Topic: Basic Linux/Unix Commands

Objectives

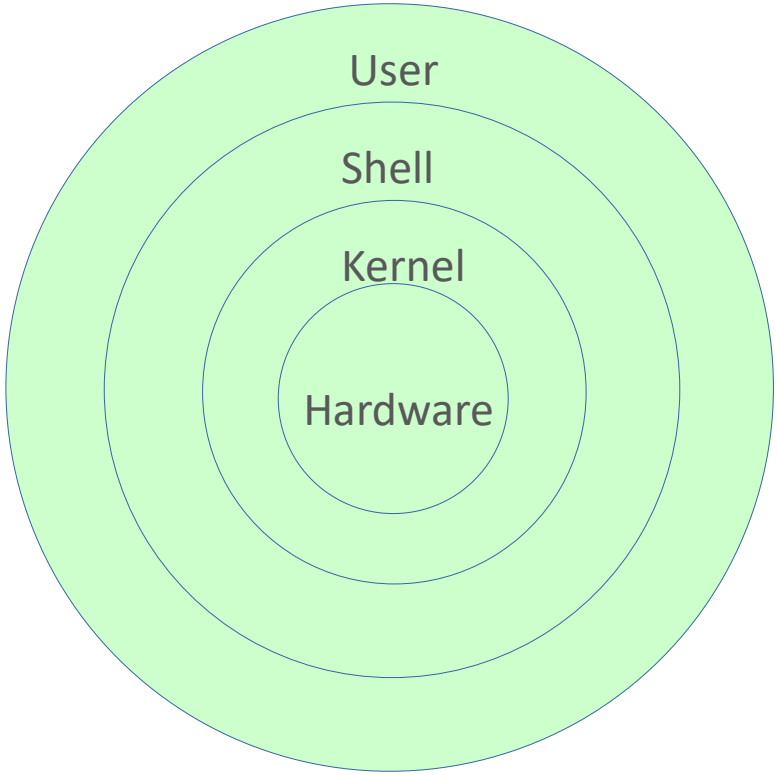
- Operating system
- Linux commands
- Accessing remote machine

Students who used Linux earlier, please learn vim → vimtutor

Topic: Basic Linux/Unix Commands

(Linux) Operating system

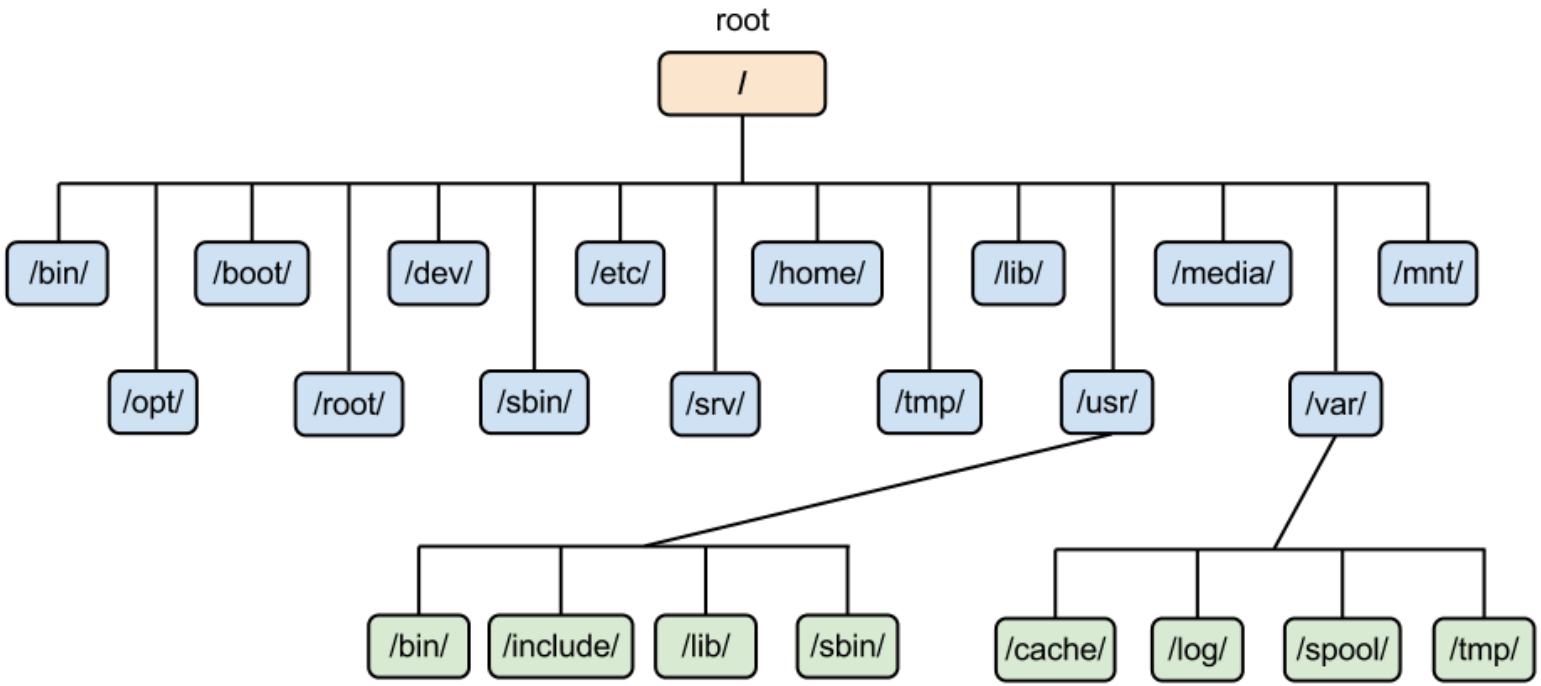
- Set of programs which acts as an interface between the user and the computer hardware
- Controls the execution of other programs
- Responsible for managing multiple computer resources (CPU, memory, disk, display, keyboard, etc.)
- Why Linux: Multi-user & multi-tasking



Kernel + system applications = OS

Topic: Basic Linux/Unix Commands

Linux file system



- Directory in Linux is similar to a “Folder” in Windows OS
- Files are organized into directories and sub-directories
- Directories are separated by forward slash (/)

Source: https://freedompenguin.com/articles/how-to/learning-the-linux-file-system/

Topic: Basic Linux/Unix Commands

First step

- Since Linux is a multi-user OS, it can handle several user simultaneously
- Log in with your username and passwd
- Normal user vs Super user
- Locate terminal
  - Applications → System Tools → Terminal
- Program & Process & Job
  - Process: Executes the program/command or performs the work
  - Job: Single or multiple processes working to perform a task (I submitted the job today!!)
- All Linux commands are CASE SENSITIVE
- Type one or two characters of a command and HIT TAB (twice) for knowing the list of all commands starting with these characters

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Basic commands

- man
  - Manual - Provides help information for the command

```
LS(1)                          User Commands                          LS(1)

NAME
       ls - list directory contents

SYNOPSIS
       ls [OPTION]... [FILE]...

DESCRIPTION
       List  information  about  the FILEs (the current directory by default).  Sort entries
       alphabetically if none of -cftuvSUX nor --sort is specified.

       Mandatory arguments to long options are mandatory for short options too.

       -a, --all
              do not ignore entries starting with .
```

Topic: Basic Linux/Unix Commands

Basic commands

Sl. No.	Command	Description
1	mkdir dir	create directory
2	cd dir	change directory
3	pwd	present working directory
4	ls	list files and directories
5	ls -ltr	sorting the listing by time modification
6	touch file	creates an empty file
7	cp file1 file2	copy files
8	cp -r dir1 dir2	copy directory dir1 to directory dir2
9	mv file1 file2	rename file1 to file2
10	rm -i file	remove file1 (interactive mode)

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Basic commands

Sl. No.	Command	Description
11	rmdir dir1	remove directory
12	history	prints all recent commands to stdout
13	cat file	prints contents of the file
14	head file	outputs first 10 lines
15	tail file	outputs last 10 lines
16	top	display all running processes
17	kill -9 PID	kill the process with process id
18	bg	list all stopped jobs or resume the stopped job in the background
19	fg	Brings the most recent job to the foreground
20	date	displays today date and time

Topic: Basic Linux/Unix Commands

Basic commands

Sl. No.	Command	Description
21	grep -i [pattern] file	search for a pattern in file and print it to stdout
22	find -iname “file”	search for a file in current directory recursively
23	./file	executes a file in current directory
24	../../file	executes a file two levels above the current directory
25	zip file.zip file1 file2 or unzip file.zip	compress/uncompress the files

Topic: Basic Linux/Unix Commands

Wild-carding

- “*” character means match everything
- “?” character means match any one character
- [0-4] or [m-s] matches a range of characters

Piping??

shortcuts

- ctrl+c halts the current command
- ctrl+z stops the current command and resume it with fg in the foreground or bg in the background

Topic: Basic Linux/Unix Commands

How to access the remote system

- Login to remote system: ssh
  - ssh -X remote_username@remote_hostname OR
  - ssh -X remote_hostname -l remote_username
  - Eg: ssh -X sandeep@10.3.55.120
- Copying files: scp
  - scp -r remote_username@remote_hostname:~/file1 .

    OR
  - scp -r file1 remote_username@remote_hostname:~