Bivariate Analysis

The dataset is already download in .csv format

IMPORTING THE PACKAGE

In [1]:

```
import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
import seaborn as sns

import warnings
warnings.filterwarnings('ignore')
```

Load the dataset

In [2]:

```
df=pd.read_csv("C:\loan_prediction.csv")
```

In [3]:

```
df.head()
```

O...

	Loan_ID	Gender	Married	Dependents	Education	Self_Employed	ApplicantIncome	CoapplicantIncome	Loan
0	LP001002	Male	No	0	Graduate	No	5849	0.0	
1	LP001003	Male	Yes	1	Graduate	No	4583	1508.0	
2	LP001005	Male	Yes	0	Graduate	Yes	3000	0.0	
3	LP001006	Male	Yes	0	Not Graduate	No	2583	2358.0	
4	LP001008	Male	No	0	Graduate	No	6000	0.0	

In [4]:

```
numerical_features = df.select_dtypes(include = [np.number]).columns
categorical_features = df.select_dtypes(include = [np.object]).columns
numerical_features
```

Out[4]:

```
Index(['ApplicantIncome', 'CoapplicantIncome', 'LoanAmount',
       'Loan_Amount_Term', 'Credit_History'],
      dtype='object')
```

In [5]:

```
categorical_features
```

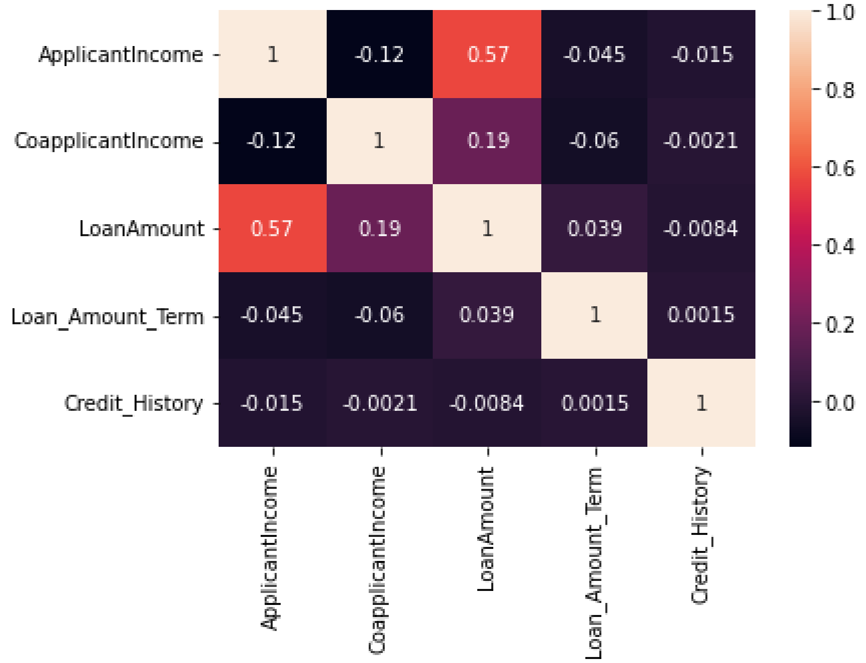
Out[5]:

```
Index(['Loan_ID', 'Gender', 'Married', 'Dependents', 'Education',
       'Self_Employed', 'Property_Area', 'Loan_Status'],
      dtype='object')
```

In [6]:

```
df.corr()
#plotting the correlation
plt.figure(1)
sns.heatmap(df.corr(), annot = True)
```

Out[6]:

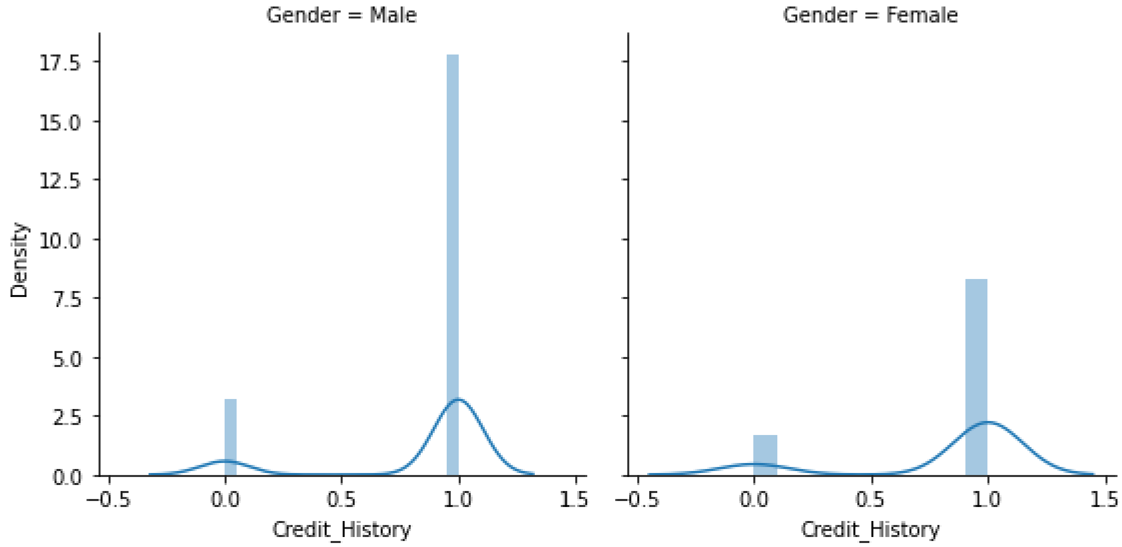


Perform Visualizations

In [7]:

```
#exploring the Gender columns more
plt.figure(3, figsize=(12, 10))
g = sns.FacetGrid(data = df, col= 'Gender', height = 4)
g.map(sns.distplot, 'Credit_History')
```

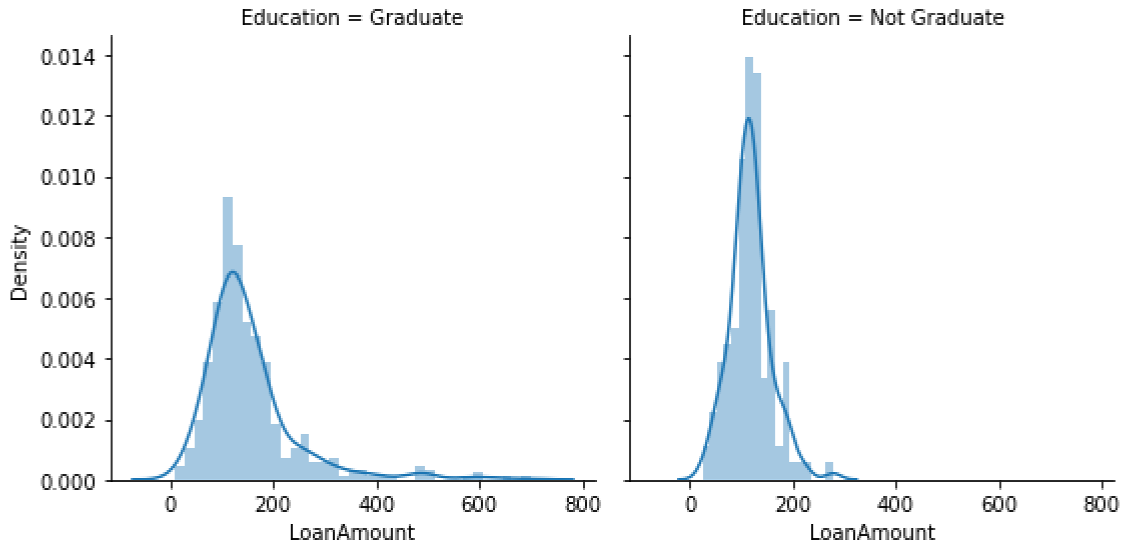
Out[7]:



In [8]:

```
#exploring the Education columns more
plt.figure(3, figsize=(12, 10))
g = sns.FacetGrid(data = df, col= 'Education', height = 4)
g.map(sns.distplot, 'LoanAmount')
```

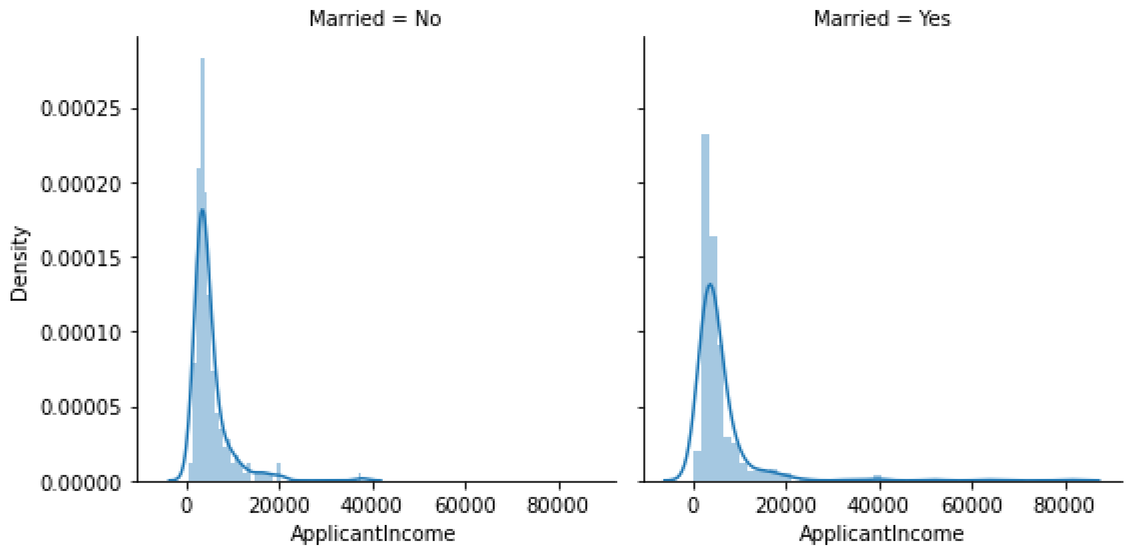
Out[8]:



In [9]:

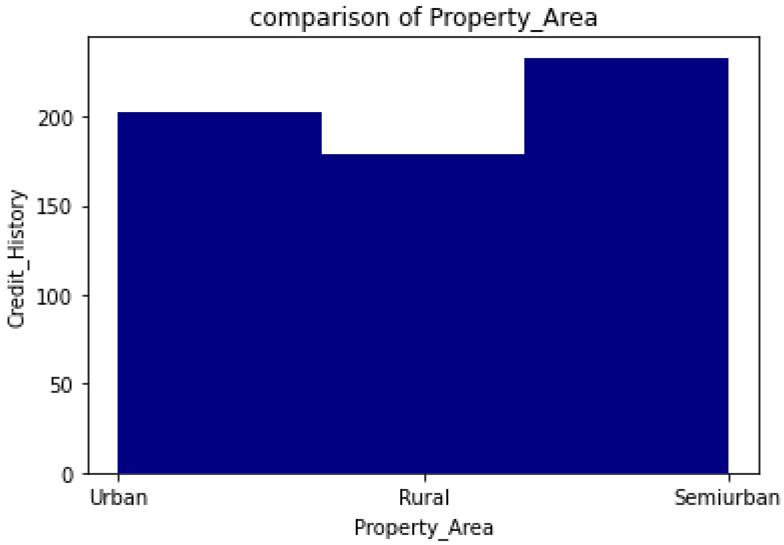
```
#exploring the Married columns more
plt.figure(3, figsize=(12, 10))
g = sns.FacetGrid(data = df, col= 'Married', height = 4)
g.map(sns.distplot, 'ApplicantIncome')
```

Out[9]:



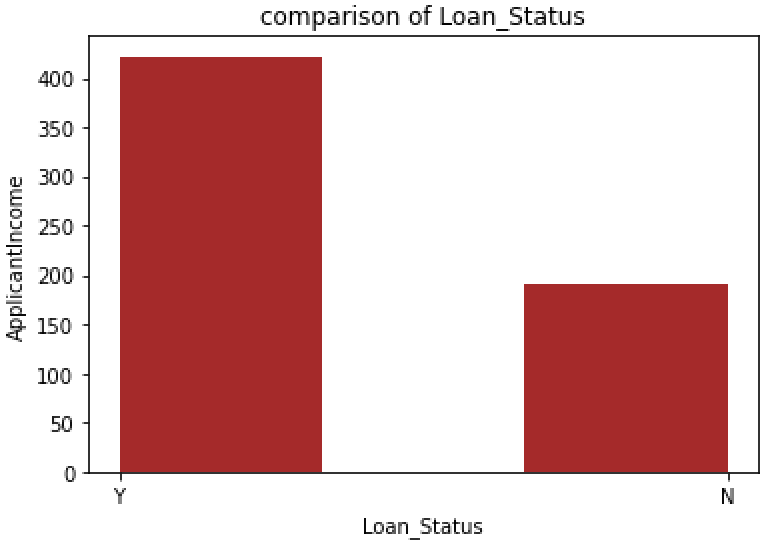
In [10]:

```
# Plotting the features of the dataset to see the correlation between them

plt.hist(x = df.Property_Area, bins = 3, color="navy")
plt.title('comparison of Property_Area')
plt.xlabel('Property_Area')
plt.ylabel('Credit_History')
plt.show()
```



In [11]:

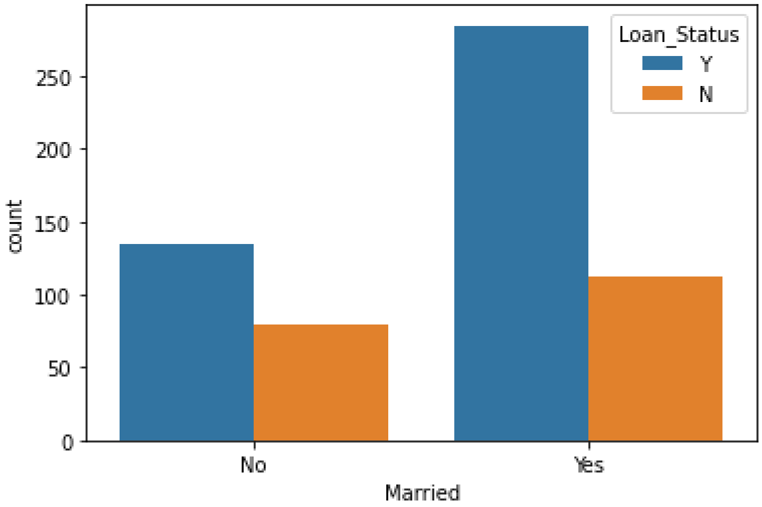
```
# Plotting the features of the dataset to see the correlation between them

plt.hist(x = df.Loan_Status, bins = 3, color="brown")
plt.title('comparison of Loan_Status')
plt.xlabel('Loan_Status')
plt.ylabel('ApplicantIncome')
plt.show()
```



In [12]:

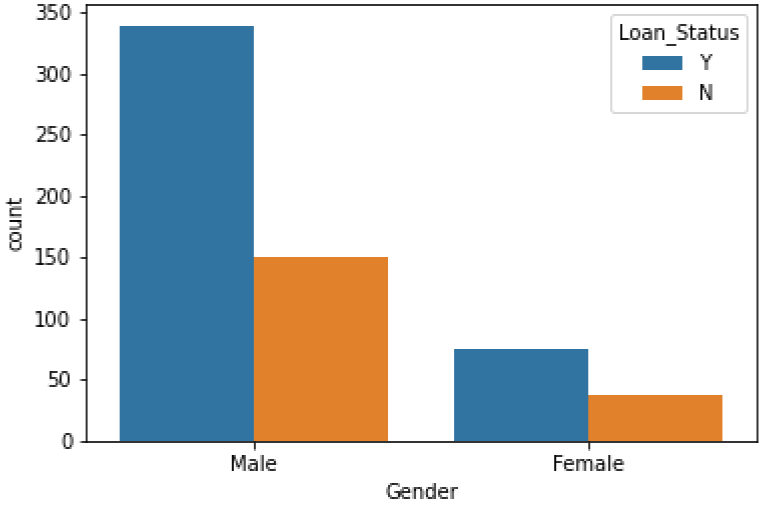
```
# Now we will find the relationship between Loan_Status
# As there is no relationship between Married and Loan_Status
sns.countplot(x="Married", hue="Loan_Status",data=df)
```

Out[12]:



In [13]:

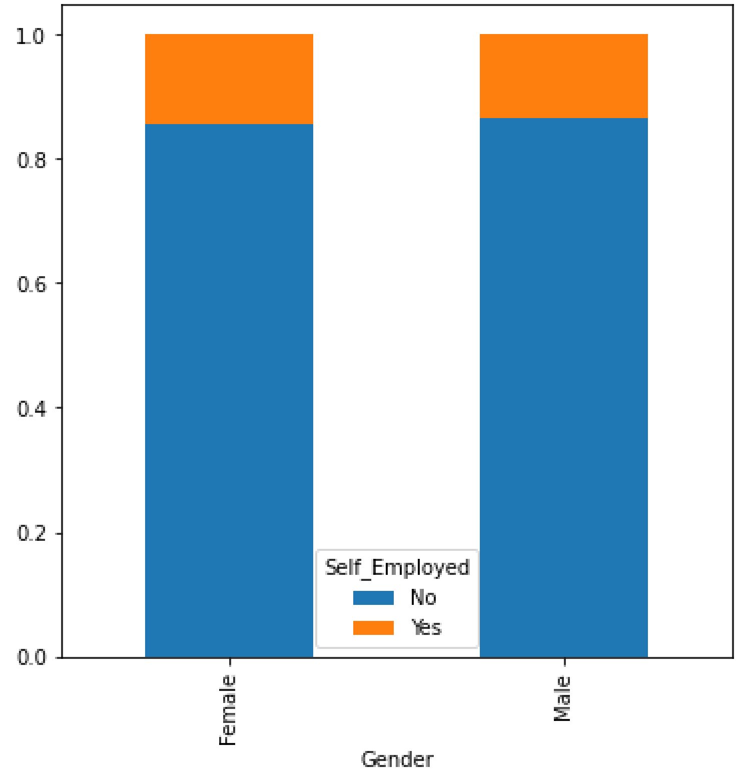
```
#  Gender v/s Loan status
sns.countplot(x="Gender", hue="Loan_Status", data=df);

#  Most of the males have got there loans approved.
```



In [1...

```
# comparison between Self_Employed and Gender

Gender = pd.crosstab(df['Gender'],df['Self_Employed'])
Gender.div(Gender.sum(1).astype(float), axis=0).plot(kind="bar", stacked=True, figsize=(
```

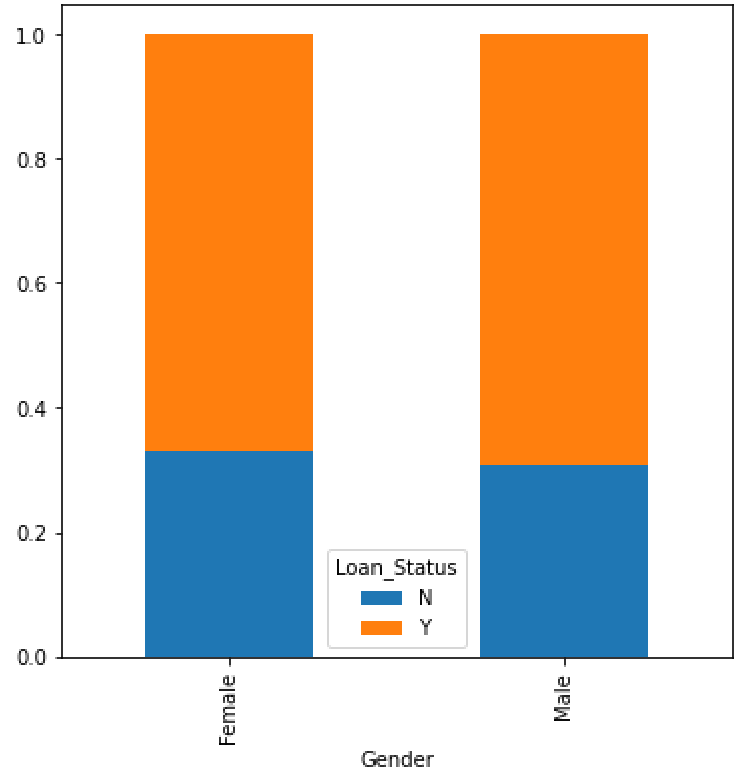
Out[14]:



In [1...

```
# comparison between Loan_Status and Gender

Gender = pd.crosstab(df['Gender'],df['Loan_Status'])
Gender.div(Gender.sum(1).astype(float), axis=0).plot(kind="bar", stacked=True, figsize=(
```

Out[15]:



calculating total Loan_Amount_Term in gender

In [16]:

```
total_0 = df.Loan_Amount_Term[df.Dependents == '0'].sum()
total_1 = df.Loan_Amount_Term[df.Dependents == '1'].sum()
```

```
total_2 = df.Loan_Amount_Term[df.Dependents == '2'].sum()
total_3above = df.Loan_Amount_Term[df.Dependents == '3+'].sum()

print("Total Balance in Dependents 0 :",total_0)
print("Total Balance in Dependents 1 :",total_1)
print("Total Balance in Dependents 2 :",total_2)
print("Total Balance in Dependents 3 :",total_3above)
```

```
Total Balance in Dependents 0 : 116268.0
Total Balance in Dependents 1 : 33264.0
Total Balance in Dependents 2 : 34428.0
Total Balance in Dependents 3 : 16260.0
```

In [17]:

```
# plotting a pie chart

labels = '0', '1','2' ,'3+'
colors = ['brown', 'navy', 'darkgreen' , 'orange']
sizes =  [116, 332, 344, 162]
explode = [ 0.01, 0.01, 0.01, 0.01]

plt.pie(sizes, colors = colors, labels = labels, explode = explode, shadow = True)

plt.axis('equal')
plt.show()
```