

Tutorial 0 : Compiling your first C program in the Linux Environment

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Objective :

This lab is intended to provide an introduction to Linux. The objective of this lab is to make students familiar with the Linux command-line environment and develop the skills of shell scripting. This lab serves as a platform for the subsequent labs related to programming in C. The lab consists of :

- Perform basic system operations such as text editing and file management in Linux environment.
- Introduces the steps for compiling a C program.

Recommended Systems :

- Any Flavour of Linux

References :

- Unix concepts and applications, Fourth Edition, Sumitabha Das, TMH.
- Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India.
- Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill.

Getting Started

- Switch on your monitor.
- Switch on your PC.
- Allow the machine to boot.
- Wait until the log in prompt comes.
- Log-in using your login id and password
- This opens your window manager (usually *GNOME*) with icons, the side panel, and so on. You are now ready to start your work
- Click on the terminal icon to open a *shell* (command prompt).

Getting Used to Linux

- At the shell prompt type `$ echo hello world`
The word *hello world* gets displayed as output on the terminal.
The *echo* command displays a line of text. Type *man echo* to read what an echo command does.
- 2. Linux provides on-line manuals for different commands through an interface called *man*. To know about *man* type the following on the terminal: *man man* and read the description that is displayed.
- For all commands we will use : *man < commandname >*
- Type *\$echo SHELL*: This prints */bin/bash*
bash is the name of the login shell that is currently in use
- Some useful Unix commands :
 - Create a directory : **mkdir progs**
 - Go to a new directory : **cd progs**
 - Go to the parent directory : **cd ../**
 - List all files in a directory :**ls -lF**
 - View a file : **cat filename**
 - Copy a file to another : **cp file1.c file2.c**
 - Copy a file to a directory : **cp file1.c progs/file3.c**
 - Move a file to another : **mv file1.c file2.c**
 - Move a file to a directory : **mv file1.c progs/file3.c**
 - Delete a file. : **rm filename**

Compiling Your First C Program

- Click on the terminal icon to open a shell (command prompt).
- The file *my_first_prog.c* has been provided for your reference. Download it and save it in the working folder
- Open the program by an editor. We recommend using the *emacs* , *gedit* or *vi* editor for Linux, *Xcode* editor for Mac or *Codeblocks* for Windows.
- This is how you can run *emacs* :
`$ emacs my_first_prog.c &`

The `&`(ampersand) in the last command was not necessary, but is helpful, because it runs emacs in the background and the shell is free to listen to your other commands.

- You can also use *vim* or *gedit* as the editors of your choice. In that case you will have to type :

```
$gedit my_first_prog.c ℰ
```

or type :

```
$ vi my_first_prog.c ℰ
```

- Edit your program in the editor (if you need)and save it.
- Go to the shell and compile your program:
cc my_first_prog.c
- If compilation is successful, an executable called **a.out** will be created.
- Run your program:
./a.out
- Continue your edit-compile-debug-run-debug-print work.