Machine Learning Project instructions:

- You have to submit 2 files :
  1. **Answer Report**: In this, you need to submit all the answers to all the questions in a sequential manner. **It should include a detailed explanation of the approach used, insights, inferences, all outputs of codes like graphs, tables, etc.** Your report should **not** be filled with codes. You will be evaluated based on the business report.
  2. **Jupyter Notebook file**: This is a must and will be used for reference while evaluating
- Any assignment found copied/ plagiarized with another person will not be graded and marked as zero.
- Please ensure timely submission as a post-deadline assignment will not be accepted.

Problem 1:

You are hired by one of the leading news channels CNBE who wants to analyze recent elections. This survey was conducted on 1525 voters with 9 variables. You have to build a model, to predict which party a voter will vote for on the basis of the given information, to create an exit poll that will help in predicting overall win and seats covered by a particular party.

Dataset for Problem: Election_Data.xlsx

Data Ingestion: 14 marks1.1 Read the dataset. Do the descriptive statistics and do the null value condition check. Write an inference on it. (6 Marks)1.2 Perform Univariate and Bivariate Analysis. Do exploratory data analysis. Check for Outliers. (8 Marks)

Data Preparation: 6 marks1.3 Encode the data (having string values) for Modelling. Is Scaling necessary here or not? Data Split: Split the data into train and test (70:30). (6 Marks)

Modeling: 32 marks1. Apply Logistic Regression . (6 marks)2. Apply KNN Model. Interpret the results. (6 marks)3. Model Tuning, Bagging (Random Forest should be applied for Bagging), and Boosting. (12 marks)4. Performance Metrics: Check the performance of Predictions on Train and Test sets using Accuracy, Confusion Matrix, Plot ROC curve and get ROC_AUC score for each model. Final Model: Compare the models and write inference which model is best/optimized. (8 marks)

Inference: 8 marks1. Based on these predictions, what are the insights? (8 marks)