# WinDbg / SOS Cheat Sheet

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| Environment |
| Attach to process | F6 |
| Detach from a process | .detach |
| Break debuggee execution | Ctrl-Break |
| Continue debuggee execution | g |
| Exit WinDbg | q |
| Clear the screen | .cls |

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| Getting Help |
| Debuggee commands | ? |
| Debugger commands | .help |
| Online help file | .hh command |
| Help on extension on top of chain | !help |
| Help on specific extension command | !help command |

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| Issuing Commands |
| Scroll through command history | [up], [down], [enter] |
| Paste into command window | [right-click] |

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| Examining the Unmanaged Environment |
| List loaded modules with full path | lmf |
| List loaded modules with last modified timestamp | lmt |
| List unmanaged threads | ~ |
| Select active thread | ~thread\_id s |
| View call stack | k |
| View thread CPU consumption | !runaway |
| Set a breakpoint | bp |
| Dump small memory image | .dump path |
| Dump large memory image | .dump /ma path |

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| Loading SOS |
| Load SOS for .NET 1.*x* | .load clr10\sos |
| Load SOS for .NET 2.0 | .loadby sos mscorwks |

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| Examining the Managed Environment |
| Dump runtime type information | !dumpruntimetypes |
| View managed threads | !threads |
| View managed call stack | !clrstack |
| View combined managed / unmanaged callstack | !dumpstack |
| View function call arguments | !clrstack –p |
| View local variables | !clrstack –l |
| View object dump | !do address |
| View array dump | !da address |
| View object size (including children) | !objsize address |
| View heap usage by type | !dumpheap -stat |
| View heap usage filtered by type | !dumpheap -type type |
| View GC roots of object instance | !gcroot address |
| View managed sync blocks | !syncblk |
| View managed thinlocks (CLR 2.0) | !dumpheap –thinlock |
| View information on most recent exception | !printexception |
| Set a breakpoint | !bpmd module method |