CSCI 2330 GDB Reference Sheet

Start

gdb myprog	Launch myprog in gdb

Run and Stop

help	Get information about gdb
quit	Exit gdb
run	Run program
run 1 2 3	Run with command-line arguments 1 2 3
run < in.txt	Run with input redirected from in.txt
kill	Stop the program
Control-D	Exit gdb
Control-C	Stop the currently running gdb command
make	Run make to rebuild without leaving gdb

Breakpoints

break sum	Set breakpoint at entry to function sum
break 20	Set breakpoint at line 20 in current file
break prog.c:20	Set breakpoint at line 20 in prog.c
break *0x80483c3	Set breakpoint at address 0x80483c3
delete 1	Delete breakpoint #1
disable 1	Disable breakpoint #1
enable 1	Enable breakpoint #1
delete	Delete all breakpoints
clear sum	Clear breakpoints at entry to function sum

Execute

step	Execute one C line
next	Execute one C line (treats functions as one line)
stepi	Execute one instruction
stepi 4	Execute four instructions
nexti	Execute one instruction (treats function as one instruction)
continue	Execute until next breakpoint
until 3	Execute until breakpoint #3
finish	Execute until current function returns
call sum(1, 2)	Call sum(1, 2) and print return value

Context

backtrace / where	Print current address & stack backtrace
info program	Print current status of the program
info functions	Print functions in program
info stack	Print backtrace of the stack
info frame	Print info about current stack frame
info registers	Print registers and their contents
info breakpoints	Print status of breakpoints

Examine Code

disas	Disassemble current function
disas sum	Disassemble function sum
disas 0x80483b7	Disassemble function around 0x80483b7
disas 0x80483b7 0x80483c7	Disassemble within address range
print /x $rip	Print program counter in hex
print /d $rip	Print program counter in decimal
print /t $rip	Print program counter in binary

Examine Data

print /d $rax	Print contents of %rax in decimal
print /x $rax	Print contents of %rax in hex
print 0x100	Print decimal representation of 0x100
print /x 555	Print hex representation of 555
print /x ($rsp+8)	Print (contents of %rsp) + 8 in hex
print *(int*) ($rsp+8)	Print integer at address %rsp + 8
print (char*) 0xbfff890	Print string at address 0xbffff890

x/w 0xbffff890	Examine 4-byte word at address 0xbffff890
x/w $rsp	Examine 4-byte word at address $rsp
x/wd $rsp	Examine 4-byte word at address $rsp in decimal
x/2w $rsp	Examine two 4-byte words at address $rsp
x/2wd $rsp	Examine two 4-byte words at address $rsp in decimal
x/g $rsp	Examine 8-byte word at address $rsp
x/s 0xbffff890	Examine string stored at 0xbffff890
x/20b sum	Examine first 20 opcode bytes of func sum
x/10i sum	Examine first 10 instructions of func sum

display /FMT EXPR	Print expression EXPR using format FMT each time execution stops
display	Show current auto-display expressions
undisplay NUM	Remove expression NUM from auto-display

Formats: x/[NUM][SIZE][FORMAT]

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If not given, uses sensible default or last-used format
   NUM = number of objects to display
  SIZE = size of each object
         b = 1 byte
         h = 2 bytes ("half word")
         w = 4 bytes ("word")
         g = 8 bytes ("giant/quad word")
FORMAT = format for displaying each object
         d = decimal
         x = hexadecimal
         o = octal
         t = binary
         a = address (pointer)
         c = character
         s = string
```