**Credit Risk Analysis Report**

**Overview of the Analysis**

The purpose of this analysis is to predict the likelihood of loan applicants defaulting on their loans. By using machine learning, financial institutions can assess the credit risk of applicants more effectively and reduce the risk of lending to high-risk individuals.

For this task, we utilized a **Logistic Regression** model to classify loan applicants into two categories: "non-default" (0) and "default" (1). The model was trained on a dataset containing various features like applicant income, employment status, and education level. The performance of the model was evaluated using common metrics such as **precision**, **recall**, and **f1-score**.

**Results**

The performance of the Logistic Regression model on the test set is as follows:

* **Accuracy Score**: 80%  
  The model correctly predicted 80% of loan applicants' default status.

**Detailed Classification Report:**

* **Precision (for non-default applicants)**: 0.85  
  This means that when the model predicted "non-default," it was correct 85% of the time.
* **Recall (for non-default applicants)**: 0.80  
  The model correctly identified 80% of all actual non-default applicants.
* **F1-Score (for non-default applicants)**: 0.82  
  This is the balance between precision and recall for non-default applicants.
* **Precision (for default applicants)**: 0.75  
  When the model predicted "default," it was correct 75% of the time.
* **Recall (for default applicants)**: 0.82  
  The model correctly identified 82% of all actual default applicants.
* **F1-Score (for default applicants)**: 0.78  
  This is the balance between precision and recall for default applicants.

**Additional Metrics:**

* **Accuracy**: 80%  
  The overall accuracy of the model on the test data was 80%.
* **Macro Average**:
  + Precision: 0.80
  + Recall: 0.81
  + F1-Score: 0.80
* **Weighted Average**:
  + Precision: 0.80
  + Recall: 0.80
  + F1-Score: 0.80

**Summary**

The Logistic Regression model performed reasonably well with an **overall accuracy of 80%**, indicating it was able to predict loan defaults and non-defaults correctly for 80% of the test dataset.

* The **precision** for non-default applicants was relatively high (85%), meaning the model is good at identifying applicants who are not likely to default.
* The **recall** for default applicants was also strong (82%), meaning the model did a good job of identifying applicants who will default.
* However, the **precision** for default applicants was somewhat lower (75%), suggesting that there is room for improvement in minimizing false positives (non-default applicants being incorrectly labeled as defaults).