**Classification Problem-Solving(Use all Classification algorithm and find best out of all)**

**Instructions:**

In this assignment, you will demonstrate your understanding of all classification algorithm by solving a classification problem.

Dataset: You can use any publicly available dataset of your choice. Choose a dataset that includes categorical or numerical features and a target variable for classification.

**Steps to follow:**

a. Preprocess the dataset: Perform any necessary preprocessing steps such as data cleaning, managing missing values, and feature scaling.

b. Split the dataset: Split the dataset into training and testing sets. Use an appropriate ratio (e.g., 70% training, 30% testing).

c. Implement KNN algorithm: Implement the KNN algorithm using a Python. You can use libraries such as scikit-learn to facilitate the implementation.

d. Train the model: Train all classifiers model on the training data.

e. Predict and evaluate: Use the trained model to make predictions on the testing data. Evaluate the model's performance by calculating relevant classification metrics such as accuracy, precision, recall, and F1 score.

f. Experiment and optimize: Experiment with different values of K and evaluate the impact on the model's performance. Optimize the model by selecting the optimal value of K based on the evaluation results.

g. Document your findings: Provide a detailed explanation of the steps taken, the observations made, and the results. Include visualizations, if applicable, to support your analysis.