**What is Shell:**

* The interface that accepts user input and produces output is called Shell.
* Ex: when we type (**ls, pwd**) it will take the input and produce the output.
* It is a command line interface / user interace
* It accepts command from the user and kernel receives the command (request) from shell, It will process the request and shows the result on our shell screen.
* Shell is an independent program of the underlying operating system UNIX or Linux
* Shell shortcut is sh / Another name was bourne shell, Because creator name steven bourne

**What is Script:**

* A script file contains series of commands
* We can execute the same file without any compiling process
* It will help us to automate most of the server administration tasks.

**Types Of Shell:**

**1. BASH Shell (Bourne again shell)**

* Default Shell in most of the Operating System is BASH Shell
* To know which shell we are using, type (**echo $SHELL**)

**2. ASH Shell**

* A simple, Lightweight Shell that runs in low-memory environments but has full compatibility with the bash shell

**3. Korn Shell**

* A programming shell compatible with advanced programming features like associative arrays and floating-point arithmetic

**4. TCSH Shell**

* tcsh shell designed to attract c programmer to learn the scripting

**5. ZSH Shell**

* zsh shell is advanced shell it incorporates features from BASH, TCSH and Korn
* BASH or any Shell belongs to CUI(Character Based User Interface)
* BASH can operate in two modes **1. Interactive mode** (Writing commands directly to the shell. Ex: single line command like ls, exit, pwd) **2. Programming mode** (Writing shell scripts)

**BASH - Features:**

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| --- | --- | --- |
| **Alias** | **Command Line Editing** | **Advanced Pattern Matching** |
| **File name completion** | **Directory Stacks** | **History** |
| **Functions** | **Key binding** | **Job Control** |
| **Spelling corrections** | **Prompt formatting** |  |

**BASH - Responsibility:**

* Reading text and parsing the entered command
* Evaluating meta characters such as wild cards, special characters or history characters
* Process I/O redirections, pipes and background processing
* Signal handling
* Initializing programs for execution.
* Before sending to kernel, it will check everything, and it will send input to kernel.

mkdir 🡪 vi test.sh 🡪 write some script like (echo “Welcome”) 🡪 chmod +x test.sh (Change it as shell executable) 🡪./test.sh(To run the script)

wallet id 19000009126849

type of closure : wallet Closure

**Vehcicle No: KA01MN4183**

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| --- | --- |
| **Basic Linux Command** | |
| **Location** | **Description** |
| /root | Home Directories |
| /root/home/username | User Home Directories |
| /bin or /usr/bin or /usr/local/bin | User Executable files like **ls, pwd, cat, etc (This is normal user)** |
| /sbin or /usr/sbin or usr/local/sbin | System Executable files like **adding user, install software, rpm command (This is system admin command)** |
| /media or /mnt | If we connect any additional USB drive or CD, It will automatically mount here |
| /etc | All the configuration will execute here Ex: User configuration, Network Config and Server Config etc.. |
| /tmp | If we want to keep temporary file we will keep here, But after reboot it won’t be there so be caution |
| /boot | Kernels and Bootloader |
| /Var or /srv | Server Data Ex: Web server file we will be here |
| /proc or /sys | System information will stored here |
| /lib or /usr/lib or usr/local/lib | Shared Libraries |
| Read the command prompt username@hostmane$ **($ mean normal user**) Ex: faiz@desizors$ / If **# it’s represent root user //** If you see this **~ it’s represent we are in home directory** | |
| **Commands** | **Description** |
| ifconfig | To display IP Address and broadcast ID detail To display IP Address and broadcast ID detail |
| date | To display the date and time |
| Uptime | It will show the uptime |
| Cal | To display the calendar |
| whoami | To know the logged in user name |
| who | How many users are logged in |
| top | To know the what are the processes are running / CPU, Memory utilization / How many users are available / PID (Process ID) |
| Kill -9 PID | To stop the process Ex: kill -9 101 (this will kill the process ID 101) / We will use this when more slowness issue or more utilization time |
| Ps or ps –ef or ps –ef | grep any | It will show all the process with all details / by using grep we can search only particular process or any other details. |
| q or ctrl+c | To exit from the prompt |
| Clear shortcut is ctrl+l | It will clear the page and it will go to 1st line. / shortcut for that is ctrl+l key |
| free –m | It will show total RAM size, used and free |
| Pwd | It will show the present working directory |
| history | It will show all the commands we used early |
| Man | Man command is help to give the full details (Ex: Man pwd) It will explain the full details of pwd command |
| Uname | It will show which OS we are working on |
| Sudo passwd root | This will create a password for root |
| Ls | List command |
| Ls -l | Ls – l (List the command with full details) |
| Ls-a | it will show the hidden file |
| Useradd –m name | It will create a user (Ex: useradd –m faiz) –m menas home directory creation |
| -m | Home directory creation for users Ex: useradd -m |
| Sudo -i | It will go to root or admin |
| Su | Switchuser (Ex su faiz) |
| Reboot | Reboot the system |
| Halt | Brings the system down immediately |
| Shutdown | Shutdown the system |
| Cd ~ (tilt symbol) | Cd(Change Directory) It will useful to go to user directory folder Ex: cd ~ of user faiz,  It will directly goes to faiz, to check pwd command (Doubt if multiple users) |
| Cd .. / cd../.. | cd.. It will go to previous directory / cd../.. it will go to previous of previous folder |
| cd / | It will go to starting path |
| Mv | Rename file name or move the file Ex for rename: mv filename new filename / mv faiz.txt renamed.txt  (Now filename was changed from Faiz.txt to renamed.txt) Ex for move: mv filename faizul/(folder name is  faizul) / mv faiz.txt Faizul/ (It will move to Faizul folder) / Same methods for moving or  renaming for folders too |
| Wc | Word count of the file Ex: wc filename / wc faiz.txt / 1st column is no of lines / 2nd column is no of words / 3rd column is no of letter+line (Ex: I am Faizul / (Letters is 11 + 1 line total 12) /  4th is filename |
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| **File Management Types** | |
| **1.Normal Files (Image, Text, Mp3), 2. Directories (Folders) 3 Special Files (Hidden, System related, link) / Hidden files b4 dot will be there** | |
| Mkdir | It will Make directories Ex; mkdir ffshz |
| CD (Directories name) | Ex: CD ffshz (It will go to ffshz directory) |
| Touch (File name) | To create a empty file Ex: Touch expense (It will create a empty file and file name is expense) |
| Cat | Cat is used to see the content of the file (Ex: cat expense) |
| Rm / rm \* | Remove (it will delete the file) Ex: rm expense / Ex2: rm faiz.txt work.txt (It will delete  multiple files) / Ex3: rm expe\* (It will delete all the files name starting with expe) |
| Rm | Remove file from one directory location to another directory location  Ex: rm faiz/(destination folder name)expense.txt(filename) / rm faiz/expense.txt |
| Rmdir | It will delete directory Ex rmdir utest2(directory name) |
| Rm –rf | Rm –rf ffshz (If directory have some files then rmdir ffshz won’t delete the directory bcos  inside expense file is there) So if you want delete then use rm -rf ffshz (now it will delete)  f represents force / Forcefully deleting |
| Cp | Copy command / Ex: cp expense expense backup (Cp sourcefilename destinationfilename) In case if you want to change anything in expense b4 we can take the backup and make it  any change / This will copy to the same folder / Destination file name should be differ |
| Cp | This example is for to copy a file to different folder cp expense.txt(filename) faiz/  (folder name) (It will copy that file here) or cp expense.txt(filename) faiz/(foldername)  expense2.txt / It will copy and paste that file expense2 name |
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| **VI Editor is useful for editing in linux / In windows we will edit or create any excel files** | |
| Vi | 2 Modes (edit and escape) Text Editor (Ex: Vi expense) It will create new file and  It will go to edit mode, There we can type what we want: Ex: Welcome to DESIZORS |
| I | Insert mode |
| :wq | In VI editor use this command to save and exit |
| :q! | Without save and exit |
| dd or d8d or 8dd | To Delete the single line press 2times dd, If you want to delete more lines then press d8d or any required number. |
| Yy | To copy the line |
| P | Paste |
| U | Undo |
| :s | Single String replace Ex: :s/car/truck or :s/car/truck/g (This will replace only one string) /  case sensitive is there, so if you want to replace (Letter F) Need to type F,  If u type f it won’t replace |
| /string or ?string | Ex /faiz (it will search faiz from top) / ?faiz (It will search from bottom) |
| :%s | String replace Ex : :%s/car/truck/ or :%s/car/truck/g (This will replace entire string) |
| Grep string filename | To search a file or a string in a file / Ex: grep welcome faiz.txt (It will search inside the faiz.txt file and if found it will display else not found) |
| Ls -l | grep foldername | To search the folder name or file name starting from fold (ex folder1, folder2, folder3  folders are available) So it will show all that three Ex: ls -l | grep fold  (Need to use pipeline symbol not exclamatory) |
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| **Sort Command is used for list in alphabetic or numeric or Ascending or descending order (n represent numeric, r is reverse, f is \*\*\*)** | |
| Sort filename | It will display special characters 1st, numbers 2nd (1,11,2,25,3) 3rd Capital Letter in  ascending order and 4th small letters in ascending order |
| Sort –n filename | **It will show numbers in small to big**, It will display special characters 1st,  2nd Capital Letter in ascending order,  3rd small letters in ascending order and 4th numbers in small to big (1,2,3,11,25) |
| Sort –r filename | It will display in reverse (1st small letters in descending, 2nd capital letter in descending, 3rd numbers(3,25,2,11,1)  and 4th special characters |
| Sort –f filename | Upper case and lower case together (Ex: A,a,am Faizul, B, C,c,cat…) / 1st special character,  2nd number and 3rd upper case and lower case together |
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| **Folder Permission** | |
| There are three permissions are there 1. Read 2. Write and 3. Execute (RWX) (R value is 4, W value is 2, X value is 1) | |
| When you use (ls -l filename) It will show some details like (–rw-rw-r—1 myfaizul sdteam 0 apr 21 10:20 faiz.txt)  myfaizul is owner permission (rw-) / sdteam group permission (rw-) / 0 others permission (r--))  (r - read value is 4 / w - write value is 2 / e – execute value is 1) Total 7 In the list first letter is – (Its is file)  If 1st letter is D (Its is directory) | |
| Chmod | Chmod is used to change the folder permission details: Ex1: Owner only need access ,  groups and others don’t want access Then chmod 700 faiz.txt / Ex2: need full permission  for owner, groups read and write, others only read so chmod 764 |
| **Sudo privilege (To install anything user need the sudo privileges)** | |
| Su - | It’s indicate switch user to root / type the root password |
| Usermod – aG sudo  username | Ex: usermod –aG sudo myfaizul (aG is append group) |
| **Now myfaizul user got the sudo privilege / To check the group of user command is groups username /**  **If you see root / then successful** | |
| Groups username | Ex: groups myfaizul |
| **To install python in Ubuntu** | |
| Sudo apt update -y | Need to update by using this command |
| Apt list | It will show all the packages of updated list |
| Sudo apt install software-  Properties-common | After this |
| Sudo add-apt-repository ppa:  Deadsnakes/ppa | Again enter to continue |
| Sudo apt install python3.9 | It will install |
| Python3.9 –version | It shows the full version of the python Ex:python3.9.12 |
| Ls –l /usr/bin/python\* | It shows the all the versions of python |
| Sudo apt update | It will update after entering the password (faizfaiz@58) |
| Sudo apt install gedit | It will install gedit |
| Sudo apt install xclip | Use to copy & paste with the terminal |
| Cat filename | xclip –sel clip | Use to copy & paste with the terminal |
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