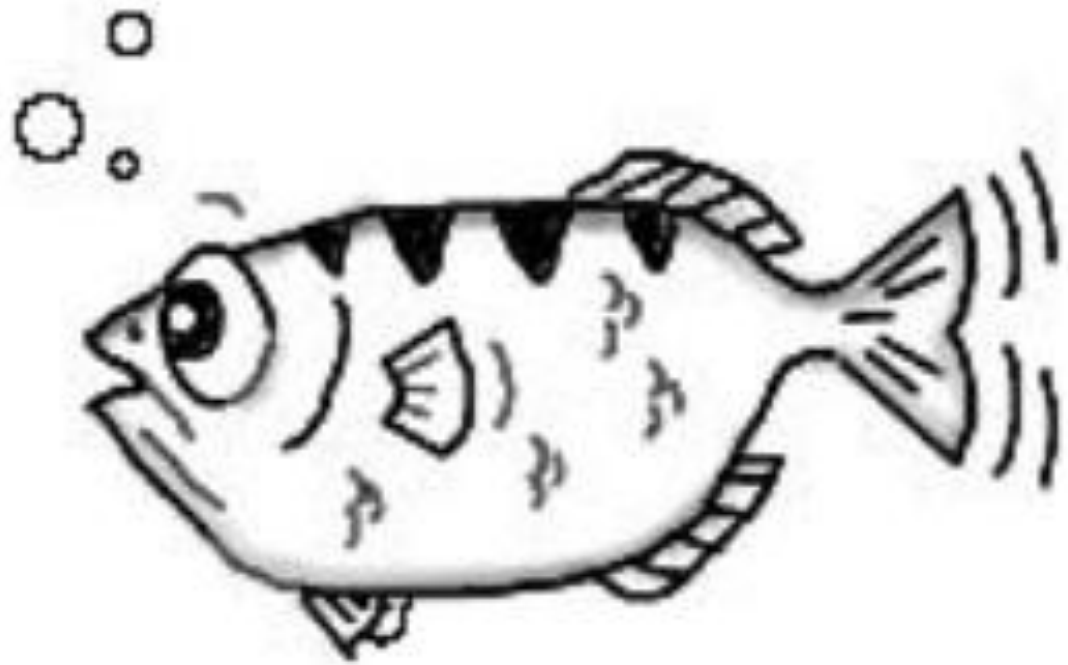

GDB: The GNU Project Debugger

GDB

When you compile your program, you run the option to add debugging symbols to your executable. Here's what you will see if you do not.

```
gcc MyProgram.c
gdb a.out
```

```
GNU gdb (GDB) Red Hat Enterprise Linux (7.0.1-45.el5)
Copyright (C) 2009 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.  Type "show copying"
and "show warranty" for details.
This GDB was configured as "x86_64-redhat-linux-gnu".
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>...
Reading symbols from /home/f/fr/frenchdm/a.out...(no debugging symbols found)...
done.
```

GDB

Compile your program with symbols on

```
gcc MyProgram.c -g
gdb a.out
```

```
GNU gdb (GDB) Red Hat Enterprise Linux (7.0.1-45.el5)
Copyright (C) 2009 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.  Type "show copying"
and "show warranty" for details.
This GDB was configured as "x86_64-redhat-linux-gnu".
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>...
Reading symbols from /home/f/fr/frenchdm/a.out...done.
(gdb)
```

GDB

How to exit the debugger

`quit`

```
[frenchdm@omega ~]$ gdb a.out
GNU gdb (GDB) Red Hat Enterprise Linux (7.0.1-45.el5)
Copyright (C) 2009 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.  Type "show copying"
and "show warranty" for details.
This GDB was configured as "x86_64-redhat-linux-gnu".
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>...
Reading symbols from /home/f/fr/frenchdm/a.out...done.
(gdb) quit
[frenchdm@omega ~]$
```

GDB

list

`list 1` – will show the first 10 lines of the program

`list n` – will show the 5 lines before `n` and the 4 lines after `n` (total of 10 lines)

`list x,y` – will show lines `x` through `y`

`list` *`function_name`* – will show 4 lines before start of function and 5 lines after

`list` – will show the next 10 lines

GDB

help

`help` – list class of command topics

`help all` – lists all commands

`help command` – list specific command information

`apropos search-word` – finds all instances of search-word in help

GDB

Starting a debug session

`break main` – set a break point on `main()`

`run` – start program execution from the beginning of the program

`c` – continue execution to next break point

GDB

break

`break main` – set a break point on `main()`

`break` *`function-name`* – set a break point on *`function-name`*

`break` *`line-number`* – set a break point on *`line-number`*

`info break` – list breakpoints

GDB

print

`print` *`variable`* – print value stored in variable

`print /t` *`variable`* – print integer value in binary

`print /x` *`variable`* – print integer value in hex

`print *`*`ArrayName@ArrayLength`* – print values of *ArrayName*

`ptype` *`variable`* – prints type definition of variable

GDB

clear

`clear` – delete breakpoint

`clear` *`function`* – remove the breakpoints in *function*

`clear` *`line-number`* – remove breakpoint at *line-number*

GDB

`step` *n*

execute *n* lines and displays the line. If the next line is a function, it executes *n* line inside the function.

`next` *n*

execute *n* lines and displays the line. If the next line is a function, it executes the whole function

GDB

`backtrace` – display which functions have been called

`quit` – exit GDB

`kill` – quit the current debugging process but stay in GDB

`return` *`retval`* – exit the current function as return value *`retval`*

`finish` – execute the current function until the function returns the *`retval`*