1

a)

```
abolfazl@ubuntu01:~$ mkdir directory_01, directory_02
abolfazl@ubuntu01:~$ ls
directory_01,  directory_02
abolfazl@ubuntu01:~$
```

b)

```
abolfazl@ubuntu01:~$ cd directory_01
abolfazl@ubuntu01:~/directory_01$ touch file_01.txt file_02.txt
abolfazl@ubuntu01:~/directory_01$ ls
file_01.txt  file_02.txt
abolfazl@ubuntu01:~/directory_01$ cd ..
abolfazl@ubuntu01:~$ cd directory_02
abolfazl@ubuntu01:~/directory_02$ touch file_03.txt file_04.txt
abolfazl@ubuntu01:~/directory_02$ ls
file_03.txt  file_04.txt
```

c)

```
abolfazl@ubuntu01:~$ cp directory_01/file_01.txt directory_02/
abolfazl@ubuntu01:~$ ls
directory_01  directory_02
abolfazl@ubuntu01:~$ cd directory_02
abolfazl@ubuntu01:~/directory_02$ ls
file_01.txt  file_03.txt  file_04.txt
```

d)

```
abolfazl@ubuntu01:~$ mv directory_02/file_03.txt directory_01/
abolfazl@ubuntu01:~$ cd directory_01
abolfazl@ubuntu01:~/directory_01$ ls
file_01.txt  file_02.txt  file_03.txt
```

e)

```
abolfazl@ubuntu01:~/directory_02$ cd ..
abolfazl@ubuntu01:~$ cd directory_01
abolfazl@ubuntu01:~/directory_01$ rm file_02.txt
abolfazl@ubuntu01:~/directory_01$ ls
file_01.txt  file_03.txt
```

f)

```
abolfazl@ubuntu01:~$ cd directory_02
abolfazl@ubuntu01:~/directory_02$ ls
file_01.txt  file_04.txt
abolfazl@ubuntu01:~/directory_02$ mv file_04.txt renamed_file_04.txt
abolfazl@ubuntu01:~/directory_02$ ls
file_01.txt  renamed_file_04.txt
abolfazl@ubuntu01:~/directory_02$
```

2)

a)

```
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
```

[10] ✓ 0.2s Python

```
house_data = np.array([[1500],[2000],[2500],[3000],[3500],[4000],[4500],[5000],[5500],[6000],
                       [4000], [5000], [6000], [7000], [8000], [9000], [10000], [11000], [12000], [13000]])


price_data = np.array([[100000],[150000],[200000],[250000],[300000],[350000],[400000],[450000],[500000],[550000],
                       [300000], [400000], [500000], [600000], [700000], [800000], [900000], [1000000], [1100000], [
```

[8] ✓ 0.0s Python

```
X_train, X_test, y_train, y_test = train_test_split(house_data, price_data, test_size=0.2, random_state=42)
```

[12] ✓ 0.0s Python

```
model = LinearRegression()
model.fit(X_train, y_train)
```

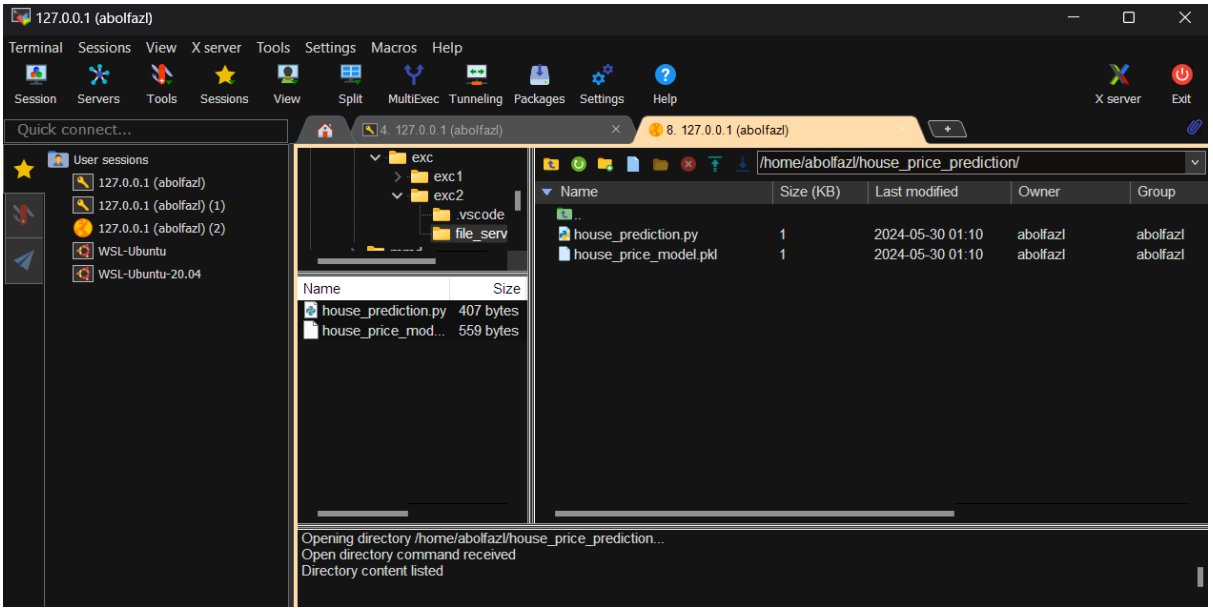
[13] ✓ 0.0s Python

b)

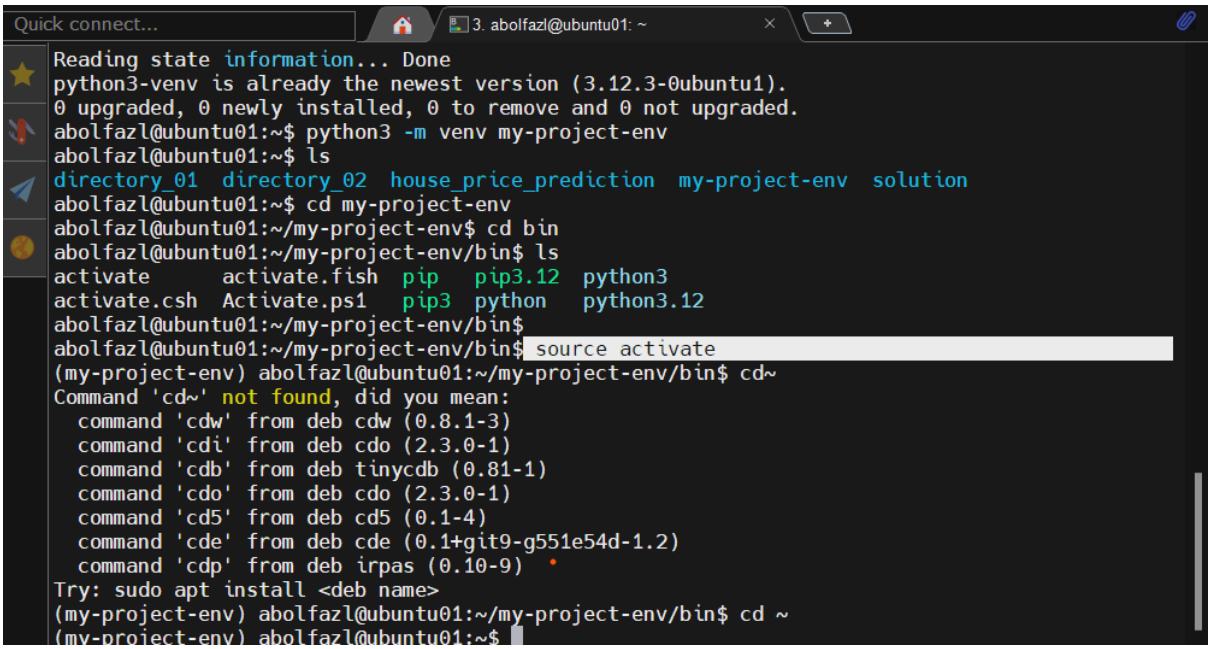
```
import joblib
joblib.dump(model, 'house_price_model.pkl')
print(f'model saved')
```

✓ 0.0s Python

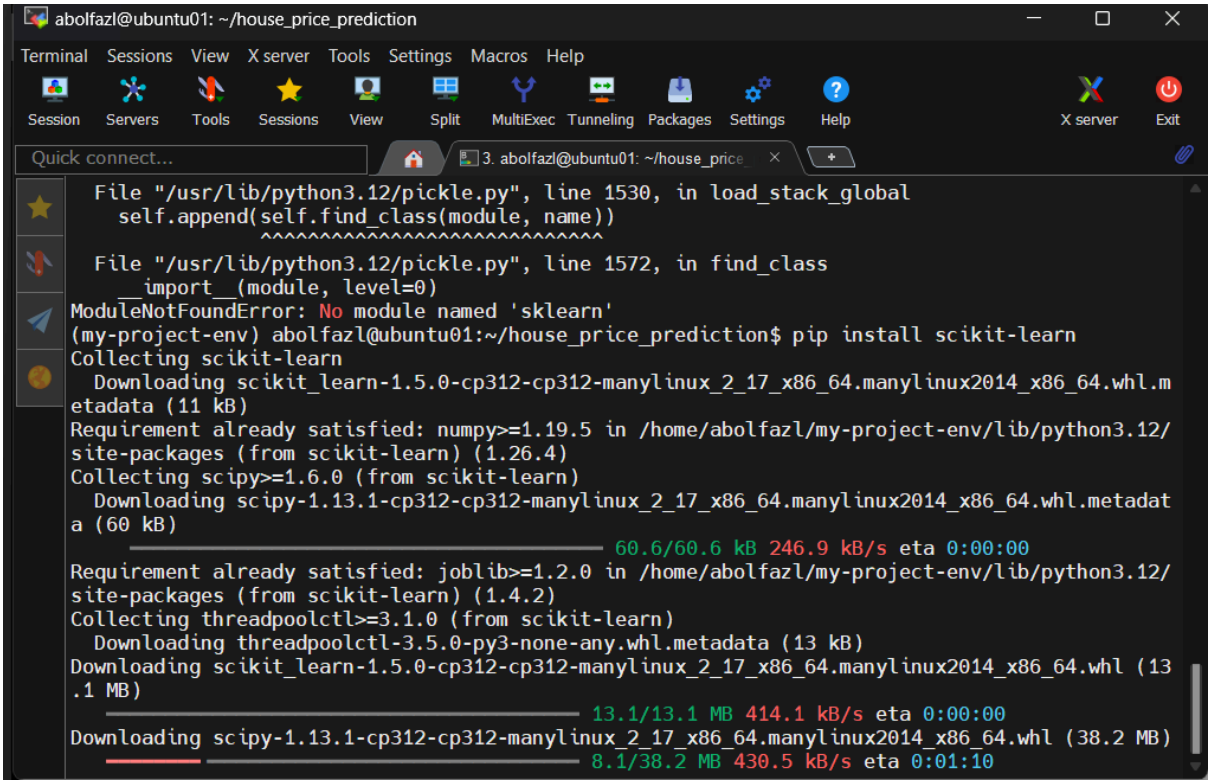
c)



d)


Quick connect...
3. abolfazl@ubuntu01: ~
Reading state information... Done
python3-venv is already the newest version (3.12.3-0ubuntu1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
abolfazl@ubuntu01:~$ python3 -m venv my-project-env
abolfazl@ubuntu01:~$ ls
directory_01 directory_02 house_price_prediction my-project-env solution
abolfazl@ubuntu01:~$ cd my-project-env
abolfazl@ubuntu01:~/my-project-env$ cd bin
abolfazl@ubuntu01:~/my-project-env/bin$ ls
activate activate.fish pip pip3.12 python3
activate.csh Activate.ps1 pip3 python python3.12
abolfazl@ubuntu01:~/my-project-env/bin$
abolfazl@ubuntu01:~/my-project-env/bin$ source activate
(my-project-env) abolfazl@ubuntu01:~/my-project-env/bin$ cd~
Command 'cd~' not found, did you mean:
command 'cdw' from deb cdw (0.8.1-3)
command 'cdi' from deb cdo (2.3.0-1)
command 'cdb' from deb tinycdb (0.81-1)
command 'cdo' from deb cdo (2.3.0-1)
command 'cd5' from deb cd5 (0.1-4)
command 'cde' from deb cde (0.1+git9-g551e54d-1.2)
command 'cdp' from deb irpas (0.10-9)
Try: sudo apt install <deb name>
(my-project-env) abolfazl@ubuntu01:~/my-project-env/bin$ cd ~
(my-project-env) abolfazl@ubuntu01:~$

e)


abolfazl@ubuntu01: ~/house_price_prediction
Terminal Sessions View X server Tools Settings Macros Help
Session Servers Tools Sessions View Split MultiExec Tunneling Packages Settings Help X server Exit
Quick connect...
3. abolfazl@ubuntu01: ~/house_price
File "/usr/lib/python3.12/pickle.py", line 1530, in load_stack_global
self.append(self.find_class(module, name))
File "/usr/lib/python3.12/pickle.py", line 1572, in find_class
__import__(module, level=0)
ModuleNotFoundError: No module named 'sklearn'
(my-project-env) abolfazl@ubuntu01:~/house_price_prediction$ pip install scikit-learn
Collecting scikit-learn
Downloading scikit_learn-1.5.0-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (11 kB)
Requirement already satisfied: numpy>=1.19.5 in /home/abolfazl/my-project-env/lib/python3.12/site-packages (from scikit-learn) (1.26.4)
Collecting scipy>=1.6.0 (from scikit-learn)
Downloading scipy-1.13.1-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (60 kB)
60.6/60.6 kB 246.9 kB/s eta 0:00:00
Requirement already satisfied: joblib>=1.2.0 in /home/abolfazl/my-project-env/lib/python3.12/site-packages (from scikit-learn) (1.4.2)
Collecting threadpoolctl>=3.1.0 (from scikit-learn)
Downloading threadpoolctl-3.5.0-py3-none-any.whl.metadata (13 kB)
Downloading scikit_learn-1.5.0-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (13.1 MB)
13.1/13.1 MB 414.1 kB/s eta 0:00:00
Downloading scipy-1.13.1-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (38.2 MB)
8.1/38.2 MB 430.5 kB/s eta 0:01:10

f)

```
(my-project-env) abolfazl@ubuntu01:~/house_price_prediction$ python house_prediction.py
/home/abolfazl/my-project-env/lib/python3.12/site-packages/sklearn/base.py:376: InconsistentV
ersionWarning: Trying to unpickle estimator LinearRegression from version 1.3.2 when using ve
rsion 1.5.0. This might lead to breaking code or invalid results. Use at your own risk. For m
ore info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
  warnings.warn(
please enter your house size: 250000
your house price is: [[23625784.27159433]]
(my-project-env) abolfazl@ubuntu01:~/house_price_prediction$
```

کدها

```
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression

house_data =
np.array([[1500],[2000],[2500],[3000],[3500],[4000],[4500],[5000],[5500],[6000],
                  [4000], [5000], [6000], [7000], [8000], [9000], [10000], [11000], [12000],
[13000]])


price_data =
np.array([[100000],[150000],[200000],[250000],[300000],[350000],[400000],[450000],[50000
0],[550000],
                  [300000], [400000], [500000], [600000], [700000], [800000], [900000],
[1000000], [1100000], [1200000]])
X_train, X_test, y_train, y_test = train_test_split(house_data, price_data, test_size=0.2,
random_state=42)
model = LinearRegression()
model.fit(X_train, y_train)

import joblib
joblib.dump(model, 'house_price_model.pkl')
print(f'model saved')
# LOADIN MODEL
model = joblib.load('house_price_model.pkl')
model.predict([[7000]])
import joblib
import numpy as np
model = joblib.load('house_price_model.pkl')
def predict_house_price():
    try:
        input_ = float(input('please enter your house size: '))
        result = model.predict(np.array([[input_]]))
        print(f'your house price is: {result}')


    except ValueError:
        print('please enter a valid number')
```

predict_house_price()

predict_house_price()