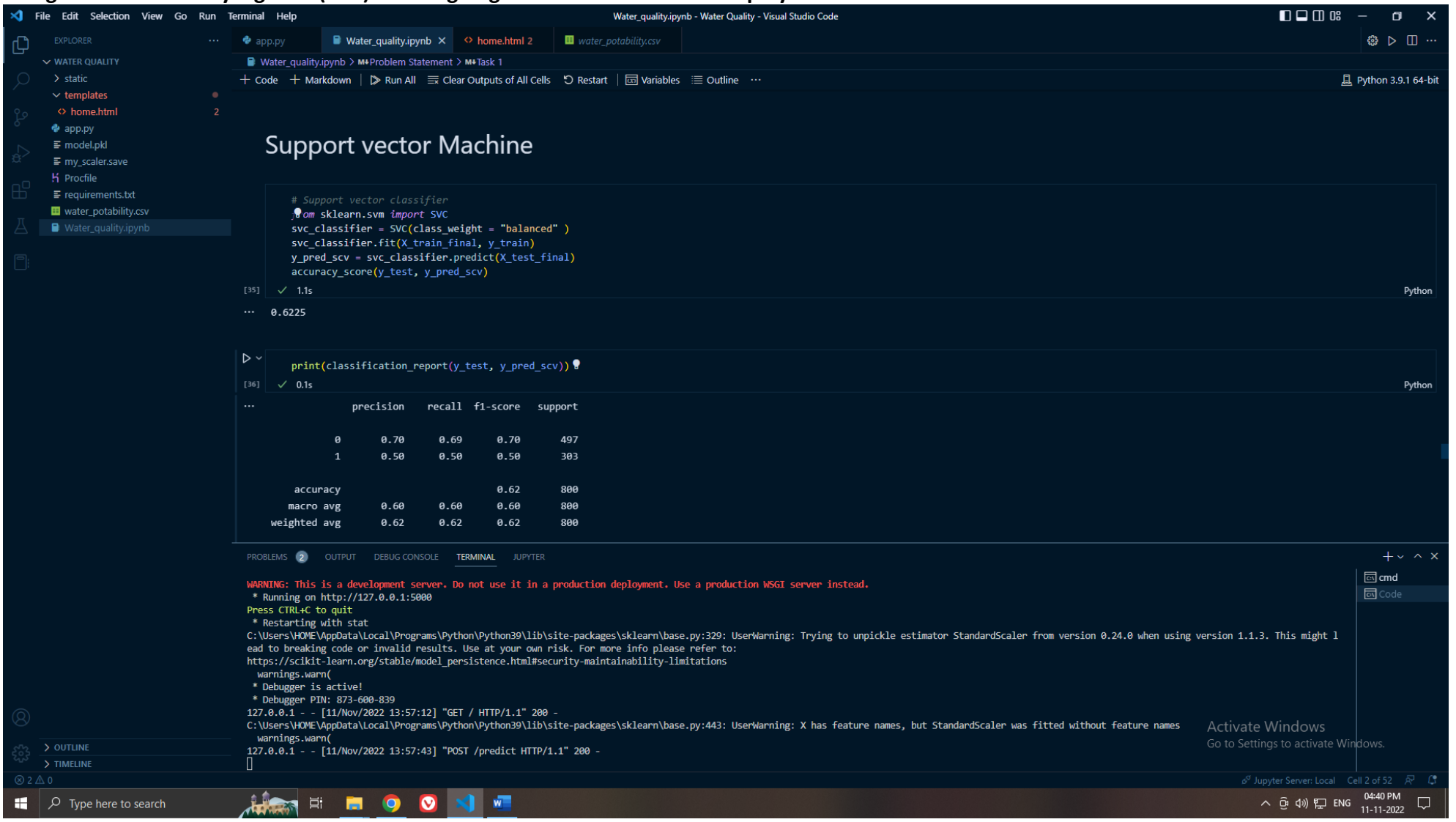
SPRINT 3

Project Deliverables (Model Building Code & Evaluation)

Team ID	PNT2022TMID21875
Project Name	Efficient Water Quality Analysis & Prediction using Machine Learning

Using the best accuracy algorith (SVC) we are going to train our model for deployment:



File Edit Selection View Go Run Terminal Help — Water_quality.ipynb - Water Quality - Visual Studio Code

EXPLORER

WATER QUALITY
- static
- templates
  - home.html 2
- app.py
- model.pkl
- my_scaler.save
- Procfile
- requirements.txt
- water_potability.csv
- Water_quality.ipynb

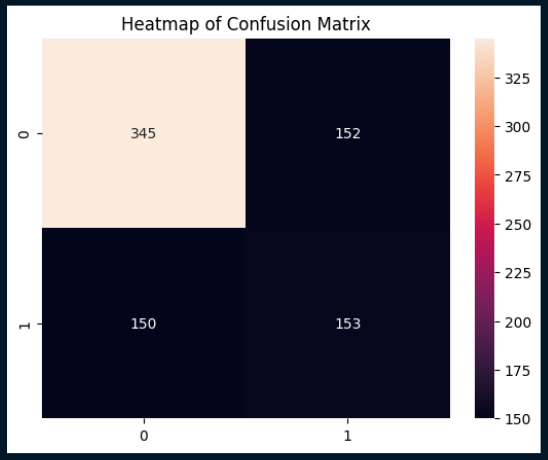
app.py | Water_quality.ipynb | home.html 2 | water_potability.csv

Water_quality.ipynb > Problem Statement > Task 1

+ Code | + Markdown | Run All | Clear Outputs of All Cells | Restart | Variables | Outline | ... | Python 3.9.1 64-bit

```
cm = confusion_matrix(y_test, y_pred_scv)
plt.title('Heatmap of Confusion Matrix', fontsize = 12)
sns.heatmap(cm, annot = True, fmt = "d")
plt.show()
```

[37] ✓ 1.2s — Python



PROBLEMS 2 | OUTPUT | DEBUG CONSOLE | TERMINAL | JUPYTER

```
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
 * Restarting with stat
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:329: UserWarning: Trying to unpickle estimator StandardScaler from version 0.24.0 when using version 1.1.3. This might l
ead to breaking code or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
  warnings.warn(
 * Debugger is active!
 * Debugger PIN: 873-600-839
127.0.0.1 - - [11/Nov/2022 13:57:12] "GET / HTTP/1.1" 200 -
C:\Users\HOME\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\base.py:443: UserWarning: X has feature names, but StandardScaler was fitted without feature names
  warnings.warn(
127.0.0.1 - - [11/Nov/2022 13:57:43] "POST /predict HTTP/1.1" 200 -
```

cmd | Code

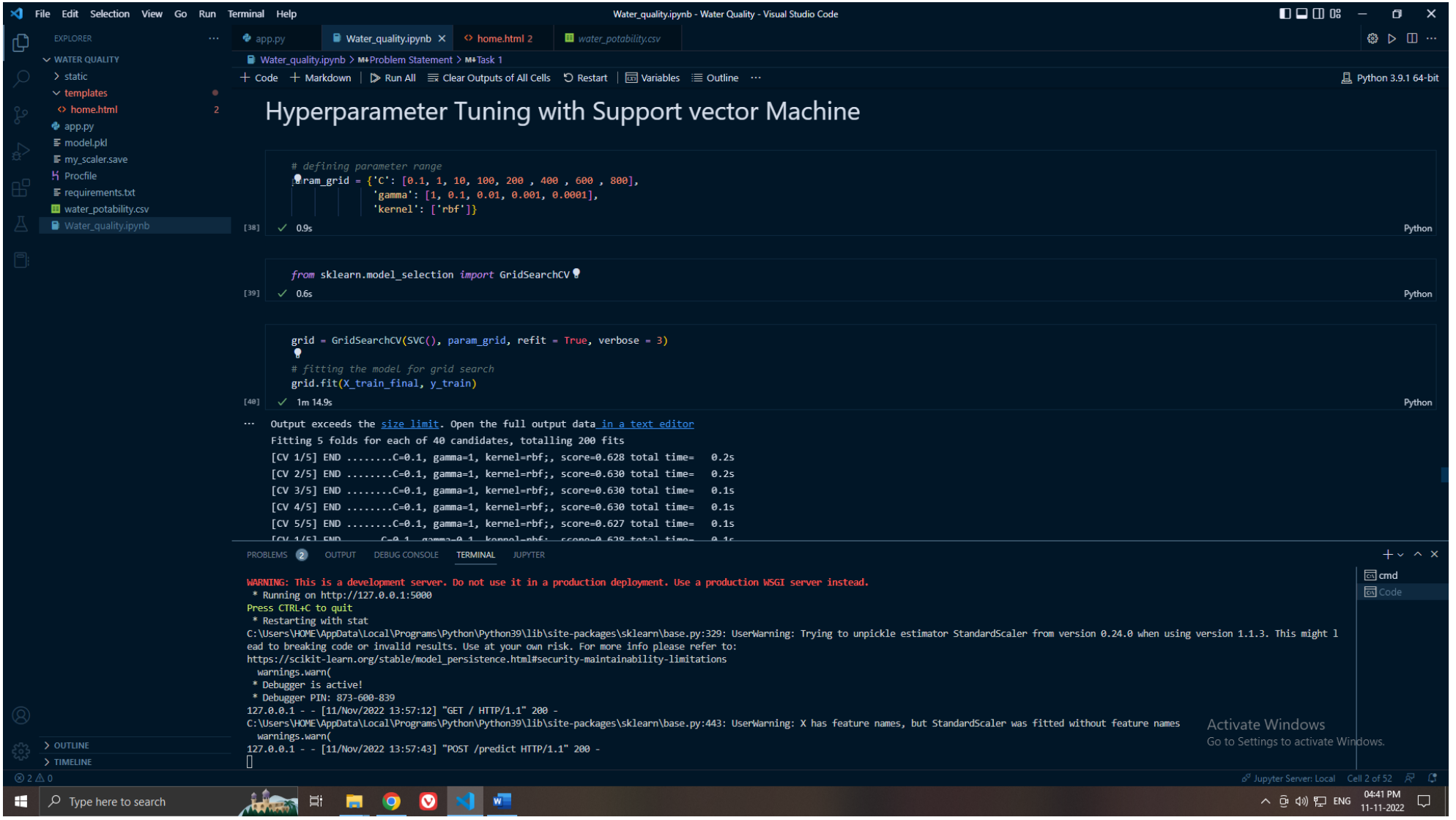
OUTLINE | TIMELINE

Activate Windows
Go to Settings to activate Windows.

Jupyter Server: Local | Cell 2 of 52

Type here to search

ENG 04:41 PM 11-11-2022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Water_quality.ipynb > Problem Statement > Task 1
Code Markdown Run All Clear Outputs of All Cells Restart Variables Outline
Python 3.9.1 64-bit
Hyperparameter Tuning with Support vector Machine
# defining parameter range
param_grid = {'C': [0.1, 1, 10, 100, 200 , 400 , 600 , 800],
'gamma': [1, 0.1, 0.01, 0.001, 0.0001],
'kernel': ['rbf']}
[38] 0.9s
Python
from sklearn.model_selection import GridSearchCV
[39] 0.6s
Python
grid = GridSearchCV(SVC(), param_grid, refit = True, verbose = 3)
# fitting the model for grid search
grid.fit(X_train_final, y_train)
[40] 1m 14.9s
Python
Output exceeds the size limit. Open the full output data in a text editor
Fitting 5 folds for each of 40 candidates, totalling 200 fits
[CV 1/5] END ....C=0.1, gamma=1, kernel=rbf;, score=0.628 total time= 0.2s
[CV 2/5] END ....C=0.1, gamma=1, kernel=rbf;, score=0.630 total time= 0.2s
[CV 3/5] END ....C=0.1, gamma=1, kernel=rbf;, score=0.630 total time= 0.1s
[CV 4/5] END ....C=0.1, gamma=1, kernel=rbf;, score=0.630 total time= 0.1s
[CV 5/5] END ....C=0.1, gamma=1, kernel=rbf;, score=0.627 total time= 0.1s
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
cmd
Code
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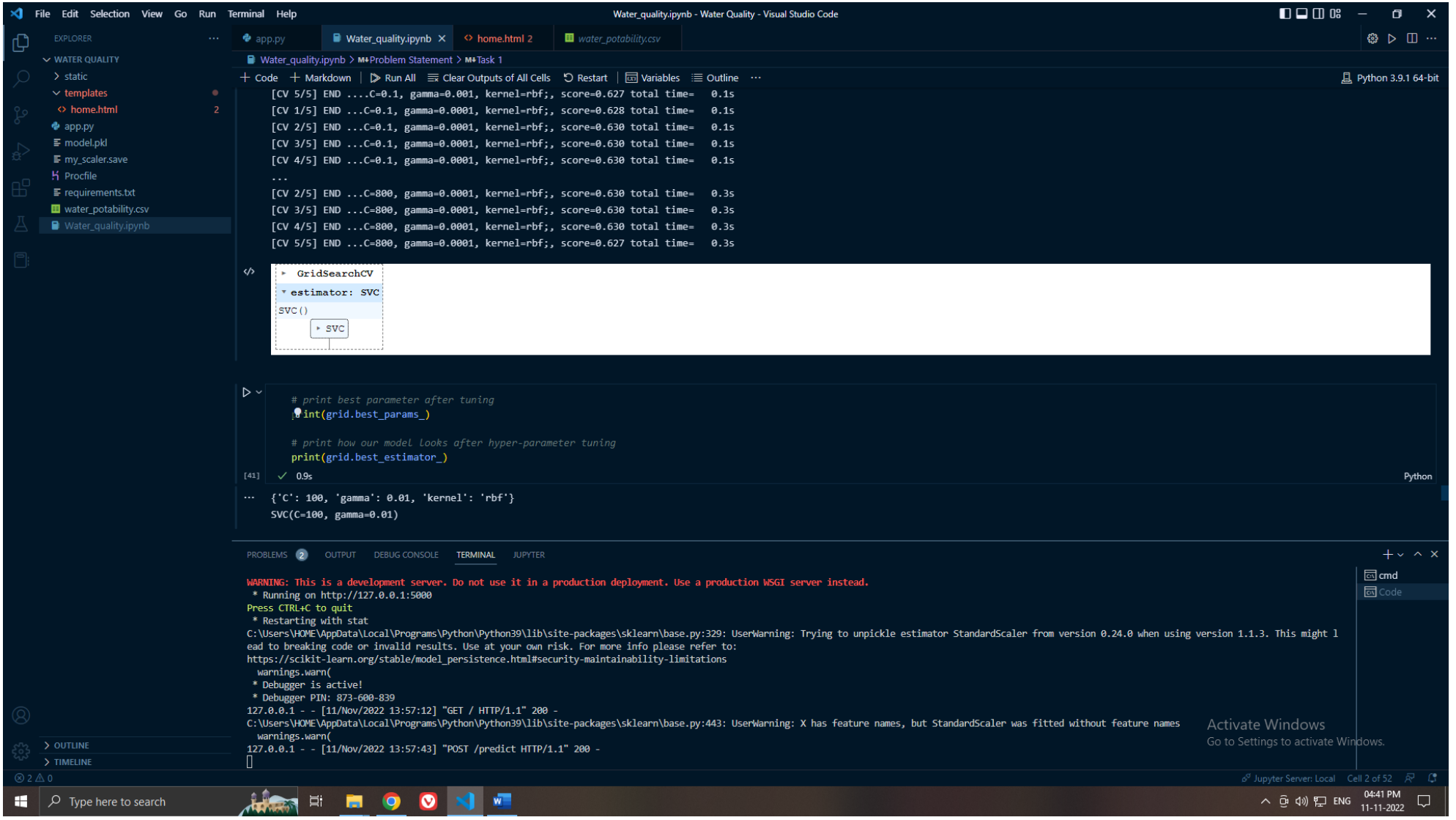
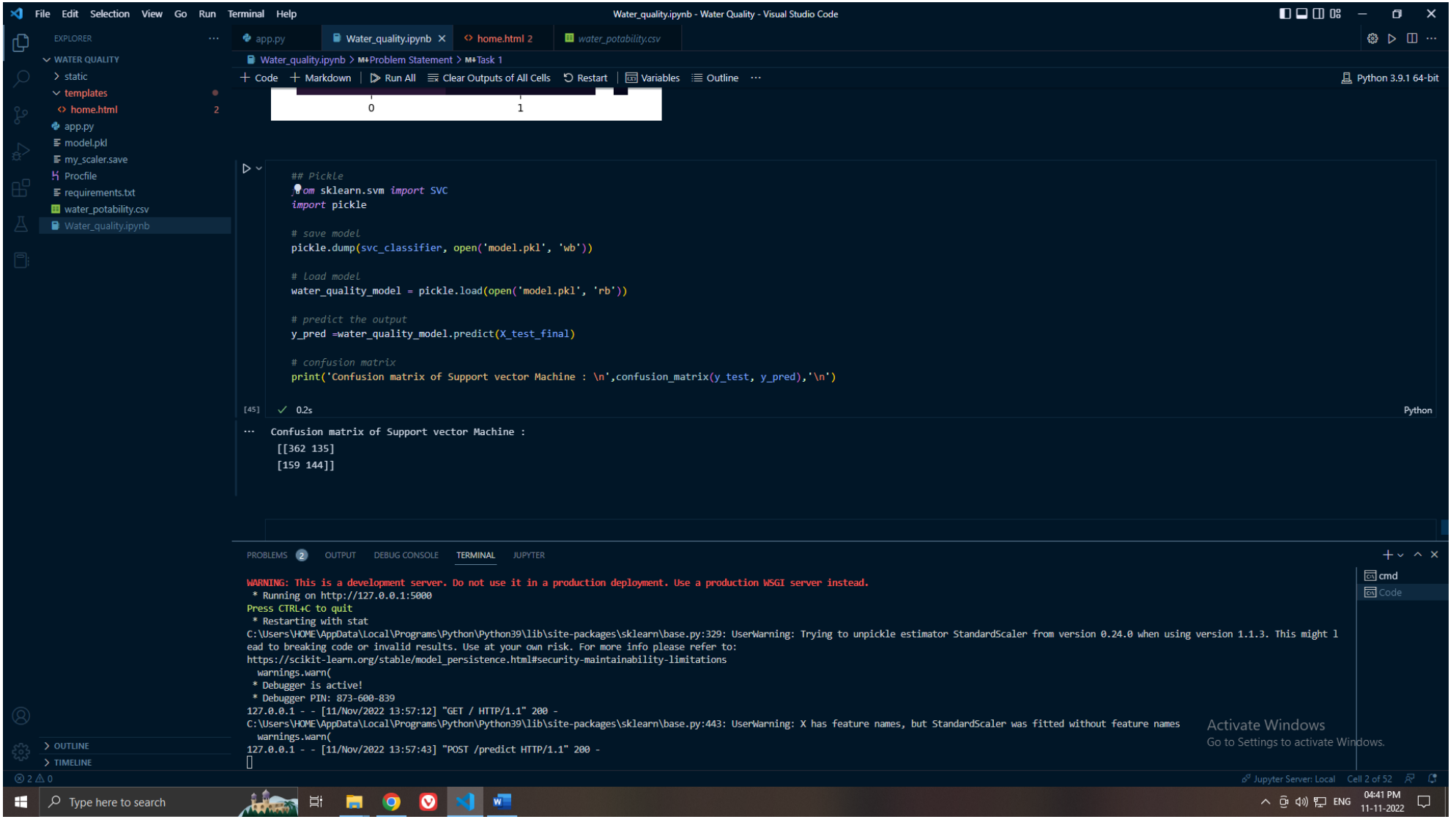
11-11-2022



Now we have successfully trained our model , then we will save our trained model using *PICKLE library*

Model.pkl file: (this is the file where we will be saving our trained model)



Now it contains all the necessary files ..