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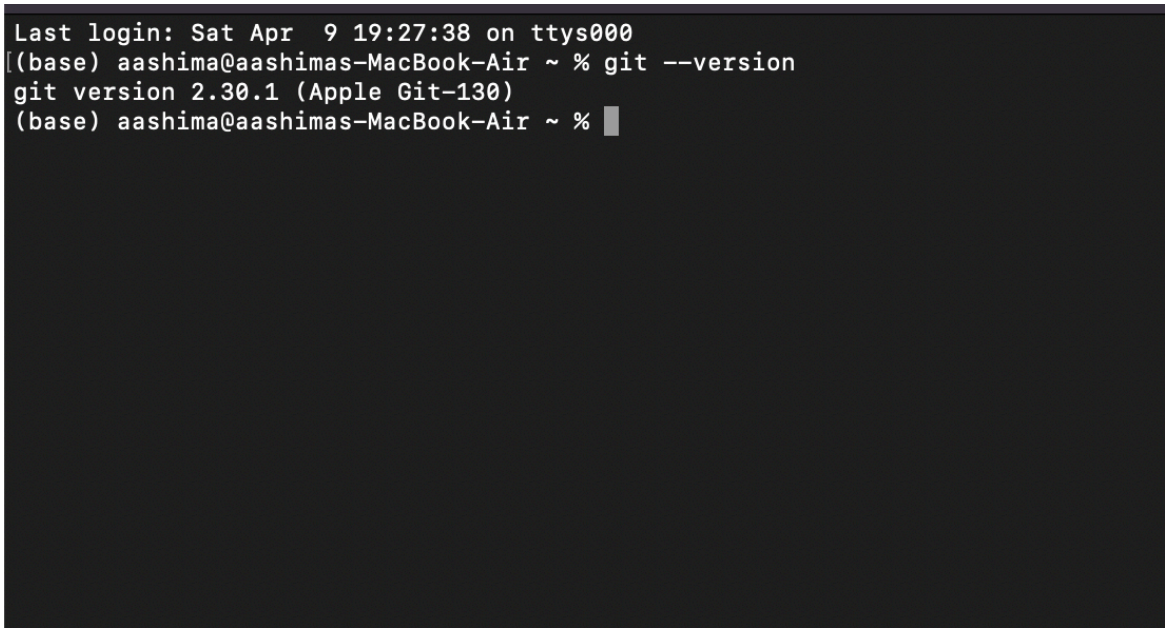
Department:CSE

Aim : Setting up Git Client

Theory

A version control system, or VCS, tracks the history of changes as people and teams collaborate on projects together. As developers make changes to the project, any earlier version of the project can be recovered at any time.

Download Git for Mac



❖On Mac git is preinstalled
❖Check by running git — version on terminal

Aim : Setting up GitHub Account

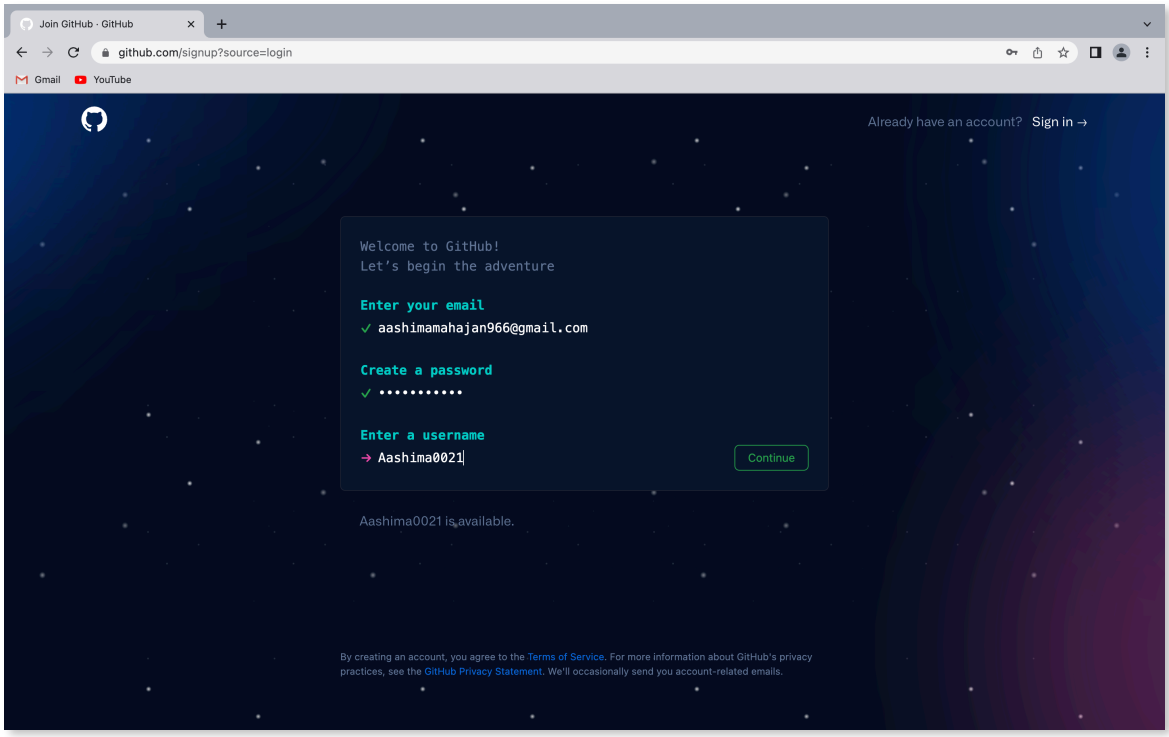
Theory

GitHub is a website and cloud-based service (client) that helps an individual or a developers to store and manage their code. We can also track as well as control changes to our or public code.GitHub offers user accounts for individuals and organisations for teams of people working together.

Procedure

1.Google (any search engine)
Search for git-hub or (https://github.com/signup).

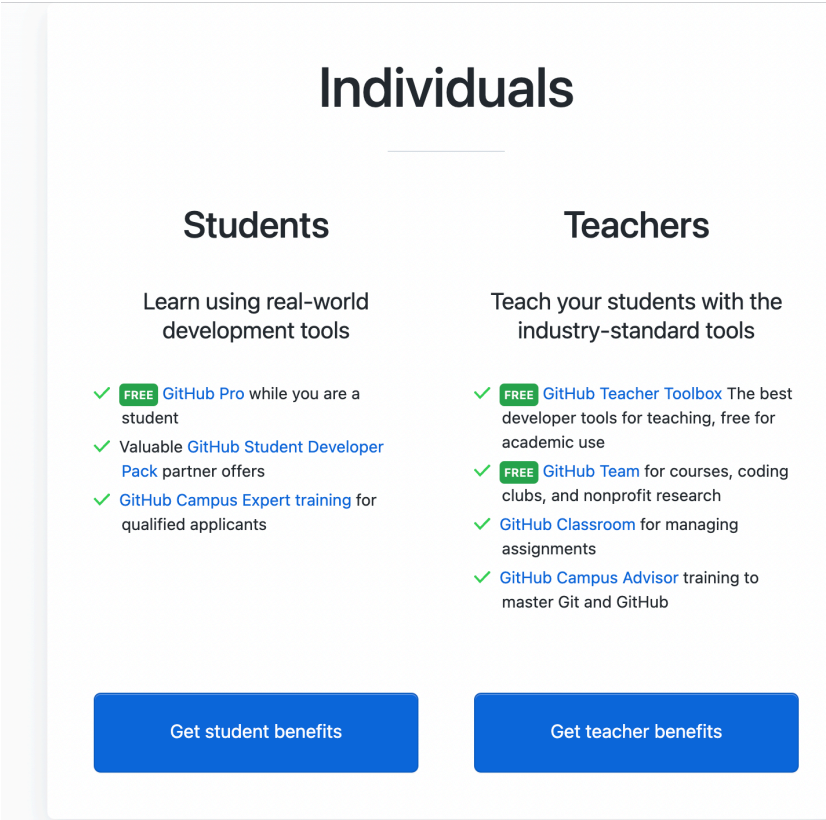
2.**Enter your personal details.** In addition to creating a username and entering an email address, you'll also have to create a password. Your password must be at least 15 characters in length *or* at least 8 characters with at least one number and lowercase letter.



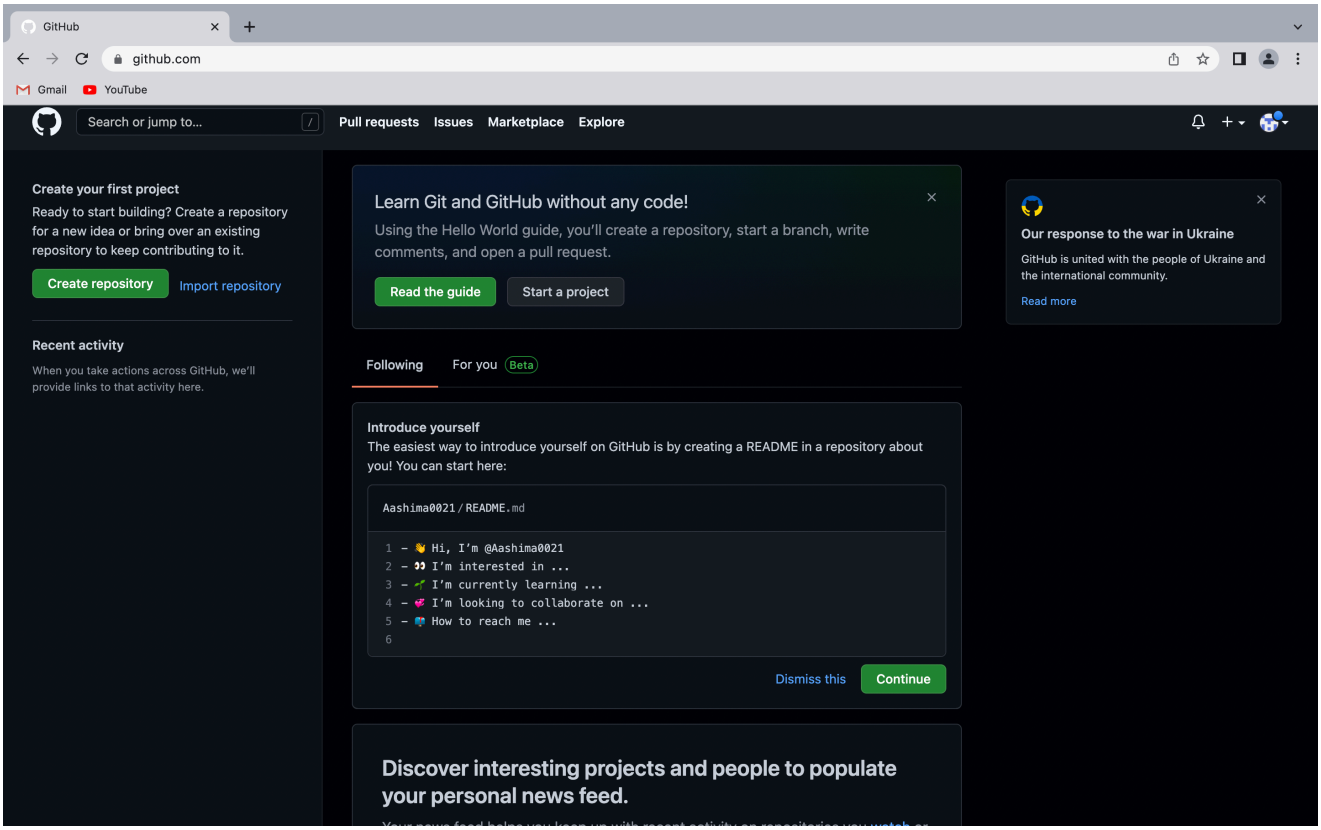
Click on the continue button to create an Account.

3.**Complete the CAPTCHA puzzle.** The instructions vary by puzzle, so just follow the on-screen instructions to confirm that you are a human.

4. Choose the plan which you want to select and continue.



5.Interface of GitHub



Aim : Program to Generate Log

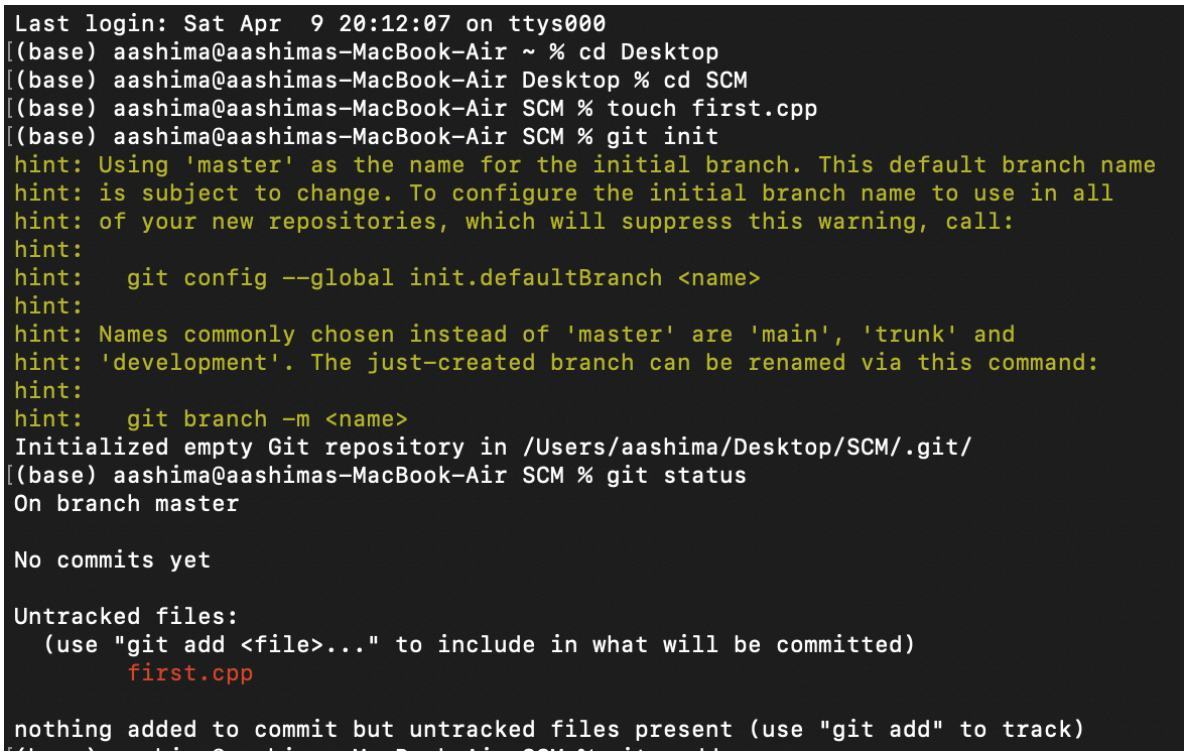
Theory

Git log is a utility tool to review and read a history of everything that happens to a repository. Multiple options can be used with a git log to make history more specific. Generally, the git log is a record of commits.

Procedure-

git status

The git status command displays the state of the working directory and the staging area.



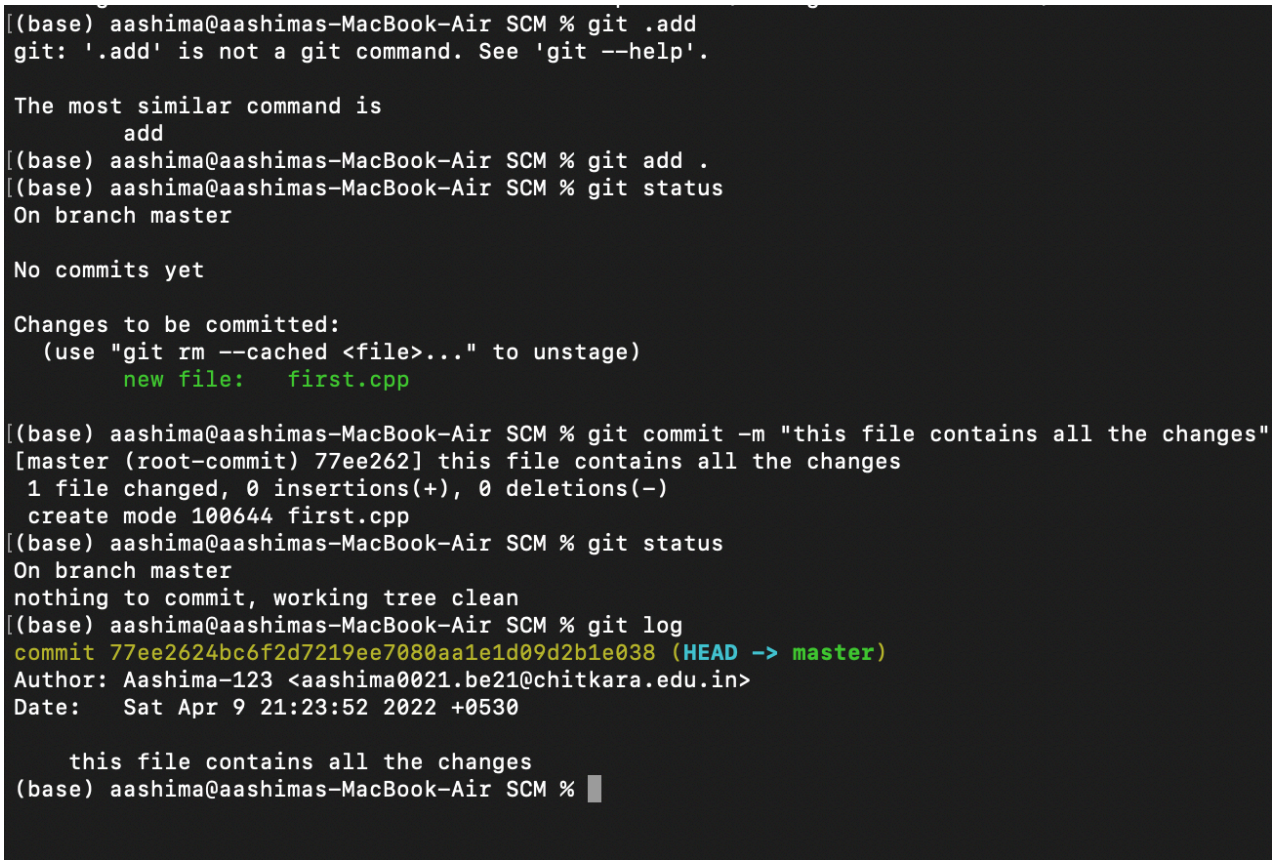
The **git add** command adds a change in the working directory to the staging area. It tells Git that you want to include updates to a particular file in the next commit. However, git add doesn't really affect the repository in any significant way—changes are not actually recorded until you run git commit.

Git Commit

Adding commits keep track of our progress and changes as we work. Git considers each commit change point or "save point". It is a point in the project you can go back to if you find a bug, or want to make a change.

When we commit, we should **always** include a **message**.

By adding clear messages to each commit, it is easy for yourself (and others) to see what has changed and when.



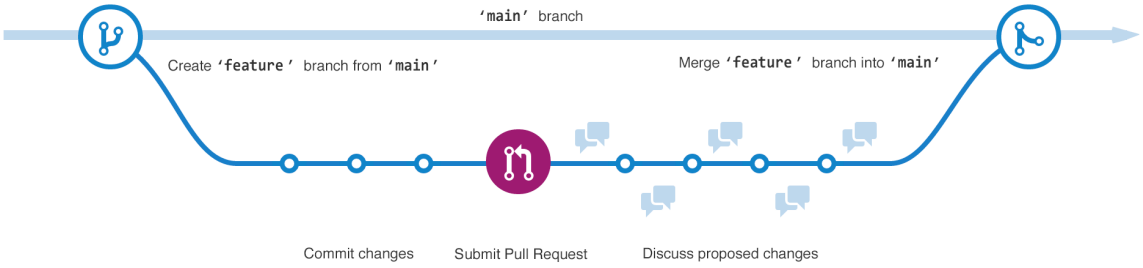
The git log Command

The git log command shows a list of all the commits made to a repository.

Aim: Create and Visualise Branches

Theory

Branching lets you have different versions of a repository at one time.The main branch in git is called as master branch. But we can make branches out of this main master branch. All the files present in master can be shown in branch but the file which are created in branch are not shown in master branch. We can also merge both the parent (master) and child (other branches)



- By default, the branch that is created automatically is called *master* or *main.*

```
[(base) aashima@aashimas-MacBook-Air SCM % git branch
* master
```

Procedure:

✦For creating a new branch -> git branch <branch name>

✦For checking all the branches -> git branch

```
(base) aashima@aashimas-MacBook-Air SCM % git branch page
(base) aashima@aashimas-MacBook-Air SCM % git branch
* master
  page
```

✦To change the present working branch -> git checkout <branch name>

```
(base) aashima@aashimas-MacBook-Air SCM % git checkout page
Switched to branch 'page'
(base) aashima@aashimas-MacBook-Air SCM % git branch
  master
* page
(base) aashima@aashimas-MacBook-Air SCM %
```

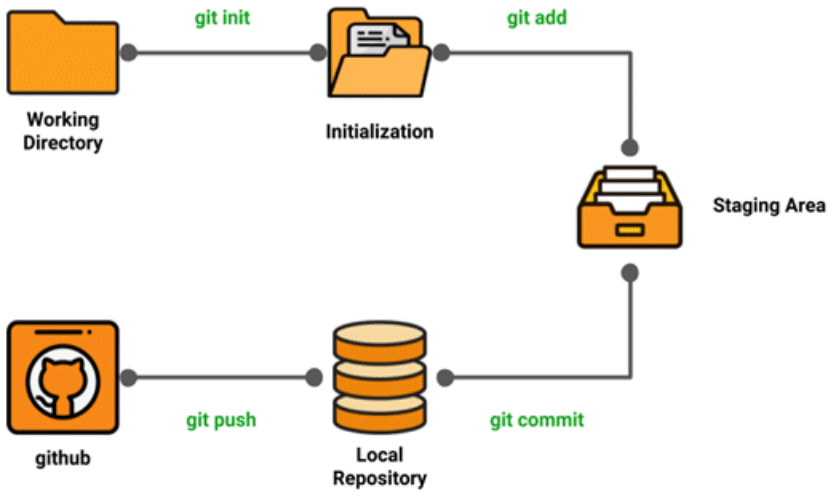
Aim : Git life cycle description

Theory

Git is used in our day-to-day work, we use git for keeping a track of our files, working in a collaboration with our team, to go back to our previous code versions if we face some error. Git helps us in many ways. Let us look at the Life Cycle that git has and understand more about its life cycle.

When a directory is made a git repository, there are mainly 3 states which make the essence of Git Version Control System. The three states are –

- Working Directory
- Staging Area
- Git Directory

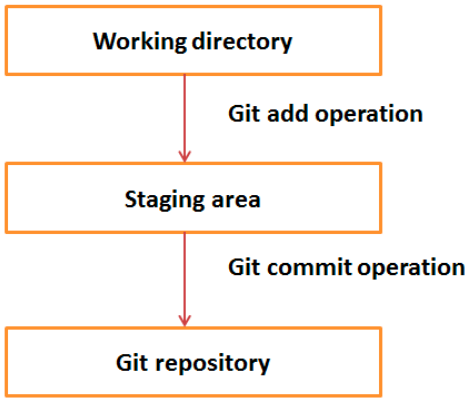


1. Working Directory

Whenever we want to initialise our local project directory to make it a git repository, we use the ***git init*** command. After this command, git becomes aware of the files in the project although it doesn't track the files yet. The files are further tracked in the staging area.

2. Staging Area

Now, to track the different versions of our files we use the command ***git add***. We can term a staging area as a place where different versions of our files are stored. ***git add*** command copies the version of your file from your working directory to the staging area. We can, however, choose which files we need to add to the staging area because in our working directory there are some files that we don't want to get tracked, examples include node modules, env files, temporary files, etc. Indexing in Git is the one that helps Git in understanding which files need to be added or sent. You can find your staging area in the ***.git*** folder inside the ***index*** file.



3. Git Directory

Now since we have all the files that are to be tracked and are ready in the staging area, we are ready to commit our files using the ***git commit*** command. Commit helps us in keeping the track of the metadata of the files in our staging area. We specify every commit with a message which tells what the commit is about. Git preserves the information or the metadata of the files that were committed in a Git Directory which helps Git in tracking files and basically it preserves the photocopy of the committed files. Commit also stores the name of the author who did the commit, files that are committed, and the date at which they are committed along with the commit message.