#### LAB<sub>3</sub>

#### **GIT AND GITHUB**



Fullname: Trương Đặng Trúc Lâm

Student ID: B2111933

 Note: screenshots need to be clear and good-looking; submissions must be in PDF format.

## 1. Setup and making commits

- Install and setup git on your computer (remember to set your name/email)

\$sudo apt update ; sudo apt install git -y

```
File Actions Edit View Help

b2111933@b2111933-virtualbox: ~ ×

b2111933@b2111933-virt
```

Updated successfully

```
b2111933@b2111933-virtualbox: ~ - ×

File Actions Edit View Help

b2111933@b2111933-virtualbox: ~ ×

b2111933@b2111933-virtualbox: ~$ sudo apt install git -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
git is already the newest version (1:2.34.1-1ubuntu1.10).
git set to manually installed.

The following packages were automatically installed and are no longer required:
   libflashrom1 libftdi1-2 libllvm13
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 45 not upgraded.
b2111933@b2111933-virtualbox:~$
```

Installed git successfully

\$git config --global user.name "Firstname Lastname"
\$git config --global user.email "example@.ctu.edu.vn"

```
b2111933@b2111933-virtualbox: ~ - × ×

File Actions Edit View Help

b2111933@b2111933-virtualbox: ~ ×

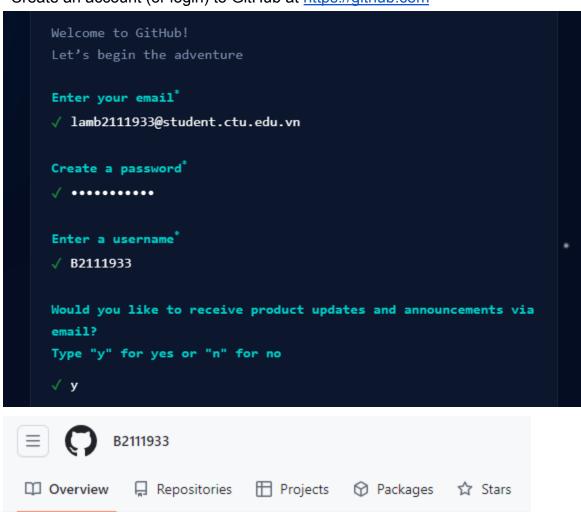
b2111933@b2111933-virtualbox: ~ $ git config --global user.name "B211193"

b2111933@b2111933-virtualbox: ~ $ git config --global user.email "lamb21"
11933@.ctu.edu.vn"

b2111933@b2111933-virtualbox: ~ $
```

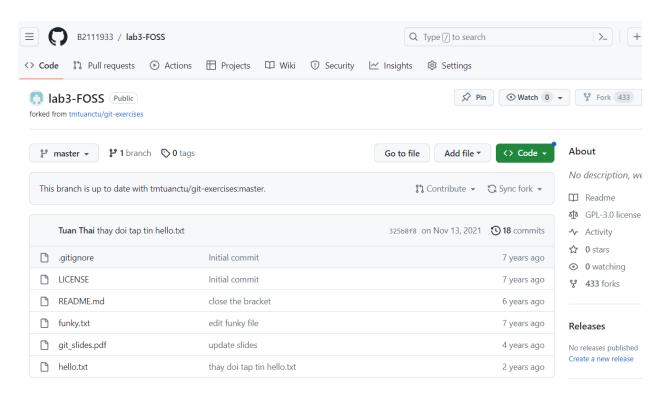
Finished configuration

- Create an account (or login) to GitHub at https://github.com



**GitHub** registered

- Fork ( )this repository <a href="https://github.com/TuanThai/git-exercises.git">https://github.com/TuanThai/git-exercises.git</a> to your Github account.



Forked repository https://github.com/TuanThai/git-exercises.git to account B2111933

- Clone the forked repository to your computer

\$git clone <url of your forked repository>

```
b2111933@b2111933-virtualbox: ~
                                                                      - ø x
File
     Actions
            Edit View
                       Help
            b2111933@b2111933-virtualbox: ~
b2111933@b2111933-virtualbox:~$ git clone https://github.com/B2111933/
lab3-FOSS
Cloning into 'lab3-FOSS'...
remote: Enumerating objects: 53, done.
remote: Counting objects: 100% (23/23), done.
remote: Compressing objects: 100% (5/5), done.
remote: Total 53 (delta 20), reused 18 (delta 18), pack-reused 30
Receiving objects: 100% (53/53), 972.69 KiB | 3.88 MiB/s, done.
Resolving deltas: 100% (24/24), done.
b2111933@b2111933-virtualbox:~$
```

Cloned the forked repository to my computer successfully

- Create and add a new file helloword.py

\$cd ./git-exercises

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS

File Actions Edit View Help

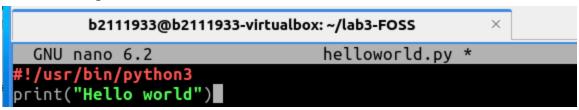
b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

b2111933@b2111933-virtualbox: ~$ cd ./lab3-FOSS

b2111933@b2111933-virtualbox: ~/lab3-FOSS$
```

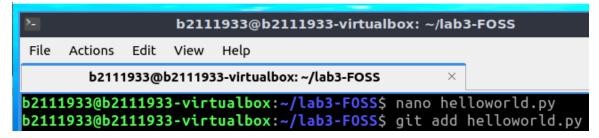
Changed the working directory to the forked repository

```
$nano helloword.py
#!/usr/bin/python3
print("Hello world")
```



Created file **helloword.py** 

\$git add helloworld.py



Added file helloword.py

\$git commit -m "Add hellworld.py file"

```
b2111933@b2111933-virtualbox:~/lab3-FOSS ×

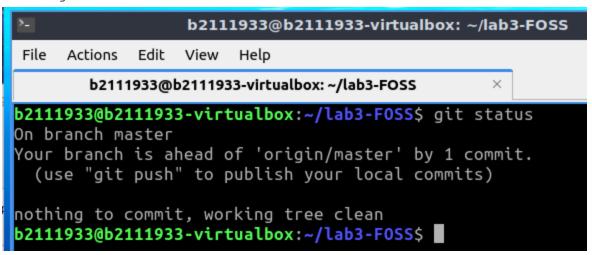
b2111933@b2111933-virtualbox:~/lab3-FOSS$ git commit -m "Add helloworld.py file"

[master ab9507b] Add helloworld.py file
   1 file changed, 2 insertions(+)
   create mode 100644 helloworld.py
b2111933@b2111933-virtualbox:~/lab3-FOSS$
```

Committed file helloword.py

- Examine the state of your repo

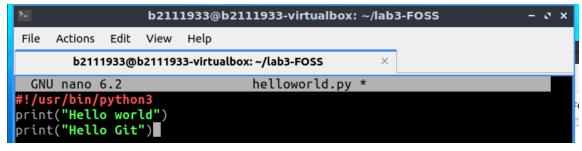
\$git status



State of the repo

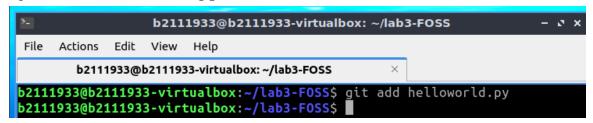
- Edit and save your new file, then add it to the staging area. Finally make a new commit with the edited file. At all stages use git status to see how your repository changes

```
$nano helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello Git")
```



Edited file helloworld.py

\$git add helloworld.py



Added the file to the staging area

\$git commit -m "Modify hellworld.py file"

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS - ×

File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

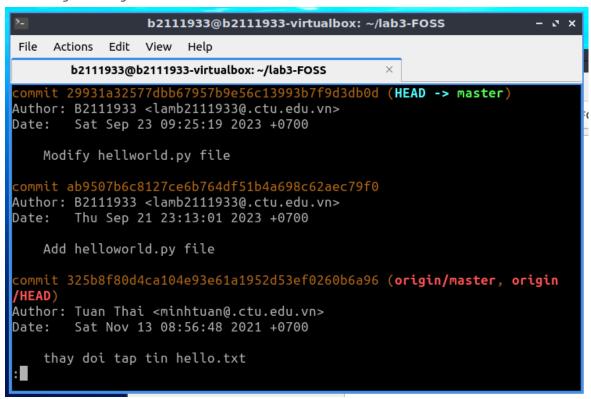
b2111933@b2111933-virtualbox: ~/lab3-FOSS$ git commit -m "Modify hellwo rld.py file"

[master 29931a3] Modify hellworld.py file
1 file changed, 1 insertion(+)
b2111933@b2111933-virtualbox: ~/lab3-FOSS$
```

Committed successfully

### - View the log

\$git log

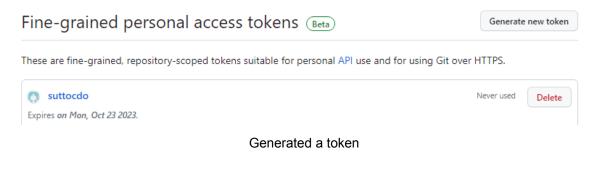


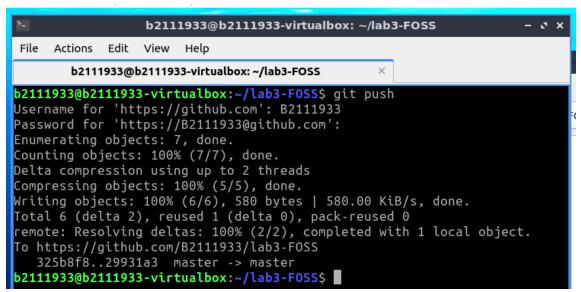
This is the log

### - Push the commits to the server

\$git push

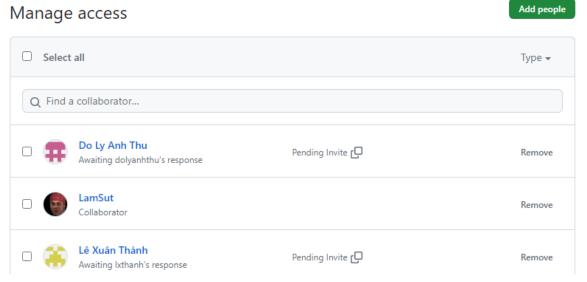
(Note: You need to provide a personal access token as a password, please follow this article to create one)





Pushed successfully

- Invite someone to be a collaborator of Github repository



I have invited my friends to be collaborators of my Github repository (take screenshots to show that you finish this exercise)

# 2. Branching and Merging

- Create a new branch "test functions"

\$git checkout -b test functions

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS - ×

File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

b2111933@b2111933-virtualbox: ~/lab3-FOSS$ git checkout -b test_functions

Switched to a new branch 'test_functions'
b2111933@b2111933-virtualbox: ~/lab3-FOSS$
```

Created a new branch named test\_functions

- Edit helloworld.py file and commit the result

```
$nano helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
```

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS

File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

GNU nano 6.2 helloworld.py *

#!/usr/bin/python3

print("Hello world")

print("Hello OSS Development")
```

Edited file helloworld.py

```
$git add helloworld.py
$git commit -m "Modify hellworld.py file"
```

```
File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

b2111933@b2111933-virtualbox: ~/lab3-FOSS$ git add helloworld.py
b2111933@b2111933-virtualbox: ~/lab3-FOSS$ git commit -m "Modify hellworld.py file"
[test_functions e42af80] Modify hellworld.py file
1 file changed, 1 insertion(+), 1 deletion(-)
b2111933@b2111933-virtualbox: ~/lab3-FOSS$
```

Committed the result

- Display helloworld.py content \$cat helloworld.py

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS - ×

File Actions Edit View Help

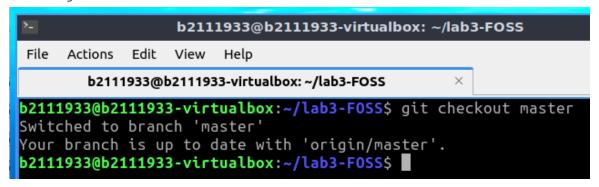
b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

b2111933@b2111933-virtualbox: ~/lab3-FOSS$ cat helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
b2111933@b2111933-virtualbox: ~/lab3-FOSS$
```

Displayed **helloworld.py** content (in **test\_functions** branch)

- Swap back to the "master" branch

\$git checkout master



Got back to the master branch

- Display helloworld.py content \$cat helloworld.py

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS

File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

b2111933@b2111933-virtualbox: ~/lab3-FOSS$ cat helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello Git")
b2111933@b2111933-virtualbox: ~/lab3-FOSS$
```

Displayed **helloworld.py** content (in **master** branch)

- Merge "test functions" branch to "master"

\$git merge test functions

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS -

File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

b2111933@b2111933-virtualbox: ~/lab3-FOSS$ git merge test_functions
Updating 29931a3..e42af80
Fast-forward
helloworld.py | 2 +-
1 file changed, 1 insertion(+), 1 deletion(-)
b2111933@b2111933-virtualbox: ~/lab3-FOSS$
```

Merged test\_functions branch to master

- Display helloworld.py content. Are there any conflicts? \$cat helloworld.py

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS

File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

b2111933@b2111933-virtualbox: ~/lab3-FOSS$ cat helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
b2111933@b2111933-virtualbox: ~/lab3-FOSS$
```

Displayed **helloworld.py** content, we can see that file **helloworld.py** in **master** branch was replaced by the one in **test\_functions** branch. There was no conflict.

- Edit helloworld.py file and commit the result

```
$nano helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
print("Hello CTU")
```

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS

File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

GNU nano 6.2 helloworld.py *

#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
print("Hello CTU")
```

Edited file helloworld.py

\$git add helloworld.py
\$git commit -m "Modify hellworld.py file"

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS - x x

File Actions Edit View Help

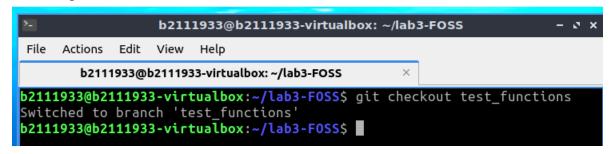
b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

b2111933@b2111933-virtualbox: ~/lab3-FOSS$ nano helloworld.py
b2111933@b2111933-virtualbox: ~/lab3-FOSS$ git add helloworld.py
b2111933@b2111933-virtualbox: ~/lab3-FOSS$ git commit -m "Modify hellworld.py file"
[master 655e881] Modify hellworld.py file
1 file changed, 1 insertion(+)
b2111933@b2111933-virtualbox: ~/lab3-FOSS$
```

Committed the result

- Checkout to  ${\tt test\_functions}$  ,  ${\tt edit}$   ${\tt helloworld.py}$  file and commit the result

\$git checkout



Switched to branch test\_functions

```
$nano helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
print("Hello CTU - CICT")
```

```
b2111933@b2111933-virtualbox: ~/lab3-FOSS

File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

GNU nano 6.2 helloworld.py

#!/usr/bin/python3

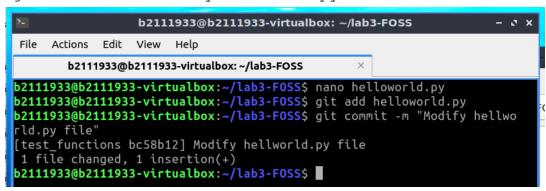
print("Hello world")

print("Hello OSS Development")

print("Hello CTU - CICT")
```

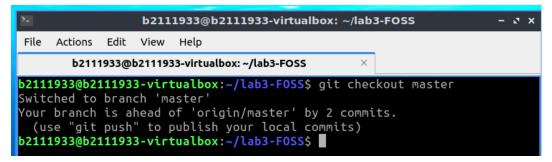
Edited file helloworld.py

```
$git add helloworld.py
$git commit -m "Modify hellworld.py file"
```



Committed the result

Swap back to the "master" branch, merge "test\_functions" branch to "master"
 \$git checkout master



Switched back to branch master

\$git merge test functions

```
File Actions Edit View Help

b2111933@b2111933-virtualbox:~/lab3-FOSS ×

b2111933@b2111933-virtualbox:~/lab3-FOSS$ git merge test_functions
Auto-merging helloworld.py
CONFLICT (content): Merge conflict in helloworld.py
Automatic merge failed; fix conflicts and then commit the result.
b2111933@b2111933-virtualbox:~/lab3-FOSS$
```

There are conflicts

- Are there any conflicts? If YES, resolve the conflict (i.e. edit the conflict markers to match how you want the file to look - like) and commit the result. Use git log to see the resulting commits on the master branch.

```
File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

GNU nano 6.2 helloworld.py

#!/usr/bin/python3

print("Hello world")

print("Hello OSS Development")

<<<<<< HEAD

print("Hello CTU")

=======

print("Hello CTU - CICT")

>>>>>> test_functions
```

When there are **conflicts**, the file will look like this

```
File Actions Edit View Help

b2111933@b2111933-virtualbox: ~/lab3-FOSS ×

GNU nano 6.2 helloworld.py *

#!/usr/bin/python3

print("Hello world")

print("Hello OSS Development")

print("Hello CTU - CICT")
```

Edited file helloworld.py

```
File Actions Edit View Help

b2111933@b2111933-virtualbox:~/lab3-FOSS ×

b2111933@b2111933-virtualbox:~/lab3-FOSS$ git add helloworld.py
b2111933@b2111933-virtualbox:~/lab3-FOSS$ git commit -m "Modify hellworld.py file"
[master e9b6a79] Modify hellworld.py file
b2111933@b2111933-virtualbox:~/lab3-FOSS$
```

Committed the result

- View the log to see the resulting commits on the master branch.

\$git log

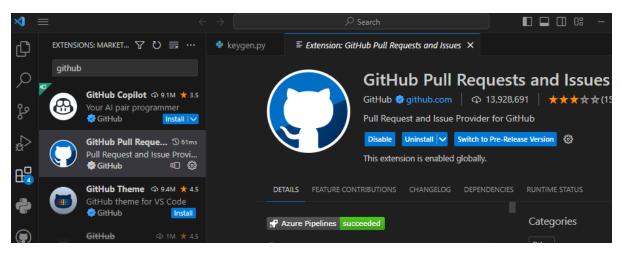
```
File Actions Edit View Help
       b2111933@b2111933-virtualbox: ~/lab3-FOSS
ommit e9b6a79095a1eb2757f557eeaa984af6a7346bba (HEAD -> master)
Merge: 655e881 bc58b12
Author: B2111933 <lamb2111933@.ctu.edu.vn>
       Sun Sep 24 12:41:54 2023 +0700
Date:
    Modify hellworld.py file
commit bc58b1203120be5863f165a279fc19361cd0be86 (test_functions)
Author: B2111933 <lamb2111933@.ctu.edu.vn>
Date: Sun Sep 24 12:29:33 2023 +0700
    Modify hellworld.py file
commit 655e881c9391f631e6192050fcab9e45c450f0e6
Author: B2111933 <lamb2111933@.ctu.edu.vn>
       Sun Sep 24 12:21:25 2023 +0700
    Modify hellworld.py file
```

View the log to see the resulting commits on the master branch

(take screenshots to show that you finish this exercise)

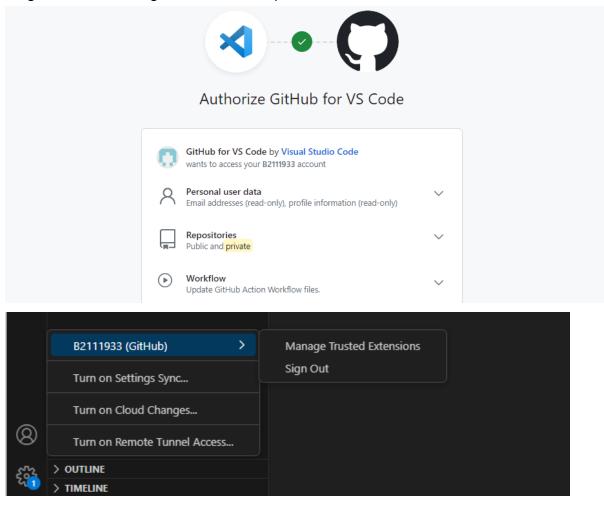
### 3. Working with GitHub in VS Code

- Install VS Code and its GitHub Pull Requests-Issues extension to your computer.



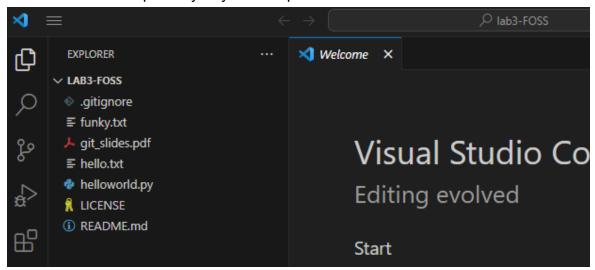
VS Code and its GitHub Pull Requests-Issues extension was installed successfully

- Sign in GitHub using GitHub Pull Requests and Issues extension.



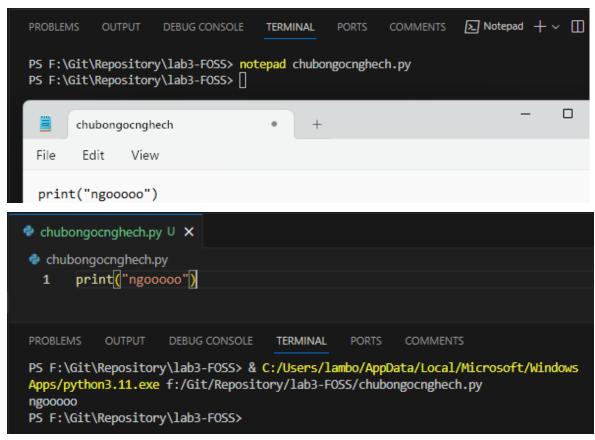
Signed in GitHub using GitHub Pull Requests and Issues extension

- Clone a remote repository to your computer.



Cloned the remote repository in exercises above to my computer

- Create and add a new file to the local repository, then commit everything you have done so far.



Create file chubongocnghech.py

```
chubongocnghech.py X
chubongocnghech.py
1  print("ngooooo")

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS

PS F:\Git\Repository\lab3-FOSS> git config --global user.name "B2111933"

PS F:\Git\Repository\lab3-FOSS> git config --global user.email "lamb2111933@.ctu.edu.vn"

PS F:\Git\Repository\lab3-FOSS> git add chubongocnghech.py

PS F:\Git\Repository\lab3-FOSS> git commit -m "Add file chubongocnghech.py"

[master 1ea96f2] Add file chubongocnghech.py

1 file changed, 1 insertion(+)
    create mode 100644 chubongocnghech.py

PS F:\Git\Repository\lab3-FOSS> []
```

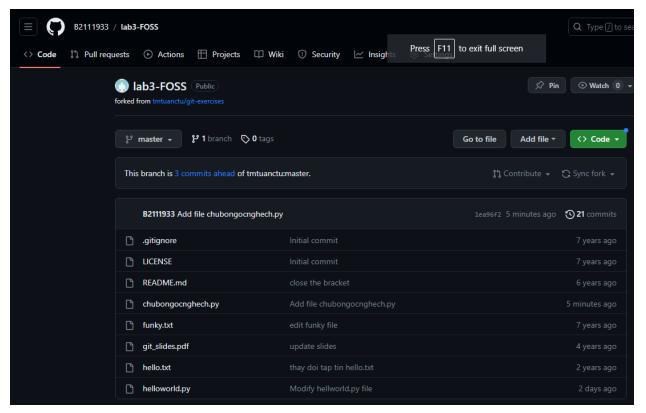
Committed the result

- Push the commits to the remote repository.

```
🕏 chubongocnghech.py 🗙
chubongocnghech.py
       print("ngooooo")
           OUTPUT
                    DEBUG CONSOLE TERMINAL
                                              PORTS COMMENTS
PS F:\Git\Repository\lab3-FOSS> git push
info: please complete authentication in your browser...
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 298 bytes | 298.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/B2111933/lab3-FOSS.git
   29931a3..1ea96f2 master -> master
PS F:\Git\Repository\lab3-FOSS>
```

Push the commits to the remote repository

Now let's check the result



Pushed successfully

(take screenshots to show that you finish this exercise)

---END---