Credit Risk Analysis Report

The code provided gives an output indicating the logistic regression model performs quite well when predicting healthy loans (0) and high-risk loans (1).

Balanced Accuracy Score: The balanced accuracy score is 0.992, which is extremely high. The balanced accuracy measure accounts for imbalance datasets. A score of 0.992 indicates a high accuracy in correctly classifying both positive and negative classes, which is a positive sign for performance.

Confusion Matrix:
- True Positives (TP): 563
- True Negatives (TN): 18,663
- False Positives (FP): 102
- False Negatives (FN): 56

The model correctly identified 18,663 healthy loans and 563 high-risk loans, with only a total of 158 loans being miscalculated; accounting for only 0.8% of all loans in the dataset. This indicates a strong performance, especially when identifying healthy loans.

Classification Report:
- **Precision:** The precision of predicting a healthy loan was 1.00 while the precision of predicting a high-risk loan was 0.85, meaning 85% of the time a high-risk loan will be identified. Precision for class 1 (high-risk loans) indicates how well the model can identify actual high-risk loans without false alarms.
- **Recall:** Recall, also referred to as Sensitivity, is how well the model captures actual healthy loans and correctly predicting when a loan will be considered high-risk. This measure can identify those high-risk loans without missing too many with a score of 0.91
- **F-1 Score:** The F-1 score is the harmonic mean of precious and recall. It provides a balanced measure of the model's accuracy in classifying both healthy and high-risk loans. The F-1 score for predicting high-risk loans is 0.88, indicating a strong balance between precision and recall.
- **Support:** The support column indicates the number of actual instances of each class. There are 18,765 healthy loans and 619 high-risk loans.

The logistic regression model demonstrates a strong predictive performance when determining a healthy loan (0) versus a high-risk loan (1). There are high precision and recall scores and a strong F-1 score indicating a strong balance between precision and recall.