



```

PPPPPPPP      RRRRRRRR      EEEEEEEEEEE      FFFFFFFFFFF      IIIIIII      XX      XX
PPPPPPPP      RRRRRRRR      EEEEEEEEEEE      FFFFFFFFFFF      IIIIIII      XX      XX
PP      PP      RR      RR      EE      FF      II      XX      XX
PP      PP      RR      RR      EE      FF      II      XX      XX
PP      PP      RR      RR      EE      FF      II      XX      XX
PP      PP      RR      RR      EE      FF      II      XX      XX
PPPPPPPP      RRRRRRRR      EEEEEEEEEEE      FFFFFFFFFFF      IIIIIII      XX      XX
PPPPPPPP      RRRRRRRR      EEEEEEEEEEE      FFFFFFFFFFF      IIIIIII      XX      XX
PP      RR      RR      EE      FF      II      XX      XX
PP      RR      RR      EE      FF      II      XX      XX
PP      RR      RR      EE      FF      II      XX      XX
PP      RR      RR      EE      FF      II      XX      XX
PP      RR      RR      EEEEEEEEEEE      FFF      IIIIIII      XX      XX
PP      RR      RR      EEEEEEEEEEE      FFF      IIIIIII      XX      XX

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RRRRRRRR      EEEEEEEEEEE      QQQQQQ
RRRRRRRR      EEEEEEEEEEE      QQQQQQ
RR      RR      EE      QQ      QQ
RR      RR      EE      QQ      QQ
RR      RR      EE      QQ      QQ
RRRRRRRR      EEEEEEEEEEE      QQ      QQ
RRRRRRRR      EEEEEEEEEEE      QQ      QQ
RR      RR      EE      QQ      QQ
RR      RR      EE      QQ      QQ
RR      RR      EE      QQ      QQ
RR      RR      EEEEEEEEEEE      QQQQ      QQ
RR      RR      EEEEEEEEEEE      QQQQ      QQ

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++  
 FUNCTIONAL DESCRIPTION:

THIS REQUIRE FILE DEFINES SOME GENERAL, LOCAL VALUES AND MACROS WHICH CANNOT OR ARE BEST NOT DEFINED GLOBALLY.

--  
 MACRO

SHORT = UNSIGNED(6)%,           ! SHORT LITERAL ATTRIBUTE  
 BYTLIT = UNSIGNED(8)%,         ! UNSIGNED BYTE ATTRIBUTE  
 WORDLIT = UNSIGNED(16)%,       ! UNSIGNED WORD ATTRIBUTE

MACRO THAT DESCRIBES A STRING

STRINGDESC(STRING) = %CHARCOUNT(STRING), UPLIT(%ASCII STRING)%.

MACRO TO GENERATE A QUADWORD STRING DESCRIPTOR

DESCRIPTOR(STRING) = VECTOR[2] INITIAL(STRINGDESC(STRING))%;

MACRO TO GENERATE A COUNTED STRING AS A BYTE VECTOR

CSTRING(STRING) = UPLIT BYTE(%CHARCOUNT(STRING),STRING)%.

MACRO TO ALLOCATE AN N-CHARACTER STORAGE VECTOR

CH\$SEQUENCE(N) = VECTOR[CH\$ALLOCATION(N)]%;

A SET OF MACROS FOR GENERATING STRUCTURE REFERENCE MACROS

COMPILETIME

XXXXXXXXSIZE = 0;

MACRO

BYTEBLOCKFIELDS(BLKNAM)[] =  
 MACRO %NAME(%STRING(BLKNAM), '%C\_START') =  
 0,0,0,0,%QUOTE%  
 XXXXXXXXBBF(BLKNAM,0,%REMAINING);  
 GLOBAL LITERAL %NAME(%STRING(BLKNAM), '%C\_SIZE') = XXXXXXXXSIZE : WEAK%.

XXXXXXXXBBF( BLKNAM, OFF, NAM, BYTS)[] =  
 MACRO %NAME( %STRING(BLKNAM), '%S', %STRING(NAM)) = OFF, 0, MIN(BYTS\*8, 32), 0 %QUOTE %;  
 %ASSIGN(XXXXXXXXSIZE,OFF+BYTS)  
 XXXXXXXXBBF( BLKNAM, OFF+BYTS, %REMAINING)%;

LITERAL

SYM\$C MAXLNG = 15,           ! MAXIMUM LENGTH OF STRINGS  
 CONTROL\_REGION = %X'40000000',   ! START OF CONTROL REGION  
 SYSTEM\_SPACE = %X'80000000',   ! START OF SYSTEM SPACE  
 MAX\_ADDRESS = %X'C0000000';   ! MAXIMUM VIRTUAL ADDRESS

STRUCTURE

QUADVECTOR[I;N] =           ! A VECTOR OF N QUADWORDS  
 [ N \* 8 ]

(QUADVECTOR + 8\*I);

THE FOLLOWING MACROS GENERATE ACCESSING MACROS FOR BLOCK STRUCTURES WHICH HAVE FIELDS OF BYTE, WORD OR LONG WIDTH.

COMPILETIME

YYYYYYYYSIZE = 0;

! VARIABLE WHICH IS RESULTANT BLOCK LENGTH

MACRO

GENBLOCKFIELDS(BLKNAM)[] =

CALLING SEQUENCE:

GENBLOCKFIELDS(BLKNAM,  
FLDNAM1,FLDWIDTH1,  
FLDNAM2,FLDWIDTH2,  
.....  
ETC,  
FLDNAMN,FLDWIDTHN);

WHERE:

FLDNAMI = THE NAME OF FIELD I IN THE BLOCK  
FLDWIDTHI = WIDTH IN BYTES OF FIELD I

THE MACRO GENERATES FIELD ACCESS MACROS OF THE FORM  
BLKNAM\$X FLDNAM WHERE X IS B, W, L FOR FIELD WIDTHS OF  
1, 2, 4 BYTES RESPECTIVELY.  
IN ADDITION A MACRO OF FORM INIT BLKNAM IS  
GENERATED FOR STATIC INITIALIZATION OF BLOCK. FOR EXAMPLE  
INITIAL (INIT\_BLKNAM(VALUE1,VALUE2,....VALUEN))

GENERATE A MACRO TO REFERENCE THE START OF THE BLOCK

MACRO %NAME(%STRING(BLKNAM),'\$C\_START') =  
0,0,0,%QUOTE%;

GENERATE THE ACCESSING MACROS FOR ALL THE FIELDS OF THE BLOCK

YYYYYYYYBBF(BLKNAM,0,%REMAINING);

DEFINE A GLOBAL LITERAL (FOR LINK TIME ERROR DETECTION) WHOSE  
VALUE IS NUMBER OF BYTES IN BLOCK

GLOBAL LITERAL %NAME(%STRING(BLKNAM),'\$C\_SIZE') = YYYYYYSIZE : WEAK;

NOW DEFINE A MACRO THAT CAN BE USED TO STATICALLY INITIALIZE  
ALL THE FIELDS OF THIS BLOCK

MACRO NAME IS INIT\_BLKNAM

YYCREBINIMACRO(%NAME('INIT\_',%STRING(BLKNAM)), (ZZZBBF(%REMAINING)), (XXXBBF(%REMAINING)))%,

AUXILIARY MACROS:-

YYCREBINIMACRO(NAME, FORMAL, BODY) =  
MACRO NAME FORMAL =%REMOVE BODY%QUOTE%%,

```
!
: ZZZBBF[FLDNAM, FLDWIDTH] = %NAME(%STRING(FLDNAM), '_FML')%,
:
: XXXBBF[FLDNAM, FLDWIDTH] = %IF FLDWIDTH EQL 1 %THEN BYTE
:                               %ELSE %IF FLDWIDTH EQL 2 %THEN WORD
:                               %ELSE LONG
:                               %FI
:                               %FI
:                               (%NAME(%STRING(FLDNAM), '_FML'))%,
:
: YYYFLDPREFIX(WIDTH) = %IF WIDTH EQL 1
:                       %THEN B
:                       %ELSE %IF WIDTH EQL 2
:                           %THEN W
:                           %ELSE L
:                           %FI
:                       %FI%,
:
: YYYYYYYYBBF( BLKNAM, OFF, NAM, BYTS)[ ] =
:   MACRO %NAME( %STRING(BLKNAM), '$', %STRING(YYYFLDPREFIX(BYTS)), '_', %STRING(NAM)) =
:     OFF, 0, MIN(BYTS*8, 32), 0 %QUOTE%;
:   %ASSIGN(YYYYYYYYSIZE, OFF+BYTS)
:   YYYYYYYYBBF( BLKNAM, OFF+BYTS, %REMAINING)%;
```

