Manual and Assignment for Operating System Lab (CS693)

Lab # 1:

Objectives

- **Introduction to UNIX:**

The Unix operating system is a set of programs that act as a link between the computer and the user. The computer programs that allocate the system resources and coordinate all the details of the computer's internals is called the **operating system** or the **kernel**.

Users communicate with the kernel through a program known as the **shell**. The shell is a command line interpreter; it translates commands entered by the user and converts them into a language that is understood by the kernel.

- Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
- There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
- Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
- A user can also run multiple programs at the same time; hence Unix is a multitasking environment.

- **Introduction to UNIX architecture:**

The main concept that unites all the versions of Unix is the following four basics −

- **Kernel** − The kernel is the heart of the operating system. It interacts with the hardware and most of the tasks like memory management, task scheduling and file management.
- **Shell** − The shell is the utility that processes your requests. When you type in a command at your terminal, the shell interprets the command and calls the program that you want. The shell uses standard syntax for all commands. C Shell, Bourne Shell and Korn Shell are the most famous shells which are available with most of the Unix variants.
- **Commands and Utilities** − There are various commands and utilities which you can make use of in your day to day activities. **cp**, **mv**, **cat** and **grep**, etc. are few examples of commands and utilities. There are over 250 standard commands plus numerous others provided through 3rd party software. All the commands come along with various options.
- **Files and Directories** − All the data of Unix is organized into files. All files are then organized into directories. These directories are further organized into a tree-like structure called the **filesystem**.

- I**ntroduction to basic UNIX commands:**
  - man: To display the manual page for a given command.
  - who: To display all the users who are currently using the system.

- whoami: Displays only your details.
- pwd: Shows current working directory.
- ls: Shows all the files in the current directory. ls can be used with several options. To learn more type $man ls
- cd: To change directory.
- rm: Removes files. By default it does not remove directory.
- cp: Makes copies of files and directories.
- mv: Moves files to other directory.
- mkdir: Creates directory under the current working directory.
- rmdir: Removes directory under the current working directory.
- echo: Displays a text or message on the screen.
- cat: Universal file viewer. Displays the content of a file.
- wc: Count lines, words and characters of a file.

Assignment

0. For each command mentioed above, give a brief description of what it does and how it can be used

Command	Description	Syntax	Sample Output
Example: cat	Displays the content of the file note1	$cat note1	Hello Java

The screenshots should be pasted for sample output.

1. Provide a short write-up (1 or 2 paragraphs) on the following:

   - History of Unix and Linux
   - Kernel of an Operating System
   - Multi-Tasking OS
   - Multi-User OS

2. List all the files and directories of '/bin' with detail information from your current directory.
3. List all the files including hidden files in your parent directory.
4. List only the directory files in your current directory.
5. Create a file 'text 1' by taking input from the keyboard.
6. Copy the contents of file' text1' to another file 'text2'.
7. Append the contents of file 'text2 'to file 'text1'.
8. Count the number of lines in the file 'text1'.