Slotted

2. Implement a Classifier using Open Source dataset

Aim : Implementing a classifier using a open source dataset

Objective :

1. Load and explore iris dataset
2. Preprocess the data
3. Apply logistic regression for classification
4. Evaluate the model using accuracy & other classification metrics

Pseudo Code :

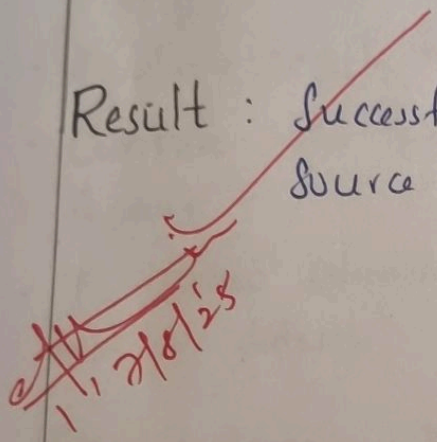
1. Import required libraries :
   - sklearn, Pandas, numpy, matplotlib
2. Load iris dataset using sklearn datasets
3. Explore ~~dataset~~ iris dataset :
   - Features : Sepal length, sepal width, petal length, petal width
   - Target : 3 classes (setosa, versicolor, virginica)
4. Split data :
   Train & test split (80% train & 20% test)
5. Train Logistic regression model on training data
6. Predict label on test data
7. Evaluate Performance :
   - accuracy

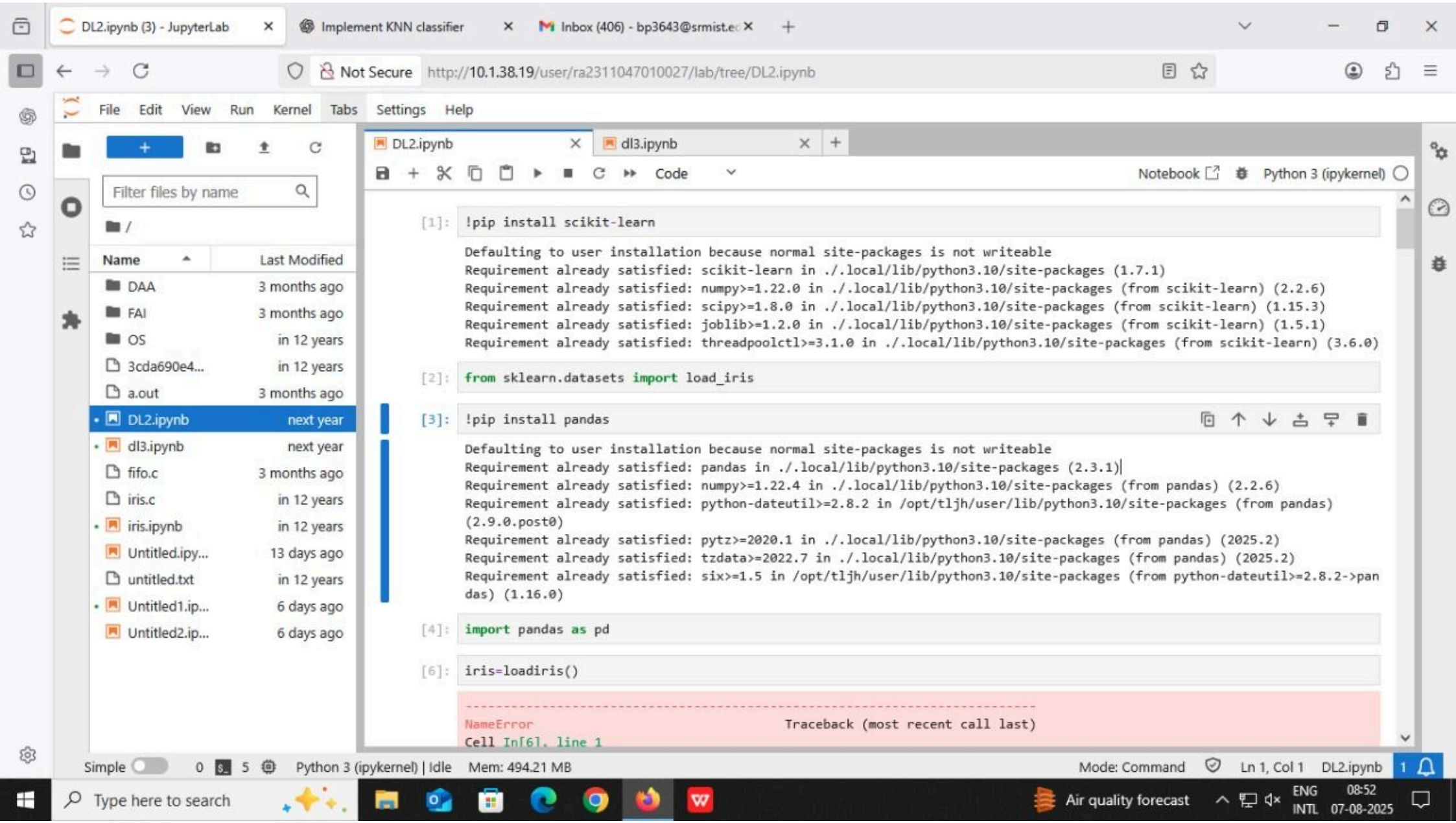
Observation :

1. Dataset
   - Iris dataset contains 150 samples, equally divided into 3 classes
   - Each sample has 4 features

2. Model performance
   - Logistic regression achieved accuracy approximately

Result : Successfully implemented a classifier using open source dataset.

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Code
Notebook
Python 3 (ipykernel)
[1]: !pip install scikit-learn
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: scikit-learn in ./.local/lib/python3.10/site-packages (1.7.1)
Requirement already satisfied: numpy>=1.22.0 in ./.local/lib/python3.10/site-packages (from scikit-learn) (2.2.6)
Requirement already satisfied: scipy>=1.8.0 in ./.local/lib/python3.10/site-packages (from scikit-learn) (1.15.3)
Requirement already satisfied: joblib>=1.2.0 in ./.local/lib/python3.10/site-packages (from scikit-learn) (1.5.1)
Requirement already satisfied: threadpoolctl>=3.1.0 in ./.local/lib/python3.10/site-packages (from scikit-learn) (3.6.0)
[2]: from sklearn.datasets import load_iris
[3]: !pip install pandas
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: pandas in ./.local/lib/python3.10/site-packages (2.3.1)
Requirement already satisfied: numpy>=1.22.4 in ./.local/lib/python3.10/site-packages (from pandas) (2.2.6)
Requirement already satisfied: python-dateutil>=2.8.2 in /opt/tljh/user/lib/python3.10/site-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in ./.local/lib/python3.10/site-packages (from pandas) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in ./.local/lib/python3.10/site-packages (from pandas) (2025.2)
Requirement already satisfied: six>=1.5 in /opt/tljh/user/lib/python3.10/site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
[4]: import pandas as pd
[6]: iris=loadiris()
NameError Traceback (most recent call last)
Cell In[6], line 1
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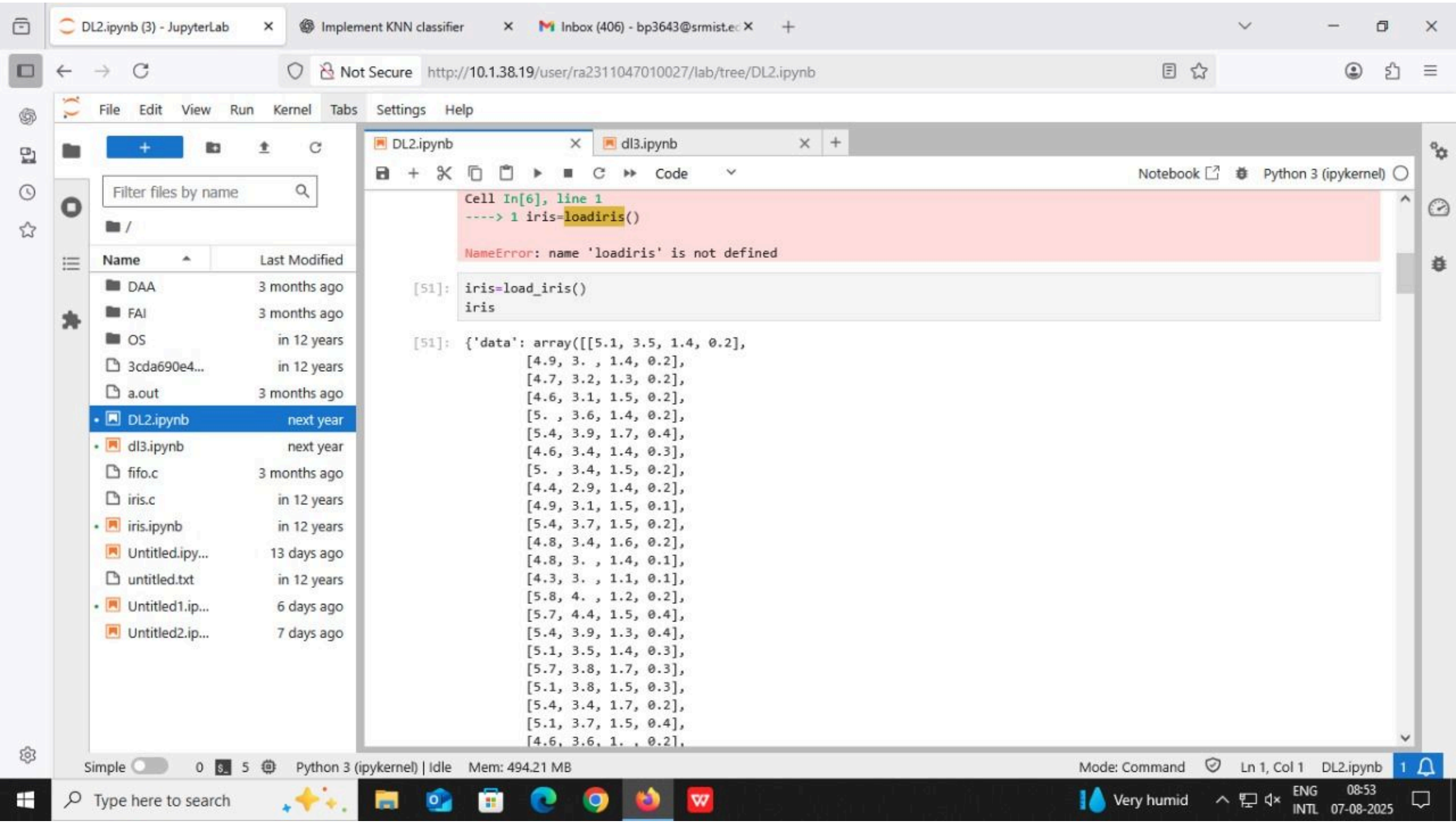
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Code
Notebook
Python 3 (ipykernel)
Cell In[6], line 1
----> 1 iris=loadiris()
NameError: name 'loadiris' is not defined
[51]: iris=load_iris()
iris
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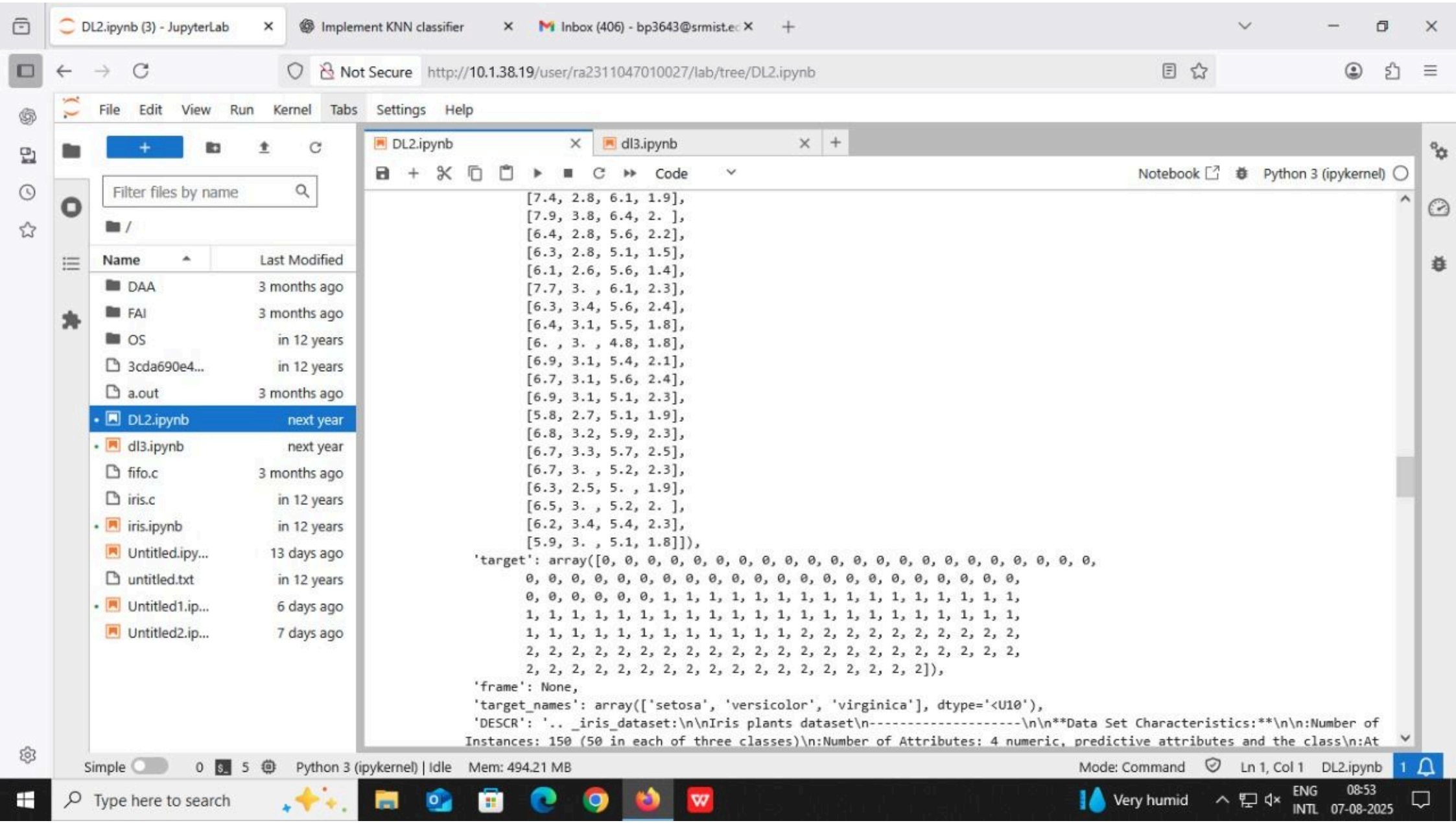
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2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2]),
'frame': None,
'target_names': array(['setosa', 'versicolor', 'virginica'], dtype='<U10'),
'DESCR': '.. _iris_dataset:\n\nIris plants dataset\n--------------------\n\n**Data Set Characteristics:**\n\n:Number of
Instances: 150 (50 in each of three classes)\n:Number of Attributes: 4 numeric, predictive attributes and the class\n:At
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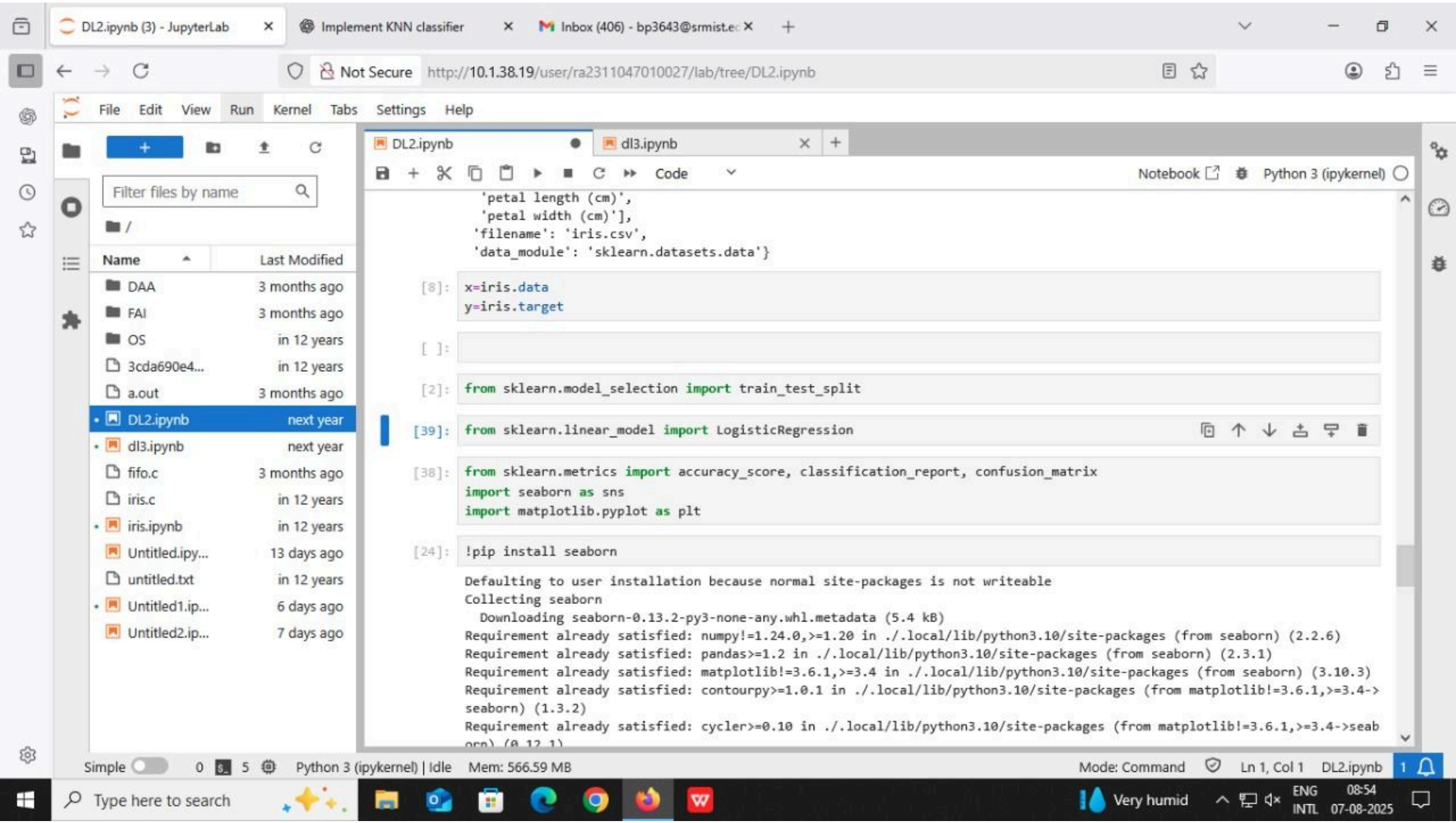
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Python 3 (ipykernel)
'petal length (cm)',
'petal width (cm)'],
'filename': 'iris.csv',
'data_module': 'sklearn.datasets.data'}
[8]: x=iris.data
y=iris.target
[ ]:
[2]: from sklearn.model_selection import train_test_split
[39]: from sklearn.linear_model import LogisticRegression
[38]: from sklearn.metrics import accuracy_score, classification_report, confusion_matrix
import seaborn as sns
import matplotlib.pyplot as plt
[24]: !pip install seaborn
Defaulting to user installation because normal site-packages is not writeable
Collecting seaborn
Downloading seaborn-0.13.2-py3-none-any.whl.metadata (5.4 kB)
Requirement already satisfied: numpy!=1.24.0,>=1.20 in ./.local/lib/python3.10/site-packages (from seaborn) (2.2.6)
Requirement already satisfied: pandas>=1.2 in ./.local/lib/python3.10/site-packages (from seaborn) (2.3.1)
Requirement already satisfied: matplotlib!=3.6.1,>=3.4 in ./.local/lib/python3.10/site-packages (from seaborn) (3.10.3)
Requirement already satisfied: contourpy>=1.0.1 in ./.local/lib/python3.10/site-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (1.3.2)
Requirement already satisfied: cycler>=0.10 in ./.local/lib/python3.10/site-packages (from matplotlib!=3.6.1,>=3.4->seaborn)
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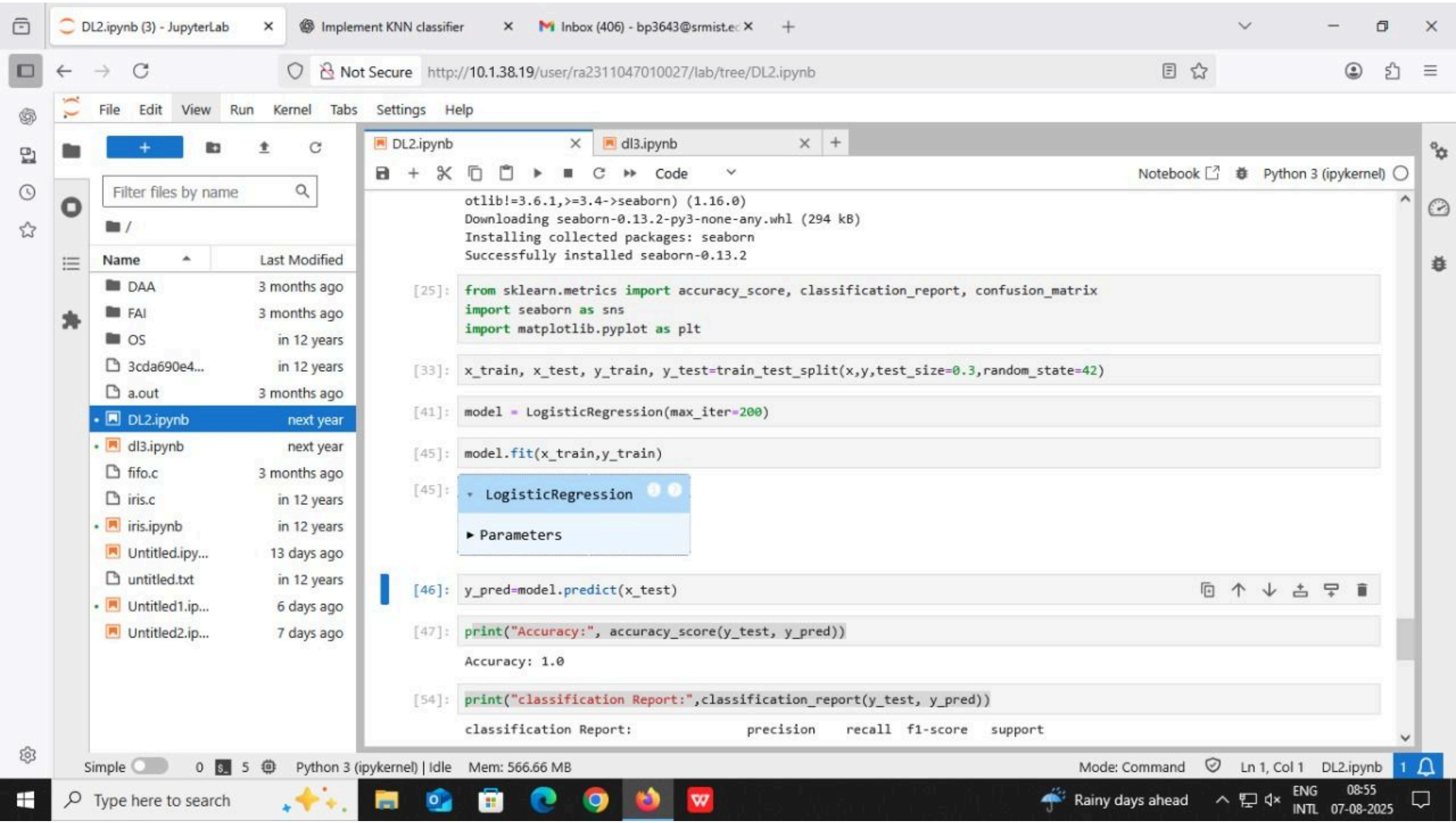
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otlib!=3.6.1,>=3.4->seaborn) (1.16.0)
Downloading seaborn-0.13.2-py3-none-any.whl (294 kB)
Installing collected packages: seaborn
Successfully installed seaborn-0.13.2
[25]: from sklearn.metrics import accuracy_score, classification_report, confusion_matrix
import seaborn as sns
import matplotlib.pyplot as plt
[33]: x_train, x_test, y_train, y_test=train_test_split(x,y,test_size=0.3,random_state=42)
[41]: model = LogisticRegression(max_iter=200)
[45]: model.fit(x_train,y_train)
[45]: LogisticRegression
▸ Parameters
[46]: y_pred=model.predict(x_test)
[47]: print("Accuracy:", accuracy_score(y_test, y_pred))
Accuracy: 1.0
[54]: print("classification Report:",classification_report(y_test, y_pred))
classification Report: precision recall f1-score support
Simple 0 5 Python 3 (ipykernel) | Idle Mem: 566.66 MB
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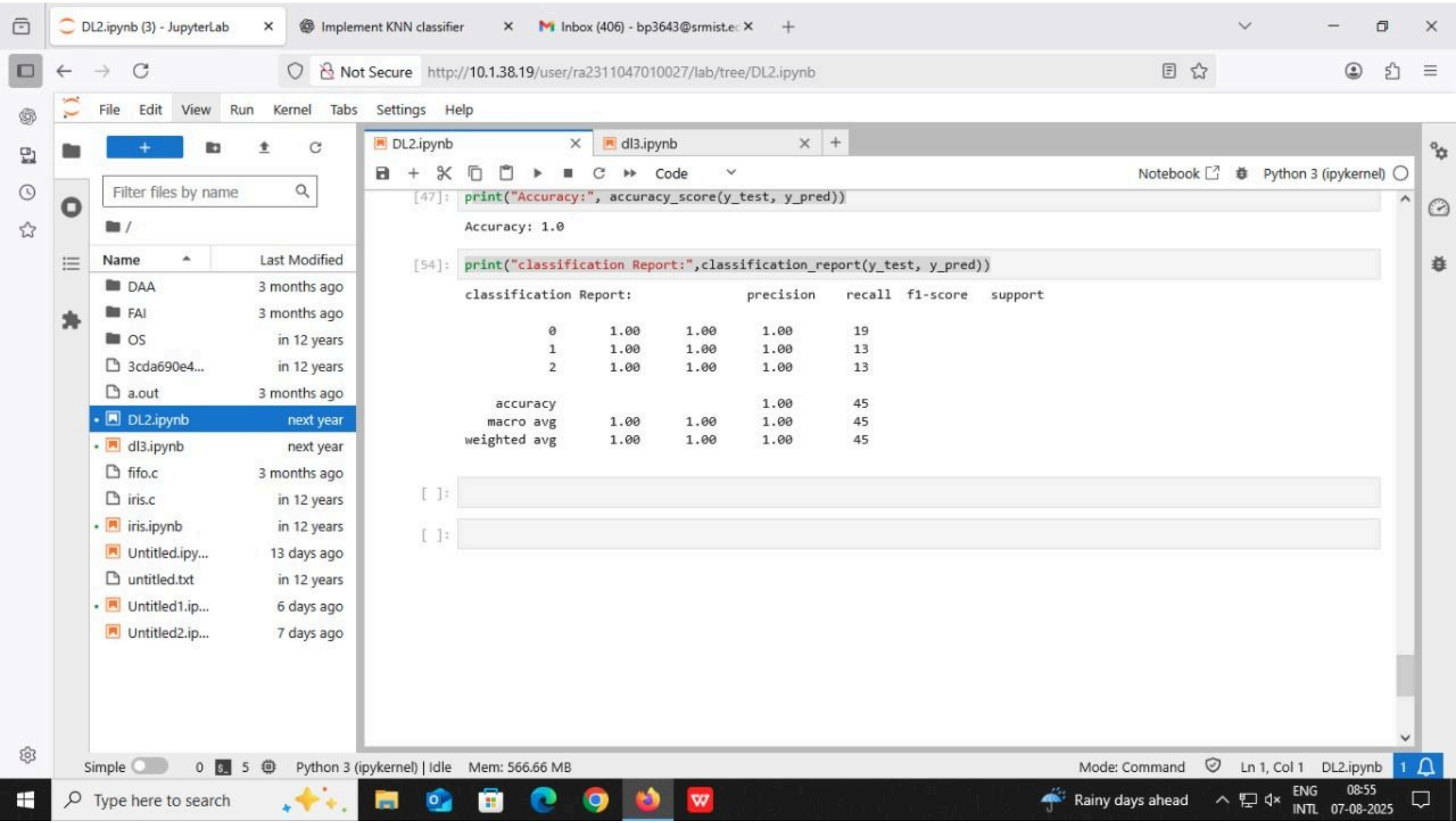
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[47]: print("Accuracy:", accuracy_score(y_test, y_pred))
Accuracy: 1.0
[54]: print("classification Report:",classification_report(y_test, y_pred))
classification Report: precision recall f1-score support
0 1.00 1.00 1.00 19
1 1.00 1.00 1.00 13
2 1.00 1.00 1.00 13
accuracy 1.00 45
macro avg 1.00 1.00 1.00 45
weighted avg 1.00 1.00 1.00 45
[ ]:
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