Lab 03 – Versioning Your Work

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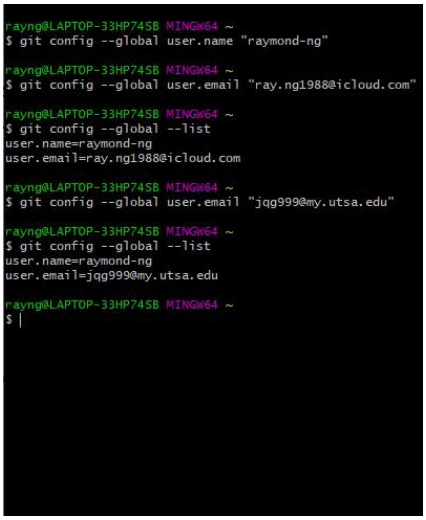
INTRODUCTION

The purpose of this lab is to allow the student to practice version control by experimenting with git and GitHub by setting up and using local (git terminal/console) and remote repositories (GitHub). Further, this lab will define the operations commit, push, pull, fork, and cloning as it relates to git.

PROCESS

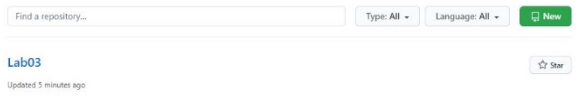


After downloading Git Bash, I opened the Git terminal and configured my Git account using the following commands:

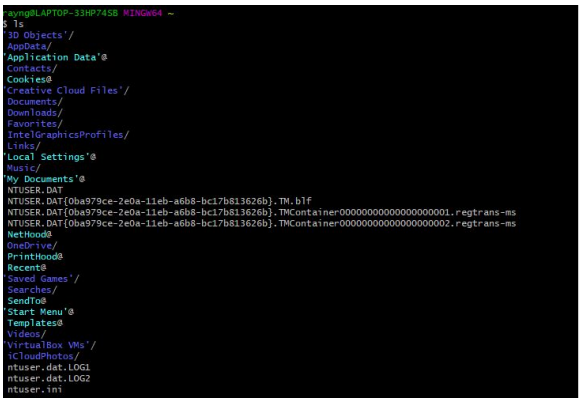
`git config --global user.name “raymond-ng”`

`git config --global user.email “jqg999@my.utsa.edu”`
Initially, I used my personal email, *ray.ng1988@icloud.com*, but the verification email from GitHub would not send to my iCloud email so I went with my school email instead.

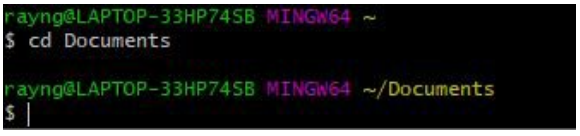
Checked my configuration with the following command:
`git config --global --list`



Created an empty repository on my GitHub account, named it “*Lab03*,” and kept the default settings



Following the instructions, I went back to my Git terminal. Here I used `ls` command (list directory) to find out where I was in my computer directory structure.



Instead of changing my directory to Desktop like instructions indicated I changed it to the Documents folder using `cd documents` command.

```
rayng@LAPTOP-33HP74SB MINGW64 ~/Documents
$ ls
'My Music'@  'My Pictures'@  'My Videos'@

rayng@LAPTOP-33HP74SB MINGW64 ~/Documents
$
```

Verified the contents of this folder by typing the `ls` command again in this directory.

```
rayng@LAPTOP-33HP74SB MINGW64 ~/Documents
$ cd lab03

rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03
$
```

Made a new subdirectory, labeled it "*lab03*," under Documents with the `mkdir lab03` command. Switched to this directory using `cd lab03` command.

```
rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03
$ echo "#lab03" >> README.md

rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03
$
```

Per the block instructions, I created a README.md file in the folder using the `echo "#lab03" >> README.md` command. I left the message in quotes the same as my file name "*lab03*".

```
rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03
$ git init
Initialized empty Git repository in C:/Users/rayng/Documents/lab03/.git/

rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$
```

Initialized the local git repository I created by typing in `git init`.

```
rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$ git add README.md
warning: LF will be replaced by CRLF in README.md.
The file will have its original line endings in your working directory

rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$
```

Next, I added the file README.md file to the "staging area" by using `git add README.md` command.

Commit:

```
rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$ git commit -m "first commit"
[master (root-commit) bd1ea72] first commit
 1 file changed, 1 insertion(+)
 create mode 100644 README.md

rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$
```

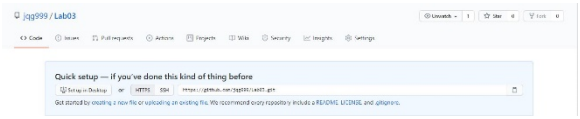
Using the `git commit -m "first commit"` command I committed all the files in the staging area to the repository and created an actual version of the reposit; local repository.

**Note:* `git commit` *is a command used to add all files that are staged to a local repository.* (Venkatesan, 2019)

```
rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$ git branch -M master

rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$
```

Per the instructions, named my repository's main branch master by typing in `git branch -M master`.



In order to add this "master" branch to my remote repository I needed the URL from the GitHub repository.

```
rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$ git remote add origin https://github.com/jqg999/Lab03.git

rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$
```

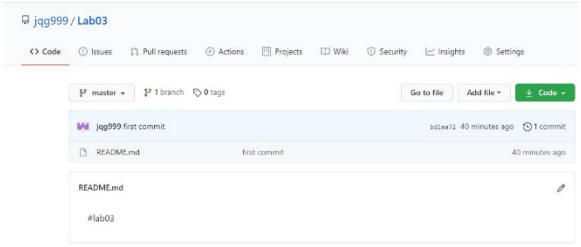
After obtaining the URL I used `git remote add origin https://github.com/jqg999/Lab03.git` to add the local repository to the GitHub repository.

Push:

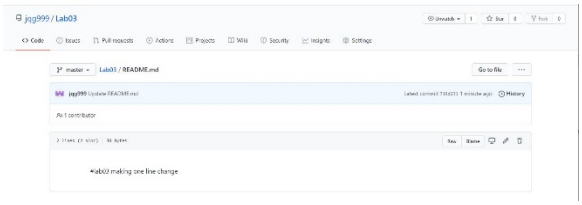
```
rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$ git push -u origin master
info: please complete authentication in your browser...
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 219 bytes | 219.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/jqg999/Lab03.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.

rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$
```

Using the `git push -u origin master` I "pushed" the changes (the README.md file) off of my local git repository in my current folder to my GitHub account.
**Note: `git push` is a command used to add all committed files in the local repository to the remote repository. Therefore, in the remote repository, all files and changes will be visible to anyone with access to the remote repository.* (Venkatesan, 2019)



Went back to my GitHub account and saw that the new README file was pushed to my repository.



Per the instructions, made a change to the remote repository on GitHub by opening up the README file and edited it in the user interface.

Pull:

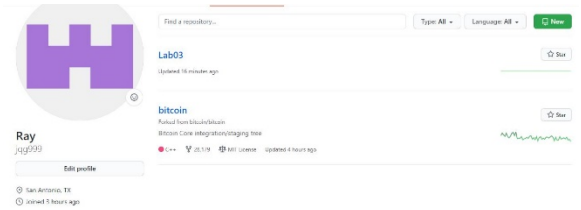
```
rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$ git pull origin master
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 645 bytes | 92.00 KiB/s, done.
From https://github.com/jqg999/Lab03
 * branch            master     -> FETCH_HEAD
   bd1ea72..719d231  master     -> origin/master
Updating bd1ea72..719d231
Fast-forward
 README.md | 1 +
 1 file changed, 1 insertion(+)

rayng@LAPTOP-33HP74SB MINGW64 ~/Documents/lab03 (master)
$
```

Used the `git pull origin master` command to pull the changes from my remote repository back to my local repository.

**Note: `git pull` is a command used to get files from the remote repository directly into the working directory.* (Venkatesan, 2019)

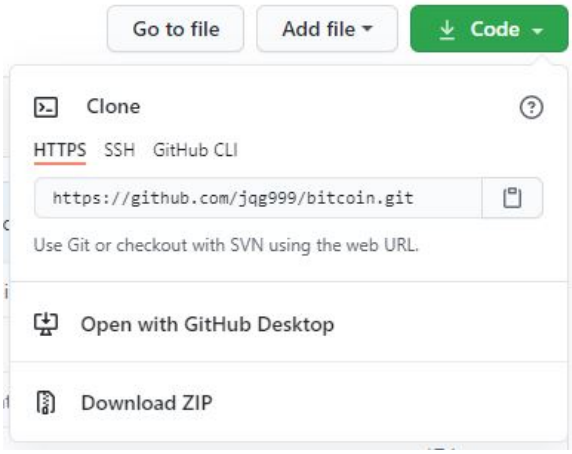
Fork:



Per the instructions regarding forking, I chose Bitcoin as my topic. I followed the instructions by clicking on the fork option in the upper righthand corner and then I navigated back to my own repository and saw a copy of the Bitcoin repository in my repository.

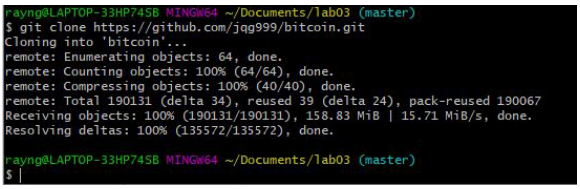
**Note: A fork is a copy of a repository. Forking a repository allows a user to freely experiment with changes without affecting the original project.* (GitHub Inc, 2021)

Clone:



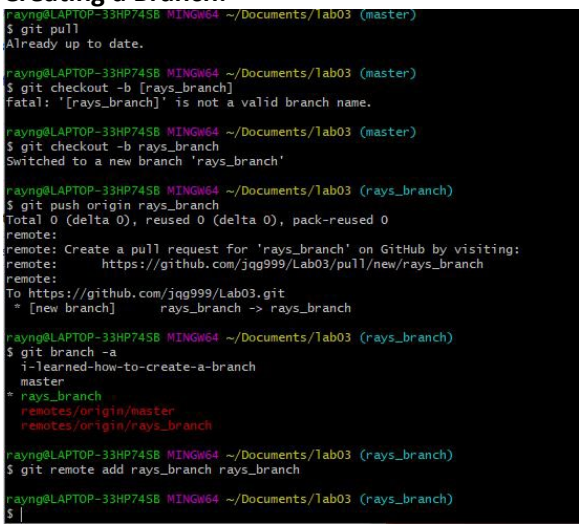
Next, I obtained the URL so that I could clone my new repository to a local git repository.

**Note: When a repository is created on GitHub, it exists as a remote repository. A user can clone a repository to create a local copy on their computer and synch between two locations.* (GitHub Inc, 2021)

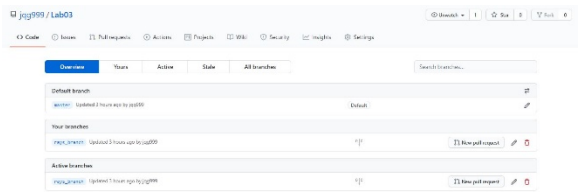


Lastly, I went back to the git terminal to clone my new repository to my local repository by using `git clone https://github.com/jqg999/bitcoin.git` command.

Creating a Branch:



According from the instructions on GitHub.com, before creating a new branch, I had the pull the changes from upstream and my master needs to be up to date so I executed the `git pull` command. Then I used the `git checkout -b` command to create "*rays_branch*". Then I pushed the branch on GitHub by using `git push origin rays_branch` command. To see all the branches created I executed `git branch -a` command. (Mourya, 2019)



I went to GitHub to see if the branch I created would appear on there as well. It worked!

Conclusion

In conclusion this lab was executed successfully. I, the student, learned how to create a local repo on the Git terminal/console and a remote repo via GitHub. Additionally, from performing the lab I established a rudimentary understanding of the five command operations of commit, push, pull, fork and clone as it relates to git. In my opinion, one of the most fundamental pieces of version control—after reading and working on this lab—is a revision history; establishes a digital chain of custody among users, which is probably beneficial when a user is debugging. This lab was an excellent way for a novice user like myself to explore the use of the commands in the git terminal and a great introductory approach to learning and exploring GitHub.

References

Internet Resources

GitHub Inc. (2021). *Cloning a respository*. Retrieved from GitHub Docs: https://docs.github.com/en/github/creating-cloning-and-archiving-repositories/cloning-a-repository

GitHub Inc. (2021). *Fork a repo*. Retrieved from GitHub Docs: https://docs.github.com/en/github/getting-started-with-github/fork-a-repo

Mourya, K. K. (2019, September 26). *Create a new branch with git and manage branches*. Retrieved from GitHub Inc: https://github.com/Kunena/Kunena-Forum/wiki/Create-a-new-branch-with-git-and-manage-branches

Venkatesan, G. (2019, January 5). *Learn the Basics fo Git in Under 10 Minutes*. Retrieved from freeCodeCamp: https://www.freecodecamp.org/news/learn-the-basics-of-git-in-under-10-minutes-da548267cc91/

Collaboration

No collaboration with other students/peers was conducted on this lab. However, I reviewed and paid attention to the #lab03 conversations on Slack to see if there were any issues other students were having and reviewed their lessons learned as they became applicable to me. During the entirety of the lab I did not run into any of the issues other students asserted via Slack.