



LAB 3

GIT AND GITHUB

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- **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
```


```
b2205896@b2205896: ~  
File Actions Edit View Help  
b2205896@b2205896: ~ x  
b2205896@b2205896:~$ sudo apt install git -y  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  git-man  
Suggested packages:  
  git-daemon-run | git-daemon-sysvinit git-doc git-email git-gui gitk gitweb  
  git-cvs git-mediawiki git-svn  
The following packages will be upgraded:  
  git git-man  
2 upgraded, 0 newly installed, 0 to remove and 293 not upgraded.  
Need to get 4,778 kB of archives.  
After this operation, 8,192 B of additional disk space will be used.  
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 git-man all 1:2.43.0-1ubuntu7.1 [1,100 kB]  
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 git amd64 1:2.43.0-1ubuntu7.1 [3,679 kB]  
Fetched 4,778 kB in 7s (657 kB/s)  
(Reading database ... 280308 files and directories currently installed.)  
Preparing to unpack .../git-man_1%3a2.43.0-1ubuntu7.1_all.deb ...  
Unpacking git-man (1:2.43.0-1ubuntu7.1) over (1:2.43.0-1ubuntu7) ...  
Preparing to unpack .../git_1%3a2.43.0-1ubuntu7.1_amd64.deb ...  
Unpacking git (1:2.43.0-1ubuntu7.1) over (1:2.43.0-1ubuntu7) ...  
Setting up git-man (1:2.43.0-1ubuntu7.1) ...  
Setting up git (1:2.43.0-1ubuntu7.1) ...  
Processing triggers for man-db (2.12.0-4build2) ...  
b2205896@b2205896:~$
```

```
$git config --global user.name "Firstname Lastname"
```

```
$git config --global user.email "example@ctu.edu.vn"
```

```
b2205896@b2205896: ~  
File Actions Edit View Help  
b2205896@b2205896: ~ x  
b2205896@b2205896:~$ git config --global user.name "Nhut Nguyen"  
b2205896@b2205896:~$ git config --global user.email "nhutb2205896@studnet.ctu.edu.vn"  
b2205896@b2205896:~$
```

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

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

- Clone the forked repository to your computer

\$git clone <url of your forked repository>

```
b2205896@b2205896: ~  
File Actions Edit View Help  
b2205896@b2205896: ~ x  
b2205896@b2205896:~$ git clone https://github.com/AndrewNguyenITVN/git-exercises  
Cloning into 'git-exercises'...  
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 (from 1)  
Receiving objects: 100% (53/53), 972.69 KiB | 2.63 MiB/s, done.  
Resolving deltas: 100% (24/24), done.  
b2205896@b2205896:~$
```

- Create and add a new file helloworld.py

\$cd ./git-exercises

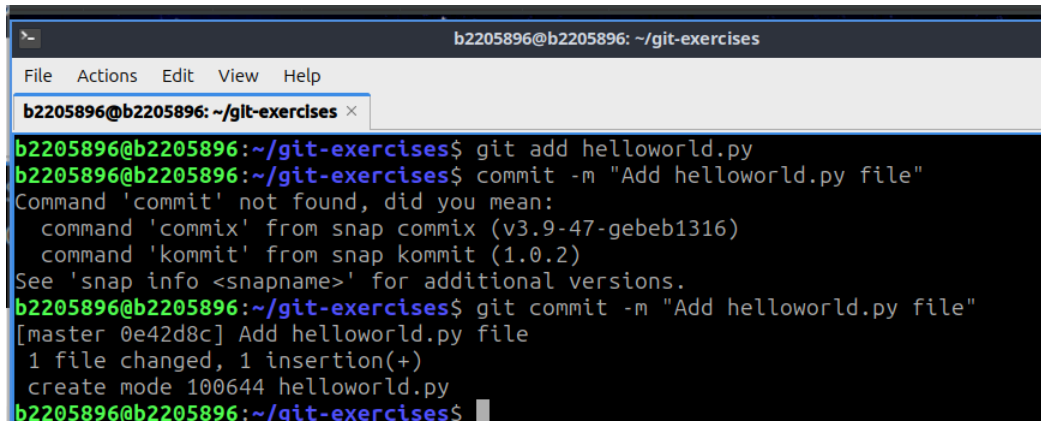
\$nano helloworld.py

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

```
b2205896@b2205896: ~/git-exercises  
File Actions Edit View Help  
b2205896@b2205896: ~/git-exercises x  
b2205896@b2205896:~$ cd ./git-exercises  
b2205896@b2205896:~/git-exercises$ nano helloworld.py  
b2205896@b2205896:~/git-exercises$
```

\$git add helloworld.py

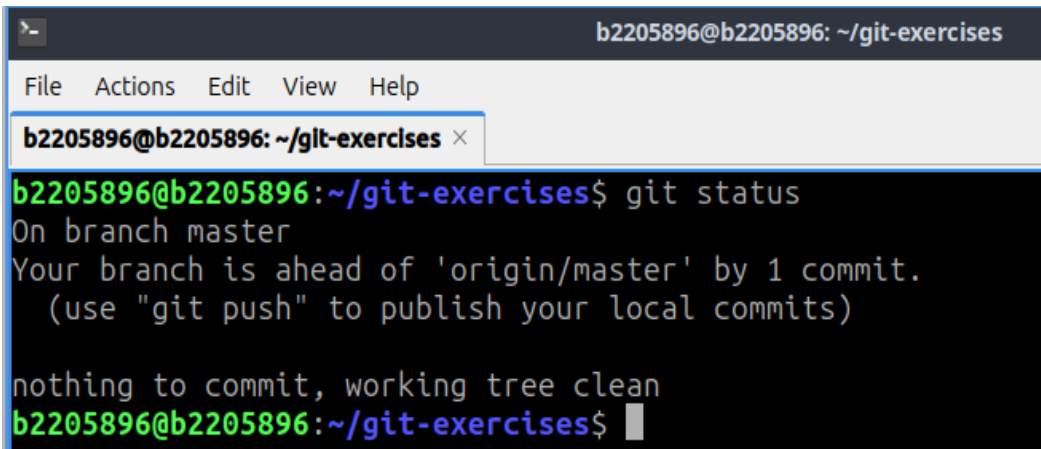
\$git commit -m "Add helloworld.py file"



```
b2205896@b2205896: ~/git-exercises
File Actions Edit View Help
b2205896@b2205896: ~/git-exercises x
b2205896@b2205896:~/git-exercises$ git add helloworld.py
b2205896@b2205896:~/git-exercises$ commit -m "Add helloworld.py file"
Command 'commit' not found, did you mean:
  command 'commix' from snap commix (v3.9-47-gebeb1316)
  command 'kommit' from snap kommit (1.0.2)
See 'snap info <snapname>' for additional versions.
b2205896@b2205896:~/git-exercises$ git commit -m "Add helloworld.py file"
[master 0e42d8c] Add helloworld.py file
1 file changed, 1 insertion(+)
create mode 100644 helloworld.py
b2205896@b2205896:~/git-exercises$
```

- Examine the state of your repo

\$git status



```
b2205896@b2205896: ~/git-exercises
File Actions Edit View Help
b2205896@b2205896: ~/git-exercises x
b2205896@b2205896:~/git-exercises$ git status
On branch master
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean
b2205896@b2205896:~/git-exercises$
```

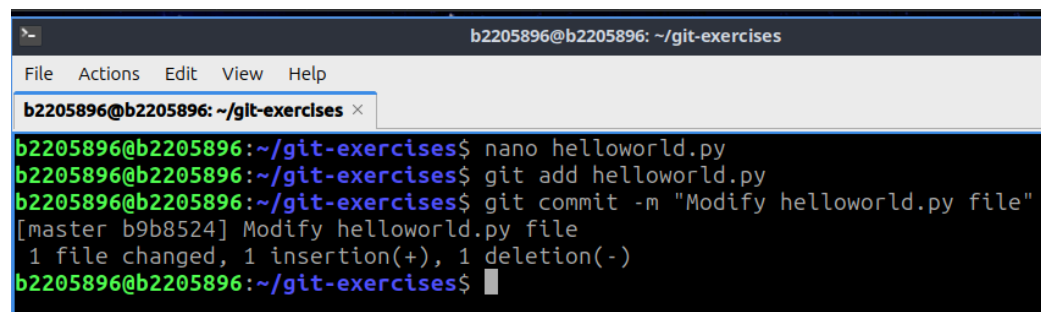
- Edit and save your new file, then add it to the staging area. Finally make a new commit with the edited file. At all stages use git status to see how your repository changes

\$nano helloworld.py

```
#!/usr/bin/python3
print("Hello world")
print("Hello Git")
```

\$git add helloworld.py

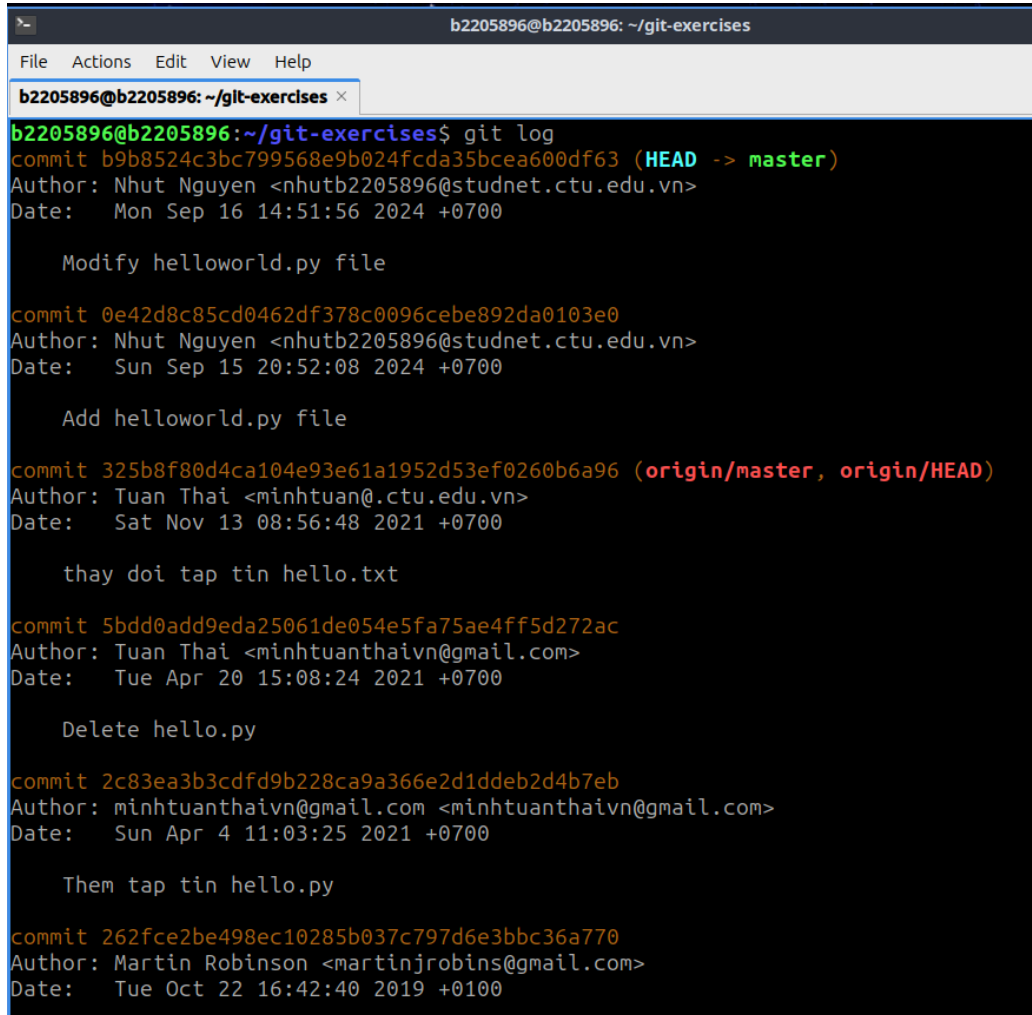
\$git commit -m "Modify helloworld.py file"



```
b2205896@b2205896: ~/git-exercises
File Actions Edit View Help
b2205896@b2205896: ~/git-exercises x
b2205896@b2205896:~/git-exercises$ nano helloworld.py
b2205896@b2205896:~/git-exercises$ git add helloworld.py
b2205896@b2205896:~/git-exercises$ git commit -m "Modify helloworld.py file"
[master b9b8524] Modify helloworld.py file
1 file changed, 1 insertion(+), 1 deletion(-)
b2205896@b2205896:~/git-exercises$
```

- View the log

```
$git log
```



```
b2205896@b2205896: ~/git-exercises
File Actions Edit View Help
b2205896@b2205896: ~/git-exercises x
b2205896@b2205896:~/git-exercises$ git log
commit b9b8524c3bc799568e9b024fcda35bcea600df63 (HEAD -> master)
Author: Nhut Nguyen <nhutb2205896@studnet.ctu.edu.vn>
Date: Mon Sep 16 14:51:56 2024 +0700

    Modify helloworld.py file

commit 0e42d8c85cd0462df378c0096cebe892da0103e0
Author: Nhut Nguyen <nhutb2205896@studnet.ctu.edu.vn>
Date: Sun Sep 15 20:52:08 2024 +0700

    Add helloworld.py file

commit 325b8f80d4ca104e93e61a1952d53ef0260b6a96 (origin/master, origin/HEAD)
Author: Tuan Thai <minhtuan@ctu.edu.vn>
Date: Sat Nov 13 08:56:48 2021 +0700

    thay doi tap tin hello.txt

commit 5bdd0add9eda25061de054e5fa75ae4ff5d272ac
Author: Tuan Thai <minhtuanthaivn@gmail.com>
Date: Tue Apr 20 15:08:24 2021 +0700

    Delete hello.py

commit 2c83ea3b3cdfd9b228ca9a366e2d1ddeb2d4b7eb
Author: minhtuanthaivn@gmail.com <minhtuanthaivn@gmail.com>
Date: Sun Apr 4 11:03:25 2021 +0700

    Them tap tin hello.py

commit 262fce2be498ec10285b037c797d6e3bbc36a770
Author: Martin Robinson <martinrobinson@gmail.com>
Date: Tue Oct 22 16:42:40 2019 +0100

    Them tap tin hello.py
```

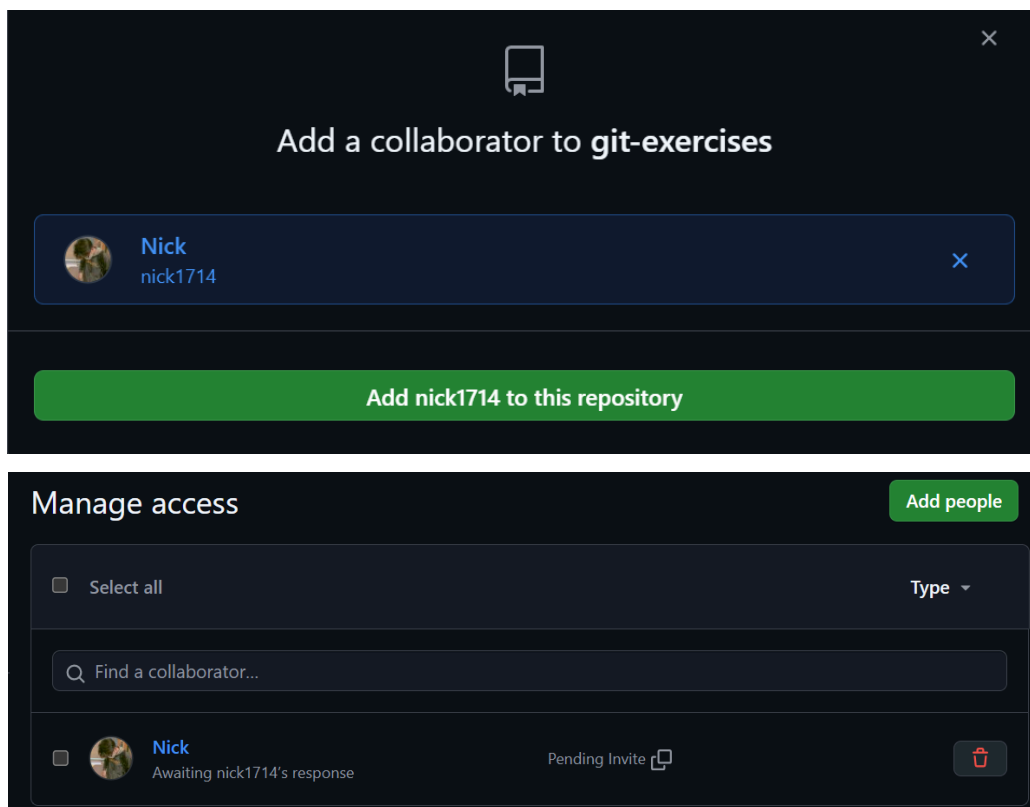
- Push the commits to the server

```
$git push
```

```
b2205896@b2205896: ~/git-exercises
File Actions Edit View Help
b2205896@b2205896: ~/git-exercises x
b2205896@b2205896:~/git-exercises$ git push
Username for 'https://github.com': AndrewNguyenITVN
Password for 'https://AndrewNguyenITVN@github.com':
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 4 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (6/6), 605 bytes | 605.00 KiB/s, done.
Total 6 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 1 local object.
To https://github.com/AndrewNguyenITVN/git-exercises
325b8f8..b9b8524 master -> master
b2205896@b2205896:~/git-exercises$
```

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

- Invite someone to be a collaborator of Github repository

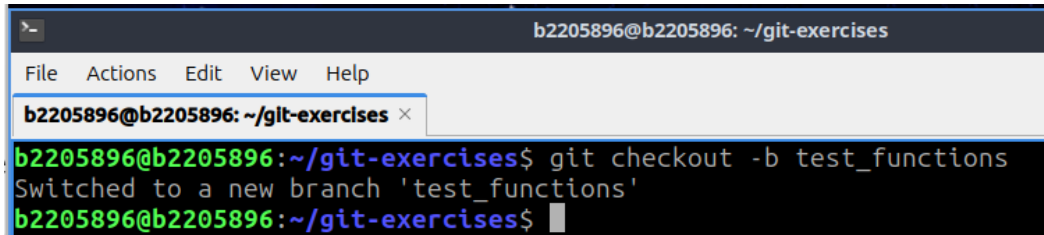


(take screenshots to show that you finish this exercise)

2. Branching and Merging

- Create a new branch "test_functions"

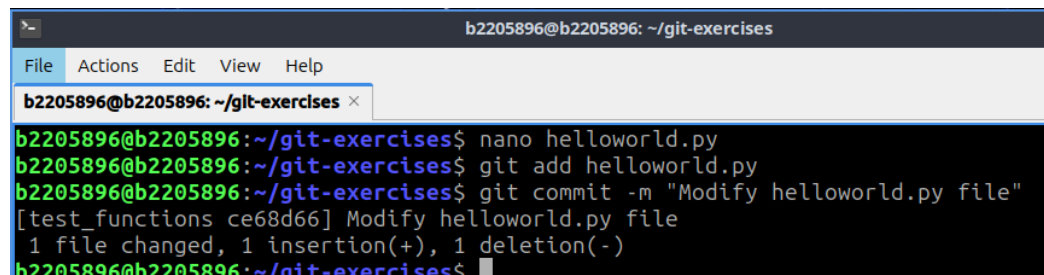
```
$git checkout -b test_functions
```

A terminal window titled 'b2205896@b2205896: ~/git-exercises' with a menu bar (File, Actions, Edit, View, Help). The command 'git checkout -b test_functions' is entered, resulting in the output 'Switched to a new branch 'test_functions''.

```
b2205896@b2205896: ~/git-exercises
b2205896@b2205896:~/git-exercises$ git checkout -b test_functions
Switched to a new branch 'test_functions'
b2205896@b2205896:~/git-exercises$
```

- Edit helloworld.py file and commit the result

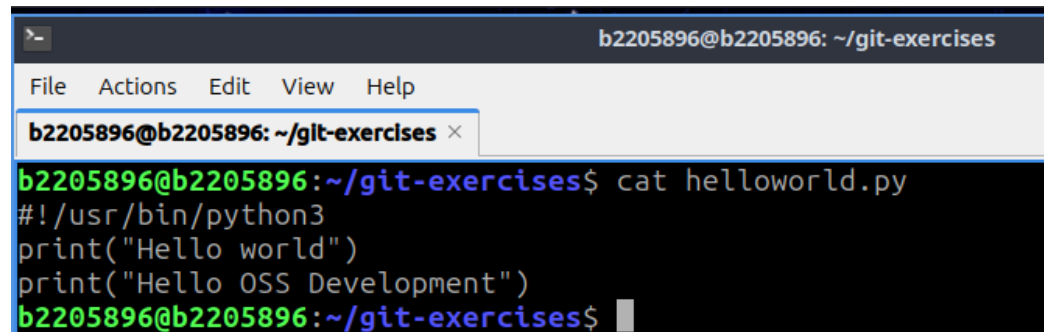
```
$nano helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
$git add helloworld.py
$git commit -m "Modify helloworld.py file"
```

A terminal window titled 'b2205896@b2205896: ~/git-exercises' showing the execution of 'nano helloworld.py', 'git add helloworld.py', and 'git commit -m "Modify helloworld.py file"'. The commit message is '[test_functions ce68d66] Modify helloworld.py file' and the output indicates '1 file changed, 1 insertion(+), 1 deletion(-)'.

```
b2205896@b2205896:~/git-exercises$ nano helloworld.py
b2205896@b2205896:~/git-exercises$ git add helloworld.py
b2205896@b2205896:~/git-exercises$ git commit -m "Modify helloworld.py file"
[test_functions ce68d66] Modify helloworld.py file
1 file changed, 1 insertion(+), 1 deletion(-)
b2205896@b2205896:~/git-exercises$
```

- Display helloworld.py content

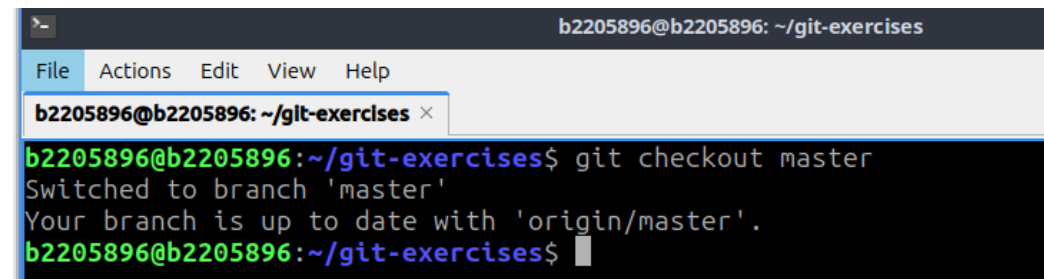
```
$cat helloworld.py
```

A terminal window titled 'b2205896@b2205896: ~/git-exercises' showing the command 'cat helloworld.py' and its output: '#!/usr/bin/python3', 'print("Hello world")', and 'print("Hello OSS Development")'.

```
b2205896@b2205896:~/git-exercises$ cat helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
b2205896@b2205896:~/git-exercises$
```

- Swap back to the "master" branch

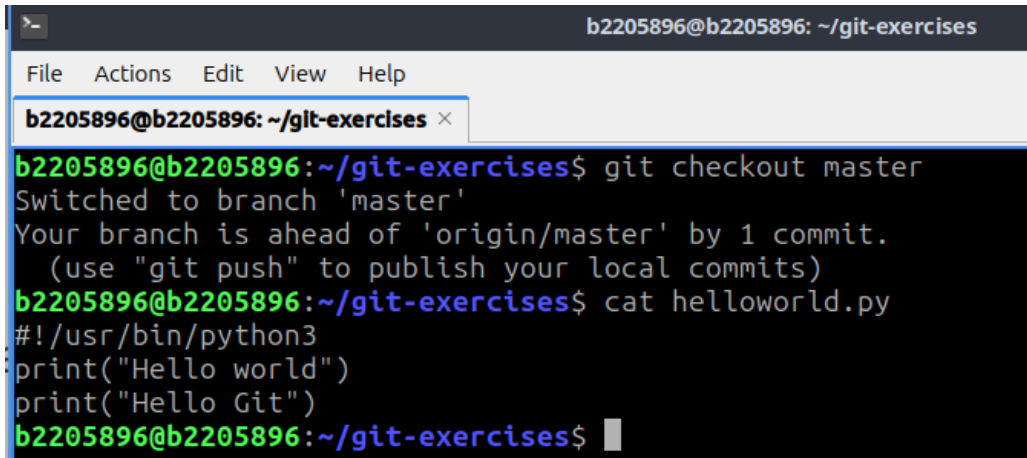
```
$git checkout master
```

A terminal window titled 'b2205896@b2205896: ~/git-exercises' showing the command 'git checkout master'. The output is 'Switched to branch 'master'' and 'Your branch is up to date with 'origin/master''.

```
b2205896@b2205896:~/git-exercises$ git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
b2205896@b2205896:~/git-exercises$
```

- Display helloworld.py content

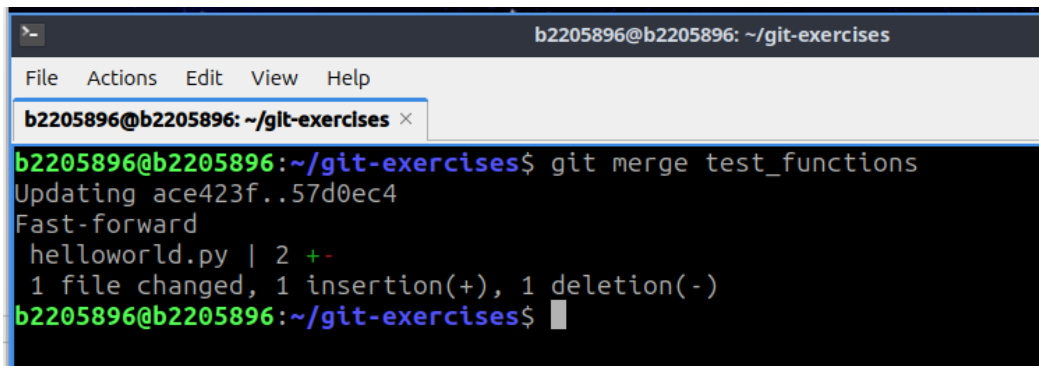
```
$cat helloworld.py
```

A terminal window titled 'b2205896@b2205896: ~/git-exercises' with a menu bar (File, Actions, Edit, View, Help). The terminal shows the command 'git checkout master' being executed, resulting in 'Switched to branch 'master'' and 'Your branch is ahead of 'origin/master' by 1 commit. (use "git push" to publish your local commits)'. Then, 'cat helloworld.py' is executed, displaying the file content: '#!/usr/bin/python3', 'print("Hello world")', and 'print("Hello Git")'.

```
b2205896@b2205896: ~/git-exercises
b2205896@b2205896:~/git-exercises$ git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 1 commit.
(use "git push" to publish your local commits)
b2205896@b2205896:~/git-exercises$ cat helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello Git")
b2205896@b2205896:~/git-exercises$
```

- Merge “test_functions” branch to “master”

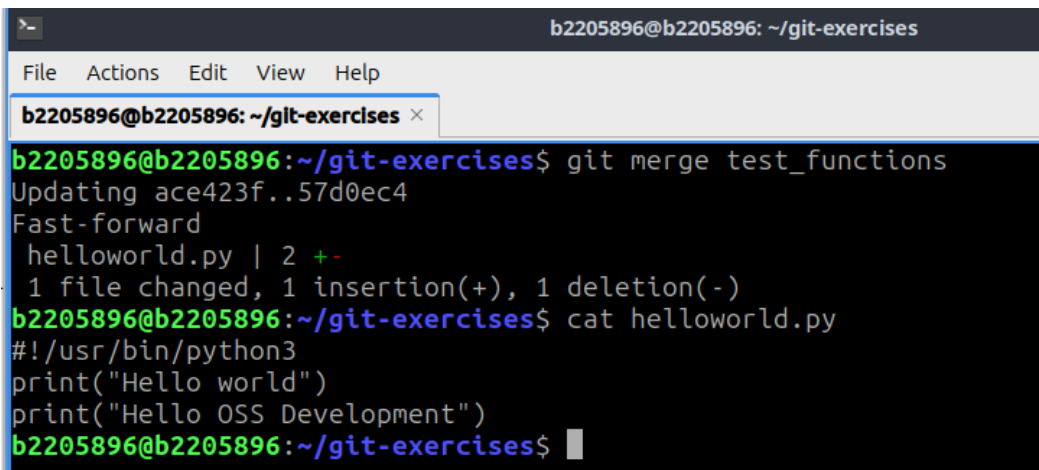
```
$git merge test_functions
```

A terminal window titled 'b2205896@b2205896: ~/git-exercises' with a menu bar (File, Actions, Edit, View, Help). The terminal shows the command 'git merge test_functions' being executed, resulting in 'Updating ace423f..57d0ec4' and 'Fast-forward'. A diff summary shows 'helloworld.py | 2 +-' and '1 file changed, 1 insertion(+), 1 deletion(-)'.

```
b2205896@b2205896: ~/git-exercises
b2205896@b2205896:~/git-exercises$ git merge test_functions
Updating ace423f..57d0ec4
Fast-forward
 helloworld.py | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
b2205896@b2205896:~/git-exercises$
```

- Display helloworld.py content. Are there any conflicts?

```
$cat helloworld.py
```

A terminal window titled 'b2205896@b2205896: ~/git-exercises' with a menu bar (File, Actions, Edit, View, Help). The terminal shows the command 'git merge test_functions' being executed, resulting in 'Updating ace423f..57d0ec4' and 'Fast-forward'. A diff summary shows 'helloworld.py | 2 +-' and '1 file changed, 1 insertion(+), 1 deletion(-)'. Then, 'cat helloworld.py' is executed, displaying the file content: '#!/usr/bin/python3', 'print("Hello world")', and 'print("Hello OSS Development")'.

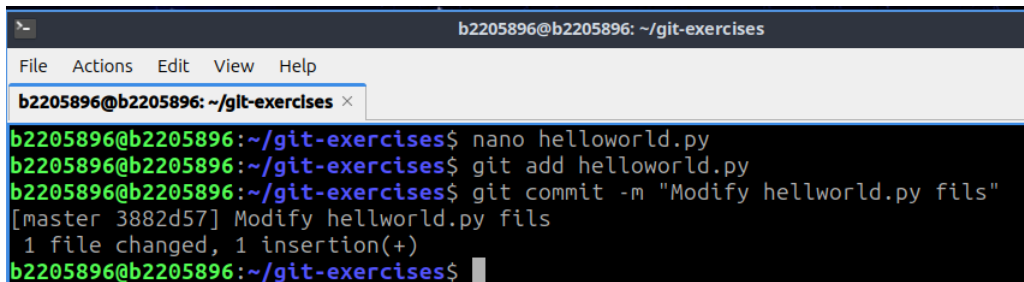
```
b2205896@b2205896: ~/git-exercises
b2205896@b2205896:~/git-exercises$ git merge test_functions
Updating ace423f..57d0ec4
Fast-forward
 helloworld.py | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
b2205896@b2205896:~/git-exercises$ cat helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
b2205896@b2205896:~/git-exercises$
```

- Edit helloworld.py file and commit the result

```
$nano helloworld.py
```



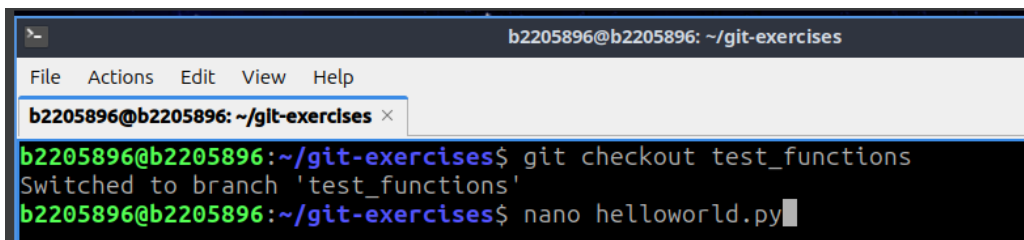
```
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
print("Hello CTU")
$git add helloworld.py
$git commit -m "Modify hellworld.py file"
```

A terminal window titled 'b2205896@b2205896: ~/git-exercises' with a menu bar (File, Actions, Edit, View, Help). The terminal shows the following commands and output:

```
b2205896@b2205896:~/git-exercises$ nano helloworld.py
b2205896@b2205896:~/git-exercises$ git add helloworld.py
b2205896@b2205896:~/git-exercises$ git commit -m "Modify hellworld.py file"
[master 3882d57] Modify hellworld.py file
1 file changed, 1 insertion(+)
```

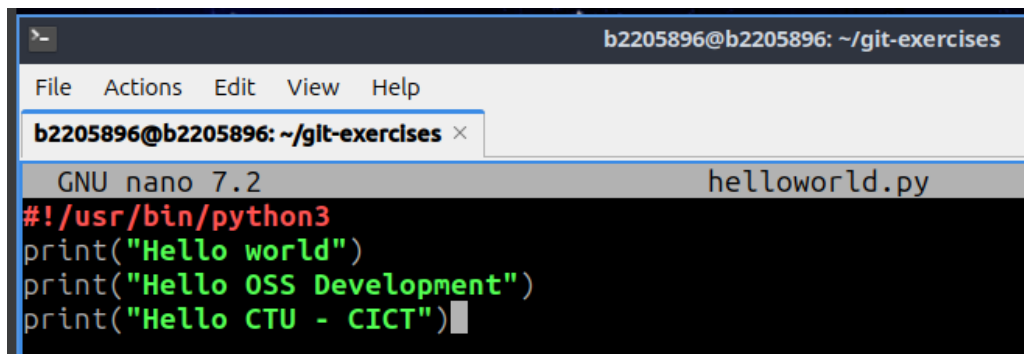
- Checkout to test_functions, edit helloworld.py file and commit the result

```
$git checkout test_functions
```

A terminal window titled 'b2205896@b2205896: ~/git-exercises' with a menu bar (File, Actions, Edit, View, Help). The terminal shows the following commands and output:

```
b2205896@b2205896:~/git-exercises$ git checkout test_functions
Switched to branch 'test_functions'
b2205896@b2205896:~/git-exercises$ nano helloworld.py
```

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

A terminal window titled 'b2205896@b2205896: ~/git-exercises' with a menu bar (File, Actions, Edit, View, Help). The terminal shows the content of helloworld.py being edited in nano 7.2:

```
GNU nano 7.2 helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
print("Hello CTU - CICT")
```

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



```
b2205896@b2205896: ~/git-exercises
File Actions Edit View Help
b2205896@b2205896: ~/git-exercises x
b2205896@b2205896:~/git-exercises$ git add helloworld.py
b2205896@b2205896:~/git-exercises$ commit -m "Modify helloworld.py file"
Command 'commit' not found, did you mean:
  command 'kommit' from snap kommit (1.0.2)
  command 'commix' from snap commix (v3.9-47-gebeb1316)
See 'snap info <snapname>' for additional versions.
b2205896@b2205896:~/git-exercises$ git commit -m "Modify helloworld.py file"
[test_functions 4ae7ba3] Modify helloworld.py file
1 file changed, 1 insertion(+)
b2205896@b2205896:~/git-exercises$
```

- Swap back to the “master” branch, merge “test_functions” branch to “master”

```
$git checkout master
```

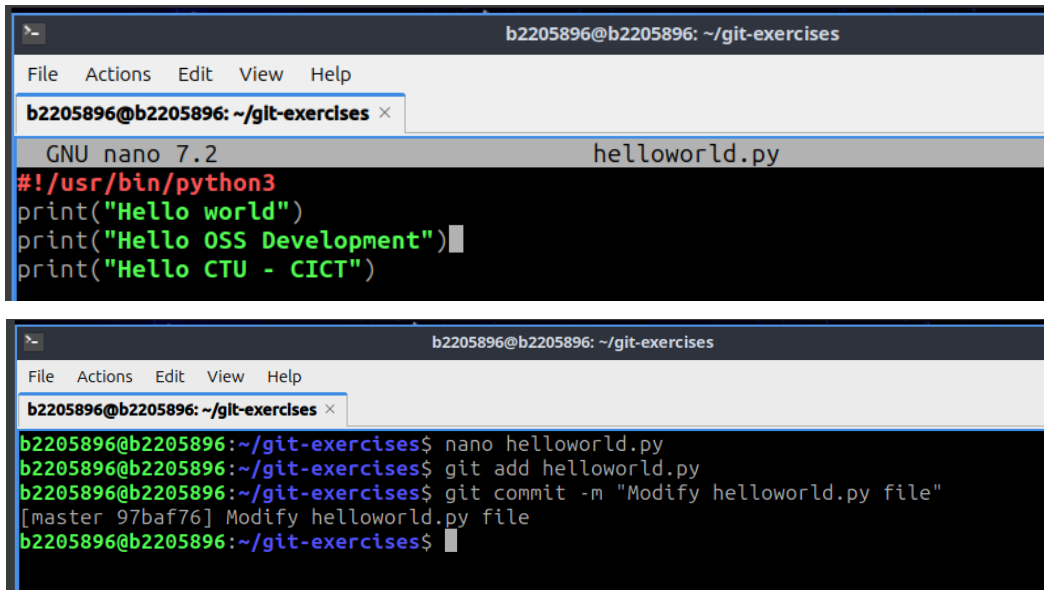
```
$git merge test_functions
```

```
b2205896@b2205896: ~/git-exercises
File Actions Edit View Help
b2205896@b2205896: ~/git-exercises x
b2205896@b2205896:~/git-exercises$ git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 6 commits.
(use "git push" to publish your local commits)
b2205896@b2205896:~/git-exercises$ 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.
b2205896@b2205896:~/git-exercises$
```

- 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.

```
b2205896@b2205896: ~/git-exercises
File Actions Edit View Help
b2205896@b2205896: ~/git-exercises x
GNU nano 7.2 helloworld.py
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
<<<<<< HEAD
print("Hello CTU")
=====
print("Hello CTU - CICT")
>>>>>> test_functions
```

Fix the conflicts



The first screenshot shows a nano editor window titled 'helloworld.py' with the following content:

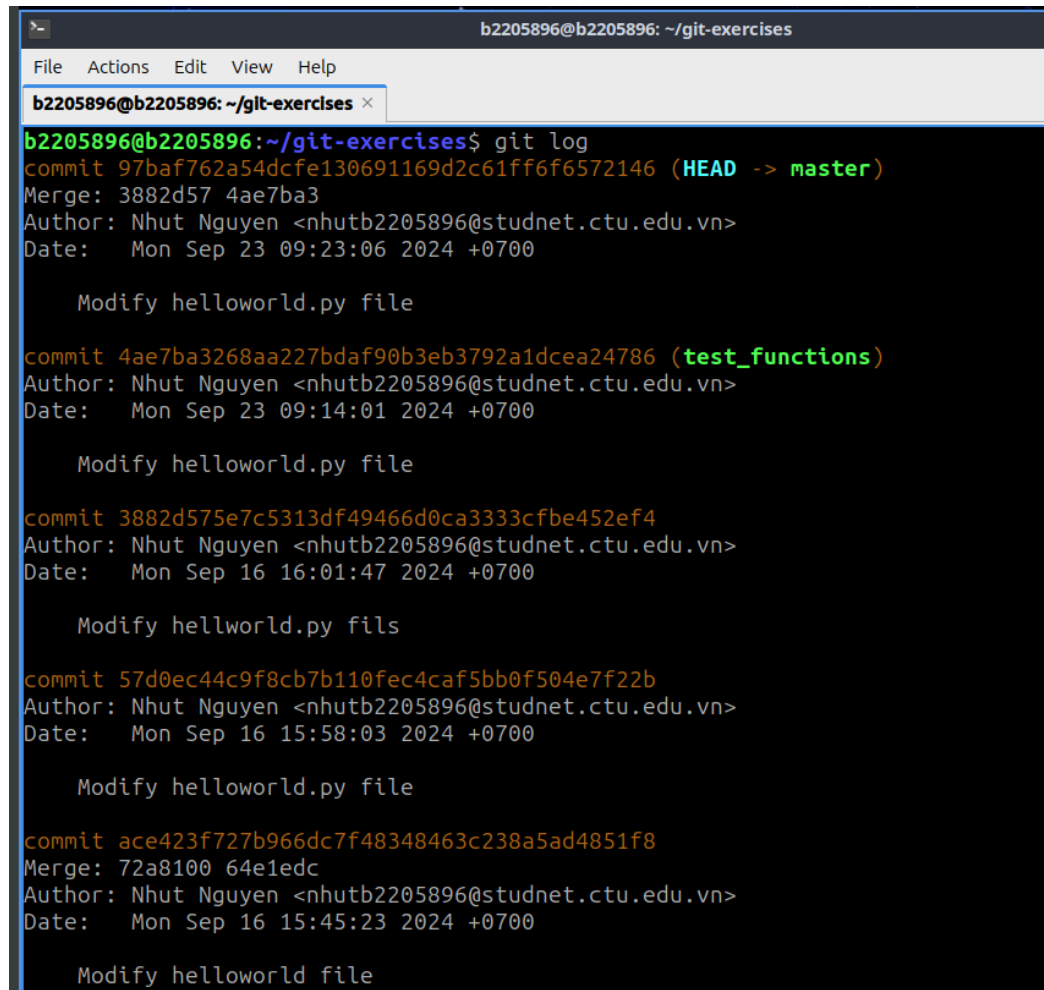
```
#!/usr/bin/python3
print("Hello world")
print("Hello OSS Development")
print("Hello CTU - CICT")
```

The second screenshot shows the terminal commands executed to create and commit the file:

```
b2205896@b2205896: ~/git-exercises
b2205896@b2205896:~/git-exercises$ nano helloworld.py
b2205896@b2205896:~/git-exercises$ git add helloworld.py
b2205896@b2205896:~/git-exercises$ git commit -m "Modify helloworld.py file"
[master 97baf76] Modify helloworld.py file
b2205896@b2205896:~/git-exercises$
```

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

\$git log



The terminal output of the 'git log' command is as follows:

```
b2205896@b2205896:~/git-exercises$ git log
commit 97baf762a54dcfe130691169d2c61ff6f6572146 (HEAD -> master)
Merge: 3882d57 4ae7ba3
Author: Nhut Nguyen <nhutb2205896@studnet.ctu.edu.vn>
Date: Mon Sep 23 09:23:06 2024 +0700

    Modify helloworld.py file

commit 4ae7ba3268aa227bdaf90b3eb3792a1dcea24786 (test_functions)
Author: Nhut Nguyen <nhutb2205896@studnet.ctu.edu.vn>
Date: Mon Sep 23 09:14:01 2024 +0700

    Modify helloworld.py file

commit 3882d575e7c5313df49466d0ca3333cfbe452ef4
Author: Nhut Nguyen <nhutb2205896@studnet.ctu.edu.vn>
Date: Mon Sep 16 16:01:47 2024 +0700

    Modify hellworld.py fls

commit 57d0ec44c9f8cb7b110fec4caf5bb0f504e7f22b
Author: Nhut Nguyen <nhutb2205896@studnet.ctu.edu.vn>
Date: Mon Sep 16 15:58:03 2024 +0700

    Modify helloworld.py file

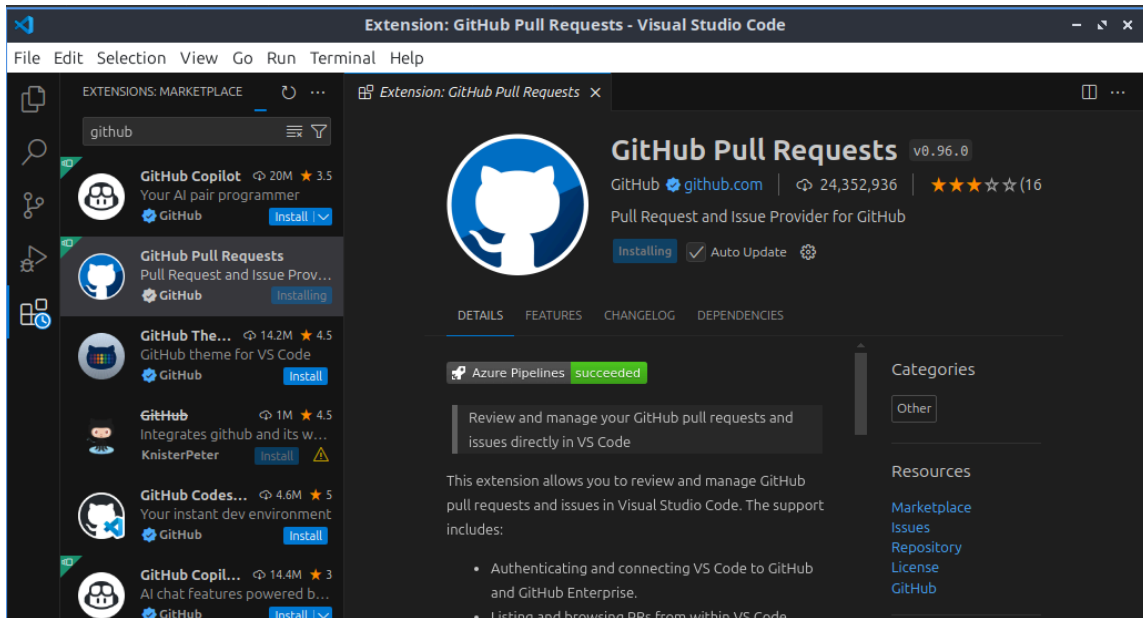
commit ace423f727b966dc7f48348463c238a5ad4851f8
Merge: 72a8100 64e1edc
Author: Nhut Nguyen <nhutb2205896@studnet.ctu.edu.vn>
Date: Mon Sep 16 15:45:23 2024 +0700

    Modify helloworld file
```

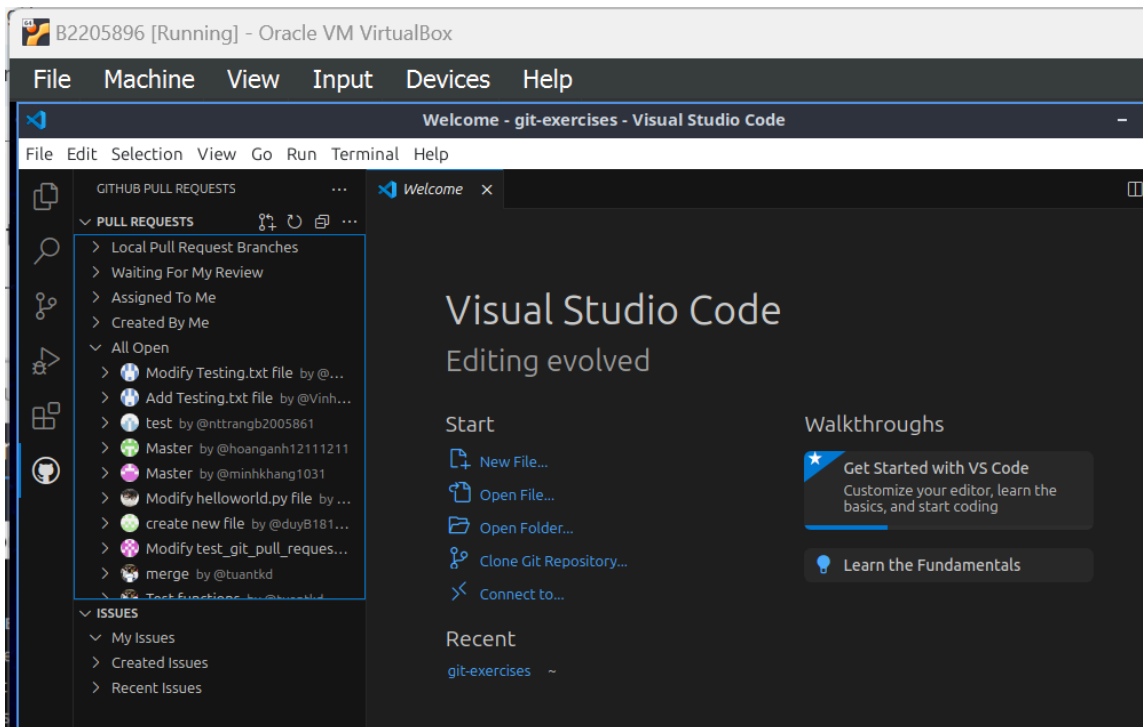
(take screenshots to show that you finish this exercise)

3.Working with GitHub in VS Code

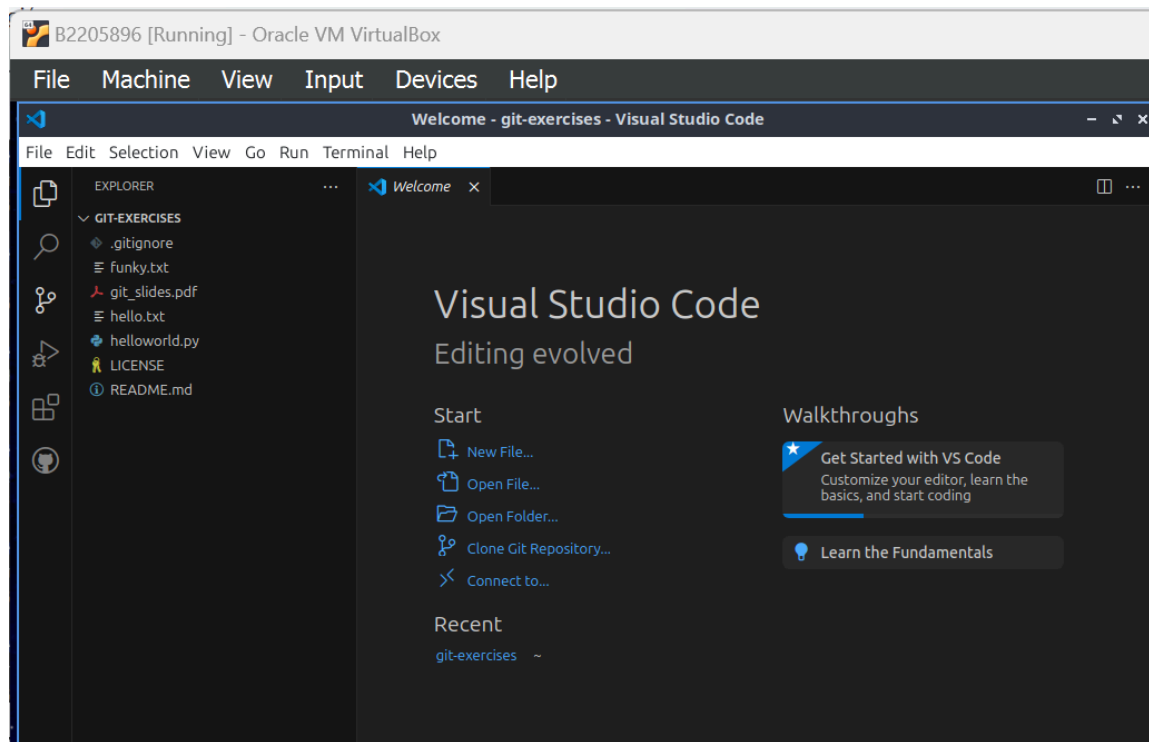
- Install VS Code and its GitHub Pull Requests-Issues extension to your computer.



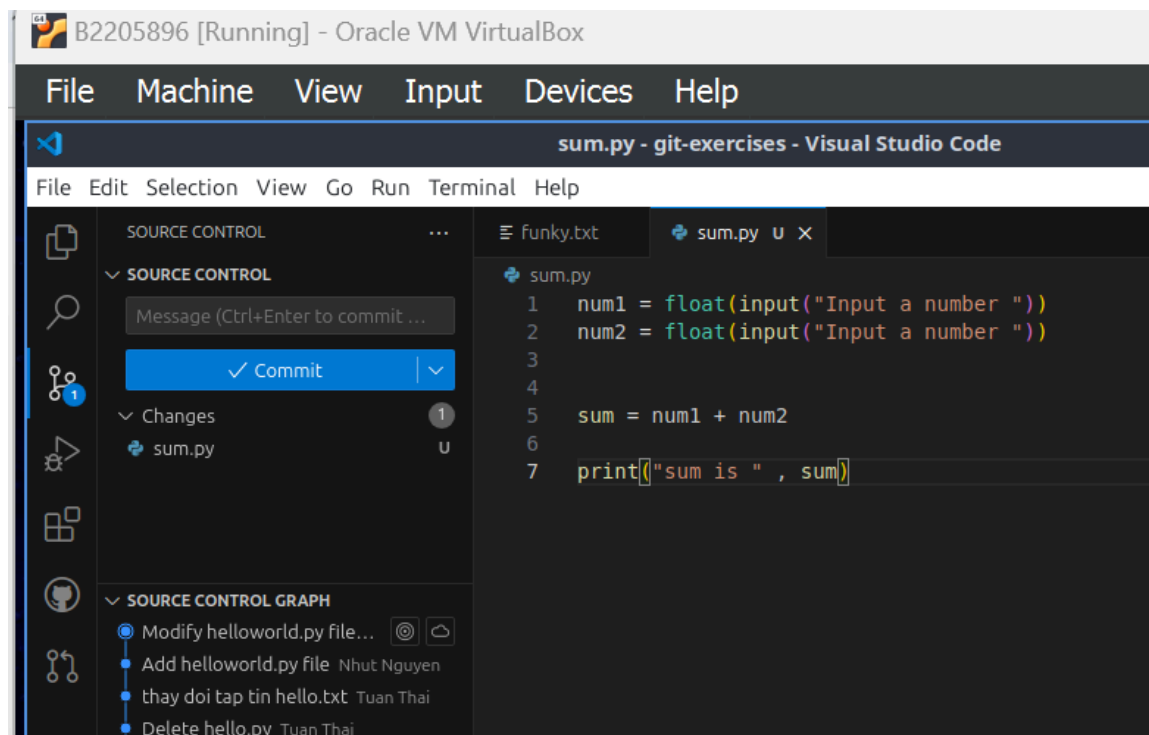
- Sign in GitHub using GitHub Pull Requests and Issues extension.

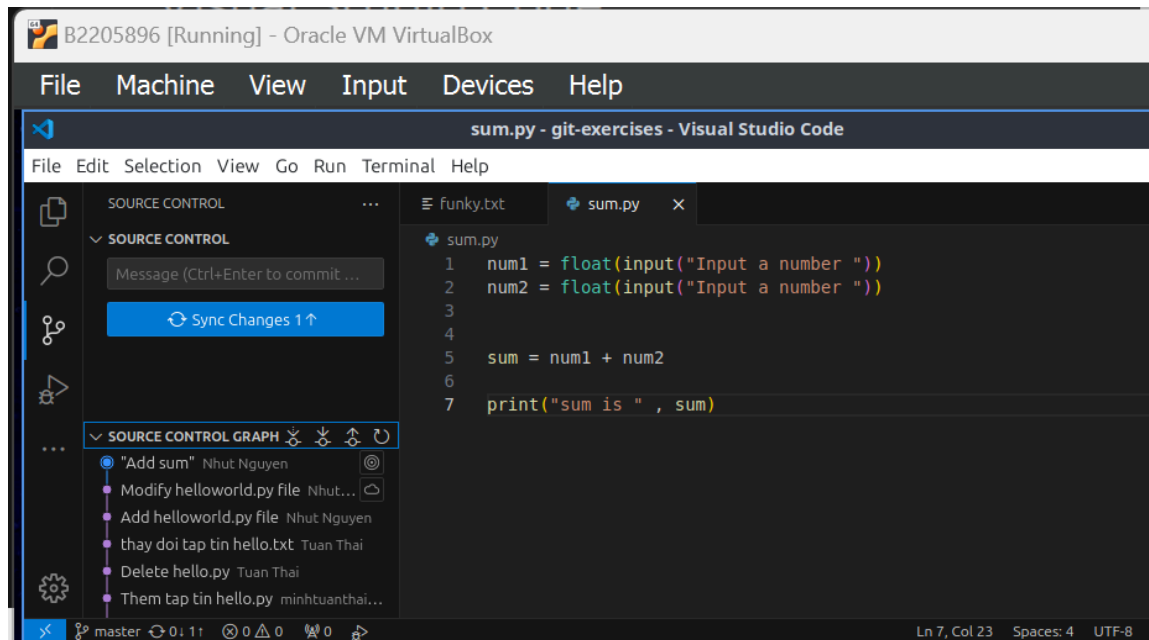


- Clone a remote repository to your computer.

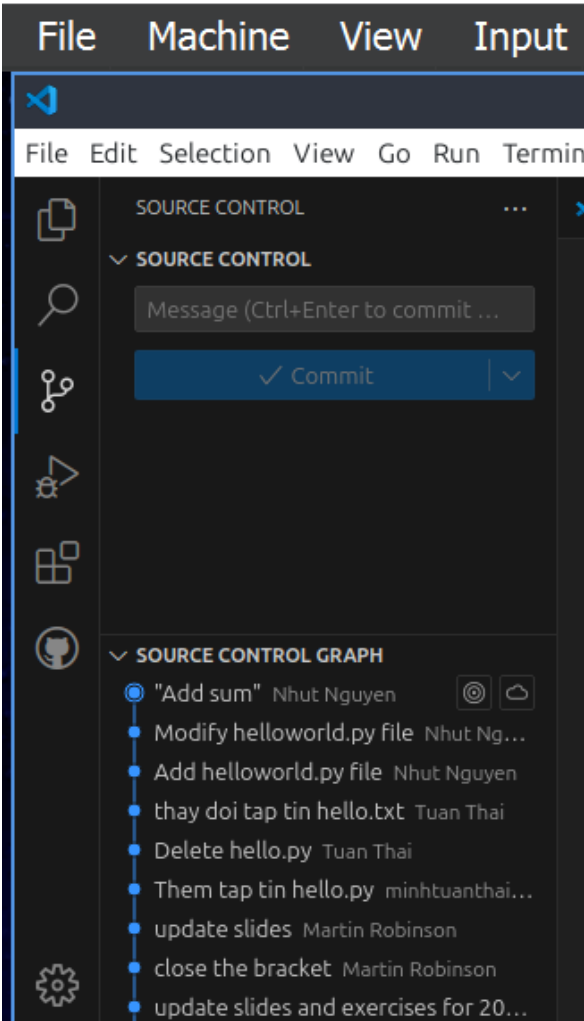


- Create and add a new file to the local repository, then commit everything you have done so far.





- Push the commits to the remote repository.



Nhut Nguyen "Add sum"		dec5f15 · now	🕒 21 Commits
📄 .gitignore	Initial commit	8 years ago	
📄 LICENSE	Initial commit	8 years ago	
📄 README.md	close the bracket	7 years ago	
📄 funky.txt	edit funky file	8 years ago	
📄 git_slides.pdf	update slides	5 years ago	
📄 hello.txt	thay doi tap tin hello.txt	3 years ago	
📄 helloworld.py	Modify helloworld.py file	4 hours ago	
📄 sum.py	"Add sum"	now	

(take screenshots to show that you finish this exercise)

---END---