**Redhat Linux ServerAssignment**

**Module 15**

**Linux server - Understand and use essential tools**

**1.** Bash" stands for "Bourne Again Shell."

2. The bash shell, short for "Bourne Again Shell," is a command-line shell and scripting language used in Unix-like operating systems, including Linux. It provides a command-line interface (CLI) through which users can interact with the operating system by typing commands and executing scripts.

3. In a Linux terminal, the dollar sign ($) typically represents the shell prompt. It indicates that the shell is ready to receive commands from the user. When you see the dollar sign, it means that the shell is awaiting your input.

4. In a Linux terminal, the hash symbol (#) typically represents the root user prompt or the superuser prompt. When you see the hash symbol as the prompt, it indicates that the shell is running with elevated privileges, often referred to as "root" or "superuser" mode.

5. In most Linux distributions, including CentOS 7.0, you typically have virtual consoles numbered from 1 to 6 available by default.

6. The Filesystem Hierarchy Standard (FHS) is a set of guidelines that define the structure and organization of directories and files in Unix-like operating systems, including Linux. It provides a standardized layout for the filesystem, ensuring consistency and compatibility across different distributions.

7. In Linux, the forward slash "/" serves multiple purposes:

**Directory Separator**: It's used as a directory separator in file paths. For example, in the path /home/user/file.txt, / separates the directories home, user, and the file file.txt.

**Root Directory**: It represents the root directory of the file system hierarchy. All other directories and files are organized beneath this root directory.

**Path Separator in Commands**: In command-line interfaces, **/** is also used as a separator in commands to denote different options or arguments. For example, in the command ls -l /home/user, -l is an option and /home/user is an argument specifying the directory to list.

8. The /etc directory in Linux serves as a central location for system configuration files. It stands for "et cetera," indicating that it contains miscellaneous system-wide configuration files that don't fit neatly into other directories.

9. The /home directory in Linux serves as the default location for user home directories. It provides a centralized and organized space for users to store their personal files, settings, and data.

10. The **/boot** directory in Linux serves a critical purpose in the boot process of the operating system. Its primary role is to store essential files required for booting the Linux operating system, including the kernel, bootloader configuration, and initial ramdisk (initramfs or initrd).

11. The man command in Linux is used to display the manual pages (often abbreviated as "man pages") for other commands, utilities, functions, and system calls. These manual pages provide detailed documentation and instructions on how to use various commands and programs available in the Linux operating system.

12. The passwd command in Linux is used to change a user's password. It allows users to set, update, or modify their password securely. Additionally, users with appropriate permissions, such as the root user, can use the passwd command to change the passwords of other users on the system.

13.To search for a specific string within a manual page (man page) in Linux, you can use the man command in combination with the grep.

14. To exit from the man command and return to the command prompt in Linux, you can simply press the "q" key on your keyboard. This action quits the manual page viewer and brings you back to the terminal prompt.

15. The pinfo command is a more feature-rich alternative to the traditional man command in Linux. It stands for "Pinfo Info Browser" and is used to view and navigate GNU Info documents.

16. The sosreport command in Linux is a utility used to gather diagnostic and troubleshooting information from a system. It collects various system configuration details, logs, and other relevant data to help system administrators and support personnel diagnose and resolve issues.

17. By default, the sosreport command stores the generated system report in the /tmp directory.

18. The **>** command, often referred to as the "output redirection" operator, is used in Linux and Unix-like operating systems to redirect the output of a command to a file. It's commonly used to create or overwrite the content of a file with the output of a command.

18. The ">>" command, known as the "append redirection" operator, is used in Linux and Unix-like operating systems to redirect the output of a command and append it to the end of a file. It's similar to the ">" operator, but instead of overwriting the content of the file, it appends the output to the existing content or creates a new file if it doesn't exist.

19. The 2> command, also known as the "standard error redirection" operator, is used in Linux and Unix-like operating systems to redirect the error output (stderr) of a command to a file. It allows you to capture and save error messages generated by a command to a specified file, separate from the regular output (stdout).

20. The 2>> command, similar to 2>, is used to redirect the error output (stderr) of a command to a file. However, 2>> appends the error messages to the specified file instead of overwriting it.

21. The whereis command in Linux is used to locate the binary, source, and manual page files for a specified command. It helps users find the locations of executable files, source code files, and manual pages associated with a particular command.

22. The echo command in Linux is used to display a line of text or string on the standard output (usually the terminal). It is one of the most basic and commonly used commands in shell scripting and interactive shell sessions.

23. The tty command in Linux is used to print the file name of the terminal connected to the standard input. It stands for "teletypewriter" and is commonly used to determine the terminal device associated with the current shell session.

24. The | (pipe) command and the tee command are both used in the terminal to manipulate the flow of data between commands and files. They are powerful tools for creating complex data processing pipelines and for logging output to files while still displaying it on the terminal.

25.Vim, short for "Vi IMproved," is a highly configurable text editor built to enable efficient text editing. It's an enhanced version of the classic Vi editor, which is a standard text editor on Unix-like systems. Vim is known for its powerful features, extensive customization options, and efficiency in editing various types of text files, including code, configuration files, prose, and more.

26. Here's a list of the main modes in Vim:

**Normal Mode**:

This is the default mode when you start Vim.

Used for navigating through the document, executing commands, and making edits to the text.

Commands in this mode are typically single key presses or key combinations preceded by a colon (**:**) for ex commands.

**Insert Mode**:

Used for inserting and editing text.

Entered by pressing **i** in Normal Mode.

In this mode, you can type text directly into the document.

**Visual Mode**:

Used for selecting blocks of text.

Entered by pressing **v** in Normal Mode.

Allows you to visually select text by moving the cursor.

**Visual Line Mode**:

Similar to Visual Mode, but selects entire lines instead of individual characters or words.

Entered by pressing **V** in Normal Mode.

**Visual Block Mode**:

Used for selecting rectangular blocks of text.

Entered by pressing **Ctrl** + **v** in Normal Mode.

Allows you to select text in a column-wise manner.

**Command-Line Mode**:

Used for entering commands that affect the whole document or execute external commands.

Entered by pressing **:** in Normal Mode.

Commands entered in this mode are preceded by a colon (**:**).

**Replace Mode**:

Used for replacing existing text with new text.

Entered by pressing **R** in Normal Mode.

In this mode, typing replaces existing characters rather than inserting new ones.

26.Gedit is a simple and lightweight text editor designed for the GNOME desktop environment on Unix-like operating systems, such as Linux. It is part of the GNOME Core Applications and is commonly included with GNOME-based Linux distributions as the default text editor.

27.tar is a command-line utility used in Unix-like operating systems, including Linux, to create, manipulate, and extract archive files. The name "tar" stands for "tape archive," as it was initially developed for creating backups to tape drives. However, nowadays, it is commonly used for various purposes, including compressing and distributing files and directories.

28. **sudo**: This command is run with administrative privileges, as the **/etc** directory contains system configuration files that require root access to read.

**tar**: Invokes the **tar** command for creating and managing archives.

**c**: Indicates that a new archive is being created.

**z**: Specifies gzip compression for the archive.

**v**: Enables verbose mode, which displays detailed information about the files being processed.

**f**: Indicates the filename of the archive to create. In this case, it is **etc\_backup.tar.gz**.

**/etc**: Specifies the directory to be archived. In this case, it's the **/etc** directory.

After running this command, a file named **etc\_backup.tar.gz** will be created in the current directory. This file will contain a compressed archive of the **/etc** directory and all its contents.

29.To extract a .tar file, you can use the tar command with the -x option.

30. You can use the tar command with the -t option to list the contents of a .tar file without extracting it.

31.To copy a file (file1) to a remote desktop computer, you can use the scp (secure copy) command. scp allows you to securely transfer files between your local system and a remote system over SSH (Secure Shell).

32. For remote synchronization, you can use the rsync command. rsync is a powerful and versatile utility for efficiently synchronizing files and directories between two locations, whether they are on the same system or on different systems over a network.

33. ACL stands for Access Control List. In Linux, ACLs are a set of permissions that can be applied to files and directories in addition to the traditional Unix permissions (read, write, execute) provided by the file system.

34. To view the ACL (Access Control List) of a file or directory in Linux, you can use the getfacl command.

35. True. Both the ext3 and ext4 file systems support ACL (Access Control List) in Linux.

36. The command used to modify ACL (Access Control List) in Linux is setfacl.

37. The grep command in Linux is used to search for specific patterns or expressions within files or streams of text.

38. The command you provided, < grep -i -v 'cat' >, is not properly formatted and would likely result in an error.

Assignment Level Intermediate

1. Pressing "Ctrl + Alt + F1" in Linux typically switches to the first virtual terminal, also known as tty1.

2. Pressing "Ctrl + Alt + F2" in Linux typically switches to the second virtual terminal, also known as tty2.

3. Pressing "Ctrl + Alt + F3" in Linux typically switches to the third virtual terminal, also known as tty3.

4. In Linux terminal emulators, the shortcut key combination to finish or exit a terminal session is typically:

Pressing "Ctrl + D" sends an "End of File" (EOF) signal to the terminal, indicating that there is no more input to be processed. This signal is interpreted by the shell, causing it to exit or close the terminal session.

5. [GNOME is the default desktop environment in Red Hat Linux 7.01](https://legacy.redhat.com/pub/redhat/linux/7.0/en/doc/RH-DOCS/rhl-gsg-en-7.0/ch-gnome60.html). [It provides a user-friendly graphical interface (GUI) that includes elements like the desktop workspace, folders, and a panel across the bottom of the screen for quick access to applications and settings](https://legacy.redhat.com/pub/redhat/linux/7.0/en/doc/RH-DOCS/rhl-gsg-en-7.0/ch-gnome60.html).

6. For instance, GNOME, a popular desktop environment, typically starts with four workspaces by default, but users can add or remove workspaces as needed.

7. The /dev directory in Linux serves as a virtual filesystem that contains special device files. These device files represent various hardware devices and software interfaces in the system. The purpose of the /dev directory is to provide a way for applications and users to interact with these devices and interfaces using standard file operations.

8. An absolute path is a complete path that specifies the exact location of a file or directory in a file system, starting from the root directory. It describes the full directory hierarchy necessary to reach the target file or directory.

9. Relative paths describe the location of a file or directory in relation to the current working directory. Unlike absolute paths, which start from the root directory (**/**), relative paths are expressed relative to the directory in which the user or application is currently located.

10. The **ls** command in Linux is used to list files and directories in a directory. The **-l** and **-a** options modify the behavior of the **ls** command:

**ls -l**: This command lists files and directories in long format. It displays detailed information about each file or directory, including permissions, number of links, owner, group, size, and modification time. However, it does not list hidden files (files whose names start with a dot **.**).

**ls -la**: This command combines the **-l** and **-a** options. It lists files and directories in long format, just like **ls -l**, but also includes hidden files in the output. Hidden files are those whose names start with a dot **.**.

In summary:

**ls -l**: Lists files and directories in long format, excluding hidden files.

**ls -la**: Lists files and directories in long format, including hidden files.

11. The pwd command in Linux stands for "print working directory." When you run the pwd command, it prints the full pathname of the current working directory, which is the directory that you are currently in within the file system.

Assignment Level Advance

1.In Linux, switching workspaces allows you to organize your open applications and windows across multiple virtual desktops, helping you manage your workflow more efficiently. The method for switching workspaces may vary depending on your desktop environment. Here are some common methods:

**Keyboard Shortcuts**:

Many desktop environments offer keyboard shortcuts to switch between workspaces. These shortcuts are usually customizable. Common default shortcuts include:

**Ctrl** + **Alt** + **Left Arrow** or **Right Arrow**: Switch to the workspace on the left or right.

**Ctrl** + **Alt** + **Up Arrow** or **Down Arrow**: Switch to the workspace above or below.

**Super** (Windows key) + **1**, **2**, **3**, etc.: Switch to the corresponding numbered workspace.

**Workspace Switcher Applet or Widget**:

Some desktop environments provide a graphical workspace switcher applet or widget in the panel or taskbar. You can click on this applet to see a visual representation of all available workspaces and switch between them by clicking on the thumbnails.

**Activities Overview**:

In GNOME Shell, pressing the **Activities** key (often the **Super** or Windows key) opens the Activities Overview, where you can see all workspaces and switch between them by clicking on the thumbnails or by dragging windows between them.

**Taskbar or Window List**:

Some desktop environments, such as KDE Plasma, may display open windows grouped by workspace in the taskbar or window list. You can click on a window belonging to a different workspace to switch to that workspace.

**Workspace Pager or Grid**:

Some desktop environments provide a workspace pager or grid that shows a visual representation of all workspaces. You can click on a workspace thumbnail to switch to it.

**Command-Line Tools**:

You can also switch workspaces using command-line tools or scripts, although this is less common for typical desktop usage.

2. The head and tail commands are used to view a specified number of lines from the beginning (head) or end (tail) of a file or input stream in Linux and Unix-like operating systems.

3. The history command in Linux is used to display a list of previously executed commands in the current shell session. It allows users to view their command history, including the sequence of commands executed during the current session, along with their respective line numbers.

4. The command used to add a new user in Linux is the useradd command.

5. The command tail -n 20 is used to display the last 20 lines of a file.

6. When you use the **cd** command without any arguments, it takes you to your home directory.

When you use the **cd ..** command, it takes you to the parent directory of your current directory.

7. The command cp file1 file2 is used to copy the contents of one file (file1) to another file (file2) in Linux or Unix-like operating systems.

8. The **rm** command in Linux is used to remove or delete files and directories from the file system.

9. The mkdir -p command in Linux is used to create directories, including parent directories if they do not already exist.

10. When you run ls ab\*, the command lists all files and directories in the current directory that have filenames starting with "ab". It does not list files or directories whose names do not match the specified pattern.