Oracle VM VirtualBox Manager

File Machine Help

Tools

Ubuntu
Running

New Add Settings Discard Show

General

Name: Ubuntu
Operating System: Ubuntu (64-bit)

System

Base Memory: 3072 MB
Processors: 2
Boot Order: Hard Disk, Optical, Floppy
Acceleration: Nested Paging, KVM Paravirtualization

Preview

Display

Video Memory: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled

Storage

Controller: IDE
IDE Secondary Device 0: [Optical Drive] Empty
Controller: SATA
SATA Port 0: Ubuntu.vdi (Normal, 128.00 GB)

Audio

Host Driver: Default
Controller: ICH AC97

Network

Adapter 1: Intel PRO/1000 MT Desktop (NAT)

USB

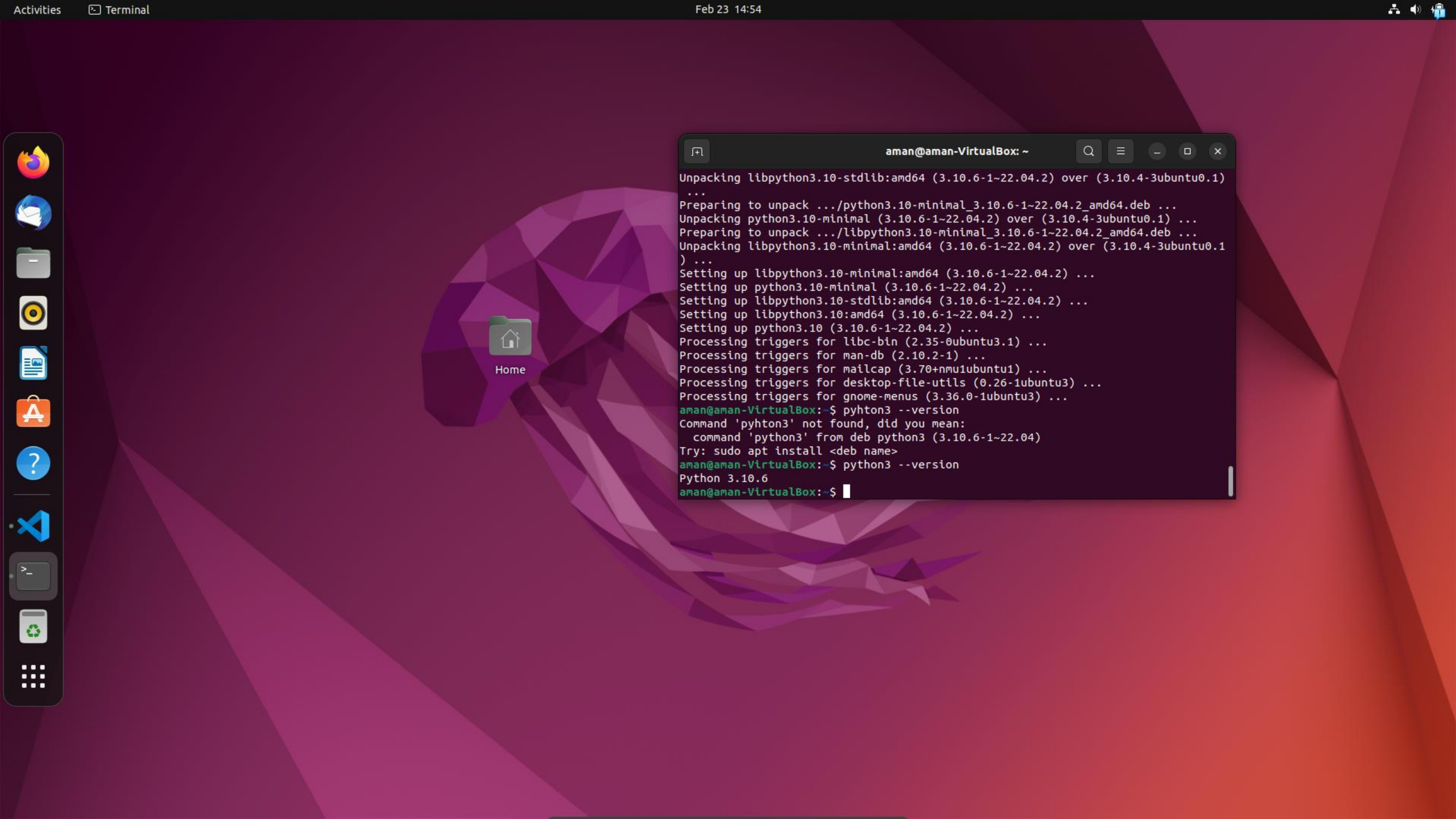
USB Controller: OHCI, EHCI
Device Filters: 0 (0 active)

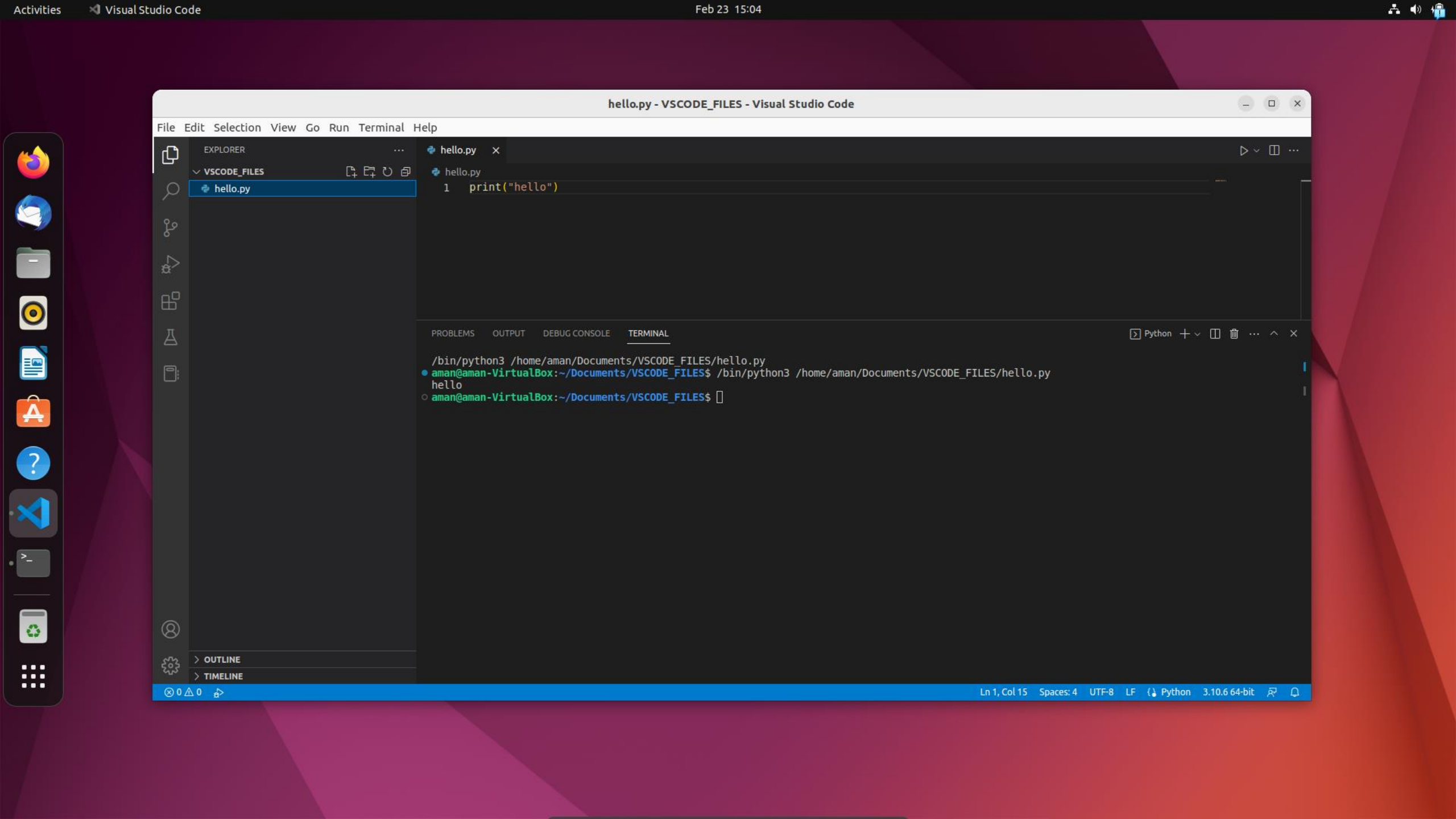
Shared folders

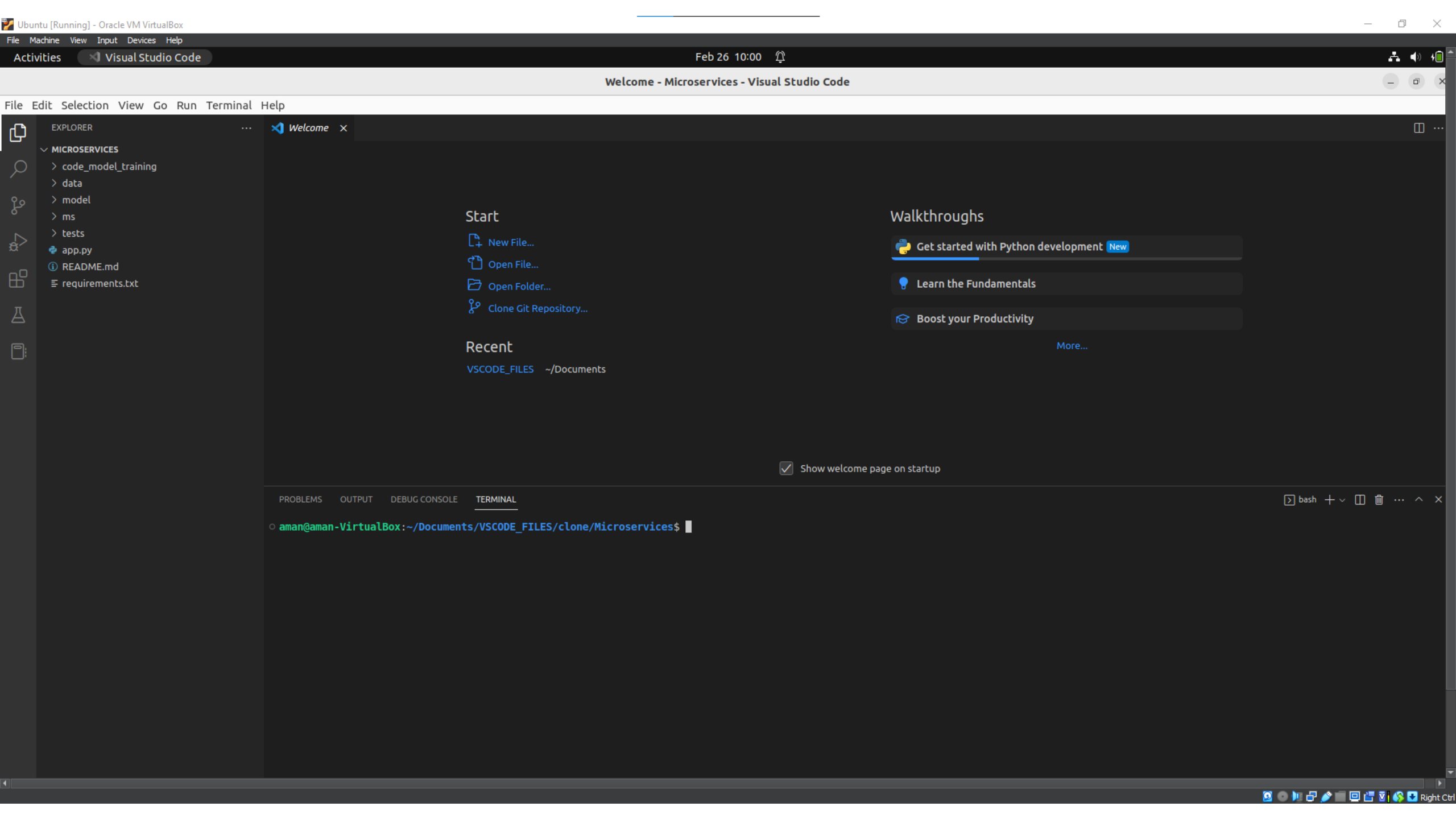
None

Description

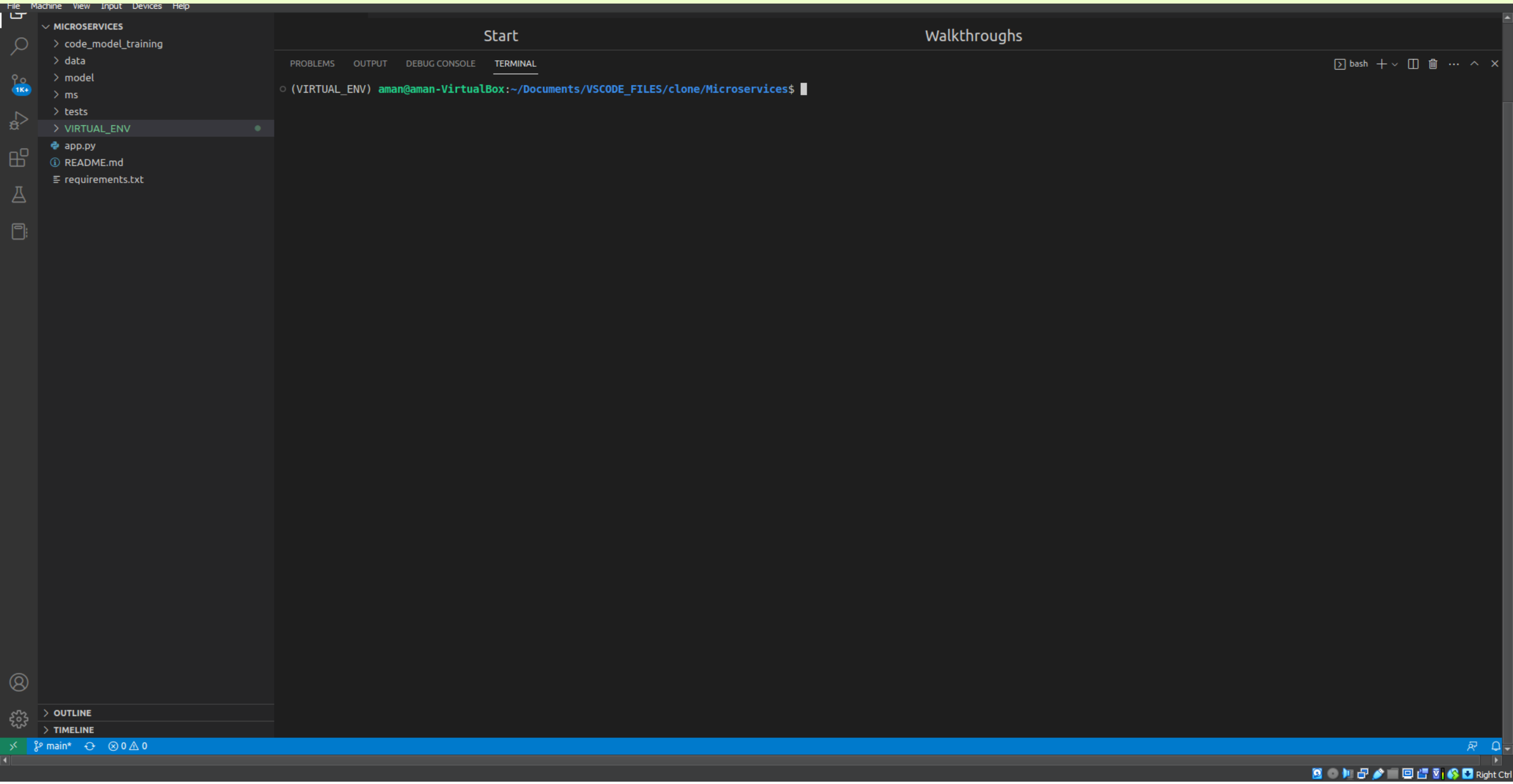
None


Activities
Terminal
Feb 23 14:54
Home
aman@aman-VirtualBox: ~
Unpacking libpython3.10-stdlib:amd64 (3.10.6-1~22.04.2) over (3.10.4-3ubuntu0.1)
...
Preparing to unpack .../python3.10-minimal_3.10.6-1~22.04.2_amd64.deb ...
Unpacking python3.10-minimal (3.10.6-1~22.04.2) over (3.10.4-3ubuntu0.1) ...
Preparing to unpack .../libpython3.10-minimal_3.10.6-1~22.04.2_amd64.deb ...
Unpacking libpython3.10-minimal:amd64 (3.10.6-1~22.04.2) over (3.10.4-3ubuntu0.1
) ...
Setting up libpython3.10-minimal:amd64 (3.10.6-1~22.04.2) ...
Setting up python3.10-minimal (3.10.6-1~22.04.2) ...
Setting up libpython3.10-stdlib:amd64 (3.10.6-1~22.04.2) ...
Setting up libpython3.10:amd64 (3.10.6-1~22.04.2) ...
Setting up python3.10 (3.10.6-1~22.04.2) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for mailcap (3.70+nmu1ubuntu1) ...
Processing triggers for desktop-file-utils (0.26-1ubuntu3) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
aman@aman-VirtualBox:~$ pyhton3 --version
Command 'pyhton3' not found, did you mean:
command 'python3' from deb python3 (3.10.6-1~22.04)
Try: sudo apt install <deb name>
aman@aman-VirtualBox:~$ python3 --version
Python 3.10.6
aman@aman-VirtualBox:~$


Activities
Visual Studio Code
Feb 23 15:04
hello.py - VSCODE_FILES - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
VSCODE_FILES
hello.py
hello.py
1 print("hello")
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Python
/bin/python3 /home/aman/Documents/VSCODE_FILES/hello.py
aman@aman-VirtualBox:~/Documents/VSCODE_FILES$ /bin/python3 /home/aman/Documents/VSCODE_FILES/hello.py
hello
aman@aman-VirtualBox:~/Documents/VSCODE_FILES$
OUTLINE
TIMELINE
Ln 1, Col 15 Spaces: 4 UTF-8 LF Python 3.10.6 64-bit


Ubuntu [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Visual Studio Code
Feb 26 10:00
Welcome - Microservices - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
MICROSERVICES
code_model_training
data
model
ms
tests
app.py
README.md
requirements.txt
Welcome
Start
New File...
Open File...
Open Folder...
Clone Git Repository...
Recent
VSCODE_FILES ~/Documents
Walkthroughs
Get started with Python development New
Learn the Fundamentals
Boost your Productivity
More...
Show welcome page on startup
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
bash
aman@aman-VirtualBox:~/Documents/VSCODE_FILES/clone/Microservices$
Right Ctrl

```
python3 -m venv /path/to/new/virtual/environment
```



Ubuntu [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

MICROSERVICES

- code_model_training
- data
- model
- ms
- tests
- VIRTUAL_ENV
- app.py
- README.md
- requirements.txt

OUTLINE

TIMELINE

Start Walkthroughs

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL python3.10

```
(VIRTUAL_ENV) aman@aman-VirtualBox:~/Documents/VSCODE_FILES/clone/Microservices$ pip install -r requirements.txt
Collecting click==8.0.3
  Downloading click-8.0.3-py3-none-any.whl (97 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 97.5/97.5 KB 799.7 kB/s eta 0:00:00
Collecting cycler==0.11.0
  Downloading cycler-0.11.0-py3-none-any.whl (6.4 kB)
Collecting Flask==2.0.2
  Downloading Flask-2.0.2-py3-none-any.whl (95 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 95.2/95.2 KB 6.1 MB/s eta 0:00:00
Collecting fonttools==4.28.5
  Downloading fonttools-4.28.5-py3-none-any.whl (890 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 890.4/890.4 KB 4.6 MB/s eta 0:00:00
Collecting gunicorn==20.1.0
  Downloading gunicorn-20.1.0-py3-none-any.whl (79 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 79.5/79.5 KB 6.1 MB/s eta 0:00:00
Collecting itsdangerous==2.0.1
  Downloading itsdangerous-2.0.1-py3-none-any.whl (18 kB)
Collecting Jinja2==3.0.3
  Downloading Jinja2-3.0.3-py3-none-any.whl (133 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 133.6/133.6 KB 8.8 MB/s eta 0:00:00
Collecting joblib==1.1.0
  Downloading joblib-1.1.0-py2.py3-none-any.whl (306 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 307.0/307.0 KB 11.2 MB/s eta 0:00:00
Collecting kiwisolver==1.3.2
  Downloading kiwisolver-1.3.2-cp310-cp310-manylinux_2_12_x86_64.manylinux2010_x86_64.whl (1.6 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 1.6/1.6 MB 12.6 MB/s eta 0:00:00
Collecting MarkupSafe==2.0.1
  Downloading MarkupSafe-2.0.1-cp310-cp310-manylinux_2_5_x86_64.manylinux1_x86_64.manylinux_2_12_x86_64.manylinux2010_x86_64.whl (30 kB)
Collecting matplotlib==3.5.1
  Downloading matplotlib-3.5.1-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (11.9 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 11.9/11.9 MB 20.6 MB/s eta 0:00:00
Collecting numpy==1.22.0
  Downloading numpy-1.22.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (16.8 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 16.8/16.8 MB 9.7 MB/s eta 0:00:00
Collecting packaging==21.3
  Downloading packaging-21.3-py3-none-any.whl (40 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 40.8/40.8 KB 551.7 kB/s eta 0:00:00
Collecting pandas==1.3.5
  Downloading pandas-1.3.5-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (11.5 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 11.5/11.5 MB 10.3 MB/s eta 0:00:00
Collecting Pillow==9.0.0
  Downloading Pillow-9.0.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (4.3 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 4.3/4.3 MB 6.3 MB/s eta 0:00:00
Collecting pyparsing==3.0.6
  Downloading pyparsing-3.0.6-py3-none-any.whl (97 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 97.6/97.6 KB 1.2 MB/s eta 0:00:00
Collecting python-dateutil==2.8.2
  Downloading python_dateutil-2.8.2-py2.py3-none-any.whl (247 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 247.7/247.7 KB 529.6 kB/s eta 0:00:00
Collecting pytz==2021.3
  Downloading pytz-2021.3-py2.py3-none-any.whl (503 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 503.5/503.5 KB 5.9 MB/s eta 0:00:00
Collecting scikit-learn==1.0.2
```

main* 0 0

Right Ctrl

Ubuntu [Running] - Oracle VM VirtualBox

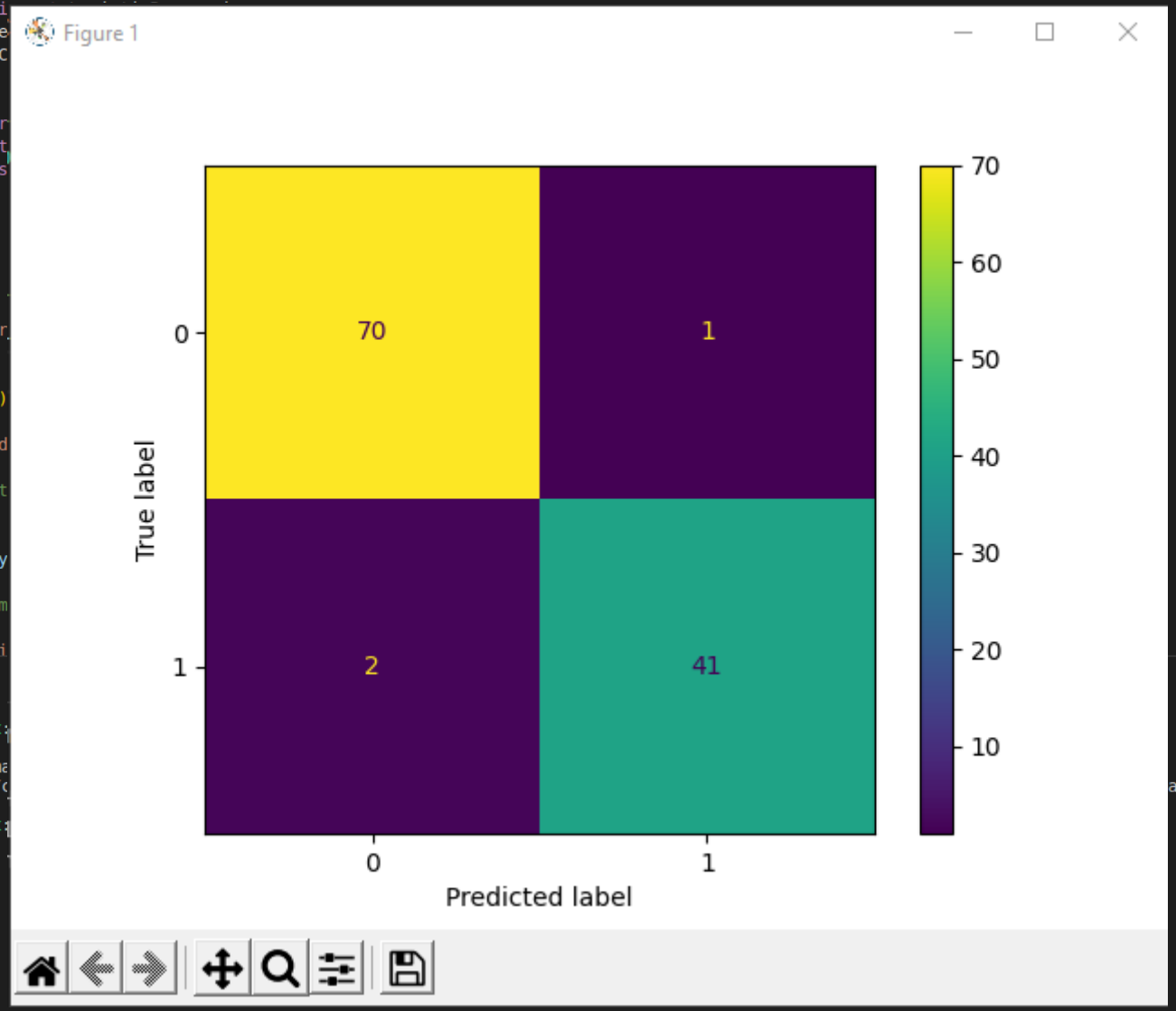
File Machine View Input Devices Help

MICROSERVICES

- code_model_training
  - train.py 9+
- data
  - breast_cancer.csv
- model
  - model_binary.dat.gz
- ms
  - __init__.py
  - functions.py
- tests
  - example_calls.txt
- VIRTUAL_ENV
- app.py
- README.md
- requirements.txt

code_model_training > train.py > ...

```
1  # Import packages
2  from sklearn.ensemble import VotingClassifier
3  from sklearn.model_selection import train_test_split
4  from sklearn.linear_model i
5  from sklearn.tree import De
6  from sklearn.svm import SVC
7  from sklearn.preprocessing
8  from sklearn.impute import
9  from sklearn.pipeline impor
10 from sklearn.metrics import
11 import matplotlib.pyplot as
12 import pandas as pd
13 import joblib
14 import gzip
15
16
17 # Load the dataset
18 data = pd.read_csv('data/br
19
20 # Preprocess dataset
21 data = data.set_index('id')
22 del data['Unnamed: 32']
23 data['diagnosis'] = data['d
24
25 # Split into train and test
26 y = data.pop('diagnosis')
27 X = data
28 X_train, X_test, y_train, y
29
30 # Create an ensemble of 3 m
31 estimators = []
32 estimators.append(('logisti
```



PROBLEMS 12 OUTPUT DEBUG CONSOLE

bash

```
(VIRTUAL_ENV) aman@aman-VirtualBox:
Accuracy: 0.9736842105263158
<sklearn.metrics._plot.confusion_ma
/home/aman/Documents/VSCODE_FILES/c
  plt.show()
(VIRTUAL_ENV) aman@aman-VirtualBox:
```

ackend, so cannot show the figure.

OUTLINE

TIMELINE

main* 0 12 Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python 3.10.6 ('VIRTUAL_ENV': venv)

Right Ctrl

Ubuntu [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

MICROSERVICES

- code_model_training
  - train.py 9+
- data
  - breast_cancer.csv
- model
  - model_binary.dat.gz
- ms
  - __pycache__
  - __init__.py
  - functions.py
- tests
  - example_calls.txt
- VIRTUAL_ENV
- app.py 2
- README.md
- requirements.txt

OUTLINE

TIMELINE

app.py > info

```python
# Local imports
import datetime

# Third part imports
from flask import request
import pandas as pd

from ms import app
from ms.functions import get_model_response


model_name = "Breast Cancer Wisconsin (Diagnostic)"
model_file = 'model_binary.dat.gz'
version = "v1.0.0"


@app.route('/info', methods=['GET'])
def info():
    """Return model information, version, how to call"""
    result = {}

    result["name"] = model_name
    result["version"] = version

    return result


@app.route('/health', methods=['GET'])
def health():
    """Return service health"""
    return 'ok'
```

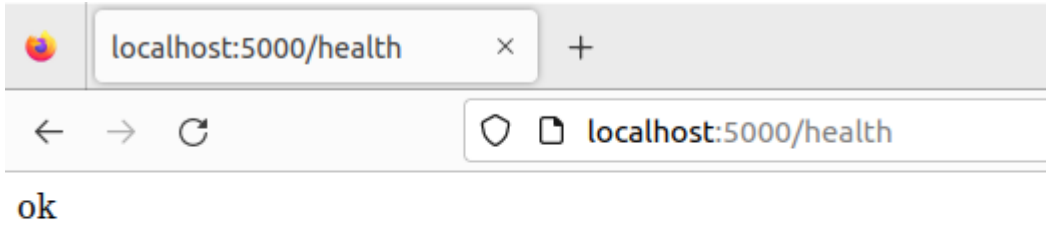
PROBLEMS 14 OUTPUT DEBUG CONSOLE TERMINAL

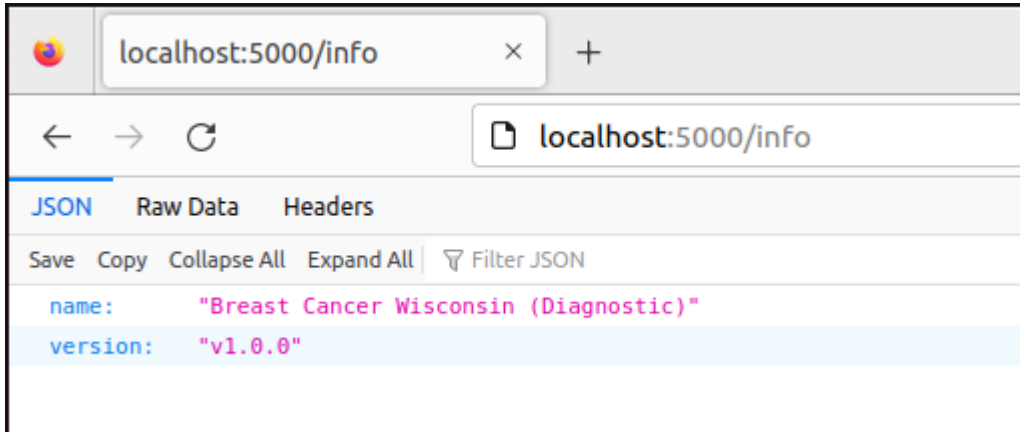
python3

```
(VIRTUAL_ENV) aman@aman-VirtualBox:~/Documents/VSCODE_FILES/clone/Microservices$ python3 app.py
 * Serving Flask app 'ms' (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployment.
   Use a production WSGI server instead.
 * Debug mode: off
 * Running on all addresses.
   WARNING: This is a development server. Do not use it in a production deployment.
 * Running on http://10.0.2.15:5000/ (Press CTRL+C to quit)
```

main* 0 14 Ln 17, Col 37 Spaces: 4 UTF-8 CRLF Python 3.10.6 ('VIRTUAL_ENV': venv)

Right Ctrl






```
aman@aman-VirtualBox:~/Documents/clone/Microservices$ sudo docker
 container run -d -p 5000:5000 cancer_prediction
d4c9479674f4a63c04dc7f68aabe0a733ef436bfa196238feced22c790c99682
```

```
aman@aman-VirtualBox:~/Documents/clone/Microservices$ sudo docker
 container ps
CONTAINER ID   IMAGE               COMMAND            CREATED
      STATUS          PORTS
 NAMES
d4c9479674f4   cancer_prediction   "python3 app.py"   25 seconds
ago   Up 22 seconds   0.0.0.0:5000->5000/tcp, :::5000->5000/tcp
 gallant_goldwasser
```

```
Removing intermediate container 551d4ffde4bc
 ---> 16d3df48a6f7
Step 9/10 : EXPOSE 5000
 ---> Running in 2e04e3f25c81
Removing intermediate container 2e04e3f25c81
 ---> 51e177402bb9
Step 10/10 : CMD ["python3", "app.py"]
 ---> Running in 1d9029858478
Removing intermediate container 1d9029858478
 ---> 0cdb6a30fe09
Successfully built 0cdb6a30fe09
Successfully tagged cancer_prediction:latest
aman@aman-VirtualBox:~/Documents/clone/Microservices$ sudo docker images
REPOSITORY          TAG       IMAGE ID       CREATED          SIZE
cancer_prediction   latest    0cdb6a30fe09   14 seconds ago   1.48GB
python              3.9.13    b6be79db3b12   6 months ago     915MB
aman@aman-VirtualBox:~/Documents/clone/Microservices$
```

```
aman@aman-VirtualBox:~/Documents/clone/Microservices$ sudo snap install curl
[sudo] password for aman:
curl 7.87.0 from Wouter van Bommel (woutervb) installed
aman@aman-VirtualBox:~/Documents/clone/Microservices$
```

```
aman@aman-VirtualBox:~/Documents/clone/Microservices$ curl -d '[{"radius_mean": 17.99, "texture_mean": 10.38, "perimeter_mean": 122.8, "area_mean": 1001.0, "smoothness_mean": 0.1184, "compactness_mean": 0.2776, "concavity_mean": 0.3001, "concave points_mean": 0.1471, "symmetry_mean": 0.2419, "fractal_dimension_mean": 0.07871, "radius_se": 1.095, "texture_se": 0.9053, "perimeter_se": 8.589, "area_se": 153.4, "smoothness_se": 0.006399, "compactness_se": 0.04904, "concavity_se": 0.05373, "concave points_se": 0.01587, "symmetry_se": 0.03003, "fractal_dimension_se": 0.006193, "radius_worst": 25.38, "texture_worst": 17.33, "perimeter_worst": 184.6, "area_worst": 2019.0, "smoothness_worst": 0.1622, "compactness_worst": 0.6656, "concavity_worst": 0.7119, "concave points_worst": 0.2654, "symmetry_worst": 0.4601, "fractal_dimension_worst": 0.1189}]' \
     -H "Content-Type: application/json" \
     -X POST http://0.0.0.0:5000/predict
{"label":"M","prediction":1,"status":200}
aman@aman-VirtualBox:~/Documents/clone/Microservices$
```

Ubuntu Software

```
aman@aman-VirtualBox:~/Documents/clone/Microservices$ curl -X GET http://localhost:5000/info
{"name":"Breast Cancer Wisconsin (Diagnostic)","version":"v1.0.0"}
aman@aman-VirtualBox:~/Documents/clone/Microservices$
```

```
aman@aman-VirtualBox:~/Documents/clone/Microservices$ curl -X GET http://localhost:5000/health
okaman@aman-VirtualBox:~/Documents/clone/Microservices$
```