The Library SysLibMem.lib

This library can be used for memory management. If the target system supports the functionality, the following library functions are available to allocate, to free, to define, to compare memory locations and to copy, move or swap between different memory locations. The execution is synchronous.

- SysMemAlloc
- SysMemFree
- SysMemMove
- SysMemSet
- SysMemCmp
- SysMemCpy
- SysMemSwap

SysMemAlloc

This function of type DWORD is used to dynamically allocate memory space.

The return value is either the pointer on the allocated memory location or it is 0, in case there is not as much space available as requested. This return value always should be checked, even if just a small memory area is to be allocated !

Input Variable	Data type	Description
dwSize	DWORD	Number of bytes to be allocated

SysMemCmp

This function of type DWORD compares the size (in Bytes) of two memory buffers buf1 and buf2.

The function returns the difference in size between the compared buffers:

< 0	buf1 smaller than buf2
0	buf1 is of equal size as buf2
> 0	buf1 bigger than buf2

Input Variable	Data type	Description
dwBuf1	DWORD	Address of memory buffer 1 (buf1)
dwBuf2	DWORD	Address of memory buffer 2 (buf2)
dwCount	DWORD	Number of memory bytes which should be compared

SysMemCpy

This function of type DWORD is used to copy a defined number of memory locations from one buffer to another.

The function will return the pointer to the address of the destination buffer area.

The difference to *SysMemMove* is that you only can copy between two non-adjoining buffers.

Input Variable	Data type	Description
dwDest	DWORD	Address of destination buffer
dwSrc	DWORD	Address of source buffer
dwCount	DWORD	Number of memory locations to be copied

SysMemMove

This function of type DWORD moves one memory buffer to another. It will return the address of the destination buffer.

The difference to SysMemCpy is that this function allows to copy even memory areas which are adjoining or even overlapping.

Input Variable	Data type	Description
dwDest	DWORD	Address of destination buffer
dwSrc	DWORD	Address of source buffer
dwCount	DWORD	Number of memory locations to be moved

SysMemSet

This function of type DWORD can be used to initialize a memory location with a defined value. It will return the address of the destination buffer.

Input Variable	Data type	Description
dwDest	DWORD	Pointer on address of the initializing memory area
bCharacter	BYTE	Character or numeric value, which should be used to initialize the memory location
dwCount	DWORD	Number of places within the memory location in Byte

SysMemFree

This function of type BOOL is used to deallocate memory space.

The return value is TRUE or FALSE depending on the success of the operation.

Input Variable	Data type	Description
dwAddress	DWORD	Address of the memory space which is currently allocated (see SysMemAlloc)
dwSize	DWORD	Number of bytes to get reallocated

SysMemSwap

This function of type BOOL can be used to swap data.

Mainly it will be used to swap data between Intel Byteorder and Motorola Byteorder.

The function performs the operation only on Motorola target systems (PPC), not on Intel target systems (ARM, MIPS, SH, x86). This allows to write portable libraries.

The function will return TRUE if the parameters are correct, otherwise FALSE. Note: The return value does not indicate whether the operation was performed or not.

Input Variable	Data type	Description
dwAddress	DWORD	Address of the memory buffer to be swapped
diSwapSize	DINT	Number of locations to be swapped: 2,4,8
diSwapElements	DINT	Number of elements in the memory area to be swapped