**What is git and github?**

**Git:**

🡪Git is a distributed version control system.

🡪It works in the local machine.

🡪It uses Command Line Interface.

**Github:**

🡪Github is a remote repository. It hosts the repositories.

🡪It works in the remote repository.

🡪It uses Web UI and Command Line Interface.

**What is CVCS and DVCS ?**

|  |  |
| --- | --- |
| **CVCS** | **DVCS** |
| 🡪It is a single central repository. | 🡪It has multiple copies (local + remote) |
| 🡪Ex : SVN, Perforce , CVS | 🡪Git, Mercurial |
| 🡪It requires internet to work | 🡪Can work offline. |
| 🡪Slower(Depends on local server) | 🡪Faster (local commits) |
| 🡪Server failure = data loss | 🡪No data loss (local copies) |
| 🡪Changes go directly to the central repository. | 🡪Developers work independently before pushing changes. |

**Create a project of any and push the project**

**Add.py**

a=int(input(‘Enter a value :’))

b=int(input(‘Enter a value :’))

print(‘Addition of 2 numbers :’,a+b)

print(‘Subtarction of 2 numbers :’a-b)

**Steps to push the project:**

**1.Initialize the repository:**

🡪Initialize the repository using init.

**git init**

**2.Add the files:**

🡪There are 2 types to add the files.

**git add filename**

🡪It adds specified file.

**git add .**

🡪It adds all the files.

**3.Commit the changes:**

🡪There are 2 types to commit the changes.

**git commit -m ‘Commit message’**

🡪It is used for the first commit.

**git commit -a -m ‘Modified commit’**

🡪It is used for the modified commit changes.

**4.Add origin:**

🡪By using the ssh url or https url we can add the origin.

**git remote add origin <url>**

**5.Push the files.**

**git push -u origin main/master**

🡪It pushes the files from the local repository to the remote repository.

**Create 3 branches and 5 tags**

**Branches:**

1.git checkout -b branch1

2.git checkout -b branch2

3.git checkout -b branch3

**Tags:**

1.git tag tag1(lightweight tag)

2.git tag -a tag2 -m ‘Message’(annotated tag)

3.git tag tag3

4.git tag -a tag4 -m ‘Message’

5.git tag tag5

**Create a Keygen and push using ssh**

1. Open git bash.

2. copy---->ssh-keygen -t ed25519 -C "your\_email@example.com"---->(Genereates the new SSH key).

3. Paste it in the git bash terminal.

4. press enter 3 times to continue.

5. copy---->clip < ~/.ssh/id\_ed25519.pub---->(# Copies the contents of the id\_ed25519.pub file to your clipboard).

6. Paste it in the git bash terminal.

7. Go to your github accounts.

8. Profile--->Settings--->SSH and GPG key---->new SSH key--->give the title & paste the key in the below comment box---->click on Add SSH key.

**Create a sub branch in a git and switch from subbanch to mainbranch(hit: use merge concept)**

🡪By using checkout we can create a sub-branch and swithches to it directly.

**git checkout -b new\_branch**

🡪To switch from the new branch to main branch.

**Create a file:**

echo "New feature" > feature.txt

git add feature.txt

git commit -m "Added a new feature in subbranch"

git checkout main

git merge new\_branch

git commit -m ‘Resolved merged conflict’

git push origin main

git branch -d subbranch

git push origin --delete subbranch # Remove from remote

**What is the importance of git checkout?**

**git checkout <branch\_name>**

🡪It switches to the specified branch.

**git checkout -b <branch\_name>**

🡪It creates a new branch and switches to the new branch.

**What is the importance of git merge?**

**git merge <branch>**

🡪It merges the specified branch into the current branch.

**What is Linux and how is it different from other operating systems?**

🡪Linux is also an operating system.

🡪It is secured operating system.

🡪It is faster as compared to other operating systems.

🡪It is open source and free.

**What are the basic Linux commands for file operations?**

🡪To create a file.

**touch filename.txt**

🡪It is used to create an empty file.

**echo ‘This is my first file’ > ‘file.txt’**

🡪It is used to create a file with the content.

🡪To add the content to the file.

**echo ‘This is second line of the file’ >>file.txt**

🡪To read the data from the file.

**cat file.txt**

🡪To delete a file.

**rm myfile.txt**

**What is the difference between chmod and chown?**

**chmod:**

🡪You can change the permissions of the file using the chmod command.

🡪It uses symbolic and numeric arguments to change the permissions.

**chown:**

🡪You can change the owner of the file or directory.

**chown <owner> <file>**

🡪It is used to change the owner.

**chown user:group1 file.txt**

🡪It is used to change the owner and group to group1.

**Explain the use of grep command.**

**grep:**

🡪It searches for a pattern in a file.

**grep document.getelementbyid index.txt**

🡪For case-insensitive

**grep -i document.getelementbyid index.txt**

🡪To add the line numbers.

**grep -n document.getelementbyid index.txt**

**How do you schedule a cron job in Linux?**

🡪cron jobs are jobs that are scheduled to run at specific intervals.

🡪They are very powerful ,especially on servers to perform maintainence and automation.

🡪The **corntab** command is the entry point to work with corn jobs.

🡪To explore the corm jobs:

**corntab -l**

🡪To edit the corm jobs, and add new ones.

**crontab -e**

🡪to remove all corn jobs.

**corntab -r**

**Explain the basic features of the Linux OS.**

🡪Linux is also an operating system.

🡪It is secured operating system.

🡪It is faster as compared to other operating systems.

🡪It is open source and free.

**What are the major differences between Linux and Windows?**

|  |  |
| --- | --- |
| **Linux** | **Windows** |
| **🡪It is operating system** | **🡪It is also a operating system** |
| **🡪It is secured.** | **🡪It is also secured but not than Linux.** |
| **🡪It is faster** | **🡪It is slower than linux** |
| **🡪It is free and open source** | **🡪It is commercial.** |
| **🡪It uses commands and stores the data.** | **🡪It uses files and folders to store the data** |

**Define the basic components of Linux.**

Linux is made up of several key components that work together to provide a functional operating system.

**1. Kernel (Core of Linux)**

* The **heart** of Linux, managing hardware and system resources.
* Handles **memory management, process scheduling, and device drivers**.
* Example: **Linux Kernel 6.x**

**2. Shell (Command Line Interface)**

* Interface between the **user** and the **kernel**.
* Accepts user commands and executes them.
* Examples:

bash # Default in most Linux distros

zsh # Advanced shell with better scripting

fish # User-friendly interactive shell

**3. File System**

* Organizes and stores data in a **hierarchical structure**.
* Common Linux file systems:
  + **ext4** → Default in many distros.
  + **XFS** → High-performance journaling file system.
  + **Btrfs** → Advanced file system with snapshots.

**4. System Libraries**

* Pre-written **functions** that programs use to perform common tasks.
* Example: **glibc (GNU C Library)**

**5. User Applications**

* Programs installed by users to perform specific tasks.
* Examples:
  + **Web Browsers** → Firefox, Chrome
  + **Editors** → Vim, Nano, VS Code
  + **Media Players** → VLC

**What is the chmod command in Linux, and how do you use it?**

**chmod:**

🡪You can change the permissions of the file using the chmod command.

🡪It uses symbolic and numeric arguments to change the permissions.

**What are the most important Linux commands?**

**ls – It lists all the files or directories.**

**pwd – It gives the present working directory.**

**cd – It is used to change the directory.**

**mkdir – It is used to make or create the directory.**

**touch – It is used to create a file**

**rm – It is used to remove the file or folder.**

**cp – it is used to copy the file .**

**cat – It is used to read the content in the file.**

**mv -- move or rename the files.**

**find – It is used to find the files or folders according to the given search pattern.**

**ln – It is used to create the links.**

**gzip – It is used to compress the file.**

**gunzip – It is used to decompress the file.**

**tar – It is used to create an archive of the files.**

**grep – Searches for a pattern ina file.**

**chown – It is used to change the owner.**

**chowd – it is used to change the permissions.How do you create,remove and copy files in linux?**

**Create:**

**🡪To create a file.**

**touch file.txt**

**echo ‘This is first file’ >myfile.txt**

**remove:**

**🡪To remove a file or directory**

**rm file.txt**

**rm -r folder.txt**

**copy:**

**🡪To copy a file.**

**Cp <src> <dest>**

**What is ssh?**

🡪Secure shell is a network protocol used to securely connect to the remote repository over an encrypted connection.