1. **Decision Tree and Random Forest**

After ranking variables based on importance scores, variables that are important are mostly the same as those before. Therefore, they are selected as predictors.

A graph with blue bars

Description automatically generatedA graph with blue bars

Description automatically generated

The decision tree model brings us an accuracy of 0.89 and an F1-score of 0.90.

A white rectangular object with black text

Description automatically generated with medium confidence

We also tried displaying the decision tree using Python and Pydot as below.

A diagram of a diagram

Description automatically generated with medium confidence

Next, a random forest model with n equal to 50 is built. The model provides both accuracy and F1-score of around 0.93.

A close-up of a computer code

Description automatically generated

1. **XGBoost**

We also tried running the XGBoost model with results of the confusion matrix as follows.

A black and white text with numbers

Description automatically generated A red blue and orange squares with numbers

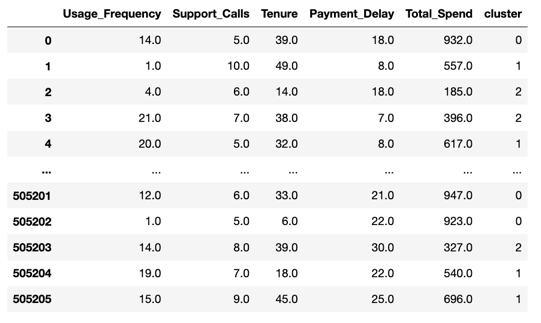
Description automatically generated

1. **Clustering**

A graph of a number of clusters

Description automatically generated

Based on Usage\_Frequency, Support\_Calls, Tenure, Payment\_Delay, and Total\_Spend, we clustered customers after estimating the most compatible number of clusters, which was 3.

 A graph of a heat map

Description automatically generated