### **Day-7**

## **1. Basic System & Package Management Commands**

* sudo apt update
  + Updates the package lists for system repositories.
* sudo apt install ncal
  + Installs the ncal (calendar) command-line tool.
* ncal
  + Displays the calendar in a different format compared to cal.
* ncal 12 2025
  + Shows the calendar for **December 2025**.
* cal 2025
  + Displays the full calendar for the year **2025**.
* cal 1990
  + Displays the full calendar for the year **1990**.

## **2. System Information Commands**

* uname -a
  + Shows complete system information, including kernel version.
* uname -s
  + Displays the **kernel name**.

## **3. Finding File Locations**

* whereis python
  + Locates installed Python binaries and related files.
* whereis java
  + Locates Java installation paths.
* whereis ls
  + Locates the **ls** (list directory) binary.

## **4. Process Management Commands**

* ps aux
  + Displays all running processes with detailed information.
* kill -9 <PID>
  + Forcefully terminates a process using its **Process ID (PID)**.
  + Example: kill -9 119675

## **5. File Operations**

* ls -lrt
  + Lists files in long format, sorted by modification time (oldest first).
* wc -l name.txt
  + Counts the number of **lines** in name.txt.
* wc -w name.txt
  + Counts the number of **words** in name.txt.
* wc -c name.txt
  + Counts the number of **characters** in name.txt.
* cat name.txt
  + Displays the contents of name.txt.
* vi name.txt
  + Opens name.txt in the **vi editor** for editing.

## **6. Searching Files and Directories**

* find -name "\*.txt"
  + Finds all .txt files in the current directory and subdirectories.
* find . -type d
  + Finds all directories inside the current directory.
* find . -name "\*.tmp" -exec rm {} \;
  + Finds and removes all .tmp files.

## **7. System Monitoring Commands**

* top
  + Displays real-time system performance and running processes.
* du -sh \*
  + Displays the disk usage of files and directories in the current folder.
* ncdu .
  + A more interactive disk usage viewer (ncdu needs to be installed first).
* sudo apt install ncdu
  + Installs ncdu (a disk usage analyzer).

## **8. Network Commands**

* ip a
  + Shows network interface details (IP addresses, MAC addresses, etc.).
* grep -Ril "ranawat"
  + Searches for the word **"ranawat"** inside files in the current directory and **lists filenames only**.
* telnet google.com
  + Attempts to connect to **Google** via Telnet (used for testing network connectivity).
* dig google.com
  + Queries DNS records for google.com.
* iperf -s -f M
  + Runs an iperf server to measure network performance (in Megabytes).
* sudo tcpdump -i any
  + Captures network traffic on all interfaces.

## **9. Git Commands**

* git pull
  + Fetches the latest changes from the remote repository.
* git reset --hard origin/main
  + Resets the current branch to match the remote **main** branch.
* history | grep git
  + Searches command history for Git-related commands.

## **10. File Compression & Archiving**

* tar -cvf etc.tar Invoice-9.pdf
  + Creates a tar archive named etc.tar containing Invoice-9.pdf.
* tar -cvf etc1.tar .
  + Archives everything in the current directory into etc1.tar.
* tar -xzvf etc1.tar
  + Extracts the contents of etc1.tar.
* tar -cvf etc12.tar.gz .
  + Creates a **compressed** archive (.tar.gz) of the current directory.
* tar -xzvf etc12.tar.gz
  + Extracts the .tar.gz file.
* tar -tzvf etc12.tar.gz
  + Lists the contents of etc12.tar.gz without extracting.
* man tar
  + Displays the manual (documentation) for the tar command.

## **11. Shell Scripting & Variables**

**Creating & Using Variables**namej="jinesh"

echo $namej

* Assigns "jinesh" to variable namej and prints it.

**Concatenating Variables**var\_1="jinesh"

var\_2="ranawat"

echo "$var\_1$var\_2"

* Prints "jineshranawat".

**Using Readonly Variables**readonly var\_2

# var\_2="ranawatjinesh" # This will give an error because var\_2 is now readonly

* **Using Conditional Statements**time=$(date +%H)

echo $time

if [ $time -lt 12 ];then

message="Good morning user"

elif [ $time -lt 18 ];then

message="Good afternoon user"

else

message="Good evening user"

fi

echo "$message $time"

* Checks the current hour and prints a time-based greeting.

**Unsetting Variables**unset var\_age

echo "Age is after unsetting $var\_age" # Prints an empty value

## **12. Loops in Shell Scripting**

**While Loop**i=1

while [ $i -lt 5 ]

do

echo "Jinesh"

i=`expr $i + 1`

done

* Prints "Jinesh" 4 times.

**For Loop with Break**for a in 1 2 3 4 5 6 7 8 9

do

if [ $a == 5 ]

then

break

fi

echo "Iteration is $a"

done

* Prints numbers **1 to 4** and exits when a == 5.

## **13. Aliases & Custom Commands**

* alias j1="ls -lrt"
  + Creates an alias j1 that runs ls -lrt.
* j1
  + Runs the alias (ls -lrt).
* alias c="clear"
  + Creates an alias c for the clear command.
* c
  + Clears the terminal screen.

## **14. File & Directory Removal**

* find . -name "\*.tmp" -exec rm {} \;
  + Finds and **deletes** all .tmp files.
* rmdir [-rf / --ignore-fail-on-non-empty]
  + Removes directories forcefully, even if they contain files.

## **15. Searching in Man Pages**

* /keyword
  + Searches for a **keyword** inside a man page.
  + Press n to find the next occurrence.

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### **Key Takeaways**

✅ **Package Management:** apt install, apt update  
✅ **System Information:** uname, top, ps aux  
✅ **Process Management:** kill, grep, find  
✅ **Networking:** dig, iperf, tcpdump  
✅ **Git & SSH:** git pull, git reset  
✅ **Archiving & Compression:** tar commands  
✅ **Shell Scripting:** Variables, loops, conditionals  
✅ **Aliases:** Creating shortcuts for commands