How To Use Github

Introduction To Programming

What is Git

Git is a version control system that help programmers manage their projects efficiently. A Version Control System is where programmers can create different versions of their project and Git keeps track of these changes so that if he/she wants to go change between versions from version 3 to version 2 for example, git helps this process easily.

Git vs No Git (No Git version)

This is how people would usually manage different versions of their project without git. This kind of style would usually make a mess because there's

← File Version 1

← File Version 2

...

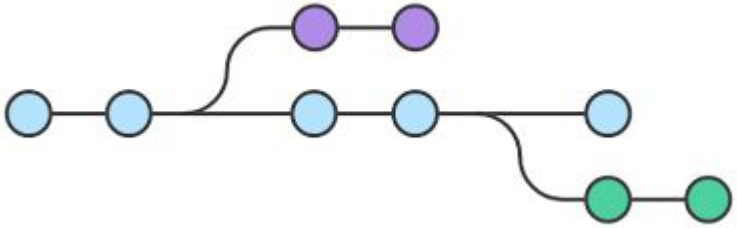
← File Version 25

too many files to save,

no control, no update

history, etc.

Git vs No Git (Git Version)

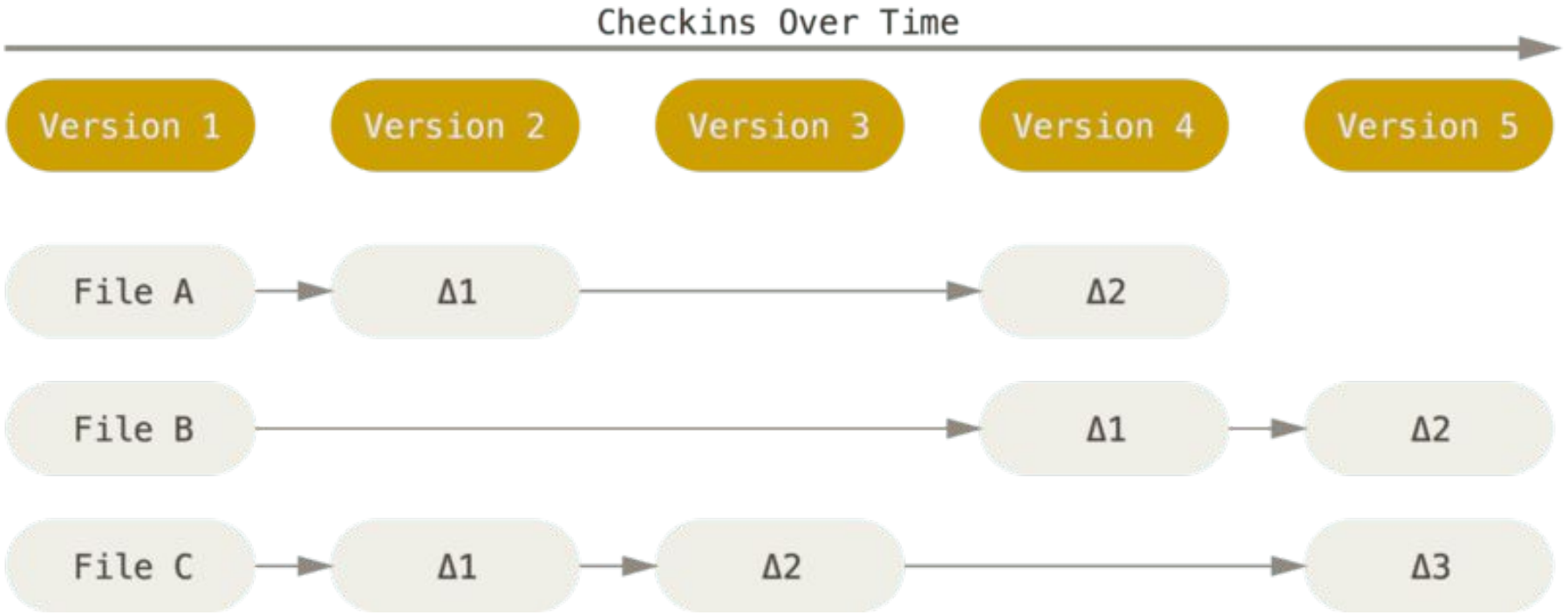


With Git every changes are tracked and recorded so that if you want to go to a previous state or version all the user has to do ask git to change the version and the project will change it to an older version and of course you can go back to the newer version. Other than changing versions, Git implements a system where it tracks all changes that are made to every file in the project and the programmer can save its current state so that later when changes are made to any of the project files, he/she can revert it back to the previous state that was saved if he/she does not like it.

How Does Git work?

Git doesn’t think of or store its data this way. Instead, Git thinks of its data more like a set of snapshots of a miniature filesystem. Every time you commit, or save the state of your project in Git, it basically takes a picture of what all your files look like at that moment and stores a reference to that snapshot. To be efficient, if files have not changed, Git doesn’t store the file again, just a link to the previous identical file it has already stored. Git thinks about its data more like a stream of snapshots.

How Does Git work?

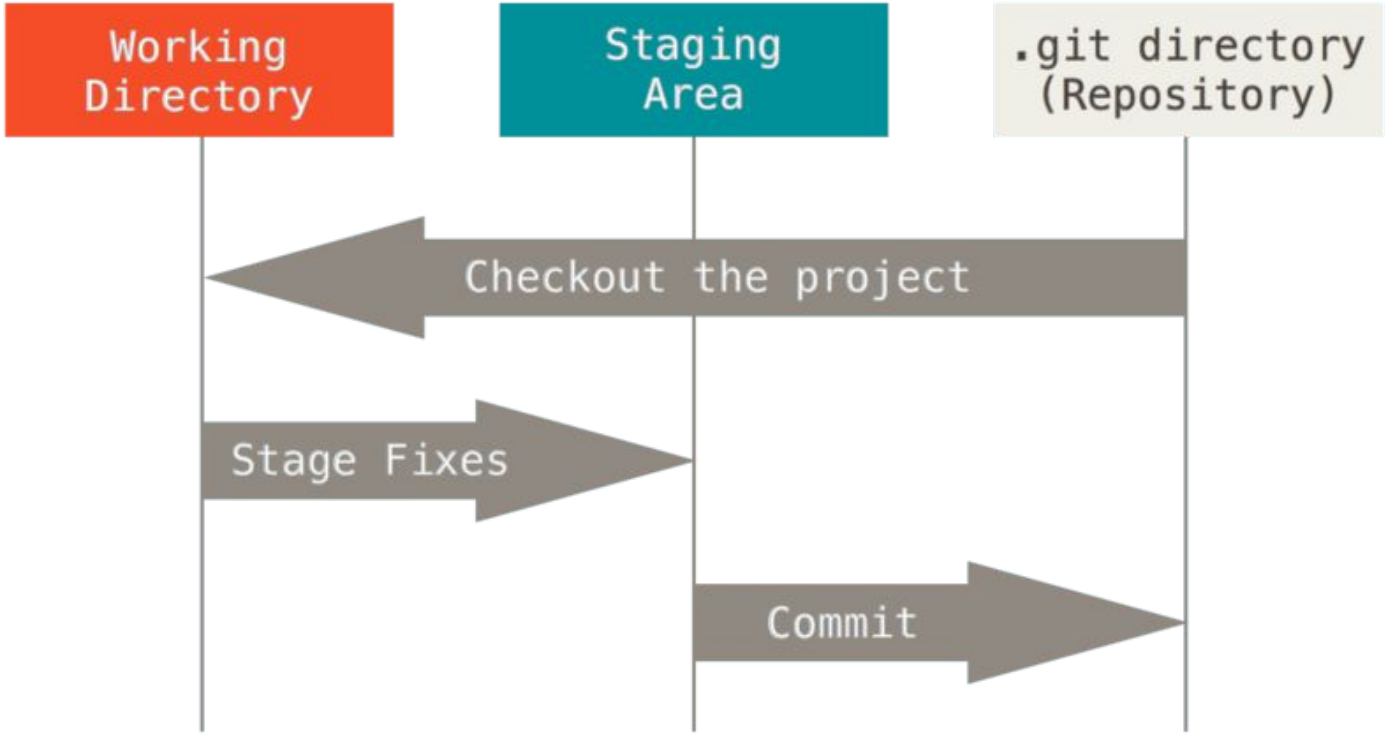


How Does Git work?

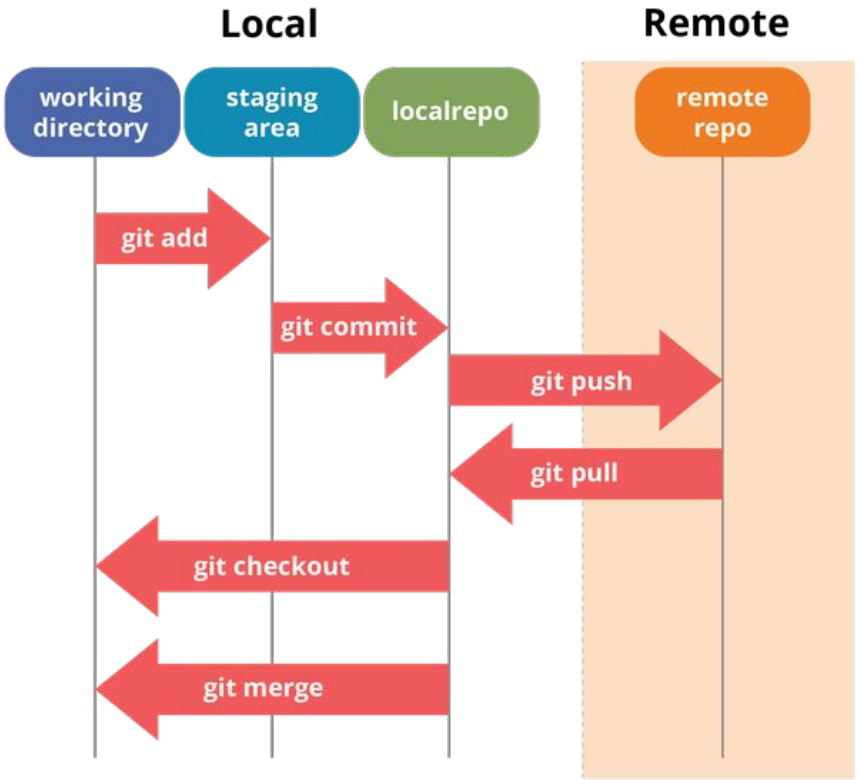
Now, pay attention. This is the main thing to remember about Git if you want the rest of your learning process to go smoothly. Git has three main states that your files can reside in: committed, modified, and staged. Committed means that the data is safely stored in your local database. Modified means that you have changed the file but have not committed it to your database yet. Staged means that you have marked a modified file in its current version to go into your next commit snapshot.

This leads us to the three main sections of a Git project: the Git directory, the working tree, and the staging area.

How Does Git work?



How Does Git work?



How to use GitHub?

Install Git:

- https://git-scm.com/downloads

Have some basic knowledge on how to use command line(windows)/terminal (Mac)

Have a Github Account

How to use Command Line/Terminal

cd: Change Directory (Directory = Folder)

Example: (Notice how we changed directory)

C:\Users\Lenovo>cd Documents

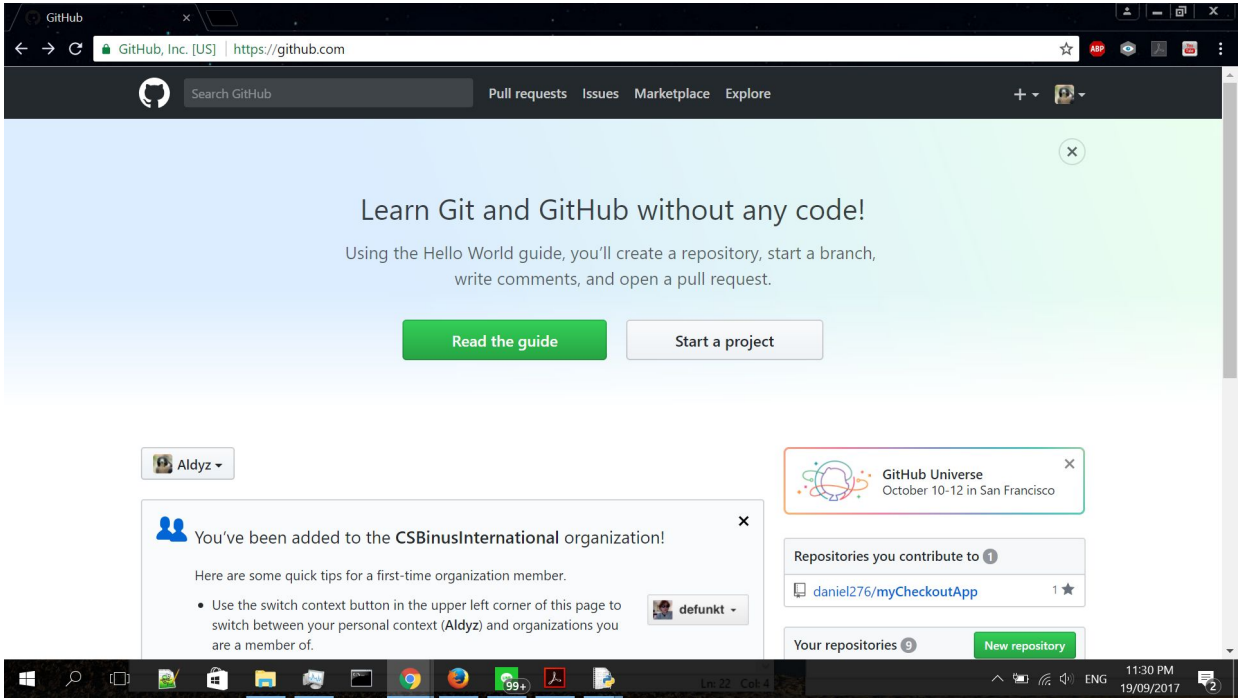
C:\Users\Lenovo\Documents>

dir(windows), ls(mac): This command list all files in the directory

mkdir [FolderName]: This command creates an empty folder with the name of the folder after the command, if you want a space in the name use double quotations, for example “A Project”.

Pushing a Local Repository to a Remote Repository#1

Start a Project →

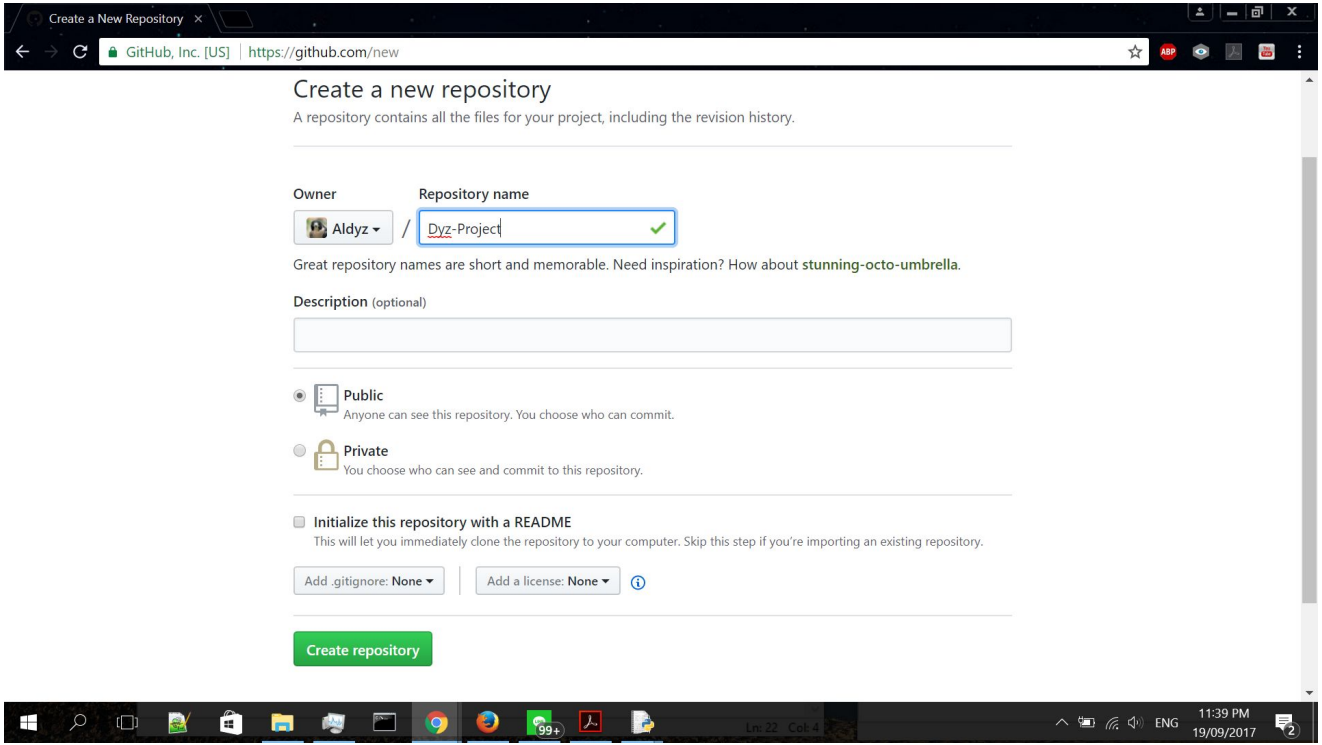


Pushing a Local Repository to a Remote Repository#2

Enter a repo name

And click create

repository.



Pushing a Local Repository to a Remote Repository#3

Open Git CMD (Windows) or Terminal (Mac), Type and Enter These:

C:\Users\Lenovo>git config --global user.name [Github Username]

C:\Users\Lenovo>git config --global user.email [Used Email for Github]

Example:

C:\Users\Lenovo>git config --global user.name Aldyz

C:\Users\Lenovo>git config --global user.email supremealdi@gmail.com

NEVER FORGET THIS STEP, but you only need to do this once so next time you open Git, this step is not needed.

Pushing a Local Repository to a Remote Repository#4

Make a folder anywhere and in command line change the directory to the directory where the folder was created, For example:

C:\Users\Lenovo\Documents>mkdir GitHub_Project

C:\Users\Lenovo\Documents>cd GitHub_Project

C:\Users\Lenovo\Documents\GitHub_Project>

Pushing a Local Repository to a Remote Repository#5

Type the command below as this will initialize a local repository in the folder or basically the git system will start to actively work in the folder and start tracking files.

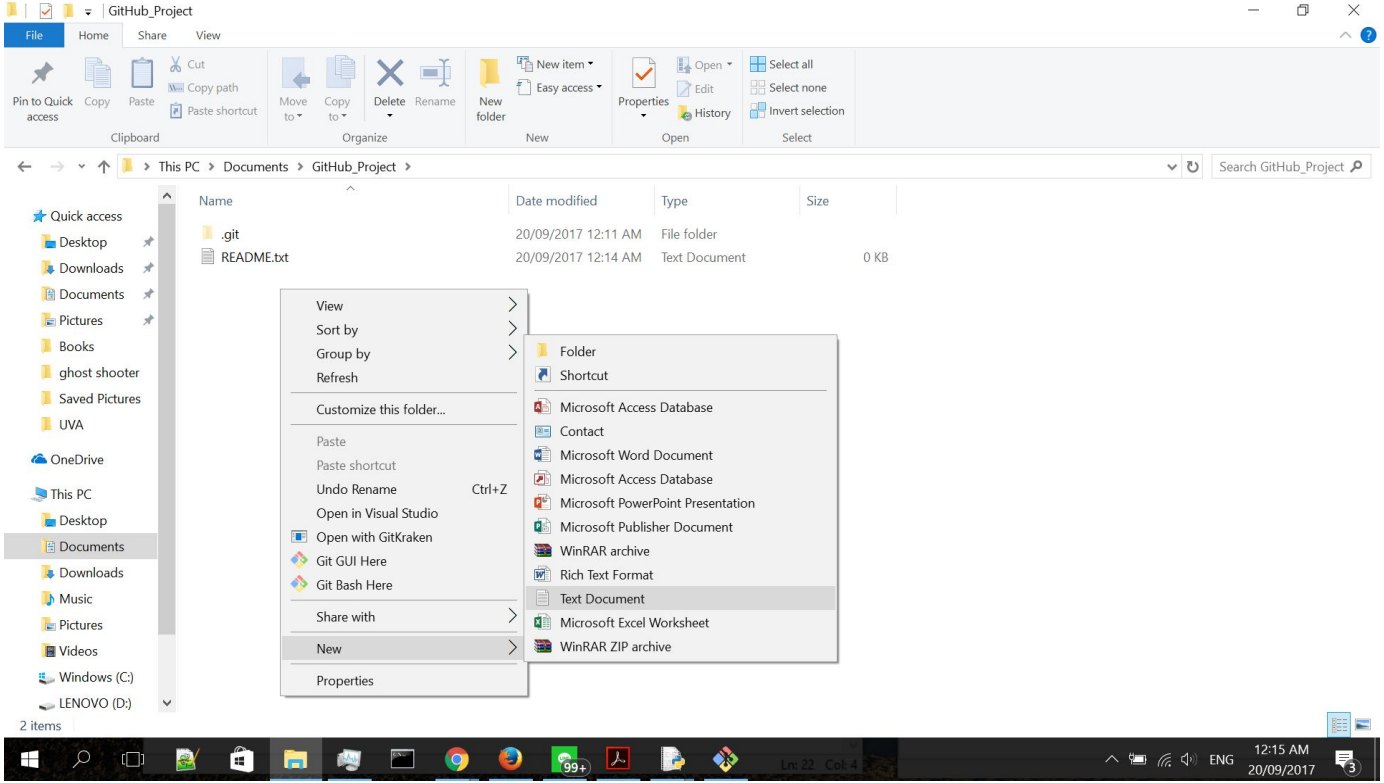
C:\Users\Lenovo\Documents\GitHub_Project>git init

The Command above should output:

Initialized empty Git repository in C:/Users/Lenovo/Documents/GitHub_Project/.git/

Pushing a Local Repository to a Remote Repository#6

Create a README.txt file in the folder, open the file and insert any random text.



Pushing a Local Repository to a Remote Repository#7

Go back to Git CMD or Terminal, then type the commands below:

C:\Users\Lenovo\Documents\GitHub_Project>git add .

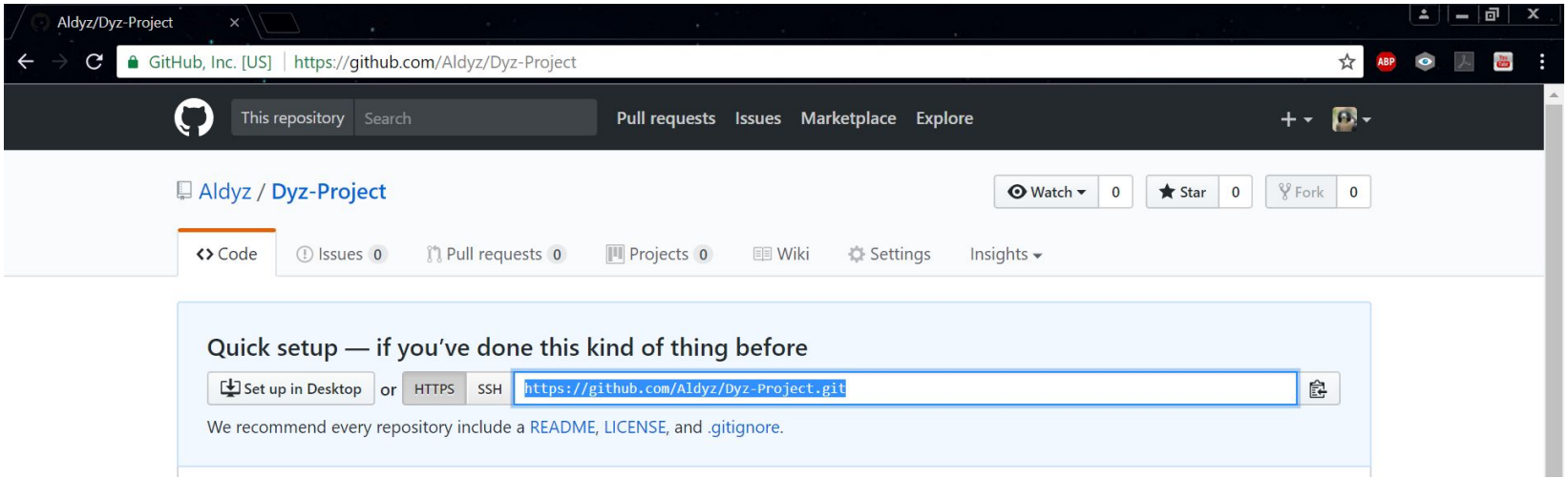
C:\Users\Lenovo\Documents\GitHub_Project>git commit -m "First Commit"

git add . : Tells Git to track all the files in the folder, make sure its ready for any commit.

git commit -m [Commit Message]: Tells Git to record/commit all changes in the directory and saves it as a state. Later the programmer can revert back to the saved state if he wants to cancel every update he has done in the folder.

Pushing a Local Repository to a Remote Repository#8

In order for the local repository or folder to know which remote/online repository it should push/upload its files to, open the Github repository you created and copy the https link.



Pushing a Local Repository to a Remote Repository#9

After Copying the link, open the Git CMD/Terminal, type and enter the following command:

git remote add origin https://github.com/Aldyz/Dyz-Project.git

Notice how the link is inserted in the command as well. Now it's time to push the files in the local repository to the remote/online repository. Type and enter the following command.

git push -u origin master

Pushing a Local Repository to a Remote Repository#10

Notice how now the file

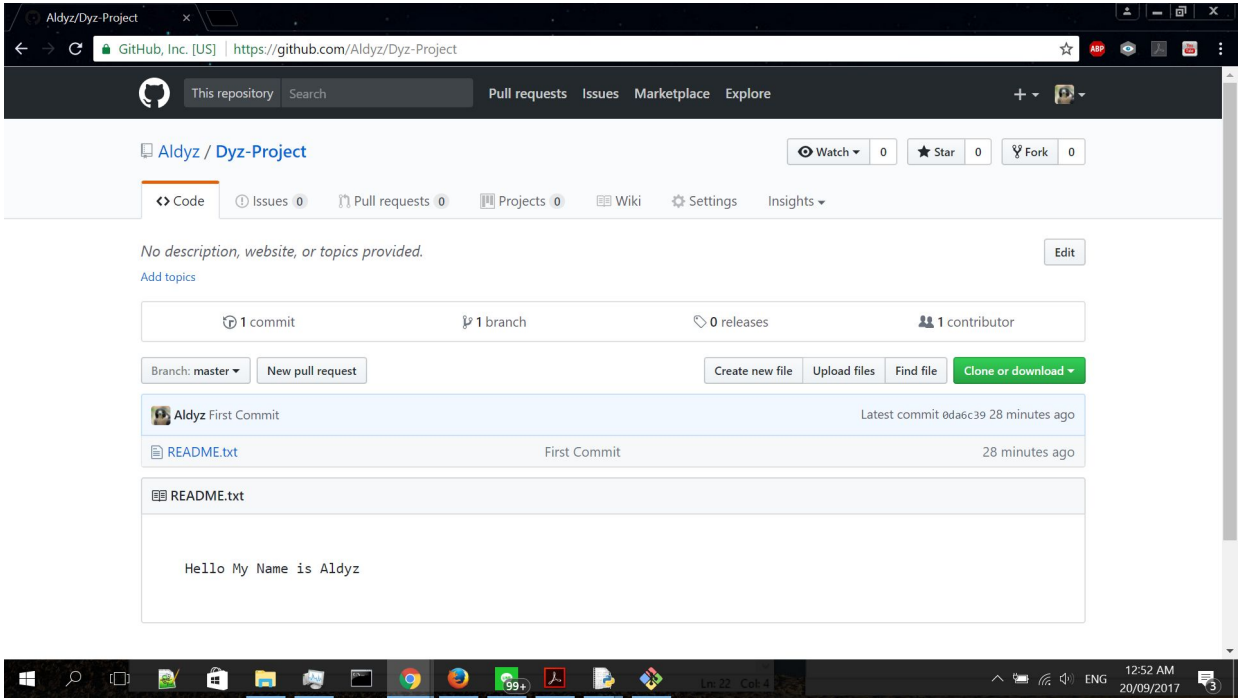
We have in our local

Repository has been

pushed/uploaded

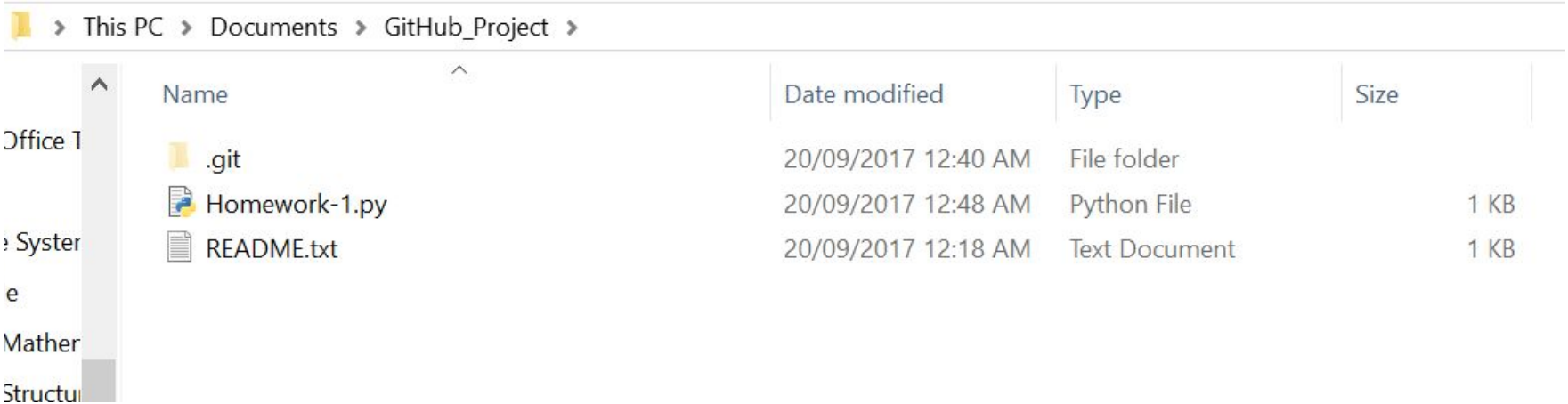
To the remote/online

repository.



Pushing a Local Repository to a Remote Repository#11

Later if you add more files to the local repository or folder. You do not have to repeat the whole process you did earlier to push it again to the remote repository.



Pushing a Local Repository to a Remote Repository#12

To push/upload the changes you have made to your project. Open your Git CMD/Terminal again. Type and Enter the following commands. MAKE SURE YOU ARE IN THE LOCAL REPOSITORY's DIRECTORY, if not change directory.

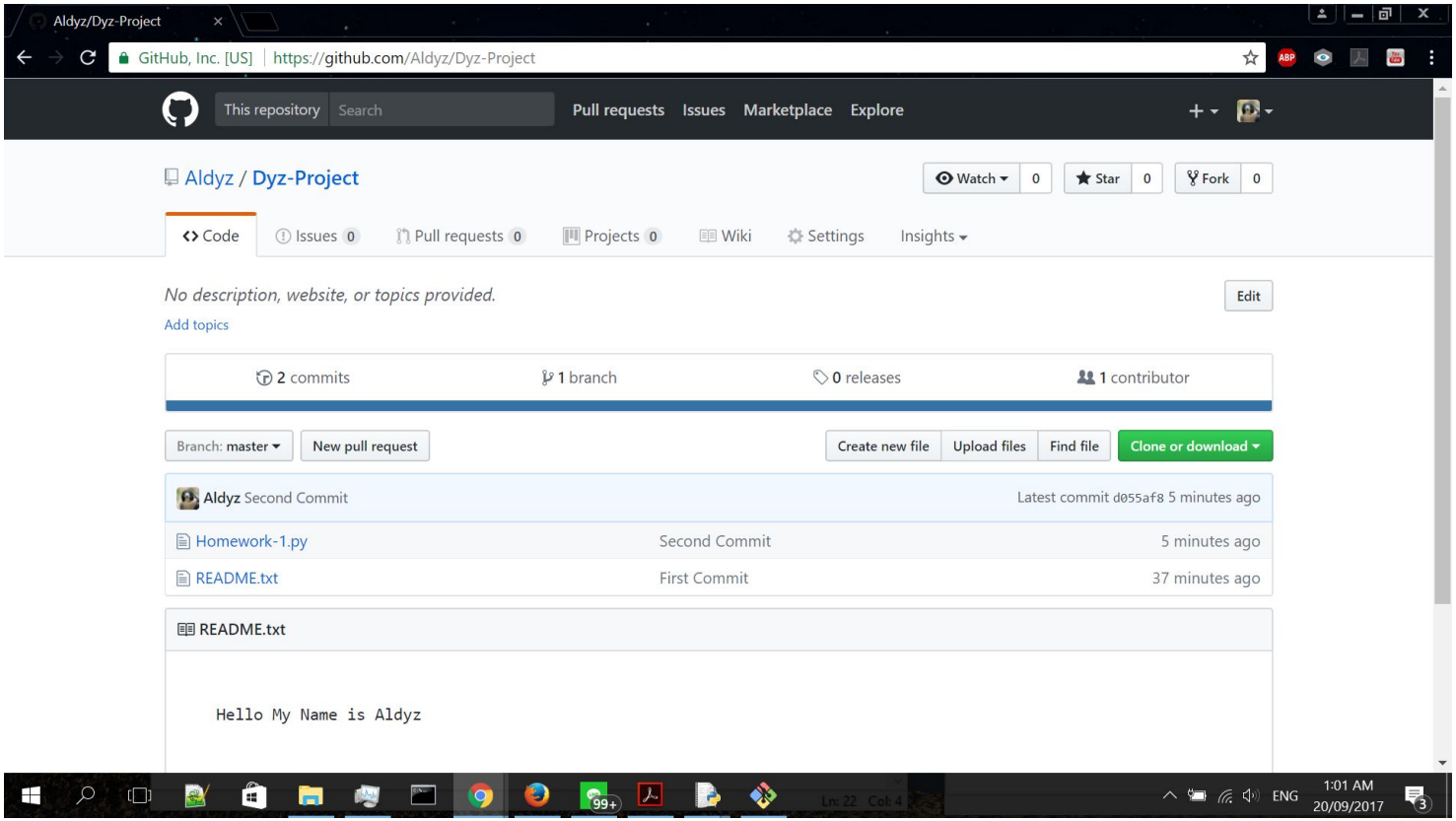
git add .

git commit -m "Second Commit"

git push

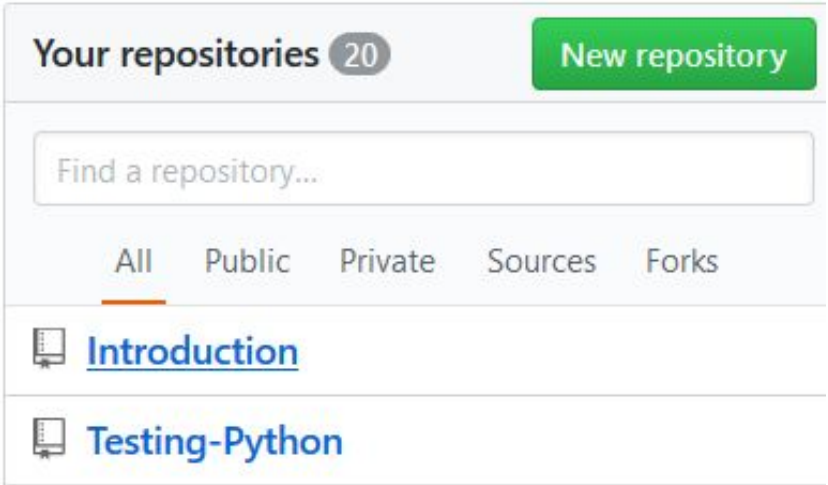
With only these these three commands, the local repository will upload its current state or files to the remote/online repository.

Pushing a Local Repository to a Remote Repository#13



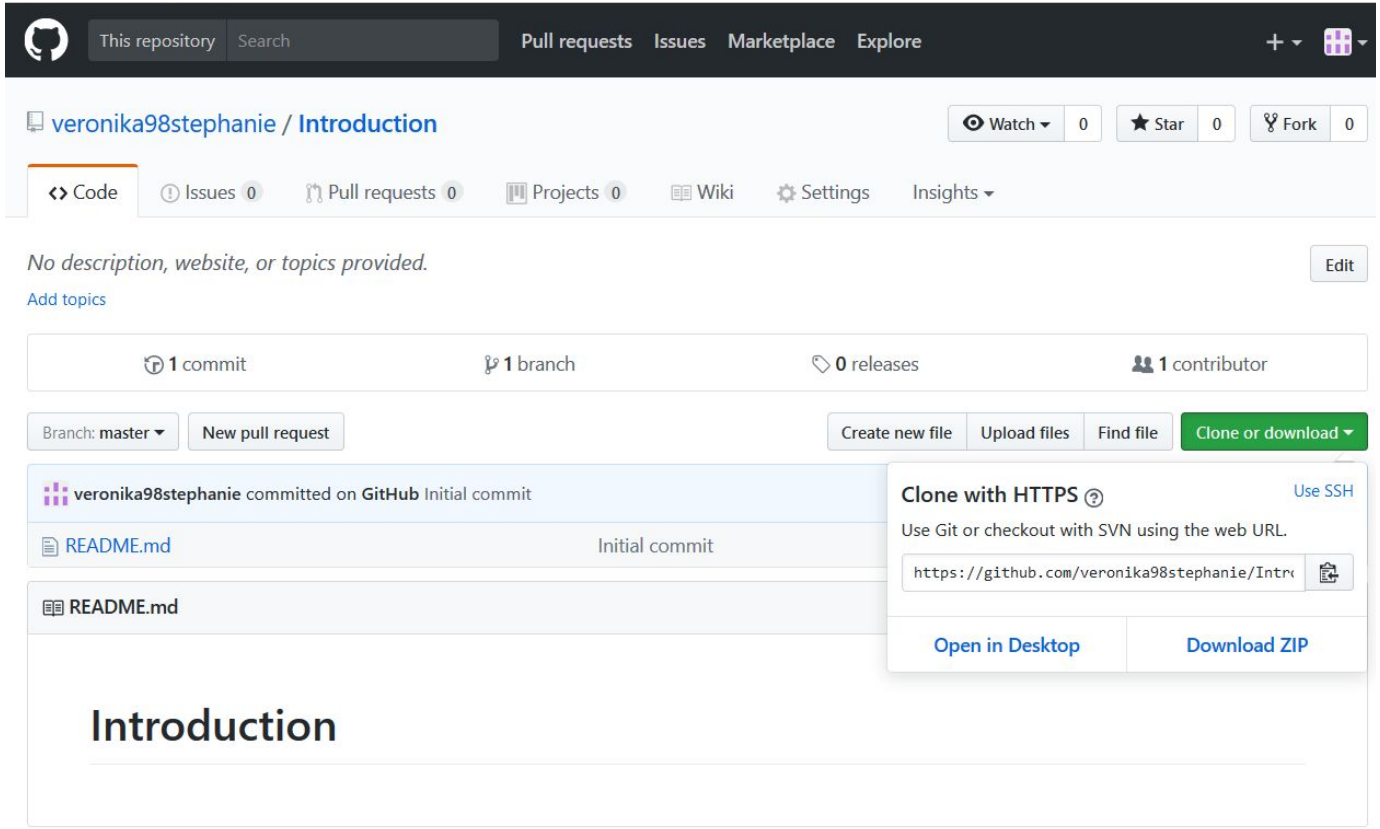
How to Clone A Repository that Already Exists on GitHub to Your Folder#1

First choose your GitHub repository



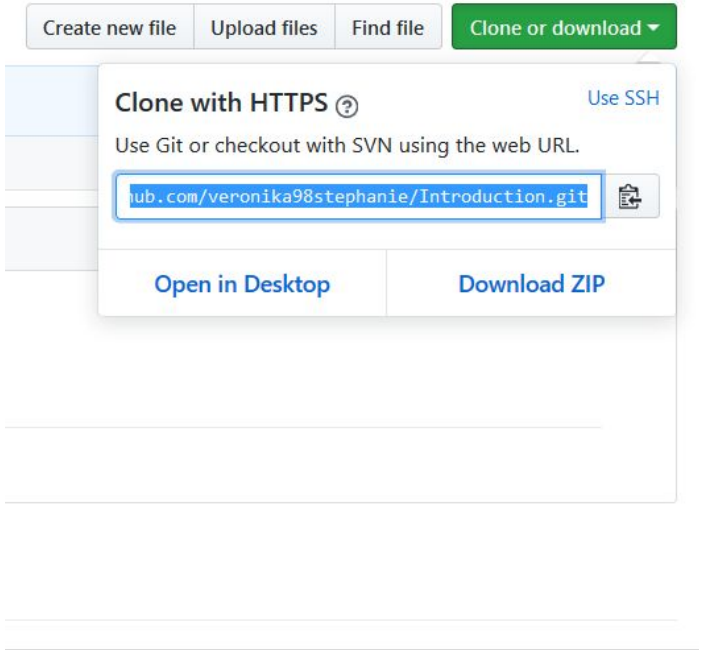
How to Clone A Repository that Already Exists on GitHub#2

Then, click the clone or download button.



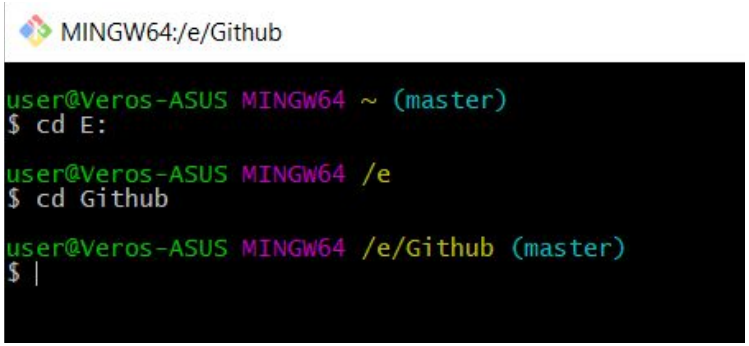
How to Clone A Repository that Already Exists on GitHub#3

Make sure that you copy the repository's URL

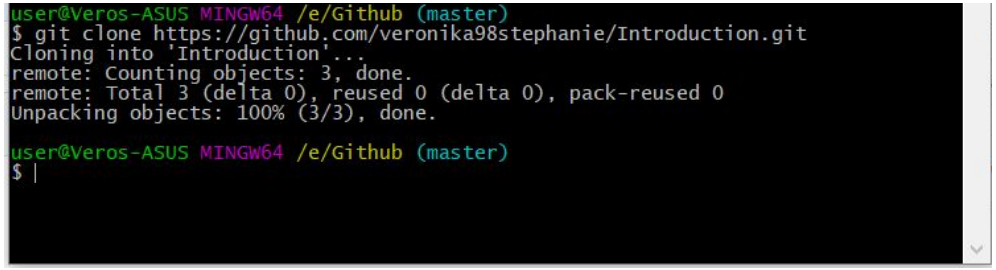


How to Clone A Repository that Already Exists on GitHub#4

Now open your Git CMD or terminal from your Mac and go to the folder that you want to clone your repository to. Example:

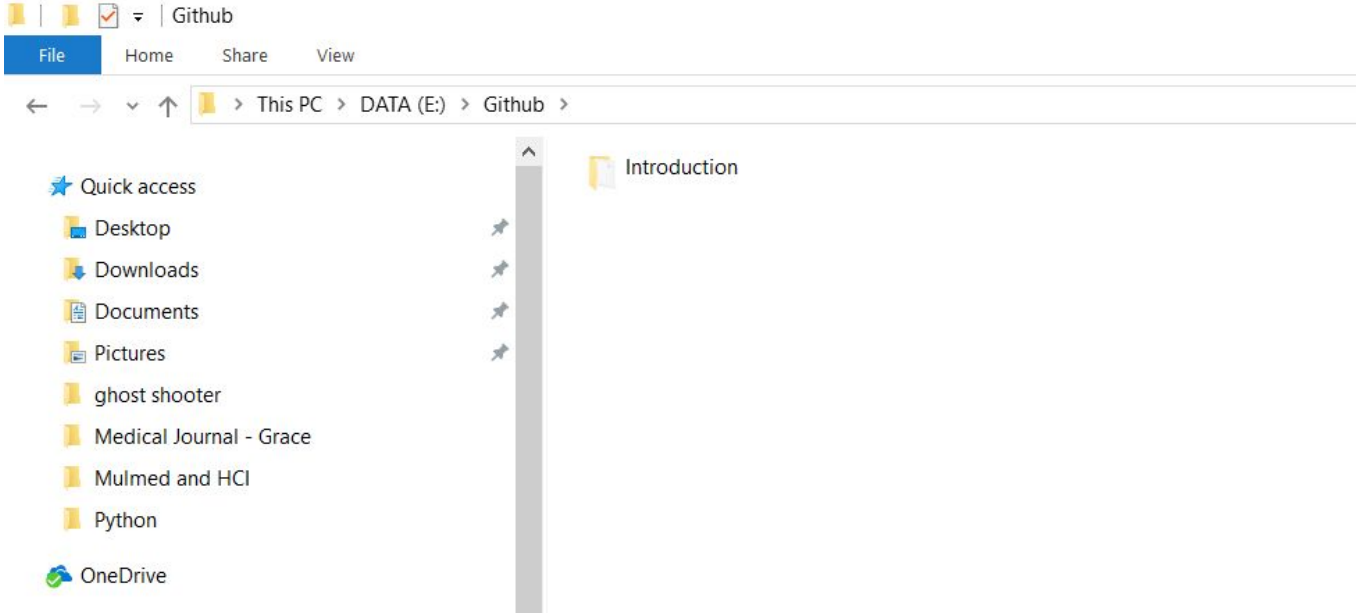


Clone the project by typing git clone yourURL. Your URL is the repository URL that you have copied before.



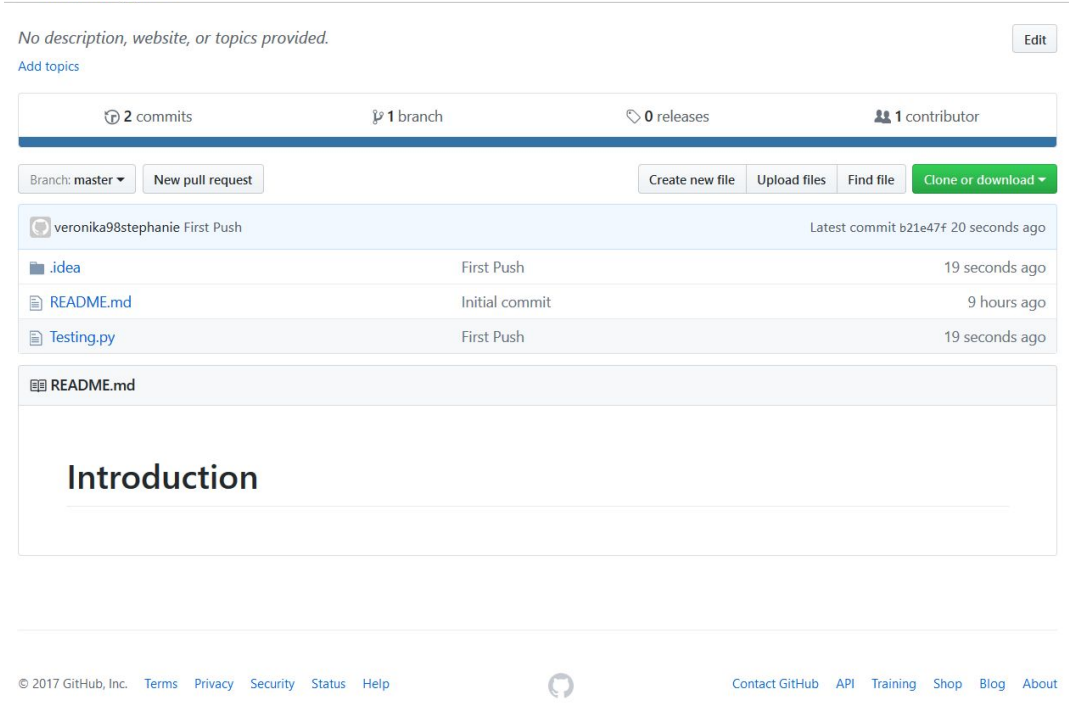
How to Clone A Repository that Already Exists on GitHub#5

Now that you are done, you can see a new folder named after your repository in your Github repository\folder that you have cloned



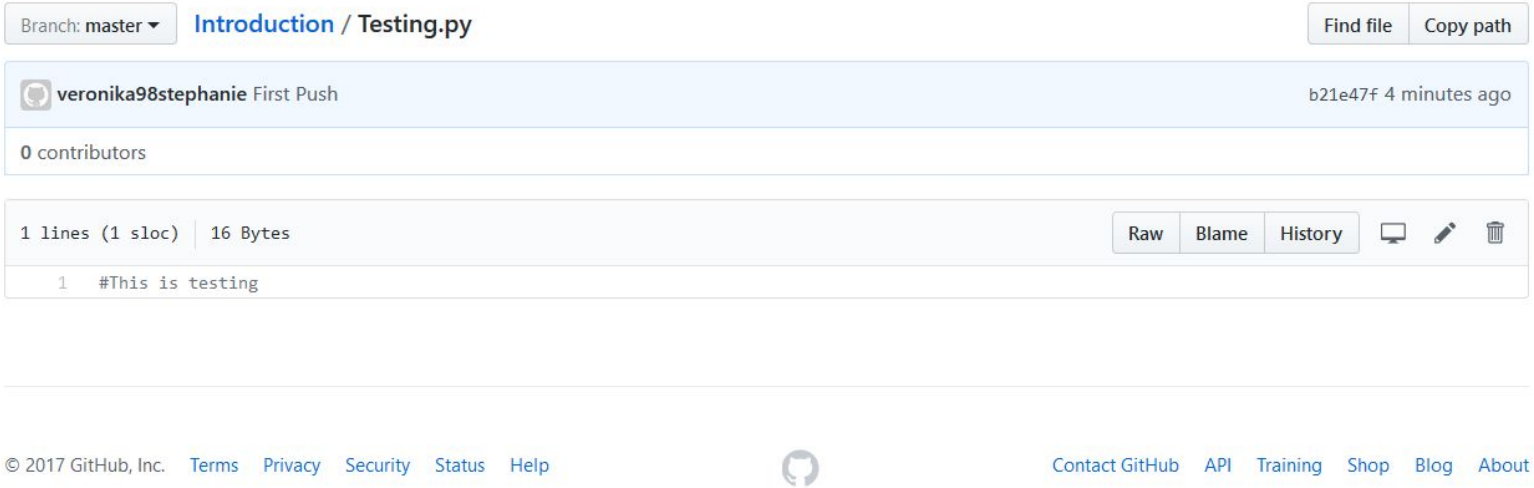
Editing and re-push data

For example you have a repository that consists of 3 files and you edit the content of one of the file. For this example the file that will be edited is the testing.py file



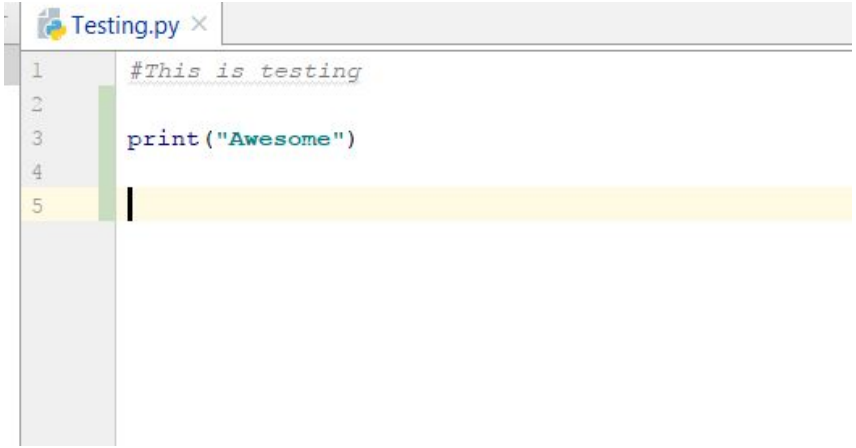
Editing and re-push data

At first tetsing.py contents is only 1 line of python language comment



Editing and re-push data

Then, you made a change on your code from the cloned folder. In order to re-push your edited code from windows cmd or mac terminal, follow several steps bellow.



Editing and re-push data

First, open your windows cmd or mac terminal, then go to your local repository (folder that contains the file that you have edited)

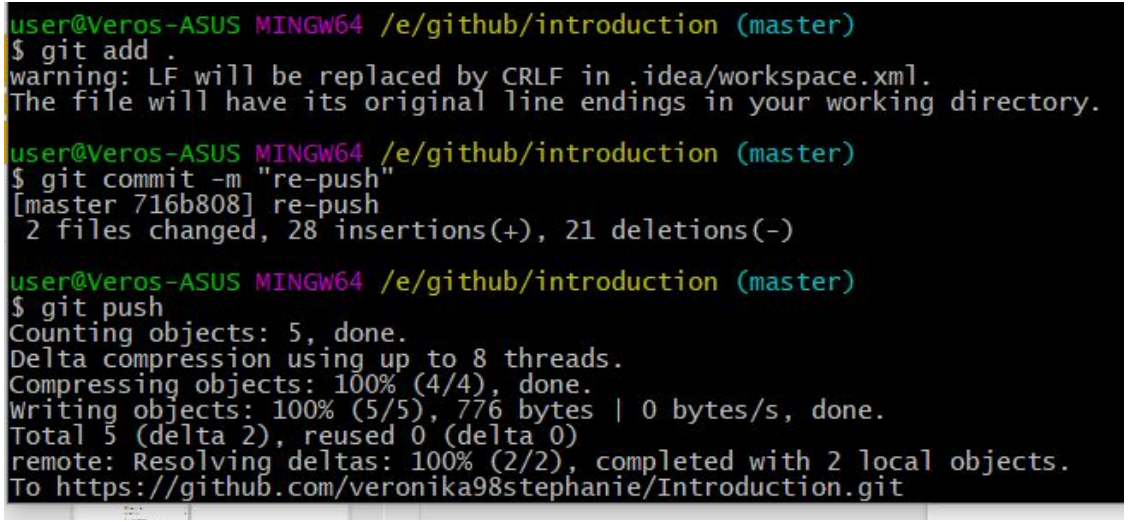
Then, input:

git add .

git commit -m “Your message”

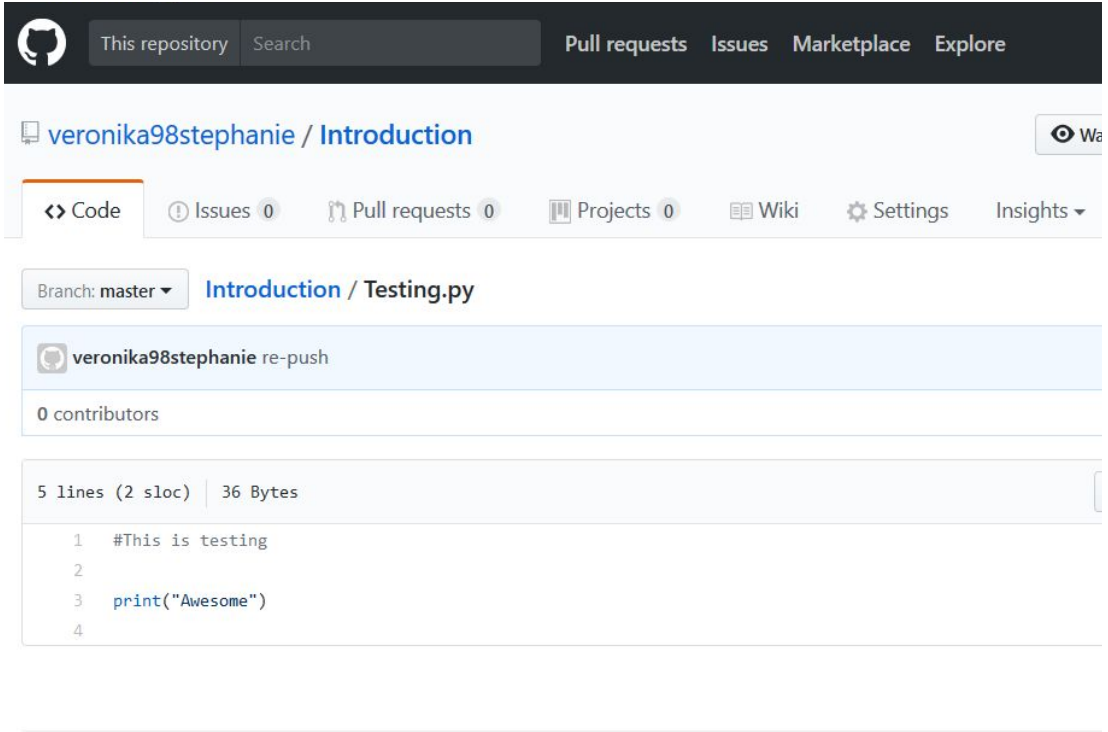
git push

With this you are done



Editing and re-push data

Now you can see the changes on your github



Useful Resources:

- https://www.youtube.com/playlist?list=PL4cUxeGkcC9goXbgTDQ0n_4TBzOO0ocPR
- https://git-scm.com/book/en/v2
- https://www.youtube.com/playlist?list=PL6gx4Cwl9DGDV6SnbINlVUd0o2xT4JbMu
- https://services.github.com/on-demand/downloads/github-git-cheat-sheet.pdf