Preparation

- install docker
- install terminal emulator (optional)

Linux commands tutorial

commands we will cover in this topic

Session 1

1. ls (list):
   Description: Lists the files and directories in the current directory.
   Function: Displays the contents of a directory.
   Example: ls

2. mkdir (make directory):
   Description: Creates a new directory.
   Function: Creates a new directory with the specified name.
   Example: mkdir new_directory

3. cd (change directory):
   Description: Changes the current working directory.
   Function: Allows the user to navigate between directories.
   Example: cd Documents

4. Environment variables:
   Description: Variables that contain information about the environment in which a process runs.
   Function: Store information that can be accessed by programs and scripts.
   Example: $HOME, $PATH

5. Path environment variable:

   Description: Contains a list of directories where the system looks for executable files.

   Function: Allows the user to run programs from any directory without specifying the full path.

   Example: $PATH

6. Bash files:

   Description: Scripts written in the Bash shell scripting language.

   Function: Automate tasks by executing a series of commands.

   Example: script.sh

7. zprofiles:

   Description: Configuration files for the Z shell (zsh).

   Function: Customize the behavior and appearance of the Z shell.

   Example: .zshrc

8. Where are environment variables stored:

   Description: Environment variables are stored in the shell's memory.

   Function: Allows programs and scripts to access and use the information stored in the variables.

   Example: In the shell's memory

9. pwd (print working directory):

   Description: Prints the current working directory.

   Function: Displays the full path of the current directory.

   Example: pwd

10. ls -r (list recursively):

    Description: Lists files and directories recursively.

    Function: Displays the contents of a directory and its subdirectories.

    Example: ls -r

11. cat (concatenate):

    Description: Displays the contents of a file.

    Function: Concatenates and displays the contents of one or more files.

    Example: cat file.txt

12. man (manual):

    Description: Displays the manual pages for a command.

Function: Provides detailed information about a specific command.

Example: man ls

13. tr (translate):

Description: Translates characters in a file or stream.

Function: Replaces or deletes characters in a file or stream.

Example: tr 'a-z' 'A-Z' < file.txt

14. touch:

Description: Creates an empty file.

Function: Updates the access and modification timestamps of a file or creates a new empty file.

Example: touch new_file.txt

15. cp (copy):

Description: Copies files or directories.

Function: Copies files or directories from one location to another.

Example: cp file.txt new_directory/

16. mv (move):

Description: Moves or renames files or directories.

Function: Moves files or directories to a new location or renames them.

Example: mv file.txt new_location/

17. rm (remove):

Description: Deletes files or directories.

Function: Removes files or directories from the system.

Example: rm file.txt

18. cp -R (copy recursively):

Description: Copies files and directories recursively.

Function: Copies files and directories along with their subdirectories and contents.

Example: cp -R directory/ new_directory/

19. Renaming a file:

Description: Changing the name of a file.

Function: Updates the name of a file to a new name.

Example: mv old_file.txt new_file.txt

20. Deleting a directory:

Description: Removing a directory and its contents.

Function: Deletes a directory along with all its files and subdirectories.

Example: rm -r directory/

21. sudo (superuser do):

   Description: Allows a user to execute commands with superuser privileges.

   Function: Grants elevated permissions to perform administrative tasks.

   Example: sudo apt-get update

22. df (disk free):

   Description: Displays disk space usage.

   Function: Shows the amount of disk space used and available on filesystems.

   Example: df -h

23. head:

   Description: Displays the first few lines of a file.

   Function: Shows the beginning of a file.

   Example: head file.txt

24. tail:

   Description: Displays the last few lines of a file.

   Function: Shows the end of a file.

   Example: tail file.txt

25. diff (difference):

   Description: Compares two files and shows the differences.

   Function: Highlights the changes between two files.

   Example: diff file1.txt file2.txt

26. locate:

   Description: Searches for files and directories on the system.

   Function: Finds files and directories based on their names.

   Example: locate file.txt

27. find:

   Description: Searches for files and directories based on specified criteria.

   Function: Locates files and directories based on various attributes.

   Example: find /home -name "*.txt"

Session 2

1. File Permissions:

   Description: File permissions determine who can read, write, or execute a file on a Unix-like operating system.

   Functions: chmod command is used to change file permissions.

   Example: chmod 755 file.txt

2. Changing File Permissions:

   Description: Allows users to change the permissions of a file or directory.

   Functions: chmod command is used to change file permissions.

   Example: chmod 644 file.txt

3. chown:

   Description: Changes the owner and group of a file or directory.

   Functions: chown command is used to change the owner and group of a file.

   Example: chown user:group file.txt

4. Performing an Action on Multiple Files:

   Description: Allows users to perform an action on multiple files at once.

   Functions: Use wildcards or loops in the command to perform actions on multiple files.

   Example: rm *.txt

5. grep:

   Description: Searches for patterns in text using regular expressions.

   Functions: grep command is used to search for a specific pattern in a file.

   Example: grep "pattern" file.txt

6. History:

   Description: Displays a list of previously executed commands.

   Functions: history command is used to display a list of previously executed commands.

   Example: history

7. Regex:

   Description: Regular expressions are patterns used to match character combinations in strings.

   Functions: Used in commands like grep to search for specific patterns in text.

   Example: [0-9]{3}

8. Regex Command:

   Description: Allows users to use regular expressions in commands.

Functions: Use regular expressions in commands to search for specific patterns in text.

Example: grep -E "[0-9]{3}" file.txt

9. Alias Command:

   Description: Creates a shortcut or alias for a command.

   Functions: alias command is used to create shortcuts for frequently used commands.

   Example: alias ll='ls -l'

10. Terminal Shortcuts:

    Description: Keyboard shortcuts that can be used in the terminal to perform actions quickly.

    Functions: Use keyboard shortcuts to navigate, edit, and execute commands in the terminal.

    Example: Ctrl + C to stop a running command

11. wget:

    Description: Downloads files from the internet using HTTP, HTTPS, or FTP protocols.

    Functions: wget command is used to download files from a URL.

    Example: wget http://example.com/file.txt

12. top:

    Description: Displays real-time information about system processes and resource usage.

    Functions: top command is used to monitor system processes and resource usage.

    Example: top

13. uname:

    Description: Displays information about the system and kernel.

    Functions: uname command is used to display system information.

    Example: uname -a

14. zip:

    Description: Compresses files into a zip archive.

    Functions: zip command is used to compress files into a zip archive.

    Example: zip archive.zip file1.txt file2.txt

15. unzip:

    Description: Extracts files from a zip archive.

Functions: unzip command is used to extract files from a zip archive.

Example: unzip archive.zip

16. hostname:

Description: Displays or sets the system's hostname.

Functions: hostname command is used to display or set the system's hostname.

Example: hostname

17. useradd:

Description: Adds a new user to the system.

Functions: useradd command is used to add a new user to the system.

Example: useradd newuser

18. userdel:

Description: Deletes a user from the system.

Functions: userdel command is used to delete a user from the system.

Example: userdel olduser

Session 3

These commands are commonly used in operating systems to gather information about the system, manage processes, and perform various networking tasks.

- `lscpu` : This command displays information about the CPU architecture and processing units.

- `free` : This command displays the amount of free and used memory in the system.

- `vmstat` : This command displays virtual memory statistics including information about processes, memory, paging, block IO, traps, and CPU activity.

- `id` : This command displays the user and group IDs of the current user.

- `getent` : This command retrieves entries from databases configured in `/etc/nsswitch.conf` file.

- `id User` : This command displays the user and group IDs of a specific user.

- `lsof` : This command lists open files and the processes that opened them.

- `nslookup` : This command is used to query DNS servers to obtain domain name or IP address mapping.

- `netstat` : This command displays network connections, routing tables, interface statistics, masquerade connections, and multicast memberships.

- `sed` : This command is used for text manipulation and transformation.

- `cut` : This command is used to extract sections from each line of files.

- `htop` : This command is an interactive process viewer and system monitor.

- `ps aux` : This command displays information about all running processes in a system.