

A Report on Git and Git-Hub.

What is Git and Git-Hub?

Git is a very useful tool that is used for monitoring changes in a file locally i.e., in our local system and helps in restoring the changes to a specific checkpoint (commit) if anything goes wrong. It is a Version control System (VCS).

Whereas Git-Hub is just an online adaptation of Git, the only difference is that it is a cloud-based version of Git that saves the files over cloud.

What is Git-Bash?

It is used to add the functionality of the git to our local computer. It provides us with a linux based command line interface to us in our windows system.

How to setup Git for a new user?

- First, we need to create a new user account using a user name and e-mail using the commands mentioned below: -
 1. `git config --global user.name (your name)`
 2. `git config --global user.email (your e-mail)`

(Note to check your username or e-mail just use the following command, `git config user.(username)/(e-mail)`)

- Now just open git bash in the folder you want to use git or we can even use VS code in that folder to use git.

Some important Git Commands: -

1. `ls` – used to list directories of the folder which is opened in git-bash.
2. `git status` – used to check the current status of the files.
3. `git init` -used to initialize an empty/new git repository.
4. `git add -A` – used to add a file into git's tracking.
5. `git commit -am "(add a comment)"` – used to commit a change in the file along with a comment.
6. `git log` – gives us a record of all the commits and changes of the file recorded by git. (along with commit id)
7. `git reset –hard (commit id)` – used to reset the file version to the file version that used to exist on that commit whose id is mentioned.

(*Note – Git stores the file changes in the form of hash values.)

Difference between 'git log' and 'git status': -

- 'git status' is used to check the status whether any change are made in the file or not.
- 'git log' is used to view all the commits by the user in the file.

What is a branch?

A branch is basically a copy of the original code on which we can work upon without altering the main/original code/file.

Commands related to branch: -

To make a new branch we use,

1. git branch – shows all branches.
2. git checkout -b (new branch name) – used to make a new branch from the main branch.
3. git branch -d (branch name) – used to delete an existing branch.
4. git checkout (branch) -used to switch to the specified branch.

(*Note – '*' is a pointer pointing the current branch from the branch list.)

What is merging?

The changes done in a branch can finally be proposed to be merged in the main branch i.e., to the original code.

For merging we use the following command,

`git merge` – used to merge two branches or a branch with the main branch.

What is .gitignore?

It is a file created inside a repository/folder for ignoring some specific files in the repository which we do not want to be monitored. We just need to add that file name to the .gitignore file.

Forking – to request a clone of a repository into your own repository, a replica of the original one to work upon.

Cloning – to download a copy of the original files/repository from our GitHub repository to our local computer.

To push a change to git-hub: -

- `git remote -v` – shows the url from which the files are cloned or to which url we want to push.
- `git fetch (url)` – `git fetch` command downloads commits, files, and refs from a remote repository into your local repo. It brings down the changes from the remote from that repository to your code.
- `git push origin` – it is a git command used for pushing a local branch or branches to a remote repository.

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