Objective:

This is a hands-on practice project **(non-graded)** where you will experiment with different sentiment analysis techniques, from traditional machine learning (ML) models to modern prompt engineering. The goal is to test the models and discuss accuracy and findings with your peers.

Instructions:

Task 1: Load and Explore the Dataset

Load the dataset, explore its structure, and perform any preprocessing you find necessary.

Task 2: Build a Traditional ML Classifier

Use any traditional ML approach, such as SVM with Bag of Words, to build a sentiment classifier and evaluate its performance. Note: A traditional ML model requires training, so the data must be split into training and test sets. The model needs to be built using the training data and evaluated on the test data to assess its performance.

Task 3: Experiment with a Traditional NLP Approach

Use any traditional NLP technique, such as TF-IDF or word embeddings, to improve sentiment classification and compare results.

Task 4: Try a Transformer-Based Model

Use any transformer model of your choice to perform sentiment analysis and compare its performance with traditional approaches.

Task 5: Explore Prompt Engineering

Experiment with any prompting technique and analyze how well it works for sentiment classification.

Task 6: Discussion & Insights

Compare the different approaches, share your observations, and discuss your findings with peers.

Key Notes and Suggestions:

- Write a Python function for evaluation which can be used to evaluate all the models
- Experiment with different models and techniques freely.
- Compare results and discuss accuracy with your peers.
- Feel free to try **any transformer model or prompting technique** beyond the suggestions.
- **Be creative and explore!**
- **Submit your Python notebook at the end. Note that this submission is for practice only and will not be evaluated.**