Lab 1: Introduction to Linux/Ubuntu

1. Objectives

- Introduce the Linux environment and basic shell commands.
- Write, compile, and execute a "Hello World!" C program in Linux environment using `gcc`.

2. Introduction

- Ubuntu is installed on the lab computers. Ubuntu is an open-source Linux-based operating system alternative to Windows. We will learn the basic desktop environment and common shell commands. Please login using the credentials provided by the lab instructor.

3. Linux Basics

Linux System

Linux System can be split into two parts:

- Shell
- Kernel

Formally, a ***Shell*** is interface between a user and a Linux operating system, i.e. user interacts with the Linux operating system through the shell.

Kernel is the core of Linux Operating System, which is operational as long as the computer system is running. The kernel is part of the Linux Operating system which consists of routines which interact with underlying hardware, and routines which include system calls handling, process management, scheduling, signals, the file system, and I/O to storage devices.

Linux File System Hierarchy

Unlike DOS, which permits you to organize your folders (directories) and files anyway you please, the Linux file system is organized into a standard directory structure. A portion of the Linux directory structure is pictured below:

/home	Users' home directory
/etc	All system administrator commands, configuration files, and installation control files.
/bin	The core set of system commands and programs. Most systems cannot boot (initially start) without executing some of the commands in this directory.
/dev	The device files used to access system peripherals (for example, your terminal can be accessed from /dev/tty).
/lib	The standard set of programming libraries required by Linux programs.
/tmp	Temporary files created and used by many Linux programs.
/var	Log files, spool files etc.
/root	The root user's home directory.
/usr/bin	Common commands and programs.
/usr/doc	Documentation
/usr/games	Games
/usr/include	Header files
/usr/info	Online documentation
/usr/man	Manual pages (help)
/usr/share	Shared information

4. Basic Commands

In this section, we learn some basic Linux commands e.g., ls, cd, mkdir etc.

Directory Commands

Command	Description
ls	**List the file in the directory, just like dir command in DOS.**
	Options
	-a Display all the files, and subdirectories, including hidden files.
	-l Display detailed information about each file, and directory.
	-r Display files in the reverse order.

Command	Description
mkdir directory-name	**Creates a new directory.** Directory-name specifies the name of the new directory. If the name doesn't begin with a slash, the new directory is created as a subdirectory of the current working directory. If the name begins with a slash, the name defines the path from the root directory to the new directory.

$cd /

Try to use the following command first because this will bring you back to your home directory

5. C Program in Linux Environment

In this section we write, compile, and execute a Hello Word program in Linux environment.

Step 1: Create a directory; `mkdir lab1`
Step 2: Switch to directory; `cd lab1`
Step 3: Create a file; `touch Hello.c`
Step 4: Open the file; `gedit Hello.c`
Step 5: Type the following source code:

```
#include<stdio.h>
main()
{
   printf("Hello  World");
}
```

Step 6: Compile; `gcc -o Outputhello Hello.c`
Step 7: Execute**;** `./Outputhello`

6. In-Lab Exercises

- Write a program that takes odd numbers from 1 to 10 and prints their sum, Compile and run it using gcc.
- Learn the usage of **find** command.

I***mportant note:*** *Don't copy paste exact information .*

Submission: A word document containing above tasks with output/s.

********** GOOD LUCK ********