DL Server Usage

1. Log In to the Server

1. Use the below syntax to log into DL Server with your username and password.

```
ssh username@27.107.164.181
```

Ex.: I have username as ‘sam’ then

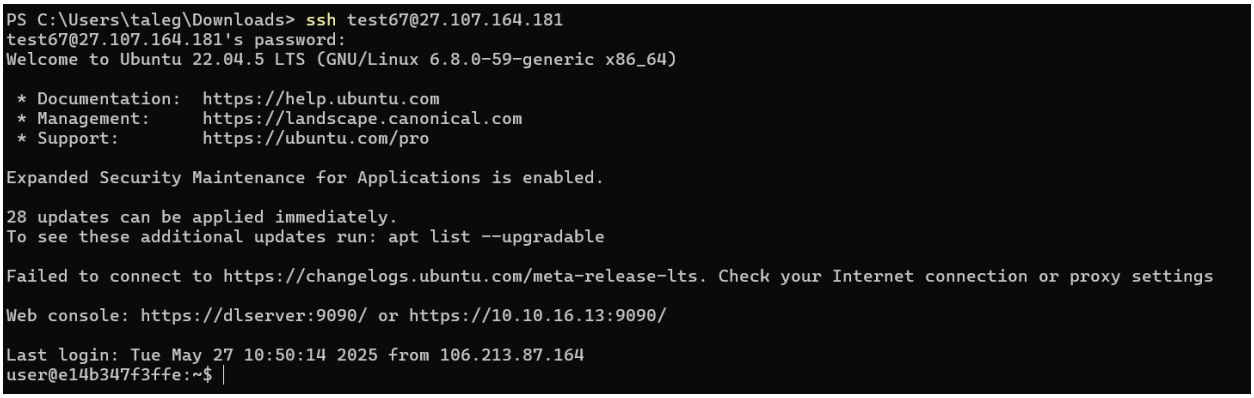
```
ssh sam@27.107.164.181
```

2. Enter your password in the terminal window. Please note the password is not visible in the window. You just type it and assume it is there.
3. You will be logged in the server. You will see something like this

```
user@e14b347f3ffe:~$
```

That means you have successfully logged in.

Below is the image for your reference

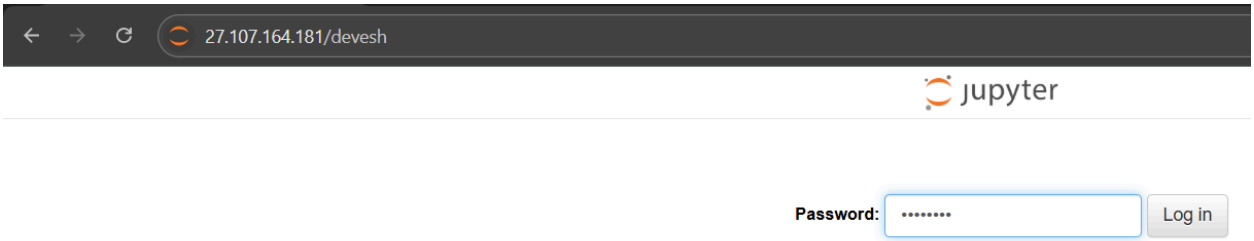


2. Accessing Jupyter Workspace

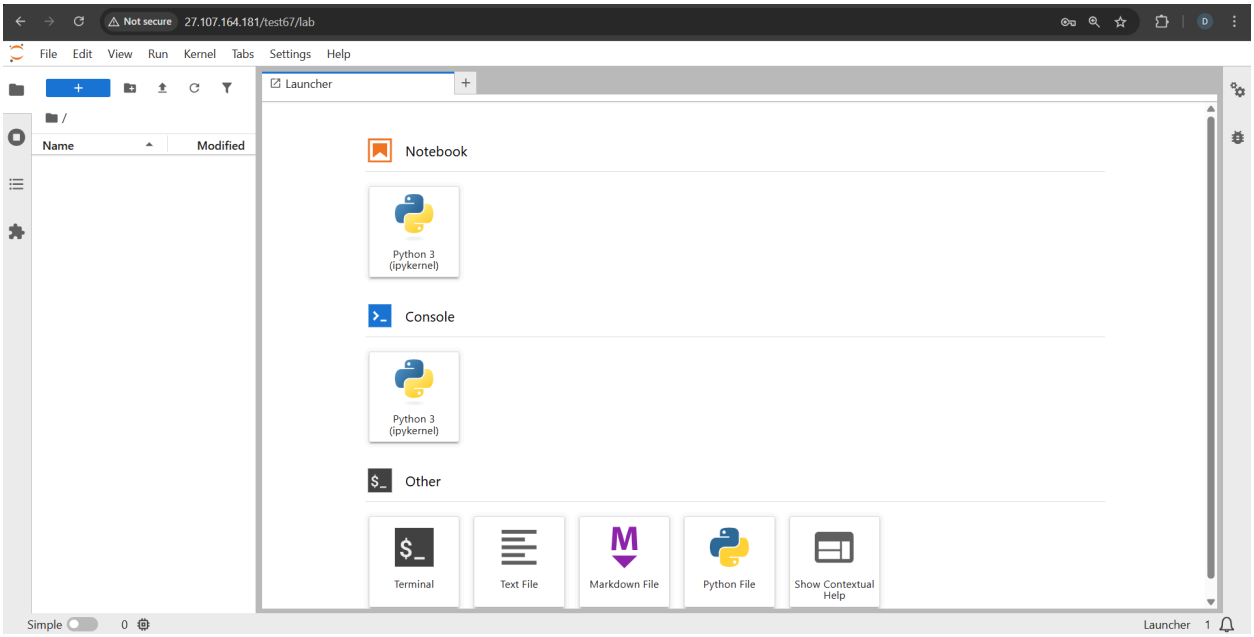
1. To access Jupyter Workspace use the below link with your username

```
http://27.107.164.181/<your_username>
```

2. Enter your password



3. You will be logged in to Jupyter Workspace



2.1 Using Jupyter Labs

In JupyterLab, you can use many different tools like Jupyter Notebooks, Terminal, Python Scripts, Python Kernel, etc.

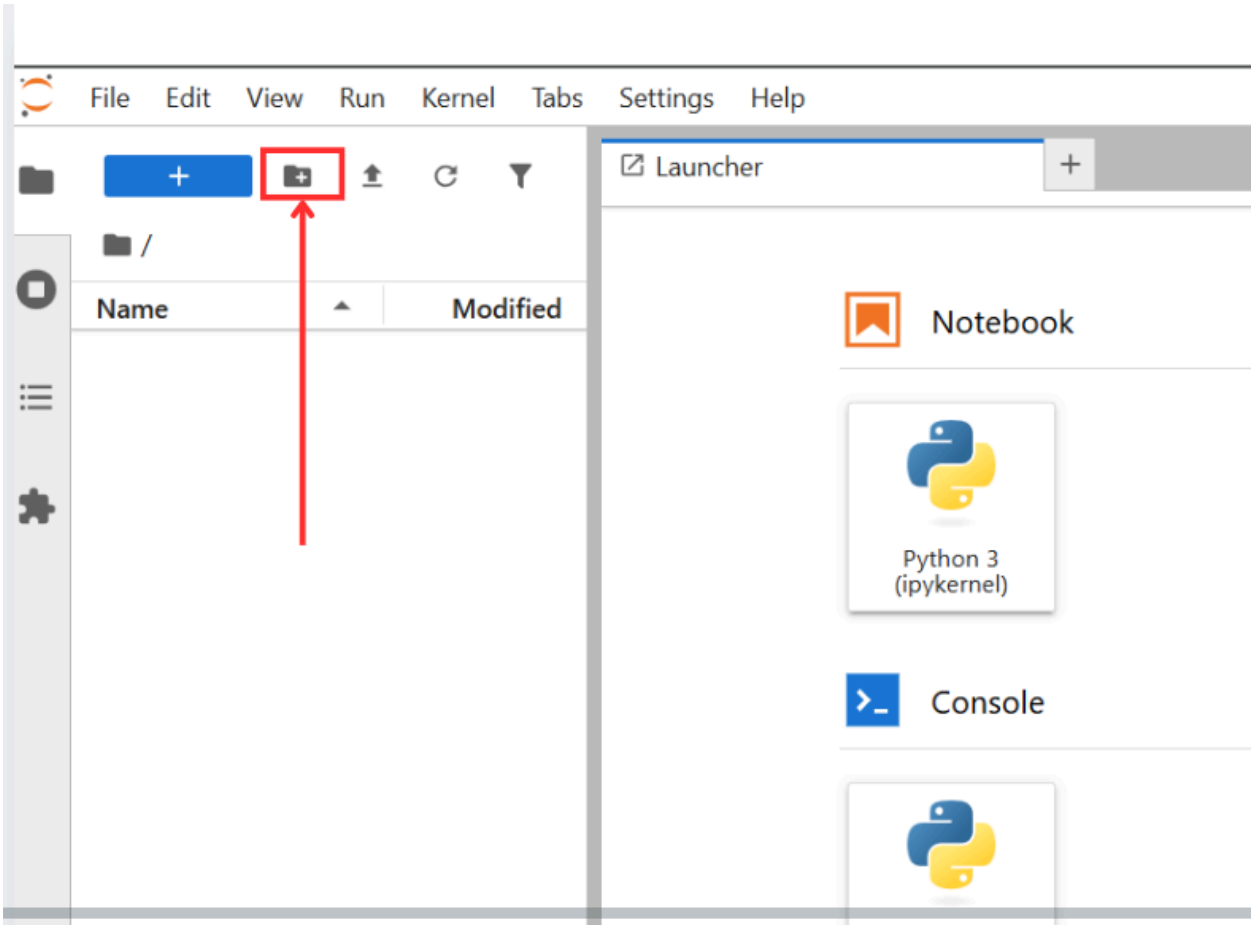
You can study about it in detail by clicking below :

https://jupyterlab.readthedocs.io/en/latest/

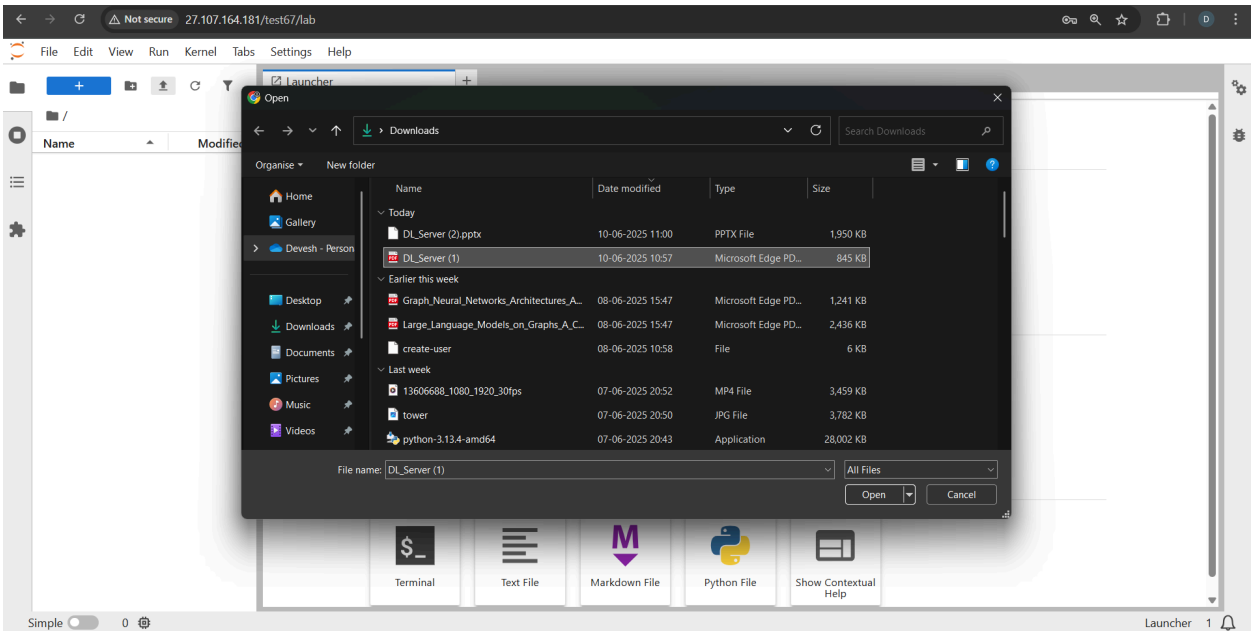
3. File Sharing between Local Machine and Server

3.1 From Local Machine to Server

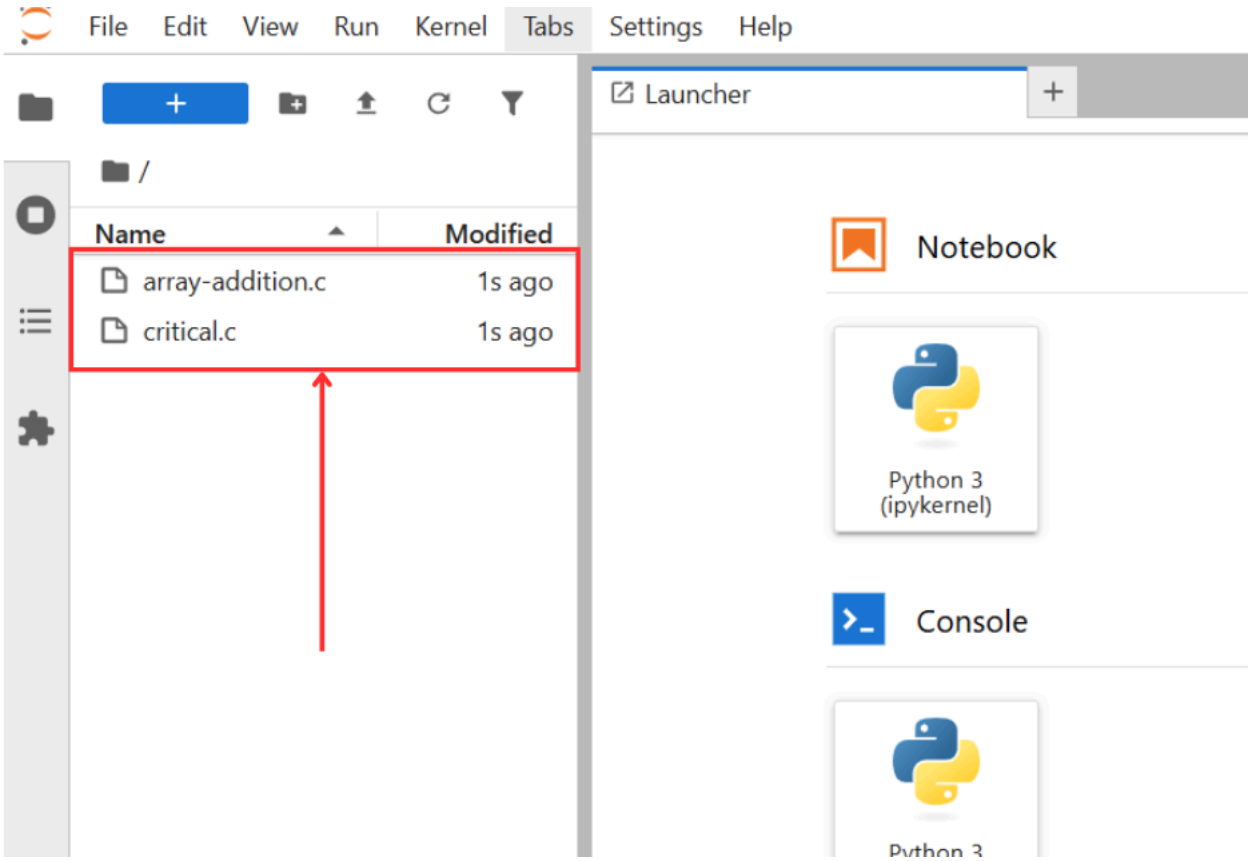
1. Login to your Jupyter Workspace as shown in (2)
2. You can see upload logo in the Jupyter Workspace.



3. Click on it and upload the file.



4. Now you can see the uploaded file in the file menu sidebar.



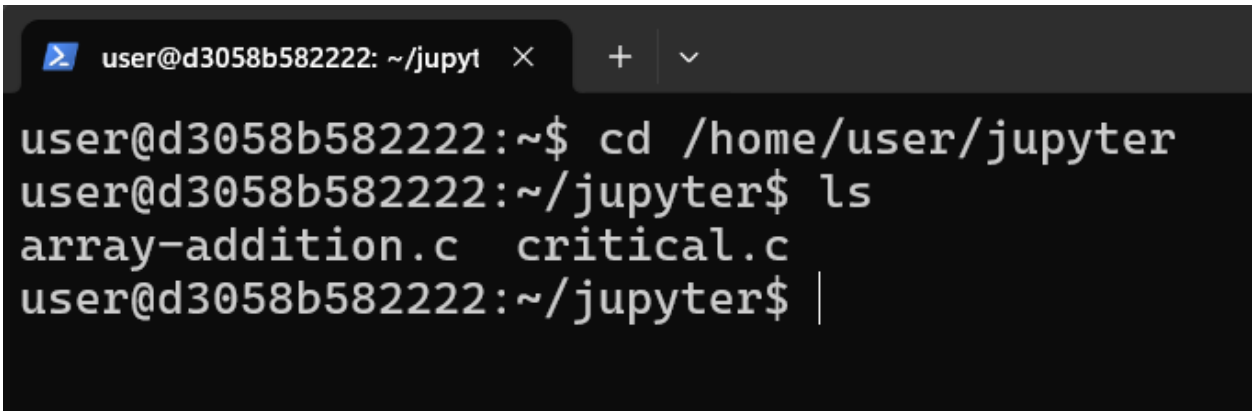
5. If you want to access the files in the terminal, You can navigate to

```
/home/user/jupyter
```

To navigate :

```
cd /home/user/jupyter
ls
```

You will see your files here.



3.2 From Server to Local

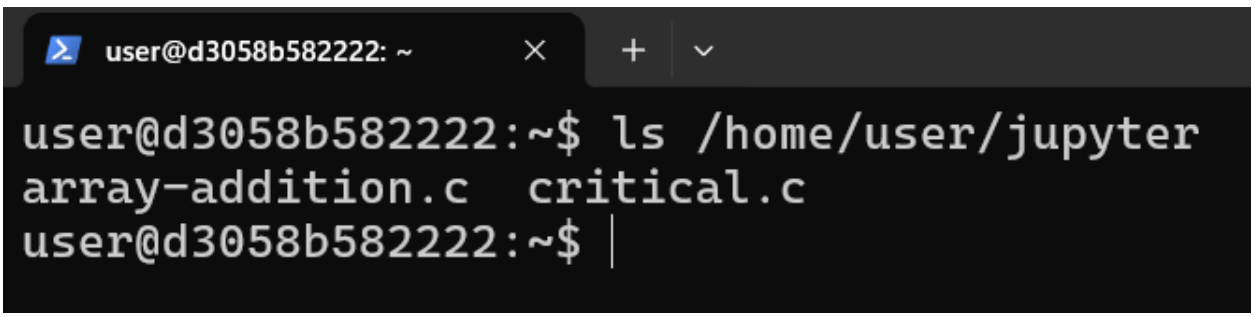
1. Make sure the file you want to send on local machine is in

```
/home/user/jupyter
```

To check:

```
ls /home/user/jupyter
```

If your file exists here, you are good to go.



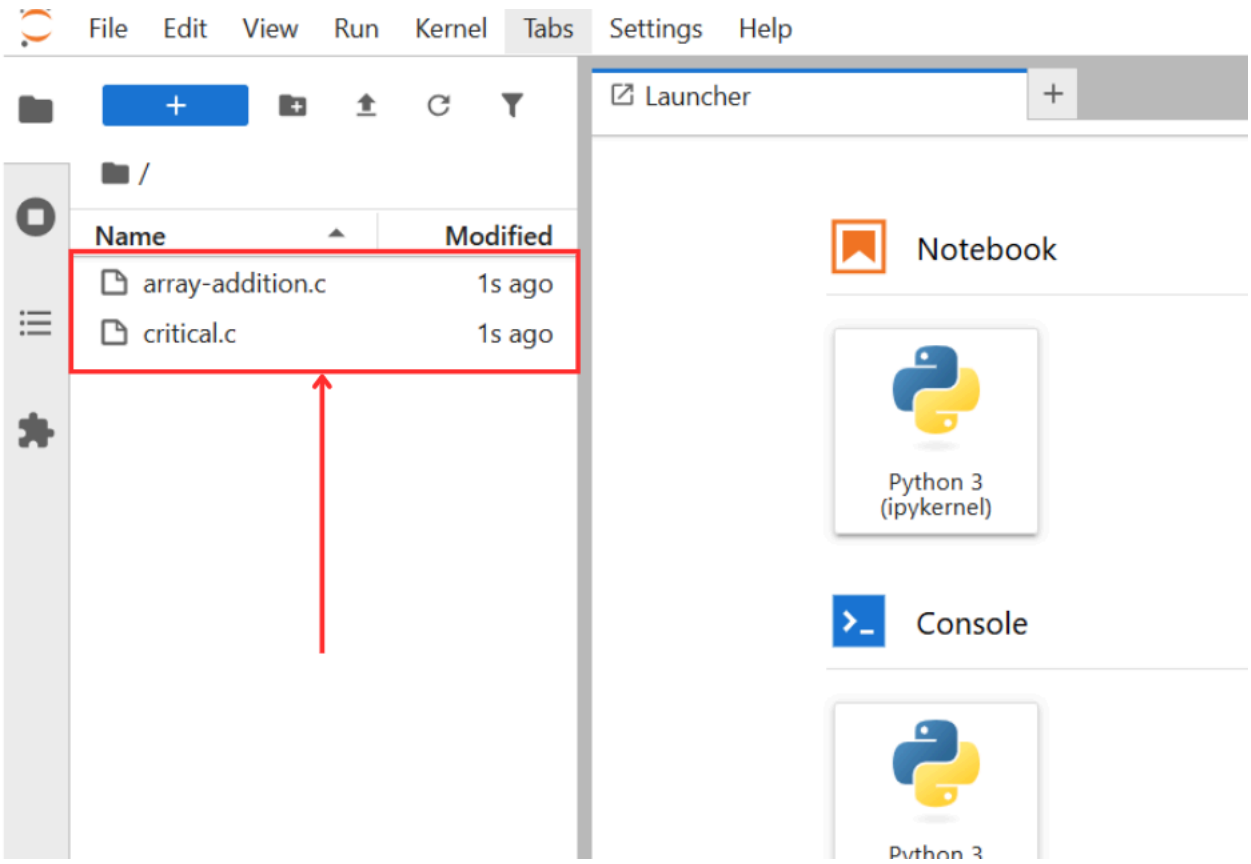
If your files are not available here, you can copy it here by

```
cp <file_path> /home/user/jupyter/
```

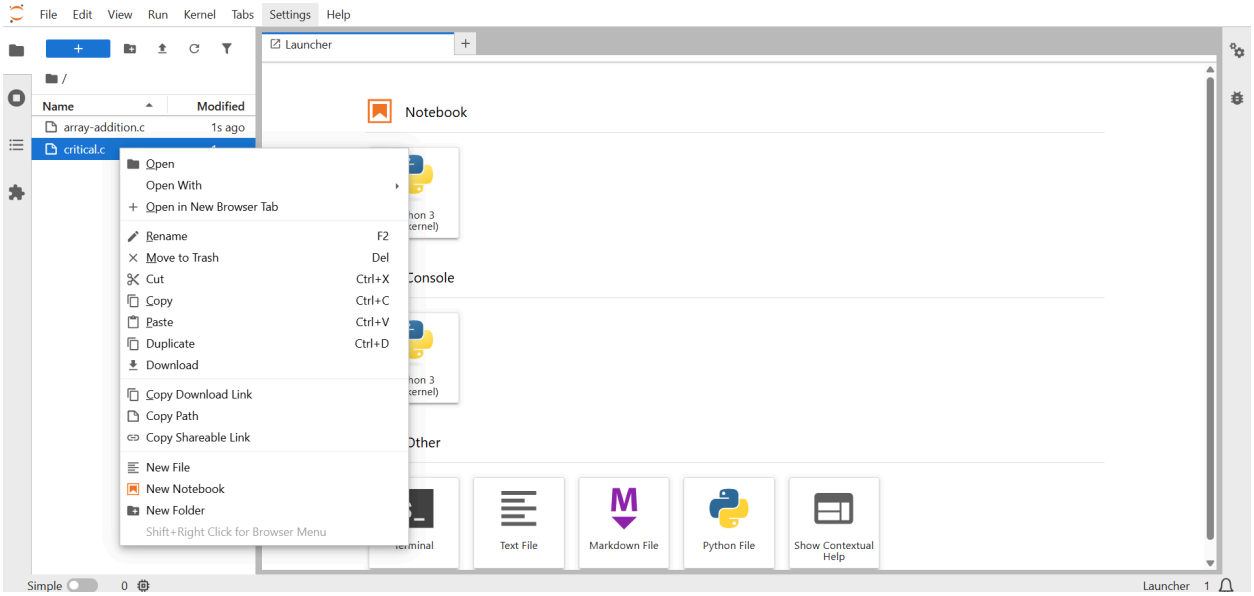
Replace `<file_path>` with your original file path.

Now, check again if files are available in `/home/user/jupyter` by following previous steps

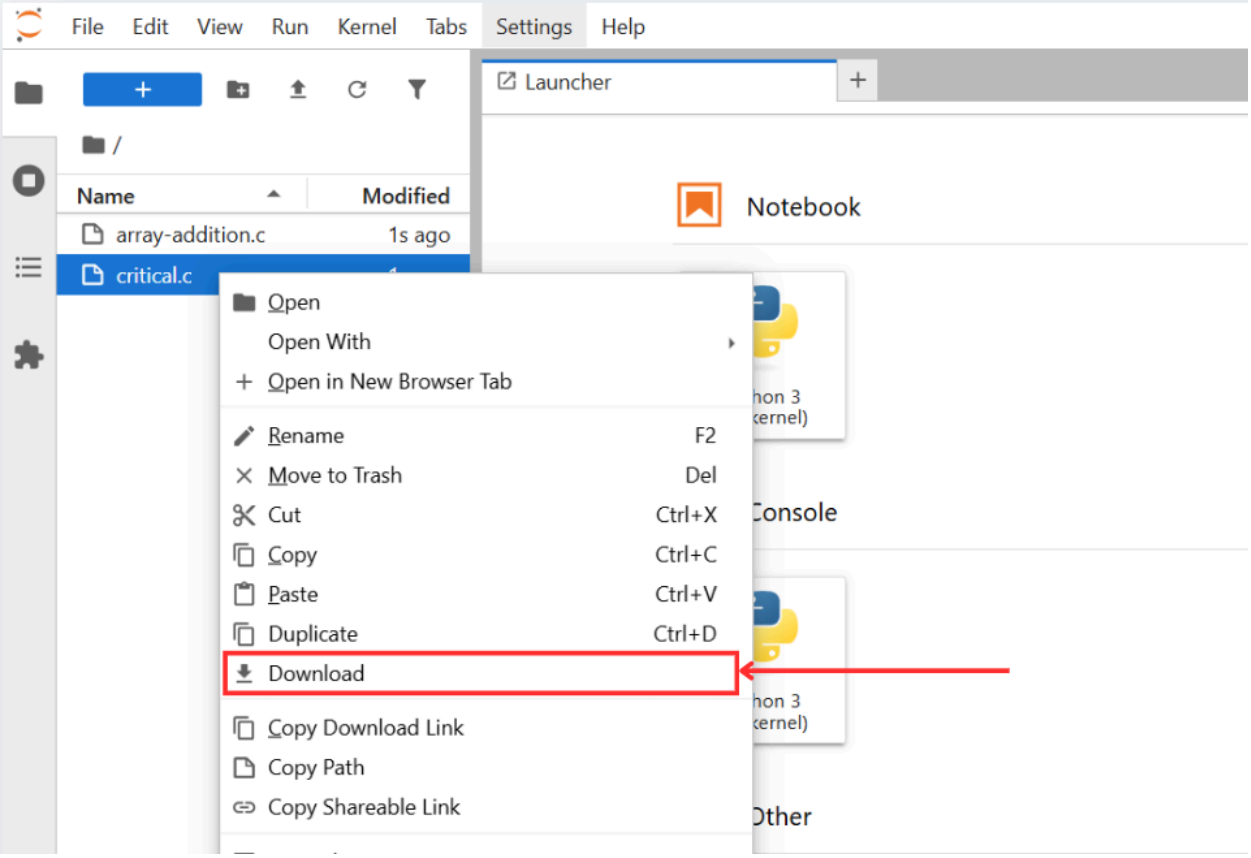
2. Log in to Jupyter Lab using Steps in (2.)
3. You can see your files in the files sidebar



5. Right Click on the file you want on Local Machine.



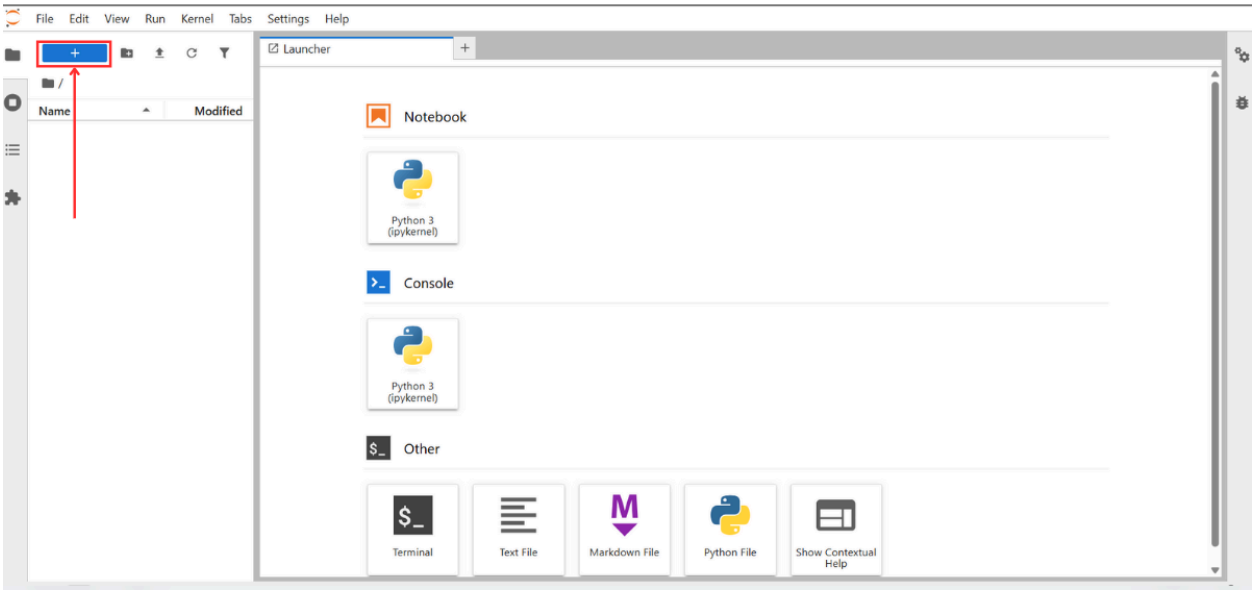
6. Click Download.



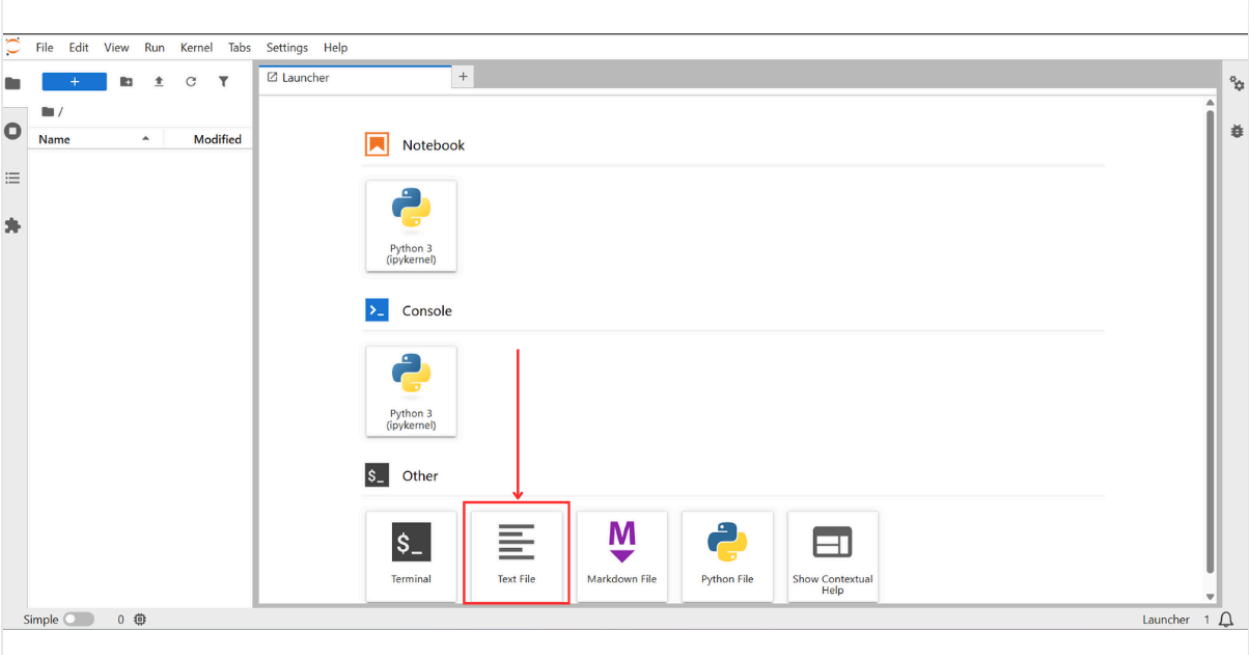
7. Your files will be downloaded on your Local Machine.

4. Creating files on DL Server using Jupyter

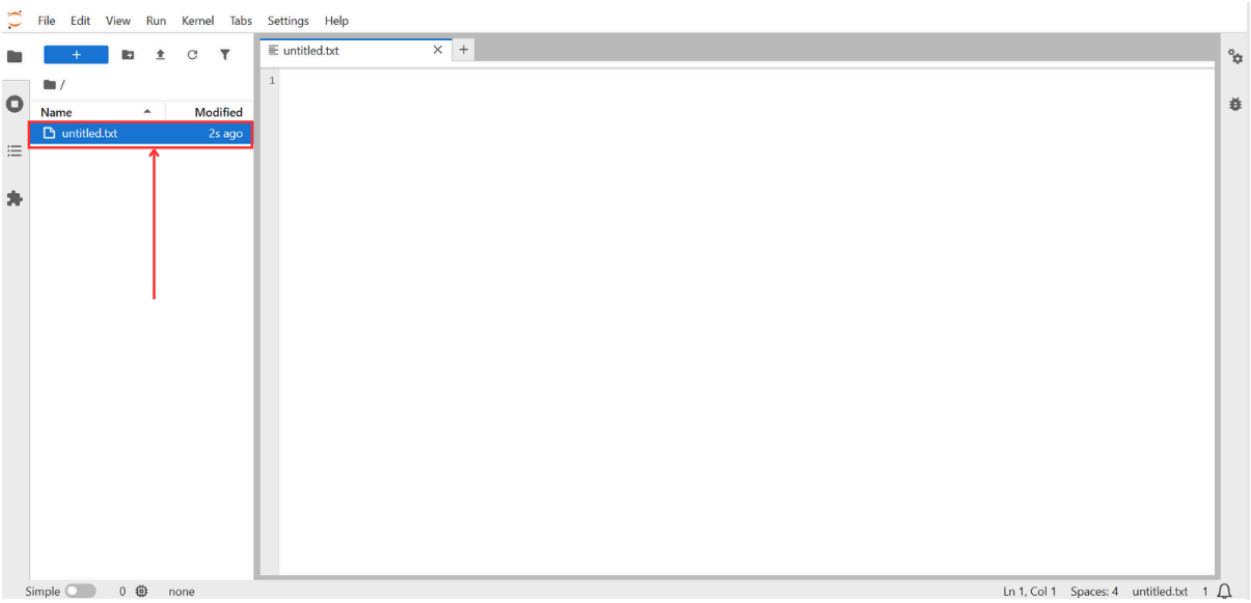
1. Login to your Jupyter Workspace as shown in (2)
2. Click on `+` icon in Jupyter.



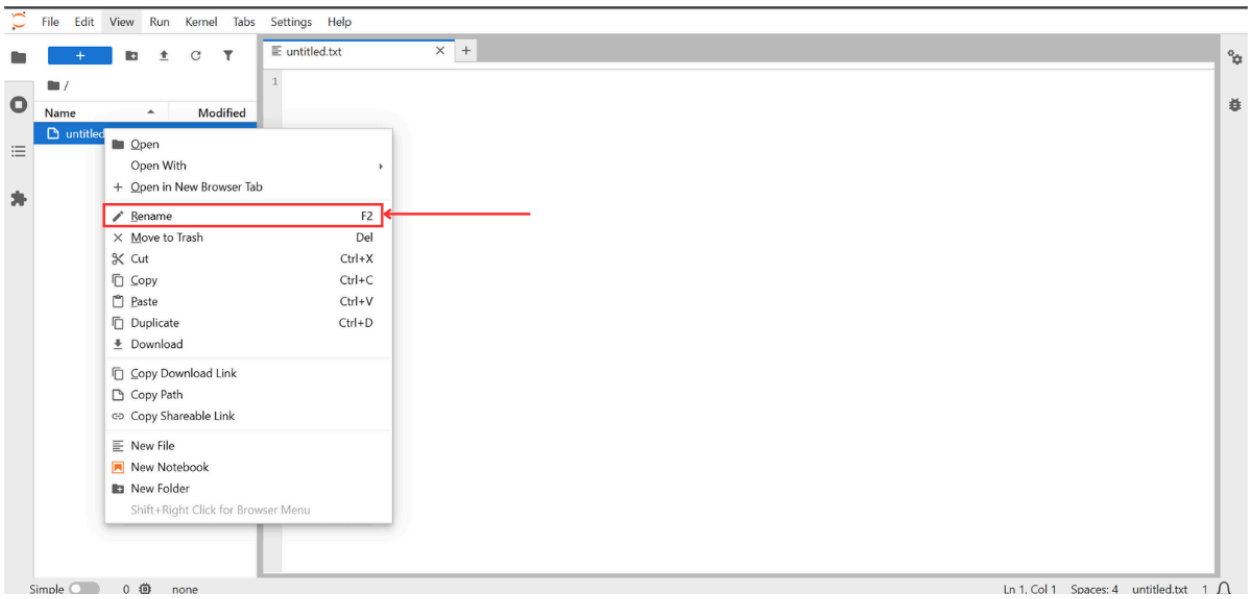
3. Click on `Text File` in the Launcher Menu



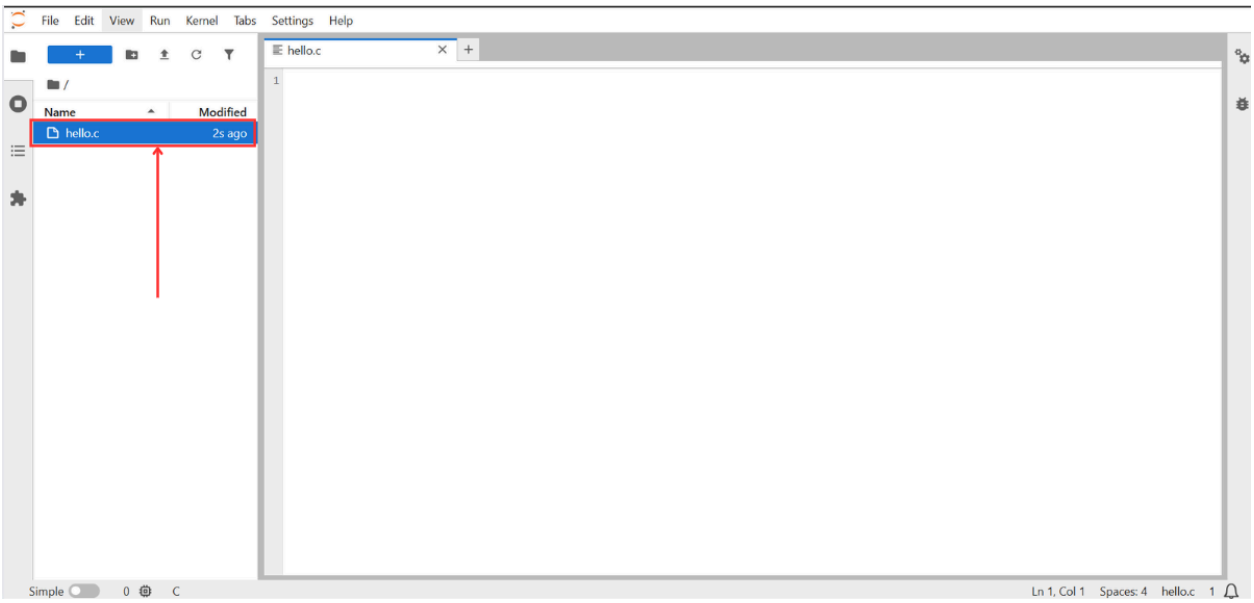
4. You will see the text file generated in file menu sidebar



5. You can Rename it by right click and select `Rename`



6. Rename the file to your preferred filename and extension.

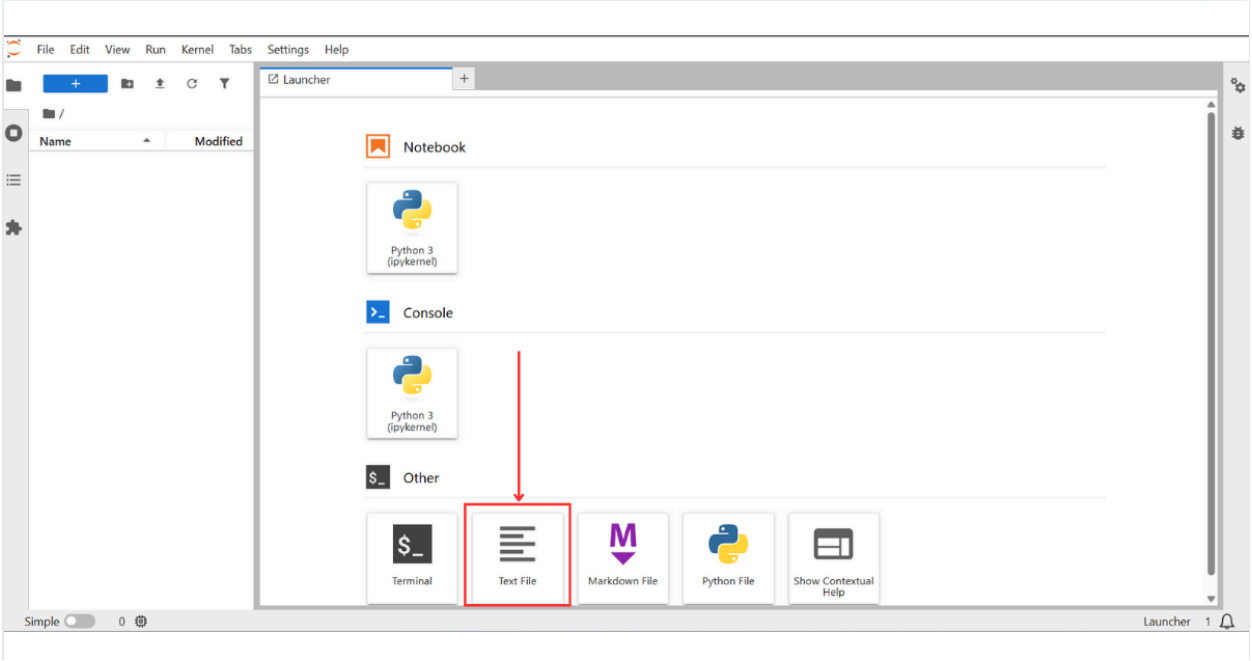


7. Open the file and edit your code
8. Save it by either `Ctrl + S` or `File → Save`

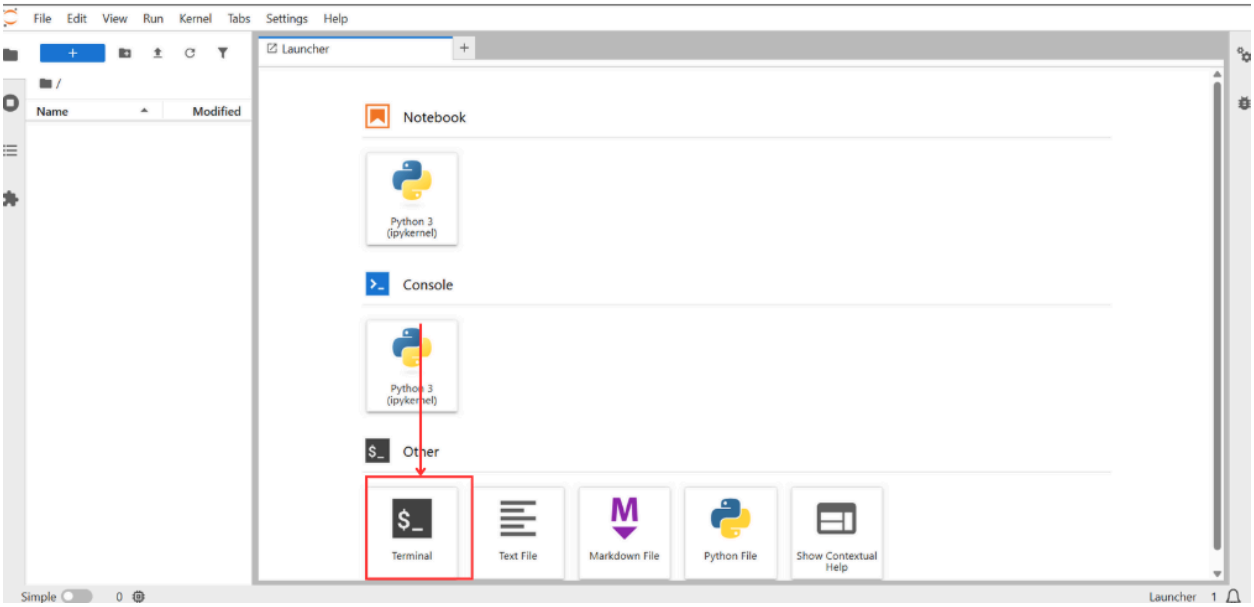
5. Running Codes on DL Server

5.1. OpenMP

1. Login to your Jupyter Workspace as shown in (2)
2. Upload your OpenMP Code file as shown in (3.1) or create a new code file as shown in (4)
3. Click on `+` icon in Jupyter.



4. Open Terminal from there



5. Make sure your current directory is `/home/user/jupyter` You can check with `pwd` command.

```
pwd
```

If not, change your directory to `/home/user/jupyter`

```
cd /home/user/jupyter
```

6. Compile your OpenMP Code

```
gcc -fopenmp -o <filename> <filename>
```

Ex.

```
gcc -fopenmp -o hello_openmp ./hello_openmp.c
```

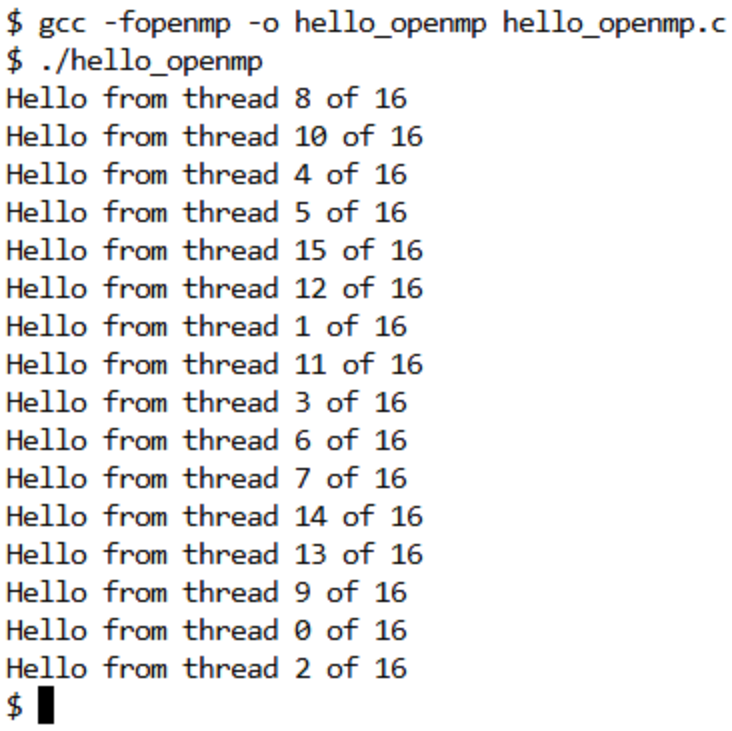
7. Run your OpenMP Code

```
./<filename>
```

Ex.

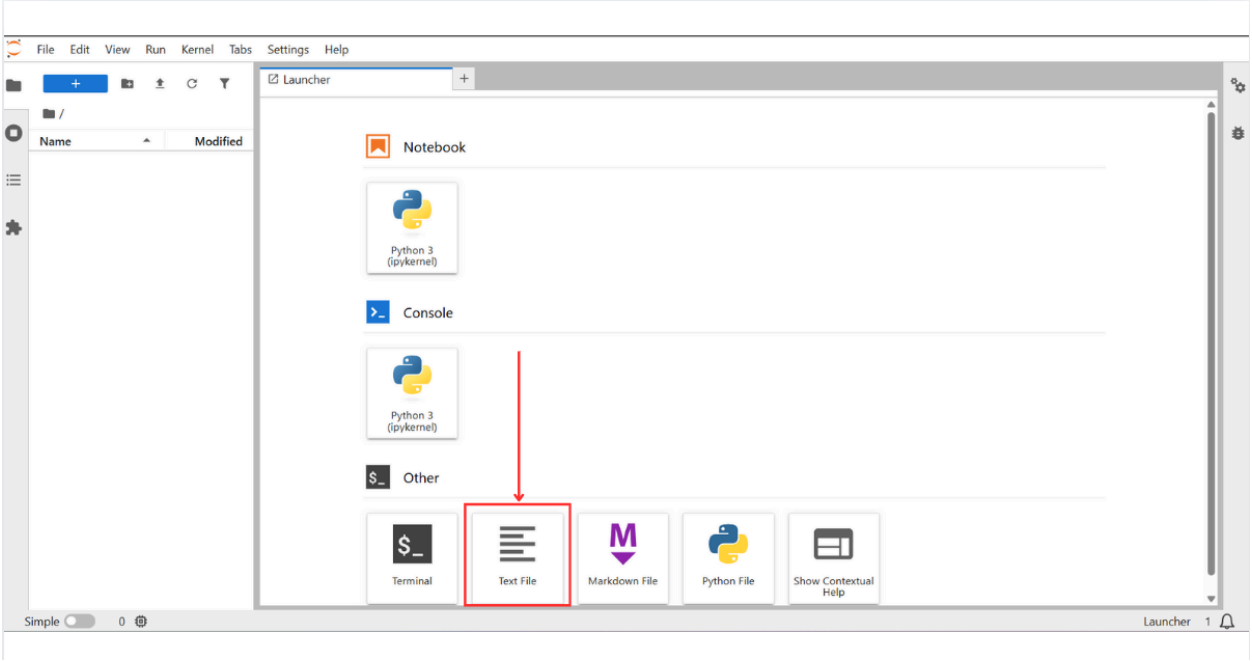
```
./hello_openmp
```

Use below image for reference

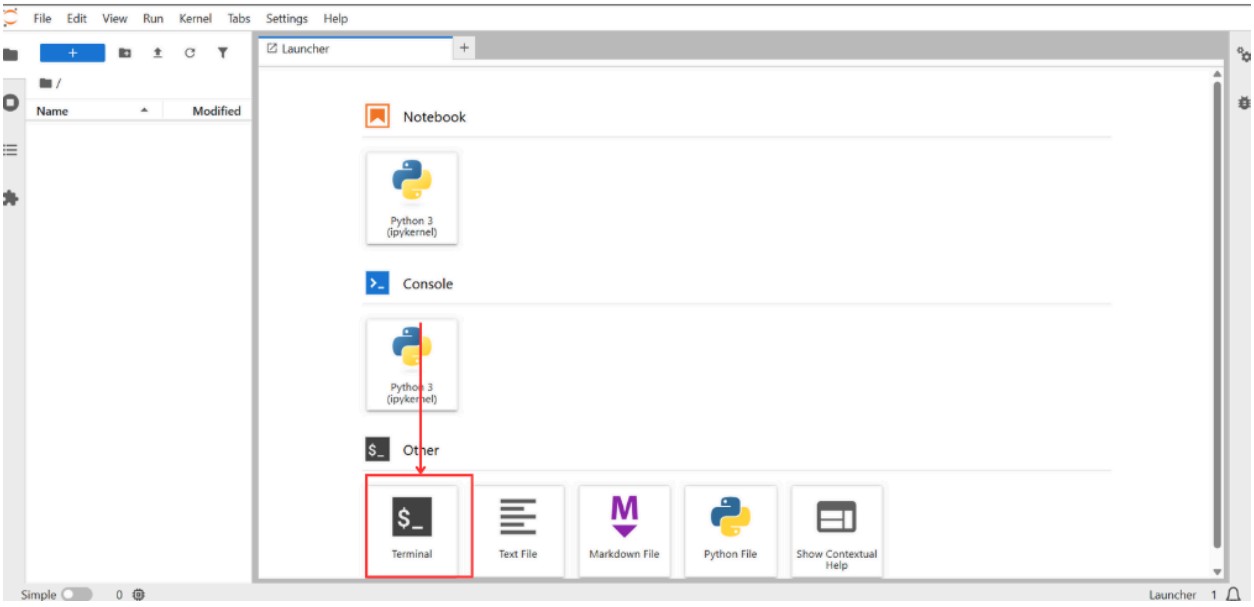


5.2 Cuda

1. Login to your Jupyter Workspace as shown in (2)
2. Upload your Cuda Code file as shown in (3.1) or create a new code file as shown in (4)
3. Click on `+` icon in Jupyter.



4. Open Terminal from there



5. Make sure your current directory is `/home/user/jupyter` You can check with `pwd` command.

```
pwd
```

If not, change your directory to `/home/user/jupyter`

```
cd /home/user/jupyter
```

6. Compile your Cuda Code

```
nvcc -arch=sm_70 -o <filename> <filename>
```

Ex.

```
nvcc -arch=sm_70 -o vec_add ./vec_add.cu
```

7. Run your OpenMP Code

```
./<filename>
```

Ex.

```
./vec_add
```

Use below image for reference

```
$ nvcc -arch=sm_70 -o vec_add vec_add.cu
nvcc warning : Support for offline compilation for architectures prior to '<compute/sm/lto>_75' will be removed in a future release (Use -Wno-deprecated-gpu-targets to suppress warnin
g).
$ ./vec_add
Enter number of elements: 20

Result of vector addition:
0 + 1 = 1
1 + 2 = 3
2 + 3 = 5
3 + 4 = 7
4 + 5 = 9
5 + 6 = 11
6 + 7 = 13
7 + 8 = 15
8 + 9 = 17
9 + 10 = 19
10 + 11 = 21
11 + 12 = 23
12 + 13 = 25
13 + 14 = 27
14 + 15 = 29
15 + 16 = 31
16 + 17 = 33
17 + 18 = 35
18 + 19 = 37
19 + 20 = 39
```