**Provide an overview that explains the purpose of this analysis. (5 points).**

Using logistic regression allows banks to assess the creditworthiness of borrowers to make important decisions on whether they can approve the proposal or not. This model provides the probability that a borrower falls into a particular creditworthiness category, typically represented as "creditworthy" (good credit) or "non-creditworthy" (bad credit). This makes this model an appropriate choice as logistic regression is specifically designed for binary classification problems where the outcome variable has two categories.

**Using a bulleted list, describe the accuracy, precision, and recall scores of the machine learning model. (5 points)**

Accuracy: describes the overall measure of how well the model is performing. It uses macro average (average of precision, recall and F1-score) and weighted average (number of occurrences for each class and their respective weight to the larger classes).

Precision: accuracy of the model predictions. Our model predicted ‘0’ accurately 100% while 85% for ‘1’.

Recall score: model’s ability to accurately find the actual instances. Our model had a recall of 99% for ‘0’, meaning it was able to find the actual instance 99% of the time while for ‘1’, the percentage was 91%.

**Summarise the results from the machine learning model. Include your justification for recommending the model for use by the company. If you don’t recommend the model, justify your reasoning. (10 points)**

The machine learning model demonstrates excellent performance, especially for predicting healthy loans (Class 0). With a precision of 1.00, the model is highly accurate in identifying healthy loans, and the recall of 0.99 indicates that it captures almost all actual healthy loans. The F1-Score of 1.00 for Class 0 confirms a perfect balance between precision and recall.

For high-risk loans (Class 1), the model shows good performance with a precision of 0.85, indicating that when it predicts a high-risk loan, it is correct about 85% of the time. The recall of 0.91 suggests that the model is able to identify 91% of the actual high-risk loans. The F1-Score of 0.88 for Class 1 demonstrates a reasonable balance between precision and recall.

The overall accuracy of 0.99 is excellent, suggesting that the model is making accurate predictions for the majority of cases in the dataset.

Justification for Recommendation:

Based on the high precision, recall, and F1-Score for both classes, along with the impressive overall accuracy, the model appears to be well-suited for predicting creditworthiness. The weighted average F1-Score of 0.99 indicates a robust overall performance, considering both classes and their respective support sizes.

This model is recommended for use by the company, especially if the primary goal is to identify healthy loans accurately while maintaining a good balance for high-risk loans. The high precision for Class 0 ensures that the company can be confident in approving loans predicted as healthy by the model. However, the company should be aware that, as with any model, continuous monitoring and evaluation are necessary to ensure its effectiveness over time.