Classification Analysis

Task: Implementing Classification Algorithms

Explanation: In this module, you will dive into classification algorithms, a type of supervised learning. You will practice various classification techniques and how to evaluate their performance. You will work with the dataset of your choice, and produce the report of your analysis.

Associated Course (if you haven't taken it or mastered the skills):

- Classification Analysis

Instructions:

1. Nearest Neighbors: Implement the k-Nearest Neighbors (k-NN) algorithm to classify data points based on their proximity to labeled samples.
2. Decision Trees: Build a decision tree model to create a series of rules for classifying data based on features.
3. Support Vector Machines (SVM): Learn how to use SVM for binary and multiclass classification tasks.
4. Naive Bayes: Understand the Naive Bayes algorithm, a probabilistic method for classification.
5. Logistic Regression: Implement logistic regression for binary classification problems.
6. Cross Validation: Perform cross-validation to assess the robustness of your classification models.
7. Ensemble Methods: Explore ensemble techniques such as bagging and boosting to improve classification performance.
8. Evaluation Metrics: Evaluate the performance of your classification models using metrics like accuracy, precision, recall, and F1-score.