Learn Git and GitHub : By Ishu Bagga

What is Centralized version control (CVC)?

-> Earlier People used to use Centralized version control system by storing the different version of code set in dropbox or at any other place
-> In CVC central server is the only place where all the versions of the Projects are stored
-> In CVC at your local you can have the current\Latest version of the project
-> In CVC when you need a previous version project then you have to download it from central system and at the same time you have to remember all the version. Then what in case the central system got crashed.
-> In case of no Internet connection won't be able to get any version from central repository

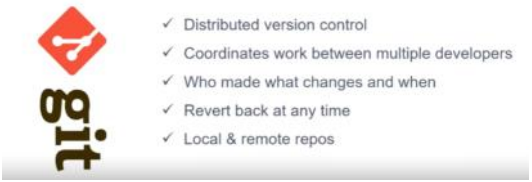
And to overcome this problem **Distributed version control system** comes in to the picture.

What is Distributed version control system ?
-> In DVCS Copy of code will be available on all the developers along with the central repository. In that way every developer has the backup of the code

Why GIT is Distributed Version Control System?
-> In case of multiple team members working on a same website can individual can concentrate on the feature he is responsible to develop without interfering other's work.

Why Do we need Version Control System ?
Maintaining versions of code or data helps in analyzing the project at later point of time to Analyse where exactly more time had been taken.

What is Git?
-> Git is a distributed version-control system for tracking changes in source code during software development.
-> It is designed for coordinating work among programmers, but it can be used to track changes in any set of files.



What is Git Bash?
Git Bash is an application for Microsoft Windows environments which provides an emulation layer for a **Git** command line experience

What is Git Hub?
GitHub is a code hosting platform for collaboration and version control.

Setup Git Bash
Check if Git is setup on your system by accessing windows button and trying to search git. If git Bash appears then git is already installed on system.
If not install git using below link:

Download Git :
https://git-scm.com/download/win

Help to setup Git:
https://www.youtube.com/watch?v=J_Clau1bYco

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Setup Git Hub
Create a Github account using below url :
https://github.com

Help to setup Git Hub:
https://www.youtube.com/watch?v=J_Clau1bYco

Remote Repository \ Central Repository is GitHub Repository
Local Repository is the one at local system

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1) **Git Configuration**
-> Once the Installation is done then configuration of git would be required which connects git with git hub.
-> To configure the git access Git Bash from windows button Immediately after git setup on system
And execute below commands
git config --global user.name "ibagga"

git config --global user.email "ishu1070@gmail.com" This configuration will connect git with github
Note : You should have to do these things only once on any given computer

Check already existing configuration status : What's the github account local git is associated with
$ git config --list
$ git config --list --show-origin
$ git config user.name

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2) Create a Local Git Repository\Folder

Create a folder on your local system and you can convert it in to Local Git Repository in **2 ways**

a) **By Cloning ------:** One can clone an existing Git repository from elsewhere
b) **By Initializing-- :** One can take a local directory that is currently not under version control, and turn it into a Git repository and later push to remote repository

a. By Cloning

-> Cloning happens in case when code exist on Remote Repository(Git Hub) or In case of already existing or old project
-> New users can clone it on their Local Repository.
Command Used to Clone : git clone https://github.com/ibagga/Trial.git
-> Now end user can either work on the same branch or can create their own branch and work simultaneously and push the code :

What is Branch ??

a) Let's try to understand using an analogy. A software developer has created a project called Amazon.com which has a feature of ordering anything over the Internet. However at the moment Amazon.com does not contain any payment mechanism. Now Amazon wants to develop the online payment mechanism. Perhaps they want a 3rd party to develop this feature for them. So for the Integration they have to share the code base to the 3rd party. Well!! Now they are worried that 3rd party should not ruined their existing code and for that reason Branches comes in to the existence. Using a Branch Amazon can take the snapshot of Amazon code base (The new snapshot will be called Branch)and give that to 3rd Party for further development.

** **Working on Same Master Branch**

-> In most of the business scenarios this is rare to work on master branch to avoid project risk.

** **Working on Another or a new Branch**

-> Command to create a new Branch

Git branch firstbranch

-> Command to Switch to newly created Branch

Git checkout firstbranch (Branch name is not case sensitive)

-> Command to push newly created branch or file in a branch to remote repository

- First check if all the file are tracked Git Status
- Add all files for tracking Git add - A (To track all files)

  What is staging in GIT?

  Staging is a time when you modify something in a file or adding a new file all together and don't commit

  Using command git status(User will be able to see what are the changes happened)
- Git Commit to save the branch file changed at Local Repository

  Git commit -a -m "Comment"
- Git Push : To push branch code to remote repository under newly created branch

  Git push origin firstbranch **** 1st Time need to setup ssh ket at github for handshaking*******

-> Command to check the already exiting Branches at remote repository

Git branch -a (Shows all local branch)

Git branch -r(Shows all remote branch)

git remote show origin

Note : In case of Cloning No Initialization of repository is require.

git clone is basically a combination of:

git init (create the local repository)

git remote add (add the URL to that repository)

git fetch (fetch all branches from that URL to your local repository)

git checkout (create all the files of the main branch in your working tree)

Therefore, no, you don't have to do a git init, because it is already done by git clone.

b). By Initializing

-> Initializing happens when ***there is no code on remote repository to clone or at the initial stage of the project***
-> End-user have to initialize the local folder using command git init and then push the code to remote repository so that other user can clone and use that project
-> End user has to manually create a repository in Git Hub
-> Now Local repository should be connected with remote repository using below command
git remote add origin "https://github.com/ibagga/STE.git"
-> To know the status of association of local repository and remote repository use below command:
Command to know the local and remote repository connection status : **git remote -v**

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3) Git Fetch

-> In case of downloading remote repository changes to local repository

-> Do git fetch git fetch origin master
-> It will not merge the changes in the local
-> However, End user will be able to see the latest code changes with name "remote/origin master"
After fetch command execute git branch -a to see the changes

4) **Git Pull =** Git Fetch + Git Merge
-> In case of downloading remote repository changes to local repository + merging in to the branch
-> Do git fetch git pull origin master
It will merge the changes in the local
-> Download the project from central to local repository or to update the project in local repository :
Command : git pull origin master

Difference between git pull and git fetch

Git pull : pull all new file\change file it directly changes your master branch
Git fetch: pull all new file\change file it directly changes and stores in a different branch
Git pull = git fetch + git merge

5) **Merging**

git merge origin/IshuBagga -m "m1"

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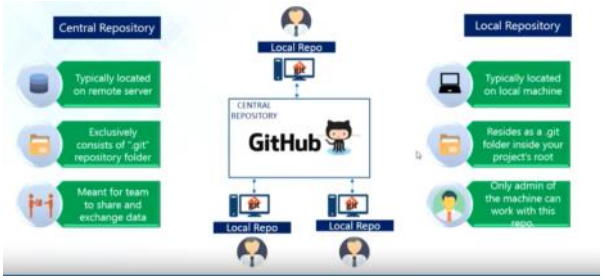
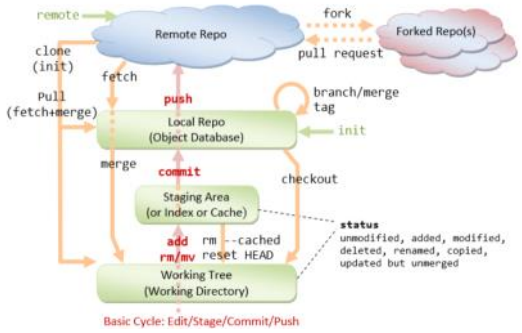
Reference :
Help to setup Git:
https://www.youtube.com/watch?v=J_Clau1bYco

https://www.youtube.com/watch?v=2hrJcHdOPBw

https://www.dyclassroom.com/git/git-remote-connecting-with-repository





master rejected non fast forward eclipse
https://www.youtube.com/watch?v=PUZc-azvqI0

Common Errors :
Untracked files: Not been done git Add
http://www.geo.uzh.ch/microsite/reproducible_research/post/rr-eclipse-git/