z390

Storage Services Guide

Automated Software Tools Corporation

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Function Table

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DEC	HEX	
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Other Macros

STORAGE
CPOOL

STORAGE

```
name STORAGE OBTAIN,LENGTH=,LOC=,COND=     Acquire storage
name STORAGE RELEASE,ADDR=,LENGTH=         Free storage
```

   An alternative to GETMAIN and FREEMAIN.

   See the equivalent descriptions below:
     LENGTH= becomes the GETMAIN/FREEMAIN parameter LV=
     LOC= is the same
     COND=NO (default) is the GETMAIN type R
     COND=YES   is the GETMAIN type RC
     ADDR= becomes the GETMAIN/FREEMAIN parameter A=

GETMAIN

name GETMAIN type,LV=,LOC=,A=
  Acquire storage.

  type is mandatory
    R   Obtain storage unconditionally.
        The default location is below 16M.

    RC Obtain storage conditionally.
        The default location is above 16M.
        The return code indicates whether the acquisition was successful.

    RU Obtain storage unconditionally.
        The default location is above 16M.

  LV= is mandatory
    LV=n   Obtain n bytes (maximum value of n is 2G-1)
    LV=nK   Obtain nK bytes (maximum value of n is 2097151)
    LV=nM   Obtain nM bytes (maximum value of n is 2047)
    LV=(reg)   Length required is in GRreg

    Note: All storage requests will be rounded up to the next 8-byte boundary and is not
          initialised.

  LOC= is optional
    If omitted, type R will default to LOC=ABOVE, types RC and RU
    will default to LOC=BELOW.

    LOC=BELOW   )
    LOC=RES   )
    LOC=24   ) Try to acquire storage below 16M.
    LOC=(24)   )

    LOC=ABOVE   )
    LOC=ANY   )
    LOC=31   ) Try to acquire storage above 16M.
    LOC=(31)   )
    LOC=(24,31))

A=label is optional
A=(reg) is optional
   After successful completion GR1 will contain the address of
   the acquired storage. This 4-byte address may be placed at label,
   or at the address in GRreg.

   The length will be returned in GR0, rounded as necessary.

Also see **Advanced topic** below

Examples:
Getmain 1024 bytes below 16M, unconditionally
   GETMAIN R,LV=1024

Getmain number of bytes in GR3 below 16M, conditionally,
   GETMAIN RC,LV=(R3),LOC=BELOW

Advanced topic:
   Storage is limited by the MEM(nnn) parameter on CALL EZ390,
   with nnn in Megabytes. The default is MEM(1).
   When the value is 16 or less then all GETMAINs will allocate storage LOC=BELOW.
   When the value is above 16, then 16M is available LOC=BELOW and the rest
   LOC=ABOVE.

   There is a preset maximum of MEM(50) set by Java.

   If this is insufficient, then code -Xmx nnnnnnnnn after the -Xrs
   option on CALL EZ370 to extend the MEM limit.
   WARNING: Over-extending memory this way may degrade the
              performance of your operating system (eg. Windows).

Register Usage:
   R0 = Input flags, output length
   R1 = Input length, output address
   R15= Return code

GR15 has a return code:
   0 GETMAIN ok
   4 Conditional request unsuccessful

Abends:
   S804 Invalid request
        Can occur if LRECL/BLKSIZE on a DCB are both zero
   S80A Unconditional out of memory

GETVIS

name GETVIS LENGTH=,ADDRESS=,LOC=
  Acquire storage (VSE only).
  All forms map to GETMAIN R,
  LENGTH and ADDRESS are mandatory.

  Parameters map to GETMAIN as follows:
    LENGTH=n   Maps to LV=n
    LENGTH=(reg)   Maps to LV=(reg)
    ADDRESS=label   Maps to A=label
    ADDRESS=(reg)   GRreg is not a pointer, the GETMAINd area
               address is placed in GRreg.
    LOC=   Maps the same.

  Register Usage:
    R0 = Input flags, output length
    R1 = Input length, output address
    R15= Return code

  GR15 has a return code:
    0 GETVIS ok

  Abends:
    S804 Invalid request
         Can occur if LRECL/BLKSIZE on a DCB are both zero
    S80A Unconditional out of memory

FREEMAIN

name FREEMAIN LV=,LA=,A=
  Free storage.

  Specify either LV= or LA=, if both are present LV= will be ignored.

    LV=n   Free n bytes (maximum value of n is 2G-1)
    LV=nK   Free nK bytes (maximum value of n is 2097151)
    LV=nM   Free nM bytes (maximum value of n is 2047)
    LV=label label must be an equated value
    LV=(reg) Length to be freed is in GRreg

    LA=label The location of a 4-byte length
    LA=(reg) GRreg must point to a 4-byte length

    A= is optional
      If A= is omitted then GR1 must contain the address of the
      storage to be freed.
      A=label The location of the 4-byte address of the storage to be freed.
      A=(reg) The 4-byte address of the storage to be freed is in GRreg.

    Notes:
      The storage address specified must be on a doubleword boundary.

      A section of a previous GETMAIN may be freed.
      It is the programmer's responsibility to manage the resulting fragmentation.

  Register Usage:
    R0 = length
    R1 = address
    R15= return code

  GR15 has a return code:
    0 FREEMAIN ok

  Abends:
    S804 Invalid request
    S90A Attempt to FREEMAIN an area which is not on a doubleword boundary
    SA0A Attempt to FREEMAIN an area already free

FREEVIS

name FREEVIS LENGTH=,ADDRESS=
  Free storage (VSE only).
  All forms map to FREEMAIN R,
  Defaults are LENGTH=(0) and ADDRESS=(1).

  Parameters map to FREEMAIN as follows:
    LENGTH=n   Maps to LV=n
    LENGTH=(reg)   Maps to LV=(reg)
    ADDRESS=label   Maps to A=label
    ADDRESS=(reg)   Maps to A=(reg)

  Register Usage:
    R0 = length
    R1 = address
    R15= return code

  GR15 has a return code:
    0 FREEVIS ok

  Abends:
    S804 Invalid request

CPOOL

BUILD obtains a storage area divided into cells, each subsequent GET retrieves the next cell. FREE and DELETE are not yet implemented.

CPOOL BUILD,CPID=label,PCELLCT=nnn, SCELLCT=nnn,CSIZE=nnn,HDR='...'
  CPID will contain the address of the GET routine for this cell
  PCELLCT contains the primary number of cells
  SCELLCT contains the secondary number of cells
  CSIZE is the size of each cell
  HDR is an optional string to identify the pool
The GETMAIN size will be (PCELLCT+SCELLCT)*CSIZE

CPOOL GET,CPID=label
  Get the next cell in this pool, GR1 contains the address or zero if all cells have been read

Change Summary

June 10, 2011
  Added note about alignment for FREEMAIN
  Added abend S90A to FREEMAIN
  Added new reason for abend S804
  Added CPOOL

June 27, 2008
  Added abend SA0A to FREEMAIN

January 18, 2008
  Added abend and return code sections.

September 28, 2007
  Added VSE Macros GETVIS and FREEVIS
  Added LOC=RES

July 10, 2007
  All macros now list possible general register usage.

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Credits

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