

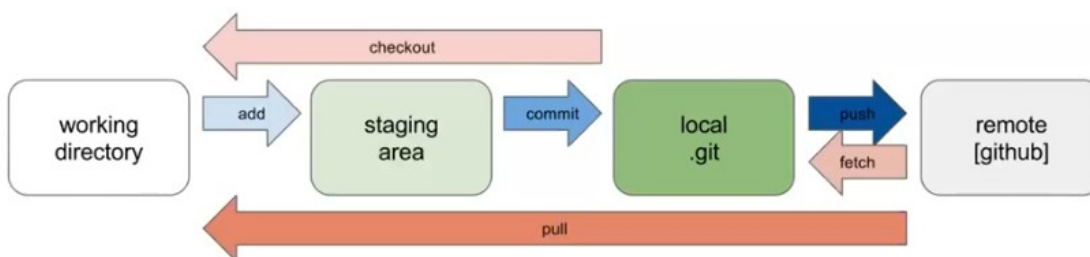
GIT and GITHUB

1. basics commands
2. git log
3. git diff command
4. git rm command
5. undo changes using git checkout command
6. git reference (master and head)
7. git reset
8. git ignore
9. git branching and commands
10. merging and conflict
11. deleting branches
12. rebasing
13. git slash
14. git remote commands
15. git tagging

What is git? git vs github?

What is GIT?

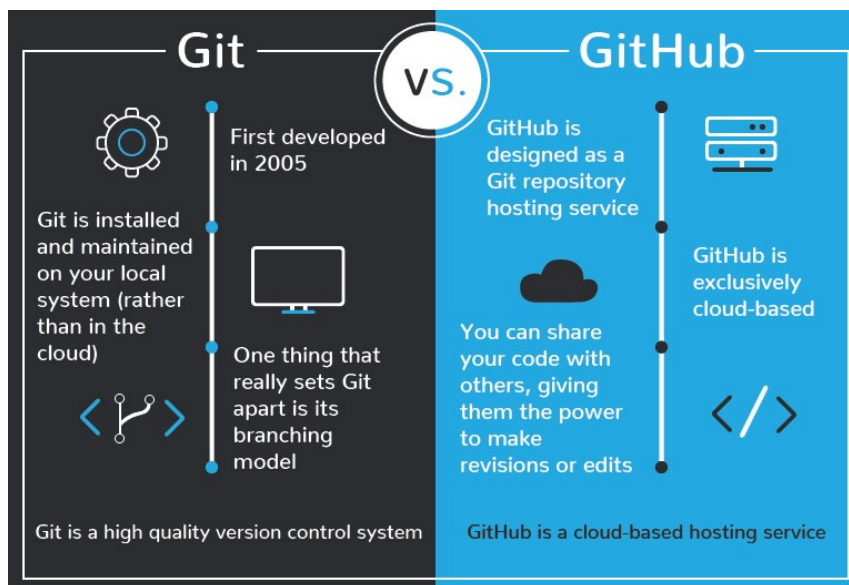
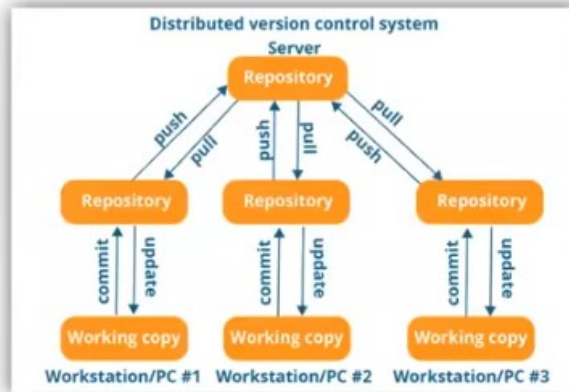
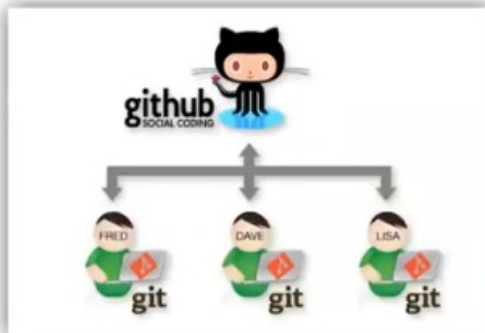
- **Git is Distributed Version Control System Tool.**
 - **Git is not acronym and hence no expansion. But most of the people abbreviated as "Global Information Tracker".**
 - **GIT is developed by Linus Torvalds, who also developed Linux Kernel**
-
- **Git** is a revision control system used to track changes in computer files. It's a tool to manage your code & file history while coordinating work remotely on those files with others.



GIT is **distributed version control system**, github is an **cloud based hosting service**

<https://blog.devmountain.com/git-vs-github-whats-the-difference/>

GitHub is a hosting service for git repositories. Git is the tool, while GitHub is the service to use git.

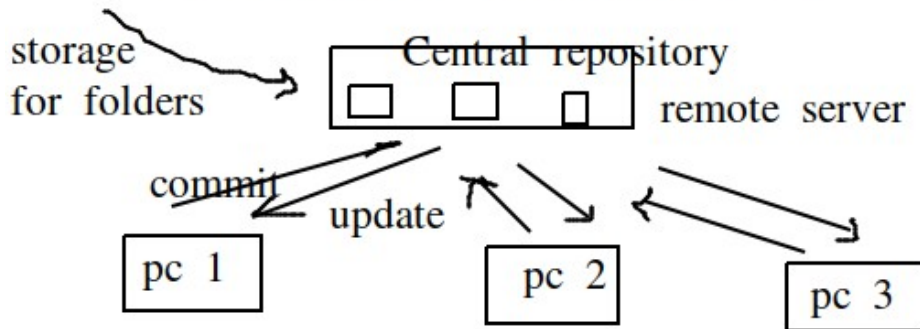


Type of version control system:

1. centralized version control system CVS eg SVN
2. Distributed version control system eg: GIT

How CVS works?

Central version control system CVS

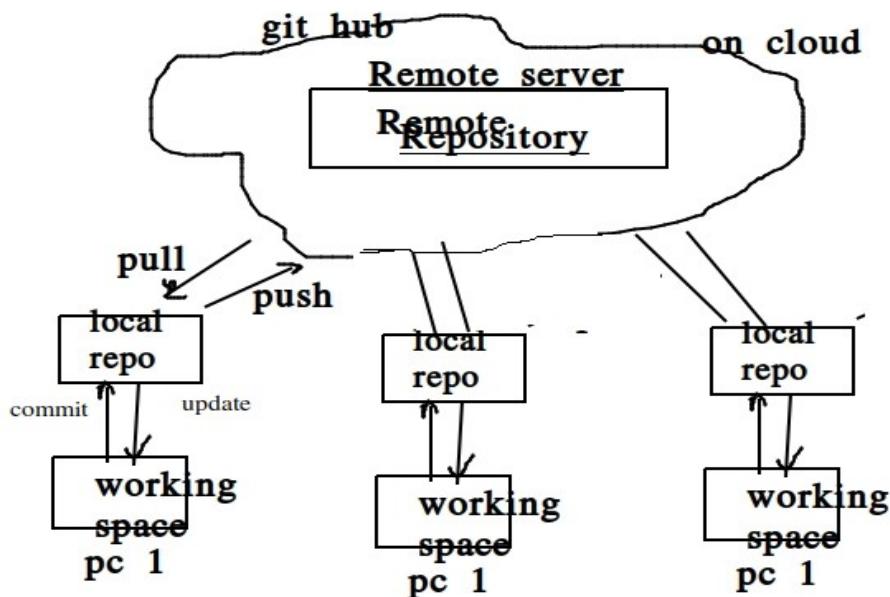


cant work
without network
or internet

Problem with CVS?

1. Not locally available, we need to connect to network or internet always. Slow performance
2. Single point of failure

Distributed version control system eg: GIT



Linus
2005

In git every contributor has a local copy or “clone” of the main repository
ie everybody maintain a local repository of there own which contain all the files and
metadata present in teh the main repository

CVS vs Distribeud version control system GIT

CVCS

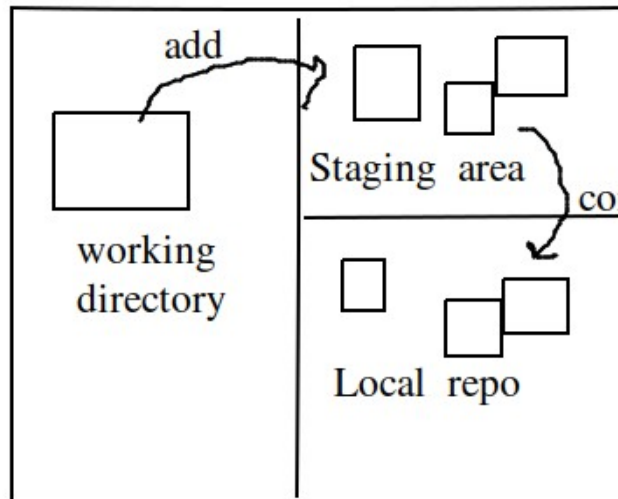
- In cvcs a client need to get local copy of souce from server, do the changes and commit these changes to central server
- CVCS easy to learn and setup
- working on branches is difficult in CVCS and leads to many confilicts
- CVCS dont provice offline access

DVCS

- In DVCS each client can have a local repo as well and have a complete history on it client need to push the changes to branches which will then be pushed to server repository
- DVCS system are difficult for beginner, multiple commands need to remember
- working on branches is easier in DVCS, less conflict
- DVCS works fine for offline access as every dev have copy of whole project on his local system , interet is only required for pull/push operation
- DVCS faster as dev use his local copy most of the time, dev has to intract with central repo not too frequently
- If DVCS server is down still dev can work on his copy

Stages of git and terminology

1. working space / working directory
2. staging area
3. local repository



git init => initialize an
repo
.git folder is created

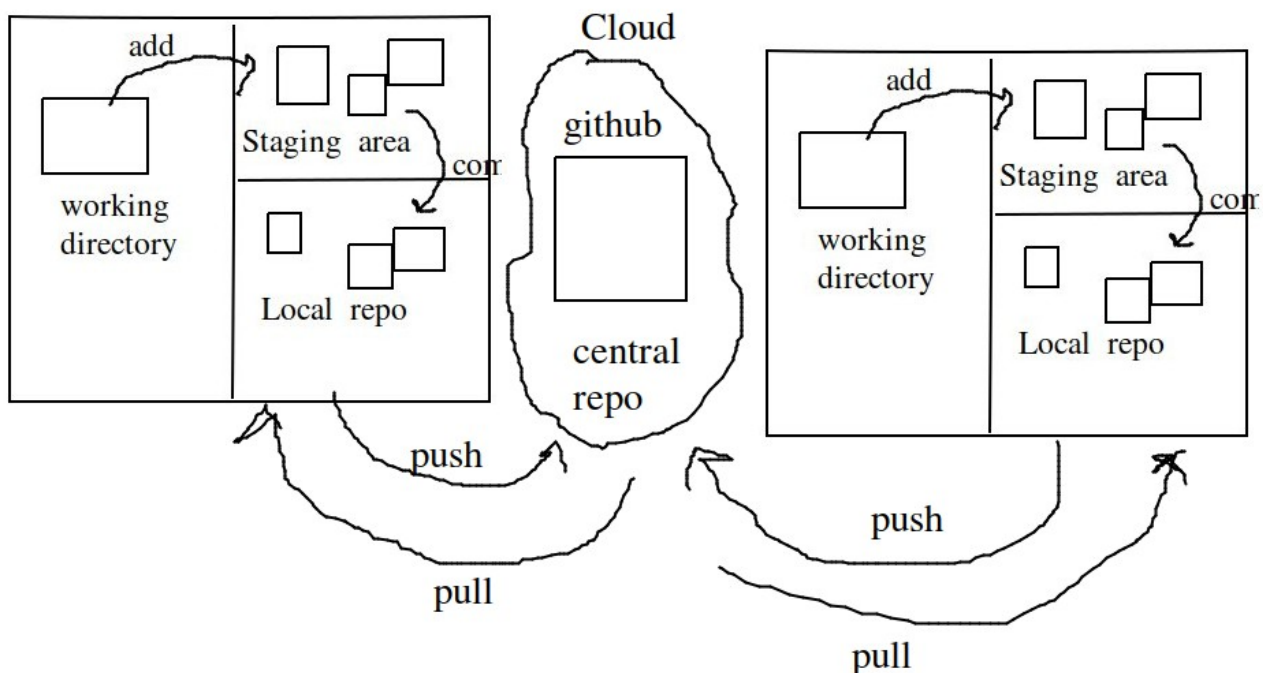
commit (Save to local repo)

snapshot

commit ID

40 alpha numerical

Tags (easy to remember)



When dev2 pull code from github copy of code would be there in working directory, staging area and local repository

Dev2 add his own code and finally commit code to local repository and push to central repository, Dev 1 next day pull and get updated code

All changes are maintained with all version history is maintained in git

GIT important terminology

Repository

- Repository is a place where you have all your code
- Repository is a kind of folder related to one product
- Changes are personal to that particular repository

server:

- it store all Repository and contain meta data also

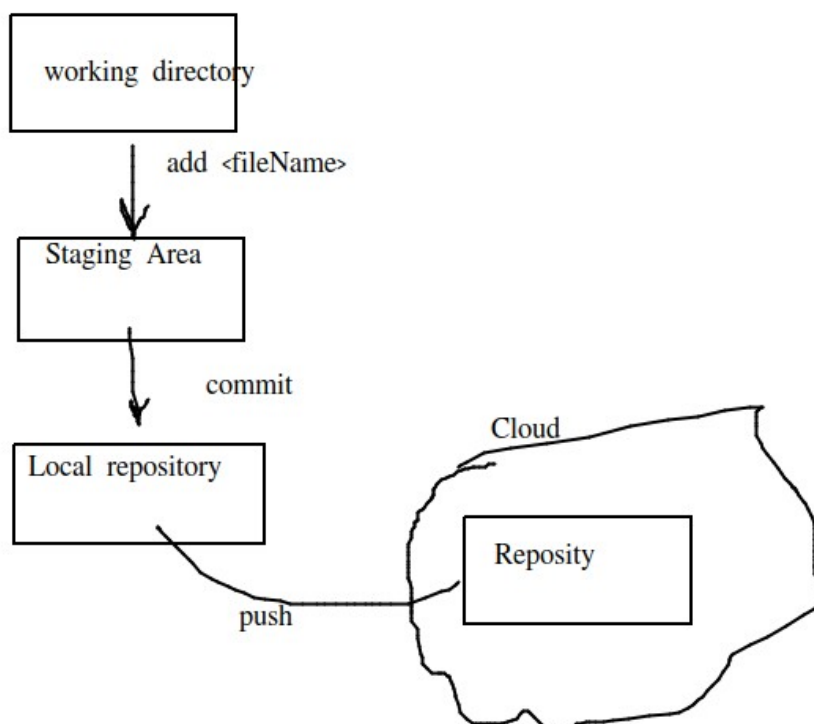
Working directory/ workspace

- Where you see files physical and do modification
- At a time you can work on a particular branch in workspace only

How git is different from Older CVS

In older version system CVCS, there is no concept of staging area, developer marks modification and commit their changes directly to the repository, so because CVCS don't use concept of staging area, cvcs need to track all files that is used by that developer :(

GIT use different approach, git only track files that are added to staging area, whenever we do commit an operation git looks for the files present in the staging area and that files only considered for commit and not other modified files present in working directory



Commit id/ version-id/ version

- Reference to identity each changes
- TO identity who changes which files

Tags

- Tags assigning some meaningful name with a specific version in the repository, once a tag is created for a particular save, even if you create a new commit, it will not be updated
- Used for versioning V-x.y.z
-

Snapshots

- represent some data for particular time
- it is always incremental i.e. it stores the changes (append data) only, not entire new copy

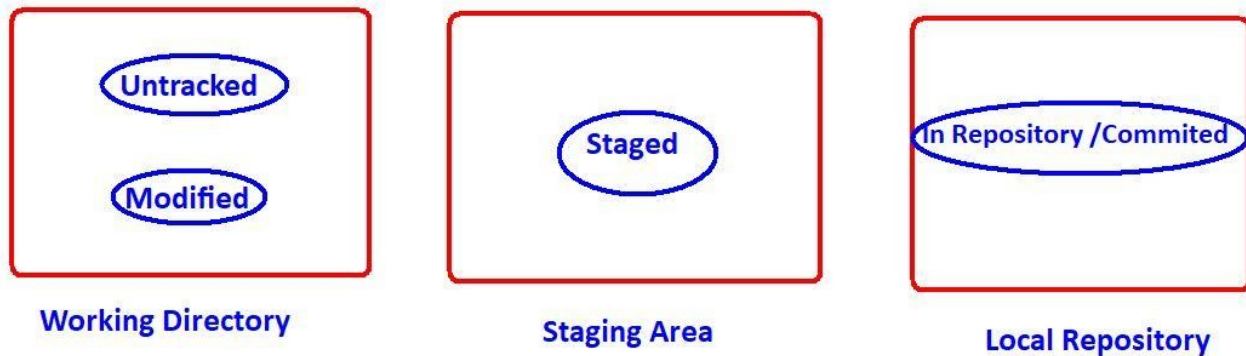
Commit

- commit will change in repository, you will get a unique commit id (40 alpha numeric code)
- It uses sha-1 checksum concept, provides code integrity/security, sender and receiver checksum must be same
- even if you change one dot, commit id will be changed
- It actually helps you to track changes
- commit is also named as SHA1 hash

Features and Architecture of GIT

Staging Area/index area.

There is logical layer/virtual layer in git between working directory and local repository.



Working Directory ==> Staging Area ==> Local Repository

We cannot commit the files of working directory directly. First we have to add to the staging area and then we have to commit.

This staging area is helpful to double check/cross-check our changes before commit.

Git stores files in repository in some hash form, which saves space. GIT will use internally snapshot mechanism for this. All these conversions and taking snapshots of our data will be happened in staging area before commit.

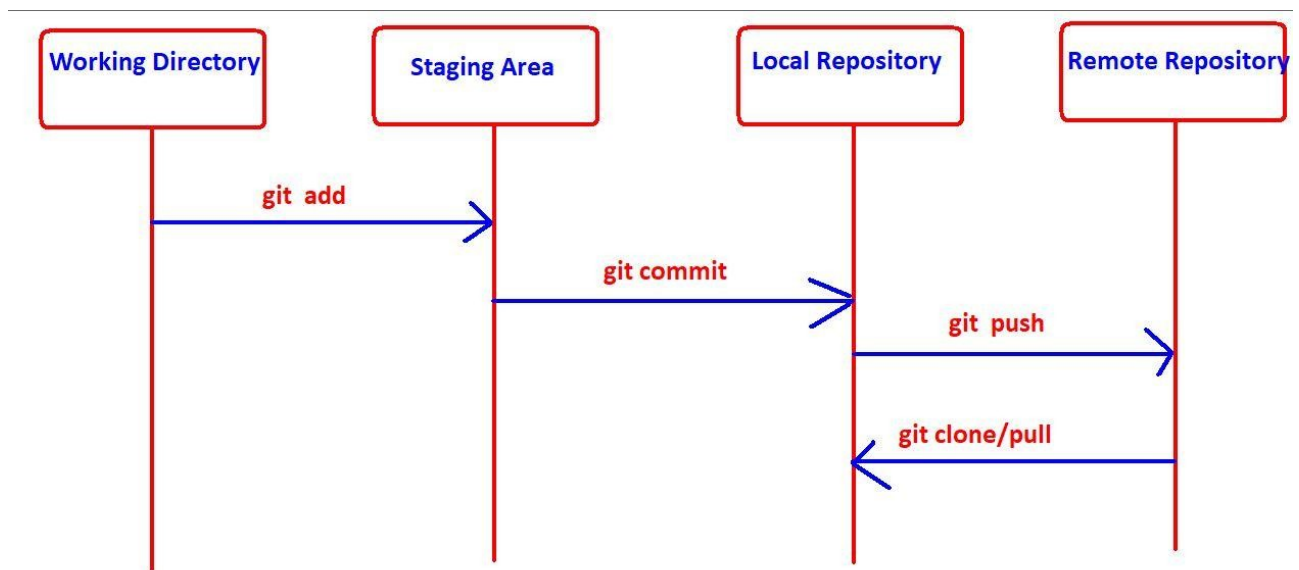
Branching and Merging:

We can create and work on multiple branches simultaneously and all these branches are isolated from each other.

It enables multiple work flows.

We can merge multiple branches into a single branch. We can commit branch wise also.

GIT Architecture:



Git contains 2 types of repositories:

- 1) Local Repository
- 2) Remote Repository

For every developer, a separate local repository is available. Developer can perform all checkout and commit operations wrt local repository only.

To perform commit operation, first he has to add files to staging area by using `git add` command, and then he has to commit those changes to the local repository by using `git commit` command.

`git add` => To add files from working directory to staging area.

`git commit` => To commit changes from staging area to local repository.

`git push` => To move files from local repository to remote repository.

`git clone` => To create a new local repository from the remote repository.

`git pull` => To get updated files from remote repository to local repository.

Life Cycle of File in GIT

Every file in GIT is in one of the following states:

1) Untracked:

The files which are newly created in working directory and git does not aware of these files are said to be in untracked state.

2) Staged:

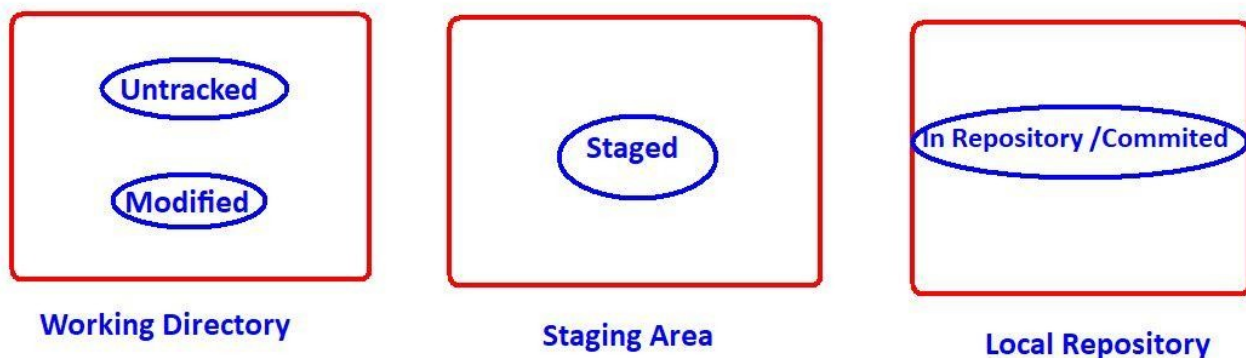
- * The files which are added to staging area are said to be in staged state.
- * These files are ready for commit.

3) In Repository/ Committed:

Any file which is committed is said to be In Repository/Committed State.

4) Modified:

Any file which is already tracked by git, but it is modified in working directory is said to be in Modified State.



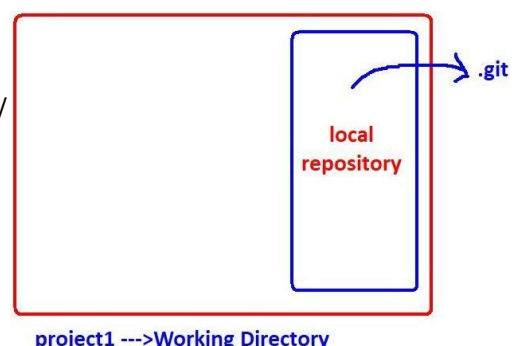
1. GIT basics commands

git status

fatal: not a git repository (or any of the parent directories): .git

git init

Initialized empty Git repository in /home/raj/Desktop/gitdemo/project1/.git/



git status

On branch master

No commits yet

nothing to commit (create/copy files and use "git add" to track)

Now create some files

```
cat >file1
```

```
this is file 1
```

```
cat >file2
```

```
this is file 2
```

git status

On branch master

No commits yet

Untracked files:

file1, file2

git add file1, file2

```
git status
```

On branch master

No commits yet

Changes to be committed:

new file: file1

new file: file2

git commit -m "first commit"

*** Please tell me who you are.

Run

```
git config --global user.email "you@example.com"
```

```
git config --global user.name "Your Name"
```

to set your account's default identity.

Configure username and password

```
git config --global user.email "rgupta.mtech@gmail.com"
git config --global user.name "rgupta00"
```

git commit -m "first commit"

```
[master (root-commit) bf0acc9] first commit
 2 files changed, 2 insertions(+)
 create mode 100644 file1
 create mode 100644 file2
```

git status

```
On branch master
nothing to commit, working tree clean
```

Now update file1:

```
cat >> file1
this is some update to file1
```

git status

```
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)
    modified:   file1
no changes added to commit (use "git add" and/or "git commit -a")
```

git add .

git commit -m "some changes to file1"

2. git log : get log information:

git log command is used to see history of all commits in local repository most commonly command

git log .	=> getting all log information
git log file1	=> only commit related to file1
git log --oneline	=> oneline message, useful to identify commit based on messages

git log

commit 0a82246afbfba89105ffa95a0b2cc65ccfc0010c (HEAD -> master)

Author: rgupta00 <rgupta.mtech@gmail.com>

Date: Thu Aug 6 11:59:07 2020 +0530

some changes to file1

commit bf0acc933722c9740521ed2dc98c9c899365dc99

Author: rgupta00 <rgupta.mtech@gmail.com>

Date: Thu Aug 6 11:56:59 2020 +0530

first commit

git ls-files:

shows files in staging area

file1

file2

git log file1

commit 0a82246afbfba89105ffa95a0b2cc65ccfc0010c (HEAD -> master)

Author: rgupta00 <rgupta.mtech@gmail.com>

Date: Thu Aug 6 11:59:07 2020 +0530

some changes to file1

```
commit bf0acc933722c9740521ed2dc98c9c899365dc99
Author: rgupta00 <rgupta.mtech@gmail.com>
Date: Thu Aug 6 11:56:59 2020 +0530
```

first commit

git log --oneline:

handy command to see oneline log message show first seven char of commit id

```
0a82246 (HEAD -> master) some changes to file1
bf0acc9 first commit
```

git log -n 2

get log for latest first two commit

```
Commit 0a82246afbfba89105ffa95a0b2cc65ccfc0010c (HEAD -> master)
Author: rgupta00 <rgupta.mtech@gmail.com>
Date: Thu Aug 6 11:59:07 2020 +0530
```

some changes to file1

```
commit bf0acc933722c9740521ed2dc98c9c899365dc99
Author: rgupta00 <rgupta.mtech@gmail.com>
Date: Thu Aug 6 11:56:59 2020 +0530
first commit
```

git log --grep "first" --oneline

git log --since="5 min ago"

git log --author =rgupta00 --oneline

git log --max-count=3

3. git diff command

lets say after committing we change file in working directory then content of staging area will be different from local repository

**we want to see the difference between working directory and staging area
=> git diff command**

git diff file1

Will give diff bw working dir and staging area

```
diff --git a/file1 b/file1
index 6564281..171840f 100644
--- a/file1
+++ b/file1
@@ -2,3 +2,4 @@ this is file 1
 this is some update to file1
 this is added to file1
 another line is added to file1
+this is another line
```

diff --git a/file1 b/file1:

a/file1: source copy ie staging area

b/file1: destination copy ie working copy

staging area ----> working copy

index 6564281..171840f 100644

6564281: hashcode of source file

171840f: hashcode of destination file

100644: GIT file mode

100: first 3 digits, represent type of file, ASCII text file

644: next 3 digits represent file permission

644-> rw-r--r--

--- a/file1

---- a/file1 is missing some lines (staging area)

+++ b/file1

+++ b/file1 is having some extra data (working dir)

@@ -2,3 +2,4 @@ this is file 1

this is some update to file1
this is added to file1
another line is added to file1

+this is another line

=> if any line prefixed with space it is unchanged
if any line is prefixed with + then it is added in destination copy

if any line is prefixed with - then it is removed in destination copy

git rm command:

git rm file1.txt => it will remove file from both working and staging area

git rm --cached file1.txt => it will remove file only from staging area
and not from working dir

rm file1.txt => it will remove file only from working area not from
staging area

As files are already in local repo can revert back! We can only restore
committed files

commit operation is required even in case of removing files, if files are
already tracked by git.

undo changes using git checkout command

git checkout command? something like undo operation

purpose: we can use checkout command to ignore/discard unstaged
changes (not added to staging area) in the tracked files of working
directory.

git checkout – file1.txt

to discard unstaged changes in working directory of tracked file

Git References or refs

(master and HEAD)

For most of the commands (like git log, git diff etc) we have to provide commit id as argument. But remembering commit id is very difficult to remember, even 7 characters also.

Git provides some simple names for these commit ids. We can use these names directly.

These are just pointers to commit ids. These sample names are called references or refs.

References are stored in .git/refs directory as text files.

There are multiple types of references like **heads, tags and remotes**.

The most recent commit id => master or HEAD

What is master?

\$ git status

On branch master

1) master is the name of the branch.

2) It is a reference(pointer) to last commit id. Hence where ever we required to use last commit id, simply we can use reference master.

3) This information is available in .git/refs/heads/master file.

The following two commands will produce same output.

\$ git log 49aa8d7

\$ git log master

What is git Head?

HEAD is a reference to master.

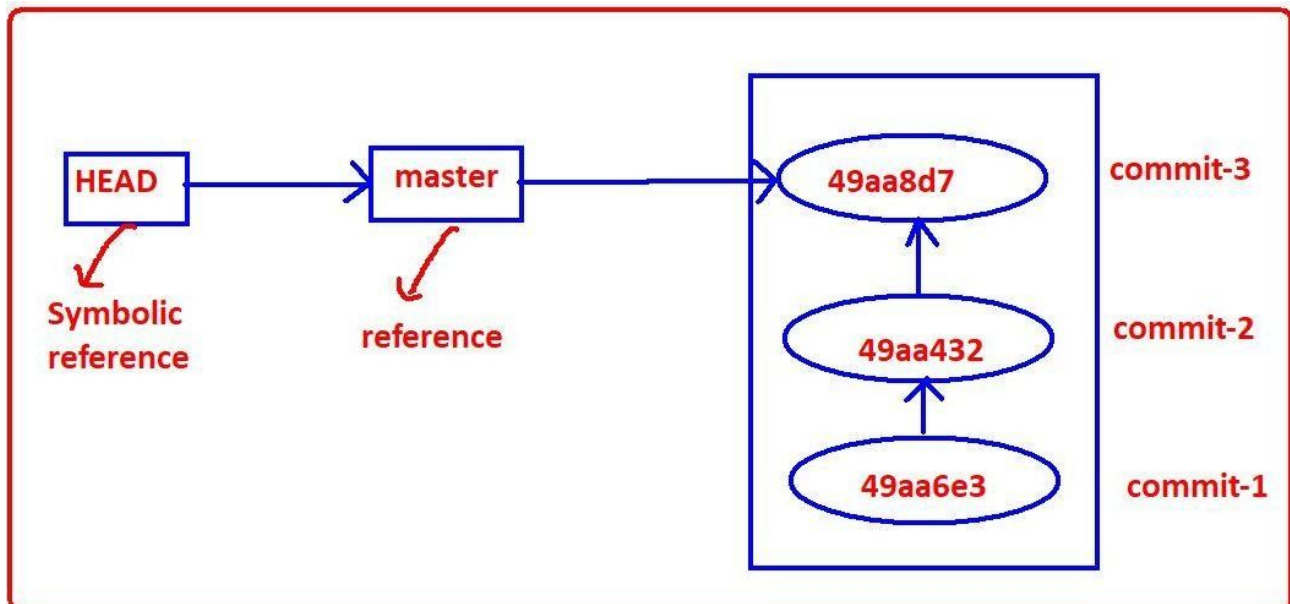
If any reference pointing to another reference, such type of reference is called symbolic reference. Hence HEAD is symbolic reference.

By default HEAD is always pointing to branch(master).

\$ git log --oneline

49aa8d7 (HEAD -> master) both files added

HEAD is stored in root of .git directory but not in .git/refs directory.



Git reset Command

git reset command is just like reset settings in our mobile.



There are 2 utilities of git reset command.

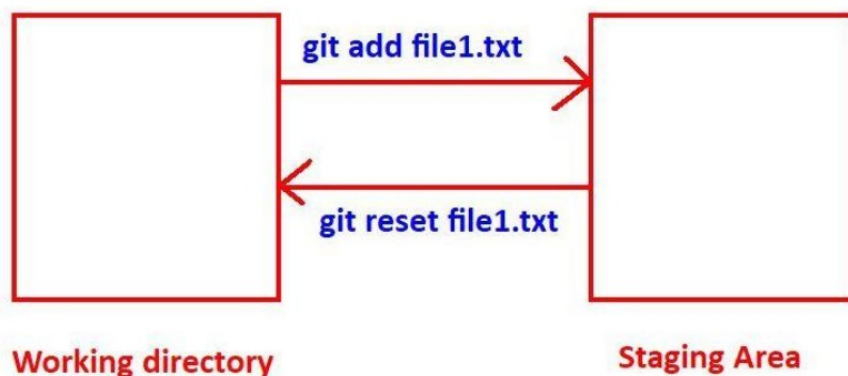
Utility-1: To remove changes from staging area

Utility-2: To undo commits at repository level

To remove changes from staging area (It is opposite to git add command.)

Changes already added to staging area, but if we don't want to commit, then to remove such type of changes from staging area, we should go for git reset.

It will bring the changes from staging area back to working directory.



git status

On branch master

Changes to be committed:

(use "git reset HEAD <file>..." to unstage)

modified: file1

raj@raj-Aspire-E5-575G:~/Desktop/devToolsStuff/gitdemo\$]git

Now run the command:

git reset file1

Unstaged changes after reset:

```
M      file1
raj@raj-Aspire-E5-575G:~/Desktop/devToolsStuff/gitdemo$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)
```

```
        modified:   file1
```

no changes added to commit (use "git add" and/or "git commit -a")

Utility-2: To undo commits at repository level

git reset <mode> <commitid>

Moves the HEAD to the specified commit, and all remaining recent commits will be removed.

mode will decide whether these changes are going to remove from staging area and working directory or not.

Example:git reset --mixed 86d0ca3 (mixed is default mode, optional)

Ignoring unwanted Files And Directories by using .gitignore File

It is very common requirement that we are not required to store everything in the repository.

We have to store only source code files like .java files etc.

README.txt Not required to store

log files Not required to store

We can request git, not to consider a particular file or directory.

We have to provide these files and directories information inside a special file .gitignore (without extension)

.gitignore File:

We have to create this file in working directory.

Don't track abc.txt file

```
abc.txt
# Don't track all .txt files
*.txt
# Don't track logs directory
logs/
#Don't track any hidden file
.*
```

Example:

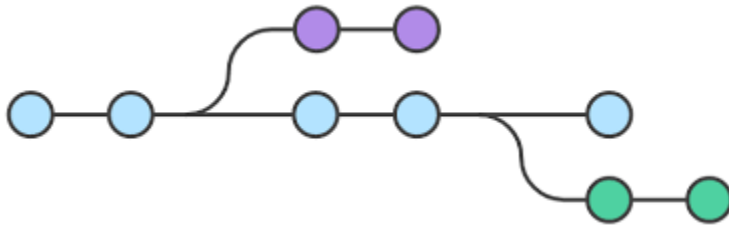
```
$ touch a.txt b.txt Customer.java
$ mkdir logs
$ touch logs/server.log logs/access.log
```

```
$ git status
On branch master
Untracked files:
(use "git add <file>..." to include in what will be committed)
Customer.java
a.txt
b.txt
logs/
```

Now lets create . Gitignore file

```
# Don't track a.txt
a.txt
#Don't track all .txt files
*.txt
#Don't track log files
logs/
#Don't track any hidden file
.*
```

Branching And Merging



Branching is one of very important concept in version control systems.

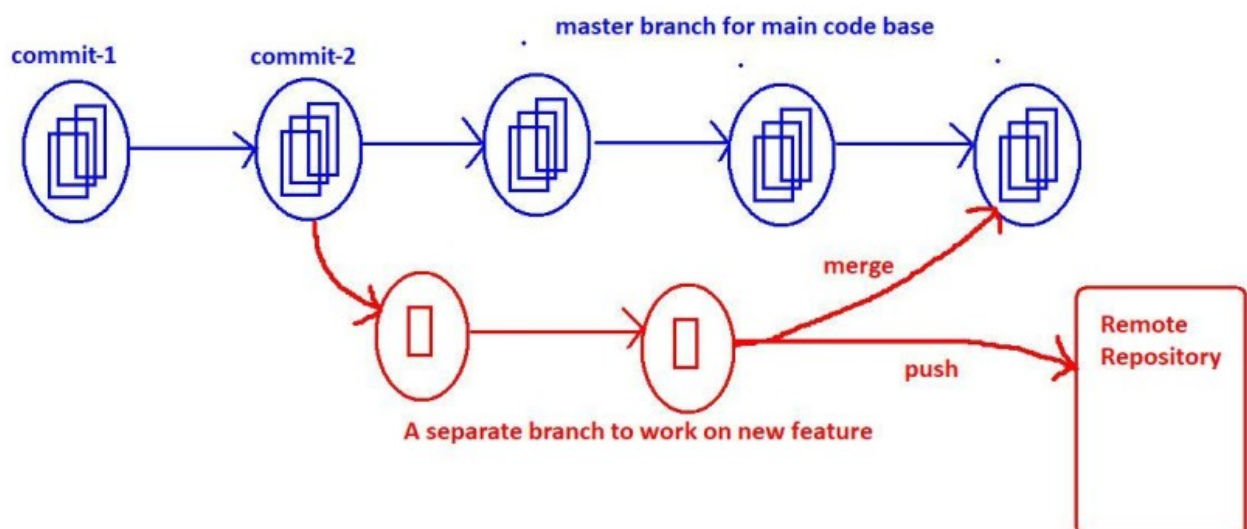
Till now whatever files created and whatever commits we did, all these happen in master branch.

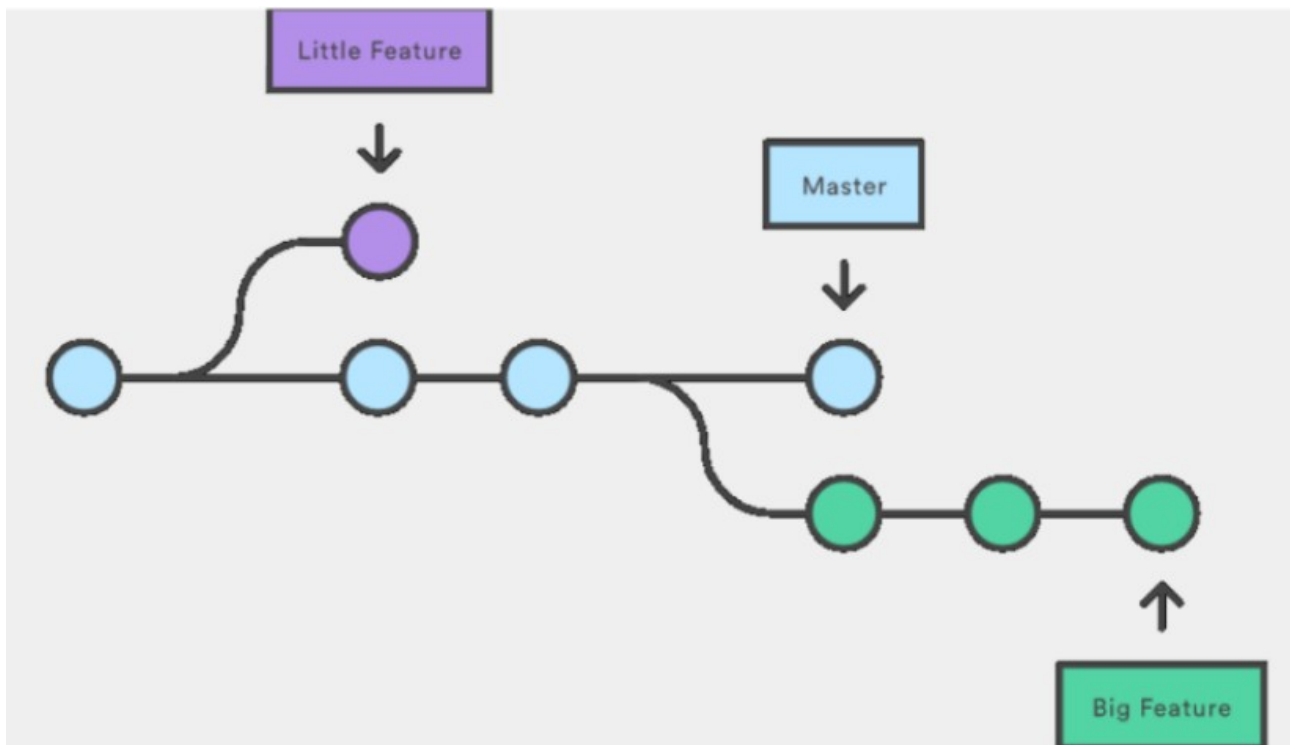
master branch is the default branch/ main branch in git. Generally main source code will be placed in master branch.



master branch develop web application
branch-1 develop Android compatibility work
branch-2 develop iOS compatibility work

A Branch is nothing but an independent flow of development and by using branching concept, we can create multiple work flows.





Conclusions:

1. Once we create a branch all files and commits will be inherited from parent branch to child branch.
2. Branching is a logical way of duplicating files and commits. In the child branch we can create new files and we can perform new commits based on our requirements.

3. All branches are isolated to each other. The changes performed in master branch are not visible to the new branch and the changes performed in the new branch are not visible to the master branch.

4. Once the work completed in new branch then we can merge that new brach to the main branch or we can push that branch directly to the remote repository.

To View Branches:

To know all available branches in our local repository, we have to use git branch command.

git branch

* master

* indicates that master is current active branch.

- It will show all branches in our local repository.
- By default we have only one branch: master
- master is the default name provided by GIT.

How to Create a New Branch:

We can create a new branch by using git branch command.

Syntax:

git branch brach_name

Eg:

\$ git branch new1branch

It will create a new branch: new1branch

\$ git branch

* master

new1branch

How to Switch from one Branch to another Branch?

git checkout brach_name

Short-cut Way to Create a New Branch and switch to that Branch

```
git checkout -b new2branch
```

Demo

```
touch a.txt b.txt c.txt
git add a.txt;git commit -m 'a.txt added'
git add b.txt;git commit -m 'b.txt added'
git add c.txt;git commit -m 'c.txt added'
git status
git log --oneline
```

```
git checkout -b test
git status
git log --oneline
touch x.txt y.txt z.txt
git add .;git commit -m 'new files added'
git log --oneline
```

```
git checkout master
ls
git log --oneline
touch d.txt
git add d.txt;git commit -m 'd.txt added'
```

```
ls  
git log --oneline
```

```
git checkout test  
ls  
git log --oneline
```

In GIT Branching, new directory won't be created and files won't be copied and just HEAD pointer will be changed. Hence to implement branching zero effort is required in GIT.

Important Conclusions:

1. All branches are isolated to each other. The changes performed in master branch are not visible to the new branch and the changes performed in the new branch are not visible to the master branch after branch is created
2. In GIT branching, logical duplication of files will be happen. For every branch, new directory won't be created. But in other version control systems like SVN, if we want to create a branch, first we have to create a new directory and we have to copy all files manually to that directory which is very difficult job and time consuming job.
3. In Git, if we switch from one branch to another branch just HEAD pointer will be moved, beyond that no other work will be happen. Hence implementing branching concept is very easy and very speed.

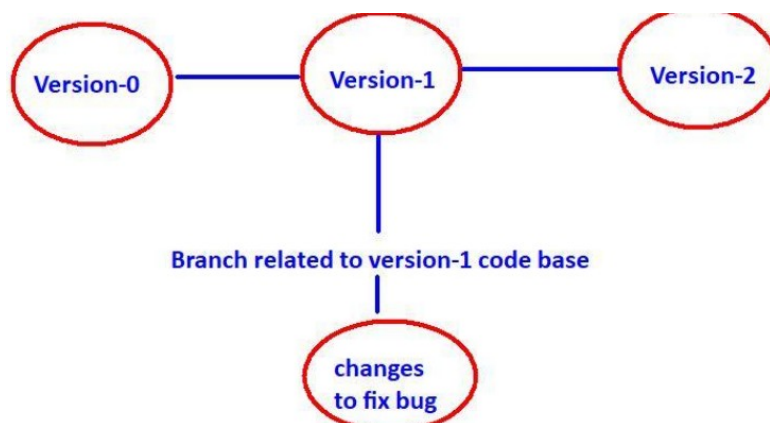
Multiple Use Cases where branching is required:

1. If we are working on a new feature of the project, and if it is required longer time then we can use branching. We can create a

separate branch for Implementing new feature. It won't affect main code (master branch).

2. If we required to work on hot fixes of production code, then we can create branch for the production code base and we can work on that branch. Once work completed then we can push the fixed code to the production. Most of the real time projects have a separate production branch to handle this type of requirements.

To test new technologies or new ideas without effecting main code base, branching is the best choice.

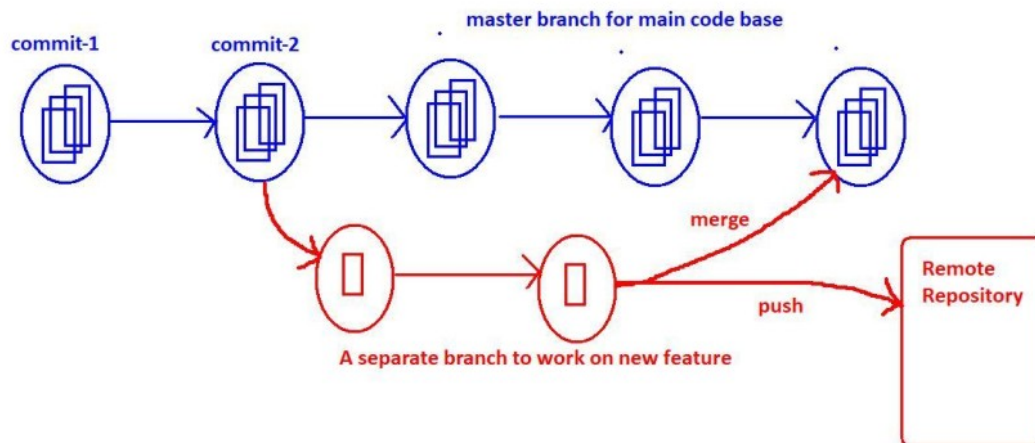


Advantages of Branching:

1. We can enable Parallel development.
2. We can work on multiple flows in isolated way.
3. We can organize source code in clean way.
4. Implementing new features will become easy
5. Bug fixing will become easy.
6. Testing new ideas or new technologies will become easy.

Merging of a Branch:

We created a branch to implement some new feature and we did some new changes in that branch, once work completed we have to merge that branch back to parent branch.



Demo:

```
touch a.txt b.txt
```

```
git add a.txt; git commit -m 'c1m'
```

```
git add b.txt; git commit -m 'c2m'
```

```
git log --oneline
```

```
git branch
```

```
git checkout -b feature
```

```
git branch
```

```
touch z.txt
```

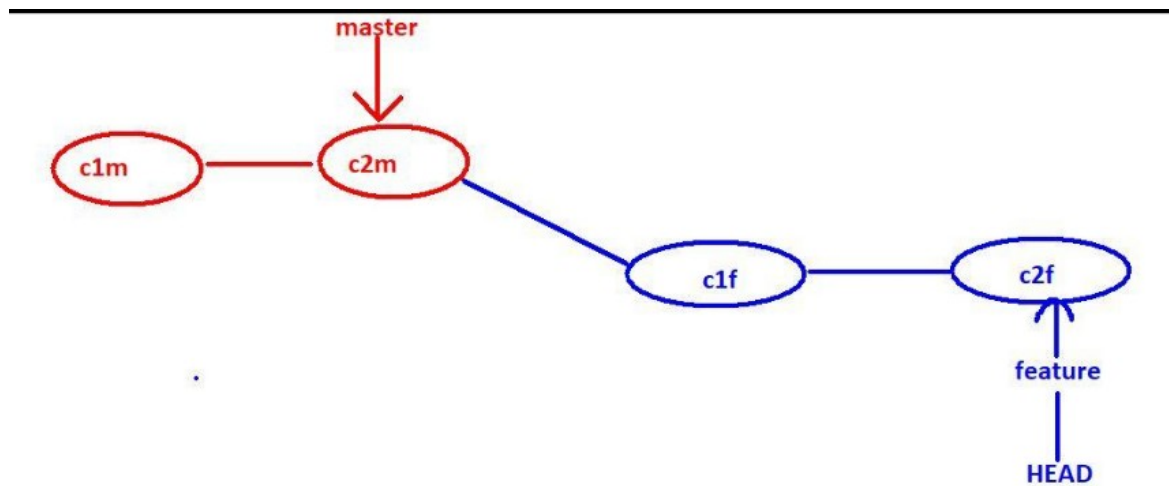
```
git add z.txt; git commit -m 'c1f'
```

```
touch x.txt
```

```
git add x.txt; git commit -m 'c2f'
```

```
git log --oneline master
```

```
git log --oneline feature
```



Assume new feature implemented properly, We want to merge feature branch with master branch.

git checkout master

git merge feature

ls

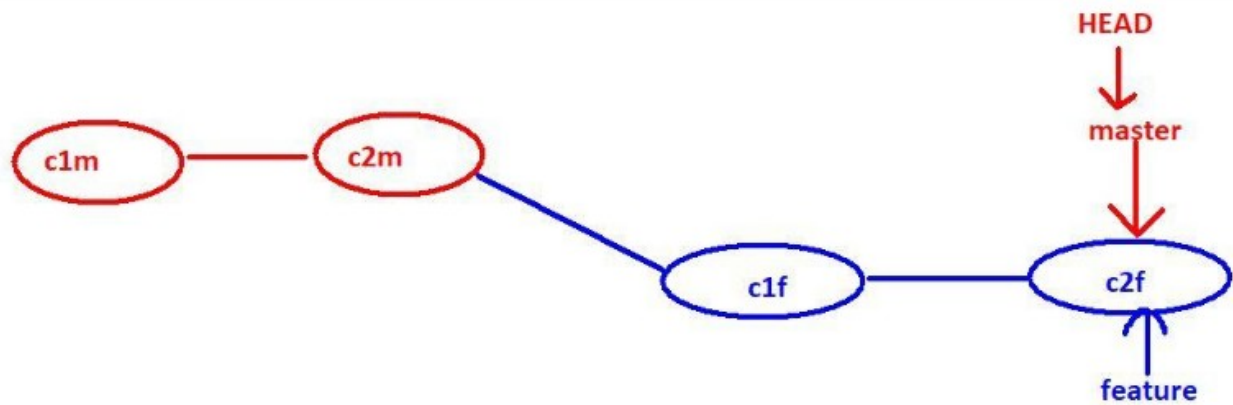
git log --oneline

What is Fast-forward Merge?

After creating child branch, if we are not doing any new commits in the parent branch, then git will perform fast-forward merge. i.e. updations(new commits) happened only in child branch but not in parent branch.

In the fast-forward merge, git simply moves parent branch and points to the last commit of the child branch.

No Chance of raising conflicts in fast-forward Merge



What is Three-Way Merge?

If changes present in both parent and child branches and if we are trying to perform merge operation, then git will do three-way merge.

Demo:

```
touch a.txt b.txt
```

```
git add a.txt;git commit -m 'c1m'
```

```
git add b.txt;git commit -m 'c2m'
```

```
ls
```

```
git log --oneline
```

```
git checkout -b feature
```

```
touch x.txt z.txt
```

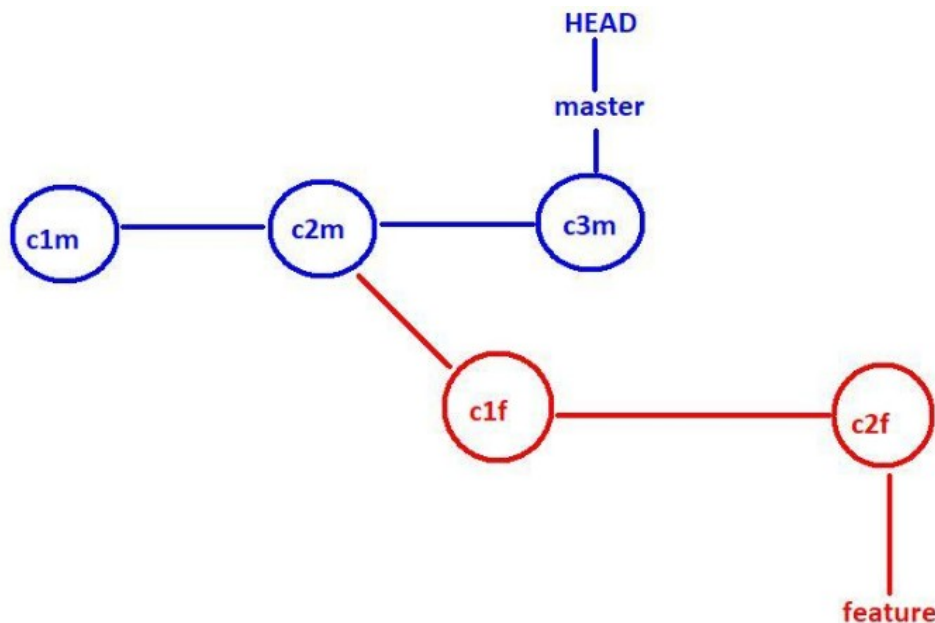
```
git add x.txt ; git commit -m 'c1f'
```

```
git add z.txt ; git commit -m 'c2f'
```

```
git branch
```

```
git log --oneline master
```

```
git log --oneline feature
```



Now we want to add new stuff to master branch after creating feature branch

`git checkout master`

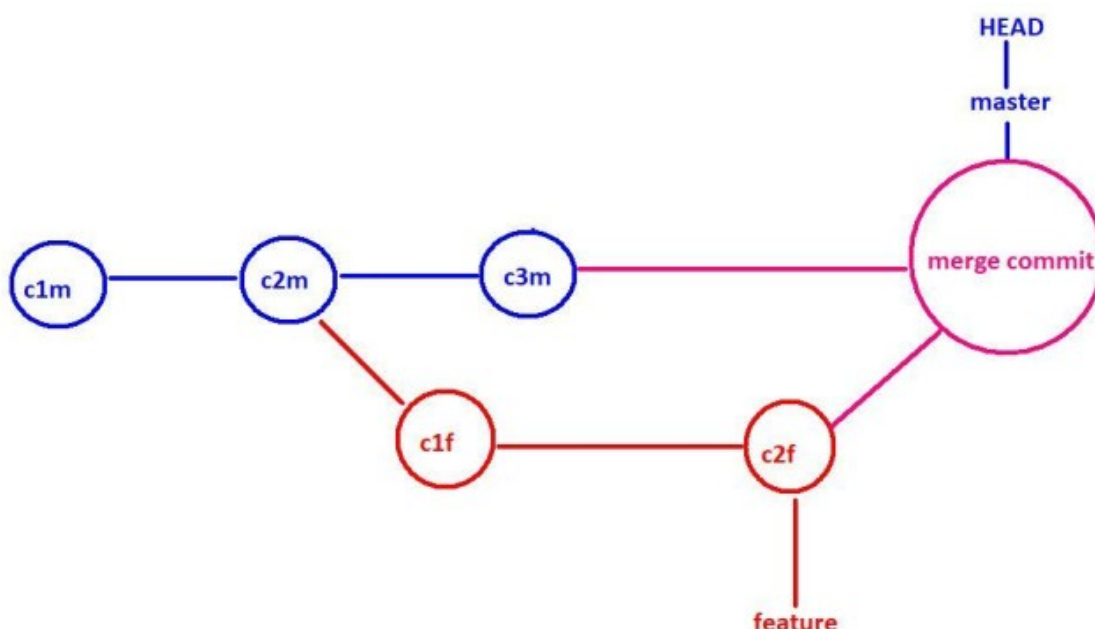
`touch c.txt`

`git add c.txt ; git commit -m 'c3m'`

`git merge feature`

Merge made by the 'recursive' strategy.

Three-way merge creates a new commit which is also known as merge commit. Parent branch will pointing to the newly created merge commit.



git log --oneline --graph

```
$ git log --oneline --graph
65afca1 (HEAD -> master) Merge branch 'feature'
* 6a9b808 (feature) c2f
* 488588b c1f
| 56fccfa c3m
/
56e0980 c2m
9e65e9f c1m
```

Fast-forward	Three-way Merge
1. After creating child branch, if updates are available only in the child branch but not in the parent branch, then GIT will perform Fast-Forward Merge.	1. After creating child branch, if updates are available in both Parent and child branches, then GIT will perform Three-way Merge.
2. It does not require any additional commit	2. It requires a new commit which is also known as Merge commit.
3. There is no chance of conflicts because new commits are available only in child branch but not in parent branch.	3. There may be a chance of conflicts because new commits are available in both parent and child branches.
4. Fast-forward merge is fully handled by GIT.	4. If there is a conflict, we may required to handle manually.

Merge Conflicts and Resolution Process

- In the case of 3-way merge, if the same file updated by both Parent and child branches then may be a chance of merge conflict.
- If there is a conflict then GIT stops the merge process and provides conflict message.
- We have to resolve the conflict manually by editing the file.
- Git will markup both branches content in the file to resolve the conflict very easily.
- Once we completed editing of the file with required final content, then we have to add to the staging area followed by commit.
- With that merging process will be completed.

Demo:

```
mkdir project12
```

```
cd project12
```

```
git init
```

```
echo "First Line Added" > a.txt
```

```
git add a.txt ; git commit -m 'c1m'
```

```
echo "Second Line Added" >> a.txt
```

```
git add a.txt ; git commit -m 'c2m'
```

```
git checkout -b feature
```

```
echo "New Data Added By Feature Branch" >> a.txt
```

```
git add a.txt ; git commit -m 'c1f'
```

```
git checkout master
echo "New Data Added By Master Branch" >> a.txt
git add a.txt ; git commit -m 'c3m'
```

git diff master feature

\$ git merge feature

Auto-merging a.txt

CONFLICT (content): Merge conflict in a.txt

Automatic merge failed; fix conflicts and then commit the result.

lenovo@DESKTOP-ECE8V3R MINGW64 /d/gitprojects/project12 (master|
MERGING)

\$ git status

On branch master

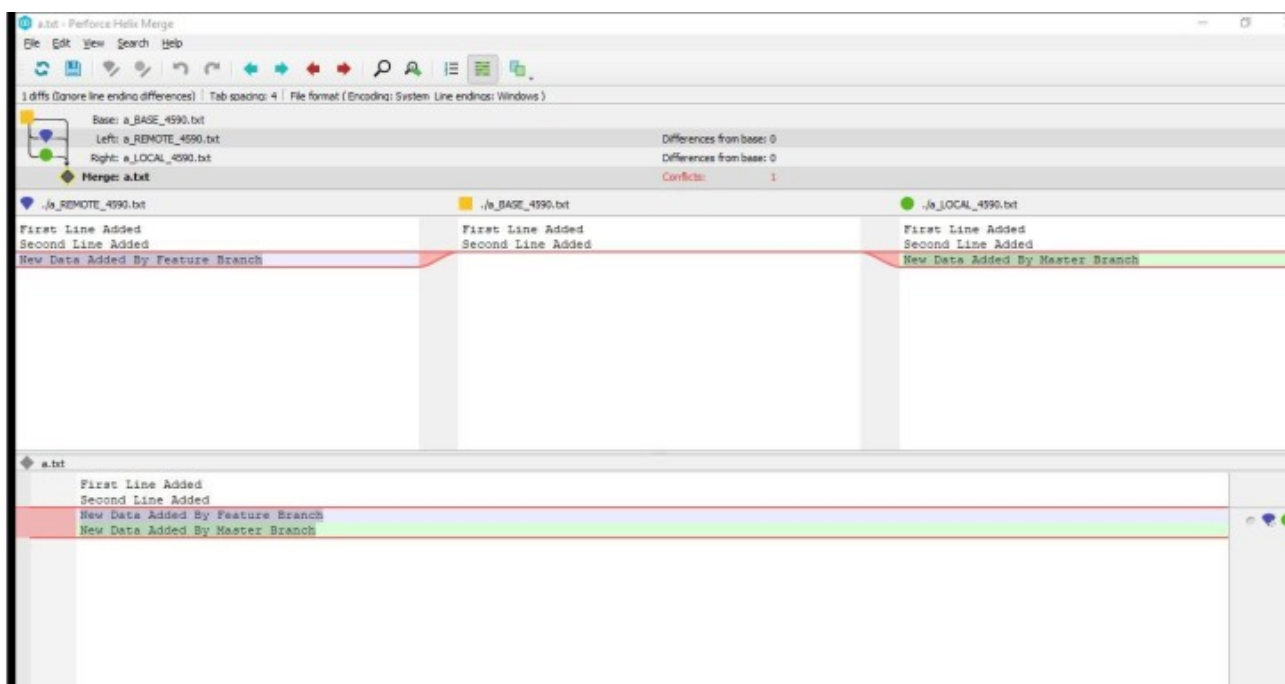
You have unmerged paths.

(fix conflicts and run "git commit")

<https://stackoverflow.com/questions/426026/git-on-windows-how-do-you-set-up-a-mergetool>

Now how to resolve conflict?

git mergetool



if tool is not working just open file using gedit and update it

finally:

`git add a.txt ; git commit -m 'Resolved Merge Conflicts'`

`git status`

```
raj@raj-Aspire-E5-575G:~/Desktop/devToolsStuff/gitdemo2$ git log --oneline --graph
*   3a91349 (HEAD -> master) Resolved Merge Conflicts
|
| * 32cd02c (feature) c1f
| * | 3bc3a59 c3m
|/
* bf05dc4 c2m
* c19d217 c1m
```

How to Delete a Branch?

Once we completed our work we can delete the branch.

Deletion of the branch is optional.

The main objective of deleting branch is to keep our repository clean.

We can delete a branch by using git branch command with -d option.

Command:

`git branch -d feature`

If we want to combine all commits of feature branch into a single commit and merge that commit to the master branch, then we should go for squash option.

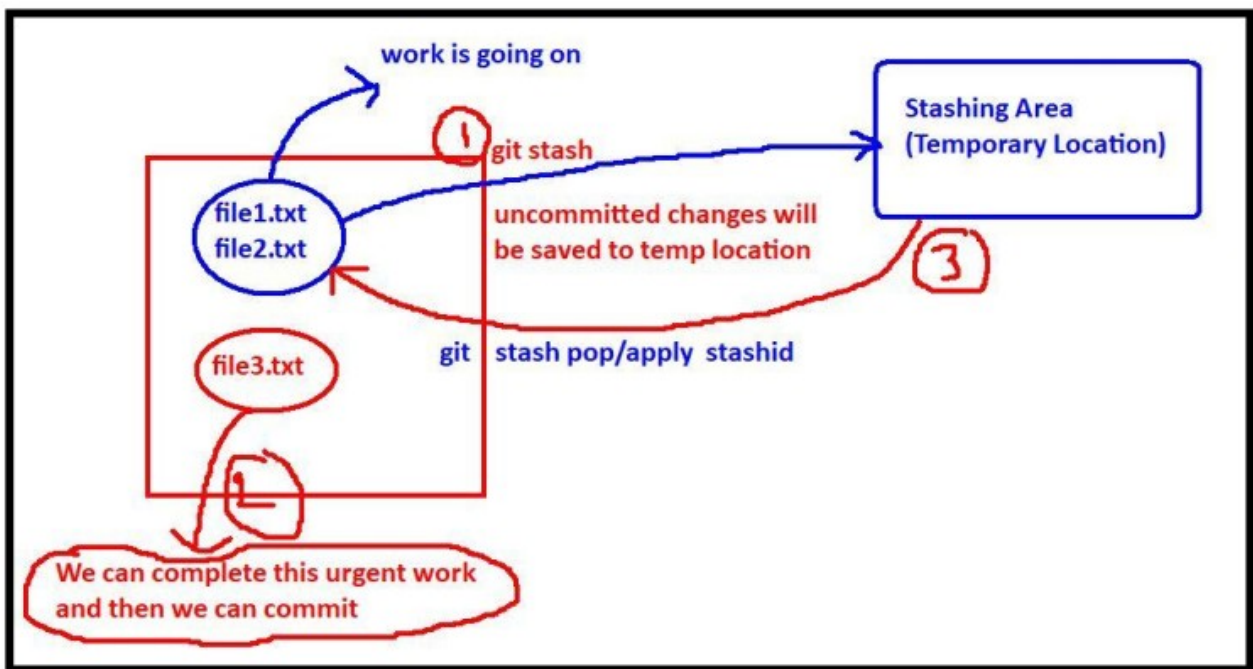
`git merge --squash feature`

Stash in GIT

something put away or hidden: a stash of gold coins buried in the garden. a place in which something is stored secretly; hiding place; cache.

What is git stash:

The git stash command takes our uncommitted changes (both staged and unstaged), saves in some temporary location. After completing our urgent work, we can bring these stashed changes to our current working directory



1. Stashing concept is applicable only for tracked files but not for newly created files.
2. To perform stashing, atleast one commit must be completed.

Demo

```
mkdir stashing cd stashing
```

```
git init
```

```
echo "First Line in File1" > file1.txt
```

```
echo "First Line in File2" > file2.txt
```

```
git add file1.txt file2.txt;git commit -m '2 files added'
```

vim file1.txt (add some data)
vim file2.txt

git add file2.txt
git add file1.txt

git status
On branch master
Changes to be committed:
(use "git restore --staged <file>..." to unstage)
modified: file2.txt
Changes not staged for commit:
(use "git add <file>..." to update what will be committed)
(use "git restore <file>..." to discard changes in working directory)
modified: file1.txt

Assume we required to create and work on file3.txt and and this file changes needs to be committed immediately.

To work on file3.txt, we have to save uncommitted changes of file1.txt and file2.txt to some temporary location, because we don't want to include these changes in the current commit.

For this we should go for git stash command.

git stash

Saved working directory and index state WIP on master: 0323e16 2 files added

git status

On branch master
nothing to commit, working tree clean
lenovo@DESKTOP-ECE8V3R MINGW64 /d/gitprojects/stashing (master)

How to list all available stashes:

git stash list
stash@{0}: WIP on master: 0323e16 2 files added

How to check the contents of stash:

git show stash@{0}

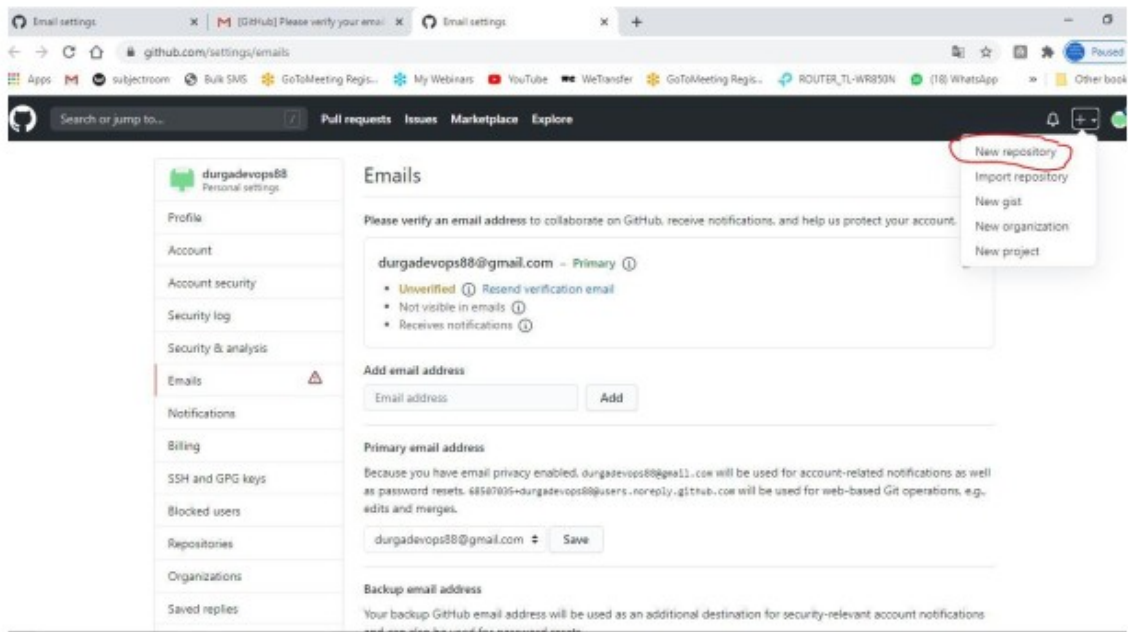
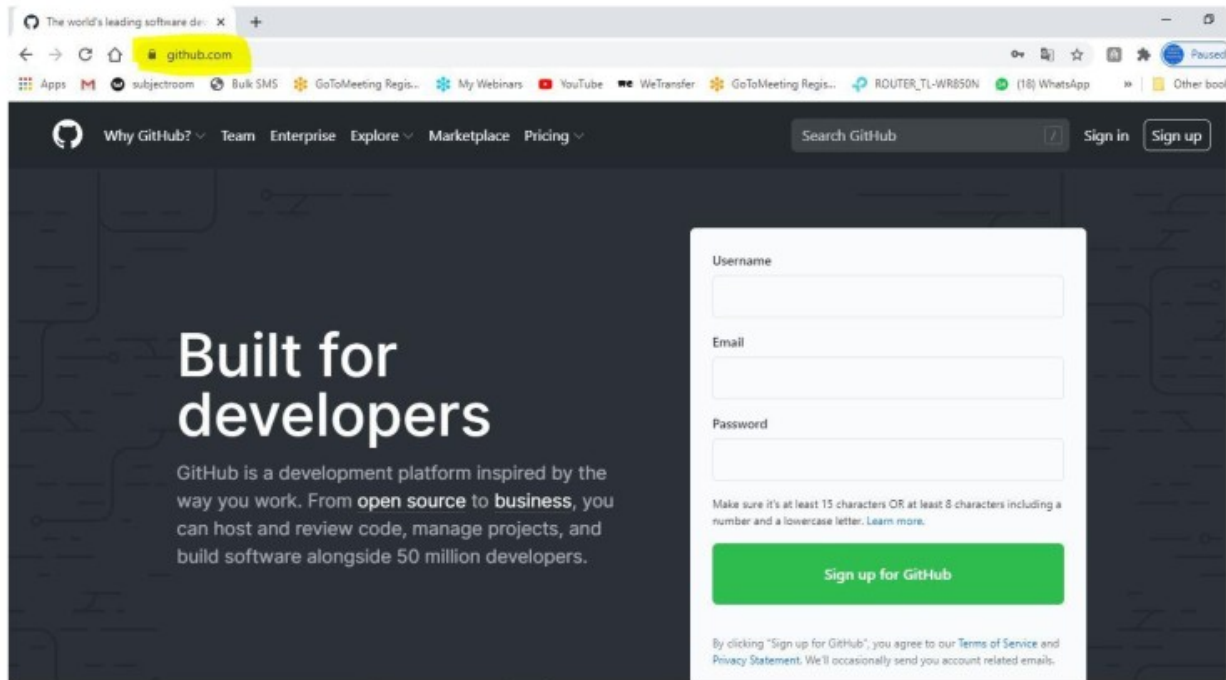
How to perform unstash

git stash pop stash@{0}

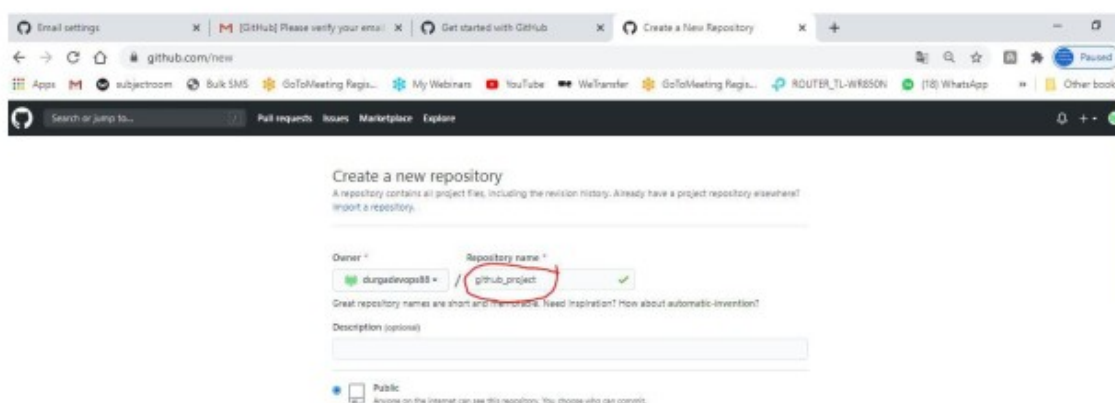
Working with Remote Repositories

Github is an online repository store/remote repository service provider. We can store our repositories in github so that our code is available for the remaining team members.

<https://github.com>

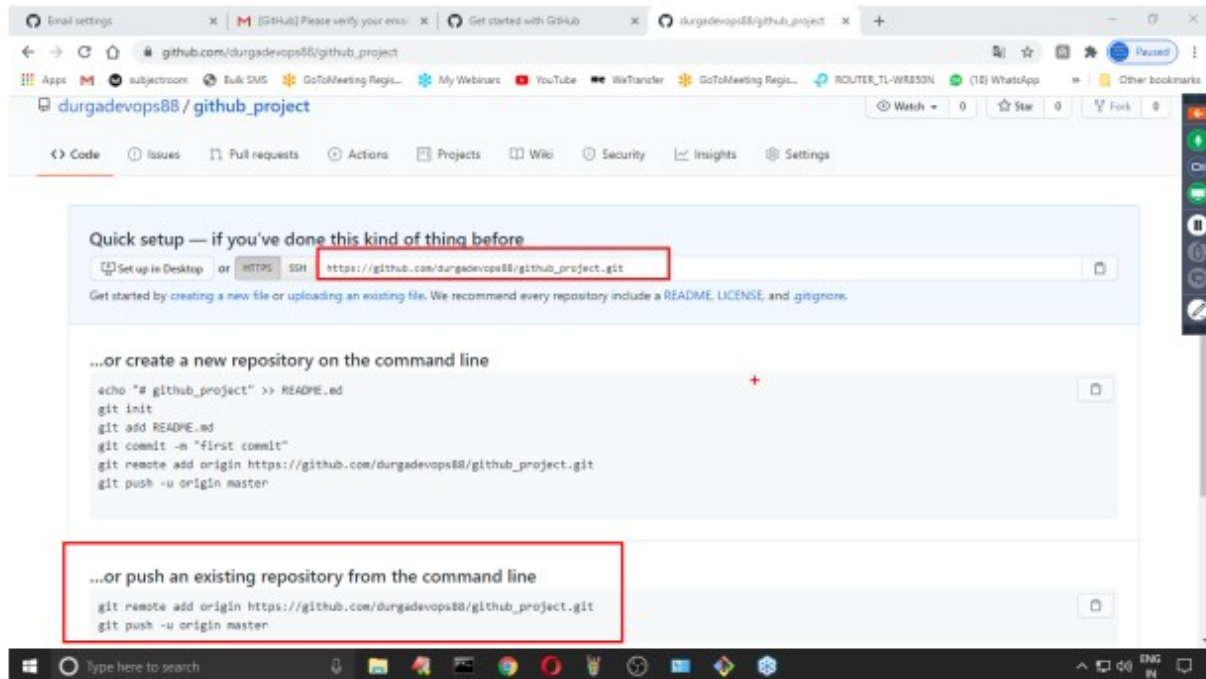


e to



Creating repo with github

Repository Name is the name of the project folder. We have to choose meaningful name.



How to work with Remote Repository:

To work with remote repository we have to use the following commands

1. git remote
2. git push
3. git clone
4. git pull
5. git fetch

git remote

To configure remote repository to our local repository.

git remote add <alias_name> remote_repository_url

Eg:

\$ git remote add origin https://github.com/rgupta00/github_project.git

Here, origin is alias name of the remote_repository_url. By using this alias name only we can communicate with remote repository.

Instead of origin we can use any name, but it is convention to use origin.

By using git remote command we can also view remote repository information.

git remote

It just provides the alias names of remote repositories

git remote -v

It provides remote repository urls also.

git push

We can use git push command to send our changes from local repository to remote repository. ie to push our changes from local repo to remote repo.

git push <remote_name> <branch_name>

git push origin master

git clone

cloning means creating exactly duplicate copy.

Already there is a project on remote repository. Being a new team member, we may required complete remote repository into our local repository. For this purpose we have to use git clone command.

i.e we can use git clone command to create local repository with remote repository files. All the files and commit history will be copied from remote repository into local repository.

Syntax: git clone <remote_repo_url>

git clone https://github.com/rgupta00/github_project.git

Now the project name will become repository project name.

Note: Based on our requirement we can provide a new name for the project.

git clone <remote_repo_url> <new_project_name>

git clone https://github.com/rgupta00/github_project.git my_project

Q. Before using git clone command is it required to use git init command?

Ans: No, git clone command itself will create local repository and hence we are not required to use git init command explicitly.

Q In how many ways we can create a new local repository?

Ans: In 2 ways

1. By using git init command to create empty local repository.
2. By using git clone command to create local repository with the files of remote repository

git fetch Command

We can use get fetch command to check whether any updates available at remote repository or not. This command will retrieve only latest meta-data info from the remote repository.

It won't download updates from remote repository into local repository.

git fetch origin

git pull Command

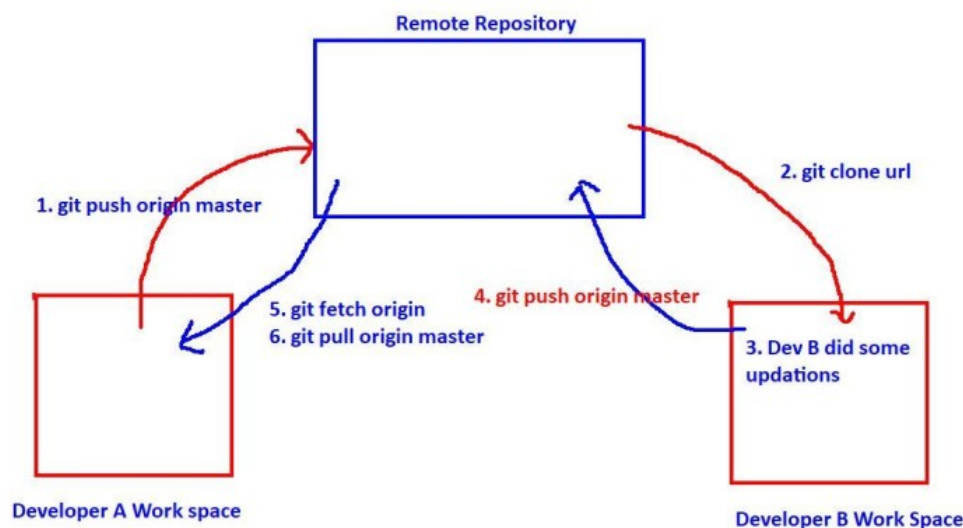
We can use git pull command to download and merge updates from remote repository into local repository.

git pull = fetch+merge

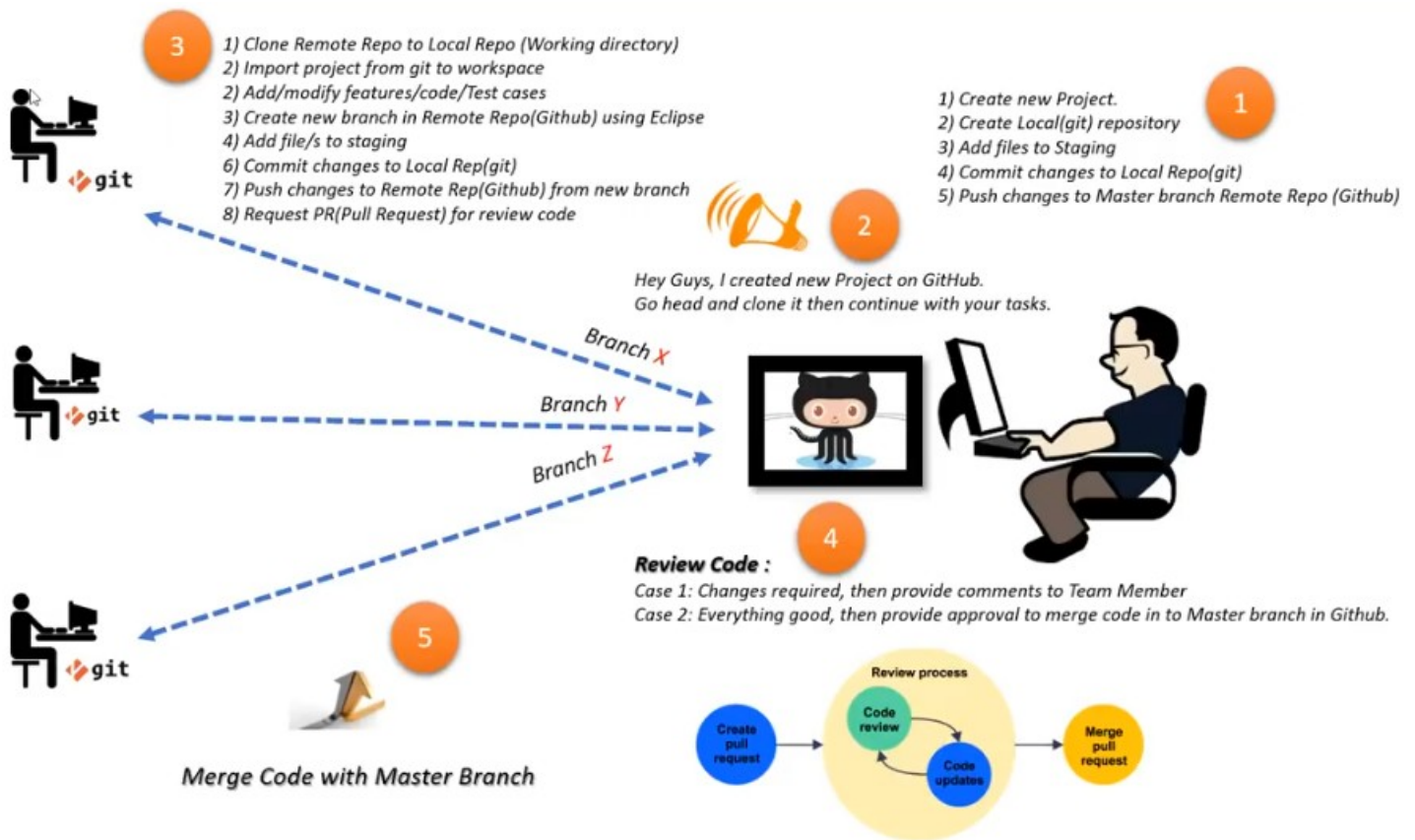
Syntax:

\$ git pull <remote> <branch>

\$ git pull origin master



GIT ECLIPSE



<https://stackoverflow.com/questions/18813847/cannot-open-git-upload-pack-error-in-eclipse-when-cloning-or-pushing-git-repos>