**What is Git?**

* Git is a distributed version control system (VCS).
* Git is a tool that helps multiple people work on the same code project or documents by tracking and managing changes to the files.

**What is VCS?**

* Every time you make a change, whether it’s adding a sentence to a document or altering a line of code, the VCS records and saves the outcome.

**Features of GIT-VCS**

* Backup and Restore: Files are safe against accidental losses or mistakes.
* Collaboration: Multiple people can work on the same project simultaneously.
* Branching and Merging: Users can diverge from the main base of code, experiment, and then bring changes back in line without losing work.
* Tracking Changes: You can see specific changes made and by whom.

**What is Git Commit?**

* A git commit is a command in Git that captures a snapshot of the projects currently staged changes, creating a permanent record in the repository’s history.

**Negative Cases**

If we made any changes by mistake and save it

Case1: To undo changes, get the last successful changes

**git restore . or file name (. mean all files )**

Case2: If we added the changes using git add then…

**git restore --staged <filePath> # To unstage**

**git restore <filePath> # To discard changes in working directory**

Case3: Added changes to staging area (didn’t commit) after this added more changes to file

**//To get the staged changes**

**git restore --worktree index.html**

Case4: How about if we did commit also wrong files

**git reset --soft HEAD^ (uncommit and keep the changes)**

**git reset --hard HEAD^ (uncommit and discard the changes)**

**Useful Log Options**

* **git log -p -2 (last two commit with diff)**
* **git log --stat (summary of changes)**
* **git log --pretty=oneline**
* **git log --pretty=format:”%h - %an, %ar:%s”**
* **git log --S function\_name**
* **git log --grep=”fix bug” (search commit msg)**
* **git log --since=”2024-01-01”**
* **git log --until=”2024-01-01”**
* **git log --author=”Paul”**
* **git log --no-merges**

**Remote Repo**

**A remote repository refers to a version of your project that resides on a network server or a hosted repository on the internet.**