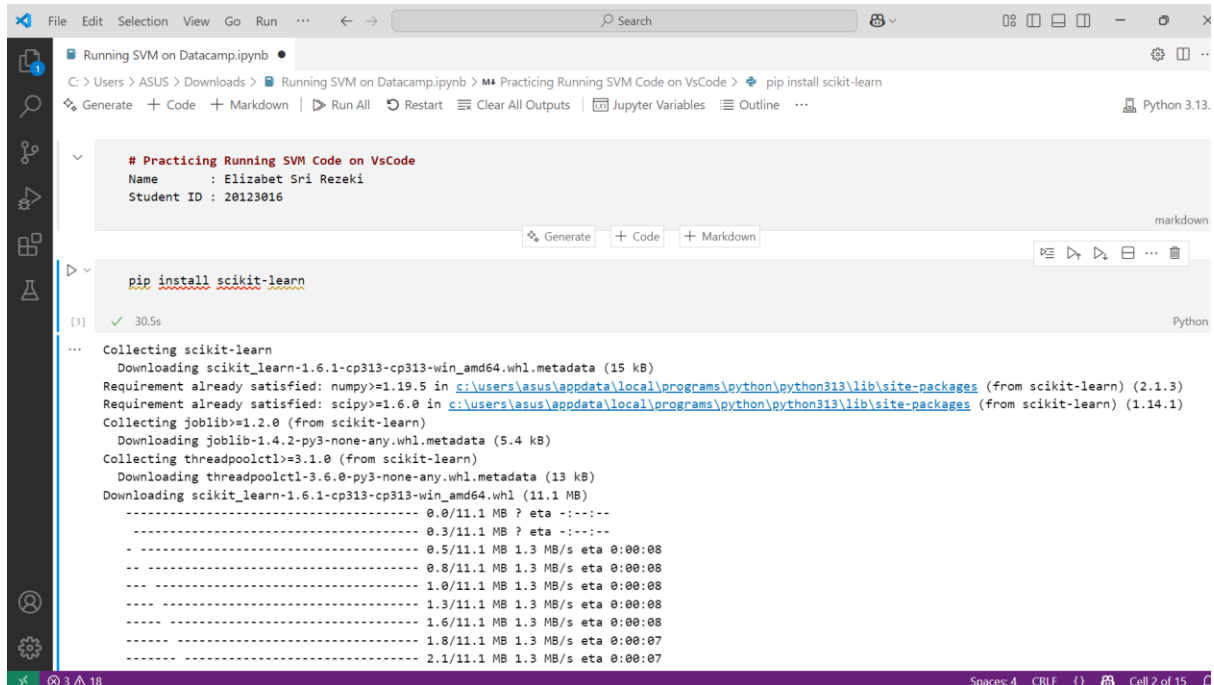


Name : Elizabet Sri Rezeki

Student ID : 20123016

2. Practicing Running SVM on VsCode

The program executed in VsCode runs as smoothly as it did when executed online on DataCamp.



The screenshot shows the VS Code interface with a file named 'Running SVM on Datacamp.ipynb'. The top bar indicates the file path: 'C:\Users\ASUS>Downloads>Running SVM on Datacamp.ipynb'. The left sidebar shows the file explorer with 'Running SVM on Datacamp.ipynb' selected. The main editor area displays a Jupyter Notebook cell with the following content:

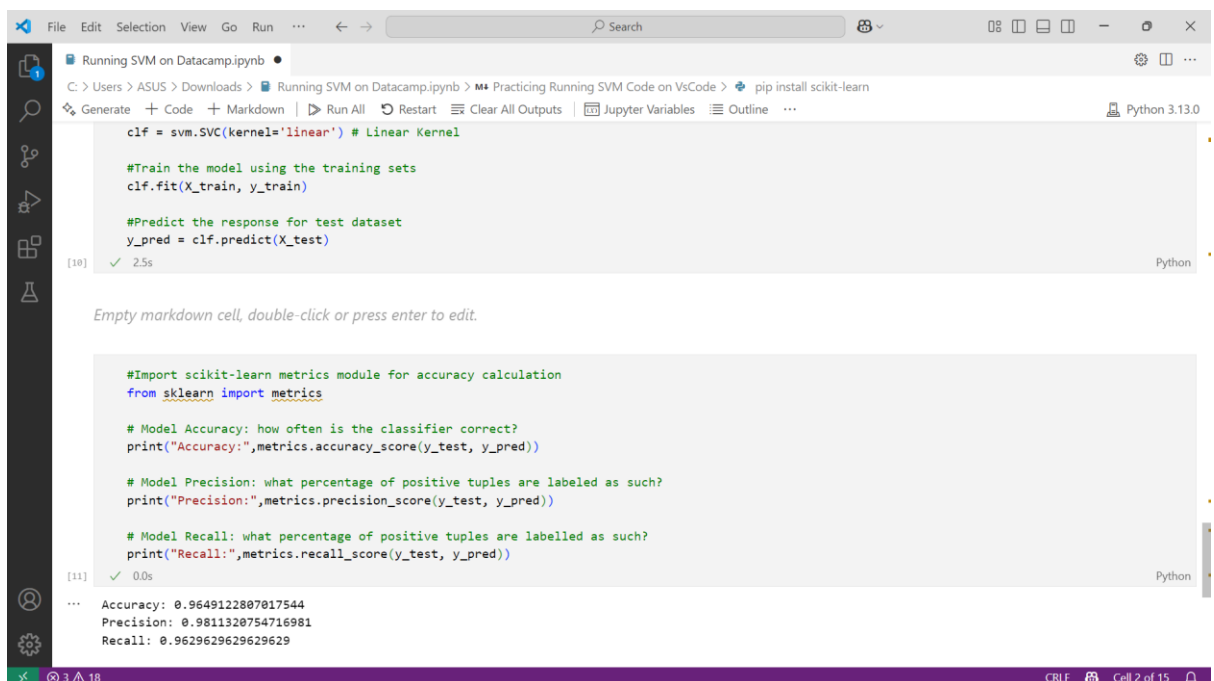
```
# Practicing Running SVM Code on VsCode
Name : Elizabet Sri Rezeki
Student ID : 20123016
```

Below the markdown cell is a code cell containing the command to install scikit-learn:

```
pip install scikit-learn
```

The output of the code cell shows the installation progress:

```
[3] ✓ 30.5s
...
Collecting scikit-learn
  Downloading scikit_learn-1.6.1-cp313-cp313-win_amd64.whl.metadata (15 kB)
Requirement already satisfied: numpy>=1.19.5 in c:\users\asus\appdata\local\programs\python\python313\lib\site-packages (from scikit-learn) (2.1.3)
Requirement already satisfied: scipy>=1.6.0 in c:\users\asus\appdata\local\programs\python\python313\lib\site-packages (from scikit-learn) (1.14.1)
Collecting joblib>=1.2.0 (from scikit-learn)
  Downloading joblib-1.4.2-py3-none-any.whl.metadata (5.4 kB)
Collecting threadpoolctl>=3.1.0 (from scikit-learn)
  Downloading threadpoolctl-3.6.0-py3-none-any.whl.metadata (13 kB)
Downloading scikit_learn-1.6.1-cp313-cp313-win_amd64.whl (11.1 MB)
----- 0.0/11.1 MB ? eta -:--:--
----- 0.3/11.1 MB ? eta -:--:--
----- 0.5/11.1 MB 1.3 MB/s eta 0:00:08
----- 0.8/11.1 MB 1.3 MB/s eta 0:00:08
----- 1.0/11.1 MB 1.3 MB/s eta 0:00:08
----- 1.3/11.1 MB 1.3 MB/s eta 0:00:08
----- 1.6/11.1 MB 1.3 MB/s eta 0:00:08
----- 1.8/11.1 MB 1.3 MB/s eta 0:00:07
----- 2.1/11.1 MB 1.3 MB/s eta 0:00:07
```



The screenshot shows the VS Code interface with the same file 'Running SVM on Datacamp.ipynb'. The main editor area displays a Jupyter Notebook cell with the following content:

```
clf = svm.SVC(kernel='linear') # Linear Kernel

#Train the model using the training sets
clf.fit(X_train, y_train)

#Predict the response for test dataset
y_pred = clf.predict(X_test)
```

The output of the code cell shows the model training and evaluation results:

```
[10] ✓ 2.5s
Empty markdown cell, double-click or press enter to edit.

[11] ✓ 0.0s
...
Accuracy: 0.9649122807017544
Precision: 0.9811320754716981
Recall: 0.9629629629629629
```

3. Create and Use Virtual Environment

Creating virtual environment “venv”

```
● PS C:\Users\ASUS> python -m venv venv
● PS C:\Users\ASUS> venv\Scripts\activate
(venv) PS C:\Users\ASUS> pip install scikit-learn pandas matplotlib
Collecting scikit-learn
  Using cached scikit_learn-1.6.1-cp313-cp313-win_amd64.whl.metadata (15 kB)
Collecting pandas
  Using cached pandas-2.2.3-cp313-cp313-win_amd64.whl.metadata (19 kB)
Collecting matplotlib
  Downloading matplotlib-3.10.1-cp313-cp313-win_amd64.whl.metadata (11 kB)
Collecting numpy>=1.19.5 (from scikit-learn)
  Downloading numpy-2.2.5-cp313-cp313-win_amd64.whl.metadata (60 kB)
Collecting scipy>=1.6.0 (from scikit-learn)
  Downloading scipy-1.15.2-cp313-cp313-win_amd64.whl.metadata (60 kB)
Collecting joblib>=1.2.0 (from scikit-learn)
  Using cached joblib-1.4.2-py3-none-any.whl.metadata (5.4 kB)
Collecting threadpoolctl>=3.1.0 (from scikit-learn)
  Using cached threadpoolctl-3.6.0-py3-none-any.whl.metadata (13 kB)
Collecting python-dateutil>=2.8.2 (from pandas)
  Using cached python_dateutil-2.9.0.post0-py2.py3-none-any.whl.metadata (8.4 kB)
Collecting pytz>=2020.1 (from pandas)
  Downloading pytz-2025.2-py2.py3-none-any.whl.metadata (22 kB)
Collecting tzdata>=2022.7 (from pandas)
  Downloading tzdata-2025.2-py2.py3-none-any.whl.metadata (1.4 kB)
Collecting contourpy>=1.0.1 (from matplotlib)
  Downloading contourpy-1.3.2-cp313-cp313-win_amd64.whl.metadata (5.5 kB)
Collecting cycler>=0.10 (from matplotlib)
  Using cached cycler-0.12.1-py3-none-any.whl.metadata (3.8 kB)
Collecting fonttools>=4.22.0 (from matplotlib)
```

Create a requirements.txt file to list all packages (scikit-learn, pandas, matplotlib) for easy reinstallation later.

```
Downloading contourpy-1.3.2-cp313-cp313-win_amd64.whl (223 kB)
Using cached cycler-0.12.1-py3-none-any.whl (8.3 kB)
Downloading fonttools-4.57.0-cp313-cp313-win_amd64.whl (2.2 MB)
  ━━━━━━━━━━━━━━━━━━━━ 2.2/2.2 MB 3.1 MB/s eta 0:00:00
Using cached joblib-1.4.2-py3-none-any.whl (301 kB)
Downloading kiwisolver-1.4.8-cp313-cp313-win_amd64.whl (71 kB)
Downloading numpy-2.2.5-cp313-cp313-win_amd64.whl (12.6 MB)
  ━━━━━━━━━━━━━━━━━━━━ 12.6/12.6 MB 3.0 MB/s eta 0:00:00
Downloading packaging-25.0-py3-none-any.whl (66 kB)
Downloading pillow-11.2.1-cp313-cp313-win_amd64.whl (2.7 MB)
  ━━━━━━━━━━━━━━━━━━━━ 2.7/2.7 MB 2.4 MB/s eta 0:00:00
Downloading pyparsing-3.2.3-py3-none-any.whl (111 kB)
Using cached python_dateutil-2.9.0.post0-py2.py3-none-any.whl (229 kB)
Downloading pytz-2025.2-py2.py3-none-any.whl (509 kB)
Downloading scipy-1.15.2-cp313-cp313-win_amd64.whl (41.0 MB)
  ━━━━━━━━━━━━━━━━━━━━ 41.0/41.0 MB 3.9 MB/s eta 0:00:00
Downloading six-1.17.0-py2.py3-none-any.whl (11 kB)
Installing collected packages: pytz, tzdata, threadpoolctl, six, pyparsing, pillow, packaging, numpy, kiwisolver, joblib, fonttools, cy
ler, scipy, python-dateutil, contourpy, scikit-learn, pandas, matplotlib
Successfully installed contourpy-1.3.2 cycler-0.12.1 fonttools-4.57.0 joblib-1.4.2 kiwisolver-1.4.8 matplotlib-3.10.1 numpy-2.2.5 packa
ing-25.0 pandas-2.2.3 pillow-11.2.1 pyparsing-3.2.3 python-dateutil-2.9.0.post0 pytz-2025.2 scikit-learn-1.6.1 scipy-1.15.2 six-1.17.0 t
hreadpoolctl-3.6.0 tzdata-2025.2
(venv) PS C:\Users\ASUS> pip freeze > requirements.txt
```