**BANK LOAN**

**import pandas as pd**

**dataset=pd.read\_excel("Bank\_Personal\_Loan\_Modelling.xlsx",sheet\_name=1)**

**dataset.head()**

Out[98]:

ID Age Experience ... CD Account Online CreditCard

0 1 25 1 ... 0 0 0

1 2 45 19 ... 0 0 0

2 3 39 15 ... 0 0 0

3 4 35 9 ... 0 0 0

4 5 35 8 ... 0 0 1

[5 rows x 14 columns]

**dataset.isna().sum().sum**

Out[99]:

<bound method Series.sum of ID 0

Age 0

Experience 0

Income 0

ZIP Code 0

Family 0

CCAvg 0

Education 0

Mortgage 0

Personal Loan 0

Securities Account 0

CD Account 0

Online 0

CreditCard 0

dtype: int64>

**dataset.isnull().sum()**

Out[101]:

ID 0

Age 0

Experience 0

Income 0

ZIP Code 0

Family 0

CCAvg 0

Education 0

Mortgage 0

Personal Loan 0

Securities Account 0

CD Account 0

Online 0

CreditCard 0

dtype: int64

**dataset.drop("ID", axis=1, inplace=True)**

**dataset.drop("ZIP Code", axis=1, inplace=True)**

**Y=dataset['Personal Loan']**

**X=dataset[['Age', 'Experience', 'Income', 'Family', 'CCAvg','Education','Mortgage','Securities Account','CD Account','Online','CreditCard']]**

**import statsmodels.api as sm**

**X1=sm.add\_constant(X)**

**Logisric=sm.Logit(Y,X1)**

**result=Logisric.fit()**

Optimization terminated successfully.

Current function value: 0.128435

Iterations 9

**result.summary()**

Out[112]:

<class 'statsmodels.iolib.summary.Summary'>

"""

Logit Regression Results

==============================================================================

Dep. Variable: Personal Loan No. Observations: 5000

Model: Logit Df Residuals: 4988

Method: MLE Df Model: 11

Date: Sat, 08 Aug 2020 Pseudo R-squ.: 0.5938

Time: 17:55:29 Log-Likelihood: -642.18

converged: True LL-Null: -1581.0

Covariance Type: nonrobust LLR p-value: 0.000

======================================================================================

coef std err z P>|z| [0.025 0.975]

--------------------------------------------------------------------------------------

const -12.1928 1.645 -7.411 0.000 -15.417 -8.968

Age -0.0536 0.061 -0.874 0.382 -0.174 0.067

Experience 0.0638 0.061 1.046 0.295 -0.056 0.183

Income 0.0546 0.003 20.831 0.000 0.049 0.060

Family 0.6958 0.074 9.364 0.000 0.550 0.841

CCAvg 0.1240 0.040 3.127 0.002 0.046 0.202

Education 1.7362 0.115 15.088 0.000 1.511 1.962

Mortgage 0.0005 0.001 0.856 0.392 -0.001 0.002

Securities Account -0.9368 0.286 -3.277 0.001 -1.497 -0.377

CD Account 3.8225 0.324 11.800 0.000 3.188 4.457

Online -0.6752 0.157 -4.298 0.000 -0.983 -0.367

CreditCard -1.1197 0.205 -5.462 0.000 -1.522 -0.718

======================================================================================

"""

**Inference:**

**1.The more significant Variables are:**

**Income, Family, CD Account, Online, CreditCard**

**2.The less significant Variables are:**

**CCAvg, Education, Securities Account**

**3.Not significant Variables are:**

**Business Travel ,Distance From Home ,years at company**