Project -4
Personal Loan Campaign Problem

Business Scenario

- The data provided is from a Personal Loans Campaign executed by MyBank.

- 20000 customers were targeted with an offer of Personal Loans at 10% interest rate.

- 2512 customers out of 20000 responded expressing their need for Personal Loan; These customers are labelled as **Target = 1** and remaining customers are labelled as **Target = 0**

Data dictionary

Column Name	Description	Column Name	Description
CUST_ID	Customer ID - Unique ID	FLG_HAS_CC	Has Credit Card - 1: Yes, 0: No
TARGET	Target Field - 1: Responder, 0: Non-Responder	AMT_ATM_DR	Amount Withdrawn from ATM
AGE	Age of the customer in years	AMT_BR_CSH_WDL_DR	Amount cash withdrawn from Branch
GENDER	Gender	AMT_CHQ_DR	Amount debited by Cheque Transactions
BALANCE	Average Monthly Balance	AMT_NET_DR	Amount debited by Net Transactions
OCCUPATION	Occupation	AMT_MOB_DR	Amount debited by Mobile Banking Transactions
AGE_BKT	Age Bucket	AMT_L_DR	Total Amount Debited
SCR	Generic Marketing Score	FLG_HAS_ANY_CHGS	Has any banking charges
HOLDING_PERIOD	Ability to hold money in the account (Range 0 - 31)	AMT_OTH_BK_ATM_USG_CHGS	Amount charged by way of the Other Bank ATM usage
ACC_TYPE	Account Type - Saving / Current	AMT_MIN_BAL_NMC_CHGS	Amount charged by way Minimum Balance not maintained
ACC_OP_DATE	Account Open Date	NO_OF_IW_CHQ_BNC_TXNS	Amount charged by way Inward Cheque Bounce
LEN_OF_RLTN_IN_MNTH	Length of Relationship in Months	NO_OF_OW_CHQ_BNC_TXNS	Amount charged by way Outward Cheque Bounce
NO_OF_L_CR_TXNS	No. of Credit Transactions	AVG_AMT_PER_ATM_TXN	Avg. Amt withdrawn per ATM Transaction
NO_OF_L_DR_TXNS	No. of Debit Transactions	AVG_AMT_PER_CSH_WDL_TXN	Avg. Amt withdrawn per Cash Withdrawal Transaction
TOT_NO_OF_L_TXNS	Total No. of Transaction	AVG_AMT_PER_CHQ_TXN	Avg. Amt debited per Cheque Transaction
NO_OF_BR_CSH_WDL_DR_TXNS	No. of Branch Cash Withdrawal Transactions	AVG_AMT_PER_NET_TXN	Avg. Amt debited per Net Transaction
NO_OF_ATM_DR_TXNS	No. of ATM Debit Transactions	AVG_AMT_PER_MOB_T	Avg. Amt debited per Mobile Banking
NO_OF_NET_DR_TXNS	No. of Net Debit Transactions		
NO_OF_MOB_DR_TXNS	No. of Mobile Banking Debit Transactions		

Part 1 - Classification Tree

- Split data into Development (70%) and Hold-out (30%) Sample
- Build Classification Tree using CART technique
- Do necessary pruning
- Measure Model Performance on Development Sample
- Test Model Performance on Hold Out Sample
- Ensure the model is not an overfit model

Part 2 - Random Forest

- Split data into Development (70%) and Hold-out (30%) Sample
- Build Model using Random Forest technique
- Measure Model Performance on Development Sample
- Test Model Performance on Hold Out Sample
- Ensure the model is not an overfit model

- Compare the 2 Models' Performance
  - CART
  - Random Forest

- Ensemble Model – Create Ensemble Model based on the output of the above 3 models

- Compare the Ensemble Model performance with individual model.