Version control

- Make save points that saves your project
- Provides total development freedom.
- eg. git, subversion, perforce.
- Git is a version control tool.
- Github is a service that hosts git repositories (collaboration).

git config --global user.name " " . (to set username)

git config --global user.email " " . (to set email)

Creating a git repo

↳ simple folder with additional capabilities of version control

pwd (present working directory)

cd <path> (change directory to given path)

ls (lists files/directories in present directory)

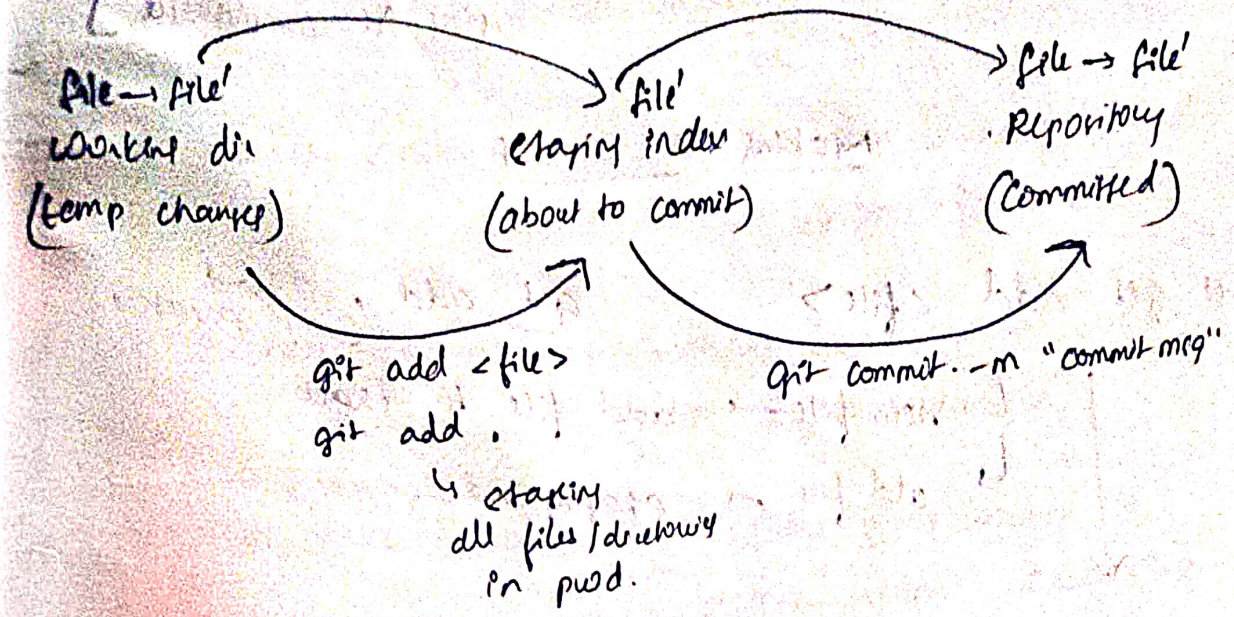
git status (gives the status of a git repo lists unstacked changes if any)

git init (initializes a .git rep in a folder to make it a repository)

git clone <github repo> <new name> [cloning a remote git repo to your local machine]

git diff [lists changes/modifications from the last commit]

Life cycle of a change



file :- commit id (ABD) → file' - commit id (ABC2)

→ Every commit in a git repo has a commit id.

Reviewing a repo history

git log (lists all the commits made on a git repo with the latest commit being on top)

For each commit, the git log command shows
- commit id
- Author
- Date & time

for latest n commits :-
git log -3 (latest 3 commits)

git log -p (shows latest commits with diff)

git log --oneline (Commits are shown in one line with commit id & commit msg)

git log --stat (shows latest commits along with changes in files with file names)

git show <commit id> [Shows changes made in a particular commit with its commit id]

Making a commit

git add <file> git add . → bad practice

↓

- new file → add file to track
- old file → staging index

git commit -m "commit msg"

[HEAD → pointer, points to the latest commit]

git restore <file>

↳ restores file to latest working commit

↓

HEAD

To untrack changes in a git repo

→ create a .gitignore file

→ include all the file names / patterns / paths to the .gitignore file that you want git to not track.

→ commit .gitignore

git commit -am "message" [to add & commit simultaneously]

Branching

git branch [Lists all branches in a repo & tells in which branch we are in]

git branch <name> [Creates a new branch named <name>]

git checkout <name> [Switches from current branch to <name> branch]

git checkout -b <name> [Creates & switches to a new branch <name>]

git merge <name> [merges <name> branch into current branch]

git branch -d <name> [deletes <name> branch]

[after working on a branch & merging it to master, that branch can be deleted]

git merge --abort [abort the merge when there are conflicts in merging (OR) [resolve conflicts and commit.]]

Tagging

git tag -a <tagname> <commit id> -m "msg"

[used to tag a particular commit]

git tag -d <tagname>

[to delete the tag over a commit]

Stashing

- There might be possibility that the remote repo is updated and is different from your local repo.

In this case, you can stash your local repo before pulling the remote repo.

stash - stores your changes temporarily which can be later merged into the remote pulled repo.

git stash ↵

git pull [pulls the remote repo locally]

git stash list [stash area list]

git stash apply [to apply your changes after pulling the remote repo]

↓

resolve merge conflicts

↓

add & commit.

Note: Master is the super stable & super maintained branch.

Always create branches first & make changes in the branches.

Merge the branches to Master only when it is stable & working.

Undo commits

git commit --amend [amend the most recent commit]
↓
making changes

git reset <commit id> [reverting given commit with commit history saved]

git reset --soft <commit id> → [stages the present changes in working directory]
--mixed " → [present changes are shown as modifications]
--hard "
↓
[reset to the given commit id & all current changes are removed]

Pushing commits

git remote add origin <repo_link> [links remote repo to local repo]
(remote)

git push -u origin main / ~~master~~ / master branch generally [pushes the commits to the remote repo]

so, git push -u origin master

NOW: Before pushing to the remote repo, authentication needs to be done for the github account from which you wanna push the changes.