GIT:

Version control system:

A version control system (VCS) is a software tool that helps manage changes to files over time, particularly in collaborative software development projects. It tracks modifications made to files, provides the ability to revert to previous versions, and facilitates collaboration among multiple developers working on the same codebase.

primarily two types of version control systems (VCS): centralized version control systems (CVCS) and distributed version control systems (DVCS).

1. Centralized Version Control Systems (CVCS):

In a CVCS, there is a central server that stores the entire code repository. Developers interact with this central server to access and manage files

Example:

1. Subversion (SVN)
2. Perforce

2 Distributed Version Control Systems (DVCS):

DVCS differs from CVCS in that each developer has a complete copy of the code repository on their local machine. This allows developers to work independently and perform most version control operations locally, without requiring a constant connection to a central server. DVCS systems are more flexible and offer better support for distributed development.

Example:

1. Git:

Git is the most widely used DVCS, known for its speed, scalability, and powerful branching and merging capabilities. It allows developers to create local branches, work offline, and easily synchronize their changes with the central repository or share them with others. Git's distributed nature makes it popular for open-source projects and large-scale collaborations.

1. Mercurial

Git vs github:

|  |  |  |
| --- | --- | --- |
| Sr no | git | github |
| 1 | Git is a distributed version control system primarily used for tracking changes in source code during software development. | GitHub is a web-based hosting platform for Git repositories. |
| 2 | It is a command-line tool that runs locally on a developer's machine. | It provides a user-friendly interface and additional collaboration features on top of Git. |
| 3 | Git allows developers to create repositories, track changes, create branches, merge changes, and revert to previous versions. | Developers can create repositories on GitHub and push their local Git repositories to GitHub for remote storage and collaboration. |
| 4 | It provides a robust set of commands for managing code history and collaboration among developers. | GitHub offers features such as issue tracking, pull requests, project management tools, and code review workflows, facilitating team collaboration. |
| 5 | Git is decentralized, meaning each developer has a complete copy of the repository on their machine, enabling offline work and independent development. | It provides a social aspect, allowing developers to discover, fork, and contribute to open-source projects hosted on GitHub. |
| 6 | It is highly flexible and can be used for any type of file or project, not just software development. | GitHub provides integrations with various development tools and services, making it a popular choice for code hosting, especially for open-source projects. |
| 7 | Git is the underlying version control system that tracks changes in code | GitHub is a hosting platform that provides a web-based interface and collaboration features for Git repositories |

Github credential: (github.com)

Login : vrmaskar

Pwd: Shourya@292623

Create repository—its just a like a storage folder in github

Procedure: 1. Create repository

2.give name and descripation

3. public select / private in company

4. select readme file

5. choose licence in private case mostly in mit used

6. create

Branch:

1.main:

Bydefault (base)

Take less time for push/pull

New repository create then its show in main branch only

Modification will possible for some cases

File name is not possible to change here

Access available to tester

2.master:

Modification will possible for all cases

Access is not available to tester most of the time

Commit:

refers to the action of saving changes to a Git repository

When you make changes to the files in a Git repository, you need to explicitly "commit" those changes to record them in the repository's history.

Each commit represents a snapshot of the project's files at a specific point in time.

Code: (we will get address here for repository)

A code repository is a centralized location where you can keep your source code, track changes, collaborate with others, and manage project versions

Those are mainly three types:

1. HTTPS:

click on the clipboard icon to copy the URL.

Using this url we can open code in any browser

1. SSH:

If you choose SSH, make sure you have set up SSH keys on your GitHub account and select the SSH option.

1. GITHUB CLI:

Server level used

Practical approach:

Procedure to confiq details in gitbash:

1. git confiq at first time after installation Identity provides to git:

there two identity provides to git one is name another is email id.

1. git config --global user.name "yourname"
2. git config --global user.email "mail id"

this is one time activity

2. how check our git configuration as:

1. git config user.name ……must show given name

2. git config user.email …must show given email

3. to create repository at local computer:

git init …..Initialized empty Git repository

git status ….check status of repository

Untracked files:

File is not going to repository till now

File is in non staging area

Non staging to staging git add - - a ….all file go to staging area at once

means files should be going to staging area and file also tracked.

if you add single file:- git add .filename

commit the file: git commit -m "first\_file"

now check status its show noting to commit, working tree clean

note: if we want to send the file in to the repository in github then we must have same branch in both repository

change master to main and main to master: git branch -M main

now we need path for send this file in repository so copied that path from code either HTTP PATH or SSH path and paste in below command

send file from local computer to github show location using:

git remote add origin 'paste SSH key/ HTTP PATH' ……(Repository add)

send the file / push command: (for push the local system to git repository)

git push -u origin main (code send local to cloud)

OR git push -f origin main If -u is not working then use