

GDB commands by function - simple guide

Startup

- % gdb -help print startup help, show switches
- % gdb object **normal debug**
- % gdb object core **core debug (must specify core file)**
- %% gdb object pid attach to running process
- % gdb use file command to load object

Help

- (gdb) help **list command classes**
- (gdb) help running list commands in one command class
- (gdb) help run bottom-level help for a command “run”
- (gdb) help info list info commands (running program state)
- (gdb) help info line help for a particular info command
- (gdb) help show list show commands (gdb state)
- (gdb) help show commands specific help for a show command

Breakpoints

- (gdb) break main set a breakpoint on a function
- (gdb) break 101 set a breakpoint on a line number
- (gdb) break basic.c:101 set breakpoint at file and line (or function)
- (gdb) info breakpoints show breakpoints
- (gdb) delete 1 delete a breakpoint by number
- (gdb) delete delete all breakpoints (prompted)
- (gdb) clear delete breakpoints at current line
- (gdb) clear function delete breakpoints at function
- (gdb) clear line delete breakpoints at line
- (gdb) disable 2 turn a breakpoint off, but don't remove it
- (gdb) enable 2 turn disabled breakpoint back on
- (gdb) tbreak function|line set a temporary breakpoint
- (gdb) commands break-no ... end set gdb commands with breakpoint
- (gdb) ignore break-no count ignore bpt N-1 times before activation
- (gdb) condition break-no expression break only if condition is true
- (gdb) condition 2 i == 20 example: break on breakpoint 2 if i equals 20
- (gdb) watch expression set software watchpoint on variable
- (gdb) info watchpoints show current watchpoints

Running the program

- (gdb) run run the program with current arguments
- (gdb) run args redirection run with args and redirection

- (gdb) set args args... set arguments for run
- (gdb) show args show current arguments to run
- (gdb) **cont continue the program**
- (gdb) **step single step the program; step into functions**
- (gdb) step count singlestep \flcount\fr times
- (gdb) **next step but step over functions**
- (gdb) next count next \flcount\fr times
- (gdb) **CTRL-C actually SIGINT, stop execution of current program**
- (gdb) **attach process-id attach to running program**
- (gdb) **detach detach from running program**
- (gdb) **finish finish current function's execution**
- (gdb) kill kill current executing program

Stack backtrace

- (gdb) **bt print stack backtrace**
- (gdb) frame show current execution position
- (gdb) up move up stack trace (towards main)
- (gdb) down move down stack trace (away from main)
- (gdb) **info locals print automatic variables in frame**
- (gdb) info args print function parameters

Browsing source

- (gdb) **list 101 list 10 lines around line 101**
- (gdb) **list 1,10 list lines 1 to 10**
- (gdb) **list main list lines around function**
- (gdb) **list basic.c:main list from another file basic.c**
- (gdb) **list - list previous 10 lines**
- (gdb) list *0x22e4 list source at address
- (gdb) cd dir change current directory to \fdir\fr
- (gdb) pwd print working directory
- (gdb) search regex forward current for regular expression
- (gdb) reverse-search regex backward search for regular expression
- (gdb) dir dirname add directory to source path
- (gdb) dir reset source path to nothing
- (gdb) show directories show source path

Browsing Data

- (gdb) **print expression print expression, added to value history**
- (gdb) **print/x expressionR print in hex**
- (gdb) print array[i]@count artificial array - print array range
- (gdb) print \$ print last value
- (gdb) print *\$->next print thru list
- (gdb) print \$1 print value 1 from value history

- (gdb) print ::gx force scope to be global
- (gdb) print 'basic.c':::gx global scope in named file (>=4.6)
- (gdb) print/x &main print address of function
- (gdb) x/countFormatSize address low-level examine command
- (gdb) x/x &gx print gx in hex
- (gdb) x/4wx &main print 4 longs at start of \fmain\fR in hex
- (gdb) x/gf &gd1 print double
- (gdb) help x show formats for x
- **(gdb) info locals print local automatics only**
- (gdb) info functions regexp print function names
- (gdb) info variables regexp print global variable names
- **(gdb) ptype name print type definition**
- (gdb) whatis expression print type of expression
- **(gdb) set variable = expression assign value**
- (gdb) display expression display expression result at stop
- (gdb) undisplay delete displays
- (gdb) info display show displays
- (gdb) show values print value history (>= gdb 4.0)
- (gdb) info history print value history (gdb 3.5)

Object File manipulation

- (gdb) file object load new file for debug (sym+exec)
- (gdb) file discard sym+exec file info
- (gdb) symbol-file object load only symbol table
- (gdb) exec-file object specify object to run (not sym-file)
- (gdb) core-file core post-mortem debugging

Signal Control

- (gdb) info signals print signal setup
- (gdb) handle signo actions set debugger actions for signal
- (gdb) handle INT print print message when signal occurs
- (gdb) handle INT noprint don't print message
- (gdb) handle INT stop stop program when signal occurs
- (gdb) handle INT nostop don't stop program
- (gdb) handle INT pass allow program to receive signal
- (gdb) handle INT nopass debugger catches signal; program doesn't
- (gdb) signal signo continue and send signal to program
- (gdb) signal 0 continue and send no signal to program

Machine-level Debug

- (gdb) info registers print registers sans floats
- (gdb) info all-registers print all registers
- (gdb) print/x \$pc print one register
- (gdb) stepi single step at machine level

- (gdb) si single step at machine level
- (gdb) nexti single step (over functions) at machine level
- (gdb) ni single step (over functions) at machine level
- (gdb) display/i \$pc print current instruction in display
- (gdb) x/x &gx print variable gx in hex
- (gdb) info line 22 print addresses for object code for line 22
- (gdb) info line *0x2c4e print line number of object code at address
- (gdb) x/10i main disassemble first 10 instructions in \flmain\fr
- (gdb) disassemble addr disassemble code for function around addr

History Display

- (gdb) show commands print command history (>= gdb 4.0)
- (gdb) info editing print command history (gdb 3.5)
- (gdb) ESC-CTRL-J switch to vi edit mode from emacs edit mode
- (gdb) set history expansion on turn on c-shell like history
- (gdb) break class::member set breakpoint on class member. may get menu
- (gdb) list class::member list member in class
- (gdb) ptype class print class members
- (gdb) print *this print contents of this pointer
- (gdb) rbreak regexpr useful for breakpoint on overloaded member name

Miscellaneous

- (gdb) define command ... end define user command
- (gdb) RETURN repeat last command
- (gdb) shell command args execute shell command
- (gdb) source file load gdb commands from file
- (gdb) quit quit gdb