GIT

Git is an **open-source distributed version control system**. It is designed to handle minor to major projects with high speed and efficiency. It is developed to co-ordinate the work among the developers. The version control allows us to track and work together with our team members at the same workspace.

FEATURES OF GIT

OPEN SOURCE –

Open-source tools are tools that are freely avaliable without a commercial licence Many different kinds of open-source tools allow developers and others to do certain things in programming, maintaining technologies or other types of technology tasks.

SCALABILITY-

Git is scalable which means when the number of users increases the Git can easily handle such situations.

SECURITY-

Git is secure. It uses the **SHA1 (Secure Hash Function)** to name and identify objects within its repository. Files and commits are checked and retrieved by its checksum at the time of checkout. It stores its history in such a way that the ID of particular commits depends upon the complete development history leading up to that commit. Once it is published, one cannot make changes to its old version.

SPEED-

Git is very fast so it can complete all the tasks in a while. Most of the git operations are done on the local repository, so it provides a huge speed Also a centralized version control system continually communicates with a server somewhere.

NON LINEAR DEELOPMENT-

Git supports branching and merging which helps in visualizing and navigating a non-linear development. A branch in Git represents a single commit. We can construct the full branch structure with the help of its parental commit.

DISTRIBUTED-

One of Git's great features is that it is distributed Distributed means that instead of switching the project to another machine, we can create a "clone" of the entire repository.

BRANCHING-

Branching is a feature available in most modern version control systems Instead of copying files from directory to directory, Git as a branch as a reference to a commit In this sense, a branch represents the tip of a series of commits its not a container for commits.

MERGING-

In Git the merging is a procedure to connect to the forked history. It joins two or more development history together. The git merge command facilitates you to take the data created by git branch and integrate them into a single branch.

DATA ASSURANCE-

The Git data model ensures the cryptographic integrity of every unit of our project. It provides a unique commit id every commit through a SHA algorithm We can retrieve and update the commit by commit ID. Most of the centralized version control systems do not provide such integrity by default.

STAGING AREA-

The Staging area is also a unique functionality of Git. It can be considered as a preview of a next commit moreover an intermediate area where commits can be formatted and reviewed before completion. When you make a commit, Git takes changes that are in the staging area and make them as a new commit. We are allowed to add and remove changes from the staging area.

INDEX-

The Git index is a staging area between the working directory and repository It is used to build up a set of changes that you want to commit together. There are three places in Git where file changes can reside, and these are working directory, staging area, and the repository.

CLEAN HISTORY-

Git facilitates with Git Rebase It is one of the most helpful features of Git. It fetches the latest commits from the master branch and puts our code on top of that. Thus it maintains a clean history of the project.

Advantages of git vc’s-

Performance

Security

Flexibility

Open source project

Disadvantages of git vc’s

It lack window support doesn’t track empty folder

They have poor GUI and usability

Git need multiple branches and support

BENEFITS OF GIT-

Save time

Offline working

Undo mistakes

Track changes