LLDB LLVM debugger

CONCEPTS

Compile with -g (and -O0 for sane stepping), otherwise LLDB has no source lines or local variables.

Debugger settings, aliases
- **Target** executable, breakpoints
  - **Process** running program
    - **Thread** bt, step
      - **Frame** variables, registers

Commands are noun verb (breakpoint set, frame select); most have short aliases such as b, n, s, c, bt, p, f.

START AND ATTACH

`lldb <prog>`
Load a program

`lldb -- <prog> <args>`
Load a program with arguments

`lldb -p <pid>`
Attach to a running process

`lldb -c <core> <prog>`
Inspect a core dump

`run [args]`
Start the program

START AND ATTACH (cont.)

`process attach --name <name>`
Attach by process name

`settings set target.run-args <args>`
Set arguments for later runs

`settings set target.env-vars <VAR>=<val>`
Set an environment variable

`process detach`
Release the process and keep it running

`quit`
Leave LLDB

BREAKPOINTS

`b <func>`
Break at a function

`b <file>:<line>`
Break at a line of a file

`breakpoint set --name <func> --condition '<cond>'`
Break only when the condition holds

`breakpoint list`
List breakpoints and hit counts

`breakpoint delete <n>`
Delete a breakpoint

`breakpoint disable <n>`
Disable a breakpoint

BREAKPOINTS (cont.)

`breakpoint enable <n>`
Re-enable a breakpoint

`breakpoint set --func-regex <regex>`
Break on every function matching a regex

`breakpoint set --method <name>`
Break on a C++ method by base name

`breakpoint modify --condition '<cond>' <n>`
Add or change a condition

WATCHPOINTS

`watchpoint set variable <var>`
Stop when a variable changes

`watchpoint set expression -- <addr>`
Watch the memory at an address

`watchpoint list`
List watchpoints

`watchpoint delete <n>`
Delete a watchpoint

RUN CONTROL

`c`
Continue until the next stop

`n`
Step over the next line

RUN CONTROL (cont.)

`s`
Step into the next line

`finish`
Run until the current function returns

`thread until <line>`
Run to a line in this frame

`si`
Step one instruction

STACK AND THREADS

`bt`
Backtrace of the current thread

`bt all`
Backtrace of every thread

`frame select <n>`
Switch to frame n

`up`
Go to the caller frame

`down`
Go back toward the callee frame

`thread list`
List threads

`thread select <n>`
Switch to thread n

INSPECT DATA

`frame variable`
Show arguments and locals

INSPECT DATA (cont.)

`frame variable <var>`
Show one variable

`p <expr>`
Evaluate a C/C++ expression

MEMORY AND REGISTERS

`memory read --size 4 --format x --count 4 <addr>`
Dump four 32-bit words in hex

`register read`
Show general registers

SOURCE AND SYMBOLS

`disassemble --frame`
Disassemble the current function

FROM GDB

GDB to LLDB

GDB	LLDB
`break foo`	b foo
`rbreak <re>`	breakpoint set -r <re>
`info locals`	frame variable
`info break`	breakpoint list
`watch <var>`	watchpoint set variable <var>
`info threads`	thread list
`disassemble`	disassemble --frame
`info registers`	register read