Model Report

Model Accuracy

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📊 Logistic Regression Performance:
              precision    recall  f1-score   support

          No       0.85      0.99      0.91       245
         Yes       0.62      0.10      0.18        49

    accuracy                           0.84       294
   macro avg       0.74      0.54      0.54       294
weighted avg       0.81      0.84      0.79       294


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🌳 Decision Tree Performance:
              precision    recall  f1-score   support

          No       0.86      0.97      0.91       246
         Yes       0.53      0.19      0.28        48

    accuracy                           0.84       294
   macro avg       0.69      0.58      0.59       294
weighted avg       0.81      0.84      0.81       294
```
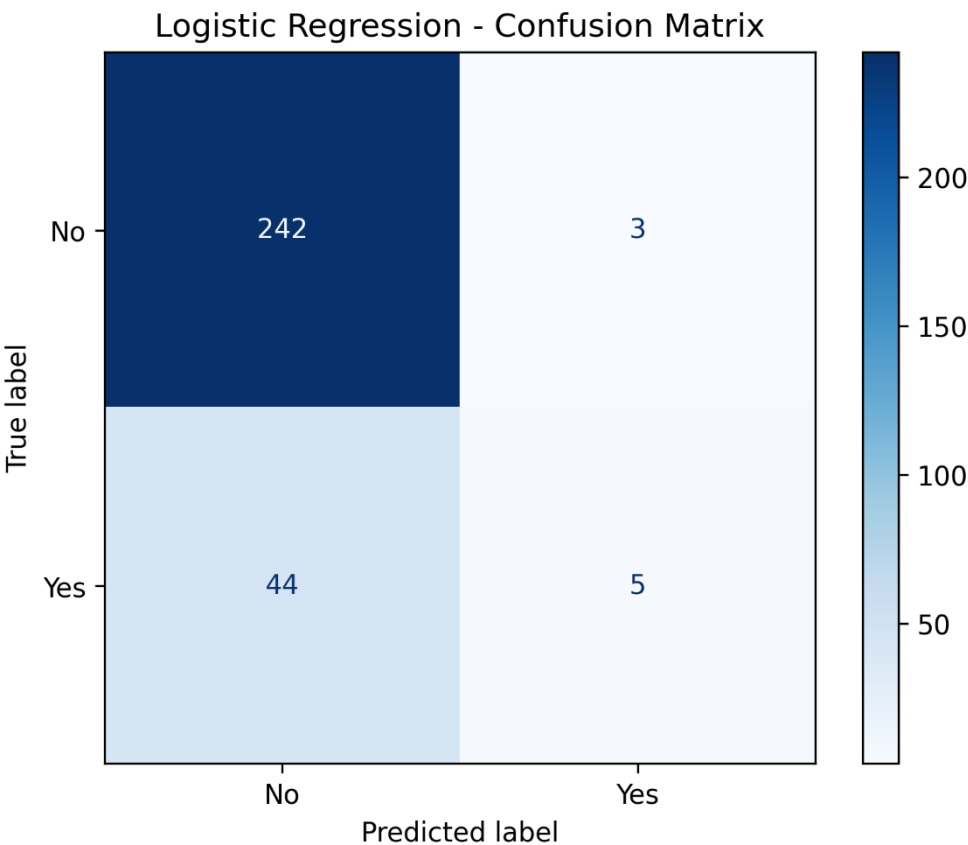
Confusion Matrix

Logistic Regression - Confusion Matrix

Decision Tree - Confusion Matrix
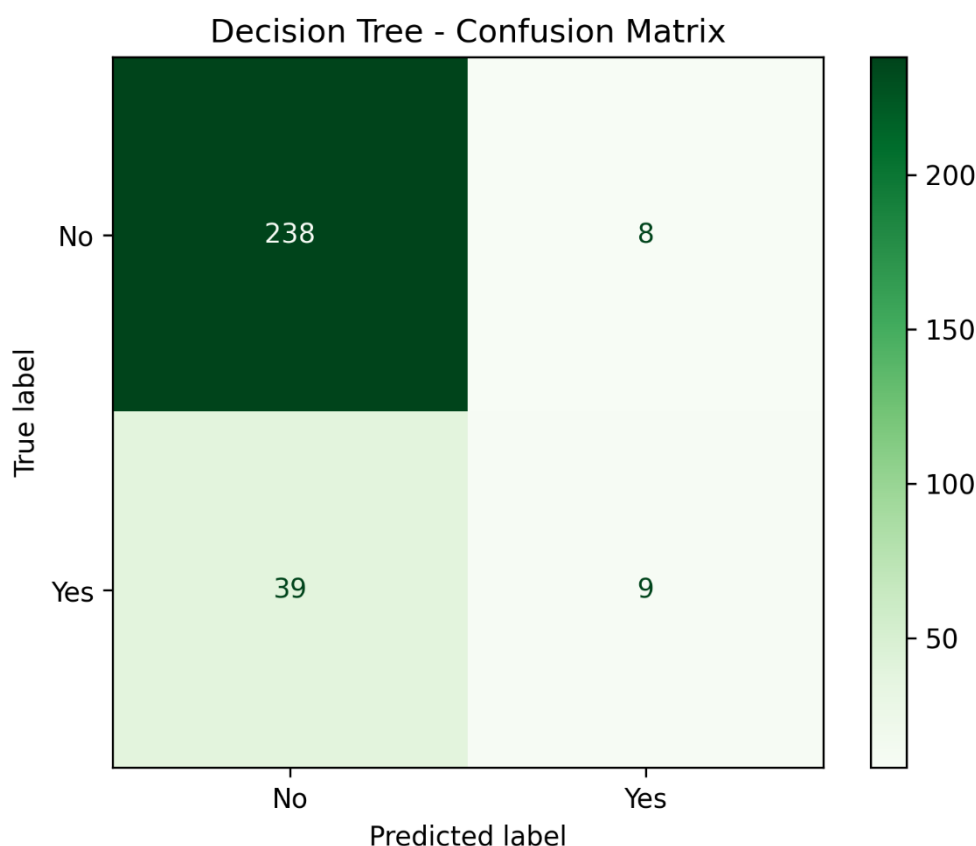
Model Evaluation Summary

The performance of both Logistic Regression and Decision Tree classifiers was evaluated using accuracy, precision, recall, and F1-score. Both models achieved an accuracy of **84%**, indicating good overall prediction capability.

- **Logistic Regression** showed high precision (**0.62**) for the minority class (Attrition = Yes), meaning it was cautious and made fewer false positives. However, its **recall was low (0.10)**, suggesting it failed to identify most of the actual attrition cases.
- **Decision Tree**, on the other hand, had slightly lower precision (**0.53**) but improved **recall (0.19)** compared to Logistic Regression. This model was more aggressive in predicting attrition, which increased its ability to catch some true positives but also introduced more false positives.

The confusion matrices illustrate that both models predict "No Attrition" very well, but struggle with "Yes Attrition," which is expected due to class imbalance.

In summary:
- ➢ **Logistic Regression** is more conservative and better suited if minimizing false alarms is important.
- ➢ **Decision Tree** offers a bit more balance and may be better if catching actual attrition cases is a priority, even at the cost of some precision.