not want OFIS Spreadsheet to automatically recalculate the spreadsheet after every change. You have the option of having OFIS Spreadsheet automatically recalculate the spreadsheet or waiting until you tell it to recalculate. In other words, you can set the spreadsheet to recalculate automatically or manually.

In addition to telling OFIS Spreadsheet which method you want it to use when recalculating the spreadsheet, you can also indicate the order of recalculation.

### Methods of Recalculation

OFIS Spreadsheet provides you with two methods of recalculation:

- Automatic
- Manual

The spreadsheet uses the automatic method of recalculation by default. This method recalculates the spreadsheet every time you make a value entry or change an existing value entry.

The manual method of recalculation recalculates only the spreadsheet when you press **Calc (F9)**. When OFIS Spreadsheet is using the manual method of recalculation, the mode indicator displays **CALC**. When you set the spreadsheet to recalculate manually, be sure to recalculate before:

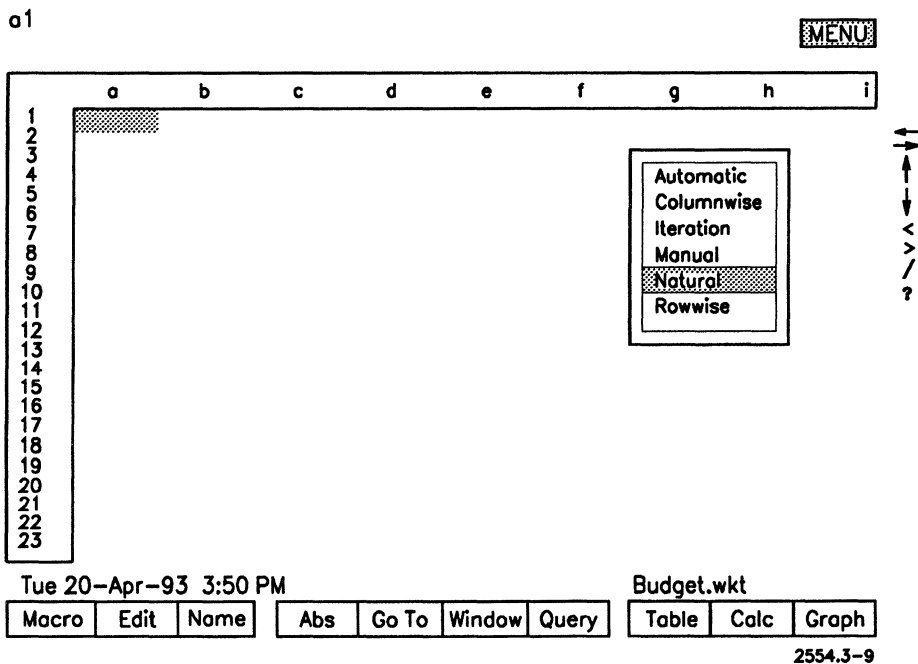
- Printing
- Copying values

To change the method or order of recalculating, type the first character of the following options:

**/WorksheetGlobalRecalculation**

This brings up the Recalculation pop-up menu (refer to Figure 3-9). You select either automatic or manual recalculation as well as the order of recalculation from the menu.

Figure 3-9. Recalculation Pop-up Menu



## Selecting the Order of Recalculation

In addition to controlling when OFIS Spreadsheet recalculates the spreadsheet, you can also control the order it recalculates. You can designate the order as:

- Natural
- Columnwise
- Rowwise

### Natural Order

Natural order is the default. This begins with the first cell that needs to be calculated so that the next cell can calculate correctly. When using this order, OFIS Spreadsheet calculates values before formulas.

### Columnwise Order

Columnwise calculates column by column. When using this order, OFIS Spreadsheet begins calculating in column **a**, and when it completes that column, it goes on to column **b**, and so on.

### Rowwise

Rowwise calculates row by row. When using this order, OFIS Spreadsheet begins calculating in row **1**, and when it completes that row, it goes on to row **2**, and so on.

### Circular Reference

When creating or making changes to formulas or functions, you can accidentally create a circular reference. A circular reference results when a formula or function refers to itself. For example, entering the formula **+a1-a2**, in cell **a2** creates a circular reference. Every time the value in **a2** changes, the formula recalculates.

Frequently, this type of situation is the result of a typing error or a pointing error. When you have a circular reference in your spreadsheet, the submenu indicator displays **CIRC**. If Automatic Recalculation mode is in effect, the indicator displays immediately. If you are in Manual Recalculation mode, the indicator displays when you recalculate the spreadsheet. When you see this indicator, you need to locate and fix the circular reference.

You can locate the circular reference by viewing the Worksheet Status screen. To view this screen, type the first character of the following options:

**/WorksheetStatus**

The Worksheet Status screen overlays the current spreadsheet. The cell address of the cell containing the circular reference appears next to the Circular Reference indicator. Sometimes the cell address that displays is not the actual location of the circular reference. If you have a complicated formula using several cell references, you may need to go back through the chain of references to locate the actual cell containing the circular reference.





# Section 4

## Formatting Cell Data for Display

When you first enter values and labels they appear in the spreadsheet according to the default formats. You can keep these formats or change them to meet your specifications.

This section covers:

- The format indicator
- Using the Global format
- Global formatting versus Range formatting
- Format options

### The Format Indicator

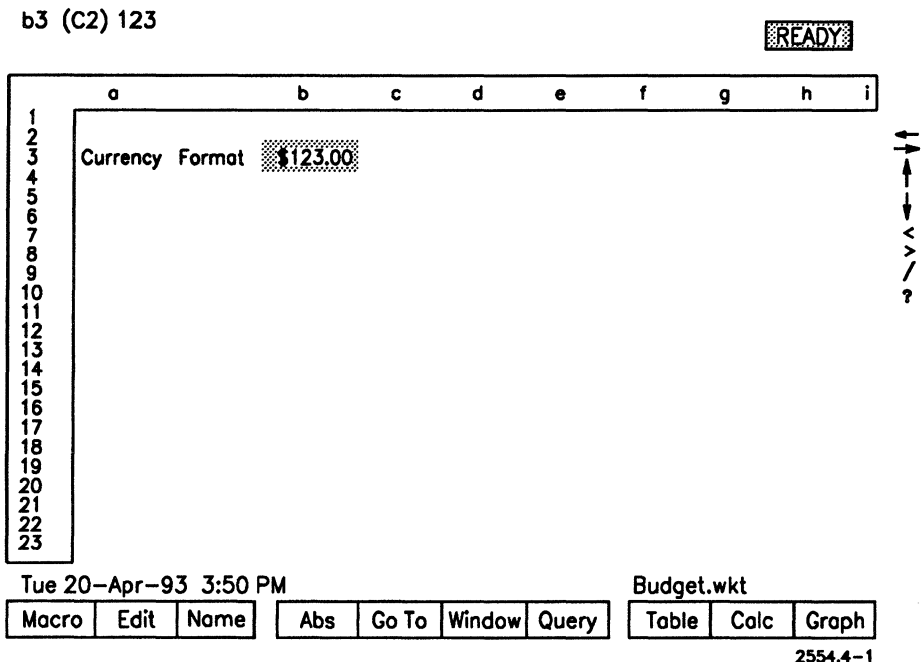
When you format a cell, a format indicator appears next to the cell address in the command panel, specifying the format in effect for that cell. A format indicator can include:

- A letter specifying the format type (such as currency)
- A number specifying the number of decimal places

Some formats have more than one option. For example, you can display the Date format in different ways. If there is more than one option for a particular format, then the format indicator displays the option number (for example, D4 for the fourth Date format option).

Figure 4-1 shows a format indicator for the Currency format, using two decimal places.

Figure 4-1. Format Indicator Display



## Using the Global Format

OFIS Spreadsheet initially displays every cell in the spreadsheet in global format. The cells retain this format unless you specify otherwise. You can change the global format for every cell, or you can change the format for a specific cell or a range of cells.

The format options are the same whether you are changing a single cell, a range of cells, or the entire spreadsheet.

### Default Global Format

The default global format for value entries is General format. The General format displays values as numbers with no other notation (such as dollar signs or decimal points). Values resulting from functions or formulas also display in General format. However, if a value is very large or very small (for example, a decimal), it displays in scientific notation.

You can check the default global formats by typing the first character of the following options:

**/WorksheetStatus**

The Worksheet Status screen overlays the spreadsheet (refer to Figure 4-2). It shows the global formats for values and labels. You press **CANCEL** to return to the spreadsheet display.

### Global Formatting Versus Range Formatting

There are two differences between global (the entire spreadsheet) and range (individual cells) formatting:

- Range formatting offers the Reset option, while global formatting does not.
- When you format a range of cells, you specify which cells are formatted. If you format an individual cell or a range of cells, that range format overrides the global format.

If you subsequently change the global format, it does not affect cells you formatted using the Range Format option.

# Formatting Cell Data for Display

---

Figure 4-2. Worksheet Status Screen

**MENU**

Available Memory:	353120 of 353120 bytes (100% free)	↑
Math Coprocessor:	None	↓
Recalculation:		<
Method	Automatic	>
Order	Natural	/
Iterations	1	?
Circular Reference:	None	
Cell Display:		
Format	(G)	
Label-Prefix	Left (!)	
Column Width	9	
Zero Supression	Off	
Global Protection:	Disabled	

Tue 20-Apr-93 3:50 PM Budget.wkt

Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
-------	------	------	-----	-------	--------	-------	-------	------	-------

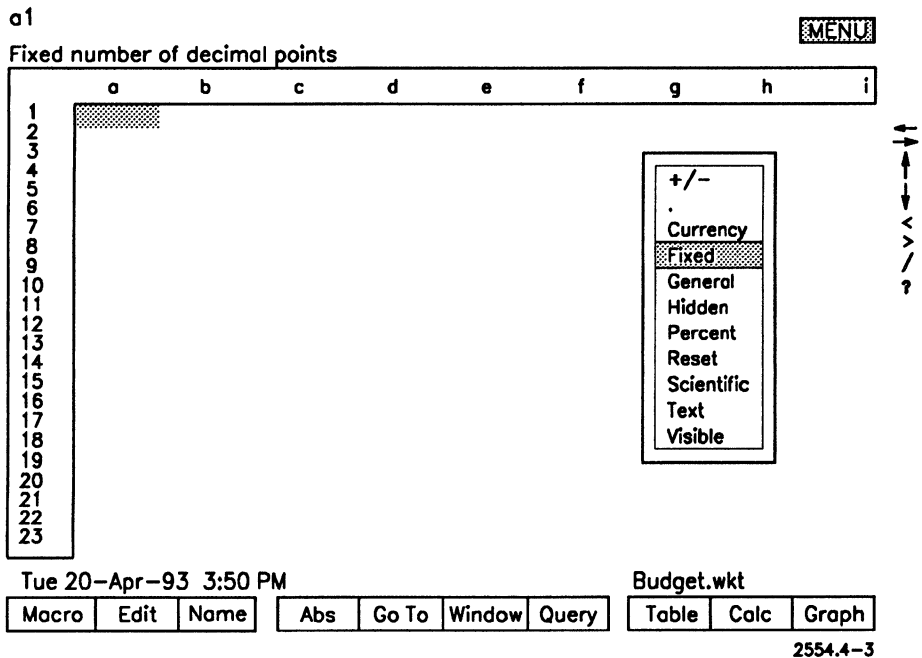
2554.4-2

To assign a format to an individual cell or a range of cells, you type the first character of the following options:

**/RangeFormat**

This displays the Range Format pop-up menu (refer to Figure 4-3).

**Figure 4-3. Range Format Pop-up Menu**



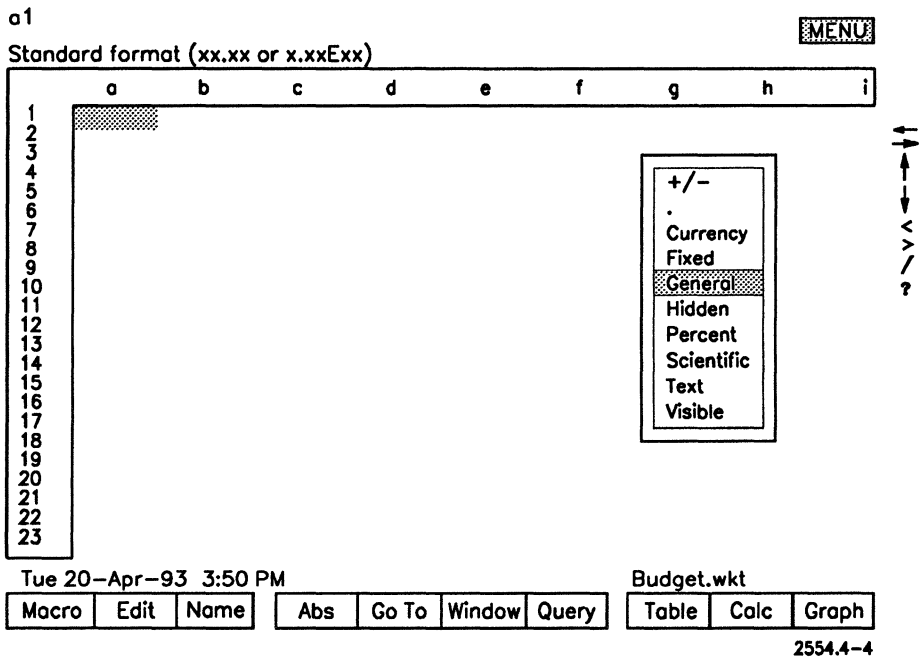
To assign a format to an entire spreadsheet, you type the first character of the following options:

**/WorksheetGlobalFormat**

This displays the Worksheet Global Format pop-up menu (refer to Figure 4-4).

OFIS Spreadsheet offers nearly the same options for both types of formatting. To select an option, refer to "Format Options," below.

## Figure 4-4. Worksheet Global Format Pop-up Menu



## Format Options

There are eight value format options available through the Global and Range format pop-up menus:

- +/- (Horizontal bar graph)
- , (Comma)
- Currency
- Fixed
- General
- Percent
- Reset (only in Range Format pop-up menu)
- Scientific

You can replace a value in a cell with a value in a different format or format blank cells. If you format blank cells, the values you enter appear in the format you selected. When you copy a formatted cell, the format copies along with the contents. Only one value format per cell can be in effect at a time.

In addition to these value formats, OFIS Spreadsheet also provides formats for:

- Date and time
- Text for cells with formulas
- Hidden and visible data for labels and values

When you select some formats, the prompt: `Enter number of decimal points:` appears. After the prompt is the default number of decimal points (2). You can accept this by pressing **RETURN** or **GO**, or designate a different number by typing over it.



Once you designate the decimal points, OFIS Spreadsheet prompts you to enter the range to format. Following the prompt is OFIS Spreadsheet's suggestion of the range using the current cell as a range. You have four options:

- Press **GO** or click with the mouse to accept the suggested range.
- Using the Arrow keys or the mouse, expand the range; then press **GO**.
- Enter a new range; then press **GO**.

Since OFIS Spreadsheet uses the position of the cell pointer to suggest a range, it is a good idea to position the cell pointer prior to executing the Range options.

The following gives an explanation of each Global and Range Format option.

### **+/- (Horizontal Bar Graph)**

The +/- (Horizontal Bar Graph) format displays values as a series of plus signs (+) or minus signs (-). Positive values display as plus signs; negative values display as minus signs; zero displays as a period. OFIS Spreadsheet rounds the values down to the nearest integer for display purposes (for example, 5.8 displays as five plus signs). If a value is too large to fully display in a cell, a series of asterisks (\*) display. (To change the column, refer to Section 6.)

You can use this option to create a simple bar graph in the spreadsheet. (To create graphs, refer to Section 8.)

### **, (Comma)**

The , (Comma) format places commas between hundreds and thousands, thousands and millions, and so on. You can specify the number of decimal places. Negative values appear in parentheses.

### Currency

The Currency format shows values as currency values with a dollar sign (\$) in front of the value and commas between hundreds and thousands, thousands and millions, and so on. Negative values are enclosed in parentheses. You can specify the number of decimal places.

When you are using decimal places and large values, the formatted value can become too large to display in the default cell width. When this occurs, a series of asterisks (\*) appear in the cell. You can correct this by using fewer decimal places, or by widening the column. For detailed information on how to change column width, refer to Section 6.

### Date

OFIS Spreadsheet stores dates as integer values. These integer values are equal to the number of days that have elapsed between December 31, 1899, and the specified date. For example, January 25, 1900, would display as 25, since 25 days elapsed between December 31, 1899, and that date.

Although this may be a good way for OFIS Spreadsheet to handle dates, it is not good for viewing. Even though you cannot change the way OFIS Spreadsheet stores dates, the Date format option allows you to specify the way dates display in the spreadsheet.

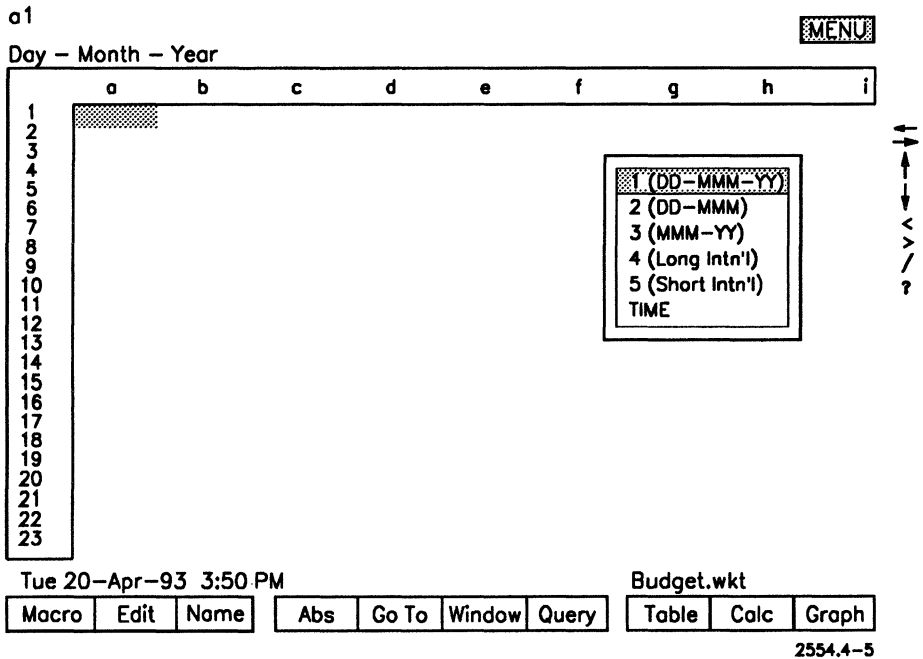
## Formatting Cell Data for Display

To view the Date Format pop-up menu, type the first character of the following options:

**/RangeFormatDate**

The Date Format pop-up menu displays (refer to Figure 4-5).

**Figure 4-5. Date Format Pop-up Menu**



This pop-up menu has five date format options and a Time format option. Table 4-1 lists each date format and gives an example of how a date using that format appears in the spreadsheet. Also given in the table is the code corresponding to that date format. It is this code that appears as the format indicator. Formats 4 and 5 use the global International Date format. This format is discussed in this section.

**Table 4-1. Date Formats**

Format	Code	Display
1 DD-MMM-YY	D1	01-Jul-91
2 DD-MMM	D2	01-Jul
3 MMM-YY	D3	Jul-91
4 (Long Intn'l)	D4	07/01/91
5 (Short Intn'l)	D5	07/01

Once you select an option, the prompt: Enter range to format: appears. Following the prompt is a reference to the current cell as a range. You have three options:

- Press **RETURN** or **GO** to accept the suggested range.
- Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
- Type the range; then press **RETURN** or **GO**.

Since OFIS Spreadsheet uses the position of the cell pointer to suggest a range, it is a good idea to position the cell pointer prior to executing the Range options.

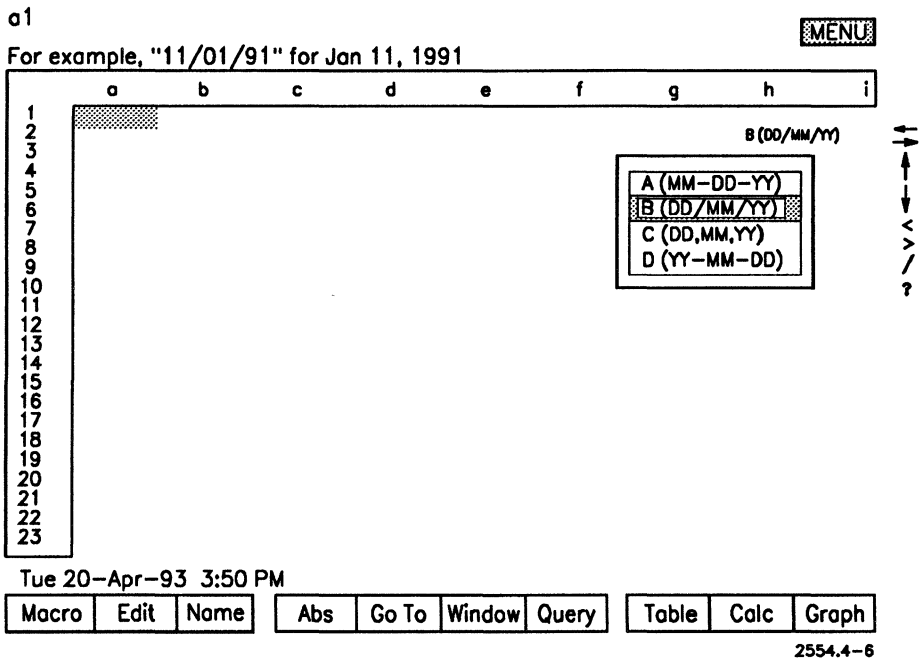
Changing International Formats

The International formats are the default date formats (refer to Table 4-2). This format has more than one selection available. To change the default International format, you type the first letter of the following options:

**/WorksheetGlobalDefaultOtherInternationalDate**

This displays the International Date options (refer to Figure 4-6).

Figure 4-6. International Date Options



A message showing how a date appears using the highlighted option is in the command panel. Table 4-2 lists each of these options and shows how the Long International and Short International formats represent the date July 1, 1991.

**Table 4-2. International Format Options**

<b>Format</b>	<b>Long Intn'l</b>	<b>Short Intn'l</b>
A (MM/DD/YY)	07/01/91	07/01
B (DD/MM/YY)	01/07/91	01/07
C (DD.MM.YY)	01.07.91	01.07
D (YY-MM-DD)	91-07-01	91-07

Once you change the International format, all cells having that format automatically change to the new format.

To make global changes default settings, type the first character of the following options:

**/WorksheetGlobalDefaultUpdate**

The changes are saved as defaults in the OFIS Spreadsheet configuration file. (For more information on the configuration file, see “OFIS Spreadsheet Configuration File,” in Appendix B, “Installing OFIS Spreadsheet.”) If you did not select these options, the changes would be in effect only for the current spreadsheet session.

You can check the Long International format in effect for the spreadsheet by typing the first character of the following options:

**/WorksheetGlobalDefaultStatus**

The Global Default Status screen overlays the spreadsheet (refer to Figure 4-7). You press **CANCEL** to return to the spreadsheet display.

Figure 4-7. Global Default Status Screen

**MENU**

<b>Printer:</b> Auto-linefeed           No Left Margin               4 Right Margin             76 Top Margin                2 Bottom Margin            2 Page Length             66 Page Width               80 Manual Paper Feed       No Setup String Name	<b>International</b> Punctuation             . Decimal Point           : Argument Separator     . Thousands Separator   . Currency String         \$ Currency Position       Prefix Date format D4         B (DD/MM/YY) Time format D8         A (HH:MM:SS)	<b>Other</b> : : \$ Prefix B (DD/MM/YY) A (HH:MM:SS)	← → ↑ ↓ < > / ?
Initial Path:               [Sys]<Sys>	Screen Colors:		
Help access method:       Removable	Borders	Lavender	
Screen clock:             Standard	Command Panel	Peach	
File locking:             Enabled	Function Keys	Yellow	
Autosave:                Enabled	Information Line	White	
Interval                  10	Protected Cells	Cyan	
	Unprotected Cells	Salmon	

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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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### Time Format Option

OFIS Spreadsheet handles hours, minutes, and seconds as fractions of a day. This value represents the percentage of time that has passed since the beginning of the day (midnight). For example, 12:00 noon has a time value of .5, since that is half way through the day; 6:00 am has a time value of .25.

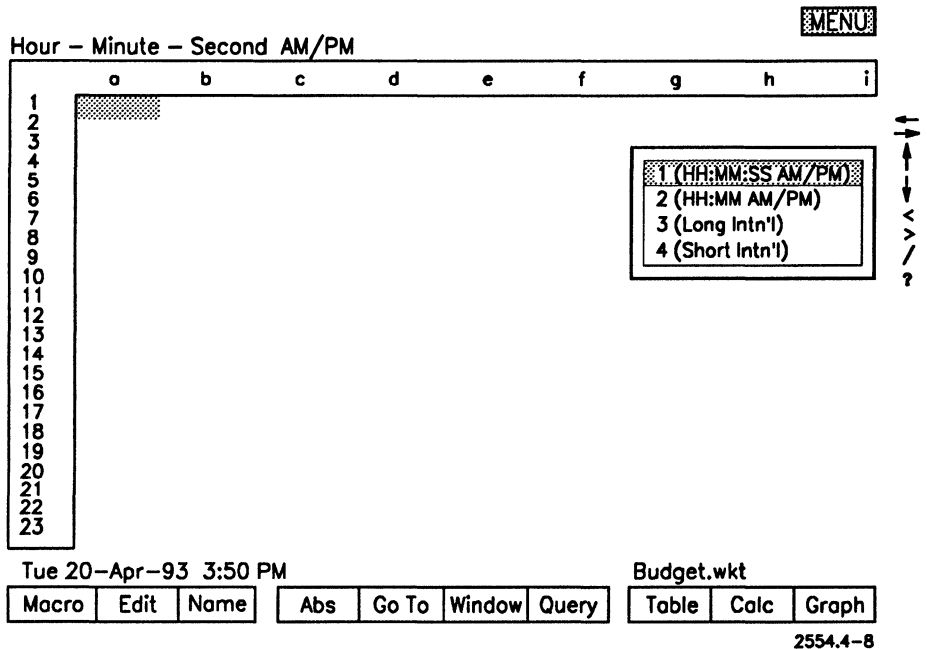
The time value is not good for viewing as OFIS Spreadsheet calculates it, so OFIS Spreadsheet provides options that allow you to format the way the value appears in the spreadsheet. These options are part of the Date format options.

To view the Time format options, type the first character of the following options:

**/RangeFormatDateTime**

The Time format options display (refer to Figure 4-8). A message showing how the time value appears using the highlighted option is in the command panel. Table 4-3 lists each option, the format code associated with the option, and how the time value appears in the spreadsheet.

Figure 4-8. Time Format Options





**Table 4-3. Time Formats**

<b>Format</b>	<b>Code</b>	<b>Display</b>
1 (HH:MM:SS AM/PM)	D6	3:55:38 PM
2 (HH:MM AM/PM)	D7	3:55 PM
3 (Long Intl)	D8	15:55:38
4 (Short Intl)	D9	15:55

The code has a D as the first letter because the Time format is part of the Date format option.

### Changing International Time Formats

You have the option to display the time value using the Long International or Short International time formats. These time formats use a 24-hour clock. Table 4-3 demonstrates how these times appear. The sample time is 3:55 pm, which using a 24-hour clock, displays as 15:55 pm.

To change the International Time format, you type the first character of the following options:

**/WorksheetGlobalDefaultOtherInternationalTime**

The International Time options appear (refer to Figure 4-9). A message showing how the time value appears using the highlighted option is in the command panel. Table 4-4 lists each of these options and shows how the Long International and Short International time formats appear.

Figure 4-9. International Time Options

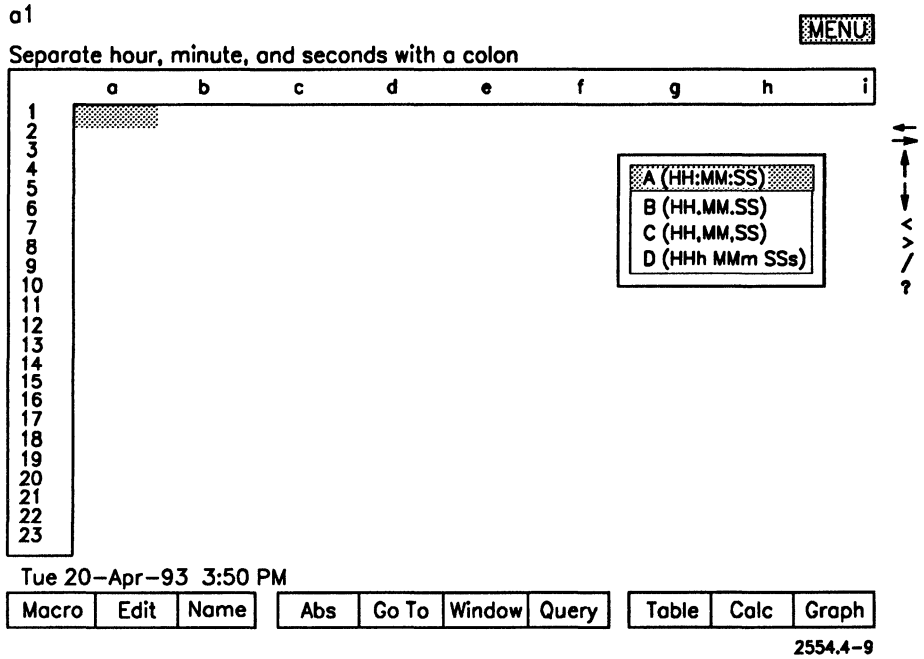


Table 4-4. International Time Format Options

Format	Long Intn'l	Short Intn'l
A (HH:MM:SS)	15:55:38	15:55
B (HH.MM.SS)	15.55.38	15.55
C (HH,MM,SS)	15,55,38	15,55
D (HHhMMmSSs)	15h55m38s	15h55m

## Formatting Cell Data for Display

---

You can check the Long International Time format for the spreadsheet by typing the first character of the following options:

**/WorksheetGlobalDefaultStatus**

The Global Default Status screen overlays the spreadsheet (refer to Figure 4-7). You press **CANCEL** to return to the pop-up menu or **CODE-CANCEL** to return to the spreadsheet.

To make the global change permanent, you need to type the first character of the following options:

**/WorksheetGlobalDefaultUpdate**

Your global changes are now permanent default settings. If you did not use these options, the changes would be in effect only for the current spreadsheet session.

### Fixed

The Fixed format controls the number of decimal places.

### General

The default format is General. Values appear as entered. Very large or very small values display in scientific notation.

### Hidden

The Hidden format hides values and labels, making it appear that cells are blank; however, if you position the cell pointer in a cell with this format, the contents display in the command panel.

This formatting option has no effect on the content of the cell, only the way in which it displays. It is useful in hiding notes, comments, or confidential material. The content within cells having this format does not print.

### Percent

The Percent format displays values as percentages, using a percent sign (%). When you specify this option, OFIS Spreadsheet automatically shifts the decimal point two places to the right for any value you enter. For example, using this option with zero decimal places, 25 displays as **2500%**, .5 displays as **50%**.

### Reset

The Reset format is available through the Range Format pop-up menu only. You use this option to reset the format for a specific number of cells.

When this option is highlighted, the command panel displays the current format. When you select this option, OFIS Spreadsheet prompts you for the cells to reset.

**/RangeFormatReset**

The cell or range returns to the global format.

### Scientific

The Scientific format displays values in scientific notation ( $x.xx\text{E}+xx$ ). You can also specify the number of decimal points. This format is especially useful when you are working with very large or very small numbers.

Values display as powers of 10. For example, using this format with two decimal places, the value 321 appears as **3.21e+02**. Since **e** means “10 raised to the power of,” you read this entry as “3.21 times 10 raised to the power of 2,” or 321.

When working with very small numbers, 10 is raised to a negative power. For example, using this format with two decimal places, the value .0008 displays as **8.00e-04**. Raising a number to a negative power is the same as dividing the number by a power of 10.

### Text

The Text format displays the formulas and functions in the source cells, instead of the resulting values. However, the amount of the formula or function that appears depends on the column width. If the formula or function exceeds the column width, it does not overlap adjacent blank cells. (To change the column width, refer to Section 6.)

This option has no effect on cells containing labels or numeric values.

### Visible

The Visible format makes the contents of cells formatted with the Hidden format appear.

## Zero Suppression

The Zero Suppression option hides all zeros in the spreadsheet. You access this option by typing the first character of the following options:

**/WorksheetGlobalZero**

This displays the Zero Suppression options, **Yes** and **No**.

If you select the **Yes** option, zeros in formulas, functions and numeric values disappear. The zeros still display in the command panel, but not in the worksheet area. This does not change any existing cell formats.

To redisplay the zeros, you select the **No** option.

You can check the Zero Suppression option by typing the first character of the following options:

**/WorksheetStatus**

The Status screen overlays the spreadsheet (refer to Figure 4-2). You press **CANCEL** to return to the spreadsheet.

# Section 5

## Customizing OFIS Spreadsheet

You customize OFIS Spreadsheet to suit your own preferences for the way it functions and presents data. You can change the:

- Punctuation characters
- Currency character
- Character width
- Clock display
- Help screen
- Cell pointer movement
- Column alignment
- AutoSave feature
- File Locking feature
- Screen Colors

Initially, all of these features use default settings. This section tells you how to alter the default settings for each of these options.

### Global Default Status Display

You can check default settings for the current worksheet by viewing the Global Default Status screen. You access this screen by typing the first character of the following options:

**/WorksheetGlobalDefaultStatus**

The Global Default Status screen appears, overlaying the current spreadsheet display (refer to Figure 5-1). This screen shows the status of the worksheet global defaults. To return to the current spreadsheet display, you press any key. You change the defaults by issuing the appropriate Worksheet Global Default Other options.

Figure 5-1. Global Default Status Screen

a1 MENU

<p><b>Printer:</b></p> <p>Auto-linefeed            No</p> <p>Left Margin                4</p> <p>Right Margin              76</p> <p>Top Margin                 2</p> <p>Bottom Margin             2</p> <p>Page Length               66</p> <p>Page Width                80</p> <p>Manual Paper Feed        No</p> <p>Setup String Name</p>	<p><b>International</b></p> <p>Punctuation              Other</p> <p>Decimal Point             .</p> <p>Argument Separator       ;</p> <p>Thousands Separator     ,</p> <p>Currency String           \$</p> <p>Currency Position        Prefix</p> <p>Date format D4            B (MM/DD/YY)</p> <p>Time format DB            A (HH:MM:SS)</p>	<p>←</p> <p>↑</p> <p>↓</p> <p>&lt;</p> <p>&gt;</p> <p>/</p> <p>?</p>
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<p>Initial Path:              [Sys]&lt;Sys&gt;</p> <p>Help access method:      Removable</p> <p>Screen clock              Standard</p> <p>File locking:             Enabled</p> <p>Autosave:                Enabled</p> <p>Interval                   10</p>	<p><b>Screen Colors:</b></p> <p>Borders                    Lavender</p> <p>Command Panel            Peach</p> <p>Function Keys             Yellow</p> <p>Information Line          White</p> <p>Protected Cells            Cyan</p> <p>Unprotected Cells         Salmon</p>
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## Worksheet Global Default Other Options

The Worksheet Global Default Other options control the settings of:

- Punctuation characters
- The currency character
- The Long International date display
- The Long International time display
- Help screen access
- The clock display
- The screen character display
- The AutoSave feature
- The File Locking feature

All of these options initially use default settings; however, you can change the default settings to suit your needs.

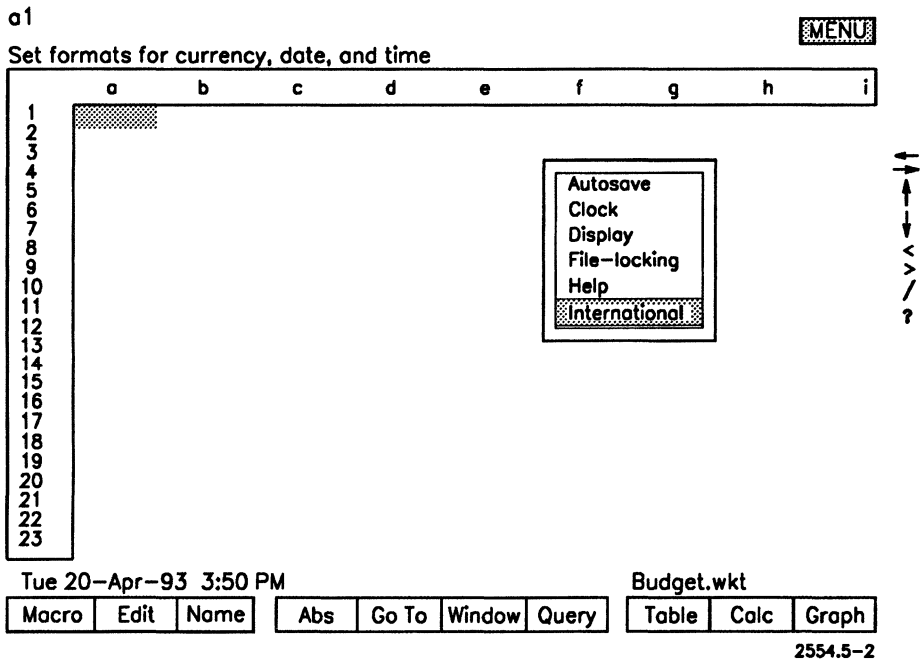


To change a worksheet global default setting, you type the first character of the following options:

**/WorksheetGlobalDefaultOther**

The Other pop-up menu appears (refer to Figure 5-2).

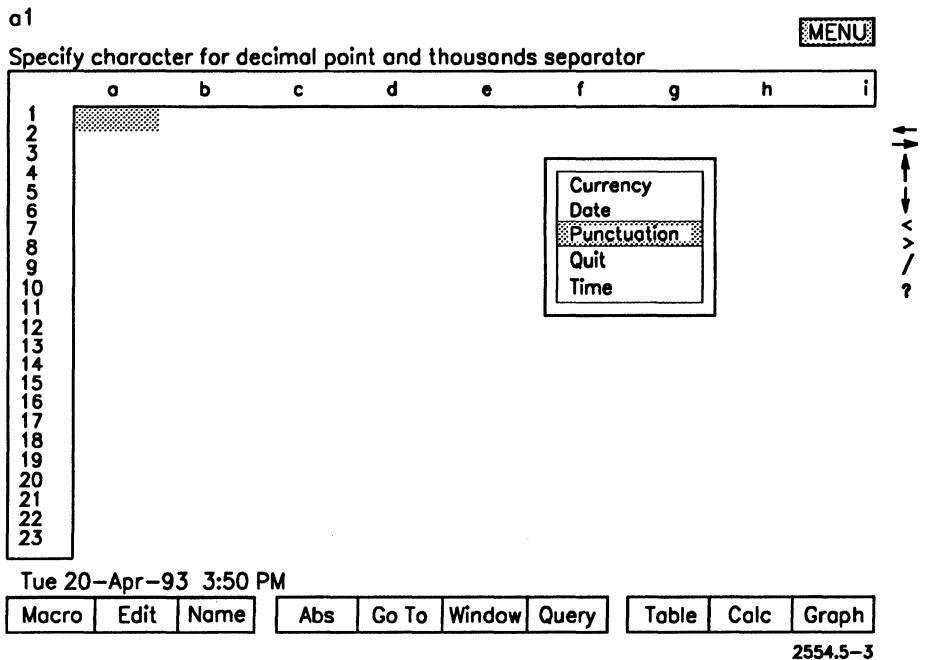
**Figure 5-2. Worksheet Global Default Other Pop-up Menu**



## Using the International Option

When you select International from the Other pop-up menu, the options shown in Figure 5-3 display.

Figure 5-3. International Options



The Currency option tells OFIS Spreadsheet which character to use as the currency character and where to place the character in relation to the number.

The Date and Time options control the Long International format OFIS Spreadsheet uses when displaying date and time values. For detailed information on these options, refer to Section 4.

The Punctuation option tells OFIS Spreadsheet which character to use as the decimal character, as the thousands separator, and as the argument separator.

The Quit option returns you to the Other pop-up menu.

### Punctuation

Whenever a value containing a decimal character or a thousands separator displays, the character OFIS Spreadsheet uses depends on the punctuation default setting.

This default also tells OFIS Spreadsheet which character to use when separating arguments in a function.

You have a selection of eight different punctuation combinations. Each combination has a decimal character, an argument separator character, and a thousands separator character.

Table 5-1 lists the eight options and shows how they display on the spreadsheet when used in values and as argument separators. Option A is the default option.

**Table 5-1. Punctuation Options**

Option	Formatted Value	Argument Separator
A(.,,)	\$3,210.11	@SUM(a1,b1)
B(.,)	\$3.210,11	@SUM(a1.b1)
C(;,)	\$3,210.11	@SUMa1;b1)
D(;,)	\$3.210,11	@SUM(a1;b1)
E(., )	\$3 210.11	@SUM(a1,b1)
F(., )	\$3 210,11	@SUM(a1.b1)
G(., )	\$3 210.11	@SUM(a1;b1)
H(., )	\$3 210,11	@SUM(a1;b1)

**Note:** *Native Language Support (NLS) determines the I Other option. Refer to your NLS documentation for more information.*

### Currency

Whenever you format a value to display as currency, a currency character displays with the value. The default currency character is the dollar sign (\$), and displays before the value. You can change this character as well as whether it displays before the value (as a prefix) or after the value (as a suffix). This versatility is useful when formatting values representing foreign currency.

You can designate up to 15 characters as the currency character.

### Accessing the Help Function

You access the Help function by pressing the **HELP** key. You can change how OFIS Spreadsheet accesses the Help file.

When you access the Help function, OFIS Spreadsheet opens a Help file. You can control the access method it uses with two options:

- Instant
- Removable

With the Instant option, OFIS Spreadsheet opens the Help file and does not close it until you exit. This means that the next time you press the **HELP** key, OFIS Spreadsheet instantly accesses the Help file. As a result, Help displays faster. However, using the Instant option reduces the amount of memory available for loading worksheets.

With the Removable option, OFIS Spreadsheet closes the Help file when you have finished with it instead of leaving it open; consequently, this takes longer to display Help the next time you need to use it. However, the Removable option makes more memory available for loading worksheets.

### Changing the Clock Display

OFIS Spreadsheet displays the current day, date, and time in the information line (above the function key display line). There are three options you can use to change the way the clock displays:

- Standard
- International
- None

Standard is the default option. It displays the date in the format DD-*MMM*-YY (day, month, year) and the time as HH:MM AM/PM (hours, minutes).

International displays the date in the current Long International date format and the time in the current Short International time format.

The None option removes the clock display from the spreadsheet screen. If you select None and want to redisplay the clock information, you select one of the other Clock display options.

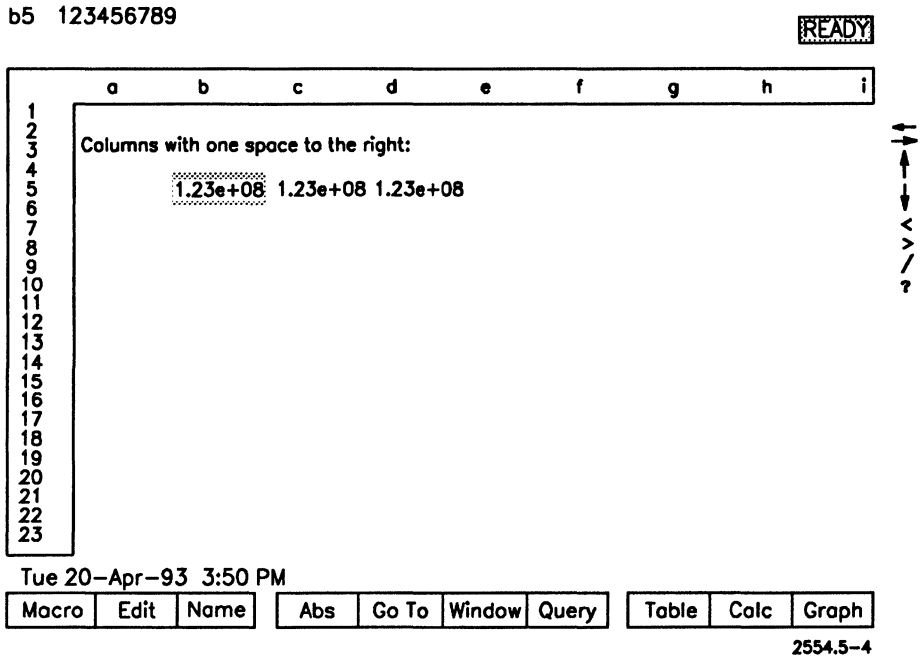
### Character Width

If your monitor has narrow format capability, you have the option to display characters on your screen in wide format or narrow format.

### Changing Column Alignment

OFIS Spreadsheet automatically places one blank space to the right of each value entry; therefore, if you enter the value **123456789** in a column that has a width of 9, OFIS Spreadsheet converts the value to scientific notation because it is too wide to fully display. It is too wide because of the automatic blank space OFIS Spreadsheet places to the right of the figure. Figure 5-4 shows an example of how this looks in a spreadsheet.

Figure 5-4. Nine-Digit Number Displayed in Scientific Notation



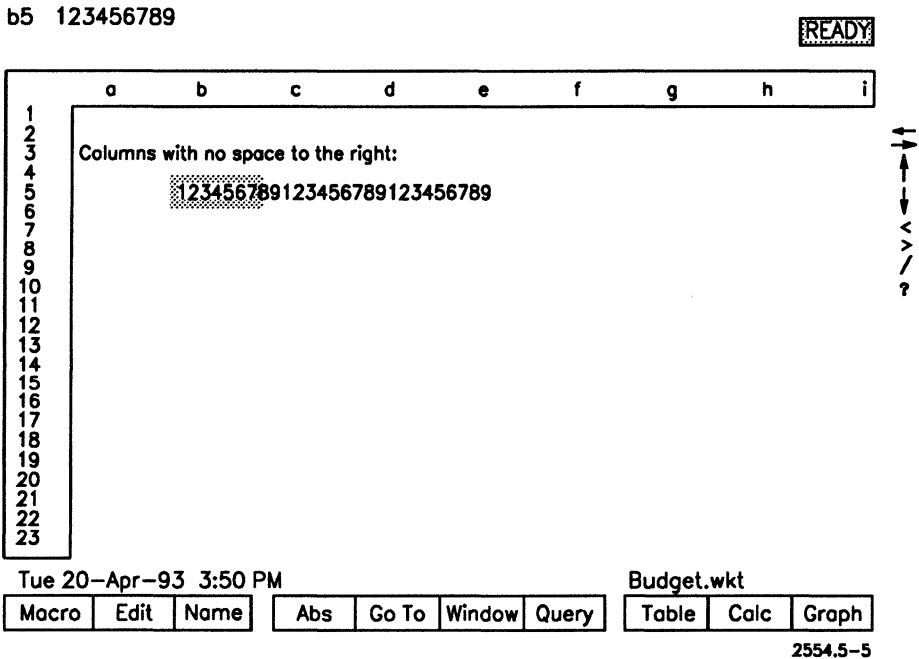
You can elect to have OFIS Spreadsheet omit the blank space to the right of a value entry. To do this, you type the first character of the following options:

**/AdvancedDefaultAlign-ColumnsNo**

When this option is in effect, OFIS Spreadsheet does not place a blank space to the right of a value entry. Figure 5-5 shows how this looks. The entries span the entire width of the column and appear to run into each other. The advantage of having this feature off is you can enter an additional number in the value entry; however, the disadvantage is that it can be difficult to read.

This option can only be set globally. You cannot set it on or off only for certain cells.

Figure 5-5. Advanced Default Alignment Column Option Off



## Automatic Cursor Movement

When you are making entries in the spreadsheet, you indicate direction by pressing the appropriate cursor movement key. OFIS Spreadsheet provides you with an option that allows you to designate the direction the cell pointer is to move without having to repeatedly use an Arrow key. This option is useful when you are making a series of entries such as a column of figures.

To set the cell pointer direction, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. After completing your first entry, press the Arrow key that indicates the direction you want the cell pointer to move.
3. Type the first character of the following options:

**/AdvancedAutomaticYes**

You can now continue entering data, pressing **RETURN** or **GO** after each entry. Each time you press **RETURN** or **GO**, the cell pointer moves to the next cell in the direction of the Arrow key you chose at the time you set the option to **Yes**. You can change direction by pressing a different Arrow key.

This option remains in effect until you set it to **No**.

To return the spreadsheet to normal cell pointer movement mode, type the first character of the following options:

**/AdvancedAutomaticNo**

Now when you press **RETURN** or **GO**, the cell pointer remains in the current cell.

## Using File Locking

The File Locking feature prevents other users from opening and changing a spreadsheet while you are working on it, and overwriting your version with theirs. File Locking is optional; you can enable it or disable it.

**Caution:**

For File Locking to be effective, all users with access to the same files must start OFIS Spreadsheet with File Locking enabled.

If you are working on a spreadsheet and have File Locking enabled, other users cannot access that spreadsheet until you close it or you disable File Locking.

The Worksheet Global Default Status screen tells you whether File Locking is enabled or disabled (refer to figure 5-1). Also, if a file is locked, its name displays in reverse video on the information line.



### Enabling and Disabling File Locking

To enable File Locking, type the first character of the following options:

`/WorksheetGlobalDefaultFilelockingEnable`

To disable File Locking, type the first character of the following options:

`/WorksheetGlobalDefaultFilelockingDisable`

### Using AutoSave

AutoSave is a feature that automatically saves a copy of your worksheet as you work, protecting you from losing your work due to an interruption such as a power outage.

If you have AutoSave enabled and suffer a power outage, when you restart OFIS Spreadsheet, it prompts you to recover your lost work. If you choose to recover, OFIS Spreadsheet will display the spreadsheet you were working on, and with the changes you made up until the last time AutoSave saved your work.

AutoSave saves your worksheet at intervals which you can set. Once the specified time has elapsed, OFIS Spreadsheet waits for a period approximately 10 seconds long when you do not type any keystrokes or move the mouse, and then saves your work to a temporary file. If you type a keystroke or move the mouse while OFIS Spreadsheet is saving the file, it stops saving the file so you can continue to work.

The temporary file has the same name as your worksheet, with the suffix *-new*. This is so that if you decide you do not want to keep the changes you have made, the original worksheet will not have been overwritten. When you save a worksheet yourself using the File Save option, OFIS Spreadsheet saves your work and deletes the temporary file. If you continue to work, OFIS Spreadsheet creates a new temporary file. If you delete your spreadsheet using the File Erase option, OFIS Spreadsheet deletes the temporary file as well.

AutoSave is optional; you can enable it or disable it. The Worksheet Global Default Status screen tells you whether AutoSave is enabled or disabled (refer to figure 5-1).

## Enabling and Disabling AutoSave

To enable AutoSave, type the first character of the following options:

**/WorksheetGlobalDefaultOtherAutosaveEnable**

To disable AutoSave, type the first character of the following options:

**/WorksheetGlobalDefaultOtherAutosaveDisable**

If you want to make the AutoSave option you specified a default, refer to the "Worksheet Update Option" in this Section.

## Setting the AutoSave Interval

To set the elapsed time between automatic saves, use the following procedure:

1. Type the first character of the following options:

**/WorksheetGlobalDefaultOtherAutosaveInterval**

2. Enter the number of minutes you want to elapse before AutoSave begins to wait for an opportunity to save.

If you want to make the interval you specified a default, refer to the "Worksheet Update Option" in this Section.

### Screen Colors

You can change the colors of the OFIS Spreadsheet display. Changing the colors of the display does not affect the data in a spreadsheet. You can change the colors of the:

- Screen Border
- Worksheet Area (both protected and unprotected data)
- Information Line
- Command Panel
- Function Keys

The colors you can choose from are:

Amber	Opaque
Blue	Peach
Cyan	Red
Fuschia	Salmon
Green	Turquoise
Indigo	Yellow
Lavender	White
Magenta	

The colors currently selected for your OFIS Spreadsheet display are listed on the Global Default Status screen (figure 5-1).

## Changing the Screen Colors

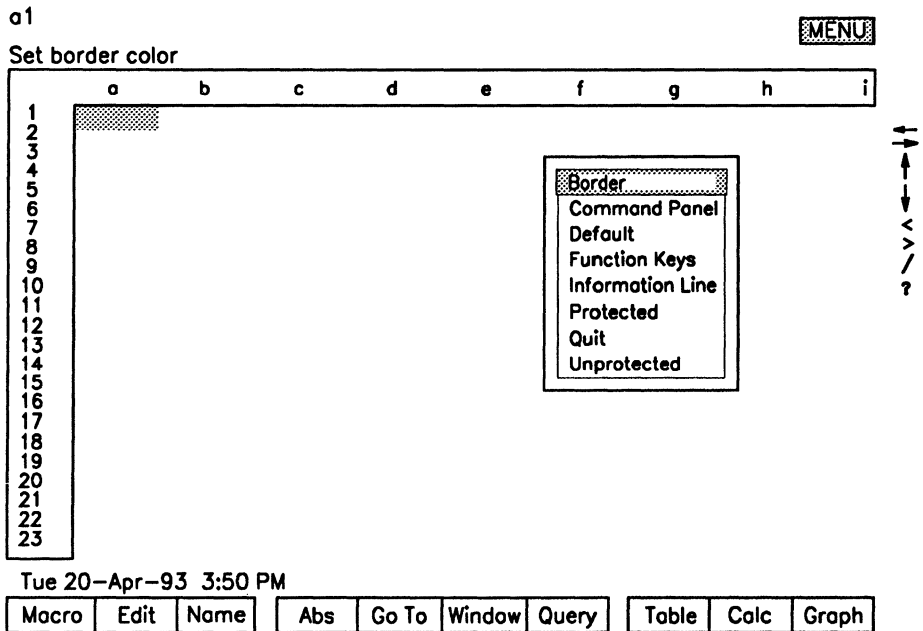
To change the colors of the screen components, use the following procedure:

1. Type the first character of the following options:

**/WorksheetGlobalDefaultColor**

The Color pop-up menu appears (refer to Figure 5-6).

**Figure 5-6. Worksheet Global Default Color Pop-up Menu**

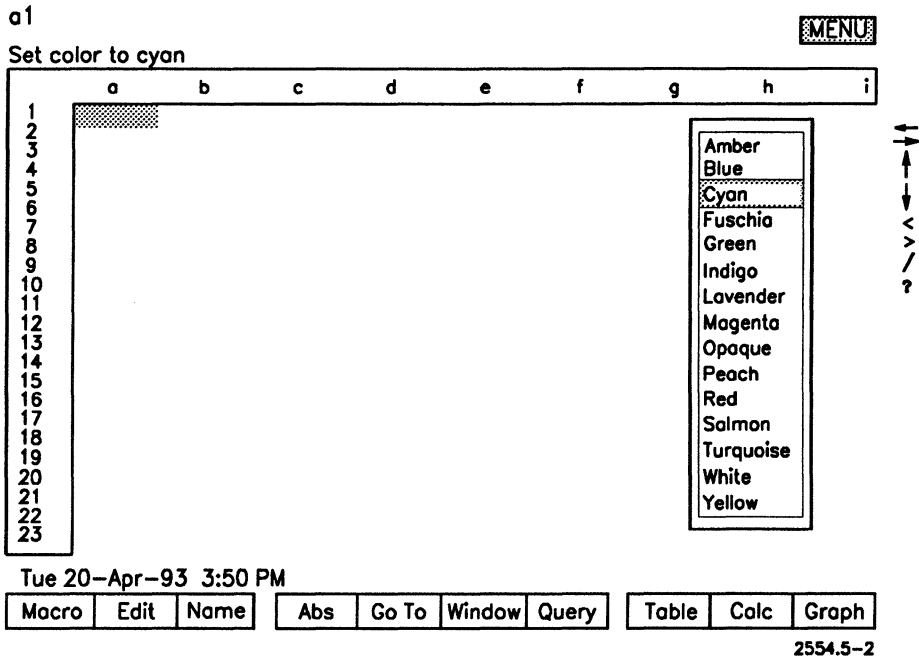


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2. Move the highlight to select the name of the part of the screen whose color you want to change, and press RETURN.

The Color Choice menu displays (figure 5-7).

**Figure 5-7. Color Choice Pop-up Menu**



3. Move the highlight to the color you want to select, and press GO.  
OFIS Spreadsheet changes the color for the component, and re-displays the Color pop-up menu (figure 5-6). You can continue changing the colors of screen components.
4. When you are satisfied with your color selections, select the Quit option.

If you want to reset the screen colors to the defaults, cyan and white, type the first character of the following options:

**/WorksheetGlobalDefaultColorDefault**

## Worksheet Update Option

Whenever you make a change to a global default option, that change remains in effect only for the current spreadsheet session unless you type the first character of the following options:

**/WorksheetGlobalDefaultUpdate**

When you execute these options, the current global settings are saved and become default settings. These settings are saved in the OFIS Spreadsheet configuration file. (For more information on the configuration file, see “OFIS Spreadsheet Configuration File,” in Appendix B, “Installing OFIS Spreadsheet.”)



# Section 6

## Changing a Spreadsheet's Appearance

This section explains how to manipulate and enhance the spreadsheet display. It includes procedures to:

- Change column width
- Reset column width
- Hide and redisplay columns
- Copy, move, and erase cells
- Insert and delete columns and rows
- Move and copy spreadsheet entries

### Changing Column Width

OFIS Spreadsheet's default column width may not be large enough to handle your entries. For example, when values that you enter or those resulting from a formula or function are too large to fit in a cell, the worksheet area displays a series of asterisks. You can also have a long label that does not fit into an individual cell, or you may want to improve the overall appearance of the spreadsheet.

OFIS Spreadsheet has three options that allow you to change column width. These options are:

- `/WorksheetGlobalColumn-Width`
- `/WorksheetColumn-WidthSet`
- `/AdvancedWidth`

Figure 6-1 shows a spreadsheet with the default column width of nine. In this spreadsheet, several value entries and the total value are too large to display, so all you see is a series of asterisks. Also, the label entries in column a display only what is able to fit in the column width, unless there is data in the adjacent column.



# Changing a Spreadsheet's Appearance

Figure 6-1. Spreadsheet Before Changing Column Width

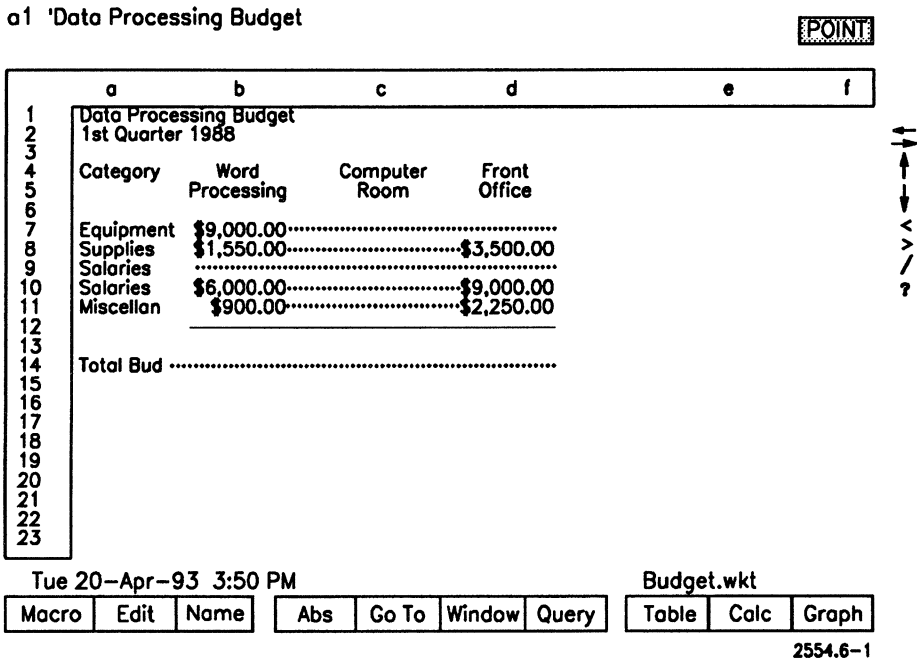


Figure 6-2 shows the same spreadsheet after changing the column widths. You can now see the entire label entries and all of the values.

Whenever the cell pointer is in a cell with a column width that you specified, the column width indicator displays in the command panel next to the cell address. This indicator shows the width of the current column. In Figure 6-2, [w22] indicates a column width of 22 spaces.

Figure 6-2. Spreadsheet After Changing Column Width

a1 [W22]Data Processing Budget POINT

	a	b	c	d	e	f
1	Data Processing Budget					
2	1st Quarter 1988					
3						
4	Category	Word Processing	Computer Room	Front Office		
5						
6						
7	Equipment	\$9,000.00	\$30,000.00	\$30,000.00		
8	Supplies	\$1,550.00	\$3,500.00	\$3,500.00		
9	Salaries - Permanent	\$14,000.00	\$19,500.00	\$19,500.00		
10	Salaries - Contract	\$6,000.00	\$9,000.00	\$9,000.00		
11	Miscellaneous Expenses	\$900.00	\$2,250.00	\$2,250.00		
12						
13						
14	Total Budget	\$31,450.00	\$64,250.00	\$64,250.00		
15						
16						
17						
18						
19						
20						
21						
22						
23						

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## Changing the Column Width of All Columns

OFIS Spreadsheet starts out with a default global column width of nine spaces.

To change the column width of every column, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:  
/WorksheetGlobalColumn-Width

## Changing a Spreadsheet's Appearance

---

3. Choose one of the following:
  - Type the desired global column width.
  - Using the **LEFT ARROW** key or **RIGHT ARROW** key, select the desired global column width.
4. Press **RETURN** or **GO**.

Every column in the spreadsheet adjusts to the new column width except those that have already been changed to width other than the default (9).

## Changing the Column Width for a Single Column

You may want to change only certain columns in the spreadsheet. OFIS Spreadsheet lets you select the columns you want to change. You can change a single column width from 1 to 72 spaces.

To change a single column width, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer anywhere in the column you are changing.
3. Type the first character of the following options:

**/WorksheetColumn-WidthSet**

A prompt appears asking for the column width. Following the prompt is the current column width.

4. Choose one of the following:
  - Type the desired column width.
  - Using the **LEFT ARROW** key or **RIGHT ARROW** key, enter the desired column width.
5. Press **RETURN** or **GO**.

OFIS Spreadsheet changes the column width of the selected column.

### Changing the Column Width for More Than One Column

You can also change the column width for a group of adjacent columns. You can change each column's width by using the Worksheet Column-Width Set option for every column you want to change. However, OFIS Spreadsheet has an option that allows you to do this by selecting the options Advanced Width Set. You can change the column width from 1 to 72 spaces using this option.

To change the column width for a group of adjacent columns, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/AdvancedWidthSet**

A prompt appears asking for the range of columns. Following the prompt is a reference to the current cell as a range.

3. Choose one of the following:
  - Press **RETURN** or **GO** to accept the suggested range.
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
  - Enter the range; then press **RETURN** or **GO**.

A prompt appears asking for the new column width. Following the prompt is the current column width.

4. Choose one of the following:
  - Type the desired column width.
  - Using the **LEFT ARROW** key or **RIGHT ARROW** key, enter the desired column width.
5. Press **RETURN** or **GO**.

OFIS Spreadsheet changes the width of the specified range of columns.

### Resetting Column Widths

You can return a column width to its default width with the same option that you used to change it, or you can use one of the following options:

- `/WorksheetColumn-WidthReset`
- `/AdvancedWidthReset`

The column width returns to the global column width.

To reset column width for a single column, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the column you are changing.
3. Type the first character of the following options:

`/WorksheetColumn-WidthReset`

The column width adjusts to the global column width, and the spreadsheet returns to Ready mode.

To reset column width for a range of columns, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in either the beginning or ending column of the range.
3. Type the first character of the following options:

`/AdvancedWidthReset`

A prompt appears asking for the range of columns. Following the prompt is a reference to the current cell as a range.

4. Choose one of the following:
  - Press **RETURN** or **GO** to accept the suggested range.
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
  - Enter the range; then press **RETURN** or **GO**.

OFIS Spreadsheet changes the width of the specified column range to the global column width.

## Hiding Columns

OFIS Spreadsheet allows you to hide from view a column or a range of columns. If a column is hidden, it does not print.

When a column is hidden from view, the columns to the left and right of the hidden column appear side-by-side. Figure 6-3 shows a spreadsheet in which column c is hidden. Notice that column b and column d are side-by-side with no indication that column c is missing.

Figure 6-3. Spreadsheet Containing Hidden Column

a1 [W22]Data Processing Budget READY

	a	b	d	e	f	g
1	Data Processing Budget					
2	1st Quarter 1988					
3						
4	Category	Word Processing	Front Office			
5						
6						
7	Equipment	\$9,000.00	\$30,000.00			
8	Supplies	\$1,550.00	\$3,500.00			
9	Salaries - Permanent	\$14,000.00	\$19,500.00			
10	Salaries - Contract	\$6,000.00	\$9,000.00			
11	Miscellaneous Expenses	\$900.00	\$2,250.00			
12						
13						
14	Total Budget	\$31,450.00	\$64,250.00			
15						
16						
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You can access a hidden column only when the spreadsheet is in Point mode. You enter Point mode by issuing any option that calls for a defined range (for example, the Copy option).

## Changing a Spreadsheet's Appearance

When the spreadsheet is in Point mode, the hidden column displays with an asterisk (\*) to the right of the column reference. At this time, you can move the cell pointer into the column's cells. The cell's contents display in the option panel. Figure 6-4 shows how a hidden column displays when the spreadsheet is in Point mode.

Figure 6-4. Spreadsheet Displaying a Hidden Column

a7 [W22]\*Equipment POINT

Enter range to copy FROM: a7..a7

	a	b	c*	d	e	f
1	Data Processing Budget					
2	1st Quarter 1988					
3						
4	Category	Word	Computer	Front		
5		Precessing	Room	Office		
6						
7	Equipment	\$9,000.00	\$30,000.00	\$30,000.00		
8	Supplies	\$1,550.00	\$3,500.00	\$3,500.00		
9	Salaries - Permanent	\$14,000.00	\$19,500.00	\$19,500.00		
10	Salaries - Contract	\$6,000.00	\$9,000.00	\$9,000.00		
11	Miscellaneous Expenses	\$900.00	\$2,250.00	\$2,250.00		
12						
13						
14	Total Budget	\$31,450.00	\$64,250.00	\$64,250.00		
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During the time the hidden columns display, you can select options affecting these columns (for example, Copy or Move). You can also point to hidden cells while creating formulas. Any references made to cells in the hidden column(s) are still valid.

To create a formula using hidden cells, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the cell where you are creating the formula.
3. Enter a mathematical operator to begin the formula.
4. Using the Arrow keys, move the cell pointer to the desired cell reference.

When you press an Arrow key, the hidden columns come into view.

5. Repeat Steps 3 and 4 until the formula is complete.
6. Press **RETURN** or **GO**.

The formula appears in the command panel, and the spreadsheet returns to Ready mode. The hidden column disappears.

### Hiding One or More Columns

You can hide one column, or a range of columns using either of the following options:

- `/WorksheetColumn-WidthHide`
- `/AdvancedWidthHide`



## Changing a Spreadsheet's Appearance

---

To hide a single column, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type in the first characters of one of the following options:

**/WorksheetColumn-WidthHide**

**/AdvancedWidthHide**

A prompt appears asking for the range of columns. Following the prompt is a reference to the current cell as a range.

3. Choose one of the following:
  - Press **GO** to accept the suggested range.
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **GO**.
  - Enter the range; then press **GO**.

The specified columns disappear from view, and the spreadsheet returns to Ready mode.

## Redisplaying Hidden Columns

You can return the hidden columns to the spreadsheet with either of the following options:

- `/WorksheetColumn-WidthDisplay`
- `/AdvancedWidthDisplay`

To redisplay a hidden column, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type in the first characters of one of the following options:

`/WorksheetColumn-WidthDisplay`

`/AdvancedWidthDisplay`

The hidden column appears with an asterisk to the right of the column reference. A prompt appears asking for the range of columns.

3. Choose one of the following:
  - Type the desired range.
  - Using the Arrow keys, point to the desired range.
4. Press **RETURN** or **GO**.

## Erasing Cell Contents

You can erase the contents in one or more cells by typing the first character of the following options:

`/RangeErase`

When a formula or function references a cell that you erase, the value for that cell becomes zero. However, if you erase a cell containing a label that is referenced in a string formula, OFIS Spreadsheet displays the message **ERR**. This happens because once the cell is erased, the string formula uses the value zero when referencing that cell, and OFIS Spreadsheet cannot join a value to a label.

## Changing a Spreadsheet's Appearance

---

To erase the content in a single cell, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the cell you are erasing.
3. Type the first character of the following options:

**/RangeErase**

A prompt appears asking for the range to erase. Following the prompt is a reference to the current cell as a range.

4. Choose one of the following:
  - Press **RETURN** or **GO**.
  - Type the cell address; then press **RETURN** or **GO**.

The cell's contents disappear from the worksheet area and the command panel, and the spreadsheet returns to Ready mode.

You can also use this option to erase the contents from a range of cells. This option does not erase formats.

You can tell OFIS Spreadsheet to erase the format, cell contents, and protection by typing the first character of the following options:

**/AdvancedDefaultBlank-FormatYes**

When this option is set to **No**, the option Range Erase erases only the cell contents.

To erase the contents of a range of cells, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in one of the corner cells of the range.
3. Type the first character of the following options:

**/RangeErase**

A prompt appears asking for the range to erase. Following the prompt is a reference to the current cell as a range.

4. Choose one of the following:
  - Press **RETURN** or **GO** to accept.
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
  - Enter the range; then press **RETURN** or **GO**

The contents of the cells in the range disappear, and the spreadsheet returns to Ready mode.

## Inserting Rows and Columns in the Spreadsheet

OFIS Spreadsheet gives you the ability to insert rows and columns in the spreadsheet. However, you cannot insert a row or column at the bottom or edge of the worksheet if there is existing data at that location. When this happens, the following error message displays:

```
Insertion canceled because it would cause data to be  
lost off edge of sheet.
```

You can get around this error by moving the data to another location in the spreadsheet, or by using the Range Erase option to erase the data.

### Inserting Rows

You can insert one or more rows at a time. OFIS Spreadsheet inserts the new row, or rows, immediately above the cell pointer position. For example, to insert a row at row 6, you would position the cell pointer in row 6. Spreadsheet inserts the new row at that point (row 6), and the previous row 6 becomes row 7.

To insert a row, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the row where you want to insert a new row.
3. Type the first character of the following options:

`/WorksheetInsertRow`

A prompt appears asking for the row insert range.

4. Press **RETURN** or **GO**.

OFIS Spreadsheet inserts a blank row at the cell pointer position, and returns to Ready mode.

To insert more than one row, you use the Arrow keys or the mouse to expand the suggested range to include the number of rows you desire. You include in the suggested range only one cell from each row.

### Inserting Columns

You can add one or more columns at a time in the spreadsheet. OFIS Spreadsheet inserts the new column, or columns, immediately to the left of the cell pointer. For example, to insert a column at **c**, you position the cell pointer anywhere in column **c**. OFIS Spreadsheet inserts the new row at that point (column **c**), and the previous column **c** becomes column **d**.

To insert a column, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the column where you want to insert the new column.
3. Type the first character of the following options:

`/WorksheetInsertColumn`

A prompt appears asking for the column insert range.

4. Press **RETURN** or **GO**.

OFIS Spreadsheet inserts a blank column at the cell pointer position, and returns to Ready mode.

To insert more than one column, you use the Arrow keys or the mouse to expand the suggested range to include the number of columns you desire. You include in the suggested range only one cell from each column.

### Insertion Effects on Cell References

Spreadsheet formulas or functions that reference cells relocated by the Insert option adjust automatically to reference the new cell address.

If you perform an insertion at a named range's endpoint, the range moves according to the type of insertion (rows, down; columns, left). The inserted rows or columns are outside of the named range.

# Deleting Rows and Columns

You can delete one or more rows or columns at a time. When you delete a row, the rows below the deleted row move up on the spreadsheet. When you delete a column, the columns to the right of the deleted column move left. Remember, deleting a row or column removes not just the contents of the cells, but the actual cells. When a row or column is deleted, OFIS Spreadsheet adds a row to the bottom of the spreadsheet, or a column to the right.

## Deleting a Row

You can delete a single row or a range of rows.

To delete a row, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the row you want to delete.
3. Type the first character of the following options:

**/WorksheetDeleteRow**

A prompt appears asking for the row deletion range.

4. Press **RETURN** or **GO**.

OFIS Spreadsheet deletes the row at the cell pointer position and returns to Ready mode.

To delete more than one row, you choose one of the following to expand the suggested range to include the number of rows you desire:

- Press **CANCEL** and expand the suggested range to include more cells.
- Type a new range.
- Use the Arrow keys or the mouse to define the deletion range (only one cell from each row needs to be highlighted).

### Deleting a Column

You can delete one column or a range of columns.

To delete a column, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the column you want to delete.
3. Type the first character of the following options:

**/WorksheetDeleteColumn**

A prompt appears asking for the column deletion range.

4. Press **RETURN** or **GO**.

OFIS Spreadsheet deletes the column at the cell pointer position, and the spreadsheet returns to Ready mode.

To delete more than one column, you choose one of the following to expand the suggested range:

- Press **CANCEL** and expand the suggested range to include more cells.
- Type a new range.
- Use the Arrow keys or the mouse to define the deletion range (only one cell from each column needs to be highlighted).

### Deletion Effects on Cell References

When you delete a row or column, formulas containing cell references to those locations can result in errors. The cell references in the formula change to a question mark (?). For example, the formula **@SUM(a1..a14)** references cells 1 through 14 in column a. If you delete column a, the formula changes to read **@SUM(?1..?14)**.

When you delete a row or column in a range, the range size shrinks. A formula referring to that particular range uses the new range size in its calculations.



# Moving Spreadsheet Entries

You can move the contents of a single cell or a range of cells from one spreadsheet location to another by:

- Selecting the **/Move** option
- Pressing the **MOVE** key
- Selecting the **/AdvancedMove** option

Using the **Move** option or pressing the **MOVE** key allows you to move a single cell or a range of cells by defining the range. The **Advanced Move** option allows you to move entire rows or columns by indicating one cell in each row or column. (Refer to “**Advanced Move**,” later in this section, for more information on this option.)

When you are defining the **TO** range, you reference only the cell in the upper left corner of the range. The size and shape of the **TO** range is always identical to the size and shape of the **FROM** range. You tell **OFIS Spreadsheet** where to start the **TO** range. However, you must be sure that the **TO** range is large enough to handle all of the cell entries. If it is not, **OFIS Spreadsheet** overwrites cells outside the **TO** range.

In addition to moving the cell entries, any formatting for the cells also moves.

To move entries with the **MOVE** key, use the following procedure:

1. Make sure the spreadsheet is in **Ready** mode.
2. Position the cell pointer in the cell being moved.
3. Press **MOVE**.

A prompt appears asking for the **FROM** range. Following the prompt is a reference to the current cell as a range.

4. Choose one of the following:
  - If you are only moving one column or row, press **RETURN** or **GO**.
  - If you are moving more than one column or row, using the **Arrow** keys or the mouse, expand the range to include one cell from each column or row; then press **RETURN** or **GO**.
  - A prompt appears asking for the **TO** range.

5. Choose one of the following:
  - Position the cell pointer in the first cell in the **TO** range.
  - Type the cell reference of the first cell in the **TO** range.
6. Press **RETURN** or **GO**.

OFIS Spreadsheet moves entries out of the **FROM** range into the **TO** range.

### Advanced Move

The /Advanced Move option relocates entire rows or columns. Unlike the /Move option, /Advanced Move does not overwrite data in the **TO** range. Rather, it removes a range of rows or columns from one location, and inserts the range in a target location that you specify. Existing rows or columns are adjusted left, right, up, or down to accommodate the relocation.

When you use the Advanced Move Column operation, one or more columns shift left or right to accommodate the relocated columns. For example, if you use Advanced Move Column to relocate column **a** to column **c**, columns **b** and **c** shift left to accommodate the change. In this case, the original columns **b** and **c** become columns **a** and **b**.

The number of columns specified in the **FROM** range determines how far the adjacent columns will shift right or left. For example, if you use Advanced Move Column to move **FROM** columns **b** through **d** **TO** column **a**, the original column **a** shifts to the right three columns. Notice that since data in three columns moves to the right, any data in columns affected by the move shifts to the left three columns in response.

When you use the Advanced Move Row operation, one or more rows shift up or down to accommodate the relocated rows. For example, if you use Advanced Move Row to move row **8** to row **1**, rows **1** through **7** shift down to allow for the insertion. In this case, the original row **1** becomes row **2**, the original row **2** becomes row **3**, and so on.

The number of rows specified in the **FROM** range determines how far the adjacent rows will shift. For example, if you use Advanced Move Row to move **FROM** rows **1** through **3** **TO** rows **4** through **6**, the original rows **4** through **6** shift up to become the new rows **1**, **2**, and **3**. Notice that since the data in three rows moves down, any data in rows affected by the move shifts up three rows in response.

## Changing a Spreadsheet's Appearance

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To move entries with the Advanced Move option, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in a cell located in the first row or column being moved.
3. Type the first character of the following options:

**/AdvancedMove**

A menu appears highlighting the **Column** option.

4. Choose one of the following:

- Press **RETURN** or **GO** to move columns.
- Select **Row** to move rows; then press **RETURN** or **GO**.

A prompt appears asking for the **FROM** range.

5. Choose one of the following:

- If you are only moving one column or row, press **RETURN** or **GO**.
- If you are moving more than one column or row, using the Arrow keys or the mouse, expand the range to include one cell from each column or row; then press **RETURN** or **GO**.

A prompt appears asking for the **TO** range.

6. Choose one of the following:

- Position the cell pointer in the first cell where you want to move the data.
- Type the cell address of the first cell in the **TO** range.

7. Press **GO**.

OFIS Spreadsheet moves the entries out of the **FROM** range into the **TO** range.

When using the Advanced Move option you highlight one cell in each row or column you want to move.

### Moving Effects on Cell References

If you move cells containing a value or label, any references to those cells change to reflect the new location of the cell. When you move a formula or function, their cell references do not change (the formula or function moves, not the cells).

### Copying Spreadsheet Entries

You can copy entries from one or more cells in the spreadsheet to other cells in the spreadsheet. When you copy an entry to another location, that entry appears twice in the spreadsheet, once at the original location, and again at the new location. Unlike the Move option, the original entry remains in its original cell.

When you copy an entry, you copy the cell contents, formula or function associated with the cell, and any formatting for that cell. OFIS Spreadsheet also gives you the option to copy the value for a cell without copying the formula or function. You can use this option for a single copy, or you can set it to be in effect for all Copy options. To do this, type the first character of the following options:

**/AdvancedDefaultCopy-Values**

The default setting is **No**. OFIS Spreadsheet copies the formula and function along with the values. By setting this option to **Yes**, the Copy option copies only the values.

### Copying Concepts

When copying entries, the size of the **FROM** and **TO** range can be critical. Table 6-1 explains what happens in certain copy situations.

**Table 6-1. Copying Results for FROM and TO Range**

<b>Copy Action</b>	<b>Results</b>
<b>TO</b> range is smaller than the <b>FROM</b> range	Cells outside the <b>TO</b> range are overwritten.
<b>FROM</b> range is smaller than the <b>TO</b> range	The cell contents of the <b>FROM</b> range repeat into the <b>TO</b> range.
<b>FROM</b> range is a column, and the <b>TO</b> range is a row	The column repeats in every column of the <b>TO</b> range row.  Figure 6-5 shows the <b>FROM</b> range, <b>a1..a10</b> . The <b>TO</b> range was specified as row <b>12</b> . The end result is the <b>TO</b> range, <b>a12..h21</b> .
<b>FROM</b> range is a row, and the <b>TO</b> range is a column.	The entire row is copied into each row of the column.  Figure 6-6 shows the <b>FROM</b> range, <b>b1..g1</b> . The <b>TO</b> range was specified as <b>b1..g1</b> . The end result is the <b>TO</b> range, <b>b3..g8</b> .

Figure 6-5. Columnar FROM Range After Copying to Row TO Range

a1 Aaron

READY

	a	b	c	d	e	f	g	h	i
1	Aaron								
2	Baker								
3	Brown								
4	Cook								
5	Daniels								
6	Johnson								
7	Jones								
8	Owen								
9	Smith								
10	Williams								
11									
12	Aaron	Aaron	Aaron	Aaron	Aaron	Aaron	Aaron	Aaron	Aaron
13	Baker	Baker	Baker	Baker	Baker	Baker	Baker	Baker	Baker
14	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
15	Cook	Cook	Cook	Cook	Cook	Cook	Cook	Cook	Cook
16	Daniels	Daniels	Daniels	Daniels	Daniels	Daniels	Daniels	Daniels	Daniels
17	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson
18	Jones	Jones	Jones	Jones	Jones	Jones	Jones	Jones	Jones
19	Owen	Owen	Owen	Owen	Owen	Owen	Owen	Owen	Owen
20	Smith	Smith	Smith	Smith	Smith	Smith	Smith	Smith	Smith
21	Williams	Williams	Williams	Williams	Williams	Williams	Williams	Williams	Williams
22									
23									



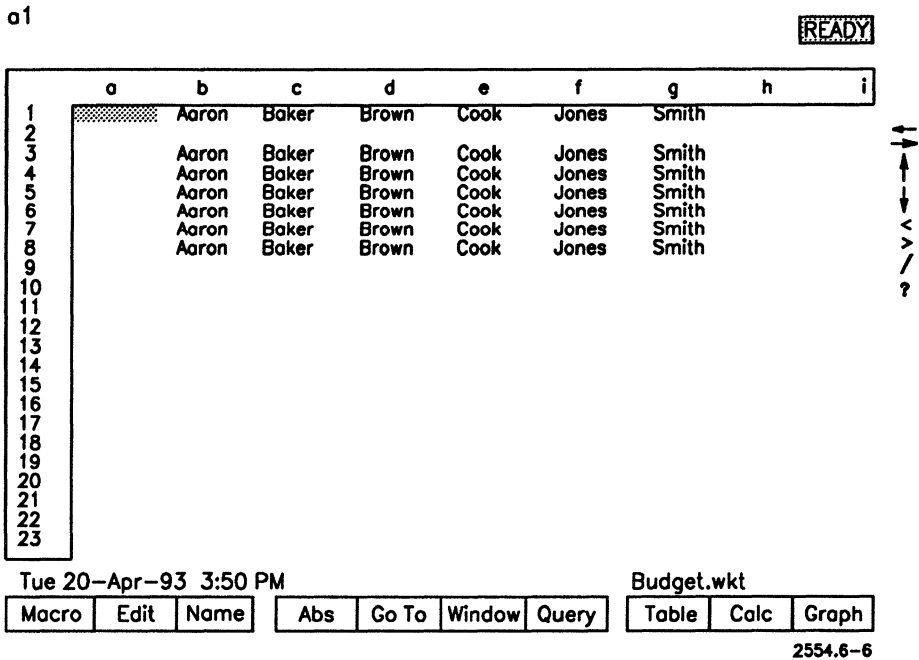
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Figure 6-6. Row FROM Range After Copying to Columnar TO Range



## Copying an Entry

You can copy a single cell or a range of cells. As with the Move option, you can select this option in more than one manner:

- Selecting the Copy option
- Pressing the **COPY** key

The advantage of using the **COPY** key is that it saves you keystrokes.

The procedure given below copies a range of cells, since this is the way you usually invoke this option. To copy a single cell, you press **GO** after the **FROM** prompt.

To copy a range of cells, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer at one of the range corner cells.
3. Choose one of the following:
  - Press **COPY**.
  - Select the /Copy option.

A prompt appears asking for the **FROM** range. Following the prompt is a reference to the current cell as a range.

4. Choose one of the following:
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
  - Type the range.
5. Press **RETURN** or **GO**.

A prompt appears asking for the **TO** range. Following the prompt is the cell address of the current cell.
6. Choose one of the following:
  - Position the cell pointer in the first cell in the **TO** range.
  - Type the cell address of the first cell in the **TO** range.
7. Press **RETURN** or **GO**.

OFIS Spreadsheet copies the range of cells.



### Copy Combinations

In addition to copying a single cell or a rectangular range of cells, you can perform the following types of copying:

- Copying from one cell to more than one cell (for example, creating a total line across the spreadsheet)
- Copying a single row to a single row
- Copying a single column to a single column
- Copying a single row to multiple rows
- Copying a single column to multiple columns

Since OFIS Spreadsheet uses the **FROM** range to decide how big to make the **TO** range, you use only the upper left corner cell when indicating the **TO** range.

When you are copying a single row or column to multiple rows or columns, be sure to increase the size of the **FROM** range to include the number of columns you want in the **TO** range.

### Copying Effects on Cell References

When you copy a formula or function, you should be aware of the type of cell references the formula or function is using.

Table 6-2 explains how OFIS Spreadsheet adjusts the cell references for each move.

**Table 6-2. Copying Results for Formulas and Functions**

---

Type of Cell Reference	Results
Relative cell reference	Cells reflect the address in the new location.
Absolute cell reference	Row and column references remain the same.
Mixed cell reference	Absolute row or column references remain the same, relative references change to reflect new location.

---

## Special Copy Options

OFIS Spreadsheet provides you with two special types of copy options:

- **/RangeValue**
- **/RangeTranspose**

The Range Value option copies only values, not the formulas or functions these values result from. The Range Transpose option copies a range of columns into rows or a range of rows into columns.

### Copying Values Only

You can copy only the current values of a formula or function into another section of the spreadsheet.

To copy current values only, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer at the entry you want to copy.
3. Type the first character of the following options:

**/RangeValue**

A prompt appears asking for the **FROM** range. Following the prompt is a reference to the current cell as a range.

4. Choose one of the following:
  - Press **RETURN** or **GO** to accept the range.
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
  - Enter the range; then press **RETURN** or **GO**.

A prompt appears asking for the **TO** range. Following the prompt is the cell address of the current cell.

5. Choose one of the following:
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
  - Enter the range.
6. Press **GO**.

The current values appear in the cells in the **TO** range. You can verify that only the current values are in the cells by moving the cell pointer to one of the cells and viewing the contents of that cell in the command panel. Only the values appear, no formulas or functions.

### Reversing Rows and Columns While Copying

Using the Range Transpose option you can copy entries from a row into a column or from a column into a row. You can also copy a single row or column or a block of entries. If the **FROM** range is larger than the **TO** range, OFIS Spreadsheet overwrites the cells outside the range.

This option is useful when you are creating a spreadsheet and realize that you would like the labels to go down the side instead of across the top.

The following procedure shows you how to copy a row into a column. You can use the same procedure to copy a column into a row by changing the **FROM** and **TO** ranges.

To copy entries from a row into a column, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer at one end of the row.
3. Type the first character of the following options:

**/RangeTranspose**

A prompt appears asking for the **FROM** range. Following the prompt is a reference to the current cell as a range.

4. Choose one of the following:
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
  - Enter the range.
5. Press **RETURN** or **GO**.

A prompt appears asking for the **TO** range. Following the prompt is the cell address of the current cell.
6. Choose one of the following:
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
  - Enter the first cell of the range.
7. Press **RETURN** or **GO**.

The entries that were in a row are now in a column.



# Section 7

## Spreadsheet Specialized Options

OFIS Spreadsheet enables you to manipulate the spreadsheet and its entries for your needs. This section discusses specialized options that let you:

- Protect cell entries
- Erase the spreadsheet
- Create titles for the spreadsheet
- Split the spreadsheet
- Name cell ranges
- Justify a long label
- Create an input-only area on the spreadsheet

### Protecting Cell Entries

You can protect spreadsheet cells from accidental or unauthorized changes. You can choose to set up the spreadsheet to protect every cell or only certain cells. You can protect key formulas, functions, or labels from changes.

This feature is very useful when you are creating a spreadsheet that others are going to use. For example, you can also use protection for important formulas or functions in your own spreadsheet to guard against accidental erasure or deletion.

You have two types of protection available:

- Global
- Range

The Global option protects all cells in the spreadsheet. The Range option protects specific cells in the spreadsheet.

When a cell is in **Protect** mode, **PR** displays in the command panel next to the cell address. If you try to access a protected cell, **OFIS** Spreadsheet displays a message telling you the cell is protected, and moves the cell pointer to that cell but does not let you edit the data in it.

### Global Protection

When you access a new spreadsheet, every cell has protection off or disabled. With global protection on, you cannot do the following to protected cells:

- Make new cell entries
- Change existing cell entries
- Erase cells
- Move cells
- Copy cells
- Delete cells, rows, or columns
- Insert rows or columns

To turn on global protection, you type the first character of the following options:

**/WorksheetGlobalProtectionEnable**

### Range Protection

When global protection for a worksheet is enabled, you can select **/Range Protect** to prevent changes and deletions to a range of cells. Protecting cell contents is helpful when you want others to use a worksheet but do not want its contents changed. **/Range Protect** works only when global protection is enabled with **/Worksheet Global Protection Enable**.

To protect a specific range of cells:

1. If you have not already done so, select **/WorksheetGlobalProtectionEnable**.
2. Select **/RangeProtect**.
3. Specify the range of cells you want to protect and press **RETURN**.

## Disabling Global Protection

To disable global protection, you type the first character of the following options:

**/WorksheetGlobalProtectionDisable**

## Disabling Range Protection

To disable range protection, you type the first character of the following options:

**/RangeUnprotect**

A prompt appears asking for the range of cells to unprotect. Following the prompt is a reference to the current cell as a range. You then enter the cell address or range you want to unprotect.

When you disable range protection while global protection is enabled, a **U** displays in the command panel next to the cell address. The unprotected cells' contents appear differently from the protected cells' contents; data in unprotected cells appears in high-visibility display or, on a color monitor, in a different color.

If you make changes to a cell referenced in a formula located in a protected cell, the value resulting from the formula still changes.

## Closing the Spreadsheet

You can close a spreadsheet by typing the first character of the following options:

**Note:** *If you want to save the changes you have made to your spreadsheet, you must use the /FileSave option before you use the /WorksheetEraseYes option.*

**/WorksheetEraseYes**



# Spreadsheet Titles

When you create a spreadsheet, you typically use labels as titles to identify and clarify categories and values. For instance, you may use the title 'Income Statement' to identify several rows and columns of numbers. These titles are usually in the upper left corner of the spreadsheet, and as soon as the spreadsheet starts to grow, the titles are no longer visible. OFIS Spreadsheet provides you with a way to keep the titles in constant view.

## Freezing Titles

You can select and freeze titles on the spreadsheet, keeping them always in view. To freeze titles, you type the first character of the following options:

**/WorksheetTitles**

A pop-up menu with four options appears. These options help you specify what rows or columns make up the titles. The options are:

- Both
- Clear
- Horizontal
- Vertical

The Both option locks in specified rows and columns. The Clear option unlocks the titles. The Horizontal option locks in specified rows, and the Vertical option locks in specified columns.

To freeze titles, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Move the cell pointer to a position that is appropriate for the titles you want:
  - to the column to the right of the column you want as a title
  - to the row below the row you want as a title
3. Type the first character of the following options:

**/WorksheetTitles**

A pop-up menu appears listing the four available options.

4. Select the option you want.
5. Press **GO**.

Figure 7-1 shows a spreadsheet that extends beyond the viewing area; that is, you cannot see beyond column g and row 23. All of the labels in column a represent titles.

Figure 7-1. Sample Spreadsheet

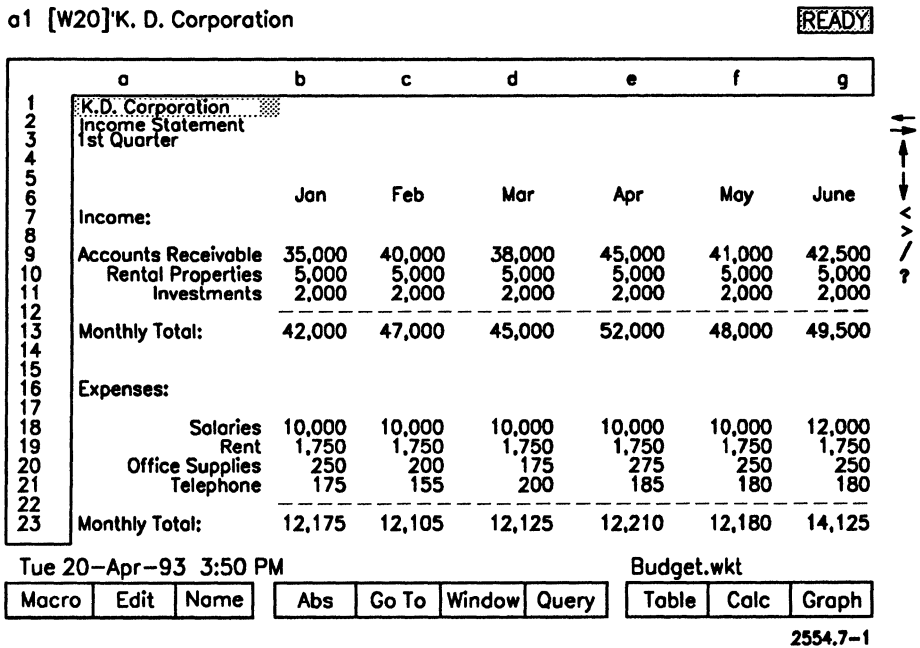


Figure 7-2 shows the same spreadsheet with the titles frozen so that they appear in the display beyond column g and row 23. In this figure, column a is frozen so that the titles remain. The column after a is column h. You can scroll to the end of your spreadsheet, and the titles will remain in the left side of your worksheet area. They are frozen in column a so that you can view them.

Figure 7-2. Sample Spreadsheet with Frozen Titles

hg [.0] 44000 READY

	a	h	i	j	k	l	m
1	K.D. Corporation						
2	Income Statement						
3	1st Quarter						
4							
5		July	Aug	Sept	Oct	Nov	Dec
6	Income:						
7	Accounts Receivable	44,000	42,500	43,000	44,000	44,000	43,500
8	Rental Properties	5,000	5,000	5,000	5,000	5,000	5,000
9	Investments	2,000	2,000	2,000	2,000	2,000	2,000
10	Monthly Total:	51,000	49,000	50,000	51,000	51,000	50,500
11	Expenses:						
12	Salaries	12,000	12,000	12,000	12,000	12,000	13,000
13	Rent	2,000	2,000	2,000	2,000	2,000	2,000
14	Office Supplies	250	250	275	300	200	250
15	Telephone	180	165	150	175	175	150
16	Monthly Total:	14,430	14,415	14,425	14,475	14,375	15,400

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When setting up the rows or columns to use as titles, you can include as large a range as you want; however, keep in mind that the area set aside for titles takes away from the display area of the spreadsheet.

When you print a spreadsheet with a title range, the frozen titles do not print beyond their original position.

### Moving into the Title Area

Once you have frozen a title, you cannot use the normal cell pointer movement keys to move the cell pointer into the title area. If you try to do this, OFIS Spreadsheet beeps. To access this area, you can press **Go To (F5)** and specify a cell address in the title area. However, this displays the title area twice.

You can also move into the title range when the spreadsheet is in Point mode.

## Spreadsheet Windows

Because the spreadsheet is so large, the screen acts like a window, letting you see a portion of the spreadsheet at a time. OFIS Spreadsheet gives you the capability of splitting your screen into two separate windows, so you can view two portions of the spreadsheet at once.

When you save a split spreadsheet, it keeps the split format. However, when you write a split spreadsheet to a Multiplan file, OFIS Spreadsheet does not save the split format.

### Splitting the Spreadsheet Window

On most workstations you can only see eight columns and 23 rows of a spreadsheet, out of the total 512 columns and 8192 rows. By splitting the spreadsheet screen, you can view two distant sections at the same time.

To split the spreadsheet, you type the first character of the following options:

**/WorksheetWindow**

This brings up a pop-up menu with five options:

- Clear
- Horizontal
- Sync
- Unsync
- Vertical

The Clear option returns the display to a single spreadsheet. The Horizontal and Vertical options determine how the spreadsheet splits. The Sync and Unsync options determine how the windows interact while scrolling.

Figure 7-3 shows a spreadsheet that has been horizontally split.

Figure 7-3. Spreadsheet with Horizontal Windows

a1 [W20]K. D. Corporation READY

		a	b	c	d	e	f	g
1	K.D. Corporation							
2	Income Statement							
3	1st Quarter							
4								
5								
6								
7	Income:	Jan	Feb	Mar	Apr	May	June	
8								
9	Accounts Receivable	35,000	40,000	38,000	45,000	41,000	42,500	
10	Rental Properties	5,000	5,000	5,000	5,000	5,000	5,000	
11	Investments	2,000	2,000	2,000	2,000	2,000	2,000	
12								
13	Monthly Total:	42,000	47,000	45,000	52,000	48,000	49,500	
14								
15								
16								
17		a	b	c	d	e	f	g
18	Salaries	10,000	10,000	10,000	10,000	10,000	12,000	
19	Rent	1,750	1,750	1,750	1,750	1,750	1,750	
20	Office Supplies	250	200	175	275	250	225	
21	Telephone	175	155	200	185	180	150	
22								
23	Monthly Total:	12,175	12,105	12,125	12,210	12,180	14,125	
24								
25	Net Income	29,825	34,895	32,875	39,790	35,820	35,375	

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The location of the cell pointer determines where the spreadsheet splits; the option you select determines if the split is horizontal or vertical.

To split the screen horizontally, you position the cell pointer at the row where you want the split. The row containing the cell pointer and those above it become one window, and the rows below it become the other window.

To split the screen vertically, you position the cell pointer at the column where you want the split. The column containing the cell pointer and those to the left of it become one window, and those to the right of it become the other window.

### Synchronizing Windows

When you split the spreadsheet, the default option, **Sync**, is in effect. This means that both windows scroll together. However, this option only synchronizes scrolling in the same direction as the split. That is, in a horizontally split window, only horizontal scrolling is synchronized, not vertical scrolling. Vertical scrolling in horizontally split windows is independent of horizontal scrolling.

The **Unsync** option allows independent movement in each window.

### Moving In Windows

If you split the screen horizontally, the cell pointer is positioned in the upper window; if you split it vertically, the cell pointer is positioned in the window on the left. You can move between windows by pressing **Window (F6)**. This causes the cell pointer to jump to the other window. To return it to the original window, you press **Window (F6)** again. you can also move between windows by clicking with the mouse to select a window.

All of the movement keys are operable within the split windows, and you can move anywhere in either window.

### Removing the Split

To return to a single window display, you type the first character of the following options:

**/WorksheetWindowClear**

The spreadsheet returns to a single window display. The spreadsheet takes on the formats of the original window before the split.

### Using Range Names

So far whenever you had to use a range reference, you specified the cell addresses of the endpoints, or corner cells of the range. This meant that you had to know the exact cell addresses. If you were not in the section of the spreadsheet you were referring to, and did not happen to know these addresses, you had to move back to the section containing the cells. An easier way to reference a range of cells is to name the range and use that range name for all references to that range.

### How to Use Range Names

Range names take the place of cell references. Wherever you would use cell references to designate a range of cells, you can use a range name instead. Some examples are:

- In formulas
- To define ranges for options (for example, the Copy or Move option)
- With Go To (F5)
- In macros (refer to Section 13)

If you have set up a cell-referencing formula for a range and then name the range at a later date, the formula automatically adjusts to the range name instead of the cell references.

When using a range name for a range of more than one cell with Go To (F5), the cell pointer jumps to the upper left corner of the range.

### Naming a Cell Range

You can name a single cell or a group of cells. When selecting a name for a cell range, keep in mind:

- A range name can have up to 15 characters.
- A range name should begin with a letter, particularly if you want to use the name in a formula or option.
- You can use any character in a range name (including spaces).
- You cannot create a name that resembles a cell address; OFIS Spreadsheet interprets it as a cell address not a range name.
- You cannot create duplicate range names; OFIS Spreadsheet simply reassigns the name to the new range.

To create a range name, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer at a cell in a corner of the range.
3. Type the first character of the following options:

**/RangeNameCreate**

A prompt appears asking for the range name. Any existing range names appear in the command panel.

4. Type the range name.
5. Press **RETURN** or **GO**.

A prompt appears asking for the range. Following the prompt is a reference to the current cell as the range.

6. Choose one of the following:
  - Press **RETURN** or **GO** to accept the displayed range.
  - Position the cell pointer in the first cell of the range and, using the Arrow keys expand the range to include all of the cells; then press **RETURN** or **GO**.
  - Type the range; then press **RETURN** or **GO**.

### Modifying Range Names

You can modify a range name by changing the cell references corresponding to the range name. In other words, you redefine the range references for that range name. To keep the same range but modify the name, you delete the range name and assign a new name to the range.

To modify a range name, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/RangeNameCreate**

A menu appears displaying the range name.



3. Select the range name.

A prompt appears asking for the cells in the range. Following the prompt is the current range for the given range name.

4. Choose one of the following:

- Using the Arrow keys or the mouse, modify the range; then press **RETURN** or **GO**.
- Type the new range; then press **RETURN** or **GO**.

The range name now corresponds to the new range. Any formula referring to the range name automatically changes to reflect the new range reference.

### Deleting Range Names

OFIS Spreadsheet allows you to delete one range name or all range names. To delete one range name at a time, you use the following option:

**/RangeNameDelete**

To delete all range names, you use the following option:

**/RangeNameReset**

***Note:** When using either option, be sure the range name you enter is the correct name. There is no warning or opportunity to reconsider once you press **RETURN** or **GO**.*

To delete range names use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Choose one of the following:
  - Type the first character of the following options to delete one range name:  
**/RangeNameDelete**
  - Type the first character of the following options to delete all range names:  
**/RangeNameReset**

A prompt appears asking for the range to delete. The existing range names appear in the pop-up menu.

3. Choose one of the following:
  - Press **RETURN** or **GO** to accept the highlighted range name.
  - Using the Arrow keys or the mouse, position the highlight over the range name you want to delete; then press **RETURN** or **GO**.
  - Enter the range name; then press **RETURN** or **GO**.

OFIS Spreadsheet deletes the range name, and the spreadsheet returns to Ready mode. All formulas referring to that range name automatically change to refer to the cell references.

### Using the Name Key

When executing an option requiring a range or using **Go To (F5)**, it is easy to forget the exact range name, or the spelling of a range name. When this happens, you can view all existing range names by pressing **Go To (F5)**, then pressing **Name (F3)**. This brings up a list of all range names for the current spreadsheet. The names appear in the pop-up menu. To move through the list of range names, you use the:

- Arrow keys
- Mouse
- **SCROLL UP** and **SCROLL DOWN** (with 18 or more range names) keys
- **NEXT PAGE** and **PREV PAGE** (with 18 or more range names) keys

### Creating a Table of Range Names

You can create a table listing all of the range names for the current spreadsheet. The table consists of two columns: the first contains the range names; the second contains the range address. The table overwrites any data in the cells of the table range; therefore, it is a good idea to create the table in an area of the spreadsheet that is not in use.

To create a range name table, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer.
3. Type the first character of the following options:

**/RangeNameTable**

A prompt appears asking for the range. Following the prompt is a reference to the current cell as a range.

4. Choose one of the following:
  - Press **RETURN** or **GO** to accept the current range.
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand range to include all of the cells; then press **RETURN** or **GO**.
  - Type the range; then press **RETURN** or **GO**.

The range name table appears on the spreadsheet. This table does not change when a range name or reference changes. You must create a new range name table to reflect changes made since you created the table.

### Creating Range Names from Labels

You can use labels in the spreadsheet to create range names for a range. The range consists of the cell immediately adjacent to the label you are using as the range name. This cell can be to the left, right, above, or below the label cell. You enter the label before issuing this option:

To enter a label, use the following procedure:

1. Type the first character of the following options:

**/RangeNameLabel**

2. Select Left, Right, Up, or Down, according to the position of the label.

This option names a range consisting of one cell for each label.

### Using the Range Justify Option

You can make notes and memos on the spreadsheet by entering text as long labels. Entering long labels is easier if you use the Range Justify option.

You can enter a memo into one long label if you do not exceed the maximum of 247 characters. By entering text this way you can focus on what you are entering and not have to deal with cell size or number of characters. However, you cannot fully view a long label.

Figure 7-4 shows a spreadsheet with very long labels in cells **a5** and **a6**. As you can see, only part of the label in each cell is visible, even though the label overlaps the adjacent cells. You can use the Range Justify option to adjust a long label to bring it fully into view.

When you justify a long label, you essentially set the margins for the text. You can do this in two ways:

- By specifying the entire range
- By specifying the width only

Using Figure 7-4 as an example, you specify the entire range by typing **a5..g9**. This range tells the spreadsheet that the location of the cell containing the first label is **a5**, and the ending cell is **g9**. Basically, you are assuming the responsibility for allocating enough space for the label.

# Spreadsheet Specialized Options

Figure 7-4. Spreadsheet with Very Long Labels

a5 [W18]I have made a list of the employees in my depart READY

	a	b	c	d	e	f	g	h
1	to: Personnel							
2	From: Abby							
3	RE: Vacation							
4								
5	I have made a list of the employees in my department th							
6	please let me know and I'll do whatever I can to help. I use							
7								
8								
9								
10								
11		Days Available						
12	R. Mason	4.5						
13	K. Cat	5						
14	P. Lee	10						
15								
16								
17								
18								
19								
20								
21								
22								
23								

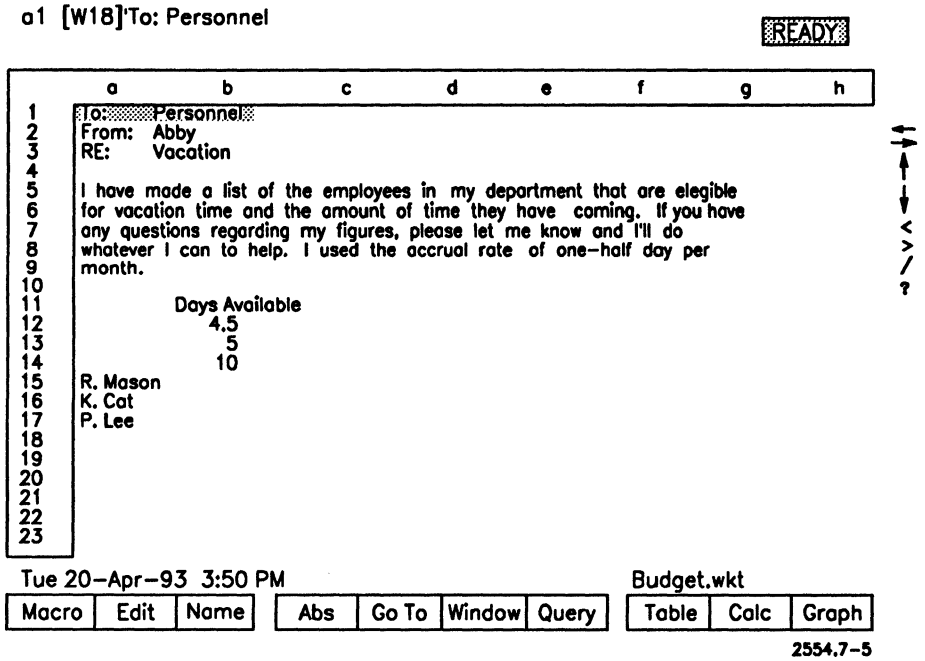
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Figure 7-5 shows how the label looks using this justify range. If there is not enough space to justify the label, OFIS Spreadsheet displays an error message.

Figure 7-5. Spreadsheet with Label Justifying Entire Range



However, you can also specify the width of the label only. Again, using Figure 7-4 as an example, you type a5..g5 for the justify range. Figure 7-5 shows how the label looks using this justify range. As you can see, the label is correctly positioned, but the data in cells a12..a14 is now in cells a15..17. This is because OFIS Spreadsheet takes up as much space as it needs without regard to existing data; it simply pushes down any existing data. Unless you are sure you have enough room, you should specify the exact justify range.

To justify a long label, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer at the first cell containing a label.
3. Type the first character of the following options:

**/RangeJustify**

A prompt appears asking for the justify range. Following the prompt is a reference to the current cell as a range.

4. Choose one of the following:
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
  - Type the range.
5. Press **RETURN** or **GO**.

OFIS Spreadsheet justifies the long label in the range given.

If there is a nonlabel entry in the justify range, the justification option ends at the cell containing that entry. Using Figure 7-4 as an example, if you try to justify cells **a1..g9**, the justification option would stop at cell **a4**, which is a blank cell. To justify this type of label entry, you have to execute the Range Justify option twice, once for cells **a1..a3**, and again for cells **a5..g9**.

Right-justified and centered labels overlap on the left.

You can unjustify a range by executing the Range Justify option and then entering as the justify range the cell containing the first label and a cell from a column that makes the range wide enough to hold the unjustified label. Using Figure 7-5 as an example, you would use **a5..g9** as a justify range.

## Creating Input Areas in the Spreadsheet

You can set up a spreadsheet to have an area that restricts cell pointer movement to a range of unprotected cells. This feature is useful when you have inexperienced users making entries on a spreadsheet. It protects existing entries from accidentally being destroyed or changed. You do this with the Range Input option. This option can also be used in creating macros. For detailed information on macros, refer to Section 13.

You set aside an area in your spreadsheet for the use as the input area. You can use the Worksheet Global Protection option to protect all of the cells in the spreadsheet. This is not necessary, but is a good idea if you have critical labels or formulas in the spreadsheet. The Range Input option applies to cells unprotected by the Range Unprotect option, so issuing global protection does not affect the input area.

To create a range input area, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer at the first input cell.
3. Type the first character of the following options:

**/RangeUnprotect**

A prompt appears asking for the range to unprotect. Following this prompt is a reference to the current cell as a range.

4. Choose one of the following:
  - Press **RETURN** or **GO** to accept the current range.
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
  - Type the range; then press **RETURN** or **GO**.



5. Type the first character of the following options:

**/RangeInput**

A prompt appears asking for the input range. Following the prompt is a reference to the current cell as a range.

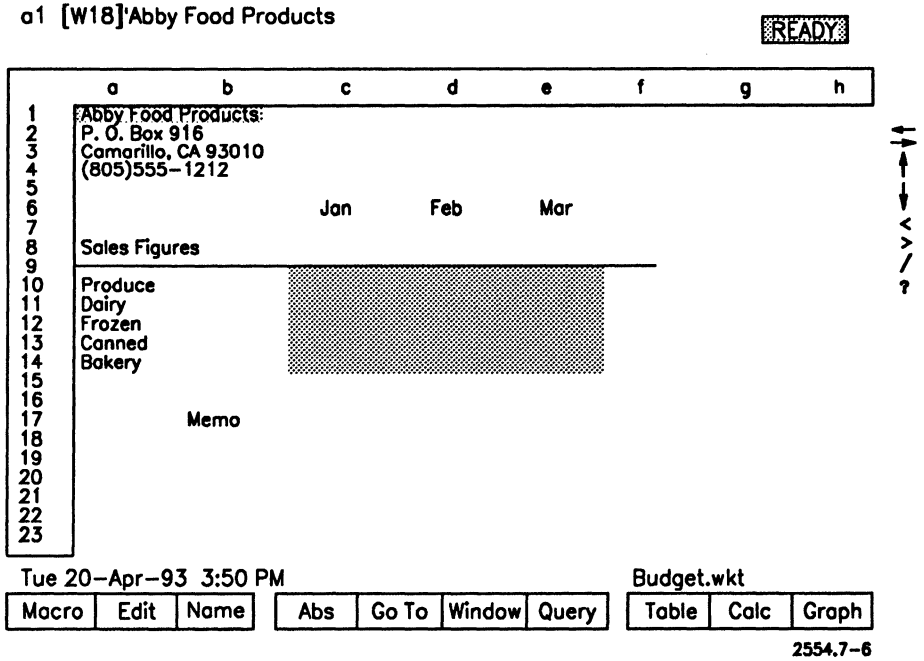
6. Choose one of the following:

- Press **RETURN** or **GO** to accept the current range.
- Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
- Enter the range; then press **RETURN** or **GO**.

The first cell in the input range displays in the upper left corner of the spreadsheet. This first cell can be a cell ready for an entry or it can be a label cell identifying the entry being made. You can include descriptive label cells in the input range without danger of them being altered by an entry. Only unprotected cells actually allow entries. To include titles or labels, do not unprotect those cells.

Figure 7-6 shows a spreadsheet that has been set up using the Range Input option. The highlighted areas represent the input areas.

Figure 7-6. Spreadsheet with Input Area



## Spreadsheet Specialized Options

---

While in the input range area, you can use the following :

- Arrow keys or the mouse to move the cell pointer from cell to cell
- **BACKSPACE** to move the cursor while making the entry
- **HELP** to display the Help function
- **CODE-UP ARROW** to return the cell pointer to the first cell in the input range
- **GO** to enter information or data
- **RETURN** to enter information or data
- **CANCEL** to cancel an entry

In addition to the above functions, the **GO** and **RETURN** keys take you out of Input mode if you press them when not entering information. Also, the **CANCEL** key takes you out of Input mode if you press it when not entering information.

All entries made in the input range display differently from other entries in the spreadsheet. They display in bold or, if you have a color monitor, in a different color.

# Section 8

## OFIS Spreadsheet Graphics

OFIS Spreadsheet helps you to create graphic images using the data from your spreadsheet. Graphs provide a visual interpretation of the spreadsheet data and allow you to present different versions of the same data. You can have more than one graph per spreadsheet.

While creating a graph you can add titles, legends, and other enhancements that further clarify the spreadsheet data displayed in the graph. These additions improve the presentation of the graph and make it easier to interpret.

In order to view a graph, save the image, or add enhancements, you must have the graphic software and hardware. For information about graphics operations, refer to the graphic software documentation for your system.

### Graph Basics

To create a graph, there are two basic steps you must perform in OFIS Spreadsheet:

- Define the data ranges in the current spreadsheet
- Select a graph type

After completing these steps, you can leave the graph as is or you can add enhancements, such as titles and legends.

This section acquaints you with the graphic options available to you in OFIS Spreadsheet. There may be additional graphic options available to you (for instance, the horizontal bar chart) that are not available through OFIS Spreadsheet. For information on these additional options, refer to the *CTOS OFIS Graphics Operations Guide*.

## Creating a Graph

You can create a graph to illustrate spreadsheet data. To create a graph, you select the following option:

/Graph

The Graph pop-up menu displays (refer to Figure 8-1).

Figure 8-1. Graph Pop-up Menu

Enter graph type

	a	b	c	d	e	f	g	h	i
1	Pinky's Flowers								
2	Sales Reports								
3									
4			1st Qtr	2nd Qtr	3rd Qtr	4th Qtr			
5									
6	Roseville		35,000	18,000	21,000	29,000			
7	Vadnois Lake		30,000	19,000	22,000	26,000			
8	Blakely		25,000	16,000	19,000	21,000			
9	Bloomington		43,000	30,000	35,000	40,000			
10									
11	Quarter Totals:		133,000	83,000	97,000	116,000			
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

Graph Pop-up Menu:

- A
- B
- C
- D
- E
- F
- Name
- Options
- Quit
- Reset
- Save
- Type
- View
- X

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Macro Edit Name Abs Go To Window Query Table Calc Graph

2554.8-1

From this pop-up menu, you select the type of graph you want to create. OFIS Spreadsheet offers you five different types:

- Bar
- Line
- Pie
- Stacked bar
- XY

Each type of graph represents data differently. The type of graph you select depends on how you want to illustrate the spreadsheet data.

Once you select the graph type, you need to tell OFIS Spreadsheet what data to use in the graph. You do this by defining data ranges. You can define up to six data ranges; A, B, C, D, E, and F. The first data range is usually A.

When defining a data range, specify only cells that are adjacent and contain values; OFIS Spreadsheet ignores label cells.

If you need to show that a data point is not available, you can include a blank cell.

In addition to the six data ranges, you have another option, the X-range. You usually use the X-range to label categories on the X-axis of the graph, or to designate labels for a pie graph rather than as a data range. Using the X-range in this manner helps to provide an explanation of the various data categories displaying in the graph. The only time you must use the X-range as a data range is when you are creating an XY graph.

**Note:** *If you are creating a Line or XY graph, you must specify an X-range (alphanumeric for Line, and numeric for XY).*

To create a graph, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character in the following options:

**/Graph**

The Graph pop-up menu appears. OFIS Spreadsheet highlights the Type option.

3. Press **RETURN** or **GO**.

The Type pop-up menu appears (refer to Figure 8-2).

4. Select the option for the type of graph you want to create.
5. Press **RETURN** or **GO**.

The Graph pop-up menu reappears. You are now ready to define the data ranges.

6. Select **A**.
7. Press **RETURN** or **GO**.

A prompt appears asking for the first data range. Following the prompt is a reference to the current cell address as a range.

8. Choose one of the following:
  - Position the cell pointer in the first cell of the data range, and use the Arrow keys or the mouse to expand the range to include all of the cells.
  - Type the range.
9. Press **RETURN** or **GO**.

The Graph pop-up menu appears.

10. If you are creating a graph with more than one data range, repeat steps 6 through 9, selecting the appropriate data range option until you define all the data ranges you want.
11. Select **View**.

The current graph displays on your screen. To return to the current spreadsheet, you press **FINISH**.

Figure 8-2. Type Pop-up Menu

a1 [W15] 'Pinky's Flowers.

MENU

	a	b	c	d	e	f	g	h	i
1	Pinky's Flowers:								
2	Sales Reports								
3									
4			1st Qtr	2nd Qtr	3rd Qtr	4th Qtr			
5									
6	Roseville		35,000	18,000	21,000	29,000			
7	Vadnais Lake		30,000	19,000	22,000	26,000			
8	Blakely		25,000	16,000	19,000	21,000			
9	Bloomington		43,000	30,000	35,000	40,000			
10									
11	Quarter Totals:		133,000	83,000	97,000	116,000			
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

Bar
Line
Pie
Stacked- Bar
XY



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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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2554.8-2



### Adding Labels to the X-Axis

OFIS Spreadsheet automatically provides labels for the Y-axis, but not for the X-axis. However, you can label the X-axis by defining the X-range with the data you want to use as labels. This data can be values or labels. If you are creating an XY graph, this data must be numeric values.

To add labels to the X-axis, use the following procedure:

1. Choose one of the of the following:
  - If the spreadsheet is in Ready mode, type the first character of the following options:  
/GraphX.
  - If the Graph pop-up menu is displaying, select X.
2. Press RETURN or GO.

A prompt appears asking for the X-axis range. Following the prompt is a reference to the current cell address as a range.

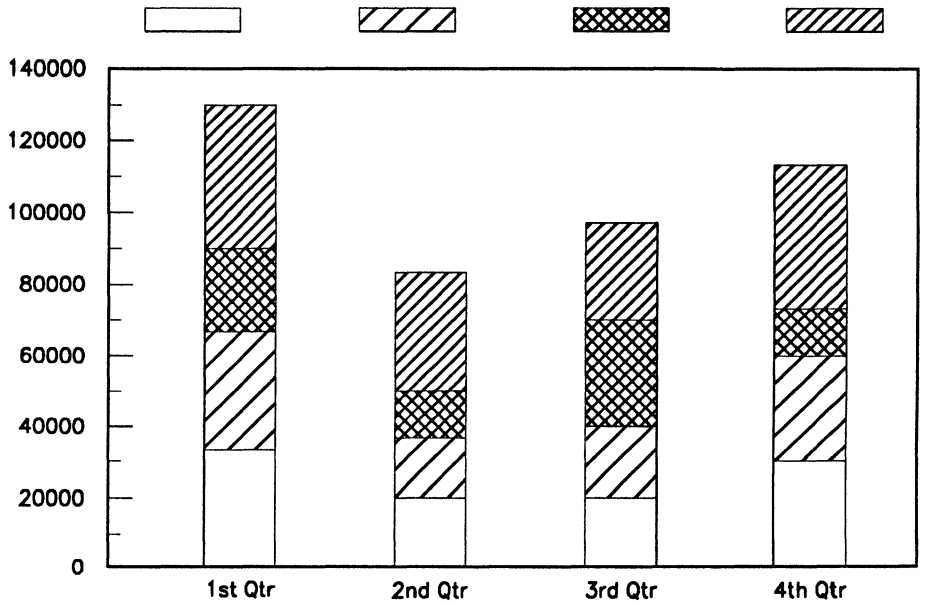
3. Choose one of the following:
  - Press RETURN or GO to accept the entry.
  - Position the cell pointer in the first cell of the X-range and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press RETURN or GO.
  - Type the range; then press RETURN or GO.

The Graph pop-up menu appears.

4. Type Q to select the Quit option.

Figure 8-3 shows an example of a graph with X-axis labels.

Figure 8-3. Graph with X-Axis Labels



2554.8-3

**Removing X-Axis Labels**

You can remove the X-axis labels at anytime by typing the first character of the following options:

**/GraphResetX**

OFIS Spreadsheet immediately removes the X-axis labels.

### Labeling a Pie Graph

OFIS Spreadsheet automatically indicates the percent of each section of a pie graph, but it does not label the sections. You can label the sections by defining an X-range containing data you want to use as labels.

To add labels to a pie graph, use the following procedure:

1. Choose one of the of the following:
  - If the spreadsheet is in Ready mode, type the first character of the following options:  
/Graph**X**.
  - If the Graph pop-up menu is displaying, select **X**.

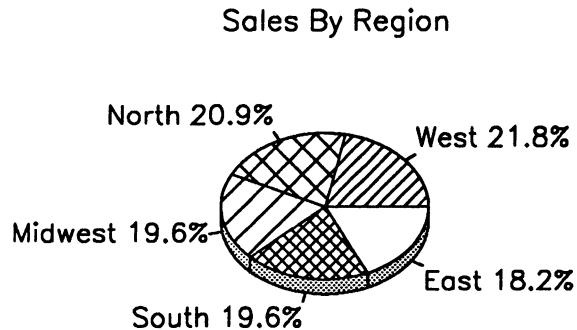
2. Press **RETURN** or **GO**.

A prompt appears asking for the X-axis range. Following the prompt is a reference to the current cell address as a range.

3. Choose one of the following:
  - Press **RETURN** or **GO** to accept the current range.
  - Position the cell pointer in the first cell of the X-range and, using the Arrow keys or the mouse, expand the range to include all of the cells containing the Pie graph labels; then press **RETURN** or **GO**.
  - Type the range; then press **RETURN** or **GO**.
4. Type **Q** to select the Quit option.

Figure 8-4 shows an example of a pie graph with labels.

Figure 8-4. Pie Graph with Labels



## Line Graph

A line graph uses a single line for each data range, and is usually a good choice when illustrating data extending over a period of time. You can include up to six data ranges on a single line graph. (Refer to the *CTOS OFIS Graphics Operations Guide* for specific information about specifying consecutive X-axis plotting points.)

Figure 8-5 shows a line graph with one data range. Figure 8-6 shows a line graph with four data ranges.

Figure 8-5. Line Graph Using One Data Range

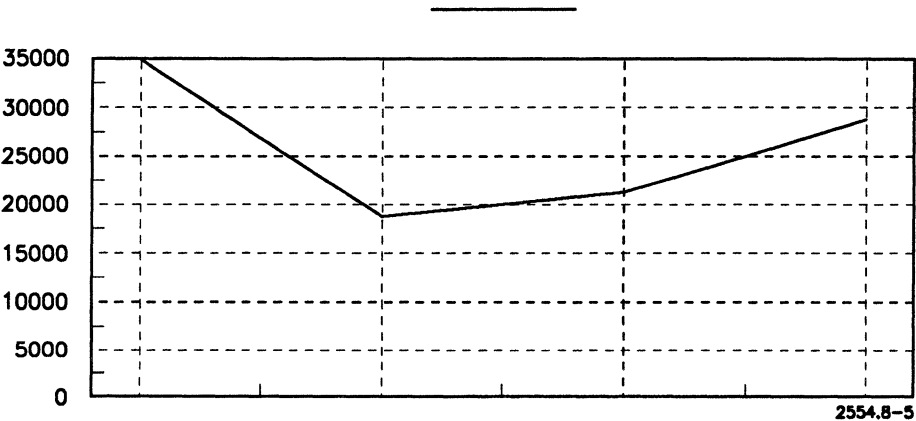
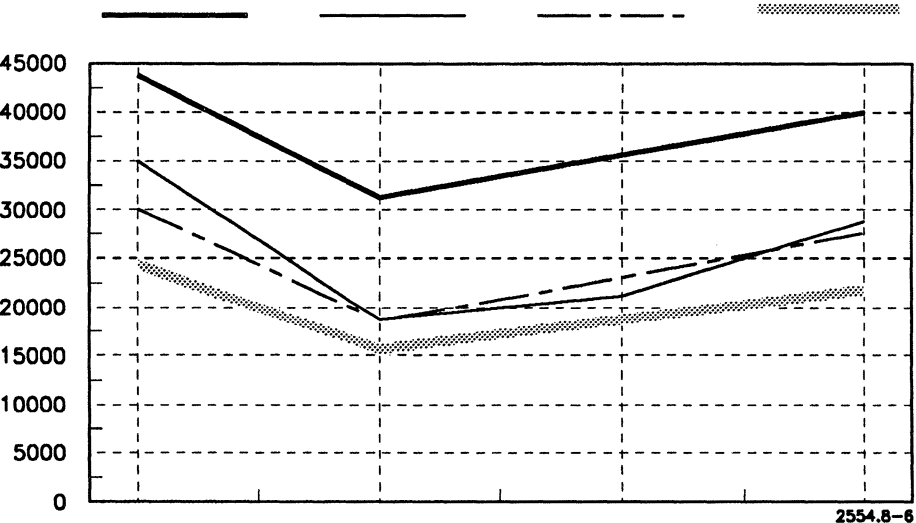


Figure 8-6. Line Graph with Four Data Ranges



As you can see in Figure 8-6, each data range uses a different type of line to symbolize the line representing the data. The different types are shown at the top of the graph. You could identify these lines by adding legends describing each data range line. Further discussion of legends appears later in this section.

## Bar Graph

Bar graphs display data in a rectangular or bar format. This type of graph is a good choice when you want to compare data using the same point in time. (Refer to the *CTOS OFIS Graphics Operations Guide* for specific information about specifying bar groups.)

Figure 8-7 shows a bar graph with one data range. Figure 8-8 shows a bar graph with four data ranges.

When you are defining more than one data range, you can define them in any order, but the A-range always appears first on the graph. Each separate data range displays with a different type of pattern.

Figure 8-7. Bar Graph with One Data Range

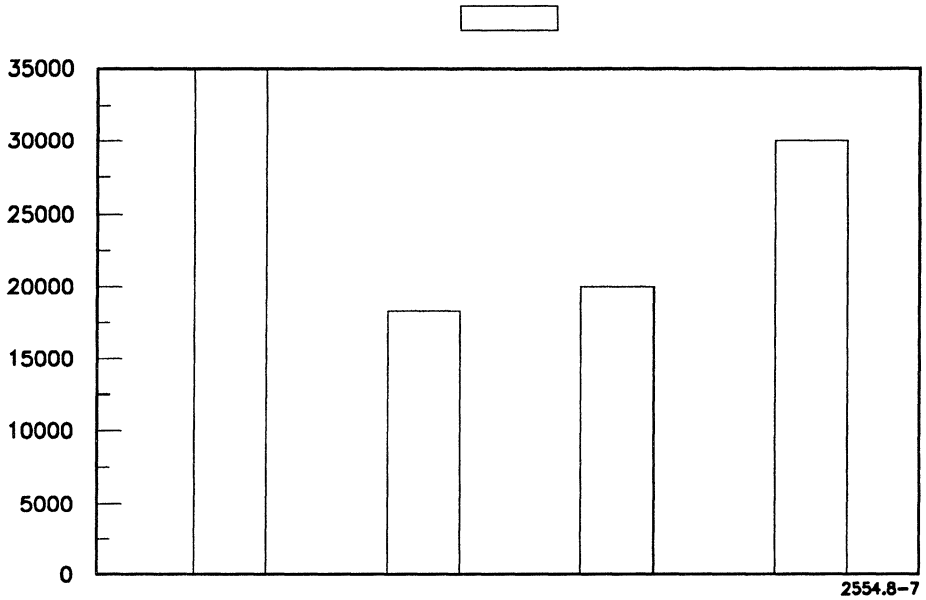
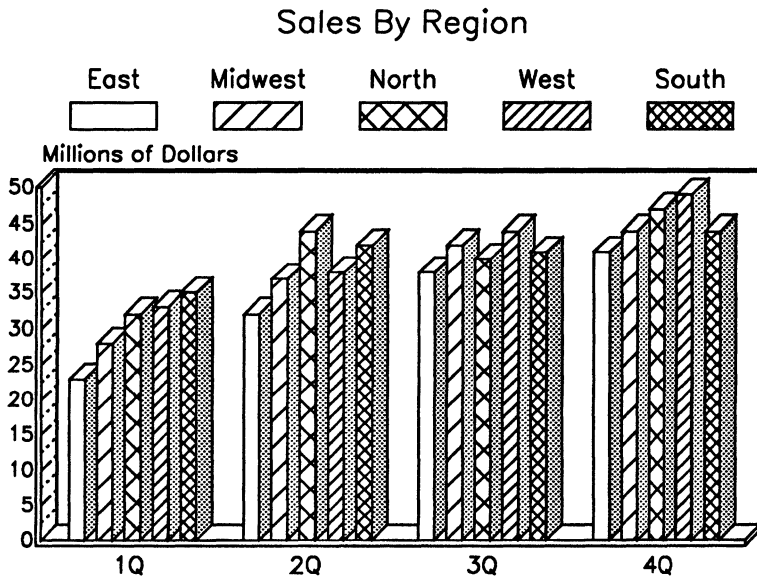


Figure 8-8. Bar Graph with Four Data Ranges



## XY Graph

XY graphs are good to use when plotting regression data or for showing the relationship between an independent variable and a dependent variable. (Refer to the *CTOS OFIS Graphics Operations Guide* for specific information about specifying consecutive X-axis plotting points.)

When creating this type of graph, you must define two ranges: the X-range and a second range, usually the A-range. The X-range represents the independent variable, and the second range is the dependent variable. Both ranges must be values. You define the range containing the dependent variable first.

Figure 8-9 shows a sample spreadsheet containing commercial time and the amount of sales. Figure 8-10 shows the XY graph resulting from the data in Figure 8-9. In this example, the commercial time is the independent variable, and the amount of sales is the dependent variable.



Figure 8-9. Spreadsheet of Commercial Time and Sales

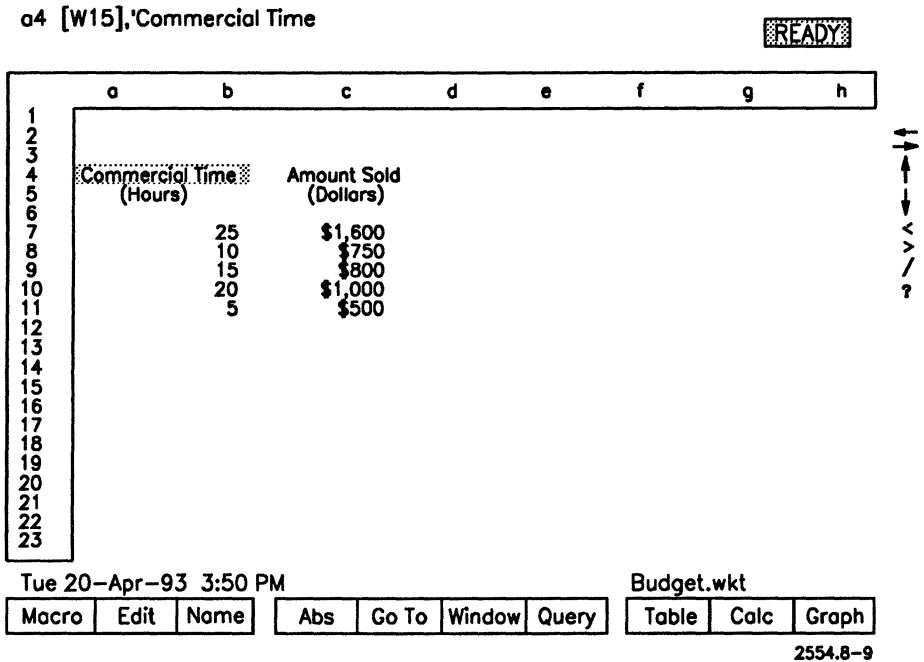
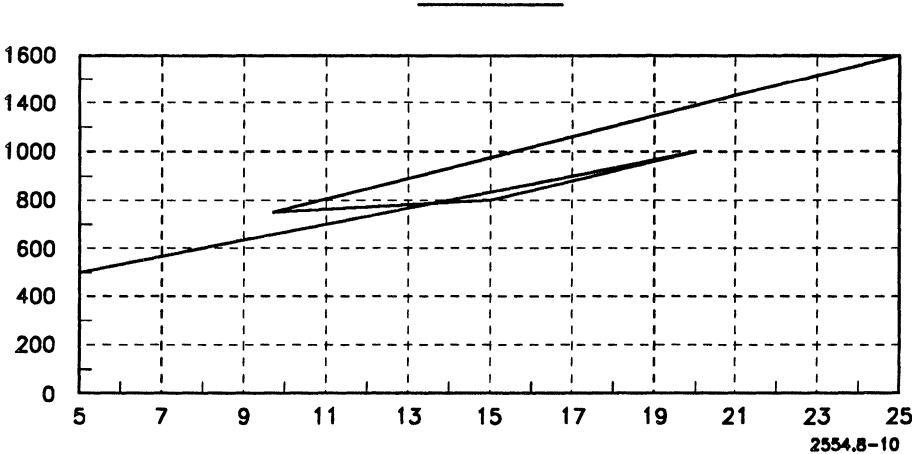


Figure 8-10. XY Graph

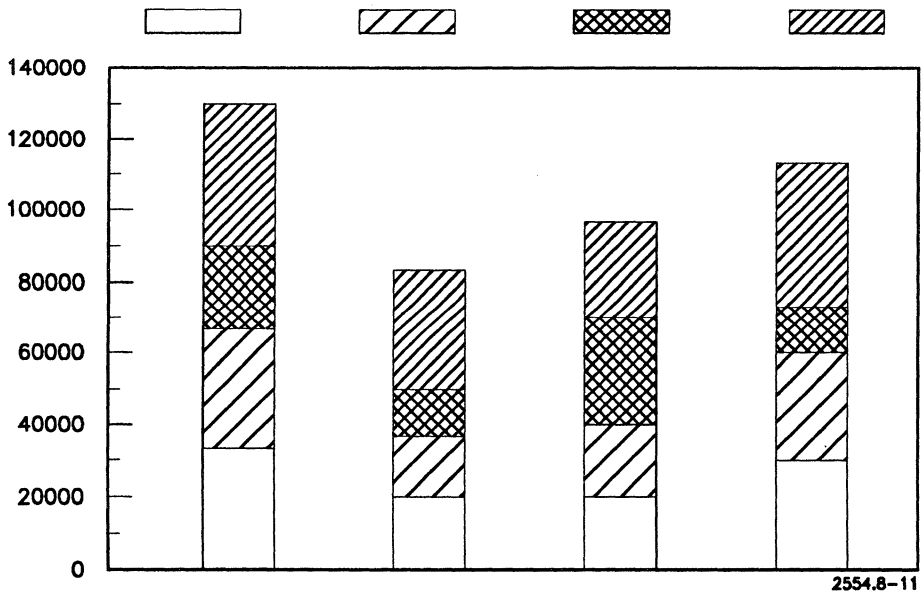


## Stacked Bar Graph

A stacked bar graph is similar to a bar graph except the data ranges are stacked on top of each other instead of side by side. As with the bar graph, you can define the data ranges in any order, but the A-range is always on the bottom, the B-range is on top of the A-range, and so on. (Refer to the *CTOS OFIS Graphics Operations Guide* for specific information about specifying stacked bar groups.)

Figure 8-11 shows an example of a stacked bar graph. As with the multiple bar graph, each data range uses a different pattern.

Figure 8-11. Stacked Bar Graph

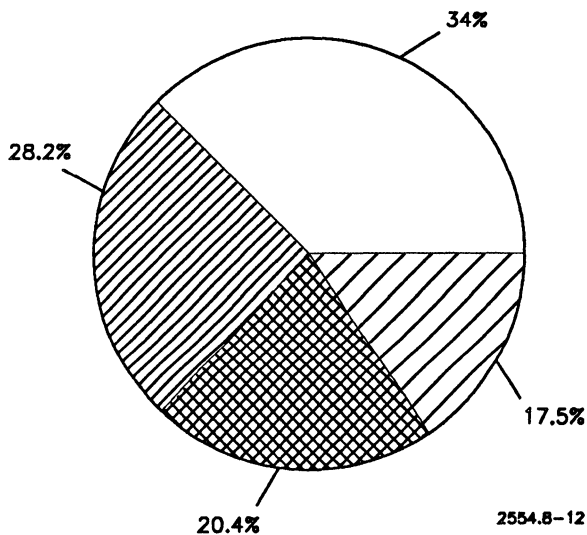


## Pie Graph

A pie graph shows each data range as a section of a pie. This type of graph shows the relative size of each data ranges and indicates the percentage of each section in relation to the whole pie graph. (Refer to the *CTOS OFIS Graphics Operations Guide* for specific information about specifying the number of sections.)

A pie graph uses only one data range, the A-range. However, you can define an X-range to create labels for the pie to help interpret the data. Figure 8-12 shows an example of a pie graph.

Figure 8-12. Pie Graph



## Viewing Your Graph

You can view your graph from the current spreadsheet by choosing one of the following:

- If the Graph pop-up menu is displaying, select **View**.
- If the spreadsheet is in Ready mode, press **Graph (F10)**.

The current graph displays on your screen. To return to the current spreadsheet, you press **FINISH**.

## Deleting Data Range Definitions

Since you can create more than one graph per spreadsheet, you may want to use different data ranges for the various graphs. OFIS Spreadsheet has an option that lets you delete individual range definitions or all of the range definitions.

To delete a data range definition, type the first character of the following options:

**/GraphReset**

The Graph Reset pop-up menu displays (refer to Figure 8-13).

Figure 8-13. Graph Reset Pop-up Menu

a1 MENU

Cancel all graph settings

	a	b	c	d	e	f	g	h	i
1	Pinky's Flowers:								
2	Sales Reports								
3									
4			1st Qtr	2nd Qtr	3rd Qtr	4th Qtr			
5									
6	Roseville		35,000	18,000	21,000	29,000			
7	Vadnais Lake		30,000	19,000	22,000	26,000			
8	Blakely		25,000	16,000	19,000	21,000			
9	Bloomington		43,000	30,000	35,000	40,000			
10									
11	Quarter Totals:		133,000	83,000	97,000	116,000			
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

A  
B  
C  
D  
E  
F  
Graph  
Quit  
X

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↑  
↓  
→  
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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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2554.8-13

From this pop-up menu, you can reset all of the data ranges or an individual data range by selecting the desired option and pressing **RETURN** or **GO**. OFIS Spreadsheet immediately resets the data range definition without issuing a warning.

## Saving the Graph

The Graph Save option is not functional in OFIS Spreadsheet. You must save the graph image in the graphic software. (Refer to the *CTOS OFIS Graphics Operations Guide* for information about graphics operations.)

You can save graph specifications for use in other graphs. (Refer to "Saving Graph Specifications," later in this section.)

## Graph Options

In addition to creating graphs, you can further enhance graphs by adding:

- Legends
- A graph title
- A Y-axis title
- An X-axis title

With these enhancements, you can make your graphs more useful and easier to understand. However, not every type of enhancement is appropriate for every type of graph. For example, since a pie graph has no X-axis, you do not need X-axis titles.

You can also specify whether or not you want the graph in color or black and white. The ability to use OFIS Spreadsheet's color option depends on the type of hardware you are using.

## Adding Legends

A legend gives an explanation of what each data range in a graph represents. It appears above the data range pattern shown in the upper portion of the graph. Legends are most useful when your graph displays more than one data range. You can have up to six legends.

You can add legends to the following types of graphs:

- Bar
- Line
- Stacked bar
- XY

To add a legend to a graph, use the following procedure:

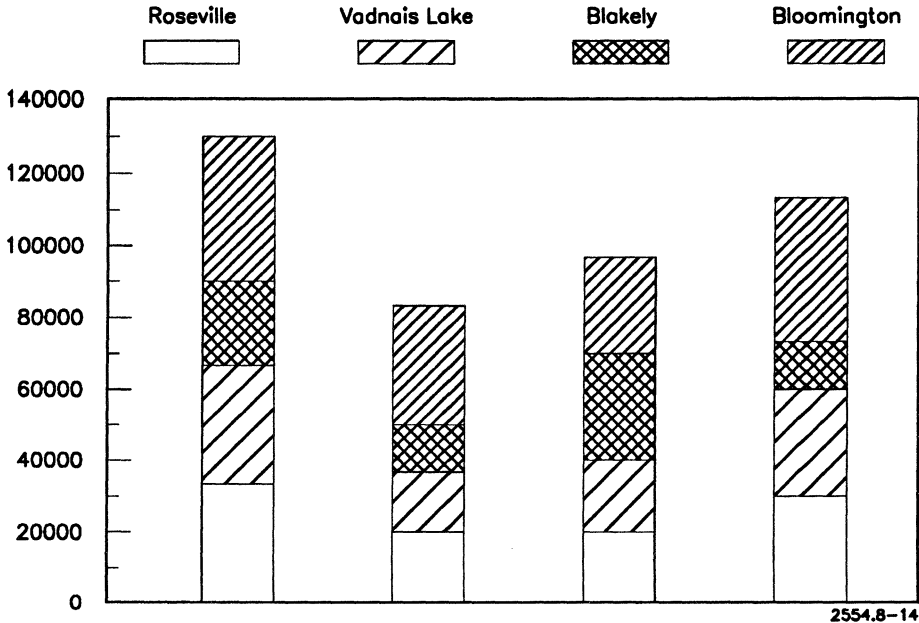
1. Choose one of the following:
  - If the spreadsheet is in Ready mode, type the first character of the following options:  
**/GraphOptions.**
  - If the Graph pop-up menu is displaying, select **Options.**  
The Options pop-up menu appears.
2. Type **L** to select the Legend option.  
The Legend option appears.
3. Type **A** to select the A-range option.  
A prompt appears asking for the A-range legend.
4. Enter the text you want to use for the legend.
5. Press **RETURN** or **GO**.
6. Type **Q** twice to select the Quit options.

The spreadsheet returns to Ready mode. You can add up to six legends.

Figure 8-14 shows a stacked bar graph using legends that explain what each data range represents.



Figure 8-14. Stacked Bar Graph Using Legends



2554.8-14

### Removing Legends

You remove a legend in a similar way as you create one.

To remove a legend, use the following procedure:

1. Choose one of the following:
  - If the spreadsheet is in Ready mode, type the first character of the following options:  
/GraphOptions.
  - If the Graph pop-up menu is displaying, select **Options**.  
The Options pop-up menu appears.
2. Type **L** to select the Legend option.  
The Legend pop-up menu appears.

3. Select the legend option you want to remove.

A prompt appears asking for the legend. Following the prompt is the current legend.

4. Press **CANCEL** to delete the legend.

5. Press **RETURN** or **GO**.

6. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

## Formatting the Graph

All graph formatting is done in the graphic software. For information about graphics operations, refer to the graphic software documentation for your system.

## Adding Titles

Titles help to label the graph. You can add titles to your graph in three locations:

- At the top of the graph
- Along the Y-axis
- Along the X-axis

The title at the top of the graph acts as the main graph title. The title along the Y-axis appears vertically, and the title along the X-axis appears horizontally. Both act as a description of the data displaying on the axis.

To add a title to a graph, use the following procedure:

1. Choose one of the of the following:
  - If the spreadsheet is in Ready mode, type the first character of the following options:  
/GraphOptions
  - If the Graph pop-up menu is displaying, type **O** to select the Options option.

The Options pop-up menu appears.

2. Select **Titles**.
3. Press **RETURN** or **GO**.

The Titles options appear. The Second option is not functional at this time.

4. Select the option for the title you want to add.

A prompt appears asking for the title text.

5. Enter the title text, up to 40 characters.
6. Press **RETURN** or **GO**.

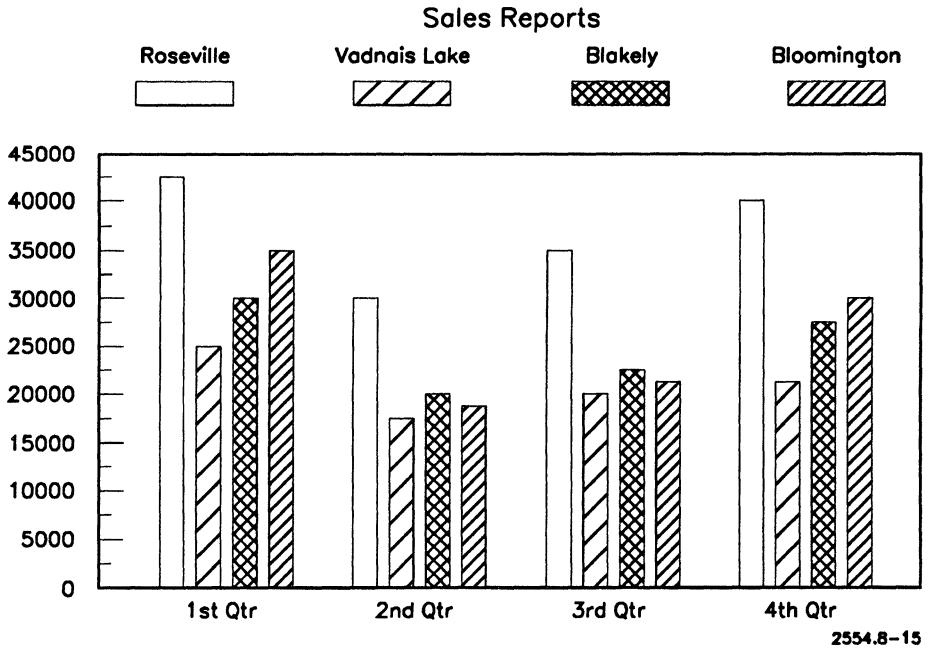
The Options pop-up menu appears.

7. Press **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

Figure 8-15 shows an example of a spreadsheet with a title at the top of the graph.

Figure 8-15. Graph With Title at the Top



### Removing Titles

Removing a title is similar to creating one.

To remove a title, use the following procedure:

1. Choose one of the of the following:
  - If the spreadsheet is in Ready mode, type the first character of the following options:  
/GraphOptions.
  - If the Graph pop-up menu is displaying, select **Options**.  
The Options pop-up menu appears.
2. Type **T** to select the Titles option.  
The Titles options appear.
3. Select the option for the title you want to remove.  
A prompt appears asking for the title text. Following the prompt is the current title.
4. Press **CANCEL** to delete the title.
5. Press **RETURN** or **GO**.
6. Type **Q** twice to select the Quit option.  
The spreadsheet returns to Ready mode.

### Using the Grid or Scale Options

To use the grid or scale options, you must be in OFIS Graphics. For information about graphics operations, refer to the *CTOS OFIS Graphics Operations Guide*.

## Choosing Color or Black and White

OFIS Spreadsheet gives you the option to display a graph in color or in black and white. To display it in color, you must have a color monitor.

If you select the color option, you can choose from a eight-color chart. If you select the black and white option, you have a two-color chart. Both the color chart and the black and white chart offer eight fill patterns.

To select an option, select one of the following:

`/GraphOptionsColor`

`/GraphOptionsB&W`

## Using Data labels

To add data labels to your graph, you must be in OFIS Graphics. For information about graphics operations, refer to the *CTOS OFIS Graphics Operations Guide*.

## Using the Graph File Options

When you create a graph, you provide the data for the graph from specifications you define in OFIS Spreadsheet. OFIS Graphics actually creates and displays the graph. There are certain files that pass information between OFIS Spreadsheet and OFIS Graphics. You have some control over the information in the file and over the selection of files.

You can manipulate graph files with the options that appear when you use the Graph Options Other option (refer to Figure 8-16).

- Format File
- Labels
- Name
- Palette
- Quit

Figure 8-16. Graph Options Other Pop-up Menu

a1

MENU

Specify a graph format file other than the default for this graph type

	a	b	c	d	e	f	g	h	i
1	Pinky's Flowers:								
2	Sales Reports								
3									
4			1st Qtr	2nd Qtr	3rd Qtr	4th Qtr			
5									
6	Roseville		35,000	18,000	21,000	29,000			
7	Vadnois Lake		30,000	19,000	22,000	26,000			
8	Blakely		25,000	16,000	19,000	21,000			
9	Bloomington		43,000	30,000	35,000	40,000			
10									
11	Quarter Totals:		133,000	83,000	97,000	116,000			
12									
13									
14									
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19									
20									
21									
22									
23									

Format File

- Labels
- Name
- Palette
- Quit

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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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## Format File Option

The Format File option lets you select a customized file, or the graphic software format file. The format file contains standard formatting options such as:

- Title text
- Chart text
- Chart information

**Note:** *If you are using OFIS Graphics 3.0, you can specify three-dimensional (3D) format files for your bar and pie graphs. For example, you can specify Color3DPie.fm.*

If you create a graph and want to save the graph format, you can create a format file in the graphics software.

To access the Format File option, type the first character of the following options:

**/GraphOptionsOtherFormat-File**

You can accept the default graph by pressing **RETURN** or **GO**, or type a customized filename.

The default format filename is the same as the type of graph you are creating. For example, the full path name for a pie graph is:

*[Sys]<Sys>Pie*

This tells the graphic software that the graph format information for the pie graph can be found on volume *Sys*, directory *Sys*, and in file *Pie*.

## Labels Option

Whenever you create Y-axis labels or legends for a graph, you can use them for another graph, or you can override the current designations and use the information from the format file.

The format file only has information that you have previously saved. Therefore, if there is no information in the format file and you tell OFIS Spreadsheet to use that file, your graph will not have titles, Y-axis labels, or legends.



You use the Label option to create labels or legends for a graph. To access the Label option, type the first character of the following options:

**/GraphOptionsOtherLabels**

To use the current designations, you do not need to access this option; OFIS Spreadsheet automatically uses the current spreadsheet designations. To use the designations in the format file, you access the option and select **No**.

### Name Option

The Name option allows you to specify a name for the graph before switching to the graphic software. If you do not assign a name to the graph, the name of the current spreadsheet becomes the default graph name. However, you can assign a name to the graph in the graphic software.

To assign a graph name, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character in the following option:

**/GraphOptionsOtherName**

A prompt appears asking for the picture name. Following the prompt is the current spreadsheet name.

3. Choose one of the following:
  - Press **RETURN** or **GO** to accept the current spreadsheet name as the graph name.
  - Type the graph name; then press **RETURN** or **GO**.
4. Type **Q** three times to select the Quit option.

The spreadsheet returns to Ready mode.

### Palette Option

At this time, OFIS Spreadsheet uses the default palette. You cannot designate a different palette or create a new one. If you attempt to use another palette, OFIS Spreadsheet uses the default palette.

To understand the full use of palettes within OFIS Graphics, refer to the *CTOS OFIS Graphics Operations Guide*.

## Quit Option

To return to the Other pop-up menu, enter **Q** to select the **Quit** option while in any of these pop-up menus:

- **Format File**
- **Labels**
- **Name**
- **Palette**
- **Quit**

## Saving Graph Specifications

After creating a graph, you may want to use the same graph specifications again. An example of using the same graph specifications would be a monthly report, where the titles, legends, and X-range designations would be the same each month, only the values would change.

Instead of defining these graph specifications each time you create the graph, you can save the specifications and recall them when you create a new version of the graph. Since you can have more than one graph per spreadsheet, you can also have more than one set of graph specifications.

You name graph specifications by using the Graph Name option. With this option you can:

- **Name the existing graph specifications for the current spreadsheet**
- **Specify which set of graph specifications to use**
- **Delete an individual set of graph specifications**
- **Reset all graph specifications**

To permanently save the graph specifications, you must save the current spreadsheet using the File Save option.

It is important to realize that you are not saving the actual graph image, only the graph settings. You save the graph specifications to recreate a graph in the future using different values. You save the actual graph image in the graphic software. For information about graphics operations, refer to the *CTOS OFIS Graphics Operations Guide*.

To name a set of graph specifications, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character in the following options:

`/GraphName`

The Name pop-up menu displays.

3. Select **Create**.

A prompt appears asking for the graph to create. Any previously named graph specifications appear in a pop-up menu.

4. Type the name of the graph specifications (up to 14 characters).

The Graph pop-up menu appears.

5. Enter **Q** to select the Quit option.

The spreadsheet returns to Ready mode.

### Using Graph Specifications

After you save graph specifications, you can access them at a future time when you create a new graph. However, if you make any changes to previously named graph specifications, you need to save those specifications in the same manner as if you were creating a new set.

To use existing graph specifications, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character in the following options:

`/GraphNameUse`

3. Press **RETURN** or **GO**.

A prompt appears asking for the graph to use. The names of all existing graph specifications for the current spreadsheet appear in a pop-up menu.

4. Select the desired graph parameters.

The current graph appears on your screen, overlaying any previously displaying graph.

5. Press **RETURN** or **GO**.
6. Press **FINISH**.

The current spreadsheet appears in Ready mode.

## Deleting Graph Specifications

You can delete individual graph specifications or all graph specifications.

To delete individual graph specifications, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character in the following options:

`/GraphNameDelete`

A prompt appears asking for the graph to delete. All named graph specifications appear in a pop-up menu.

3. Choose one of the following:
  - Select the graph specifications you want to delete by highlighting the graph specification name.
  - Type the name after the prompt.
4. Press **RETURN** or **GO**.

The Graph pop-up menu appears.

5. Press **Q** to select the Quit option.

The spreadsheet returns to Ready mode.

You can also delete all named graph specifications by typing the first character of the following options:

**/GraphNameReset**

OFIS Spreadsheet immediately deletes all graph specifications.

## Exiting the Graph Pop-up Menu

To exit the Graph pop-up menu and return the spreadsheet to Ready mode, you select **Q** (Quit) from the Graph pop-up menu.

## Printing the Graph

Actual printing of a graph is done in OFIS Graphics. For information about graphics operations, refer to the *CTOS OFIS Graphics Operations Guide*.

## Section 9

# OFIS Spreadsheet Functions

Functions are formulas already set up in OFIS Spreadsheet that help you to perform complex calculations quickly. You use these functions as shortcuts for operations that are difficult to calculate.

Functions have three basic components:

- A first character that is @, +, -, \$, or (
- A key word or name
- One or more arguments

The first character of a function can be @, +, -, \$, or (. Usually it is the symbol @. This tells OFIS Spreadsheet you are entering a function, not a label.

Every function has a key word or name. This is a short, descriptive, sometimes abbreviated word that describes what the function does. For example, @SUM performs addition, @NPV computes the net present value, and @COUNT counts. If you do not prefix the function with a function symbol, OFIS Spreadsheet treats the function as a label.

Almost all OFIS Spreadsheet functions require one or more arguments. An argument defines the cells it is to act upon. For example, **@SUM(a1..a4)** tells OFIS Spreadsheet to add the values found in cells **a1** through **a4**. You always enclose the argument in parentheses, and, if there is more than one argument, you separate them by commas. You do not include spaces when defining an argument. An argument can be:

- Values
- Cells
- Ranges
- Range names
- Formulas
- Other functions

Certain functions require a particular form of an argument. For example, string functions use strings as arguments, and logical functions use conditional tests as arguments.

If a function does not require an argument, the format given for that function does not show an argument.

## Categories of Functions

OFIS Spreadsheet provides 10 different types of functions:

- Mathematical
- Financial
- Statistical
- Database
- Table
- Logical
- Date and Time
- Trigonometric
- String
- Special

# Mathematical Functions

OFIS Spreadsheet provides you with eight mathematical functions:

- @ABS
- @INT
- @MOD
- @RAND
- @ROUND
- @SIGN
- @SQRT
- @SUM



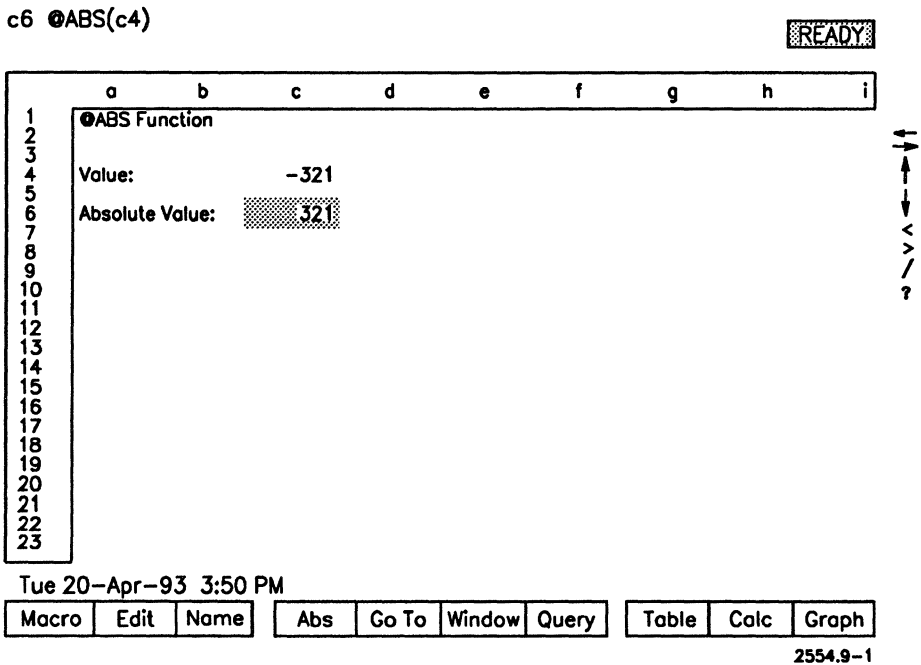
### @ABS

The @ABS function returns the absolute, or positive, value of the value given in the argument. The function format is:

@ABS(value)

Figure 9-1 shows an example of the @ABS function.

Figure 9-1. @ABS Function



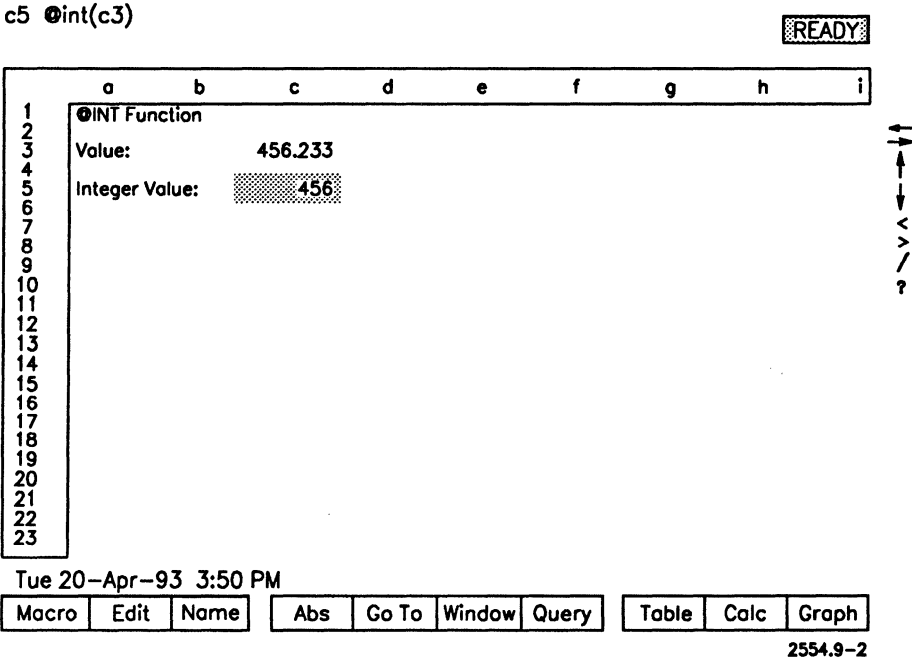
**@INT**

The @INT function returns the integer value (a positive whole number) of the value specified in the argument by truncating the value to its integer form. The function format is:

@INT(value)

Figure 9-2 shows an example of the @INT function.

Figure 9-2. @INT Function



**@MOD**

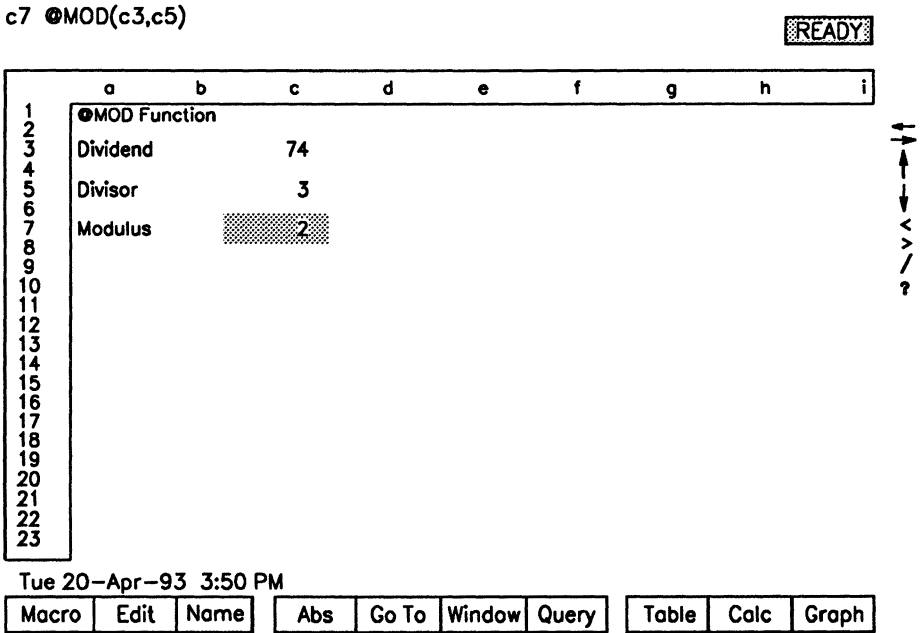
The @MOD function returns the modulus, or remainder, resulting from dividing one value (the dividend) by another value (the divisor). The function format is:

**@MOD**(*dividend, divisor*)

The values in the argument can be positive, negative, or a combination. If you use a combination, the sign of the dividend determines the sign of the result. The divisor cannot be 0.

Figure 9-3 shows an example of the @MOD function.

Figure 9-3. @MOD Function



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## **@RAND**

The @RAND function returns random numbers, between 0.0 and 1.0.  
The function format is:

### **@RAND**

This function does not require an argument.

A new random number displays every time you calculate the spreadsheet.

### **@ROUND**

The @ROUND function rounds a value to the number of decimal places you specify in the argument. The function format is:

**@ROUND**(*number to be rounded, number of decimal places*)

The number OFIS Spreadsheet is rounding can be the result of a formula, a value, or a cell reference. The number of decimal places depends on your type of workstation.

This function rounds numbers less than five downward (towards zero) and numbers greater than or equal to five upward (away from zero). If you specify a negative number of decimal places, the function rounds to the left of the decimal place.

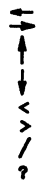
Figure 9-4 shows examples of the @ROUND function. You can use the @ROUND function to avoid addition problems. When you format a number, OFIS Spreadsheet displays it according to the format instructions. However, internally the number is the same as before formatting, and it is the internal number representation that OFIS Spreadsheet uses when calculating. Figure 9-5 shows an example of this concept.

Figure 9-4. @ROUND Function

c5 @ROUND(a5,b5)

READY

	a	b	c	d	e	f	g	h	i
1	@ROUND Function								
2									
3	Value	#Decimal Places	Result						
4									
5	321.812	2	321.81						
6	321.812	1	321.8						
7	321.812	0	322						
8	321.812	-1	320						
9	321.812	-2	300						
10									
11									
12									
13									
14									
15									
16									
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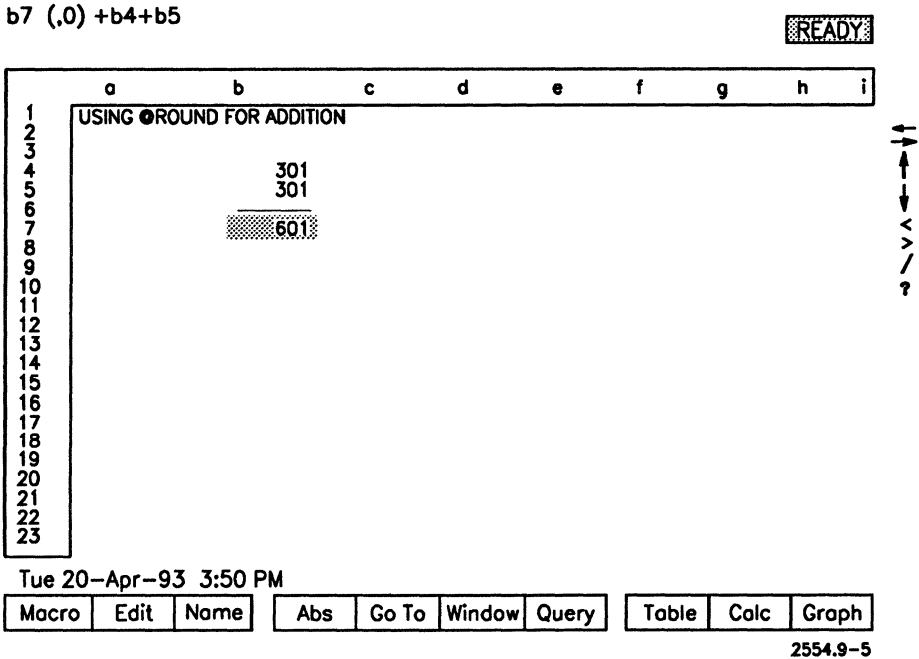


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Figure 9-5. @ROUND Function-ADDITION



The addition in Figure 9-5 appears incorrect. When you add 301 to 301 you should get 602, yet the result displaying is 601. The reason for this is that OFIS Spreadsheet is adding the internal numbers, not the display numbers. What is actually happening is OFIS Spreadsheet adds the numbers 300.56 and 300.8 and displays the result according to the format instructions. To avoid this type of problem, you change the formula in cell b7 to:

**@ROUND(b4,0)+@ROUND(b5,0)**

The formula rounds the values in cells b4 and b5 to 0 decimal places, and uses those values in the addition. The result of the formula displays as 602.

**@SIGN**

The **@SIGN** function returns a value that represents the sign of the argument. The function format is:

**@SIGN**(*value*)

The values this function returns and their meaning are shown in Table 9-1.

**Table 9-1. @SIGN Values**

---

<b>Value</b>	<b>Argument Sign</b>
1	positive
0	0 or blank
-1	negative

---



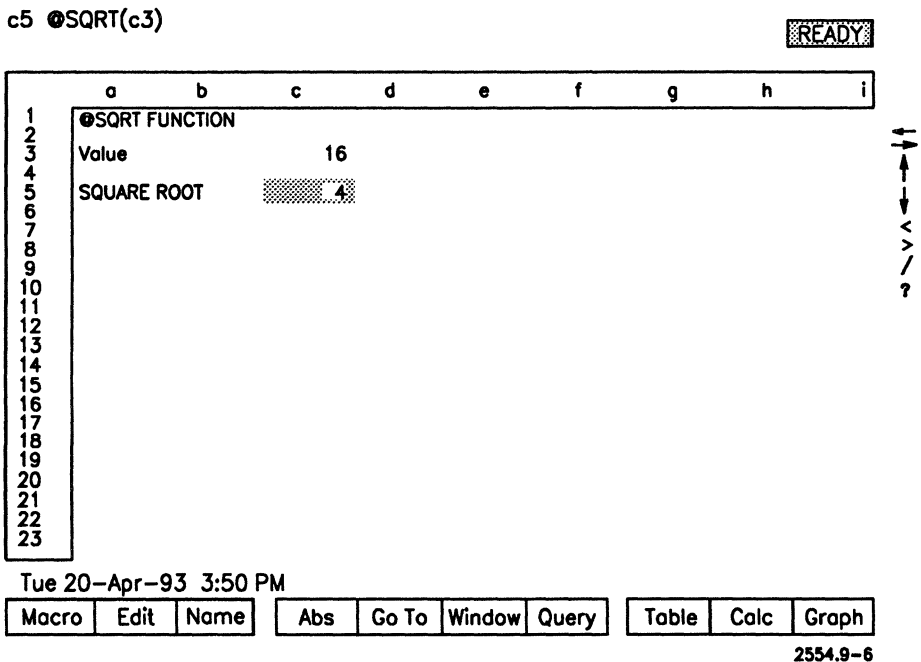
## @SQRT

The @SQRT function returns the square root of a value. The function format is:

**@SQRT(*value*)**

The argument must be positive. If you use a negative argument, OFIS Spreadsheet displays ERR. Figure 9-6 shows an example of this function.

Figure 9-6. @SQRT Function



To find a root other than the square root of a value, for example, the cube root, you can set up a formula using the mathematical operator  $\wedge$ . The following formula returns the cube root of 64:

**64^(1/3)**

In this formula, you override OFIS Spreadsheet's order of precedence by using parentheses to indicate that the division is to be done before the exponentiation.

### @SUM

The @SUM function returns a value that is the result of adding two or more values. This function can have one or more arguments. The function format is:

**@SUM**(*range*)

You use this function as an alternative to the + operator. When you use this function, it automatically adjusts to include insertions or deletions in the defined range. If you include label cells in the formula, OFIS Spreadsheet assigns a zero value to those cells.

## Financial Functions

OFIS Spreadsheet's financial functions provide you with a means to perform a variety of financial calculations. There are 11 different financial functions:

- @CTERM
- @DDB
- @FV
- @IRR
- @NPV
- @PMT
- @PV
- @RATE
- @SLN
- @SYD
- @TERM

### @CTERM

The @CTERM function calculates the term necessary for a lump sum investment to compound interest for a future value, given a fixed periodic rate of interest. The function format is:

**@CTERM**(*interest rate, target value, starting value*)

This function uses three arguments:

- **interest rate**  
This specifies a fixed period of interest.
- **target value**  
This specifies a desired future value.
- **starting value**  
This specifies the initial investment amount.

**@DDB**

The @DDB function uses the double declining balance method to calculate depreciation. The double declining balance method is also known as an accelerated depreciation method. The function format is:

**@DDB(*cost of asset, salvage value, life of asset, current period*)**

This function uses four arguments:

- **cost of asset**  
This specifies the depreciable value of the asset.
- **salvage value**  
This specifies the value of the asset at the end of its depreciable life.
- **life of asset**  
This specifies the approximate asset lifetime.
- **current period**  
This specifies the period for which you are calculating depreciation.

### @FV

The @FV function calculates the future value of an investment. The future value of an investment is the value at a specified future date that includes all of the interest accrued up to that date. The function format is:

**@FV**(*payments, interest rate, term*)

This function uses three arguments:

- **payments**  
This specifies the amount of cash receipts.
- **interest rate**  
This specifies the rate of interest you earn on the investment.
- **term**  
This specifies the time during which the cash receipts occur.

It is important that the time period for the arguments is the same. For example, if the payments are monthly, then the interest must be the monthly interest, and the term must be the number of months.

## @IRR

The @IRR function calculates the approximate internal rate of return on an investment. The internal rate of return is the discount rate at which the net present value of the investment is zero. The format function is:

**@IRR**(rate guess, range of cash flows)

This function uses two arguments:

- rate guess

This specifies the approximate internal rate of return. It can be any decimal number between zero and one.

- range of cash flows

This defines the range containing the cash payments and receipts. You enter cash payments as negative values and cash receipts as positive values.

This function uses an iterative process to calculate the internal rate of return. OFIS Spreadsheet uses the rate guess you enter as the first value in this process. It revises the rate guess for 40 iterations. If it cannot calculate a net present value less than 0.0000001, ERR displays. When this happens, you enter a new rate guess and recalculate.



### @NPV

The @NPV function calculates the net present value of a series of equally, or unequally, spaced cash flows. The function format is:

**@NPV(*interest rate, range of cash flows*)**

This function uses two arguments:

- interest rate

This specifies the periodic rate of interest.

- range of cash flows

This defines the range containing the cash flows occurring during the term of the investment.

This function assumes that the first cash flow occurs at the end of the first period.

It is important that the time period for the arguments is the same. For example, if the interest rate is monthly interest, then the term must be the number of months.

## **@PMT**

The **@PMT** function calculates the payment required to pay off a loan using the loan principal, interest rate, and term. The function format is:

**@PMT**(*principal, interest rate, term*)

This function uses three arguments:

- **principal**  
This specifies the amount borrowed.
- **interest rate**  
This specifies the periodic interest rate.
- **term**  
This specifies the time frame over which you are paying off the loan.

It is important that the time period for the arguments is the same. For example, if the interest is the monthly interest, then the term must be the number of months.

### @PV

The @PV function calculates the present value of a series of equally spaced cash flows. The function format is:

**@PV**(*payments, rate, term*)

This function uses three arguments:

- **payments**  
This specifies the amount of the equal payments.
- **rate**  
This specifies the discount rate.
- **term**  
This specifies the number of cash flows being paid.

It is important that the time period for the arguments is the same. For example, if the payments are monthly, then the term must be the number of months.

## @RATE

The @RATE function calculates the periodic rate of interest necessary to compute a lump sum investment to a target amount over a specified number of periods. The function format is:

**@RATE**(*target amount, initial amount, term*)

This function uses three arguments:

- **target amount**  
This specifies the future value of the investment.
- **initial amount**  
This specifies the lump sum invested.
- **term**  
This specifies the time frame during which the investment is being compounded.

### **@SLN**

The @SLN function calculates the straight line depreciation of an asset.  
The function format is:

**@SLN(*cost of asset, salvage value, life of asset*)**

This function uses three arguments:

- **cost of asset**  
This specifies the depreciable value of the asset.
- **salvage value**  
This specifies the value of the asset at the end of the depreciation period.
- **life of asset**  
This specifies the time frame defining the approximate asset life.

## **@SYD**

The **@SYD** function calculates depreciation by the sum of the years method. This is also known as an accelerated method of depreciation. The function format is:

**@SYD**(*cost of asset, salvage value, life of asset, current period*)

This function uses four arguments:

- **cost of asset**  
This specifies the depreciable value of the asset.
- **salvage value**  
This specifies the value of the asset at the end of its depreciable life.
- **life of asset**  
This specifies the approximate asset lifetime.
- **current period**  
This specifies the period for which you are calculating depreciation.

### @TERM

The @TERM function calculates the number of periods required for a series of equal, evenly spaced investments to compound to a target amount, given a steady rate of interest. The function format is:

**@TERM**(*payments, interest rate, target value*)

This function uses three arguments:

- **payments**  
This specifies the amount of equal, periodic investments.
- **interest rate**  
This specifies a periodic rate of interest.
- **target value**  
This specifies the value you desire at some future time.

It is important that the time period for the arguments is the same. For example, if the payments are monthly, then the interest must be the monthly interest, and the term must be the number of months.

## Statistical Functions

OFIS Spreadsheet's statistical functions provide you with a convenient and easy way to compute simple statistics from your spreadsheet data. There are seven different statistical functions:

- @AVG
- @COUNT
- @MAX
- @MIN
- @RANK
- @STD
- @VAR

Each of the statistical functions has the same basic function format. They all can have one or more arguments. You can use ranges, individual cells, or a mix of ranges and individual cells in an argument. For example, you can use either of the following:

- @AVG(a1,b1,b2,b3)
- @AVG(a1,b1..b3)



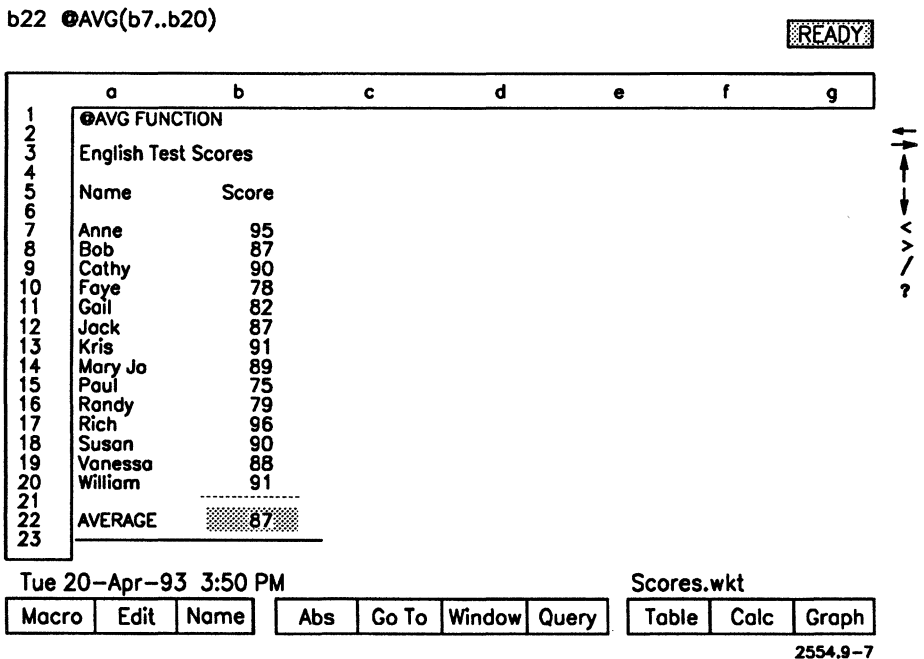
## @AVG

The @AVG function calculates the average (arithmetic mean) of a group of values in a specified range. OFIS Spreadsheet calculates the mean by adding the values in the range, then dividing the sum of the values by the number of values in the range.

When specifying your argument range, you should keep in mind that OFIS Spreadsheet ignores label cells and blank cells. If your spreadsheet is suffixed *.wkl* or *.wks*, OFIS Spreadsheet assigns 0 to label cells and ignores blank cells. These have an effect on OFIS Spreadsheet's computations of the average value.

Figure 9-7 shows an example of the @AVG function.

Figure 9-7. @AVG Function

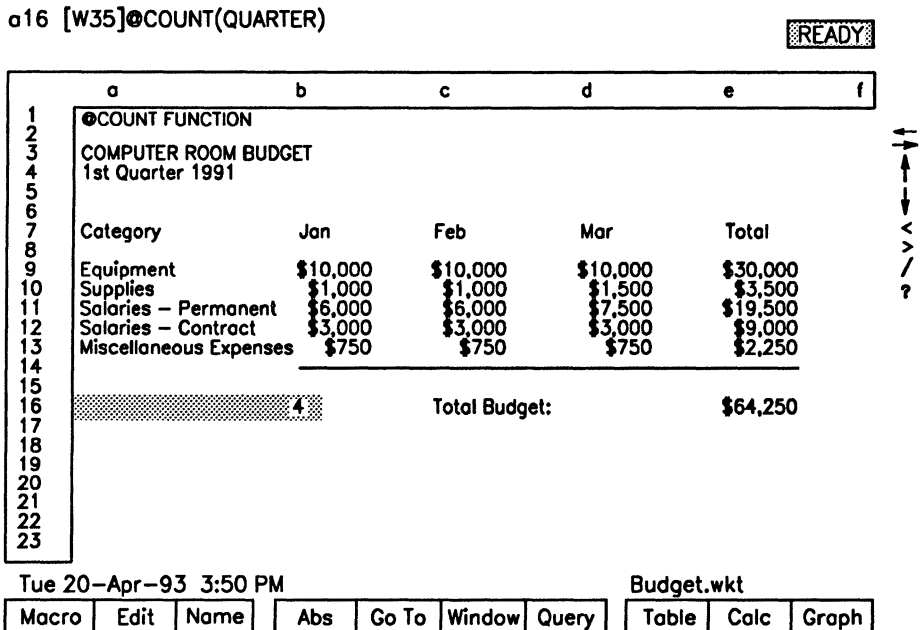


## @COUNT

The @COUNT function counts the number of nonblank cells in the defined range argument. OFIS Spreadsheet counts label cells the same as it counts value cells, but ignores blank cells. However, if the range is only one cell, OFIS Spreadsheet returns a value of 1, even if the cell is a blank cell.

Figure 9-8 shows an example of the @COUNT function. In this figure, the range argument is b7..e8, which is a row of label cells, and a row of blank cells. OFIS Spreadsheet counts the label cells, but does not count the blank cells.

Figure 9-8. @COUNT Function



**@MAX**

The @MAX function returns the highest value in the argument range. However, this function does not give the cell address of the highest value. OFIS Spreadsheet assigns a 0 to label cells and ignores blank cells. However, if an individual cell comprises the argument range, then OFIS Spreadsheet assigns a 0 value to a blank cell.

Figure 9-9 shows an example of the @MAX function.

**Figure 9-9. @MAX Function**

a16 [W35]@COUNT(QUARTER) READY

	a	b	c	d	e	f
1	@COUNT FUNCTION					
2						
3	COMPUTER ROOM BUDGET					
4	1st Quarter 1991					
5						
6						
7	Category	Jan	Feb	Mar	Total	
8	Equipment	\$10,000	\$10,000	\$10,000	\$30,000	
9	Supplies	\$1,000	\$1,000	\$1,500	\$3,500	
10	Salaries - Permanent	\$6,000	\$6,000	\$7,500	\$19,500	
11	Salaries - Contract	\$3,000	\$3,000	\$3,000	\$9,000	
12	Miscellaneous Expenses	\$750	\$750	\$750	\$2,250	
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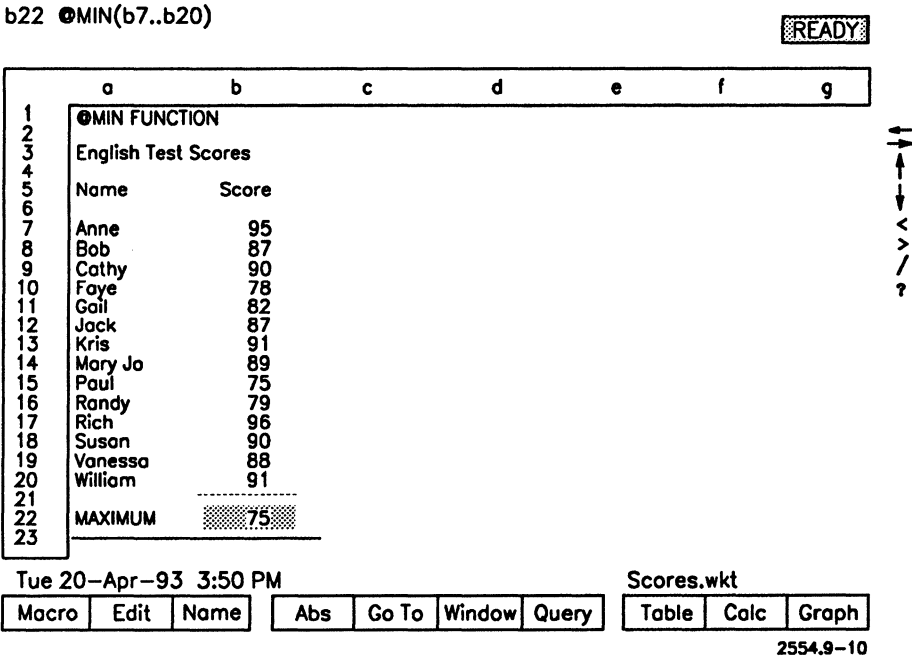
2554.9-8

@MIN

The @MIN function returns the lowest value in the argument range. However, this function does not give the cell address of the lowest value. OFIS Spreadsheet assigns a 0 to label cells and ignores blank cells. However, if an individual cell comprises the argument range, then OFIS Spreadsheet assigns a 0 value to a blank cell.

Figure 9-10 shows an example of the @MIN function. In this figure, notice that the label cell b21 is not part of the argument. This is because OFIS Spreadsheet would assign a value of 0 to that cell and return the minimum result of 0.

Figure 9-10. @MIN Function



## @RANK

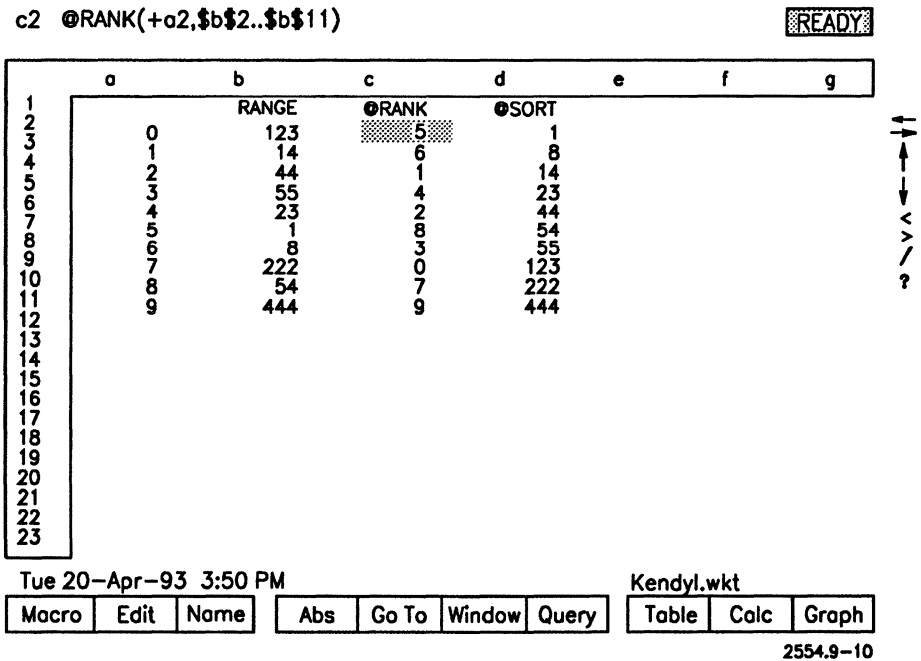
The @RANK function accepts as arguments an element's position in a sorted list and a (usually unsorted) list. Lists can contain ranges, cell addresses, or both. @RANK sorts the list and returns the element's row number in the original (unsorted) list. The function format is:

**@RANK(*n*,*list*)**

*n* is the element's position in a sorted list. The @RANK function assigns 0 to label cells and blank cells and sorts them first.

Figure 9-11 shows an example of the @RANK function compared with the @SORT function using the same data.

Figure 9-11. @RANK Function

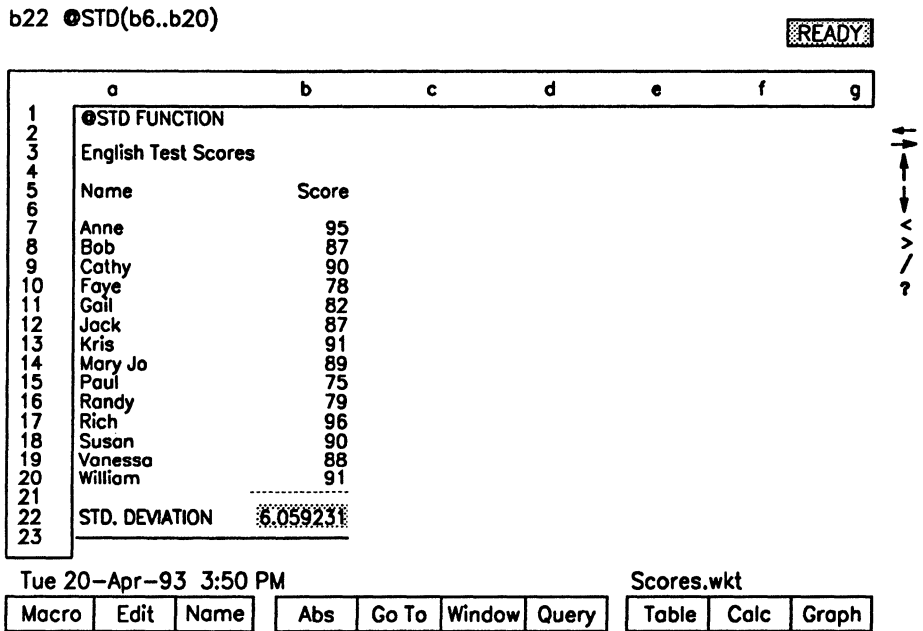


## @STD

The @STD function computes the standard deviation of values in the argument. The standard deviation is the square root of the variance or the extent to which each value in the range varies from the mean for that range. OFIS Spreadsheet assigns a 0 value to label cells and ignores blank cells.

Figure 9-12 shows an example of the @STD function.

Figure 9-12. @STD Function



## @VAR

The @VAR function calculates the variance of the values in a range. The variance is the square of the standard deviation or the degree to which each value in the range varies from the average of all values in the range. OFIS Spreadsheet assigns a 0 value to label cells and ignores blank cells.

Figure 9-13 shows an example of the @VAR function.

Figure 9-13. @VAR Function

b22 @VAR(b6..b20) READY

	a	b	c	d	e	f	g	
1	@VAR FUNCTION							
2	English Test Scores							
3								
4	Name                  Score							
5								
6								
7	Anne	95						
8	Bob	87						
9	Cathy	90						
10	Faye	78						
11	Gail	82						
12	Jack	87						
13	Kris	91						
14	Mary Jo	89						
15	Paul	75						
16	Randy	79						
17	Rich	96						
18	Susan	90						
19	Vanessa	88						
20	William	91						
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## Database Functions

OFIS Spreadsheet's database functions allow you to compute statistics about database entries matching criteria you define. There are seven database functions:

- @DAVG
- @DCOUNT
- @DMAX
- @DMIN
- @DSTD
- @DSUM
- @DVAR

All of the database functions have the same basic format, which is shown in the following example of the @DAVG function:

**@DAVG**(*input range, field offset, criterion range*)

The function consists of a function name and three arguments. The first two characters of the function, @D, tell OFIS Spreadsheet that this is a database function. The next three characters identify the actual function. The three arguments are:

- **input range**  
This specifies the database containing the information the function is using. It can be a range reference or a range name.
- **field offset**  
This is the number telling OFIS Spreadsheet which field to use for the calculation. For example, 0 specifies the first field, and 1 specifies the second field. The fields must contain value entries. However, there is one exception to this restriction. If you are using the @DCOUNT function, you can also refer to fields other than value entries.
- **criterion range**  
This specifies the range containing the criterion that the function uses to match database entries. When defining this range, include at least one field name and one cell below that field name.



Figure 9-14 shows a sample database. You can determine the average salary for all employees in Department E by using the @DAVG function. You would enter E under the field name DEPARTMENT CODE. Next, you would set up the function as follows:

**@DAVG(a2..e15,3,a19..e20)**

Figure 9-14. Sample Spreadsheet Database

b22 (CO) [W15] @DAVG(a2..e15,3,a19..a20) READY

	a	b	c	d	e	f
1	@AVG FUNCTION					
2	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
3	Adams	John	02/01/85	\$25,000	A	
4	Crown	Drake	01/08/86	\$21,000	E	
5	French	Vanessa	05/15/83	\$27,000	D	
6	Farley	Rancy	06/22/79	\$35,000	E	
7	Henry	Thomas	11/01/87	\$25,000	E	
8	Jackson	Barbara	03/21/88	\$20,000	A	
9	Mason	Abby	12/15/84	\$28,000	C	
10	Parker	K. C.	04/01/88	\$20,000	E	
11	Richards	Lee	07/02/80	\$40,000	A	
12	Tracy	Jo	10/15/85	\$30,000	E	
13	Watson	Daniel	12/15/87	\$26,000	E	
14	Williams	Robert	02/15/88	\$20,000	C	
15	Young	Susan	11/01/87	\$26,000	E	
16						
17						
18						
19	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
20					E	
21	AVERAGE SALARY FOR			\$26,143		
22	DEPARTMENT E					
23						

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This function can go in any blank cell in the spreadsheet. In this example the function is in cell c23. The first argument instructs OFIS Spreadsheet to use the entries from the database range a2..e15. The second argument, 3, instructs OFIS Spreadsheet to use the entries in the SALARY field. The third argument defines the Criterion range, and tells OFIS Spreadsheet to use entries from the records matching the specified criterion. In this example, OFIS Spreadsheet only uses entries with the Department Code E.

## **@DAVG**

The @DAVG function calculates the average of the values in the database that are found in the specified field and matching the criterion.

## **@DCOUNT**

The @DCOUNT function counts the nonblank entries in the database found in the specified field and matching the criterion. This function works with label or value entries, because it only counts nonblank entries.

## **@DMAX**

The @DMAX function returns the highest value in the database found in the specified field and matching the criterion. This function does not tell you the cell address of the value.

## **@DMIN**

The @DMIN function returns the lowest value in the database found in the specified field and matching the criterion. This function does not tell you the cell address of the value.

## **@DSTD**

The @DSTD function calculates the standard deviation of the values in the database found in the specified field and matching the criterion. Standard deviation is the square root of the variance or the extent to which each value in the range varies from the mean for that range.

## **@DSUM**

The @DSUM function adds the values in the database found in the specified field and matching the criterion.

## **@DVAR**

The @DVAR function calculates the variance of the values in the database found in the specified field and matching the criterion. The variance is the square of the standard deviation or the degree to which each value in the range varies from the average of all values in the range.

### Table Functions

OFIS Spreadsheet's table functions allow you to search a defined range for a value. There are 10 table functions:

- @CHOOSE
- @COL
- @COLS
- @HLOOKUP
- @INDEX
- @LOOKUP
- @ROW
- @ROWS
- @SORT
- @VLOOKUP

## @CHOOSE

The @CHOOSE function selects an entry from a list of options given within the function. The function format is:

**@CHOOSE**(*offset, option1, option2...optionx*)

The function arguments are:

- **offset**

This identifies the location of the result in the list of options. The first option in the list has an offset of 0, the second has an offset of 1, and so on. If you specify an offset with a value less than 0 or greater than the number of options, ERR displays.

- **option1, option2...optionx**

This is the list OFIS Spreadsheet uses to make the selection. These options can be:

- values
- labels
- cell references
- functions
- formulas

Figure 9-15 shows an example of this function, as follows:

OFIS Spreadsheet reads the offset argument in cell **b4**, which is **3**, locates the option whose position corresponds to that offset, and displays the result, **231**.

Figure 9-15. @CHOOSE Function

b7 @CHOOSE(b4, d5, d6, d7, d8, d9) READY

	a	b	c	d	e	f	g
1	@CHOOSE FUNCTION						
2							
3				OPTIONS			
4	VALUE	3		45			
5				879			
6				561			
7	SELECTION	231		231			
8				789			
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							

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You can use this function to look up strings or labels. You can also use literal values or literal strings instead of cell references as options. When using literal strings, you must enclose them in quotation marks.

### @COL

The @COL function returns the column number of the column containing the function. Column a returns 1, column b returns 2, and so on. You can also use a positive or negative offset. The function format is:

**@COL+*n* or -*n***

This function does not use an argument.

## @COLS

The @COLS function returns the number of columns in a range. The function format is:

**@COLS**(*range*)

This function uses one argument: **Range** specifies an area of the spreadsheet.

## @HLOOKUP

The @HLOOKUP lookup function uses a key to look up an entry in a horizontal table. A horizontal lookup table is a table with more columns than rows. The function format is:

**@HLOOKUP**(*key,table range,offset*)

This function uses three arguments:

- **key**

This specifies the entry OFIS Spreadsheet locates in the table. It can be a value or a string.

- **table range**

This defines the range containing the entries you are using for the look up. It must be more than one row.

- **offset**

This specifies the row in the table containing the result of the function. It must be a positive number and cannot exceed the number of rows in the table range. The first column has an offset of 0, the second column has an offset of 1, and so on.

The lookup table is critical to the successful use of this, and the other lookup functions. The following paragraphs describe lookup tables.

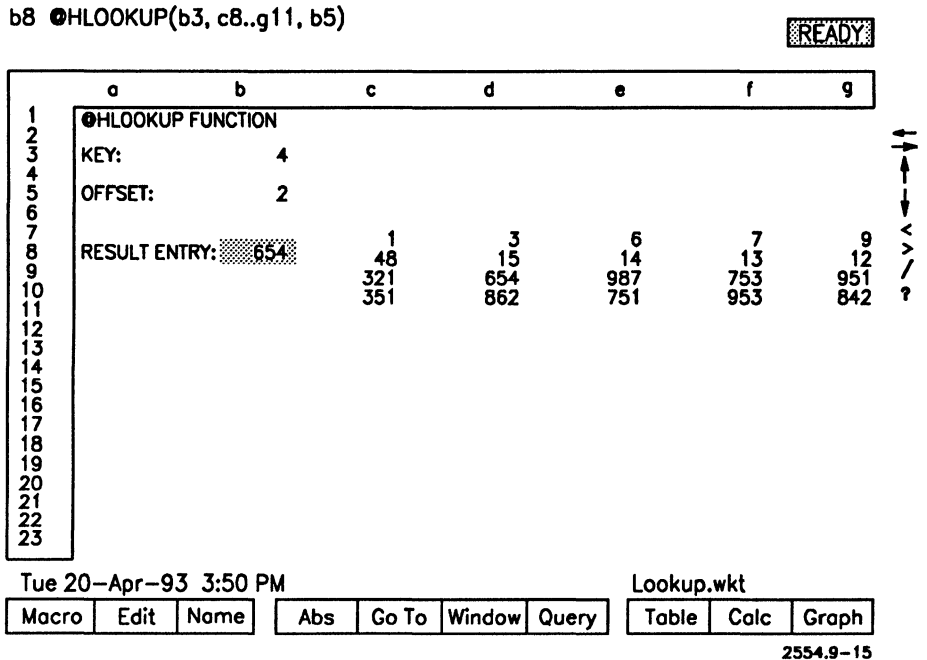
### Lookup Tables

A lookup table is simply a horizontal or vertical table in the spreadsheet, whose location you define in the table range argument. A horizontal table must have more than two rows; there is no limit on the number of columns. A vertical table must have more than two columns; there is no limit on the number of rows. You can have any valid OFIS Spreadsheet entries in the table.

The first row in a horizontal table is known as the index row, and the first column in a vertical table is known as the index column. These are the areas that OFIS Spreadsheet uses to compare with the key entry. The entries in the index row or column can be values or labels, but should not be a combination of each. If you use values in a horizontal table, they should be in ascending order from left to right. In a vertical table, they should be in ascending order from top to bottom. You should avoid duplicate entries.

Figure 9-16 shows a sample lookup table, which explains how OFIS Spreadsheet uses the @HLOOKUP function.

Figure 9-16. @HLOOKUP Function



The lookup table in Figure 9-16 consists of values in the range **c8..g11**. The values in the index row are in ascending order. The key argument, **4**, is in cell **b3**, and the offset argument, **2**, is in cell **b5**. OFIS Spreadsheet uses the key argument to compare with the entries in the index row. It continues comparing until it finds the first value greater than or equal to the key argument. Since the key argument is **4**, the first value meeting this criteria is **6** in cell **e8**.

If the index entry is greater than the key argument, the result is in the column to the left of the column containing the matching index. If the index entry is equal to the key argument, the result is in the same column.

The index in the sample is greater than the key argument, so OFIS Spreadsheet looks for the result column **d**.



OFIS Spreadsheet then uses the offset argument to locate the row containing the result. It counts the first row of the table as 0, the second as 1, and so on. In this example, the offset argument is 2, so the result is in the third row of the table, or row 10 of the spreadsheet. OFIS Spreadsheet displays the result, **654**, in the cell containing the function, **b8**.

### @INDEX

The @INDEX function allows you to select an entry from a range by specifying the column and row locations. The function format is:

**@INDEX**(*table range, column offset, row offset*)

This function uses three arguments:

- **table range**  
This specifies the range of cells containing the entries. It can be a range name or the range coordinates.
- **column offset**  
This specifies the column in the range containing the result. The leftmost column in the table range is 1, the column immediately to the right is 2, and so on. If the table range argument consists of a single column, this argument is not necessary.
- **row offset**  
This specifies the row in the range containing the result. The top row of the table range is 1, the row directly below that is 2, and so on. If the table range argument consists of a single row, this argument is not necessary.

You can use this function to look up strings or values.

## @LOOKUP

The @LOOKUP function uses a numeric key to look up an entry in a table range. The function format is:

**@LOOKUP**(*key value,table range*)

This function uses two arguments:

- key value

This specifies the value OFIS Spreadsheet uses to compare to entries in the range.

- table range

This specifies the range of cells containing the entries.

This function can search for entries in horizontal tables and vertical tables. A vertical table is a table with more rows than columns, and a horizontal table is a table with more columns than rows. The table range definition tells OFIS Spreadsheet the type of table.

If the table is a horizontal table, OFIS Spreadsheet searches each column until it finds the first value less than or equal to the key value. If the table is a vertical table, then OFIS Spreadsheet searches each row until it finds the first value less than or equal to the key value.

## @ROW

The @ROW function returns the row number of the row containing the function. You can also use a positive or negative offset. The function format is:

**@ROW**+*n* or -*n*

This function does not use an argument.

## @ROWS

The @ROWS function returns the number of rows in a range. The function format is:

**@ROWS**(*range*)

This function uses one argument: Range specifies an area of the spreadsheet.

### @SORT

The @SORT function sorts specified entries in ascending order and returns a result corresponding to the value argument. The function format is:

**@SORT(*value, range*)**

This function uses two arguments:

- **value**

This specifies the number OFIS Spreadsheet uses to select the result entry. If the value is 0, then OFIS Spreadsheet returns the lowest value in the specified range. If the value is 1, then OFIS Spreadsheet returns the second lowest value.

- **range**

This specifies the cells containing values that OFIS Spreadsheet sorts in ascending order.

OFIS Spreadsheet assigns a 0 value to label cells and blank cells. OFIS Spreadsheet sorts label cells first.

## @VLOOKUP

The @VLOOKUP function uses a key to look up an entry in a vertical lookup table. A vertical lookup table is a table with more rows than columns. The function format is:

**@VLOOKUP**(*key, table range, offset*)

This function uses three arguments:

- **key**  
This specifies the entry OFIS Spreadsheet locates in the table. It can be a value or a string.
- **table range**  
This defines the range containing the entries you are using for the look up. It must be more than one column.
- **offset**  
This specifies the column in the table containing the result of the function. It must be a positive number and cannot exceed the number of rows in the table range. The first row has an offset of 0, the second row has an offset of 1, and so on.

Refer to the discussion of lookup tables under @HLOOKUP. The concepts are the same for the @VLOOKUP function.

# Logical Functions

OFIS Spreadsheet's logical functions allow you to test for error conditions or perform simple decision-making tasks. There are 10 logical functions:

- @AND
- @FALSE
- @IF
- @ISERR
- @ISNA
- @ISNUMBER
- @ISSTRING
- @NOT
- @OR
- @TRUE

## @AND

The @AND function compares two or more conditions and returns a true (1) or false (0) value. The function format is:

**@AND(*condition 1...condition n*)**

An example of this function is:

**@AND(a2<>700,b2="Sales",c2>900)**

OFIS Spreadsheet reads this as, "If the value in cell a2 is not equal to 700, AND the entry in cell b2 is Sales, AND the value in cell c2 is greater than 900, then the result is true, and 1 is returned in the cell containing the function." If any of the conditions are not true, OFIS Spreadsheet returns 0.

## @FALSE

The @FALSE condition can serve as the false value argument in an @IF condition. If the condition is false, OFIS Spreadsheet returns 0.

## @IF

The @IF condition allows you to test conditions to see if they are true or false. The function format is:

**@IF(*condition, true value, false value*)**

This function uses three arguments:

- condition

This is the logical condition you are comparing to see if it is true or false. A condition can be a value, label, function, or formula. You can test more than one condition at a time.

- true value

This is the value the cell containing the function returns if all of the conditions are true. It can be:

- value
- label
- formula
- function
- cell reference

If you do not specify a value, OFIS Spreadsheet returns 1.

- false value

This is the value the cell containing the function returns if one or more of the conditions are false. It can be:

- value
- label
- formula
- function
- cell reference

If you do not specify a value, OFIS Spreadsheet returns 0.

An @IF test typically uses a comparison operator. Table 9-2 shows the comparison operators available in OFIS Spreadsheet.

**Table 9-2. Comparison Operators**

<b>Operator</b>	<b>Function</b>
>	greater than
<	less than
=	equal to
>=	greater than or equal to
<=	less than or equal to
<>	not equal to

In addition to the comparison operators shown in Table 9-2, OFIS Spreadsheet offers three additional operators that you can use to join simple conditions, turning them into compound conditions. You can then use the @IF function to test the compound conditions to see if they are true or false. These operators are:

- #AND#
- #OR#
- #NOT#

The #AND# operator joins two conditions. To get a true value result, both conditions must test true. The #OR# operator also joins two conditions, but to get a true value result, only one condition needs to test true. The #NOT# operator serves to negate the condition it prefaces.

Examples of each of these operators and how OFIS Spreadsheet reads them are:

**@IF(a5=100#AND#a7=1,1,0)**

If cell a5 equals 100, AND cell a7 equals 1, then true, display 1; if not, false, display 0.

**@IF(a5=100#OR#a7=1,1,0)**

If cell a5 equals 100, OR cell a7 equals 1, then true, display 1; if not, false, display 0.

**@IF(#NOT#a5=100,1,0)**

If cell a5 does not equal 100, then true, display 1; if it does equal 100, then false, display 0.

**@ISERR**

The @ISERR function tests a cell for the presence of the ERR value. OFIS Spreadsheet displays ERR whenever a condition exists that it is unable to evaluate or compute. The function format is:

**@ISERR(*cell address*)**

This function uses one argument: Cell address refers to the location of the cell you are testing for the presence of ERR.

When this function tests true, OFIS Spreadsheet returns 1. If it tests false, it returns 0.

You can test more than one cell at a time by combining this function with another function that groups the cells together. For example:

**@ISERR(@SUM(a1..d5))**

OFIS Spreadsheet returns a 1 if any cell in the defined range contains the ERR value.

**@ISNA**

The @ISNA function tests a cell for the presence of the NA (not applicable) value. The NA value results from using the @NA function. The function format is:

**@ISNA(*cell address*)**

This function uses one argument: Cell address refers to the location of the cell you are testing for the presence of NA.

When this function tests true, OFIS Spreadsheet returns 1. If it tests false, it returns 0.



### @ISNUMBER

The @ISNUMBER function tests to see if a cell has a value entry. The function format is:

**@ISNUMBER**(*cell address*)

This function uses one argument: Cell address is the address of the cell you want to test for a value entry.

If the cell this function is testing has a value entry, then OFIS Spreadsheet returns 1 for true; if it does not contain a value entry, then it returns 0 for false.

### @ISSTRING

The @ISSTRING function tests to see if a cell has a label entry. The function format is:

**@ISSTRING**(*cell address*)

This function uses one argument: Cell address is the address of the cell you want to test for a label entry.

If the cell has a label entry, then OFIS Spreadsheet returns 1 for true; if it does not contain a label entry, then it returns 0 for false.

### @NOT

The @NOT function negates the condition it prefaces. The function format is:

**@NOT**(*cell address*)

This function uses one argument: Cell address is the address of the cell you want to test.

If the condition is true, the OFIS Spreadsheet returns 0 for false; if it is false, it returns 1 for true. For example:

**@NOT(a5=1000)**

OFIS Spreadsheet returns 0 if a5 equals 1000. If it does not equal 1000, it returns 1 for true.

### **@OR**

The @OR function compares a list of values or labels. The function format is:

**@OR**(*conditions*)

This function uses one argument: Conditions specify the comparisons you want OFIS Spreadsheet to make.

If any of the conditions test true, OFIS Spreadsheet returns 1; if all test false, it returns 0.

### **@TRUE**

The @TRUE function can serve as the true value argument in an @IF condition. If the condition is true, OFIS Spreadsheet returns 1.

### Date and Time Functions

OFIS Spreadsheet keeps track of the time of day and the current date. You can use this feature to date your spreadsheets, compute date and time arithmetic, and for any other functions you want to perform involving date or time values. There are 11 date and time functions:

- @DATE
- @DAY
- @MONTH
- @YEAR
- @DATEVALUE
- @TIME
- @HOUR
- @MINUTE
- @SECOND
- @TIMEVALUE
- @NOW

## Using Date Functions

OFIS Spreadsheet measures dates by single days, representing the date by integer values unique for each date. The integer representing a date is known as a serial date value. OFIS Spreadsheet calculates this serial date value by computing the number of days between December 31, 1899, and the specified date.

For example, the serial date value for January 1, 1900, is 1 because between December 31, 1899, and January 1, 1900, there is only 1 day. The serial date value for January 1, 1952, is 18994 because that is how many days there are between that date and December 31, 1899.

As you can see, it is not easy to recognize a date by looking at the serial date value. For this reason, OFIS Spreadsheet gives you a way to format dates in a form that you can easily recognize. For detailed information on how to format dates, refer to Section 4, “Formatting Cell Data for Display.”

### @DATE

The @DATE function generates a serial date value for a specified date and checks that the specified date is a valid date. The function format is:

**@DATE**(*year, month, day*)

This function uses three arguments:

- year

This specifies the year of the date you are entering. It can be any number from 0 (1900) to 199 (2099), or it can be a reference to a cell containing a value, to a cell containing a formula, or to a function returning a value.

- **month**

This specifies the month of the date you are entering. It can be any number from 1 (January) to 12 (December), or it can be a reference to a cell containing a value, to a cell containing a formula, or to a function returning a value.

- **day**

This specifies the day of the date you are entering. It can be any number from 1 to 31, or it can be a reference to a cell containing a value, to a cell containing a formula, or to a function returning a value. OFIS Spreadsheet displays ERR if you exceed the number of days in the month.

Figure 9-17 shows an example of a serial date value for the date January 1, 1952.

This function works with dates from January 1, 1900 to December 31, 2099. If you try to enter a date outside of this range, OFIS Spreadsheet displays ERR.

Figure 9-17. @DATE Function

c5 @DATE(52, 1, 1.) READY

	a	b	c	d	e	f	g	h
1	@DATE FUNCTION							
2								
3								
4								
5	SERIAL DATE VALUE		18994					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
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## @DAY

The @DAY function returns the day of the month from a serial date value. The function format is:

**@DAY**(*serial date value*)

This function uses one argument: Serial date value is the number OFIS Spreadsheet uses to keep track of a date.

This function always returns a value from 1 to 31.

### @MONTH

The @MONTH function returns the month from a serial date value. The function format is:

**@MONTH**(*serial date value*)

This function uses one argument: Serial date value is the number OFIS Spreadsheet uses to keep track of a date.

This function always returns a value from 1 to 12.

### @YEAR

The @YEAR function returns the year from a serial date value. The function format is:

**@YEAR**(*serial date value*)

This function uses one argument: Serial date value is the number OFIS Spreadsheet uses to keep track of a date.

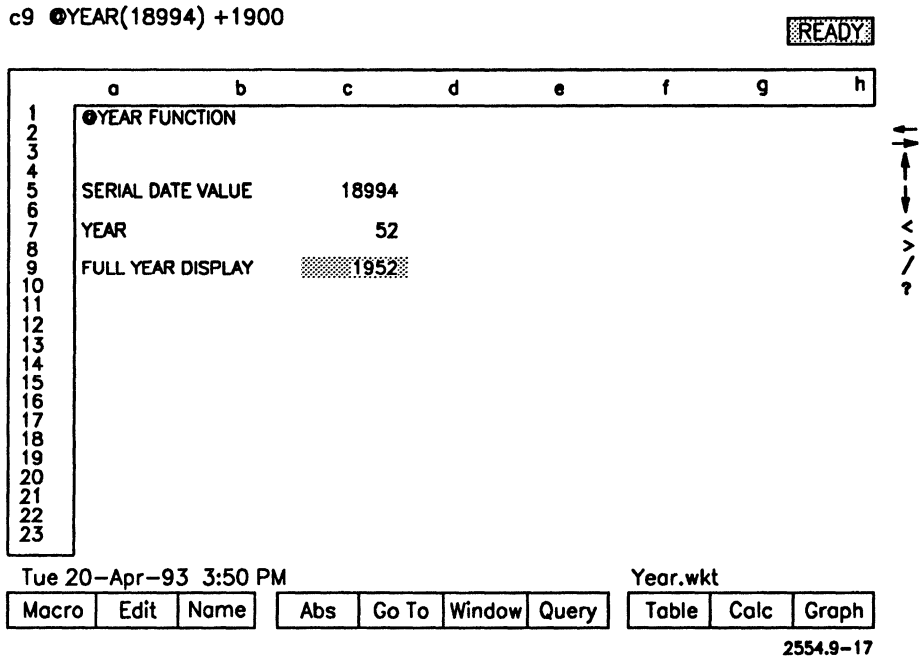
This function always returns a value from 0 to 199.

To display the entire year, you use the following formula:

**@YEAR**(*serial date value*)+1900

Figure 9-18 shows an example displaying the entire year.

Figure 9-18. @YEAR Function



## @DATEVALUE

The @DATEVALUE function converts a date label entry into that date's serial date value. The function format is:

**@DATEVALUE**(*date label*)

This function uses one argument: Date label is either a reference to a cell containing a date label, or the literal date label. If you are using a literal date label, you must enclose it in quotation marks.

The date label reference must be a valid OFIS Spreadsheet date format. If it is not, OFIS Spreadsheet displays ERR.

Figure 9-19 shows examples of this function.



When you have an incomplete date OFIS Spreadsheet makes an assumption concerning the missing component. For example, if the day is missing, then it assumes it is the first day of the month.

Figure 9-19. @DATEVALUE Function

b6 [W17]@DATEVALUE(a6) READY

	a	b	c	d	e	f
1	@DATEVALUE FUNCTION					
2						
3						
4	DATE LABEL	SERIAL	DATE	VALUE		
5						
6	01-Jul-93			33420		
7						
8	01-Jul			34151		
9						
10	Jul-93			33420		
11						
12	01/07/93			33245		
13						
14	01/07			33976		
15						
16	July 1, 1993			ERR		
17						
18						
19						
20						
21						
22						
23						

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## Date Mathematics

By keeping track of dates as serial date values, OFIS Spreadsheet gives you the ability to perform mathematical functions using these values. You can use OFIS Spreadsheet mathematical operators or mathematical functions using the serial date value. For detailed information on how to use mathematical operators, refer to Section 3, “Entering and Editing Data.”

Some examples of how you can use date arithmetic are:

- You can subtract or add dates.
- You can calculate the number of weeks between dates.
- You can determine the exact day a future event is to happen.

## Using Time Functions

OFIS Spreadsheet keeps track of the time of day by using midnight as its reference point. It represents time as a fraction value, using the specified time’s distance from midnight to determine the time. For example, midnight is 0.00, 6 am is 0.25, noon is 0.5, and 6 pm is 0.75. This fraction value is known as a time value.

It can be difficult to figure out what time it is by looking at the time value, so OFIS Spreadsheet gives you the ability to format the time in a more recognizable fashion. For detailed information on how to format time, refer to Section 4, “Formatting Cell Data for Display.”

### @TIME

The @TIME function generates a time value for a specified time and checks that the specified time is a valid time. The function format is:

**@TIME(*hours,minutes,seconds*)**

This function uses three arguments:

- hours

This specifies the hour of the day you are entering. It can be any number from 0 (midnight) to 23 (11 pm), or it can be a reference to a cell containing a value, to a cell containing a formula, or to a function returning a value.

- minutes

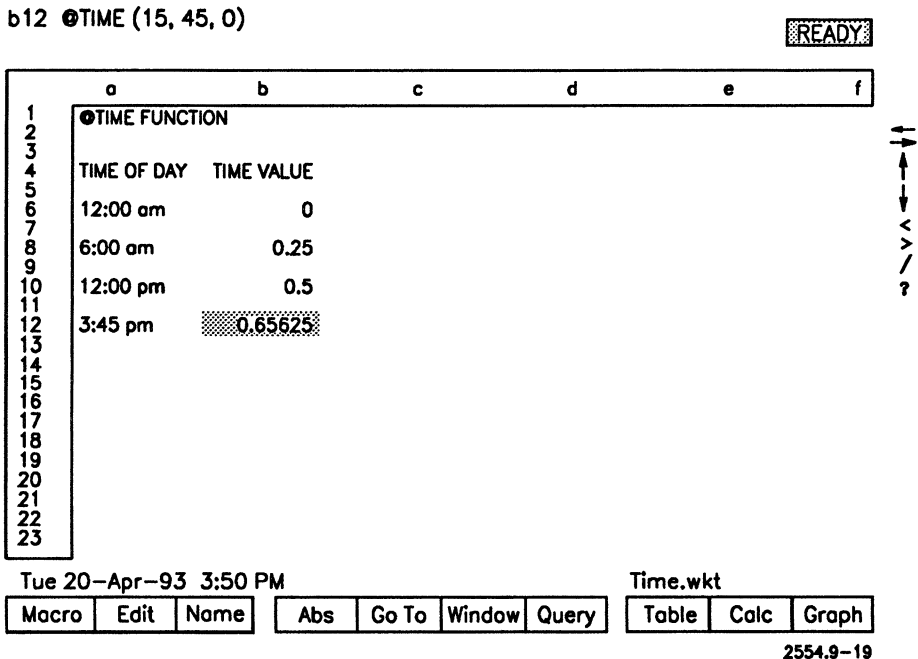
This specifies the minutes you are entering. It can be any number from 0 to 59, or it can be a reference to a cell containing a value, to a cell containing a formula, or to a function returning a value.

- seconds

This specifies the seconds you are entering. It can be any number from 0 to 59, or it can be a reference to a cell containing a value, to a cell containing a formula, or to a function returning a value.

Figure 9-20 shows examples of this function.

Figure 9-20. @TIME Function



## @HOUR

The @HOUR function returns the hour from the time value. The function format is:

**@HOUR**(*time value*)

This function uses one argument: Time value is the number OFIS Spreadsheet uses to keep track of the time.

This function always returns a value from 0 to 23.

## @MINUTE

The @MINUTE function returns the minutes from the time value. The function format is:

**@MINUTE**(*time value*)

This function uses one argument: Time value is the number OFIS Spreadsheet uses to keep track of the time.

This function always returns a value from 0 to 59.

## @SECOND

The @SECOND function returns the seconds from the time value. The function format is:

**@SECOND**(*time value*)

This function uses one argument: Time value is the number OFIS Spreadsheet uses to keep track of the time.

This function always returns a value from 0 to 59.

## @TIMEVALUE

The @TIMEVALUE function converts a time label entry into that time's time value. The function format is:

**@TIMEVALUE**(*time label*)

This function uses one argument: Time label is either a reference to a cell containing a time label, or the literal time label. If you are using a literal time label, you must enclose it in quotation marks.

# OFIS Spreadsheet Functions

The time label reference must be a valid OFIS Spreadsheet time format. If is not, OFIS Spreadsheet displays ERR.

Figure 9-21 shows examples of this function.

Figure 9-21. @TIMEVALUE Function

b6 @TIMEVALUE(a6) READY

	a	b	c	d	e	f	g	h	i
1	@TIMEVALUE FUNCTION								
2									
3									
4	TIME OF DAY	TIME VALUE							
5	5:47:15 PM	0.741146							
6	5:47 PM	0.740972							
7	17:47:15	0.741146							
8	17:47	0.740972							
9	6 AM	ERR							
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

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## **@NOW**

The @NOW function returns the current date and time, in serial date value and time value format. The function format is:

### **@NOW**

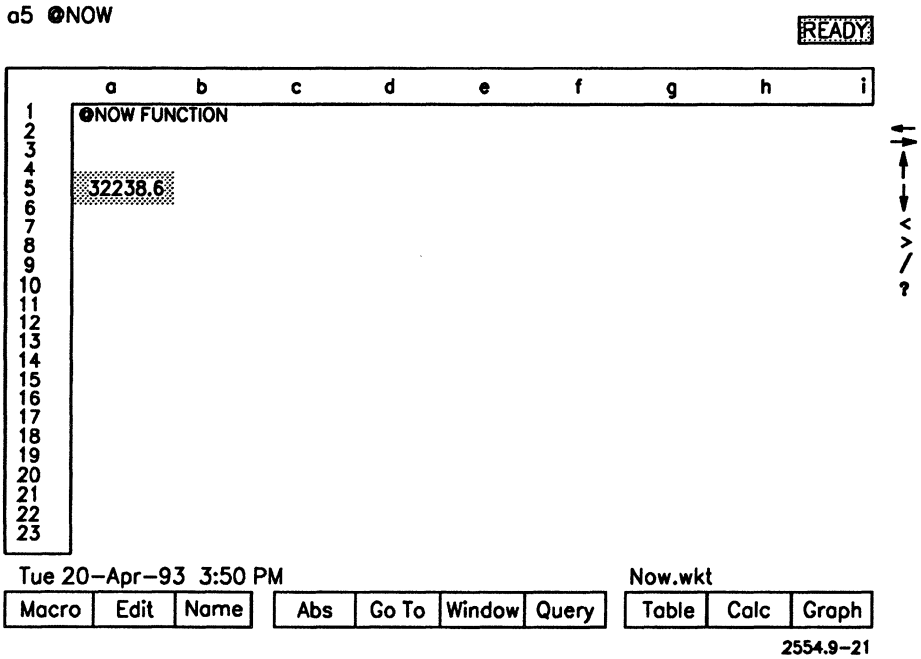
This function uses no arguments.

OFIS Spreadsheet uses your computer system's clock to obtain the current date and time. Figure 9-22 shows an example of this function.

This function displays the current date and time as a decimal value. The integer portion of the value is the serial date value, and the decimal portion of the value is the time value.

OFIS Spreadsheet updates this value every time the spreadsheet recalculates. You can make the value permanent by using the Range Value option. For detailed information on how to use the Range Value option, refer to Section 6.

Figure 9-22. @NOW Function



## Trigonometric Functions

OFIS Spreadsheet's trigonometric functions allow you to compute common trigonometric values, which you can use in scientific, manufacturing, or engineering applications. There are 11 trigonometric functions:

- @ACOS
- @ASIN
- @ATAN
- @ATAN2
- @COS
- @EXP
- @LN
- @LOG
- @PI
- @SIN
- @TAN

OFIS Spreadsheet expresses all angles as radians. This is a unit of measurement that equates the radius and arc length. If you need to convert an angle from degrees to radians, you can do so by multiplying the number of degrees by @PI/180.

### @ACOS

The @ACOS function returns the arc cosine of the angle specified in the argument. The function format is:

**@ACOS**(*value*)

This function uses one argument: Value specifies the angle in radians.

If the value is between -1 and +1, the result is between 0 and pi. If the value is not between -1 and +1, OFIS Spreadsheet displays ERR.



### @ASIN

The @ASIN function returns the arc sine of the angle specified in the argument. The function format is:

**@ASIN(*value*)**

This function uses one argument: Value specifies the angle in radians.

If the value is between -1 and +1, the result is between  $-\pi/2$  and  $+\pi/2$ . If the value is not between -1 and +1, OFIS Spreadsheet displays ERR.

### @ATAN

The @ATAN function returns the arc tangent of the angle specified in the argument. The function format is:

**@ATAN(*value*)**

This function uses one argument: Value specifies the angle in radians. The value must be stated in radians, not degrees. To convert from degrees to radians, multiply the number of degrees by @PI/180.

The result is always between  $-\pi/2$  and  $+\pi/2$ .

### @ATAN2

The @ATAN2 function computes a 4-quadrant arctangent, and returns the radian measure of an angle. The function format is:

**@ATAN(*x-coordinate*,*y-coordinate*)**

This function uses two arguments: x-coordinate, y-coordinate specify the absolute position of a point in terms of its relationship to the X and Y axis.

This function considers the signs of the x and y coordinates separate, so it takes on values for all quadrants from  $-\pi$  to  $+\pi$ .

## @COS

The @COS function returns the cosine of an angle. The function format is:

**@COS(*value*)**

This function uses one argument: Value specifies the measurement of an angle. The value must be stated in radians, not degrees. To convert from degrees to radians, multiply the number of degrees by @PI/180.

## @EXP

The @EXP function is the inverse of the @LN function. It raises the constant e to the power of the value specified in the argument. The function format is:

**@EXP(*value*)**

The value must be equal to or less than 230. If it is greater than 230, OFIS Spreadsheet displays ERR instead of a result. The constant e is equal to 2.718281828.

## @LN

The @LN function calculates the natural logarithm of a value. The natural, or base e, logarithm of a value is the power of the constant e producing the original value. The constant e is equal to 2.718281828. The function format is:

**@LN(*value*)**

This function uses one argument: Value specifies a number greater than 0. If it is less than 0, OFIS Spreadsheet displays ERR.

## @LOG

The @LOG function calculates the base 10 logarithm of a value. The base 10 logarithm is the power of 10 equaling the value. For example, the base 10 logarithm of 1000 is 3,  $10^3$  equals 1000. The function format is:

**@LOG(*value*)**

This function uses one argument: Value specifies a number greater than 0. If it is less than 0, OFIS Spreadsheet displays ERR.

### **@PI**

The function @PI returns the value of the constant pi, 3.14159265358979.  
The function format is:

**@PI**

This function uses no arguments.

### **@SIN**

The @SIN function returns the sine of an angle. The function format is:

**@SIN(*value*)**

This function uses one argument: Value specifies the measurement of an angle. The value must be stated in radians, not degrees. To convert from degrees to radians, multiply the number of degrees by @PI/180.

### **@TAN**

The @TAN returns the tangent of an angle. The function format is:

**@TAN(*value*)**

This function uses one argument: Value specifies the measurement of an angle. The value must be stated in radians, not degrees. To convert from degrees to radians, multiply the number of degrees by @PI/180.

## String Functions

OFIS Spreadsheet's string functions operate on string entries or convert value entries to string entries. There are 21 string functions:

- **@BLANK**
- **@CHAR**
- **@CODE**
- **@DOLLAR**
- **@EXACT**
- **@FIND**
- **@FIXED**
- **@LEFT**
- **@LEN**
- **@LOWER**
- **@MID**
- **@N**
- **@PROPER**
- **@REPLACE**
- **@REPT**
- **@RIGHT**
- **@S**
- **@STRING**
- **@TRIM**
- **@UPPER**
- **@VALUE**

### **@BLANK**

The @BLANK function returns the number of blank cells in a range. The function format is:

**@BLANK**(*range*)

This function uses one argument: Range specifies the area of the spreadsheet containing the cells you want to check.

### **@CHAR**

The @CHAR function returns the ASCII (American Standard Code for Information Interchange) character of a number. The function format is:

**@CHAR**(*value*)

This function uses one argument: Value specifies an integer value. This integer value must be from 30 to 255.

### **@CODE**

The @CODE function returns the number of an ASCII (American Standard Code for Information Interchange) character. The function format is:

**@CODE**(*character*)

This function uses one argument: Character specifies an ASCII character, and you must enclose it in quotations.

### **@DOLLAR**

The @DOLLAR function converts a value to a text string. The text string displays in currency format with two decimal places. The function format is:

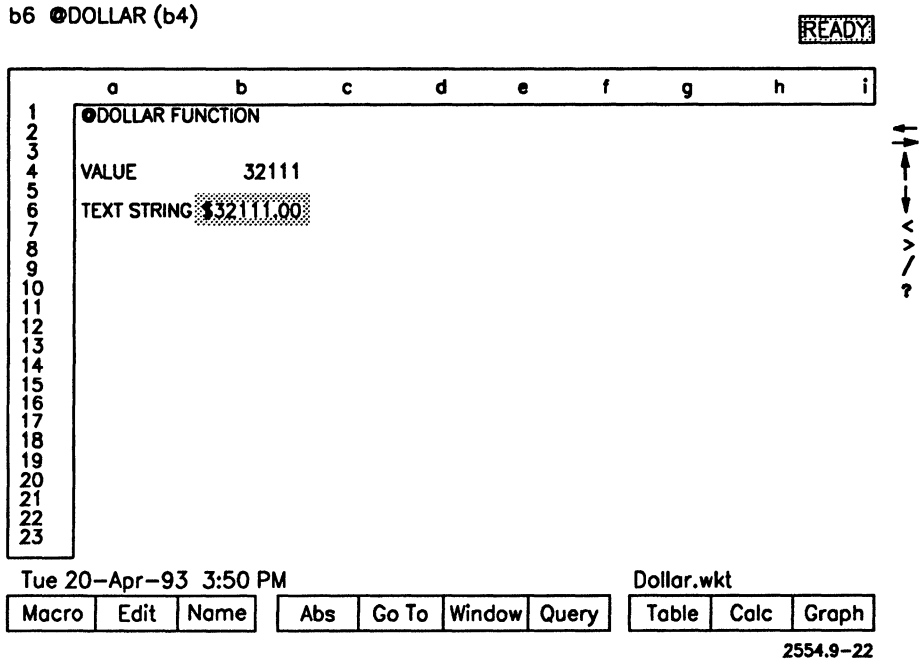
**@DOLLAR**(*value*)

This function uses one argument: Value specifies the number OFIS Spreadsheet is converting.

If the value is a negative number, OFIS Spreadsheet encloses the result in parentheses.

Figure 9-23 shows an example of the @DOLLAR function.

Figure 9-23. @DOLLAR Function



## @EXACT

The @EXACT function compares one string to another. If the strings are identical, including capitalization, OFIS Spreadsheet displays 1; if they are not identical, it displays 0. The function format is:

**@EXACT(string1,string2)**

This function uses two arguments: String1 and string2 specify the strings you want to compare. These can be cell references or literal strings. If they are literal strings, you must enclose them in quotation marks.

### @FIND

The @FIND function allows you to locate a substring within a string. The function format is:

**@FIND(*substring, string, offset*)**

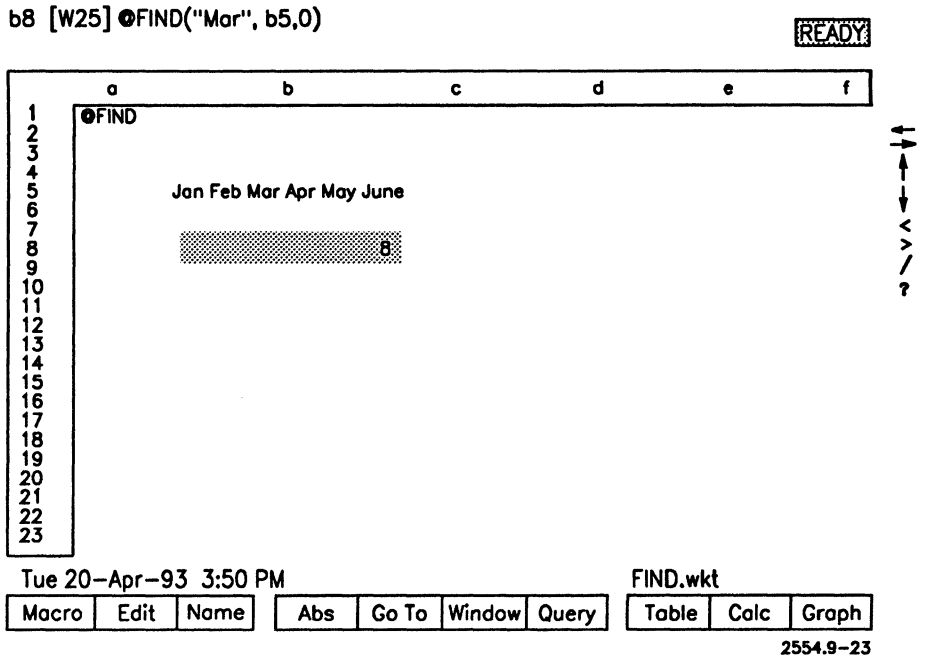
This function uses three arguments:

- **substring**  
This specifies the group of characters you are trying to locate. If this is a literal string, you must enclose it in quotation marks.
- **string**  
This specifies the group of characters you are searching.
- **offset**  
This specifies the position where you want OFIS Spreadsheet to begin searching. The first character of the string has an offset of 0.

Figure 9-24 shows an example of this function.

The result is a number indicating the position of the substring within the string, starting at the first position of the string or offset 0. If there is no match, OFIS Spreadsheet displays ERR.

Figure 9-24. @FIND Function



## @FIXED

The @FIXED function changes a value entry to a string entry, with a specified number of decimal places. The function format is:

**@FIXED**(value,decimal)

This function uses two arguments:

- value  
This is a cell address containing a value entry or a number.
- decimal  
This is the number of decimal places the string entry is to have.

Once OFIS Spreadsheet changes the value to a string entry, the function @STRING, the value, and decimal specification appear in the command panel next to the cell address.



### @LEFT

The @LEFT function extracts a specified number of characters from a string, starting at the left edge of the string. The function format is:

**@LEFT(*string*,*number of characters*)**

This function uses two arguments:

- **string**  
This specifies the text from which OFIS Spreadsheet is extracting the characters.
- **number of characters**  
This specifies how many characters OFIS Spreadsheet extracts from the string. If you specify more characters than are actually in the string, OFIS Spreadsheet returns the entire string.

### @LEN

The @LEN function returns the number of characters in a string. The function format is:

**@LEN(*string*)**

This function uses one argument: **String** specifies the text whose characters OFIS Spreadsheet is counting. If this is a literal string, you must enclose it in quotation marks.

### @LOWER

The @LOWER function converts the text in a string to all lowercase characters. The function format is:

**@LOWER(*string*)**

This function uses one argument: **String** specifies the text whose characters OFIS Spreadsheet is making lowercase.

## @MID

The @MID function returns a substring from a string. The function format is:

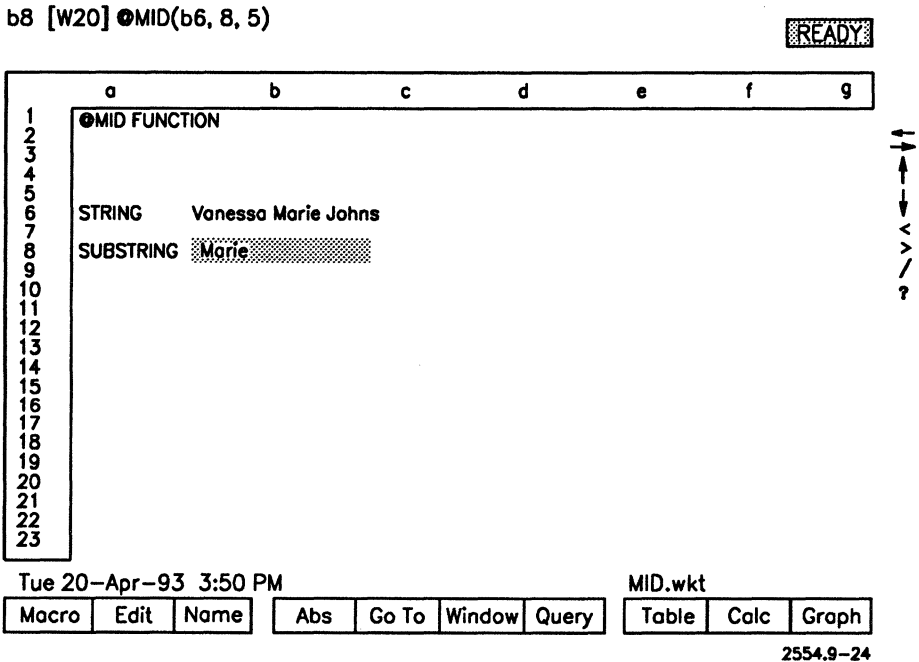
**@MID**(*string, starting position, number of characters*)

This function uses three arguments:

- **string**  
This specifies the text from which OFIS Spreadsheet extracts the substring.
- **starting position**  
This is the position of the first character you want to extract. The first character in the string has an offset of 0.
- **number of characters**  
This specifies the total number of characters you want to extract.

Figure 9-25 shows an example of the @MID function.

Figure 9-25. @MID Function



**@N**

The @N function returns the contents of the upper left cell in a specified range. The function format is:

**@N(range)**

This function uses one argument: Range specifies the area of the spreadsheet OFIS Spreadsheet is using for this function.

If the cell in the upper left corner of the specified range contains a value, OFIS Spreadsheet returns that value. If it contains a string, then it returns 0.

## @PROPER

The @PROPER function converts the first letter in a string and the first letter after each space in the string to an uppercase letter. The function format is:

**@PROPER**(*string*)

This function uses one argument: String specifies the text OFIS Spreadsheet is converting to uppercase.

## @REPLACE

The @REPLACE function allows you to replace characters in a string with other characters. The function format is:

**@REPLACE**(*string, starting position, number of characters to replace, new string*)

This function uses four arguments:

- **string**  
This specifies the original text string in which you are replacing characters.
- **starting position**  
This specifies the first character you want to replace. The first character in the string is 0.
- **number of characters to replace**  
This specifies the total number of characters OFIS Spreadsheet replaces.
- **new string**  
This specifies the replacement characters.

### @REPT

The @REPT function repeats a string of characters as many times as you specify. The function format is:

**@REPT**(*string, times to repeat*)

This function uses two arguments:

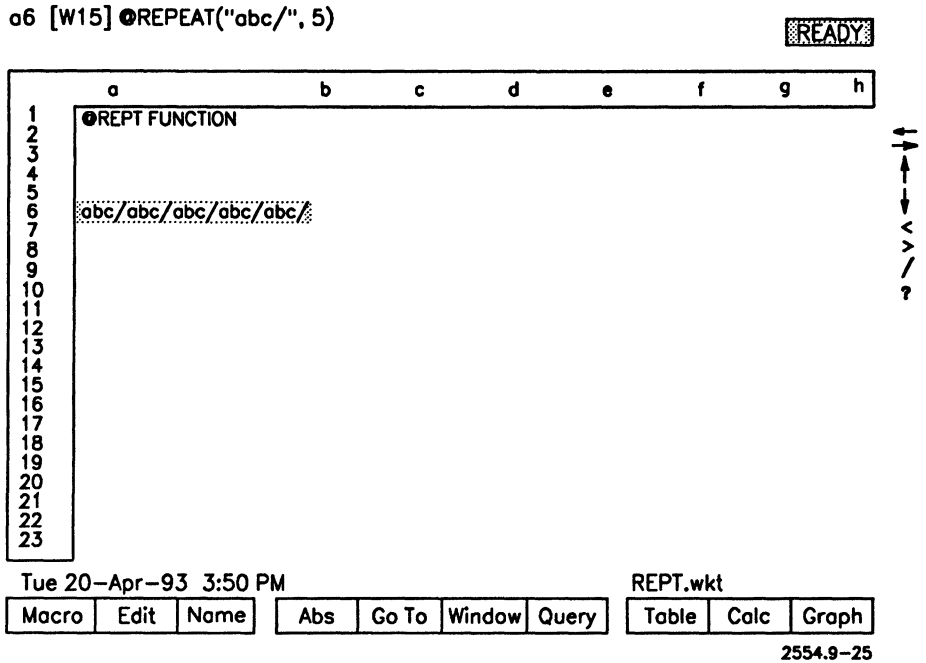
- **string**  
This specifies the characters you want to repeat. If this is a literal string, you must enclose it in quotation marks.
- **times to repeat**  
This specifies the number of times the characters in the string are to repeat.

You can use a string with two or more characters. However, this function repeats each character the number of times you specify in the argument. OFIS Spreadsheet does not restrict the output to the length of the cell containing the formula.

Figure 9-26 shows an example of this function.

In Figure 9-26 notice that the times to repeat argument is 5; that is how many times OFIS Spreadsheet repeats each character.

Figure 9-26. @REPT Function



## @RIGHT

The @RIGHT function extracts a specified number of characters from a string, starting at the right edge of the string. The function format is:

**@RIGHT(string, number of characters)**

This function uses two arguments:

- **string**  
This specifies the text from which OFIS Spreadsheet is extracting the characters.
- **number of characters**  
This specifies how many characters OFIS Spreadsheet extracts from the string. If you specify more characters than are actually in the string, OFIS Spreadsheet returns the entire string.

### @S

The @S function returns the contents of the upper left cell in a specified range. The function format is:

**@S(*range*)**

This function uses one argument: **Range** specifies the area of the spreadsheet OFIS Spreadsheet is using for this function.

If the cell in the upper left corner of the specified range contains a string, OFIS Spreadsheet returns the string. If it contains a value, then it returns a blank cell.

### @STRING

The @STRING function changes a value entry to a string entry. The function format is:

**@STRING(*value, decimal*)**

This function uses two arguments:

- **value**

This specifies the numerical entry you want to change to a string entry.

- **decimal**

This specifies how many decimal places you want in the string entry.

### @TRIM

The @TRIM function removes all leading and trailing spaces from a string entry. The function format is:

**@TRIM(*string*)**

This function uses one argument: **String** specifies the text entry.

## @UPPER

The @UPPER function converts the text in a string to all uppercase characters. The function format is:

**@UPPER**(*string*)

This function uses one argument: String specifies the text whose characters OFIS Spreadsheet is making uppercase.

## @VALUE

The @VALUE function changes a numeric string to a value entry. The function format is:

**@VALUE**(*numeric string*)

This function uses one argument: Numeric string specifies a string entry.

The numeric string cannot contain text. If it does, OFIS Spreadsheet displays ERR.

## Special Functions

OFIS Spreadsheet has some functions that do not exactly fit in any of the previous categories. These functions are known as special functions. There are five special functions:

- @@
- @CELL
- @CELLPOINTER
- @ERR
- @NA



### @@

The @@ function allows you to make an indirect reference to another cell. The function format is:

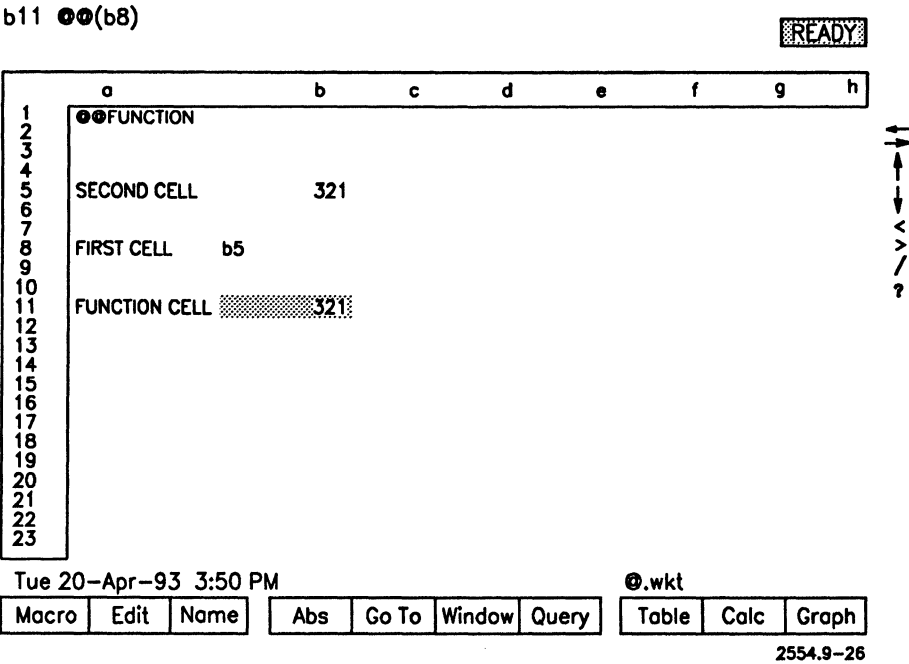
**@@(*cell reference*)**

This function uses one argument: Cell reference is the address or name of a cell. This is the first cell. It contains a string entry that looks like a cell address. This cell address is for the second cell. It is the contents of the second cell that OFIS Spreadsheet returns.

Figure 9-27 shows an example of this function.

Cell **b11** contains the function that refers to cell **b8**. Cell **b8** contains the label 'b5'. Cell **b5** contains the value **321**. It is this value that the function returns.

Figure 9-27. @@ Function



### @CELL

The @CELL function returns status information about a specified cell. The function format is:

**@CELL(attribute, cell address)**

This function uses two arguments:

- attribute
  - This is a string specifying the status information. Table 9-3 shows the available attributes and the type of information they return. You must enclose the attribute in quotation marks.
- cell address
  - This specifies the cell for which OFIS Spreadsheet is obtaining status information.

**Table 9-3. Cell Attributes**

<b>Attribute</b>	<b>Results</b>
address	The absolute address of the designated cell
col	A number between 1 and 512, representing the column number of the designated cell
contents	The contents of the designated cell
format	The format attribute of the designated cell
prefix	The label prefix of the designated cell is a label cell
protect	The protection status of the designated cell; 1 for protected, 0 for unprotected
row	A number between 1 and 8192, representing the row number of the designated cell
type	The type of entry in the designated cell; l for label, v for value, b for blank
width	The width of the designated cell

### **@CELLPOINTER**

The @CELLPOINTER function returns status information about the cell at the cell pointer location. The function format is:

**@CELLPOINTER**(*attribute*)

This function uses one argument: Attribute is a string specifying the status information. Table 9-3 shows the available attributes and the type of information they return. You must enclose the attribute in quotation marks.

## **@ERR**

The **@ERR** function allows you to place the value **ERR** in a blank cell. The function format is:

### **@ERR**

This function uses no arguments.

Any cells referring to a cell with the **ERR** value return the result **ERR**.

## **@NA**

The **@NA** function allows you to place the value **NA** in a blank cell. This value indicates not applicable. The function format is:

### **@NA**

This function uses no arguments.

You can use this function to flag cells that need information that may not yet be available. Any cells referring to a cell with the **NA** value return the result **ERR**.



# Section 10

## File Management

OFIS Spreadsheet handles each of your spreadsheets as individual files. This section describes file options that:

- Save spreadsheets, both manually and automatically
- Retrieve spreadsheets
- Extract spreadsheet information
- Combine data from different spreadsheets
- Erase spreadsheet files
- List spreadsheet file names
- Import spreadsheet information
- Specify a directory

### Saving Spreadsheet Files

While you are creating a spreadsheet, OFIS Spreadsheet holds the spreadsheet in the system's memory, which is temporary; if the power to the system is turned off or you exit OFIS Spreadsheet without saving your worksheet, the data in it is lost. To keep your spreadsheet, you must save it to the system's hard disk.

You can protect yourself from losing data by saving your spreadsheet at intervals while you work on it. You can either save it yourself manually at intervals during your session, or you can use OFIS Spreadsheet's AutoSave feature to save it for you automatically. For more information on AutoSave, refer to "Using AutoSave" in Section 5.

### Saving a Spreadsheet for the First Time

When you are ready to save your new spreadsheet, you do so by using the File Save option. At this time, you name the spreadsheet. You can give the spreadsheet a new name or use an existing name. However, if you use an existing name, OFIS Spreadsheet overwrites the existing spreadsheet file with the new spreadsheet file.

The spreadsheet name can be up to 46 characters. You can use:

- Uppercase letters
- Lowercase letters
- Numbers
- The period (.) character
- The underline ( \_ ) character
- Virgules (/) and backslashes (\)

You cannot use the suffixes *-old* or *-new*.

To save a new spreadsheet file, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/FileSave**

A prompt appears asking for the filename.

3. Enter the filename.
4. Press **GO**.

OFIS Spreadsheet saves the spreadsheet file under the specified name. While it is executing the File Save option, the Mode Indicator flashes **WAIT**. When OFIS Spreadsheet completes the File Save option, the spreadsheet returns to Ready mode. The current spreadsheet continues to display.

## Saving an Existing Spreadsheet File

When you select the File Save option to save an existing spreadsheet file, OFIS Spreadsheet automatically assumes you are saving the file under the same name. However, you can save the new version under a different filename. You then have two versions of the spreadsheet, the original version and the new version.

If you save the spreadsheet file under a filename that already exists, you receive a prompt warning you that the original spreadsheet file could be overwritten, and asking you to replace that original file.

To save an existing spreadsheet file, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/FileSave**

3. Press **RETURN** or **GO**.

A prompt appears asking for the filename. Following the prompt is the current filename.

4. Choose one of the following:
  - Press **RETURN** or **GO** to accept.
  - Enter a different filename; then press **RETURN** or **GO**.

OFIS Spreadsheet saves the Spreadsheet file under the specified name. While it is executing the File Save option, the Mode Indicator flashes **WAIT**. When OFIS Spreadsheet completes the File Save option, the spreadsheet returns to Ready mode. The current spreadsheet continues to display.



### Backup (-old) Files

When you save a spreadsheet file, OFIS Spreadsheet automatically saves a backup copy of it as it existed after it was last saved. OFIS Spreadsheet gives the backup copy the same name as the working copy you have edited, with the additional suffix of *-old*. When you view a list of spreadsheet files in OFIS Spreadsheet, it does not list the backup copies. You cannot open a backup copy of a spreadsheet file, but should the need arise, you can replace a working copy of a file with its backup, and then open the replacement.

For example, consider the following scenario:

1. You start OFIS Spreadsheet and open an existing spreadsheet file named *Budget.wkt*, and make some changes to it. Then you save it and close it. At this point:
  - There are two files, *Budget.wkt* and *Budget.wkt-old*.
  - *Budget.wkt* contains all the changes you made.
  - *Budget.wkt-old* duplicates the data *Budget.wkt* contained when you first opened it, and before you last saved it.
2. You decide that you do not want the current version of *Budget.wkt* (the version with your changes); you want the original version you opened. To replace the current version with the backup (*-old*) file, you:
  - a. Go to the Executive command line, type **Rename**, and press **RETURN**.
  - b. The **Rename** command form displays. You fill it out as follows, and press **GO**:

```
Rename
File from      Budget .wkt-old
File to        Budget .wkt
[Overwrite ok?] Yes
[Confirm each?]
```
  - c. The Executive overwrites the current version with the backup (*-old*) version.

For more information on the Executive **Rename** command, you can refer to the *CTOS Executive User's Guide* or the *CTOS Executive Reference Manual*.

## Retrieving a Spreadsheet

You can retrieve any previously saved spreadsheet files by issuing the File Retrieve option. When you retrieve a spreadsheet, OFIS Spreadsheet overwrites the current spreadsheet, without saving the current spreadsheet. To save the current spreadsheet, you do so before issuing the File Retrieve option. If you do not, any changes made to the current spreadsheet since it was last saved are lost when the new spreadsheet displays.

If you have a long list of files, OFIS Spreadsheet displays a counter at the top of the display. The counter tells you the total number of .wkt files and the number of the file the highlight is on. For example, if you move the highlight to the third file from the top of the display, and you have a total of 21 files, the counter displays: 3/21.

Since you can create a file name with up to 50 characters, including the .wkt suffix, OFIS Spreadsheet displays long file names in their entirety. The pop-up menu adjusts its size to accommodate the longest file name.

You can use any of these keys to move through the list of files:

- **SCROLL UP**
- **SCROLL DOWN**
- **NEXT PAGE**
- **PREV PAGE**

To retrieve a spreadsheet file, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/FileRetrieve**

A prompt appears asking for the filename of the new spreadsheet. Following the prompt is `*.wk?`. A pop-up menu displays files in the current directory ending with the letters `wk?` (`?` is any valid filename character).

3. Choose one of the following:
  - Position the highlight over the filename.
  - Enter the filename.
4. Press **GO**.

The mode indicator flashes `WAIT` while OFIS Spreadsheet retrieves the spreadsheet file.

### Using Wildcards to Retrieve Spreadsheet Files

There may be times you are not certain of the exact spreadsheet filename and do not want to go through every filename in the directory. In this case, you can use the wildcard characters `*` or `?` to display certain spreadsheet filenames.

When you select the File Retrieve option, `*.wk?` displays after the prompt asking for the filename. Below the prompt, all of the filenames in the current directory ending in the letters `.wk?` display. Basically, the extension `*.wk?` tells OFIS Spreadsheet to display all entries (`*`) with an extension that has the letters `wk` as the first two letters, and any third letter (`?`).

You can do the same thing by using the asterisk (`*`) to stand for a series of characters or the question mark (`?`) to stand for a single character. For example, if you type `C*.wk?` after the filename prompt, OFIS Spreadsheet displays all spreadsheet filenames beginning with a `C` and with an extension that has `wk` for the first two letters.

## Combining Spreadsheet Data

You can take information from a spreadsheet file and bring it into a spreadsheet you are currently working on. You have control over how much information you want to bring in the current spreadsheet and the location in the current spreadsheet where you want to combine the information.

This feature is different from the File Retrieve option. When you combine spreadsheets, OFIS Spreadsheet does not erase the contents of the current spreadsheet.

This File Combine option is useful for:

- Combining information from two or more spreadsheets into one spreadsheet
- Transferring information from one spreadsheet to another
- Replacing information

OFIS Spreadsheet offers you several different options for combining information, but regardless of which option you select, they all use the same basic concepts.

### Combining Basics

When you use the File Combine option, you are taking information from one spreadsheet file and bringing it into the current spreadsheet file. What OFIS Spreadsheet does with this information depends on which File Combine option you select. Table 10-1 lists the options available and explains how they affect the spreadsheet.

**Table 10-1. File Combine Options**

<b>Option</b>	<b>Function</b>
Add	Adds values from spreadsheet file to values in current spreadsheet
Copy	Copies entries, overwriting any entries in specified area
Divide	Divides values of current spreadsheet by values of spreadsheet file
Greater-Than	Replaces values in current spreadsheet only if spreadsheet file values are greater
Less-Than	Replaces values in current spreadsheet only if spreadsheet file values are less
Multiply	Multiplies values from spreadsheet file with the values in current spreadsheet
Subtract	Subtracts values from spreadsheet file from values in current spreadsheet

You control how much information OFIS Spreadsheet brings into the current spreadsheet and where the information goes. You control the amount of information brought into the current spreadsheet by either specifying a range from the spreadsheet file or selecting the entire file.

OFIS Spreadsheet uses the location of the cell pointer to determine what cells to use in the File Combine operation. Therefore, it is very important for you to be aware of exactly where your cell pointer is before executing a File Combine option.

To perform a File Combine, use the following procedure:

1. Be sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the spreadsheet at the first cell you want to start the combining.
3. Type the first character of the following options:  
**/FileCombine**  
The File Combine pop-up menu appears.
4. Select an option.

5. Press **RETURN** or **GO**.

A pop-up menu appears asking you if you want the entire file or if you want to name a range.

6. Select the size.

If you choose **Entire File**, go to Step 9.

7. Press **RETURN** or **GO**.

A prompt appears asking for the range.

8. Enter either the range name or the range coordinates.

9. Press **RETURN** or **GO**.

A prompt appears asking for the combine filename. A list of all of the files in the current directory appears in a pop-up menu.

10. Select the filename.

11. Press **GO**.

OFIS Spreadsheet executes the File Combine option.

### Using the File Combine Copy Option

The File Combine Copy option acts like the Copy option except you can copy information from another spreadsheet into the current Spreadsheet. The information OFIS Spreadsheet brings in using the Copy option overwrites any entries in the cell range designated for incoming information.

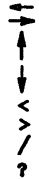
Figures 10-1 and 10-2 each show a sample spreadsheet containing sales figures.

Figure 10-1. Sales Figures Spreadsheet 1

a1 [W15]Randy Mason

READY

	a	b	c	d	e	f	g	h
1	Randy Mason							
2	Sales Figures							
3								
4			Jan	Feb				
5								
6	Area 1	\$1,500	\$1,525					
7	Area 2	\$1,780	\$1,800					
8	Area 3	\$2,050	\$2,100					
9								
10	Total:	\$5,330	\$5,425					
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								



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Sales1.wkt

Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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2554.10-1

Figure 10-2. Sales Figures Spreadsheet 2

a1 [W15]Richard Drake

READY

	a	b	c	d	e	f	g	h
1	Richard Drake							
2	Sales Figures							
3								
4			Jan	Feb				
5								
6	Area 1	\$1,750	\$1,750					
7	Area 2	\$2,000	\$2,200					
8	Area 3	\$2,050	\$2,000					
9								
10	Total:	\$5,800	\$5,950					
11								
12								
13								
14								
15								
16								
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18								
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20								
21								
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23								



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Sales2.wkt

Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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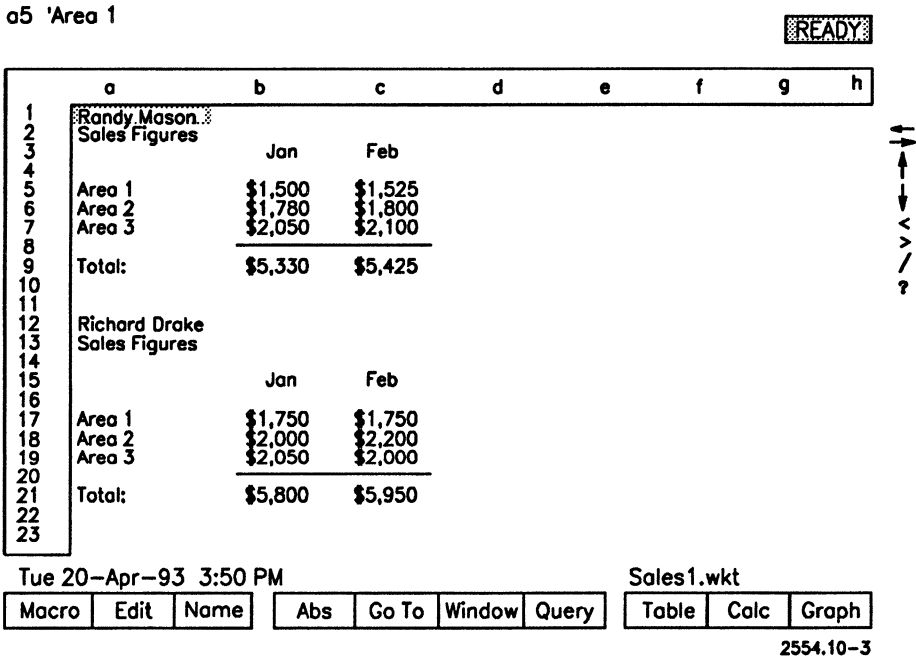
2554.10-2

Using the File Combine Copy option, OFIS Spreadsheet can combine the information from the sample spreadsheet 2 with the information in the sample spreadsheet 1. Figure 10-3 shows the final spreadsheet.

The entries from the spreadsheet file keep the format and label alignment from the original file. OFIS Spreadsheet adjusts formulas to reflect the new location of the cell references.



Figure 10-3. Spreadsheet after File Combine Copy



### Using the File Combine Add Option

The File Combine Add option adds values from another spreadsheet file to values in the current Spreadsheet file. This option does not combine label entries. The Add option handles formulas as follows:

- If the cell in the spreadsheet file contains a formula and the corresponding cell in the current spreadsheet file does not contain a formula, OFIS Spreadsheet adds the value resulting from the formula to the current spreadsheet cell.
- If the cell in the spreadsheet file contains a formula and the corresponding cell in the current spreadsheet file contains a label, the label remains intact.

- If the cell in the spreadsheet file contains a formula and the corresponding cell in the current spreadsheet file contains a value, OFIS Spreadsheet adds the value resulting from the formula to the current spreadsheet cell value.
- If the cell in the spreadsheet file contains a formula and the corresponding cell in the current spreadsheet contains a formula, the formula in the current spreadsheet file remains intact.

### Using the File Combine Subtract Option

The File Combine Subtract option subtracts values in another spreadsheet file from values in the current spreadsheet file. This option does not affect label entries. The Subtract option handles formulas as follows:

- If the cell in the spreadsheet file contains a formula and the corresponding cell in the current spreadsheet file does not contain a formula, OFIS Spreadsheet subtracts the value resulting from the formula from the current spreadsheet cell.
- If the cell in the spreadsheet file contains a formula and the corresponding cell in the current spreadsheet file contains a label, the label remains intact.
- If the cell in the spreadsheet file contains a formula and the corresponding cell in the current spreadsheet file contains a value, OFIS Spreadsheet subtracts the value resulting from the formula from the current spreadsheet cell value.
- If the cell in the spreadsheet file contains a formula and the corresponding cell in the current spreadsheet file contains a formula, the formula in the current spreadsheet file remains intact.

### Using the File Combine Less-Than Option

The File Combine Less-Than option replaces values in the current spreadsheet file if the other spreadsheet file values are less. This option does not affect label entries. If a cell in either file has a formula, the Less-Than option only uses the value resulting from the formula. Formulas in cells in the current spreadsheet file remain intact.

### Using the File Combine Greater-Than Option

The File Combine Greater-Than option replaces values in the current spreadsheet file if the other spreadsheet file values are greater. This option does not affect label entries. If a cell in either file has a formula, the Greater-Than option only uses the value resulting from the formula. Formulas in cells in the current Spreadsheet file remain intact.

### Using the File Combine Multiply Option

The File Combine Multiply option multiplies the values in the current spreadsheet by values in the other spreadsheet file. This option does not affect label entries. If a cell in either file has a formula, the Multiply option only uses the value resulting from the formula. Formulas in cells in the current spreadsheet file remain intact.

If a cell in the spreadsheet file contains zero, the result in the current spreadsheet is a zero value. If a cell in the spreadsheet file is blank, the value in the current spreadsheet remains intact.

### Using the File Combine Divide Option

The File Combine Divide option divides the values in the current spreadsheet by the values in another spreadsheet file. This option does not affect label entries. If a cell in either file has a formula, the Divide option only uses the value resulting from the formula. Formulas in cells in the current spreadsheet file remain intact.

If a cell in the spreadsheet file contains a zero, the message `ERR` displays in the cell in the current spreadsheet. If the cell in the current spreadsheet is blank, a zero value displays.

## Using the File Xtract Option

The File Xtract option gives you the ability to take all, or a portion of a spreadsheet file, and save it in a different spreadsheet file. Once you have the information in the new spreadsheet file, you can use the File Combine option to incorporate the information into another spreadsheet file. You can use the File Xtract option to:

- Divide a large spreadsheet into smaller sections
- Extract a range into a new spreadsheet for use in other spreadsheets (for example, commonly used titles)

When you select the File Xtract option, you need to specify an extract file. This is the output file for the information OFIS Spreadsheet is extracting. You can use a new file, or you can use an existing file, in which case OFIS Spreadsheet overwrites any data in the file.

### Extracting Basics

The File Xtract option offers four options:

- 123-Worksheet
- Formulas
- Multiplan-SYLK
- Values

The 123-Worksheet option changes the information to a Lotus 1-2-3 Worksheet format and extracts it to a Lotus 1-2-3 file.

The Formulas option extracts values and formulas to a .prn file.

The Multiplan-SYLK option changes the information to a Multiplan-SYLK format and extracts it to a Multiplan-SYLK file.

**Note:** *You cannot extract only a range to a Multiplan-SYLK file; you must extract an entire file.*

The Values option extracts only the current values resulting from the formulas, not the actual formulas. The values are extracted to a .prn file.

Whenever you want to use a spreadsheet file from OFIS Spreadsheet in Lotus 1-2-3 or Multiplan, use the File Xtract option for that software application to create a file that uses the appropriate format for that application.

### Which Option Should You Select

If the range you are extracting includes a formula and all of the cells that the formula references, then select the **Formula** option. You run into problems when you are not extracting all the cells the formula references. In that case, it is better to select the **Values** option.

OFIS Spreadsheet always places the upper left cell of the extract range in cell **a1**. When you extract formulas, OFIS Spreadsheet adjusts the formula to reflect the new location of the cell references. If you make changes to the original spreadsheet, those changes are not made in the export file. To update the export file, you reselect the **File Xtract** option.

If the range you are extracting does not include formulas, you can select either the **Formula** option or the **Value** option with the same results. When extracting values only from a Spreadsheet containing formulas, you should be aware that OFIS Spreadsheet does not automatically recalculate the spreadsheet before executing the **File Xtract** option. If you set the spreadsheet to manual calculation, be sure to recalculate it before performing a **File Xtract**.

Labels are not affected by either option.

To extract information from a spreadsheet file, use the following procedure:

1. Make sure the spreadsheet is in **Ready** mode.
2. Position the cell pointer in the cell in the upper left corner of the range you want to extract.
3. Type the first character of the following options:  
**/FileXtract**  
The **File Xtract** pop-up menu appears.
4. Select the option you want.
5. Press **RETURN** or **GO**.  
A prompt appears asking for the export filename.
6. Enter the name of the export file.

7. Press **RETURN** or **GO**.

A prompt appears asking for the cell range. Following the prompt is a reference to the current cell as a range.

8. Choose one of the following:

- Press **RETURN** or **GO** to accept.
- Position the cell pointer in the first cell of the range, and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
- Enter the range; then press **GO**.

OFIS Spreadsheet extracts the information to the export file. The current spreadsheet remains on your screen. Figure 10-4 shows a sample spreadsheet; the marked area is the export information.

Figure 10-4. Spreadsheet with Exported Information

a1 [W15]:LAST NAME READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
2						
3	Adams	John	02-01-85	\$25,000	A	
4	Crown	Drake	01-08-86	\$21,000	E	
5	French	Vanessa	05-15-83	\$27,000	D	
6	Farley	Randy	06-22-79	\$35,000	E	
7	Henry	Thomas	11-01-87	\$25,000	E	
8	Jackson	Barbara	03-21-88	\$20,000	A	
9	Mason	Abby	12-15-84	\$28,000	C	
10	Parker	K. C.	04-01-88	\$20,000	E	
11	Richards	Lee	07-02-80	\$40,000	A	
12	Tracy	Jo	10-15-85	\$30,000	E	
13	Watson	Daniel	12-15-87	\$26,000	E	
14	Williams	Robert	12-15-88	\$20,000	C	
15	Young	Susan	11-01-87	\$26,000	E	
16						
17						
18						
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2554.10-4

After OFIS Spreadsheet finishes the File Xtract option, you can check the export file by using the File Retrieve option. Figure 10-5 shows the export file containing the highlighted data from Figure 10-4. Notice that OFIS Spreadsheet starts the export information in cell a1.

Figure 10-5. Export File

a1 (C0)[W10]~SALARY READY

	a	b	c	d	e	f	g	h
1	SALARY	DEPARTMENT CODE						
2	\$25,000	A						
3	\$21,000	E						
4	\$27,000	D						
5	\$35,000	E						
6	\$25,000	E						
7	\$20,000	A						
8	\$28,000	C						
9	\$20,000	E						
10	\$40,000	A						
11	\$30,000	E						
12	\$26,000	E						
13	\$26,000	C						
14	\$20,000	C						
15	\$26,000	E						
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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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2554.10-5



### Erasing a Spreadsheet File

You can erase a spreadsheet file by using the File Erase option. This option gives you the ability to erase several different types of files. When you select the File Erase option, OFIS Spreadsheet displays the following options:

- Graph
- Other
- Print
- Worksheet

Graph files have the extension *.pic*; this option displays all graph files in the current directory.

Other displays every file in the current directory.

Print files have the extension *.prn*; this option displays all print files in the current directory.

Worksheet (spreadsheet) files have the following extensions:

*.wkt*

*.wk1*

*.wk3*

*.wks*

The Worksheet option displays all spreadsheet files in the current directory.

This option only erases one file at a time. To erase more than one file, reselect the File Erase option. OFIS Spreadsheet gives you an option to cancel the File Erase option before it actually erases the file.

To erase a spreadsheet file, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/FileErase**

The File Erase pop-up menu appears.

3. Select the option you want.

A prompt appears asking for the filename you want to erase. A list of worksheet files appears in a pop-up menu.

4. Choose one of the following:

- Point to the filename.
- Enter the filename.

5. Press **RETURN** or **GO**.

A prompt appears asking if you want to cancel the operation or continue and erase the file.

6. Select the desired option.
7. Press **RETURN** or **GO**.

OFIS Spreadsheet erases the file and returns the spreadsheet to Ready mode.

# Listing the Names of Spreadsheet Files

If you have many entries in your spreadsheet directory, it can be unwieldy to locate a specific filename by using the Arrow keys to move through all of the selections. The File List option displays all of filenames in the current directory.

You can define the filenames to display, or you can display all of the filenames by selecting the appropriate option:

- Graph
- Other
- Print
- Worksheet

The Graph option lists all of the graph filenames. The Other option lists all of the filenames in the current directory. The Print option lists all of the print filenames. The Worksheet option lists all of the spreadsheet filenames.

To display a list of spreadsheet file names, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

`/FileList`

The File List pop-up menu appears.

3. Select the option you want.

A prompt appears asking for the filename to list. Following the prompt is an extension indicating the type of file being displayed; for example, `*.wk?` for spreadsheet files, `*.prn` for print files, `*.pic` for graph files, and `*` for all files. The filenames in the current directory appear, overlaying the current spreadsheet.

You can use the Arrow keys to point to a filename. As you point to a filename, the following information about the file appears:

- Last date it was saved
- Time of day it was saved
- Size

To return the spreadsheet to Ready mode, press **CANCEL** twice.

## Importing Files into the Spreadsheet

OFIS Spreadsheet gives you the ability to transfer data between various applications and the spreadsheet. You can bring information from a standard file into the spreadsheet by using the File Import option. This option offers three options for importing information:

- Multiplan SYLK
- Numbers
- Text

OFIS Spreadsheet overwrites entries in the spreadsheet in the range where the imported information is being placed. OFIS Spreadsheet places the first row of information at the cell pointer location and continues down until it transfers all of the information or reaches the end of the spreadsheet. After OFIS Spreadsheet completes the import operation, you must save the spreadsheet.

To import information from an application file, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer at the first cell to receive information.
3. Type the first character of the following options:

**/FileImport**

4. Press **RETURN** or **GO**.

The File Import pop-up menu appears.

5. Select the option you want.

A prompt appears asking for the import filename. Following the prompt is a reference to the extension for the option you chose and a list of all files in the current directory with that extension.

6. Choose one of the following:

- Point to the filename.
- Type in the directory, if necessary, and the filename.

7. Press **GO**.

The information from the import file appears on the spreadsheet.

### The File Import Text Option

The File Import Text option imports information as a series of long labels. This option imports text and numbers, but numbers are brought over as label entries not value entries. Once in the spreadsheet, each line in the file appears as a long, left-aligned label. Since each line is a long label, only one cell in each row contains the label, and all the rows are in one column.

Figure 10-6 shows a memorandum from a word processing document. The File Import Text option imports this document into the spreadsheet, as shown in Figure 10-7.

**Figure 10-6. Text in a Word Processing Document**

April 20, 1993

Tom:

I need your department budget by 3:00 pm today.

Susan

As Figure 10-7 illustrates each line of text is in one cell, in one row. To break the long label into individual labels or values, you use the Data Parse option. For detailed information on the Data Parse option, refer to Section 12.

Figure 10-7. Text in Spreadsheet After File Import Option

a6 'I need your department budget by 3:00 pm today.

READY

	a	b	c	d	e	f
1						
2	April 20, 1993					
3						
4	Tom:					
5						
6	I need your department budget by 3:00 pm today.					
7						
8	Susan					
9						
10						
11						
12						
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Memo.wkt

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## The File Import Numbers Option

The File Import Numbers option separates the file into values and labels. Numbers import as values, functions and formulas import as numbers, and text imports as labels. You enclose text in quotation marks.

OFIS Spreadsheet inserts the entries into different columns and separate cells. Labels are all left-aligned, and numbers are inserted as values. (You can tell if a number has been imported as a value or label by its alignment in the cell; values are always right-aligned.) Numbers in the originating file should not be formatted. For example, if the number in the originating file is \$1,988.50, OFIS Spreadsheet imports it as separate values, 1 and 998.50. You can use decimal points and percent signs with numbers. These are recognized by the File Import Numbers option.

Figure 10-8 shows a file that is in the proper format to import using the File Import Numbers option. Notice that the text entries, except for the last one on each line, are enclosed in quotation marks.

**Figure 10-8. File Formatted for File Import Numbers Option**

```
"Adams,   J.", "01-02-85", 25000, A  
"Crown,   D.", "01-08-86", 21000, E
```

Figure 10-9 shows how this file appears in the spreadsheet after executing the File Import Numbers option. Notice that each entry is in an individual cell, and that the numbers are value entries. The text entries not enclosed in quotation marks, did not import.



Figure 10-9. Data In File After File Import Numbers Option

a2 [W10]Adams, J. READY

	a	b	c	d	e	f
1	Adams, J.	01-02-85	25000			
2	Crown, D.	01-08-86	21000			
3						
4						
5						
6						
7						
8						
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### The Multiplan-SYLK Option

The Multiplan-SYLK option imports information from a Multiplan-SYLK format file. You can use the spreadsheet options on the information in the file just like any other spreadsheet file.

## Changing the Directory

When you access a spreadsheet, OFIS Spreadsheet automatically assumes you want to use the default directory. However, you have the option of using any directory you desire. You can change the directory two different ways:

- When you execute a File option
- By using the File Directory option

### Changing Directories When Executing a File Option

OFIS Spreadsheet allows you to specify a different directory at the time you select a file option.

To change a directory when executing a file option, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Select the desired File option.
3. At the filename prompt, enter the file specification necessary to access the file.

Enclose the volume name in square brackets and the directory name in angle brackets. For example, *[d1] <spreadsheet>*.

OFIS Spreadsheet continues to use the specified directory for the duration of the option.

### Changing the Directory for an OFIS Spreadsheet Session

You can instruct OFIS Spreadsheet to use a specific directory for the duration of a OFIS Spreadsheet session.

To change the directory for an OFIS Spreadsheet session, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:  
`/FileDirectory`  
A prompt appears asking for the directory.
3. Enter the name of the volume and directory you want to use.  
Enclose the volume name in square brackets and the directory name in angle brackets. For example, `[d1] <spreadsheet>`.
4. Press **GO**.

OFIS Spreadsheet uses the new directory as the current directory for the duration of the session or until you change directories.

To change the default directory where OFIS Spreadsheet stores and retrieves data, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/WorksheetGlobalDefaultDirectory**

A prompt appears asking for the default directory.

3. Enter the name of the default directory you want to use.

Enclose the volume name in square brackets and the directory name in angle brackets. For example, *[d1] <spreadsheet>*.

4. Press **GO**.

To make the default directory change permanent, you need to type the first character of the following options:

**/WorksheetGlobalDefaultUpdate**

Your directory change is now a default setting, which is saved in the OFIS Spreadsheet configuration file. (For more information on the configuration file, see “OFIS Spreadsheet Configuration File,” in Appendix B, “Installing OFIS Spreadsheet.”) If you did not select this option, the change would only be in effect for the current spreadsheet session.



# Section 11

## Printing a Spreadsheet

You print a spreadsheet by using the **Print** options. The **Print** options allow you to output information from your spreadsheet to a printer or a file. You can also define the portion of the spreadsheet you want to print, change the appearance of the printed spreadsheet, and set up headers, footers, and borders. For some information about printing, you may need to refer to your Generic Print System (GPS) documentation.

You set up defaults for an individual spreadsheet by using the **Print** options, or for all spreadsheets by using the **Worksheet Global Default Printer** options:

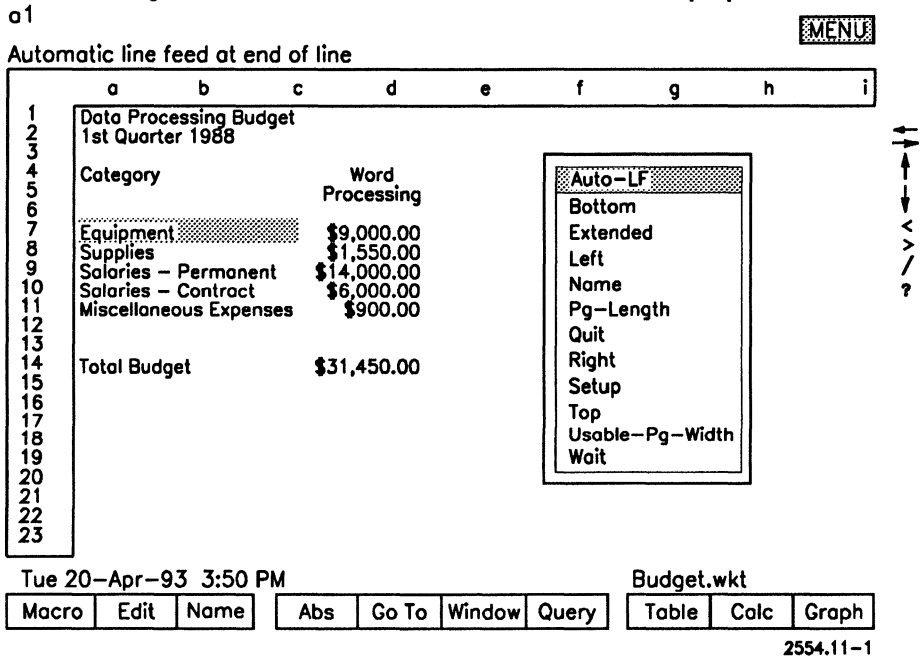
- Left margin
- Right margin
- Top margin
- Bottom margin
- Page length
- Page width
- Automatic line feed
- Page position or orientation
- Printer name

The parameters for these features can be set globally, for all spreadsheets you print, or on an individual spreadsheet basis. To set parameters globally, you type the first character of the following options:

**/WorksheetGlobalDefaultPrinter**

The **Worksheet Global Default Printer** pop-up menu, shown in **Figure 11-1**, displays.

Figure 11-1. Worksheet Global Default Printer Pop-up Menu



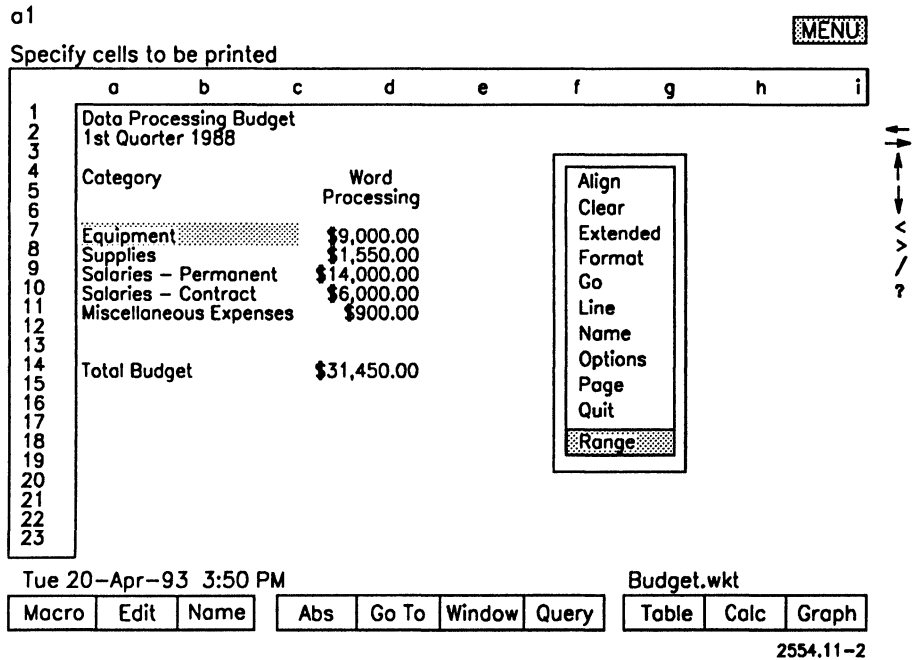
From this menu, you select the print feature you want.

To set parameters for an individual spreadsheet, you type the first character of the following options:

**/PrintPrinter**

The Print Printer pop-up menu, shown in Figure 11-2, displays.

Figure 11-2. Print Printer Pop-up Menu



From this menu, you select the print feature for which you are setting parameters.

## Printing Basics

To send your spreadsheet to a printer, you type the first character of the following options:

**/PrintPrinterAlignGo**

When you select this option, OFIS Spreadsheet uses the print options you specify or the default options. If you do not specify a Print Range, OFIS Spreadsheet prints the entire spreadsheet. Usually you do set some guidelines for OFIS Spreadsheet to use when printing the spreadsheet.



### Printing a Print Range

OFIS Spreadsheet prints the entire spreadsheet or a portion of it, depending on the Print Range you specify. If you do not define a Print Range, OFIS Spreadsheet prints the entire spreadsheet.

To define a print range, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/PrintPrinterRange**

A prompt appears asking for the Print range. Following the prompt is a reference to the current cell address as a range.

3. Choose one of the following:
  - Press **RETURN** or **GO** to accept.
  - Anchor the cell pointer in the first cell of the print range, and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
  - Type the range, then press **RETURN** or **GO**.

OFIS Spreadsheet retains the Print range specifications until you redefine them, or exit the spreadsheet.

### Line and Page Options

You can use the Line and Page options to add blank lines and pages to your printed spreadsheet. For example, you may find it helpful to add a blank line to separate ranges of data, and to add a blank page to separate your spreadsheet from another user's output.

## Line Option

To add a blank line to your printed spreadsheet, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

`/PrintPrinterLine`

3. Press **RETURN** or **GO**.

OFIS Spreadsheet adds a blank line to your printed spreadsheet.

## Page Option

To add a blank page to your printed spreadsheet, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

`/PrintPrinterPage`

3. Press **RETURN** or **GO** .

OFIS Spreadsheet adds a blank page to your printed spreadsheet.

## Printing Options

OFIS Spreadsheet provides you with options to:

- Insert headers and footers
- Define margins
- Set up borders
- Change page length and width
- Determine the number of copies to print

# Printing a Spreadsheet

To access these options, you type the first character of the following options:

**/PrintPrinterOptions**

This brings up the Print Printer Options pop-up menu, shown in Figure 11-3.

**Figure 11-3. Print Printer Options Pop-up Menu**

o1 MENU

Enter header line

	a	b	c	d	e	f	g	h	i
1	Data Processing Budget								
2	1st Quarter 1988								
3									
4	Category		Word Processing						
5									
6									
7	Equipment		\$9,000.00						
8	Supplies		\$1,550.00						
9	Salaries - Permanent		\$14,000.00						
10	Salaries - Contract		\$6,000.00						
11	Miscellaneous Expenses		\$900.00						
12									
13									
14	Total Budget		\$31,450.00						
15									
16									
17									
18									
19									
20									
21									
22									
23									

Borders  
 Copies  
 Footer  
**Header**  
 Margins  
 Other  
 Page-Length  
 Quit  
 Setup  
 Usable-Pg-Width

Tue 20-Apr-93 3:50 PM Budget.wkt

Macro Edit Name Abs Go To Window Query Table Calc Graph

2554.11-3

## Defining and Formatting Headers and Footers

You can have OFIS Spreadsheet print headers and/or footers on your spreadsheet. A header is a single line containing text that appears at the top line of the spreadsheet. A footer is a single line containing text that appears at the bottom line of the spreadsheet.

You can use headers and footers to include a date, page number, or some other form of text. The text in the header or footer cannot exceed the width of the page set by the margins.

## Aligning Headers and Footers

You can indicate where you want text in a header or footer to print, either in the center of the page or at the right edge. You do this by using the vertical bar (|) character, indicating to OFIS Spreadsheet where you want the header or footer text to appear.

OFIS Spreadsheet automatically prints header and footer text at the left edge. To print text in the center, you use a single |. For example, setting up a header as **Preliminary|First Draft**, prints as shown in Figure 11-4.

You can also have OFIS Spreadsheet print text on the right edge of the header or footer. You do this by using two | characters. For example, setting up a header as **Preliminary|First Draft|March 31**, prints as shown in Figure 11-5.

Figure 11-4. Spreadsheet with a Two-Section Header

Preliminary

First Draft

K. C. Company

Income Statement

First Quarter

Income:	Jan	Feb	Mar	1st Qtr
Accounts Receivable	\$35,000	\$40,000	\$38,000	\$113,000
Rental Properties	\$5,000	\$5,000	\$5,000	\$15,000
Investments	\$2,000	\$2,000	\$2,000	\$6,000
-----				
Total Income:	\$42,000	\$47,000	\$45,000	\$134,000
Expenses:				
Salaries	\$10,000	\$10,000	\$10,000	\$30,000
Rent	\$2,000	\$2,000	\$2,000	\$6,000
Office Supplies	\$500	\$450	\$500	\$1,450
Telephone	\$250	\$175	\$200	\$625
-----				
Total Expenses:	\$12,750	\$12,625	\$12,700	\$38,075
Net Income:	\$29,250	\$34,375	\$32,300	\$95,925

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Figure 11-5. Spreadsheet with a Three-Section Header

Preliminary	First Draft			March 31
K. C. Company				
Income Statement				
First Quarter				
Income:	Jan	Feb	Mar	1st Qtr
Accounts Receivable	\$35,000	\$40,000	\$38,000	\$113,000
Rental Properties	\$5,000	\$5,000	\$5,000	\$15,000
Investments	\$2,000	\$2,000	\$2,000	\$6,000
-----				
Total Income:	\$42,000	\$47,000	\$45,000	\$134,000
Expenses:				
Salaries	\$10,000	\$10,000	\$10,000	\$30,000
Rent	\$2,000	\$2,000	\$2,000	\$6,000
Office Supplies	\$500	\$450	\$500	\$1,450
Telephone	\$250	\$175	\$200	\$625
-----				
Total Expenses:	\$12,750	\$12,625	\$12,700	\$38,075
Net Income:	\$29,250	\$34,375	\$32,300	\$95,925
-----				

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In Figure 11-5, everything to the left of the first |, prints on the left edge of the spreadsheet. Everything between the first |, and the second |, prints in the center of the spreadsheet; everything after the second | prints on the right edge of the spreadsheet. You can use the | to position text without inserting text before or between the character. For example, | | March 31, tells OFIS Spreadsheet to print the date on the right side of the spreadsheet.

### Numbering Spreadsheet Pages

You can have OFIS Spreadsheet number your spreadsheet pages by using the # character in the header or footer. Whenever OFIS Spreadsheet encounters this symbol, it inserts a sequential number representing the page number of the spreadsheet.

### Dating the Spreadsheet

You can have OFIS Spreadsheet insert the current system date on your spreadsheet. To do this you use the @ character in the header or footer. The date appears on your spreadsheet in the format DD-Mmm-YY. The date formats currently in effect in the spreadsheet have no effect on this date.

### Deleting Headers and Footers

You can delete headers and/or footers by using either of the following procedures. The first procedure deletes only the header or footer. The second procedure, in addition to deleting the header or footer, also resets all print options to their original defaults.

To delete a header or footer, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first characters in the appropriate option:

`/PrintPrinterOptionsHeader`

`/PrintPrinterOptionsFooter`

The header or footer prompt appears. Following the prompt is the current header or footer text.

3. Press **CANCEL**.  
OFIS Spreadsheet removes the header or footer text.
4. Press **RETURN** or **GO**.

You can also delete a header or footer by typing the first character of the following options:

`/PrintPrinterClearAll`

Remember, in addition to deleting the header or footer, this option resets all of the print options to their original defaults.

### Determining the Spreadsheet Margins

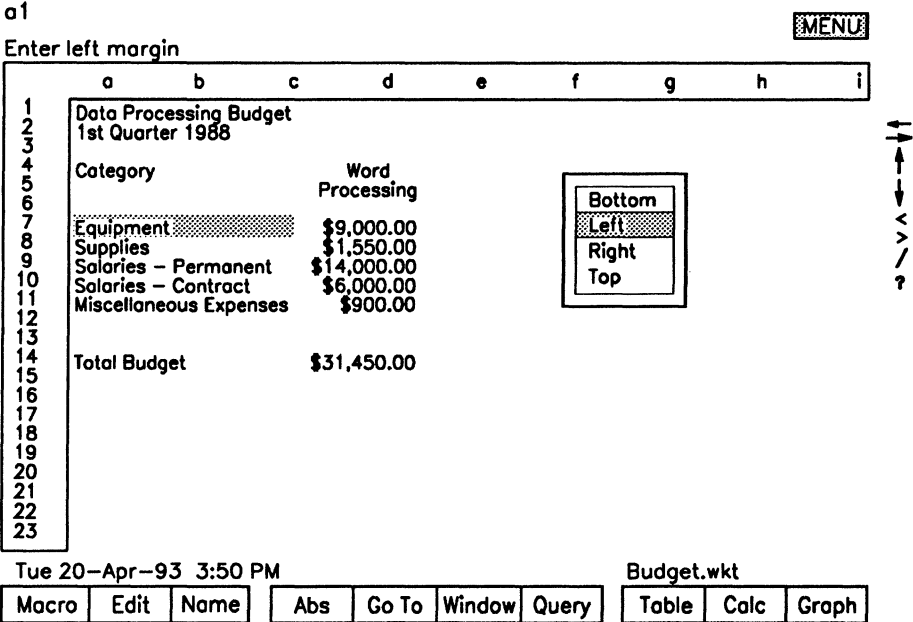
When you print a spreadsheet, it prints left, right, top, and bottom margins. If you do not specify a margin setting, OFIS Spreadsheet uses the default settings.

To change a margin setting, type the first character of the following options:

**/PrintPrinterOptionsMargins**

This brings up the pop-up menu shown in Figure 11-6. From this menu, you can select the margin option you want to redefine.

Figure 11-6. Print Printer Options Margins Pop-up Menu





### Left Margin

The left margin tells OFIS Spreadsheet how many blank characters to insert to the left of the first character. The default left margin is 5. Using this default left margin, OFIS Spreadsheet prints the first character 6 spaces from the left edge.

To change the left margin, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:  
`/PrintPrinterOptionsMarginsLeft`
3. Press **RETURN** or **GO**.

A prompt appears asking for the left margin and showing the range of values you can select. Following the prompt is the current left margin setting.

4. Type a number representing the size of the left margin.
5. Press **GO**.
6. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

It is important to remember that if the first character of an entry, in the first column of the Print range, is not left-aligned, OFIS Spreadsheet adds the blank spaces in the entry after the left margin spaces.

For example, if your Print range starts in column **a**, and if the column width is 9, the spreadsheet is in General format, and cell **a1** contains the entry 321, OFIS Spreadsheet prints it with 5 spaces between the left edge of the report and the first numerical character. For this reason, the left edge of the report may not appear to lineup.

1. Choose one of the following:
  - Press **RETURN** or **GO**.
  - Point to a cell(s) in the column(s); then press **RETURN** or **GO**
  - Type a cell address from the column(s); then press **RETURN** or **GO**.

The Options pop-up menu reappears, highlighting the Border option. If you wish to include rows in the border, skip step 5. If you do not wish to include rows in the border complete step 5, then skip the remaining steps.

2. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

3. Press **RETURN** or **GO**.

Two border options appear, Columns and Rows. OFIS Spreadsheet highlights the **Columns** option.

4. Select the **Row** option.

5. Press **RETURN** or **GO**.

A prompt appears asking for the border rows. Following the prompt is a reference to the current cell address as a range.

6. Choose one of the following:

- Press **GO**.
- Point to a cell(s) in the row(s); then press **GO**.
- Type a cell address from the row(s); then press **GO**.

The Options pop-up menu reappears, with the Border option highlighted.

7. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

### Right Margin

The right margin tells OFIS Spreadsheet the total number of characters appearing on one line of the report. This number includes the number of spaces set by the left margin. For example, the default right margin is 80, so if the left margin is 5, then OFIS Spreadsheet can print 75 characters on a line.

To change the right margin, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

`/PrintPrinterOptionsMarginsRight`

3. Press **RETURN** or **GO**.

A prompt appears asking for the right margin and showing the range of values you can select. Following the prompt is the current right margin setting.

4. Type a number representing the size of the right margin.
5. Press **GO**.
6. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

There are a couple of points you need to remember when setting the right margin:

- It must be larger than the left margin.
- It cannot be larger than the maximum number of characters your printer can print on a line.

If you have any questions regarding the number of characters your printer can print on a line, refer to the manual for that printer.

You can also change the margins for all spreadsheets. Changes made to an individual spreadsheet override global changes.

To change the left or right margin globally, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first characters in one of the following options:

`/WorksheetGlobalDefaultPrinterLeft`

`/WorksheetGlobalDefaultPrinterRight`

A prompt appears asking for the global margin setting, and showing the range of values you can select. Following the prompt is the current global margin setting.

3. Type a number representing the size of the margin.
4. Press **GO**.
5. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

To make global changes default settings, you need to type the first character of the following options:

`/WorksheetGlobalDefaultUpdate`

Your global changes are now defaults, which are saved in the OFIS Spreadsheet configuration file. (For more information on the configuration file, see “Customizing OFIS Spreadsheet” in Appendix B, “Installing OFIS Spreadsheet.”) If you did not select these options, the changes would be in effect only for the current spreadsheet session.

### Top and Bottom Margins

The top margin tells OFIS Spreadsheet how many blank lines to insert at the top of the page before printing the first line. The bottom margin tells it how many blank lines to insert at the bottom of the page after printing the last line. The default setting for both margins is 2. If you have set a header or footer, that line is in addition to the top and bottom margin settings.

You can change the margins for an individual spreadsheet, or you can change the margins for all spreadsheets. Changes made to an individual spreadsheet override global changes.

## Printing a Spreadsheet

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To change the top or bottom margin for the current spreadsheet, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first characters in the appropriate option:

**/PrintPrinterOptionsMarginTop**

**/PrintPrinterOptionsMarginBottom**

A prompt appears asking for the margin setting and showing the range of values you can select. Following the prompt is the current margin setting.

3. Type a number representing the size of the margin.
4. Press **GO**.
5. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

To change the top or bottom margin globally, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first characters in one of the following options:

**/WorksheetGlobalDefaultPrinterTop**

**/WorksheetGlobalDefaultPrinterBottom**

A prompt appears asking for the global margin setting and showing the range of values you can select. Following the prompt is the current global margin setting.

3. Type a number representing the size of the margin.
4. Press **GO**.
5. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

To make the global change a default setting, you need to type the first character of the following options:

**/WorksheetGlobalDefaultUpdate**

Your global change is now a default setting, which is saved in the OFIS Spreadsheet configuration file. (For more information on the configuration file, see “Customizing OFIS Spreadsheet” in Appendix B, “Installing OFIS Spreadsheet.”) If you did not select this option, the change would only be in effect for the current spreadsheet session.

## Designating Print Borders

If you are printing a large spreadsheet, it can be difficult after the first page to try and match the entries to their categories. The first page typically has the category labels, but later pages can have only partial category labels or none at all. You can remedy this by designating selected columns and rows for OFIS Spreadsheet to use on each page as a border.

The border column prints on the left side of the page, and the border row prints at the top row of the page. When you designate borders you need to define the Print range so it does not include the border columns and rows. If you do not exclude these from the Print range, OFIS Spreadsheet prints the border columns and rows twice. It prints the columns and rows as the border, and then prints them again as part of the spreadsheet.

When designating a row or column as a border, you specify a single cell in the row or column, not the entire row or column.

To designate a border, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/PrintPrinterOptionsBorders**

Two border options appear, **Columns** and **Rows**. OFIS Spreadsheet highlights the **Columns** option.

3. Press **RETURN** or **GO**.

A prompt appears asking for the border columns. Following the prompt is a reference to the current cell address as a range.

### Clearing Borders

You can remove borders from the spreadsheet by typing the first character of the following options:

**/PrintPrinterClearBorders**

This removes the column and row borders. You must remove both column and row borders; you cannot remove just one type of border.

### Changing Spreadsheet Page Length

OFIS Spreadsheet uses the page length option to determine how many lines to print per page. The default page length for 8 1/2" by 11" paper is 66 lines, which includes top and bottom margins, header and footer lines, and data rows. This option also tells OFIS Spreadsheet where to insert page breaks.

If you change the point size you can alter the number of lines that can fit on the page. Refer to "Font Size" in this section.

When printing the first page of a spreadsheet, OFIS Spreadsheet prints as many complete rows and columns from the upper left corner of the spreadsheet as it can fit on the page. The second page continues with the same columns but prints the next series of rows, printing as many as it can fit on the page. It continues printing the data in the leftmost columns, until there is no more data left to print. It then begins printing data from the top of the next series of columns and rows and continues until there is no more data to print in that series. OFIS Spreadsheet continues printing in this manner until it completes printing all of the data in the specified Print range.

You can control the number of lines of data OFIS Spreadsheet prints on a page by changing the page length option. You can change the page length for an individual spreadsheet, or you can change the page length for every spreadsheet. Changes to page length for individual spreadsheets override global page length changes.

To change the page length for the current spreadsheet, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/PrintPrinterOptionsPage-Length**

A prompt appears asking for the page length and showing the range of values you can select. Following the prompt is the current page length.

3. Type the page length.
4. Press **GO**.  
The Options pop-up menu appears.
5. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

To change the global page length, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/WorksheetGlobalDefaultPrinterPg-Length**

A prompt appears asking for the page length, and showing the range of values you can select. Following the prompt is the current global page length.

3. Type the page length.
4. Press **GO**.  
The Printer pop-up menu appears.
5. Type **Q** twice to select the Quit option.



The spreadsheet returns to Ready mode. In order to make the global page length change a default setting, type the first character of the following options:

**/WorksheetGlobalDefaultUpdate**

Your global changes are now default settings, which are saved in the OFIS Spreadsheet configuration file. (For more information on the configuration file, see "Customizing OFIS Spreadsheet" in Appendix B, "Installing OFIS Spreadsheet.") If you did not select the /Worksheet Global Default Update option, the page length change remains in effect for the current spreadsheet session only.

### Changing Spreadsheet Page Width

OFIS Spreadsheet uses the Usable Page Width option to determine how many characters to print per line. The default page width for 8 1/2" by 11" paper is 85 characters, which includes left and right margins, and data rows.

If you change the point size you can alter the number of characters that can fit on each line. For more information, refer to "Font Size" in this section.

You can control the number of characters of data OFIS Spreadsheet prints on a line by changing the usable page width option. You can make the page width change global by using the /Worksheet Global Default Printer Update option to make the changed page width the default.

To change the page width, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/PrintPrinterOptionsUsable-Pg-Width**

A prompt appears asking for the page width, and showing the range of values you can select. Following the prompt is the current page width.

3. Type the page width.

4. Press **GO**.

The Printer pop-up menu appears.

5. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode. In order to make the page width change a default setting, type the first character of the following options:

**/WorksheetGlobalDefaultPrinterUpdate**

Your page width change is now the default setting, and is saved in your OFIS Spreadsheet configuration file. (For more information on the configuration file, see “Customizing OFIS Spreadsheet” in Appendix B, “Installing OFIS Spreadsheet.”) If you did not select the **/Worksheet Global Default Update** option, the page width change remains in effect for the current spreadsheet session only.

### Inserting Manual Page Breaks In the Spreadsheet

Even though you can specify page length, sometimes OFIS Spreadsheet breaks a page at an inappropriate position. To avoid this, you can insert a manual page break code. Whenever OFIS Spreadsheet encounters a row containing a manual page break code, it inserts a page break after printing that row. A manual page break overrides a natural page break.

To insert a manual page break, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.

2. Position the cell pointer in the row where you want the page break. The cell pointer should be in the leftmost column of the Print range.

3. Type the first character of the following options:

**/WorksheetPage**

OFIS Spreadsheet inserts a new row at the cell pointer position, and the manual page break code, **::**, appears in this row. OFIS Spreadsheet pushes the row originally containing the cell pointer and all rows below that down one row.

The spreadsheet returns to Ready mode.

### Additional Print Format Options

In addition to being able to print the spreadsheet specifying margins, headers, and footers, you can also have OFIS Spreadsheet print the spreadsheet in an unformatted state, or just print the cell contents.

To select a print format, type the first character of the following options:

**/PrintPrinterOptionsOther**

The Other pop-up menu displays, offering the following options:

- As-Displayed
- Cell-Formulas
- Formatted
- Unformatted

#### As-Displayed

When using this option, OFIS Spreadsheet prints the current headers and footers, uses the current margin settings and page length, and inserts page breaks wherever there is a manual page break code. OFIS Spreadsheet uses this option as the default option.

#### Cell-Formulas

This option prints cell contents for each cell in the spreadsheet on a line by line basis. The spreadsheet appears as a list of the cell contents, exactly as the contents appear in the control panel. For example, formulas print instead of values, any formatting codes print, and so on.

Figure 11-7 shows an example of how the Cell-Formulas option prints a spreadsheet report.

Figure 11-7. Spreadsheet Report Using Cell-Formulas Option

Preliminary	First Draft	March 31
a1:	[W20] 'K. C. Company	
a2:	[W20] 'Income Statement	
a3:	[W20] 'First Quarter	
b6:	~Jan	
c6:	~Feb	
d6:	~Mar	
e6:	~1st Qtr	
a7:	[W20] 'Income'	
a8:	[W20] 'Accounts Receivable	
b8:	35000	
c8:	40000	
d8:	38000	
e8:	⊕SUM(b8..d8)	
a9:	[W20] 'Rental Properties	
b9:	5000	
c9:	5000	
d9:	5000	
e9:	⊕SUM(b9..d9)	
a10:	[W20] 'Investments	
b10:	2000	
c10:	2000	
d10:	2000	
e10:	⊕SUM(b10..d10)	
a11:	[W20] \-	
b11:	\-	
c11:	\-	2554.11-7

### Formatted

When using this option, OFIS Spreadsheet prints the current headers and footers, uses the current margin settings and page length, and inserts page breaks wherever there is a manual page break code.

### Unformatted

This option ignores:

- Top and bottom margins
- Headers and footers
- Page length
- Page width
- Page breaks

When using this option, OFIS Spreadsheet starts printing on the first line of the page and continues printing to the last line on the page. It then starts printing the next page at the very first line; there is no space between pages. This option does not ignore left and right margins.

Figure 11-8 shows an example of how the Unformatted option prints a spreadsheet report.

Figure 11-8. Spreadsheet Report Using Unformatted Option

Income Statement

First Quarter

Income:	Jan	Feb	Mar	1st Qtr
Accounts Receivable	\$35,000	\$40,000	\$38,000	\$113,000
Rental Properties	\$5,000	\$5,000	\$5,000	\$15,000
Investments	\$2,000	\$2,000	\$2,000	\$6,000
-----				
Total Income:	\$42,000	\$47,000	\$45,000	\$134,000
Expenses:				
Salaries	\$10,000	\$10,000	\$10,000	\$30,000
Rent	\$2,000	\$2,000	\$2,000	\$6,000
Office Supplies	\$500	\$450	\$500	\$1,450
Telephone	\$250	\$175	\$200	\$625
-----				
Total Expenses:	\$12,750	\$12,625	\$12,700	\$38,075
Net Income:	\$29,250	\$34,375	\$32,300	\$95,925

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### Designating the Number of Copies

You can print from 1 to 99 copies of a spreadsheet report.

To designate the number of copies, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/PrintPrinterOptionsCopies**

A prompt appears asking for the number of copies and showing the range of values you can select. Following the prompt is the default copy value, **1**.

3. Choose one of the following:
  - Press **GO**.
  - Type the desired number of copies; then press **GO**.

The Options pop-up menu appears.

4. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

### Exiting the Options Pop-up Menu

Pressing the Quit option returns the spreadsheet to the Printer pop-up menu.

## Clearing Print Options

When you change print options for a spreadsheet, you can reset them to their original default status by issuing the Clear option. This option resets:

- Headers
- Footers
- Print range
- Borders
- Margins
- Page length
- Page width
- Setup strings
- Typeface

To reset print options, you type the first character of the following options:

**/PrintPrinterClear**

The Clear pop-up menu, shown in Figure 11-9, displays.



Figure 11-9. Print Printer Clear Pop-up Menu

a1 MENU

Return all print settings to default values

	a	b	c	d	e	f	g	h	i
1	Data Processing Budget								
2	1st Quarter 1988								
3									
4	Category		Word						
5			Processing						
6									
7	Equipment		\$9,000.00		<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     All                      Borders                      Format                      Range                 </div>				
8	Supplies		\$1,550.00						
9	Salaries - Permanent		\$14,000.00						
10	Salaries - Contract		\$6,000.00						
11	Miscellaneous Expenses		\$900.00						
12									
13									
14	Total Budget		\$31,450.00						
15									
16									
17									
18									
19									
20									
21									
22									
23									

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From this pop-up menu you can select an option for the print options you want to reset.

The All option resets every print option to its original default status.

The Range option resets the Print range.

The Borders option resets borders.

The Format option resets margins, page length, page width, and setup strings.

## Aligning Printer Paper

The Align option lines up the printer paper at the top of the page. An example of when you would use this option is after changing page orientation between Portrait and Landscape. After you execute this option, OFIS Spreadsheet knows the paper is at the top of the page, and can accurately place the page breaks.

To reset the printer paper, you type the first character of the following options:

**/PrintPrinterAlign**

## Printing a Spreadsheet

Once you have set up the print options for your spreadsheet, you are ready to print.

To print the spreadsheet, you type the first character of the following options:

**/PrintPrinterAlignGo**

The mode indicator flashes **WAIT**; then the Printer pop-up menu displays. You press **Q** (Quit) to return the spreadsheet to Ready mode.

## Printing Part of a Spreadsheet

You have the option of printing the entire spreadsheet or a portion of the spreadsheet. You can specify exactly how much and what portion of the spreadsheet OFIS Spreadsheet is to print. You do this by defining the Print range. If you do not define a Print range, OFIS Spreadsheet prints the entire spreadsheet.

# Using the Extended Option

OFIS Spreadsheet's Extended option gives you the ability to change the physical appearance of how the spreadsheet prints and the input bin (paper tray) from which the printer draws paper. You can change:

- Page orientation
- Font size
- Print pitch
- Input bin (paper tray)
- Line spacing
- Typeface

**Note:** *If you intend to change parameters such as font size, pitch, and line spacing, you may find it helpful to allow OFIS Spreadsheet to recalculate margins and page dimensions for you. You enable recalculation by assigning the values 1 or 2 to the keyword :SSAUTOPAGELO: in your OFIS Spreadsheet configuration file. For more information, refer to "Configuration File Keywords and Values" in Appendix B, "Installing OFIS Spreadsheet".*

To access these options, you type the first character of the following options:

**/PrintPrinterExtended**

The Extended pop-up menu, shown in Figure 11-10, appears. From this menu, you select the option you want to use.

Figure 11-10. Print Printer Extended Pop-up Menu

a1 MENU

Set the print orientation

	a	b	c	d	e	f	g	h	i
1									
2		Data Processing Budget							
3		1st Quarter 1988							
4		Category		Word					
5				Processing					
6									
7		Equipment		\$9,000.00					
8		Supplies		\$1,550.00					
9		Salaries - Permanent		\$14,000.00					
10		Salaries - Contract		\$6,000.00					
11		Miscellaneous Expenses		\$900.00					
12									
13									
14		Total Budget		\$31,450.00					
15									
16									
17									
18									
19									
20									
21									
22									
23									

Font-Size  
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## Orientation

The orientation option gives you three selections: Default, Landscape or Portrait. OFIS Spreadsheet uses Portrait as the default option. The Landscape option prints a report with the paper width exceeding the paper length (for example, 11" x 8 1/2"). The Portrait option prints a report with the paper length exceeding the paper width (for example, 8 1/2" x 11").

Note that when you select either landscape or portrait mode, the right margin and page length are automatically adjusted so that the entire printer page is fully used.

### Font-Size

You select the font, or character set size, in points. The default value of 12 points corresponds to six lines per inch vertically and 10 characters per inch horizontally.

Laser printers support fonts from six to 36 points, although most support only even-numbered sizes, and only a few of these support larger than 12 point.

Daisywheel printers support eight point (15 pitch) and 10 point (12 pitch) in addition to the default, 12 point. Some dot matrix printers may support nine point, since that corresponds to eight lines per inch.

Note that when you change the point size, the margins and page length are automatically adjusted so that the entire printer page is fully used.

Refer to the *CTOS Generic Print System (GPS) Administration Guide* to determine the font size that your printer supports.

### Line-Spacing

You determine the amount of space between lines by changing the Line Spacing option. OFIS Spreadsheet uses a default line spacing of 12 points between lines, but you can select line spacing of from 6 to 36 points.

### Pitch

You determine the number of printed characters per inch by changing the Pitch option. OFIS Spreadsheet automatically uses the default pitch for the specified font size, but you can select a pitch of 1 to 50 characters per inch.

### Input-Bin

You can select the paper tray a printer will draw the paper to print a report from by changing the Input-Bin option. The default, 0, allows GPS to select the paper tray for a report. You can select paper tray number 1, 2, or 3.

## Typeface

You use the Typeface option to change the typeface (font) a spreadsheet prints in. You can select a typeface from those available to your system from GPS. You use the Typeface option as follows:

- If you select the Typeface option, OFIS Spreadsheet displays a list of the typefaces available from the font database, and you can select one to print your spreadsheet in.
- If you select a typeface for a spreadsheet, it remains the selected typeface for that spreadsheet; you do not have to re-select it every time you print that spreadsheet.
- If you want to change the selected typeface, select a different typeface from the list.

*Note: If you select a proportional font, OFIS Spreadsheet prints the spreadsheet using the default pitch for that font.*

## Troubleshooting a Printed Spreadsheet's Appearance

If your spreadsheet does not print out the way you expect, the cause may lie in the Typeface selected for it. Keep the following in mind when you use the Typeface option:

- If a font you select is not available on the printer you print your spreadsheet on, the printer substitutes the closest font it has to the one you specified. This can cause your spreadsheet to print out differently on different printers. You may find it helpful to ask your system administrator for a list of the fonts available on a printer, and make sure one of them corresponds to the font you have selected for your spreadsheet.

- The font choices the Typeface option displays can include both proportional fonts and monospaced fonts. In a proportional font, the amount of space a character occupies on a printed page depends on its width; for example, in a proportional font, the character **W** occupies more printed space than the character **I**. This can cause a printed spreadsheet to appear markedly different from the way it appears on the screen, or in a monospaced font. Monospaced fonts allow the same amount of space for every character; for example, in a monospaced font, the character **I** occupies as much space as the character **W**. The following two lines illustrate the difference:

This text is in a proportional font. 0123456789.

This text is in a monospaced font. 0123456789.

A spreadsheet printed in a monospaced font most closely resembles a spreadsheet displayed on your screen, so using monospaced fonts yields the most predictable results. For a list of proportional fonts, refer to table 11-1.

If you select a proportional font, print your spreadsheet and examine it to make sure that cells that appear properly spaced on the screen do not overlap other cells on the printed spreadsheet. If they do, try selecting a different proportional font; you may get better results.

Also, you can change the value of the `SSWSRATIO` keyword in your *SDConfig.sys* file to change the method used to compute white space. This may enable you to adjust the white space to accommodate the selected font. Refer to Appendix B for more information.

**Table 11-1. Proportional Fonts**

---

APBoldItPS	ITC Avant Garde Gothic
APBoldPS	ITC Bookman
Cubic PS 96	ITC Zapf Chancery
Greek	ITC Zapf Dingbats
Helvetica	LinePrint
Helvetica Condensed	New Century Schoolbook
Helvetica Narrow	Palatino
	Times

---

## Exiting the Extended Option Pop-up Menu

To exit the Extended option pop-up menu, press **Q** (Quit). The Printer pop-up menu appears. To return the spreadsheet to Ready mode, press **Q** (Quit) again.

## Formatting Print Data

OFIS Spreadsheet allows you to set certain printable attributes. Printable attributes are attributes you can select to format data entered in the worksheet area of a worksheet. These attributes are used for printing to a printer (not to a file).

### Printable Attributes

Printable attributes can be defined for a cell or range of cells. Attributes include Bold, Italics, Overstrike, and Underline. If you select Underline, you get the additional option of selecting single underline or double underline. With all of these options, you can select Set (turn the attribute on) or Clear (turn the attribute off). When the cell pointer is on a cell that has one of these attributes turned on, the command panel displays the option in braces (for example, {Bold}).

To access printable attributes, you type the first character of the following option:

**/PrintPrinterFormat**

The Print Printer Format pop-up menu, shown in Figure 11-10A, appears. From this menu, you select the printable attribute(s) you want to use.

To return to Ready mode, press **Q** (Quit). To remove all print formatting from a range, press **R** (Reset).



Figure 11-10A. Print Printer Format Pop-up Menu

a1 MENU

Format text for printing in boldface

	a	b	c	d	e	f	g	h	i
1	Data Processing Budget								
2	1st Quarter 1988								
3									
4	Category		Word						
5			Processing						
6									
7	Equipment		\$9,000.00		<div style="border: 1px solid black; padding: 5px;"> <p><b>Bold</b></p> <p>Italics</p> <p>Overstrike</p> <p>Quit</p> <p>Reset</p> <p>Underline</p> </div>				
8	Supplies		\$1,550.00						
9	Salaries - Permanent		\$14,000.00						
10	Salaries - Contract		\$6,000.00						
11	Miscellaneous Expenses		\$900.00						
12									
13									
14	Total Budget		\$31,450.00						
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### Printable Attribute Descriptions

Table 11-1A lists the command panel text that can appear in braces when printable attributes are selected for the current cell. The text is displayed in the command panel just after the cell indicator. The text is listed in the order it is displayed within the braces from left to right.

**Table 11-1A. Attribute Descriptions**

Attribute	Command Panel Text
Bold	Bold
Italics	Ital
Overstrike	Overa
Underline	U1
Double Underline	U2

The following are examples of command panel text:

- {Bold} Cell entry prints bold.
- {Bold Ital U1} Cell entry prints bold, italics, and underlined.
- {Ital U2} Cell entry prints in italics and double underlined.

***Note:** The Underline attribute (single and double) only underlines an entry that is already in a cell. You cannot underline a blank cell.*

## Saving Printable Attributes

Printable attributes are saved when the worksheet is saved so that they can be reused each time the worksheet is retrieved. However, printable attributes are not recognized by other spreadsheet products. If another spreadsheet product retrieves a sheet with printable attributes, they will be ignored. Also, printable attributes are not recognized by older versions of OFIS Spreadsheet. These attributes are unique to OFIS Spreadsheet 2.1 or later.

## Selecting a Printer

OFIS Spreadsheet allows you to select from one or more printers to print your spreadsheet reports, but you typically use the same printer per session. To select a printer, you type the first character of the following options:

**/PrintPrinterName**

The Mode indicator flashes **WAIT**, then displays a prompt asking you to select a printer name. Below the prompt OFIS Spreadsheet shows the available printers and highlights the default printer.

To print to the default printer, press **RETURN** or **GO**. To print to a printer other than the default printer, you can type the first letter of the printer name, or select the name.

To return the spreadsheet to Ready mode, press **Q** (Quit).

## Sending Data to a Print File

In addition to printing data to a printer, OFIS Spreadsheet also can send data to a print file.

To send data to a print file, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/PrintFile**

A prompt appears asking for the print filename.

3. Type the print filename. If not in the current directory, type the full path name.

The PrintFile pop-up menu appears. You then define what portion of the spreadsheet you want OFIS Spreadsheet to send to the print file.

4. Select the **Range** option.

A prompt appears asking for the Print range. Following the prompt is a reference to the current cell address as a range.

5. Choose one of the following:

- Press **RETURN** or **GO**.
- Anchor the cell pointer in the first cell of the Print range and, using the Arrow keys, expand the range to include all of the cells; then press **RETURN** or **GO**.
- Type the range; then press **RETURN** or **GO**.

The PrintFile pop-up menu appears.

6. Select **GO**.

The Mode Indicator flashes **WAIT**, and the PrintFile pop-up menu appears.

7. Type **Q** to select the Quit option.

OFIS Spreadsheet sends the information in the Print range to the print file. The print filename appears in the current directory with the extension *.prn*. This extension indicates this is a print file.

## Accessing the Print File

OFIS Spreadsheet creates the print file in the directory you were using during your spreadsheet session. When accessing the print file, you must be in that directory, or you can copy the print file to a different directory. You can then access the print file from that directory.

## Exiting the Printer Pop-up Menu

To exit the Printer pop-up menu, you press **Q** (Quit). The spreadsheet returns to Ready mode.



## Using the Worksheet Global Default Printer Options

The Worksheet Global Default Printer options affect every spreadsheet. You can still modify individual spreadsheets by using the Print Printer options, but to make a global change, you do so by using the Worksheet Print options. Changes made to individual cells, or ranges, override global changes.

### Changing the Auto Line-Feed Setting

The auto line-feed setting tells OFIS Spreadsheet if it should send a carriage return and/or line-feed instruction to the printer after printing each line. The carriage return instruction tells the printer to move the print head to the edge of the paper, and the line-feed instruction tells the printer to move up one line.

The auto line-feed setting has three options. Table 11-2 shows the options and explains what each does.

**Table 11-2. Auto Line-Feed Options**

Option	Function
Line-Feed	Sends only line-feed instruction (Default)
No	Sends only carriage return instruction
Yes	Sends carriage return and line-feed instructions

Some printers automatically add a line-feed at the end of each line. If this is the case and you have the option set to send a line-feed instruction, OFIS Spreadsheet prints the report with double spacing. If this happens, you should set the option to **No**.

## Printing a Spreadsheet

---

To change the auto line-feed option, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:  
**/WorksheetGlobalDefaultPrinterAuto-LF**
3. Press **RETURN** or **GO**.

The Auto-LF pop-up menu appears, highlighting the Line-Feed option.

4. Choose one of the following:
  - Type the first letter of the desired option.
  - Move the highlight over the desired option; then press **GO**.

The Auto-LF pop-up menu appears.

5. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.

## Pausing the Printer Between Pages

The OFIS Spreadsheet Worksheet Wait option tells the printer to pause between printing each page. This option is useful, for example, when printing on forms or letterhead. When you use the Wait option, OFIS Spreadsheet tells the printer to stop printing after each page, and waits until you press a key to resume printing.

To resume printing you must enter Print Manager, and press **Resume (F5)**.

To turn the Worksheet Wait option on, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/WorksheetGlobalDefaultPrinterWait**

The Wait options appear, with No highlighted.

3. Choose one of the following:

- Type **Y**
- Highlight **Yes**; then press **GO**.

The Worksheet Printer pop-up menu appears.

4. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode.



### Selecting a Global Default Printer

The OFIS Spreadsheet Worksheet Global Default Printer option enables you to select a global default printer. After you select a global default printer, that printer name will be selected in the pop-up menu of printers when you select the Print Printer Name option to print a report.

To select a global default printer, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

`/WorksheetGlobalDefaultPrinterName`

The list of printers appears.

3. Highlight the printer you want to select as your global default printer, and press **GO**.

The Worksheet Global Default Printer pop-up menu appears.

4. Type **Q** twice to select the Quit option.

The spreadsheet returns to Ready mode. In order to make the printer your default printer, type the first character of the following options:

`/WorksheetGlobalDefaultPrinterUpdate`

Your selected printer is now your default setting, and is saved in your OFIS Spreadsheet configuration file. (For more information on the configuration file, see “Customizing OFIS Spreadsheet” in Appendix B, “Installing OFIS Spreadsheet.”) If you did not select the Worksheet Global Default Update option, the your printer selection remains in effect for the current spreadsheet session only.

## Using the Update Option

Whenever you make a print option change using the Worksheet Printer option, it only remains in effect for the duration of your spreadsheet session, unless you save the changes by using the Update option.

To save Worksheet Printer changes, type the first character of the following options:

**/WorksheetGlobalDefaultUpdate**

Your global changes are now default settings, which are saved in the OFIS Spreadsheet configuration file. (For more information on the configuration file, see “Customizing OFIS Spreadsheet” in Appendix B, “Installing OFIS Spreadsheet.”)

To return the spreadsheet to Ready mode, you press **Q** (Quit).

## Checking on Global Print Status

The Worksheet Global Default Status displays the default status for the following print settings:

- Auto line-feed
- Left, right, top, and bottom margins
- Page length
- Page width
- Manual paper feed
- Setup string
- Printer name

To view the Worksheet Global Default Status screen, you type the first character of the following options:

**/WorksheetGlobalDefaultStatus**

# Printing a Spreadsheet

A sample of this screen is shown in Figure 11-11.

**Figure 11-11. Worksheet Global Default Status Screen**

a1 MENU

Printer:		International		
Auto-linefeed	No	Punctuation	Other	←
Left Margin	4	Decimal Point	.	↑
Right Margin	76	Argument Separator	:	↓
Top Margin	2	Thousands Separator	,	<
Bottom Margin	2	Currency String	\$	>
Page Length	66	Currency Position	Prefix	/
Page Width	80	Date format D4	B (MM/DD/YY)	?
Manual Paper Feed	No	Time format D8	A (HH:MM:SS)	
Setup String Name				
Initial Path:	[Sys]<Sys>	Screen Colors:		
Help access method:	Removable	Borders	Lavender	
Screen clock	Standard	Command Panel	Peach	
File locking:	Enabled	Function Keys	Yellow	
Autosave:	Enabled	Information Line	White	
Interval	10	Protected Cells	Cyan	
		Unprotected Cells	Salmon	
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Window	Query	Table	Calc	Graph

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To return to the current spreadsheet, you press any key. To return to Ready mode, you press **Q** (Quit) twice

## Section 12

# Managing the Database

OFIS Spreadsheet gives you several methods of utilizing databases. A database is a collection of information. In OFIS Spreadsheet you can have many different types of databases. For example, you can have mailing lists, price lists, personnel records, or inventories. The database is structured so you can access and manipulate information quickly and easily. You can find information in the database, sort it, define conditions and extract information matching those conditions from it, and delete information. You can also compute statistics about database information.

## Database Structure

To access information in the database easily and quickly, it must be carefully arranged. Figure 12-1 shows a sample spreadsheet database. Each row in the spreadsheet constitutes a record in the database, and each column constitutes a field.

The top row of the spreadsheet is the label row. The label row is a single row of adjacent cells containing identifying entries, usually labels. These entries serve as the field names of the database. The field name describes the information that each column or field contains. This row is essential in the structure of the database.

Figure 12-1. Sample Database

a1 [W12]'LAST NAME READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	STREET ADDRESS	CITY	STATE	ZIP
2	Adams	John	423 Oak	Los Angeles	CA	90013
3	Crown	Drake	1115 Vadnals	Camarillo	CA	93010
4	French	Vanessa	2516 Rose	Los Angeles	CA	90013
5	Farley	Randy	428 St. Louis	Agoura	CA	91301
6	Henry	Thomas	324 Fir	Ventura	CA	93004
7	Jackson	Barbara	11 Janes	Camarillo	CA	93010
8	Mason	Abby	916 Seepe	Los Angeles	CA	90013
9	Parker	K. C.	811 Autumn	Los Angeles	CA	90014
10	Richards	Lee	72 Beacon	Moorpark	CA	93021
11	Tracy	Jo	568 Grimes	Ventura	CA	93003
12	Watson	Daniel	699 Park	Agoura	CA	91301
13	Williams	Robert	4578 Cedar	Agoura	CA	91301
14	Young	Susan	91 Gault	Thousand Oaks	CA	91360
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The field names serve two purposes in database structure:

- They identify the information in the column or field.
- They tell OFIS Spreadsheet where to look in the database for the information you are seeking.

## Creating a Database

You create a database the same way you create a spreadsheet, by entering labels, values, formulas, or functions. The database in Figure 12-1 contains label and value entries. If you have formulas or functions in the database referring to cells outside of the database, then you use absolute cell referencing, or at least mixed cell referencing, keeping the row reference fixed.

When creating a database, you can use as many field names as necessary. The same size constraints apply to the number of records you have in the database. The database size is set by the size of the spreadsheet and the amount of memory available. The database can be a portion of a spreadsheet, or it can be the entire spreadsheet.

To create a database, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer at the first cell of the first row of the database.
3. Type the field name.

After you type the first field name, move the cell pointer to an adjacent cell and type the next field name. Continue until you type all field names.

Now you are ready to enter the records, starting immediately below the first field name.

4. Type the record.

After you enter the first record, enter the second record by moving the cell pointer to the next row. Continue until you enter all of the records.

# Manipulating Database Information

Since a database is virtually the same as a spreadsheet, you can use the same options and functions to format, edit, print, and save the database.

You edit the database just like any other spreadsheet. You can:

- Copy records or fields
- Move records or fields
- Erase records or fields using the Range Erase option
- Add records or fields
- Delete records or fields

You can improve the appearance of the database by formatting the entries, changing the column width, or by using any of the other options and functions available to you in OFIS Spreadsheet.

# Sorting the Database

You can sort any group of adjacent records in the spreadsheet. OFIS Spreadsheet arranges the records using the sort order you select. You have the option of sorting this information in:

- Ascending order (lowest to highest)
- Descending order (highest to lowest)

Sorting the database makes it easier to find a particular record. You can more easily compare entries in the same field or different fields by sorting the information.

## Sorting Basics

You sort the database by typing the first character of the following options:

**/DataSort**

The Sort pop-up menu displays.

Before you actually execute the sort, you need to define certain information:

- Data range
- Primary-key
- Secondary-key

### Defining the Data Range

The data range consists of the entries you want to sort. You define the data range by selecting every field of every record you want to include in the sort. You do not need to include field names in the data range.

### Designating the Primary-key

OFIS Spreadsheet bases the sort on the primary-key. You define the primary-key by selecting an entry from the column containing the fields you want to use as the primary-key. You can request sorting of these entries in ascending or descending order.

### Designating the Secondary-key

There may be times you want to define the sort order beyond the primary-key sort. You do this by defining a secondary-key for OFIS Spreadsheet to use in sorting. You use the same procedure to define this key as you did to define the primary-key.



### Sorting on a Single Field

When you want to sort on a single field, you specify a primary-sort key only. The procedure is the same whether the field is a label or a value.

To sort using a primary-key only, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the first cell of the entries you want to sort.
3. Type the first character of the following options:

**/DataSort**

The Sort pop-up menu appears with the Data-Range option highlighted.

4. Press **RETURN** or **GO**.  
A prompt appears asking for the Data range. Following the prompt is a reference to the cell address of the current cell.
5. Position the first cell by pressing . (the period) and, using the Arrow keys or the mouse, move the cell pointer to expand the range until it includes all of the entries you want to include in the sort.

6. Press **RETURN** or **GO**.

The Sort pop-up menu reappears.

7. Select Primary-Key.

A prompt appears asking for the primary sort key address. Following the prompt is a reference to the cell address of the current cell.

8. Choose one of the following:

- Press **RETURN** or **GO** to accept.
- Using the Arrow keys or the mouse, move the cell pointer to a cell in the column containing the field you are using as the primary-key; then press **RETURN** or **GO**.

A prompt appears asking for the sort order.

9. Choose one of the following:

- Press **RETURN** or **GO** to accept the default order, ascending.
- Type **D** to select descending order; then press **RETURN** or **GO**.

The Sort pop-up menu reappears.

10. Select **GO**.

While the sort is in progress, the Mode Indicator flashes **WAIT**. When the sort is complete, the newly sorted database displays on your screen.

Figure 12-2 shows the mailing list database after sorting using the entries under **CITY** as the primary sort field, in ascending order. All of the entries in the database are in order by city, and the cities are in alphabetical order.

Figure 12-2. Database Sorted on Single Field

a1 [W12]LAST NAME

READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	STREET ADDRESS	CITY	STATE	ZIP
2	Watson	Daniel	699 Park	Agoura	CA	91301
3	William	Robert	4578 Cedar	Agoura	CA	91301
4	Farley	Randy	428 St. Louis	Agoura	CA	91301
5	Crown	Drake	1115 Vadnais	Camarillo	CA	93010
6	Jackson	Barbara	11 Jones	Camarillo	CA	93010
7	Adams	John	423 Oak	Los Angeles	CA	90013
8	Mason	Abby	916 Seepe	Los Angeles	CA	90013
9	French	Vanessa	2516 Rose	Los Angeles	CA	90013
10	Parker	K. C.	811 Autumn	Los Angeles	CA	90014
11	Richards	Lee	72 Beacon	Moorpark	CA	93021
12	Young	Suson	91 Gault	Thousand Oaks	CA	91360
13	Henry	Thomas	324 Fir	Ventura	CA	93004
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## Sorting on Two Fields

The procedure for sorting on two fields is the same as for sorting on one, except you define a secondary-key in addition to a primary key.

To sort using two keys, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the first cell of the entries you want to sort.
3. Type the first character of the following options:

**/DataSort**

The Sort pop-up menu appears with the Data-Range option highlighted.

4. Press **RETURN** or **GO**.

A prompt appears asking for the Data range. Following the prompt is a reference to the cell address of the current cell.

5. Position the first cell by pressing . (the period) and, using the Arrow keys or the mouse, move the cell pointer to expand the range until it includes all of the entries you want to include in the sort.
6. Press **RETURN** or **GO**.

The Sort pop-up menu reappears.

7. Select **Primary-Key**.

A prompt appears asking for the primary sort key address. Following the prompt is a reference to the cell address of the current cell.

8. Choose one of the following:
  - Press **RETURN** or **GO** to accept.
  - Using the Arrow keys or the mouse, move the cell pointer to a cell in the column containing the field you are using as the primary-key; then press **RETURN** or **GO**.

A prompt appears asking for the sort order.

9. Choose one of the following:

- Press **RETURN** or **GO** to accept the default order, ascending.
- Type **D** to select descending order; then press **RETURN** or **GO**.

The Sort pop-up menu redisplay.

10. Select **Secondary-Key**.

11. Press **RETURN** or **GO**.

A prompt appears asking for the secondary sort key address. Following the prompt is a reference to the cell address of the current cell.

12. Choose one of the following:

- Press **RETURN** or **GO** to accept.
- Using the Arrow keys or the mouse, move the cell pointer to a cell in the column containing the field you are using as the secondary-key; then press **RETURN** or **GO**.

A prompt appears asking for the sort order.

13. Choose one of the following:

- Press **RETURN** or **GO** to accept the default order, ascending.
- Type **D** to select descending order; then press **RETURN** or **GO**.

The Sort pop-up menu reappears.

14. Select **RETURN** or **GO**.

While the sort is in progress, the Mode Indicator flashes **WAIT**. When the sort is complete, the newly sorted database appears on your screen.

Figure 12-3 shows the mailing list database after sorting, using **CITY** as the primary sort field, in ascending order, and **LAST NAME** as the secondary sort field, in ascending order.

The database is in ascending order by city; within each city, the last names are in alphabetical order.

Figure 12-3. Database Sorted on Two Fields

a1 [W12] LAST NAME READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	STREET ADDRESS	CITY	STATE	ZIP
2	Farley	Randy	428 St. Louis	Agoura	CA	91301
3	Watson	Daniel	699 Park	Agoura	CA	91301
4	Williams	Robert	4578 Cedar	Agoura	CA	91301
5	Crown	Drake	1115 Vadnais	Camarillo	CA	93010
6	Jackson	Barbara	11 Janes	Camarillo	CA	93010
7	Adams	John	423 Oak	Los Angeles	CA	90013
8	French	Vanessa	2516 Rose	Los Angeles	CA	90013
9	Mason	Abby	916 Seepe	Los Angeles	CA	90013
10	Parker	K. C.	811 Autumn	Los Angeles	CA	90014
11	Richards	Lee	72 Beacon	Moorpark	CA	93021
12	Young	Susan	91 Gault	Thousand Oaks	CA	91360
13	Henry	Thomas	324 Fir	Ventura	CA	93004
14	Tracy	Jo	568 Grimes	Ventura	CA	93003
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## Undoing a Sort

OFIS Spreadsheet does not have an option that you can select to “undo” a sort. However, there are steps you can take before you sort that enable you to undo the sort, if necessary.

First, you should always save the spreadsheet before sorting: then if something happens you can simply retrieve the original spreadsheet and start again.

Second, if you have a sequential numerical field (for example, customer number) you can do an ascending sort using that field as the primary-key. If you do not have such a field, you can create one by issuing the Data Fill option. The Data Fill option is discussed in detail later in this section.

### Resetting Sort Definitions

Once you define the data range, primary-key and secondary-key, OFIS Spreadsheet keeps those values during your session. To define different values, you can enter them at the prompts or type the first character of the following options:

**/DataSortReset**

OFIS Spreadsheet clears all current sort definitions.

### Querying a Database

Once you have a database set up, you can obtain information from it using certain specifications or criteria. OFIS Spreadsheet provides you with functions that let you find database records, extract them from the database, and delete them from the database. You do this by using the Data Query option.

To obtain the information you set up certain specifications or criteria. Criteria are conditions you define telling OFIS Spreadsheet which records to select from the database. To define criteria, you must create a Criterion range.

### Creating a Criterion Range

A Criterion range is similar in structure to a database. The top row consists of the field names and the rows beneath the top row contain the criteria. The field names must be identical to the field names in the database. To ensure they are identical, it is a good idea to use the Copy option when creating the field names in the Criterion range. You need at least the field names you are querying.

Figure 12-4 shows the field names in a Criterion range set up for the mailing list database.

Figure 12-4. Criterion Range Field Names

a1 [W12] LAST NAME

READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	STREET ADDRESS	CITY	STATE	ZIP
2	Adams	John	423 Oak	Los Angeles	CA	90013
3	Crown	Drake	1115 Vadnals	Camarillo	CA	93010
4	French	Vanessa	2516 Rose	Los Angeles	CA	90013
5	Farley	Randy	428 St. Louis	Agoura	CA	91301
6	Henry	Thomas	324 Fir	Ventura	CA	93004
7	Jackson	Barbara	11 Jones	Camarillo	CA	93010
8	Mason	Abby	916 Seepe	Los Angeles	CA	90013
9	Parker	K. C.	811 Autumn	Los Angeles	CA	90014
10	Richards	Lee	72 Beacon	Moorpark	CA	93021
11	Tracy	Jo	568 Grimes	Ventura	CA	93003
12	Watson	Daniel	699 Park	Agoura	CA	91301
13	Williams	Robert	4578 Cedar	Agoura	CA	91301
14	Young	Susan	91 Gault	Thousand Oaks	CA	91360
15						
16						
17						
18	LAST NAME	FIRST NAME	STREET ADDRESS	CITY	STATE	ZIP
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### Defining Criteria

Before you can query the database, you must define the criteria. Criteria are the entries in the Criterion range OFIS Spreadsheet uses to select information from the database. You start making these entries in the second row of the Criterion range; you can use more than one row. These entries can be:

- Labels
- Values
- Formulas
- Functions

The entries you make in the Criterion range are basically the same types of entries you make in the spreadsheet. However, in addition to these types of entries you can also use:

- Wildcards
- Comparisons

It is important that you place the entry under the correct field name, because OFIS Spreadsheet uses the field name to look for the entry.

### Exact Match Criterion

You specify an exact match criterion by entering the label or value exactly as it appears in the database, under the appropriate field name. Figure 12-5 shows an example of how to set up an exact match label criterion.

Figure 12-5. Exact Match Label Criterion

a1 [W15]'LAST NAME READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
2	Adams	John	02-01-85	\$25,000	A	
3	Crown	Drake	01-08-86	\$21,000	E	
4	French	Vanessa	05-15-83	\$27,000	D	
5	Farley	Randy	06-22-79	\$35,000	E	
6	Henry	Thomas	11-01-87	\$25,000	E	
7	Jackson	Barbara	03-21-88	\$20,000	A	
8	Mason	Abby	12-15-84	\$28,000	C	
9	Parker	K. C.	04-01-88	\$20,000	E	
10	Richards	Lee	07-02-80	\$40,000	A	
11	Tracy	Jo	10-15-85	\$30,000	E	
12	Watson	Daniel	12-15-87	\$26,000	E	
13	Williams	Robert	12-15-88	\$20,000	C	
14	Young	Susan	11-01-87	\$26,000	E	
15						
16						
17						
18	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
19	Mason					
20						
21						
22						
23						

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### Wildcard Criterion

Wildcard criterion uses the wildcard character as part of the entry. A wildcard is a symbol that represents a character or character string. Table 12-1 shows the wildcard characters available in OFIS Spreadsheet and explains their function. Using wildcard criterion enables you to select a specified group of entries from the database.

**Table 12-1. Wildcard Characters**

---

<b>Symbol</b>	<b>Function</b>
?	Represents any single character For example, Swans?n would match Swansen and Swanson.
*	Represents any series of adjacent characters For example, Pe* matches Peters and Peterson; *as matches Thomas and Lomas; Pe*son matches Person and Peterson.
~	Negates what follows For example, ~Johnson matches every label entry except Johnson.

---

The wildcard entries work only with label entries, not values. When working with values you must use comparison criteria.

### Comparing Criterion

You can set up a condition and instruct OFIS Spreadsheet to compare it to specified entries in the database and return a result. Basically, you are setting up conditional tests.

The result OFIS Spreadsheet returns is either 1 for true or 0 for false. If it is true, OFIS Spreadsheet selects the record; if it is false, it does not. Since you usually select an entire field for comparison, this indicator can be misleading. The indicator only tells you if the first entry in the field is true or false, not every entry.

The Data Query condition you set up has three parts:

- Cell reference
- Comparison operator
- A value

The first part, cell reference, is simply a relative reference to the cell in the first record of a field in the database. This tells OFIS Spreadsheet what field in the database the criterion applies.

You do not need to specify the entire field because OFIS Spreadsheet automatically tests every entry in the field. If you are using a cell reference outside of the database, you must use an absolute cell reference or a mixed cell reference with the row reference fixed.

The next part of the condition is the comparison operator. Table 12-2 shows the available comparison operators and their functions.

**Table 12-2. Comparison Operators**

Symbol	Function
>	Greater than
<	Less than
=	Equal to
>=	Greater than or equal to
<=	Less than or equal to
<>	Not equal to

These comparison operators tell OFIS Spreadsheet how to compare the criterion to the entry. For example, using the = comparison operator with a value entry tells OFIS Spreadsheet to find a value equal to that value. Using <> tells OFIS Spreadsheet to select records that do not equal the comparison value.

Figure 12-6 shows an example of a condition comparing criteria. The condition appears in the command panel next to the cell address, and the response appears in the Criterion range under the field name. In this example, OFIS Spreadsheet returns 1, indicating the first record in the database field meets the criterion.

Figure 12-6. Comparing Criterion

d19 [W10] +d3>=25000

READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
2	Adams	John	01/02/85	\$25,000	A	
3	Crown	Drake	01/08/86	\$21,000	E	
4	French	Vanessa	05/15/83	\$27,000	D	
5	Farley	Randy	06/22/79	\$35,000	E	
6	Henry	Thomas	11/01/87	\$25,000	E	
7	Jackson	Barbara	03/21/88	\$20,000	A	
8	Mason	Abby	12/15/84	\$28,000	C	
9	Parker	K. C.	04/01/88	\$20,000	E	
10	Richards	Lee	07/02/80	\$40,000	A	
11	Tracy	Jo	10/15/85	\$30,000	E	
12	Watson	Daniel	12/15/87	\$26,000	E	
13	Williams	Robert	02/15/88	\$20,000	C	
14	Young	Susan	11/01/87	\$26,000	E	
15						
16						
17						
18	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
19						
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23						

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### Comparing Text Criteria

You can set up conditional tests to compare text fields. For example, using the mailing list database, you could use the criterion **+a3="Mason"** to select all the records with the label **Mason** in the **LAST NAME** field. Whenever you use text in a comparison criterion, you must enclose the text in quotation marks.

You can also use the comparison operators to compare text fields. These are useful when you are comparing text entries such as telephone numbers or zip codes. You can not use any of the wildcard characters in text comparison criterion.

### Comparing Formulas and Functions Criteria

You can also set up conditional tests using comparison operators to compare formulas and functions. For example, using the database in Figure 12-7, you could select the records of all employees with a date of hire after January 1985 by using the following comparison: **+C3>@DATE(85,01,01)** This would then select all records with a hire date after January 1, 1985.

Figure 12-7. Sample Function Comparison

c19 [W15] +c3>@DATE(85, 1, 1)

READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
2	Adams	John	01/02/85	\$25,000	A	
3	Crown	Drake	01/08/86	\$21,000	A	
4	French	Vanessa	05/15/83	\$27,000	D	
5	Farley	Randy	06/22/79	\$35,000	E	
6	Henry	Thomas	11/01/87	\$25,000	E	
7	Jackson	Barbara	03/21/88	\$20,000	A	
8	Mason	Abby	12/15/84	\$28,000	C	
9	Parker	K. C.	04/01/88	\$20,000	E	
10	Richards	Lee	07/02/80	\$40,000	A	
11	Tracy	Jo	10/15/85	\$30,000	E	
12	Watson	Daniel	12/15/87	\$26,000	E	
13	Williams	Robert	02/15/88	\$20,000	C	
14	Young	Susan	11/01/87	\$26,000	E	
15						
16						
17						
18	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
19						
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### Multiple Criteria

You can set up comparison criteria that compare more than one condition and select records matching one or more of those conditions. How you set up the criterion in the Criterion range determines if the record must meet all of the criteria or just a single entry.

To select only records meeting all of the criteria, you place all of this criteria on the same row of the Criterion range. By setting the criteria up on the same row you are creating an implied “AND” condition. OFIS Spreadsheet uses the criteria to select the records meeting this condition. All of the conditions must be true for OFIS Spreadsheet to select a record.

Figure 12-8 shows a Criterion range using criteria specifying only records whose salary is over \$35,000, and date of hire before December 31, 1986.

Figure 12-8. AND Comparison

c19 [W15] +c3>@DATE(86, 12, 31)

READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
2	Adams	John	01/02/85	\$25,000	A	
3	Crown	Drake	01/08/86	\$21,000	E	
4	French	Vanessa	05/15/83	\$27,000	D	
5	Farley	Randy	06/22/79	\$35,000	E	
6	Henry	Thomas	11/01/87	\$25,000	E	
7	Jackson	Barbara	03/21/88	\$20,000	A	
8	Mason	Abby	12/15/84	\$28,000	C	
9	Parker	K. C.	04/01/88	\$20,000	E	
10	Richards	Lee	07/02/80	\$40,000	A	
11	Tracy	Jo	10/15/85	\$30,000	E	
12	Watson	Daniel	12/15/87	\$26,000	E	
13	Williams	Robert	02/15/88	\$20,000	C	
14	Young	Susan	11/01/87	\$26,000	E	
15						
16						
17						
18	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
19				0		
20						
21						
22						
23						

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You also have the option of selecting records that match some of the criteria. You do this by placing the criterion on separate rows in the Criterion range. Setting up the criteria in this way creates an implied OR condition. OFIS Spreadsheet reads the criteria OR selects the record meeting this condition.

Figure 12-9 shows a Criterion range using criteria to specify records with a date of hire after January 1985 or Department Code E. Only one of the conditions must be true for OFIS Spreadsheet to select a record.



### Comparing AND and OR Comparisons

You can also create a Criterion range that uses both implied AND and OR conditions. To do this, simply place conditions using implied AND on the same row and conditions using implied OR on different rows. Only records that meet criteria on either row are selected. In Figure 12-10, criteria is set up to select records that have a date of hire before December 31, 1985 or a Department Code of A and a salary greater than \$30,000.

Figure 12-9. OR Comparison

c19 [W15] +c3>@DATE(85, 1, 1)

READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
2	Adams	John	01/02/85	\$25,000	A	
3	Crown	Drake	01/08/86	\$21,000	E	
4	French	Vanessa	05/15/83	\$27,000	D	
5	Farley	Randy	06/22/79	\$35,000	E	
6	Henry	Thomas	11/01/87	\$25,000	E	
7	Jackson	Barbara	03/21/88	\$20,000	A	
8	Mason	Abby	12/15/84	\$28,000	C	
9	Parker	K. C.	04/01/88	\$20,000	E	
10	Richards	Lee	07/02/80	\$40,000	A	
11	Tracy	Jo	10/15/85	\$30,000	E	
12	Watson	Daniel	12/15/87	\$26,000	E	
13	Williams	Robert	02/15/88	\$20,000	C	
14	Young	Susan	11/01/87	\$26,000	E	
15						
16						
17						
18	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
19						
20					E	
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Figure 12-10. AND and OR Comparison

c19 [W10] +d3>35000

READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
2	Adams	John	01/02/85	\$25,000	A	
3	Crown	Drake	01/08/86	\$21,000	E	
4	French	Vanessa	05/15/83	\$27,000	D	
5	Forley	Randy	06/22/79	\$35,000	E	
6	Henry	Thomas	11/01/87	\$25,000	E	
7	Jackson	Barbara	03/21/88	\$20,000	A	
8	Mason	Abby	12/15/84	\$28,000	C	
9	Parker	K. C.	04/01/88	\$20,000	E	
10	Richards	Lee	07/02/80	\$40,000	A	
11	Tracy	Jo	10/15/85	\$30,000	E	
12	Watson	Daniel	12/15/87	\$26,000	E	
13	Williams	Robert	02/15/88	\$20,000	C	
14	Young	Susan	11/01/87	\$26,000	E	
15						
16						
17						
18	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
19				0		
20				0	A	
21						
22						
23						

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## Special Operators

In addition to the comparison operators, OFIS Spreadsheet has special operators that you can use to join or negate conditions. Table 12-3 shows these special operators and explains what they do.

**Table 12-3. Special Operators**

Symbol	Function
#AND#	Links two criteria in an AND relationship
#OR#	Links criteria in an OR relationship
#NOT#	Negates criterion

### #AND# Operator

The #AND# operator links two criteria in an AND relationship. The specified criteria must test true for a record to match. The #AND# operator functions in the same manner as the implied AND, except you can link the two criteria together in one cell instead of two cells.

### #OR# Operator

The #OR# operator functions in the same manner as the implied OR, except that you can place the criteria in one row instead of using more than one. You can combine two or more criteria in one cell using this operator.

### #NOT# Operator

The #NOT# operator negates a criterion. You use this as a prefix. This operator operates on a comparison criterion and compound criteria.

# Querying the Database

You obtain information from a database by using the Data Query option.

This option allows you to set up a specific criterion to use as a selection basis to obtain information matching the criterion. There are four options to help you find, extract, and delete information from the database that matches a specified criterion:

- **Find**  
This locates and highlights the matching records.
- **Extract**  
This copies all matching records to another location in the spreadsheet.
- **Unique**  
This copies the first occurrence of matching records to another location in the spreadsheet.
- **Delete**  
This deletes matching records.

Before executing any of these options you must:

- Create the Criterion range
- Define the Input range
- Define the Criterion range
- Define the Output range (only when executing the Extract or Unique options)

## Defining the Ranges

Before you can query a database, you must define the various ranges that tell the option the location of the information in the database, where the criterion is, when there is output, and where in the spreadsheet output is to go.

## Defining the Input Range

You need to define the area of the spreadsheet containing the database. This area is the Input range.

To define the Input range, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the cell in the upper left corner of the database.

*Note:* When defining the Input range, you must include the row containing the field names. If you insert or delete a row, OFIS Spreadsheet automatically adjusts the Input range definition. However, if you delete the last row of the Input range, you must redefine the range.

3. Type the first character of the following options:

**/DataQueryInput**

A prompt appears asking for the range. Following the prompt is a reference to the address of the current cell.

4. Choose one of the following:
  - Position the cell pointer and, using the Arrow keys or the mouse, expand the range to include all of the cells.
  - Type in the range.
5. Press **GO**.

### Defining the Criterion Range

When defining the Criterion range, be aware that OFIS Spreadsheet interprets a blank line to mean match any record with an entry in any field. If you have a blank line in the Criterion range, you end up matching every record in the database.

To define a Criterion range, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.

*Note:* When you define the Criterion range you must include the row containing the field names. If you add or delete rows after you define the Criterion range, you must redefine it.

2. Type the first character of the following options:

**/DataQueryCriterion**

A prompt appears asking for the range. Following the prompt is a reference to the address of the current cell as a range.

3. Choose one of the following:
  - Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
  - Type the range.
4. Press **GO**.

## Defining the Output Range

When you select the **Extract** or **Unique** options, you must define an Output range, because each of these options copies the matching records to this range.

To define the Output range, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.

***Note:** When defining the Output range, all you need to include is the row containing the field names. These field names must be identical to the field names in the database. OFIS Spreadsheet uses as many rows as is necessary for the matching records, overwriting any existing entries. Because of this, it is a good idea to define the Output range in a section of the spreadsheet that does not have cells containing entries.*

2. Type the first character of the following options:

**/DataQueryOutput**

A prompt appears asking for the range. Following the prompt is a reference to the address of the current cell as a range.

3. Choose one of the following:

- Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
- Type the range.

4. Press **RETURN** or **GO**.



### Redefining Ranges

OFIS Spreadsheet remembers the range definitions for the Input, Criterion, and Output ranges until you redefine or reset them.

To make a change in the range definition, you repeat the procedure for creating the original range definition.

To change all of the range definitions, you can reset all of the definitions by typing the first character of the following options:

**/DataQueryReset**

Once you have your range definitions set up, you are ready to start querying the database.

### Using the Find Option

The Data Query Find option uses criteria in the Criterion range to find and highlight matching records in the database.

Before you select the Data Query Find option, you must define an Input range and a Criterion range if you have not already done so or if the current range definitions are different from the previous range definitions.

To select the Find option, type **/DQF**, and press **GO**.

OFIS Spreadsheet starts at the top of the database and highlights the first matching record, while displaying **FIND** in the Mode Indicator. If there are no matching records, the Data Query menu displays.

You can use the following keys, to move the highlight around in the database while in Find mode:

- **UP ARROW** to move to the next matching record
- **DOWN ARROW** to move to the previous matching record
- **CODE-UP ARROW** to move to the first matching record
- **SHIFT-UP ARROW** to move to the first matching record
- **SHIFT-DOWN ARROW** to move to the last matching record

You can use the following keys to exit Find mode:

- **RETURN**
- **GO**
- **CANCEL**

When you exit Find mode, the Data Query menu displays.

### Using the Extract Option

You can use the Extract Option to find and copy database records that match the criterion. If the matching record is a value resulting from a formula or function, OFIS Spreadsheet only copies the value. The matching records are copied to the defined Output range.

To extract a partial record, you use only the field name of the fields that you are using as criteria. Figure 12-11 shows a Criterion range set up to extract only records matching **Department Code E** and to copy only the **Last Name** of those records.

Figure 12-11. Data Query Extract

c23 [W15]'LAST NAME READY

	a	b	c	d	e	f
16						
17						
18	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
19					E	
20						
21						
22						
23	LAST NAME					
24	Crown					
25	Farley					
26	Henry					
27	Parker					
28	Tracy					
29	Watson					
30	Young					
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Before you select the Extract option, you must define an Input range, a Criterion range, and an Output range if you have not already done so or if the current range definitions are different from the previous range definitions.

To select the Extract option, type /DQE, and press GO.

OFIS Spreadsheet extracts and copies the matching records to the Output range and displays the Data Query menu.

## Using the Unique Option

The Unique option copies only the first occurrence of database records matching the specified criteria. If two or more database records have the same entries in the specified criterion fields, the Unique option only copies the record once. This differs from the Extract option which copies all occurrences of a matching record.

Before you select the Unique option, you must define an Input range, a Criterion range, and an Output range if you have not already done so or if the current range definitions are different from the previous range definitions.

To select the Unique option, type **/DQU**, press **GO**.

OFIS Spreadsheet extracts and copies the first occurrence of matching records to the Output range and displays the Data Query menu.

Figure 12-12 shows an example of using the Unique Option.

Figure 12-12. Data Query Unique Example

d19 [W10] +d3>25000 READY

	a	b	c	d	e	f
3	Crown	Drake	01-08-86	\$21,000	E	
4	French	Vanessa	05-15-83	\$27,000	D	
5	Farley	Randy	06-22-79	\$35,000	E	
6	Henry	Thomas	11-01-87	\$25,000	E	
7	Jackson	Barbara	03-21-88	\$20,000	A	
8	Mason	Abby	12-15-84	\$28,000	C	
9	Parker	K. C.	04-01-88	\$20,000	E	
10	Richards	Lee	07-02-80	\$40,000	A	
11	Tracy	Jo	10-15-85	\$30,000	E	
12	Watson	Daniel	12-15-87	\$26,000	E	
13	Williams	Robert	02-15-88	\$20,000	C	
14	Young	Susan	11-01-87	\$26,000	E	
15						
16						
17						
18	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
19					E	
20	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
21	Crown	Drake	01-08-86	\$21,000	E	
22	Farley	Randy	06-22-79	\$35,000	E	
23	Parker	K. C.	04-01-88	\$20,000	E	
24	Tracy	Jo	10-15-85	\$30,000	E	
25						

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### Using the Delete Option

You can delete records from the database records matching specified criterion by using the Data Query Delete option. OFIS Spreadsheet moves the remaining records up in the space left by records it deletes and adjusts the Input range accordingly. Be careful not to leave a blank line in the Criterion range; OFIS Spreadsheet reads this as select and deletes every record in the database.

Before you select the Delete option, you must define an Input range and a Criterion range if you have not already done so or if the current range definitions are different from the previous range definitions.

To select the Delete option, type **/DQD**

OFIS Spreadsheet deletes all records matching the defined criterion.

There is no way to undo the Delete option. However, there are two precautions you can take before issuing the Delete option:

- Save the spreadsheet.
- Use the Data Query Extract option to copy the fields you are going to delete.

### Using the Query (F7) Key

You can tell OFIS Spreadsheet to reselect the last Data Query option by pressing the **Query (F7)** key. For example, if you press the **Query (F7)** key after issuing a Data Query Find option, OFIS Spreadsheet reselects the Data Query Find option.

This key is helpful when you are performing the same Data Query option with different criteria. When changing the criteria, redefine the Criterion range, if necessary, before pressing the **Query (F7)** key.

### Using the Data Fill Option

The Data Fill option allows you to fill a defined range of cells with consecutive numbers. This is helpful when you are creating a column or range of evenly spaced numbers. You can also create a rectangular range of numbers. OFIS Spreadsheet starts in the first column, fills it, then continues the series in the first cell of the second column.

OFIS Spreadsheet uses the information you enter in response to the prompts to determine the numbering sequence.

To create a series of consecutive numbers, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the first cell of the series.
3. Type the first character of the following options:

**/DataFill**

A prompt appears asking for the fill range. Following the prompt is a reference to the address of the current cell as the range.

4. Choose one of the following:
  - Press **RETURN** or **GO** to accept.
  - Type the cell address; then press **RETURN** or **GO**.

A prompt appears asking for the starting value. Following the prompt is the default starting value 0.

5. Choose one of the following:
  - Press **RETURN** or **GO** to accept the default.
  - Type a starting value; then press **RETURN** or **GO**.

A prompt appears asking for the step value (the interval between the numbers). Following the prompt is the default step value 1.

6. Choose one of the following:
  - Press **RETURN** or **GO** to accept the default.
  - Type a starting value; then press **RETURN** or **GO**.

A prompt appears asking for the stop value (the last number you want). Following the prompt is the default stop value 8191.

7. Choose one of the following:
  - Press **GO** to accept the default.
  - Type a stop value; then press **GO**.

OFIS Spreadsheet creates a series of consecutive numbers using your specifications. Any entries in the defined range are overwritten.

You cannot have variable intervals between the numbers. The Start, Step, and Stop values can be:

- Positive values
- Negative values
- Integers
- Decimals
- Formulas

## Creating a Data Table

OFIS Spreadsheet gives you the ability to perform what-if calculations using different variables in formulas or functions.

However, before you can start calculating, you must first create a data table. You need to have one or two sets of variables, depending on if you are creating a one variable or two variable table, and at least one formula. Once you have the data table set up, you can begin performing what-if calculations.

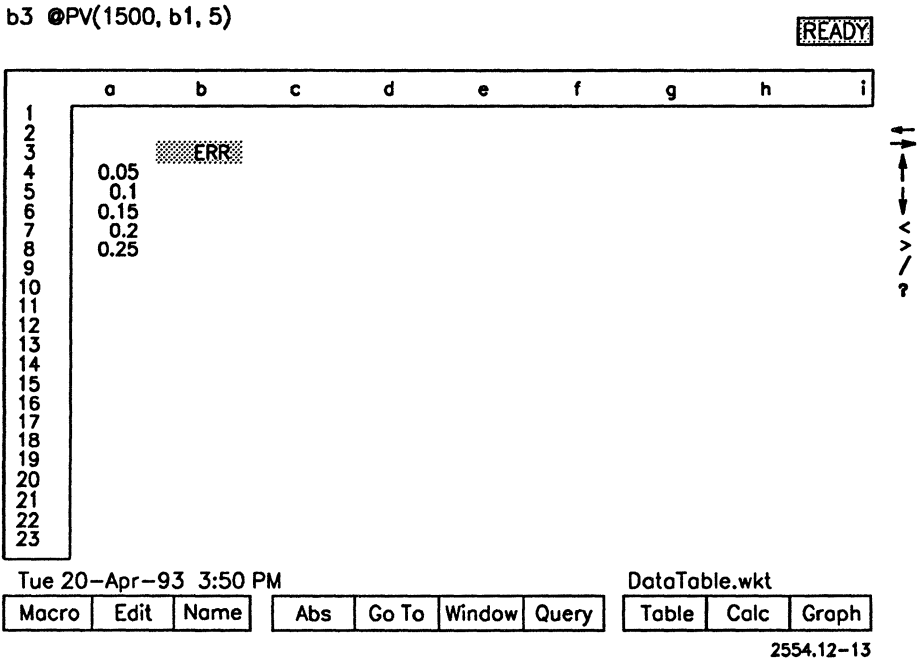
### Creating a One Variable Data Table

A one variable data table substitutes one variable into a formula. You can use as many different values as you want, but you can only have one variable in the formula. You can have more than one formula, which you would enter immediately to the right of the previous formula.

Figure 12-13 shows a one variable data table. The variable values are in cells **a4..a8** and the formula is in cell **b3**. The formula should be in the row above the first variable value. The reason for this is when OFIS Spreadsheet calculates the what-if result for each variable, it places the result in the cell to the right of the variable.



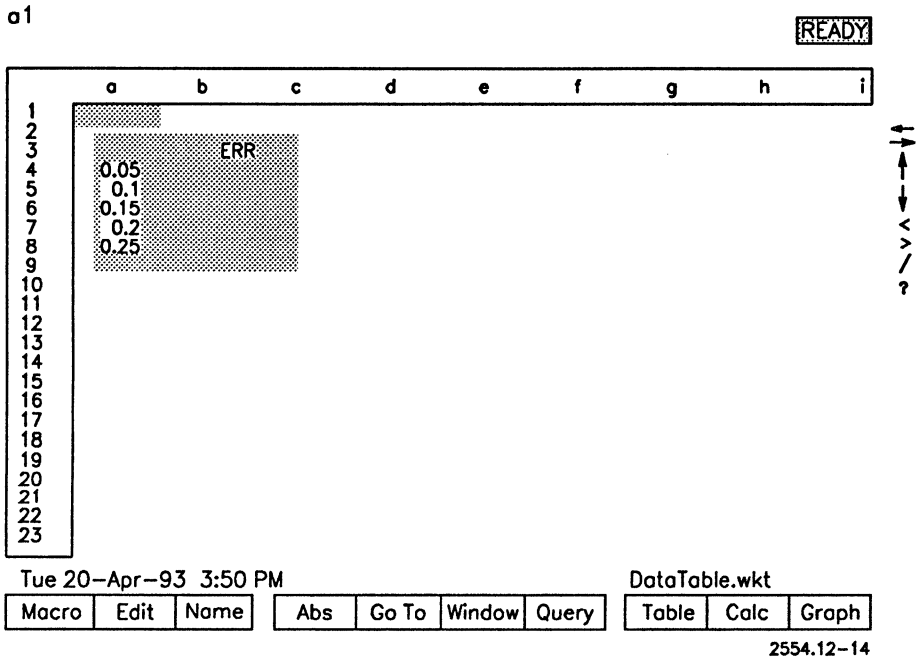
Figure 12-13. One Variable Data Table



The formula in cell **b3** refers to cell **b1**, which is empty, and therefore causes the **ERR** message to display in the spreadsheet. Cell **b1** is the Input Cell. This is a blank cell that OFIS Spreadsheet uses to hold the variable values during the calculations. If you are using more than one formula, each formula must refer to the table's input cell.

You are now ready to begin the what-if calculations. First you need to define the table range. This, like all ranges, is rectangular, and includes a column for the variable values and a column for each formula. Figure 12-4 shows the highlighted table range for the one variable table in our example.

Figure 12-14. One Variable Data Table Range



To perform calculations using a data table with one variable, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cursor in the cell immediately above the first variable value.
3. Type the first character of the following options:

**/DataTable**

The Data Table pop-up menu appears, with the option for a one variable table highlighted.

4. Press **RETURN** or **GO**.

A prompt appears asking for the Table range. Following the prompt is a reference to the cell address of the current cell as a range.

5. Choose one of the following:
  - Position the cell pointer, and using the Arrow keys or the mouse, expand the range.
  - Type the range.
6. Press **RETURN** or **GO**.

A prompt appears asking for Input cell 1. Following the prompt is a reference to the current cell as Input cell 1.

7. Choose one of the following:
  - Press **RETURN** or **GO** to accept.
  - Type the input cell address; then press **RETURN** or **GO**.

OFIS Spreadsheet performs the what-if calculations and places the results for each variable in the cell to the right of that variable. OFIS Spreadsheet continues to perform the calculations until it uses all of the variables. Figure 12-15 shows the results using the one variable table example.

OFIS Spreadsheet retains the definitions of the Table range and Input cell address until you change them.

### Creating a Two Variable Table

You create a two variable table in the same manner as you create a one variable table, with the following exceptions:

- You add a second variable.
- You can only have one formula.

The first variable value is set up in a column, and the second is set up in a row above the column. The formula goes in the cell forming the intersection of the row and column. Figure 12-16 shows a two variable table.

Figure 12-15. One Variable Data Table Results

b3 @PV(1500, b1, 5)

READY

	a	b	c	d	e	f	g	h	i
1									
2									
3									
4			ERR						
5	0.05	6494.215							
6	0.1	5686.18							
7	0.15	5028.233							
8	0.2	4485.918							
9	0.25	4033.92							
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

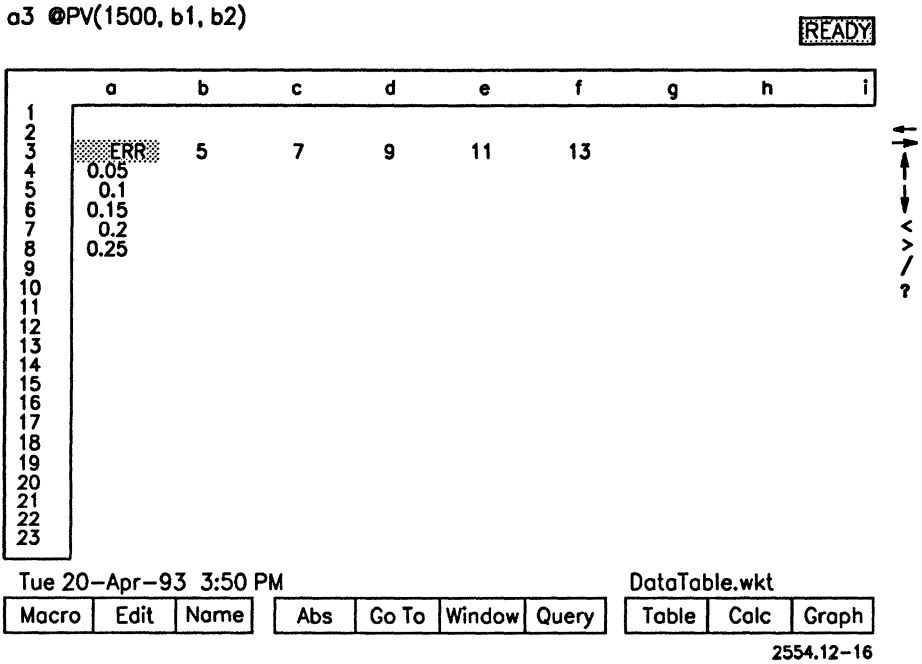
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DataTable.wkt

Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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Figure 12-16. Two Variable Data Table



The variable values are in cells a4..a8 and b3..f3. The formula is in cell a3. In the formula there are two blank cells, b1 and b2. You must have one blank cell for each variable.

It is important to remember which Input cell is being used for which variable. OFIS Spreadsheet uses the Input cells in the order you tell it to use them; the calculations are the result of this order.

To perform calculations using a data table with two variables, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/DataTable**

The Data Table pop-up menu appears, with the option for a one variable table highlighted.

3. Select **2**.
4. Press **RETURN** or **GO**.

A prompt appears asking for the table range. Following the prompt is a reference to the cell address of the current cell as a range.

5. Choose one of the following:
  - Using the Arrow keys or the mouse, expand the range.
  - Type the range.
6. Press **RETURN** or **GO**.

A prompt appears asking for Input cell 1. Following the prompt is a reference to the cell address of the current cell Input cell 1.

7. Choose one of the following:
  - Press **RETURN** or **GO** to accept.
  - Type the cell address of Input cell 1; then press **RETURN** or **GO**.

A prompt appears asking for Input cell 2. Following the prompt is a reference to the cell address of the current cell as Input cell 2.

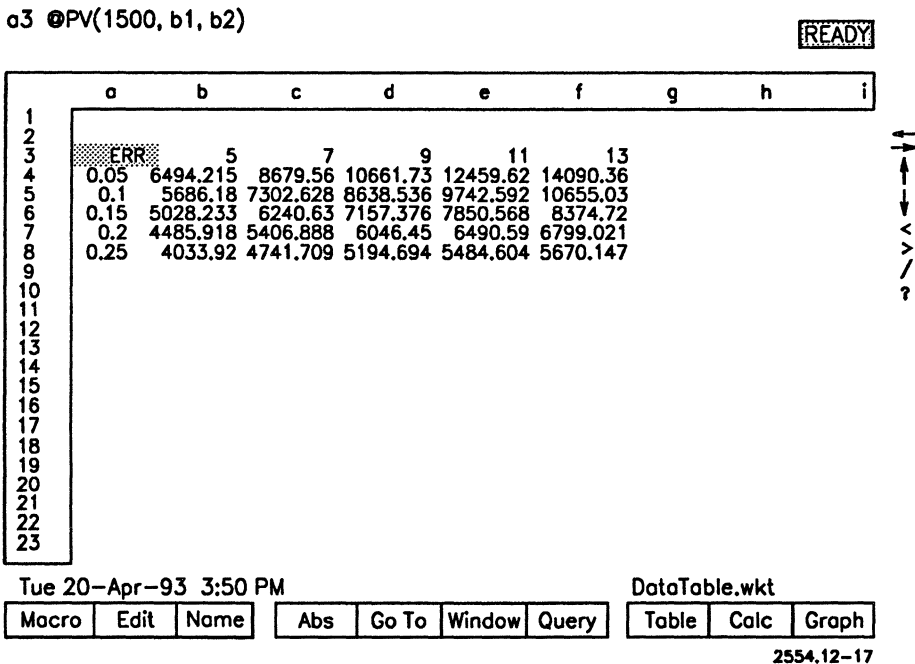
8. Choose one of the following:
  - Press **RETURN** or **GO** to accept.
  - Type the cell address of Input cell 2; then press **RETURN** or **GO**.

OFIS Spreadsheet performs the what-if calculations, and places the results for each set of variables in the cell to the right of the first variable and under the column containing the second variable. OFIS Spreadsheet continues performing the calculations until it uses all of the variable combinations.

Figure 12-17 shows the results using the two variable table example.

OFIS Spreadsheet retains the definitions of the Table range and Input cell address until you change them.

Figure 12-17. Two Variable Table Results



## Goal Seeking

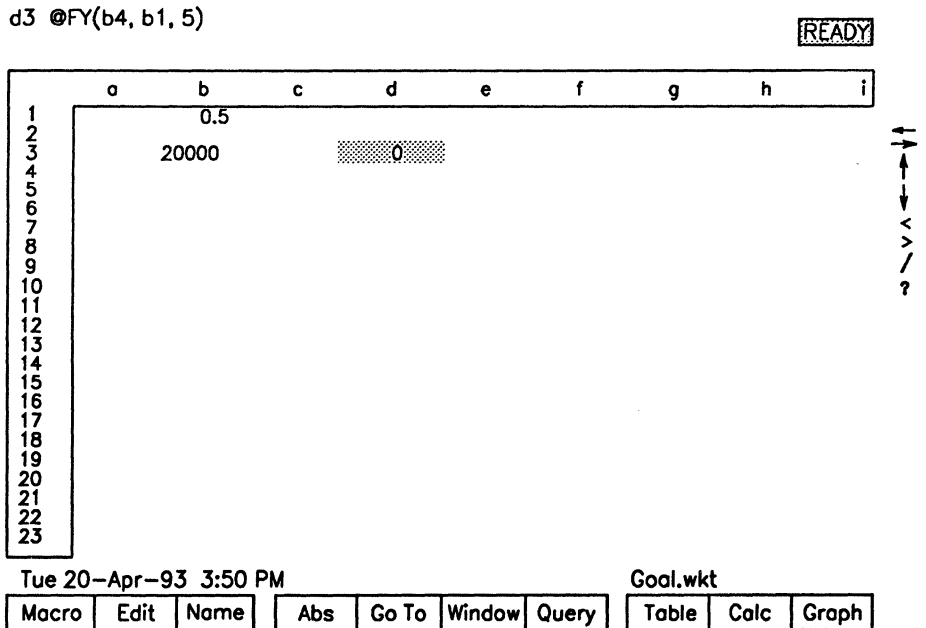
The Advanced Goal-Seeking option uses different variables to reach a known goal. Before issuing the option you need to set up a variable cell and a target cell.

The variable cell contains the value OFIS Spreadsheet uses to reach your goal. This cell cannot contain a formula or a label.

The target cell represents your goal. This cell contains a formula that uses the variable cell or a cell affected by the variable cell.

Figure 12-18 shows a spreadsheet set up to perform goal seeking. Cell **b1**, in Figure 12-18, is the variable cell, and the target cell, **d3**, contains the formula. The goal is 20000.

Figure 12-18. Goal Seeking Table





To perform goal seeking, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/AdvancedGoal-Seeking**

A prompt appears asking for the variable cell. Following the prompt is the cell address of the current cell.

3. Choose one of the following:
  - Press **RETURN** or **GO** to accept.
  - Point to the variable cell; then press **RETURN** or **GO**.
  - Type the cell address of the variable cell; then press **RETURN** or **GO**.

A prompt appears asking for the target cell. Following the prompt is the cell address of the current cell.

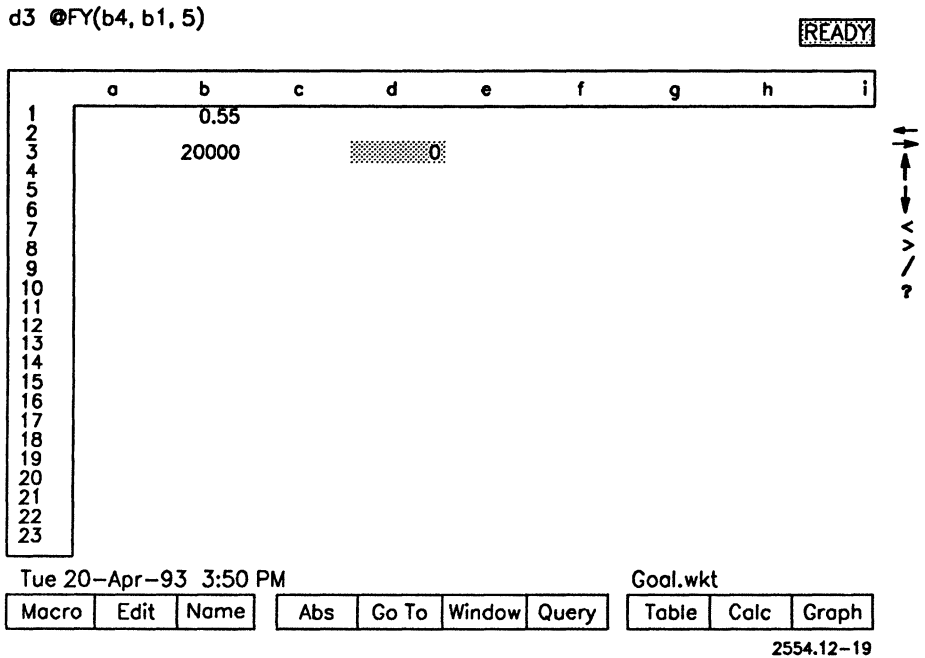
4. Choose one of the following:
  - Point to the target cell.
  - Type the cell address of the target cell.
5. Press **RETURN** or **GO**.

A prompt appears asking for the goal.

6. Type the goal.
7. Press **GO**.

OFIS Spreadsheet computes the formula, adjusting the value in the variable cell until it is able to reach your desired goal. The value necessary to reach the goal displays in the variable cell. Figure 12-19 shows the spreadsheet after performing goal seeking using 20000 as a goal.

Figure 12-19. Spreadsheet After Performing Goal Seeking



OFIS Spreadsheet had to adjust the value in the variable cell from 0.5 to 0.55 to reach the goal. OFIS Spreadsheet iterates up to 40 times to reach the desired goal.

### Using the Table (F8) Key

The data table does not automatically recalculate when you change the variable values or the formula. To recalculate the table, you can reselect the Data Table option or press the **Table (F8)** key.

## Frequency Distribution

A frequency distribution displays a count representing values falling in a given range. This count displays in a table you set up and define specifically for the frequency distribution. A frequency distribution uses two separate ranges of values:

- Values in the database that OFIS Spreadsheet evaluates
- Numerical categories in which these values fall

You define the values you want OFIS Spreadsheet to use as the Value range. You define the numerical categories in which you are grouping the values as the Bin range. The Value range is a group of values already set up in your database.

You set up the Bin range using the following guidelines:

- Arrange the values in ascending order; the lowest value goes in the top cell.
- The cells to the right of the Bin range entries must be blank.
- Only values go in the Bin range, not labels.
- The cell immediately below the column where the number of applicable values goes, must be blank.

Once you have set up the Bin range, you are ready to begin the frequency distribution. Figure 12-20 shows a Bin range set up in categories for salary amounts.

Figure 12-20. Bin Range

a1 [W15] LAST NAME

READY

	a	b	c	d	e	f
1	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
2						
3	Adams	John	02-01-85	\$25,000	A	
4	Crown	Drake	01-08-86	\$21,000	E	
5	French	Vanessa	05-15-83	\$27,000	D	
6	Farley	Randy	06-22-79	\$35,000	E	
7	Henry	Thomas	11-01-87	\$25,000	E	
8	Jackson	Barbara	03-21-88	\$20,000	A	
9	Mason	Abby	12-15-84	\$28,000	C	
10	Parker	K. C.	04-01-88	\$20,000	E	
11	Richards	Lee	07-02-80	\$40,000	A	
12	Tracy	Jo	10-15-85	\$30,000	E	
13	Watson	Daniel	12-15-87	\$26,000	E	
14	Williams	Robert	12-15-88	\$20,000	C	
15	Young	Susan	11-01-87	\$26,000	E	
16						
17						
18		20,000				
19		25,000				
20		30,000				
21		35,000				
22		40,000				
23						



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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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To perform a frequency distribution, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:  
/DataDistribution
3. Press RETURN or GO.

A prompt appears asking for the Value range. Following the prompt is a reference to the cell address of the current cell as a range.

4. Choose one of the following:
  - Position the cell pointer in the first cell of the Value range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
  - Type the range.

5. Press **RETURN** or **GO**.

A prompt appears asking for the Bin range. Following the prompt is a reference to the cell address of the current cell as a range.

6. Choose one of the following:

- Position the cell pointer in the first cell of the Bin range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
- Type the range.

OFIS Spreadsheet executes the frequency distribution and places the resulting values next to the appropriate Bin range values. Each bin contains a value representing the total number of values from the Value range that are less than or equal to the value of that bin, but greater than the previous bin value.

Figure 12-21 shows the result of the Data Distribution option on the sample spreadsheet. OFIS Spreadsheet inserts the number of values falling in each bin next to the appropriate bin value. In addition, it places an extra entry after the highest bin value. This entry tells you how many values are greater than the last bin value.

Figure 12-21. Data Distribution Results

a1 [W15]'LAST NAME READY

	a	b	c	d	e	f
	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
1						
2						
3	Adams	John	02-01-85	\$25,000	A	
4	Crown	Drake	01-08-86	\$21,000	E	
5	French	Vanessa	05-15-83	\$27,000	D	
6	Farley	Randy	06-22-79	\$35,000	E	
7	Henry	Thomas	11-01-87	\$25,000	E	
8	Jackson	Barbara	03-21-88	\$20,000	A	
9	Mason	Abby	12-15-84	\$28,000	C	
10	Parker	K. C.	04-01-88	\$20,000	E	
11	Richards	Lee	07-02-80	\$40,000	A	
12	Tracy	Jo	10-15-85	\$30,000	E	
13	Watson	Daniel	12-15-87	\$26,000	E	
14	Williams	Robert	12-15-88	\$20,000	E	
15	Young	Susan	11-01-87	\$26,000	C	
16						
17						
18		20,000	3			
19		25,000	3			
20		30,000	5			
21		35,000	1			
22		40,000	1			
23			0			

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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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## Using the Data Matrix Option

OFIS Spreadsheet Data Matrix options give you the ability to perform matrix mathematics. A matrix is a rectangular arrangement of numerical data. You can use the Matrix options to multiply one matrix by another or to invert a matrix.

### Multiplying a Matrix

You can have OFIS Spreadsheet multiply the variables in one matrix by the variables in a second matrix, and add the results together. When using the Multiply option there are a few rules to follow:

- The number of columns in the first matrix range must equal the number of rows in the second matrix range.

For example, you can multiply a matrix with four rows and five columns by a matrix having five rows and one column. But you cannot multiply a matrix with four rows and five columns by a matrix with one row and five columns.

The clearest way to see this is to write out the number of rows and columns for each matrix;  $4 \times 5$  and  $5 \times 1$  shows that you can multiply the two matrices,  $4 \times 5$  and  $1 \times 5$  shows that you cannot multiply the two matrices.

- You cannot have a blank cell in a matrix; insert zero if necessary.
- Results are values, not formulas.
- Output overwrites any entries in the defined Output range.
- If you change the matrix values, OFIS Spreadsheet does not automatically update the results; you must reselect the Data Matrix Multiply option.

To multiply matrices, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

`/DataMatrixMultiply`

A prompt appears asking for the first matrix multiplication input range. Following the prompt is a reference to the cell address of the current cell as a range.

3. Choose one of the following:
  - Position the cell pointer in the first cell of the first matrix and, using the Arrow keys or the mouse, expand the range.
  - Type the range.

4. Press **RETURN** or **GO**.

A prompt appears asking for the second matrix multiplication input range. Following the prompt is a reference to the cell address of the current cell as a range.

5. Choose one of the following:

- Position the cell pointer in the first cell of the second matrix and, using the Arrow keys or the mouse, expand the range.
- Type the range.

6. Press **RETURN** or **GO**.

A prompt appears asking for the Output range. Following the prompt is a reference to the cell address of the current cell as a range.

7. Choose one of the following:

- Press **RETURN** or **GO** to accept.
- Type the range; then press **RETURN** or **GO**.

The results of the matrix multiplication appear in the Output range.

## Inverting a Matrix

The OFIS Spreadsheet Data Matrix Invert option allows you compute the inverse of a matrix. The inverse of a matrix is simply a separate matrix that is the same size as the original matrix. Multiplying the original matrix by its inverse matrix results in an identity matrix; a matrix in which all of the elements are 0 except for a 1, which is in a different location for each row, corresponding to the row number.

When using the inverse option, there are a few rules to follow:

- Only square matrices can use the invert option (the number of rows is equal to the number of columns).
- Output overwrites any entries in the Output range.



To invert a matrix, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:

**/DataMatrixInvert**

A prompt appears asking for the input range. Following the prompt is a reference to the cell address of the current cell as a range.

3. Choose one of the following:
  - Position the cell pointer and, using the Arrow keys or the mouse, expand the range to include all of the cells.
  - Type the range.
4. Press **RETURN** or **GO**.

A prompt appears asking for the Output range. Following the prompt is a reference to the cell address of the current cell as a range.

5. Choose one of the following:
  - Position the cell pointer and, using the Arrow keys or the mouse, expand the range.
  - Type the range.
6. Press **RETURN** or **GO**.

The inverse of the original matrix appears in the Output range.

## Computing Linear Regression

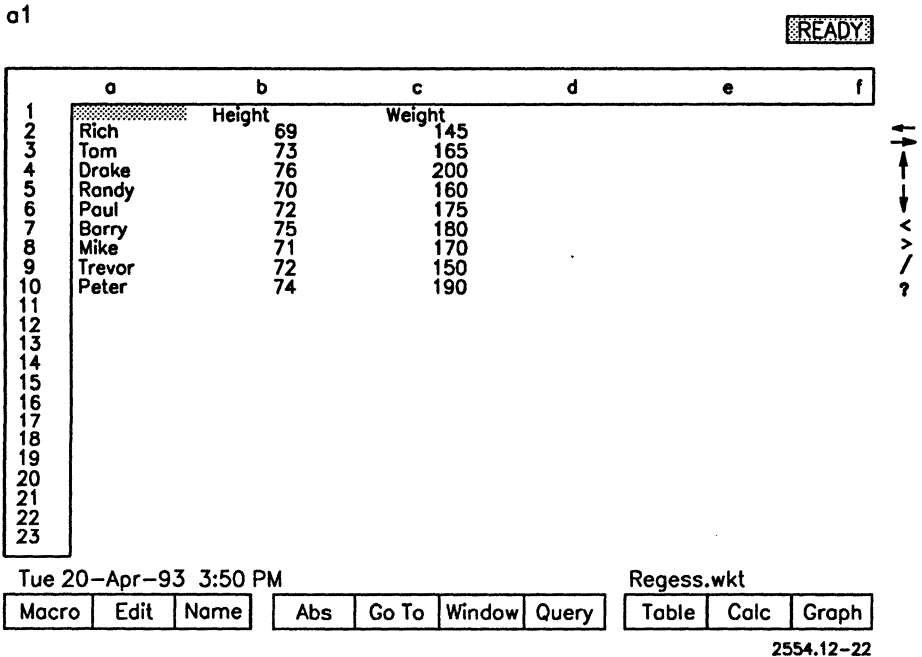
OFIS Spreadsheet provides you with a method to determine how changes in an independent variable affect a dependent variable, the Data Regression option.

You can perform simple regression analysis by using only one independent variable, or you can perform a multiple regression analysis by using more than one independent variable.

Before you select the Data Regression option, you need to enter the values for the independent variable (the X range) and for the dependent variable (the Y range). These variables should be in columns, and if using more than one independent variable, in adjacent columns. You must have the same number of values for each variable.

Figure 12-22 shows a sample worksheet set up for regression analysis. The independent variable, the X range, is Height, and the dependent variable, the Y range, is Weight.

Figure 12-22. Sample Spreadsheet for Linear Regression



OFIS Spreadsheet writes the results of the regression analysis to a defined Output range. Any entries in the Output range are overwritten.

To compute linear regression, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first character of the following options:  
/DataRegression
3. Press RETURN or GO.

The Data Regression pop-up menu appears, with the X-Range option highlighted.

4. Press **RETURN** or **GO**.

A prompt appears asking for the independent variable regression range. Following the prompt is a reference to the cell address of the current cell as a range.

5. Choose one of the following:

- Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
- Type the range.

6. Press **RETURN** or **GO**.

The Data Regression pop-up menu appears, with the X-Range option highlighted.

7. Select the **Y-Range** option.

8. Press **RETURN** or **GO**.

A prompt appears asking for the dependent variable regression range. Following the prompt is a reference to the cell address of the current cell as a range.

9. Choose one of the following:

- Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
- Type the range.

The Data Regression pop-up menu appears, with the Y-Range option highlighted.

10. Select the **Output-Range** option.

11. Press **RETURN** or **GO**.

A prompt appears asking for the Output range. Following the prompt is a reference to the cell address of the current cell as a range.

12. Choose one of the following:

- Press **RETURN** or **GO** to accept.
- Point to the cell in the upper left corner of the Output range; then press **RETURN** or **GO**.
- Type the range; then press **RETURN** or **GO**.

The Data Regression pop-up menu appears.

13. Press **RETURN** or **GO**.

OFIS Spreadsheet writes the results of the computation to the Output range.

Figure 12-23 shows the results of performing regression analysis on the sample spreadsheet.

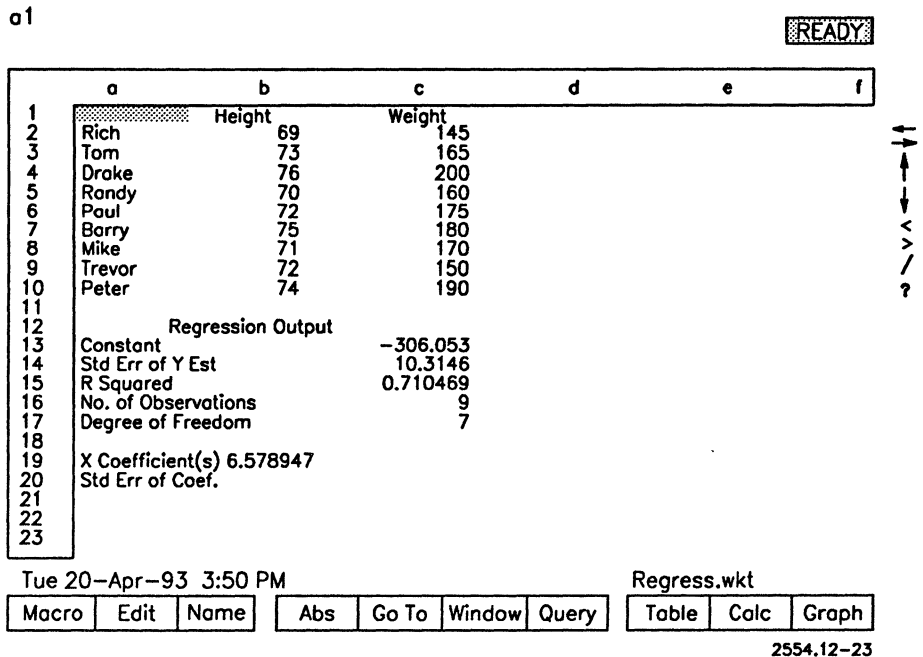
### Intercept Option

The Intercept option instructs OFIS Spreadsheet to either compute the Constant or use zero as the Constant. In the above procedure, you did not select the Intercept option to compute the regression analysis. If you did select this option, you would have two choices:

- Compute
- Zero

Compute is the default option and tells OFIS Spreadsheet to compute the Constant. Usually, you want OFIS Spreadsheet to compute the Constant, but there can be situations where this would not be practical. In these situations, you can instruct OFIS Spreadsheet to skip computing the Constant and use zero as the Constant instead.

Figure 12-23. Linear Regression Results



## Parsing Data

The Data Parse option is useful if you want to break down long labels into individual label and value entries.

For example, you can use the Data Parse option to convert an ASCII text file that you brought into you worksheet with the File Import Text option into a standard worksheet. When you import information into the spreadsheet with the File Import Text option, each line in the file appears as a long, left aligned label. Since each line is a long label, only one cell in each row contains the label, and all the rows are in one column. With the Data Parse option, you can divide the long label into columns of data.

### Creating the Format Line

The format line contains special symbols telling OFIS Spreadsheet where to break the label being parsed and what type of entries are in the label. You can have one or more format lines, depending on the types of entries in the range you are parsing. Table 12-4 shows these special symbols and explains what they mean.

**Table 12-4. Parse Special Symbols**

Symbol	Meaning
L	Start of a label block
V	Start of a value block
D	Start of a date block
T	Start of a time block
>	Represents a single character
.	Represents a blank space
S	Skip a character

To create a format line, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the first cell of the label you are parsing.
3. Type the first character of the following options:

**/DataParse**

4. The Data Parse pop-up menu appears, with the Format-Line option highlighted.
5. Press **RETURN** or **GO**.  
The Format-Line options appear, with the Create option highlighted.
6. Press **GO**.

The format line appears above the label.

Figure 12-24 shows a spreadsheet with a format line in the top row.

Figure 12-24. Spreadsheet with a Parse Format Line

a2 [W72] LAST NAME FIRST NAME DATE OF HIRE SALARY DEPARTMENT READY

	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE
1					
2					
3					
4	Adams	John	02-01-85	\$25,000	A
5	Crown	Drake	01-08-86	\$21,000	E
6	French	Vanessa	05-15-83	\$27,000	E
7	Farley	Randy	06-22-79	\$35,000	D
8	Henry	Thomas	11-01-87	\$25,000	E
9	Jackson	Barbara	03-21-88	\$20,000	A
10	Mason	Abby	12-15-84	\$28,000	C
11	Parker	K. C.	04-01-88	\$20,000	E
12	Richards	Lee	07-02-80	\$40,000	A
13	Tracy	Jo	10-15-85	\$30,000	E
14	Watson	Daniel	12-15-87	\$26,000	E
15	Williams	Robert	12-15-88	\$20,000	C
16	Young	Susan	11-01-87	\$26,000	E
17					
18					
19					
20					
21					
22					
23					

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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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## Editing the Format Line

After you create the format line, you need to check it to make sure it is dividing the label correctly. Basically, OFIS Spreadsheet guesses at how to divide the parts of the label. Usually, this guess is accurate, but there can be circumstances when you need to edit the format line.

In Figure 12-24, the format line needs some editing. OFIS Spreadsheet broke the LAST NAME, FIRST NAME, and DEPARTMENT CODE labels into two blocks and the DATE OF HIRE label into three blocks. It did this because of the spaces between the text in the label. Also, the DATE OF HIRE has a label symbol instead of a date symbol, and the SALARY has a label symbol instead of a value symbol.

While editing the format line, you can use any of the Edit mode cursor movement keys. For detailed information on these keys, refer to Section 3.



To edit a format line, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Place the cell pointer in the cell containing the format line.
3. Type the first character of the following options:

**/DataParseFormat-Line**

4. Press **RETURN** or **GO**.
5. Select **Edit**.

The format line appears in the command panel.

6. Edit the format line.
7. Press **RETURN** or **GO**.

The corrected format line appears in the spreadsheet.

8. Select **Quit**.

The spreadsheet returns to Ready mode.

Figure 12-25 shows the edited format line.



To parse the data, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the cell containing the format line.
3. Type the first character of the following options:

**/DataParse**

The Data Parse pop-up menu appears.

4. Select the **Input-Column** option.

A prompt appears asking for the Input range. Following the prompt is a reference to the cell address of the current cell as a range. The Input range must include the format line and the labels you want to parse.

5. Choose one of the following:

- Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
- Type the cell address in the upper left corner of the range.
- Type the range, including the format line and the labels you want to parse.

6. Press **RETURN** or **GO**.

The Data Parse pop-up menu appears with the Input-column option highlighted.

7. Select the **Output-Range** option.

A prompt appears asking for the Output range. Following the prompt is a reference to the cell address of the current cell as a range.

8. Choose one of the following:

- Position the cell pointer in the first cell of the range and, using the Arrow keys or the mouse, expand the range to include all of the cells.
- Type the range.

9. Press **RETURN** or **GO**.

The Data Parse pop-up menu appears with the Output-Range option highlighted.

10. Select the **GO** option.

OFIS Spreadsheet parses the data to the Output range.

Figure 12-26 shows an example of the parsed data.

Figure 12-26. Data After Parse Option

c20 [W15] READY

	c	d	e	f	g	h
1						
2	LAST NAME	FIRST NAME	DATE OF HIRE	SALARY	DEPARTMENT CODE	
3						
4	Adams	John	02-01-85	\$25,000	A	
5	Crown	Drake	01-08-86	\$21,000	E	
6	French	Vanessa	05-15-83	\$27,000	D	
7	Farley	Randy	06-22-79	\$35,000	E	
8	Henry	Thomas	11-01-87	\$25,000	E	
9	Jackson	Barbara	03-21-88	\$20,000	A	
10	Mason	Abby	12-15-84	\$28,000	C	
11	Parker	K. C.	04-01-88	\$20,000	E	
12	Richards	Lee	07-02-80	\$40,000	A	
13	Tracy	Jo	10-15-85	\$30,000	E	
14	Watson	Daniel	12-15-87	\$26,000	E	
15	Williams	Robert	12-15-88	\$20,000	C	
16	Young	Susan	11-01-87	\$26,000	E	
17						
18						
19						
20						
21						
22						
23						

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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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## Section 13

# Creating and Using OFIS Spreadsheet Macros

Macros are a series of instructions telling OFIS Spreadsheet the keystrokes it needs to perform a function, option, or enter data. Using macros allows you to:

- Save keystrokes
- Automate complex or time-consuming jobs
- Extend OFIS Spreadsheet's capabilities

Macros are useful when you have a procedure that you use frequently. Instead of repeating the steps of the procedure each time, you can create a macro, and have OFIS Spreadsheet execute the macro whenever you need that procedure done. OFIS Spreadsheet performs the procedure without further assistance from you.

You can also use macros to automate complex or time-consuming tasks that must be done repeatedly. By setting up macros for these types of tasks, you can have less-experienced users do the tasks with greater confidence.

Macros also enable you to go beyond basic OFIS Spreadsheet functions by giving you the ability to program tasks and functions according to your requirements. Macros can range from very simple to very complex.

When creating macro instructions you can use:

- Labels
- Formulas
- Values
- Functions
- Special macro key representations
- Special macro options

You can place your macros anywhere in the spreadsheet, but it is a good idea to keep them in a section away from the spreadsheet's active area. This helps prevent accidental deletion or insertion of rows or columns in the macros. These types of accidents can cause the macro to perform incorrectly, or can even destroy the entire macro. You can make a notation in the upper left corner of the spreadsheet, the area visible when you first access the spreadsheet, telling you the location of any macros in that spreadsheet.

Before you begin creating macros, you should be comfortable with OFIS Spreadsheet.

## Creating a Macro

You create a macro by representing every step of a procedure, function, or sequence of options in an instruction. These series of instructions are in a single column. You can use more than one row, but not more than one column. You can enter the instructions in single cells, or you can combine all of the instructions in one cell. The only limitation on how much you can enter in a cell is the maximum width of the cell. However, entering several instructions in one cell can make the macro difficult to understand or edit, so it is a good idea not to make a very long entry.

Almost all instructions are label entries. Each label entry begins with a label prefix, just like any other spreadsheet label entry. When OFIS Spreadsheet executes the instruction it ignores the label prefix.

When an instruction is to create a label entry, OFIS Spreadsheet automatically supplies the label prefix at the time it creates the entry; you do not need to include a label prefix as part of the instruction unless you want a particular label prefix. If the instruction is to create a label entry beginning with a value, you must include a label prefix as part of the instruction. You also must include a label prefix for instructions that are values. You cannot have a value entry as a macro instruction.

For example, if you have an instruction to create the label **1st Qtr**, you need to include a label prefix for OFIS Spreadsheet to use when creating the label, and a label prefix for the instruction. You enter the instruction as: **"1st Qtr**. The first label prefix, **'**, is for the instruction, and the second label prefix, **'**, is for OFIS Spreadsheet to use when creating the label entry.

OFIS Spreadsheet recognizes certain keys by special macro key representations. For example, if you want the cell pointer to move right you would indicate this by the macro key representation **{RIGHT}**. When OFIS Spreadsheet reads this macro key representation it moves the cell pointer to the right. Notice that the macro key representation begins with a brace and ends with a brace. This is how you tell OFIS Spreadsheet this is a macro key representation, not text.

Tables 13-1 and 13-2 show the macro key representations available in OFIS Spreadsheet. Table 13-1 shows the macro key representations for keyboard keys, and Table 13-2 shows the macro representation for function keys. Some have an alternate form (for example **{RIGHT}** or **{R}**). Only the keys shown in Tables 13-1 and 13-2 have macro key representations.



**Table 13-1. Keyboard Macro Key Representations**

<b>Key</b>	<b>Macro Representation</b>
BACKSPACE	{BACKSPACE} or {BS}
CANCEL	{ESCAPE} or {ESC}
CODE-LEFT-ARROW	{BIGLEFT}
CODE-RIGHT-ARROW	{BIGRIGHT}
CODE-UP ARROW	{HOME}
COPY	{COPY}
DELETE	{DEL}
DOWN ARROW	{DOWN} or {D}
FINISH	{EXIT}
HELP	{HELP}
LEFT ARROW	{LEFT} or {L}
MOVE	{MOVE}
NEXT PAGE	{PGDN}
OVERTYPE	{INSERT}
PREV PAGE	{PGUP}
RETURN	~
RIGHT ARROW	{RIGHT} or {R}
UP ARROW	{UP} or {U}

**Table 13-2. Function Key Macro Representation**

<b>Function Key</b>	<b>Macro Representation</b>
Edit (F2)	{EDIT}
Name (F3)	{NAME}
Abs (F4)	{ABS}
Go To (F5)	{GOTO}
Window (F6)	{WINDOW}
Query (F7)	{QUERY}
Table (F8)	{TABLE}
Calc (F9)	{CALC}
Graph (F10)	{GRAPH}

As you can see from the tables, most of the macro key representations are simply the keyname enclosed in braces ({}). OFIS Spreadsheet recognizes the key representation in either upper or lower case letters. Whenever OFIS Spreadsheet reads the macro key representation in an instruction, it performs the key's function as though you were pressing that key.

When using these in an instruction, OFIS Spreadsheet does not care if you capitalize the macro key representation or not. OFIS Spreadsheet does check for:

- Correct spelling
- An opening brace ( { )
- A closing brace ( } )

The only macro key representation that does not need an opening and a closing brace is the **RETURN** macro key representation, the tilde (~).

You indicate the number of times you want OFIS Spreadsheet to perform the key function by including a number with the macro key representation (with the exception of the **RETURN** key representation). For example, if you want to move the cell pointer four times to the right you would enter the macro key representation as {RIGHT 4}. When OFIS Spreadsheet reads this instruction it would move the cell pointer to the right four times. If you simply enter the macro key representation, OFIS Spreadsheet performs the key function once.

You create macros in one of the following ways:

- using the Advanced Record-Macro option
- typing each step of the macro instruction

The Advanced Record-Macro option allows you to create a macro simply by pressing the appropriate key. The option automatically records the macro key representation for you. This method is best for creating macros that consist of options or keystrokes.

Typing each step of the macro gives the ability to create more complex and sophisticated macros.

### Creating a Macro Using the Advanced Record-Macro Option

The Advanced Record-Macro option allows you to create a macro by performing the keystroke sequence instead of typing the macro key representations or options. It also automatically enters a label prefix in the instruction. This is especially helpful when you are creating instructions beginning with values. However, you still need to include, when appropriate, label prefixes for entries OFIS Spreadsheet creates from the instructions. This option also automatically inserts the beginning and ending braces({}) whenever necessary for the macro instructions.

When using the Advanced Record-Macro option, OFIS Spreadsheet asks you to define the macro range. You can specify a single cell or the entire range. If you specify a single cell, OFIS Spreadsheet uses as many cells in a the column necessary for the macro. OFIS Spreadsheet overwrites any data in these cells. However, if you specify a range and it is not large enough, OFIS Spreadsheet displays the message `Paragraph too large`, and does not record the macro.

You can edit the instructions while creating them, but since the Advanced Record-Macro option automatically records every keystroke you make, all your edit keystrokes become part of the macro. Your macro still works, but it contains the edit keystrokes. If you find that you need to edit an instruction, it is best to do so after you finish creating the macro.

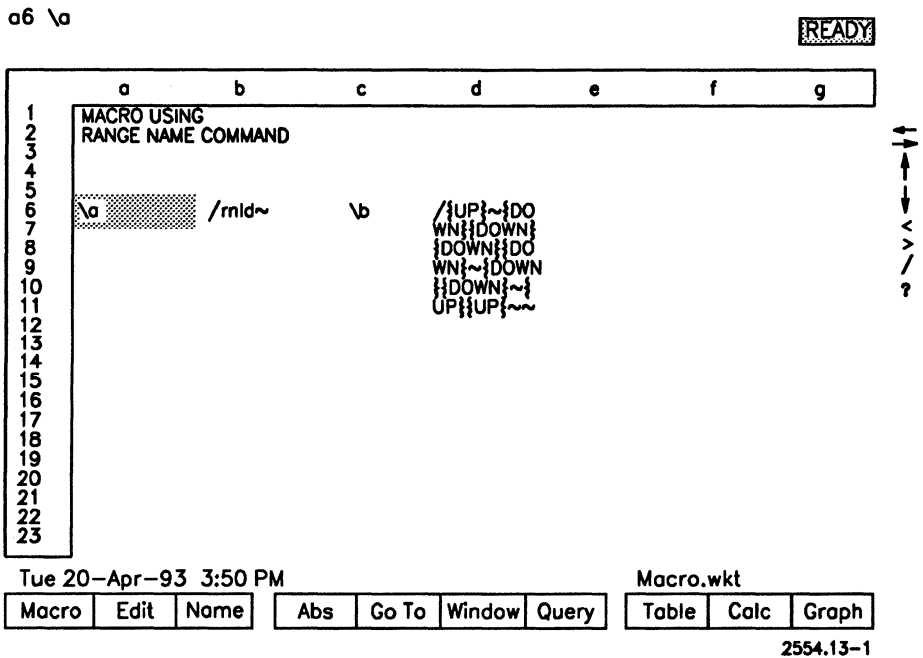
Keep the following in mind when you use the Advanced Record-Macro option:

- If you are using menu options in an instruction, enter the options by typing the initial character instead of pointing. When you select the option by pointing, the Advanced Record-Macro option types the highlight movement instead of the option name. The macro instruction still works, but when you look at the macro, it is very hard to understand exactly what it is doing.
- If you record a macro by pointing, there may be problems if someone else tries to use your spreadsheet with the macro and doesn't use the same type of menu (pop-up menu or menu bar) that you used when recording the macro.
- You cannot use the mouse to record macro functions.

Figure 13-1 shows examples of option menu macro instructions using pointing and selection.

As you see in Figure 13-1, macro **a** shows you the first letter of each menu selection, and macro **b** shows you the direction of movement of the cell pointer. Macro **a** is much easier to read and understand than macro **b**.

Figure 13-1. Menu Option Macro Instructions



To create a macro using the Advanced Record-Macro option, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the first cell of the macro.
3. Type the first characters of the following options:

/AdvancedRecord-Macro

4. Press RETURN or GO.

A prompt appears asking for the macro name. You can use any letter of the alphabet (a through z) or the numbers 0 through 9, not already in use for other macros in the current spreadsheet.

5. Enter the macro name.

A prompt appears asking for the macro range. Following the prompt is a reference to the current cell as a range.

6. Choose one of the following:
  - Press **RETURN** or **GO** to accept.
  - Position the cell pointer in the first cell of the range, and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
  - Enter the range; then press **RETURN** or **GO**.

The Submode Indicator RCD appears in the command panel. OFIS Spreadsheet is now in Record Ready mode.

7. Begin entering the macro instructions.
8. Upon completion of the macro instructions, press **Macro (F1)**.
9. Press **FINISH**.

OFIS Spreadsheet returns to Ready mode. The macro appears on the spreadsheet, ready for execution.

### Creating a Macro by Typing

You can create more complex and sophisticated macros by typing each keystroke of the instruction. You can also use special macro options not accessible by simply pressing the keyboard keys. Refer to Section 14, "Advanced Macro Options," for detailed information on these options.

When you create a macro by typing you must remember to:

- Insert label prefixes when necessary before each instruction
- Use the proper key representation for each keystroke
- Insert the opening and closing braces when necessary
- Name the macro using the Range Name option

### Naming Macros

You need to name each macro in your spreadsheet. The macro name tells OFIS Spreadsheet which macro you want to execute, and the location of the macro.

A macro name can be any letter of the alphabet (a through z), or any number from 0 through 9. This limits the number of macros you can have in a single spreadsheet at one time. However, since macros are spreadsheet-specific, that is they only apply to the spreadsheet in which they are found, you can have macros with the same name in different spreadsheets.

When you create a macro using the Advanced Record-Macro option, the option prompts for a macro name, and names the macro for you. However, when you create a macro by typing you must name the macro in a separate step. A macro is basically a range name, so you name a macro by using the Range Name option.

### Naming a Macro with the Range Name Option

When you create a macro by typing, you can name it before creating or after creating it. You do not need to enter the macro name on the spreadsheet, but it is a good idea to do so. This helps you to identify the macro and can also help to tell you what the macro does. If you decide to enter the macro name on the spreadsheet, you can use the Range Name Labels option to name the macro. This option allows you to name ranges to the left, below, above, or right of the cell containing the range name. For detailed information on how to use the Range Name option, refer to Section 7.

A macro name consists of a backslash (\) and a single character (a through z or 0 through 9). You enter the name of the macro in the spreadsheet as a label entry. Since the backslash character is the repeating label prefix you must enter a label prefix as the first character. If you do not, OFIS Spreadsheet repeats everything after the backslash.

The following procedure is for the Range Name Labels Right option, but you can use any of the Range Name options.

To name a macro using the Range Name Labels Right Option, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the cell containing the macro name.
3. Type the first characters of the following options:

**/RangeNameLabelsRight**

A prompt appears asking for the range. Following the prompt is a reference to the cell address immediately to the right of the cell pointer as a range. You can name the entire macro, but OFIS Spreadsheet only needs the address of the first cell in the macro.

4. Press **RETURN** or **GO**.

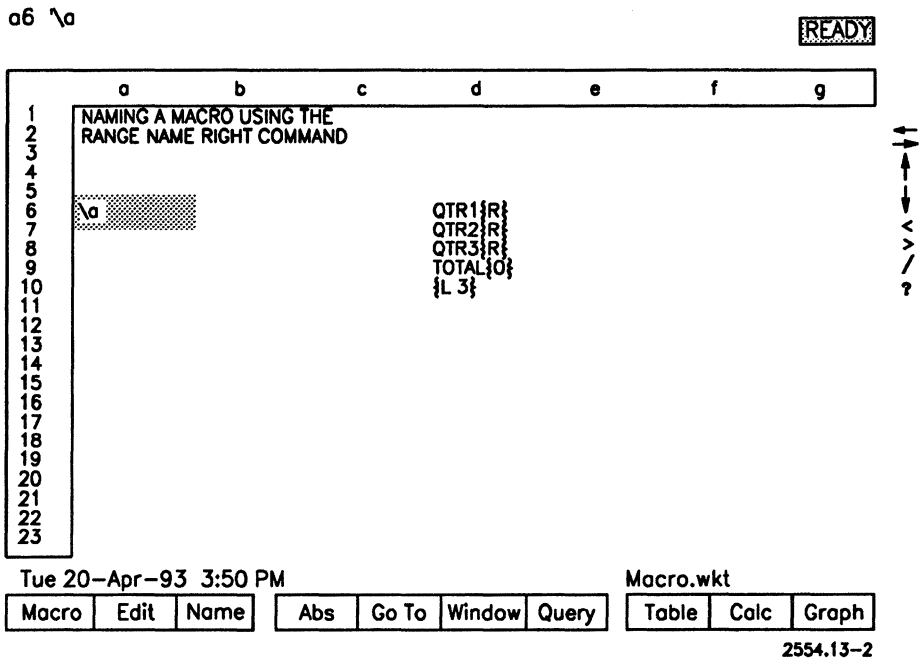
Spreadsheet returns to Ready mode. The macro is now ready for execution.

Figure 13-2 shows an example of a macro set up to use the Range Name Labels Right option.



# Creating and Using OFIS Spreadsheet Macros

Figure 13-2. Naming Macro Using Range Name Labels Right Option



### Naming an Auto-executing Macro

An auto-executing macro is a macro that OFIS Spreadsheet automatically executes each time you retrieve the spreadsheet. You can have one auto-executing macro for each spreadsheet. To designate a macro as an auto-executing macro, you assign 0 (zero) as the macro name. If you do not want a macro to be an auto-executing macro, do not assign the character 0 as the macro name.

You can also execute an auto-executing macro from the spreadsheet the same as you would any other macro.

### Saving a Macro

You save a macro by issuing the File Save option. In other words, OFIS Spreadsheet saves your macros whenever it saves your spreadsheets. It is important to remember this when making changes to your macros. If you do not save the spreadsheet after making the corrections, they are lost.

Always save the current spreadsheet before running a macro for the first time. This is a preventative step in the event the macro is incorrect and damages the spreadsheet. If this happens, you can simply select the File Retrieve option and correct the macro.

You can also save a macro outside of the current spreadsheet. You do this by using the File Xtract Formulas option. When you select this option you specify a file in which OFIS Spreadsheet is to save the macro. By saving a macro this way, you can access it independently of a spreadsheet. This is a convenient way to store macros you want to use frequently in different spreadsheets.

To save a macro using the File Xtract option, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Type the first characters of the following options:

`/FileXtractFormulas`

A prompt appears asking for the export filename.

3. Enter the export filename.
4. Press **RETURN** or **GO**.

A prompt appears asking for the cell range. Following the prompt is a reference to the current cell as a range.

5. Choose one of the following:

- Press **RETURN** or **GO** to accept.
- Position the cell pointer in the first cell of the range, and, using the Arrow keys or the mouse, expand the range to include all of the cells; then press **RETURN** or **GO**.
- Enter the range; then press **RETURN** or **GO**.

The Mode Indicator flashes **WAIT** while OFIS Spreadsheet extracts the specified data. When complete, the spreadsheet returns to Ready mode.

## Testing Macros

If you have a complicated macro, it is a good idea to test the macro before actually running the macro to see if there are any errors in the macro. You do this because macros run very quickly, and they do exactly what you tell them to do. The most common types of errors are:

- Using an incorrect cell reference
- Misspelling option names, range names, or key references
- Omitting a character (for example, closing brace ()) or tilde (~)
- Omitting keystrokes
- Using an invalid response to a prompt
- Using an incorrect form of a key representation
- Positioning a macro sequence incorrectly

If your macro is short or simple, you can check it by proofreading. However, when you have a long or complicated macro, that could get tedious. OFIS Spreadsheet assists you in testing these types of macros.

## Using Step Mode to Test a Macro

Step mode steps you through the macro, one keystroke at a time. This allows you to verify each step of your instructions before actually executing the macro. You cannot go into Step mode while OFIS Spreadsheet is executing the macro.

**Note:** *If you press CANCEL when testing a macro in Step mode, the message Break entered is displayed on the screen. To end Step mode at this point, press F1, HELP, and CANCEL until you are returned to Ready mode.*

To test a macro in Step mode, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the first cell of the macro.
3. Press **Macro (F1)**.
4. Press **HELP**.

The Submode Indicator, **SST**, appears in the command panel. The spreadsheet is now in Step mode.

5. Press **Macro (F1)**.
6. Enter the character following the backslash (\) in the macro name.  
The Submode Indicator, **SST**, flashes.
7. Press the **SPACEBAR**.

The first macro keystroke appears in the command panel, or if the instruction is for a cell pointer movement, OFIS Spreadsheet moves the cell pointer.

Repeat Step 7 until you step through the entire macro.

8. Press **Macro (F1)**.
9. Press **HELP**.

The spreadsheet returns to Ready mode. You can now correct any errors in your macro by editing the instructions.

## Editing Macros

Since macros are made up of label entries, you edit a macro like you would any other spreadsheet label entry.

To edit a macro instruction, use the following procedure:

1. Make sure the spreadsheet is in Ready mode.
2. Position the cell pointer in the cell you want to edit.
3. Press **Edit (F2)**.

The contents of the cell appear in the command panel.

4. Make the necessary corrections or additions to the cell contents.
5. Press **RETURN**.

OFIS Spreadsheet enters the cell contents in the spreadsheet. You can now execute the macro with the correction. However, be sure to save the spreadsheet before executing the macro. This makes the corrections you just made a permanent part of the macro, and saves the spreadsheet data in the event the macro is not correct.

## Executing a Macro

You can execute a macro from anywhere in the spreadsheet containing that macro. The location of the cell pointer and the location of the macro are totally independent. However, you should have the cell pointer in the cell where you want the macro to begin executing the instructions.

To execute a macro, press **Macro (F1)**, and enter the character following the backslash (\) in the macro name.

OFIS Spreadsheet looks in the current spreadsheet for a macro with the specified name. When OFIS Spreadsheet finds the macro, it starts at the first cell of the macro and carries out the instructions found in that cell. When it completes the instructions in that cell, it continues onto the next cell.

### Stopping a Macro

OFIS Spreadsheet continues executing the macro until it encounters:

- A blank cell
- A value entry
- An error
- {Quit}
- {Exit}

You should be aware that if a cell has a space in it, OFIS Spreadsheet does not treat it as a blank cell. When OFIS Spreadsheet encounters a cell containing a space, it treats the space as your instruction to put a space in the cell, then go on to the next instruction.

Figure 13-3 shows examples of macros containing some of these conditions. Whenever OFIS Spreadsheet encounters one of these conditions while executing a macro, it immediately stops execution of the macro. When OFIS Spreadsheet reads {Exit}, it not only stops the macro, but prepares to exit the spreadsheet.

Figure 13-3. Conditions That Stop Macro Execution

o6 \a READY

	a	b	c	d	e	f	g	h	i
1	MACROS CONTAINING CONDITIONS THAT STOP EXECUTION								
2									
3									
4									
5									
6	\a	Qtr1	\b	Qtr1	\c	Qtr1	\d	Qtr1	
7		{R}		{R}		{R}		{R}	
8		Qtr2		Qtr2		Qtr2		Qtr2	
9		{R}		{R}		{R}		{R}	
10		Qtr3		Qtr3		Qtr3		Qtr3	
11		{R}		{R}		{R}		{R}	
12				Total		Total		Total	
13		Total		~		~{Quit}		~	
14		~							
15									
16									
17									
18									
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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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In Figure 13-3, the macro names appear on the left side of the macro. Macro a contains a blank cell; macro b contains a value entry; macro c contains {Quit}, and macro d has an error in the macro.

The type of error in macro d, an error in the form of a macro key representation, occurs when you misspell a key name or use an incorrect form of the key name. This type of error is quite common. When OFIS Spreadsheet encounters an error of this type, it stops, flashes ERROR in the Mode Indicator, and displays an error message. When you press RETURN or GO the spreadsheet returns to Ready mode. You can then correct the error and restart the macro.



You can also stop the execution of a macro by pressing **FINISH**. When you press **FINISH**, OFIS Spreadsheet immediately stops executing the macro, flashes **ERROR** in the Mode Indicator, and displays a message. When you press **RETURN** or **GO** the spreadsheet returns to Ready mode. It is important to realize that this does not undo anything the macro did up to the point of interruption, it merely prevents OFIS Spreadsheet from executing any further instructions. If you want to resume running the macro, you must restart it; you cannot resume execution from the point of interruption.

## Documenting Macros

It can be difficult to remember what a macro does or why you set an instruction up in a particular format. Therefore, it is a good idea to get into the habit of documenting your macros. You document your macros by placing explanatory notes next to your instructions. These notes can be a simple explanation of what the macro does, or how a particular instruction works. The notes can go anywhere outside of the macro, but it is most helpful to place them in the cells adjacent to the macro. The cells containing the explanatory notes are not an executable part of the macro.

Figure 13-4 shows an example of macro with explanatory notes.

Figure 13-4. Macro with Explanatory Notes

aa6\o READY

	aa	ab	ac	ad	ae	af	ag	ah
1	MACRO WITH							
2	EXPLANATORY NOTES							
3								
4								
5								
6	^a	(Goto)a1~			positions cell pointer			
7		/wcs20~			changes column width			
8		K. D. Company{D}						
9		Income Statement{D}						
10		{?}Quarter{D 5}			pauses for user entry			
11		INCOME{D}						
12		Accounts Receivable{R}{?}{D}{L}			pauses for user entry			
13		Rental Properties{R}{?}{D}{L}			pauses for user entry			
14		Investments{R}{?}{D 2}{L}			pauses for user entry			
15		Total Income:R						
16		/mcINCOME~b9.b11~			names range			
17		@SUM(INCOME)~			formula to compute total			
18		{Quit}						
19								
20								
21								
22								
23								

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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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This is a macro to set up the income figures for an income statement. While executing this macro, OFIS Spreadsheet pauses for user input, names a range, and inserts a formula. These instructions have explanatory notes in the cell to the right of the instruction.

## Using Menu Options in a Macro

You can have instructions in your macros that tell OFIS Spreadsheet to select options. You do this by entering in the instruction the keystrokes you use when typing the options on the keyboard. This type of instruction is useful when you want to automate an option that you frequently repeat. If the menu option instruction is the first entry in the cell you must be sure to include the label prefix in the entry, unless you are creating the macro using the Advanced Record-Macro option.

### Using Range Names in a Macro

Macros are mostly made up of label cells containing instructions. Some of these instructions use cell references to designate ranges.

When you create a macro that refers to ranges, it is a good idea to use a range name instead of cell references. When you make changes to cell references OFIS Spreadsheet does not automatically update label cells containing those references. However, if you use a range name instead of the cell references, OFIS Spreadsheet automatically updates the range references whenever you make a change affecting the range. If you do not use range names in your macros, you must make the change in the macro.

### Interactive Macros

You can create macros that pause for user input, then upon receiving the input continue executing. These types of macros are known as interactive macros.

You tell OFIS Spreadsheet to pause during execution by using the macro representation {?}. When this macro representation is present, OFIS Spreadsheet pauses until it receives a response from the user. For example, /RNC acts as an interactive macro. When OFIS Spreadsheet reads this instruction it pauses and waits for a response from the user. OFIS Spreadsheet does not continue executing the macro until it receives input from the user. This can create a problem if the user is unaware they are in a macro.

Pressing **RETURN** or **GO** after the pause does not enter the information in the spreadsheet, it merely tells OFIS Spreadsheet to continue executing the macro. To have OFIS Spreadsheet enter the information in the spreadsheet you must include the appropriate instruction (for example a tilde (~) after the pause).

## Options Affecting Macros

When you have macros in a spreadsheet, you need to be aware of how certain options can affect the macro. You execute some of these options while working on the spreadsheet, and some OFIS Spreadsheet executes as part of the macro. These options can have unexpected results on the execution of your macro.

### Executing Options in the Spreadsheet

Whenever you have a macro in a spreadsheet, you need to be aware of the effect the following options can have on the macro:

- Worksheet Delete Row
- Worksheet Delete Column
- Worksheet Insert Row

You typically use all of these options when working in your spreadsheet. However, when your spreadsheet contains a macro, you must be careful where you use these options.

If you delete a row that is part of a macro, you disturb the logic of the macro causing it to not run properly.

If you delete the column containing the macro, you lose the entire macro.

When you insert a row in the macro, you insert a blank cell in the macro. This causes OFIS Spreadsheet to stop executing the macro at the blank cell.

### Executing Options in the Macro

Exercise caution when you use the following options in a macro:

- **Worksheet Erase**
- **File Retrieve**
- **Range Name Reset**

When OFIS Spreadsheet executes the **Worksheet Erase** or **File Retrieve** options, it erases the current spreadsheet. Unless you save the spreadsheet before executing these options in a macro, you lose any changes made to the spreadsheet since the last save, and you also lose the macro OFIS Spreadsheet is currently executing. If you do want to have OFIS Spreadsheet execute one of these options in the macro, you should have the option at the end of the macro.

When OFIS Spreadsheet executes the **Range Name Reset** option it resets all of the range names in the current spreadsheet, including any range names in the macro and the macro name.

Incorrect or inadvertent placement of any of these options in a macro could cause problems.

# Section 14

## Advanced Macro Options

In addition to the macro key representations and macro options you became acquainted with in Section 13, OFIS Spreadsheet has many more macro options available for you to use. These options allow you to:

- Use loops in your macro
- Solicit information
- Create and use custom menus
- Redirect the flow of the macro
- Test conditions
- Manipulate file data

Using these advanced options, you can create complex macros that are similar to a computer software program. The options typically consist of a keyword and have a beginning and ending brace. Some options accept arguments which can be:

- A cell address
- A range name
- A string
- A numeric entry
- A range reference
- A formula
- A function

## Advanced Macro Options

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When using the keyword options you do not need to capitalize the first letter of the keyword, but you do need to make sure the option:

- Is spelled correctly
- Starts with a beginning brace ({})
- Ends with an ending brace (})

### **{Beep}**

You tell OFIS Spreadsheet to issue a beep sound by using the {Beep} option. The macro option format is:

{Beep value}

This option uses one argument: Value is a numeric entry telling OFIS Spreadsheet how many times to sound a beep tone. You can choose to have one, two, or three beeps. The default is one.

### **{Blank}**

By using the {Blank} option in a macro, you can tell OFIS Spreadsheet to erase the cell contents in an specific area of the spreadsheet. The macro option format is:

{Blank location}

This option uses one argument: Location is the area of the spreadsheet containing the contents you want OFIS Spreadsheet to erase. This can be a cell address or a range name.

This macro option functions the same as the Range Erase option.

## **{Branch}**

You can tell OFIS Spreadsheet to leave the macro it is executing, go to another area in the spreadsheet, and begin executing the instructions found there. You do this by using the {Branch} option. The macro option format is:

**{Branch location}**

This option uses one argument: **Location** is the area of the spreadsheet containing the instructions the macro is to execute. This can be a cell address or a range name.

Once in the new location, OFIS Spreadsheet executes the instructions until it encounters:

- A blank cell
- {Quit}
- {Branch}

When OFIS Spreadsheet encounters a blank cell or a {Quit} option, it stops executing the macro; it does not automatically return to the calling macro. When OFIS Spreadsheet encounters a {Branch} option, it proceeds to the location given in the option argument and executes the instructions found there.



### **{BreakOff} and {BreakOn}**

You disable the **CANCEL** key by using the **{BreakOff}** option in your macro. This option is good to use when you want to prevent accidental interruption of a macro, or when you have an auto-executing macro. However, it is important to remember that once you enable this option you cannot stop a macro during execution. So, before adding the **{BreakOff}** option to your macro, be sure that it is completely error-free. The macro option format is:

**{BreakOff}**

This option uses no arguments.

The **{BreakOff}** option remains in effect until OFIS Spreadsheet encounters:

- A blank cell
- **{Quit}**
- **{BreakOn}**

When OFIS Spreadsheet encounters a blank cell or **{Quit}**, it stops executing the macro, and the **{BreakOff}** option is no longer in control.

When OFIS Spreadsheet encounters the **{BreakOn}** option, it reactivates the **CANCEL** key and continues executing the macro. The macro option format is:

**{BreakOn}**

This option uses no arguments.

### **{Close}**

You tell OFIS Spreadsheet to close an open file by using the **{Close}** option. The macro option format is:

**{Close}**

This option uses no arguments.

Whenever you open a file in a macro, that file remains open until you tell OFIS Spreadsheet to close it, exit the spreadsheet, or open another file.

## {Contents}

Using the {Contents} option you can tell OFIS Spreadsheet to copy information from one location to another during execution of a macro. The macro option format is:

{Contents destination location, source location}

This option uses two arguments:

- destination location

Destination location is the area of the spreadsheet where OFIS Spreadsheet is copying the information. This can be a cell address or a range name.

- source location

Source location is the area of the spreadsheet from which OFIS Spreadsheet is copying the information. This can be a cell address or a range name.

This macro option differs slightly from the Copy option as it does not copy the contents of a cell, rather it copies only what you see on your screen. When using the {Contents} option, OFIS Spreadsheet changes value entries to numeric label entries.

For example, if you are copying a cell displaying a value resulting from a formula, OFIS Spreadsheet only copies the value, not the formula. Figures 14-1 and 14-2 help to illustrate this, and other differences that occur when you use the {Contents} option.

Figure 14-1 shows a spreadsheet containing first quarter income figures. In this spreadsheet columns **a** and **b** have a column width of 20, and the income figures are in Currency format. The Total Income value in cell **b11** is the result of a formula. You can see the formula for this value in the option panel.

Figure 14-1. Spreadsheet With First Quarter Income Figures

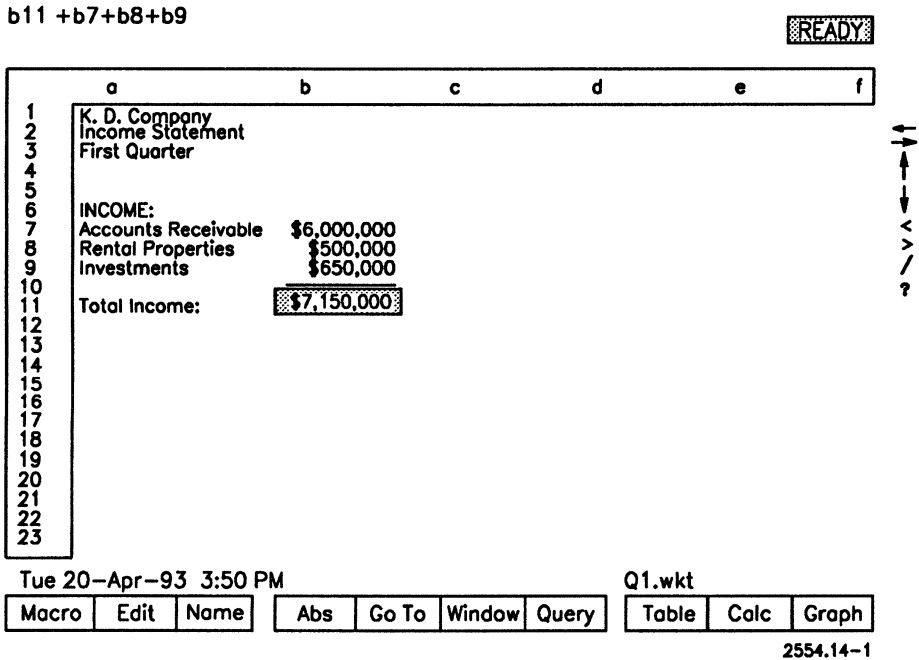


Figure 14-2 shows this entry after copying with the {Contents} option. The result displays in cell e11. As you can see in the option panel, the cell contents consist of a numeric label entry containing only the value. This entry has the same number of characters as the source entry, and is in currency format.

You have the option of changing the destination width and format by using two optional arguments. The macro option format with the two optional arguments is:

{Contents destination location, source location, width, format}

This option format uses two optional arguments:

- **width**

Width is a value specifying the cell width of the destination cell. If this value is too narrow, OFIS Spreadsheet truncates a text entry, or displays a series of asterisks (\*) for a value entry. You can use this argument without using the format argument.

- **format**

Format specifies the manner in which the data is to display. This argument must be one of the codes shown in Table 14-1. You cannot use this argument without also using the width argument.

# Advanced Macro Options

Figure 14-2. Spreadsheet After Using the {Contents} Option

c11 715000 READY

	a	b	c	d	e	f
1	K. D. Company			\a	{Contents c11, b11}	
2	Income Statement					
3	First Quarter					
4						
5						
6	INCOME:					
7	Accounts Receivable	\$6,000,000				
8	Rental Properties	\$500,000				
9	Investments	\$650,000				
10						
11	Total Income:	\$7,150,000	\$7,150,000			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						

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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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**Table 14-1. Format Codes**

<b>Code</b>	<b>Format</b>
0-15	Fixed, with 0 to 15 decimal places
16-31	Scientific, with 0 to 15 decimal places
32-47	Currency, with 0 to 15 decimal places
48-63	Percent, with 0 to 15 decimal places
64-79	, (Comma), with 0 to 15 decimal places
112	+/- (Horizontal Bar Graph)
113	General
114	Date, DD-MMM-YY
115	Date, DD-MMM
116	Date, MMM-YY
117	Display formula(s)
118	Hidden
119	Time, HH:MM:SS AM/PM
120	Time, HH:MM AM/PM
121	Date, full International display
122	Date, partial International display
123	Time, full International display
124	Time, partial International display
127	Default spreadsheet format

Figure 14-3 uses a sample spreadsheet to show some examples using the optional arguments.

# Advanced Macro Options

Figure 14-3. Spreadsheet Using the {Contents} Option with Optional Arguments

a1 READY

	a	b	c	d	e	f
1	K. D. Company				Va {Contents c6, a6, 5}	
2	Income Statement				{Contents c7, b7, 10}	
3	First Quarter				{Contents c11, b11, 15, 113}	
4						
5	INCOME:		INCOME			
6	Accounts Receivable	\$6,000,000	.....			
7	Rental Properties	\$500,000				
8	Investments	\$650,000				
9						
10	Total Income:	\$7,150,000		\$7,150,000		
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						

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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
-------	------	------	-----	-------	--------	-------	-------	------	-------

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The entries in cells c6 and c7 show how OFIS Spreadsheet handles entries when the specified cell width is too small. When the entry is a text entry, as in cell c6, OFIS Spreadsheet truncates the entry to fit the specified cell width. When it is a numeric label entry, as in cell c7, OFIS Spreadsheet displays a series of asterisks (\*).

The entry in cell c11 shows the result using a format code. The source entry is in Currency format, and the destination entry is in General format.

## {Define}

You use the {Define} option to tell OFIS Spreadsheet where to store the information in the arguments you are passing to a subroutine, and how to treat the information. The macro option format is:

{Define location1:type1...locationn:typen}

This option uses an argument for each piece of information passing to the subroutine. The argument consists of two parts:

- location1

Location1 is the area of the spreadsheet in which OFIS Spreadsheet is to store the first subroutine argument. This can be a cell address or a range name.

- :type

You can specify :label or :value. This argument tells OFIS Spreadsheet how to interpret the information. If you do not specify a type, OFIS Spreadsheet treats the information as a label. The :type suffix is optional.

## {Dispatch}

Using the {Dispatch} option you tell OFIS Spreadsheet to branch indirectly to a location in the spreadsheet. The macro option format is:

{Dispatch location}

This option uses one argument: Location is the first cell to which OFIS Spreadsheet is branching. This can be a cell address or range name. This cell contains a cell address or range name of the next cell where OFIS Spreadsheet is branching. After branching this second time, OFIS Spreadsheet begins executing the instructions found at that location.

This option functions similar to the {Branch} option with the following exception. When executing the {Branch} option, OFIS Spreadsheet immediately begins executing the instructions found at the location given in the option argument. When executing the {Dispatch} option, OFIS Spreadsheet reads the first cell to find the address of the second cell, which contains the executable instructions.



### {FileSize}

The {FileSize} option tells you the total number of characters, or bytes, in an open file. The macro option format is:

{FileSize location}

This option uses one argument: Location is the cell in which you want OFIS Spreadsheet to store the numeric value representing the size of the file. This can be a cell address or a range name.

### {For}

You use the {For} option to tell OFIS Spreadsheet to execute a set of instructions for a specified number of times. Repeating a sequence of instructions in this manner is known as looping. The macro option format is:

{For counter, start, stop, step, starting location}

This option uses five arguments:

- counter

Counter is a cell OFIS Spreadsheet uses to hold a value, representing the number of passes made through the loop. This can be a cell address or a range name.

- start

Start is the initial starting value. OFIS Spreadsheet begins counting the number of passes using this value.

- stop

Stop is the stopping value. When OFIS Spreadsheet reaches this value, it stops executing the instructions in the loop.

- **step**  
Step is the value OFIS Spreadsheet adds to the counter value after each pass through the loop.
- **starting location**  
Starting location is the location of the first cell containing the instructions OFIS Spreadsheet is going to execute. This can be a cell address or a range name.

When you use this option, you do not need to keep track of the counter; OFIS Spreadsheet updates it after each pass through the loop using the step value. OFIS Spreadsheet checks the counter before each loop. If the value in the counter does not exceed the stop value, OFIS Spreadsheet makes another pass through the loop. If the value in the counter exceeds the stop value, OFIS Spreadsheet proceeds with the next instruction in the macro.

Whenever OFIS Spreadsheet reaches a blank cell or a (Return) in the loop, it ends that pass through the loop. If it encounters a (ForBreak), it breaks out of the loop.

### **{ForBreak}**

The (ForBreak) option tells OFIS Spreadsheet to cancel the preceding (For) option, break out of the loop it is currently executing, return to the calling macro, and execute the instruction following the (For) option. The macro option format is:

**{ForBreak}**

This option uses no arguments.

### {Get}

The {Get} option tells OFIS Spreadsheet to pause during the execution of the macro and accept a single character response. The macro option format is:

{Get location}

This option uses one argument: Location is the cell in which OFIS Spreadsheet is to store the one character response. This can be a cell address or a range name.

The {Get} option restricts the response to a single character and does not display a prompting message. The response can be alphabetic, numeric, or you can respond by pressing a function key. If you respond by pressing a function key, OFIS Spreadsheet stores the function key representation in the cell. For example, if you press **Edit (F2)**, OFIS Spreadsheet would store it as {EDIT}.

OFIS Spreadsheet stores the response in the location cell but does not display the response until it redraws the screen. To have OFIS Spreadsheet display the response immediately, you use the tilde (~) after the {Get} option.

### {GetLabel}

The {GetLabel} option lets you solicit string input during execution of a macro. This option also allows you to display a message prompt. The macro option format is:

{GetLabel prompt, location}

This option uses two arguments:

- **prompt**  
Prompt is the message OFIS Spreadsheet displays during execution of the option. If the prompt contains a character that you can use as an argument separator (for example, a comma), then you must enclose the prompt argument in quotation marks.
- **location**  
Location is the area of the spreadsheet where OFIS Spreadsheet stores the response. This can be a cell address or a range name.

OFIS Spreadsheet treats all responses as strings, entering them in the spreadsheet as label entries.

You must press **RETURN** or **GO** after entering the response to have OFIS Spreadsheet store the response. OFIS Spreadsheet stores the response in the location cell but does not display the response until it redraws the screen. To have OFIS Spreadsheet display the response immediately, you use the tilde (~) after the {GetLabel} option.

## {GetNumber}

The {GetNumber} option lets you solicit numeric input during execution of a macro. This option also allows you to display a message prompt. The macro option format is:

{GetNumber prompt,location}

This option uses two arguments:

- **prompt**  
Prompt is the message OFIS Spreadsheet displays during execution of the option. If the prompt contains a character that you can use as an argument separator (for example, a comma), then you must enclose the prompt argument in quotation marks.
- **location**  
Location is the area of the spreadsheet where OFIS Spreadsheet stores the response. This can be a cell address or a range name.

The response to this option can be a:

- **Value**
- **Formula**
- **Function**

If you try to enter a string as a response, **ERROR** displays in the Mode Indicator, and an error message appears at the bottom of the screen.

You must press **RETURN** or **GO** after entering the response to have OFIS Spreadsheet store the response. OFIS Spreadsheet stores the response in the location cell but does not display the response until it redraws the screen. To have OFIS Spreadsheet display the response immediately, you use the tilde (~) after the {GetNumber} option.

### {GetPos}

Using the {GetPos} option, you can find the current position of the file pointer in an open file. The macro option format is:

{GetPos location}

This option uses one argument: Location is the area of the spreadsheet where OFIS Spreadsheet stores the numeric value representing the current position of the file pointer. This can be a cell address or a range name.

When using this option remember that the first character in a file is in position 0, not 1.

### {If}

You use the {If} option to make the macro conditionally branch and execute different instructions, depending on the result of a logical true/false test. The macro option format is:

{If condition}(execute these command(s) if true)  
(execute these command(s) if false)

Condition is the logical statement being tested for and can be a numeric value or a string. You put the true value and false value in quotes. A true condition returns 1; a false condition returns 0.

When the conditional test is true, OFIS Spreadsheet executes the instructions in the same cell or line as the {If} option.

When the conditional test is false, OFIS Spreadsheet executes the instructions on the next line.

For example:

```
{If Revenue>10000000}{C30="Hooray!"){Celebrate}  
{C30="Sell More!"}
```

## **{Indicate}**

You use the {Indicate} option to customize the Mode Indicator display. The macro option format is:

{Indicate message}

This option uses one argument: **Message** is the text you want OFIS Spreadsheet to display in the Mode Indicator. This can be up to five characters.

When OFIS Spreadsheet encounters this option, it places the message in the Mode Indicator. The message remains in the Mode Indicator until:

- OFIS Spreadsheet encounters another {Indicate} option
- You exit OFIS Spreadsheet

You can clear the message from the Mode Indicator by using the Indicate option without a message argument.

## **{Let}**

You use the {Let} option to tell OFIS Spreadsheet to enter information in a particular location of the spreadsheet. The macro option format is:

{Let location, data}

This option uses two arguments:

- **location**

Location specifies the area of the spreadsheet in which OFIS Spreadsheet is to place the information. This can be a cell address or a range name.

- **data**

Data is the information OFIS Spreadsheet is placing in the location. This can be a numeric entry, a formula, a function, or a string entry.

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You can control how OFIS Spreadsheet handles your data by using an optional argument. The macro option format with the optional argument can be one of the following:

{Let location,data:string}

{Let location,data:value}

The optional arguments are:

- :string

The :string argument tells OFIS Spreadsheet to handle the data as a string entry.

- :value

The :value argument tells OFIS Spreadsheet to handle the data as a value entry.

Whenever the data argument is an invalid argument, OFIS Spreadsheet displays ERR in the location cell.

Figure 14-4 shows some examples using the {Let} option.

Figure 14-4. {Let} Option

a1 READY

	a	b	c	d	e	f
1						
2						
3						
4	\a					
5	{Let c5, Total}		Total			
6						
7	\b					
8	{Let c8, Total:string}		Total			
9						
10	\c					
11	{Let c11,1152}		1152			
12						
13	\d					
14	{Let c14,1152:string}		1152			
15						
16	\e					
17	{Let c17,+c14}		ERR			
18						
19						
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### **{Look}**

You use the {Look} option to tell OFIS Spreadsheet to check the keyboard buffer, then place the first character from the keyboard buffer in a specified location. The macro option format is:

{Look location}

This option uses one argument: Location is the cell in which OFIS Spreadsheet places the character from the keyboard buffer. This can be a cell address or a range name

This option does not cause OFIS Spreadsheet to suspend execution of the macro. When OFIS Spreadsheet encounters this option, it executes the option, then continues executing the next macro instruction.

### **{MenuBranch} and {MenuCall}**

OFIS Spreadsheet gives you two options you use to create custom pop-up menus, {MenuBranch} and {MenuCall}. The macro option format for each is:

{MenuBranch location}

{MenuCall location}

Each option uses one argument: Location is a cell in the upper left corner of the range containing the custom menu. This can be a cell address or a range name.

Both options tell OFIS Spreadsheet to go to an area in the spreadsheet containing a custom menu. The difference in the options is in how OFIS Spreadsheet exits the custom menu.

The {MenuBranch} option tells OFIS Spreadsheet to branch to the custom menu. When you are through using the custom menu, OFIS Spreadsheet does not automatically return to the calling macro. To return to the calling macro, you must have an instruction telling OFIS Spreadsheet to do so.

The {MenuCall} option tells OFIS Spreadsheet to treat the custom menu as a subroutine. When you are through using the custom menu, OFIS Spreadsheet automatically returns to the calling macro and executes the instruction following the {MenuCall} option.

Figure 14-5 shows an example of a macro using the {MenuCall} option. The menu it creates is displayed in the figure.

Figure 14-5. Macro Using {MenuCall}

aa2\va READY

	a	b	c	d	e	f
1	\va					
2						
3	{MENCALL \b}					
4						
5						
6	\b					
7	{MONEY}	{WIDTH}	{QUIT}			
8	Currency	Col to 20	Quit Menu			
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
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26						
27						
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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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Whenever OFIS Spreadsheet encounters the {MenuCall} option, it branches to the custom menu at the location given in the option argument.

## Custom Pop-up Menu

**Notes:** *When you create a custom menu, the command order depends upon how you created them (for example, if you created the commands in alphabetical order within the macro, they appear in alphabetical order in the custom menu.)*

*When you create a custom menu within a macro, you must create the menu items in consecutive columns.*

A custom menu must be at least two columns wide and three rows deep. Figure 14-6 shows a custom pop-up menu.

Figure 14-6. Custom Pop-up Menu

aa44\b READY

	aa	ab	ac	ad	ae	af	ag
41							
42							
43							
44	\b	MONEY	WIDTH	QUIT			
45		Currency	Col to 20	Quit Menu			
46		/RFC0{?}~{?}~	/WCS20{?}~				
47		{MENUBRANCH \b}	{MENUBRANCH \b}				
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
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Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
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You always set up custom menus using the same basic format:

- The first row gives the menu options. Each option should start with a different character and should be eight characters or less.
- The second row gives a description of the option. This row displays in the option panel as you highlight the corresponding option, just like any other OFIS Spreadsheet menu.
- The third and fourth rows give the instructions OFIS Spreadsheet executes when you select the option. This can include an instruction to branch to a subroutine.

It is a good idea to set the custom menu up in a location that is away from the active area of the spreadsheet.

### How to Use a Custom Pop-up Menu

After branching to a custom menu, OFIS Spreadsheet displays the custom pop-up menu. The custom pop-up menu appears exactly as you have set it up. The highlight is on the first option of the menu, and the description for that option appears in the option panel.

You select options from the custom menu just as you would from any OFIS Spreadsheet pop-up menu:

- Use the Arrow keys or the mouse to move the highlight over the selection; then press **RETURN** or **GO**; or
- Type in the first letter of the option.

After you make your selection, OFIS Spreadsheet begins executing the instructions for that option. OFIS Spreadsheet continues executing these instructions until it encounters one of the following:

- A blank cell
- {Quit}
- {MenuBranch}
- {MenuCall}

The custom menu shown in Figure 14-6 has the following menu options:

- Money  
change to currency format
- Width  
change column width to 20
- Quit  
quit the custom menu

When you select the Money or Width option, OFIS Spreadsheet executes the instructions found in the third and fourth rows, directly beneath the option. The instruction in the fourth row is {MenuBranch \b}. When OFIS Spreadsheet executes this option, the custom menu redisplay.

When you select the Quit option, OFIS Spreadsheet returns to the calling macro.

## {OnError}

You use the {OnError} option to give OFIS Spreadsheet error handling instructions for errors occurring during execution of your macro. The macro option format is:

{OnError location}

This option uses one argument: Location is the cell where OFIS Spreadsheet branches when the error occurs. This can be a cell address or a range name

The {OnError} option gives you the option of having OFIS Spreadsheet display an error message at a specified location or at the bottom of the screen. The macro option format using the optional argument is:

{OnError location, message location}

This option format uses one optional argument: Message location is a cell containing the error message OFIS Spreadsheet displays upon the occurrence of an error. This can be a cell address or a range name.

When OFIS Spreadsheet encounters an {OnError} option, the option remains in effect until OFIS Spreadsheet encounters one of the following:

- An error relating to the current {OnError}
- A new {OnError}
- A blank cell
- {Quit}

If OFIS Spreadsheet encounters a new {OnError} when a previous {OnError} is in effect, the most recent {OnError} cancels the previous one.

## {Open}

You use the {Open} option to tell OFIS Spreadsheet to open or create a file during macro execution, and to provide file access instructions. The macro option format is:

{Open filename, access mode}

This option uses two arguments:

- filename

Filename is the name of the file you want OFIS Spreadsheet to open or create. This can be:

- The actual filename
- A cell address or range name for a cell containing the filename
- A string formula or function that returns the filename

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- access mode

Access mode is a single character specifying the type of access OFIS Spreadsheet has to the file. You have four types of access modes:

- Read
- Write
- Modify
- Append

You designate access mode by using the first character of the mode you desire.

It is important to understand the significance of each type of access mode because this controls what OFIS Spreadsheet can do with the open file.

### Read Access Mode

Read access mode allows OFIS Spreadsheet to open a file. While in this mode, OFIS Spreadsheet can only read the file.

### Write Access Mode

Write access mode allows OFIS Spreadsheet to create a new file, using the specified filename to name it, or to overwrite an existing file. While in this mode, OFIS Spreadsheet can read and write to the file.

### Modify Access Mode

Modify access mode allows OFIS Spreadsheet to open an existing file. While in this mode, OFIS Spreadsheet can read and write to the file.

### Append Access Mode

Append access mode allows OFIS Spreadsheet to open a file. While in this mode, OFIS Spreadsheet can only write to the file.

## **{PanelOff}**

You use the {PanelOff} option to freeze the Control Panel during macro execution. This option is useful in reducing the activity appearing in the option panel during execution of a macro. The macro option format is:

{PanelOff}

This option uses no argument.

The {PanelOff} option remains in effect until OFIS Spreadsheet executes one of the following:

- {PanelOn}
- A blank cell
- {Quit}

When using this option, be sure to unfreeze the Control Panel before instructions soliciting user input. If you do not, OFIS Spreadsheet pauses waiting a response, but no prompting message displays.

## **{PanelOn}**

You unfreeze the option panel by using the {PanelOn} option. The macro option format is:

{PanelOn}

This option uses no arguments.



### {Put}

You use the {Put} option to tell OFIS Spreadsheet to store the results of a calculation in a specific cell within a range. You specify the cell by using row and column offsets. The macro option format is:

{Put location,column offset,row offset,calculation}

This option uses four arguments:

- location

Location is the range of cells in which OFIS Spreadsheet is to place the result of the calculation. This can be range coordinates or a range name.

- column offset

Column offset specifies a column within the range specified by the location. The first column of the range has an offset of 0.

- row offset

Row offset specifies a row within the range specified by the location. The first row of the range has an offset of 0.

- calculation

Calculation is the information OFIS Spreadsheet stores in the specified cell location.

### {Quit}

You tell OFIS Spreadsheet to terminate execution of the macro with the {Quit} option. The macro option format is:

{Quit}

This option uses no arguments.

Since OFIS Spreadsheet stops executing a macro whenever it encounters a blank cell, it is not necessary to use the {Quit} option to end execution of a macro. However, this option is useful to stop a macro during execution, for example, as part of a conditional test.

## **{Read}**

Using the {Read} option, you tell OFIS Spreadsheet to read a specified number of characters and store them in a specific location. The macro option format is:

**{Read characters, location}**

This option uses two arguments:

- **characters**

**Characters** gives a numeric value specifying the number of characters OFIS Spreadsheet is to read from the file. OFIS Spreadsheet begins reading at the current position of the file pointer.

- **location**

**Location** is the cell in which OFIS Spreadsheet is to place the information from the file. This can be a cell address or a range name.

OFIS Spreadsheet can read a file only if one of the following access modes is in effect:

- **Read**
- **Write**
- **Modify**

### **{ReadLn}**

Using the {ReadLn} option you tell OFIS Spreadsheet to read a complete line of information from a file and store them in a location in the spreadsheet. The macro option format is:

{ReadLn location}

This option uses one argument: Location is the cell in which OFIS Spreadsheet is to place the line of information from the file. This can be a cell address or a range name.

This option starts reading the file at the current position of the file pointer and stops reading when it reaches a carriage return or linefeed.

OFIS Spreadsheet can read a file only if one of the following access modes is in effect:

- Read
- Write
- Modify

### **{Recalc} and {RecalcCol}**

You tell OFIS Spreadsheet to recalculate a section of the spreadsheet by using the {Recalc} or {RecalcCol} option. The {Recalc} option recalculates row by row; the {RecalcCol} option recalculates column by column. The macro option format for each is:

{Recalc location}

{RecalcCol location}

Each option uses one argument:

- location

Location is the area of the spreadsheet you want OFIS Spreadsheet to recalculate. This can be a cell address or a range name.

You have the option of telling OFIS Spreadsheet to perform the calculation depending upon the result of a conditional test. You can also specify how many times OFIS Spreadsheet should recalculate. You do this by using two optional arguments. The macro option format for each option, with the two optional arguments is:

{Recalc location,condition,iteration}

{RecalcCol location,condition,iteration}

The option format uses two optional arguments:

- condition

Condition is a conditional test. As long as this conditional test remains false, OFIS Spreadsheet continues recalculating.

- iteration

Iteration is a value telling OFIS Spreadsheet how many times to recalculate when the conditional test is false.

You can use the condition argument without using the iteration argument, but you cannot use the iteration argument without using the condition argument.

## {Restart}

You use the {Restart} option during the execution of a subroutine to tell OFIS Spreadsheet to complete the subroutine instructions. Instead of returning to the calling routine, OFIS Spreadsheet continues executing instructions from the subroutine location. It functions the same as if the calling option was the {Branch} option. The macro option format is:

{Restart}

This option uses no arguments.

### **{Return}**

You use the {Return} option in a subroutine to tell OFIS Spreadsheet to return to the calling macro and continue executing the instructions following the subroutine option. OFIS Spreadsheet does not execute any instructions in the subroutine after the {Return} option. The macro option format is:

**{Return}**

This option uses no arguments.

### **{routine}**

You tell OFIS Spreadsheet to branch to and execute a subroutine by using the {routine} option. Subroutines are useful when you have to repeat a task in a macro (for example, printing). The macro option format is:

**{routine}**

This option does not have an option keyword and uses no arguments. Instead of an option keyword, it uses the range name of a cell. This cell contains the first instruction of the subroutine.

OFIS Spreadsheet executes a subroutine the same as it executes a macro. When OFIS Spreadsheet reaches the last instruction of the subroutine it automatically returns to the calling macro and continues executing instructions in that macro.

To have OFIS Spreadsheet execute the subroutine instructions differently each time, you can pass information from the calling macro to the subroutine by using an argument. The macro option format with arguments is:

**{routine argument1, argument2, argumentn}**

This option uses one argument for each piece of information you are passing to the subroutine. The argument can be a label, value, formula, or function.

## {SetPos}

You tell OFIS Spreadsheet to place the file pointer at a specific location in an open file with the {SetPos} option. The macro option format is:

{SetPos position}

This option uses one argument: **Position** is the location in the file where OFIS Spreadsheet places the file pointer. This can be a value, a formula, or a function.

The first character in the file is at position 0.

## {Wait}

You tell OFIS Spreadsheet to pause during the execution of a macro by using the {Wait} option. The macro option format is:

{Wait time}

This option uses one argument: **Time** specifies the time at which you want OFIS Spreadsheet to resume executing the macro. This can be a time value, or an equation or function returning a time value.

For example, you can have a macro instruction using the {Wait} option as follows:

```
{Wait @TIME(10,15,0)}
```

Using this example, OFIS Spreadsheet would stop executing the macro until 10:15 am. The actual length of the pause depends upon the time when OFIS Spreadsheet is executing the macro. In the example, if you are running the macro at 9:30 am, OFIS Spreadsheet pauses for 45 minutes before resuming execution of the macro at 10:15 am. If you are running the macro at 8:00 am, OFIS Spreadsheet pauses for 2 hours and 15 minutes.

You also have the ability to tell OFIS Spreadsheet to pause for a specific interval of time. To do this, you set up the macro option as follows:

```
{Wait @NOW+@TIME (hh, mm, ss) }
```

By setting up the option in this manner, you tell OFIS Spreadsheet to pause for an exact period of time, for example 30 seconds, without concern about when OFIS Spreadsheet is executing the macro.

During the pause, OFIS Spreadsheet flashes WAIT in the Mode Indicator.

### {WindowsOff}

You use the {WindowsOff} option to freeze the screen window during execution of the macro. The screen window is the area below the column border and to the right of the row border. The macro option format is:

```
{WindowsOff}
```

This option uses no arguments.

The {WindowsOff} option remains in effect until OFIS Spreadsheet encounters one of the following:

- {WindowsOn}
- A blank cell
- {Quit}

### {WindowsOn}

You can unfreeze the screen window by using the {WindowsOn} option. The macro option format is:

```
{WindowsOn}
```

This option uses no arguments.

## **{Write}**

You tell OFIS Spreadsheet to write text to an open file by using the **{Write}** option. The macro option format is:

**{Write string}**

This option uses one argument: **String** is the text OFIS Spreadsheet writes to the file. This can be a literal string, a cell address or range name for the location of a string, or a formula or function returning a string.

## **{WriteLn}**

You tell OFIS Spreadsheet to write text to an open file and place a carriage return/linefeed at the end of the text, by using the **{WriteLn}** option. The macro option format is:

**{WriteLn string}**

This option uses one argument: **String** is the text OFIS Spreadsheet writes to the file. This can be a literal string, a cell address or range name for the location of a string, or a formula or function returning a string.

## **/X Options**

OFIS Spreadsheet offers several **/X** options that have functions similar to keyword macro options. The option format of the **/X** options is slightly different from the keyword macro options. The **/X** options:

- Begin with a slash (/)
- Do not need beginning or ending braces
- Have no space between the keyword and argument

The following is a brief explanation of each **/X** option available in OFIS Spreadsheet. Each explanation references the equivalent keyword macro option. For a more detailed explanation of the option functions, refer to the discussion on the equivalent keyword macro option.



### **/XC**

You use the **/XC** option to tell OFIS Spreadsheet to execute a subroutine. This option is equivalent to the **{routine}** option. The macro option format is:

**/XClocation~**

This option uses one argument: **Location** specifies a cell containing the first instruction of the subroutine. This can be a cell address or a range name.

The ending tilde (~) is an essential part of the option.

### **/XG**

You alter execution flow of the macro by using the **/XG** option. This option directs OFIS Spreadsheet to a different location in the spreadsheet, where it begins executing instructions at that location. This option is equivalent to the **{Branch}** option. The macro option format is:

**/XGlocation~**

This option uses one argument: **Location** is the area of the spreadsheet containing the instructions OFIS Spreadsheet is to execute. This can be a cell address or a range name.

The ending tilde (~) is an essential part of the option.

### **/XI**

Using the **/XI** option, you tell OFIS Spreadsheet to test a condition, and execute instructions using the results of the conditional test. This option is equivalent to the **{If}** option. The macro option format is:

**/XIcondition~**

This option uses one argument: **Condition** is a conditional test. This can be a numeric value or a string.

The ending tilde (~) is an essential part of the option.

### **/XL**

You solicit user input during macro execution by using the **/XL** option. You can also tell OFIS Spreadsheet where to store the response. This option is equivalent to the **(GetLabel)** option. The macro option format is:

**/XLmessage~location~**

This option uses two arguments:

- **message**

Message is the text OFIS Spreadsheet displays prompting the user for input during execution of the macro.

- **location**

Location is the area of the spreadsheet where OFIS Spreadsheet stores the response. This can be a cell address or a range name.

The ending tilde (~) is an essential part of the option.

### **/XM**

You create a custom menu using the **/XM** option. You can have up to eight menu options on the custom menu. This option is equivalent to the **(MenuBranch)** option. The macro option format is:

**/XMlocation~**

This option uses one argument: Location is the cell address in the upper left corner of the range containing the custom menu. This can be a range name.

The ending tilde (~) is an essential part of the option.

### **/XN**

You solicit numeric input during macro execution by using the **/XN** option. You can also tell OFIS Spreadsheet where to store the response. This option is equivalent to the **{GetNumber}** option. The macro option format is:

**/XNmessage~location~**

This option uses two arguments:

- **message**

Message is the text OFIS Spreadsheet displays during execution of the Macro, prompting the user for input.

- **location**

Location is the area of the spreadsheet where OFIS Spreadsheet stores the response. This can be a cell address or a range name.

The ending tilde (~) is an essential part of the option.

### **/XQ**

You tell OFIS Spreadsheet to stop executing a macro by using the **/XQ** option. This option is equivalent to the **{Quit}** option. The macro option format is:

**/XQ**

This option uses no arguments.

### **/XR**

You use the **/XR** option to tell OFIS Spreadsheet to return from a macro subroutine to the calling macro and continue executing the next instruction in the calling macro. This option is equivalent to the **{Return}** option. The macro option format is:

**/XR**

This option uses no arguments.

# Section 15

## Linking Data From Different Spreadsheets

OFIS Spreadsheet provides you with a way to link information between spreadsheet files. This link connects information from a cell or a range in one spreadsheet to a cell or a range in another spreadsheet. The spreadsheet that the information is coming from is known as the *external* spreadsheet. The spreadsheet the information is going to is the one you are currently working on, known as the *current* spreadsheet.

You can link information:

- Between one or more OFIS Spreadsheet files
- From Lotus 1-2-3 files to OFIS Spreadsheet files

You create a link between spreadsheets by copying a cell or range from the external spreadsheet to a cell or range in the current spreadsheet. The location you are copying from is the *source area*, and the location you are copying to is the *target area*. Figures 15-1 and 15-2 illustrate these concepts.

# Linking Data From Different Spreadsheets

Figure 15-1. Word Processing Budget Spreadsheet

a1 [W35] 'WORD PROCESSING BUDGET

READY

	a	b	c	d	e	f
1	Word Processing Budget					
2	1st Quarter 1988					
3						
4	Category	Jan	Feb	Mar	Total	
5						
6						
7	Equipment	\$3,000	\$3,000	\$3,000	\$9,000	
8	Supplies	\$500	\$500	\$550	\$1,550	
9	Salaries - Permanent	\$4,500	\$4,500	\$5,000	\$14,000	
10	Salaries - Contract	\$1,500	\$1,500	\$3,000	\$6,000	
11	Miscellaneous Expenses	\$300	\$300	\$300	\$900	
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						



Tue 20-Apr-93 3:50 PM

WPBudget.wkt

Macro	Edit	Name	Abs	Go To	Window	Query	Table	Calc	Graph
-------	------	------	-----	-------	--------	-------	-------	------	-------

2554.15-1

Figure 15-2. Data Processing Budget Spreadsheet

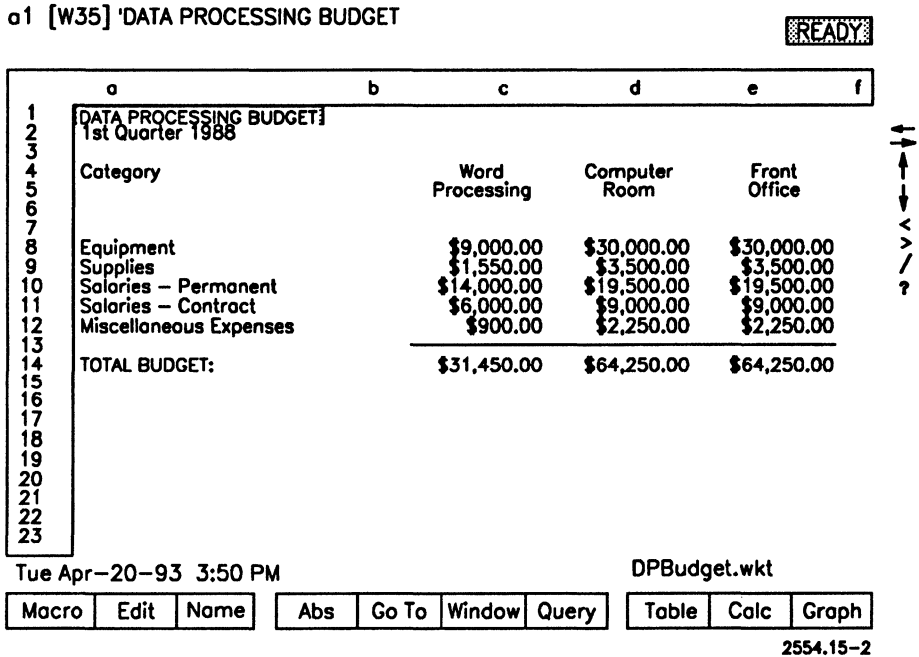


Figure 15-1 shows a budget for the Word Processing section of a Data Processing Department. Figure 15-2 shows the Data Processing Department budget. The spreadsheet for the Data Processing Department budget is the current spreadsheet, and the spreadsheet for the Word Processing section is the external spreadsheet.

## Dependent and Supporting Links

When you link information between cells in a source area and a target area, you create a dependency between the two spreadsheets. The information in the cells in the target area of the current spreadsheet is directly affected by changes made to the information in the cells in the source area of the external spreadsheet.

The current spreadsheet has a dependent link to the external spreadsheet; the external spreadsheet has a supporting link to the current spreadsheet. The current spreadsheet depends on the external spreadsheet for information, and the external spreadsheet supports the information in the current spreadsheet.

One spreadsheet can have both supporting and dependent links. In Figure 15-2, the Data Processing Department spreadsheet has a dependent link to the Word Processing spreadsheet. The totals it uses for the Word Processing totals come from the Word Processing spreadsheet. The Data Processing spreadsheet in turn can have a supporting link, for example, to a company budget spreadsheet, supplying the company budget with totals for the Data Processing Department.

### Updating Dependent Links

When you update information in a spreadsheet that has a supporting link to a dependent spreadsheet, OFIS Spreadsheet does not automatically update the information in the dependent spreadsheet. In order to update the information in the dependent spreadsheet, you must open the dependent spreadsheet, and then save the spreadsheet. The new information does not become a permanent part of the dependent spreadsheet until you save the dependent spreadsheet.

If you have several dependent and supporting links between spreadsheets you may find it helpful to diagram the various links. This way you can see which spreadsheets you need to update, and in what order.

## Creating a Link

You can create links to OFIS Spreadsheet with the following types of files:

- OFIS Spreadsheet spreadsheet files
- Lotus 1-2-3 worksheet files

You can create dependent and supporting links using OFIS Spreadsheet spreadsheet files. You can only create supporting links with Lotus 1-2-3 worksheet files.

OFIS Spreadsheet copies only values from one file to another. It does not copy formulas or functions.

Any entries in the cells of the target area are overwritten by information from the source area.

To create a link to OFIS Spreadsheet files, use the following procedure:

1. Have the current OFIS Spreadsheet spreadsheet open.
2. Make sure the spreadsheet is in Ready mode.
3. Type the first character of the following options:

**/AdvancedLinkCreate**

A prompt appears asking for the external filename. Following the prompt is a pop-up menu of the names of all files in the current directory.

4. Choose one of the following:
  - Select a filename.
  - Type the desired filename.
5. Press **RETURN** or **GO**.

A prompt appears asking for the named range from the source spreadsheet.



6. Choose one of the following:

- Type the range coordinates.
- Type a range name.

7. Press **RETURN** or **GO**.

A prompt appears asking for the range of the target range. Following the prompt is a reference to the current cell as a range.

8. Choose one of the following:

- Press **GO** to accept.
- Use the Arrow keys or the mouse to position the cell pointer at the cell in the upper left corner of the range; then press **GO**.
- Type the cell address of the cell in the upper left corner of the range; then press **GO**.

OFIS Spreadsheet copies the information from the source area into the target area.

## Editing Links

OFIS Spreadsheet allows you to edit supporting links only while in the dependent spreadsheet.

To edit a supporting link, use the following procedure:

1. Have the dependent spreadsheet open.
2. Make sure the spreadsheet is in Ready mode.
3. Type the first character of the following options:

**/AdvancedLinkEdit**

A prompt appears asking for the external filename. Following the prompt is a pop-up menu of all spreadsheet files that have supporting links to the open dependent spreadsheet file.

4. Choose one of the following:
  - Highlight the desired filename.
  - Type the desired filename.

5. Press **RETURN** or **GO**.

A prompt appears asking for the range name of the link you want to edit. Following the prompt is a list of all range names for links from the supporting spreadsheet file.

6. Choose one of the following:
  - Highlight the desired range name.
  - Type the desired range name.

A prompt appears asking you for the target area. Following the prompt is a reference to the current cell as a range.

7. Choose one of the following:
  - Press **GO** to accept.
  - Using the Arrow keys or the mouse, position the cell pointer in the cell in the upper left corner of the target area range; then press **GO**.

### Deleting Dependent Links

You can delete supporting links while in the dependent spreadsheet.

To delete a supporting link, use the following procedure:

1. Have the dependent spreadsheet open.
2. Make sure the spreadsheet is in Ready mode.
3. Type the first character of the following options:

`/AdvancedLinkDelete`

A prompt appears asking for the external filename. Following the prompt is a pop-up menu of all spreadsheet files that have supporting links to the open dependent spreadsheet file.

4. Choose one of the following:
  - Highlight the desired filename.
  - Type the desired filename.
5. Press **RETURN** or **GO**.

A prompt appears asking for the range name of the link you want to delete. Following the prompt is a list of all range names for links from the supporting spreadsheet file.

6. Choose one of the following:
  - Highlight the desired range name.
  - Type the desired range name.
7. Press **RETURN** or **GO**.

OFIS Spreadsheet deletes the supporting link.

## Listing Dependent Links

You can list all dependent links from the supporting spreadsheet.

To list a supporting spreadsheet's dependent links, use the following procedure:

1. Have the supporting spreadsheet open.
2. Make sure the spreadsheet is in Ready mode.
3. Type the first character of the following options:

`/AdvancedLinkList-Dependent`

A list of all dependent spreadsheets for the supporting spreadsheet appears.



# Appendix A

## Spreadsheet Comparisons

The following tables compare options from OFIS Spreadsheet to equivalent commands and options in Multiplan and Lotus 1-2-3. The tables are broken down as follows:

- Worksheet
- Range
- File
- Print
- Graph

If OFIS Spreadsheet has an option that has no equivalent in Enhanced Multiplan or Lotus 1-2-3, then that option is not shown in the table.

## Spreadsheet Comparisons

---

**Table A-1. Worksheet Options**

<b>OFIS Spread- sheet Option (1st and 2nd levels)</b>	<b>Option</b>	<b>Suboption</b>	<b>Multiplan</b>	<b>Lotus 1-2-3</b>
Global Format	Fixed		X	X
	Scientific		X	X
	Currency		X	X
	, (comma)		X	X
	General		X	X
	+/-		X	X
	Percent		X	X
	Date		NA	X
	Text		X	X
	Hidden		NA	X
Global Label- Prefix		Left	X	X
		Right	X	X
		Center	X	X
Global Column- Width			X	X
Global Re- calculation	Natural		NA	X
	Columnwise		NA	X

continued

Table A-1. Worksheet Options (cont.)

OFIS Spread- sheet Option (1st and 2nd levels)	Option	Suboption	Multiplan	Lotus 1-2-3
	Rowwise		NA	X
	Automatic		X	X
	Manual		X	X
	Iteration		X	X
Global Protection			X	X
Global Default	Printer	Auto-LF	NA	X
		Left	X	X
		Right	X	X
		Top	X	X
		Bottom	X	X
		Pg-Length	X	NA
		Wait	X	X
		Name	X	X
		Extended- Orientation		
		• Landscape		
		• Portrait	X	NA
			X	NA

continued



## Spreadsheet Comparisons

---

**Table A-1. Worksheet Options (cont.)**

OFIS Spread- sheet Option (1st and 2nd levels)	Option	Suboption	Multiplan	Lotus 1-2-3
	-Font-Size		X	NA
	Directory		X	X
	Status		NA	X
	Update		NA	X
	Other	Inter-national		
		-Punctuation	NA	X
		-Currency	NA	X
		-Date	NA	X
		-Time	NA	X
		Help		
		-Instant	NA	X
		-Removable	NA	X
		Clock	NA	X
		-Standard		
		-Inter-national		
		-None	NA	X
			NA	X

continued

Table A-1. Worksheet Options (cont.)

OFIS Spread- sheet Option (1st and 2nd levels)	Option	Suboption	Multiplan	Lotus 1-2-3
		Display		
		-Wide Characters	X	X
		-Narrow Characters	X	X
Global Zero			NA	X
Insert		Column	X	X
		Row	X	X
Delete		Column	X	X
		Row	X	X
Column- Width		Set	X	X
		Reset	X	X
Erase			NA	X
Titles		Both	X	X
		Horizontal	X	X
		Vertical	X	X
		Clear	NA	X
Window		Horizontal	X	X
		Vertical	X	X
		Sync	X	X
		Unsync	X	X
		Clear	X	X
Status			NA	X
Page			NA	X

# Spreadsheet Comparisons

---

**Table A-2. Range Options**

OFIS Spread- sheet Option	Option	Suboption	Multiplan	Lotus 1-2-3	
Format	Fixed		X	X	
	Scientific		X	X	
	Currency		X	X	
	, (comma)		X	X	
	General		X	X	
	+/-		X	X	
	Percent		X	X	
	Date(Time)		NA	X	
	Text		NA	X	
	Hidden		NA	X	
	Reset		NA	X	
Label	Visible		NA	X	
	Left		X	X	
	Right		X	X	
Erase	Center		X	X	
			X	X	
			X	X	
Name	Create		X	X	
	Delete		X	X	
	Labels	Right		NA	X
		Down		NA	X
		Left		NA	X
		Up		NA	X
Reset		NA	X		

continued

Table A-2. Range Options (cont.)

OFIS Spread- sheet Option	Option	Suboption	Multiplan	Lotus 1-2-3
	Table		NA	X
Justify			NA	X
Protect			X	X
Unprotect			X	X
Input			NA	X
Value			NA	X
Transpose			NA	X

## Spreadsheet Comparisons

---

**Table A-3. File Options (/F)**

<b>OFIS Spread- sheet Option</b>	<b>Option</b>	<b>Suboption</b>	<b>Multiplan</b>	<b>Lotus 1-2-3</b>
Retrieve			X	X
Save			X	X
Combine	Copy	Entire File	NA	X
		Named Range	NA	X
	Add	Entire File	NA	X
		Named Range	NA	X
	Subtract	Entire File	NA	X
		Named Range	NA	X
	Multiply	Named Range	NA	NA
		Entire File	NA	NA
	Divide	Named Range	NA	NA
		Entire File	NA	NA
	Greater Than	Entire File	NA	NA
		Named Range	NA	NA
	Less Than	Entire Range	NA	NA
		Named Range	NA	NA

continued

Table A-3. File Options (/F) (cont.)

OFIS Spread- sheet Option	Option	Suboption	Multiplan	Lotus 1-2-3
Xtract	Formulas		NA	X
	Values		NA	X
	Multiplan- SYLK		X	NA
Erase	Worksheet		X	X
	Print		NA	X
	Graph		NA	X
List	Worksheet		X	X
	Print		NA	X
	Graph		NA	X
	Other		X	X
Import	Text		NA	X
	Numbers		NA	X
	Multiplan- SYLK		X	NA
Directory			X	X

## Spreadsheet Comparisons

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**Table A-4. Print Options (/P)**

OFIS Spread- sheet Option	Option	Suboption	Multiplan	Lotus 1-2-3	
Printer	Range		X	X	
		Options			
			Header	NA	X
			Footer	NA	X
			Margins	X	X
			Borders	X	X
			Page-Length	X	X
			Other		
			-As-Displayed	X	X
			-Cell Formulas	X	X
			-Formatted	NA	X
			-Unformatted	NA	X
		Clear	All	NA	X
			Range	NA	X
			Borders	NA	X
			Format	NA	X
		Align		NA	X
		Go		X	X
		Extended	Orientation		
			-Default	NA	NA
	-Landscape		X	NA	
	-Portrait		X	NA	
	Font-Size		X	NA	

continued

Table A-4. Print Options (/P) (cont.)

OFIS Spread- sheet Option	Option	Suboption	Multiplan	Lotus 1-2-3
	Name		X	X
File			X	X



# Spreadsheet Comparisons

**Table A-5. Graph Options (/G)**

OFIS Spread- sheet Option	Option	Suboption	Multiplan	Lotus 1-2-3
Type	Line		X	X
	Bar		X	X
	XY		X	X
	Stacked Bar		X	X
	Pie		X	X
X			NA	X
A			X	X
B			X	X
C			X	X
D			X	X
E			X	X
F			X	X
Reset	Graph		X	X
	X		NA	X
	A		NA	X
	B		NA	X
	C		NA	X
	D		NA	X
	E		NA	X
F		NA	NA	X
Options	Legend	A	X	X
		B	X	X
		C	X	X
		D	X	X

continued

Table A-5. Graph Options (cont.)

OFIS Spread- sheet Option	Option	Suboption	Multiplan	Lotus 1-2-3
		E	X	X
		F	X	X
	Titles	First	X	X
		X-Axis	X	X
		Y-Axis	X	X
	Color		X	X
	B&W		X	X
	Other	Format-File	X	NA
		Labels	X	NA
		Palette	X	NA
		Name	NA	NA
Name	Use		NA	X
	Create		NA	X
	Delete		NA	X
	Reset		NA	X



# Appendix B

## Installing OFIS Spreadsheet

This section provides information about memory, software and hardware requirements, and the procedures for installing OFIS Spreadsheet.

### Memory Requirements

OFIS Spreadsheet memory requirements are as follows:

	<b>Minimum</b>	<b>Recommended</b>
<b>Protected mode system</b>	750 KB	1000 KB
<b>Real mode system</b>	600 KB	850 KB

### Disk Requirements

OFIS Spreadsheet requires approximately 3700 sectors of disk space.

# Hardware Requirements

You can install OFIS Spreadsheet locally or at the server.

Workstations come in a variety of overall hardware configurations. However, all configurations include the following components:

- A monitor

Depending on your system's hardware, the monitor can display from 29 to 38 lines and from 80 to 146 characters per line.

- A central processing unit (CPU)

The central processing unit includes the electronic components and circuitry the system uses to carry out your commands and process the data you enter.

- Disk drives

Depending on its configuration, your system incorporates some combination of disk drives, including 5-1/4-inch or 3-1/2-inch floppy drives and Winchester-style hard drives. Disk drives may not necessarily be part of your cluster workstation; they may be on the server.

- A keyboard

Depending on its configuration, your system has a K1, K2, K3, K5, SG-101-K, or SG-102-K keyboard.

## Mouse

You can use any mouse supported by the operating system with OFIS Spreadsheet.

## Math Coprocessor

Your workstation does not need to have a math coprocessor to run OFIS Spreadsheet.

## Installing OFIS Spreadsheet on a Cluster

On a cluster, you will obtain the best performance from OFIS Spreadsheet if you install it on the cluster workstations' hard disks.

## Printers

You can use any printer supported by the CTOS Generic Print System (GPS) to print OFIS Spreadsheet spreadsheets. For more information about GPS, refer to your GPS documentation or your printer documentation.

## Graphics

For the software and hardware required to create charts from OFIS Spreadsheet data, refer to the *CTOS OFIS Graphics Operations Guide*.

## Software Requirements

Software requirements depend upon the features you intend to use, such as graphics or incorporating spreadsheets into documents.

## Operating Systems

To use OFIS Spreadsheet, your system must have one of the following operating systems:

- BTOS II 3.2
- CTOS I 3.3
- CTOS II 3.3
- CTOS III 1.0
- CTOS/XE 3.0

**Note:** *The operating system levels listed for all systems are minimums; you can also use later releases with OFIS Spreadsheet.*

## Printing

To print from OFIS Spreadsheet, your system must have access to the Generic Print System (GPS), level 2.5.

### Context Manager

If you want to use several applications concurrently, you must use one of the following:

- BTOS Context/Window Manager 1.3.5 or higher
- CTOS Context/Window Manager 4.0 or higher

### Cooperating Applications

If you want to access spreadsheets created in Enhanced Multiplan or Extended Multiplan, you must use BTOS Multiplan 2.1 or higher or CTOS Multiplan 2.1 or higher.

If you want to incorporate spreadsheets into word-processed documents, you must use CTOS OFIS Document Designer 3.0 or higher.

If you want to use spreadsheet data to create charts, you must use CTOS OFIS Graphics 2.0 or higher.

## Before You Install OFIS Spreadsheet

Before you install OFIS Spreadsheet, you should have done the following:

- Installed the cooperating software you want to use (such as Context Manager and OFIS Designer or OFIS Document Designer)
- Made backup copies of the OFIS Spreadsheet installation diskettes using the **Floppy Copy** command (refer to the *CTOS Executive Reference Manual* for information on the **Floppy Copy** command).

## Installing OFIS Spreadsheet

OFIS Spreadsheet is supplied on three 5¼-inch or two 3½-inch diskettes. The diskettes are write-protected; you should not remove the write-protection label or use them as working copies.

If you are installing OFIS Spreadsheet from the installation diskettes, use the procedure under "Installing OFIS Spreadsheet from the Installation Diskettes". If you are installing OFIS Spreadsheet from the server, use the procedure under "Installing OFIS Spreadsheet from the Server". Both procedures use the Installation Manager utility. For details about the **Floppy Install** and **Server Install** commands and the Installation Manager utility, you can refer to the *CTOS Executive Reference Manual*.

During installation, Installation Manager:

- displays instructions which guide you through the installation process.
- copies executable and data files to a hard disk either on your workstation or on the server.
- adds the OFIS Spreadsheet Executive commands to a command file on your workstation or on the server, depending on the installation parameters you choose.
- updates the configuration files of cooperating applications and gives you the option to update your Context Manager configuration file. If you need information on manually configuring Context Manager and cooperating applications, you can refer to "Configuring Context Manager for Use with OFIS Spreadsheet", and "Configuring the Chaining Configuration File", both in this appendix.



### Installing OFIS Spreadsheet from the Installation Diskettes

To install OFIS Spreadsheet from the installation diskettes, use the following procedure:

1. Power up the workstation and complete the Signon form.
2. Insert your working copy of the first installation diskette in drive F0.
3. Type **Floppy Install** in the Executive command field and press **GO**.
4. The system processes several files and displays the Installation Defaults menu. Choose one of the following actions:
  - To install OFIS Spreadsheet on the local workstation, select the **Continue Installation** option and press **GO**.
  - If you are at a workstation and want to install OFIS Spreadsheet onto a server, select the **Examine/Change Defaults** option and press **GO**. On the Installation Parameters menu, select **Yes** for the Public parameter value and press **GO**.
5. Follow the displayed instructions to enter parameters and make selections.

When installation is complete, Installation Manager prompts you to exit or continue and install another application.

6. Press **FINISH** to exit Installation Manager.
7. Remove the diskette from drive F0 and store it in a safe place.

## Installing OFIS Spreadsheet from the Server

If OFIS Spreadsheet has been installed publicly on the server, you can use the following procedure to install it on a cluster workstation.

To install OFIS Spreadsheet from the server, use the following procedure:

1. Power up the cluster workstation and complete the Signon form.
2. Choose one of the following:
  - If your operating system is BTOS II 3.2, type **Installation Manager** at the Executive command line, then press **GO**.  
Installation Manager displays the Software Operation menu.
    - a. Choose the Install New Software option.
    - b. When the Install Media menu displays, choose the Install from Server option.
  - If your operating system is not BTOS II 3.2, type **Server Install** at the Executive command line, then press **GO**.

Installation Manager starts and displays all the software that has been publicly installed onto the server

3. Select the **CTOS OFIS Spreadsheet** option, then press **GO**.

Installation Manager installs OFIS Spreadsheet on the cluster workstation. When installation is complete, Installation Manager prompts you to exit or continue and install another application.

4. Press **FINISH** to exit Installation Manager.

# Configuring Context Manager for Use with OFIS Spreadsheet

Context Manager is an application that enables you to run several applications simultaneously, and switch from one to another quickly and easily.

The installation process offers you the option of modifying your Context Manager configuration file to include OFIS Spreadsheet as a context. If you choose not to have the installation process modify your Context Manager configuration file, you can modify it manually using the information in table B-1. For the procedures on configuring Context Manager, refer to your Context Manager documentation.

Table B-1. Application Information for CTOS Context Manager

Parameter	Entry
Command Name	OFIS Spreadsheet
Run file name	[Sys]<Sys>OFISSpreadsheet.run <i>Note: If you have installed OFIS Spreadsheet on the server, enter [!Sys]&lt;Sys&gt;OFISSpreadsheet.run.</i>
Abbreviation	O SS
Function key	
Memory size	Protected mode system: 750Kb minimum 1000Kb recommended  Real mode system: 650Kb minimum 850Kb recommended
Command case	00
Volume	
Directory	
Prefix	
Password	
Node	
Autostart ordering	

continued

## Installing OFIS Spreadsheet

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**Table B-1. Application Information for CTOS Context Manager (cont.)**

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<b>Parameter</b>	<b>Entry</b>
Needs Exec screen?	no
Color	green
Resolution	1024x768
More	If you want to transfer objects (spreadsheet data) from OFIS Spreadsheet to OFIS Designer or OFIS Document Designer, enter :OfdObjectEdited:269  If you want to transfer objects (spreadsheet data) from OFIS Spreadsheet to Document Designer, enter :DDObjectEdited:269

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## Transferring Data Between Applications

If you want to transfer data between OFIS Spreadsheet and a graphics or word-processing application, you can either use Context Manager to switch between contexts, or you can chain from OFIS Spreadsheet to another application.

The advantages of transferring objects by each method are:

- using Context Manager's Inter-Context Message Service (ICMS) is faster, but requires more memory
- chaining from one application to another requires less memory, but is slower

Either method requires that information identifying OFIS Spreadsheet as a cooperating application be placed in configuration files. The installation process normally adds the information automatically. However, if the information is absent (for example, because you installed OFIS Spreadsheet before OFIS Designer or OFIS Document Designer), you can add it manually.

### Configuring Context Manager

If you choose not to have the installation process modify your Context Manager configuration file, you can modify it manually using the information in table B-1.

### Configuring the Chaining Configuration File

The procedure for editing the OFIS Designer and OFIS Document Designer chaining configuration file is described in the *BTOS OFIS Designer Installation, Configuration, and Administration Guide* and the *CTOS OFIS Document Designer / OFIS Document Writer System Administration Guide*. The default chaining configuration file is `[Sys]<Sys>DDConfig.sys`.

To transfer spreadsheet data to a graphics application, add the following to the information identifying the graphics application:

**:XMpGraphics:1**

To transfer spreadsheet data to OFIS Designer, add the following:

**:CommandName:OFIS Spreadsheet**  
**:RunFileName:[Sys]<Sys>OFISSpreadsheet.run**  
**:OfdObjectEdited:269**

To transfer spreadsheet data to OFIS Document Designer, add the following:

**:CommandName:OFIS Spreadsheet**  
**:RunFileName:[Sys]<Sys>OFISSpreadsheet.run**  
**:DDObjectEdited:269**

**Note:** *If you have installed OFIS Spreadsheet on a path other than `[Sys]<Sys>`, specify that path in place of `[Sys]<Sys>`.*

## The OFIS Spreadsheet Configuration File

The installation process creates a default configuration file named *[Sys]<Sys>SDConfig.sys*. *SDConfig.sys* contains the default parameters used by OFIS Spreadsheet.

Whenever you select the Worksheet Global Default Update option, OFIS Spreadsheet writes the new default parameters to the configuration file.

### Creating Your Own Configuration File

You may prefer to create your own configuration file and use it instead of the default, especially if you are using a cluster workstation and OFIS Spreadsheet is installed on the server.

To create your own configuration file, use the following procedure:

1. Use the Copy command to make a copy of the default configuration file, assigning to the copy a name of your choice. For example, you could call the copy *[Sys]<Sys>MySDConfigFile*, where *[Sys]<Sys>* are the names of the volume and directory containing *MySDConfigFile*, the copy of the configuration file.

*Note:* If the default configuration file is not available, you can use the CTOS Editor to re-create it using the keywords and values in table B-2.

2. Use the CTOS Editor to edit the copy of the configuration file, changing the parameters to suit your preferences. Refer to table B-4 for descriptions of the keywords and values you can enter.
3. Use the CTOS Editor to add the following entry to your .user file identifying your personal OFIS Spreadsheet configuration file:

**:SDConfigfile:[Vol]<Dir>Filename**

where *[Vol]<Dir>Filename* is the name of your personal OFIS Spreadsheet configuration file.



### Configuration File Keywords and Values

Table B-2 lists the OFIS Spreadsheet configuration file keywords and values you can enter.

**Table B-2. Configuration File Keywords and Values**

<b>Keyword</b>	<b>Description</b>
SSFORMAT	<p>Sets the default format for values in cells. The default formats are explained in detail in "Format Options," in Section 4, "Formatting Cell Data for Display."</p> <p>The default setting is General. The options are as follows:</p> <ul style="list-style-type: none"><li>General</li><li>Currency</li><li>Comma</li><li>Fixed</li><li>Percent</li><li>Scientific</li><li>Bar (horizontal bar graph)</li><li>Fmlatext (formula text display, also known as Text format)</li><li>Day-Month-Year (DD-MM-YY)</li><li>Day-Month (DD-MM)</li><li>Month-Year (MM-YY)</li></ul>
SSLABEL	<p>Sets the default alignment for labels in cells.</p> <p>The default setting is Left alignment. The options are as follows:</p> <ul style="list-style-type: none"><li>Left            Indicates the label is left-aligned.</li><li>Center         Indicates the label is centered.</li><li>Right          Indicates the label is right-aligned.</li></ul>

continued

Table B-2. Configuration File Keywords and Values (cont.)

Keyword	Description
SSMODE	<p>Sets the default recalculation mode for the spreadsheet.</p> <p>The default setting is automatic. The defaults modes are as follows:</p> <p>Automatic    Recalculates each time a cell value is changed.</p> <p>Manual        Recalculates only when Calc (F9) is pressed.</p>
SSORDER	<p>Sets the default recalculation order for the spreadsheet.</p> <p>The default setting is Natural. The options are as follows:</p> <p>Natural        Calculates values before formulas.</p> <p>Column        Calculates column by column.</p> <p>Row            Calculates row by row.</p>
SSDECMLS	<p>Sets the default number of decimal places for cell values.</p> <p>The default setting is 2. The options are from 0 to 15 decimal places.</p>
SSWIDTH	<p>Sets the default width for spreadsheet cells and columns.</p> <p>The default setting is 9 characters. The options are from 1 to 72 characters.</p>

continued

**Table B-2. Configuration File Keywords and Values (cont.)**

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<b>Keyword</b>	<b>Description</b>
SSBLNKFMT	<p>Sets the default method of cell blanking/erasing.</p> <p>The default setting is 1. The options are as follows:</p> <ul style="list-style-type: none"><li>0 Erases cell values and retains cell formats.</li><li>1 Erases cell values and cell formats.</li></ul>
SSALIGN	<p>Sets the default alignment of columns in the spreadsheet.</p> <p>The default setting is 1. The options are as follows:</p> <ul style="list-style-type: none"><li>0 Does not leave a blank space at the right of each cell.</li><li>1 Leaves a blank space at the right of each cell.</li></ul>
SSCPYVAL	<p>Sets the default type of copy operation for the spreadsheet.</p> <p>The default setting is 0. The options are as follows:</p> <ul style="list-style-type: none"><li>0 Copies both cell formulas and values.</li><li>1 Copies only cell values.</li></ul>
SSMAXNAMES	<p>Sets the maximum number of range names.</p> <p>The default is 200. You can specify a larger number. However, a greater maximum number of range names requires more memory.</p>

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continued

**Table B-2. Configuration File Keywords and Values (cont.)**

Keyword	Description
SSPRINTER	<p>Sets the default GPS printer OFIS Spreadsheet prints your spreadsheet on.</p> <p>Enter the name (without square brackets) of a GPS printer. If you leave this entry blank, OFIS Spreadsheet uses the printer specified in your .user file by the keyword :GPSDefaultPrinter: as a default.</p>
SSBININ	<p>Sets the default printer paper tray OFIS Spreadsheet draws paper from.</p> <p>The default setting is 0. The options are as follows:</p> <ul style="list-style-type: none"> <li>0     Allows GPS to select the paper tray.</li> <li>1     Tray 1</li> <li>2     Tray 2</li> <li>3     Tray 3</li> </ul>
SSMANFEED	<p>Sets the default printer paper type for the spreadsheet.</p> <p>The default setting is 0. The options are as follows:</p> <ul style="list-style-type: none"> <li>0     Printer uses continuous-feed paper.</li> <li>1     Printer uses manual-feed paper.</li> </ul>
SSAUTOLF	<p>Informs OFIS Spreadsheet whether or not the printer automatically adds a line feed at the end of each line.</p> <p>The default setting is 0. The options are as follows:</p> <ul style="list-style-type: none"> <li>0     Printer does not automatically add a line feed.</li> <li>1     Printer automatically adds a line feed.</li> </ul>

continued

**Table B-2. Configuration File Keywords and Values (cont.)**

<b>Keyword</b>	<b>Description</b>
SSGPS	<p>Sets the default page orientation. The default setting is 0.</p> <p>0 This setting causes OFIS Spreadsheet calculate the aspect ratio of the page length to the page width. If the page length is greater than the page width, OFIS Spreadsheet prints the spreadsheet in landscape mode. Otherwise, it prints it in portrait mode.</p> <p>1 This setting causes OFIS Spreadsheet to print the spreadsheet in landscape mode.</p> <p>2 This setting causes OFIS Spreadsheet to print the spreadsheet in portrait mode.</p>
SSNOGPSEJECT	<p>Sets this setting causes a printer to wait until you notify it that you have finished sending data to it before printing the data.</p> <p>The default setting is 0 (do not wait for notification). The option is 1 (wait for notification).</p> <p>If you want to print more than one range at a time, you can set this option to 1, and then select the ranges you want to print and print them as you would normally. If you want to add a blank line between ranges, use the /PrintPrinterLine option. To print the ranges, select the /PrintPrinterPage option.</p> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"><p style="text-align: center;"><b>Caution</b></p><p>Exercise care when using this option; if another user sends data to the printer before you use the /PrintPrinterPage option, that user's data will appear in your printed output.</p></div>

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continued

Table B-2. Configuration File Keywords and Values (cont.)

Keyword	Description
SSAUTOPAGELO	<p>Enables automatic page layout; OFIS Spreadsheet recalculates margins and page dimensions if you specify any of the Extended printer options such as font size, pitch, line spacing, or page orientation.</p> <p><i>Note: If you enable automatic page layout, Unisys recommends that you set SSAUTOPAGELO to 2.</i></p> <p>The default setting is 0. The options are as follows:</p> <ul style="list-style-type: none"> <li>0 Disables recalculation; OFIS Spreadsheet uses margin and page dimensions specified in your OFIS Spreadsheet configuration file.</li> <li>1 Enables recalculation, and requires OFIS Spreadsheet to set font width if you specify the pitch.</li> <li>2 Enables recalculation, and allows printer to set font width if you specify the pitch.</li> </ul>
SSPRINTERTIMEOUT	<p>Sets the printer timeout value in tenths of seconds.</p> <p>Valid values are 10 to 50.</p>

continued

**Table B-2. Configuration File Keywords and Values (cont.)**

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Keyword	Description
SSGPSROTATE	<p>Rotates a printed spreadsheet on a page.</p> <p><b>Note:</b> <i>You only need to change this setting if your printer has dead zones (areas of the page that the it will not print on) that are different sizes from one side of a page to another.</i></p> <p>The default setting is 270. The options are as follows:</p> <p>270 This setting rotates a spreadsheet 270 degrees from the way it appeared on your monitor to the way it appears on a printed page.</p> <p>If you view a spreadsheet printed with this setting and hold the page portrait-style, its top margin is on the left (long) side of the page, the right margin along the top (short) side, the bottom margin along the right (long) side, and the left margin along the bottom (short) side.</p> <p>90 This setting rotates a spreadsheet 90 degrees from the way it appears on your monitor to the way it appears on a printed page. If you view a spreadsheet printed with this setting and hold the page portrait-style, its top margin is on the right (long) side of the page, the right margin along the bottom (short) side, the bottom margin along the left (long) side, and the right margin along the bottom (short) side.</p>

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continued

**Table B-2. Configuration File Keywords and Values (cont.)**

<b>Keyword</b>	<b>Description</b>
SSPAGELEN	<p>Sets the default number of lines per page.</p> <p>The default setting is 66 lines per page, which assumes 6 lines per inch and an 11-inch long page. The options are from 1 to 999 lines.</p>
SSPAGEWIDTH	<p>Sets the default number of characters per line.</p> <p>The default setting is 85 characters per line, which assumes 10 characters per inch and an 8.5-inch wide page. The options are from 80 to 132 characters per line.</p>
SSLMARGIN	<p>Sets the default width of the left margin on a printed spreadsheet.</p> <p>The default setting is 5 spaces. The options are from 1 to 240.</p>
SSRMARGIN	<p>Sets the default width of the right margin on a printed spreadsheet.</p> <p>The default setting is 80 spaces. The options are from 1 to 240.</p>
SSTMARGIN	<p>Sets the default depth of the top margin on a printed spreadsheet.</p> <p>The default setting is 2 lines. The options are from 1 to 10 lines.</p>

continued



**Table B-2. Configuration File Keywords and Values (cont.)**

<b>Keyword</b>	<b>Description</b>
SSBMARGIN	<p>Sets the default height of the bottom margin on a printed spreadsheet.</p> <p>The default setting is 2 lines. The options are from 1 to 10 lines.</p>
SSSETUP	<p>Enables compatibility with macros imported from other spreadsheet applications (such as Lotus 1-2-3). This entry has no effect on the operations of printers.</p> <p>There is no default.</p> <p>You can set this entry by using the /Worksheet Global Default Printer Setup option, and then make it a global default by using the by the /Worksheet Global Default Update option.</p>
SSLOTUSDISPLAY	<p>Sets the format in which OFIS Spreadsheet displays long labels.</p> <p>The default is 0. The options are as follows:</p> <ul style="list-style-type: none"><li>0 Long labels display in OFIS Spreadsheet format.</li><li>1 Long labels display in a fashion similar to Lotus-1-2-3; regardless of their alignment, long labels extend beyond their cells to the right, as if left-aligned.</li></ul>

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continued

**Table B-2. Configuration File Keywords and Values (cont.)**

<b>Keyword</b>	<b>Description</b>
SSLOSEFORMAT	<p>Set the format in which OFIS Spreadsheet saves spreadsheets created in Lotus 1-2-3 (.wk1 files).</p> <p>The default is 0. The options are as follows:</p> <p>0 OFIS Spreadsheet does not save the Hidden attribute of a cell but does save the previous underlying cell attributes.</p> <p>1 OFIS Spreadsheet saves the Hidden attribute of a cell and ignores the previous underlying cell attributes, similar to Lotus 1-2-3 version 2.01.</p>
SSPITCH	<p>Sets the default pitch of the characters on a printed spreadsheet.</p> <p>The default setting is 10. The options are as follows:</p> <p>0 This setting allows the printer to select the pitch.</p> <p>10 10-pitch type</p> <p>12 12-pitch type</p> <p>15 15-pitch type</p>
SSPOINTS	<p>Sets the default point size of the characters on a printed spreadsheet.</p> <p>The default setting is 12 points. The options are from 6 to 36.</p>

continued

**Table B-2. Configuration File Keywords and Values (cont.)**

<b>Keyword</b>	<b>Description</b>
SSWSRATIO	<p>When printing using proportional fonts, sets the amount of white space to be printed, expressed as a fraction of the largest printed character. (White space is the blank space following a left-justified label or value, or preceding a right-justified label. White space does not include characters created by pressing the <b>SPACEBAR</b>.)</p> <p>The default setting is 1. The options are as follows:</p> <ol style="list-style-type: none"><li>1 White space computed as occupying 1/2 the space of the largest character in the selected font.</li><li>2 White space computed as occupying 5/8 the space of the largest character in the selected font.</li><li>3 White space computed as occupying 3/4 the space of the largest character in the selected font.</li></ol>
SSLINESP	<p>Sets the default spacing between lines.</p> <p>The default setting is 12 points (6 lines per inch). The options are from 4 to 36.</p>
SSVERT	<p>Sets the character that displays as the vertical sides of a pop-up window.</p>
SSHORZ	<p>Sets the character that displays as the horizontal side of a pop-up window.</p>
SSBLCOR	<p>Sets the character that displays as the bottom left corner of a pop-up window.</p>
SSBRCOR	<p>Sets the character that displays as the bottom right corner of the pop-up windows.</p>

continued

Table B-2. Configuration File Keywords and Values (cont.)

Keyword	Description																											
SSTLCOR	Sets the character that displays as the top left corner of a pop-up window.																											
SSTRCOR	Sets the character that displays as the top right corner of a pop-up window.																											
SSDFLTDIR	Sets the default working directory for OFIS Spreadsheet.  Specify the default directory you want to store your spreadsheets in.																											
SSPUNCT	Sets the default punctuation combinations used in values and as argument separators on the spreadsheet. Each combination has a decimal character, an argument separator character, and a thousands separator character.  The default setting is 8. The options are as follows:  <table border="0"> <tr> <td>0</td> <td>(, . ,)</td> <td>(comma, period, comma)</td> </tr> <tr> <td>1</td> <td>(. , .)</td> <td>(period, comma, period)</td> </tr> <tr> <td>2</td> <td>(; . ,)</td> <td>(semicolon, period, comma)</td> </tr> <tr> <td>3</td> <td>(; , .)</td> <td>(semicolon, comma, period)</td> </tr> <tr> <td>4</td> <td>(, . )</td> <td>(comma, period, space)</td> </tr> <tr> <td>5</td> <td>(. , )</td> <td>(period, comma, space)</td> </tr> <tr> <td>6</td> <td>(; . )</td> <td>(semicolon, period, space)</td> </tr> <tr> <td>7</td> <td>(; , )</td> <td>(semicolon, comma, space)</td> </tr> <tr> <td>8</td> <td colspan="2">Determined by the Native Language Support (NLS).</td> </tr> </table>	0	(, . ,)	(comma, period, comma)	1	(. , .)	(period, comma, period)	2	(; . ,)	(semicolon, period, comma)	3	(; , .)	(semicolon, comma, period)	4	(, . )	(comma, period, space)	5	(. , )	(period, comma, space)	6	(; . )	(semicolon, period, space)	7	(; , )	(semicolon, comma, space)	8	Determined by the Native Language Support (NLS).	
0	(, . ,)	(comma, period, comma)																										
1	(. , .)	(period, comma, period)																										
2	(; . ,)	(semicolon, period, comma)																										
3	(; , .)	(semicolon, comma, period)																										
4	(, . )	(comma, period, space)																										
5	(. , )	(period, comma, space)																										
6	(; . )	(semicolon, period, space)																										
7	(; , )	(semicolon, comma, space)																										
8	Determined by the Native Language Support (NLS).																											
SSCRNCYSTR	Sets the default currency character for the spreadsheet.  The default setting is \$. Enter the ASCII character you want to use to indicate currency.																											

continued

**Table B-2. Configuration File Keywords and Values (cont.)**

<b>Keyword</b>	<b>Description</b>
SSCRNCYPOS	<p>Sets the default currency character position.</p> <p>The default setting is 1. The options are as follows:</p> <ul style="list-style-type: none"><li>0 Displays the currency character after the value.</li><li>1 Displays the currency character before the value.</li></ul>
SSINTDATE	<p>Sets the default international date format.</p> <p>The default setting is 0. The options are as follows:</p> <ul style="list-style-type: none"><li>0 MM/DD/YY</li><li>1 DD/MM/YY</li><li>2 DD.MM.YY</li><li>3 YY-MM-DD</li></ul>
SSINTTIME	<p>Sets the default international time format.</p> <p>The default setting is 0. The options are as follows:</p> <ul style="list-style-type: none"><li>0 HH:MM:SS</li><li>1 HH.MM.SS</li><li>2 HH,MM,SS</li><li>3 HHhMMmSSs (Hours,Minutes, and Seconds are separated with h, m, and s, respectively.)</li></ul>

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continued

**Table B-2. Configuration File Keywords and Values (cont.)**

Keyword	Description
SSCLOCK	<p>Sets the default setting is 1. The default clock display for the spreadsheet.</p> <p>The options are as follows:</p> <p>0 Standard format (for example, Fri 10-May-91 1:56 PM)</p> <p>1 International format as determined by SSINTDATE/TIME</p> <p>2 Does not display date and time on the screen.</p>
SSZOOMED	<p>Sets the default screen display mode for the spreadsheet.</p> <p>The default setting is 0.</p> <p>0 Wide characters (80 column format)</p> <p>1 Narrow characters (132 or 146 column format, depending on your monitor and graphics card or module)</p>
SSBORDERCOLOR	<p>Sets the screen colors for the:</p> <p>Border Cell pointer Mouse icons Pop-up menu</p> <p>Refer to table B-4 for a list of the colors you can specify.</p>
SSCOMMANDCOLOR	<p>Sets the screen color for the command panel.</p> <p>Refer to table B-4 for a list of the colors you can specify.</p>

continued

**Table B-2. Configuration File Keywords and Values (cont.)**

<b>Keyword</b>	<b>Description</b>
SSFUNCTIONCOLOR	<p>Sets the screen color for the function keys.</p> <p>Refer to table B-4 for a list of the colors you can specify.</p>
SSINFOCOLOR	<p>Sets the screen color for the information line.</p> <p>Refer to table B-4 for a list of the colors you can specify.</p>
SSPROTECTEDCOLOR	<p>Sets the screen color for worksheet data marked as Protected (non-editable).</p> <p>Refer to table B-4 for a list of the colors you can specify.</p>
SSUNPROTECTEDCOLOR	<p>Sets the screen color for the worksheet data marked as Unprotected (editable).</p> <p>Refer to table B-4 for a list of the colors you can specify.</p>
SSFILELOCKING	<p>Sets the File Locking feature.</p> <p>To enable File Locking, specify ENABLED; to disable it, specify DISABLED.</p>
SSMOUSEHAND	<p>Configures the mouse for operation by the left or right hand.</p> <p>For right-handed operation, specify RIGHT.</p> <p>For left-handed operation, specify LEFT.</p>
SSIGNOREMOUSE	<p>Sets the presence or absence of the mouse cursor and mouse icons. The default is 0, which causes the mouse cursor and icons to display if the Mouse Service is installed. Set this value to 1 to suppress display of the mouse cursor and icons even if the Mouse Service is installed.</p>

---

continued

**Table B-2. Configuration File Keywords and Values (cont.)**

<b>Keyword</b>	<b>Description</b>
SSAUTOSAVING	<p>Sets the AutoSave feature.</p> <p>To enable AutoSave, specify ENABLED; to disable it, specify DISABLED.</p>
SSAUTOSAVEINTERVAL	<p>Sets the the amount of time, in minutes, that elapses before OFIS Spreadsheet begins to wait for an opportunity to save a copy of the currently open spreadsheet.</p> <p>Specify a value of between 1 and 1000.</p>
SSAUTOSAVEIDLENESSPERIOD	<p>Sets the length of time, in tenths of a second, that elapses with no keyboard or mouse input before AutoSave begins to save. The default value is 10.</p>

**Table B-3. Screen Colors**

Amber	Blue	Cyan
Fuschia	Green	Indigo
Lavender	Magenta	Opaque
Peach	Red	Salmon
Turquoise	White	Yellow





# Appendix C

## Macro Key Representation

This appendix lists macro representations for:

- Keyboard macros
- Menu option macros
- Function key macros
- Programming macros
- File macros
- Screen display macros

The macro is a keyword enclosed in braces. You do not need to capitalize the macro keyword. You do need to be sure the macro:

- Is spelled correctly
- Starts with a beginning brace ({})
- Ends with a closing brace (})

## Macro Key Representation

---

**Table C-1. Keyboard Macros**

---

<b>Key</b>	<b>Macro Representation</b>
BACKSPACE	{BACKSPACE}
CANCEL	{ESC}
CODE-LEFT ARROW	{BIGLEFT}
CODE-RIGHT ARROW	{BIGRIGHT}
CODE-UP ARROW	{HOME}
COPY	{COPY}
DELETE	{DELETE}
DOWN ARROW	{DOWN}
HELP	{HELP}
LEFT ARROW	{LEFT}
NEXT PAGE	{PGDN}
OVERTYPE	{INSERT}
PREV PAGE	{PGUP}
RETURN	~
RIGHT ARROW	{RIGHT}
UP ARROW	{UP}

---

**Table C-2. Menu Option Macros**

<b>Key</b>	<b>Macro Representation</b>
/	{CMD}, /
/Copy	{COPY}
/Move	{MOVE}
/Print	{PRINT}
/Range Erase	{BLANK}

**Table C-3. Function Key Macros**

<b>Function Key</b>	<b>Macro Representation</b>
Edit (F2)	{EDIT}
Name (F3)	{NAME}
Abs (F4)	{ABS}
Go To (F5), Name (F3)	{GOTO} - {NAME}
Window (F6)	{WINDOW}
Query (F7)	{QUERY}
Table (F8)	{TABLE}
Calc (F9)	{CALC}
Graph (F10)	{GRAPH}

## Macro Key Representation

---

**Table C-4. Programming Macros**

<b>Macro Representation</b>	<b>Function</b>
{BEEP}	Beep sound, only one tone
{BRANCH}	Branch to instructions in cell
{BREAKOFF}	Turns off CANCEL Key
{BREAKON}	Turns on CANCEL Key
{BREAK}	Returns to Ready mode
{CONTENT}	String number representation
{DEFINE}	Argument passing
{DISPATCH}	Branch to instructions in other cell location
{FORBREAK}	Ends a loop
{FOR}	Starts a loop
{GET}	Get prompt input
{GETLABEL}	Character(s) prompt
{GETNUMBER}	Number prompt
{IF}	If-then-else condition
{LET}	Enter data
{LOOK}	Looks for input data
{MENUBRANCH}	Menu selection; then branch
{MENUCALL}	Menu selection; call subroutine
{ONERROR}	Branches to cell location on error
{PUT}	Enter data
{QUIT}	End

---

continued

**Table C-4. Programming Macros (cont.)**

Macro Representation	Function
{RECALC}	Recalculate range of formulas
{RECALCCOL}	Recalculate column of formulas
{RESTART}	Cancel subroutine
{RETURN}	Subroutine return
{ROUTINE-NAME}	Subroutine call
{WAIT}	Wait a specified time period
{?}	Pause, press RETURN to continue

**Table C-5. File Macros**

Macro Representation	Function
{CLOSE}	Close
{FILESIZE}	Filesize in bytes
{GETPOS}	Current pointer position
{OPEN}	Open file, specify read/write
{READ}	Read character(s) of data
{READLN}	Read line of data
{SETPOS}	Set pointer position
{WRITE}	Write character(s)
{WRITELN}	Write line of data

## Macro Key Representation

---

**Table C-6. Screen Display Macros**

<b>Macro Representation</b>	<b>Function</b>
{INDICATE}	Changes characters in indicator
{PANELOFF}	Blank top display panel
{PANELON}	Turn top display panel on
{WINDOWOFF}	Suppress spreadsheet refresh
{WINDOWON}	Turn spreadsheet refresh on

# Appendix D

## Errors

This appendix describes some common conditions that can trigger an OFIS Spreadsheet error and explains methods to rectify the error.

When OFIS Spreadsheet encounters an error, it beeps and may:

- Display ERR in a reference cell
- Display an error message in the information line
- Display ERROR in the mode indicator

Different types of errors cause OFIS Spreadsheet to respond in any combination of these ways. Common errors that can trigger the error response include:

- Invalid cell, range addresses, or arguments
- Arithmetic errors
- Extended OFIS Spreadsheet boundaries

## Invalid Cell, Range Addresses, or Arguments

If you supply an invalid reference or address, OFIS Spreadsheet responds with a beep and an error message. For example, if you try to delete a range name that does not exist, the message Range Name Does Not Exist displays at the bottom of the worksheet.

Additionally, if you use a formula to try to string together the following invalid cell references, OFIS Spreadsheet displays ERR in the cell containing the formula:

- Value to label
- Value to value
- Label or string to an empty cell



If you enter invalid data arguments while using database options, OFIS Spreadsheet displays ERR in the location cell.

You use the **Edit (F2)** key to correct these conditions.

## Arithmetic Errors

If your arithmetic operations do not compute or cannot be evaluated, you receive an error message. The most common arithmetic errors include:

- Dividing by a blank cell
- Dividing by a cell containing the number 0
- Linking a value to a label

For example, if a cell is the divisor in a formula, but contains a zero, OFIS Spreadsheet displays ERR in the resultant cell instead of a numeric value. Likewise, if the formula in a cell refers to an empty cell, the ERR message displays in the resultant cell. This type of error does not affect label entries.

You use the **Edit key (F2)** to correct the data in the cell.

## Extended OFIS Spreadsheet Boundaries

If you exceed preset boundaries and limitations, OFIS Spreadsheet responds by displaying ERR in a cell, an error message at the bottom of the worksheet, or both.

For example, OFIS Spreadsheet displays ERR if you exceed the number of days in the month.

You use the **Edit key (F2)** to correct the data in the cell.

If you try to perform an insertion at a row or column at the edge or bottom of the spreadsheet, OFIS Spreadsheet restricts you with a message. Since OFIS Spreadsheet deletes existing data at worksheet boundaries while inserting, it displays the following error message:

```
Insertion canceled because it would cause data to be  
lost off edge of sheet.
```

You correct this error by moving the data to another location in the spreadsheet or by using the Range Erase option to erase the data.

---

## Macro Errors

There are several different types of macro errors. The most common types of macro errors are:

- Using an incorrect cell reference
- Misspelling option names, range names, or key references
- Omitting a character (for example, closing brace ()) or tilde (~))
- Omitting keystrokes
- Using an invalid response to a prompt
- Using an incorrect form of a key representation
- Positioning a macro sequence incorrectly

When OFIS Spreadsheet encounters macro errors, it stops, flashes **ERROR** in the Mode Indicator, and displays an error message. When you press **RETURN** or **GO**, the spreadsheet returns to Ready mode. You can then correct the error and restart the macro.

When you press **FINISH**, OFIS Spreadsheet immediately stops executing the macro, flashes **ERROR** in the Mode Indicator, and displays a message.

If your macro is short or simple, you can check it by proofreading. However, when you have a long or complicated macro, that could get tedious. OFIS Spreadsheet assists you in testing these types of macros.

## Macro Options for Errors

You use the {OnError} option to give OFIS Spreadsheet error-handling instructions for errors that occur during execution of your macro. The {OnError} option instructs OFIS Spreadsheet to display an error message at the bottom of the screen. For details on the macro option, refer to Section 14.



# Appendix E

## Converting Multiplan Files

This appendix describes how you convert Multiplan files into OFIS Spreadsheet files using the Convert To Wkt utility.

You can convert your Multiplan files manually; however, this can be time consuming if you have several files. The utility converts numerous files automatically.

### Conversion Procedure

The **Convert to Wkt** command saves your Multiplan *.mp* files as symbolic *.sl* files and then imports the *.sl* files into OFIS Spreadsheet and saves them as *.wkt* files.

At the end of this process, you have two copies of each worksheet; this includes the:

- *.mp* file
- *.wkt* file

To save disk space, after successfully converting the files, you may want to backup the multiplan files (*\*.mp*) onto tape or floppy diskettes and delete them from your hard disk.

**Note:** *Before you convert the files, you must have BTOS Enhanced Multiplan 2.1 or higher or CTOS Extended Multiplan 2.3 or higher installed on your system.*

## Converting Multiplan Files

---

To convert Multiplan files into OFIS Spreadsheet files, use the following procedure:

1. Sign on to the system.
2. At the Executive command line, type **Convert to WKT**.

**Note:** *OFIS Spreadsheet requires an Executive partition of at least 600KB (750KB in Protected mode). Without a partition of at least this size, your conversion may fail. If you are using large Multiplan spreadsheets, you should use a larger partition.*

3. Press **GO**.

The system prompts you for the location of your *.mp* files.

4. Choose one of the following:
  - accept the default volume and directory
  - enter the volume and directory that contains your *.mp* files
5. Press **GO**.

The system:

- Saves your OFIS Spreadsheet *.wkt* files to *.wkt.save* files (This prevents the conversion process from overwriting files if you have a Multiplan file with the same name as an OFIS Spreadsheet file.)
- Converts *.mp* files to *.sl* files in Multiplan and saves them
- Takes converted *.sl* files into OFIS Spreadsheet and converts them into *.wkt* files

As mentioned previously, if you no longer need the *.mp* files, you can back them up onto tape or floppy diskettes and delete them from your hard disk.

# Glossary

## A

### **alphanumeric**

Alphanumeric refers to alphabetic and numeric symbols, punctuation marks, and mathematical symbols.

### **application**

An application is a software program that provides a complete user interface.

### **argument**

An argument is the independent variable value on which a function operates.

## B

### **backing up**

Backing up is the process, like archiving, of duplicating data from one storage medium to another so the extra (backup) copy will exist in the event of data loss.

### **boldface**

Boldface is a character attribute that prints text with a thicker, heavier appearance. **This text is in boldface.**

### **Built-In functions**

Built-in functions are formulas already set up in OFIS Spreadsheet.

### C

#### cell

A cell is the area in the spreadsheet where a column and row intersect.

#### cell address

The cell address is the column letter and row number at the point of intersection.

#### cell pointer

The cell pointer is the highlighted rectangular box used in the spreadsheet work area to indicate the current cell.

#### Central Processing Unit (CPU)

The Central Processing Unit is the part of the workstation that computes data.

#### character

A character is a single letter, number, screen symbol, or space.

#### character string

A character string is a connected sequence of characters, words, or other elements.

#### command panel

The command panel is the area of the OFIS Spreadsheet display that functions as a data entry and edit area, option area, and prompt display area. This area also displays the mode indicator and the submode indicator.

#### configuration

A configuration defines how a system or application feature works. It is a combination of hardware and/or software elements and their physical or logical relationships.

#### Context Manager

Context Manager is the software that allows several applications, utilities, or programs to run concurrently.

**copy**

Copy refers to the OFIS Spreadsheet operation that allows data duplication within a spreadsheet.

**CPU**

See Central Processing Unit.

**criteria**

Criteria are conditions, or conditional tests telling OFIS Spreadsheet what records to select from a database.

**CTOS**

CTOS is a workstation operating system.

**cursor**

The cursor is a underline or block that indicates the place for the next entry in the command panel.

**cursor keys**

Cursor keys allow cursor movement (for example, **RIGHT ARROW** or **LEFT ARROW**).

**D**

**database**

A database is a collection of logically related fields (cells) and records (rows).

**date format**

Date format is the way in which OFIS Spreadsheet displays date (such as DD/MM/YY, for day/month/year).

**Date Format Separator**

The Date Format Separator is the punctuation OFIS Spreadsheet uses to separate the parts of the current date expression (for example, a colon or period).



### **decimal character**

Decimal character is the character OFIS Spreadsheet uses to indicate the decimal symbol (for example, a period or comma).

### **dedicated function keys**

Dedicated function keys are those that always perform the same function, (for example, the **DELETE** key).

### **default**

A default is the action OFIS Spreadsheet takes unless it receives an instruction to perform an alternate action.

### **default printer**

A default printer is the printer to which OFIS Spreadsheet automatically prints.

### **device**

A device is a hardware unit connected to a computer; it is partially or entirely under the computer's control. Examples of devices are printers and disk drives.

### **directory**

A directory is a group of files on a volume. In a path name, the directory appears in angle brackets (<>).

### **disk**

A disk is a magnetic storage device for information. The amount of information a disk stores depends on its size. Disks can be hard (internal to your workstation) or flexible (a floppy diskette).

### **disk drive**

A disk drive is a mass storage device that uses a hard or flexible disk to record information in the form of electromagnetic signals.

### **diskette**

A diskette is a reusable, flexible, magnetic storage device that records data.

### **display**

The display is the computer output screen that temporarily stores and presents graphic and/or textual data.

## **E**

### **edit**

To edit is to rearrange, delete, or add data or text to existing text in a cell.

### **error message**

An error message is a display that appears when OFIS Spreadsheet cannot complete an operation.

## **F**

### **file**

A file is a spreadsheet stored under a unique name in a directory.

### **filename**

A filename is the name assigned to a file (spreadsheet) at its creation and by which OFIS Spreadsheet recognizes it.

### **format**

The format is the specific arrangement of data being stored or displayed.

### **formulas**

Formulas are mathematical instructions to OFIS Spreadsheet for calculating specific values.

### **function key**

A function key performs or starts an OFIS Spreadsheet operation.

### **function key display line**

The function key display line is the last row on the OFIS Spreadsheet display, and shows the functions assigned to each key.

### **functions**

See Built-In functions.

### G

#### **Generic Print System (GPS)**

GPS is a set of software programs that provide printing services for applications using the CTOS operating system. GPS manages all communications between your workstation and the printers attached to it.

#### **global**

Global is the term that applies to the entire spreadsheet. Making a global change to a cell affects all cells.

#### **graphics**

Graphics software and hardware allow the creation and editing picture images on a computer.

### H

#### **hard copy**

The hard copy is a printed paper version of a document, as opposed to a magnetic media version (soft copy).

#### **hard disk**

A hard disk is a mass storage device contained within your workstation. It is a rigid disk enclosed in a dust-free environment to achieve high information density and fast access time.

#### **hardware**

Hardware is the physical computer machinery that includes the CPU and peripheral devices that comprise a computer system.

#### **help message**

A help message is information displayed on the information line to assist the user in performing the action OFIS Spreadsheet expects.

#### **help screen**

A Help screen displays information about how an OFIS Spreadsheet key or operation works.

**highlight**

A highlight is a bright display attribute. It marks commands or options displaying in the command panel.

**home**

Home is the location of the first spreadsheet cell, a1.

**I**

**information line**

The information line displays the date, time, day, and error messages. The information line is located above the function key line.

**input**

Input is the instruction(s) sent to the system from the keyboard.

**insert mode**

The Insert mode of text entry automatically moves existing characters and spaces to the right to make room for typed characters and spaces.

**install**

To install is to copy the application programs from installation diskettes to the hard disk on a workstation or to place a system service into memory.

**integrated workstation**

Integrated workstation replaces model names for Convergent Series/i and Unisys B39 workstations.

**J**

**jumping**

Jumping is moving to a specified cell in OFIS Spreadsheet.

**K**

**keyboard**

A keyboard is the part of the workstation from which input is sent to the CPU for processing.

### **keystroke**

A keystroke is the result of pressing a key on the keyboard.

## **L**

### **label**

A label is one or more text characters in a cell preceded by a label prefix character.

### **label prefix character**

The label prefix character is the first character of a label entry. OFIS Spreadsheet uses this character to identify the entry as a label entry.

### **landscape page orientation**

Landscape is a page orientation attribute that provides a printed page with paper width exceeding paper lengths.

### **legend**

A legend is an explanation of the bars, points, symbols, or lines used in a graph.

### **logon/logout**

Logon/Logout is the connect/disconnect operation between a user and the Executive.

## **M**

### **macro**

A symbolic programming language type statement that when translated results in OFIS Spreadsheet automatically performing certain keystrokes or operations.

### **mathematical operators**

Mathematical operators represent a process to be performed on a value called an operand; for example, the plus sign (+) is a mathematical operator that indicates addition.

### **message**

A message is displayed information from OFIS Spreadsheet. Messages have three functions: to prompt the next appropriate keystroke, to communicate the status of an operation, or to warn of a system problem.

### **mode indicator**

The mode indicator displays the status of the spreadsheet (for example, READY, EDIT).

### **modular workstation**

Modular workstation replaces model names for Convergent NGENs and Unisys B26, B27, B28, and B38 workstations.

### **move**

The Move operation allows the transfer of data within the spreadsheet work area. Data is removed from its original location and inserted in a new location.

## **O**

### **OFIS Spreadsheet**

OFIS Spreadsheet is a software program that arranges data, values, and formulas in cells.

### **online**

Online refers to a program or equipment that is connected to the computer and available for use.

### **operating system**

The operating system is the software program that provides the computer's basic operating instructions.

### **output**

Output refers to the system's response to keyboard input. Output can be hard (printed) copy, displayed information, or information stored on disks.

### **Overtyping mode**

The Overtyping mode of data entry allows for typing over existing characters and spaces.

### **overwrite**

To overwrite means to replace existing file data with a later or earlier version of that file's data.

## **P**

### **palette**

The palette allows OFIS Spreadsheet to tell OFIS Graphics what colors to use for graphs.

### **parameter**

A parameter is a variable or constant value that the OFIS Spreadsheet needs to execute an operation.

### **parsing**

Parsing analyzes a string and breaks it down into a group of more easily processed characters.

### **password**

A password is a string of characters or a word which provides a security measure. You can assign a password to a user, device, volume, directory, or file. Once a password is assigned, a user must enter the password to gain access to the designated level of the system.

### **path**

A path is the volume/directory route to a file.

### **pop-up menu**

A pop-up menu is a list of options that appears in the spreadsheet's work area as you select options. Each command is an option within one of the menus.

### **portrait page orientation**

A portrait is a page orientation attribute that provides a printed page with paper length exceeding paper width.

**primary key**

A primary key is a unique field for a record used in sorting.

**printer**

A printer is a device used to make a hard copy of information that is stored electronically within a computer.

**program**

A program is a sequence of computer instructions that the CPU understands and carries out in order to accomplish a system function or job.

**prompt**

A prompt is a message that provides options or calls for input.

**Q**

**query**

To query is to ask for information from a database.

**R**

**range**

A range is a specifically defined group of cells.

**release documentation**

Release documentation refers to the document or electronic file that accompanies the distribution media and contains the most current information about the product.

**reverse video**

Reverse video is a screen attribute that displays dark characters on a light screen.



### S

#### **screen**

The screen is part of the cathode ray tube where the system displays the effect of keystroke interaction with the current program.

#### **scrolling**

Scrolling is the vertical movement of displayed information on the screen.

#### **secondary key**

A secondary key is a field used as the second field in a sort.

#### **server**

A server describes the workstation or shared resource processor that controls resources within a cluster.

#### **session**

A session is the time period between logon and logout.

#### **Shared Resource Processor (SRP)**

SRP describes the multiprocessor, floor-model computer that functions as a server.

#### **sign on**

To sign on to the system is to enter a user name to start an Executive, OFIS Spreadsheet, or other application session.

#### **software**

Software is a set of programmed instructions that make the computer hardware function. There are three types of software: system software that performs the overall control of hardware functions; utility software that performs frequently-used tasks required by programmers; and applications software that manipulates data for a particular purpose (such as word processing or payroll processing).

#### **SRP**

See Shared Resource Processor.

**suffix**

A filename suffix consists of a period, followed by three alphabetic characters, added to the end of the filename; for example, *sales.wkt*.

**system**

System is an abbreviated term for operating system.

**system administrator**

The system administrator is the person who installs and configures software on your system.

**T**

**temporary file**

A temporary file is any variety of system generated file associated with OFIS Spreadsheet.

**time format**

Time format is the way in which OFIS Spreadsheet displays time (such as 01:30 PM or 01:30:42 PM).

**time separator**

The time separator is the punctuation OFIS Spreadsheet uses to separate the parts of a time display (for example, a colon).

**U**

**user**

A user is a person identified by a unique name who interacts with the operating system.

**user file**

A user file identifies each system user and specifies the environment the system activates after the user signs on and exits from the system. The user file name consists of the user name and the suffix *.user*.

**user name**

A user name identifies a user to the system at sign on.

### V

#### **volume**

Volume is the hard or floppy disk storage unit for your system.

### W

#### **wild card character**

A wild card character is a symbol (question mark or asterisk) that represents a character or character string in a file or directory. Wild card characters provide a shorthand method of entering long file names in fields, and of listing files that match the remainder of the file specification.

#### **window**

A window is the portion of a spreadsheet appearing on the screen.

#### **workstation**

A workstation is a combination of cathode ray tube, CPU, and keyboard with or without local storage facilities.

### X

#### **X-Axis**

The X-Axis is the horizontal axis of a line, bar, stacked bar, or XY graph.

### Y

#### **Y-Axis**

The Y-Axis is the vertical axis of a line, bar, stacked bar, or XY graph.

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# Product Information Announcement

New Release    Revision    Update    Errata

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Title:

## **CTOS<sup>®</sup> OFIS<sup>®</sup> Spreadsheet 2.0 Reference Manual**

This Product Information Announcement (PIA) announces the release and availability of the *CTOS OFIS Spreadsheet Reference Manual* release 2.0, part number 4393 4827-000.

This manual documents the new features in the 2.0 release of CTOS OFIS Spreadsheet. It also contains corrections to the 1.3 release of the *CTOS OFIS Spreadsheet Reference Manual*.

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# Product Information Announcement

New Release    Revision    Update    Errata

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Title:

## **CTOS<sup>®</sup> OFIS<sup>®</sup> Spreadsheet Reference Manual, Update 1**

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# Section 1

## General Description

### 1.1 Introduction

This section contains:

- An introduction to the Software Release Announcement (SRA)
- A concise description of CTOS OFIS Spreadsheet R2.1.10 software, including major options and important new or existing features, and information on related families of products

Unisys publishes Software Release Announcements (SRAs) to announce the release of a new product. An SRA:

- Provides you with technical details and ordering information on the new product
- Describes interdependency and migration considerations
- Complements marketing, sales, and other customer product information
- Lists additional sources of information

You can order extra copies of an SRA. For more information, see Section 10, "Ordering Procedure", or contact your Unisys representative.

## 1.2 Product Description

CTOS OFIS Spreadsheet R2.1.10 is part of the CTOS and OFIS families of integrated and cooperating products. It is an electronic spreadsheet application that allows you to create spreadsheets to chart, manipulate, and analyze data, and integrate that data into word processed documents or graphics applications.

# Section 2

## Release Functionality

### 2.1 Introduction

This section describes the new and enhanced features in CTOS OFIS Spreadsheet R2.1.10.

### 2.2 New Features

New features provided in CTOS OFIS Spreadsheet R2.1.10 are described below.

#### 2.2.1 Printable Attributes

Data can now be formatted to print bold, italic, underlined, double underlined, or overstruck.

#### 2.2.2 New Configuration File Token

SSMAXGRAPHS can now be used as a token in `sdconfig.sys` to increase the default maximum number of graph name settings. The default is 20. Please note that a greater number of maximum graph names will require more memory.





# Section 3

## Product Interdependencies

### 3.1 Introduction

This section contains:

- Information on interdependent software releases and hardware you need to use with the various functional components in the CTOS OFIS Spreadsheet R2.1.10 package
- Random-access memory (RAM) and media sizing requirements
- Information on the supported software release levels of all required products

You can use the information in this section to configure your system. A suggested configuration for minimal input/output functionality includes:

- CTOS workstation, including a hard disk and a printer
- CTOS operating system
- CTOS Generic Print System (GPS)

### 3.2 Interdependent Software

The following table describes the interdependent software releases you need to use the CTOS OFIS Spreadsheet R2.1.10 package and the nature of the interdependencies. It also lists the style names and release levels (for ordering purposes). For products that have had recent releases, the table may also include the previous release level.

**Note:** For CTOS OFIS Spreadsheet R2.1.10, Unisys fully supports and recommends the releases listed in this table. If you are using older releases, consider migrating to these releases at the earliest opportunity. Older releases of interdependent software may work with CTOS OFIS Spreadsheet R2.1.10, but Unisys may not fully support them. If you require a correction to an older release, Unisys may ask you to upgrade to a newer release.

As new releases become available, Unisys may no longer offer certain ordering and support services for older releases. Review the applicable Software Release Announcement (SRA) for future compatibility and service information. See Section 10, "Ordering Procedure", for part number information to order an SRA.

---

Description	Style ID:	Release
BTOS II	(see note)	3.2 or greater
CTOS I	(see note)	3.3 or greater
CTOS II	(see note)	3.3 or greater
CTOS III	(see note)	1.0 or greater
CTOS/XE	XE530-MOS	3.0 or greater
CTOS Generic Print System	B25-GP2	2.5 or greater
CTOS Context/Window Manager	B25-CM6	1.3.5 or greater
CTOS OFIS Graphics	B25-OG2	2.0 or greater
CTOS OFIS Document Designer	B25-DD3	3.0 or greater

---

**Note:** Style IDs vary according to CPU type (B26 through B39 and SuperGen Series processors) and Operating System type (Server, Cluster, or Standalone). For more information on Style IDs, equipment configurations, and interdependent software, contact your Unisys representative.

Additional information is also available in the Software Release Announcements associated with the various products.

## 3.3 Interdependent Hardware

This section provides information on the hardware products you can use with CTOS OFIS Spreadsheet 2.1. Hardware includes workstations, modules, monitors, and keyboards.

### 3.3.1 Workstations and Processors

CTOS OFIS Spreadsheet R2.1.10 requires one of the following workstations:

B26, B27, B28, B38, B39                      All released SuperGen Series

The OFIS Spreadsheet software can also be installed onto a shared resource processor (XE520 or XE530).

### 3.3.2 Monitors and Graphics Modules

CTOS OFIS Spreadsheet R2.1.10 requires one of the following monitors:

B25-D1	B25-D2	B25-D3	B25-D5
B25-CD3	B25-CA1	B25-GS1	B25-PD7
B25-PD8	VM-003	VM-005	VC-002
VC-003	SG-101-D	B25-VDC	1431-VDM
1431-VDC	IBM 8514	SVG-100-COL	SVG-200-MON
SG-120D	SG-130D	B25-VA1	

CTOS OFIS Spreadsheet R2.1.10 supports the following optional graphics modules in conjunction with the appropriate monitors for use with OFIS Graphics:

B25-GRA	B25-GRE	B25-GPP	B25-VG1
B25-VG2	B25-VG3	B25-VG4	GC-103
GC-001	GC-003	GC-x04	SG-501

CTOS Video Card

### 3.3.3 Keyboards and Pointing Devices

You can use CTOS OFIS Spreadsheet R2.1.10 with the following keyboards:

B25-K1	B25-K2	B25-K3
B25-K5	B25-K6	SG-101-K
SG-102-K		

You can optionally use CTOS OFIS Spreadsheet R2.1.10 with the following mice:

B25-MOU	B25-MO3	PD-001	SG101-U
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### 3.3.4 Printers

You can use CTOS OFIS Spreadsheet R2.1.10 with any printer listed in the *CTOS Generic Print System Installation and Configuration Guide*.

### 3.3.5 Disk and Tape Drives

CTOS OFIS Spreadsheet requires a hard disk drive and either a 3 1/2 or 5 1/4-inch floppy drive for software installation. OFIS Spreadsheet does not require a 3 1/2-inch diskette or 5 1/4-inch floppy diskette or tape drive to operate. However, these drives are useful for storing CTOS files on removable media.

## 3.4 Media Sizing

The following table lists approximate media sizing considerations for all required and optional installation files.

---

Description	Sectors
OFISSpreadsheet.run	157
ProtSpreadsheet.Run	932
RealSpreadsheet.Run	1014
OFISSpreadsheet.Hlp	406
SdConfig.Sys	2
SdMsg.Bin	94
ConvertToWkt.Sub	5
OS.Sub	2
EM.sub	1
<b>Total Sectors</b>	<b>2613</b>

---

## 3.5 Random-Access Memory (RAM) Sizing

As a guideline, the following table shows the RAM considerations you can use as a typical memory requirement. Your particular use will determine your exact RAM needs.

Using this table, you can also identify the mode of memory each program uses. Each program uses all available memory in its memory partition, up to the maximum. Real mode programs can only use a partition in the first megabyte of RAM. Protected mode programs can use a partition above, below, or spanning the first megabyte of RAM.

---

Description	Run File Mode	KBytes RAM
RealSpreadsheet.Run	Protected	650
ProtSpreadsheet.Run	Protected	750

---

# Section 4

## Migration Requirements

### 4.1 Introduction

This section describes the tasks required to migrate from prior releases of CTOS OFIS Spreadsheet.

### 4.2 Migration from Older Release Levels

You should perform the following tasks to migrate from previous release levels to CTOS OFIS Spreadsheet R2.1.10.

#### 4.2.1 Delete Obsolete Files

If you are upgrading from OFIS Spreadsheet 1.x, you can delete the following OFIS Spreadsheet 1.x files from your system:

SdEmul.Run  
SdNoEm.Run

#### 4.2.2 Save Your Current OFIS Spreadsheet Configuration File

The installation process renames your current SdConfig.Sys to SdConfig.Sys-save and copies a new default SdConfig.Sys file to your hard disk.

If you want to use your current SdConfig.Sys file instead of the new default configuration file, after installation, use the Executive Rename command to rename [Sys]<Sys>SdConfig.Sys-save to [Sys]<Sys>SdConfig.Sys.



### 4.2.3 Correct Os.sub for Convert To WKT

OFIS Spreadsheet R2.1.10 needs to be invoked with a special command case to use the Convert To WKT command.

If you installed OFIS Spreadsheet to a path other than the default ([Sys]<Sys>) you must use the Editor to edit the path for the OFIS Spreadsheet run file in the file [Sys]<Sys>OS.sub.

# Section 5

## Corrections

### 5.1 Introduction

This section describes corrections to certain restrictions, limitations, and operational conditions found in the releases of CTOS OFIS Spreadsheet preceding R2.1.10. Corrections are described relative to the operating environment, including a brief description of the original symptoms, if necessary.

All of these restrictions, limitations, and conditions have been either corrected or improved by this or previous releases of OFIS Spreadsheet

### 5.2 Exiting Without Error Message

Retrieving or recalculating certain worksheets caused OFIS Spreadsheet to exit without an error message.

### 5.3 Data Table Performance

Data Table performance was slow.

### 5.4 Inconsistent Maximum Length

Maximum length of labels and formulas was different for different operations. Maximum length for all cases is now 270.

## 5.5 Importing with Different Punctuation

A file would not import correctly if it did not use type A punctuation.

## 5.6 Cell Format when Importing

The format of cells in which numbers were imported was changed to f0.

## 5.7 Autoexecute Macro from the Command Line

If you retrieved a file using the [Worksheet] parameter of the OFIS Spreadsheet command, and the file contained an autoexecute macro (\0), the macro would not execute.

## 5.8 Alignment with SSNOGPSEJECT

If you had SSNOGPSEJECT set to 1 in your configuration file (SdConfig.sys), PPAIalign would not work correctly.

## 5.9 Setting Font after Pitch

If you selected a font after selecting a pitch, the pitch would be recalculated.

## 5.10 VLOOKUP for Empty Cells

VLOOKUP now treats 0 and blanks cells the same.

## 5.11 @ROUND in Formula

If @ROUND was used inside an @IF function and @ROUND returned an error, the @IF function would incorrectly return ERR.

## 5.12 Links Lost

If you had a sheet linked to more than one other sheet, the additional links would not display for editing.

## 5.13 Pitch Not Saved

The default pitch was not saved with the worksheet.

## 5.14 Data Parse of Values

Parsing data that contained values with commas and parentheses did not work correctly.

## 5.15 Rounding

Rounding with @ROUND did not always produce correct results.

## 5.16 Extracting Column Widths

Extracting to a file did not save the correct column widths.

## **5.17 Editing a Link**

Editing a link to change a file name to another path did not update the supporting sheet correctly.

## **5.18 Importing Without Return**

You could not import a file that did not have a carriage return as the last character.

## **5.19 12 Character Printer Name**

You could not print to a printer that had a 12-character name.

## **5.20 Printing To a File**

You could not print to a file after you printed to a printer with a proportional font selected for the worksheet.

## **5.21 Date/Time Indicator**

The date/time indicator would not display correctly for some future values.

## **5.22 High Resolution Sheet Saving**

If you saved a worksheet on a system that was running OFIS Spreadsheet in high resolution, the sheet would not display correctly when it was retrieved on a system running OFIS Spreadsheet in low resolution.

## **5.23 Chaining to OFIS Graphics**

On some systems, OFIS Graphics would be chained to instead of started as a new context.

## **5.24 {PanelOn} and {PanelOff}**

The PanelOn and PanelOff macro commands did not work correctly.

## **5.25 Lookup Table Problem**

If a label was included in the range of a numerical lookup table before any values, 0 would be returned instead of the correct lookup value.

## **5.26 Erc 87 on Math Co-processor Systems**

Certain worksheets would cause an erc 87 on systems with a math co-processor.

## **5.27 Retrieving a Sheet with Links**

Performance was slow when retrieving a sheet that contained links to other sheets.

## **5.28 Importing from Multiplan**

Importing named ranges from Multiplan did not work correctly.

## **5.29 Loss of Backword Compatibility when Localizing OFIS Spreadsheet**

In OFIS Spreadsheet 2.0, not all messages in the SdMsg.bin file were used as they had been in previous versions. This made it impossible to maintain backward compatibility with previous versions when localizing the product. OFIS Spreadsheet 2.1 now uses all the messages in the SdMsg.bin file as in previous versions.

## **5.30 Printing Numbers Mis-aligned**

In OFIS Spreadsheet 2.1.0, columns of formatted numbers, i.e., comma or percent, were mis-aligned due to the alignment to the left of the gutter space.

## **5.31 -old Files Appear During /FileRetrieve**

-old files would appear if a password was added to the directory path in the SdConfig.sys token SSDFLTDIR, and a wildcard filespec was entered.

## **5.32 Pitch Incorrectly Calculated**

In OFIS Spreadsheet 2.1.0, with SSAUTOPAGELO set to 1, the pitch was incorrectly calculated.

## **5.33 Column Heading Bar Corrupted**

If a very long label was typed and overwrote the column heading bar, the typed text would remain after the label was entered.

## **5.34 Print Attributes Unnecessarily Imported**

In OFIS Spreadsheet 2.1.0, invoking `/FileCombineCopyNamedRange` imported the named range cells plus all additional cells which contained the new print formatting, bold, italic, etc.

## **5.35 Corruption with Linked Worksheets**

When loading linked worksheets by specifying the dependent worksheet from the command line, the first cell of the linked sheet was corrupt. This does not occur if `/FileRetrieve` is used.

## **5.36 Pitch Not Recalculating**

In OFIS Spreadsheet 2.1.0, if previously a pitch size was specified, and a new font-size is selected, the pitch size did not recalculate to adjust to the new font size, although `SSAUTOPAGELO` was set to 2 for automatic recalculation.





# Section 6

## Restrictions and Known Limitations

### 6.1 Introduction

This section describes restrictions and limitations for CTOS OFIS Spreadsheet R2.1.10. There are no new restrictions or limitations introduced by this release.

### 6.2 Existing Items

The following restrictions and known limitations exist in CTOS OFIS Spreadsheet.

#### 6.2.1 Lotus 1-2-3 Password-Protection

OFIS Spreadsheet cannot read password-protected Lotus 1-2-3 worksheets.

#### 6.2.2 Lotus 1-2-3 Compose Key

OFIS Spreadsheet does not support the Lotus 1-2-3 Compose key.

#### 6.2.3 Maximum Number of Formulas

OFIS Spreadsheet limits the maximum number of formula entries in a single spreadsheet to approximately 16,000.

## 6.2.4 /DataSort Results

The /DataSort command returns slightly different results in OFIS Spreadsheet than it does in Lotus 1-2-3 due to the use of the CTOS character set instead of ASCII. In OFIS Spreadsheet, the sort order is determined by the CTOS procedure NlsCollate, which allows the sort order to be changed on a system-wide basis for nationalization purposes.

## 6.2.5 Graphing Limitations

The following limitations related to graphing exist:

- Due to the interface between OFIS Spreadsheet and OFIS Graphics, some of the Graph commands have no effect. Specifically, any changes made by the Format, Grid, Data-Labels, and Scale subcommands of Graph Options are saved with the worksheet but are not reflected in the OFIS Graphics graph.
- Any value entered in the Graph Options Titles Second command will not be present in the graph.
- The Lotus 1-2-3 command /GraphOptionScaleY-Scale Indicator, and its Yes/No submenu are not available in OFIS Spreadsheet, and attempting to access them by entering the sequence of keystrokes results in OFIS Spreadsheet beeping.
- The B range in Pie Graphs, which is used for selecting shading codes and exploding segments, is not supported.
- You cannot use graph ranges A through F simultaneously, due to OFIS Graphics' limit of five line or bar groups. Unisys recommends that you use ranges A through E only.

## 6.2.6 F3 (Name) Key

Pressing the F3 (Name) key multiple times to get a full-screen display of range names is not supported. Only a single-line display is provided in this release. The full-screen display is supported in most of the File commands.

## 6.2.7 Multiplan Features Not Supported in OFIS Spreadsheet

The following Multiplan features are not supported:

- INTERCNT function
- DELTA function
- Cell alignment
- Windows

## 6.2.8 Macros

The macro commands {writeln}, {filesize}, {setpos}, {read}, and {getpos} operate slightly differently in OFIS Spreadsheet than in Lotus 1-2-3. This is because CTOS uses a single line-feed character to separate lines in text files, while MS-DOS uses a carriage-return and line-feed combination. Therefore, each line written with the {writeln} macro is one character shorter in CTOS. This is reflected in the results of the {filesize}, {setpos}, {getpos}, and {read} macros.

## 6.2.9 /FileSave and /FileXtract Commands

The use of file list menus or wildcard file specifications is not supported in the File Save or File Xtract commands. The results of wildcard file specifications used in other File commands may have different results in OFIS Spreadsheet compared to Lotus 1-2-3 due to the differences in file naming between CTOS and MS-DOS.

## 6.2.10 STD Function

The Multiplan STDEV function is changed to the STD function when symbolic files are read into OFIS Spreadsheet. However, STD is the population standard deviation, while STDEV is the sample standard deviation, so the result of the formula will be different in OFIS Spreadsheet. You can use the following formula to convert from the STD function to the STDEV equivalent:

$$\text{STDEV}(\text{list}) = \text{SQRT}(\text{COUNT}(\text{list}) / (\text{COUNT}(\text{list}) - 1)) * \text{STD}(\text{list})$$

## 6.2.11 MID Function

The Multiplan MID function assumes that the starting character in a string is number 1, but the OFIS Spreadsheet MID function uses the number 0 for the starting character. Thus, a symbolic worksheet loaded into OFIS Spreadsheet may have different results than expected for formulas using the MID function. You can use the following formula to convert from the MID function to the Multiplan equivalent (MIDMP):

$$\text{MID}(\text{string}, \text{start} - 1, \text{count}) = \text{MIDMP}(\text{string}, \text{start}, \text{count})$$

## 6.2.12 COUNT Function

The Multiplan COUNT function disregards all blank and label cells, but the OFIS Spreadsheet COUNT function counts all non-blank cells, including labels. Thus, a symbolic worksheet loaded into OFIS Spreadsheet may have different results than expected for formulas using the COUNT function. You can use the following formula to convert from the COUNT function to the Multiplan equivalent (COUNTMP):

$$\text{COUNTMP}(\text{list}) = \text{COUNT}(\text{list}) - \text{LABEL}(\text{list})$$

## 6.2.13 WAIT Indicator

The WAIT indicator may not display as soon as expected for some operations which involve large amounts of data, or when a large worksheet is being changed.

## **6.2.14 Logical Values**

Multiplan uses special data types for logical values, but OFIS Spreadsheet uses the numeric values 0 and 1 to represent false and true, respectively. If a worksheet is saved in symbolic format and loaded into Multiplan, the numbers 0 and 1 will not be recognized as logical values. This may cause formulas using these values with logical functions such as AND and OR to return the #VALUE! error.

## **6.2.15 INT Function**

OFIS Spreadsheet's INT function will produce different results than Multiplan for negative argument values. For example, INT(-8.25) will result in -8 in OFIS Spreadsheet and -9 in Multiplan. This may cause formulas to return different results than expected when a symbolic worksheet is loaded.

## **6.2.16 Characters Above 128**

Because OFIS Spreadsheet saves Lotus 1-2-3 worksheets using the Lotus International Character Set (LICS), some characters with values above 128 may be unexpectedly changed when a Lotus 1-2-3 worksheet is retrieved. This occurs if there is no LICS counterpart to a CTOS character.

## **6.2.17 Importing Linked Spreadsheets**

When transferring Multiplan-SYLK linked spreadsheets into OFIS Spreadsheet using the /FileImport option, the original links (specified in the initial External Copy) are maintained. Therefore, any External Use specification made within Multiplan is ignored.

## **6.2.18 Data Sort Row Limitation**

The /DataSort command is limited to sorting a maximum of 3276 rows.

## **6.2.19 Display of Real Numbers**

Real numbers will only correctly display up to 12 significant digits in OFIS Spreadsheet.

## **6.2.20 Incorrect Updates of Cell References**

If a formula references blank cells which are beyond the last row or column containing non-blank cells, OFIS Spreadsheet will not update the formula's cell references when Delete, Insert or Move operations would normally readjust cell references.

## **6.2.21 Multiple Users Retrieving the Same Worksheet**

When File-Locking is Disabled, OFIS Spreadsheet does not prevent multiple users from opening and modifying the same file. The changes made by the last user to save are retained and all other users' changes are overwritten.

## **6.2.22 Switching Between Default and Selected Pitch and Line Spacing**

When changing from default pitch or line spacing to a selected value, the user must initially enter a selected value that is equal to the default value. This allows OFIS Spreadsheet to correctly calculate the page dimensions in later operations. The default pitch is 120 / current font size. The default line spacing is the same as the current font size.

## **6.2.23 Printer Font Substitution**

Selecting a font that is not available results in a substitution that may produce undesirable results. In addition, a user can enter text that does not overlap other cells or appears in a specific location on the screen that, when printed with proportional fonts, may produce undesirable results.

## **6.2.24 Narrow Characters and the Mouse Cursor**

On BTOS II 3.2 and CTOS II 3.3 high-resolution VGA systems running in low-resolution, when the display is changed to Narrow, the mouse pointer is off and you can move the cursor past a certain column (approximately 100th column) using the mouse.

If you need to use low-resolution narrow characters on a high-resolution system to view a spreadsheet, set an Executive partition to 132 columns using the Screen Setup command, then start OFIS Spreadsheet.

## **6.2.25 Information Line/Function Key Color Clash**

When the color of the information line and the function keys is the same, you cannot see the mouse cursor when it is over the function keys.

## **6.2.26 Remote Node Syntax Error**

If you open a worksheet on a remote node, you must specify the full path name, including the node name, in the file specification when you save it.

## **6.2.27 Moving the Mouse During Various Operations**

On Standard Software 12.1 or later if you move the mouse during various operations, such as during a file list expansion or while switching screen character widths, duplicated or erroneous characters occur.

## **6.2.28 Selecting an Area With the Mouse**

When selecting an area with the mouse, the display attribute indicating selected data may lag behind the mouse cursor.



## **6.2.29 Custom Menus in Macros**

If you have a macro that displays a custom menu and you call it while another menu is displayed, the screen may become corrupted after the menus are removed. Adding {PGDN}{PGUP} to the macro corrects this.

## **6.2.30 Low Memory Warning**

During some memory-intensive operations, such as expanding a file list of all files in all directories on a volume, when a Memory Low condition occurs, you must use the /WorksheetEraseYes option to regain the memory. You may need to exit OFIS Spreadsheet. You can then restart it in a larger partition.

## **6.2.31 String Concatenation with DOLLAR and Database Function**

When the DOLLAR function is applied to a database function and the result is concatenated to a string, OFIS Spreadsheet displays ERR.

## **6.2.32 Changing Help Color**

If you display the Contents of on-line Help, and then press Next Page twice, the screen changes colors.

## **6.2.33 Recovering a Worksheet on Startup**

If OFIS Spreadsheet terminates abnormally with a worksheet open and you restart OFIS Spreadsheet with the worksheet specified in the [Worksheet] parameter of the command form, you cannot use the mouse or Arrow keys to select an option from the popup menu that prompts you to recover; you must type the first letter of the option you want.

### **6.2.34 Flashing Cell Pointer when Changing Windows with the Mouse**

If you use the mouse to change windows, the cell pointer displays initially in one cell and then in the correct cell.

### **6.2.35 /DataQueryFind Cursor Positioning**

When moving through records with the /DataQueryFind operation, you may notice that OFIS Spreadsheet is slower at repositioning the cursor as opposed to the highlight.

### **6.2.36 Lotus 1-2-3 File Compatibility**

OFIS Spreadsheet R2.1.10 reads Lotus 1-2-3 version 1A files (.wks)

OFIS Spreadsheet R2.1.10 reads and writes Lotus 1-2-3 version 2.0 to 2.4 files (.wk1)

OFIS Spreadsheet R2.1.10 reads and writes Multiplan SYLK files (.sl)

OFIS Spreadsheet R2.1.10 reads and writes text files (typically called .prn)

OFIS Spreadsheet R2.1.10 reads and writes OFIS Spreadsheet files (.wkt)

It is intended that features unique to one application should be ignored when accessed in another application. See each application's documentation for a list of available features. Other applications able to read or write in the formats listed above should be able to share files with OFIS Spreadsheet.

## 6.2.37 Keystroke Compatibility With Lotus 1-2-3

OFIS Spreadsheet contains command menus to mimic those of Lotus 1-2-3 version 2.01. Not all Lotus 1-2-3 2.01 commands are implemented. Therefore, selecting commands that are not implemented, causes the message "FOR KEYSTROKE COMPATIBILITY ONLY" to display. This allows Lotus 1-2-3 2.01 macros to execute without error or major modification. In addition, it provides users who are familiar with Lotus 1-2-3 2.01 to be able to use the product without major retraining.

## 6.2.38 Compatibility With Lotus 1-2-3 version 2.4 Functions and Macros

OFIS Spreadsheet can read data from Lotus 1-2-3 versions 2.0, 2.1, 2.3, and 2.4 files, including macros and formulas. Since Lotus 1-2-3 provides different feature sets, OFIS Spreadsheet is not completely compatible with the various versions of Lotus 1-2-3.

The following is a list of functions new to Lotus 1-2-3 version 2.4 that are not supported by OFIS Spreadsheet R2.1.10:

<b>Function</b>	<b>Category</b>	<b>Description</b>
@?	Special	Indicates an unknown @ function from an add-in program.
@CLEAN	String	Removes control characters from a string.
@ISAAF	Logical	Returns 1 for an attached add-in @ function; 0 for any other entry.

The following is a summary of Lotus 1-2-3 macro calls which are not supported by OFIS Spreadsheet R2.1.10:

APP1 - invokes the add-in program assigned to Alt+F7

APP2 - invokes the add-in program assigned to Alt+F8

APP3 - invokes the add-in program assigned to ALT+F9

APP4 - invokes the add-in program assigned to ALT+F10

Appendbelow - copies a range of data to the bottom of a second range.

Appendright - copies a range of data to the right of a second range.

Bordersoff - turns off display of the worksheet column letters and row numbers.

Borderson - turns on display of the worksheet column letters and row numbers.

End - Equivalent to pressing End.

Form - suspends a macro temporarily so data can be entered.

Formsbreak - ends a form command

Frameoff - works the same as Bordersoff

Frameon - works the same as Borderson

Graphon - creates a full screen view of the current graph

Menu - equivalent to pressing / (slash)

System - suspend 1-2-3 and passes a command to the operating system.

"(" and ")" - allows the entering of { and } without being interpreted as a macro.

"~" - allows the entering of ~ without being interpreted as Enter.

### **6.2.39 Compatibility With CTOS/PM WingZ**

OFIS Spreadsheet can read and write CTOS/PM WingZ spreadsheets, provided they are in the Lotus 1-2-3 version 2.0 file format (.WK1).

CTOS/PM WingZ does not support macros generated by OFIS Spreadsheet. CTOS/PM WingZ does not support graphics generated by OFIS Spreadsheet.

# Section 7

## Support

### 7.1 Introduction

This section provides support categories and warranties information. It also provides information about any discontinuance of support for previous release levels (or features in those releases) and the effective date for support discontinuance. Unisys may also provide you with information about support discontinuance in a Discontinuance Announcement.

### 7.2 Support and Warranty

The CTOS OFIS Spreadsheet R2.1.10 software is in Support Category 1 and Warranty Class 1. It is fully supported and enhanced, and is warranted for 90 days to conform to Unisys published specifications.

<b>Support Type</b>	<b>Description</b>
Support Category 1	fully supported and enhanced
Support Category 2	supported only, with no enhancements
Support Category 3	neither supported nor enhanced

<b>Warranty Type</b>	<b>Description</b>
Warranty Class 1	warranted for 90 days to conform to Unisys published specifications
Warranty Class 2	not warranted and is provided "as is"

## **7.3 Support Discontinuance**

Effective with the release of CTOS OFIS Spreadsheet R2.1.10, update maintenance support is discontinued for all releases of CTOS OFIS Spreadsheet prior to 2.0. If you are currently using a prior release level, you should consider migrating to release level R2.1.10 at the earliest opportunity. If you require a correction to a prior release level, Unisys may ask you to upgrade to release R2.1.10.

## **7.4 Product Assistance**

### **7.4.1 Instructions**

Should you encounter a problem with a Unisys product, please contact your local Customer Service Center. Your Customer Service Center representative will have a more definitive set of problem reproduction requirement guidelines specific to the application you are running. So that your questions may be answered in a timely manner, please collect all information which applies to your problem. A guideline for gathering information is listed below.

### **7.4.2 Environment**

In order to assist us in determining the nature of your problem, please be prepared to describe the environment in which the problem occurs.

### 7.4.3 Software Components

If you suspect the problem is software related, be prepared to provide the following information concerning the software being used:

1. The version number of the software in which the problem occurs.
2. The version of the operating system software.
3. Installation parameters used for the failing software.
4. Configuration files used.
5. Other software installed at the time of failure.
6. Recent changes to the system software (for example, updates).
7. Any messages associated with the failure that appear in the system log files (for example, accessed through the **Plog** command on CTOS systems).
8. The connectivity of the software (is your system part of a network?).

### 7.4.4 Hardware Components

If you suspect the problem is hardware related, be prepared to provide the following information concerning your hardware platform:

1. The type of processor being used.
2. The workstation components (for example, hard drives, communication modules, CD-ROM drive).
3. Any peripherals attached to the workstation (for example, printers, scanners, modems, plotters).
4. The connectivity of the hardware (is your system part of a network?).
5. Recent changes to the hardware platform.
6. The amount of memory installed.

### 7.4.5 Circumstances



Be prepared to describe the circumstances under which the failure occurs. The description should include:

1. Whether or not the problem is reproducible.
2. The exact steps that are required to reproduce the problem.
3. A description of circumstances under which the problem does not occur.

# Section 8

## Customer Product Information

### 8.1 Introduction

This section describes the documentation for CTOS OFIS Spreadsheet.

### 8.2 Product Information Packaging

Unisys packages product information into Libraries or Literature Sets for each product. Also, for your convenience, Unisys offers various ways to reorder product information to fit your needs:

- **Library:** Customers who wish to purchase the entire suite of books, including binders and slipcases, may do so by ordering the Library part number.
- **Literature Set:** Customers who wish to purchase individual books with binders and slipcases may do so by ordering the Literature Set part number.
- **Individual books:** Customers who wish to purchase individual books without binders and slipcases may do so by ordering the Book part number.

See Section 10, "Ordering Procedure", for part number information. Unisys includes all applicable errata and updates with each part number. Updates contain any preceding errata.

As release levels higher than those listed become available, review the applicable SRA for compatibility information.



# Section 9

## List of Files on Product Media

### 9.1 Introduction

This section describes the software distribution media. It organizes this information by product and available media. The CTOS OFIS Spreadsheet R2.1.10 package contains two 3 1/2-inch or three 5 1/4-inch diskettes.

The following tables list the volume, directory, and file names on each type media.

### 9.2 3 1/2-inch Media

Files are shown by location and file names.

---

#### 3 1/2-inch first diskette [B25OL2-1]

##### <Sys> Directory

Install.ctrl  
Install.jcl

Install>English.cmds  
SMS.Registration

##### <Unisys> Directory

ConvertToWkt.sub  
Em.sub  
OFISSpreadsheet.hlp  
OFISSpreadsheet.run

Os.sub  
SdConfig.sys  
SdMsg.bin

---

continued

**3 1/2-inch Media (cont.)**

---

**3 1/2-inch second diskette [B25OL2-2]**

**<Sys> Directory**

OFIS Spreadsheet 2 of 2

**<Unisys> Directory**

RealSpreadsheet.Run

ProtSpreadsheet.Run

---

## **9.3 5 1/4-Inch Media**

Files are shown by location and file names.

---

**5 1/4-inch, first diskette [B25OL2-1]**

**<Sys> Directory**

Install.ctrl  
Install.jcl

Install>English.cmds  
SMS.Registration

**<Unisys> Directory**

ConvertToWkt.sub  
Em.sub  
OFISSpreadsheet.hlp  
OFISSpreadsheet.run

Os.sub  
SdConfig.sys  
SdMsg.bin

---

continued

**5 1/4-inch media (cont.)**

---

**5 1/4-inch, second diskette [B25OL2-2]**

**<Sys> Directory**

OFIS Spreadsheet 2 of 3

**<Unisys> Directory**

RealSpreadsheet .Run

---

**5 1/4-inch, third diskette [B25OL2-3]**

**<Sys> Directory**

OFIS Spreadsheet 3 of 3

**<Unisys> Directory**

ProtSpreadsheet .Run

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# Section 10

## Ordering Procedure

### 10.1 Introduction

This section provides software style IDs and product information part numbers and release levels.

For ordering information:

- Contact your local Unisys representative, sales office, or reseller. Unisys has branches and representatives in most major cities, worldwide.
- United States customers, call Unisys Direct at 1-800-448-1424.
- Unisys personnel, use the Electronic Literature Ordering (ELO) system.

### 10.2 Style IDs/Part Numbers

You can use the style IDs or part numbers in the following table if you want to order CTOS OFIS Spreadsheet R2.1.10 components, including:

- Software media
- SRAs
- Documentation

**Note:** *Order software using a style ID. Order product information using a part number.*



## 10.2.1 Software Style IDs

Software Description	Release Level	Style ID
<p>CTOS OFIS Spreadsheet</p> <p>Single new package license including: 3 1/2 or 5 1/4-inch diskettes</p> <p><i>CTOS OFIS Spreadsheet Software Release Announcement (SRA)</i></p> <p><i>CTOS OFIS Spreadsheet Training Guide</i></p> <p>3/4-inch binder with slipcase</p> <p><i>CTOS OFIS Spreadsheet Reference Manual</i></p> <p><i>CTOS OFIS Spreadsheet Reference Manual, Update 1</i></p> <p>1 1/2-inch binder with slipcase</p>	R2.1.10	NP25-OL2
<p>CTOS OFIS Spreadsheet</p> <p>Single upgrade package license including: 3 1/2 or 5 1/4-inch diskettes</p> <p><i>CTOS OFIS Spreadsheet Software Release Announcement (SRA)</i></p> <p><i>CTOS OFIS Spreadsheet Reference Manual, Update 1</i></p>	R2.1.10	UP25-OL2

continued

<b>Software Description (cont.)</b>	<b>Release Level</b>	<b>Style ID</b>
CTOS OFIS Spreadsheet Multiple new package license only	R2.1.10	ML25-OL2
CTOS OFIS Spreadsheet Multiple upgrade package license only	R2.1.10	UL25-OL2

## 10.2.2 Documentation Part Numbers

<b>Documentation Description</b>	<b>Release Level</b>	<b>Part Number</b>
CTOS OFIS Spreadsheet Document Library	R2.1	4393 5204-001
Includes:		
<i>CTOS OFIS Spreadsheet Reference Manual</i>		
<i>CTOS OFIS Spreadsheet Reference Manual, Update 1</i>		
1 1/2-inch binder with slipcase		
<i>CTOS OFIS Spreadsheet Training Guide</i>		
3/4-inch binder with slipcase		

continued

<b>Documentation Description (cont.)</b>	<b>Release Level</b>	<b>Part Number</b>
CTOS OFIS Spreadsheet Reference Manual Literature Set	R2.1	4393 5246-001
Includes:		
<i>CTOS OFIS Spreadsheet Reference Manual</i>		
<i>CTOS OFIS Spreadsheet Reference Manual, Update 1</i>		
1 1/2-inch binder with slipcase		
CTOS OFIS Spreadsheet Training Guide Literature Set	R2.1	4393 5253-000
Includes:		
<i>CTOS OFIS Spreadsheet Training Guide</i>		
3/4-inch binder with slipcase		
<b>Individual Items</b>	<b>Release Level</b>	<b>Part Number</b>
<i>CTOS OFIS Spreadsheet Software Release Announcement (SRA)</i>	R2.1.10	4393 5212-002
<i>CTOS OFIS Spreadsheet Reference Manual</i>	2.0	4393 4827-000
<i>CTOS OFIS Spreadsheet Reference Manual, Update 1</i>	R2.1	4393 4827-010
<i>CTOS OFIS Spreadsheet Training Guide</i>	2.0	4393 4835-000





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