```
In [1]:
          import numpy as np
          import pandas as pd
          import seaborn as sns
          import matplotlib.pyplot as plt
In [2]:
          from sklearn.linear model import LogisticRegression
In [3]:
          df_train=pd.read_csv("C8_loan-train.csv")
          df_test=pd.read_csv("C8_loan-test.csv")
          df_train
               Loan_ID Gender Married Dependents Education Self_Employed ApplicantIncome CoapplicantIn
Out[3]:
           0 LP001002
                                                                                         5849
                          Male
                                     No
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                                                                                         3000
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         612 LP002984
                          Male
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                                                                          No
                                                                                         7583
                                                      Graduate
         613 LP002990 Female
                                     No
                                                                          Yes
                                                                                         4583
        614 rows × 13 columns
In [4]:
          df test
Out[4]:
               Loan_ID Gender Married Dependents Education Self_Employed ApplicantIncome CoapplicantIII
           0 LP001015
                                                                                         5720
                          Male
                                    Yes
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           1 LP001022
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                          Male
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           3 LP001035
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                                                           Not
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              LP001051
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                                                      Graduate
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Loan ID Gender Married Dependents Education Self_Employed ApplicantIncome CoapplicantIII
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                        Male
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         363 LP002975
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                                                                                4158
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         364 LP002980
                                                 Graduate
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                        Male
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         365 LP002986
                        Male
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                                                 Graduate
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                                                                  No
         366 LP002989
                        Male
                                 No
                                                 Graduate
                                                                  Yes
                                                                                9200
        367 rows × 12 columns
 In [5]:
          df1=df train.dropna()
 In [6]:
          df2=df_test.dropna()
 In [7]:
          df1.info()
         <class 'pandas.core.frame.DataFrame'>
         Int64Index: 480 entries, 1 to 613
         Data columns (total 13 columns):
                                Non-Null Count Dtype
          #
              Column
              Loan ID
          0
                                480 non-null
                                                object
          1
              Gender
                                480 non-null
                                                object
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              Married
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              Dependents
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              Self Employed
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                                                int64
          6
              ApplicantIncome
                                480 non-null
          7
              CoapplicantIncome 480 non-null
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          8
                                                float64
              LoanAmount
                                480 non-null
              Loan Amount Term
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                                480 non-null
                                                float64
          10 Credit History
                                480 non-null
                                                float64
          11 Property Area
                                480 non-null
                                                object
          12 Loan Status
                                480 non-null
                                                object
         dtypes: float64(4), int64(1), object(8)
         memory usage: 52.5+ KB
 In [8]:
          df1.columns
dtype='object')
 In [9]:
          feature_matrix=df1[['ApplicantIncome', 'CoapplicantIncome', 'LoanAmount',
                 'Loan_Amount_Term', 'Credit_History']]
          target_vector=df1[['Self_Employed']]
In [10]:
          feature_matrix.shape
```

```
Out[10]: (480, 5)
In [11]:
          target_vector.shape
Out[11]: (480, 1)
In [12]:
          from sklearn.preprocessing import StandardScaler
In [13]:
          fs=StandardScaler().fit_transform(feature_matrix)
In [14]:
          logr=LogisticRegression()
          logr.fit(fs,target vector)
         C:\ProgramData\Anaconda3\lib\site-packages\sklearn\utils\validation.py:63: DataConversio
         nWarning: A column-vector y was passed when a 1d array was expected. Please change the s
         hape of y to (n samples, ), for example using ravel().
           return f(*args, **kwargs)
Out[14]: LogisticRegression()
In [15]:
          df2.info()
         <class 'pandas.core.frame.DataFrame'>
         Int64Index: 289 entries, 0 to 366
         Data columns (total 12 columns):
          #
              Column
                                Non-Null Count
                                               Dtype
          0
              Loan ID
                                289 non-null
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              ApplicantIncome
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              CoapplicantIncome
                                289 non-null
                                                int64
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                                289 non-null
                                                float64
              LoanAmount
          9
              Loan Amount Term
                                289 non-null
                                                float64
          10 Credit History
                                289 non-null
                                                float64
          11 Property Area
                                289 non-null
                                                object
         dtypes: float64(3), int64(2), object(7)
         memory usage: 29.4+ KB
In [16]:
          df2.columns
'Loan_Amount_Term', 'Credit_History', 'Property_Area'],
               dtype='object')
In [17]:
          observation=df2[['ApplicantIncome', 'CoapplicantIncome', 'LoanAmount',
                 'Loan_Amount_Term', 'Credit_History']]
```

```
In [18]:
                     prediction=logr.predict(observation)
                     print(prediction)
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                     'Yes']
In [19]:
                     logr.classes
Out[19]: array(['No', 'Yes'], dtype=object)
In [20]:
                     logr.predict proba(observation)
Out[20]: array([[0.
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In [21]: logr.predict_proba(observation)[0][0]
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Out[21]: 0.0