# Assignment 2

Problem 1:

Universal Bank has begun a program to encourage existing customers to borrow via a consumer loan program.

The bank has tested a loan promotion on a random sample of 5000 customers. This test promotion resulted in 480 of the 5000 existing customers accepting the offer (look at the column “Personal Loan”)

The bank is intrigued by the success of this promotion. It has hired you to help them develop a model to identify which of its remaining customers may accept a similar promotion.

They hired you to help them reduce the promotion costs and target the offer to only a subset of its customers that or more likely to accept the offer. They disclosed that the cost to promote this offer is $10 dollars per customer, and the profit from obtaining a loan customer is $100.

Thus,

The profit for TP = $100 - $10 = $90

The profit for FP = $-10 (spent the marketing cost, but didn't get the profit.)

The profit from TN = 0

The profit for FN = -$90 as opportunity cost.

Can you please design a model that maximizes the profit for Universal Bank?

Few points,

1. Split the data 70:30 and use the random seed as 100.
2. Use the 70% data for training and validation (k fold cross validation). Use the 30% unseen data only to test and report corresponding performance.
3. Use the randomized search and/or gridsearch to find the best solution.
4. Please report the profit you made. There will be points awarded based on your performance in making a profit.
5. Submit a notebook file.