Ex: 2. Implement a Classifier using an Open Source dataset.

06.08.25. ~~6/8/25~~

Aim: To implement a supervised machine learning using an open source dataset.

Pseudo code:

1. Import necessary libraries.
   - pandas, scikit-learn, dataset, metrics, KNeighboursClassifier.
2. Load the dataset.
   - use datasets.load_iris(). (iris dataset)
3. Prepare the data
   - Assign features to x, target to y.
4. Split into training & testing sets :-
   - Use train_test_split(x, y, test_size 0.3, random_state = 42)
5. ~~Ras~~ Instantiate the KNN classifier :
   - knn = KNeighboursClassifier(n_neighbours=3)
6. Train the Model
7. Make Predictions
   - y_pred = knn.predict(x_test)
8. Evaluate the classifier :-
   - Calculate accuracy : metric.accuracy_score(y_test, y_pred

Observation:

- The KNN classifier is trained on the iris dataset and tested on unseen data
- Output is displayed.
- Lowering 'K' can make the the model more sensitive to ~~make~~ noise, while larger 'K' can smoothen decision boundary

Result: KNN ~~classifier~~ classifier was successfully implemented & tested using an open-source dataset.

OBSERVATION:

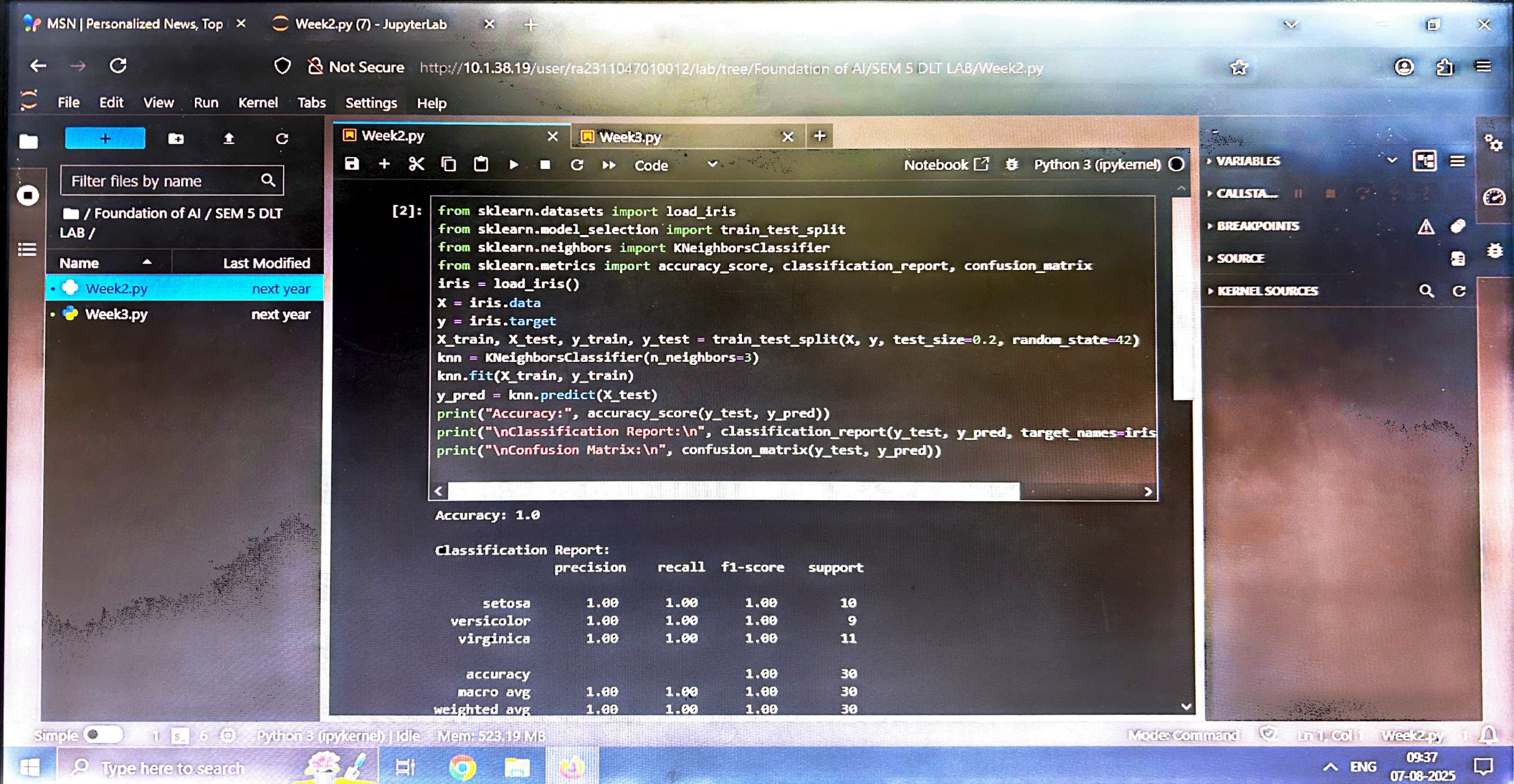
Accuracy: 1.0

Classification Report:

	precision	recall	f1-score	support
setosa	1.00	1.00	1.00	10
versicolor	1.00	1.00	1.00	9
virginica	1.00	1.00	1.00	11
accuracy			1.00	30
macro avg.	1.00	1.00	1.00	30
weighted avg.	1.00	1.00	1.00	30

Confusion Matrix:

```
[[10  0  0]
 [ 0  9  0]
 [ 0  0 11]]
```


MSN | Personalized News, Top
Week2.py (7) - JupyterLab
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Code
Notebook
Python 3 (ipykernel)
[2]:
from sklearn.datasets import load_iris
from sklearn.model_selection import train_test_split
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import accuracy_score, classification_report, confusion_matrix
iris = load_iris()
X = iris.data
y = iris.target
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
knn = KNeighborsClassifier(n_neighbors=3)
knn.fit(X_train, y_train)
y_pred = knn.predict(X_test)
print("Accuracy:", accuracy_score(y_test, y_pred))
print("\nClassification Report:\n", classification_report(y_test, y_pred, target_names=iris
print("\nConfusion Matrix:\n", confusion_matrix(y_test, y_pred))
Accuracy: 1.0
Classification Report:
precision recall f1-score support
setosa 1.00 1.00 1.00 10
versicolor 1.00 1.00 1.00 9
virginica 1.00 1.00 1.00 11
accuracy 1.00 30
macro avg 1.00 1.00 1.00 30
weighted avg 1.00 1.00 1.00 30
VARIABLES
CALLSTA...
BREAKPOINTS
SOURCE
KERNEL SOURCES
Simple
Python 3 (ipykernel) | Idle
Mem: 523.19 MB
Mode: Command
Ln 1, Col 1
Week2.py
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ENG
09:37
07-08-2025

Week2.py Untitled.ipynb

Code Notebook Python 3 (pykern

```
y_pred = knn.predict(X_test)
print("Accuracy:", accuracy_score(y_test, y_pred))
print("\nClassification Report:\n", classification_report(y_test, y_pred, target_names=iris
print("\nConfusion Matrix:\n", confusion_matrix(y_test, y_pred))
```

```
Accuracy: 1.0

Classification Report:
              precision    recall  f1-score   support

      setosa       1.00      1.00      1.00        10
  versicolor       1.00      1.00      1.00         9
   virginica       1.00      1.00      1.00        11

    accuracy                           1.00        30
   macro avg       1.00      1.00      1.00        30
weighted avg       1.00      1.00      1.00        30


Confusion Matrix:
 [[10  0  0]
 [ 0  9  0]
 [ 0  0 11]]
```

[ ]: