Linux is the most important achievement of free software, it has been developed for business, education and personal productivity.
Linux is not Just for unix wizards, Linux (Pronounced with a short, Li as in LIH nucks), is a clone of unix O.S.
That runs on Intel's 386 upward series of computers. It supports a wide range of software through X windows to GNU c/c++ compilers to TCP/IP.

@@@@Operating System :
I) Operating system is a interface between User & Computer.
2) It is the resource manager.
3) It is the software that manages the Computer's Hardware and provides a convenient and safe environment for running programs.

@@@@Evaluation of Operating Systems :
1) Serial Processing.
2) Simple batch Operating Systems.
3) Multibatch Operating System
4) Multiprogramming Operating Systems.
5) Time Sharing Operating Systems.

@@@@features of 0.S :
1) Process Management.
2) Memory Management
3) Data Management
4) Input / Output Management

@@@@History of Unix
The journey of Unix Operating System had been started from the project MULTICS (Multiplex Information and Computing System).
It was the project started by the joint efforts of AT&T, MIT (Massachusetts Institute of Technology) and GE (General Electronics) in the year 1965,
the objective of this project is to provide a multiuser capability to the operating system. It was partially succeeded to the two users.
In the year 1969, the muffles was extended to the 100's of users and they named this Operating system as "Unics" (Uniplex Information and Computing System),
it was developed by Kenthompson & DennisRitche with 80% C language and 20% Assembly Language.
In the year 1973 "Unics" was totally rewritten into C language and named it as "Unix"

@@@@Features of unix
Multitasking & multiuser capabilit
Programing Facility
Portability
Communication
Security
Help Facility

@@@@Flavors of Unix :

Vender	Flavour
AT&T	Sys III & Sys V
Sunmicro Systems	Solaris
IBM	AIX
SG	IRIX
SCO	SCO Unix
HP	HP-UX
BSD	BSD FREE UNIX

AT&T	American Telephone & Telegraph
SUN	Stanford University of Networks
SG	Silicon Graphics
SCO	Scanta Cruz Operations
BSD	Birekely Software Distribution
HP	Hewlett Packard
AIX	Advanced Intractive Executive

@@@@History of Linux
Linux was developed by, a Finnish Student Linus Torwalds, who was studying operating systems-and working with "Minix" in Helsinky University.
He expanded the Minix and named the new 0.S with combination of his name and Minix name.
Advanced Interactive Executive

Lee-Nus(his name) + Minix :=> Linn - lcs
0.01 version of Linux was released by him.

This Linux was given to GPL(general public licence) organized by GNU
0.02 version Of linux was released in the year 1991, Oct 05

@@@@Distributions of linux
) Redhat, 2) Susc, 3) Mandrake, 4) Puppy, 5) ubuntu, 6) Fedora, 7) debain GNU, 8) Centos, 9) Slackware,
10)Mostly Linux, 11) White Box

Redhat has been distributing the linux since 1994. It has two types of O.S.
I. Free Edition : Fedora Core (1 ,2„11), this edition doesn't have any technical support.
2. Commercial Edition : RHEL (1,2„8.0), this edition have the technical support, collects the money for applications.

@@@@Features of Linux :
Multitasking & Multiuser Capability
Portability
Software Tools
Flexibility, Power & Elegance
Scalability
Reliability
Interface with MS-Dos & MS-Windows
Network Support

@@@@Linux Architecture:-
All the CUI (Character User Interface) or CLI (Command Line Interface) based operating systems follows the four level Architecture.
I. User Level
2. Shell
3. Kernel
4. Hardware level

@@@@User Level
This level consists the end user oriented programs, here user has to interact with system through utilities.

Utilities are the programs required by the user inorder to carry out several tasks.

@@@@Shell
Shell is the interface between user and kernel. It is the Linux system's command interpreter.
It takes the input given by the user and deciphers it and convert in to the kernel understandable language.

@@@@Kernel
Kernel is the core of the operating system, consists the setof system calls to generate processes.
It Consists the device drivers to interact with hardware.

@@@@Services Provided by the Kernel :
1. Control Execution of Process.
2. Scheduling Process fairly for execution by cpu
3. Allocating memory for an executing Process.
Kernel consists setof programs which are crucial to make up system, hence it is the heart of the operating system.

@@@@Hardware Level
This level represents the hardware components which have to be interacted by kernel.
Ex : Hard Disk, CD-Rom, Floppy Drive, Ethernet Card.

@@@@File System
It is the way of storing and retrieving the files and directories into the secondary storage devices.
The available file systems are
I . Physical
2. Logical
3. Swap
4. Network

@@@@Linux File System
Linux follows Hierachical Filesystem Standard (HFS).
In this the system all other directories an nounted under the directory called root(/).
/ => Root (Top of the Directory)
/root Superuser (or) Administrator home directory, represented by ~(tlidc) symbol.

@@@@Hierarchical File system:
root (/) (or) top of the hierarchy contains 21 subdirectories, some of them are

/ (Root):- It is the top of the directory. All other Directories & files created under control of it.
/Boot :- It contains the kernel, the core of O.S. It also contains the files related to booting the system such as the boot loader & the Initial ramdisk.
/root :- This is the default home directory of the administrator.
/home :- All user's home directories dehinitly created under control of it.
/usr :- It means unix system resources. It contains, The programs and applications which are available for both normal user et administrator. ex man pages.
/bin :- It means binaries (i.e executable), This directory contains commands used by the super user and the normal user.

/sbin :- It means Superuser binaries (i.e. admin commands). This directory keeps the super user com-mands. These commands canbe used by Administrator only.
/etc :- It contains all configuration files.
/dev :- This directory contains devices in the form of files through which the O.S. Can access Hardware & Software devices on the system.
/tmp :- This directory contains temporary files used by the system.
/proc :- This directory is a mount point for virtual information about current running system processes.
/opt :- It contains third party applications.
         Ex: Mediaplayer, Oracle.
/mnt :- It is mount point provided for removable media. Such as Floppy Drive, CD, DVD, Ram Disk etc.
/lib :- It contains library files. Which are needed by no.of different applications as well as linux kernel.

@@@@Installation:-
Linux can he installed in two ways
1.Standalone 2. Network

@@@@Standalone :- Here we install operating system through the local media. In this method we can install the o.s. in 2 ways.
I. GUI 2. Text Based
* To install 0.S in GUI (or) Graphical Mode, enter has to be pressed at boot prompt (:)
* To install 0.S. in Text Mode, we have to type "linux text" at boot prompt.

@@@@Network Installation :- In this method linux can be install through the network, this method is called as Kickstart Method of Installation.

@@@@While Installation consoles role:
Ctrl + Alt + F1 => Text based Installation.
Ctrl + Alt + F2 => Maintains RAM Information
Ctrl + Alt + F3 => Debugging / Error Inlormation
Ctrl + AIt + F4 => Kernel related Information
Ctrl + Alt + F5 => Boot Loader Information
Ctrl + Alt + F6 =>
                  } Graphical Based Installations
Ctrl + Alt + F7 =>

@@@@How to Open the Terminal
1. Right Click on desktop => Open Terminal
2. Open Applications => Accessories => Terminal
3. Alt + F2 - Opens run prompt, in this write gnome-terminal => Ok.
* gnome - gnu's network object model enu/
          Alt + Fl - Opens application menu.

@@@@How to manage the Terminal
1) Alt+ FlO => maximize
2) Alt + F5 => Restore
3) Alt + F9 => minimize
4) Alt + Tab =>Open terminal
5) F11 => Enable & Disable full screen
6) Ctrl + Shift++ => Increase the zoom
7) Ctrl + - => decrease the zoom
8) Ctrl + 0 => Normal Size
9) Ctrl + Shift + t => Opens the new tab at some terminal
10) Ctrl + pageup => Move to the previous tab.
11) Ctr1 + pagedown => Move to the after tab.

12) Ctrl + Shift +n => Open the new terminal
13) Exit => Close the terminal
[root @ sunl~]# => user log in prompt

super user (admin) promt is "#"
normal user promt is "~" (Tlide)

@@@@To see the default shell : # echo $SHELL
Note : The default shell in Linux is bash shell.
To check the current using shell # echo $0.
To see the available shell # cat /etc/shells
switching one shell to another # ksh
Again to come to bash shell # /bin/bash

@@@@Command Line Editing:-
Ctrl + a => Move to the beginning of the line
Ctrl + e => Move to the end of the line
Ctrl + b => Move one char char back
Ctrl + f => Move one char forward
Ctrl + v(or)w => Delete the before line current cursor position.
Ctrl + k => del the after current cursor position line.
Ctrl + c => skip from command
Ctrl + m => execute the command without pressing enter.
Ctrl + p => Display the previous command
ctrl + n => Display the next command
pwd => To see the current working directory.
Is => To list the files & directory
ls -l(or) #ll => To list the files along with attributes

In the above command output observe the first line characters.
if the charecter is "-" then it is a file.
if the charecter is "d" then it is a directory.

ls -a => List the files along with hidden
  NOT :- In Linux all the hidden files starts with .(dot)

1s -l => List the files mode number

To see the directory information in tree structure
ll -R < directory Name>
tree <directory name>

11 -s => List the files sorting with size
ll -r => List the files in reverse order
ll -t => List the files by time sorting

@@@@Wild Cards:
ll i* => To display the files, all starts with i character
ll ?? => To display the 2 char file only
* => represent the number of characters
? => represent the single characters

ll *log* => To see files having log characters 5 char file
ll *.c => To see the extension of .c files only
ll [a-m]* => To list the files starting between (a-m) char
clear (or) Ctrl + I => To clear the screen

@@@@How to create a file in Linux?
We can create the files using below commands.

1) CAT : With this command we can create a file and append the data, we can see the file information.
 But we can't modify the data.

cat > <file-name>
 Eg: # cat > Linux
 Note : For save & exit purpose press the "ctrl+d"

@@To see the file content
cat <file name>
 Eg : # cat > Linux

@@To append the data
cat >> <file-name>
 Eg : # cat >> Linux

@@To append the no.of files
cat < file l> < file2> >> <new file>
 Eg : # cat fl f2>>f3
 (

2) Touch : By using this command we can create multiple files with 0 bytes data. As well as we can change the Date & Time Stamp of file (or) Directory.
 Eg : # touch fl

@@To create no. of files
touch <filel> <file2>
 eg : # touch fl f2
 Note : Changing of Time stamping and date stamping effectively used by backup time.

@@To Change the date & time stamp
touch -t MMDDI1IIMM <file-name>
  Ex : touch -t 03241055 sun

@@To change the time stamp to current date & time
#touch -m < file-name>