session 2

Working with Linux OS (Ubuntu)

Learning Objectives

- Ubuntu Interface
- Basic Linux Commands

2.1 Introduction

Previous sessions have talked about the basics of operating systems and how to work in a GUI operating system, Microsoft Windows. There is another hugely popular operating system Linux which is mostly used in most sincere applications. Linux is an open source operating system (*i.e.*, its code is also available) created by a Finnish student *Linus Torvalds*. Linux is available in multiple distributions such as ***Ubuntu, Red Hat, Linux Mint, Fedora, Debian, CentOS*** and many more. In this session , you shall learn to work with Ubuntu distribution of Linux.

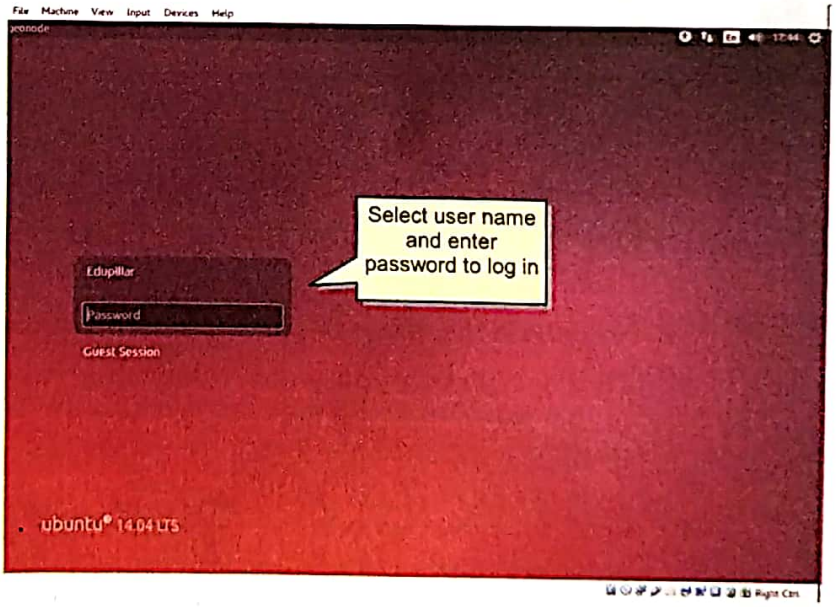
NOTE

This session is optional for those who work on Windows based operating systems.

2.2 Starting Ubuntu

When you boot your computer / laptop with Ubuntu, you are first taken to login screen, where you need to log in.

1. On this log in screen, select the user you want to login as, enter the password and press Enter.
2. In a few seconds the user's desktop will appear.



2.3 User Interface

Let us now have a look at the user interface.

- The **Favourites panel** on the left side of the screen contains shortcuts to frequently used applications.
- From the top right of dark grey bar at the top you can reach ***Network settings*** ( ), ***System language*** (En). ***Audio volume*** ( ), ***System date and time*** (17:53) and ***Power menu*** ( ).

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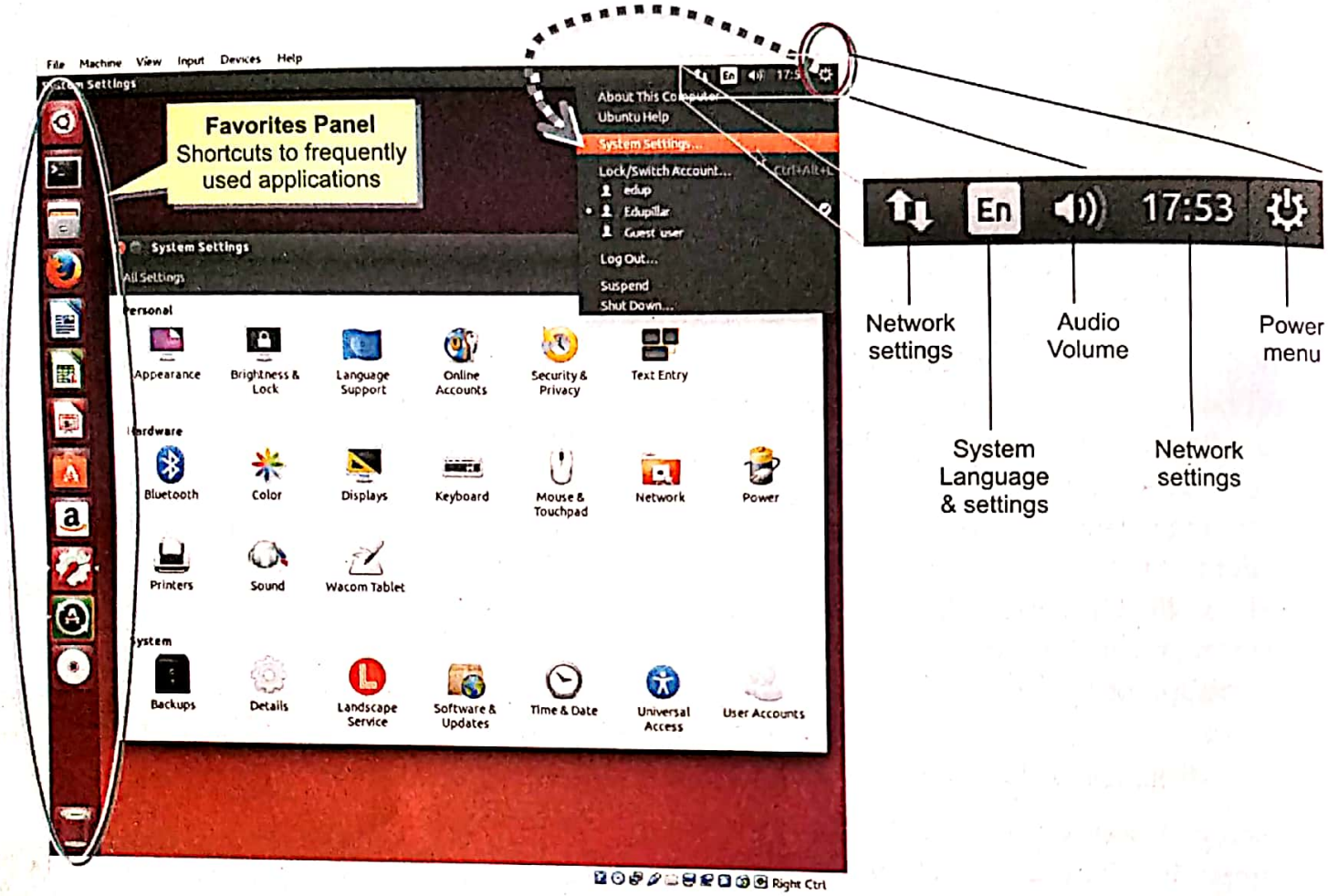
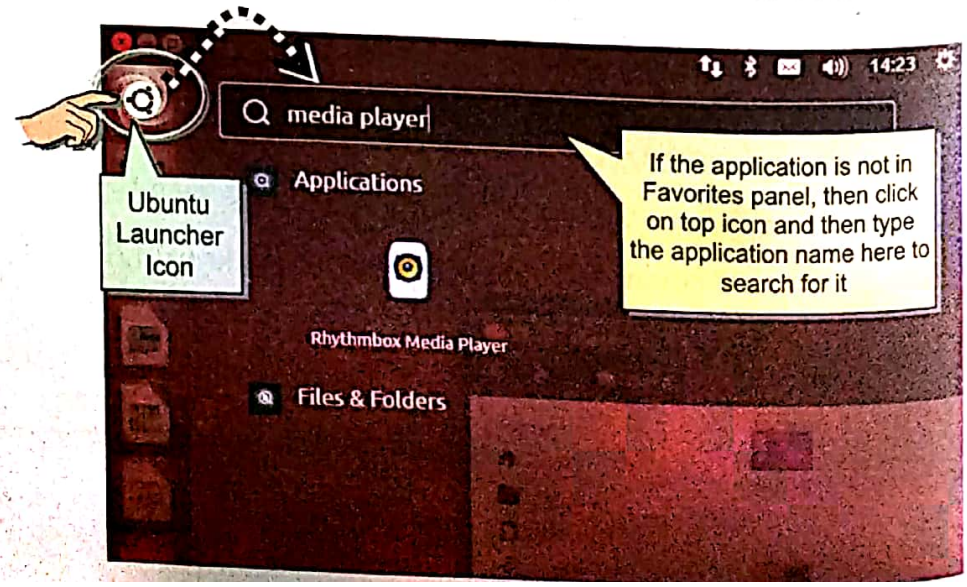
- From the *Power menu* ( ) you can switch to a different user, logout, power off the system or access system settings.
  - To open **System Settings** menu, click on **Power menu** first and then click at **System Setting**. In '**System Setting**' menu you can set several different parameters for the system.



2.3.1 Launch an application

You can launch the applications listed in the Favourites panel simply by clicking on them.

- If the application you want to launch is not in the Favourites panel, use the *Ubuntu Launcher*. Click on the Ubuntu Launcher icon [ ] in the top left corner of the screen.
- Write down the name of the application. A list of applications matching the name you are searching will show up, for and press Enter or click on the icon of the application.



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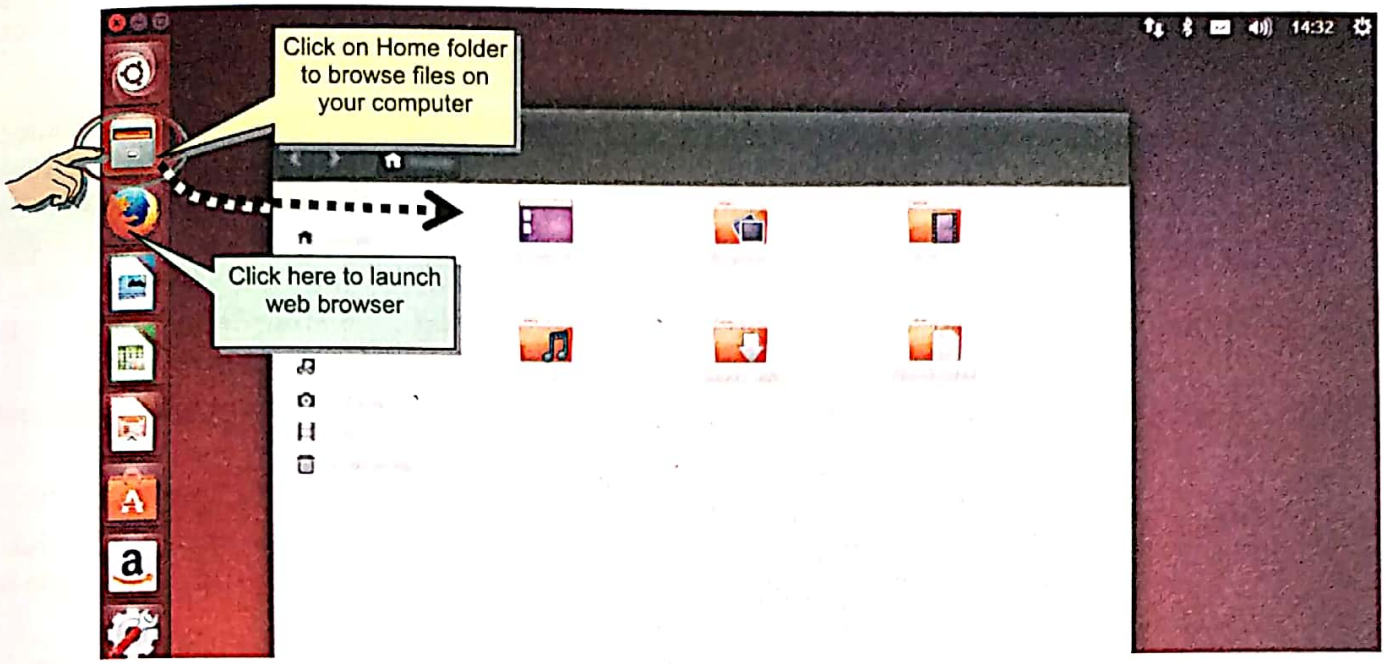
2.3.2 Browse files and Surf Web

- To browse files on your computer, click on **Home folder** in the favourites panel.



- **To surf web** or launch your web browser, click at the ***Firefox icon*** in the Favourites panel (see figure above).

2.3.3 Launch the Terminal Emulator

A terminal emulator is a program that allows the use of the terminal in a graphical environment. Through a terminal window, you can use Linux commands.

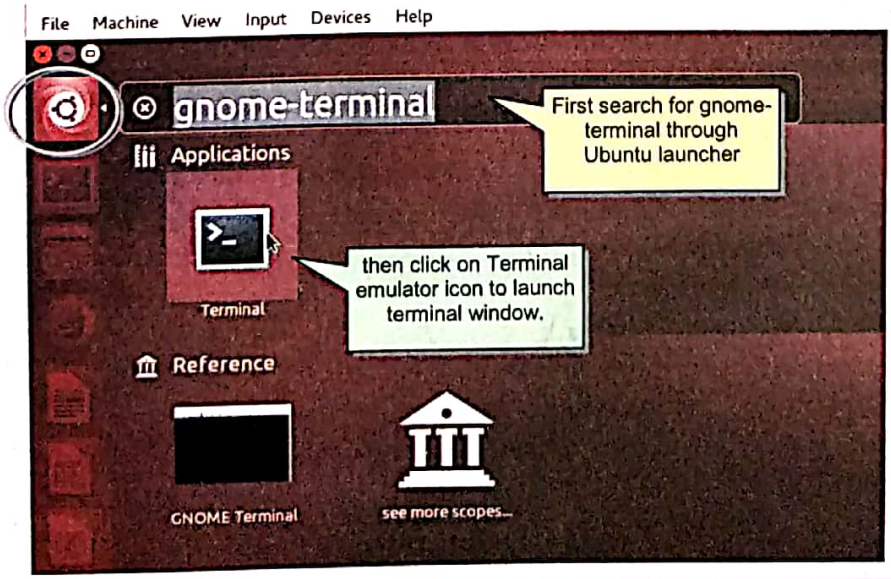
To launch the terminal emulator in Ubuntu,

(*i*) Click on the **Ubuntu Launcher** icon in the top left corner of the screen, and type ***gnome-terminal*** in the search box.

(*ii*) It will show the Terminal emulator's icon, click on it to launch the terminal window.

(*iii*) Terminal emulator will open and will be ready for your commands.

(*iv*) To exit from terminal, you can press **Ctrl+d** key combination.



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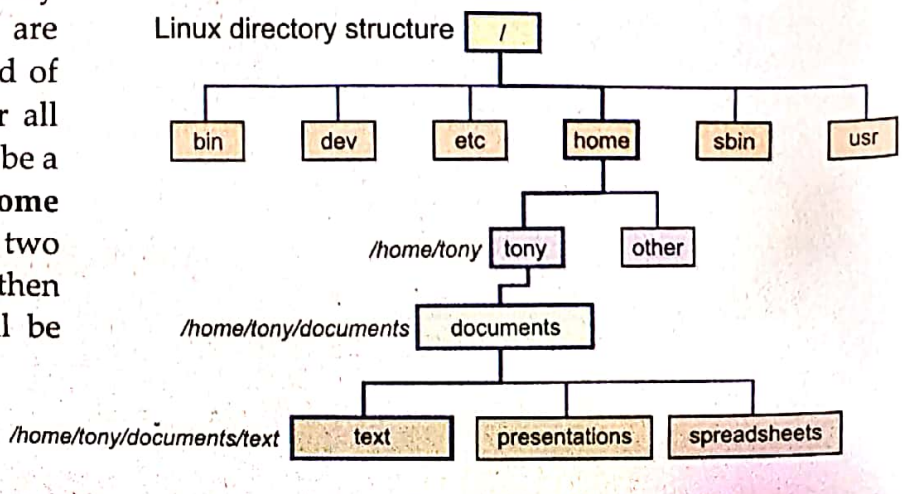
2.4 Linux Directory Structure

A computer system organizes all of its files in a directory structure. Linux stores everything (even devices) as a file on its directory structure. The Linux directory structure is a tree structure and is composed of these directories/folders and subdirectories.

/	is the root directory where the directory structure begins. Every file and directory in the system is under the root directory.
/boot	is where Linux keeps files and information needed for booting up.
/etc	contains the configuration files for the system.
/etc/inittab	is a file that describes the processes are started on boot
/etc/fstab	contains descriptive information about floppies, CD-roms and so on.
/etc/passwd	contains the user definitions
/bin, /usr/bin	contain the most important programs (binaries) that the system needs to operate, such as the shells, ls, and grep.
/sbin, /usr/sbin	contains system admin programs which can only be run by the root user.
/usr	is the directory that stores user applications and is usually the largest directory.
/usr/doc	contains documentation for user apps.
/usr/share	contains configuration files for user apps.
/usr/src	contains source files for user apps.
/usr/include	contains header files for the C compiler.
/usr/local	is where apps and files are housed that are strictly on the local machine and not shared by other access points in the network.
/lib	houses the dynamically linked shared libraries for programs (a la DLLs on Windows)
/home	is where the users keep their personal files.
/root	is the super user's home directory.
/var	contains variable data that is constantly changing while the system is running.
/var/log	contains log files like error reports.
/var/mail	incoming/outgoing mail is stored here.
/var/spool	holds files that are queued for some process, like printing.
/tmp	contains temporary files written by programs.
/dev	holds the devices that are available to the system, like hard disks and cd-roms.
/mnt	is a directory used for mount points.
/proc	is a virtual directory that contains information about the kernel.
/lost+found	is where Linux keeps files after a system crash.

The /home directory

The **/home** directory is a place where by default all user home directories are created. These directories are a kind of personal place (Working space) for all the users other than ***root***. There will be a separate folder for each user in **/home** directory. For example if you have two users called "**honey**" and "**tony**" then their default home directories will be **/home/honey** and **/home/tony** respectively.



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Thus,

- A separate sub folder *i.e.,* **/home/<user-name>** is present for each user.
- Only user who owns this sub folder can access its content other than root user. So, **honey user** cannot access **tony user's** home directory content which is located at **/home/tony**.
- All his terminal properties, command history file, application setting files (~/.vimrc, ~/.ssh) etc. everything is located in the home folder of the user.

2.5 Some Basic Linux Commands

Let us now learn about some basic Linux commands. You can use and practice these commands in Terminal emulator.

1. Current working directory (command : pwd)

```
$ pwd
/home/edup
```

The **pwd** command will show you your working directory, that is the directory you are inside of and running your commands in.

2. Create a directory (command : mkdir)

```
$ mkdir test
```

To create a new directory inside your working directory use the **mkdir** command followed by the folder name argument.

3. Delete a directory (command : rmdir)

```
$ rmdir test
```

To delete an empty directory type **rmdir** followed by the folder name argument.

4. Create an empty file (command : touch)

```
$ touch testfile
```

To create an empty file in your current working directory use the **touch** command followed by the name of the file.

5. Delete a file (command : rm)

```
$ rm filename
```

To delete a file use the **rm** command followed by the file name. The command **rm –r** will remove a directory.

6. Change working directory (command : cd)

```
$ cd /home
```

To change your current working directory use the cd command followed by the path (location) you want to change to.

7. List contents of a folder/directory (command : ls)

```
$ ls
```

The ls command will list the content of your current working directory. You can optionally provide a path to a directory as argument, in that case **ls** will show you the content of that directory.

```
$ ls /home
edup  edupnode
```

The command **ls –l** will give you long listing of the directory and the command **ls –a** will give you all files including hidden files.

8. Switch to Home directory (command : cd ~)

To switch to your home folder you can use the tilde ~ character as a shortcut with **cd** command.

```
$ cd ~
$ pwd
/home/edup
```

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