Machine Learning with Python Lab - Assignment 10

Question 1 :

1. Implement K-Nearest Neighbors (KNN) using Python.
2. Load the Iris dataset from sklearn.datasets.
3. Split the data into training and testing sets (80% : 20% , 90:10 , 75:25,65:35).
4. Use the KNeighborsClassifier to create the KNN model with k=3.
5. Train the model and make predictions on the test data.
6. Report the accuracy of your model.
7. Visualize the accuracies for 4 types of splitting
8. Try different values of K (e.g., K=1, 3, 5, 7, 9) and record the accuracy for each value.
9. Which value of K gives the highest accuracy? Explain why this value might work best.
10 Visualize the accuracies for the different K values

Question 2 :
1.Implement Logistic Regression using Python on iris dataset
2 Using the same Iris dataset, build a Logistic Regression model using LogisticRegression
3. Train the model on the training set and make predictions on the test set (80% : 20% , 90:10 , 75:25,65:35.
4. Report the accuracy of the Logistic Regression model.
5 Visualize the accuracies for 4 types of splitting
6.Compare the accuracy, confusion matrix, and classification report of the Logistic Regression model with that of the KNN model.
7Which model performs better for the Iris dataset? Justify your answer based on the results.

Question 3:

1. Apply Min-Max Scaling or Standard Scaling to the dataset using StandardScaler and retrain both the KNN and Logistic Regression models.
2. Does scaling improve the model performance? Explain the results with visualizations