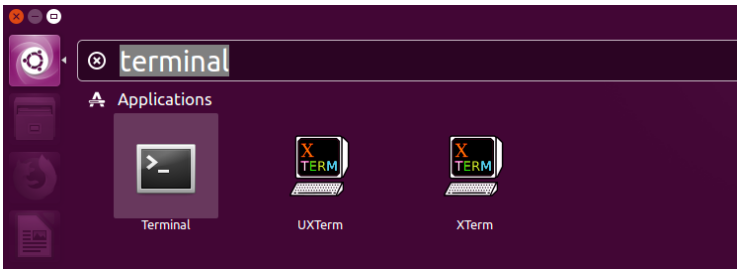
OS Lab #1: Learning Basic Linux Commands

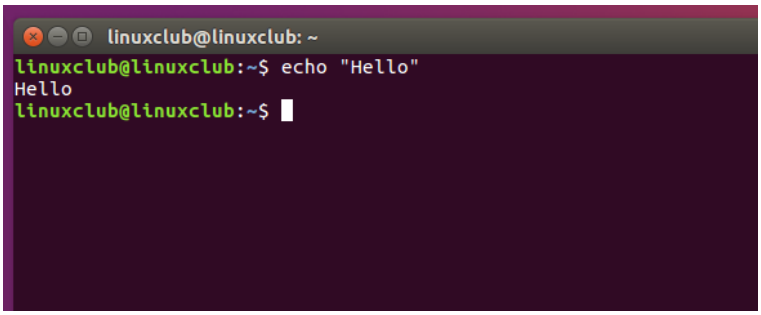
1. Open Virtual Box and start Ubuntu virtual machine.
2. After it finishes the booting process, it will prompt for user name and password.
   User name: **ubuntu** (this may change)
   Password: ***to be announced in the class***
3. Ubuntu is now ready to use as shown on the screen below.

4. To start a program, click at this button  on the top-left corner.

5. Now, we want to start a Terminal application. We can search for "`terminal`" by typing the word into the search bar. Then, click on the application named **Terminal**.



6. "Terminal" (or sometimes called "Console") is a program that let you interact with the operating system through the command prompt. That means it will keep a prompt (usually ends with "$" or "#") waiting for you to enter a command.



Example of command "echo"

7. "`echo`" command will print the word back out on the terminal. Try using command "`echo`" to let the terminal prints out your name. What would the command be?
Ans: echo "Ming"
8. Try these commands and try to determine what they do

Command	**What it does?**
`date`	Show the the system date and time.
`cal`	Show the system calendar.
`uptime`	Show the current time, how long the system has been running, how many users Currently logged on, and the system load averages for the past 1,5,15 minutes.
`who`	Show the name of users who are currently logged in.
`whoami`	Show the effective username of being ran whoami.
`id`	Show the system identification of a specified user.
`w`	Show the information about the users currently on the machine, and their processes.
`hostname`	Show the current host, domain or node name of the system.

Now, we will work on commands that related to files and folders (or in Linux, it usually says "directory").

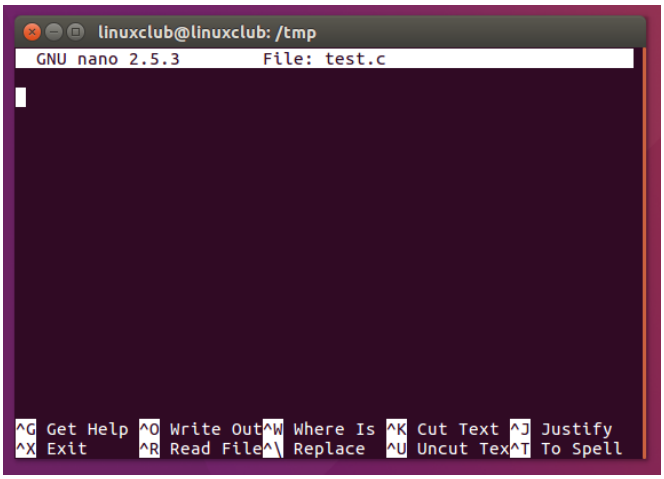
9. To know your current working directory, try the command "`pwd`"
- *Note1: The name of this command comes from "print working directory".*
- *Note2: notice that directory in Linux usually starts with "/" symbol, unlike "C:" in Windows.*

10. To list all files in the currency directory, try the command "`ls`"

11. Let's change directory, we are moving to "/tmp", we can use command "`cd /tmp`" to move there.
- *Note1: the name "`cd`" is from "change directory".*
- *Note2: there is a white space (" ") between the command (in this case, "`cd`") and a parameter (in this case, "`/tmp`").*
- *Note3: try "`pwd`" command again, to see if current working directory is changed.*
- *Note4: notice the prompt would change. You can also see your current working directory here too.*
- *Note5: When you look at the prompt from the previous command, what do you think "~" symbol means?* Ans: ~ means home directory

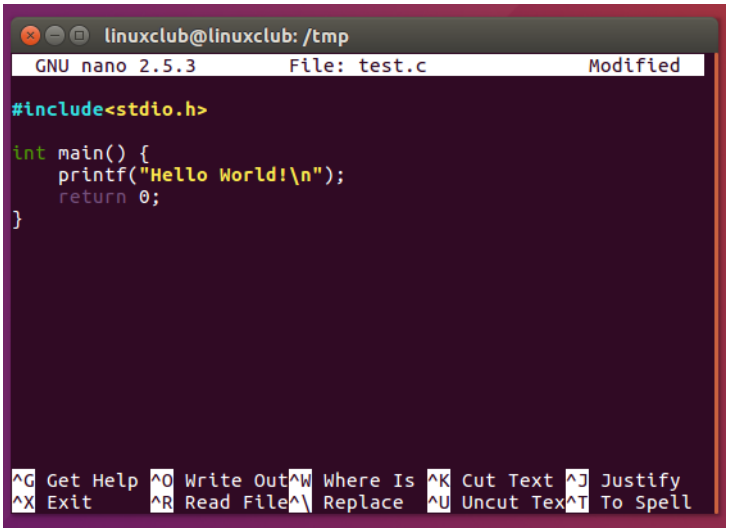
12. You can also create and/or edit text files from the Terminal. Type "`nano test.c`" to start a text editor named "nano" to edit a C source file named "test.c"

- *Note: the program will look for "test.c" in the current directory, if file does not exist, it will create a new one.*



12.1 At the cursor, you can type anything and use arrow keys to move around, as you would do normally on other text editor, such as Notepad.
12.2 At the bottom of the screen, there are menus of the nano program. You can select the menu by pressing a combination of keys displayed there, for example, "`^X`" means you need to press `Ctrl+X`, and it will exit the program.

13. Write this program below and save to the file named "`test.c`" and exit.



Note: When exiting, there might be some questions for you to answer at the bottom of the screen. You need to look and follow the screen.

14. Back to the command prompt, try "`ls`" command to see if the file "`test.c`" is created properly. (It should exist now.)

15. There is a command named "cat" that print out content of a file. Try "`cat test.c`" to see the content of the file is correct, as you have typed in the nano program.

16. Next, compile this source file into a program. The command is "`gcc <filename.c>`", in this case "`gcc test.c`"

- *Note: "gcc" came from "GNU C Compiler"*

17. List all files in this directory again, you should see a file named "a.out". This is the program compiled from our source code "test.c"

18. Execute a program is simple. As you are in the same directory of the program file (in this case "a.out" is also in "/tmp" directory as you currently are), you only need to use command "`./<program name>`", in this case "`./a.out`"