**Git Version Control System**

**What is Git?**

Git is a distributed version control system (DVCS) that tracks changes in source code during software development. It allows multiple developers to work on a project simultaneously, keeping track of modifications, merging changes, and maintaining a history of all updates.

**Working Directory :** This is your current workspace, where you create, edit, and delete files before telling Git to track them.Files here can be untracked, modified, or staged.

**Staging Area :** A temporary place where Git stores changes before they are committed.You use git add <filename> to move changes from the working directory to the staging area.

**Local Repository :** The.git folder in your project contains the history of changes.When you run git commit, your changes are saved here.

**Remote Repository :** A version of your repository hosted on a server like a GitHub.Allows multiple people to work on the same project.Changes are pushed and pulled between the local and remote repositories.

**Commit** : A snapshot of changes in your project.Use git commit -m "message" to save changes to the local repository.

**Branch :** The main branch is usually called main or master.Developers create new branches to work on features or bug fixes without affecting the main code.

**Merge :** Combining changes from one branch into another.

**Pull & Push :**

**git push:** Sends local commits to the remote repository.

**git pull:** Fetches and merges changes from the remote repository to your local machine.

**Cloud repositories**

|  |  |  |  |
| --- | --- | --- | --- |
| **Bitbucket** | **GitHub** | **GitLab** | **Feature** |
| Atlassian | Microsoft | GitLab Inc. | **Owner** |
| Yes | Yes | Yes | **Free Plan** |
| Cloud, self-hosted | Cloud, self-hosted | Cloud, self-hosted, hybrid | **Hosting options** |
| Supports issues and integrates with Jira and Trello | Supports issues, milestones, labels, projects and discussions | Supports issues, milestones, labels, boards, epics and roadmaps | **Project management** |
| Supports wikis and snippets | Supports wikis, gists, codespaces and discussions | Supports wikis, snippets, web IDE, live preview and ChatOps | **Collaboration** |