**Best Performing Experiment:**The combination of **Random Forest with GridSearchCV and SMOTE** yielded the best performance, especially in terms of **F1-score** and **recall**, effectively handling the class imbalance.

**Challenges Faced:**

* Dealing with imbalanced data impacted early model accuracy.
* Selecting the right hyperparameters required multiple tuning iterations.
* Interpreting the effects of L1 vs L2 regularization was nuanced.

**Key Learnings from Each Experiment:**

* **Feature Scaling** improved Logistic Regression but had little impact on tree-based models.
* **Train-Test Split Change** slightly influenced generalization, with 80/20 yielding slightly better results.
* **Regularization** helped reduce overfitting and improved interpretability in Logistic Regression.
* **SMOTE** significantly boosted performance for the minority class, especially in recall.