



# GIT

## SCM (OR) Version Control

SCM is a process of tracking and controlling the changes in the software development. The popular SCM tools are listed below.

- Git
- SVN
- CVS
- Perforce
- ClearCase
- TFS (Team Foundation Service from Microsoft) ...etc.

## SCM Goals

- Team work
- Defect tracking
- Configuration auditing
- Process management
- Environment management

## SCM Terminologies

- Server/Client
- Repository
- Workspace
- Branch
- Check-In/Check-Out
- Revision
- Baseline

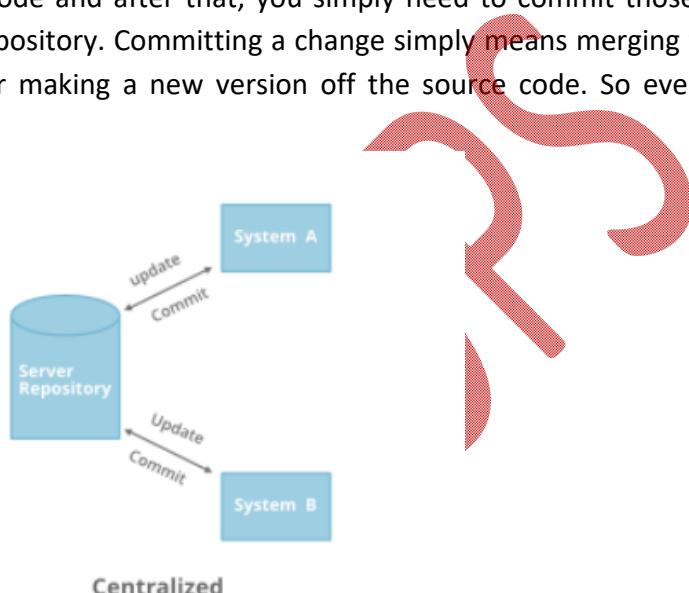
## SCM Advantages

- Supports for non-linear deployment.
- It's fully distributed.
- Ability to handle large projects like Linux efficiently.
- Speed

Many of us aware about the version control when it comes to work with multiple developers on a single project and collaborate with them. There is no doubt that version control make developers work more easy and fast. In most of the organization developers use either Centralized Version Control System(CVCS) like Subversion(SVN) or Concurrent Version System(CVS) or Distributed Version Control System(DVCS) like Git (Written in C), Mercurial (Written in Python) or Bazaar (Written in Python).

### SCM centralize model (CVCS)

In centralized source control, there is a server and a client. The server is the master repository which contains all of the versions of the code. To work on any project, firstly user or client needs to get the code from the master repository or server. So the client communicates with the server and pulls all the code or current version of the code from the server to their local machine. In other terms we can say, you need to take an update from the master repository and then you get the local copy of the code in your system. So once you get the latest version of the code, you start making your own changes in the code and after that, you simply need to commit those changes straight forward into the master repository. Committing a change simply means merging your own code into the master repository or making a new version off the source code. So everything is centralized in this model.



### Advantages of centralize model (CVCS)

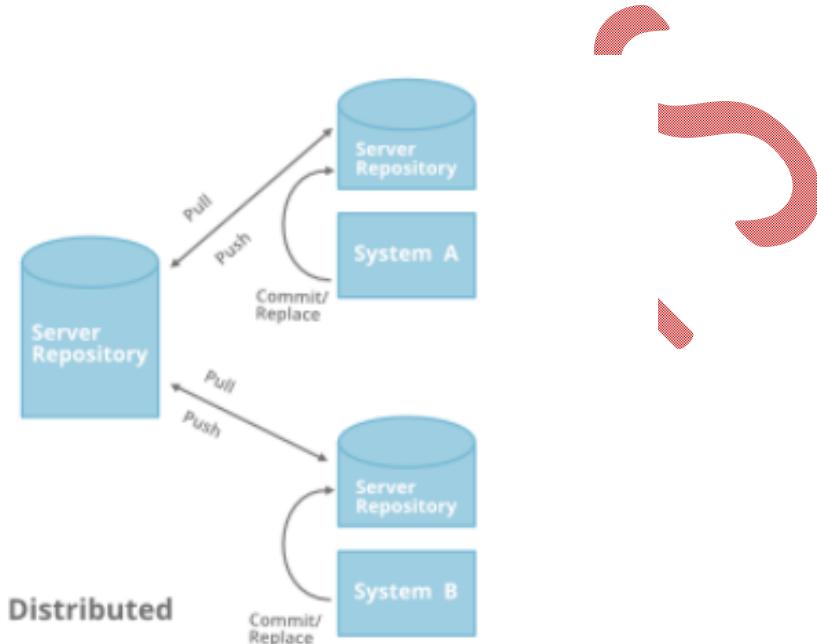
- Centralized version control is easier to learn than distributed model and easy to learn and easy to set up.
- If the project has long history or the project contain large binary files in that case downloading the entire project in DVCS can take more time and space than usual, whereas in CVCS you just need to get few lines of code because you don't need to save the entire history or complete project in your own server so there is no requirement for additional space.

### Disadvantages of centralize model (CVCS)

- Network issue.
- Always connection between server and client.
- Multiple checkin/out for the different users.
- It requires lot of efforts and not friendly.
- If the main server goes down or it crashes in CVCS, We can't get back.
- It's slower than CVCS because need to communicate with the remote server for each and every command.
- Working on branches very difficult because it requires communicating with the server directly.
- Merge conflicts are more in CVCS in comparison of DVCS.

### **SCM distributed model (DVCS)**

In distributed version control most of the mechanism or model applies the same as centralized. The only major difference you will find here is, instead of one single repository which is the server, here every single developer or client has their own server and they will have a copy of the entire history or version of the code and all of its branches in their local server or machine. Basically, every client or user can work locally and disconnected which is more convenient than centralized source control and that's why it is called distributed.



### **Advantages of distributed model (DVCS)**

- In GIT there is no concept of server and client.
- In everything is workspace.
- Every workspace is a copy of repository.
- Its follows distributed model.
- It's faster than CVCS because you don't need to communicate with the remote server for each and every command.
- Working on branches is easy.
- Merge conflicts are less in DVCS in comparison of CVCS.

### **Disadvantages of distributed model (DVCS)**

- Need to learn lot of commands to work on DVCS.
- If the project has long history or the project contain large binary files in that case downloading the entire project in DVCS can take more time compare to CVCS.

## SVN Vs GIT

<b><u>GIT</u></b>	<b><u>SVN</u></b>
GIT It is a distributed version control system used for source code management.	Subversion (SVN) SVN is centralized versioning and revision control system.
GIT was developed for Linux kernel by Linus Torvalds.	SVN was developed by CollabNet, Inc.
Every user can maintain their own copy of code on their local similar to branch.	Everyone has a working copy and changes are made to a central repository.
It works on two stages commit and push.	It works on single stage i.e. commit
It Require very less Storage.	It Require much more storage compared to GIT.
It automatically remembers the revision of merges.	In SVN we need to remember revision about the last revision of merged.
It maintains information about the user who has performed the merge	All changes are done on branch appear to be made by merging user.
User can easily switch between different branches on same code base	To Work on branch user must copy the trunk into another directory and then merge it back when complete.
We can view merge specific changes.	Not possible to see merge related changes.
It can work in both online as well as offline mode, so network access is not mandatory.	Must be connected to network for commit.
It has easy to fork, branch and merge	Branching and merging is time consuming.
Used by <b>90%</b> of professional developers.	Used by <b>10%</b> of professional developers.
A sub project is called a Git “ <b>submodule</b> ”.	A sub project is called an “ <b>SVN external</b> ”.
GIT doesn't have a global revision number.	SVN have a global revision number.
The content in Git is stored as metadata.	SVN stores files of content.
GIT contents are cryptographically check-summed using the SHA-1 hash algorithm.	SVN doesn't have hashed contents.

### 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.

### Why Git is distributed model?

One developer can share the changes to the repository (OR) Other developers so it's called distributed model.

- If someone works on project, They have to clone their local machines. In this case local machines behave like GIT server.
- The idea is everyone work locally and all operations are going very fast.

## **Why GIT is required in Projects?**

- Developers easily collaborate and work on same project.
- Merging code changes are very easy.
- SCM tools records all versions with
  - Time stamp (Date & Time)
  - Developer name/mail
  - Commit message
- Debugging defects are simplified.
- If latest software release has any issue, we can easily rollback to its previous version.
- GIT is fast when it is compared with other version controlling tools.
- It also works as backing up our project code.

## **Workspaces in GIT**

A workspace is simply a set of git repositories. There are 2-types workspaces in GIT.

1. Central workspace (Bare)
2. Local workspace/User workspace (Non Bare)

### **Central workspace (Bare)**

It contains store and share the changes.

Ex:

- Github
- Bitbucket ...etc.

### **Local workspace/User workspace (Non Bare)**

We can modify the changes store and share the changes.

## **What is GitHub?**

GitHub is a Git repository hosting service. GitHub also facilitates with many of its features, such as access control and collaboration. It provides a Web-based graphical interface.

GitHub is an American company. It hosts source code of your project in the form of different programming languages and keeps track of the various changes made by programmers.

It offers both distributed version control and source code management (SCM) functionality of Git. It also facilitates with some collaboration features such as bug tracking, feature requests, task management for every project.



### Features of GitHub

GitHub is a place where programmers and designers work together. They collaborate, contribute, and fix bugs together. It hosts plenty of open source projects and codes of various programming languages.

*Some of its significant features are as follows.*

- Collaboration
- Integrated issue and bug tracking
- Graphical representation of branches
- Git repositories hosting
- Project management
- Team management
- Code hosting
- Track and assign tasks
- Conversations

### Benefits of GitHub

GitHub can be separated as the Git and the Hub. GitHub service includes access controls as well as collaboration features like task management, repository hosting, and team management.

*The key benefits of GitHub are as follows.*

- It is easy to contribute to open source projects via GitHub.
- It helps to create an excellent document.
- You can attract recruiter by showing off your work. If you have a profile on GitHub, you will have a higher chance of being recruited.
- It allows your work to get out there in front of the public.
- You can track changes in your code across versions.

## **GIT Vs GitHub**

<b><u>GIT</u></b>	<b><u>GitHub</u></b>
Git is a distributed version control tool that can manage a programmer's source code history.	GitHub is a cloud-based tool developed around the Git tool.
A developer installs Git tool locally.	GitHub is an online service to store code and push from the computer running the Git tool.
Git focused on version control and code sharing.	GitHub focused on centralized source code hosting.
It is a command-line tool.	It is administered through the web.
It facilitates with a desktop interface called Git Gui.	It also facilitates with a desktop interface called GitHub Gui.
Git does not provide any user management feature.	GitHub has a built-in user management feature.
It has minimal tool configuration feature.	It has a market place for tool configuration.

## **Bitbucket**

Bitbucket is a web-based version control repository hosting service owned by Atlassian, for source code and development projects that use either **Mercurial** or **GIT** revision control systems. Bitbucket offers both commercial plans and free accounts.

### **Features of Bitbucket**

- The code review and codes are managed by Bitbucket which possesses many features such as continuous delivery lines, pull services for comments and code review, bitbucket pipelines, dual-step verification process, whitelisting of IP, merging and code searching of alphas and checks.
- It provides Git large file storage services, tracking of issues, Wikis, integrations, and add-ons.
- The documentation also includes readme files that have different markdown file formats.
- The static websites hosted on Bitbucket cloud servers have Bitbucket.io.domain.in the URL.
- The snippet and smart monitoring enable the developer to exchange the code files or segments and utilizes third-party servers that rely on any development and programming language. They supports for freestyle of Jenkins, project based on pipelines, and multiple branch pipeline is provided by Bitbucket.
- The automated webhook development in Bitbucket server repo if Jenkin jobs are saved.
- The rapid section of projects on the server using Jenkin's job via the dropdown.
- The Mercurial VCS and Git are supported by Bitbucket which is scripted in Python on the web framework of Django.
- It can be installed in most of the operating system such as Mac, Windows, and Android applications.
- Easily integrating with other Atlassian tools like JIRA, Confluence and CROWD ...etc.

## GIT Client

For interaction between our local machine and remote git server(Github/Bitbucket) we need git client.GIT supports both GUI (Graphical User Interface) & CLI (Command Line Interface).

Ex:

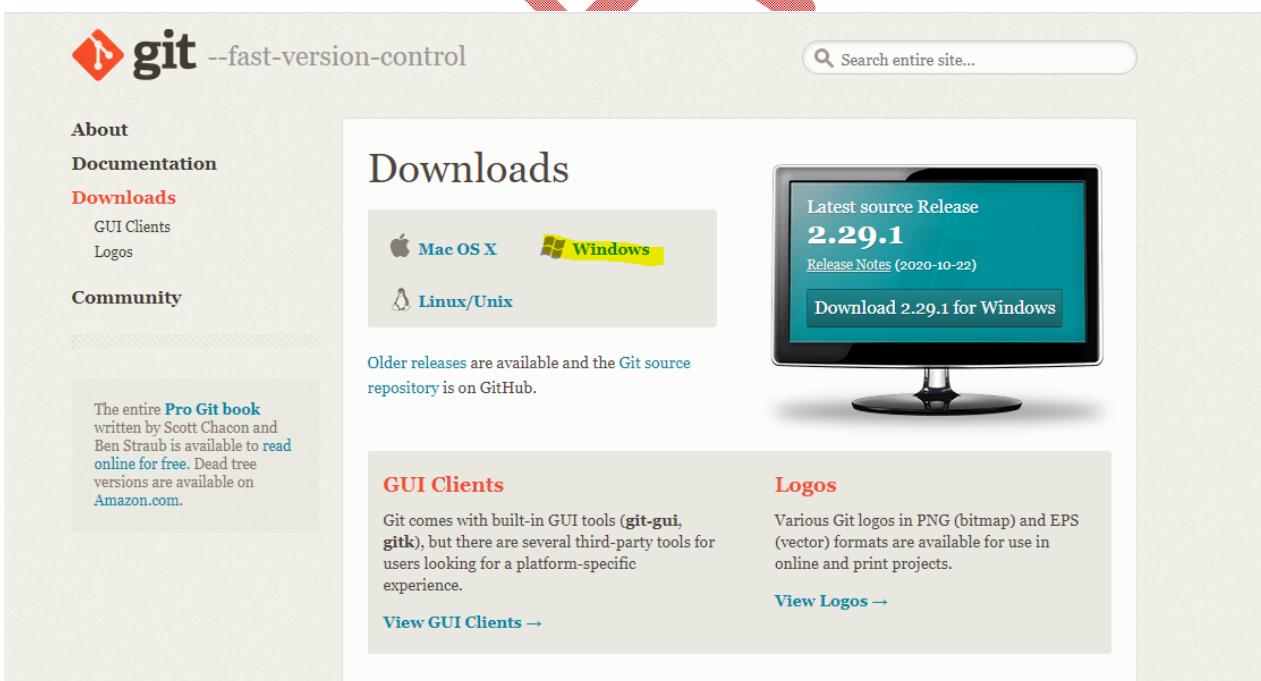
- Git bash
- Source tree
- Tortoisegit
- Git extension
- Smartgit
- Atom ....etc.

## GIT Bash installation on Windows

To use Git, you have to install it on your computer. Even if you have already installed Git, it's probably a good idea to upgrade it to the latest version. You can either install it as a package or via another installer or download it from its official site.

### Step-1

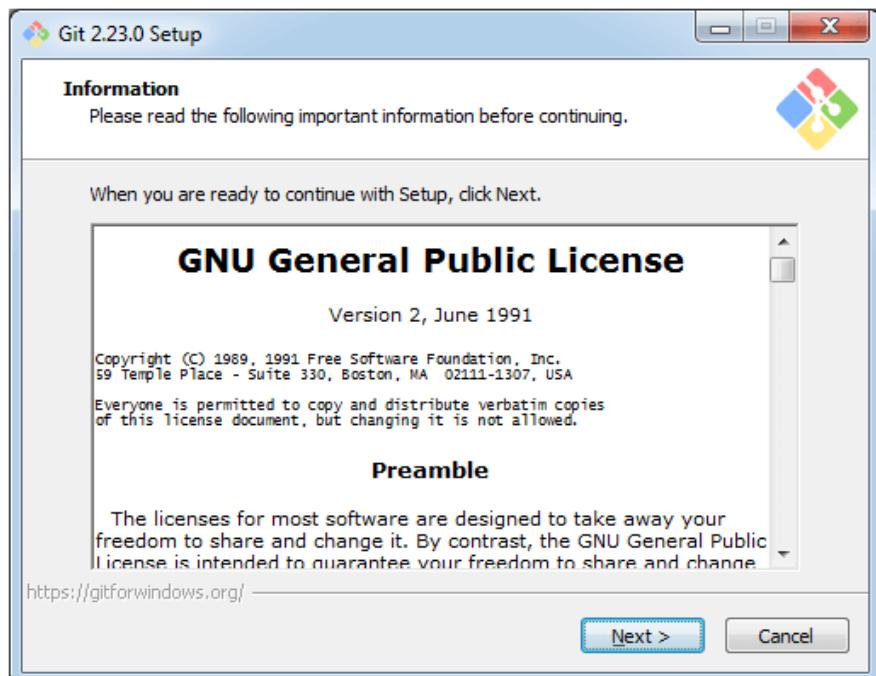
To download the Git installer, visit the Git's official site and go to download page. The link for the download page is <https://git-scm.com/downloads>.



Click on the package given on the page as download 2.23.0 for windows. The download will start after selecting the package. Now, the Git installer package has been downloaded.

### Step-2

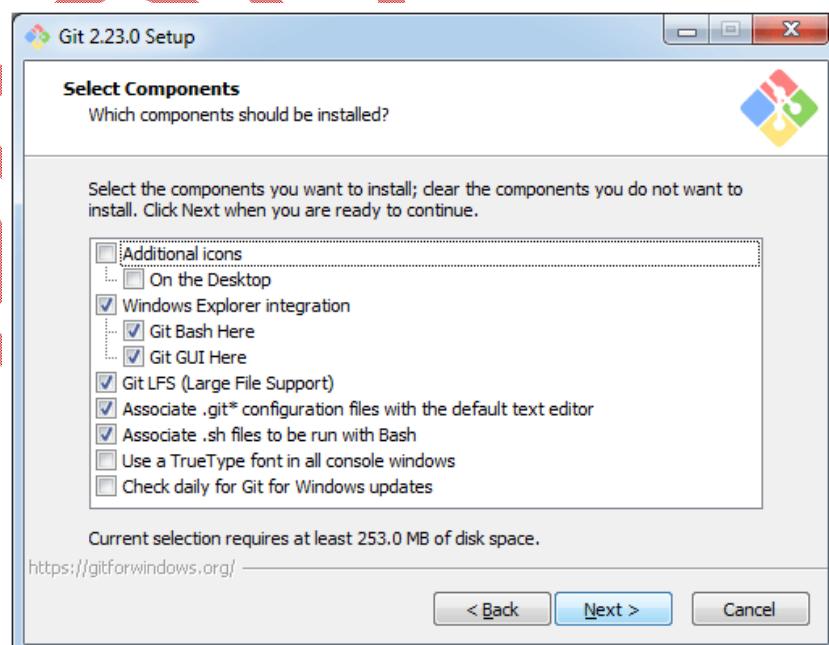
Click on the downloaded installer file and select yes to continue. After the selecting yes the installation begins, and the screen will look like as



Click on next to continue.

### Step-3

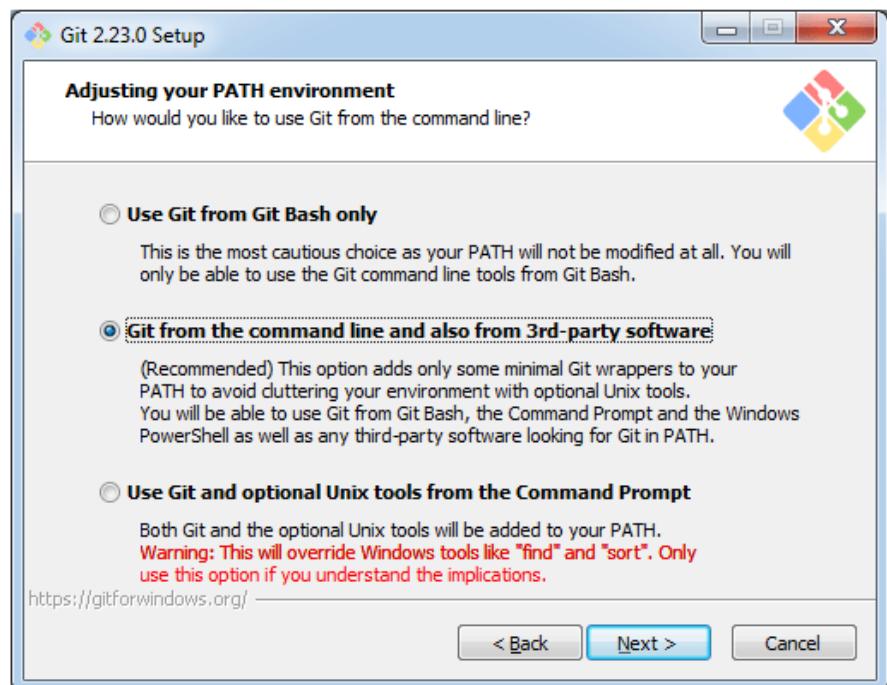
Default components are automatically selected in this step. You can also choose your required part.



Click next to continue.

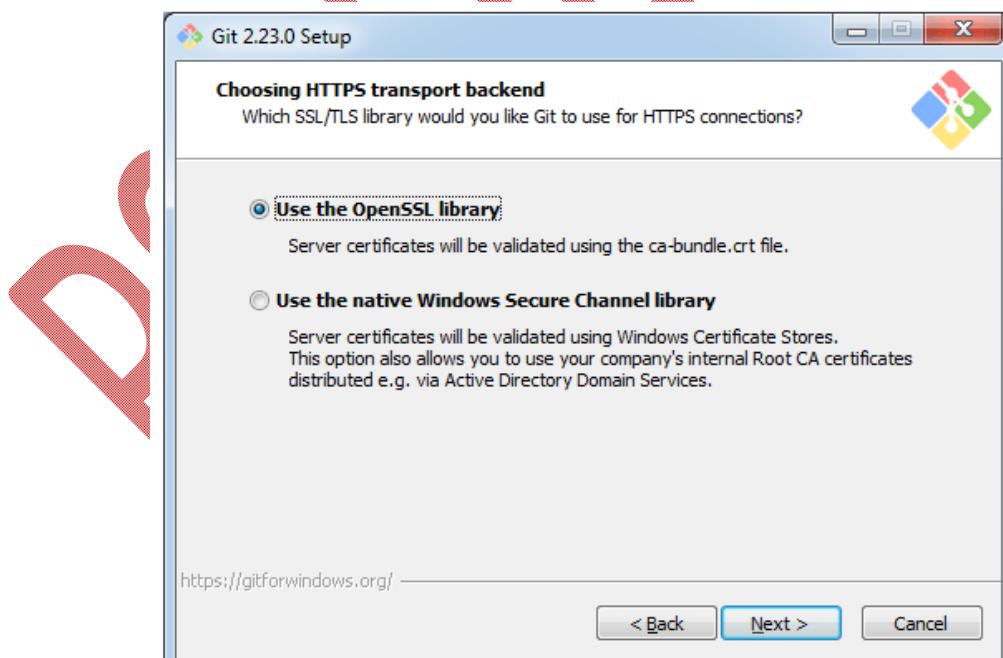
#### Step-4

The default Git command-line options are selected automatically. You can choose your preferred choice. Click next to continue.



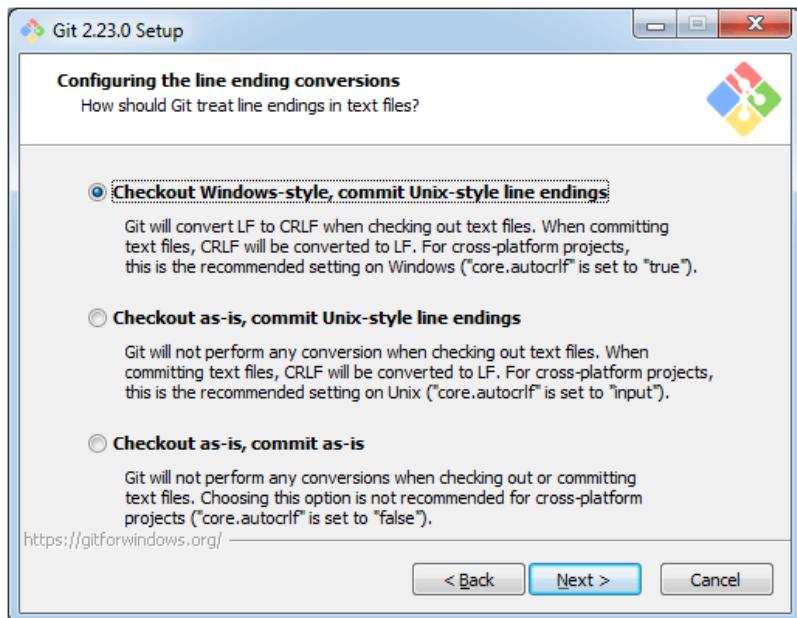
#### Step-5

The default transport backend options are selected in this step. Click next to continue.



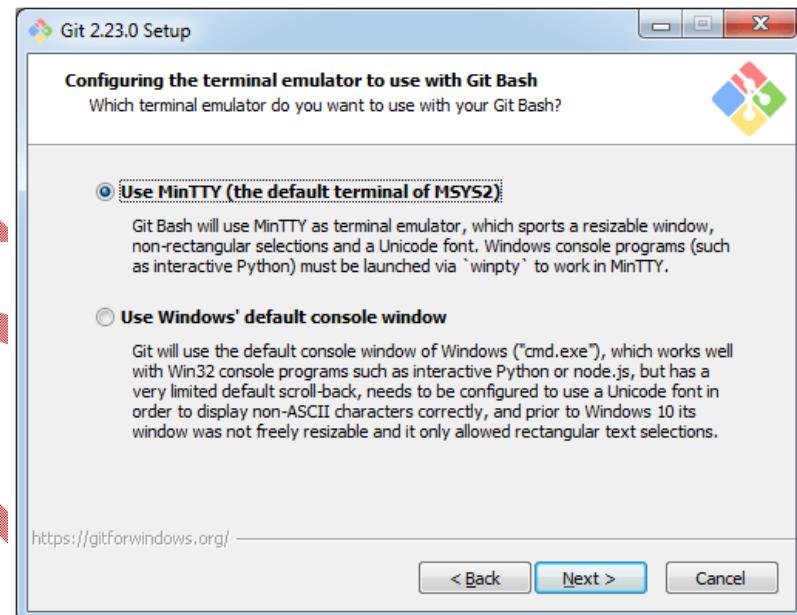
### Step-6

Select your required line ending option and click next to continue.



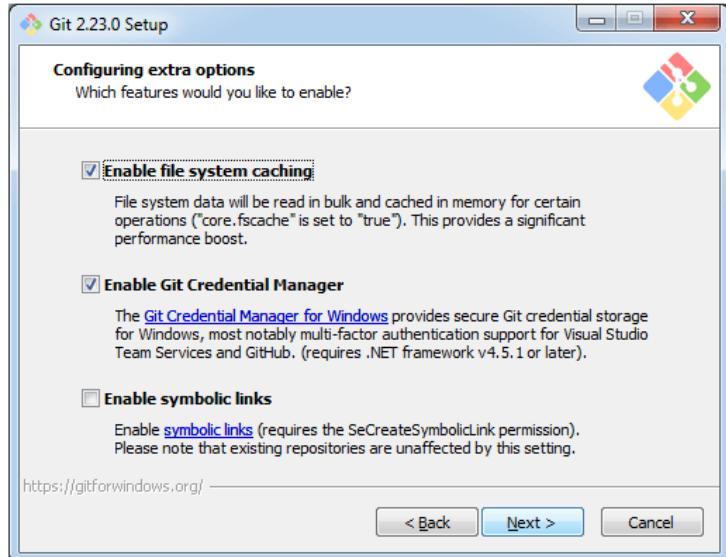
### Step-7

Select preferred terminal emulator clicks on the next to continue.



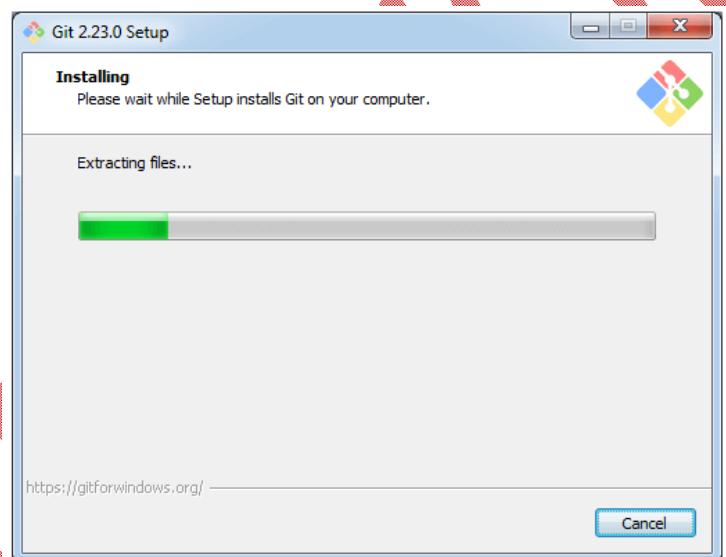
### Step-8

This is the last step that provides some extra features like system caching, credential management and symbolic link. Select the required features and click on the next option.

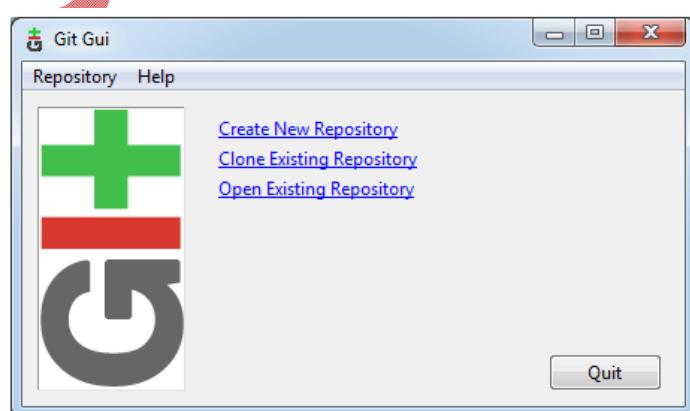


### Step-9

The files are being extracted in this step.



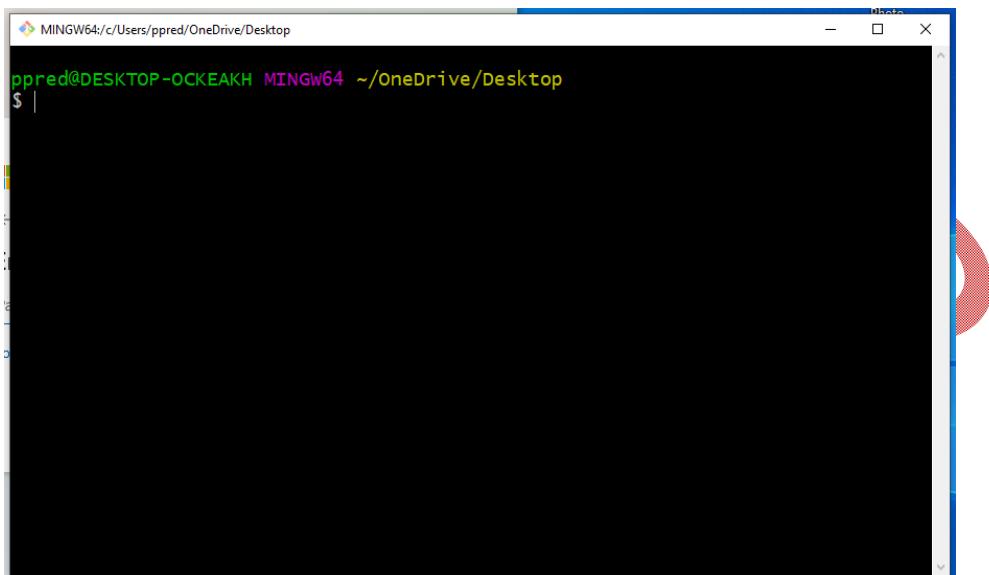
Therefore, The Git installation is completed. Now you can access the Git Gui and Git Bash.  
The Git Gui looks like as



It facilitates with three features.

- Create New Repository
- Clone Existing Repository
- Open Existing Repository

The Git Bash looks like as



### **GIT Client installation on Linux**

Git is an open-source distributed version control system that is available for everyone at zero cost. It is designed to handle minor to major projects with speed and efficiency. It is developed to coordinate the work among programmers. The version control allows you to track and work together with your team members at the same workspace.

#### **Step-1**

Start the General OS and Package update.

```
# yum update -y
```

```
[root@samplegoogle ec2-user]# yum update -y
Red Hat Update Infrastructure 3 Client Configuration Server 8          17 kB/s | 2.1 kB   00:00
Red Hat Enterprise Linux 8 for x86_64 - AppStream from RHUI (RPMs)    17 kB/s | 2.8 kB   00:00
Red Hat Enterprise Linux 8 for x86_64 - BaseOS from RHUI (RPMs)       16 kB/s | 2.4 kB   00:00
Dependencies resolved.
Nothing to do.
Complete!
[root@samplegoogle ec2-user]#
```

#### **Step-2**

To install Git, run the below command

```
# yum install git* -y
```

```
[root@samplegoogle ec2-user]# yum install git* -y
Last metadata expiration check: 0:01:23 ago on Sun 25 Oct 2020 12:50:49 PM UTC.
Dependencies resolved.
```

Package	Arch	Version	Repository	Size
Installing:				
git	x86_64	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	187 k
git-all	noarch	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	48 k
git-clang-format	x86_64	9.0.1-2.module+e18.2.0+5494+7b8075cf	rhel-8-appstream-rhui-rpms	20 k
git-core	x86_64	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	4.0 M
git-core-doc	noarch	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	2.3 M
git-daemon	x86_64	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	708 k
git-email	noarch	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	88 k
git-gui	noarch	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	296 k
git-instaweb	x86_64	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	62 k
git-subtree	x86_64	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	70 k
git-svn	x86_64	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	755 k
gitk	noarch	2.18.4-2.el8_2	rhel-8-appstream-rhui-rpms	201 k

### Step-3

When the central installation done, first check to ensure the executable file is set up and accessible. The best way to do this is the git version command.

```
# git --version
```

```
[root@samplegoogle ec2-user]# git --version
git version 2.18.4
[root@samplegoogle ec2-user]#
```

### GIT Client Configuration

This information is used by git to record our commits

```
# git config --global user.name "psddevops"
# git config --global user.email ppreddy2711@gmail.com
```

```
[ec2-user@samplegoogle ~]$ git config --global user.name "psddevops"
[ec2-user@samplegoogle ~]$ git config --global user.email "ppreddy2711@gmail.com"
[ec2-user@samplegoogle ~]$ git config --global push.default simple
[ec2-user@samplegoogle ~]$
```

--global tells git to use the same information for all the repositories i manage on my local machine.

```
# git config --list
```

```
[ec2-user@samplegoogle ~]$ git config --list
user.name=psddevops
user.email=ppreddy2711@gmail.com
push.default=simple
[ec2-user@samplegoogle ~]$
```

```
# git config --global --edit
```

```
[ec2-user@samplegoogle ~]$ git config --global --edit
[ec2-user@samplegoogle ~]$
```

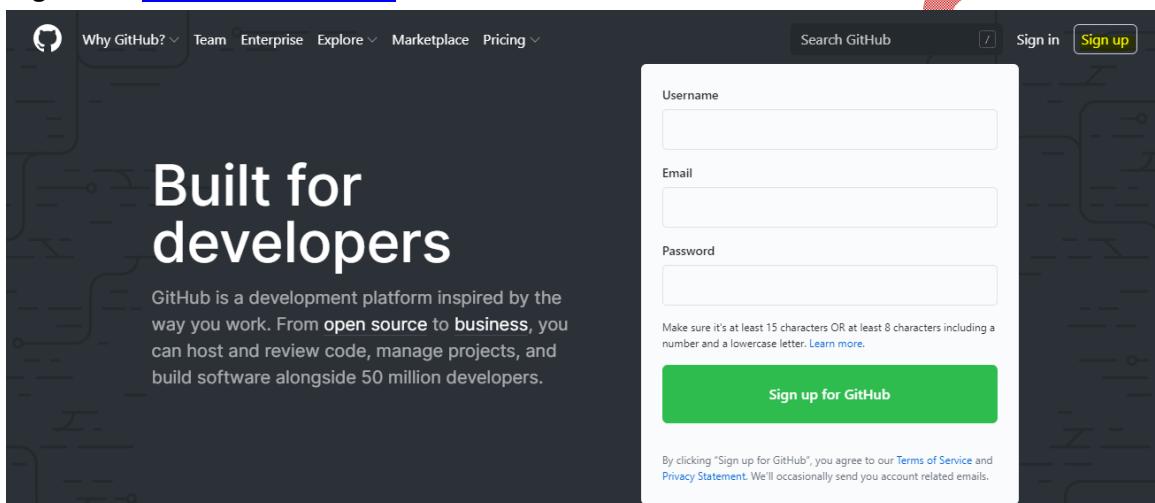
## Checking GIT version

```
# git --version
```

```
ppred@DESKTOP-OCKEAKH MINGW64 ~/OneDrive/Desktop
$ git --version
git version 2.29.1.windows.1
```

## Signup to the Github

Login in to <https://github.com/>

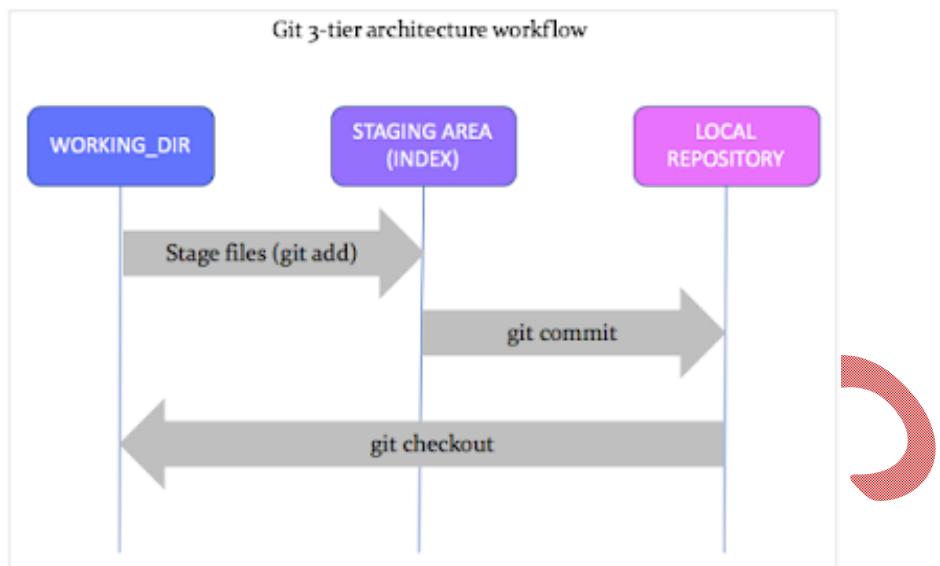


Click on to **Sign up** button and enter username, email address, password, verify and create the account.

A screenshot showing the continuation of the GitHub sign-up process. It shows a "Create your account" step with three fields: "Username" (psddevops1), "Email address" (ppreddymca@gmail.com), and "Password". Below the password field is a note: "Make sure it's at least 15 characters OR at least 8 characters including a number and a lowercase letter. [Learn more.](#)". There's also an "Email preferences" section with a checked checkbox for "Send me occasional product updates, announcements, and offers.". Below these fields is a "Verify your account" section containing a large green checkmark icon. At the bottom is a blue "Create account" button.

By creating an account, you agree to the [Terms of Service](#). For more information about GitHub's

## GIT Lifecycle



- Untracked
- Unmodified/Modified
- Staged

### Working Directory (OR) Working Area

Any modifications we do to the local repository those modification are kept under working area.

### Staging area/Index area/Buffer area

This area is to stage the files we want to commit to local & remote repository. Whichever files we have to commit those files we have to move staging area. In this area **commit-id** and **snap-shots** will be created.

Ex:

- git add README.md
- git add \*
- git add \*.java
- git add \*.sh

### Commit-id

- It's a 40-character random generated unique number.
- It's describing the file changes. Who did the change and when did the changes for same.

### Snap-shot

What you have add and what you have modified the file differences is called snap-shot.

## Local Repository/Repository

A repository contains a directory named .git, where git keeps all of its metadata for the repository.

### git status

This provides information about our local repository (working area, staging area & local repository)

### Commit:

When we do commit, it picks the files present in staging and commits to local repository. Its created commit-id contains username, mail, date and time other details.

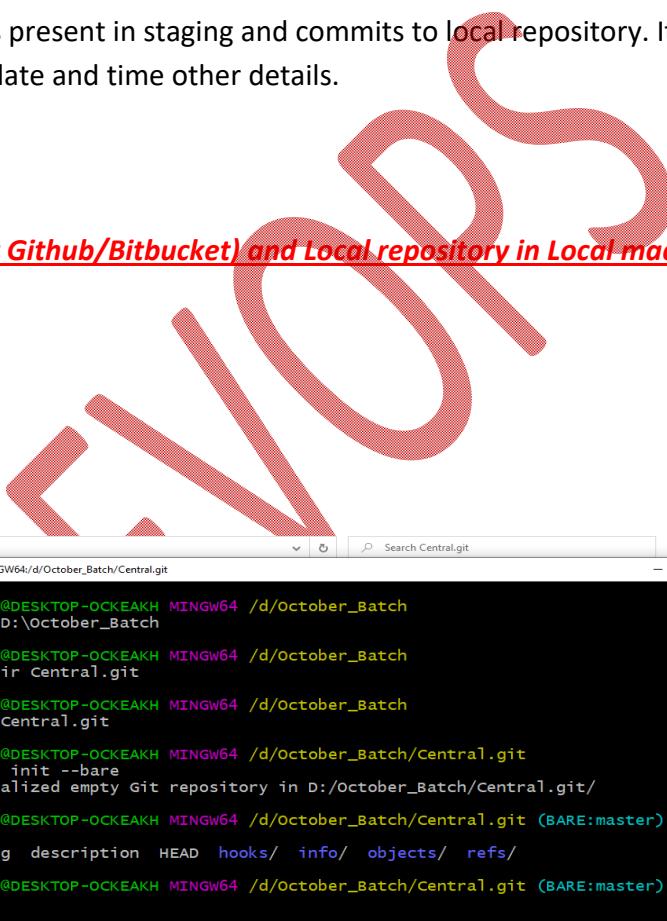
### Ex:

```
git commit -m 'Learning git tool'
```

## Creating Central repository (Without Github/Bitbucket) and Local repository in Local machine

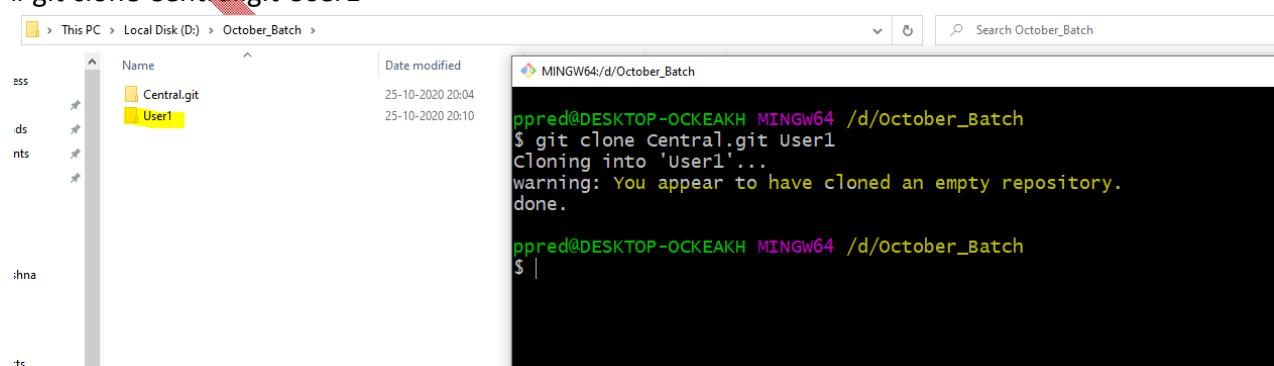
### Creating bare/central repository

```
# cd D:\October_Batch  
# mkdir Central.git  
# cd Central.git  
# git init --bare
```



### Creating local repository/non-bare repository

```
# git clone Central.git User1
```



## git clone

Git clone clones the remote copy into our local machine.

## Adding and pushing a single file to the remote repo

Creating/Adding a file in working area

```
#touch test.java
```

```
#git status
```

```
MINGW64:/d/October_Batch/User1
$ touch test.java

MINGW64:/d/October_Batch/User1 (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    test.java

nothing added to commit but untracked files present (use "git add" to track)

MINGW64:/d/October_Batch/User1 (master)
$ |
```

## Untracked file

Untracked file is a file there is no previous information of that file i.e. new file.

Moving a file working area to staging area

```
#git add test.java
```

```
nothing added to commit but untracked files present (use "git add" to track)

MINGW64:/d/October_Batch/User1 (master)
$ git add test.java

MINGW64:/d/October_Batch/User1 (master)
$ git status
On branch master

No commits yet

changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   test.java

MINGW64:/d/October_Batch/User1 (master)
$ |
```

Pushing a file staging area to local repository

```
# git commit -m "Adding a new test.java file"
```

Local Disk (D:) > October\_Batch > User1

Name	Date modified
test.java	25-10-2020 20:44

```
error: pathspec 'Adding a new test.java file' did not match any file
git
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/User1 (master)
$ git commit -m "Adding a new test.java file"
[master (root-commit) 980d51a] Adding a new test.java file
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 test.java
```

## Pushing changes to remote repo

# git push origin master

This PC > Local Disk (D:) > October\_Batch > User1

Name	Date modified
test.java	25-10-2020 20:44

```
git
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/User1 (master)
$ git commit -m "Adding a new test.java file"
[master (root-commit) 980d51a] Adding a new test.java file
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 test.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/User1 (master)
$ git push origin master
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 224 bytes | 224.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To D:/October_Batch/Central.git
 * [new branch] master -> master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/User1 (master)
```

## Adding few more files in User1

#touch test1.java test2.java test3.java → Presented in working area

# git add . → Presented in working area

# git commit -m "Added three files" → added the files to the local repository

# git push → Push to the remote repository

## How can view the log files in GIT

By using **git log** command we can view the log information. It contains the information like Author, Date and Comment information.

#git log

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/User1 (master)
$ git log
commit ec5d2b877a18214af768328caaedb3be9dafca7 (HEAD -> master)
Author: psddevops <ppreddy2711@gmail.com>
Date:   Mon Oct 26 10:56:58 2020 +0530

    Added test4.java file

commit a563169802b95646da86ae826aec11c41b4923b2
Author: psddevops <ppreddy2711@gmail.com>
Date:   Mon Oct 26 10:46:37 2020 +0530

    Added three files

commit 980d51a63929bbdd3ac1387b8f4dd79af9748897
Author: psddevops <ppreddy2711@gmail.com>
Date:   Sun Oct 25 20:52:36 2020 +0530

    Adding a new test.java file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/User1 (master)
$ |
```

```
# git log --oneline
```

Display the log information in single line.

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/User1 (master)
$ git log --oneline
ec5d2b8 (HEAD -> master, origin/master) Added test4.java file
a563169 Added three files
980d51a Adding a new test.java file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/User1 (master)
$ |
```

```
# git log -<No.of commits>
```

```
# git log -2 (Display latest two commits)
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/User1 (master)
$ git log -2
commit ec5d2b877a18214afd768328caaedb3be9dafca7 (HEAD -> master, origin/master)
Author: psddevops <ppreddy2711@gmail.com>
Date:   Mon Oct 26 10:56:58 2020 +0530

    Added test4.java file

commit a563169802b95646da86ae826aec11c41b4923b2
Author: psddevops <ppreddy2711@gmail.com>
Date:   Mon Oct 26 10:46:37 2020 +0530

    Added three files

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/User1 (master)
$ |
```

```
# git log --oneline -2 (Display latest two commits in one line)
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/User1 (master)
$ git log --oneline -2
ec5d2b8 (HEAD -> master, origin/master) Added test4.java file
a563169 Added three files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/User1 (master)
$ |
```

```
# git log --oneline --all (Display all commits in one line)
```

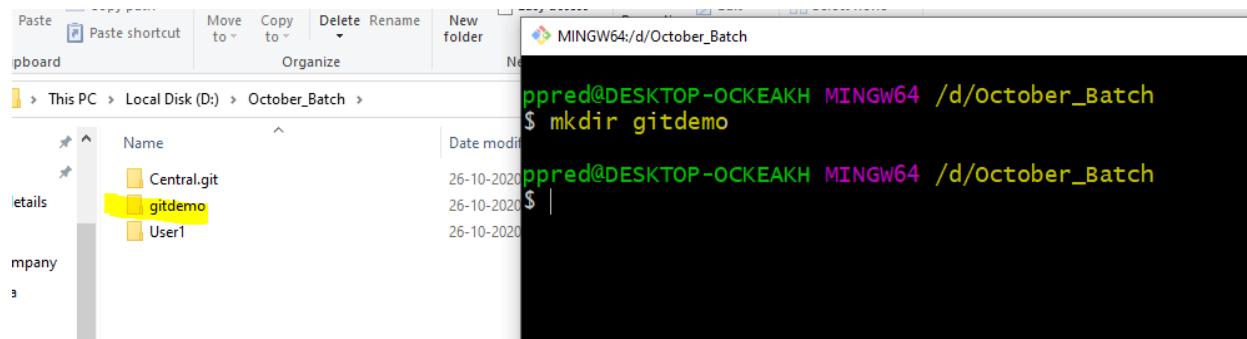
```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (master)
$ git log --oneline --all
d027b7e (HEAD -> master) seven.java
55894f7 Added six.java
583b2a0 Added five.java
21bdc50 (origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (master)
$ |
```

## **Create a project and Push to the remote repository (Git HUB)**

Create a folder “gitdemo” in local machine.

```
#mkdir gitdemo
```

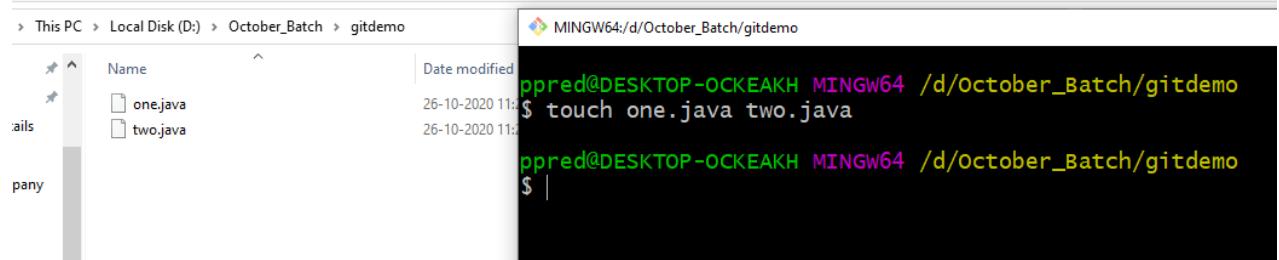


File Explorer window showing the creation of a new folder 'gitdemo' in the 'October\_Batch' directory. The folder contains two files: 'Central.git' and 'User1'. The command in the terminal is:

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch
$ mkdir gitdemo
```

Add the files inside **gitdemo** folder

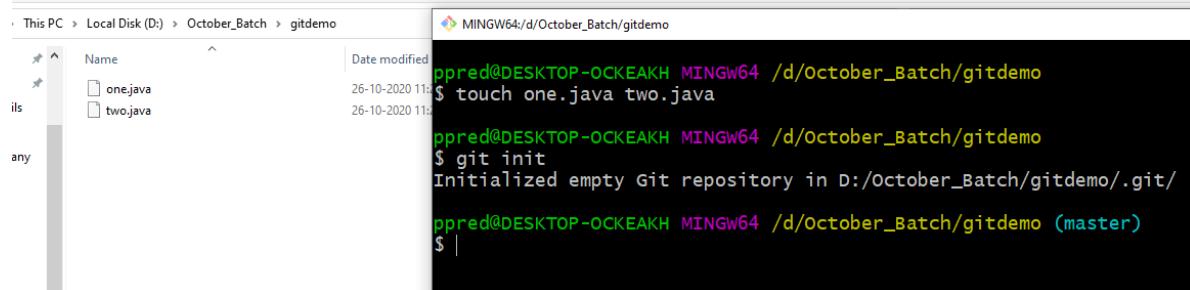
```
#touch one.java two.java
```



File Explorer window showing the contents of the 'gitdemo' folder, which now contains 'one.java' and 'two.java'. The command in the terminal is:

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo
$ touch one.java two.java
```

Initialize the git by using “**git init**” command.



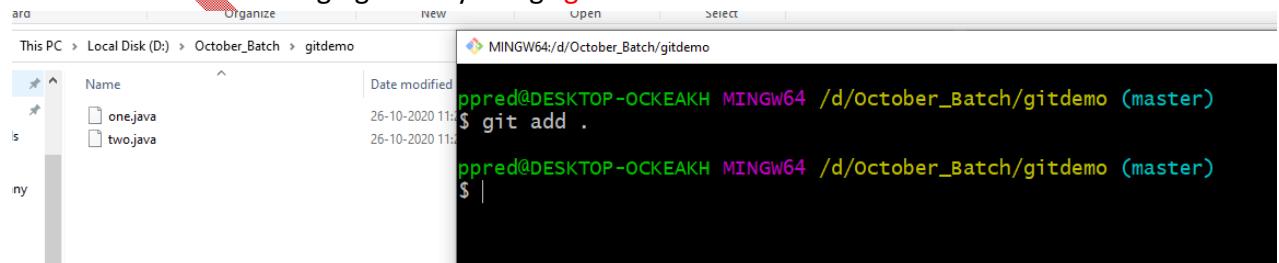
File Explorer window showing the contents of the 'gitdemo' folder. The command in the terminal is:

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo
$ touch one.java two.java
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo
$ git init
Initialized empty Git repository in D:/october_Batch/gitdemo/.git/
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (master)
$ |
```

Move the files to the staging area by using “**git add .**” command.



File Explorer window showing the contents of the 'gitdemo' folder. The command in the terminal is:

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (master)
$ git add .
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (master)
$ |
```

Move the files to the local repository by using “**git commit -m “==”** “command.

```

PC > Local Disk (D:) > October_Batch > gitdemo
Name Date modified
one.java 26-10-2020 11:12
two.java 26-10-2020 11:12

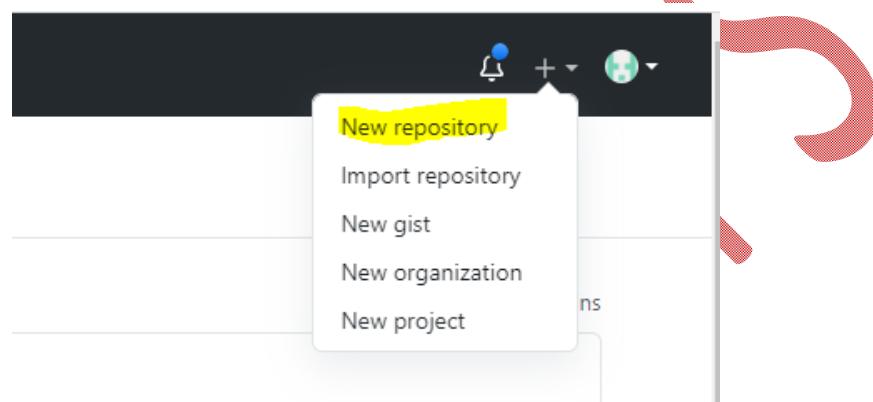
MINGW64:/d/October_Batch/gitdemo
$ git commit -m "Added the files"
[master (root-commit) 20bce21] Added the files
 2 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 one.java
 create mode 100644 two.java

MINGW64:/d/October_Batch/gitdemo
$ |

```

Login and create the new repository in [github \(<https://github.com/>\)](https://github.com/)

Click on (+) symbol on top right hand side and select new repository



Enter repository name “**BasicExample**” and create repository.

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)

Owner \* Repository name \*

/

Great repository names are short and memorable. Need inspiration? How about [refactored-octo-doodle](#)?

Description (optional)

Public  
Anyone on the internet can see this repository. You choose who can commit.

Private  
You choose who can see and commit to this repository.

Initialize this repository with:

Skip this step if you're importing an existing repository.

Add a README file  
This is where you can write a long description for your project. [Learn more.](#)

Add .gitignore  
Choose which files not to track from a list of templates. [Learn more.](#)

Choose a license  
A license tells others what they can and can't do with your code. [Learn more.](#)

Copy the newly created URL (<https://github.com/psddevops/BasicExample.git>)

The screenshot shows the GitHub 'Quick setup' interface. It displays the copied URL 'https://github.com/psddevops/BasicExample.git' in the address bar. Below the address bar, there are options for 'Set up in Desktop' (with a local icon), 'or', 'HTTPS' (with a lock icon), and 'SSH' (with a key icon). A yellow highlight box surrounds the URL in the address bar.

Verify the remote connection by using "git remote -v" command in git bash

#git remote -v

The screenshot shows a file explorer window on the left and a terminal window on the right. The file explorer shows a directory structure: Local Disk (D:) > October\_Batch > gitdemo. Inside the gitdemo folder, there are two files: one.java and two.java, both modified on 26-10-2020 at 11:24. The terminal window shows the following command and its output:

```
MINGW64:/d/October_Batch/gitdemo
$ git commit -m "Added the files"
[master (root-commit) 20bce21] Added the files
 2 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 one.java
 create mode 100644 two.java

MINGW64:/d/October_Batch/gitdemo (master)
$ git remote -v

MINGW64:/d/October_Batch/gitdemo (master)
$ |
```

Adding the URL for the remote repository where your local repository code will be pushed.

# git remote add origin <https://github.com/psddevops/BasicExample.git>

The screenshot shows a file explorer window on the left and a terminal window on the right. The file explorer shows the same directory structure as before. The terminal window shows the following command and its output:

```
MINGW64:/d/October_Batch/gitdemo
$ git remote add origin https://github.com/psddevops/BasicExample.git

MINGW64:/d/October_Batch/gitdemo (master)
$ git remote -v
origin  https://github.com/psddevops/BasicExample.git (fetch)
origin  https://github.com/psddevops/BasicExample.git (push)

MINGW64:/d/October_Batch/gitdemo (master)
$ |
```

Push the changes in your local repository to GitHub remote repository.

# git push origin master

Here push is the git command, origin is the remote name and master is the branch name.

The screenshot shows a file explorer window on the left and a terminal window on the right. The file explorer shows the same directory structure. The terminal window shows the following command and its output:

```
MINGW64:/d/October_Batch/gitdemo
$ git remote -v
origin  https://github.com/psddevops/BasicExample.git (fetch)
origin  https://github.com/psddevops/BasicExample.git (push)

MINGW64:/d/October_Batch/gitdemo (master)
$ git push origin master
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 221 bytes | 221.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/psddevops/BasicExample.git
 * [new branch]      master -> master

MINGW64:/d/October_Batch/gitdemo (master)
```

Now our code is pushed to the remote repository.

The screenshot shows a GitHub repository page for 'psddevops / BasicExample'. The repository has 1 branch and 0 tags. A commit from 'psddevops' titled 'Added the files' was made 1 hour ago. It includes two files: 'one.java' and 'two.java', both added 1 hour ago. A message at the bottom encourages adding a README, with a 'Add a README' button.

git remote show origin :

It will give the information on a particular remote (here origin is the remote name)

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git remote show origin
* remote origin
  Fetch URL: https://github.com/psddevops/BasicExample.git
  Push URL: https://github.com/psddevops/BasicExample.git
  HEAD branch: master
  Remote branch:
    master tracked
  Local ref configured for 'git push':
    master pushes to master (up to date)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git status
On branch master
nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (master)
$ |
```

# git remote remove origin: It will remove the remote origins.

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git remote remove origin

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git remote -v

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |
```

### Checking specific commit-id

```
# git show <commit-id>
# git show 21bdc50
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git show 21bdc50
commit 21bdc50f4af7a17550d5265f1d081c1fa5d9275b (HEAD -> master, origin/master)
Author: psddevops <ppreddy2711@gmail.com>
Date:   Mon Oct 26 12:27:41 2020 +0530

    Added four.java file

diff --git a/four.java b/four.java
new file mode 100644
index 000000..e69de29

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |
```

### Remove the files from working area/working directory

By using git clean we are going to remove the files in working directory/working area.

**#git clean -n**

Display the list of expected files

**#git clean -f**

Delete the files in working area

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ touch six.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    six.java

nothing added to commit but untracked files present (use "git add" to track)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git clean -n
Would remove six.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git clean -f
Removing six.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (master)
$ git status
On branch master
nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |
```

### git reset modes in GIT

Whenever we are modify and added the file into staging area the temporary-id will create repository that time head reference will pointing to the temporary-id.

There are **3-types** of modes in git reset.

- git reset --soft
- git reset --mixed
- git reset --hard

**Note:** Don't use reset if your commit is pushed to the remote, it causes problems.

#### git reset --soft

Move the head pointer from temporary-id to commit-id.

#### git reset --mixed

Move the head pointer and reset the staging area.

#### git reset --hard

Move the head pointer also reset the staging area and working area.

**Ex: git reset --hard demo**

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

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ ls  
five.java four.java one.java seven.java six.java three.java two.java  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git log --oneline  
9317098 (HEAD -> master) Added seven.java  
55894f7 Added six.java  
583b2a0 Added five.java  
21bdc50 (origin/master) Added four.java file  
0d9003d Added three.java  
01e6c11 Added the file
```

**Reverting the changes to four.java**

```
# git reset --hard 21bdc50  
# ls  
# git status
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git reset --hard 21bdc50  
HEAD is now at 21bdc50 Added four.java file  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ ls  
four.java one.java three.java two.java  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git status  
On branch master  
nothing to commit, working tree clean
```

**Reverting the changes to seven.java**

```
# git reset --hard 9317098  
# git log --oneline
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git reset --hard 9317098
HEAD is now at 9317098 Added seven.java

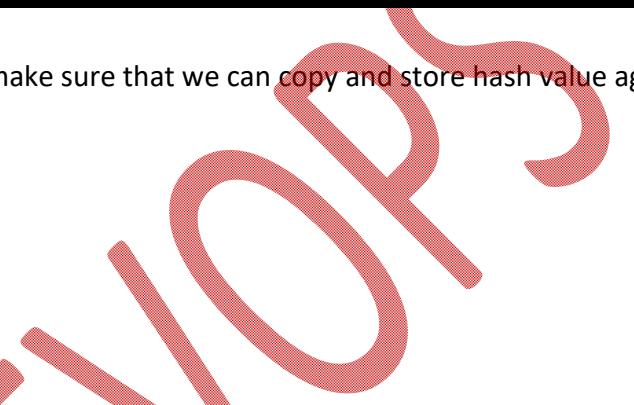
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git status
On branch master
nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log --oneline
9317098 (HEAD -> master) Added seven.java
55894f7 Added six.java
583b2a0 Added five.java
21bdc50 (origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

```

**Note:** Whenever we are using reset hard make sure that we can copy and store hash value again we need to back easily.

### git reset --soft demo



```

#ls
# git log --oneline
# git reset --soft 583b2a0
# git status

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ ls
five.java  four.java  one.java  seven.java  six.java  three.java  two.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log --oneline
d027b7e (HEAD -> master) seven.java
55894f7 Added six.java
583b2a0 Added five.java
21bdc50 (origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git reset --soft 583b2a0

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   seven.java
    new file:   six.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |

```

### git reset --mixed demo

```

# ls
#git log --oneline
# git reset --mixed 583b2a0
$ |

```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ ls
five.java four.java one.java seven.java six.java three.java two.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log --oneline
d027b7e (HEAD -> master) seven.java
55894f7 Added six.java
583b2a0 Added five.java
21bdc50 (origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git reset --mixed 583b2a0

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    seven.java
    six.java

nothing added to commit but untracked files present (use "git add" to track)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |
```

### Reverting the Specific commit-id

# git revert

If we want to remove specific commit we can use git revert. It doesn't remove the commit from the history; instead it reverts changes to the files and makes a new commit. This commit-id's will be updated in the remote repository and other users also can see this message.

#### Note:

If commits are already pushed to remote we can't use reset instead we should go with revert.

#git log --oneline --all

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log --oneline --all
d027b7e (HEAD -> master) seven.java
55894f7 Added six.java
583b2a0 Added five.java
21bdc50 (origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |
```

#git revert 583b2a0

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git status
On branch master
nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git revert 583b2a0
Removing five.java
[master 4cb98f2] Revert "Added five.java"
 1 file changed, 0 insertions(+), 0 deletions(-)
 delete mode 100644 five.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git status
On branch master
nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ ls
four.java  one.java  seven.java  six.java  three.java  two.java

```

**#git log**

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log
commit 4cb98f2650136d40a70b3bac45964f8ffa078cbd (HEAD -> master)
Author: psddevops <ppreddy2711@gmail.com>
Date:   Tue Oct 27 10:23:30 2020 +0530

    Revert "Added five.java"

    This reverts commit 583b2a03de69295ac2bcc1e7557f4313f39b979.

commit d027b7e60a76b143e6ce901d8d5d2b0c6f79d128
Author: psddevops <ppreddy2711@gmail.com>
Date:   Mon Oct 26 16:30:55 2020 +0530

    seven.java

```

### Restore the changes

**#git cherry-pick 583b2a03de69295ac2bcc1e7557f4313f39b979**

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git cherry-pick 583b2a03de69295ac2bcc1e7557f4313f39b979
[master 3598bde] Added five.java
Date: Mon Oct 26 16:05:44 2020 +0530
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 five.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ ls
five.java  four.java  one.java  seven.java  six.java  three.java  two.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |

```

### git cherry-pick

It's used for restoring the commit-id and also It picks a commit from different branch and applies it to current branch.

#### Syntax:

git cherry-pick <commit-id>

## git checkout

If we want to traverse one commit-id to other commit-id we can go for git checkout.

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git checkout 55894f7
Note: switching to '55894f7'.
```

You are in 'detached HEAD' state. You can look around, make experimental changes and commit them, and you can discard any commits you make in this state without impacting any branches by switching back to a branch.

If you want to create a new branch to retain commits you create, you may do so (now or later) by using -c with the switch command. Example:

```
git switch -c <new-branch-name>
```

Or undo this operation with:

```
git switch -
```

Turn off this advice by setting config variable advice.detachedHead to false

```
HEAD is now at 55894f7 Added six.java
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo ((55894f7...))
$ |
```

```
# touch eight.java
```

```
# git status
```

```
# git add . && git commit -m "Added eight.java"
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo ((55894f7...))
$ touch eight.java
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo ((55894f7...))
$ git status
```

```
HEAD detached at 55894f7
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    eight.java
```

```
nothing added to commit but untracked files present (use "git add" to track)
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo ((55894f7...))
$ git add . && git commit -m "Added eight.java"
```

```
[detached HEAD 8f53c1d] Added eight.java
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 eight.java
```

```
# git log --oneline
```

```
# ll
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo ((8f53c1d...))
$ git log --oneline
```

```
8f53c1d (HEAD) Added eight.java
55894f7 Added six.java
583b2a0 Added five.java
21bdc50 (origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo ((8f53c1d...))
$ ll
```

```
total 0
-rw-r--r-- 1 ppred 197609 0 Oct 27 10:47 eight.java
-rw-r--r-- 1 ppred 197609 0 Oct 27 10:29 five.java
-rw-r--r-- 1 ppred 197609 0 Oct 26 12:27 four.java
-rw-r--r-- 1 ppred 197609 0 Oct 26 11:24 one.java
-rw-r--r-- 1 ppred 197609 0 Oct 26 16:53 six.java
-rw-r--r-- 1 ppred 197609 0 Oct 26 12:22 three.java
-rw-r--r-- 1 ppred 197609 0 Oct 26 11:24 two.java
```

```
# git checkout master
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo ((8f53c1d...))
$ git checkout master
Warning: you are leaving 1 commit behind, not connected to
any of your branches:

  8f53c1d Added eight.java

If you want to keep it by creating a new branch, this may be a good time
to do so with:

  git branch <new-branch-name> 8f53c1d

Switched to branch 'master'
```

```
# git log --oneline
```

```
# ls
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log --oneline
3598bde (HEAD -> master) Added five.java
4cb98f2 Revert "Added five.java"
d027b7e seven.java
55894f7 Added six.java
583b2a0 Added five.java
21bdc50 (origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ ls
five.java four.java one.java seven.java six.java three.java two.java
```

```
# git cherry-pick 8f53c1d
```

```
# git log --oneline
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git cherry-pick 8f53c1d
[master 69ca6b7] Added eight.java
 Date: Tue Oct 27 10:48:13 2020 +0530
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 eight.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log --oneline
69ca6b7 (HEAD -> master) Added eight.java
3598bde Added five.java
4cb98f2 Revert "Added five.java"
d027b7e seven.java
55894f7 Added six.java
583b2a0 Added five.java
21bdc50 (origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |
```

## Branches

Branch is used to work on a specific task (enhancement, bug, new feature) Branch provides isolation, i.e. other work will not impact my work.

### Branch

- Branches are used to create another line of development.
- By default, Git has a master branch, which is same as trunk in Subversion (SVN). Usually, a branch is created to work on a new feature.
- Once the feature is completed, it is merged back with the master branch and we delete the branch.

### Master Branch:

- Every git repository comes with a default branch which is called as master branch.
  - No one should directly work on master.
  - Master must contain only well tested code.
  - In real world most of the guys will not have permissions to push to master.
- If there is a new task to work on, then we should create a branch and work on it.

### Tags

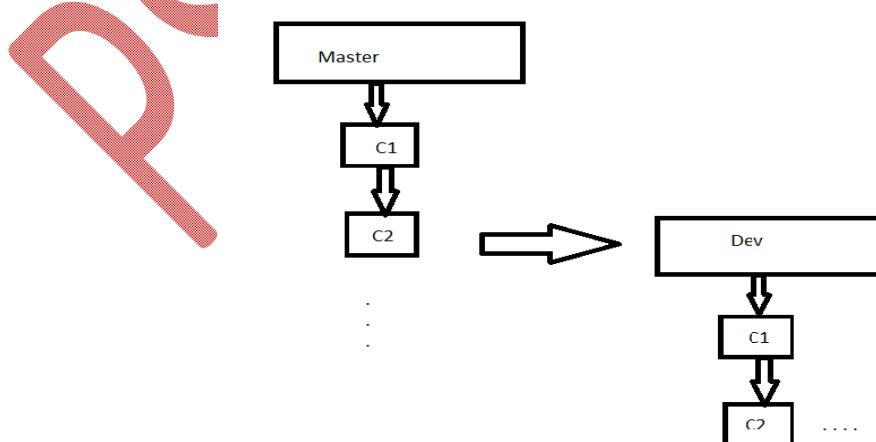
- Tags similar to branches, but the difference is that tags are immutable.
- It means, tag is a branch, which nobody intends to modify. Once a tag is created for a particular commit, even if you create a new commit, it will not be updated.
- Usually, developers create tags for product releases.

### Creating Branch

By using below command to create a new branch from current branch, whenever we are creating branch all commit-id data up to date its present.

### Syntax

```
git branch <branch-name>  
git branch Dev
```



*Creating dev Branch from master*

```
# git branch dev
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch
* master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch dev

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch
  dev
* master
```

*Switching the branch from master to dev*

```
# git checkout dev
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git checkout dev
Switched to branch 'dev'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ |
```

*Verifying the logs in master and dev branches*

```
# git log --oneline
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ git log --oneline
21bdc50 (HEAD -> dev, origin/master, master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ git checkout master
Switched to branch 'master'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log --oneline
21bdc50 (HEAD -> master, origin/master, dev) Added four.java file
0d9003d Added three.java
20bce21 Added the files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |
```

Note:

(HEAD -> master, origin/master, dev) → master && dev branches having same commit-id, origin/master(remote repo) also having commit-id.

*Creating a file in dev branch and merge to the master branch*

```
# git checkout dev
```

```
# touch five.java
```

```
# git add . && git commit -m "Added five.java in dev branch"
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ touch five.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ git add . && git commit -m "Added five.java in dev branch"
[dev 3ed9064] Added five.java in dev branch
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 five.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ git log --oneline --all
3ed9064 (HEAD -> dev) Added five.java in dev branch
21bdc50 (origin/master, master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ 

```

In above diagram

- (HEAD -> dev) is pointing latest commit-id i.e. “3ed9064”
- (origin/master, master) is pointing previous commit-id i.e. “21bdc50”

### *Merging to master branch*

Switch to master branch and verify the log

```
#git checkout master
```

```
#git log --oneline --all
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ git checkout master
Switched to branch 'master'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log --oneline --all
3ed9064 (dev) Added five.java in dev branch
21bdc50 (HEAD -> master, origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

```

### *Use git cherry-pick command merge to the master branch*

```
#git cherry-pick 3ed9064
```

```
#git log --oneline --all
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git cherry-pick 3ed9064
[master 11a0f65] Added five.java in dev branch
 Date: Tue Oct 27 13:04:07 2020 +0530
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 five.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log --oneline --all
11a0f65 (HEAD -> master) Added five.java in dev branch
3ed9064 (dev) Added five.java in dev branch
21bdc50 (origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

```

In above diagram master and dev branches pointing to same file.

Origin/master pointing to different commit-id

## *Pushing branches to remote repository (github)*

Find out the branches in remote repo

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch
  dev
* master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch -r
  origin/master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |
```

In github

psddevops / BasicExample

<> Code Issues Pull requests Actions Projects Wiki Security Insights Settings

master 1 branch 0 tags

Switch branches/tags Find or create a branch...  
Branches Tags default  
✓ master View all branches two.java

21bdc50 yesterday 3 commits  
Added four.java file  
Added the files  
Added three.java  
Added the files

## *Pushing dev branch*

```
# git checkout dev
```

```
# git push origin dev
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch -r
  origin/master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git checkout dev
Switched to branch 'dev'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ git push origin dev
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 250 bytes | 125.00 KiB/s, done.
Total 2 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
remote:
remote: Create a pull request for 'dev' on GitHub by visiting:
remote:     https://github.com/psddevops/BasicExample/pull/new/dev
remote:
To https://github.com/psddevops/BasicExample.git
 * [new branch]      dev -> dev

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ git branch -r
  origin/dev
  origin/master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ |
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ git log --oneline --all
11a0f65 (master) Added five.java in dev branch
3ed9064 (HEAD -> dev, origin/dev) Added five.java in dev branch
21bdc50 (origin/master) Added four.java file
0d9003d Added three.java
20bce21 Added the files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ |
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)
$ git checkout master
Switched to branch 'master'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git push -u --all
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 255 bytes | 255.00 KiB/s, done.
Total 2 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/psddevops/BasicExample.git
  21bdc50..11a0f65  master -> master
Branch 'dev' set up to track remote branch 'dev' from 'origin'.
Branch 'master' set up to track remote branch 'master' from 'origin'.

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log --oneline --all
11a0f65 (HEAD -> master, origin/master) Added five.java in dev branch
3ed9064 (origin/dev, dev) Added five.java in dev branch
21bdc50 Added four.java file
0d9003d Added three.java
20bce21 Added the files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
```

By using “**git push -u -all**” we can push all branches to the remote repo

Commit	Date	Message
11a0f65	44 minutes ago	Added five.java in dev branch Added four.java file Added the files Added three.java
3ed9064	yesterday	Added five.java in dev branch

## Using merge/rebase command to merge the branches

### Merge demo

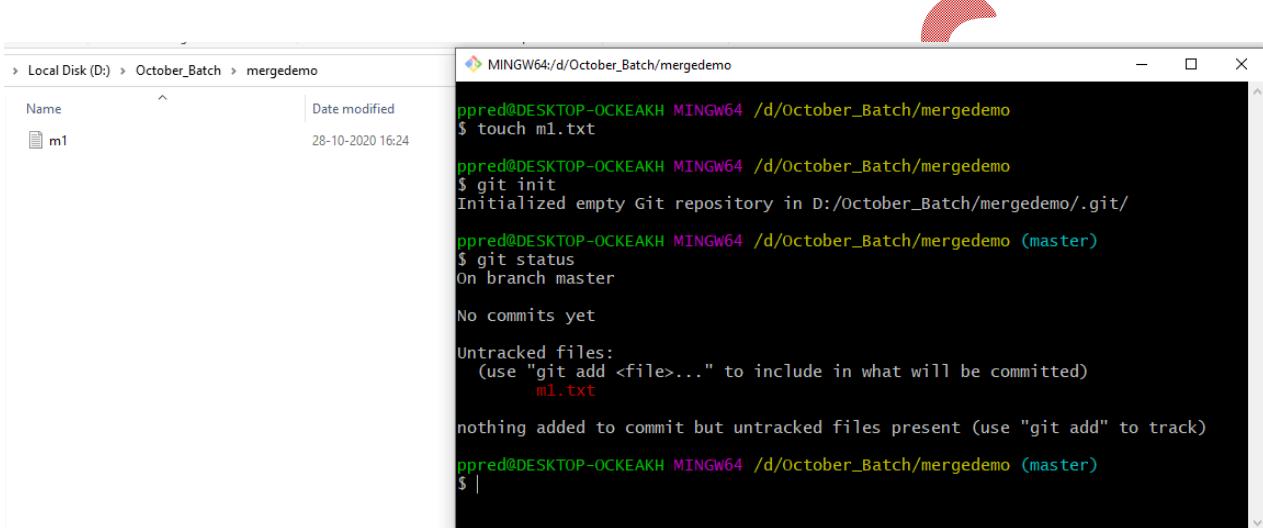
Git merge is used to integrate changes from one branch into another branch.

Create a project **mergedemo** and create **master** and **dev** branches

```
# git init
```

```
# touch m1.txt
```

```
# git status
```



```
MINGW64:/d/October_Batch/mergedemo
$ touch m1.txt
$ git init
Initialized empty Git repository in D:/October_Batch/mergedemo/.git/
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    m1.txt

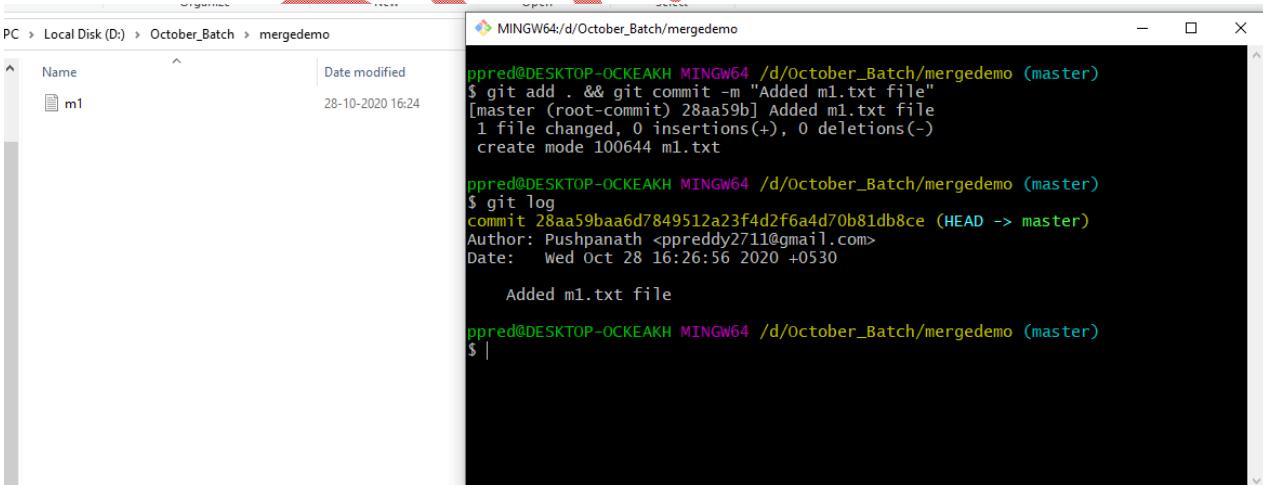
nothing added to commit but untracked files present (use "git add" to track)

$ |
```

### Added to staging and commit

```
# git add . && git commit -m "Added m1.txt file"
```

```
# git log
```



```
PC > Local Disk (D:) > October_Batch > mergedemo
$ Name Date modified
  m1 28-10-2020 16:24

MINGW64:/d/October_Batch/mergedemo
$ git add . && git commit -m "Added m1.txt file"
[master (root-commit) 28aa59b] Added m1.txt file
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 m1.txt

$ git log
commit 28aa59baa6d7849512a23f4d2f6a4d70b81db8ce (HEAD -> master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Wed Oct 28 16:26:56 2020 +0530

  Added m1.txt file

$ |
```

### Create and checkout to dev branch

```
# git checkout -b dev
```

```
# git log
```

```

> Local Disk (D:) > October_Batch > mergedemo
Name Date modified
m1 28-10-2020 16:24

MINGW64:/d/October_Batch/mergedemo
$ git checkout -b dev
Switched to a new branch 'dev'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (dev)
$ git log
commit 28aa59baa6d7849512a23f4d2f6a4d70b81db8ce (HEAD -> dev, master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Wed Oct 28 16:26:56 2020 +0530

    Added m1.txt file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (dev)
$ |

```

*Create d1.txt file dev branch*

```
#touch d1.txt
#git add . && git commit -m "added d1.txt in dev branch"
```

```

> Local Disk (D:) > October_Batch > mergedemo
Name Date modified
d1 28-10-2020 16:34
m1 28-10-2020 16:24

MINGW64:/d/October_Batch/mergedemo
$ touch d1.txt
$ git add . && git commit -m "added d1.txt in dev branch"
[dev 64099d2] added d1.txt in dev branch
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 d1.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (dev)
$ git log
commit 64099d2b327097e8cdb89da06dba0143100feb99 (HEAD -> dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Wed Oct 28 16:35:28 2020 +0530

    added d1.txt in dev branch

commit 28aa59baa6d7849512a23f4d2f6a4d70b81db8ce (master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Wed Oct 28 16:26:56 2020 +0530

    Added m1.txt file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (dev)
$ |

```

*Checkout to master and create m2.txt file*

```
# git checkout master
# touch m2.txt
# git add . && git commit -m "added m2.txt file"
# git log
```

```

> Local Disk (D:) > October_Batch > mergedemo
Name Date modified
m1 28-10-2020 16:24
m2 28-10-2020 16:49

MINGW64:/d/October_Batch/mergedemo
$ git checkout master
Switched to branch 'master'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (master)
$ touch m2.txt
$ git add . && git commit -m "added m2.txt file"
[master cd7a25a] added m2.txt file
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 m2.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (master)
$ git log
commit cd7a25a4fe159d169f83aa4ec6e93b10a492ad44 (HEAD -> master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Wed Oct 28 16:49:41 2020 +0530

    added m2.txt file

commit 28aa59baa6d7849512a23f4d2f6a4d70b81db8ce
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Wed Oct 28 16:26:56 2020 +0530

    Added m1.txt file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (master)
$ |

```

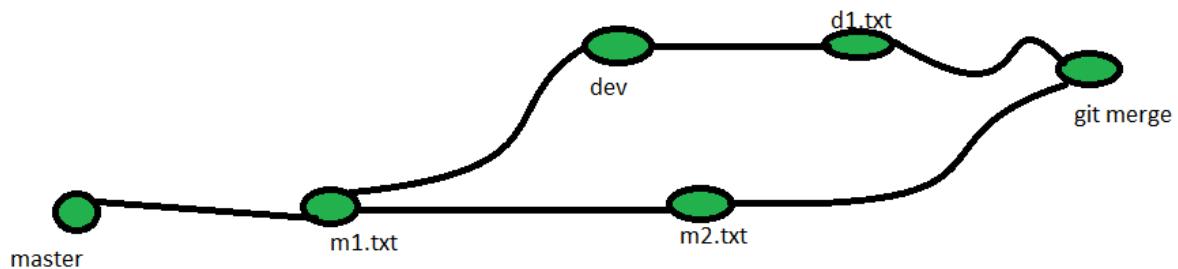
### *Checkout to dev and merge to master*

```
# git checkout dev  
# git merge master
```

```
PC > Local Disk (D:) > October_Batch > mergedemo  
Name Date modified Type  
d1 28-10-2020 16:54 Text Document  
m1 28-10-2020 16:24 Text Document  
m2 28-10-2020 16:55 Text Document  
MINGW64/d/October_Batch/mergedemo  
$ ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (master)  
$ git checkout dev  
Switched to branch 'dev'  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (dev)  
$ git merge master  
Merge made by the 'recursive' strategy.  
 m2.txt | 0  
 1 file changed, 0 insertions(+), 0 deletions(-)  
 create mode 100644 m2.txt  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (dev)  
$ |
```

```
#git log
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (dev)  
$ git log  
commit 1a0b54f5cfe50a6950effb49c3bd1b659f78948db (HEAD -> dev)  
Merge: 64099d2 cd7a25a  
Author: Pushpanath <ppreddy2711@gmail.com>  
Date:   Wed Oct 28 16:55:10 2020 +0530  
  
    Merge branch 'master' into dev  
  
commit cd7a25a4fe159d169f83aa4ec6e93b10a492ad44 (master)  
Author: Pushpanath <ppreddy2711@gmail.com>  
Date:   Wed Oct 28 16:49:41 2020 +0530  
  
    added m2.txt file  
  
commit 64099d2b327097e8cdb89da06dba0143100feb99  
Author: Pushpanath <ppreddy2711@gmail.com>  
Date:   Wed Oct 28 16:35:28 2020 +0530  
  
    added d1.txt in dev branch  
  
commit 28aa59baa6d7849512a23f4d2f6a4d70b81db8ce  
Author: Pushpanath <ppreddy2711@gmail.com>  
Date:   Wed Oct 28 16:26:56 2020 +0530  
  
    Added m1.txt file  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (dev)  
$ |
```



## Reverting the merge

```
# git reset 64099d2
```

```
# git log
```

The screenshot shows a Windows File Explorer window with a path of C:\Local Disk (D:) \ October\_Batch \ mergedemo. Inside the folder, there are three files: d1 (modified 29-10-2020 10:36), m1 (modified 28-10-2020 16:24), and m2 (modified 28-10-2020 16:55). To the right of the file list is a terminal window with the following content:

```
MINGW64:/d/October_Batch/mergedemo
Added m1.txt file
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/mergedemo (dev)
$ git reset 64099d2
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/mergedemo (dev)
$ 11
Text-rw-r--r-- 1 ppred 197609 0 Oct 29 10:36 d1.txt
Text-rw-r--r-- 1 ppred 197609 0 Oct 28 16:24 m1.txt
Text-rw-r--r-- 1 ppred 197609 0 Oct 28 16:55 m2.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/mergedemo (dev)
$ git log
commit 64099d2b327097e8cd89da06dba0143100feb99 (HEAD -> dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Wed Oct 28 16:35:28 2020 +0530

    added d1.txt in dev branch

commit 28aa59baa6d7849512a23f4d2f6a4d70b81db8ce
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Wed Oct 28 16:26:56 2020 +0530

    Added m1.txt file

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/mergedemo (dev)
$ git status
On branch dev
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    m2.txt

nothing added to commit but untracked files present (use "git add" to track)
```

If we are trying to checkout master branch will get error need to delete the working area files.

# git checkout master (It will get error)

# git clean -n

# git clean -f

# git checkout master (It will work)

The screenshot shows a Windows File Explorer window with a path of S:\PC\Local Disk (D:) \ October\_Batch \ mergedemo. Inside the folder, there are two files: m1 (modified 28-10-2020 16:24) and m2 (modified 29-10-2020 10:45). To the right of the file list is a terminal window with the following content:

```
MINGW64:/d/October_Batch/mergedemo
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/mergedemo (dev)
$ git status
On branch dev
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    m2.txt

nothing added to commit but untracked files present (use "git add" to track)

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/mergedemo (dev)
$ git checkout master
error: The following untracked working tree files would be overwritten by checkout:
  m2.txt
Please move or remove them before you switch branches.
Aborting

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/mergedemo (dev)
$ git clean -f
Removing m2.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/mergedemo (dev)
$ git checkout master
switched to branch 'master'

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/mergedemo (master)
$ |
```

Verify the logs in master and dev branch.

```
# git log
```

```
# git log
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (master)
$ git log
commit cd7a25a4fe159d169f83aa4ec6e93b10a492ad44 (HEAD -> master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   wed Oct 28 16:49:41 2020 +0530

    added m2.txt file

commit 28aa59baa6d7849512a23f4d2f6a4d70b81db8ce
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   wed Oct 28 16:26:56 2020 +0530

    Added m1.txt file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (dev)
$ git checkout dev
Switched to branch 'dev'

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/mergedemo (dev)
$ git log
commit 64099d2b327097e8cdb89da06dba0143100feb99 (HEAD -> dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   wed Oct 28 16:35:28 2020 +0530

    added d1.txt in dev branch

commit 28aa59baa6d7849512a23f4d2f6a4d70b81db8ce
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   wed Oct 28 16:26:56 2020 +0530

    Added m1.txt file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/mergedemo (dev)
$ |

```

## Rebase demo

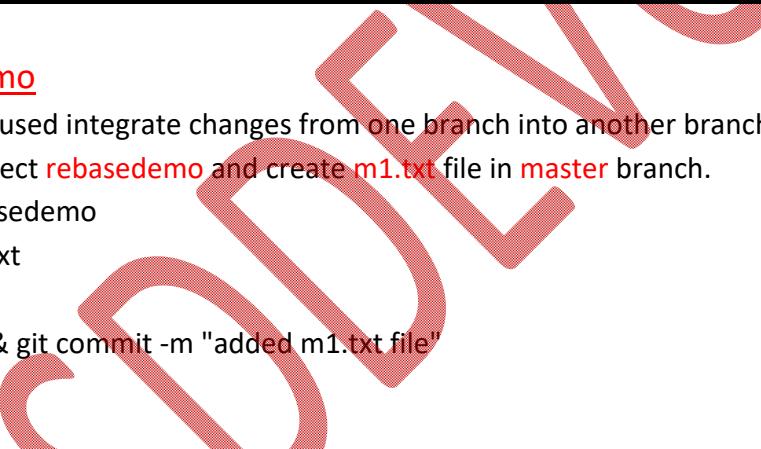
Git rebase is used integrate changes from one branch into another branch.

Create a project **rebasedemo** and create **m1.txt** file in **master** branch.

```

# mkdir rebasedemo
# touch m1.txt
# git init
# git add . && git commit -m "added m1.txt file"
# git log

```




```

MINGW64:/d/October_Batch/rebasedemo
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo
$ cd rebasedemo/
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo
$ touch m1.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo
$ git init
Initialized empty Git repository in D:/October_Batch/rebasedemo/.git/

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (master)
$ git add .
[master (root-commit) 12a629d] added m1.txt file
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 m1.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (master)
$ git log
commit 12a629da1bd259484722ce8f3fbf2b4d20491925 (HEAD -> master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Thu Oct 29 09:35:31 2020 +0530

    added m1.txt file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (master)
$ |

```

Create **dev** branch and add **d1.txt** file

```
# git checkout -b dev  
# touch d1.txt  
# git add . && git commit -m "added d1.txt file"  
# git log
```

```
MINGW64/d/October_Batch/rebasedemo  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (master)  
$ git checkout -b dev  
Switched to a new branch 'dev'  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (dev)  
$ touch d1.txt  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (dev)  
$ git add . && git commit -m "added d1.txt file"  
[dev 4c20295] added d1.txt file  
1 file changed, 0 insertions(+), 0 deletions(-)  
create mode 100644 d1.txt  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (dev)  
$ git log  
commit 4c20295ad9a5addeddad13f90ba9036900ed867 (HEAD -> dev)  
Author: Pushpanath <ppreddy2711@gmail.com>  
Date: Thu Oct 29 09:39:28 2020 +0530  
    added d1.txt file  
commit 12a629da1bd259484722ce8f3fbf2b4d20491925 (master)  
Author: Pushpanath <ppreddy2711@gmail.com>  
Date: Thu Oct 29 09:35:31 2020 +0530  
    added m1.txt file  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (dev)  
$ |
```

Create **m2.txt** in **master** and merge to the **dev** branch using **rebase** process

```
# git checkout master  
# touch m2.txt  
# git add . && git commit -m "added m2.txt file"  
# git log
```

```
MINGW64/d/October_Batch/rebasedemo  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (master)  
$ touch m2.txt  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (master)  
$ git add . && git commit -m "added m2.txt file"  
[master 9838608] added m2.txt file  
1 file changed, 0 insertions(+), 0 deletions(-)  
create mode 100644 m2.txt  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (master)  
$ git log  
commit 9838608cef3617fb5247507aac14ec90e660b30e (HEAD -> master)  
Author: Pushpanath <ppreddy2711@gmail.com>  
Date: Thu Oct 29 09:59:20 2020 +0530  
    added m2.txt file  
commit 12a629da1bd259484722ce8f3fbf2b4d20491925  
Author: Pushpanath <ppreddy2711@gmail.com>  
Date: Thu Oct 29 09:35:31 2020 +0530  
    added m1.txt file  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/rebasedemo (master)  
$ |
```

```
# git checkout dev  
# git rebase master  
# git log
```

File Paste shortcut to to Organize New

Name Date modified

- d1 29-10-2020 10:01
- m1 29-10-2020 09:33
- m2 29-10-2020 10:01

```
MINGW64:/d/October_Batch/rebasedemo
$ git checkout dev
Switched to branch 'dev'

$ git rebase master
Successfully rebased and updated refs/heads/dev.

$ git log
commit f14bb137cd97f452a7b1a33fb00500e3fb387cc4 (HEAD -> dev)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Thu Oct 29 09:39:28 2020 +0530

    added d1.txt file

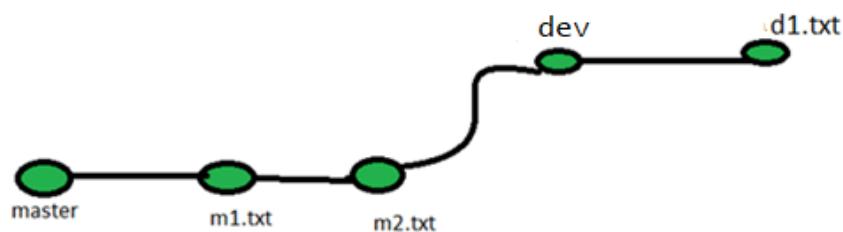
commit 9838608cef3617fb5247507aac14ec90e660b30e (master)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Thu Oct 29 09:59:20 2020 +0530

    added m2.txt file

commit 12a629da1bd259484722ce8f3fbf2b4d20491925
Author: Pushpanath <preddy2711@gmail.com>
Date:   Thu Oct 29 09:35:31 2020 +0530

    added m1.txt file

$ |
```



### git merge Vs rebase

Git *rebase* and *merge* both integrate changes from one branch into another

#### git merge

- Is a non-destructive operation.
- Existing branches are not changed in any way.
- Creates a new merge commit in the feature branch.

#### git rebase

- Moves the entire feature branch to begin on the tip of the master branch.
- Re-writes the project history.
- We get much cleaner and linear project history.

**Note:** Use merge if we have any issue we can reset easily.

## Git branching strategy

Branching strategies coordinate work to allow for easier integration of changes and releases. The point of a branching strategy is to efficiently manage code changes. This workflow will impact both developer and deployment workflows. It's mainly divided into 2-categories.

1. Main branches
2. Supporting/Supplementary branches

### Main branches

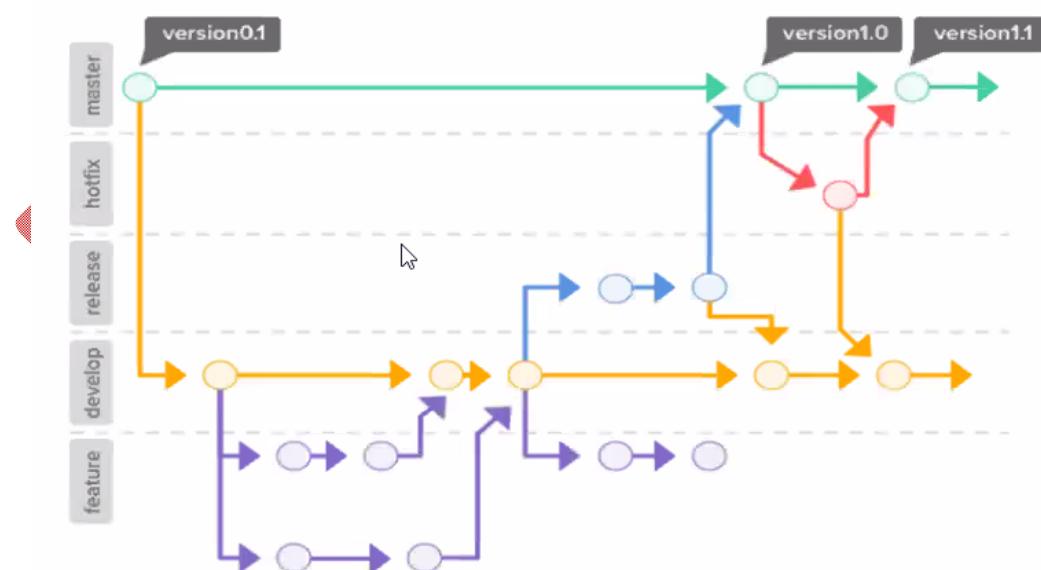
The development model is greatly inspired by existing models out there. The central repo holds two main branches with an infinite lifetime.

- master branch
- develop branch

### Supporting/Supplementary branches

Supporting branches to aid parallel development between team members, ease tracking of features, prepare for production releases and to assist in quickly fixing live production problems. Unlike the main branches, these branches always have a limited life time, since they will be removed eventually.

- feature branch
- release branch
- bugfix branch
- hotfix branch



### Master branch:

Master must contain well tested code, application release happens from this branch by creating a release ‘tag’. All development code is merged into master in sometime. In real world no one directly work on master.

### Develop branch:

This branch belongs to a specific team, code integration of this team members are done on this branch. Develop branch is created from master. This branch contains pre-production code. When the features are finished then they are merged into *develop* branch.

### Feature branch:

Feature branch belongs to a specific developer, where his feature is implemented, after completion of a feature changes are merged into his develop branch. Feature branch is created from develop branch.

### Release/UAT branch:

This branch is to integrate changes done by multiple teams under their develop branch. Release branches support preparation of a new production release. They allow many minor bug to be fixed and preparation of meta-data for a release. May branch off from *develop* and must merge into *master* and *develop*.

### Bugfix branch:

This branch is used for fixing UAT defects. Bugfixes branch is created from *release*. Bugfix branches are necessary to act immediately upon an undesired status of *release*. May branch off from *release* and must merge into *release* branch.

### Hotfix branch:

This branch is used for fixing production defects. Hotfixes branch is created from *master*. Hotfix branches are necessary to act immediately upon an undesired status of *master*. May branch off from *master* and must merge into *master* and *develop*.

## Branching Strategies Demo

1. Create a file **p1.txt** in **master branch** which is currently running on **PROD**.

```
# touch p1.txt  
# git add . && git commit -m "added p1.txt file in master branch"
```

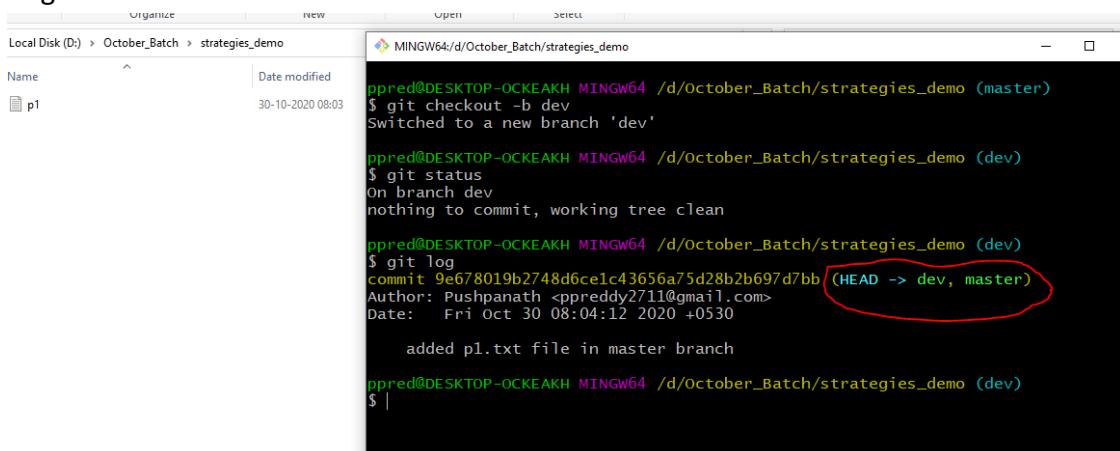
```
MINGW64/d/October_Batch/strategies_demo  
$ git init  
Initialized empty Git repository in D:/October_Batch/strategies_demo/.git/  
$ touch p1.txt  
$ git add . && git commit -m "added p1.txt file in master branch"  
[master (root-commit) 9e67801] added p1.txt file in master branch  
1 file changed, 0 insertions(+), 0 deletions(-)  
$ git status  
On branch master  
nothing to commit, working tree clean  
$ git log --oneline  
9e67801 (HEAD -> master) added p1.txt file in master branch  
$ |
```

2. Create **dev** branch from **master** branch .i.e. **p1.txt** file available in **dev** branch also.

```
# git checkout -b dev
```

```
# git status
```

```
# git log
```



```
MINGW64:/d/October_Batch/strategies_demo
$ git checkout -b dev
Switched to a new branch 'dev'

MINGW64:/d/October_Batch/strategies_demo (dev)
$ git status
On branch dev
nothing to commit, working tree clean

MINGW64:/d/October_Batch/strategies_demo (dev)
$ git log
commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb (HEAD -> dev, master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

MINGW64:/d/October_Batch/strategies_demo (dev)
$ |
```

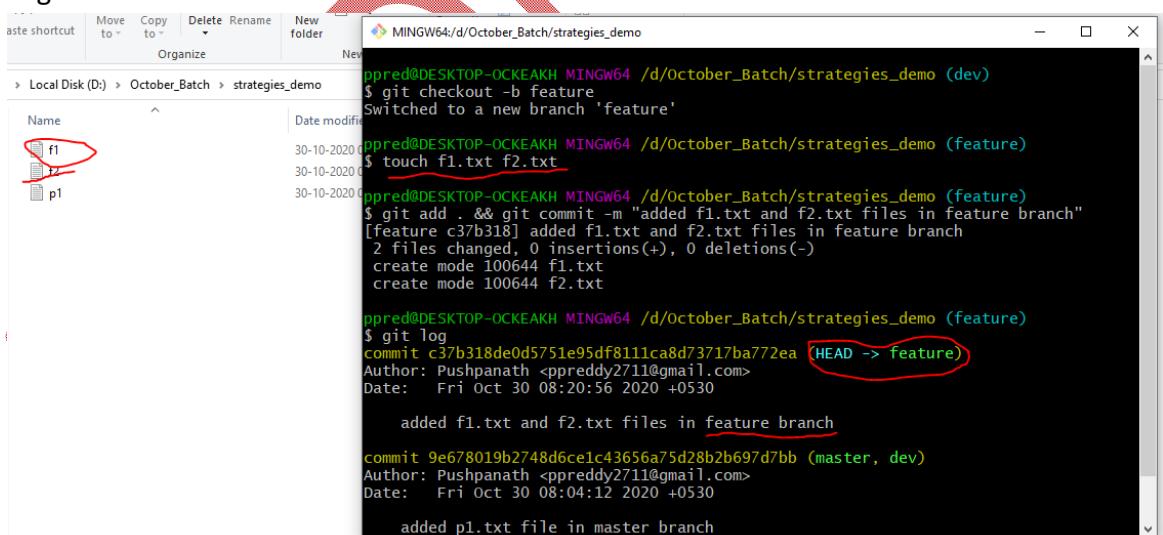
3. Create **feature** branch from **dev** and add **f1.txt** and **f2.txt** files in **feature**, merge and delete the feature branch to **dev** branch.

**Creating files in feature branch**

```
# git checkout -b feature
```

```
# touch f1.txt f2.txt
```

```
# git log
```



```
MINGW64:/d/October_Batch/strategies_demo
$ git checkout -b feature
Switched to a new branch 'feature'

MINGW64:/d/October_Batch/strategies_demo (feature)
$ touch f1.txt f2.txt

MINGW64:/d/October_Batch/strategies_demo (feature)
$ git add .
$ git commit -m "added f1.txt and f2.txt files in feature branch"
[feature c37b318] added f1.txt and f2.txt files in feature branch
2 files changed, 0 insertions(+), 0 deletions(-)
create mode 100644 f1.txt
create mode 100644 f2.txt

MINGW64:/d/October_Batch/strategies_demo (feature)
$ git log
commit c37b318de0d5751e95df8111ca8d73717ba772ea (HEAD -> feature)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb (master, dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch
```

**Merging feature branch to dev branch and delete the feature branch**

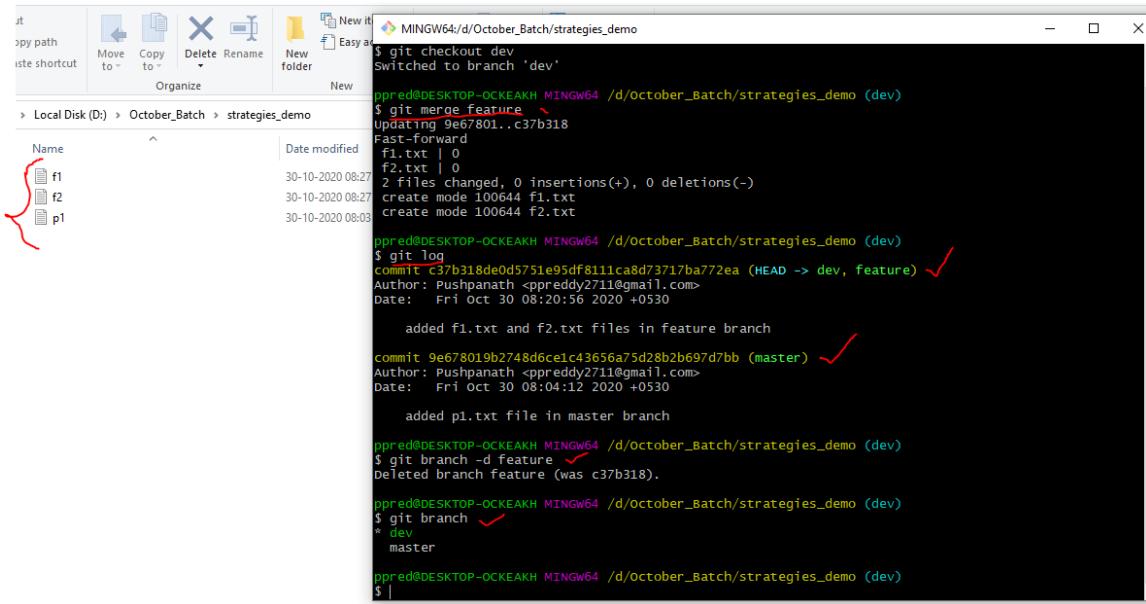
```
# git checkout dev
```

```
# git merge feature
```

```
# git log
```

```
# git branch -d feature (Deleting the feature branch)
```

```
# git branch (List out the all branches)
```



```

MINGW64:/d/October_Batch стратегии_demo
$ git checkout dev
Switched to branch 'dev'
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/стратегии_demo (dev)
$ git merge feature
Updating 9e67801..c37b318
Fast-forward
 f1.txt | 0
 f2.txt | 0
 2 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 f1.txt
 create mode 100644 f2.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/стратегии_demo (dev)
$ git log
commit c37b318de0d5751e95df8111ca8d73717ba772ea (HEAD -> dev, feature) ✓
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb (master) ✓
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

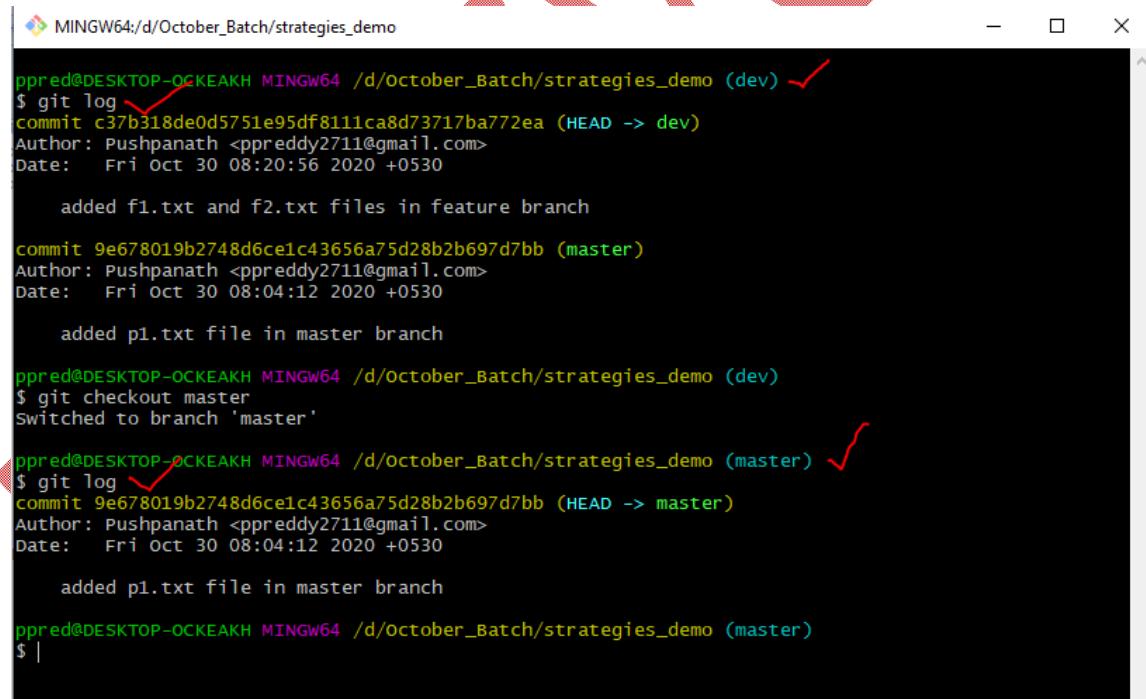
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/стратегии_demo (dev)
$ git branch
* dev
  master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/стратегии_demo (dev)
$ |

```

Verify the logs in dev and master branches

```
# git log
# git checkout master
# git log
```



```

MINGW64:/d/October_Batch/стратегии_demo
$ git log
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/стратегии_demo (dev) ✓
commit c37b318de0d5751e95df8111ca8d73717ba772ea (HEAD -> dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb (master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/стратегии_demo (dev)
$ git checkout master
switched to branch 'master'

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/стратегии_demo (master) ✓
commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb (HEAD -> master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/стратегии_demo (master)
$ |

```

4. Create QA/release branch from dev branch for testing purpose.

```
# git checkout dev
# git checkout -b qa
# git log
```

```

Cut Copy path Move to Copy to Delete Rename New item Easy access
C > Local Disk (D) > October_Batch > strategies_demo
Name Date modified
f1 30-10-2020 08:48
f2 30-10-2020 08:48
p1 30-10-2020 08:03

MINGW64/d/October_Batch/strategies_demo
$ git checkout -b qa
Switched to a new branch 'qa'

$ git branch
  dev
* master
  qa

$ git log
commit c37b318de0d5751e95df8111ca8d73717ba772ea (HEAD -> qa, dev)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb (master)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

$ |

```

5. If we found any issues in **qa** testing we need to create **bugfix** branch from **qa** branch. Once issues will complete **merge** to the **qa** branch and delete the **bugfix** branch.

```

# git checkout -b bugfix
# touch b1.txt b2.txt
# git add . && git commit -m "added b1.txt and b2.txt files in bugfix branch"
# git log

```

```

Cut Copy path Move to Copy to Delete Rename New item Easy access
his PC > Local Disk (D) > October_Batch > strategies_demo
Name Date modified
b1 30-10-2020 09:01
b2 30-10-2020 09:01
f1 30-10-2020 08:48
f2 30-10-2020 08:48
p1 30-10-2020 08:03

MINGW64/d/October_Batch/strategies_demo
$ git checkout -b bugfix
Switched to a new branch 'bugfix'

$ touch b1.txt b2.txt

$ git add . && git commit -m "added b1.txt and b2.txt files in bugfix branch"
[bugfix fbe9af3] added b1.txt and b2.txt files in bugfix branch
 2 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 b1.txt
 create mode 100644 b2.txt

$ git log
commit fbe9af34a4b3c5a17c93a9ac519a9dec81599fb (HEAD -> bugfix)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 09:02:36 2020 +0530

    added b1.txt and b2.txt files in bugfix branch

commit c37b318de0d5751e95df8111ca8d73717ba772ea (qa, dev)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb (master)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

$ |

```

### Merging bugfix branch to qa branch and delete the bugfix branch

```

# git checkout qa
# git merge bugfix
# git log

```

```

C:\ Local Disk (D:) > October_Batch > strategies_demo
Name Date modified
b1 30-10-2020 09:09
b2 30-10-2020 09:09
f1 30-10-2020 08:48
f2 30-10-2020 08:48
p1 30-10-2020 08:03

MINGW64/d/October_Batch/strategies_demo
$ git checkout qa
Switched to branch 'qa'

MINGW64/d/October_Batch/strategies_demo (qa)
$ git merge bugfix
Updating c37b318..fbe9af3
Fast-forward
 b1.txt | 0
 b2.txt | 0
 2 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 b1.txt
 create mode 100644 b2.txt

MINGW64/d/October_Batch/strategies_demo (qa)
$ git log
commit fbe9af34a4b3c5a17c93a9ac519a9dec881599fb (HEAD -> qa, bugfix)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 09:02:36 2020 +0530

    added b1.txt and b2.txt files in bugfix branch

commit c37b318de0d5751e95df8111ca8d73717ba772ea (dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb (master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

MINGW64/d/October_Batch/strategies_demo (qa)
$ |

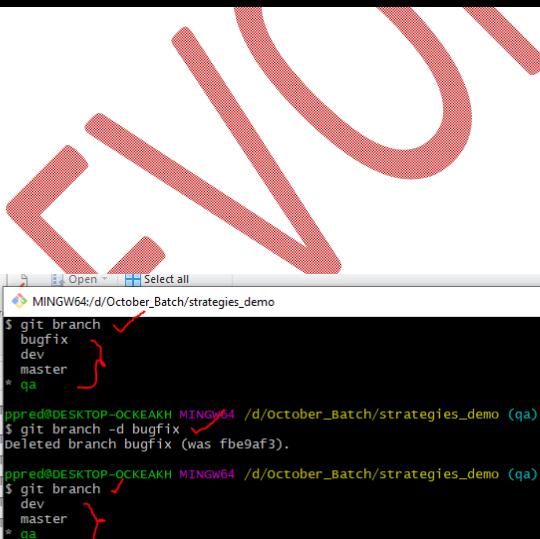
```

## Deleting the bugfix branch

```

# git branch
# git branch -d bugfix
# git branch
# git log

```



```

MINGW64/d/October_Batch/strategies_demo
$ git branch
bugfix
dev
master
* qa

MINGW64/d/October_Batch/strategies_demo (qa)
$ git branch -d bugfix
Deleted branch bugfix (was fbe9af3).

MINGW64/d/October_Batch/strategies_demo (qa)
$ git branch
* dev
  master
* qa

MINGW64/d/October_Batch/strategies_demo (qa)
$ git log
commit fbe9af34a4b3c5a17c93a9ac519a9dec881599fb (HEAD -> qa, bugfix)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 09:02:36 2020 +0530

    added b1.txt and b2.txt files in bugfix branch

commit c37b318de0d5751e95df8111ca8d73717ba772ea (dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb (master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

MINGW64/d/October_Batch/strategies_demo (qa)
$ |

```

## 6. Merge the qa branch to master and dev branches and delete the qa branch.

### Merging qa branch to the dev branch

```

# git branch
# git checkout dev
# git merge qa
# git log

```

The screenshot shows a Windows File Explorer window on the left and a terminal window on the right. The File Explorer shows a folder named 'strategies\_demo' containing files b1, b2, f1, f2, and p1, all modified on 30-10-2020. The terminal window shows the following git log output:

```

MINGW64/d/October_Batch/strategies_demo
$ git branch
* qa
$ git checkout dev
Switched to branch 'dev'
$ git merge qa
Updating c37b318..fbe9af3
Fast-forward
 b1.txt | 0
 b2.txt | 0
 2 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 b1.txt
 create mode 100644 b2.txt

MINGW64/d/October_Batch/strategies_demo (dev)
$ git log
commit fbe9af34a4b3c5a17c93a9ac519a9dec881599fb (HEAD -> dev, qa)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 09:02:36 2020 +0530

    added b1.txt and b2.txt files in bugfix branch

commit c37b318de0d5751e95df8111ca8d73717ba772ea
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb (master)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

MINGW64/d/October_Batch/strategies_demo (dev)
$ |

```

### Merging qa branch to the master branch

# git checkout master

# git merge qa

# git log

The screenshot shows a Windows File Explorer window on the left and a terminal window on the right. The File Explorer shows the same folder structure as before. The terminal window shows the following git log output:

```

MINGW64/d/October_Batch/strategies_demo
$ git checkout master
Switched to branch 'master'
$ git merge qa
Updating 9e67801..fbe9af3
Fast-forward
 b1.txt | 0
 b2.txt | 0
 f1.txt | 0
 f2.txt | 0
 4 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 b1.txt
 create mode 100644 b2.txt
 create mode 100644 f1.txt
 create mode 100644 f2.txt

MINGW64/d/October_Batch/strategies_demo (master)
$ git log
commit fbe9af34a4b3c5a17c93a9ac519a9dec881599fb (HEAD -> master, qa, dev)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 09:02:36 2020 +0530

    added b1.txt and b2.txt files in bugfix branch

commit c37b318de0d5751e95df8111ca8d73717ba772ea
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

MINGW64/d/October_Batch/strategies_demo (master)
$ |

```

### Deleting the qa branch and verify the master and dev branch

# git branch -d qa

# git branch

# git log

```

MINGW64:/d/October_Batch/strategies_demo
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (master)
$ git branch -d qa
Deleted branch qa (was fbe9af3).

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (master)
$ git branch
  dev
* master

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (master)
$ git log
commit fbe9af34a4b3c5a17c93a9ac519a9dec881599fb (HEAD --> master, dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 09:02:36 2020 +0530

    added b1.txt and b2.txt files in bugfix branch

commit c37b318de0d5751e95df8111ca8d73717ba772ea
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748dce1c43656a75d28b2b697d7bb
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (master)
$ |

```

Now the code same in **master** and **dev** branch

7. If we found any issues in **master** (PROD) branch. We can create the **hotfix** branch from **master** and merge to the **dev** and **master** branches. Finally we can delete the **hotfix** branch.

```

# git checkout -b hotfix
# touch h1.txt h2.txt
# git add . && git commit -m "added h1.txt and h2.txt"
# git log

```

```

MINGW64:/d/October_Batch/strategies_demo
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (master)
$ git checkout -b hotfix
Switched to a new branch 'hotfix'

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (hotfix)
$ touch h1.txt h2.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (hotfix)
$ git add . && git commit -m "added h1.txt and h2.txt"
[hotfix 39ad0f0] added h1.txt and h2.txt
 2 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 h1.txt
 create mode 100644 h2.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (hotfix)
$ git log
commit 39ad0f03c43cc29b721a5e6fed07ef7b1375eb4e (HEAD --> hotfix)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 09:49:11 2020 +0530

    added h1.txt and h2.txt

commit fbe9af34a4b3c5a17c93a9ac519a9dec881599fb (master, dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 09:02:36 2020 +0530

    added b1.txt and b2.txt files in bugfix branch

commit c37b318de0d5751e95df8111ca8d73717ba772ea
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748dce1c43656a75d28b2b697d7bb
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (hotfix)
$ |

```

Merge and delete the **hotfix** branch to **dev** and **master** branches

```

# git checkout master
# git merge hotfix
# git log

```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (hotfix)
$ git branch
  dev
* hotfix
  master

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (hotfix)
$ git checkout master
Switched to branch 'master'

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (master)
$ git merge hotfix
Updating fbe9af3..39ad0f0
Fast-forward
 h1.txt | 0
 h2.txt | 0
 2 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 h1.txt
 create mode 100644 h2.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (master)
$ git log
commit 39ad0f03c43cc29b721a5e6fed07ef7b1375eb4e (HEAD -> master, hotfix) ✓
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 09:49:11 2020 +0530

    added h1.txt and h2.txt

commit fbe9af34a4b3c5a17c93a9ac519a9dec881599fb (dev)
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 09:02:36 2020 +0530

    added b1.txt and b2.txt files in bugfix branch

commit c37b318de0d5751e95df8111ca8d73717ba772ea
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 08:20:56 2020 +0530

    added f1.txt and f2.txt files in feature branch

commit 9e678019b2748d6ce1c43656a75d28b2b697d7bb
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 08:04:12 2020 +0530

    added p1.txt file in master branch

```

# git checkout dev  
# git merge hotfix  
# git branch -d hotfix  
# git log

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (master)
$ git checkout dev
Switched to branch 'dev'

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (dev)
$ git merge hotfix
Updating fbe9af3..39ad0f0
Fast-forward
 h1.txt | 0
 h2.txt | 0
 2 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 h1.txt
 create mode 100644 h2.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (dev)
$ git log -1
commit 39ad0f03c43cc29b721a5e6fed07ef7b1375eb4e (HEAD -> dev, master, hotfix) ✓
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 09:49:11 2020 +0530

    added h1.txt and h2.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (dev)
$ git branch -d hotfix
Deleted branch hotfix (was 39ad0f0).

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (dev)
$ git branch
* dev
  master

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (dev)
$ git log -1
commit 39ad0f03c43cc29b721a5e6fed07ef7b1375eb4e (HEAD -> dev, master) ✓
Author: Pushpanath <preddy2711@gmail.com>
Date:   Fri Oct 30 09:49:11 2020 +0530

    added h1.txt and h2.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/strategies_demo (dev)
$ |

```

## Merge conflicts

When two branches are trying to merge, and both are edited at the same time and in the same file, Git won't be able to identify which version is to take for changes. Such a situation is called merge conflict. If such a situation occurs, it stops just before the merge commit so that you can resolve the conflicts manually.

1. Resolving merge conflicts manually
2. Resolving merge conflicts using merge tools.

### Resolving merge conflicts manually

We are trying to merge one branch to another branch with same file the conflicts will come. By update the file with require content we will resolve the issue.

1. Create state.txt file in master branch

```
# git init  
# vi state.txt  
# cat state.txt  
# git add . && git commit -m "added state.txt file in master branch"  
# git log
```

```
$ git init ✓  
Initialized empty Git repository in D:/October_Batch/merge_conflicts/.git/  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)  
$ vi state.txt ✓  
$ cat state.txt  
Anantapur  
Kadapa  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)  
$ git add . && git commit -m 'added state.txt file in master branch' ✓  
warning: LF will be replaced by CRLF in state.txt.  
The file will have its original Line endings in your working directory  
[master (root-commit) 43e54fd] added state.txt file in master branch  
1 file changed, 2 insertions(+)  
create mode 100644 state.txt  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)  
$ git log  
commit 43e54fd74597d8b9bbfe152d182f08c72220400a (HEAD -> master)  
Author: Pushpanath <ppreddy2711@gmail.com>  
Date:   Wed Nov 4 10:14:58 2020 +0530  
      added state.txt file in master branch  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)  
$ |
```

2. Create **dev branch** and update the **state.txt** file

```
# git checkout -b dev  
# vi state.txt  
# cat state.txt  
# git add . && git commit -m "updated state.txt file in dev branch"  
# git log --oneline
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git checkout -b dev ✓
Switched to a new branch 'dev'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ vi state.txt ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ cat state.txt
Anantapur
Kadapa
Chittoor ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ git add . && git commit -m "updated state.txt file in dev branch"
warning: LF will be replaced by CRLF in state.txt.
The file will have its original line endings in your working directory
[dev aa9d195] updated state.txt file in dev branch
1 file changed, 1 insertion(+)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ git log --oneline ✓
aa9d195 (HEAD -> dev) updated state.txt file in dev branch
43e54fd (master) added state.txt file in master branch

```

3. Switch to **master branch** and update the **state.txt** file.

# git checkout master

# vi state.txt

# cat state.txt

# git add . && git commit -m "updated state.txt file in master branch"

# git log --oneline

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ git checkout master ✓
Switched to branch 'master'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ vi state.txt ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ cat state.txt
Anantapur
Kadapa
Kurnool

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git add . && git commit -m "updated state.txt file in master branch"
[master 3cef1ce] updated state.txt file in master branch
1 file changed, 1 insertion(+)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git log --oneline ✓
3cef1ce (HEAD -> master) updated state.txt file in master branch ✓
43e54fd added state.txt file in master branch ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ |

```

4. Try to merge the **dev branch** to the **master branch**.

# git merge dev

Will get the issue like below

Auto-merging state.txt

CONFLICT (content): Merge conflict in state.txt

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

```

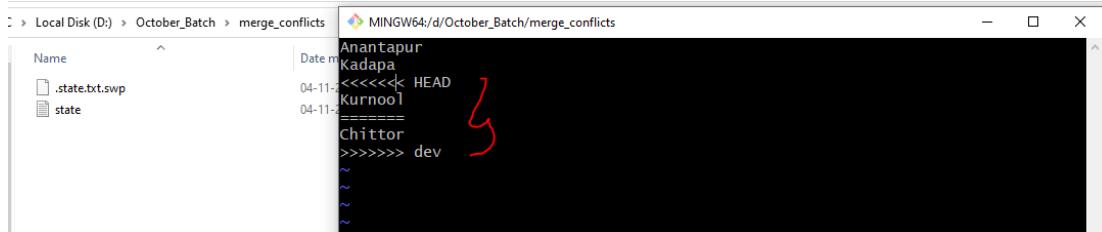
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git merge dev ✓
Auto-merging state.txt
CONFLICT (content): Merge conflict in state.txt
Automatic merge failed; fix conflicts and then commit the result.

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master|MERGING)
$ |

```

5. Update the **state.txt** file in **master** branch.

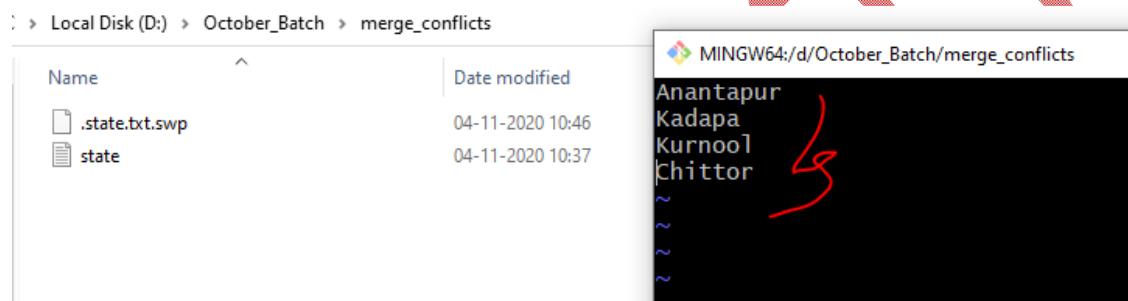
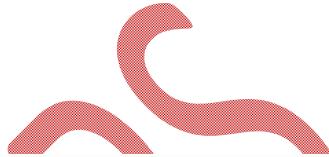
```
# vi state.txt
```



```
MINGW64:/d/October_Batch/merge_conflicts
Name          Date modified
.state.txt.swp 04-11-2020 10:46
state         04-11-2020 10:37
Anantapur
Kadapa
<<<<< HEAD
Kurnool
=====
Chittor
>>>> dev
~
~
~
~
```

<<<<< HEAD is the current branch i.e. master branch

>>>>> dev is the remote branch trying to merge.

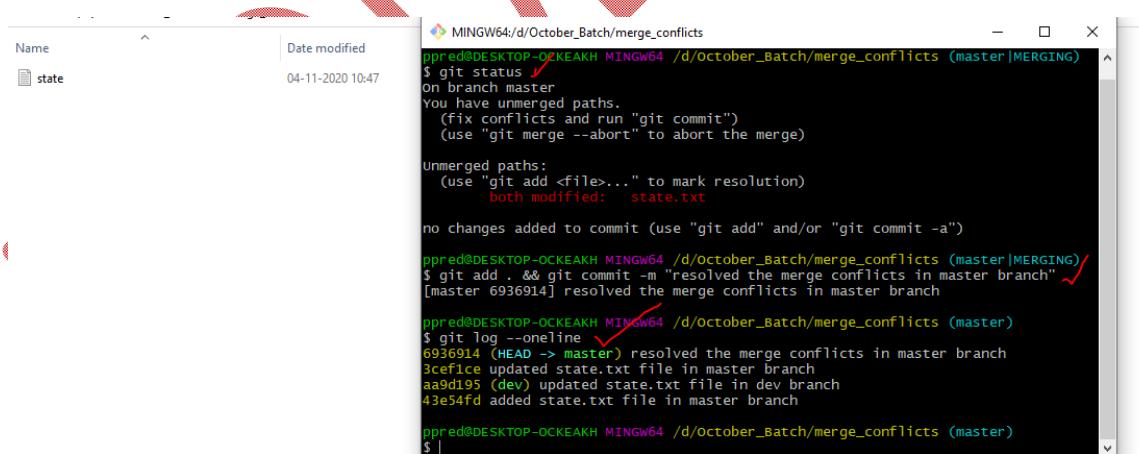


```
MINGW64:/d/October_Batch/merge_conflicts
Name          Date modified
.state.txt.swp 04-11-2020 10:46
state         04-11-2020 10:37
Anantapur
Kadapa
Kurnool
Chittor
~
~
~
~
```

```
# git status
```

```
# git add . && git commit -m "resolved the merge conflicts in master branch"
```

```
# git log --oneline
```



```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master|MERGING)
$ git status ✓
On branch master
You have unmerged paths.
  (fix conflicts and run "git commit")
  (use "git merge --abort" to abort the merge)

Unmerged paths:
  (use "git add <file>..." to mark resolution)
    both modified: state.txt

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

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/merge_conflicts (master|MERGING) ✓
$ git add . && git commit -m "resolved the merge conflicts in master branch" ✓
[master 6936914] resolved the merge conflicts in master branch

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/merge_conflicts (master)
$ git log --oneline ✓
6936914 (HEAD -> master) resolved the merge conflicts in master branch
3cefce1 updated state.txt file in master branch
aa9d195 (dev) updated state.txt file in dev branch
43e54fd added state.txt file in master branch

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/merge_conflicts (master)
$ |
```

6. Verify the content in **state.txt** in master branch.

```
# git branch
```

```
# cat state.txt
```

```
# git log
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git branch
  dev
* master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ cat state.txt
Anantapur
Kadapa
Kurnool
Chittoor

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git log
commit 693691408253699378ff361b59fea70dbc1840 (HEAD -> master)
Merge: 3cef1ce aa9d195
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   wed Nov 4 10:51:08 2020 +0530

    resolved the merge conflicts in master branch

commit 3cef1ce7196cdc59048ba9bc184d6174a66a0d45
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   wed Nov 4 10:28:43 2020 +0530

    updated state.txt file in master branch

commit aa9d195f37d1748dfce95d466f904af3a12f28c6 (dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   wed Nov 4 10:23:34 2020 +0530

    updated state.txt file in dev branch

commit 43e54fd74597d8b9bbfe152d182f08c72220400a
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   wed Nov 4 10:14:58 2020 +0530

    added state.txt file in master branch

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ |

```

## 7. Checkout the dev branch and verify the content.

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git checkout dev
Switched to branch 'dev'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ cat state.txt
Anantapur
Kadapa
Chittoor

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ git log
commit aa9d195f37d1748dfce95d466f904af3a12f28c6 (HEAD -> dev)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   wed Nov 4 10:23:34 2020 +0530

    updated state.txt file in dev branch

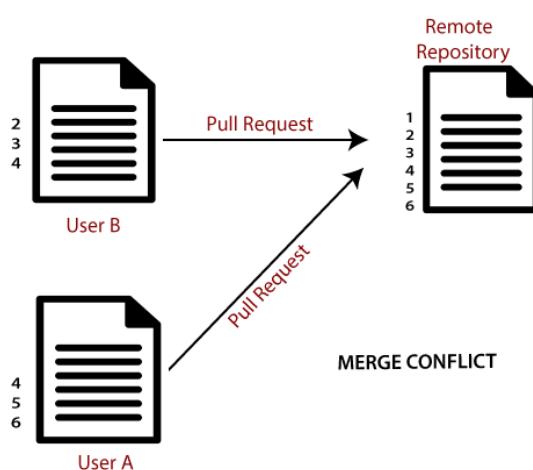
commit 43e54fd74597d8b9bbfe152d182f08c72220400a
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   wed Nov 4 10:14:58 2020 +0530

    added state.txt file in master branch

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ |

```

## Merge conflicts from remote repo



psddevops / mergeconflictdemo

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

master 1 branch 0 tags Go to file Add file Code

**psddevops added districts.txt file in master branch** 797e8c4 11 minutes ago 2 commits

districts.txt added districts.txt file in master branch 11 minutes ago

states.txt added states.txt file in master branch 12 minutes ago

Help people interested in this repository understand your project by adding a README. Add a README

Suppose my remote repository has cloned by two of my team member user1 and user2. The user1 made changes as below in my projects **districts.txt** file.

```
# git clone https://github.com/psddevops/mergeconflictdemo.git
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user1/mergeconflictdemo (master)
$ git clone https://github.com/psddevops/mergeconflictdemo.git|
```

```
# vi districts.txt
```

```
Anantapur
Kadapa
Chittoor
```

```
# git add . && git commit -m "updated districts.txt by user1 in master branch"
```

```
# git push origin master
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user1/mergeconflictdemo (master)
$ 11
total 2
-rw-r--r-- 1 ppred 197609 19 Nov 4 15:49 districts.txt
-rw-r--r-- 1 ppred 197609 27 Nov 4 15:49 states.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user1/mergeconflictdemo (master)
$ vi districts.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user1/mergeconflictdemo (master)
$ git add . && git commit -m "updated districts.txt by user1 in master branch"
[master 9acf57e] updated districts.txt by user1 in master branch
 1 file changed, 1 insertion(+)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user1/mergeconflictdemo (master)
$ git push origin master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 330 bytes | 82.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/psddevops/mergeconflictdemo.git
 797e8c4..9acf57e master -> master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user1/mergeconflictdemo (master)
$ |
```

## Now remote repository is

The screenshot shows a GitHub repository page for 'psddevops / mergeconflictsdemo'. The 'Code' tab is selected. A commit from 'user1' is highlighted with a yellow box and a red arrow pointing to the timestamp '5 minutes ago'. Another commit from 'user1' is also visible.

Now, at the same time, user2 also update the **districts.txt** file as follows.

# vi districts.txt

```
Anantapur
Kadapa
Kurnool] ✓
```

# git add . && git commit -m "updated districts.txt by user2 in master branch"

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user2/mergeconflictsdemo (master)
$ vi districts.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user2/mergeconflictsdemo (master)
$ git add . && git commit -m "updated districts.txt by user2 in master branch"
[master 7bf3100] updated districts.txt by user2 in master branch
 1 file changed, 1 insertion(+)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user2/mergeconflictsdemo (master)
$ git push origin master
To https://github.com/psddevops/mergeconflictsdemo.git
 ! [rejected]      master -> master (fetch first)
error: failed to push some refs to 'https://github.com/psddevops/mergeconflictsdemo.git'
hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user2/mergeconflictsdemo (master)
$ |
```

In the above output, the server knows that the file is already updated and not merged with other branches. So, the push request was rejected by the remote server. It will throw an error message like **[rejected] failed to push some refs to <remote URL>**. It will suggest you to pull the repository first before the push.

# git pull origin master

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user2/mergeconflictdemo (master)
$ git pull origin master ✓
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 3 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 310 bytes | 1024 bytes/s, done.
From https://github.com/psdddevops/mergeconflictdemo
 * branch            master      -> FETCH_HEAD
   797e8c4..9acf57e master      -> origin/master
Auto-merging districts.txt ✓
CONFLICT (content): Merge conflict in districts.txt ✓
Automatic merge failed; fix conflicts and then commit the result.
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user2/mergeconflictdemo (master|MERGING) ✓
$ |
```

Update the **districts.txt** file

```
# cat districts.txt
```

```
Anantapur
Kadapa
<<<<< HEAD ✓
Kurnool
=====
Chittor
>>>> 9acf57e11b6ca5237cc750a5c2f1d5e967d797ed ✓
~
```

```
# vi districts.txt
```

```
Anantapur
Kadapa
Kurnool
Chittor
~
~
```

```
# git status
```

```
# git add . && git commit -m "updated districts.txt by user2 in master branch"
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user2/mergeconflictdemo (master|MERGING)
$ git status
On branch master
Your branch and 'origin/master' have diverged,
and have 1 and 1 different commits each, respectively.
  (use "git pull" to merge the remote branch into yours)

You have unmerged paths.
  (fix conflicts and run "git commit")
  (use "git merge --abort" to abort the merge)

Unmerged paths:
  (use "git add <file>..." to mark resolution)
    both modified: districts.txt

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

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user2/mergeconflictdemo (master|MERGING)
$ git add . && git commit -m "updated districts.txt by user2 in master branch"
[master 0c5fe8a] updated districts.txt by user2 in master branch
```

```
# git push origin master
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user2/mergeconflictdemo (master)
$ git push origin master
Enumerating objects: 10, done.
Counting objects: 100% (10/10), done.
Delta compression using up to 4 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 663 bytes | 221.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/psdddevops/mergeconflictdemo.git
  9acf57e..0c5fe8a master -> master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/user2/mergeconflictdemo (master)
$ |
```

Now the remote repository is

A screenshot of a GitHub repository page for 'psddevops / mergeconflictsdemo'. The repository has 1 branch and 0 tags. The master branch has 5 commits. A commit by 'psddevops' updated 'districts.txt' in the master branch 4 minutes ago. Another commit added 'states.txt' file in the master branch 1 hour ago. A red arrow points to the commit message 'updated districts.txt by user2 in master branch'.

A screenshot of a GitHub file view for 'mergeconflictsdemo / districts.txt'. The file has 4 lines (4 sloc) and 33 Bytes. The content is: 1 Anantapur, 2 Kadapa, 3 Kurnool, 4 Chittor. A red arrow points to the line '3 Kurnool'.

### Resolving merge conflicts using merge tools.

1. Downloading diffmerge tool by using below link  
<https://sourcegear.com/diffmerge/downloads.php>

A screenshot of the DiffMerge download page. The page features a large 'DIFFMERGE' logo. On the left, there's a sidebar with links: Overview (selected), Documentation, Register, Release Notes, System Requirements, Support Forum, License Agreement, and a prominent 'Download' button. The main content area says 'Download DiffMerge 4.2' and 'Visually compare and merge files on Windows, OS X, and Linux.' Below this is a list of download options with radio buttons:

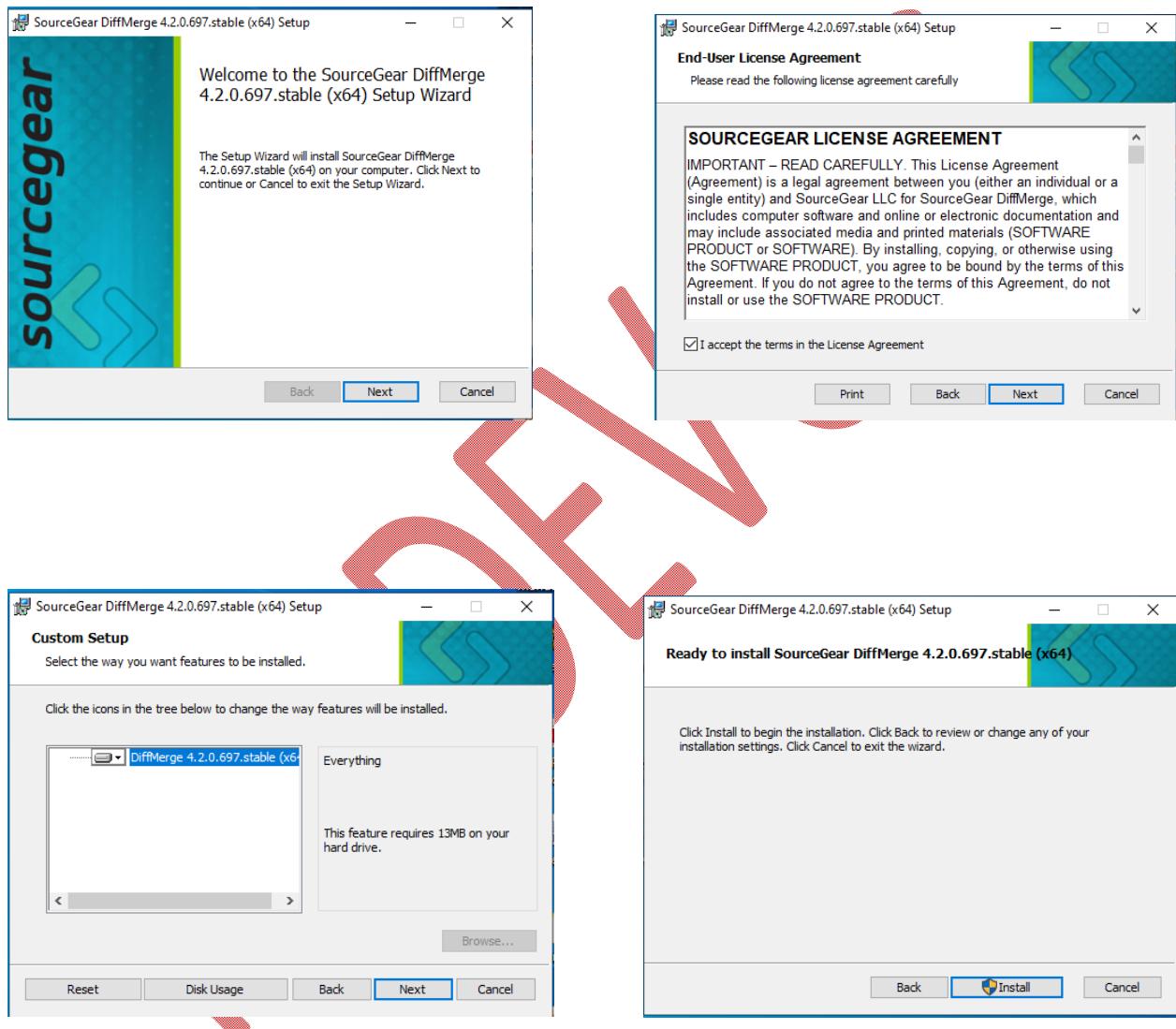
- Windows Installer (64bit)
- Windows Installer (32bit)
- Windows zip (64bit)
- Windows zip (32bit)
- OS X 10.6+ Installer (Intel)
- OS X 10.6+ DMG (Intel)
- Ubuntu 12.04 LTS ("Precise") and newer (64bit)
- Ubuntu 12.04 LTS ("Precise") and newer (32bit)
- Fedora 17 and newer (64bit)
- Fedora 17 and newer (32bit)

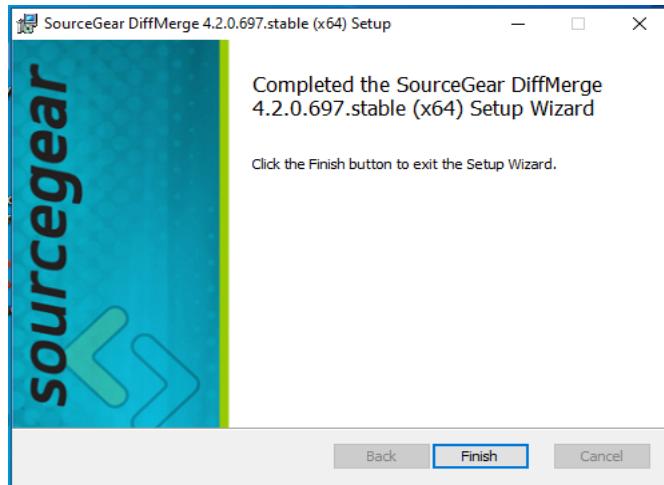
A red arrow points to the 'Windows Installer (64bit)' option.

	DiffMerge_4.2.0.697.stable_x64	03-11-2020 12:00	Windows Installer ...	7,576 KB
	gvim82	03-11-2020 10:43	Application	8,962 KB

Yesterday (3)

## 2. Install diffmerge in windows machine.





3. Need to configure vimdiff as a git merge tool.

```
git config --global diff.tool diffmerge
git config --global difftool.diffmerge.cmd 'C:/Program Files/SourceGear/Common/DiffMerge/sgdm.exe "$LOCAL" "$REMOTE"'
git config --global merge.tool diffmerge
git config --global mergetool.diffmerge.trustExitCode true
git config --global mergetool.diffmerge.cmd 'C:/Program Files/SourceGear/Common/DiffMerge/sgdm.exe -merge -result="$MERGED" "$LOCAL" "$BASE" "$REMOTE"'
```

```
ppred@DESKTOP-OCKEAKH MINGW64 ~/OneDrive/Desktop
$ git config --global diff.tool diffmerge
ppred@DESKTOP-OCKEAKH MINGW64 ~/OneDrive/Desktop
$ git config --global difftool.diffmerge.cmd 'C:/Program\ Files/SourceGear/Common/DiffMerge/sgdm.exe "$LOCAL" "$REMOTE"'
ppred@DESKTOP-OCKEAKH MINGW64 ~/OneDrive/Desktop
$ git config --global merge.tool diffmerge
ppred@DESKTOP-OCKEAKH MINGW64 ~/OneDrive/Desktop
$ git config --global mergetool.diffmerge.trustExitCode true
ppred@DESKTOP-OCKEAKH MINGW64 ~/OneDrive/Desktop
$ git config --global mergetool.diffmerge.cmd 'C:/Program\ Files/SourceGear/Common/DiffMerge/sgdm.exe -merge -result="$MERGED" "$LOCAL" "$BASE" "$REMOTE"'
ppred@DESKTOP-OCKEAKH MINGW64 ~/OneDrive/Desktop
$ git config --global --list
user.name=Pushpanath
user.email=ppreddy2711@gmail.com
gui.recentrepo=C:/Users/ppred/OneDrive/Desktop/gittdemo
diff.tool=diffmerge
difftool.diffmerge.cmd=C:/Program\ Files/SourceGear/Common/DiffMerge/sgdm.exe "$LOCAL" "$REMOTE"
merge.tool=diffmerge
mergetool.diffmerge.trustexitcode=true
mergetool.diffmerge.cmd=C:/Program\ Files/SourceGear/Common/DiffMerge/sgdm.exe -merge -result="$MERGED" "$LOCAL" "$BASE" "$REMOTE"
ppred@DESKTOP-OCKEAKH MINGW64 ~/OneDrive/Desktop
```

### Merge conflicts demo vimdiff tool

- Create india.txt file in master branch.

```
# touch india.txt
# git init
# git status
# git add . && git commit -m "added india.txt file in master branch"
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts
$ git init
Initialized empty Git repository in D:/October_Batch/merge_conflicts/.git/
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    india.txt

nothing added to commit but untracked files present (use "git add" to track)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git add . && git commit -m "added india.txt file in master branch"
[master (root-commit) 37a34b6] added india.txt file in master branch
 1 file changed, 4 insertions(+)
 create mode 100644 india.txt

```

## 2. Create dev branch and update india.txt

```

# git checkout -b dev
# vi india.txt
# git add . && git commit -m "updated india.txt file in dev branch"

```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git checkout -b dev
Switched to a new branch 'dev'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ vi india.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ git add . && git commit -m "updated india.txt file in dev branch"
[dev 9365ca9] updated india.txt file in dev branch
 1 file changed, 1 insertion(+)

```

## 3. Checkout to master and update the india.txt file

```

# git checkout master
# vi india.txt
# git add . && git commit -m "updated india.txt file in master branch"
# git merge dev

```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (dev)
$ git checkout master
Switched to branch 'master'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ vi india.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git add . && git commit -m "updated india.txt file in master branch"
[master 64905a4] updated india.txt file in master branch
 1 file changed, 1 insertion(+)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git merge dev
Auto-merging india.txt
CONFLICT (content): Merge conflict in india.txt
Automatic merge failed; fix conflicts and then commit the result.

```

#### 4. Try to Merge dev to master branch

```
# git mergetool
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master|MERGING)
$ git mergetool
Merging:
india.txt

Normal merge conflict for 'india.txt':
{[local]}: modified file
{[remote]}: modified file
merge of india.txt failed

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master|MERGING)
$ git mergetool
Merging:
india.txt

Normal merge conflict for 'india.txt':
{[local]}: modified file
{[remote]}: modified file
merge of india.txt failed
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git add . && git commit -m "updated india.txt file in master branch"
[master 64905a4] updated india.txt file in master branch
1 file changed, 1 insertion(+)

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/merge_conflicts (master)
$ git merge dev
Auto-merging india.txt
CONFLICT (content): Merge conflict in india.txt
Automatic merge failed; fix conflicts and then
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/merge_conflicts (master)
$ git mergetool
Merging:
india.txt

Normal merge conflict for 'india.txt':
{[local]}: modified file
{[remote]}: modified file
merge of india.txt failed

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/merge_conflicts (master)
$ git mergetool
Merging:
india.txt

Normal merge conflict for 'india.txt':
```

#### 5. Verify the india.txt file in master branch.

```
# git checkout master
```

```
# git branch
```

```
# cat india.txt
```

```
# git log
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master|MERGING)
$ git checkout master
Already on 'master'
M    india.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git branch
  dev
* master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ cat india.txt
Andhra pradesh
Karnataka
Telangana
Kerala
Tamilnadu
Orissa

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts (master)
$ git log
commit 64905a4f6b079706a4211e4809de8082487f9f8a (HEAD -> master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Tue Nov 3 12:27:28 2020 +0530

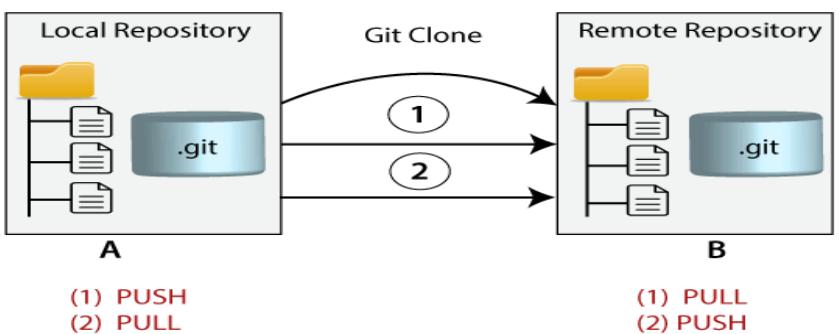
    updated india.txt file in master branch

commit 37aa4b6bbfd6c83915874110d6af7749f196f
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Tue Nov 3 12:25:12 2020 +0530

    added india.txt file in master branch
```

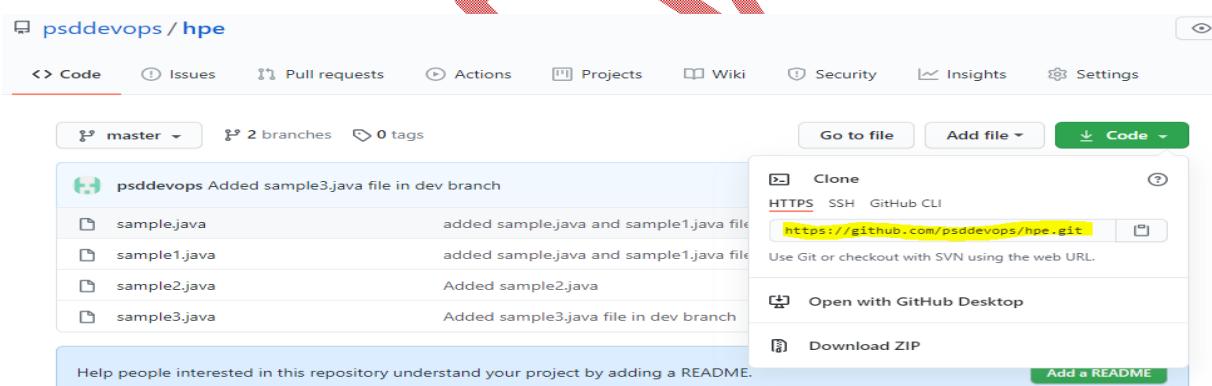
## Git clone

In Git, cloning is the act of making a copy of any target repository. The target repository can be remote or local. You can clone your repository from the remote repository to create a local copy on your system. Also, you can sync between the two locations.



The git clone is a command-line utility which is used to make a local copy of a remote repository. It accesses the repository through a remote URL. Usually, the original repository is located on a remote server, often from a Git service like [GitHub](#), [Bitbucket](#), or [GitLab](#). The remote repository URL is referred to the origin.

Cloning a repository from Github



Copy the URL (<https://github.com/psddevops/hpe.git>)

# git clone https://github.com/psddevops/hpe.git

```
Local Disk (D): > October_Batch > merge_conflicts MINGW64:/d/October_Batch/merge_conflicts/hpe
Name
hpe

$ pred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts
$ git clone https://github.com/psddevops/hpe.git
Cloning into 'hpe'...
remote: Enumerating objects: 7, done.
remote: Counting objects: 100% (7/7), done.
remote: Compressing objects: 100% (5/5), done.
remote: Total 7 (delta 2), reused 6 (delta 1), pack-reused 0
Receiving objects: 100% (7/7), done.
Resolving deltas: 100% (2/2), done.

$ cd hpe/
$ git branch
```

## Cloning a specific branch from git repository

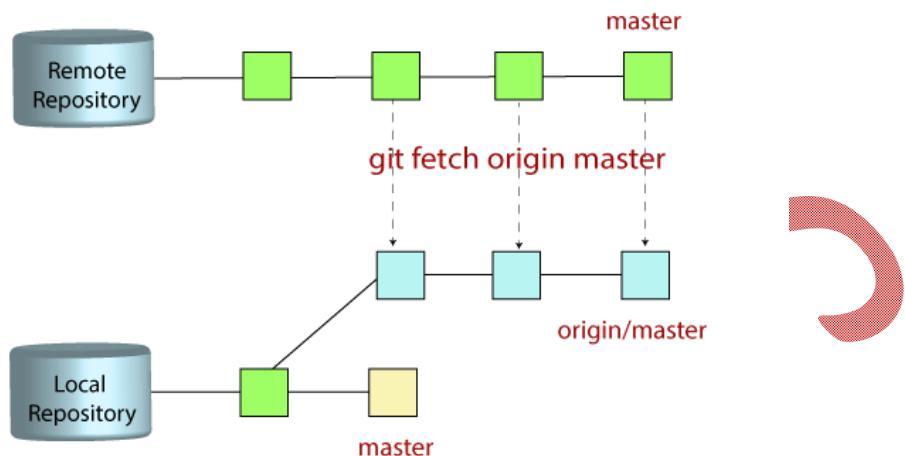
The screenshot shows a GitHub repository page for 'psddevops/hpe'. The 'Code' tab is selected. A modal window titled 'Switch branches/tags' is open, showing the 'dev' branch is selected. The main repository view shows a list of commits for the 'dev' branch, including additions of sample.java and sample1.java files, and additions of sample2.java and sample3.java files.

# git clone -b dev <https://github.com/psddevops/hpe.git>

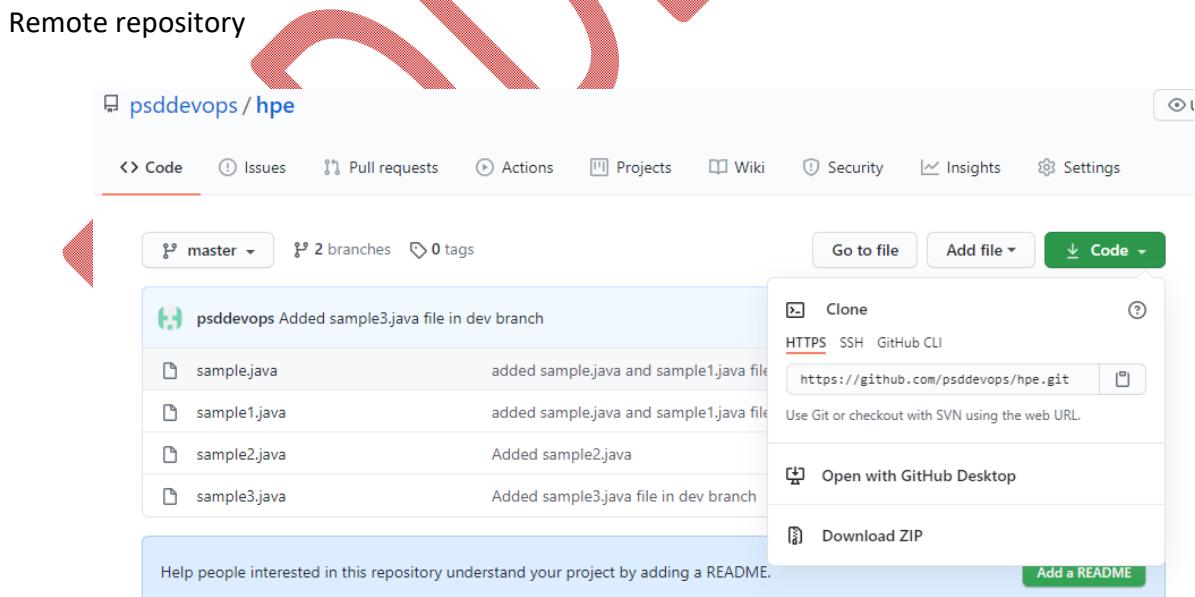
The screenshot shows a terminal window on a Windows system (MINGW64) displaying the command to clone the 'dev' branch. The command is: \$ git clone -b dev <https://github.com/psddevops/hpe.git>. The output shows the cloning process completed successfully, with 7 objects received and 0 resolved deltas. The current branch is then checked with \$ git branch, showing \* dev. A large red checkmark is drawn over the command line.

## GIT Fetch

Git "fetch" Downloads commits, objects and refs from another repository. It fetches branches and tags from one or more repositories. It holds repositories along with the objects that are necessary to complete their histories to keep updated remote-tracking branches.



The "**git fetch**" command is used to pull the updates from remote-tracking branches. Additionally, we can get the updates that have been pushed to our remote branches to our local machines without merging. As we know, a branch is a variation of our repositories main code, so the remote-tracking branches are branches that have been set up to pull and push from remote repository.



## Cloning to the git repository

```
# git clone https://github.com/psddevops/hpe.git
```

A screenshot of a terminal window titled "MINGW64:/d/October\_Batch/merge\_conflicts/hpe". The window shows the command \$ git clone https://github.com/psddevops/hpe.git being run, followed by the output of the cloning process. The directory listing on the left shows four files: sample.java, sample1.java, sample2.java, and sample3.java, all modified on 05-11-2020 at 10:42.

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/hpe
$ git clone https://github.com/psddevops/hpe.git
Cloning into 'hpe'...
remote: Enumerating objects: 7, done.
remote: Counting objects: 100% (7/7), done.
remote: Compressing objects: 100% (5/5), done.
remote: Total 7 (delta 2), reused 6 (delta 1), pack-reused 0
Receiving objects: 100% (7/7), done.
Resolving deltas: 100% (2/2), done.

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/hpe (master)
$ ls
sample.java  sample1.java  sample2.java  sample3.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/hpe (master)
$ |
```

```
# git status
```

A screenshot of a terminal window titled "MINGW64:/d/October\_Batch/merge\_conflicts/hpe". The command \$ git status is run, showing that the branch is up to date with 'origin/master'. The working tree is clean.

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/hpe (master)
$ git status
On branch master
Your branch is up to date with 'origin/master'.

nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/hpe (master)
$ |
```

Added a file to the remote repo

A screenshot of a GitHub repository page for "psddevops/hpe". The "Code" tab is selected. A new file, "fetch-master-test.txt", has been added to the master branch. The commit history shows this addition along with other commits from previous days.

Code

Issues Pull requests Actions Projects Wiki Security Insights Settings

master 2 branches 0 tags Go to file Add file Code

psddevops Create fetch-master-test.txt ... 4049623 1 minute ago 4 commits

File	Commit Message	Time
fetch-master-test.txt	Create fetch-master-test.txt ✓	1 minute ago
sample.java	added sample.java and sample1.java files	7 days ago
sample1.java	added sample.java and sample1.java files	7 days ago
sample2.java	Added sample2.java	7 days ago
sample3.java	Added sample3.java file in dev branch	5 days ago

Help people interested in this repository understand your project by adding a README. Add a README

```
# git fetch origin master
```

```
# git status
```

```
# git merge
```

The screenshot shows a Windows File Explorer window on the left and a terminal window on the right. The File Explorer window shows a directory structure under 'Local Disk (D:) > October\_Batch > merge\_conflicts > hpe'. Inside, there are files: 'fetch-master-test' (highlighted in yellow), 'sample.java', 'sample1.java', 'sample2.java', and 'sample3.java'. The terminal window shows the following session:

```
MINGW64:/d/October_Batch/merge_conflicts/hpe (master)
$ git fetch origin master
From https://github.com/psddevops/hpe
 * branch      master      -> FETCH_HEAD
J... 73b8a45..4049623  master      -> origin/master
J$ git status
JOn branch master
Your branch is behind 'origin/master' by 1 commit, and can be fast-forwarded.
  (use "git pull" to update your local branch)

nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/hpe (master)
$ git merge
Updating 73b8a45..4049623
Fast-forward
  fetch-master-test.txt | 1 +
  1 file changed, 1 insertion(+)
  create mode 100644 fetch-master-test.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/hpe (master)
$ git status
On branch master
Your branch is up to date with 'origin/master'.

nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/hpe (master)
$ .
```

### Note:

If we use git fetch and compulsory will run git merge command.

#### 1. To fetch a specific branch

```
git fetch <branch URL><branch name>
```

#### 2. To fetch all the branches simultaneously.

```
git fetch --all
```

#### 3. To synchronize the local repository

```
git fetch origin master
```

### GIT PULL

Git pull command is used to fetch the files from remote repository to local repo. If you want to push any commits you must be in synchronize with remote git repository. Synchronize is nothing but whatever the files and commits in remote github repository must be in local repository. Then only you can push commits to remote repo otherwise it will through you errors. To synchronize local repository with remote github repository we use pull command.

### What exactly does the git pull command

When you are executing pull command it will execute two commands in background.

*git fetch + git merge*

Fetch command will download all files from remote repo to local repo and Fetch doesn't change local working copies or local files. Merge command will merge the files , so finally you will get the files from remote repo to local repo.

## Git Pull Demo

### Git hub remote repository

The screenshot shows a GitHub repository page for 'psddevops/hpe'. The repository has 2 branches and 0 tags. The commit history shows 4 commits, with the most recent being 'Create fetch-master-test.txt' by 'psddevops' 1 hour ago. Other commits include 'sample.java', 'sample1.java', 'sample2.java', and 'sample3.java'. The repository has no description, website, or topics provided. It also has no releases published and no packages published.

### Clone the repository to local

```
# git clone https://github.com/psddevops/hpe.git
```

The terminal window shows the command \$ git clone https://github.com/psddevops/hpe.git being run. The output shows the cloning process, including object enumeration, counting, compressing, and receiving objects, followed by resolving deltas. The repository 'hpe' is now cloned to the current directory.

### Adding a file in remote repo

The screenshot shows a GitHub repository page for 'psddevops/hpe'. The repository has 2 branches and 0 tags. The commit history shows 5 commits, with the most recent being 'Create pull-master-demo.txt' by 'psddevops' now. Other commits include 'fetch-master-test.txt', 'sample.java', 'sample1.java', 'sample2.java', and 'sample3.java'. The repository has no description, website, or topics provided. It also has no releases published and no packages published.

Pull the git repository

```
# git pull origin master
```

The screenshot shows a Windows File Explorer window on the left and a terminal window on the right. The File Explorer window shows a directory structure under 'Local Disk (D:) > October\_Batch > merge\_conflicts > hpe'. The terminal window shows the command \$ git pull origin master being run, followed by the output of the pull operation.

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/hpe (master)
$ git pull origin master
remote: Enumerating objects: 4, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 689 bytes | 3.00 KiB/s, done.
From https://github.com/psddevops/hpe
 * branch            master      -> FETCH_HEAD
   4049623..da40bc9  master      -> origin/master
Updating 4049623..da40bc9
Fast-forward
 pull-master-demo.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 pull-master-demo.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/merge_conflicts/hpe (master)
$ git log
commit da40bc9cdfe15886f7301f765df26d19d74a835 (HEAD -> master, origin/master, origin/HEAD)
Author: psddevops <59026188+psddevops@users.noreply.github.com>
Date:   Thu Nov 5 11:20:09 2020 +0530
```

### Git diff

Git diff is a command-line utility. It's a multiuse Git command. When it is executed, it runs a diff function on Git data sources. These data sources can be files, branches, commits, and more. It is used to show changes between commits, commit, and working tree, etc.

It compares the different versions of data sources. The version control system stands for working with a modified version of files. So, the diff command is a useful tool for working with Git.

*Track the changes that have not been staged*

```
# cat test.java
# vi test.java
# git diff
```

The screenshot shows a terminal window with the following command and its output:

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ cat test.java
This is first line

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ vi test.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git diff
warning: LF will be replaced by CRLF in test.java.
The file will have its original line endings in your working directory
diff --git a/test.java b/test.java
index 0cbcf32..655a706 100644
--- a/test.java
+++ b/test.java
@@ -1 +1,2 @@
- This is first line
+This is second line

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ cat test.java
This is first line
This is second line

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |
```

*Track the changes that have staged but not committed*

```
# cat test.java  
# git add .  
# git diff --staged
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ cat test.java  
This is first line  
This is second line  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git add .  
warning: LF will be replaced by CRLF in test.java.  
The file will have its original line endings in your working directory  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git diff --staged  
diff --git a/test.java b/test.java  
index 0cbcfc32..655a706 100644  
--- a/test.java  
+++ b/test.java  
@@ -1 +1,2 @@  
 This is first line ✓  
+This is second line ✓  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ |
```

*Track the changes after committing a file*

```
# git status  
# git commit -m "updated test.java file"  
# git diff 5ac0042 62c1d6c  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git status  
On branch master  
changes to be committed:  
  (use "git restore --staged <file>..." to unstage)  
    modified: test.java  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git commit -m "updated test.java file"  
[master 5ac0042] updated test.java file  
 1 file changed, 1 insertion(+)  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git log  
commit 5ac0042de87052e77741ebf33b34d7a9d9d1cc25 (HEAD -> master)  
Author: Pushpanath <preddy2711@gmail.com>  
Date:   Thu Nov 5 17:22:51 2020 +0530  
  
      updated test.java file  
  
commit 62c1d6c92b0249509020c971ef7ff7098397bde2  
Author: Pushpanath <preddy2711@gmail.com>  
Date:   Thu Nov 5 17:13:23 2020 +0530  
  
      added test.java file  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git diff HEAD  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git diff 5ac0042 62c1d6c  
diff --git a/test.java b/test.java  
index 655a706..0cbcfc32 100644  
--- a/test.java  
+++ b/test.java  
@@ -1,2 +1 @@  
 This is first line  
-This is second line  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ |
```

## Git Diff Branches

```
# git checkout -b dev  
# vi test.java  
# git add . && git commit -m "updated test.java file in dev branch"  
# cat test.java  
# git diff master dev
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)  
$ git checkout -b dev ✓  
switched to a new branch 'dev'  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev)  
$ vi test.java ✓  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (dev)  
$ git add . && git commit -m "updated test.java file in dev branch"  
warning: LF will be replaced by CRLF in test.java.  
The file will have its original line endings in your working directory  
[dev 6de8779] updated test.java file in dev branch  
 1 file changed, 1 insertion(+)  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (dev)  
$ cat test.java  
This is first line  
This is second line  
This is third line added by dev branch  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (dev)  
$ git diff master dev ✓  
diff --git a/test.java b/test.java  
index 655a706..e59873f 100644  
--- a/test.java  
+++ b/test.java  
@@ -1,2 +1,3 @@  
 This is first line  
 This is second line  
+This is third line added by dev branch  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo (dev)  
$ |
```

## Renaming the branches in local

By using git branch command we can rename git branch

### Syntax

Checkout to current branch

```
# git branch -m <new-branch-name>
```

From different branch

```
# git branch -m <old-branch-name> <new-branch-name>
```

```
# git checkout dev
```

```
# git branch -m dev-int
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev) ✓  
$ git branch -m dev-int ✓  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (dev-int) ✓  
$ git checkout master  
Switched to branch 'master'
```

```

# git branch
# git branch -m dev-int uat
# git branch
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch ✓
  dev
  dev-int
* master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch -m dev-int uat ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch
  dev
* master
  uat ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |

```

### Creating a branch from commit-id

#### Syntax

```

git branch <branch _name> <commit id>
# git log
# git branch
# git branch commit-branch 5ac0042de87052e77741ebf33b34d7a9d9d1cc25
# git branch
# git checkout commit-branch
# git log –oneline

```



```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log
commit 5ac0042de87052e77741ebf33b34d7a9d9d1cc25 (HEAD --> master)
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Thu Nov 5 17:22:51 2020 +0530

    updated test.java file

commit 62c1d6c92b0249509020c971ef7ff7098397bde2
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Thu Nov 5 17:13:23 2020 +0530

    added test.java file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch
  dev
* master
  uat

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch commit-branch 5ac0042de87052e77741ebf33b34d7a9d9d1cc25 ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git branch
  commit-branch
  dev
* master
  uat

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git checkout commit-branch ✓
Switched to branch 'commit-branch'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (commit-branch)
$ git log --oneline
5ac0042 (HEAD --> commit-branch, master) updated test.java file
62c1d6c added test.java file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (commit-branch)
$ |

```

## Git Stash

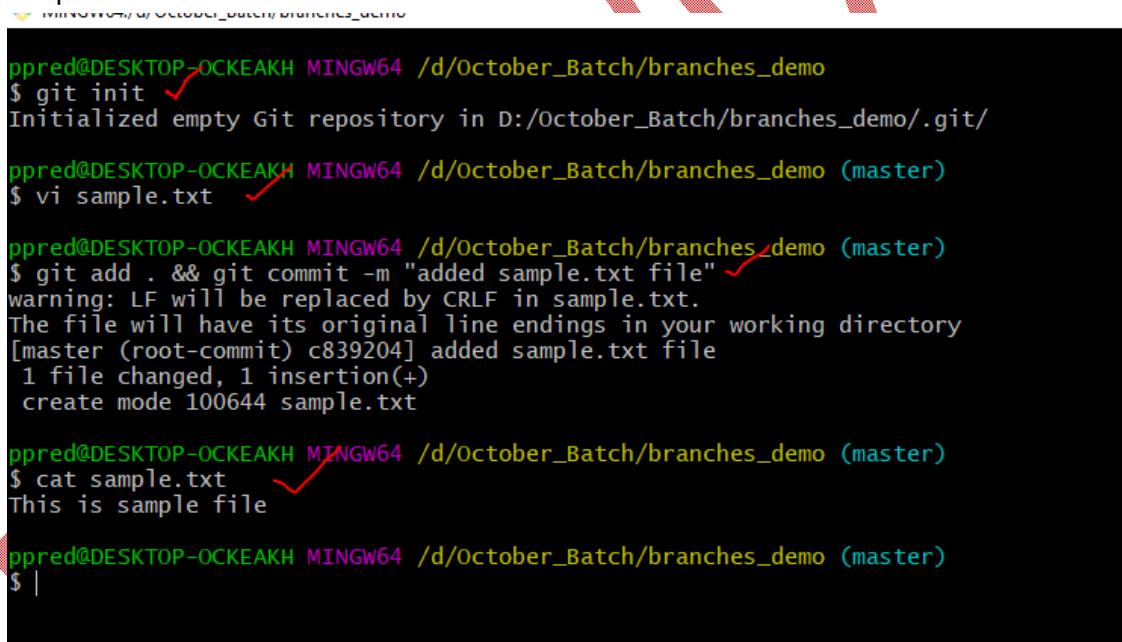
Sometimes you want to switch the branches, but you are working on an incomplete part of your current project. You don't want to make a commit of half-done work. Git stashing allows you to do so. The *git stash* command enables you to switch branches without committing the current branch. Git stash temporarily shelves (or stashes) changes you've made to your working copy so you can work on something else, and then come back and reapply them later on.. Stashing is handy if you need to quickly switch context and work on something else, but you're mid-way through a code change and aren't quite ready to commit.

It will try to backup all your changes before you commit. It will do undo the changes.

## Demo

Add sample.txt file with content

```
# git init  
# vi sample.txt  
# git add . && git commit -m "added sample.txt file"  
# cat sample.txt
```



```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo  
$ git init ✓  
Initialized empty Git repository in D:/October_Batch/branches_demo/.git/  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)  
$ vi sample.txt ✓  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)  
$ git add . && git commit -m "added sample.txt file" ✓  
warning: LF will be replaced by CRLF in sample.txt.  
The file will have its original line endings in your working directory  
[master (root-commit) c839204] added sample.txt file  
 1 file changed, 1 insertion(+)  
 create mode 100644 sample.txt  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)  
$ cat sample.txt ✓  
This is sample file  
  
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)  
$ |
```

Updated **sample.txt** file three times

```
# vi sample.txt  
# git status  
# git stash save "added idea-1"  
# git status
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ cat sample.txt ✓
This is sample file

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ vi sample.txt ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git status ✓
On branch master
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:   sample.txt

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

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash save "added idea-1" ✓
warning: LF will be replaced by CRLF in sample.txt.
The file will have its original line endings in your working directory
Saved working directory and index state On master: added idea-1

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git status ✓
On branch master
nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ |

```

# vi sample.txt  
# cat sample.txt  
# git stash save "added idea-2"  
# git stash list  
# git status



```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ vi sample.txt ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ cat sample.txt
This is sample file
This is idea-2

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash save "added idea-2" ✓
Saved working directory and index state On master: added idea-2

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash list ✓
stash@{0}: On master: added idea-2
stash@{1}: On master: added idea-1

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git status ✓
On branch master
nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ |

```

```
# vi sample.txt
# cat sample.txt
# git stash save "added idea-3"
# git stash list
# git status
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ vi sample.txt ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ cat sample.txt
This is sample file
This is idea-3 ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash save "added idea-3" ✓
Saved working directory and index state On master: added idea-3

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash list ✓
stash@{0}: On master: added idea-3
stash@{1}: On master: added idea-2
stash@{2}: On master: added idea-1

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git status ✓
On branch master
nothing to commit, working tree clean

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ |
```

**git stash show :** This command shows the summary of the stash diffs. This command considers only the latest stash.

**git stash show -p :** It will give you the detailed list of differences.

**git stash list:** To display list of stashes

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash show ✓
sample.txt | 1 +
1 file changed, 1 insertion(+)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash show -p ✓
diff --git a/sample.txt b/sample.txt
index 175aac5..069e553 100644
--- a/sample.txt
+++ b/sample.txt
@@ -1 +1,2 @@
 This is sample file
+This is idea-3

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash list ✓
stash@{0}: On master: added idea-3
stash@{1}: On master: added idea-2
stash@{2}: On master: added idea-1

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ |
```

**git stash pop:** It apply the latest stash and then immediately drop it from your stack.

**git stash pop stash@{1} :** It apply the particular stash and then immediately drop it from your stack.

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash list
stash@{0}: On master: added idea-3
stash@{1}: On master: added idea-2
stash@{2}: On master: added idea-1

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash pop
On branch master
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:   sample.txt

no changes added to commit (use "git add" and/or "git commit -a")
Dropped refs/stash@{0} (834e40ce77da6b9608e27dce85765c4a7a4e3461)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash list
stash@{0}: On master: added idea-2
stash@{1}: On master: added idea-1

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ |
```

**git stash apply:** It copies changes stashed to working/index area, entry still remains in the stash

**git stash clear:** Remove the stash entries.

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash list
stash@{0}: On master: this is idea-2
stash@{1}: On master: this is idea-1

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash apply stash@{0}
On branch master
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:   sample.txt

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

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ |
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash list
stash@{0}: On master: this is idea-2
stash@{1}: On master: this is idea-1

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash clear

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ git stash list

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/branches_demo (master)
$ |
```

## GIT Tags

A name which is attached to the commit-id is called tag. Later point of time we can use tags rather than commit-id. It's a pointer pointing to a specific commit, tag is similar to branch but, branch is used for development/bugfix, whereas tag is used for releasing software. On a branch we can do commits, but on a tag we cannot perform commits.

- We can't attach one tag to multiple/other commit-ids.
- One commit-id having multiple tags.
- One tag having only one commit-id.

### Creating a tag

```
git tag -a VERSION-1.0 -m "Created version 1.0" 4049623
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git log --oneline
da40bc9 (HEAD -> master, origin/master, origin/HEAD) Create pull-master-demo.txt
4049623 Create fetch-master-test.txt
73b8a45 (origin/dev) Added sample3.java file in dev branch
3b8213c Added sample2.java
7e54aa8 added sample.java and sample1.java files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git tag -a VERSION-1.0 -m "Created version 1.0" 4049623 ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
```

### # git tag → list of tags

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git tag -a VERSION-1.1 -m "Created version 1.1" da40bc9

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git tag
VERSION-1.0
VERSION-1.1
```

### # git show VERSION-1.0 → Displaying the tag details

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git show VERSION-1.0
tag VERSION-1.0
Tagger: Pushpanath <ppreddy2711@gmail.com>
Date:   Fri Nov 6 17:14:47 2020 +0530

Created version 1.0

commit 4049623cf14a7decb727d26a0affeb5452e6e9 (tag: VERSION-1.0)
Author: psddevops <59026188+psddevops@users.noreply.github.com>
Date:   Thu Nov 5 10:29:46 2020 +0530

    Create fetch-master-test.txt

    fetch-master-test.txt

diff --git a/fetch-master-test.txt b/fetch-master-test.txt
new file mode 100644
index 0000000..16140b1
--- /dev/null
+++ b/fetch-master-test.txt
@@ -0,0 +1 @@
+fetch-master-test.txt
```

## Pushing Tags to remote repo

Zero tags in remote repo

The screenshot shows a GitHub repository page for 'psddevops/hpe'. The repository has 2 branches and 0 tags. A modal window titled 'Switch branches/tags' is open, showing a search bar 'Find a tag' and tabs for 'Branches' (selected) and 'Tags' (highlighted). Below the tabs, it says 'Nothing to show' and 'View all tags'. To the right, a list of commits is displayed:

Commit	Date
da40bc9 yesterday	5 commits
Create fetch-master-test.txt	yesterday
Create pull-master-demo.txt	yesterday
added sample.java and sample1.java files	8 days ago

# git push --tags

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git push --tags
Enumerating objects: 2, done.
Counting objects: 100% (2/2), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 332 bytes | 332.00 KiB/s, done.
Total 2 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/psddevops/hpe.git
 * [new tag]      VERSION-1.0 -> VERSION-1.0
 * [new tag]      VERSION-1.1 -> VERSION-1.1
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
```

Now remote repo

The screenshot shows the same GitHub repository page after pushing tags. The repository now has 2 tags. The 'Tags' tab in the 'Switch branches/tags' modal is selected, showing 'VERSION-1.1' and 'VERSION-1.0'. The commit list on the right remains the same.

Commit	Date
da40bc9 yesterday	5 commits
Create fetch-master-test.txt	yesterday
Create pull-master-demo.txt	yesterday
added sample.java and sample1.java files	8 days ago
added sample.java and sample1.java files	8 days ago

## Deleting a tag

```
# git tag -d VERSION-0.1
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git log --oneline
da40bc9 (HEAD -> master, tag: VERSION-1.1, origin/master, origin/HEAD) Create pull-master-demo.txt
4049623 (tag: VERSION-1.0) Create fetch-master-test.txt
73b8a45 (origin/dev) Added sample3.java file in dev branch
3b8213c (tag: VERSION-0.1) Added sample2.java
7e54aa8 added sample.java and sample1.java files

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git tag -d VERSION-0.1
Deleted tag 'VERSION-0.1' (was 3047417)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git log --oneline
da40bc9 (HEAD -> master, tag: VERSION-1.1, origin/master, origin/HEAD) Create pull-master-demo.txt
4049623 (tag: VERSION-1.0) Create fetch-master-test.txt
73b8a45 (origin/dev) Added sample3.java file in dev branch
3b8213c Added sample2.java
7e54aa8 added sample.java and sample1.java files

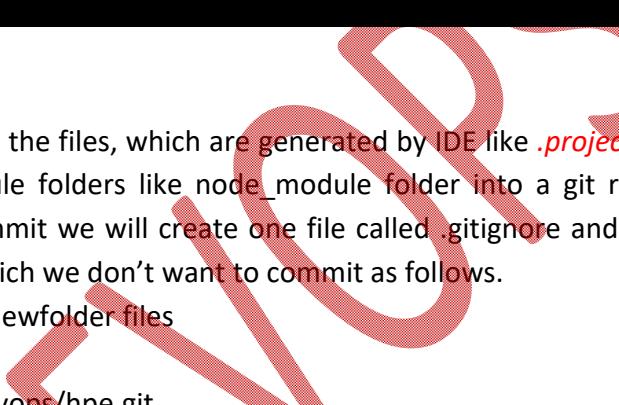
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ |
```

## Ignore Files in Git (`git .ignore`)

Sometimes we don't want to commit the files, which are generated by IDE like `.project`, `folders` and `.classpath` files or some node module folders like `node_module` folder into a git repository. To ignore these files and folders to commit we will create one file called `.gitignore` and we will keep the file names or directory names which we don't want to commit as follows.

Ignoring `.class`, `.conf`, `.classpath` and `newfolder` files

```
# git clone https://github.com/psddevops/hpe.git
```



The screenshot shows a Windows File Explorer window on the left displaying a directory structure with files like `fetch-master-test`, `pull-master-demo`, and several `sample.java` files. On the right is a terminal window titled "MINGW64 /d/October\_Batch/gitdemo/hpe". The terminal shows the following commands and output:

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo
$ ll
total 1
-rw-r--r-- 1 ppred 197609 42 Nov  6 19:02 sample.java
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo
$ rm sample.java
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo
$ git clone https://github.com/psddevops/hpe.git
Cloning into 'hpe'...
remote: Enumerating objects: 21, done.
remote: Counting objects: 100% (21/21), done.
remote: Compressing objects: 100% (15/15), done.
remote: Total 21 (delta 6), reused 7 (delta 1), pack-reused 0
Receiving objects: 100% (21/21), done.
Resolving deltas: 100% (6/6), done.

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo
$ cd hpe/
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ |
```

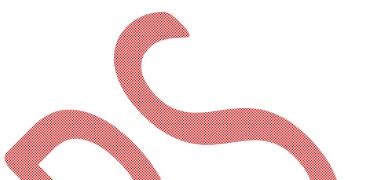
Create new files with below extensions

`sample.class`  
`test.class`  
`sample.conf`  
`test.conf`  
`.classpath`  
`.project`  
`newfolder`

```

# cd hpe
# touch sample.class test.class sample.conf test.conf .classpath .project
# mkdir newfolder
# mkdir testfolder
# cd newfolder
# touch newfolder.txt newfolder1.txt
# cd ../testfolder/
# touch testfolder.txt testfolder1.txt
# cd ..
# touch sample4.java
# ls

```



```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo
$ cd hpe/
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ touch sample.class test.class sample.conf test.conf .classpath .project ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ mkdir newfolder ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ mkdir testfolder ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ cd newfolder/ ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe/newfolder (master)
$ touch newfolder.txt newfolder1.txt✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe/newfolder (master)
$ cd ../testfolder/ ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe/testfolder (master)
$ touch testfolder.txt testfolder1.txt✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe/testfolder (master)
$ cd ..
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ ls
fetch-master-test.txt  pull-master-demo.txt  sample.conf  sample1.java  sample3.java  test.conf  test1.java
newfolder/             sample.class        sample.java   sample2.java  test.class   test.java  testfolder/
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ touch sample4.java ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ |

```

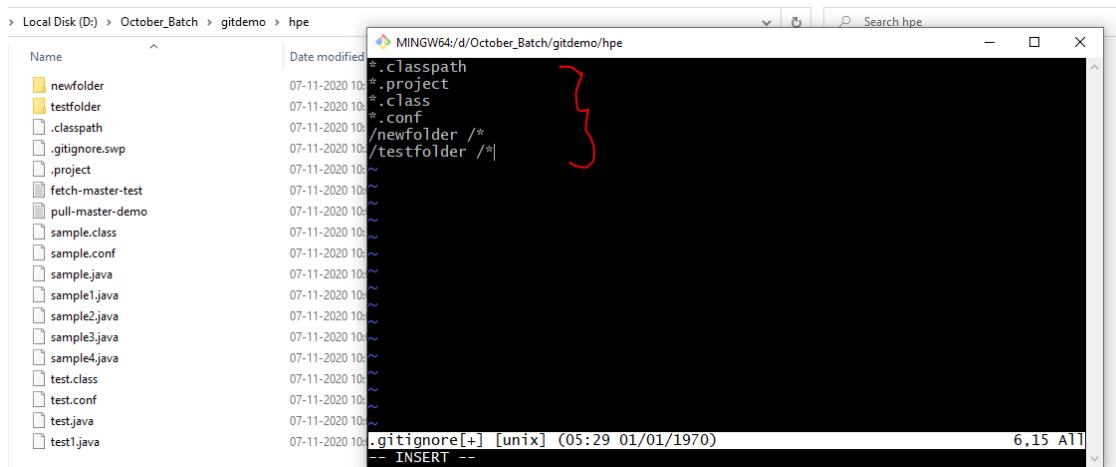
Create .gitignore file and add below content



```

*.classpath
*.project
*.class
*.conf
/newfolder /*
/testfolder /*

```



## Verify the remote repository

**Code**

**master** · **2 branches** · **2 tags**

File	Description	Time Ago
fetch-master-test.txt	Create fetch-master-test.txt	2 days ago
pull-master-demo.txt	Create pull-master-demo.txt	2 days ago
sample.java	added sample.java and sample1.java files	9 days ago
sample1.java	added sample.java and sample1.java files	9 days ago
sample2.java	Added sample2.java	9 days ago
sample3.java	Added sample3.java file in dev branch	7 days ago
test.java	test.java	16 hours ago
test1.java	test1.java	16 hours ago

**About**  
No description, website, or provided.

**Releases**  
2 tags  
Create a new release

**Packages**  
No packages published  
Publish your first package

## Push to the remote repository

```
# git status
# git add . && git commit -m "added files for .gitignore purpose"
# git push origin master
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_batch/gitdemo/hpe (master)
$ git status
On branch master
Your branch is up to date with 'origin/master'.

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    .gitignore
    newFolder/
    sample4.java
    testFolder/
nothing added to commit but untracked files present (use "git add" to track)

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_batch/gitdemo/hpe (master)
$ ls
fetch-master-test.txt  pull-master-demo.txt  sample.conf  sample1.java  sample3.java  test.class  test.java  testFolder/
newFolder/             sample.class        sample.java   sample2.java  sample4.java  test.conf   test1.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_batch/gitdemo/hpe (master)
$ git add . && git commit -m "added files for .gitignore purpose"
warning: LF will be replaced by CRLF in .gitignore.
The file will have its original line endings in your working directory
[master b1b92dd] added files for .gitignore purpose
 6 files changed, 6 insertions(+)
create mode 100644 .gitignore
create mode 100644 newFolder/newFolder.txt
create mode 100644 newFolder/newFolder1.txt
create mode 100644 sample4.java
create mode 100644 testFolder/testFolder.txt
create mode 100644 testFolder/testFolder1.txt
```

## Verify the remote repo

The screenshot shows a GitHub repository page. At the top, there are buttons for 'master', '2 branches', '2 tags', 'Go to file', 'Add file', and a dropdown for 'Code'. Below this is a table of commits:

Author	Message	Time
psddevops	added files for .gitignore purpose	6 minutes ago
	newfolder added files for .gitignore purpose ✓	6 minutes ago
	testfolder added files for .gitignore purpose ✓	6 minutes ago
	.gitignore added files for .gitignore purpose ✓	6 minutes ago
	fetch-master-test.txt Create fetch-master-test.txt	2 days ago
	pull-master-demo.txt Create pull-master-demo.txt	2 days ago
	sample.java added sample.java and sample1.java files	9 days ago
	sample1.java added sample.java and sample1.java files	9 days ago
	sample2.java Added sample2.java	9 days ago
	sample3.java Added sample3.java file in dev branch	7 days ago
	sample4.java added files for .gitignore purpose ✓	6 minutes ago
	test.java test.java	16 hours ago
	test1.java test1.java	16 hours ago

On the right side, there are sections for 'About' (no description), 'Releases' (2 tags), 'Packages' (no packages published), and 'Languages' (Java 100.0%).

### *Ignoring folder*

```
# mkdir samplefolder  
# cd samplefolder/  
# touch samplefolder.txt samplefolder1.txt samplefolder2.txt
```

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo/hpe (master)  
$ mkdir samplefolder ✓  
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo/hpe (master)  
$ cd samplefolder/ ✓  
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo/hpe/samplefolder (master)  
$ touch samplefolder.txt samplefolder1.txt samplefolder2.txt  
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo/hpe/samplefolder (master)  
$ cd .. ✓  
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo/hpe (master)  
$ ll  
total 8  
-rw-r--r-- 1 ppred 197609 23 Nov 7 10:07 fetch-master-test.txt  
drwxr-xr-x 1 ppred 197609 0 Nov 7 10:14 newfolder/  
-rw-r--r-- 1 ppred 197609 22 Nov 7 10:07 pull-master-demo.txt  
-rw-r--r-- 1 ppred 197609 0 Nov 7 10:13 sample.class  
-rw-r--r-- 1 ppred 197609 0 Nov 7 10:13 sample.conf  
-rw-r--r-- 1 ppred 197609 0 Nov 7 10:07 sample.java  
-rw-r--r-- 1 ppred 197609 0 Nov 7 10:07 sample1.java  
-rw-r--r-- 1 ppred 197609 0 Nov 7 10:07 sample2.java  
-rw-r--r-- 1 ppred 197609 0 Nov 7 10:07 sample3.java  
-rw-r--r-- 1 ppred 197609 0 Nov 7 10:17 sample4.java  
drwxr-xr-x 1 ppred 197609 0 Nov 7 10:43 samplefolder/  
-rw-r--r-- 1 ppred 197609 0 Nov 7 10:13 test.class  
-rw-r--r-- 1 ppred 197609 0 Nov 7 10:13 test.conf  
-rw-r--r-- 1 ppred 197609 11 Nov 7 10:07 test.java  
-rw-r--r-- 1 ppred 197609 12 Nov 7 10:07 test1.java  
drwxr-xr-x 1 ppred 197609 0 Nov 7 10:16 testfolder/  
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo/hpe (master)  
$ vi .gitignore ✓
```

```
# vi .gitignore
```

```
*.classpath  
*.project  
*.class  
*.conf  
/newfolder /*  
/testfolder /*  
/samplefolder/* ✓  
~
```

```
# git status  
# git add . && git commit -m "added sample folder"  
# git push origin master
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git status ✓
On branch master
Your branch is up to date with 'origin/master'.

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:   .gitignore ✓

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

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo/hpe (master)
$ git add . && git commit -m "added sample folder." ✓
warning: LF will be replaced by CRLF in .gitignore.
The file will have its original line endings in your working directory
[master 4de04cc] added sample folder
 1 file changed, 1 insertion(+)

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo/hpe (master)
$ git push origin master ✓
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 322 bytes | 322.00 KiB/s, done.
Total 3 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/psddevops/hpe.git
  b1b92dd..4de04cc master -> master

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_Batch/gitdemo/hpe (master)

```

## Before pushing remote repo

No description provided.

**Releases**

**Packages**

**Languages**

File/Folder	Description	Time Ago
newfolder	added files for .gitignore purpose	11 minutes ago
testfolder	added files for .gitignore purpose	11 minutes ago
.gitignore	added files for .gitignore purpose	11 minutes ago
fetch-master-test.txt	Create fetch-master-test.txt	2 days ago
pull-master-demo.txt	Create pull-master-demo.txt	2 days ago
sample.java	added sample.java and sample1.java files	9 days ago
sample1.java	added sample.java and sample1.java files	9 days ago
sample2.java	Added sample2.java	9 days ago
sample3.java	Added sample3.java file in dev branch	7 days ago
sample4.java	added files for .gitignore purpose	11 minutes ago
test.java	test.java	16 hours ago
test1.java	test1.java	16 hours ago

Help people interested in this repository understand your project by adding a README. [Add a README](#)

## After pushing remote repo

No description, website, or ti provided.

**Releases**

**Packages**

File/Folder	Description	Time Ago
newfolder	added files for .gitignore purpose	18 minutes ago
testfolder	added files for .gitignore purpose	18 minutes ago
.gitignore	added sample folder	7 minutes ago
fetch-master-test.txt	Create fetch-master-test.txt	2 days ago
pull-master-demo.txt	Create pull-master-demo.txt	2 days ago
sample.java	added sample.java and sample1.java files	9 days ago
sample1.java	added sample.java and sample1.java files	9 days ago

## Removing a file/Directory from github/bitbucket repository

To delete file from git hub repository you must follow three steps.

1. Remove file in local repository (working directory)
2. Commit your changes
3. Push your changes to remote git repository(github)

## *Removing files from remote repo*

Files in remote repository

The screenshot shows a GitHub repository page for 'psddevops/hpe'. It displays a list of 14 commits made by 'psddevops' over 9 days ago. The commits include adding sample folders, .gitignore files, and Java files like sample.java, sample1.java, etc. On the right side, there are sections for 'About', 'Releases', 'Packages', and 'Languages' (Java 100%).

Commit	Description	Time Ago
psddevops added sample folder	added files for .gitignore purpose	5 hours ago
newfolder	added files for .gitignore purpose	5 hours ago
testfolder	added files for .gitignore purpose	5 hours ago
.gitignore	added sample folder	5 hours ago
fetch-master-test.txt	Create fetch-master-test.txt	2 days ago
pull-master-demo.txt	Create pull-master-demo.txt	2 days ago
sample.java	added sample.java and sample1.java files	9 days ago
sample1.java	added sample.java and sample1.java files	9 days ago
sample2.java	Added sample2.java	9 days ago
sample3.java	Added sample3.java file in dev branch	7 days ago
sample4.java	added files for .gitignore purpose	5 hours ago
test.java	test.java	20 hours ago
test1.java	test1.java	20 hours ago

Clone the remote repository to local

The screenshot shows a Windows File Explorer window displaying the contents of 'Local Disk (D:) > October\_Batch > gitdemo > hpe'. Below it is a terminal window titled 'MINGW64 /d/October\_Batch/gitdemo' showing the output of a 'git clone' command. The command fails because it cannot resolve the host 'github.com'.

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo
$ git clone https://github.com/psddevops/hpe.git
Cloning into 'hpe'...
fatal: unable to access 'https://github.com/psddevops/hpe.git/': Could not resolve host: github.com

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo
$ git clone https://github.com/psddevops/hpe.git
Cloning into 'hpe'...
remote: Enumerating objects: 29, done.
remote: Counting objects: 100% (29/29), done.
remote: Compressing objects: 100% (20/20), done.
remote: Total 29 (delta 9), reused 16 (delta 4), pack-reused 0
Receiving objects: 100% (29/29), 4.10 KiB | 600.00 KiB/s, done.
Resolving deltas: 100% (9/9), done.
```

```
# ls
# git rm fetch-master-test.txt pull-master-demo.txt
# git status
# git add .
# git commit -m "deleted the files ...."
# git push origin master
```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ ls
fetch-master-test.txt  pull-master-demo.txt  sample1.java  sample3.java  test.java  testfolder/
newfolder/             sample.java          sample2.java  sample4.java  test1.java

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git rm fetch-master-test.txt pull-master-demo.txt
rm 'fetch-master-test.txt'
rm 'pull-master-demo.txt'

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git status
On branch master
Your branch is up to date with 'origin/master'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    deleted:   fetch-master-test.txt
    deleted:   pull-master-demo.txt

```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git add . && git commit -m "deleted the files ...."
[master 8b60aaa] deleted the files ....
2 files changed, 2 deletions(-)
delete mode 100644 fetch-master-test.txt
delete mode 100644 pull-master-demo.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ git push origin master
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 236 bytes | 236.00 KiB/s, done.
Total 2 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/psddevops/hpe.git
  4de04cc..8b60aaa  master -> master

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/hpe (master)
$ |

```

## Verify the remote repo/

master ▾ 2 branches 2 tags

Go to file Add file ▾ Code ▾

**psddevops deleted the files ....** sb60aaa 43 seconds ago 10 commits

newfolder	added files for .gitignore purpose	5 hours ago
testfolder	added files for .gitignore purpose	5 hours ago
.gitignore	added sample folder	5 hours ago
sample.java	added sample.java and sample1.java files	9 days ago
sample1.java	added sample.java and sample1.java files	9 days ago
sample2.java	Added sample2.java	9 days ago
sample3.java	Added sample3.java file in dev branch	7 days ago
sample4.java	added files for .gitignore purpose	5 hours ago
test.java	test.java	21 hours ago
test1.java	test1.java	21 hours ago

Help people interested in this repository understand your project by adding a README. Add a README

About  
No description, website, or topics provided.

Releases  
2 tags  
Create a new release

Packages  
No packages published  
Publish your first package

Languages  
Java 100.0%

## Removing folder from remote repo

The screenshot shows a GitHub repository page. At the top, there are buttons for 'master', '2 branches', '2 tags', 'Go to file', 'Add file', and 'Code'. Below this is a list of commits:

Commit	Message	Time Ago
psddevops deleted the files ...	added files for .gitignore purpose	5 hours ago
newfolder	added files for .gitignore purpose	5 hours ago
testfolder	added files for .gitignore purpose	5 hours ago
.gitignore	added sample folder	5 hours ago
sample.java	added sample.java and sample1.java files	9 days ago
sample1.java	added sample.java and sample1.java files	9 days ago
sample2.java	Added sample2.java	9 days ago
sample3.java	Added sample3.java file in dev branch	7 days ago
sample4.java	added files for .gitignore purpose	5 hours ago
test.java	test.java	21 hours ago
test1.java	test1.java	21 hours ago

At the bottom, there is a note: "Help people interested in this repository understand your project by adding a README." and a "Add a README" button.

## Removing *testfolder* in remote repo

```
# ls  
# git rm -r testfolder/  
# git status  
# git add . && git commit -m "deleted testfolder"  
# git push origin master
```

```
$ ls  
newfolder/ sample.java sample1.java sample2.java sample3.java sample4.java test.java test1.java testfolder/  
$ git rm -r testfolder/  
rm 'testfolder/testfolder.txt'  
rm 'testfolder/testfolder1.txt'  
$ git status  
On branch master  
Your branch is up to date with 'origin/master'.  
Changes to be committed:  
(use "git restore <staged file>" to unstage)  
 deleted: testfolder/testfolder.txt  
 deleted: testfolder/testfolder1.txt  
  
$ git add . && git commit -m "deleted testfolder"  
[master d4f5ee1] deleted testfolder  
 2 files changed, 0 insertions(+), 0 deletions(-)  
 delete mode 100644 testfolder/testfolder.txt  
 delete mode 100644 testfolder/testfolder1.txt  
  
$ git push origin master  
Enumerating objects: 3, done.  
Counting objects: 100% (3/3), done.  
Delta compression using up to 4 threads  
Compressing objects: 100% (2/2), done.  
Writing objects: 100% (2/2), 227 bytes | 227.00 KiB/s, done.  
Total 2 (delta 1), reused 0 (delta 0), pack-reused 0  
remote: Resolving deltas: 100% (1/1), completed with 1 local object.  
To https://github.com/psddevops/hpe.git  
 8660aaa..d4f5ee1 master -> master
```

## Verify the central repository

The screenshot shows a GitHub repository page. At the top, there are buttons for 'master', '2 branches', '2 tags', 'Go to file', 'Add file', and 'Code'. Below this is a list of commits:

Commit	Message	Time Ago
psddevops deleted testfolder		d4f5ee1 5 minutes ago
newfolder	added files for .gitignore purpose	5 hours ago
.gitignore	added sample folder	5 hours ago
sample.java	added sample.java and sample1.java files	9 days ago
sample1.java	added sample.java and sample1.java files	9 days ago

## **Git Hooks/Triggers/Wrapper Scripts**

Git Hooks are the scripts which trigger when you perform a specific action in Git. These are useful to automate the tasks.

**Ex:** When you create a Git Hook to run commit validation every time you commit code.

We can apply the script in two ways.

1. Before executing the command (Pre-step)
2. After executing the command (Post-step)

There are two types of git hooks.

1. Client-Side Hooks
2. Server-Side Hooks

Client-Side Hooks are triggered by operations such as committing and merging.

Server-Side Hooks are triggered by network operations such as receiving pushed commits.

After you are initialising the git repo, using git init command, it will create a one folder called. git and it contains some sub folders called hooks, branches, info, objects... etc

There are some predefined client-side hooks available in hooks folder.

applypatch-msg.sample

post-update.sample

pre-push.sample

prepare-commit-msg.sample

commit-msg.sample

pre-applypatch.sample

pre-rebase.sample

update.sample

fsmonitor-watchman.sample

pre-commit.sample

pre-receive.sample

To enable any hook from above list, remove the ".sample" from each hook. Ex:

To enable pre-commit.sample hook, rename this file to "pre-commit".

<https://git-scm.com/book/en/v2/Customizing-Git-Git-Hooks>

```
# git init  
# cd .git  
# cd hooks  
# ls -lrt
```

```

$ rm -rf .git
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo
$ git init ✓
Initialized empty Git repository in D:/October_Batch/gitdemo/.git/
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ cd .git ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git (GIT_DIR!)
$ ls -lrt
total 7
-rw-r--r-- 1 ppred 197609 73 Nov 7 21:17 description
drwxr-xr-x 1 ppred 197609 0 Nov 7 21:17 hooks/ ✓
drwxr-xr-x 1 ppred 197609 0 Nov 7 21:17 info/
drwxr-xr-x 1 ppred 197609 0 Nov 7 21:17 refs/
-rw-r--r-- 1 ppred 197609 23 Nov 7 21:17 HEAD
drwxr-xr-x 1 ppred 197609 0 Nov 7 21:17 objects/
-rw-r--r-- 1 ppred 197609 130 Nov 7 21:17 config

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git (GIT_DIR!)
$ cd hooks ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ ll
total 41
-rwxr-xr-x 1 ppred 197609 478 Nov 7 21:17 applypatch-msg.sample*
-rwxr-xr-x 1 ppred 197609 896 Nov 7 21:17 commit-msg.sample*
-rwxr-xr-x 1 ppred 197609 4655 Nov 7 21:17 fsmonitor-watchman.sample*
-rwxr-xr-x 1 ppred 197609 189 Nov 7 21:17 post-update.sample*
-rwxr-xr-x 1 ppred 197609 424 Nov 7 21:17 pre-applypatch.sample*
-rwxr-xr-x 1 ppred 197609 1643 Nov 7 21:17 pre-commit.sample*
-rwxr-xr-x 1 ppred 197609 416 Nov 7 21:17 pre-merge-commit.sample*
-rwxr-xr-x 1 ppred 197609 1492 Nov 7 21:17 prepare-commit-msg.sample*
-rwxr-xr-x 1 ppred 197609 1374 Nov 7 21:17 pre-push.sample*
-rwxr-xr-x 1 ppred 197609 4898 Nov 7 21:17 pre-rebase.sample*
-rwxr-xr-x 1 ppred 197609 544 Nov 7 21:17 pre-receive.sample*
-rwxr-xr-x 1 ppred 197609 3650 Nov 7 21:17 update.sample*

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ |

```

### Rename the sample extension files

```

# mv pre-commit.sample pre-commit
# mv commit-msg.sample commit-msg

```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ cp pre-commit.sample 1_pre-commit.sample
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ mv pre-commit.sample pre-commit ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ cp commit-msg.sample 1_commit-msg.sample
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ mv commit-msg.sample commit-msg ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ |

```

### Update the *pre-commit* and *commit-msg* files

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ vi commit-msg ✓
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ cat commit-msg
#!/bin/sh
#
# An example hook script to check the commit log message.
# Called by "git commit" with one argument, the name of the file
# that has the commit message. The hook should exit with non-zero
# status after issuing an appropriate message if it wants to stop the
# commit. The hook is allowed to edit the commit message file.
#
# To enable this hook, rename this file to "commit-msg".
#
# Uncomment the below to add a signed-off-by line to the message.
# Doing this in a hook is a bad idea in general, but the prepare-commit-msg
# hook is more suited to it.
#
# $OB=$($git var GIT_AUTHOR_IDENT | sed -n 's/^(>).*$Signed-off-by: \1/p')
# grep -qs "$OB" "$1" || echo "$OB" >> "$1"
#
# This example catches duplicate Signed-off-by lines.
#
#test "" = "$($grep '^Signed-off-by: ' '$1' |
#          sort | uniq -c | sed -e '/^<!-->.*$/d')" || {
#    echo >&2 Duplicate Signed-off-by lines.
#    exit 1
#}
echo "git commit successfully completed ....."
ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ |

```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ vi pre-commit ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ cat pre-commit ✓
#!/bin/sh
#
# An example hook script to verify what is about to be committed.
# Called by "git commit" with no arguments. The hook should
# exit with non-zero status after issuing an appropriate message if
# it wants to stop the commit.
#
# To enable this hook, rename this file to "pre-commit".
echo "This is pre-commit message ....." ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo/.git/hooks (GIT_DIR!)
$ |

```

```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ ls
a.txt b.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    a.txt
    b.txt

nothing added to commit but untracked files present (use "git add" to track)

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git add .

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git commit -m " Added a.txt and b.txt files....."
This is pre-commit message ..... ✓
git commit successfully completed ..... ✓
[master (root-commit) b591b23] Added a.txt and b.txt files..... ✓
 2 files changed, 2 insertions(+)
  create mode 100644 a.txt
  create mode 100644 b.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |

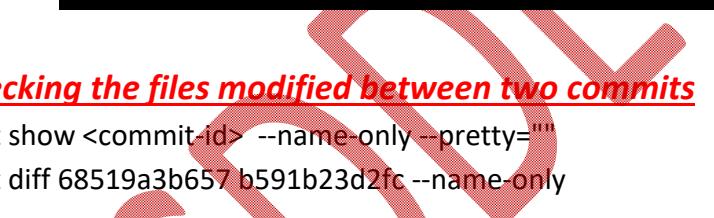
```

### Checking the files modified between two commits

```

# git show <commit-id> --name-only --pretty=""
# git diff 68519a3b657 b591b23d2fc --name-only

```



```

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ vi c.txt ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git add . && git commit -m "added c.txt file"
warning: LF will be replaced by CRLF in c.txt.
The file will have its original line endings in your working directory
This is pre-commit message ..... ✓
git commit successfully completed ..... ✓
[master 68519a3] added c.txt file
 1 file changed, 1 insertion(+)
  create mode 100644 c.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git log ✓
commit 68519a3b6570cb9670745d15e02a9e78c430bf2a (HEAD -> master) ✓
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Sat Nov 7 21:36:13 2020 +0530
      added c.txt file ✓

commit b591b23d2fc52afabc7e1f97e26f1cbf0a0932d8
Author: Pushpanath <ppreddy2711@gmail.com>
Date:   Sat Nov 7 21:32:48 2020 +0530
      Added a.txt and b.txt files..... ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ git diff 68519a3b657 b591b23d2fc --name-only
c.txt ✓

ppred@DESKTOP-OCKEAKH MINGW64 /d/October_Batch/gitdemo (master)
$ |

```

## Git GUI

Git GUI is Tcl/Tk based graphical user interface to Git. It focuses on allowing users to make changes to their repository by making new commits, amending existing ones, creating branches, performing local merges, and fetching/pushing to remote repositories.

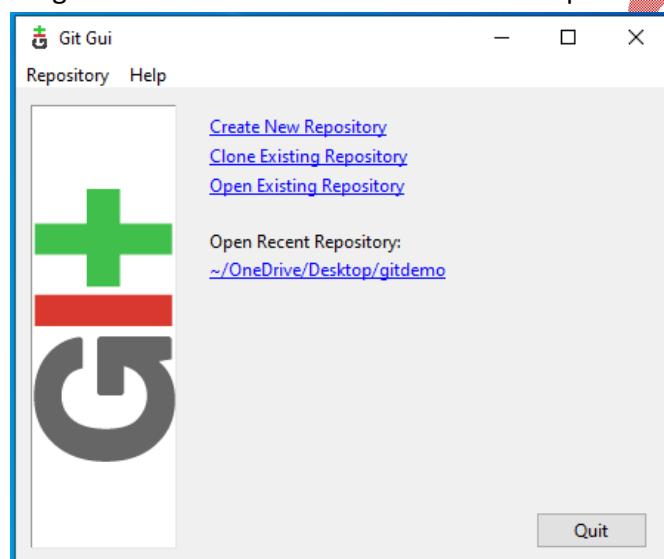
The first thing we need to do is install Git on Windows; you can do so with the following steps:

Step 1: Download and install the latest version of Git for Windows.

Step 2: Use the default options for each step in the installation.

Step 3: Remove Git Bash Desktop Icon.

Step 4: Go to Start > All Programs > Git > Git GUI and make a Desktop Shortcut.

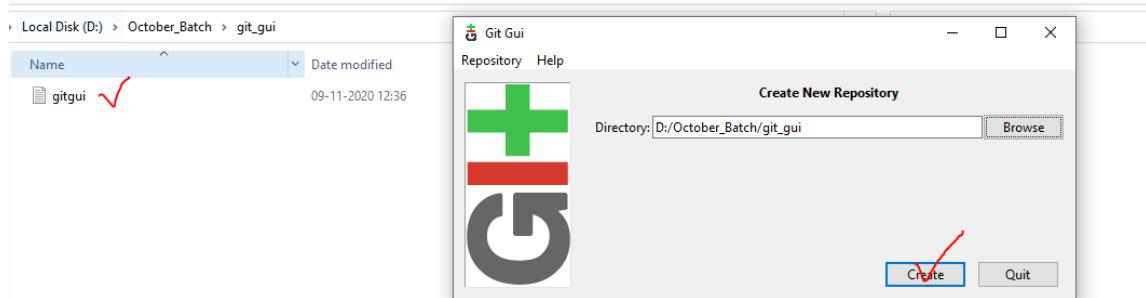


Create **new repository** in local

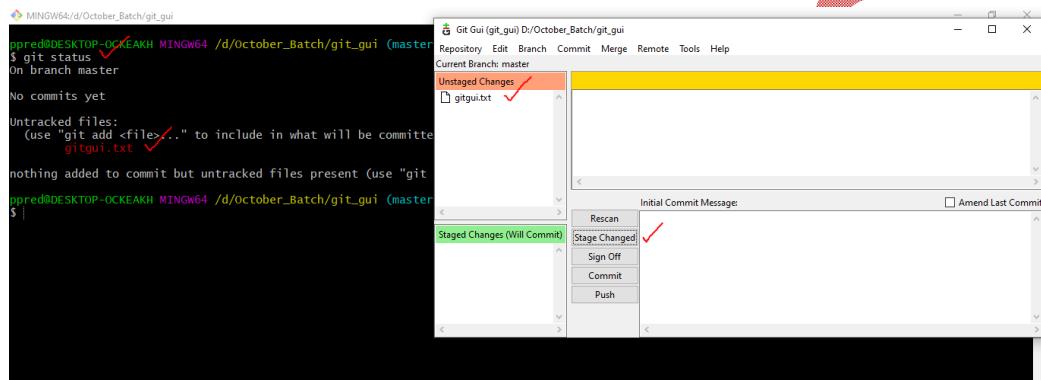
Create a folder **git-gui** and file in local

A screenshot of a Windows File Explorer window. The path is "Local Disk (D:) > October\_Batch > git\_gui". The "git\_gui" folder is selected and highlighted with a blue border and a red checkmark. Below it is a list of files and folders: "branches\_demo", "central.git", "dell", "git\_gui" (selected), "gitzdemo", "hpe", and "merge\_conflicts".

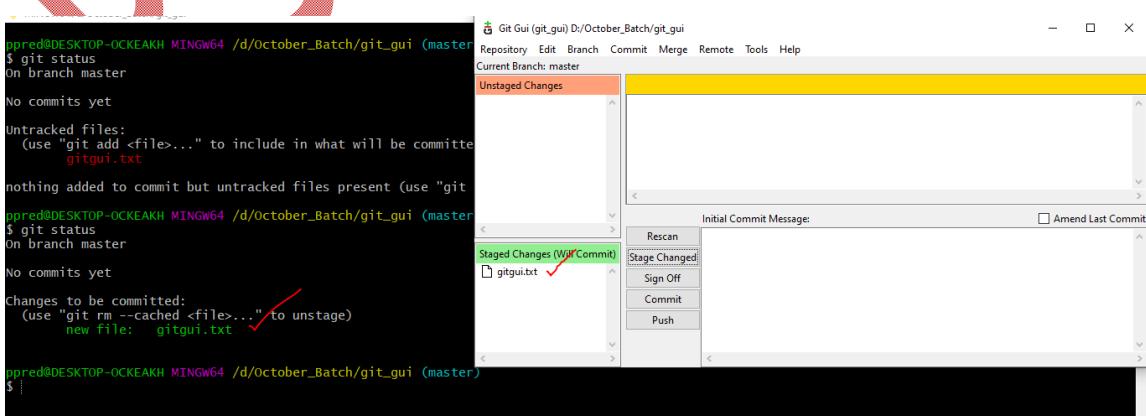
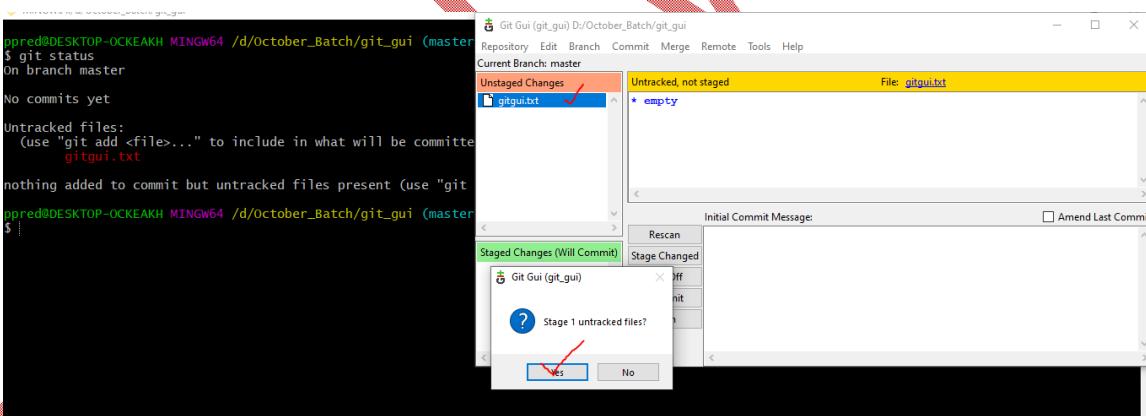
Name	Date modified	Type
gitgui	09-11-2020 12:36	Text Document



Click on the *file* and *Stage Changed*

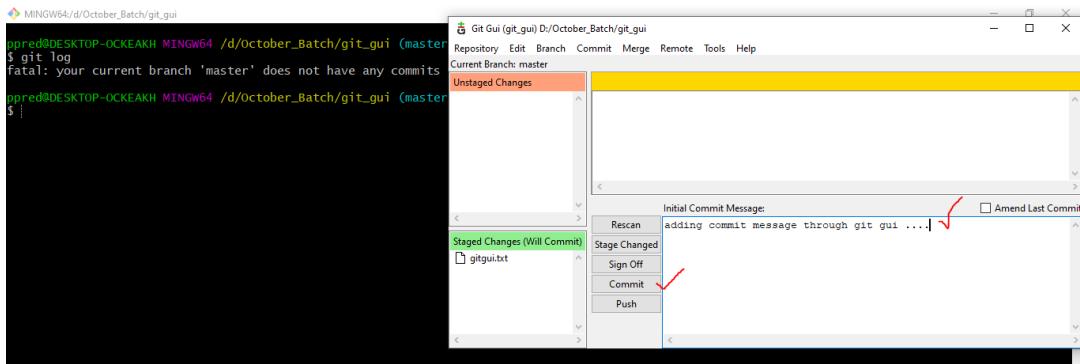


Click on *Yes* it's equal to `# git add .`

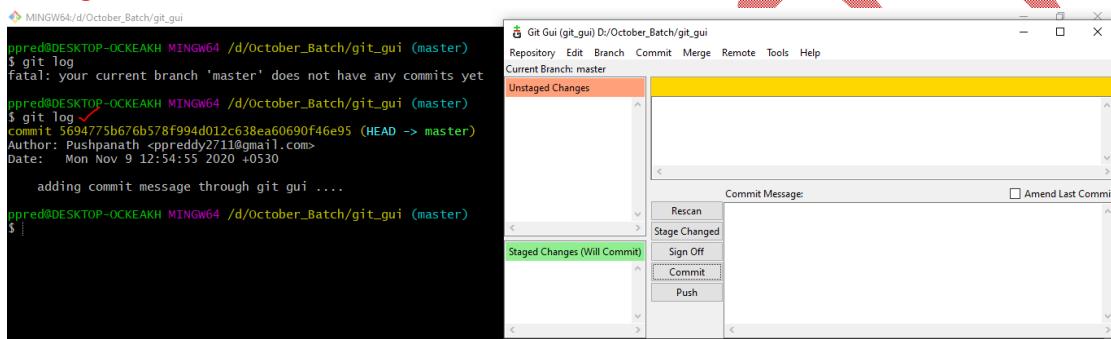


Enter **commit message** and click **commit** button.

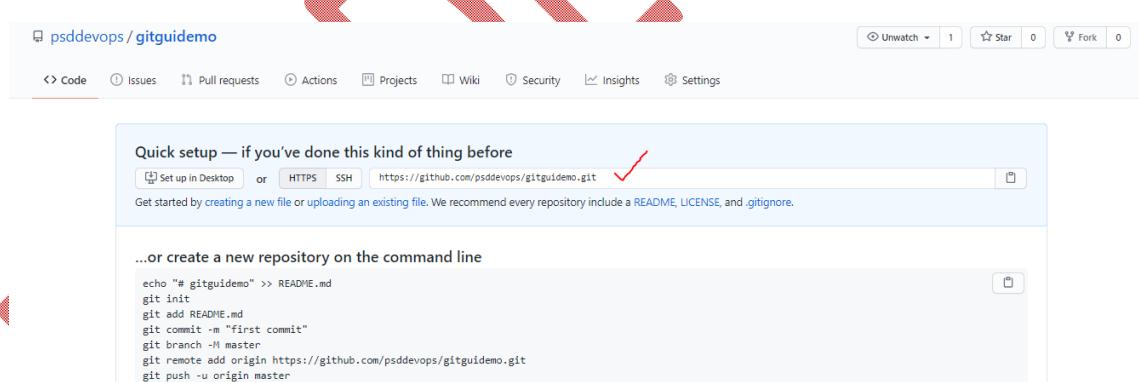
It's equal to `#git commit -m "adding commit message through git gui ...."`



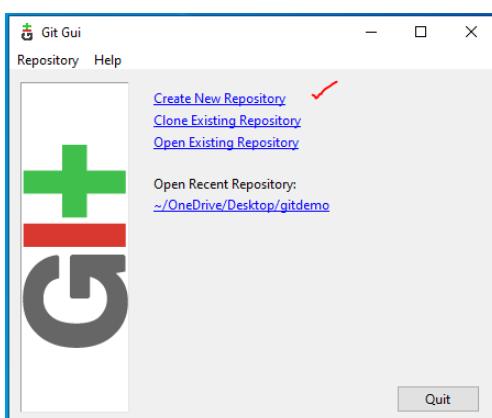
Verify the **logs**

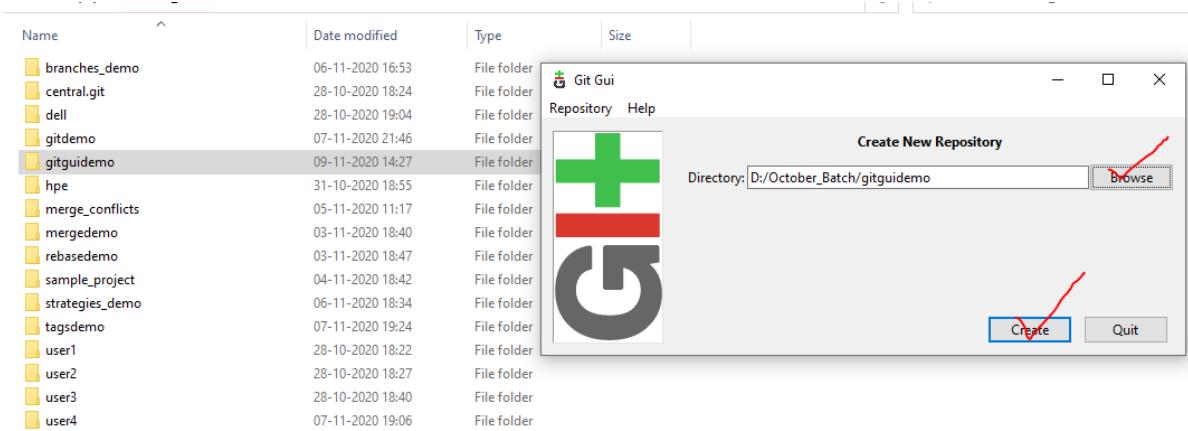


Create a remote repository in **github** (<https://github.com/psddevops/gitguidemo.git>)

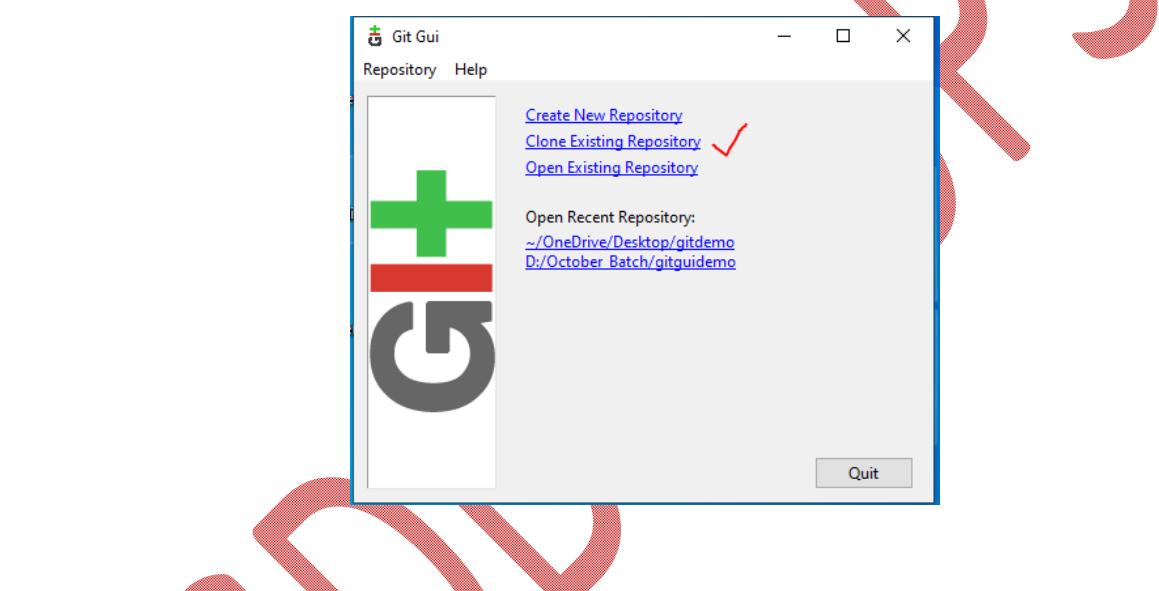


Create New Repository





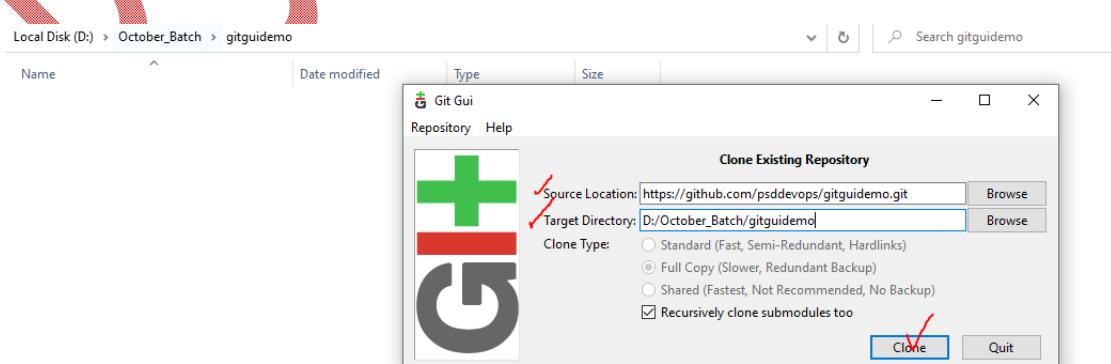
## Clone a Remote Repository to a Local Repository



## Enter Source Location and Target Directory

Source Location= <https://github.com/psddevops/gitguidemo.git>

Target\_Directory= D:/October\_Batch/gitguidemo



## Exchanging the keys from server to github/Bitbucket

SSH keys are a way to identify trusted computers without involving passwords. You can generate an SSH key and add the public key to your GitHub account.

Generate ssh key using below command.

```
# ssh-keygen
```

```
ubuntu@ip-172-31-3-62:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_rsa
Your public key has been saved in /home/ubuntu/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:KjG7NCVu5h0xFg78HOYu1b5lXcKvey8J8r5kQM0kJJo ubuntu@ip-172-31-3-62
The key's randomart image is:
+---[RSA 3072]---+
| . .
| = =
|E o * +
| . X o
| . * % S
| . o.%B
| . %B...
| . 0 o+
| . o.*+ o.
+---[SHA256]---+
ubuntu@ip-172-31-3-62:~$
```

Verify the keys generated path

```
# /home/ubuntu/.ssh
```

```
ubuntu@ip-172-31-3-62:~/ssh$ pwd
/home/ubuntu/.ssh
ubuntu@ip-172-31-3-62:~/ssh$ ls -lrt
total 12
-rw----- 1 ubuntu ubuntu 391 Nov  9 06:35 authorized_keys
-rw-r--r-- 1 ubuntu ubuntu 575 Nov  9 15:28 id_rsa.pub
-rw----- 1 ubuntu ubuntu 2610 Nov  9 15:28 id_rsa
ubuntu@ip-172-31-3-62:~/ssh$
```

Verify and configure the git

```
# vi /home/ubuntu/.gitconfig
# git config --global --list
# git config --global user.name "Pushpanath"
# git config --global user.email "ppreddy2711@gmail.com"
# git config --global --list
```

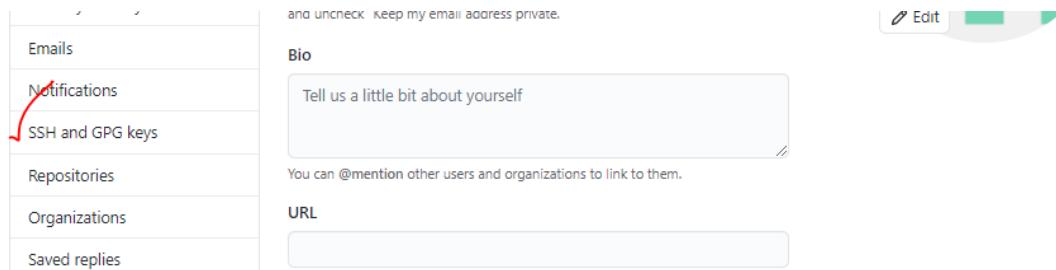
```
ubuntu@ip-172-31-3-62:~/ssh$ 
ubuntu@ip-172-31-3-62:~/ssh$ git config --global --list
fatal: unable to read config file '/home/ubuntu/.gitconfig': No such file or directory
ubuntu@ip-172-31-3-62:~/ssh$ vi /home/ubuntu/.gitconfig
ubuntu@ip-172-31-3-62:~/ssh$ git config --global --list
ubuntu@ip-172-31-3-62:~/ssh$ git config --global user.name "Pushpanath"
ubuntu@ip-172-31-3-62:~/ssh$ git config --global user.email "ppreddy2711@gmail.com"
ubuntu@ip-172-31-3-62:~/ssh$ git config --global --list
user.name=Pushpanath
user.email=ppreddy2711@gmail.com
ubuntu@ip-172-31-3-62:~/ssh$
```

Create repo in github and exchange the keys

The screenshot shows the GitHub 'Quick setup' interface. It includes fields for 'Set up in Desktop' (with options for HTTPS and SSH), a GitHub URL ('git@github.com:psddevops/sshdemo.git'), and a note about creating a new file or uploading an existing one. Below this, there's a section for '...or create a new repository on the command line' with the following command:

```
echo "# sshdemo" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M master
git remote add origin git@github.com:psddevops/sshdemo.git
git push -u origin master
```

Click on  → Settings → SSH and GPG keys



The screenshot shows the GitHub settings interface. On the left, a sidebar lists 'Emails', 'Notifications', 'SSH and GPG keys' (which is highlighted with a red arrow), 'Repositories', 'Organizations', and 'Saved replies'. The main area has tabs for 'Bio' and 'URL'. A note at the top says 'and uncheck Keep my email address private.' There is an 'Edit' button.

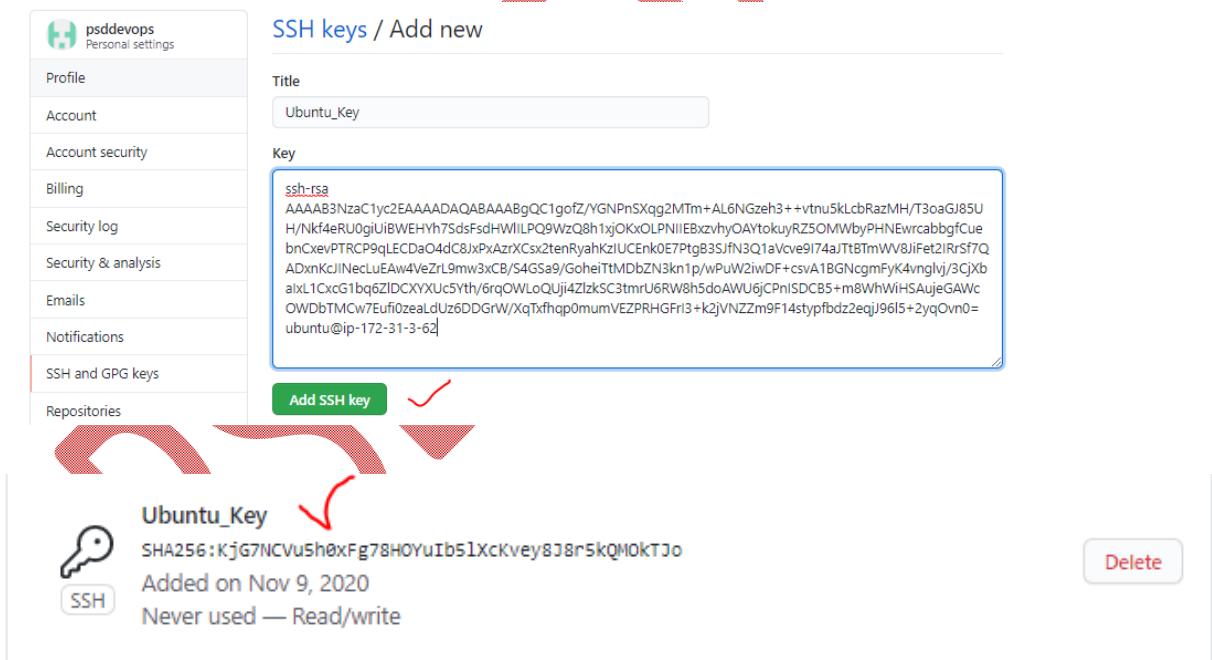
Click on New ssh key



The screenshot shows the GitHub 'SSH keys' page. It features a header with a user icon and 'psddevops Personal settings'. Below the header is a 'SSH keys' section with a 'New SSH key' button on the right.

Copy and paste the publickey

```
ubuntu@ip-172-31-3-62:~$ cd .ssh
ubuntu@ip-172-31-3-62:~/ssh$ ls
authorized_keys  id_rsa  id_rsa.pub
ubuntu@ip-172-31-3-62:~/ssh$ 
ubuntu@ip-172-31-3-62:~/ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAABgQC1gofZ/YGNPnSXqg2MTm+AL6NGzeh3++vtぬ5LcbRazMH/T3oaGJ85UH/Nkf4eRU0giUiBWEHYh7SdsFsdH
W/LILPQ9wZQ8h1xj0Kx0LPNIEBxzvhy0AYtokuyRZ50MwbyPHNEwrcabbgfCuebnCxevPTRCP9qLECDa04dc8JxPxAzrXCsx2tenRyahkzIUCenk0E7PtgB3SJ
fn301aVcve9I74ajTtBTmW8J1Fet2IRrSf7QADxnKcJINecLuEaw4VeZrL9mw3xCB/S4GSa9/GohetTtMDbZN3kn1p/wPuW2iwDF+csvA1BGNcgmFyK4vnglv
j/3CjXbaIx1CxcG1bq6Z1DCXYUc5Yth/6rqOWLoQUj14ZlzkSC3tmrU6RW8h5doAWU6jCPnISDCB5+m8WhWiHSAujeGAWc0WDbTMcW7Eufi0zeaLduZ6DDGr
W/XqTxfhpq0numVEZPRHGFrI3+k2jVNZZm9F14stypfbdz2eqjJ96l5+2yq0vn0= ubuntu@ip-172-31-3-62
ubuntu@ip-172-31-3-62:~/ssh$
```



The screenshot shows the 'SSH keys / Add new' page. The sidebar includes 'Profile', 'Account', 'Account security', 'Billing', 'Security log', 'Security & analysis', 'Emails', 'Notifications', 'SSH and GPG keys' (highlighted with a red arrow), and 'Repositories'. The main area has a 'Title' field containing 'Ubuntu\_Key' and a 'Key' field containing a sample publickey. A 'Add SSH key' button is at the bottom. Below it, a key entry for 'Ubuntu\_Key' is shown with fields for SHA256, date added, and usage status.

SHA256:	KjG7NCVu5h0xFg78HOYuIb51Xckvey8J8r5kQMOKTJo
Added on:	Nov 9, 2020
Never used —	Read/write

Verify the sample application

```
# mkdir gitdemo
# cd gitdemo
# git init
# touch a.txt
# git status
# git add . && git commit -m "added a.txt file"
```

```

ubuntu@ip-172-31-3-62:~$ mkdir gitdemo
ubuntu@ip-172-31-3-62:~$ cd gitdemo
ubuntu@ip-172-31-3-62:~/gitdemo$ git init
Initialized empty Git repository in /home/ubuntu/gitdemo/.git/
ubuntu@ip-172-31-3-62:~/gitdemo$ touch a.txt
ubuntu@ip-172-31-3-62:~/gitdemo$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)

    a.txt

nothing added to commit but untracked files present (use "git add" to track)
ubuntu@ip-172-31-3-62:~/gitdemo$ git add . && git commit -m "added a.txt file"
[master (root-commit) 04a455a] added a.txt file
  1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 a.txt
ubuntu@ip-172-31-3-62:~/gitdemo$ 

```

# git remote add origin [git@github.com:psddevops/sshdemo.git](https://github.com/psddevops/sshdemo.git)

# git push origin master

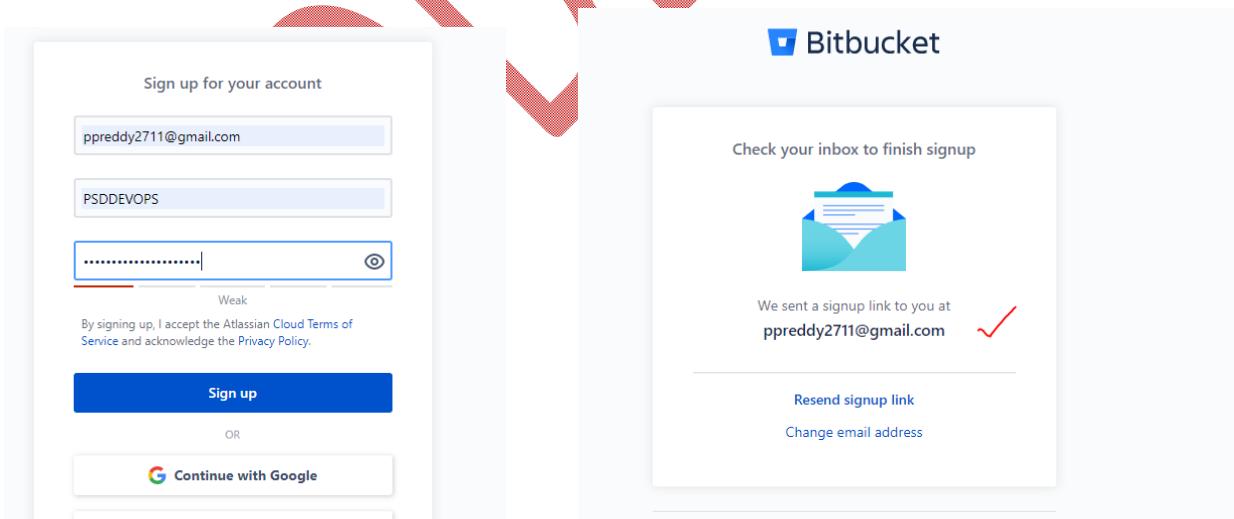
```

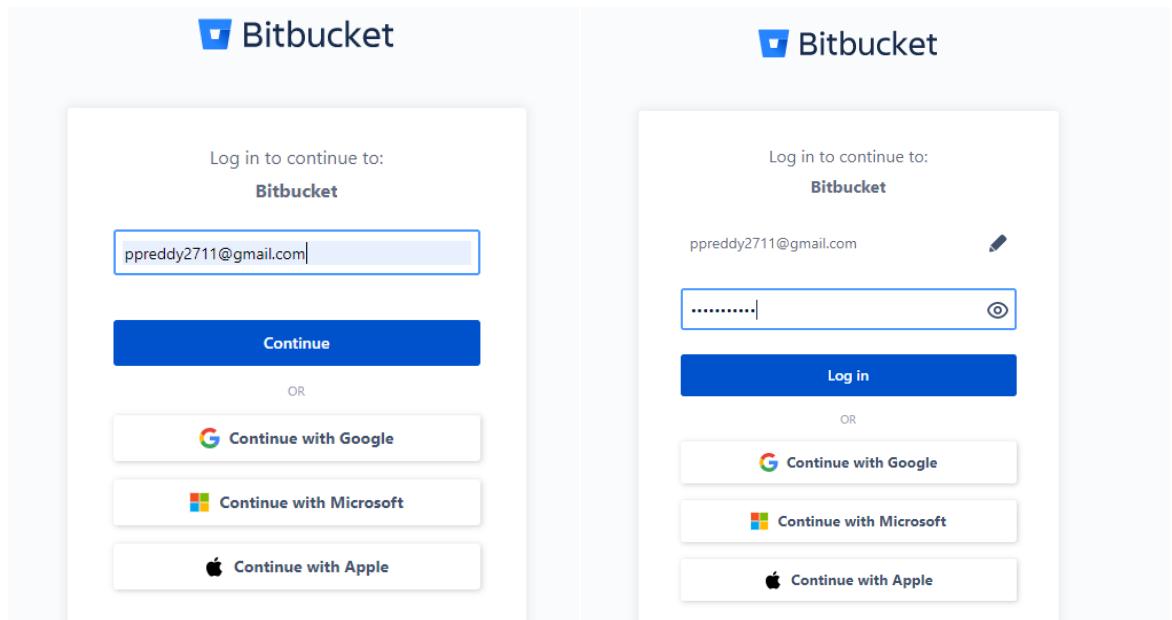
ubuntu@ip-172-31-3-62:~/gitdemo$ git remote add origin git@github.com:psddevops/sshdemo.git
ubuntu@ip-172-31-3-62:~/gitdemo$ git remote -v
origin git@github.com:psddevops/sshdemo.git (fetch)
origin git@github.com:psddevops/sshdemo.git (push)
ubuntu@ip-172-31-3-62:~/gitdemo$ git push origin master
Warning: Permanently added the RSA host key for IP address '140.82.113.3' to the list of known hosts.
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 215 bytes | 215.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To github.com:psddevops/sshdemo.git
 * [new branch] master -> master
ubuntu@ip-172-31-3-62:~/gitdemo$ 

```

### Integrate with Bitbucket from GIT

Sign in to the Bitbucket





Create repo in Bitbucket and exchange the keys

Welcome to Bitbucket! Let's get started

Get started building your personal projects, testing out ideas, and more in your devopspsd workspace.

**Create repository** Import repository

Plan to collaborate with your team? Create a new workspace to get started.

Create workspace

**Create a new repository**

Import repository

Workspace: PSDDEVOPS

Project name\*: sshdemo

Repository name\*: sshdemo

Access level:  Private repository

Include a README?: Yes, with a tutorial (for beginners...)

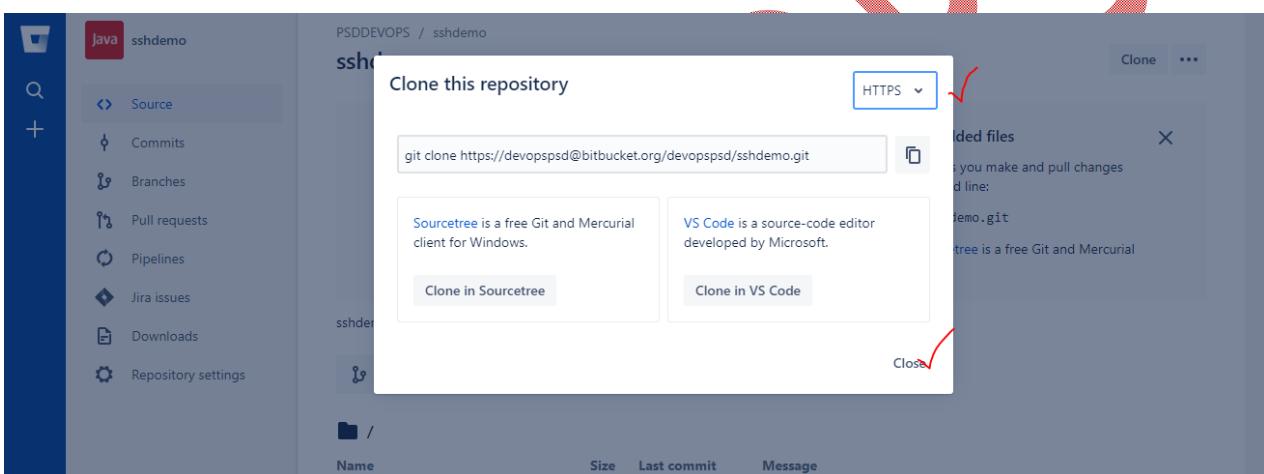
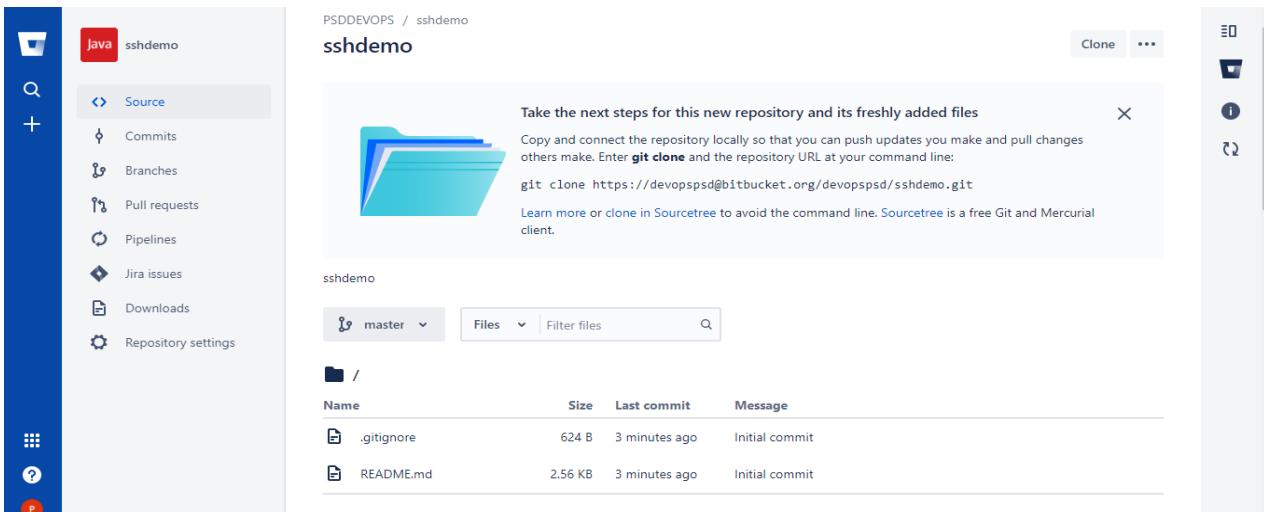
Include .gitignore?: Yes (recommended)

Advanced settings

Description: sshdemo

Language: Java

**Create repository** Cancel



### *Exchanging the keys between server and Bitbucket*

```
# cd /home/ubuntu/.ssh
# cat id_rsa.pub
ubuntu@ip-172-31-3-62:~$ cd .ssh
ubuntu@ip-172-31-3-62:~/ssh$ ls
authorized_keys  id_rsa  id_rsa.pub  known_hosts
ubuntu@ip-172-31-3-62:~/ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQgOC1gofZ/YGNPnSXqg2MTm+AL6NGzeh3++vtu5kLcbRazMH/T3oaGJ85UH/Nkf4eRU0giUiBWEHYh7SdsFsdH
WlILPQ9wzQ8h1xj0KxOLPNIEBxzvhY0AYtokuyRZ50MMybPHNEwrcabbgfCuebnCxeVPTRCP9qLECDa04dC8JxpXAzrXCsx2tenRyahKzIUCEnk0E7PtqB3SJ
fn301aVce9I74ajTtBTmW8JiFet2IRrSf7QADxnKcJINecLuEAw4VeZrL9mw3xCB/S4GSa9/GoheiTtMDbZN3kn1p/wPuW2iwDF+csvA1BGNgcmFyK4vnglv
j/3CjXbaIxL1CxG1bq6ZlDCXYUc5Yth/6rq0WL0oUj14ZlzkSC3tmrU6RW8h5doAWU6jCPnISDCB5+m8WhWiHSAujeGAwC0WDbTMCw7Eufi0zeaLdUz6DDGr
W/XqTxfhqp0mumWEZPRHGFrI3+k2jVNZZm9F14stypfbdz2eqjJ96l5+2yq0vn0= ubuntu@ip-172-31-3-62
ubuntu@ip-172-31-3-62:~/ssh$
```

### *Adding ssh key to the Bitbucket*

Click on → icon → Personal Settings → SSH Keys → Add key

Add SSH key

Label	Ubuntu_Key
Key*	<pre>ssh-rsa AAAAB3NzaC1yc2EAAAQABAAgQC1goFZ/YGNPnSXqg2MTm+AL6N Gzeh3++vtu5kLcbRazMH/T3oaGJ85UH/Nkf4eRU0giUiBWEHYh7SdsFsdH WIIIPQ9WzQ8h1xjOKxOLPNIIEBxzvhyOAYtokuyRZ50MWbPHNEwrcabbgf CuebnCxevPTRCP9qLECDaO4dC8JxpAzxCsx2tenRyahKzIUCEnk0E7PtgB3SJ fN3Q1aVcve9l74aTtBTmWV8JiFet2lRrSF7QADxnKcjINecLuEAw4VeZrl9mw3 xCB/S4GSa9/GoheiTtMDbZN3kn1p/wPuW2iwDF+csvA1BGNgcmFyK4vnglvj /3CjXbalxL1CxcG1bq6ZIDCXYUc5Yth/6rqOWLoQUji4ZIkSC3tmrU6RW8h5</pre>

**Don't have a key?**  
Learn how to [generate an SSH key](#).

**Already have a key?**  
Copy and paste your key here.

**Problems adding a key?**  
Read our [troubleshooting page](#) for common issues.

**Add key** **Cancel**

### Add key

Key	Added	Last used
Ubuntu_Key ✓	just now	Never

```
# git clone git@bitbucket.org:devopspsd/sshdemo.git
# cd sshdemo
# touch a.txt
# git add . && git commit -m "added a.txt file"
# git push origin master
```

```
ubuntu@ip-172-31-3-62:~/bitbucketdemo$ git clone git@bitbucket.org:devopspsd/sshdemo.git
Cloning into 'sshdemo'...
remote: Counting objects: 4, done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 4 (delta 0), reused 0 (delta 0)
Receiving objects: 100% (4/4), done.
ubuntu@ip-172-31-3-62:~/bitbucketdemo$ ll
total 12
drwxrwxr-x 3 ubuntu ubuntu 4096 Nov 10 08:10 .
drwxr-xr-x 6 ubuntu ubuntu 4096 Nov 10 07:52 ...
drwxrwxr-x 3 ubuntu ubuntu 4096 Nov 10 08:10 sshdemo/
ubuntu@ip-172-31-3-62:~/bitbucketdemo$ cd sshdemo/
ubuntu@ip-172-31-3-62:~/bitbucketdemo/sshdemo$ ls
README.md
ubuntu@ip-172-31-3-62:~/bitbucketdemo/sshdemo$ touch a.txt
ubuntu@ip-172-31-3-62:~/bitbucketdemo/sshdemo$ git add . && git commit -m "added a.txt file"
[master 2cf326d] added a.txt file
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 a.txt
```

```
ubuntu@ip-172-31-3-62:~/bitbucketdemo/sshdemo$ git remote -v
origin git@bitbucket.org:devopspsd/sshdemo.git (fetch)
origin git@bitbucket.org:devopspsd/sshdemo.git (push)
ubuntu@ip-172-31-3-62:~/bitbucketdemo/sshdemo$ git push origin master
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 311 bytes | 311.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To bitbucket.org:devopspsd/sshdemo.git
  21dd546..2cf326d  master -> master
ubuntu@ip-172-31-3-62:~/bitbucketdemo/sshdemo$
```

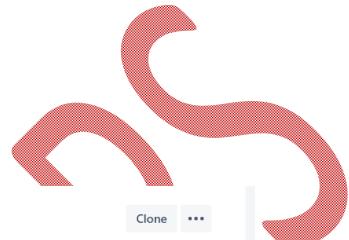
## Pull Request

Pull request really a just a request that someone else review the work that you have done and merge our changes. Pull request enables team mates to review and comment on the changes before merging to main branch, we also can see how many file are modified, we also can compare modified file with their old version. When you create pull request, you have select two branches on GitHub/Bitbucket, The branch that you have made the changes on and where you would want to merge your changes into. Because Pull request occurs in GitHub/Bitbucket you would need to push your branch GitHub/Bitbucket before you create the request.

## PR-Demo

Create a **feature** branch from “**dev**” branch

The screenshot shows a Git repository interface. On the left, there's a sidebar with options like Source, Commits, Branches, Pull requests, Pipelines, Jira issues, Downloads, and Repository settings. The main area shows a list of branches under the 'dev' dropdown. The 'dev' branch has three commits: 'Initial commit', 'Initial commit', and 'updated and added the files'. A new branch named 'myfeature' is listed. A red arrow points from the 'dev' branch to the 'myfeature' branch.



Go to Branches → Create branch → Name: **feature-1** → Create

The screenshot shows a 'Create branch' dialog box. It has fields for Type (set to Other), From branch (set to dev), and Branch name (set to 'feature-1'). Below the form is a diagram showing the 'dev' branch merging into the 'feature-1' branch. A red arrow points from the 'From branch' dropdown to the 'feature-1' branch name field.

Java sshdemo

PSDDEVOPS / sshdemo / sshdemo / Branches

**feature-1**

Source  
Commits  
**Branches**  
Pull requests  
Pipelines  
Jira issues

Check out View source Merge ...

#3: Feature 1 MERGED  
No restrictions edit

Clone the **feature-1** branch and update the required changes

```
# git clone -b feature-1 https://devopspsd@bitbucket.org/devopspsd/sshdemo.git
# cd sshdemo/
# vi a.txt
# touch feature.txt
# git status
# git add . && git commit -m "added and updated the files in feature-1 branch"
# git push -f
```

Organize New

Local Disk (D:) > October\_Batch > prdemo > sshdemo >

Name	Date modified
.git	11-11-2020 13:30
.gitignore	11-11-2020 13:28
a	11-11-2020 13:29
b	11-11-2020 13:28
c	11-11-2020 13:28
feature	11-11-2020 13:29
README.md	11-11-2020 13:28

```
$ git clone -b feature-1 https://devopspsd@bitbucket.org/devopspsd/sshdemo.git
Cloning into 'sshdemo'...
remote: Counting objects: 16, done.
remote: Compressing objects: 100% (13/13), done.
remote: Total 16 (delta 4), reused 0 (delta 0)
Unpacking objects: 100% (16/16), 2.95 KiB | 3.00 KiB/s, done.
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_batch/prdemo/sshdemo
$ cd sshdemo/
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_batch/prdemo/sshdemo (feature-1)
$ vi a.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_batch/prdemo/sshdemo (feature-1)
$ touch feature.txt

ppred@DESKTOP-OCKEAKH MINGW64 /d/october_batch/prdemo/sshdemo (feature-1)
$ git status
On branch feature-1
Your branch is up to date with 'origin/feature-1'.

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:   a.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    feature.txt

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

Local Disk (D:) > October\_Batch > prdemo > sshdemo

Name	Date modified	Type
.git	11-11-2020 13:30	File folder
.gitignore	11-11-2020 13:28	Text Document
a	11-11-2020 13:29	Text Document
b	11-11-2020 13:28	Text Document
c	11-11-2020 13:28	Text Document
feature	11-11-2020 13:29	Text Document
README.md	11-11-2020 13:28	MD File

```
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_batch/prdemo/sshdemo (feature-1)
$ git add . && git commit -m "added and updated the files in feature-1 branch"
[feature-1 ce55799] added and updated the files in feature-1 branch
 2 files changed, 1 insertion(+)
 create mode 100644 feature.txt
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_batch/prdemo/sshdemo (feature-1)
$ git push -f
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 366 bytes | 366.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote:
remote: Create pull request for feature-1:
remote: https://bitbucket.org/devopspsd/sshdemo/pull-requests/new?source=feature-1
remote:
To https://bitbucket.org/devopspsd/sshdemo.git
 bb42de8..ce55799  feature-1 -> feature-1
ppred@DESKTOP-OCKEAKH MINGW64 /d/october_batch/prdemo/sshdemo (feature-1)
```

## Verify the remote **feature-1** branch in Bitbucket

The screenshot shows the Bitbucket repository interface for the 'sshdemo' repository. The left sidebar has 'Source' selected. The main area shows the 'feature-1' branch with the following files:

Name	Size	Last commit	Message
.gitignore	624 B	yesterday	Initial commit
README.md	2.56 KB	yesterday	Initial commit
a.txt	43 B	1 minute ago	added and updated the files in feature-1 branch ✓
b.txt	15 B	18 hours ago	updated and added the files
c.txt	0 B	18 hours ago	updated and added the files
feature.txt	0 B	1 minute ago	added and updated the files in feature-1 branch ✓

## Create the **Pull Request** in Bitbucket

Click on Pull Requests → Create Pull Request



The screenshot shows the Bitbucket 'Pull requests' page for the 'sshdemo' repository. The left sidebar has 'Pull requests' selected. The main area shows a search bar and filters, followed by a message 'No open pull requests'. A large red arrow points from the previous 'Verify' step to this 'Create' step.

Adding the target branch (**dev**) reviewers (**Pushpanath**) like below → Create Pull Request

The screenshot shows the Bitbucket 'Create pull request' page. The left sidebar has 'Pull requests' selected. The main area shows the following fields:

- From branch: feature-1 ✓
- To branch: dev ✓
- Title: added and updated the files in feature-1 branch ✓
- Description: added and updated the files in feature-1 branch ✓
- Attachments: Browse to upload
- Reviewers: Pushpanath ✓
- Close branch:  Close feature-1 after the pull request is merged ✓
- Create pull request button

A large red arrow points from the previous 'Create' step to this 'Add Reviewers' step.

Prepared by **PPNREDDY** .....

Java sshdemo

PSDDEVOPS / sshdemo / sshdemo / Pull requests

**added and updated the files in feature-1 branch**

**P feature-1 → dev OPEN**  
Created 5 seconds ago · Last updated 5 seconds ago

**P Approve Merge ...**

added and updated the files in feature-1 branch

0 attachments

0 comments

**P Add a comment**

1 commit

2 files

FILTER BY COMMENTS **P** SORT BY File tree

a.txt

```
@@ -1 +1,2 @@
1 1 Hi this a.txt
2 + editing via feature-1 branch ✓
```

Reviewer will review and approve the PR

Java sshdemo

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**Pull requests**

Create pull request

Search pull requests **P** Open Author Target branch I'm reviewing

**P added and updated the files in feature-1 branch feature-1 → dev ✓**  
PSDDEVOPS - #4, created 1 minute ago, updated 1 minute ago

Activity Reviewers Builds

The screenshot shows a pull request titled "added and updated the files in feature-1 branch" from "feature-1" to "dev". The status is "OPEN". The commit message is "added and updated the files in feature-1 branch". There are 0 attachments and 0 comments. A single commit has 2 files, one of which is "a.txt" containing the content "Hi this a.txt". The sidebar on the left shows navigation options like Source, Commits, Branches, Pull requests, Pipelines, Jira issues, Downloads, and Repository settings. The right sidebar shows repository statistics: 0 checks, 0 builds, 2 files (a.txt, feature.txt), 0 tasks, 0 Jira issues, Reports NEW, Activity, and a Filter section.

Merge the **feature-1** branch to **dev** branch.

Click on merge button

The screenshot shows the same pull request as before, but now the "Merge" button is highlighted with a red arrow. The status is still "OPEN". The commit message is "added and updated the files in feature-1 branch". There are 0 attachments and 0 comments. A single commit has 2 files, one of which is "a.txt" containing the content "Hi this a.txt". The sidebar on the left shows navigation options like Source, Commits, Branches, Pull requests, Pipelines, Jira issues, Downloads, and Repository settings. The right sidebar shows repository statistics: 0 checks, 0 builds, 2 files (a.txt, feature.txt), 0 tasks, 0 Jira issues, Reports NEW, Activity, and a Filter section.

Merge pull request

Source  
feature-1

Destination  
dev

Commit message  
Merged in feature-1 (pull request #4)  
added and updated the files in feature-1 branch  
Approved-by: Pushpanath

Merge strategy  
Merge commit

Close source branch

Merge

Cancel

PSDDEVOPS / sshdemo / sshdemo / Pull requests

**added and updated the files in feature-1 branch**

feature-1 → dev MERGED ✓

Created 4 minutes ago · Last updated now

P Approve ...

Merged pull request  
Merged in feature-1 (pull request #4)  
558236a · PSDDEVOPS · 2 seconds ago

added and updated the files in feature-1 branch

0 attachments

Verify the **dev** branch

ssnaemo

dev

Name	Size	Last commit	Message
.gitignore	624 B	yesterday	Initial commit
README.md	2.56 KB	yesterday	Initial commit
a.txt	43 B	10 minutes ago	added and updated the files in feature-1 branch ✓
b.txt	15 B	18 hours ago	updated and added the files
c.txt	0 B	18 hours ago	updated and added the files
feature.txt	0 B	10 minutes ago	added and updated the files in feature-1 branch ✓

Now **dev** branch having merged code.

### **README.md** file

You can add a README file to your repository to tell other people why your project is useful, what they can do with your project, and how they can use it.

A README is often the first item a visitor will see when visiting your repository. README files typically include information on:

- What the project does
- Why the project is useful
- How users can get started with the project
- Where users can get help with your project
- Who maintains and contributes to the project

### **Project Title**

One Paragraph of project description goes here

## Getting Started

These instructions will get you a copy of the project up and running on your local machine for development and testing purposes. See deployment for notes on how to deploy the project on a live system.

## Prerequisites

What things you need to install the software and how to install them and give examples.

## Installing

A step by step series of examples that tell you how to get a development env running. Say what the steps will be and give the examples. End with an example of getting some data out of the system or using it for a little demo.

## Running the tests

Explain how to run the automated tests for this system.

## Deployment

Add additional notes about how to deploy this on a live system.

## Versioning

Use versioning for each release and keep track of versions.

<https://semver.org/>

## Authors

Add here Authors names.

## License

Add the License here.

<https://gist.github.com/PurpleBooth/>

## Git Best Practices

- Use branching strategy and pull requests.
- Commit once you finish the task.
- Avoid merge commits.
- Don't Commit Half-Done Work.
- Test your code before commit.
- Write Good Commit Messages before you are committing and try to use git commands rather than GUI tools.

**MAINTHEBEST**

**PSODEVOPS**