Shree

Git is a version control system. A version control system is a tool that helps to track the changes made in the code.

Why is git popular:

- Free and open source
- Fast and reliable
- Scalable

Git helps us to:

1. Track the changes and we can save the data.
2. Helps us to collaborate with our peers.

Github is a website which allows us to store and manage code using git.

github.com

We upload our projects in folders.
In git terms a folder is called a repository.

Changes in git are called commits.

Initial commit means the first change in the project (usually it should be a readme file).

Adding a repository / project on git is a 2 step process:

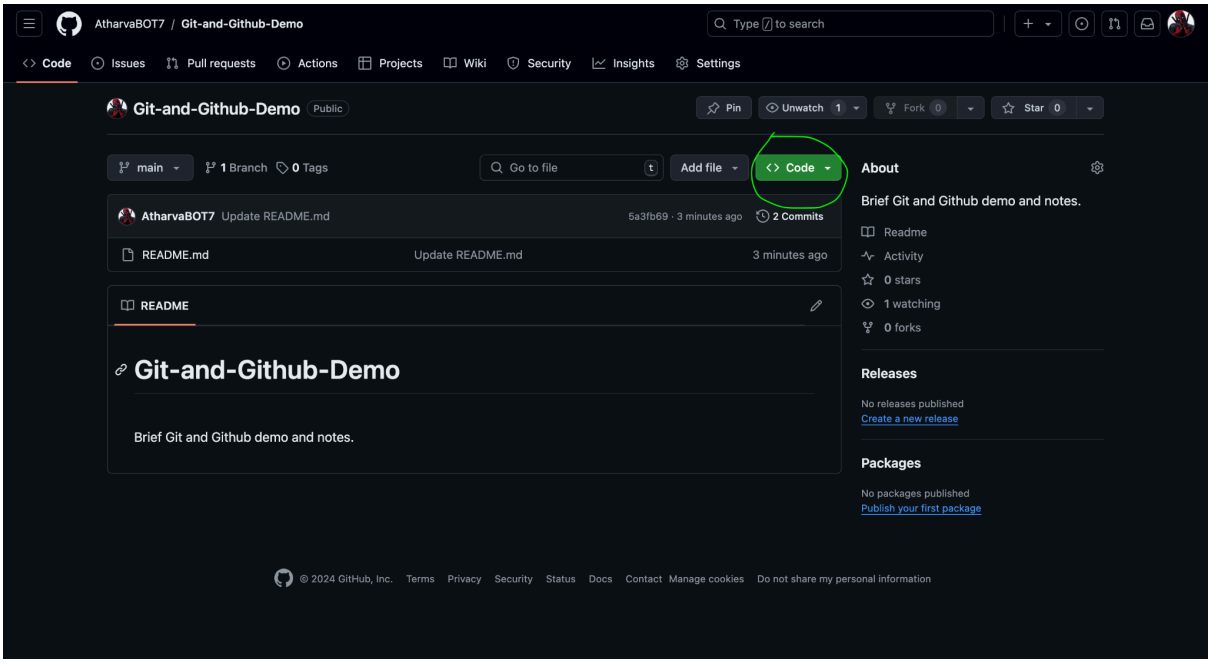
1. Add
2. Commit

Clone Command

As there are many repositories on github, we can clone any of the repositories from the global level to our local machine.

Clone command helps us to clone a repository on git.
Syntax : git clone <- link ->

For the first time, clone your repository, you can find the link after clicking th repository which you created for the first time.



After cloning the repository, use the cd command in terminal or use visual studio code terminal.

Change the directory to the new file.
Syntax : cd < - file name ->

Use the ls command to list down all the files present in the present directory.

Use the ls -a command to access all the files in the directory including the hidden files.

You will find a **.git** folder in each and every directory which the git is tracking.

Status Command

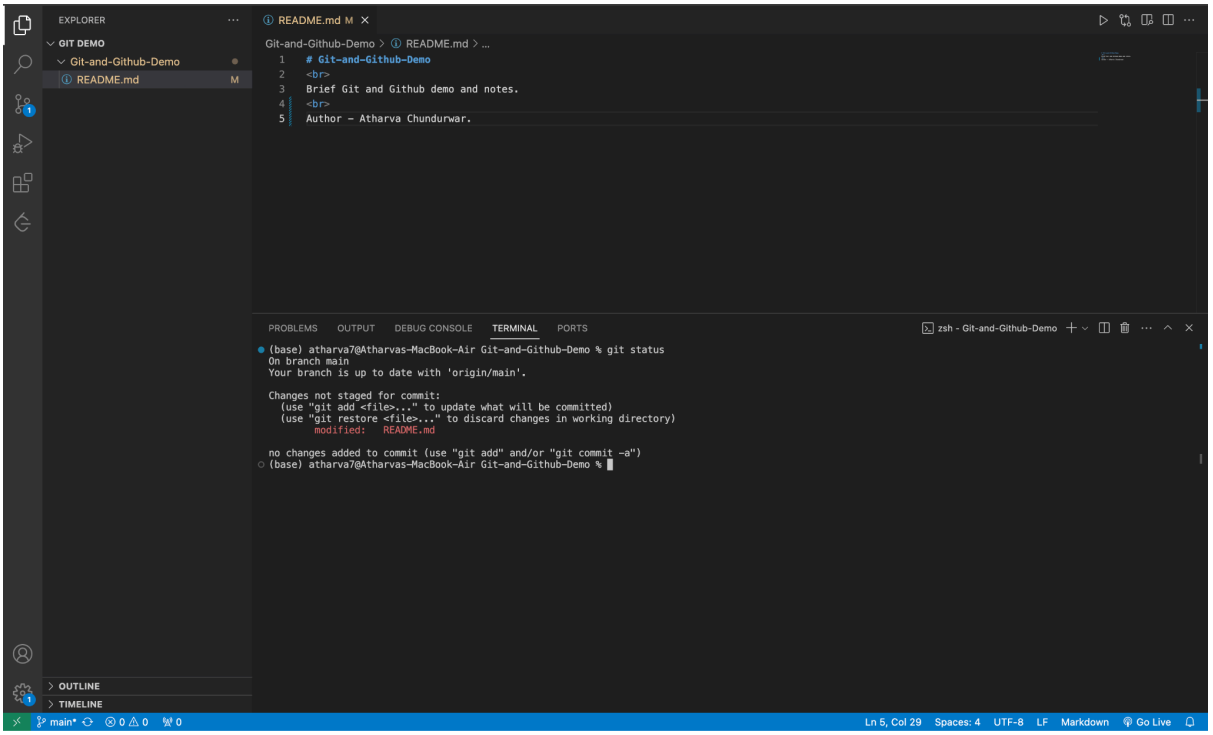
Status displays the status of the code.
Syntax : git status

There are 4 types of status in git:

1. Untracked : new files which are not tracked by git yet.
2. Modified : updated / modified files with changes not yet committed.
3. Staged : File ready to be committed.
4. Unmodified : unchanged.

Open VS code and then open the git folder in vs code.

Modify the readme.md file which we had created in github while creating a new repository.



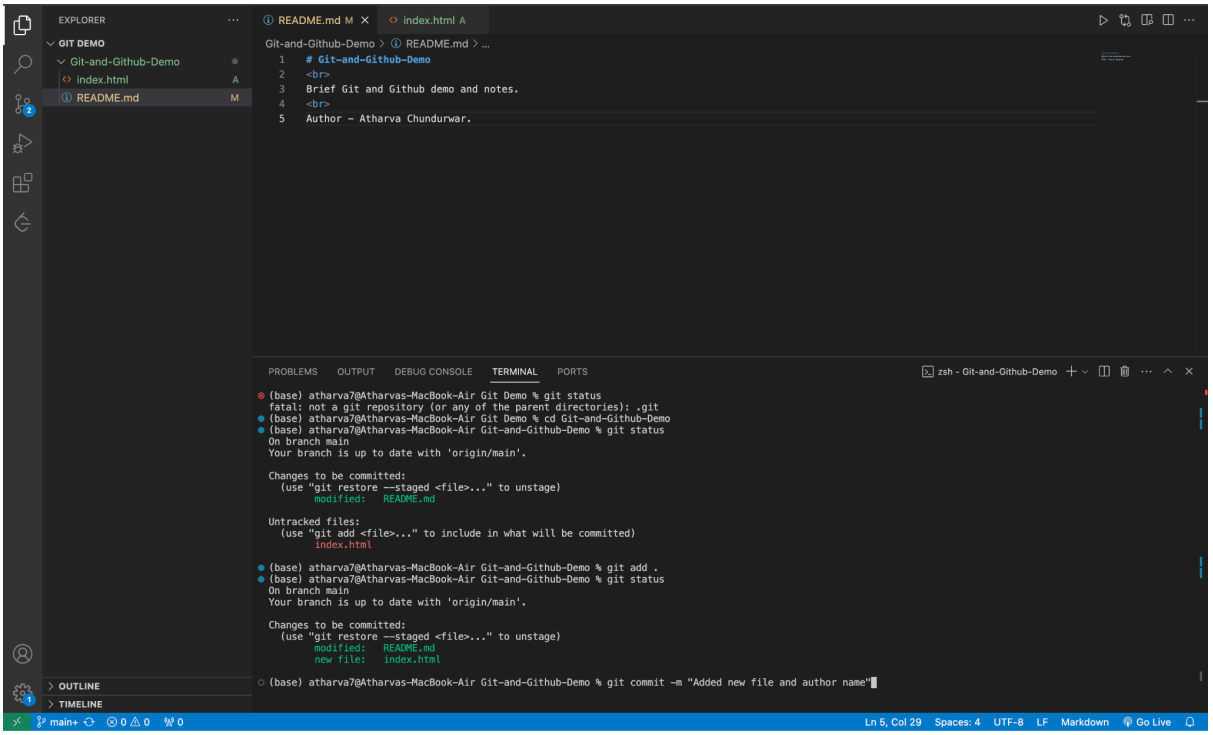
Add Command

You can add new or changed files in your working directory to the git staging area.
Syntax : git add <- file name ->
(git add .) is the command used to add all the command to the staging area.

Commit Command

You use the commit command to save the changes. It is the record of the changes made to the project.

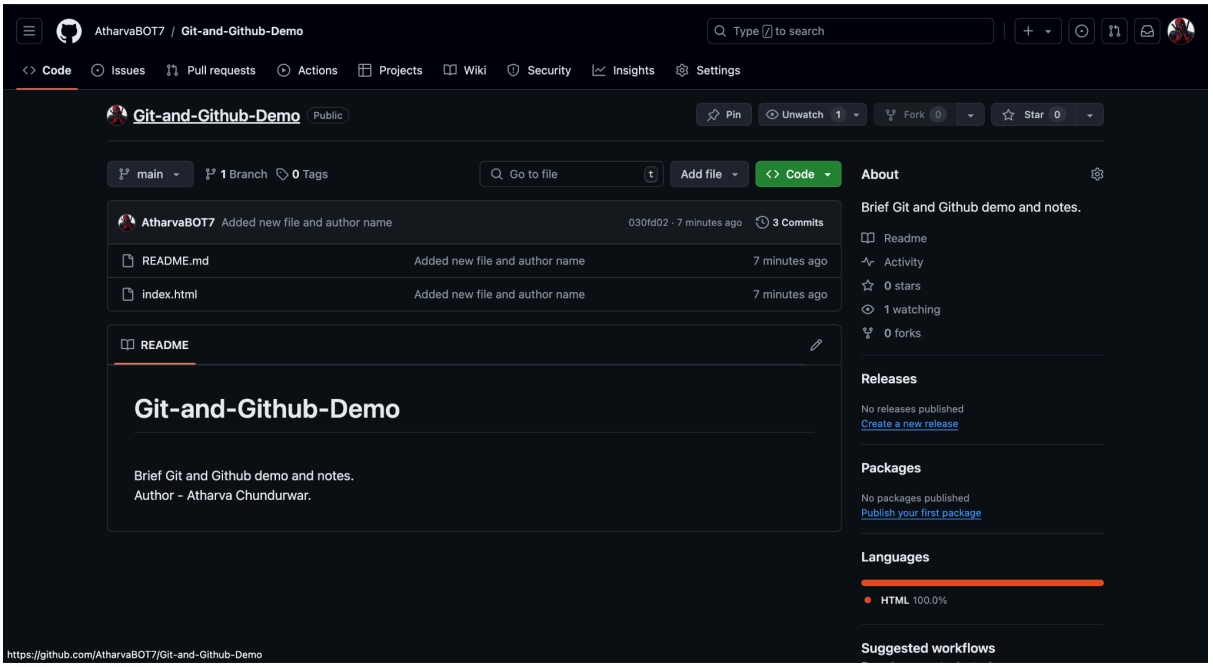
Syntax : git commit -m “ some message “



Even after the git commit command the changes have not been pushed to our github account, this is because we have committed the changes to our local machine.

Push Command

The git push command is used to upload a local repo content to the remote repo.
In simple terms, it is used to upload our changes to the github website on our account.
Syntax : git push origin main



Init Commands

The init command is used to create a new repository on github.

git init command

git remote add origin <- link -> : adds a remote branch named origin.

git remote -v : used to verify the remote

git branch : used to check the branch

git branch -M main : used to rename the branch

git push origin main

General Git workflow:

1) **Create a new github repository.**
2) **Clone the repository**
3) **Make changes to the repository**
4) **Add the changes to the staging area**
5) **Commit the changes for final push**
6) **Push the changes on the remote area.**

Branch commands:

1) **git branch : to check the current branch on which you are working**
2) **git branch -M main : change the branch name to main.**
3) **git checkout <- branch name -> : used to navigate.**
4) **git checkout -b <- new branch name -> : used to create a new branch**
5) **git branch -d <- branch name -> : to delete a branch (you can't delete the branch in which you are currently working in)**

Merging Branches:

Way 1:

1) **git diff <- branch name -> : used to compare commits, branches, files and more.**
2) **git merge <- branch name -> : used to merge 2 branches**

Way 2:
Create a PR (Pull request), a pull request lets you tell others about the changes that you have pushed on the branch in a repository on github.

Using the 2nd method, you can directly merge the PR with the main branch on github.

The changes in code will not reflect in VS code here, for that you will have to use git pull origin main command. This command is used to fetch and download content from a remote repository and immediately update the local repository to match the content.

Resolving merge conflicts:
A merge conflict is an event that takes place when github is not able to automatically merge two commits due to differences in their codes.

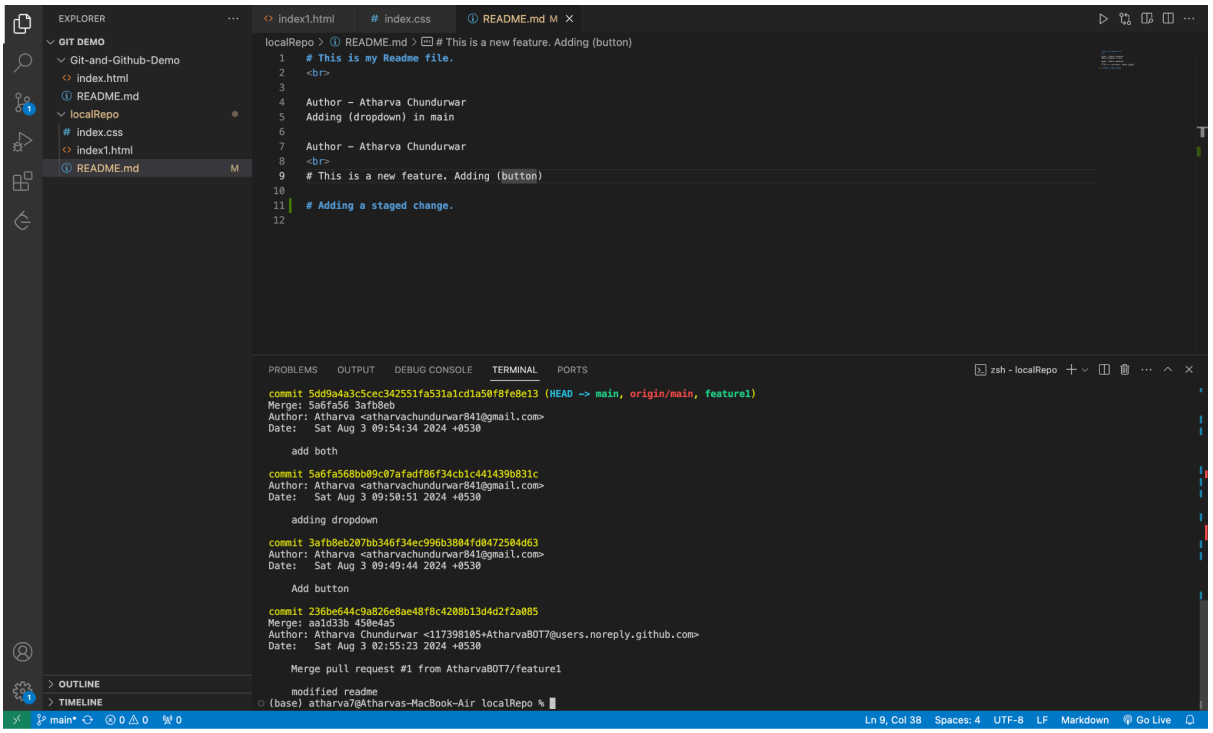
Undoing changes:

Case 1: Staged changes
git reset <- file name ->
git reset

Case 2: Committed changes (for one commit)
git reset head ~1 (by default, git stores commit in form of stack and the last commit is named HEAD)

Case 3: Committed changes (for many changes)
git reset <- commit # ->
git reset –hard <- commit # ->

Use command (git log) to display all the commits. (press q button to quit)



Each commit has its own commit hash, we have to enter git reset commit hash to go to that commit.

Fork

Fork in git is a new repository that shares code and visibility settings with the original “upstream” repository. **Upstream repo = main branch (main repo)**

Fork is a rough copy used to check bugs / changes.