MLT LAB

Q1. Basic Decision Tree Classification

- Load the Iris dataset using sklearn.datasets.load_iris.
- Split the data into training (70%) and testing (30%).
- Train a Decision Tree Classifier (criterion="gini", max_depth=3).
- Evaluate accuracy on the test set.

Q2. Compare Splitting Criteria

- Train two Decision Tree Classifiers on the Iris dataset:
    1. With criterion="gini"
    2. With criterion="entropy"
- Compare the accuracy of both models.

Q3. Effect of Tree Depth

- Train Decision Tree Classifiers with different values of max_depth = [2, 3, 4, 5].
- Record training and testing accuracy for each depth.

Q4. Decision Tree Regression

- Use the same Iris dataset, but treat **petal length** as the **target variable** (Y) and the other features as inputs (X).
- Train a Decision Tree Regressor (max_depth=3).
- Evaluate performance using:
    - Mean Squared Error (MSE)
    - R^2 score
- Plot predicted vs actual values.