UNIVERSITY OF ENGINEERING AND TECHNOLOGY, TAXILA

FACULTY OF TELECOMMUNICATION AND INFORMATION ENGINEERING

SOFTWARE ENGINEERING DEPARTMENT

OPERATING SYSTEM

LAB # 01

Operating System

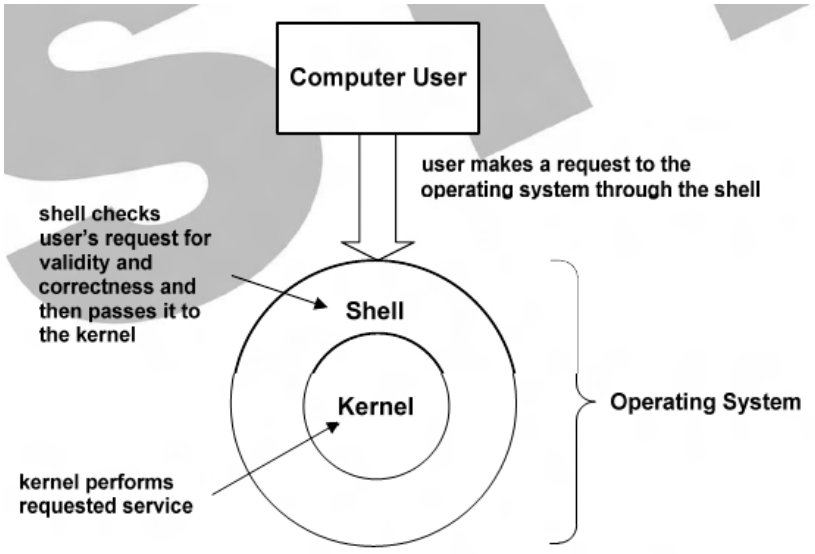
System software that allows users or the application programs they are using to interact with the computer hardware in an easy and convenient manner.

Major functions of an operating system:

1. It creates a virtual machine interface between the user/application program and the hardware.
2. It acts as the computer's resource manager or resource allocator. It functions as the program launcher.

Two parts of an operating system:

1. Kernel
2. Shell



The Kernel and the Shell

What is Linux?

Linux is an operating system. (We will conduct our labs on Linux environment and we will use Ubuntu for this purpose)

Why Linux?

- ✓ LINUX is free.
- ✓ Can view and edit the source code of OS
- ✓ It is fully customizable.
- ✓ Most Important Feature is Stability
- ✓ L INUX has better security structure.
- ✓ Written in C which is highly portable.

Layers in Linux:

Three important parts of Linux are Kernel, Shell and File system.

Kernel:

✓ The kernel is a computer program that is the core of a computer's operating system, with complete control over everything in the system.

✓ It is the low-level core of the System that is the interface between applications and H/W.

✓ Functions are Manage Memory, I/O devices, allocates the time between user and process, inter process communication, sets process priority.

Shell:

✓ Shell is special user program which provide an interface to user to as an interface between users and kernel to use operating system services.

✓ Shell accept human readable commands from user and convert them into something which kernel can understand. It is a command language interpreter that execute commands read from input devices such as keyboards or from files. The shell gets started when the user logs in or start the terminal.

File System:

✓ Linux treats everything as a file including hardware devices. Arranged as a directory hierarchy.

✓ The top-level directory is known as "root (/)".

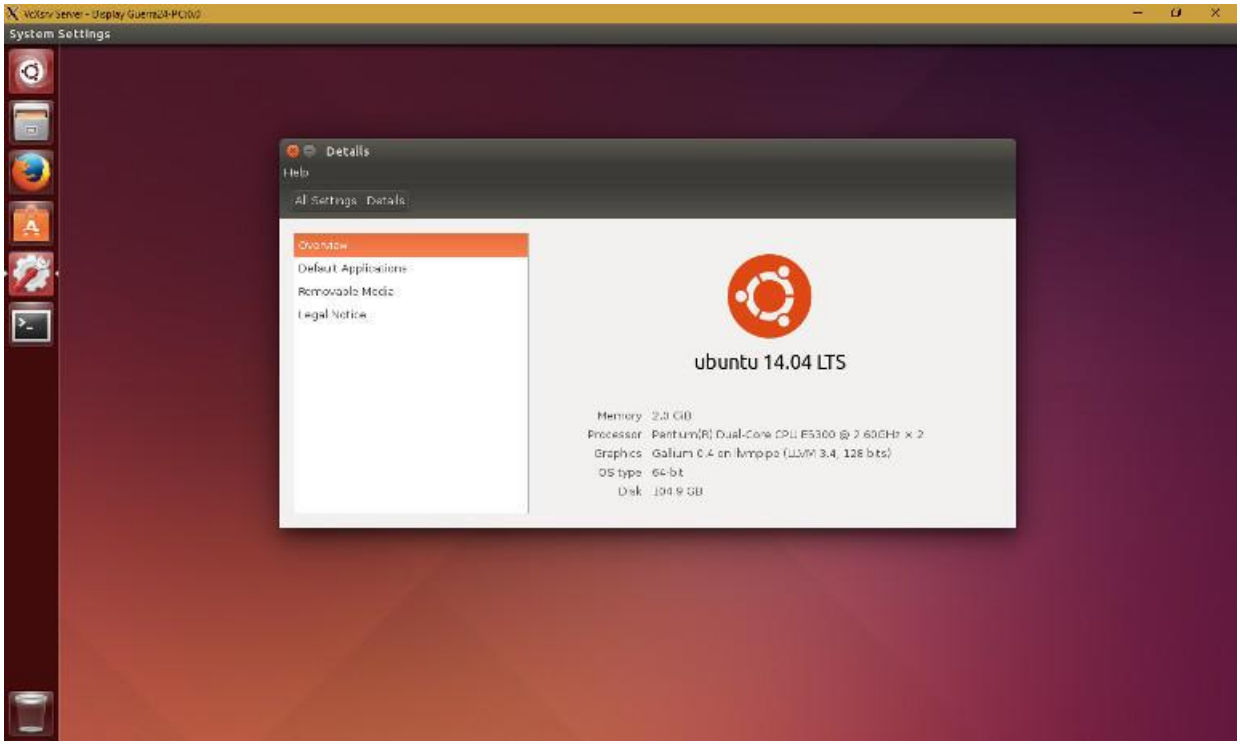
Terminal:

The traditional Unix environment is a CLI (command line interface), where you type commands to tell the computer what to do.

Virtual Box

- ✓ Installed on an existing host OS.
- ✓ Guest OS can be loaded and run, each with its own virtual environment.
- ✓ Supported host operating systems.
- ✓ Linux Mac OS X, Windows XP, Windows Vista, Windows 7, Solaris.

Windows 10 running an Ubuntu 10 VM



Linux Installation

a. Perform installation of Ubantu Linux Environment on your Laptops.
b. It's already installed on PCs.
c. Note all the steps in the demo for installation from Lab Supervisor.

Basic Shell Commands

cd command in Linux with Examples

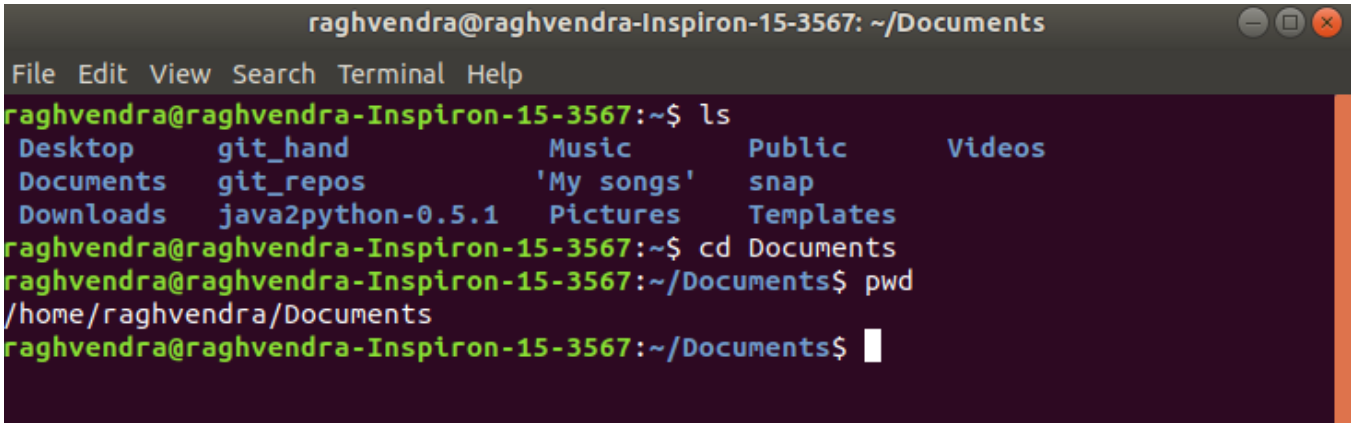
cd command in linux known as change directory command. It is used to change current working directory.

Syntax:

```
$ cd [directory]
```

To move inside a subdirectory: to move inside a subdirectory in linux we use

```
$ cd [directory_name]
```



In the above example, we have checked number of directories in our home directory and moved inside the Documents directory by using cd Documents command.

Different functionalities of cd command:

- **cd /:** this command is used to change directory to the root directory, the root directory is the first directory in your filesystem hierarchy.

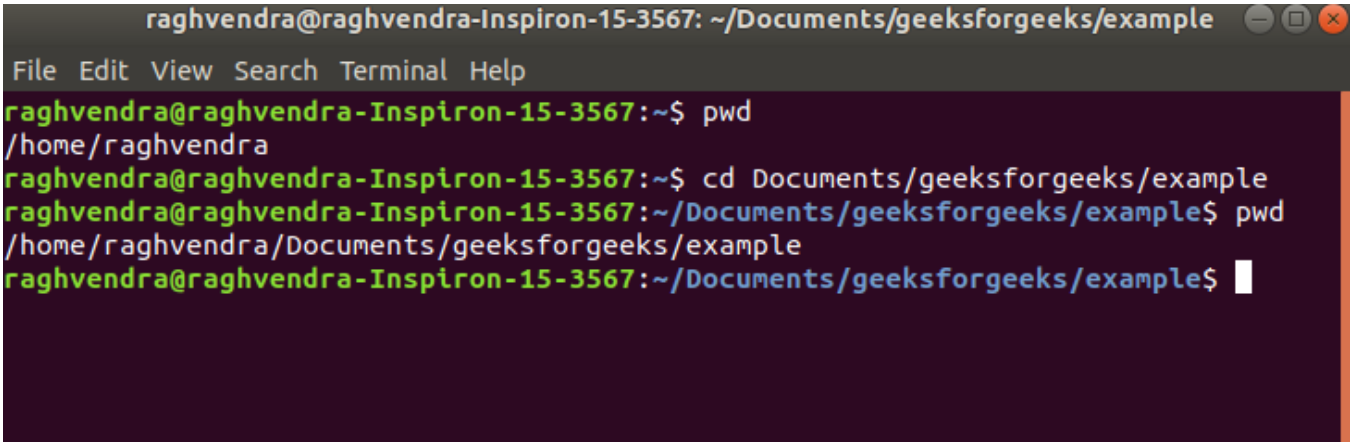
  ```
  $ cd /
  ```

  Above, "/" represents the root directory.

- **cd dir_1/dir_2/dir_3:** This command is used to move inside a directory from a directory **"Relative Path"**

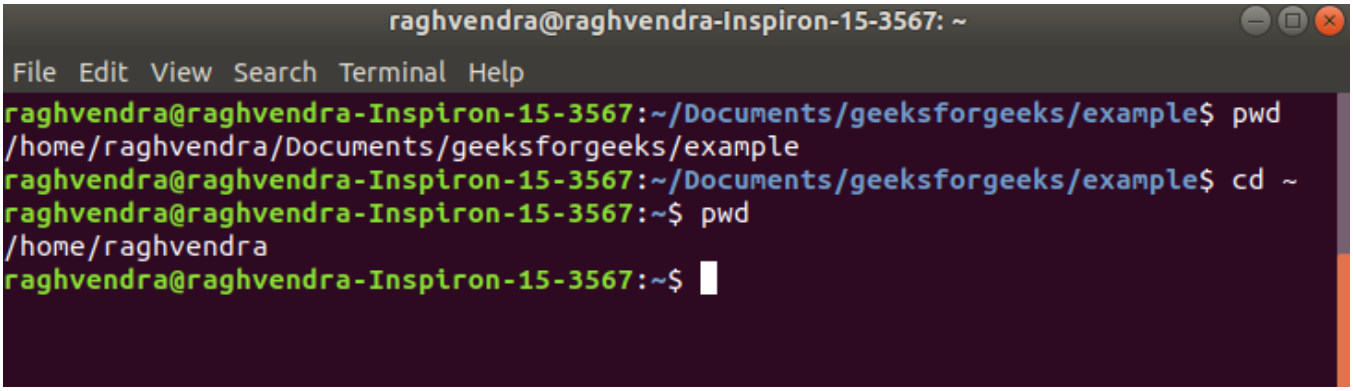
  ```
  $ cd dir_1/dir_2/dir_3
  ```



  In above example, we have the document directory and inside the document directory we have a directory named geeksforgeeks and inside that directory we have example directory. To navigate example directory we have used command "**cd Documents/geeksforgeeks/example"**.

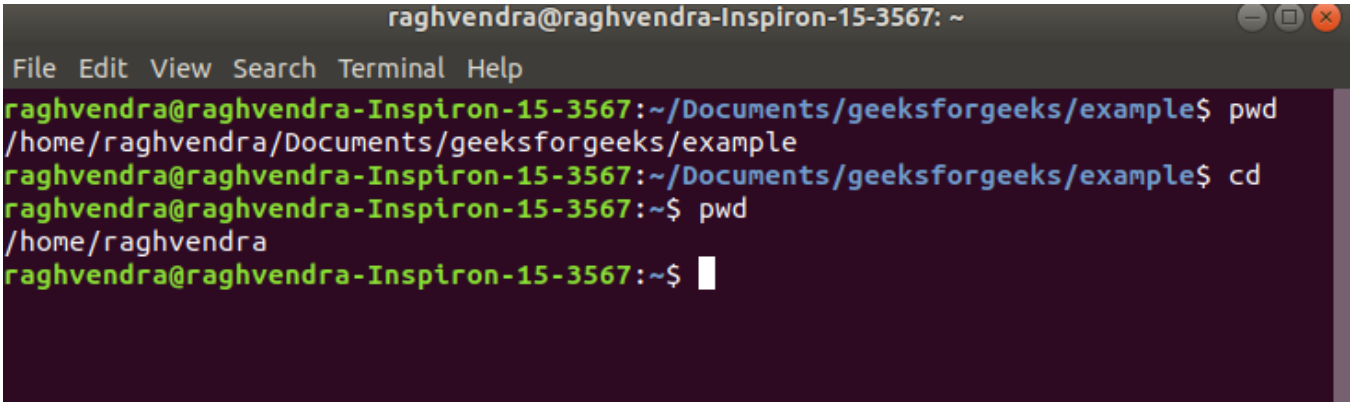
- **cd ~:** this command is used to change directory to the home directory.

  ## $ cd ~



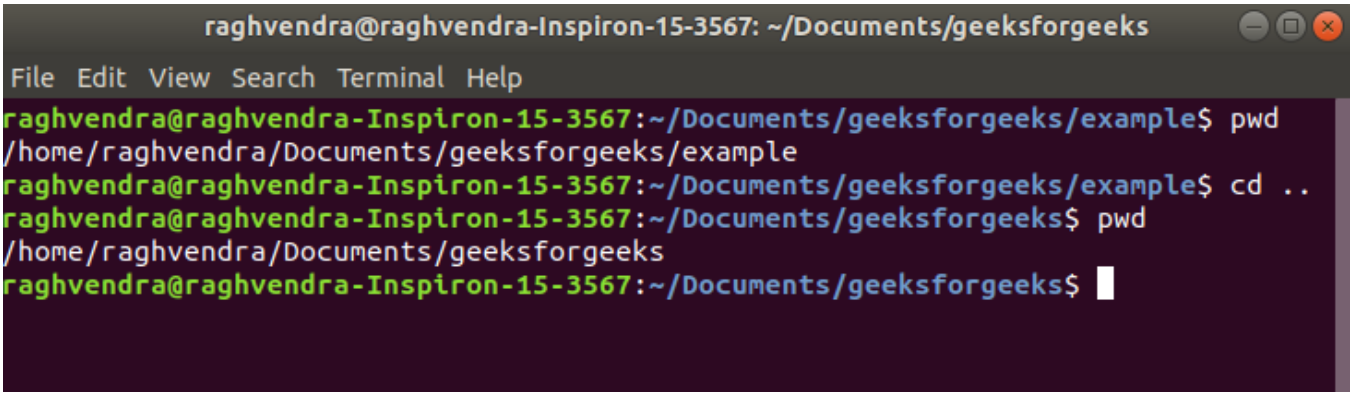
  or

$ cd commad also work same as **cd ~** command.



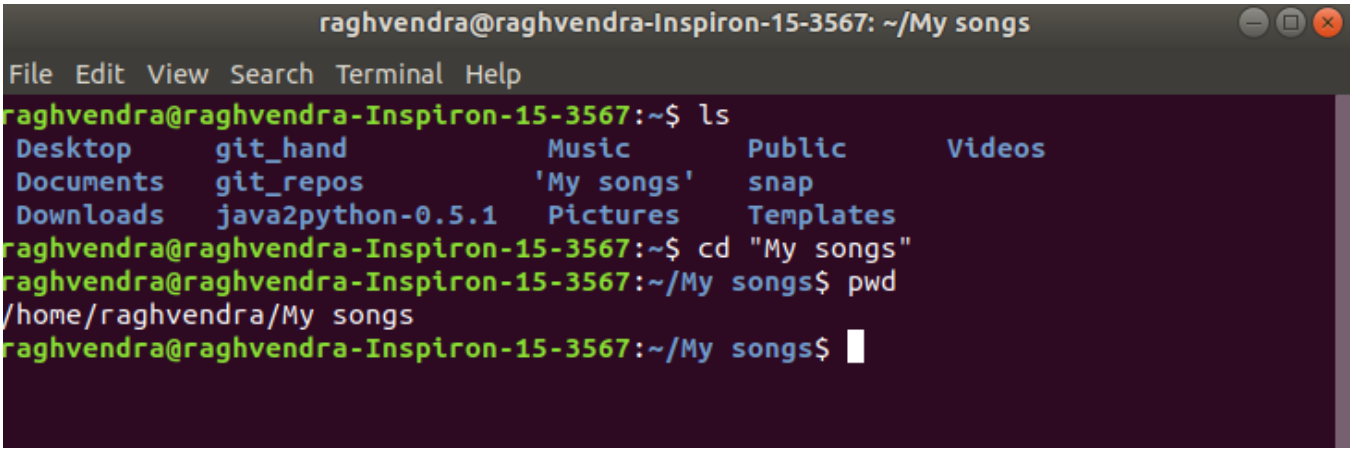
- **cd .. :** this command is used to move to the parent directory of current directory, or the directory one level up from the current directory. ".." represents parent directory.

```
$ cd ..
```



- **cd "dir name":** This command is used to navigate to a directory with white spaces. Instead of using double quotes we can use single quotes then also this command will work.

```
$ cd "dir name"
```



In above example, we have navigated the My songs directory by using cd "My songs" command.

or

$ cd dir\ name :

this command work same as cd “dir name” command.

Task:

1. Open Terminal in Ubuntu to Run shell commands
2. Make Directory using **mkdir** Command, Change directories using **cd** Command, check current working directory using **pwd** Command.