GNU Debugger Cheat Sheet

By Stephan Avenwedde

GNU Debugger (gdb) allows you to monitor a program as it executes. For best results, the program must have been compiled with debug symbols (**`-g`** in GCC)**.**

Launch	
Start debugging	`gdb --args <executable> <args>`
Attach to a running process	`gdb attach <pid>`

Coredumps (systemd only)	
Run gdb on the latest coredump	`coredumpctl debug`
Use the coredump of what ran on pid 3692	`coredumpctl debug 3692`

Flow control	Long	Shortcut
Start, but stop at the main procedure	`start <args>`	
Start, do not stop at main procedure	`run <args>`	**`r`**
Continue execution	`continue`	**`c`**
Continue execution until a different line of code	`step`	**`s`**
Continue next instruciton, step into subroutines	`stepi`	**`si`**
Execute current line of code	`next`	**`n`**
Execute next instruction	`nexti`	**`ni`**
Show stack frames	`backtrace`	**`bt`**
Move *n* number stack frames up or down	`up <n> / down <n>`	

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Breakpoints

Stop execution at line n	`break <n>`
Stop at a specific address	`break *0xabcdef`
Stop at the program's entry point	`break _start`
Stop at the main function	`break main`
Show all breakpoints	`Info breakpoints`

Watchpoints

Watch a variable	`watch <expression>`
Stop when variable *foo* is greater than 0	`watch foo > 0`
Stop at <event>	`catch <event>`
Remove 4th watch, catch, or break point	`disable|enable|delete|clear 4`

Value and type evaluation

o	Octal	**x**	Hexadecimal	**u**	Unsigned decimal	**t**	Binary
c	Char	**a**	Address	**f**	Floating point	**s**	String

Print value of a variable	`print <var name>`
Print value of exrpression in Octal format	`print /o <expression>`
Show the type of a variable	`whatis <var name>`
Print type information	`ptype < type-name`

Modifying values

Modify value of Mybool to true	`set bMybool = true`
Write integer 4 to specific address	`set {int}0x7fffffffd5b8 = 4`
Modify a single bypte in memory	`set *(unsigned char*)0x401435`
Modify a string variable	`set Mystring = "Hello world"`

Show

Show directories for finding source files	`show directories`
Show search path for finding object files	`show path`
Show the OS ABI of target	`show osabi`

