Git Concepts

* Git

It is a Version Control System that helps us to track changes in code. To track history of code and collaborate.

* Repository

A repository contains all project files, including the revision history of the project.

* git clone-

Cloning a remote repository into our local machine i.e. making a duplicate in our local machine.

By using HTTPS url it is the easiest way to clone.

Command- git clone <https url>

The repo gets cloned in our local system.

Once we clone the repo we will see a .git file gets created. This shows that we can use git in this folder (cloned repo)

* git status-

It tells the status of the code.

Command- git status

If any changes made it file/s. This command tells that the file/s has been **modified** and if we add a new file, it tells that the newly created file is **untracked**. If the file is ready to be committed i.e. it has been added and need to commit then the status is **staged.** And if no changes are made the status as **unmodified**.

* git add-

adds new or changed files in our working directory (where the changes made) to the Git staging area.

Command- git add <file name>

For specific file

Command- git add .

For all the changes made.

* git commit-

It is a record of the change.

Command- git commit -m “<meaningful commit message>”

After doing this, status shows our local system is a commit ahead of our branch. Thus, we must perform push.

* git push

It uploads the local repo content to the remote repo.

Command- git push origin <branch name>

Origin specifies the name of the remote repo.

We need to have the permission to push our changes into the remote repo.

* git init

Used to create a new git repository.

Command- git init

After this command we have created a repo in our local system. Now we can work on our project, create files, work on code etc. After this we have to follow the same steps i.e. add commit.

Now we have to upload our local repo in our remote repo. So for doing that first we need to create a new repo remotely and then for linking-

Command- git remote add origin <https url link>

Name of the repo is origin.

To verify the which remote repo is set-

Command- git remote -v

Used to check the branches present and which branch we are in-

Command- git branch

main branch is the default branch.

* Branch

We basically make a copy of the main code and work on that branch, make changes on that branch without effecting the main branch. We can later on merge this branch code to the actual code/ main branch

We create a new branch to take the snapshot of the changes we made.

Command- git branch

Used to check the branches present and which branch we are in.

Command- git branch <new branch name>

A new branch is created

Command- git branch -d <branch-name>

To delete existing branch

* git checkout-

used to switch to a different branch.

If creating a new branch and switching

Command- git checkout -b <name of new branch>

If switching to an existing branch

Command- git checkout <branch-name>

* git merge-

to add the changes made in a different branch into one branch.

To check the changes in the two branch

Command- git diff <branch-name>

To merge the changes

Command- git merge <branch-name>

* We can also merge by creating a PR. This is done through the platform where we create a PR so that the changes will be merged after getting approval by any snr authority.
* Merge conflict- while merging if the code changes are not identified. (eg same line changes)

We can resolve this by choosing either or both the changes.

* git pull-

This is used to update the changes made in the remote repo to our local repo.

* git reset-

To undo the added changes

Command- git reset <file-name>

To undo last commit

Command- git reset HEAD-1

To undo previous commit

Command- git reset <commit-hash>

* git fork-

Copy of repo.