

```
-- Help!!!

? (Debuggee Help)

.help (Debugger Help)

.hh (Debugger Help in CHM file)

!help (Extension help - usually SOS)

-- Load SOS - depends on the .Net framework version
.loadby sos clr
.loadby sos mscorwks

-- Load extension from custom path
.load [path]

-- Viewing all loaded extensions
.chain

-- unloading extensions
.unload sos

-- Loading symbols
.sympath cache*c:\symbols;srv*http://msdl.microsoft.com/download/symbols
-- Appending symbols to path
.sympath+ cache*c:\symcache;
.reload

-- Faster way to load symbols
.symfix
.reload

-- list of all threads (both native and managed)
~

-- Switch between threads

~[th id]s (i.e "~0s" - switched to thread 0)

-- Iterate on all native thread and run a command for each thread

~*e [command] (~*e !ClrStack)

-- List of managed threads
!threads

-- finding exception on the current thread
!PrintException (!pe) [Exception object pointer]
```

!ClrStack [-a] (dumps managed call stack)

-- Dump all Application Domain in the process

!dumpdomain

-- Dump module with list of types

!Dumpmodule -mt [Add of Object]

-- Dump type with list of methods

!dumpmt -md [MT of type]

-- Dump IL code

!dumpil [Method Descriptor]

-- Translate IP (Instruction Pointer) to MD (MethodDescriptor)

!IP2MD [IP of the method in call stack]

-- Show Heap

!DumpHeap (full list of objects and stats)

!DumpHeap -stat (only stats)

!DumpHeap -type [wildcard name] (List of objects and type that contains the name being searched)

!DumpHeap -MT [mt address] (Filter only object of specific type)

!DumpHeap -short (for piping purposes)

-- Getting Object REAL Size

!objSize [Add of object]

-- Getting all application roots to an object

!GcRoot [Add of object]

-- ForEach loops

.foreach (obj {!dumpheap -mt 00007ff950b19c78 -short}) { !objsize obj }