LAB Assignment 1

1. **Introduction to the Operating System with Key Functions:**
    - An operating system (OS) is software that manages computer hardware and provides services for computer programs.
    - Key functions include managing resources (CPU, memory, storage), providing user interfaces, and executing and managing applications.
2. **Introduction to Unix/Linux (Architecture):**
    - Unix/Linux is an operating system that follows a multi-user, multitasking architecture.
    - It is based on the principles of simplicity, modularity, and the use of text files for configuration.
3. **Concept of Shell:**
    - The shell is a command-line interface that allows users to interact with the OS.
    - It interprets user commands and communicates with the kernel to execute those commands.
4. **Types of Shell:**
    - Common Unix/Linux shells include Bash (Bourne Again Shell), sh (Bourne Shell), csh (C Shell), and zsh (Z Shell).
    - Bash is the most widely used shell.
5. **Command Structure:**
    - A command typically consists of the command name and optional arguments.
    - Options can modify a command's behavior, and arguments provide input data.
6. **Introduction to Basic Linux Commands (e.g., sudo, ls, pwd, mkdir, rmdir, rm, cd, cp, wc, mv, cmp, passwd, who, uname):**
    - `sudo`: Execute a command with superuser privileges.

- `ls`: List files and directories in the current directory.
- `pwd`: Print the current working directory.
- `mkdir`: Create a new directory.
- `rmdir`: Remove an empty directory.
- `rm`: Remove files and directories.
- `cd`: Change the current directory.
- `cp`: Copy files and directories.
- `wc`: Count lines, words, and characters in a file.
- `mv`: Move or rename files and directories.
- `cmp`: Compare two files byte by byte.
- `passwd`: Change user password.
- `who`: Show who is logged on.
- `uname`: Display system information.

7. **How to Install, Update, Upgrade, and Remove Any Package in Linux (apt-get):**
   - `apt-get` is a package management tool for Debian-based Linux distributions.
   - Use `apt-get install` to install packages, `apt-get update` to update package lists, `apt-get upgrade` to upgrade installed packages, and `apt-get remove` to remove packages.
8. **>, >> Option for Directing the Output of a Command:**
   - `>` is used to redirect the output of a command to a file, overwriting the file if it exists.
   - `>>` is used to append the output of a command to a file, creating the file if it doesn't exist.
9. **cat Command:**
   - `cat` is used to display the content of a file on the terminal.
   - It can also be used to concatenate and display the content of multiple files.
10. **Compressing and Archiving Files (zip, tar):**

- `zip` is used to compress and archive files into a ZIP format.
- `tar` is used to create tape archives and is often used for creating compressed tarballs.