Importing Dependencies

```
import numpy as np
import pandas as pd
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn import svm
from sklearn.metrics import accuracy_score
```

Data Collection and Processing

```
#loading dataset to dataframe
loan_dataset = pd.read_csv('/content/Loan Prediction.csv')
```

```
loan_dataset.head()
```

ation	Self_Employed	ApplicantIncome	Coapp
aduate	No	5849	
aduate	No	4583	
aduate	Yes	3000	
Not aduate	No	2583	
aduate	No	6000	

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```
#number of rows and columns
loan_dataset.shape
```

```
(614, 13)
```

```
loan_dataset.describe()
```

	ApplicantIncome	CoapplicantIncome	LoanAmount	Loan_Amount_Term	Credit_History
count	614.000000	614.000000	592.000000	600.00000	564.000000
mean	5403.459283	1621.245798	146.412162	342.00000	0.842199
std	6109.041673	2926.248369	85.587325	65.12041	0.364878
min	150.000000	0.000000	9.000000	12.00000	0.000000
25%	2877.500000	0.000000	100.000000	360.00000	1.000000
50%	3812.500000	1188.500000	128.000000	360.00000	1.000000
75%	5795.000000	2297.250000	168.000000	360.00000	1.000000
max	81000.000000	41667.000000	700.000000	480.00000	1.000000

```
#number of missing values in each column
loan_dataset.isnull().sum()
```

	0
Loan_ID	0
Gender	13
Married	3
Dependents	15
Education	0
Self_Employed	32
ApplicantIncome	0
CoapplicantIncome	0
LoanAmount	22
Loan_Amount_Term	14
Credit_History	50
Property_Area	0
Loan_Status	0

dtype: int64

```
#dropping missing values
loan_dataset = loan_dataset.dropna()


#number of missing values in each column
loan_dataset.isnull().sum()
```

	0
Loan_ID	0
Gender	0
Married	0
Dependents	0
Education	0
Self_Employed	0
ApplicantIncome	0
CoapplicantIncome	0
LoanAmount	0
Loan_Amount_Term	0
Credit_History	0
Property_Area	0
Loan_Status	0

dtype: int64

```
#label encoding
loan_dataset.replace({"Loan_Status":{'N':0, 'Y':1}}, inplace=True)
```

```
loan_dataset.head()
```

	Loan_ID	Gender	Married	Dependents	Education	Self_Employed	ApplicantIncome	Coap
1	LP001003	Male	Yes	1	Graduate	No	4583	
2	LP001005	Male	Yes	0	Graduate	Yes	3000	
3	LP001006	Male	Yes	0	Not Graduate	No	2583	
4	LP001008	Male	No	0	Graduate	No	6000	
5	LP001011	Male	Yes	2	Graduate	Yes	5417	

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```
#Dependent column values
loan_dataset['Dependents'].value_counts()
```

Dependents	count
0	274
2	85
1	80
3+	41

dtype: int64

```
#replacing the value of 3+ to 4
loan_dataset = loan_dataset.replace(to_replace='3+', value=4)
```

```
#Dependent column values
loan_dataset['Dependents'].value_counts()
```

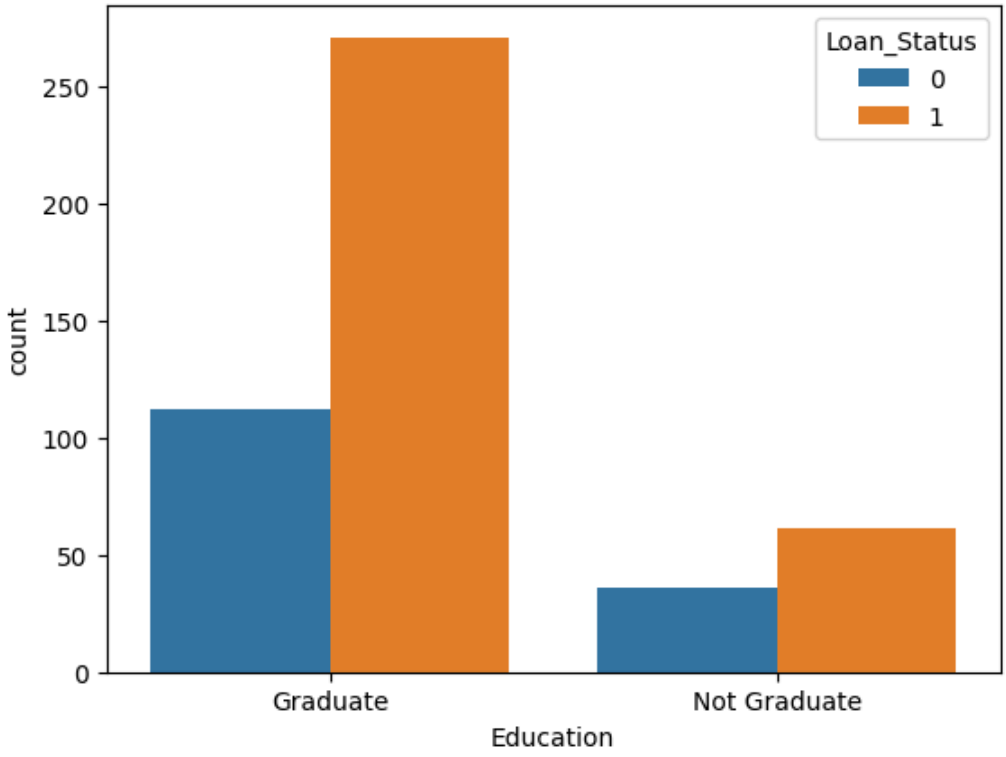
Dependents	count
0	274
2	85
1	80
4	41

dtype: int64

Data Visualization

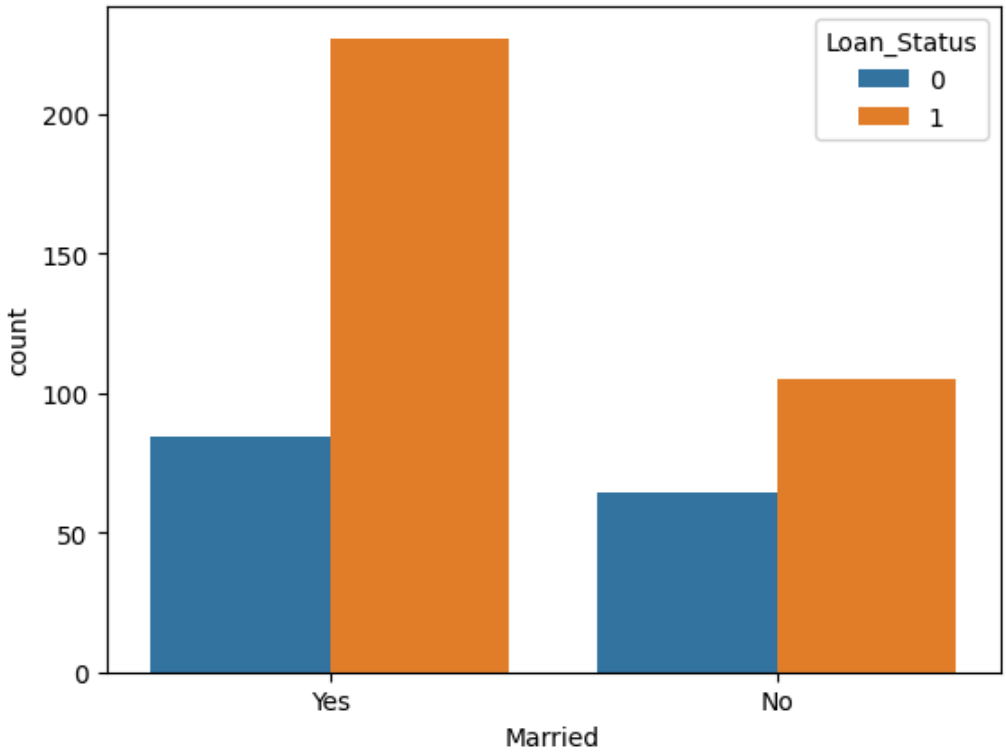
```
#Education & Loan Status
sns.countplot(x='Education', hue='Loan_Status', data=loan_dataset)
```

```
<Axes: xlabel='Education', ylabel='count'>
```




```
#Marital status and Loan status
sns.countplot(x='Married', hue='Loan_Status', data=loan_dataset)
```

```
<Axes: xlabel='Married', ylabel='count'>
```




```
#convert categorical columns to numerical values
loan_dataset.replace({"Married":{'No':0, 'Yes':1}}, inplace=True)
```

```
#convert categorical columns to numerical values
loan_dataset.replace({"Education":{'Not Graduate':0, 'Graduate':1}}, inplace=True)
```

```
#convert categorical columns to numerical values
loan_dataset.replace({'Gender':{'Female':0, 'Male':1}, 'Self_Employed':{'No':0, 'Yes':1},'F
```

```
loan_dataset.head()
```

ation	Self_Employed	ApplicantIncome	Coapp
1	0	4583	
1	1	3000	
0	0	2583	
1	0	6000	
1	1	5417	

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```
#Seperating data and label
X= loan_dataset.drop(columns=['Loan_ID', 'Loan_Status'], axis=1)
Y= loan_dataset['Loan_Status']
```

```
print(X)
print(Y)
```

```
     Gender  Married Dependents  Education  Self_Employed  ApplicantIncome  \
1         1        1          1          1              0             4583
2         1        1          0          1              1             3000
3         1        1          0          0              0             2583
4         1        0          0          1              0             6000
5         1        1          2          1              1             5417
..      ...      ...        ...        ...            ...              ...
609       0        0          0          1              0             2900
610       1        1          4          1              0             4106
611       1        1          1          1              0             8072
612       1        1          2          1              0             7583
613       0        0          0          1              1             4583

     CoapplicantIncome  LoanAmount  Loan_Amount_Term  Credit_History  \
1               1508.0       128.0             360.0             1.0
2                  0.0        66.0             360.0             1.0
3               2358.0       120.0             360.0             1.0
4                  0.0       141.0             360.0             1.0
5               4196.0       267.0             360.0             1.0
..                 ...         ...               ...             ...
609                0.0        71.0             360.0             1.0
610                0.0        40.0             180.0             1.0
611              240.0       253.0             360.0             1.0
612                0.0       187.0             360.0             1.0
613                0.0       133.0             360.0             0.0

     Property_Area
1                0
2                2
3                2
4                2
5                2
..             ...
609              0
610              0
```

```
611              2
612              2
613              1

[480 rows x 11 columns]
1      0
2      1
3      1
4      1
5      1
      ..
609    1
610    1
611    1
612    1
613    0
Name: Loan_Status, Length: 480, dtype: int64
```

Train Test Dataset

```
X_train, X_test, Y_train, Y_test = train_test_split(X,Y, test_size=0.1, stratify=Y, random_
```

```
print(X.shape, X_test.shape, X_train.shape)
```

```
(480, 11) (48, 11) (432, 11)
```

Training Model: Support Vector Machine Model

```
classifier = svm.SVC(kernel='linear')
```

```
#training the SVM model
classifier.fit(X_train, Y_train)
```

```
SVC
SVC(kernel='linear')
```

Model Evaluation

```
#Accuracy Score on training data
X_train_prediction = classifier.predict(X_train)
training_data_accuracy = accuracy_score(X_train_prediction,Y_train)
```

```
print('Accuracy score on training data : ', training_data_accuracy)
```

```
Accuracy score on training data :  0.7986111111111112
```

```
#Accuracy Score on traitestingning data
```