**LAB Assignment 1**

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**Q1. Introduction to the operating system with key functions.**

A software that manages a computer's hardware and software resources.

**Key Functions:**

* **Process Management:** Creates, schedules, and manages processes.
* **Memory Management:** Allocates and deallocates memory to processes.
* **File System Management:** Organises and stores files on storage devices.
* **Device Management:**
* Controls input/output devices.
* **Network Management:** Handles communication between the computer and other devices on a network.
* **User Interface:** Provides a way for users to interact with the computer.

**Q2. Introduction to the Unix/Linux (Architecture).**

* **Multi-user, Multi-tasking:** Designed for multiple users and simultaneous tasks.
* **Stability and Security:** Known for their reliability and security.
* **Flexibility:** Highly customizable and adaptable to various environments.

**Components:**

* **Kernel:** The core of the OS, responsible for managing hardware resources.
* **Shell:** A command-line interface for interacting with the OS.
* **System Utilities:** Programs that perform various tasks (e.g., file management, network configuration).
* **Application Programs:** Software that performs specific tasks for users.

**Q3. Concept of Shell.**

* **Command-Line Interpreter:** A program that accepts commands from the user and executes them.
* **User Interface:** Provides a way for users to interact with the OS.

**Q4. Types of Shell.**

* **Bourne Shell (sh):** The original Unix shell.
* **C Shell (csh):** A shell with C-like syntax.
* **Korn Shell (ksh):** Combines features of the Bourne and C shells.
* **Bash (Bourne-Again SHell):** The default shell on most Linux distributions.

**Q5. Command Structure:**

* **Command Name:** The name of the command to be executed.
* **Options:** Flags that modify the command's behavior.
* **Arguments:** Data that the command operates on.

**Q6. Introduction of basic linux commands (sudo, ls, pwd, mkdir, rmdir, rm, cd, cp, wc, mv, cmp, passwd, who, uname)**

* **sudo:** Executes a command as a superuser.
* **ls:** Lists files and directories in a specified directory.
* **pwd:** Prints the current working directory.
* **mkdir:** Creates a new directory.
* **rmdir:** Removes an empty directory.
* **rm:** Removes files.
* **cd:** Changes the current directory.
* **cp:** Copies files.
* **wc:** Counts the number of lines, words, and characters in a file.
* **mv:** Moves files or renames directories.
* **cmp:** Compares two files for differences.
* **passwd:** Changes the user's password.
* **who:** Displays information about users currently logged in.
* **uname:** Displays system information, such as the operating system name and version.

**Q7. How to install, update, upgrade and remove any package in linux (apt-get)Install.**

* **sudo apt-get install package\_name**
* **Update: sudo apt-get update**
* **Upgrade: sudo apt-get upgrade**
* **Remove: sudo apt-get remove package\_name**

**Q8. >, >> option for directing the output of a command.**

* **>:** Redirects standard output to a file, overwriting if it exists.
* **>>:** Redirects standard output to a file, appending to the end.

**Q9. cat Command:**

* Displays the contents of one or more files.

**Q10. Compressing and archiving files (zip, tar)**

* **zip:** Creates ZIP archives.
* **tar:** Creates TAR archives, often compressed with tools like gzip or bzip2.