In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [2]:
```
df=pd.read_csv("C:\\Users\\DELL\\Downloads\\loan_train.csv")
df
```

Out[2]:

	Gender	Married	Dependents	Education	Self_Employed	Applicant_Income	Coapplicant_Income
0	Male	No	0	Graduate	No	584900	0.0
1	Male	Yes	1	Graduate	No	458300	150800.0
2	Male	Yes	0	Graduate	Yes	300000	0.0
3	Male	Yes	0	Not Graduate	No	258300	235800.0
4	Male	No	0	Graduate	No	600000	0.0
...	...	...	...	...	...	...	...
609	Female	No	0	Graduate	No	290000	0.0
610	Male	Yes	3+	Graduate	No	410600	0.0
611	Male	Yes	1	Graduate	No	807200	24000.0
612	Male	Yes	2	Graduate	No	758300	0.0
613	Female	No	0	Graduate	Yes	458300	0.0

614 rows × 12 columns

In [3]:
```
#Data understanding
```

In [4]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 614 entries, 0 to 613
Data columns (total 12 columns):
 #   Column             Non-Null Count  Dtype  
---  ------             --------------  -----  
 0   Gender             601 non-null    object 
 1   Married            611 non-null    object 
 2   Dependents         599 non-null    object 
 3   Education          614 non-null    object 
 4   Self_Employed      582 non-null    object 
 5   Applicant_Income   614 non-null    int64  
 6   Coapplicant_Income 614 non-null    float64
 7   Loan_Amount        614 non-null    int64  
 8   Term               600 non-null    float64
 9   Credit_History     564 non-null    float64
 10  Area               614 non-null    object 
 11  Status             614 non-null    object 
dtypes: float64(3), int64(2), object(7)
memory usage: 57.7+ KB
```

In [5]:
```
df_continuous=['Applicant_Income','Coapplicant_Income','Term','Credit_History']
df_discrete=['Gender','Married','Dependents','Education','Self_Employed','Area','Statu
```

In [6]:
```
df.shape
```

Out[6]:
```
(614, 12)
```

In [7]:
```
df.describe()
```

Out[7]:

	Applicant_Income	Coapplicant_Income	Loan_Amount	Term	Credit_History
count	6.140000e+02	6.140000e+02	6.140000e+02	600.00000	564.000000
mean	5.403459e+05	1.621246e+05	1.414104e+07	342.00000	0.842199
std	6.109042e+05	2.926248e+05	8.815682e+06	65.12041	0.364878
min	1.500000e+04	0.000000e+00	0.000000e+00	12.00000	0.000000
25%	2.877500e+05	0.000000e+00	9.800000e+06	360.00000	1.000000
50%	3.812500e+05	1.188500e+05	1.250000e+07	360.00000	1.000000
75%	5.795000e+05	2.297250e+05	1.647500e+07	360.00000	1.000000
max	8.100000e+06	4.166700e+06	7.000000e+07	480.00000	1.000000

In [8]:
```
df['Status'].value_counts()
```

Out[8]:
```
Y    422
N    192
Name: Status, dtype: int64
```

In [9]:
```
df['Area'].value_counts()
```

Out[9]:
```
Semiurban    233
Urban        202
Rural        179
Name: Area, dtype: int64
```

In [10]:
```
df['Education'].value_counts()
```

Out[10]:
```
Graduate        480
Not Graduate    134
Name: Education, dtype: int64
```

In [11]:
```
df['Dependents'].value_counts()
```

Out[11]:
```
0     345
1     102
2     101
3+     51
Name: Dependents, dtype: int64
```

In [12]:
```
df['Education'].value_counts()
```

Out[12]:
```
Graduate        480
Not Graduate    134
Name: Education, dtype: int64
```

In [13]:
```
df['Gender'].value_counts()
```

Out[13]:
```
Male      489
Female    112
Name: Gender, dtype: int64
```

In [14]:
```
df['Married'].value_counts()
```

Out[14]:
```
Yes    398
No     213
Name: Married, dtype: int64
```

In [15]:
```
df.isnull().sum()
```

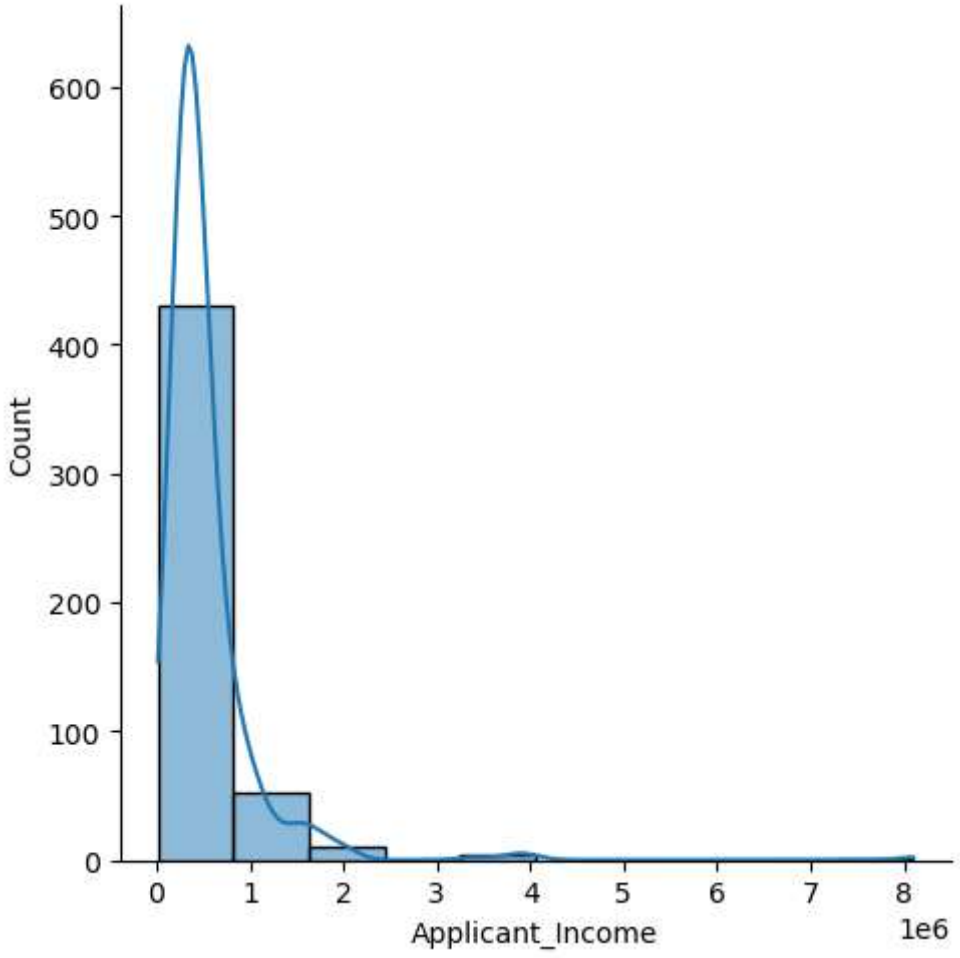
Out[15]:
```
Gender               13
Married               3
Dependents           15
Education             0
Self_Employed        32
Applicant_Income      0
Coapplicant_Income    0
Loan_Amount           0
Term                 14
Credit_History       50
Area                  0
Status                0
dtype: int64
```

In [16]:
```
df=df.dropna()
```

In [17]:
```
#Data understanding
```

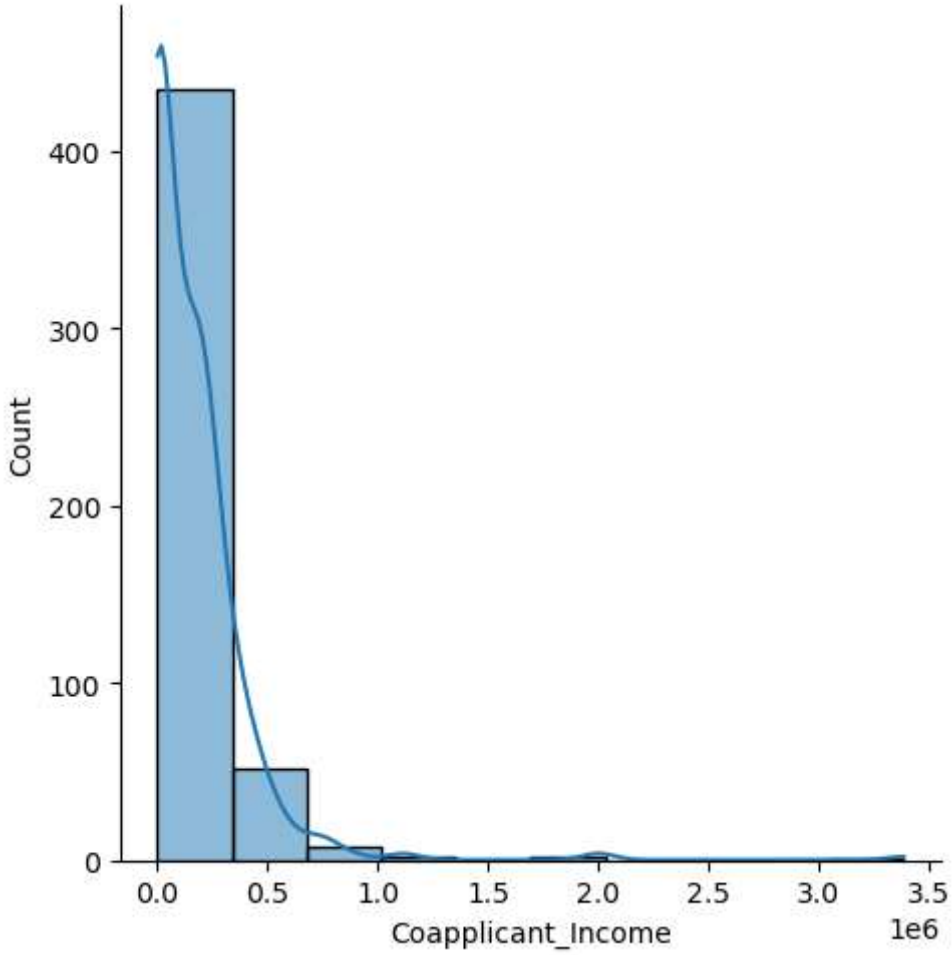
In [18]:
```
#Histogram
```

In [19]:
```
sns.displot(df['Applicant_Income'],bins=10,kde=True) # here the applicant income frequ
plt.show()
```

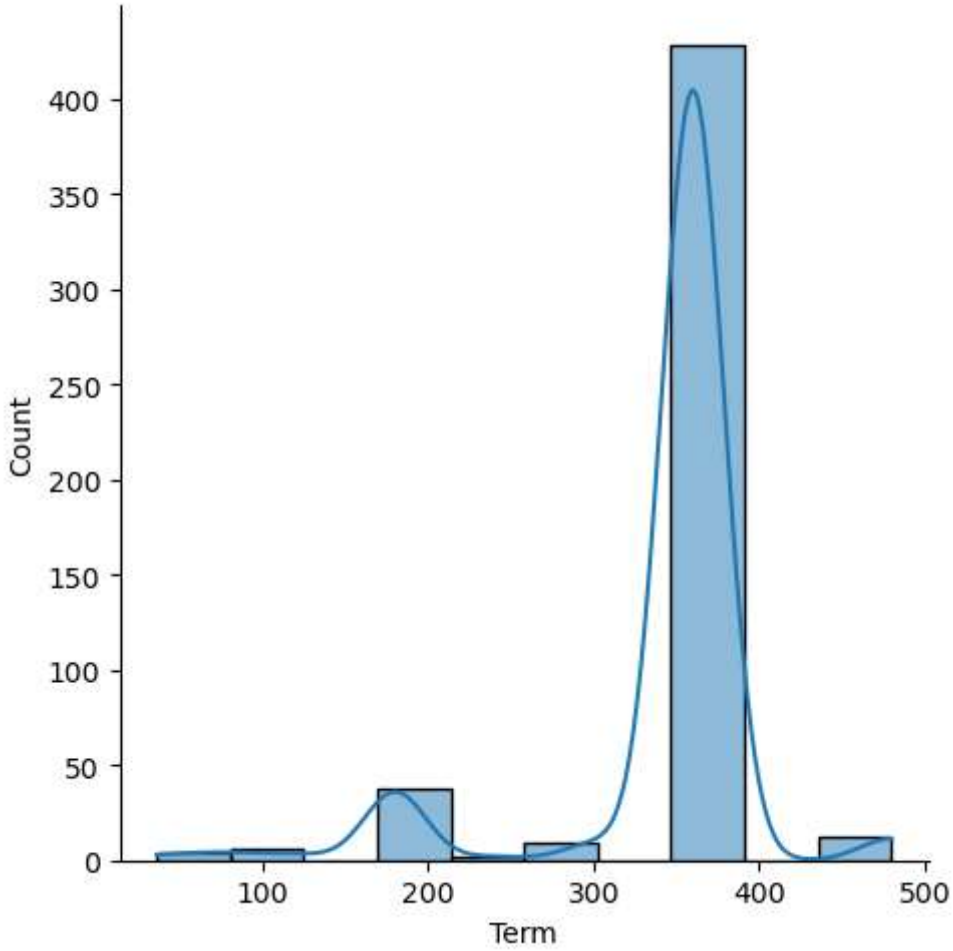


In [20]:
```
df_continuous=['Applicant_Income','Coapplicant_Income','Term','Credit_History',]
df_discrete=['Gender','Married','Education','Self_Employed','Area','Status','Dependent
```

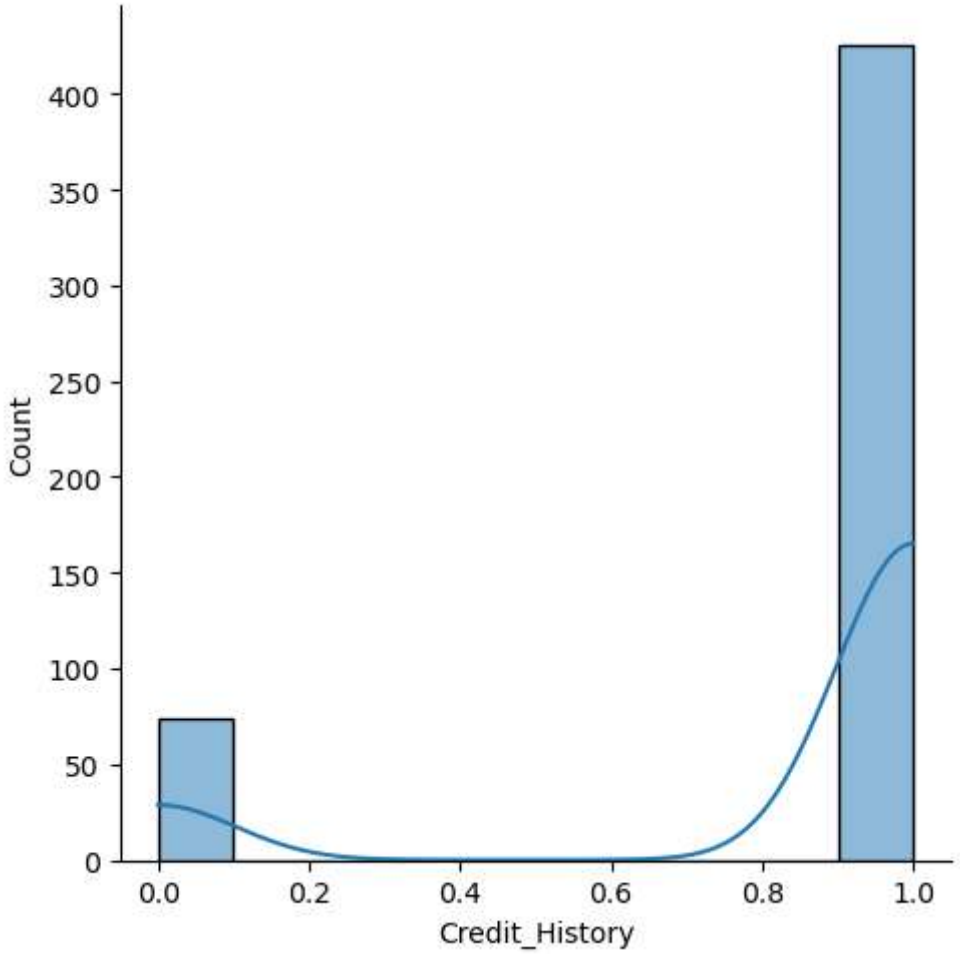
In [21]:
```
sns.displot(df['Coapplicant_Income'],bins=10,kde=True)   #here thr coapplicant income
plt.show()
```



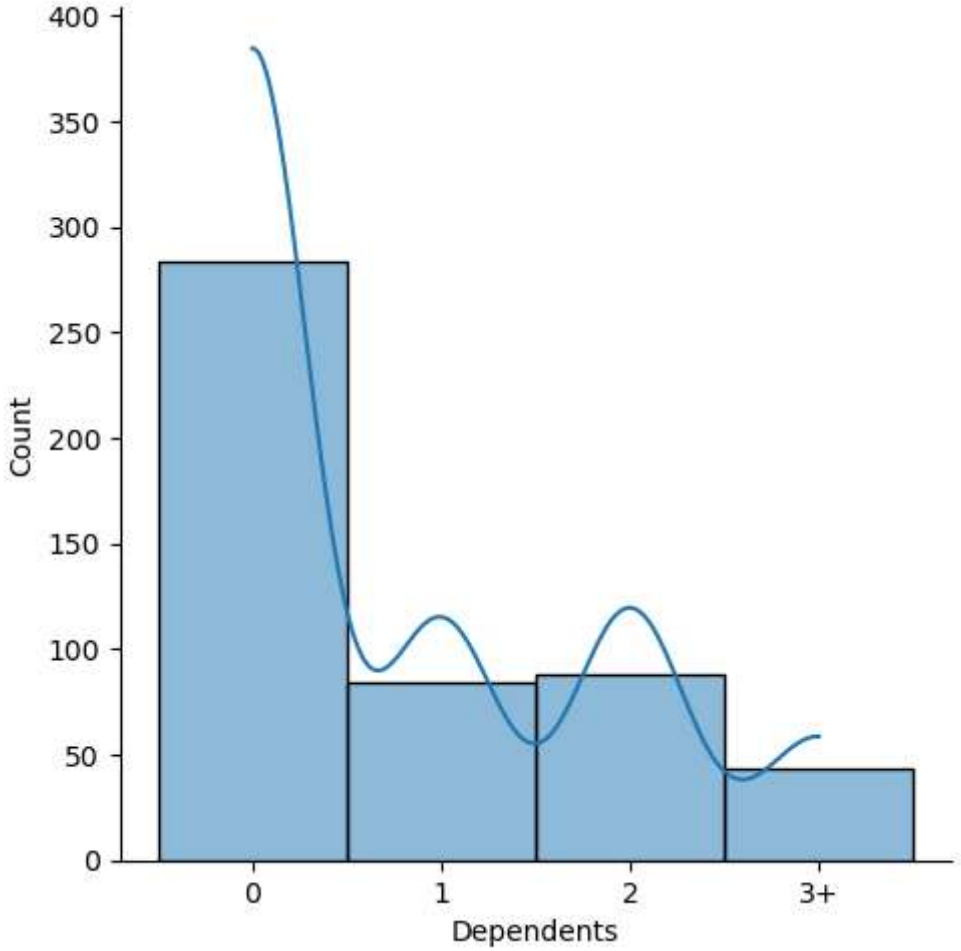
In [22]:
```
sns.displot(df['Term'],bins=10,kde=True) #here the term is left tailed distribution
plt.show()
```



In [23]:
```
sns.displot(df['Credit_History'],bins=10,kde=True)#here the Credit history is also le
plt.show()
```

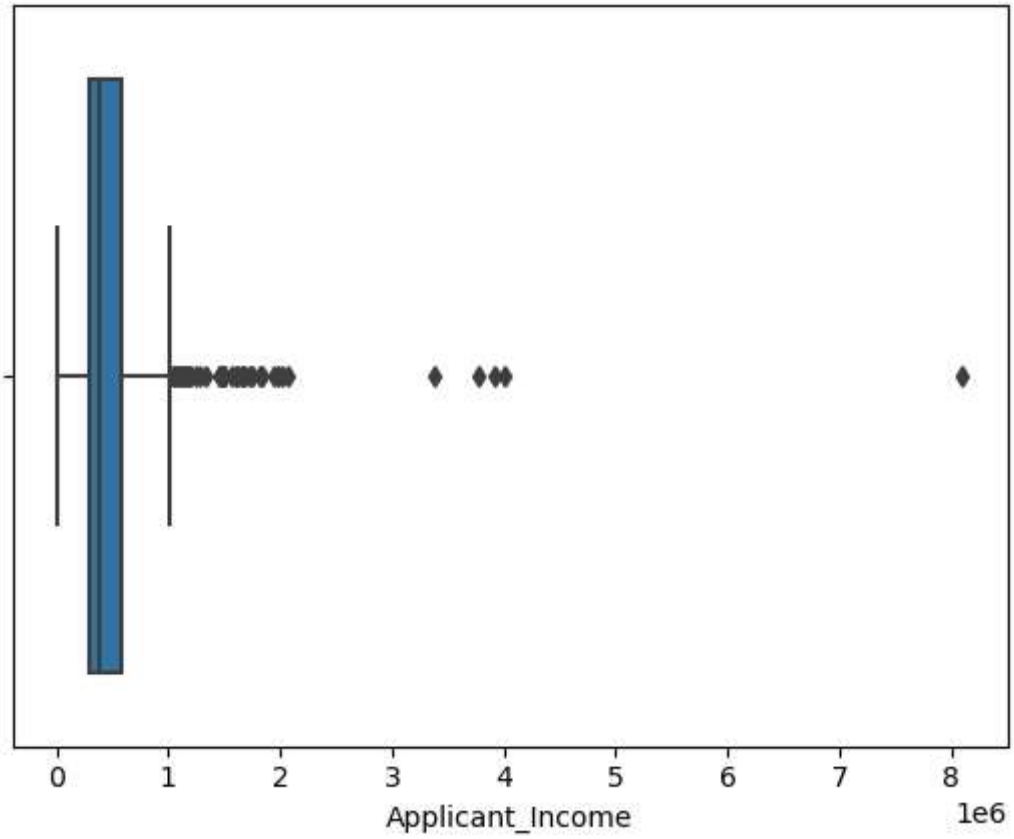


In [24]:
```
sns.displot(df['Dependents'],bins=10,kde=True)  # here Dependents is right tailed dist
plt.show()
```

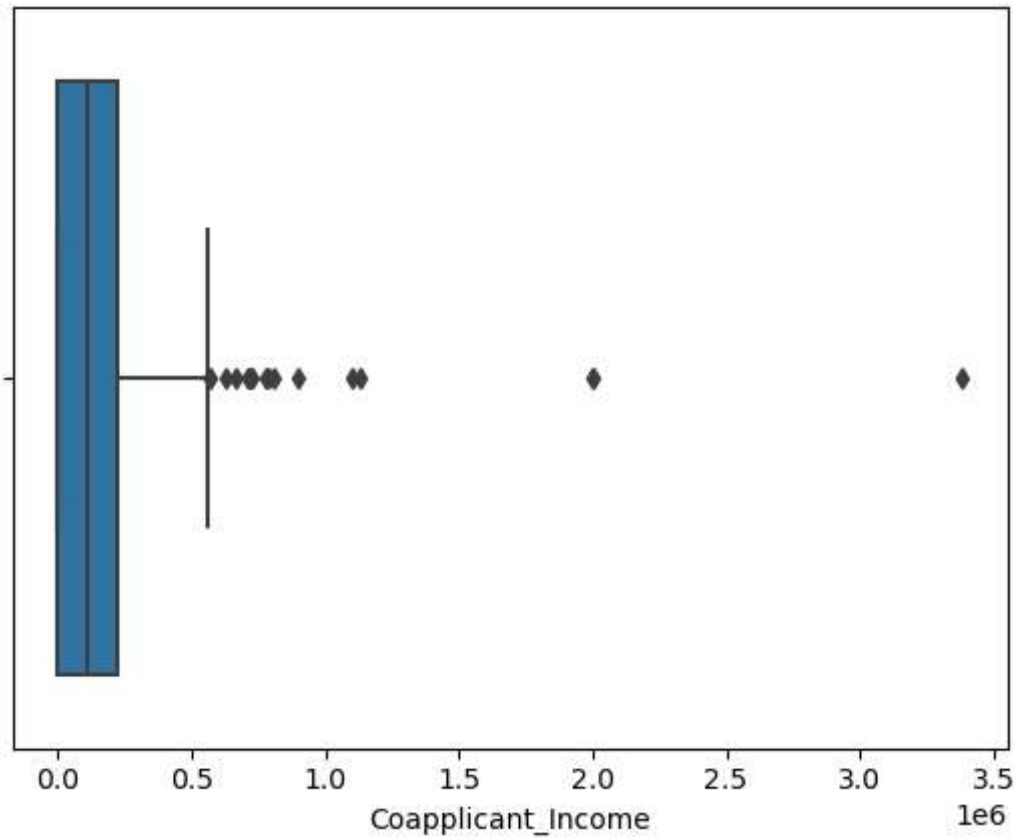


In [25]:
```
#Boxplot
```

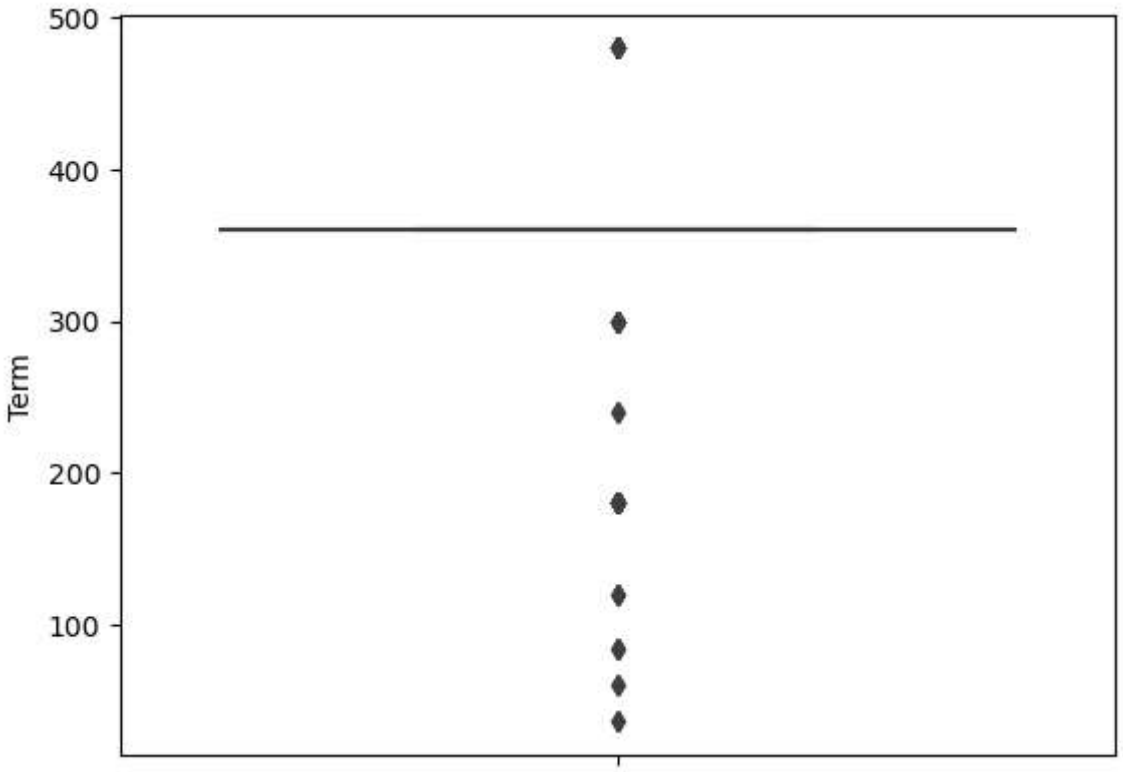
In [26]:
```
sns.boxplot(x=df['Applicant_Income']) # Here in applicant income i found more Outliers
plt.show()
```



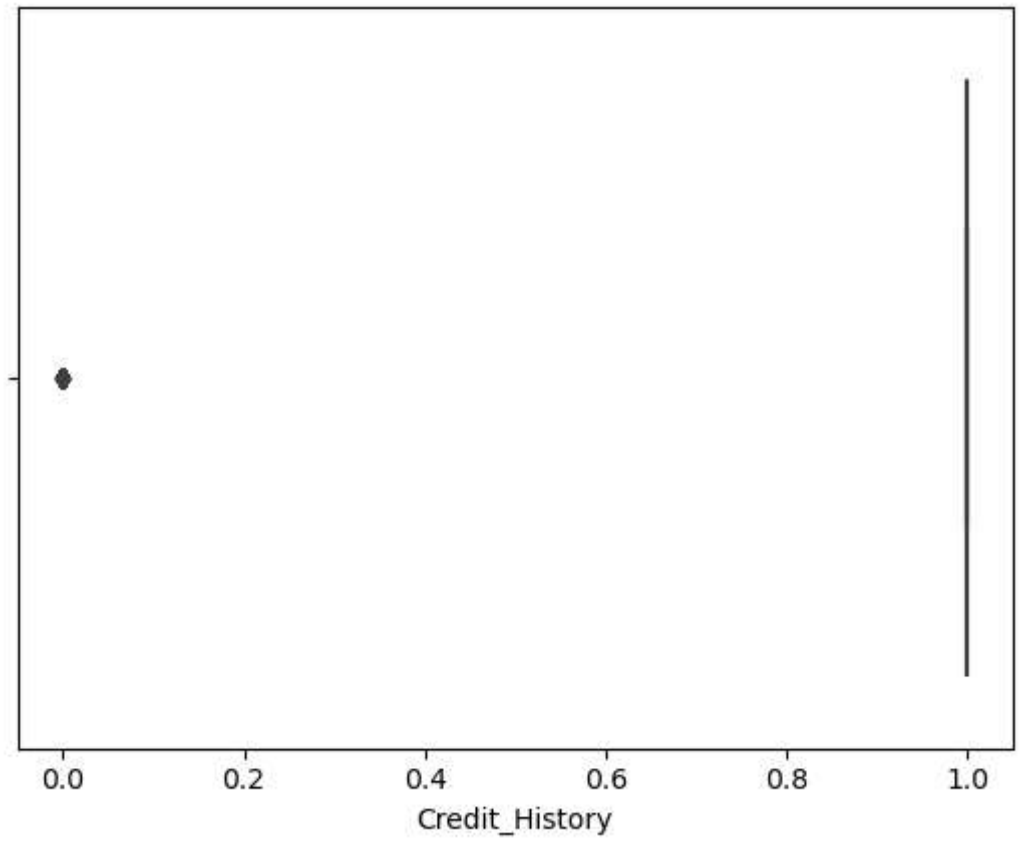
In [27]:
```
sns.boxplot(x=df['Coapplicant_Income'])# overall the coapplicant income data is right
plt.show()                              #and more outliers i found from 0.5 1e6 to mor
```



In [28]:
```
sns.boxplot(y=df['Term'])
plt.show()
```



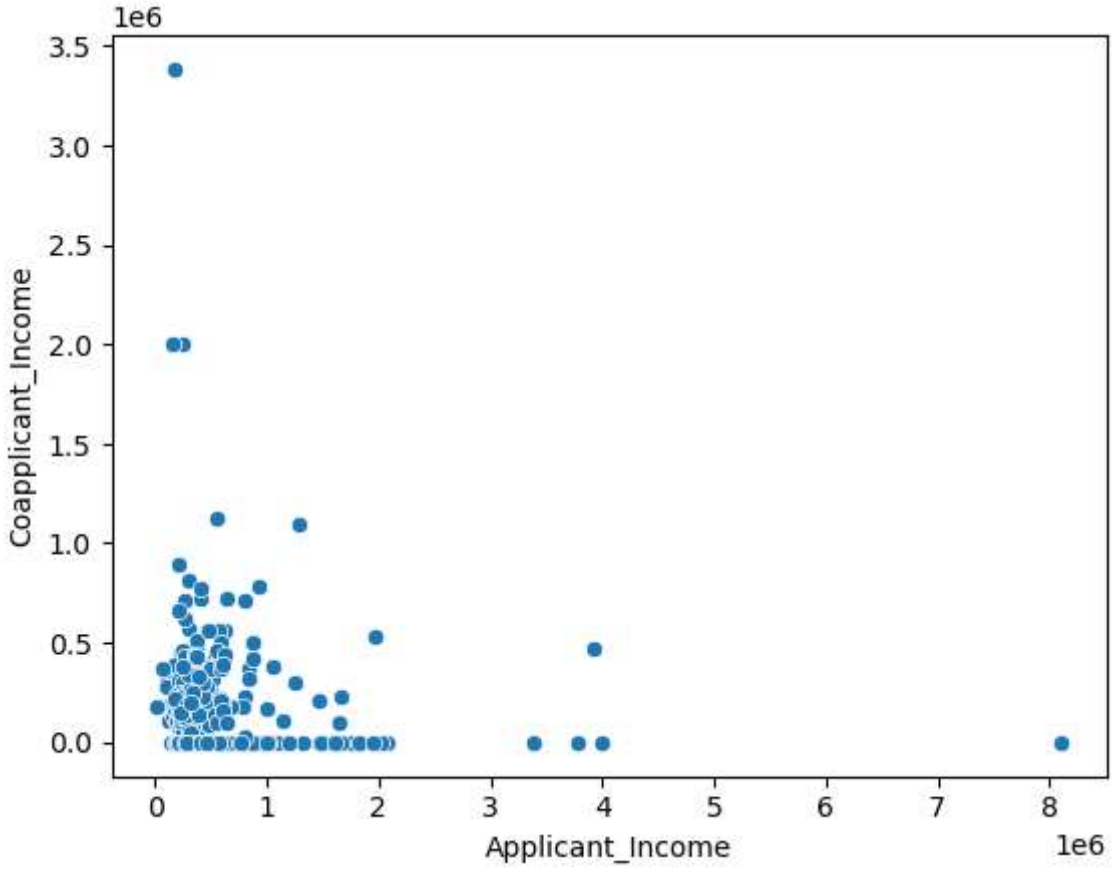
In [29]:
```
sns.boxplot(x=df['Credit_History'],)# the data is left tailed and outliers are found c
plt.show()
```



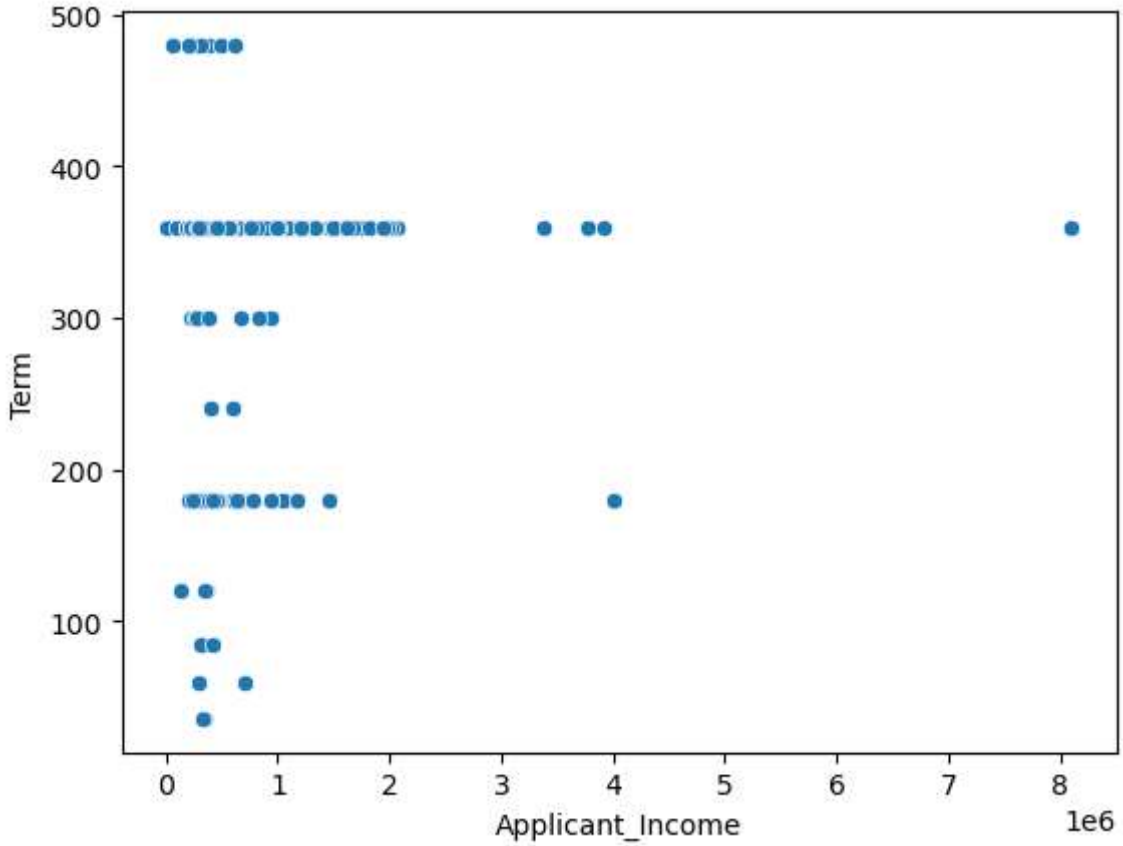
In [30]:
```
df_continuous=['Applicant_Income','Coapplicant_Income','Term','Credit_History','Loan_A
df_discrete=['Gender','Married','Education','Self_Employed','Area','Status','Dependent
```

In [31]:
```
#Scatter plot
```

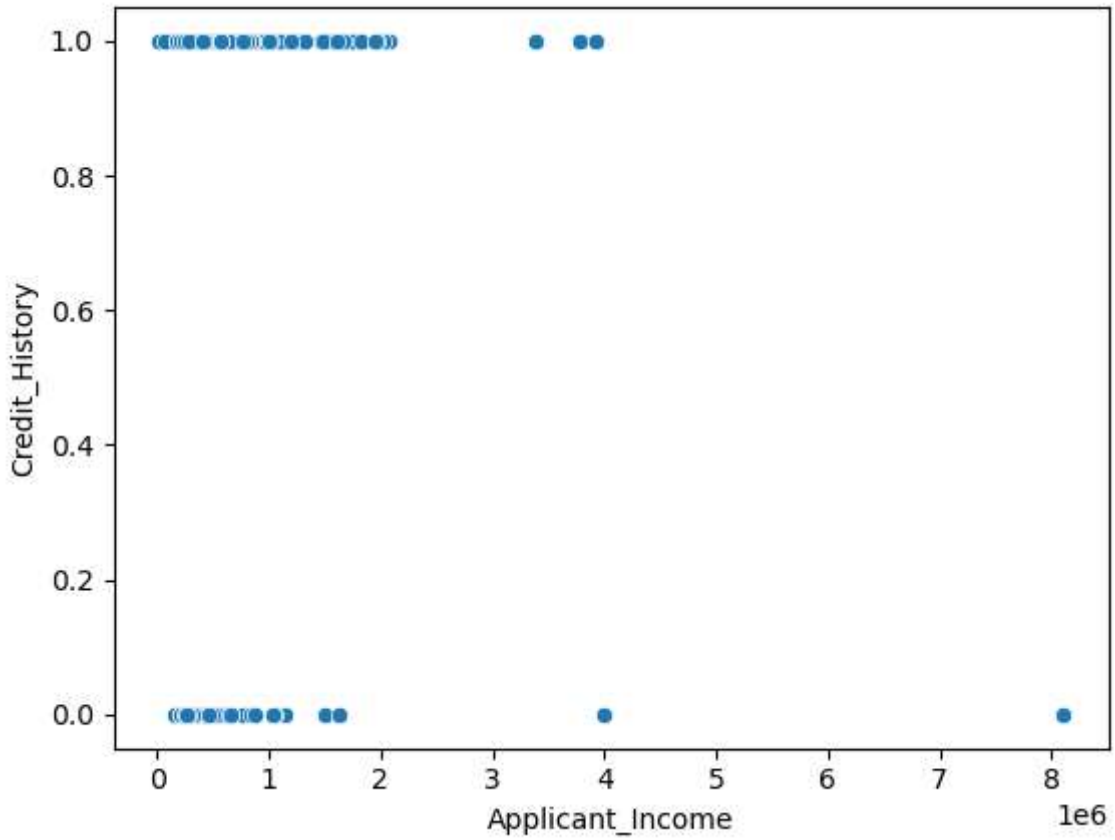
In [32]:
```
sns.scatterplot(x=df['Applicant_Income'],y=df['Coapplicant_Income']) #The correlation
plt.show()
```



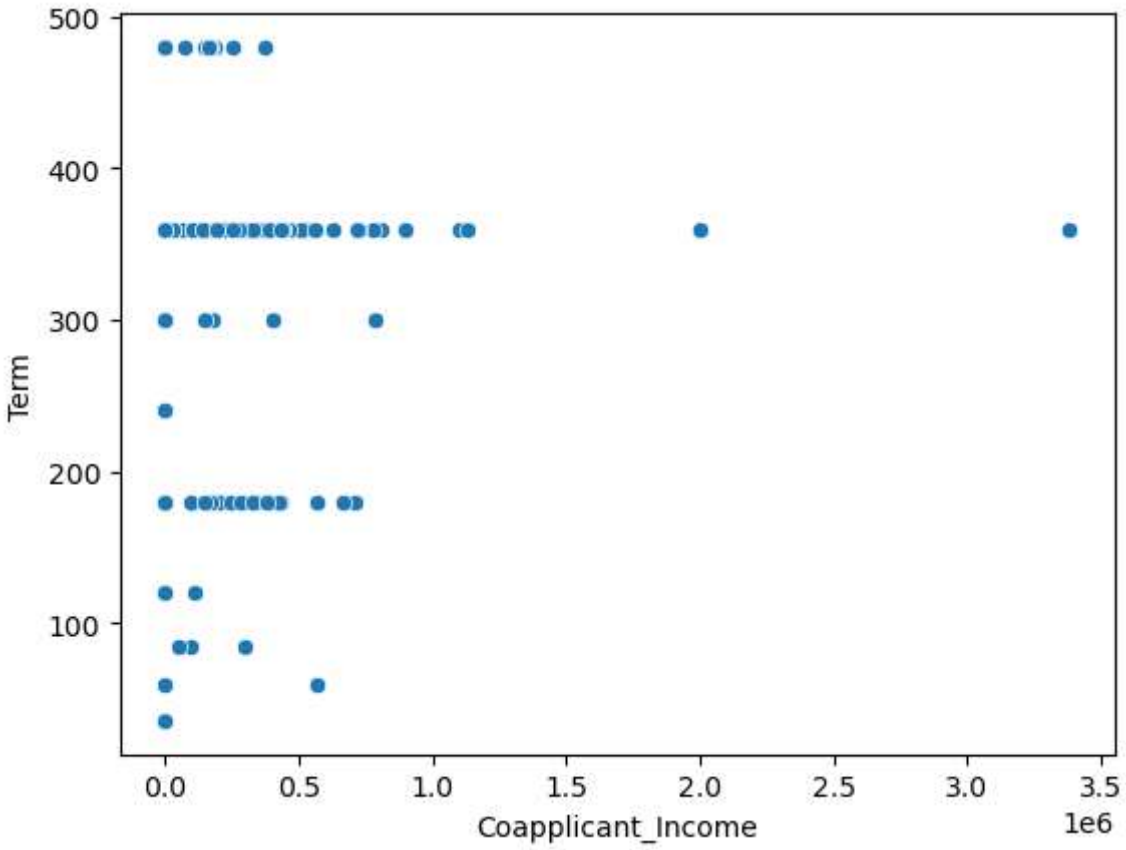
In [33]:
```
sns.scatterplot(x=df['Applicant_Income'],y=df['Term']) # the correlation between appli
plt.show()
```



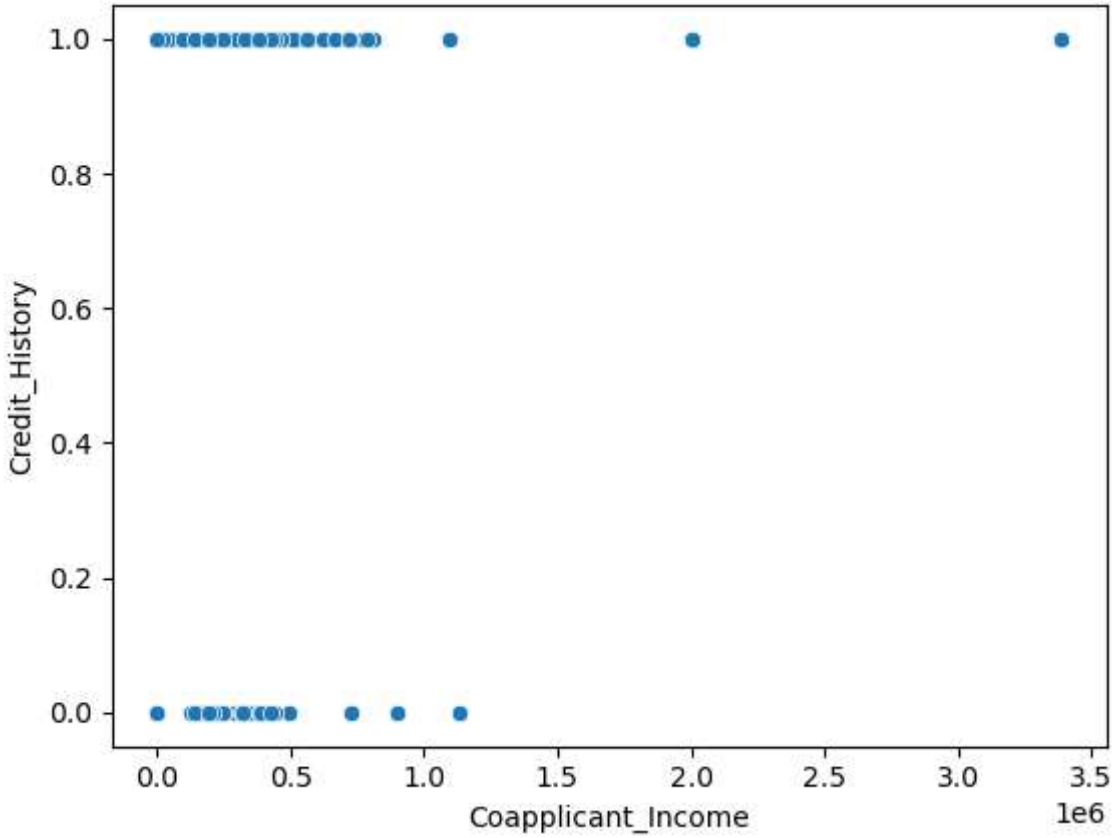
In [34]:
```
sns.scatterplot(x=df['Applicant_Income'],y=df['Credit_History'])# here the correlatior
plt.show()
```



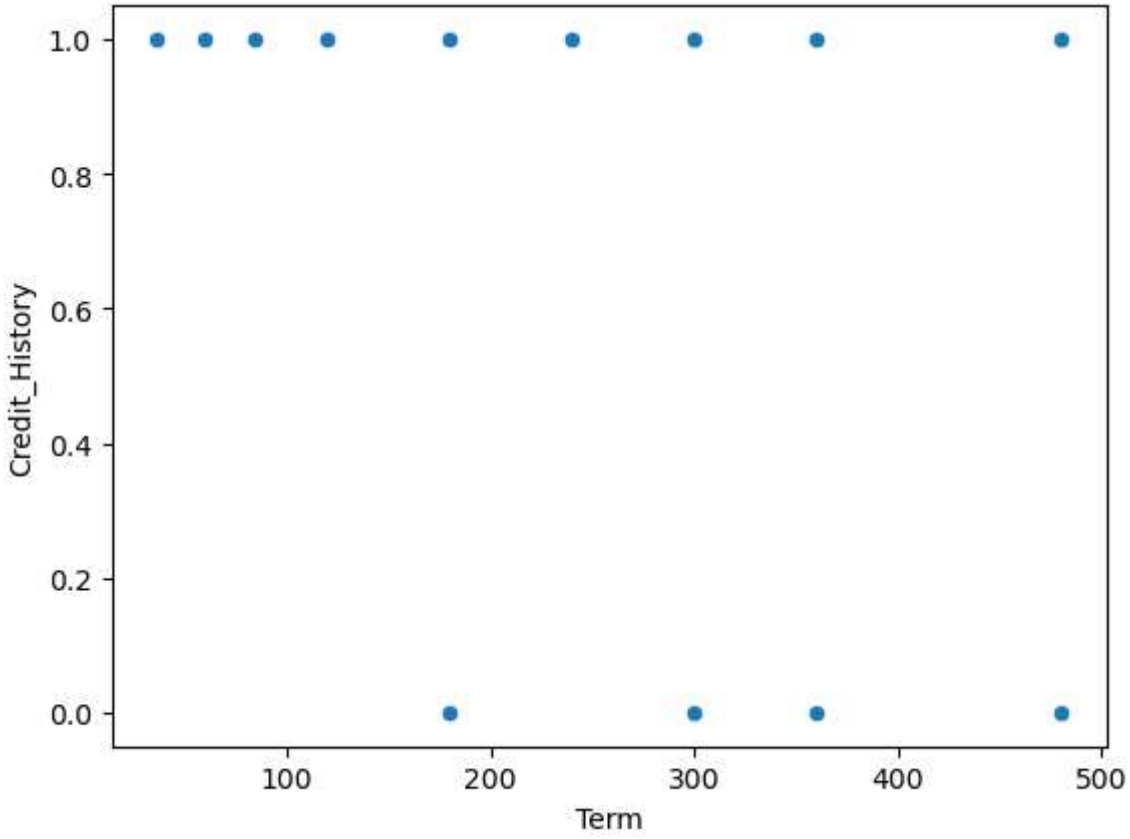
In [35]:
```
sns.scatterplot(x=df['Coapplicant_Income'],y=df['Term'])# here the correlation betweer
plt.show()
```



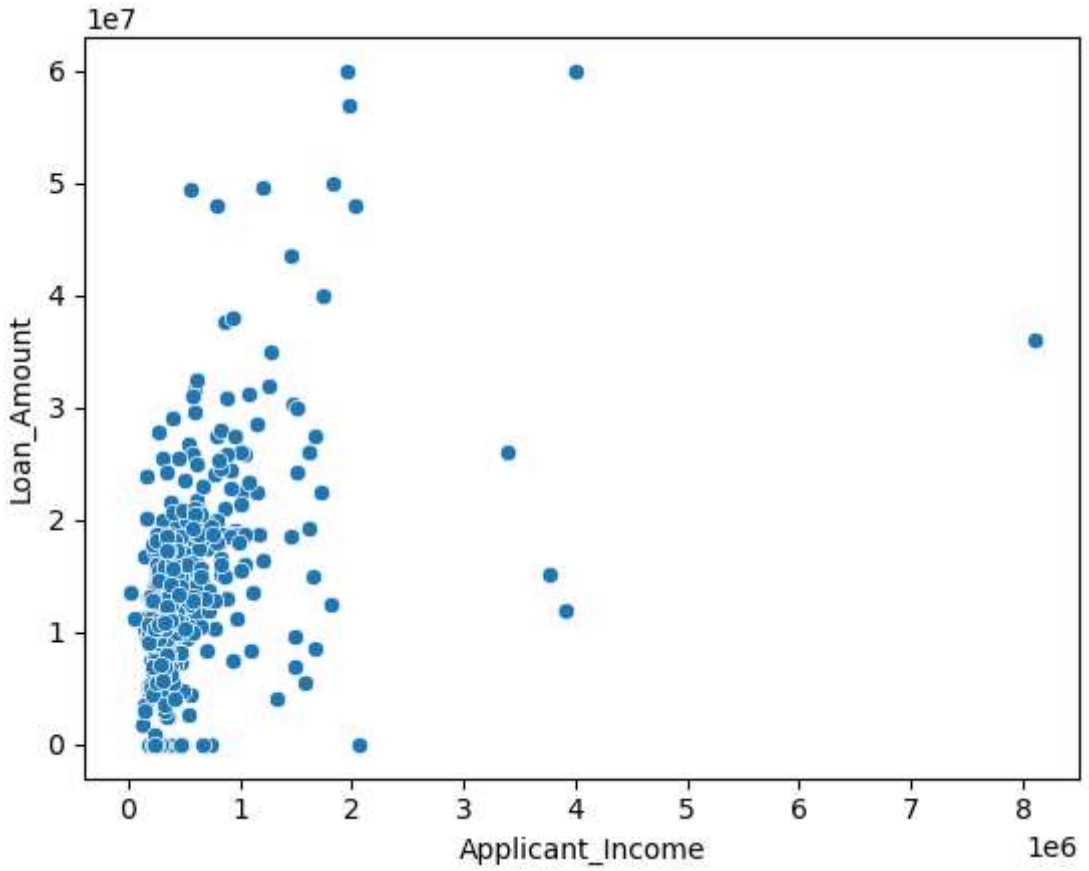
In [36]:
```
sns.scatterplot(x=df['Coapplicant_Income'],y=df['Credit_History'])# here correlation t
plt.show()
```



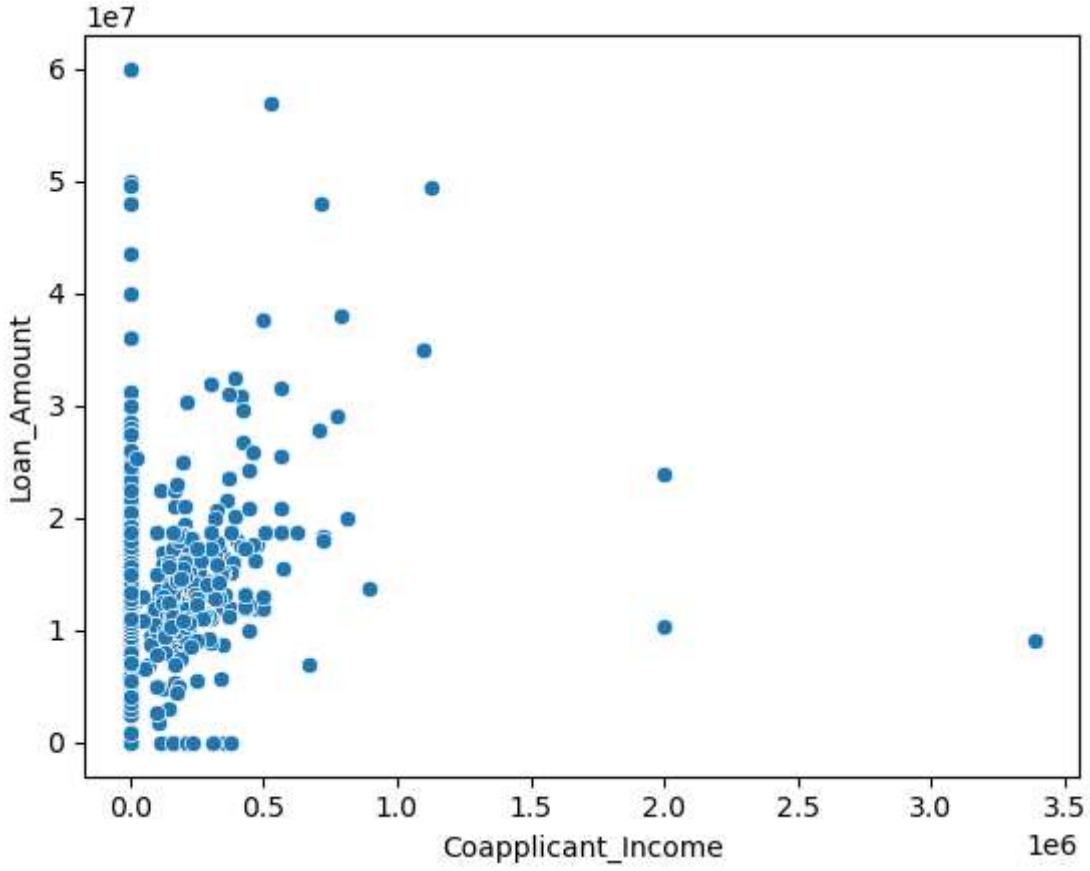
In [37]:
```
sns.scatterplot(x=df['Term'],y=df['Credit_History'])# here the correlation is very lo
plt.show()
```



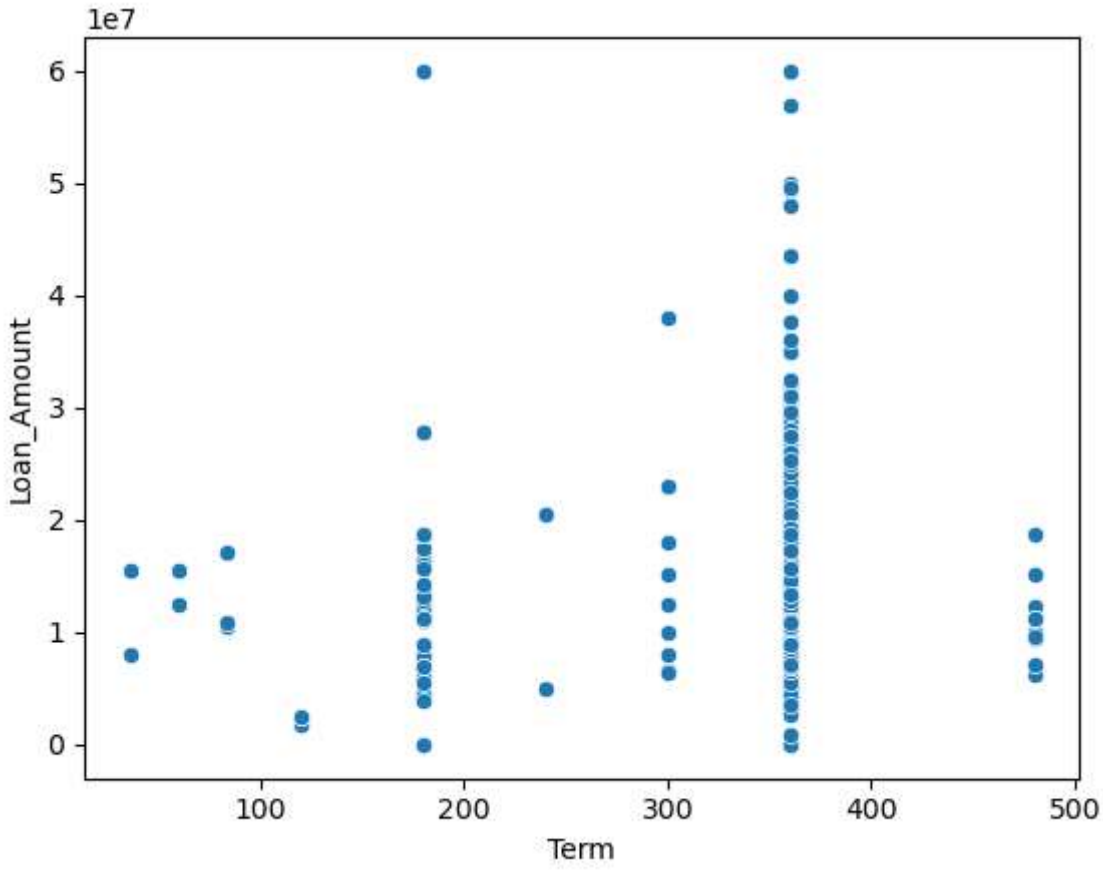
In [38]:
```
sns.scatterplot(x=df['Applicant_Income'],y=df['Loan_Amount'])#here correlation is high
plt.show()
```



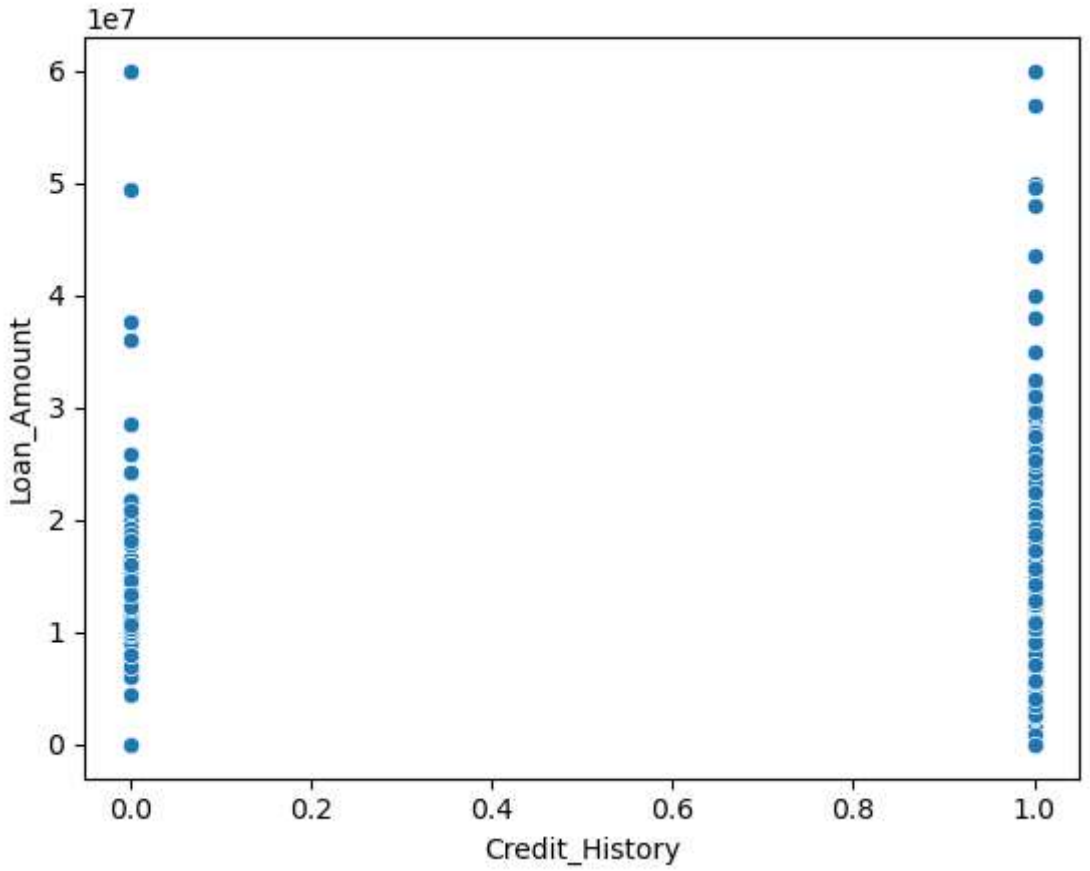
In [39]:
```
sns.scatterplot(x=df['Coapplicant_Income'],y=df['Loan_Amount'])# here correlation is h
plt.show()
```



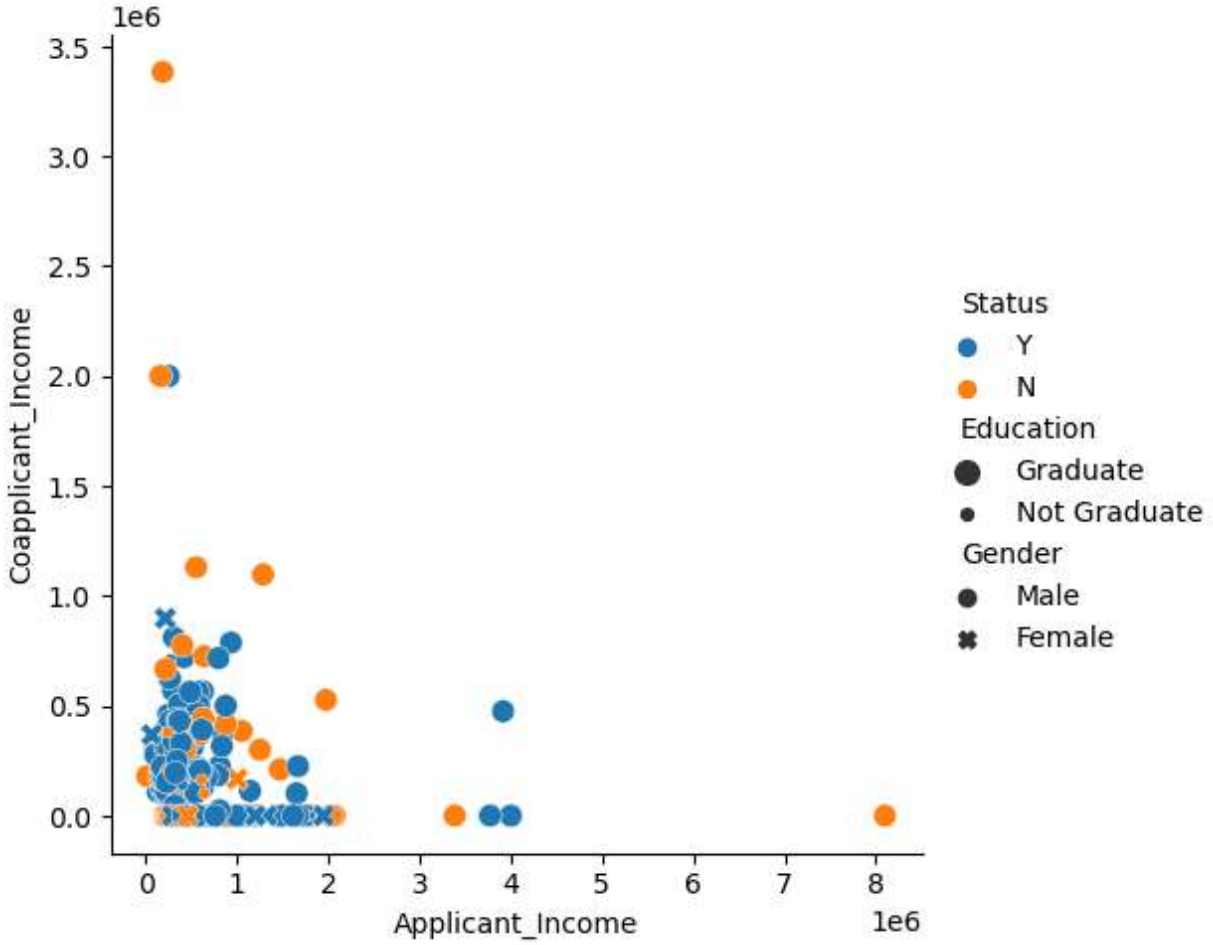
In [40]:
```
sns.scatterplot(x=df['Term'],y=df['Loan_Amount'])# here the correlation is high in ter
plt.show()
```



In [41]:
```
sns.scatterplot(x=df['Credit_History'],y=df['Loan_Amount'])#here correlation is good t
plt.show()
```



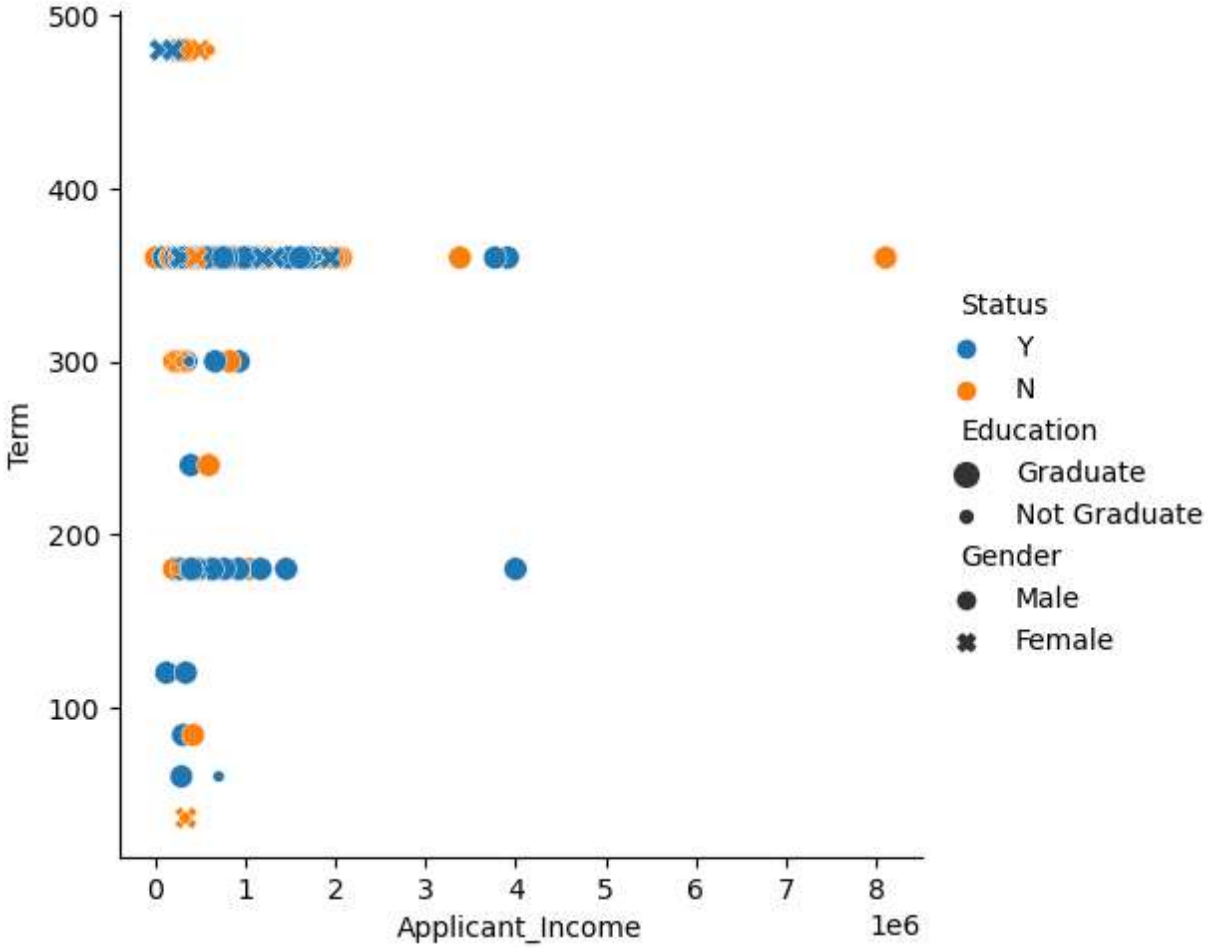
In [42]:
```
sns.relplot(x='Applicant_Income',y='Coapplicant_Income',data=df,hue='Status',style='Ge
plt.show()
```



In [43]:
```
#Here the more males with more graduates  with status
```

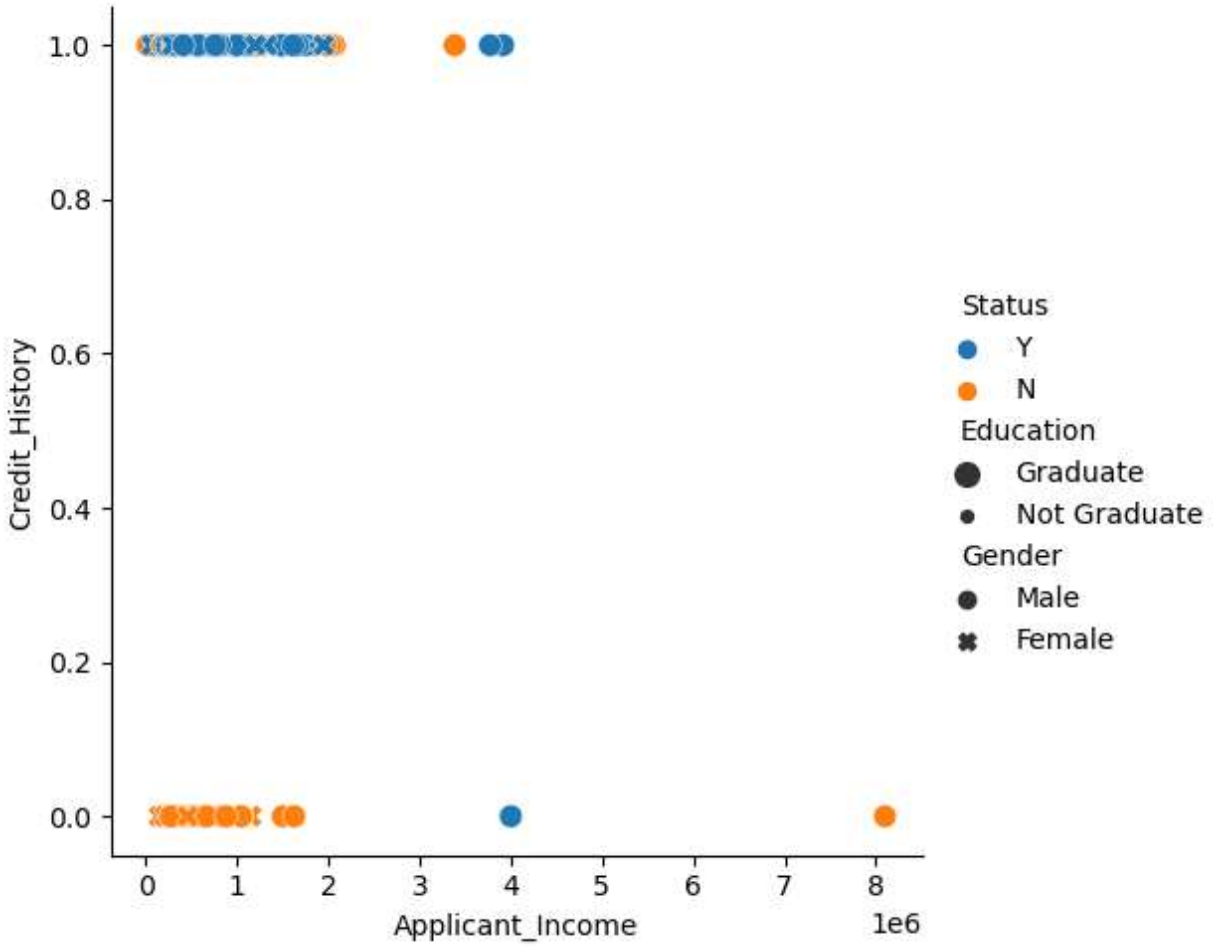
on above plot and below plots the relplot shows variance by colour ,size and style and showing correlation between two variables

In [44]:
```
sns.relplot(x='Applicant_Income',y='Term',data=df,hue='Status',style='Gender',size='Ed
plt.show()
```



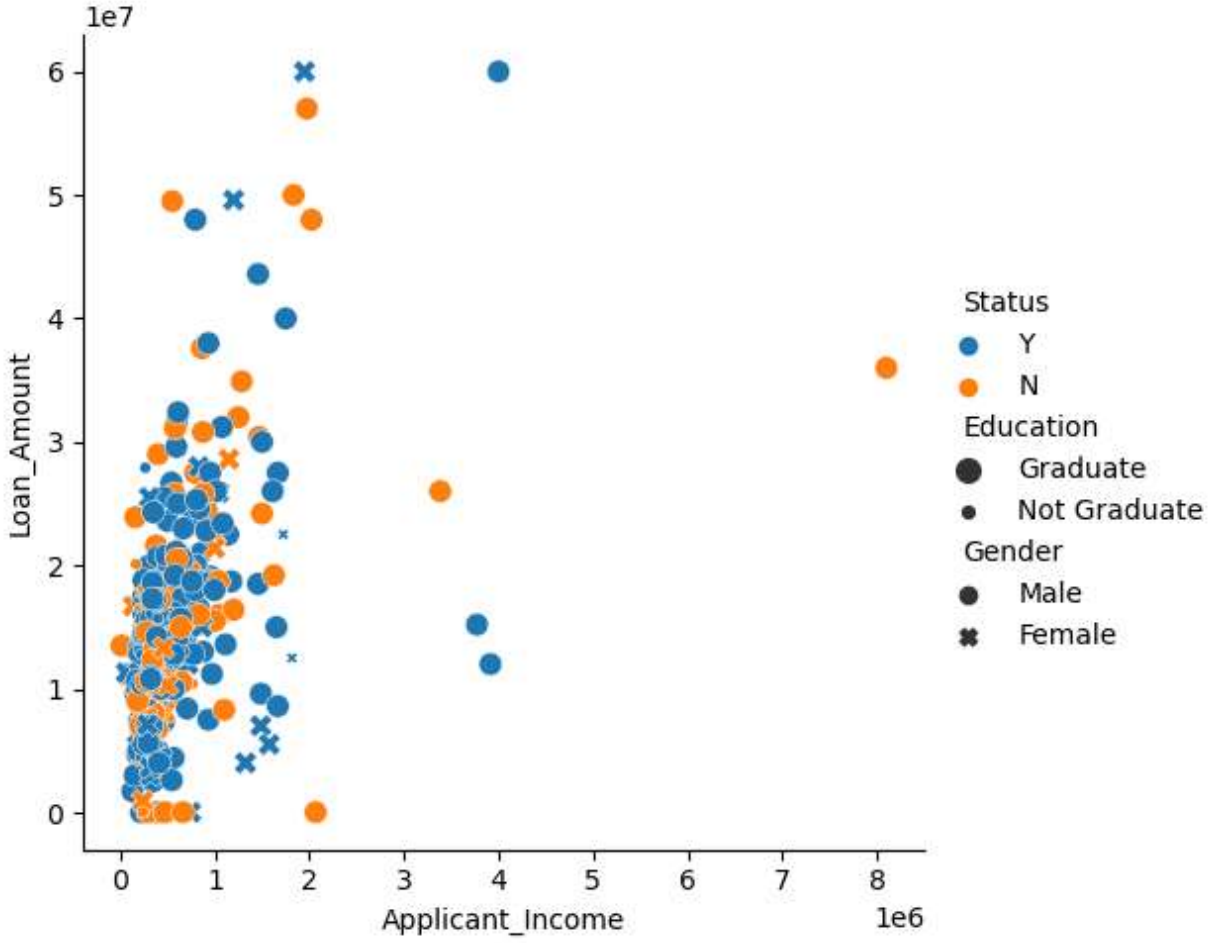
In [45]:
```
#as i observed more males and more graduates with yes status
```

In [46]:
```
sns.relplot(x='Applicant_Income',y='Credit_History',data=df,hue='Status',style='Gender
plt.show()
```



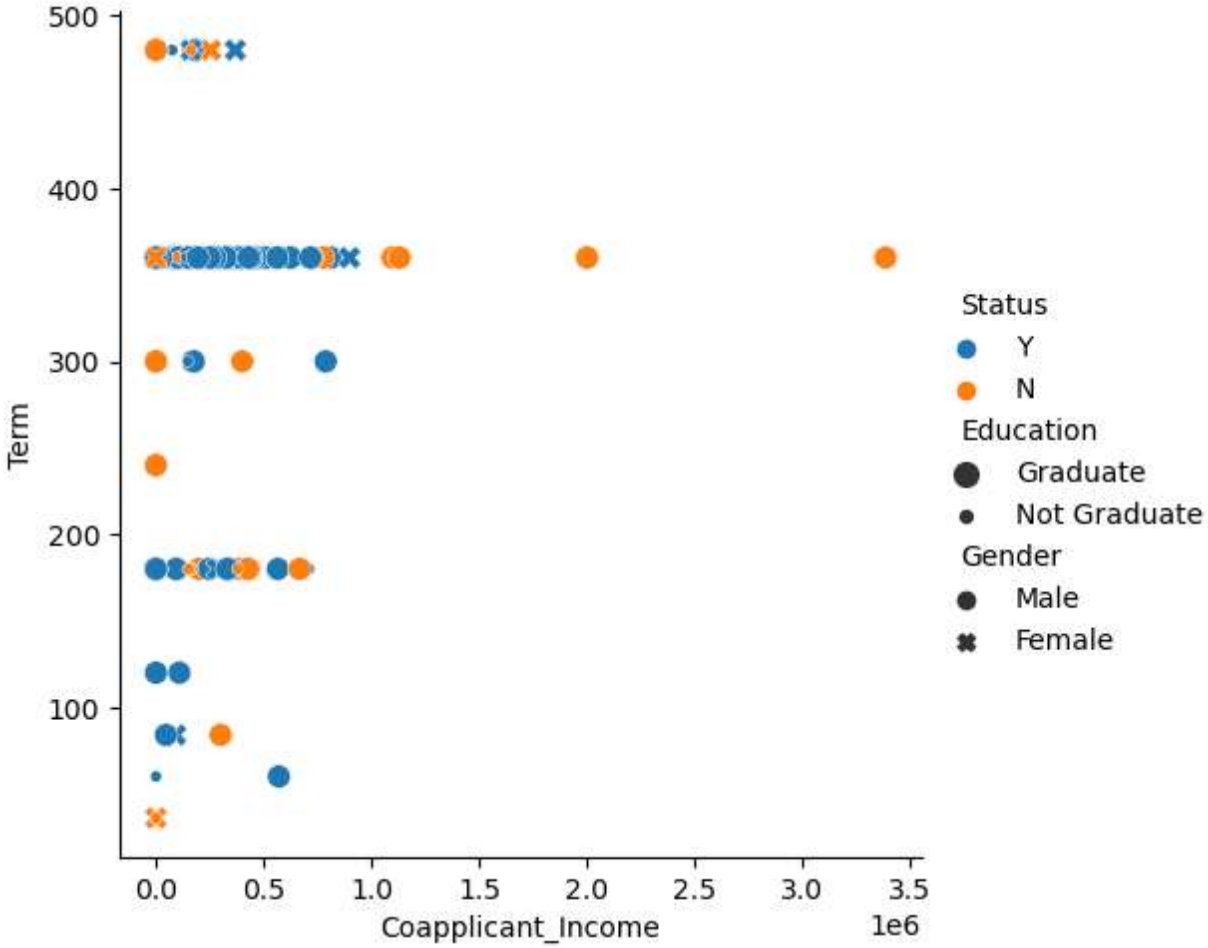
In [47]:
```
#as i observed more both males and females with Graduation
```

In [48]:
```
sns.relplot(x='Applicant_Income',y='Loan_Amount',data=df,hue='Status',style='Gender',s
plt.show()
```



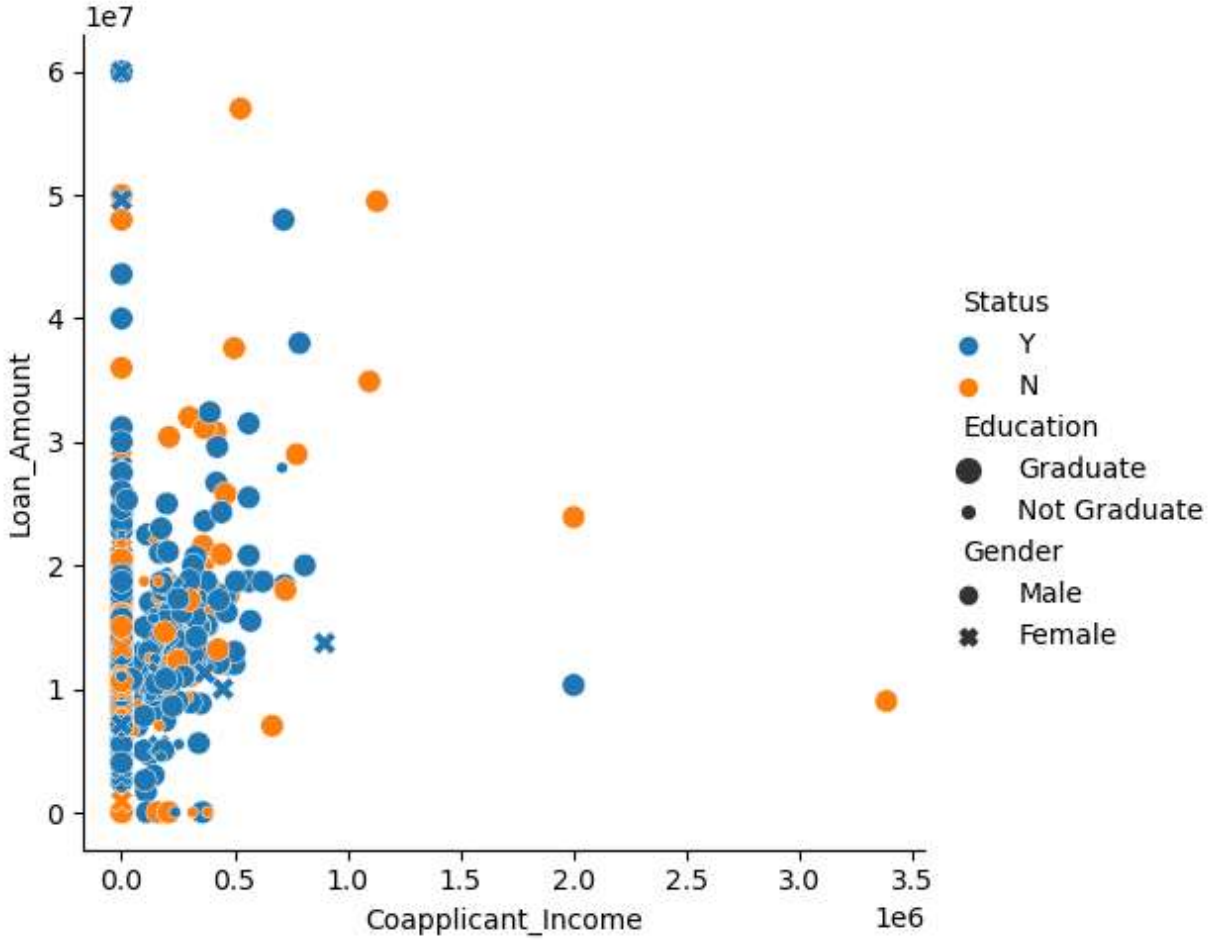
In [49]:
```
# as i observed both males and females with graduation has loan status and some of fem
```

In [50]:
```
sns.relplot(x='Coapplicant_Income',y='Term',data=df,hue='Status',style='Gender',size='
plt.show()
```



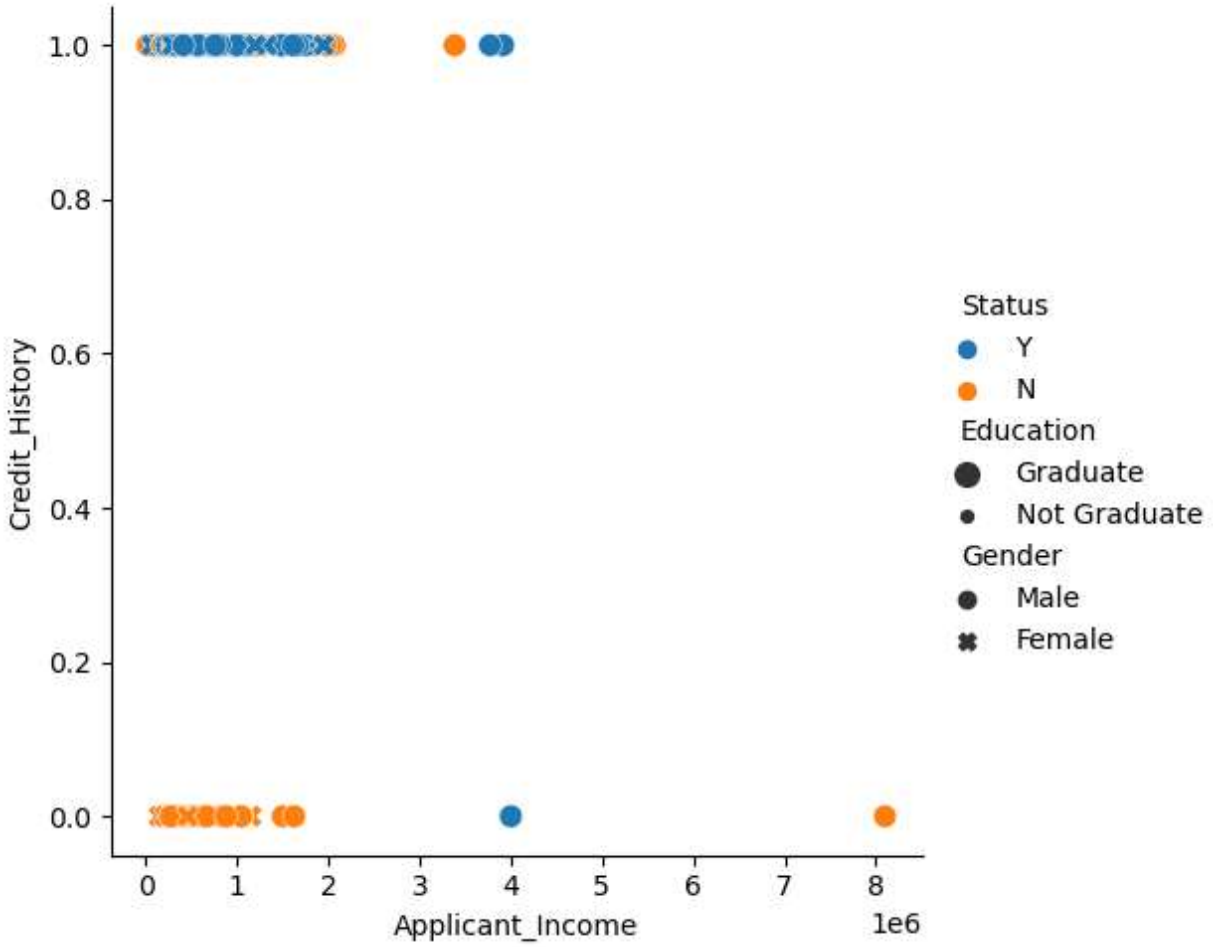
In [51]:
```
#here both males and females with graduation has loan status
```

In [52]:
```
sns.relplot(x='Coapplicant_Income',y='Loan_Amount',data=df,hue='Status',style='Gender'
plt.show()
```



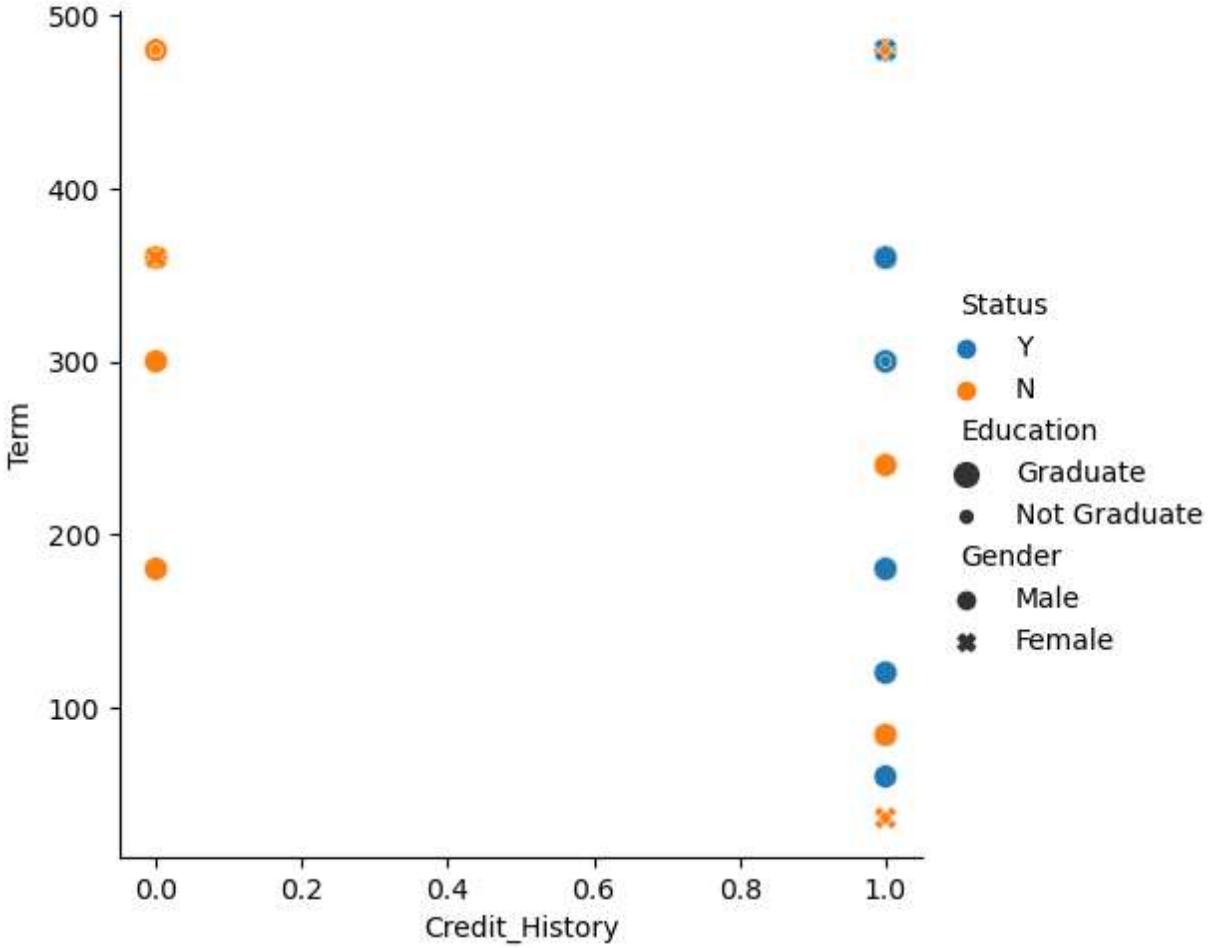
In [53]:
```
#here both males and females with education has high possibility of loan status
```

In [54]:
```
sns.relplot(x='Applicant_Income',y='Credit_History',data=df,hue='Status',style='Gender
plt.show()
```



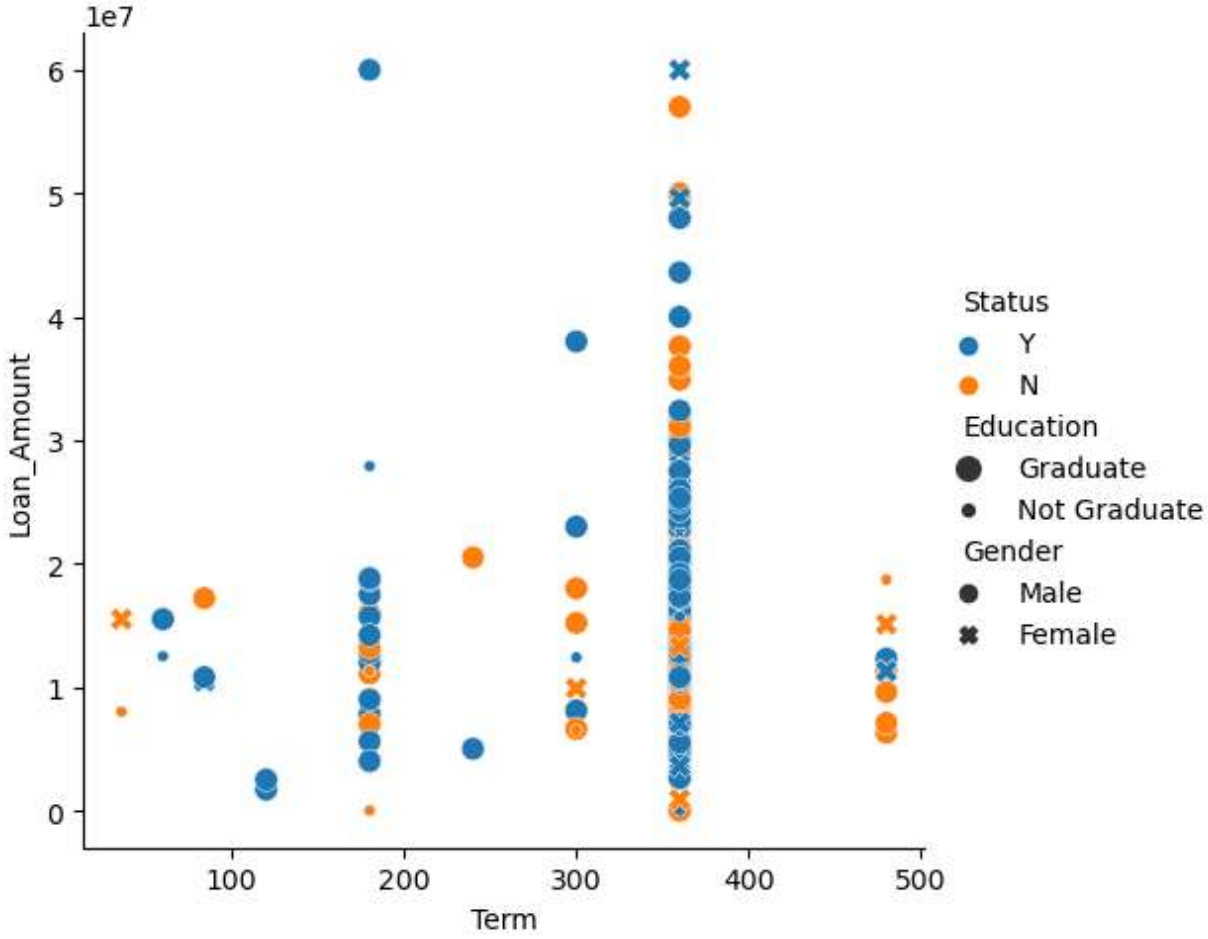
In [55]:
```
#here the both male and females with education has high possibility of loan status
```

In [56]:
```
sns.relplot(x='Credit_History',y='Term',data=df,hue='Status',style='Gender',size='Educ
plt.show()
```



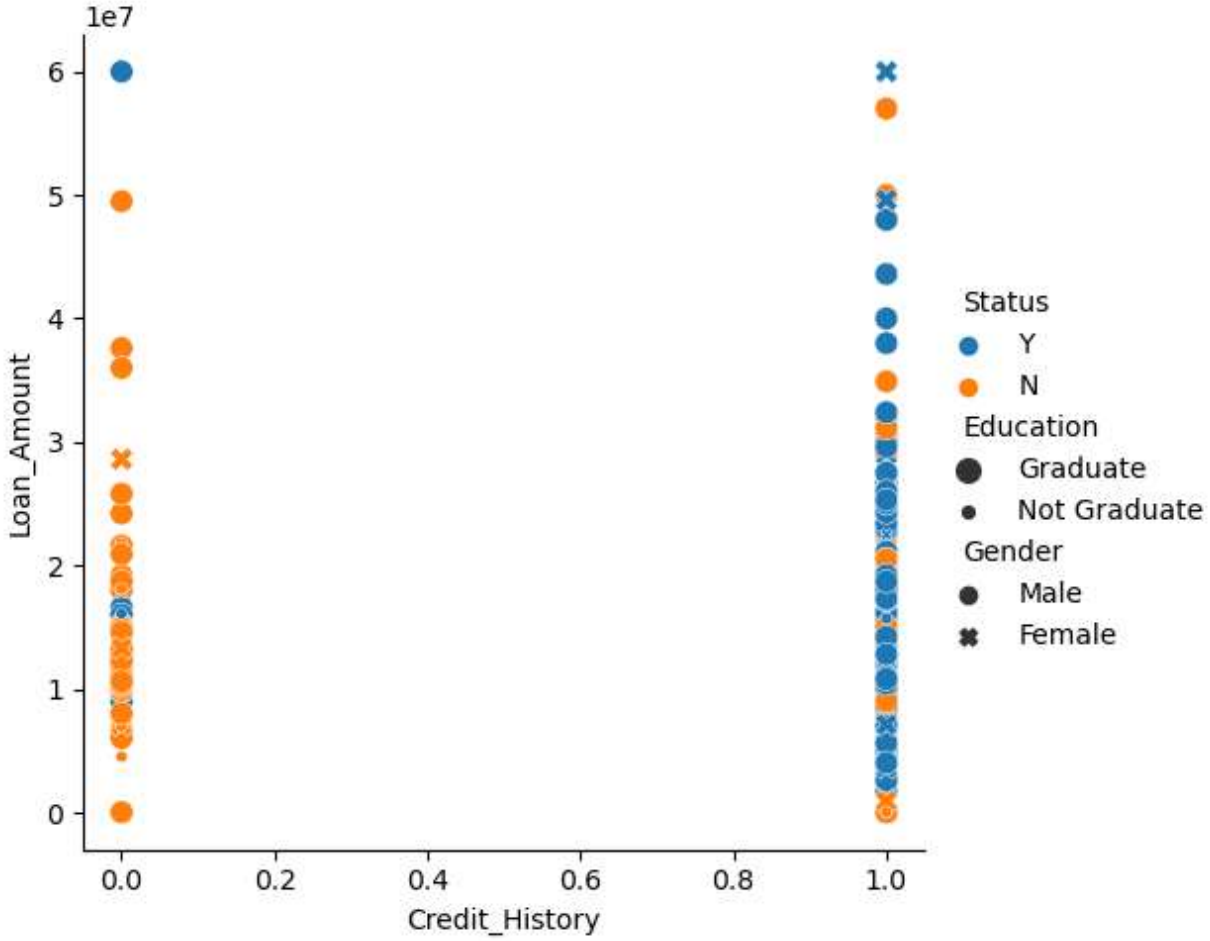
In [57]:
```
#In term and credit history only male graduates has loan status
```

In [58]:
```
sns.relplot(x='Term',y='Loan_Amount',data=df,hue='Status',style='Gender',size='Educati
plt.show()
```



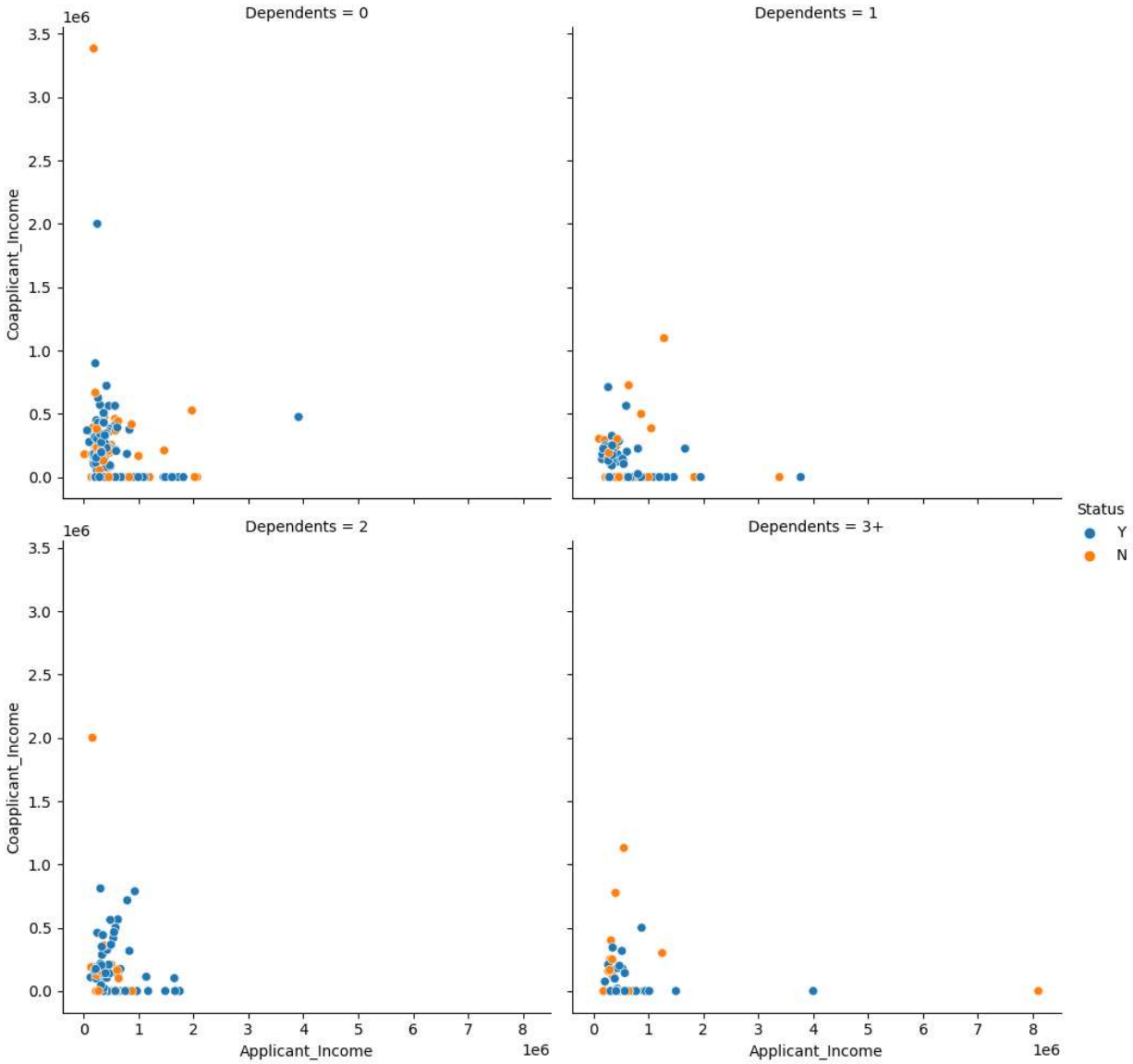
In [59]:
```
#here between the Term and Loan amount the males with graduation and some of them with
```

In [60]:
```
sns.relplot(x='Credit_History',y='Loan_Amount',data=df,hue='Status',style='Gender',siz
plt.show()
```

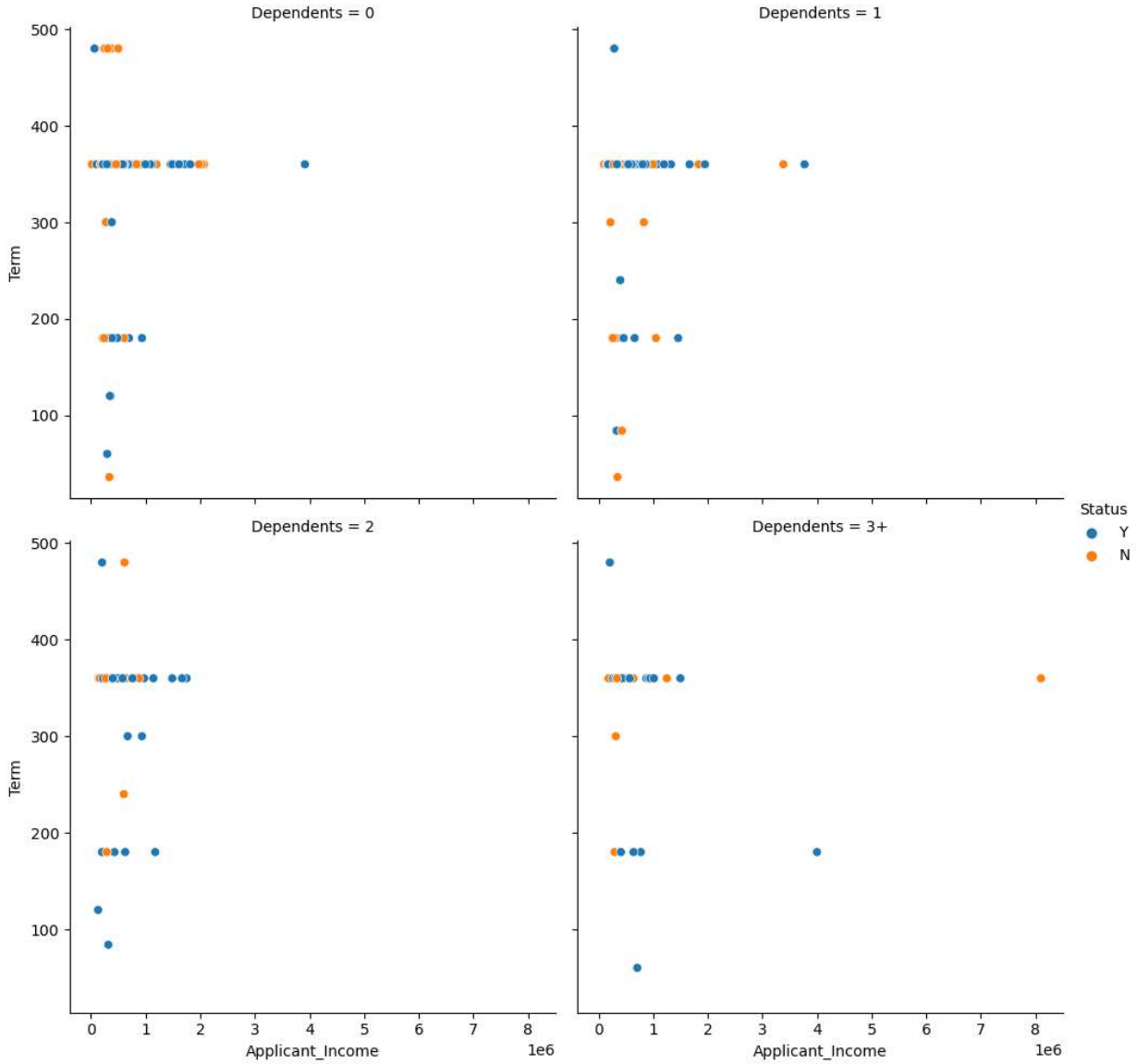


In [61]:
```
#the relation between credit history and loan amount the both males and females with g
```

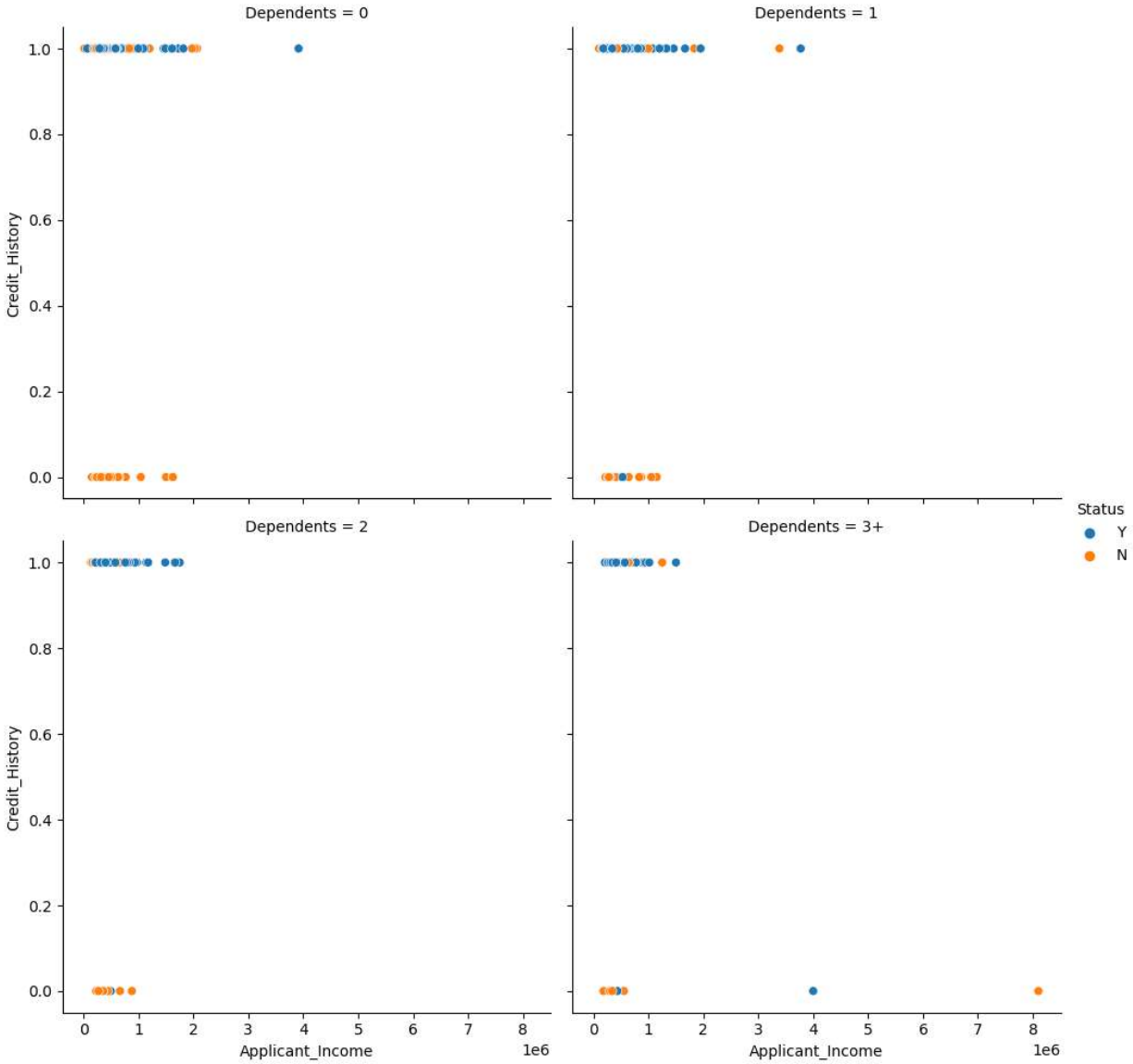
In [62]:
```
sns.relplot(x='Applicant_Income',y='Coapplicant_Income',data=df,col='Dependents',hue='
plt.show()
```



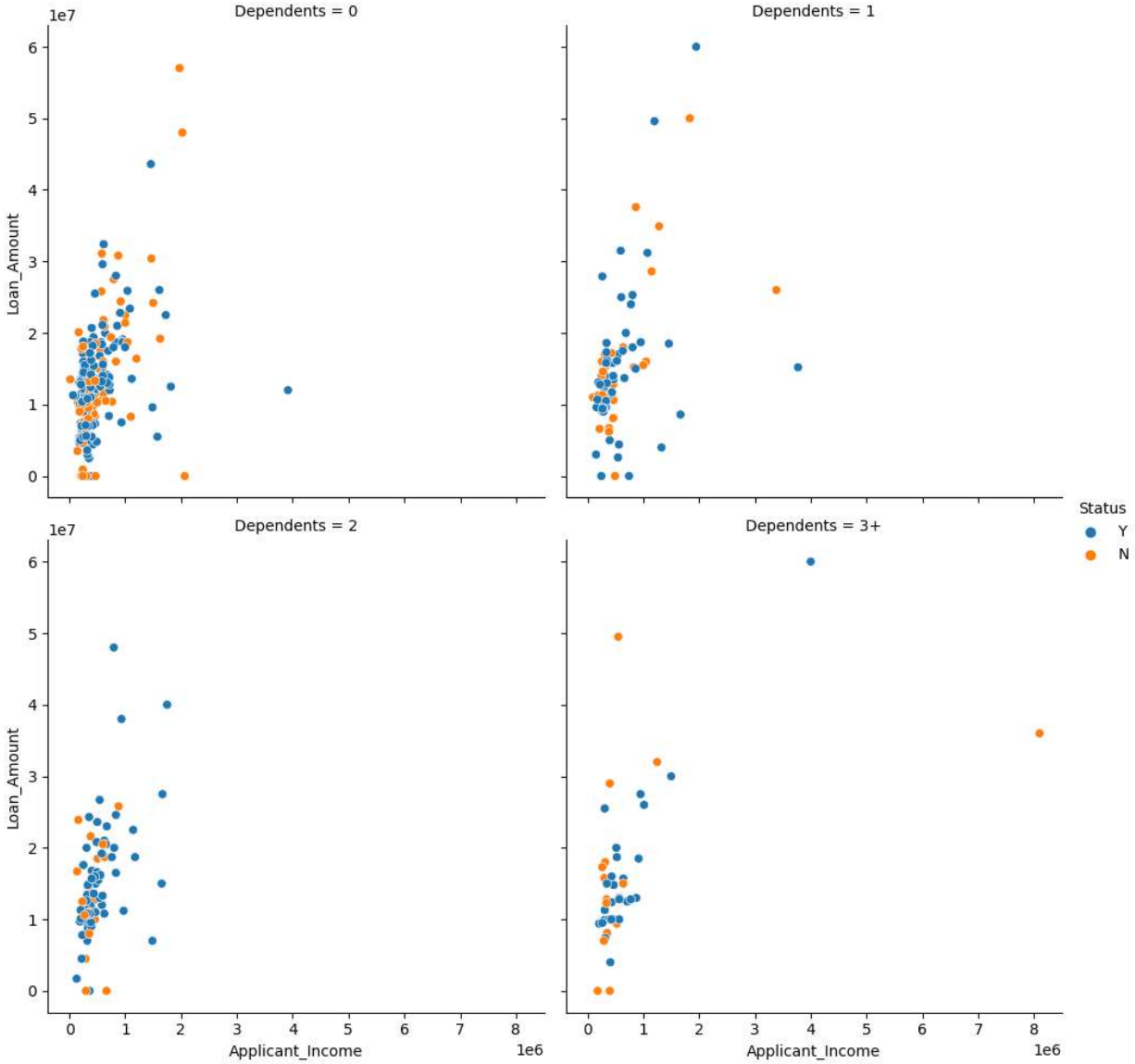
In [63]:
```
sns.relplot(x='Applicant_Income',y='Term',data=df,col='Dependents',hue='Status',col_wr
plt.show()
```



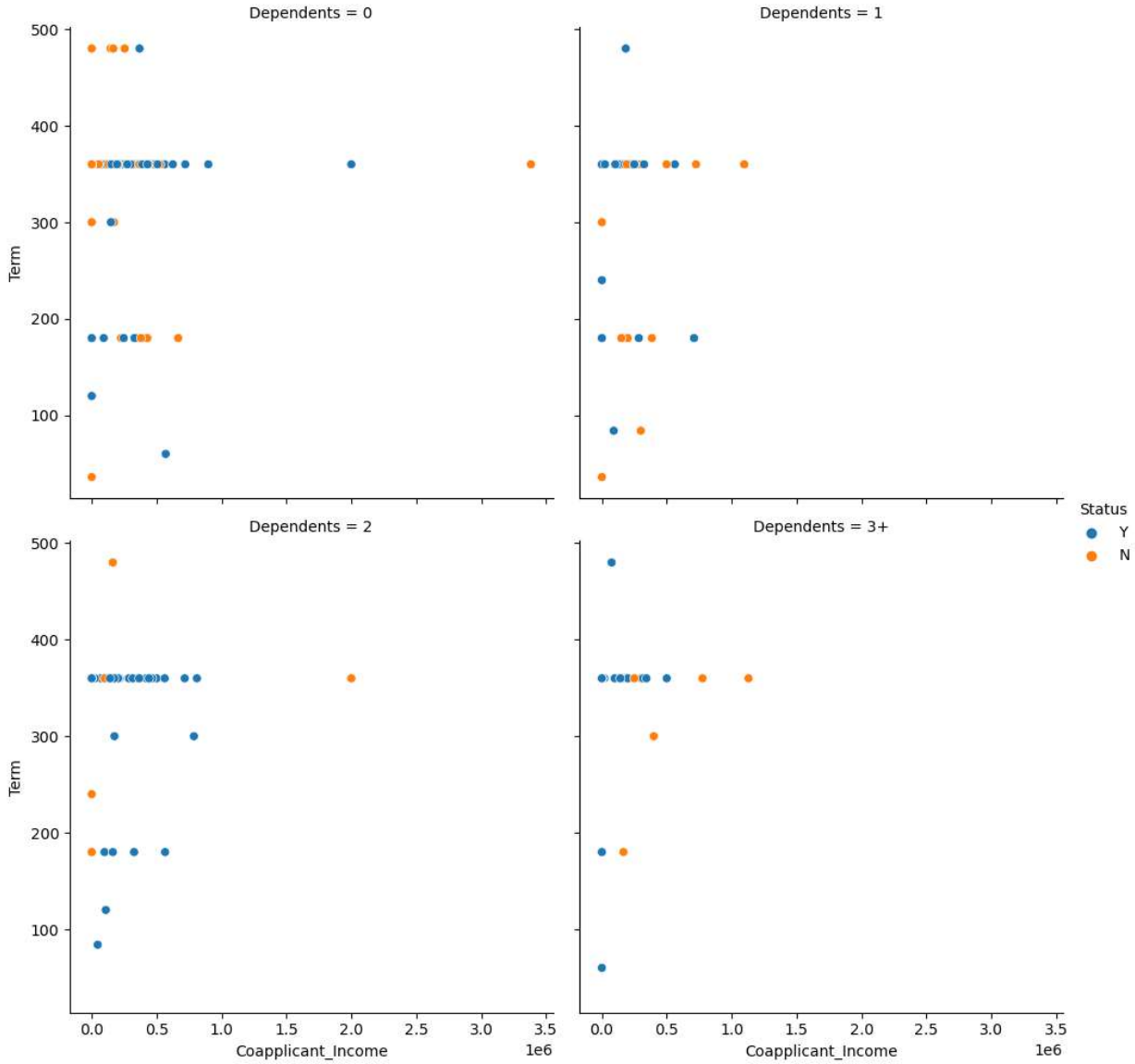
In [64]:
```
sns.relplot(x='Applicant_Income',y='Credit_History',data=df,col='Dependents',hue='Stat
plt.show()
```



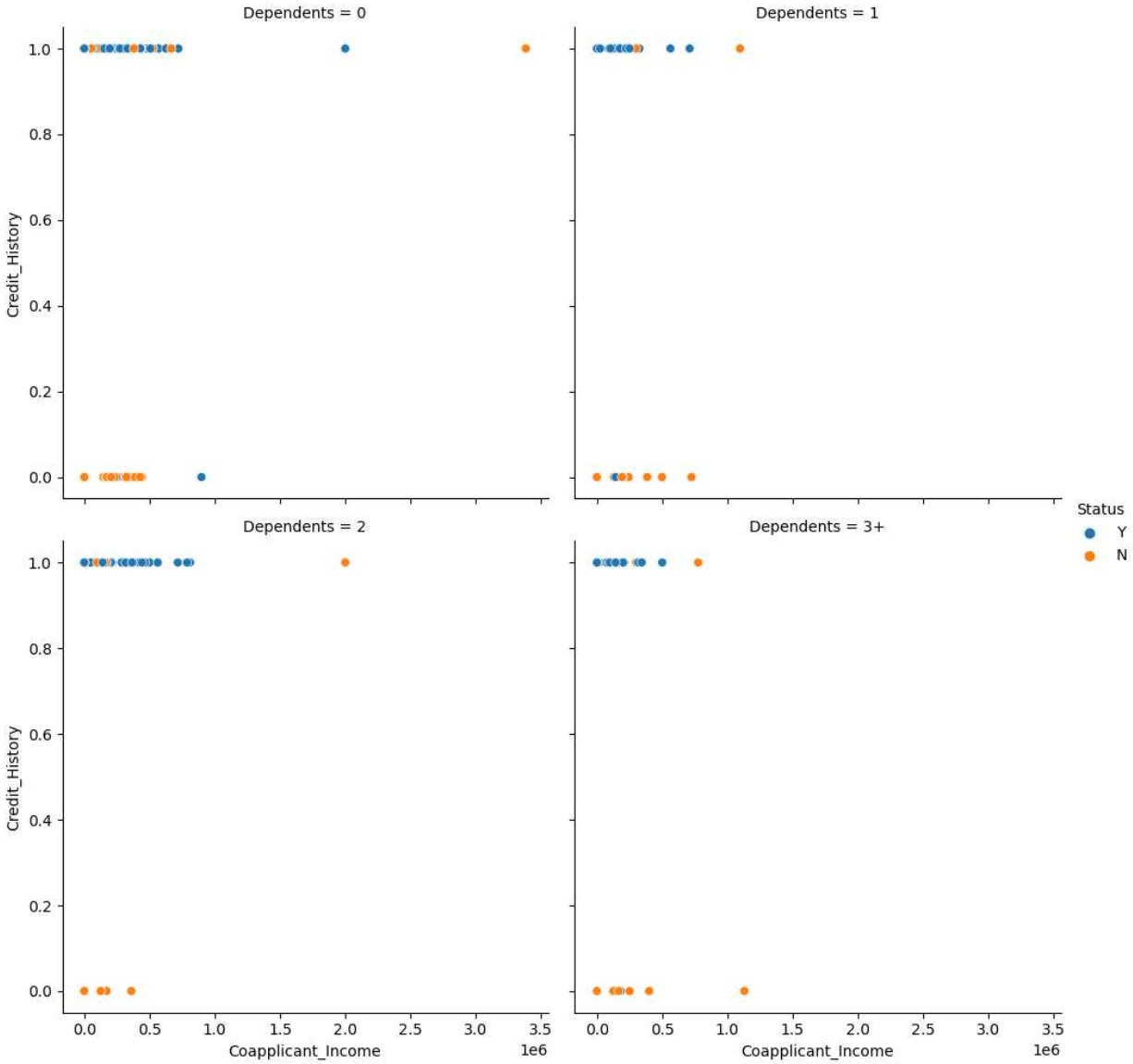
In [65]:
```
sns.relplot(x='Applicant_Income',y='Loan_Amount',data=df,col='Dependents',hue='Status'
plt.show()
```



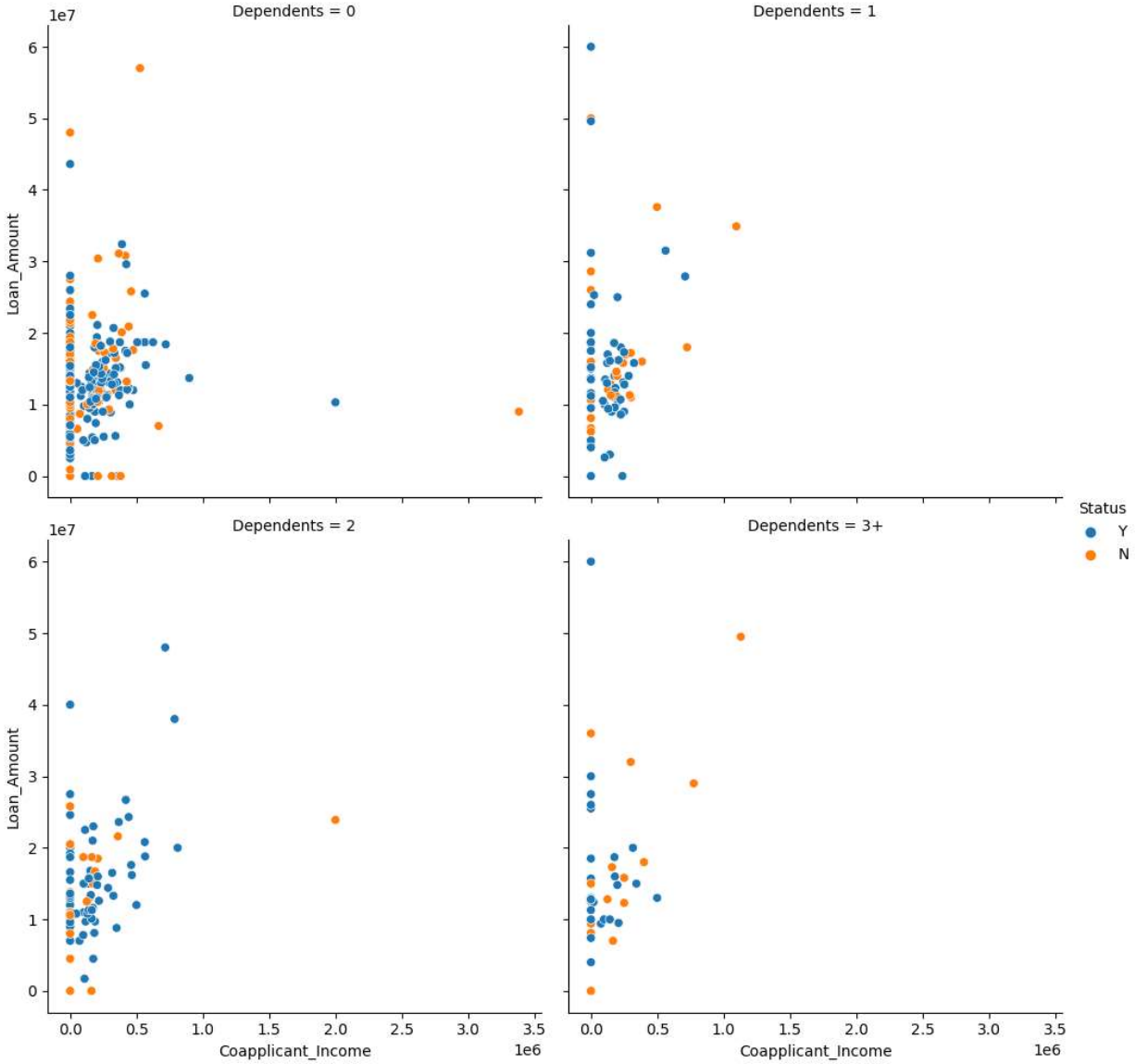
In [66]:
```
sns.relplot(x='Coapplicant_Income',y='Term',data=df,col='Dependents',hue='Status',col_
plt.show()
```



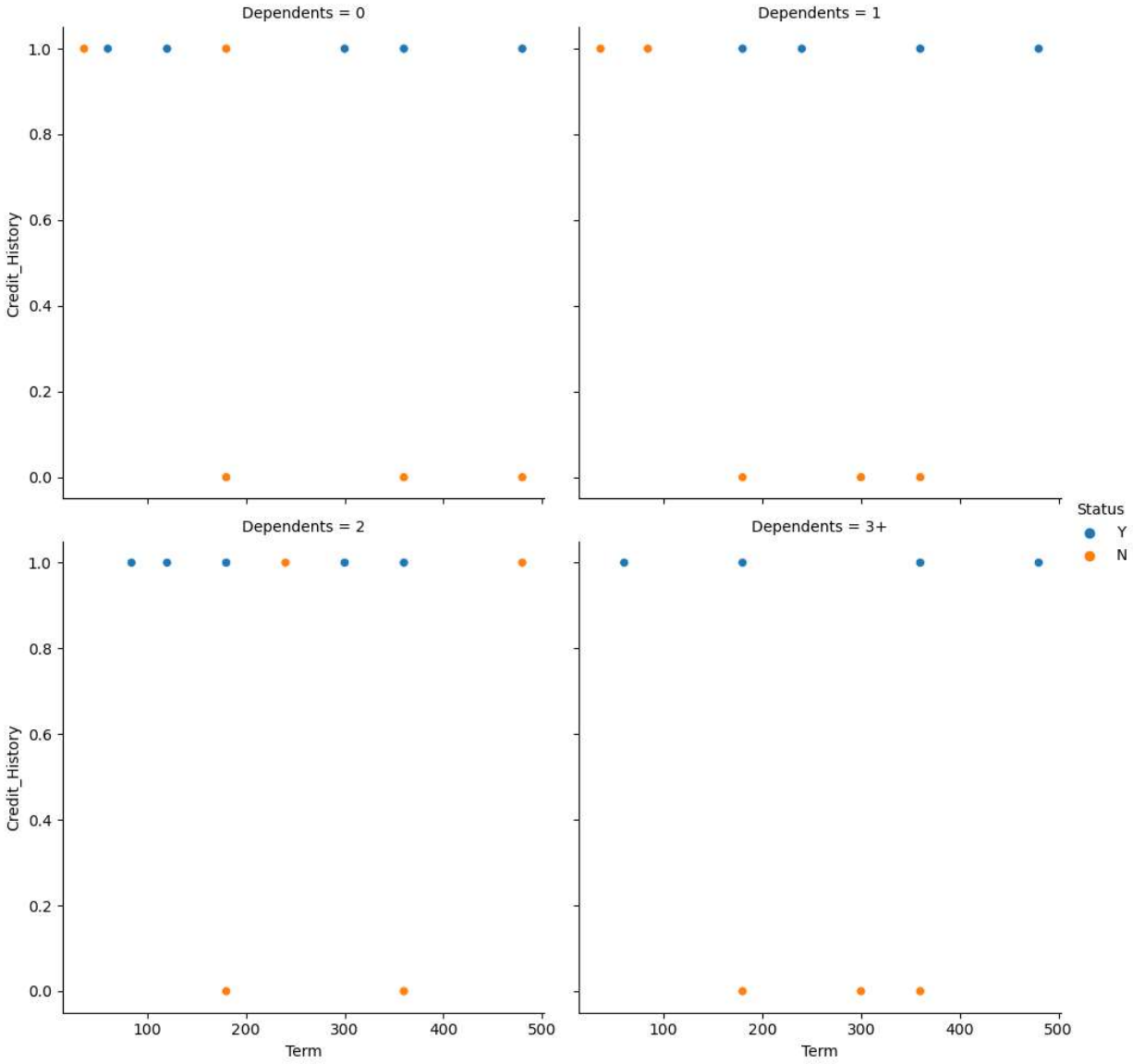
In [67]:
```
sns.relplot(x='Coapplicant_Income',y='Credit_History',data=df,col='Dependents',hue='St
plt.show()
```



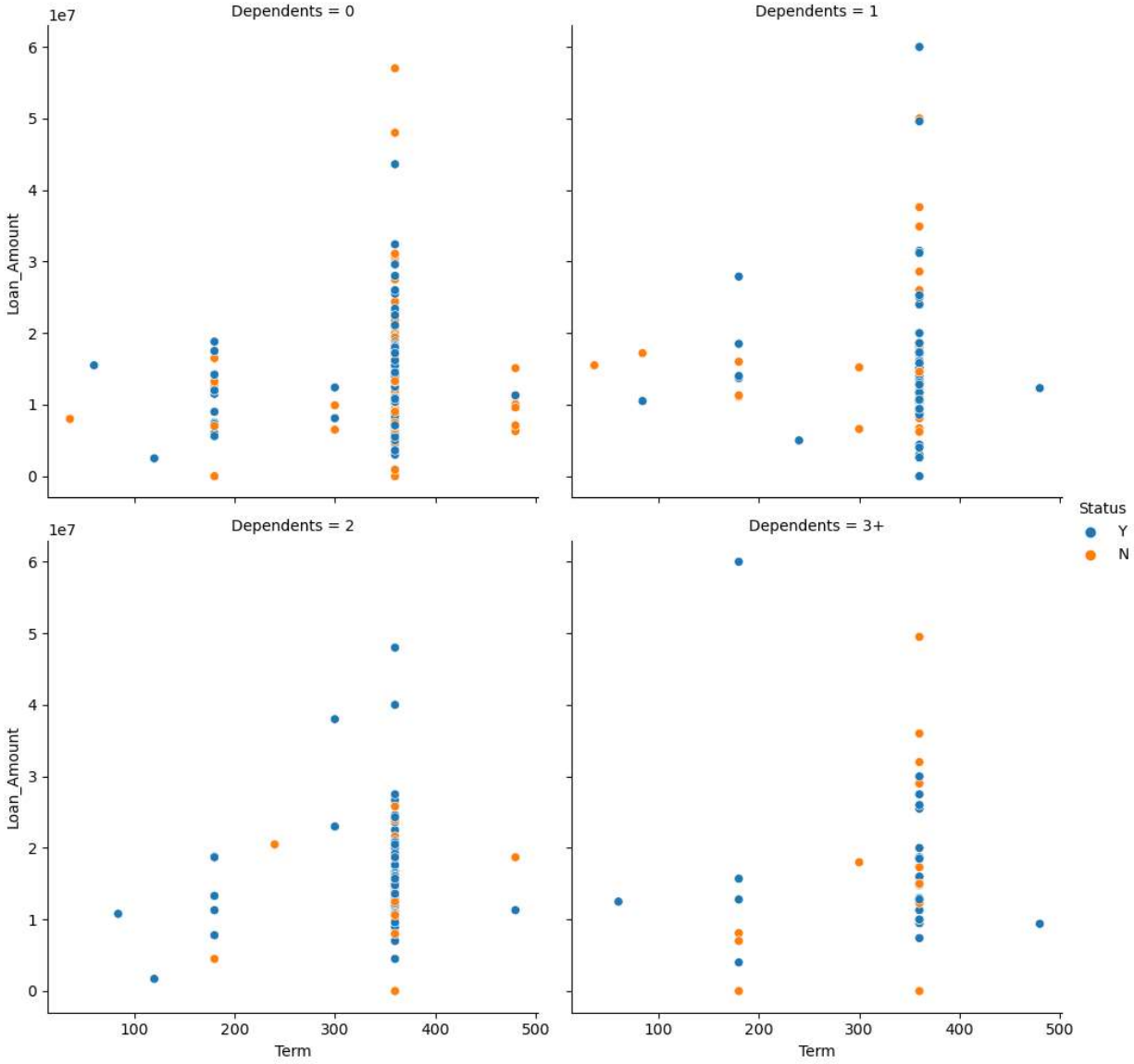
In [68]:
```
sns.relplot(x='Coapplicant_Income',y='Loan_Amount',data=df,col='Dependents',hue='Statu
plt.show()
```



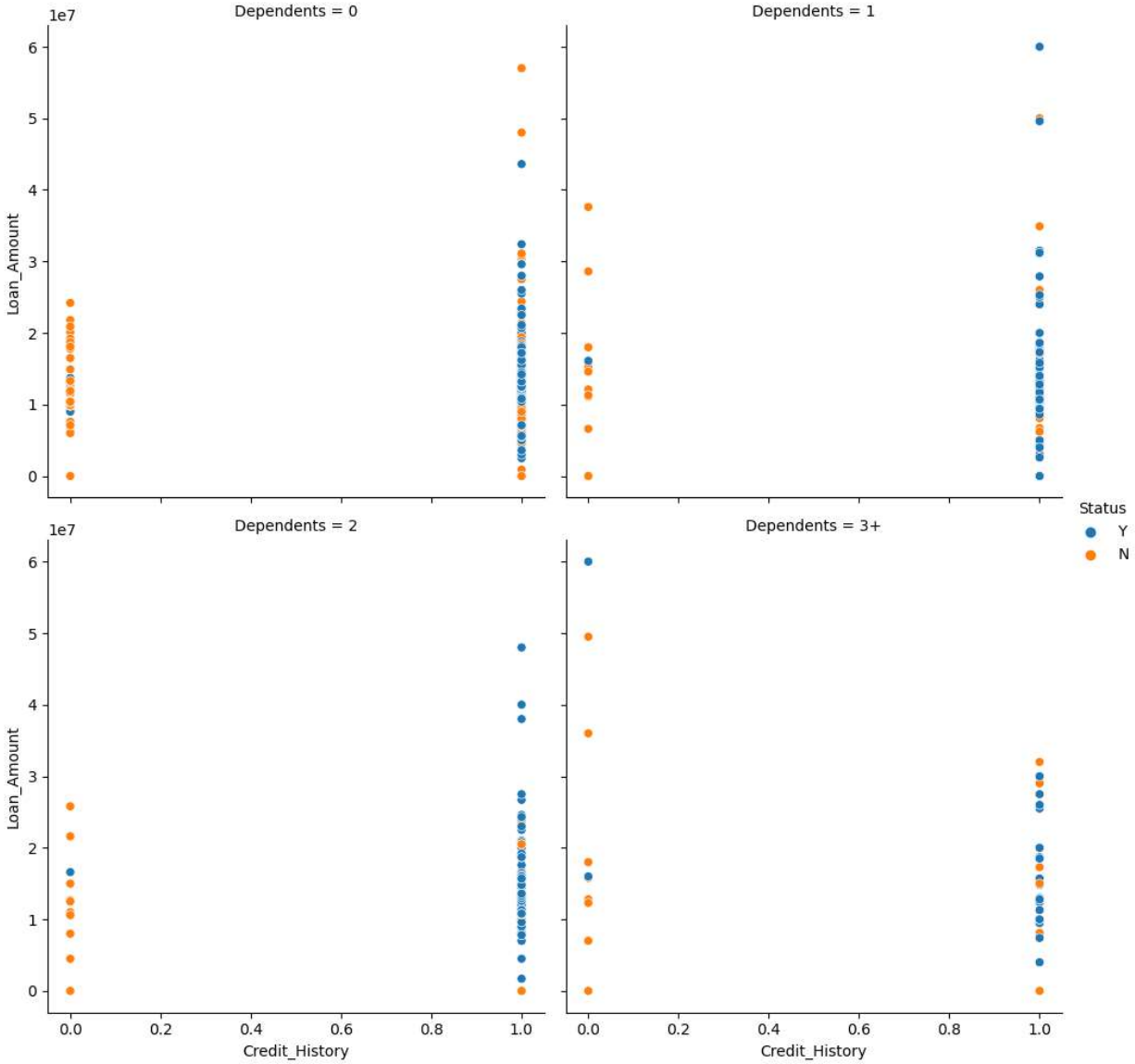
In [69]:
```
sns.relplot(x='Term',y='Credit_History',data=df,col='Dependents',hue='Status',col_wrap
plt.show()
```



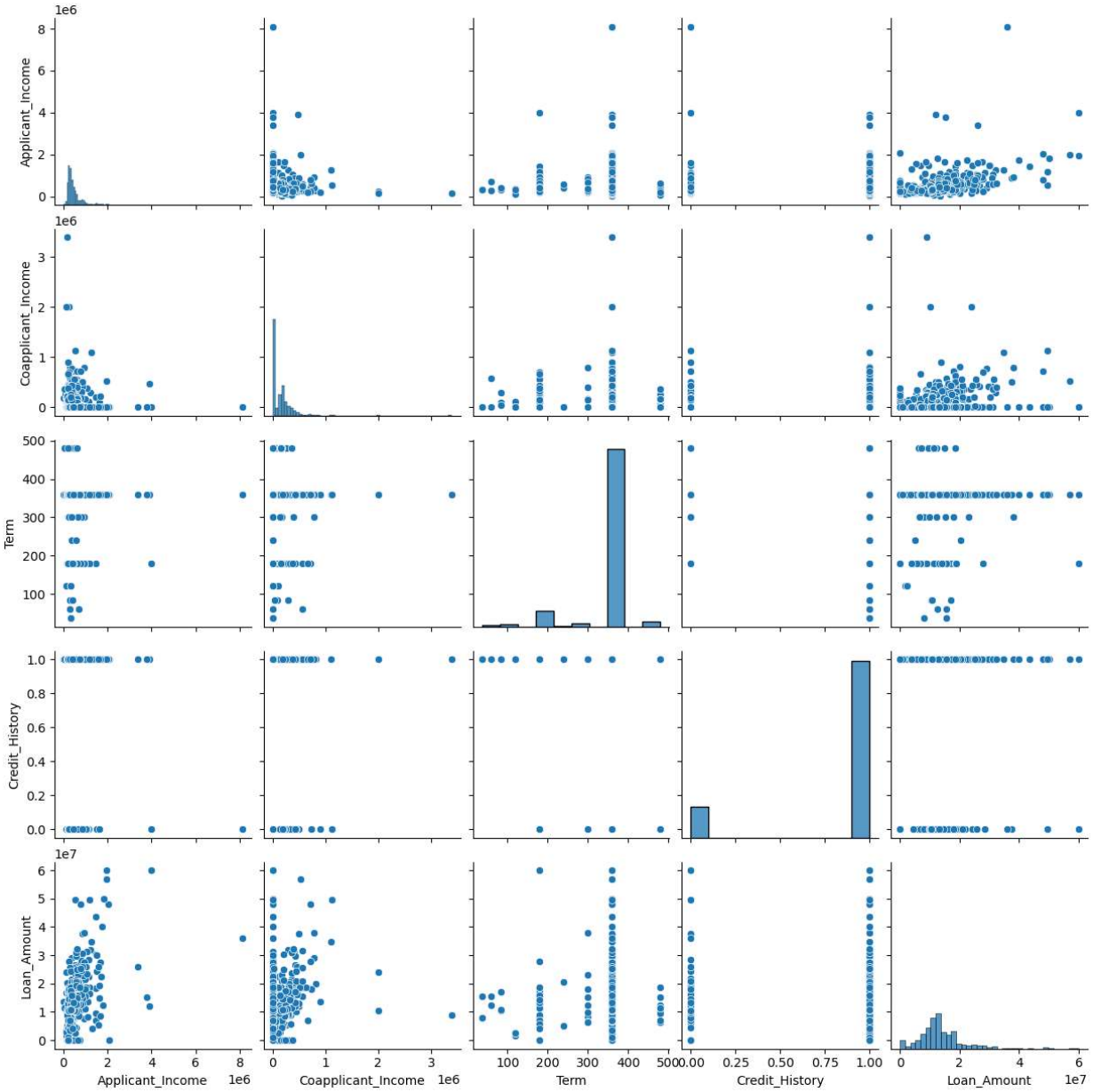
In [70]:
```
sns.relplot(x='Term',y='Loan_Amount',data=df,col='Dependents',hue='Status',col_wrap=2)
plt.show()
```



In [71]:
```
sns.relplot(x='Credit_History',y='Loan_Amount',data=df,col='Dependents',hue='Status',
plt.show()
```



In [72]:
```
sns.pairplot(df,vars=df_continuous)
plt.show()
```



In [73]:
```
#heatmap
```

In [74]:
```
c_m=df[['Applicant_Income','Coapplicant_Income']].corr()
c_m
```

Out[74]:

	Applicant_Income	Coapplicant_Income
Applicant_Income	1.000000	-0.114489
Coapplicant_Income	-0.114489	1.000000

In [75]:
```
sns.heatmap(c_m,annot=True) # correlation  between applicant income and applicant inco
plt.show()
```

In [76]:
```
c_m2=df[['Applicant_Income','Term']].corr()
c_m2
```

Out[76]:

	Applicant_Income	Term
Applicant_Income	1.000000	-0.007663
Term	-0.007663	1.000000

In [77]:
```
sns.heatmap(c_m2,annot=True)# here also relation between same variables is high
plt.show()
```

In [78]:
```
c_m3=df[['Applicant_Income','Credit_History']].corr()
c_m3
```

Out[78]:

	Applicant_Income	Credit_History
Applicant_Income	1.000000	-0.051144
Credit_History	-0.051144	1.000000

In [79]:
```
sns.heatmap(c_m3,annot=True) #relation between same variable is high
plt.show()
```

In [80]:
```
c_m4=df[['Applicant_Income','Loan_Amount']].corr()
c_m4
```

Out[80]:

	Applicant_Income	Loan_Amount
Applicant_Income	1.000000	0.472394
Loan_Amount	0.472394	1.000000

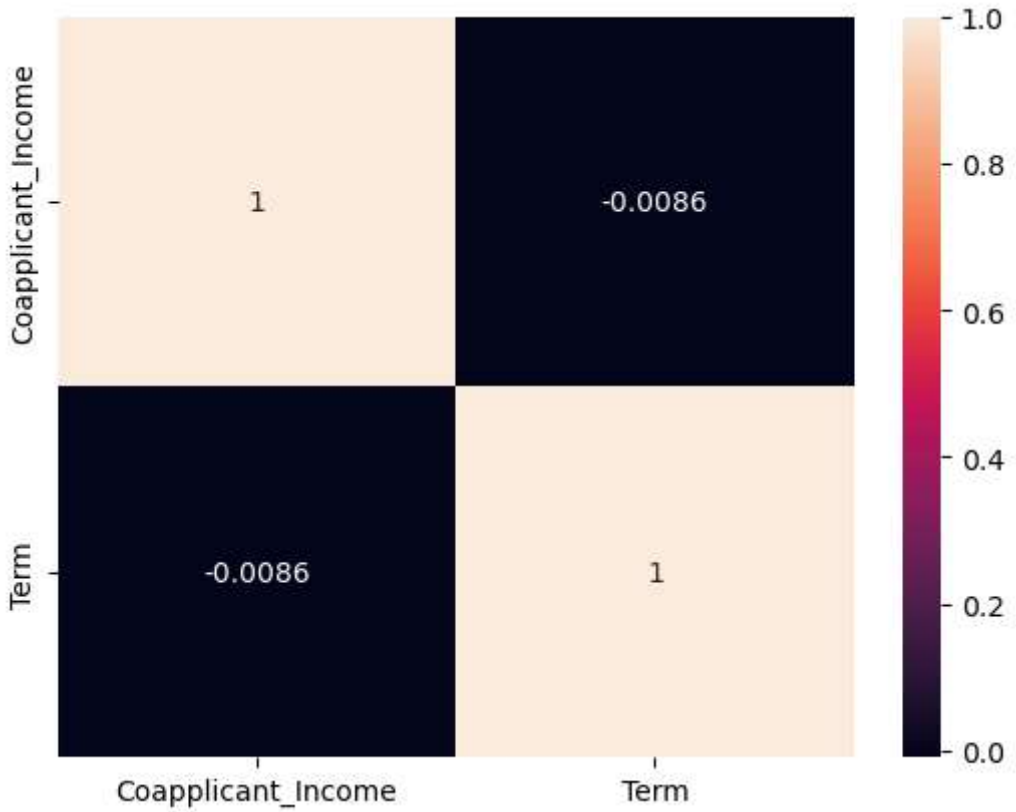
In [81]:
```
sns.heatmap(c_m4,annot=True) # here also relation between same variable is high
plt.show()
```

In [82]:
```
c_m5=df[['Coapplicant_Income','Term']].corr()
c_m5
```

Out[82]:

	Coapplicant_Income	Term
Coapplicant_Income	1.000000	-0.008559
Term	-0.008559	1.000000

In [83]:
```
sns.heatmap(c_m5,annot=True) # here also relation between same variable is high
plt.show()
```

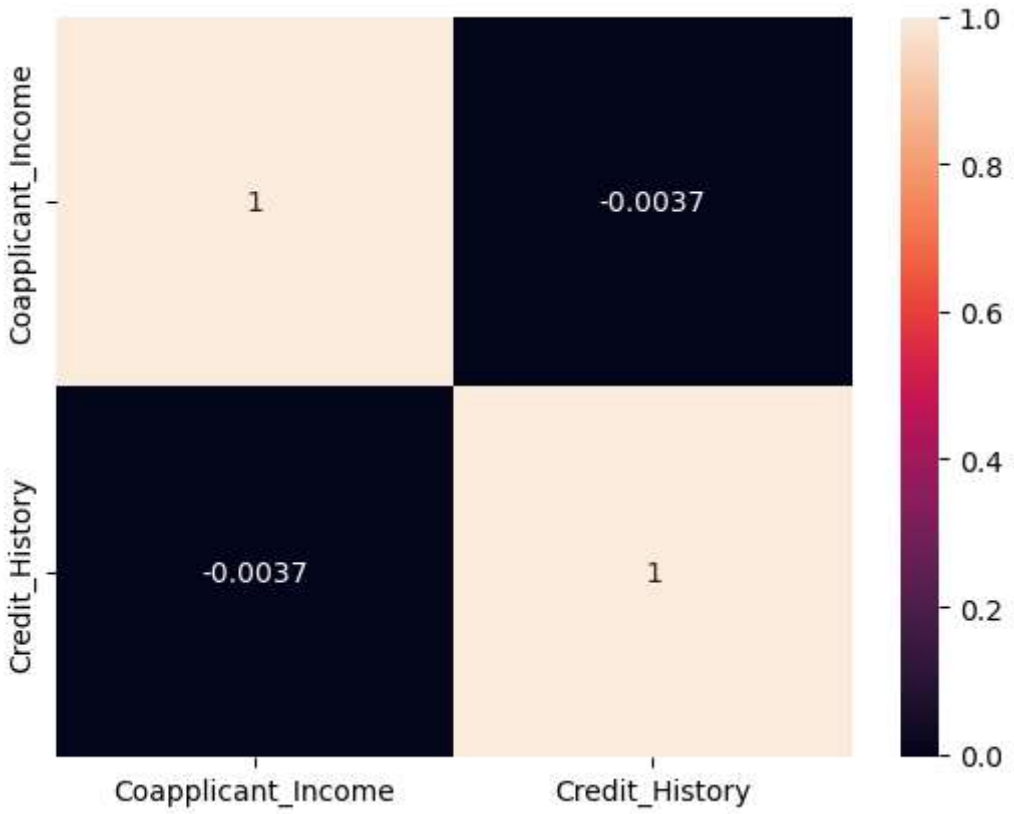


In [84]:
```
c_m6=df[['Coapplicant_Income','Credit_History']].corr()
c_m6
```

Out[84]:

	Coapplicant_Income	Credit_History
Coapplicant_Income	1.000000	-0.003729
Credit_History	-0.003729	1.000000

In [85]:
```
sns.heatmap(c_m6,annot=True) # relation between same variable is high
plt.show()
```

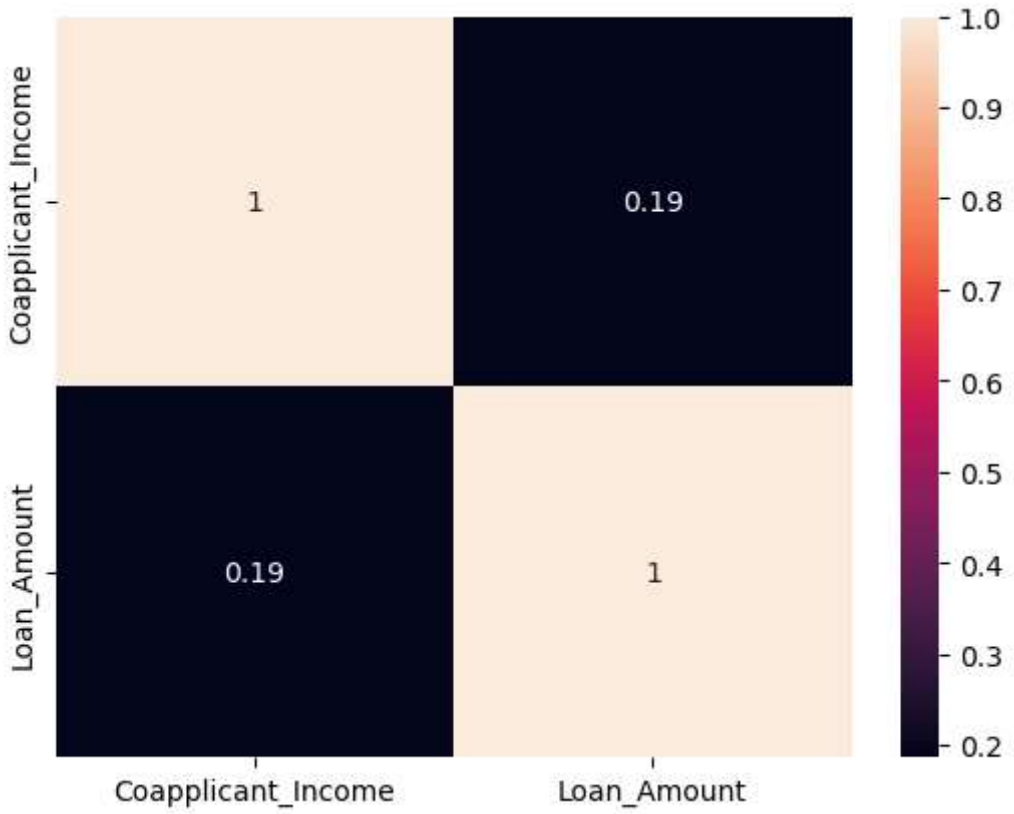


In [86]:
```
c_m7=df[['Coapplicant_Income','Loan_Amount']].corr()
c_m7
```

Out[86]:

	Coapplicant_Income	Loan_Amount
Coapplicant_Income	1.000000	0.186449
Loan_Amount	0.186449	1.000000

In [87]:
```
sns.heatmap(c_m7,annot=True) #relation between same variable is high#
plt.show()
```



In [88]:
```
c_m8=df[['Term','Credit_History']].corr()
c_m8
```

Out[88]:

	Term	Credit_History
Term	1.000000	0.025141
Credit_History	0.025141	1.000000

In [89]:
```
sns.heatmap(c_m8,annot=True) #relation between same variable is high#
plt.show()
```

In [90]:
```
c_m9=df[['Term','Loan_Amount']].corr()
c_m9
```

Out[90]:

	Term	Loan_Amount
Term	1.000000	0.049436
Loan_Amount	0.049436	1.000000

In [91]:
```
sns.heatmap(c_m9,annot=True) #relation between same variable is high#
plt.show()
```

In [92]:
```
c_m10=df[['Credit_History','Loan_Amount']].corr()
c_m10
```

Out[92]:

	Credit_History	Loan_Amount
Credit_History	1.000000	-0.024495
Loan_Amount	-0.024495	1.000000

In [93]:
```
sns.heatmap(c_m10,annot=True) #relation between same variable is high#
plt.show()
```

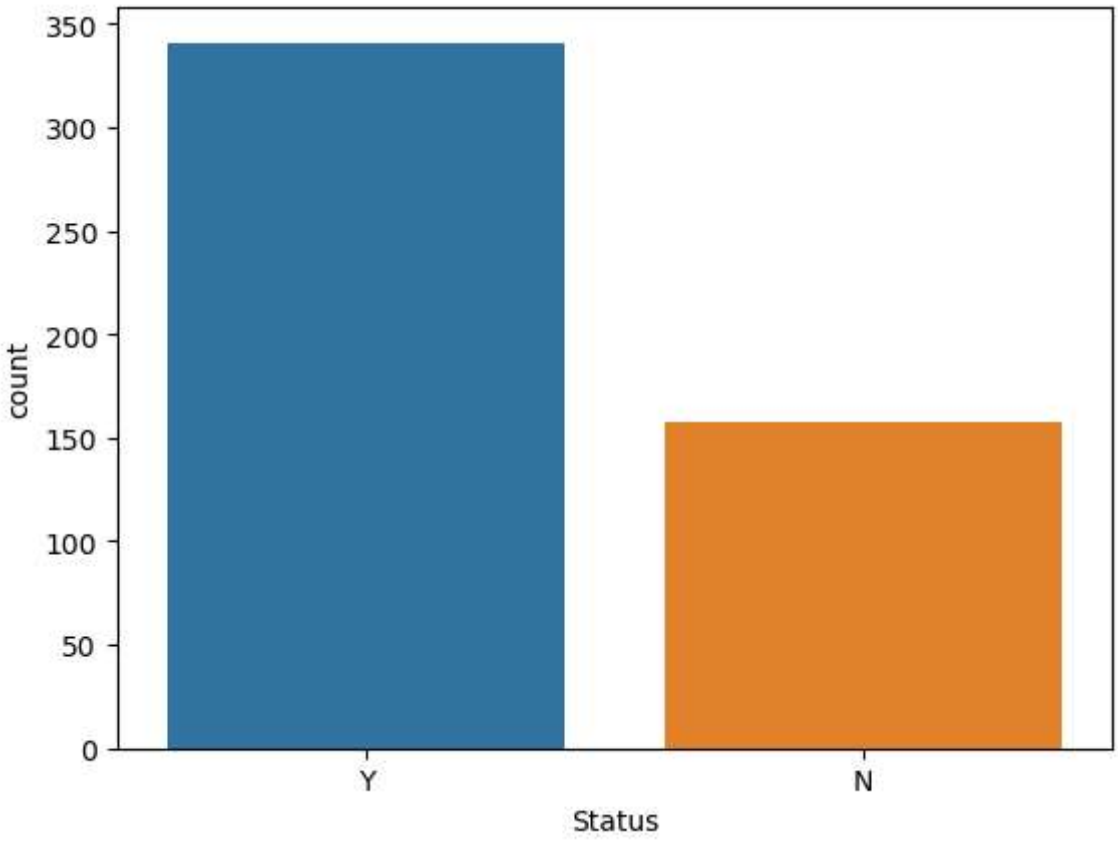
In [94]:
```
#Plots for Discrete
```

In [95]:
```
#Count_plot
```

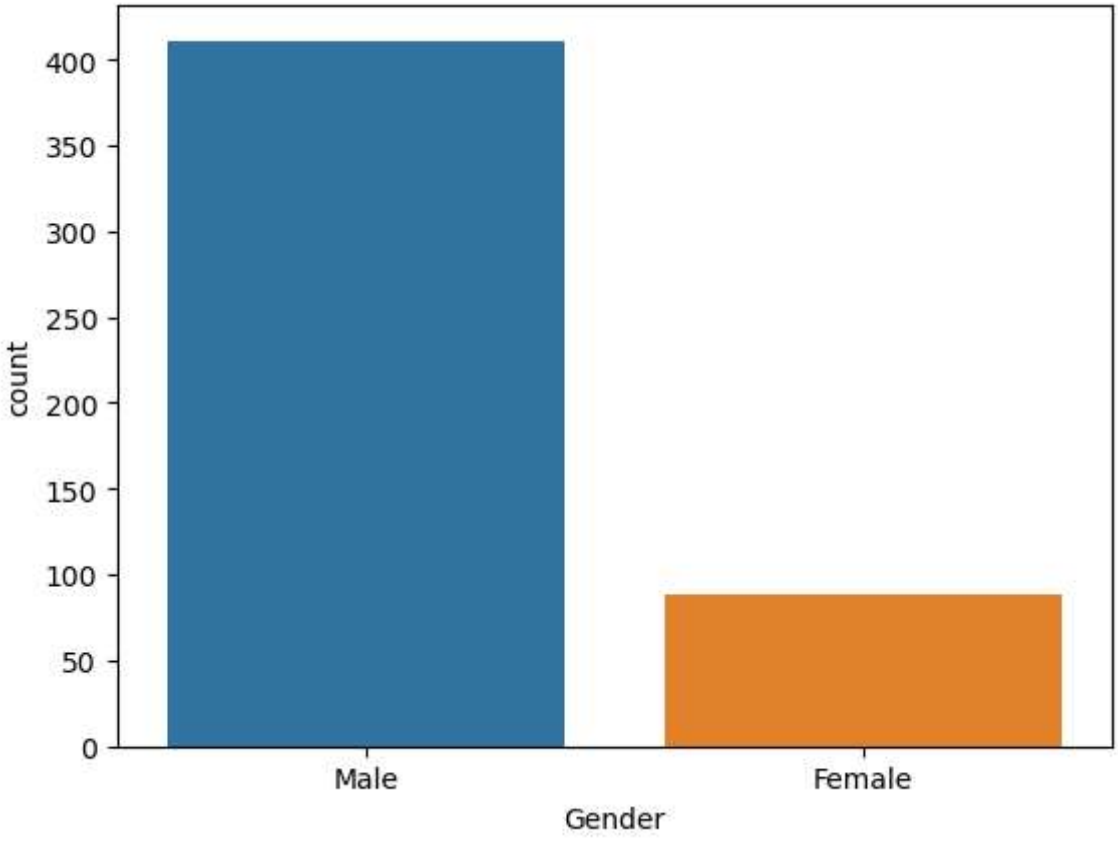
In [96]:
```
df['Status'].value_counts()
```

Out[96]:
```
Y    341
N    158
Name: Status, dtype: int64
```

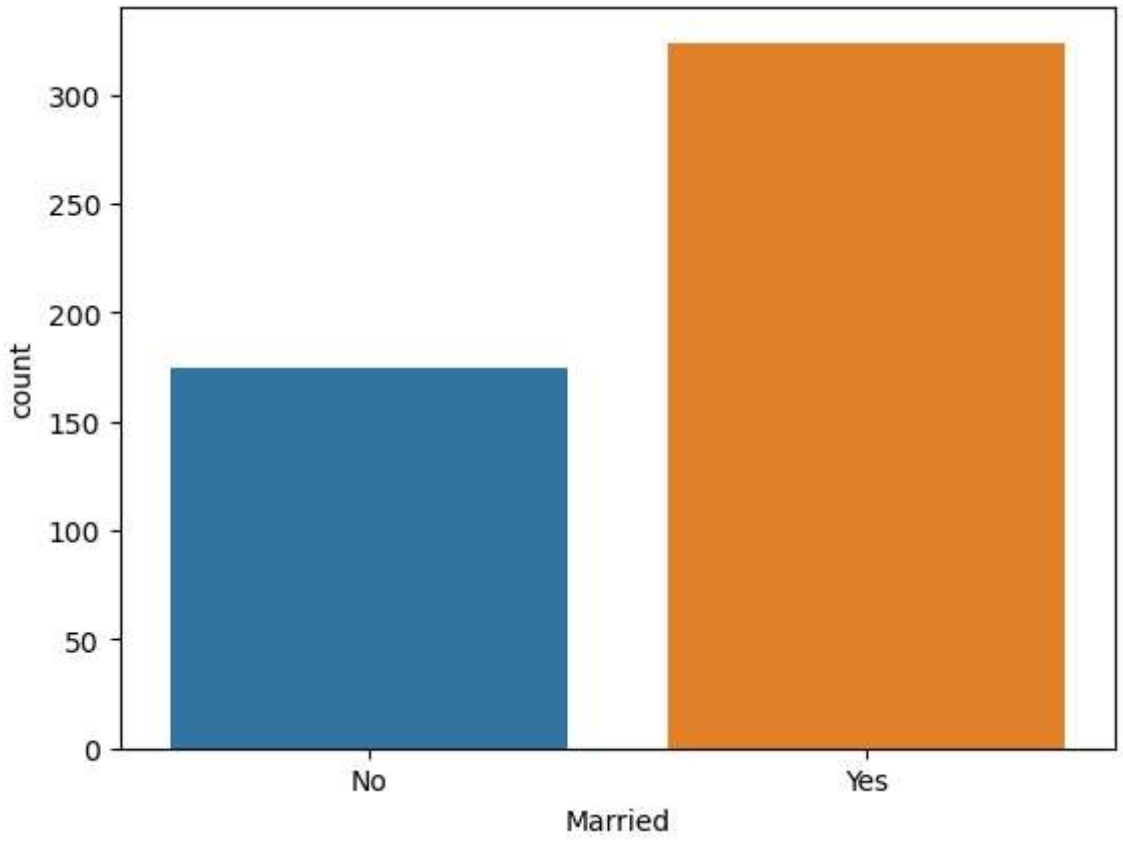
In [97]:
```
sns.countplot(x=df['Status'])# here yes status is more
plt.show()
```



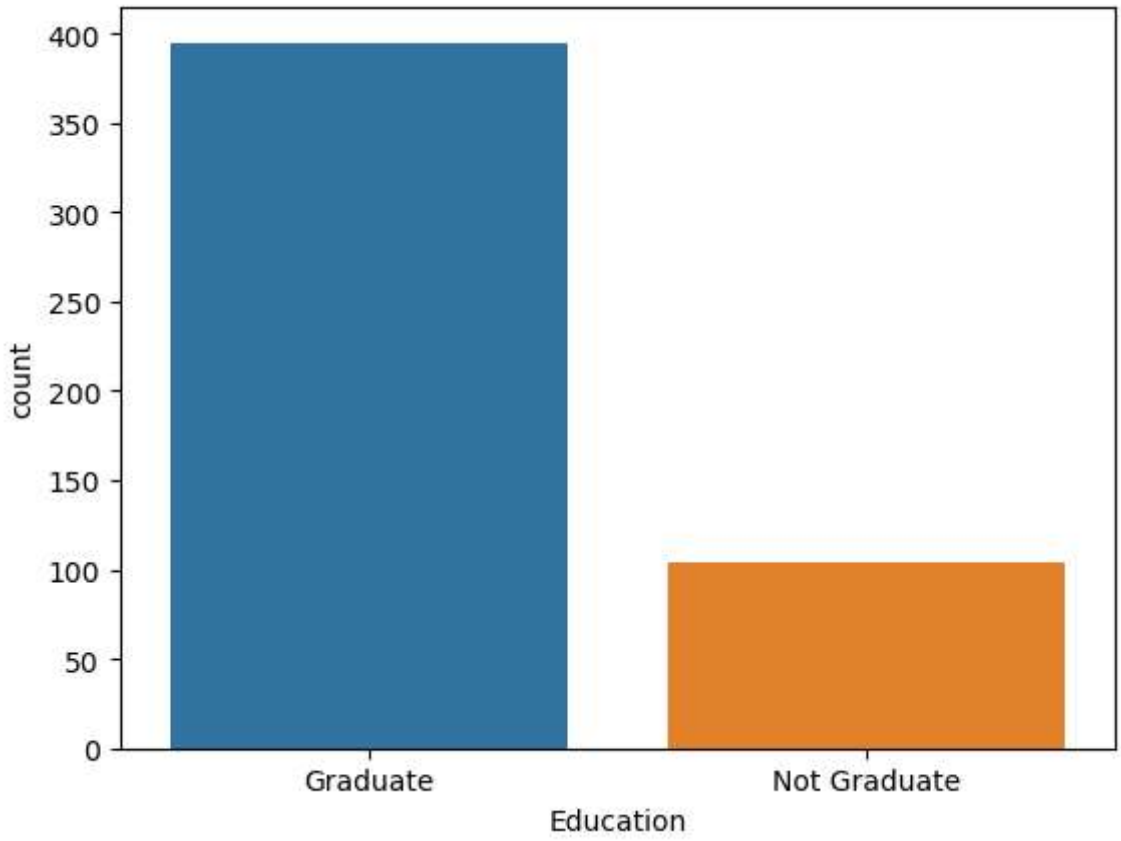
In [98]:
```
sns.countplot(x=df['Gender']) #More males has loan status as yes
plt.show()
```



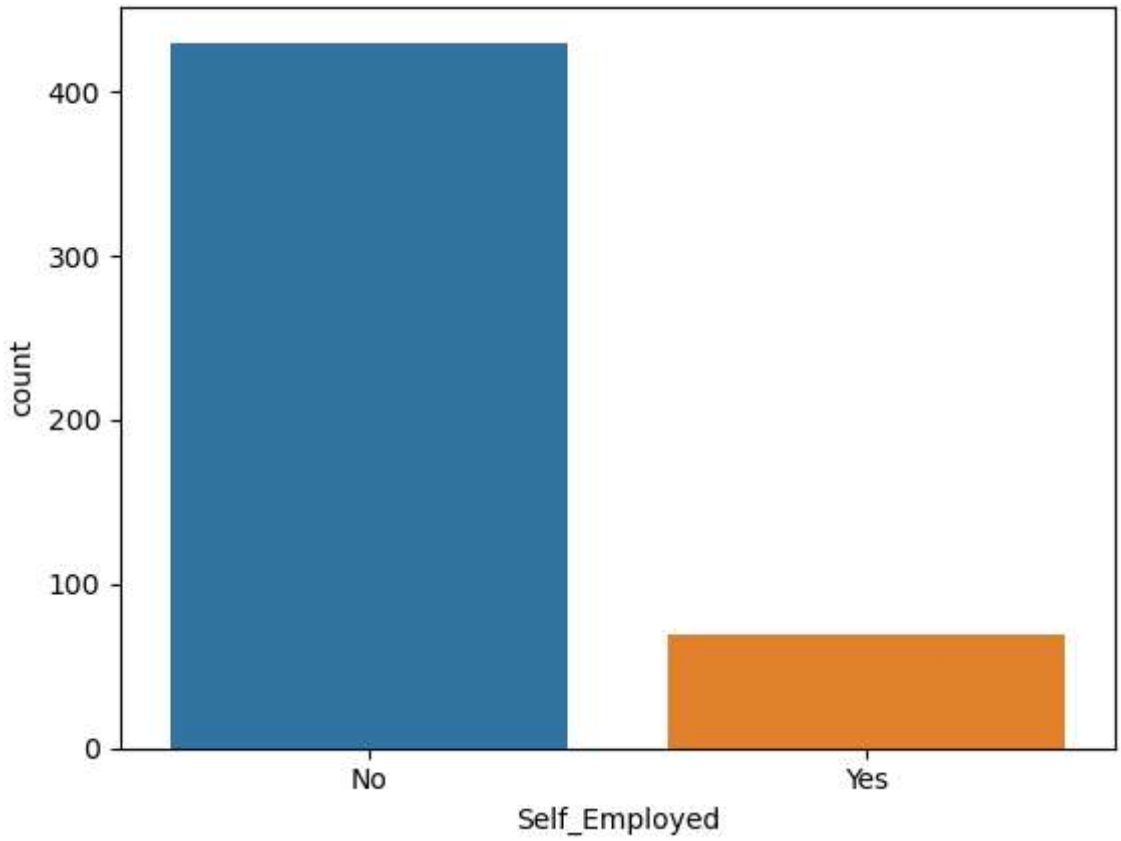
In [99]:
```
sns.countplot(x=df['Married']) # non married candidates has loan status as yes more mo
plt.show()
```



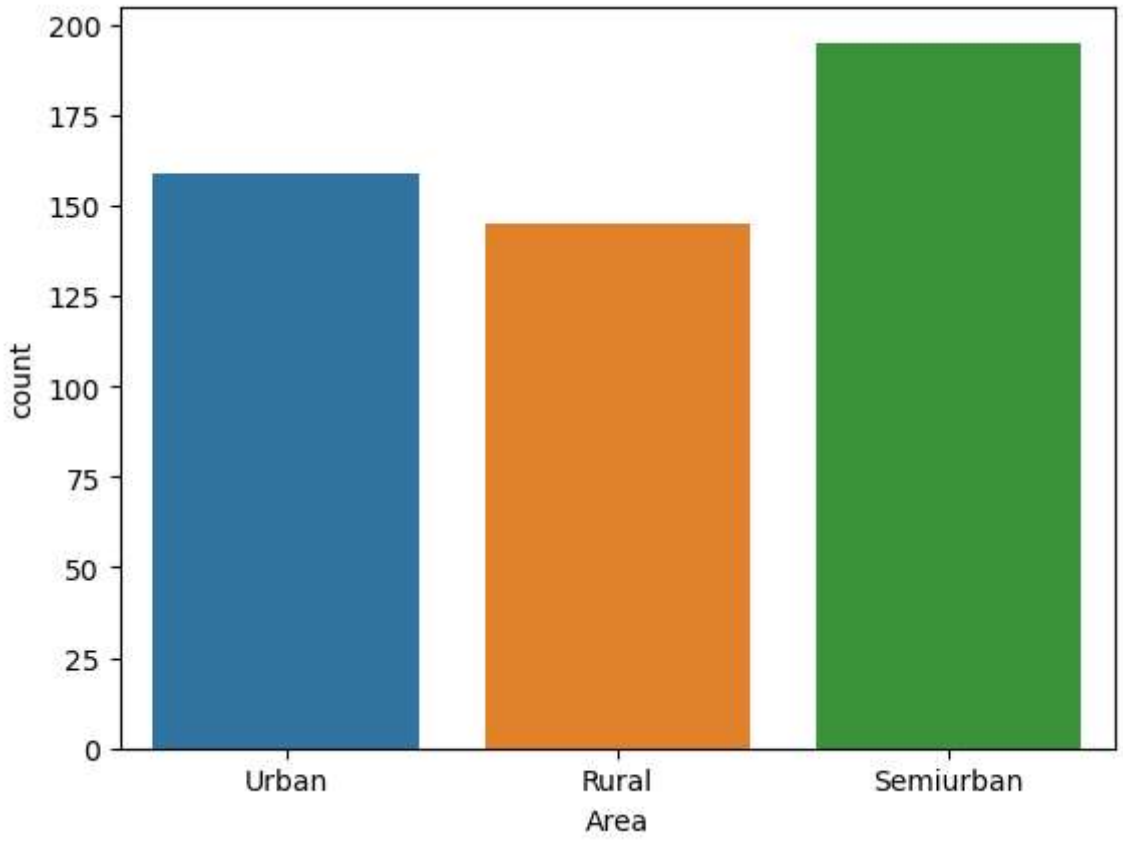
In [100…
```
sns.countplot(x=df['Education']) #more Graduates has loan status as yes
plt.show()
```



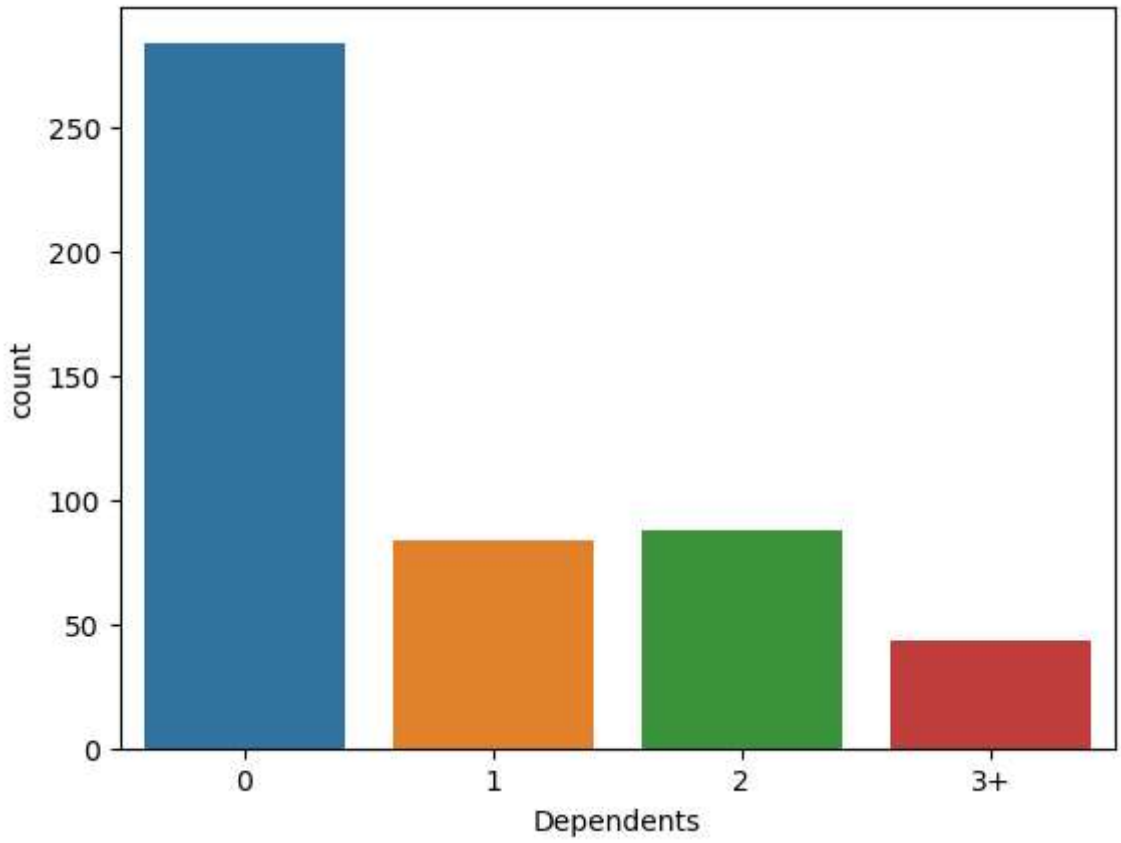
In [101…
```
sns.countplot(x=df['Self_Employed']) # those who are not self employed has loan status
plt.show()
```



In [102…
```
sns.countplot(x=df['Area']) #more semi urban people has loan status and next urban fol
plt.show()
```

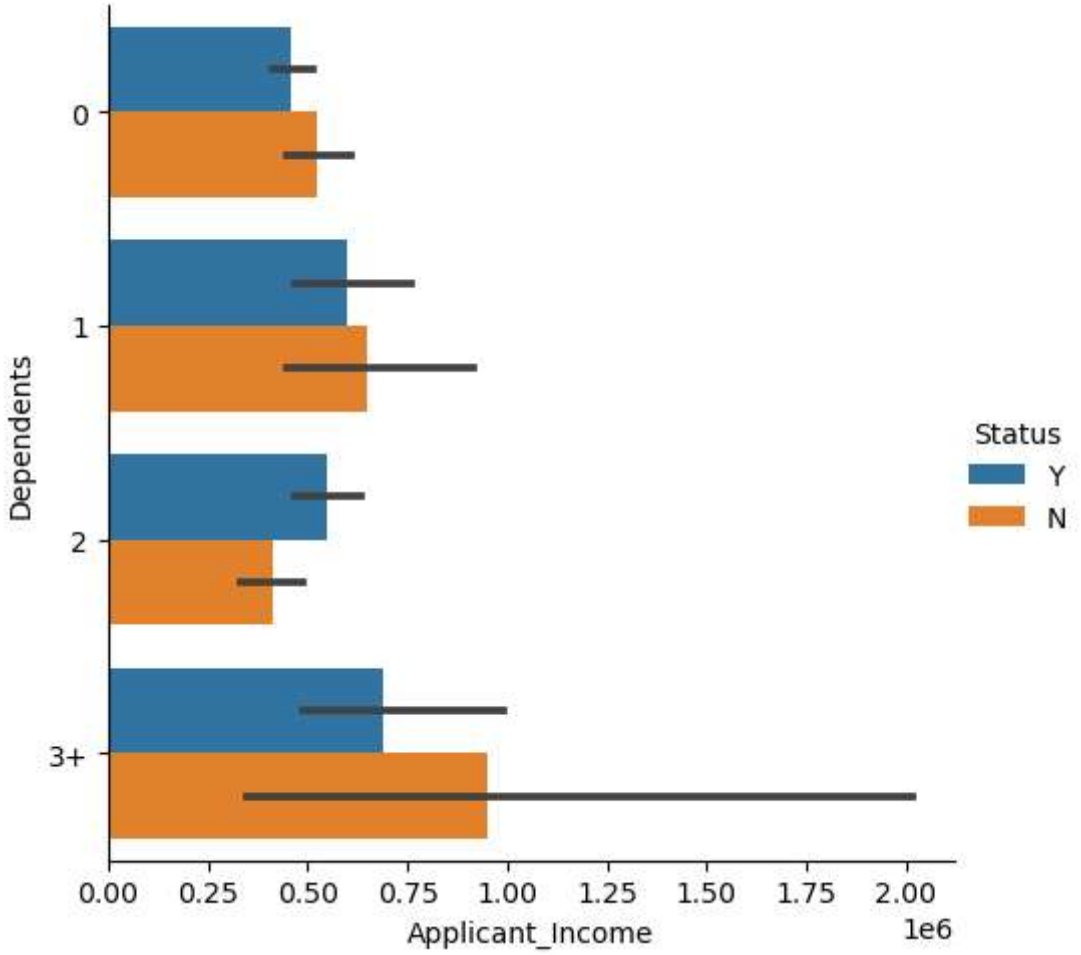


In [103…
```
sns.countplot(x=df['Dependents']) #mostly no dependents for loan status yes
plt.show()
```



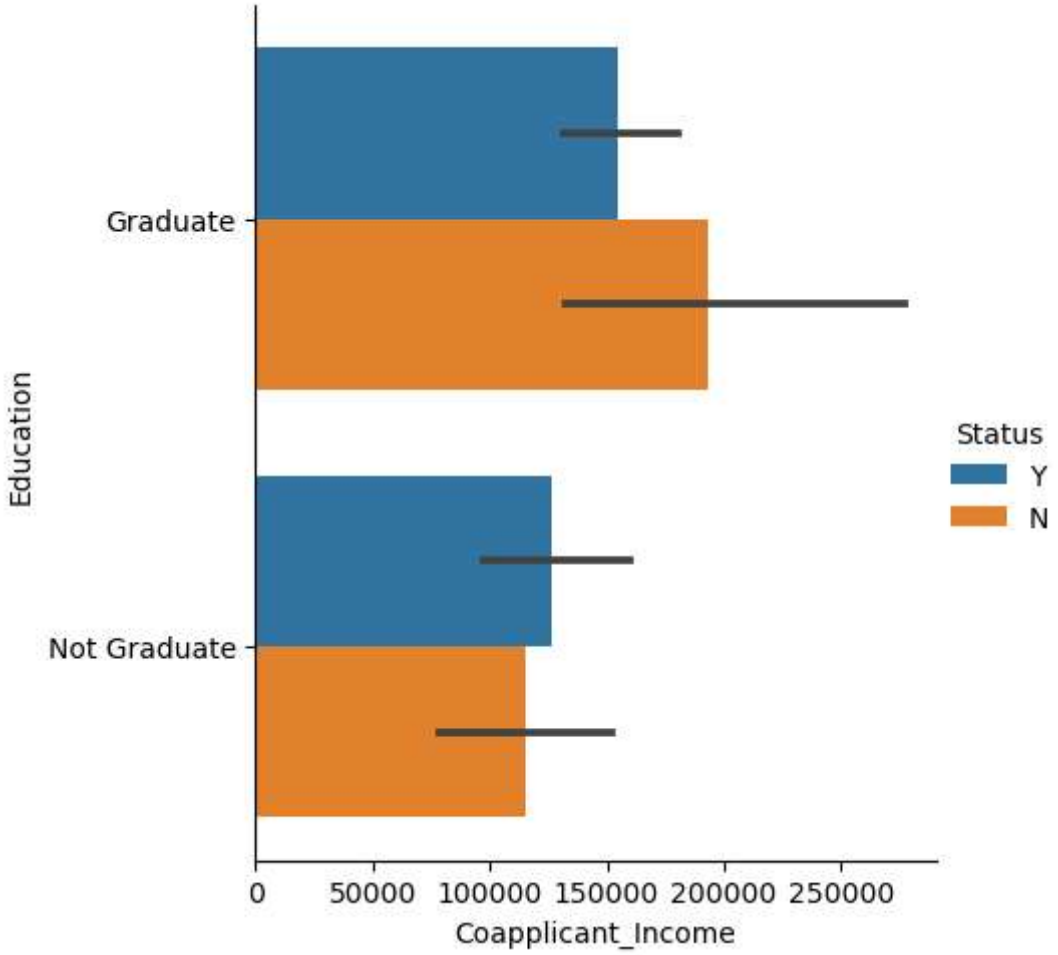
In [104…

```
sns.catplot(x='Applicant_Income',y='Dependents',data=df,kind='bar',hue='Status')# wher
plt.show()
```



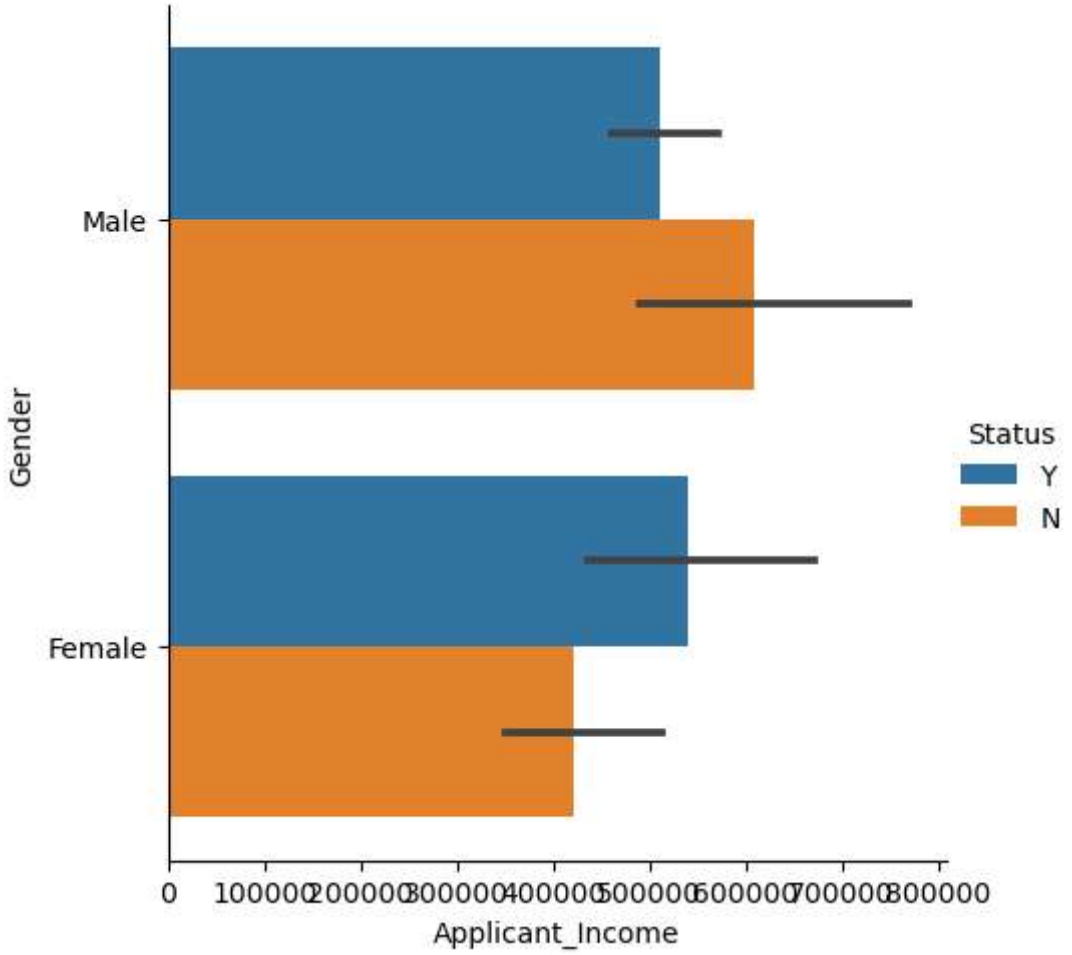
In [105…

```
sns.catplot(x='Coapplicant_Income',y='Education',data=df,kind='bar',hue='Status')# Gr
plt.show()                                                                    #non
```



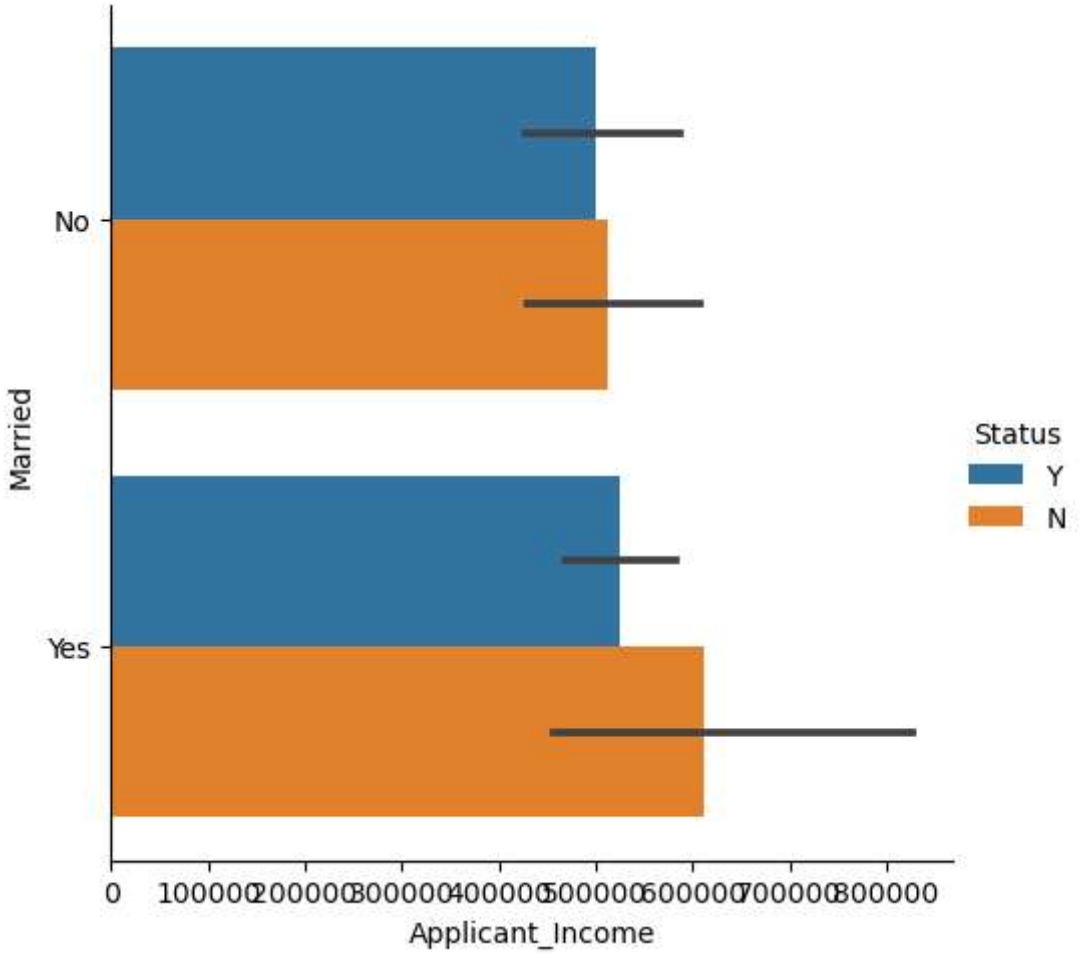
In [106…

```
sns.catplot(x='Applicant_Income',y='Gender',data=df,kind='bar',hue='Status')# males wt
plt.show()                                                                  #more female
```



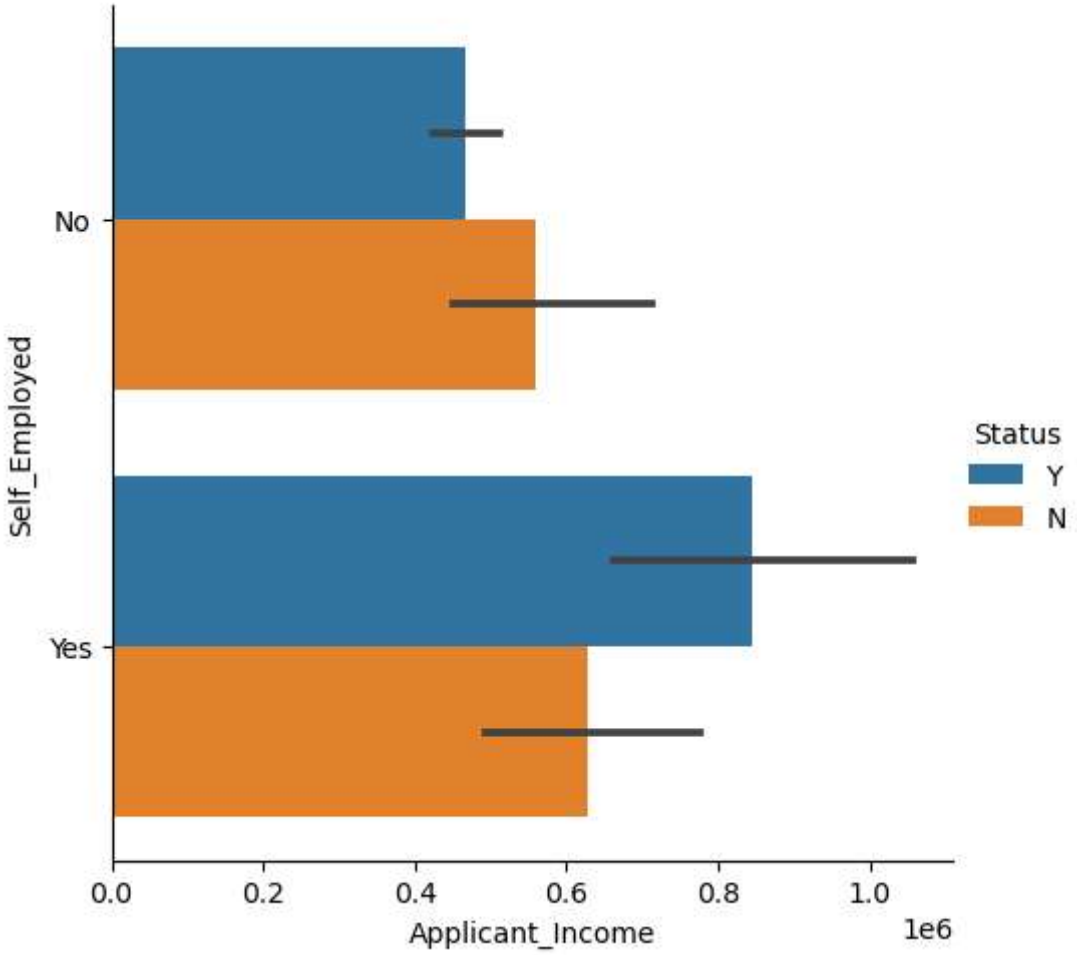
In [107…

```
sns.catplot(x='Applicant_Income',y='Married',data=df,kind='bar',hue='Status')#males wi
plt.show()
```



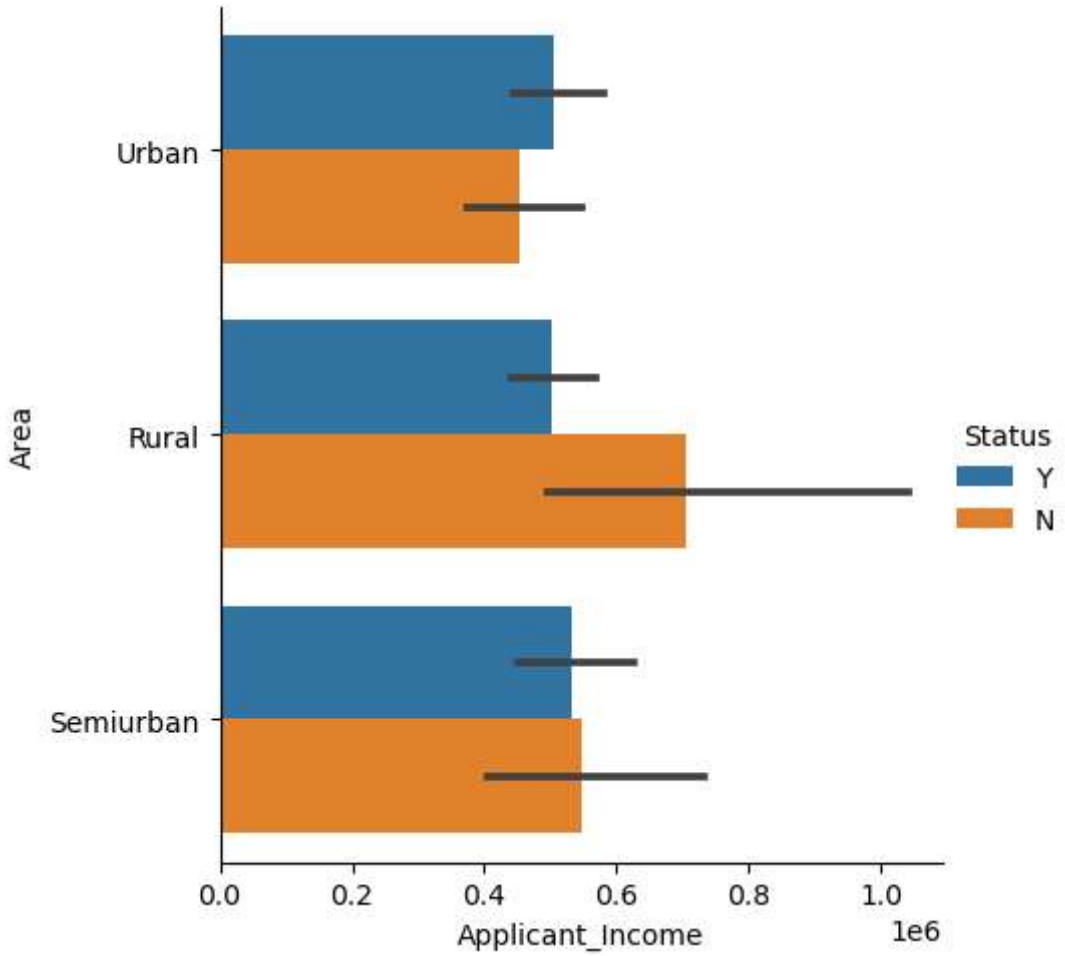
In [108…

```
sns.catplot(x='Applicant_Income',y='Self_Employed',data=df,kind='bar',hue='Status')#se
plt.show()
```



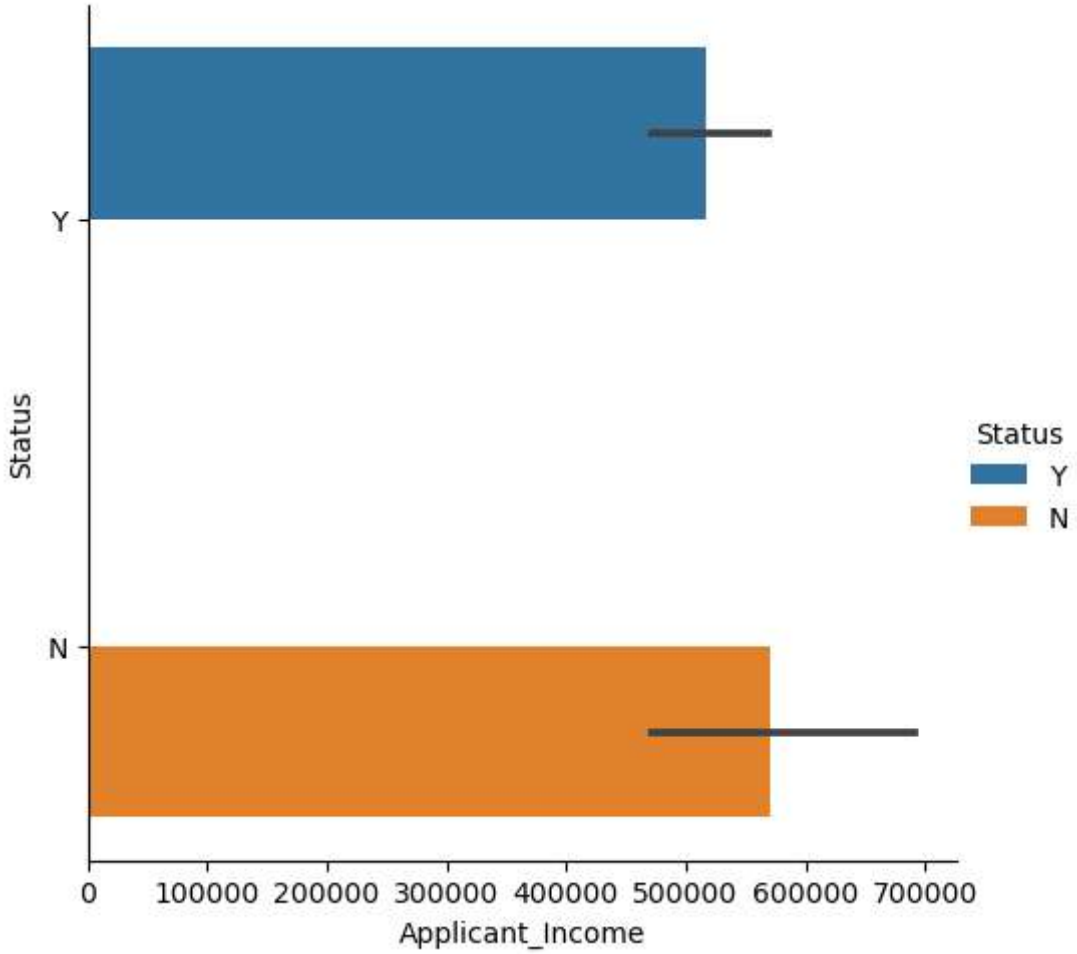
In [109…

```
sns.catplot(x='Applicant_Income',y='Area',data=df,kind='bar',hue='Status') #for urban
plt.show()
```



In [110…

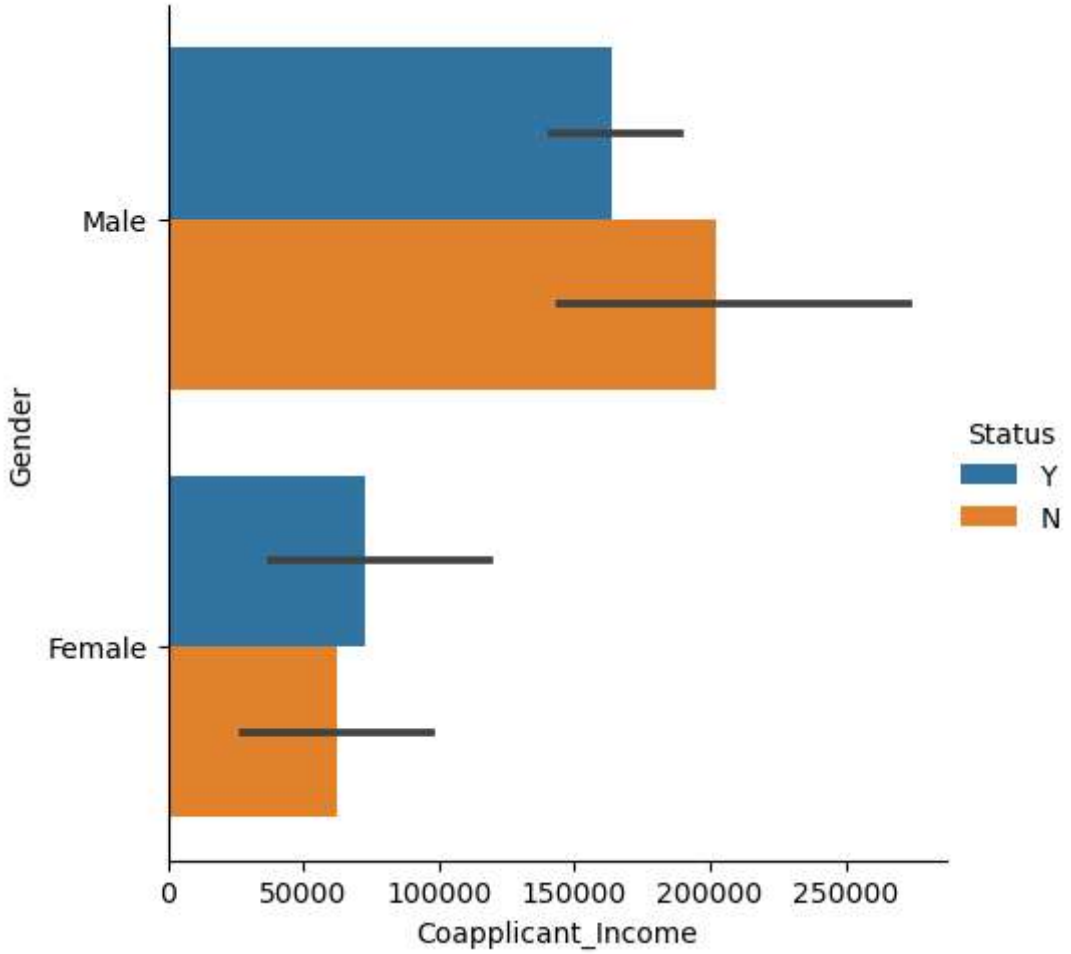
```
sns.catplot(x='Applicant_Income',y='Status',data=df,kind='bar',hue='Status')#the statu
plt.show()                                                                  #and statu
```



In [111…

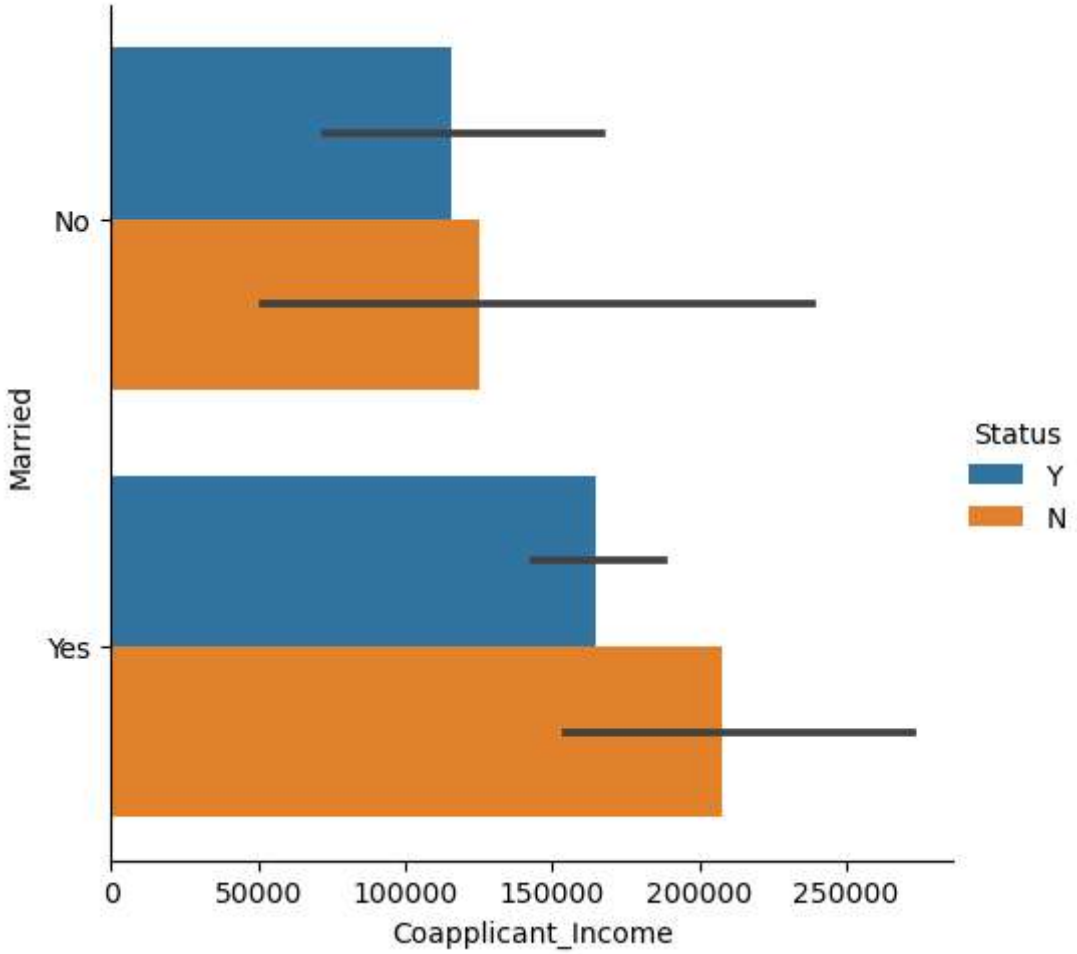
```
sns.catplot(x='Coapplicant_Income',y='Gender',data=df,kind='bar',hue='Status')# the mo

plt.show()                                                                    #females
```



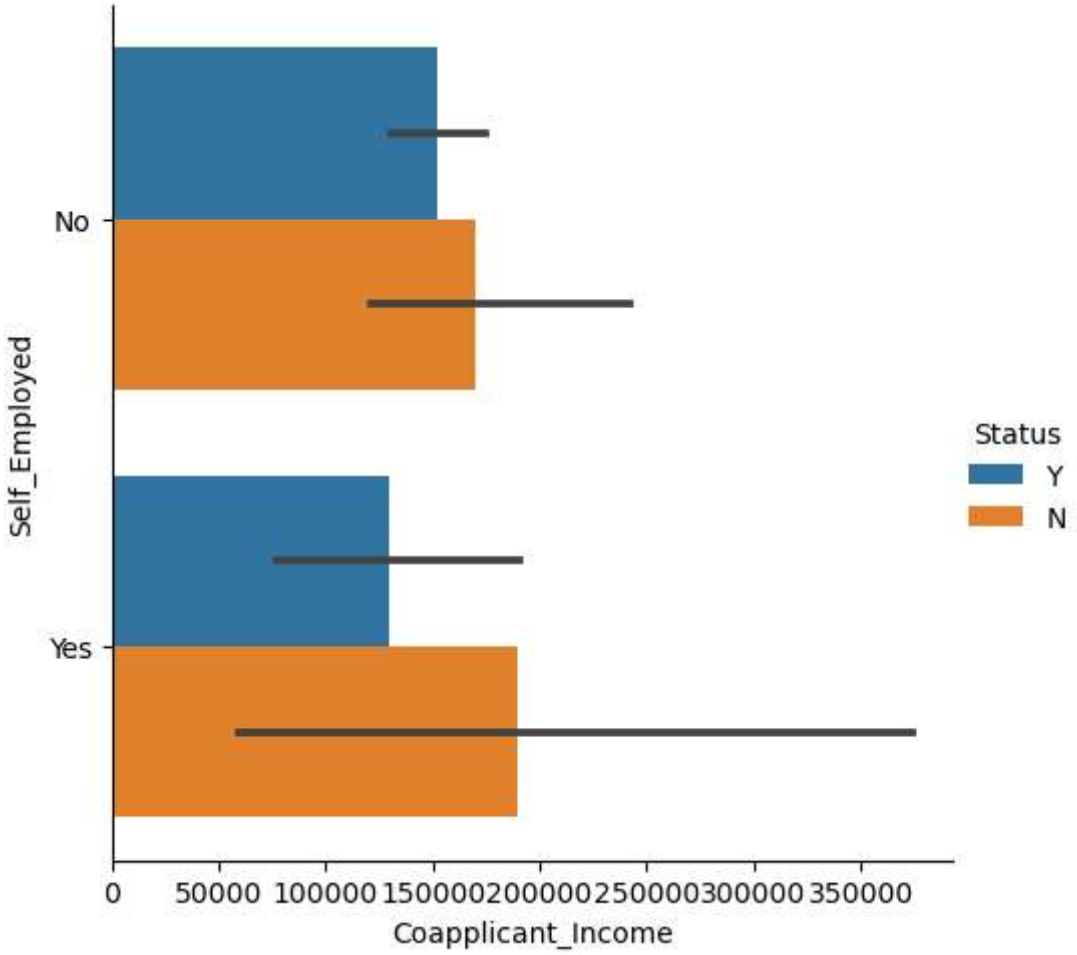
In [112…

```
sns.catplot(x='Coapplicant_Income',y='Married',data=df,kind='bar',hue='Status')# not r
plt.show()                                                                    # marr
```



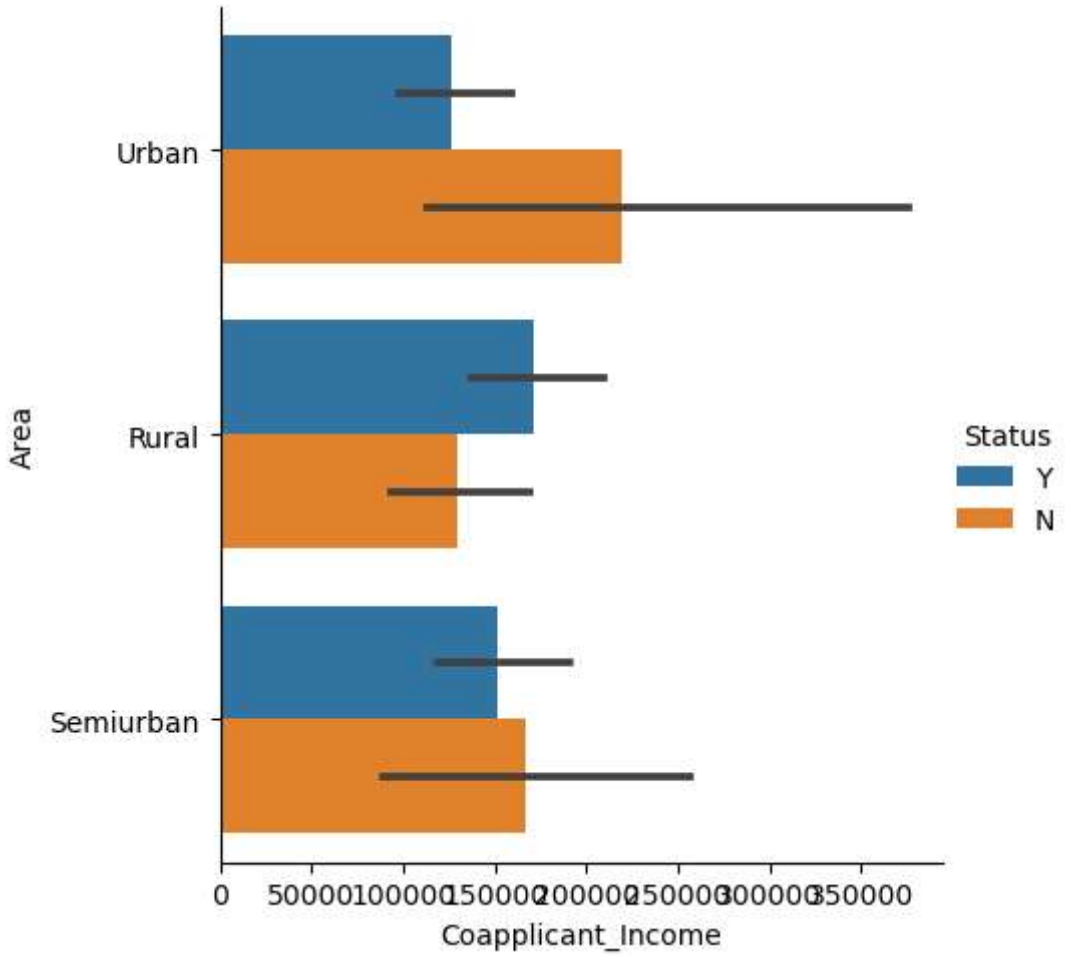
In [113…

```
sns.catplot(x='Coapplicant_Income',y='Self_Employed',data=df,kind='bar',hue='Status')#
plt.show()                                                                    #coc
```

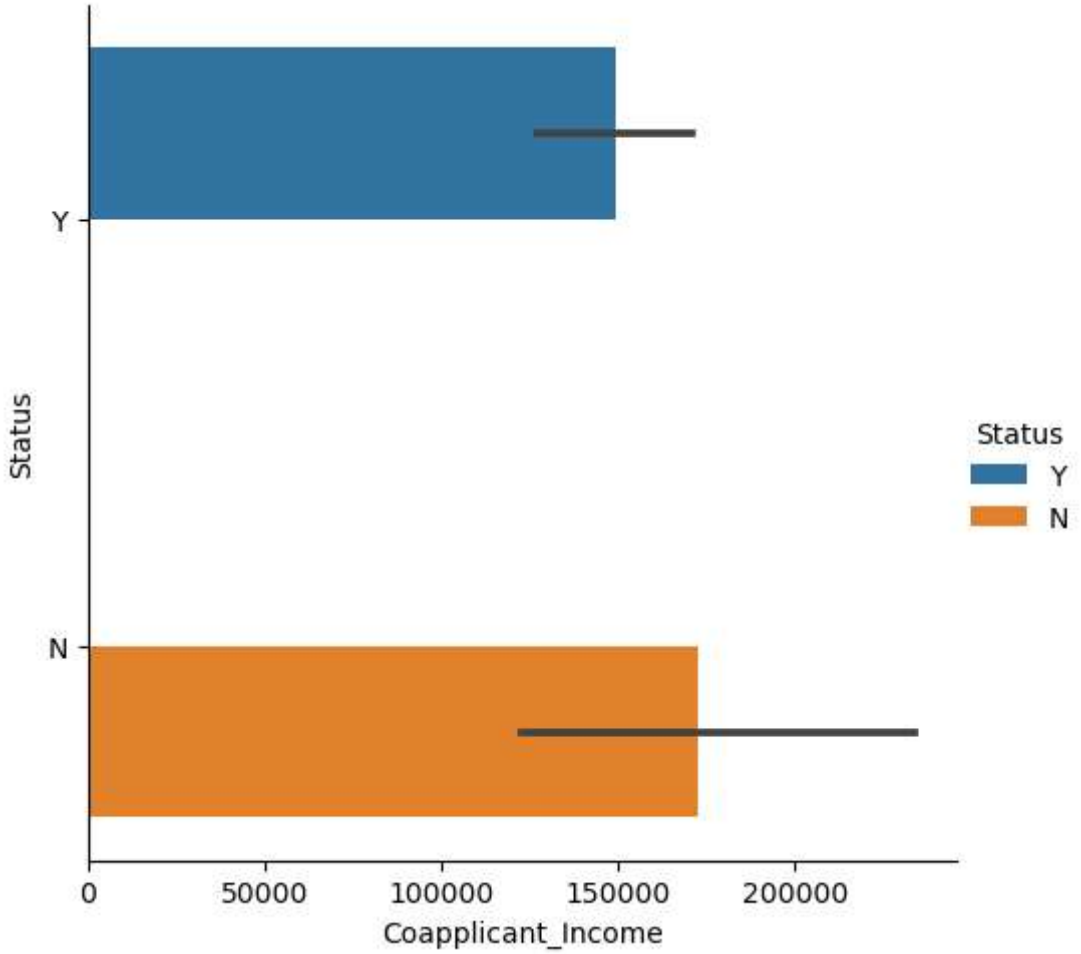


In [114…

```
sns.catplot(x='Coapplicant_Income',y='Area',data=df,kind='bar',hue='Status')#urban wi
plt.show()                                                                  #semi urb
                                                                             #rural w
```

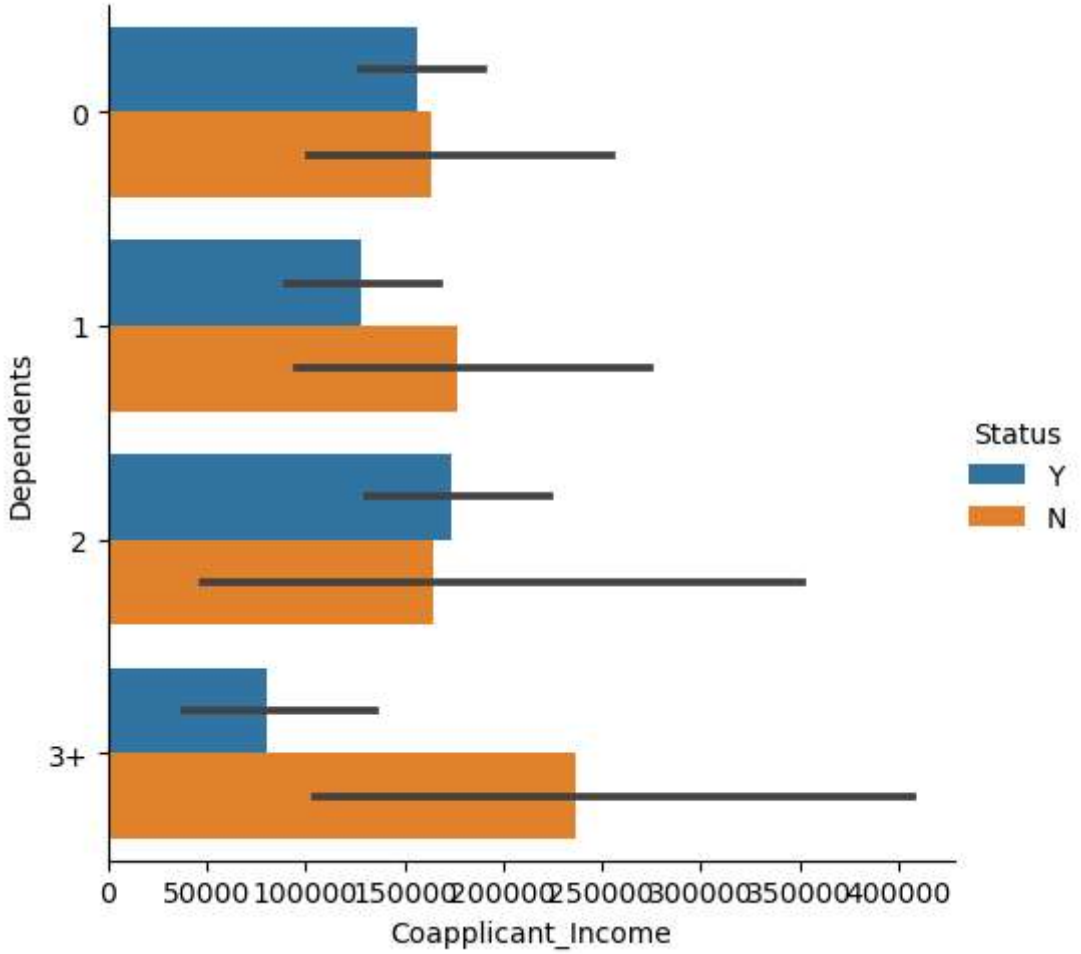


In [115…
```
sns.catplot(x='Coapplicant_Income',y='Status',data=df,kind='bar',hue='Status')#co appl
plt.show()                                                                    #co applicant t
```



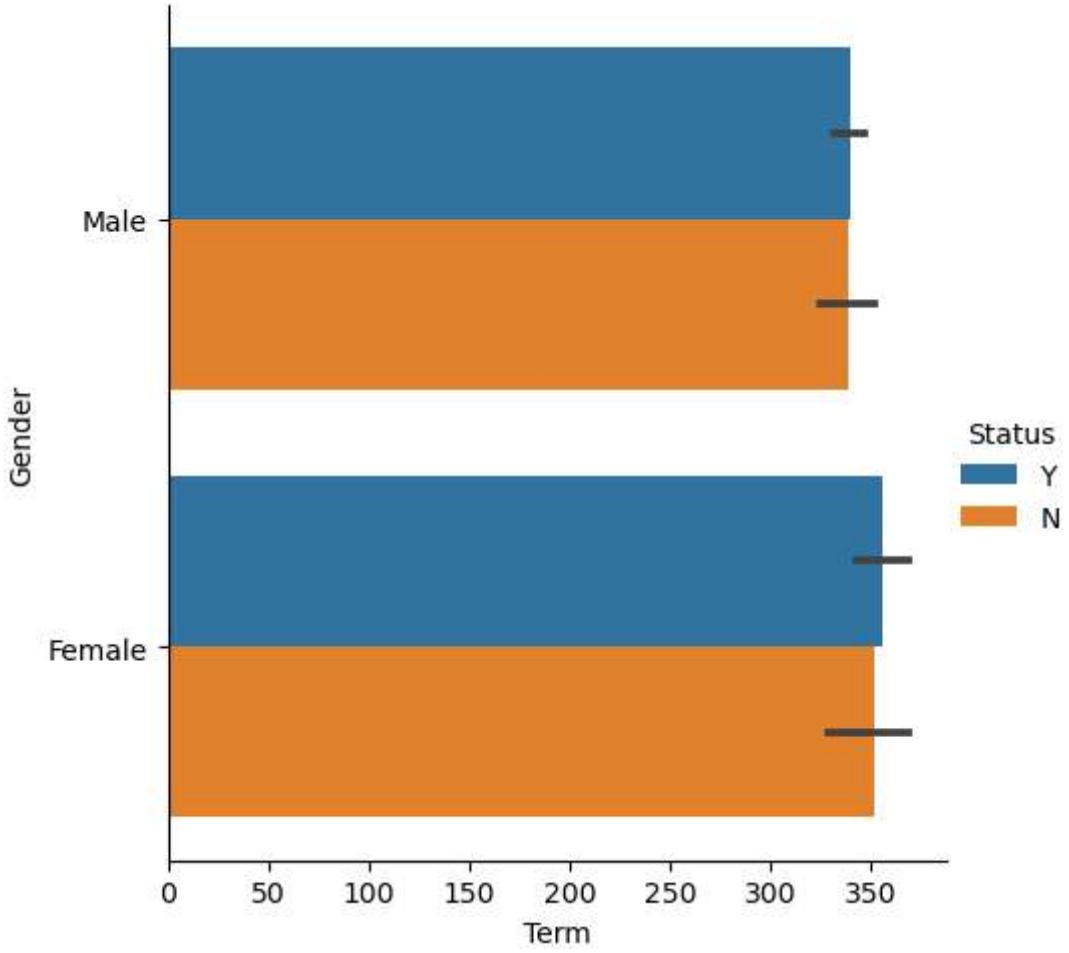
In [116…

```
sns.catplot(x='Coapplicant_Income',y='Dependents',data=df,kind='bar',hue='Status')#if
plt.show()                                                                        #if
                                                                                  # ij
```



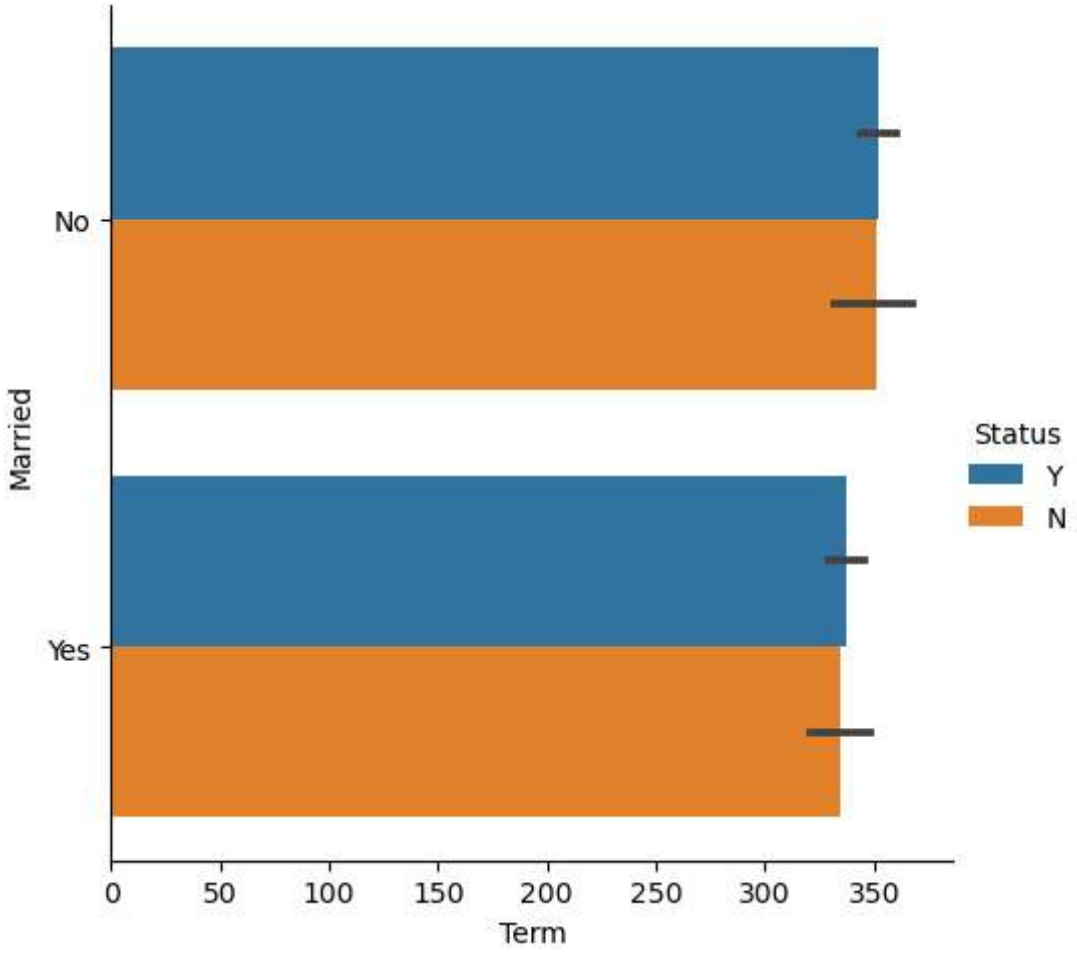
In [117…

```
sns.catplot(x='Term',y='Gender',data=df,kind='bar',hue='Status') #male with term more
plt.show()                                                      #female with 350 has
```



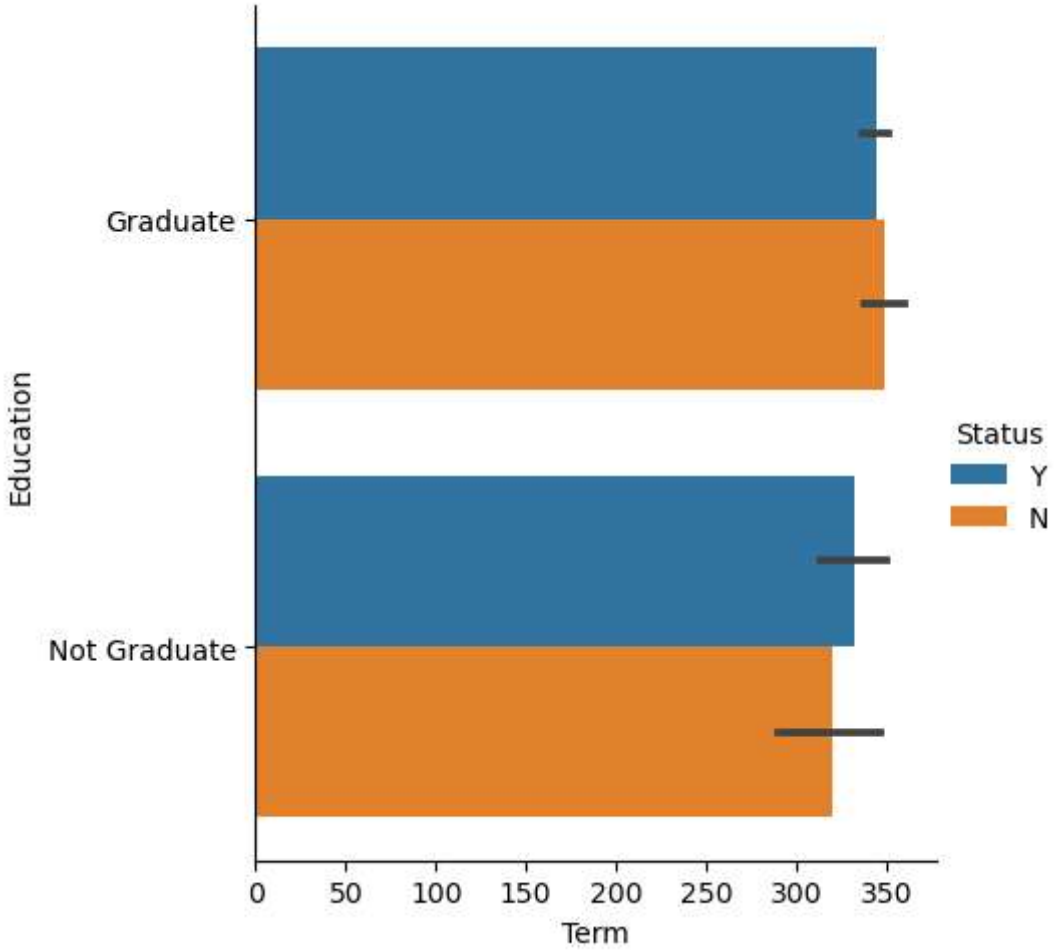
In [118…

```
sns.catplot(x='Term',y='Married',data=df,kind='bar',hue='Status')#not married with ter
plt.show()                                                      #married with term n
```



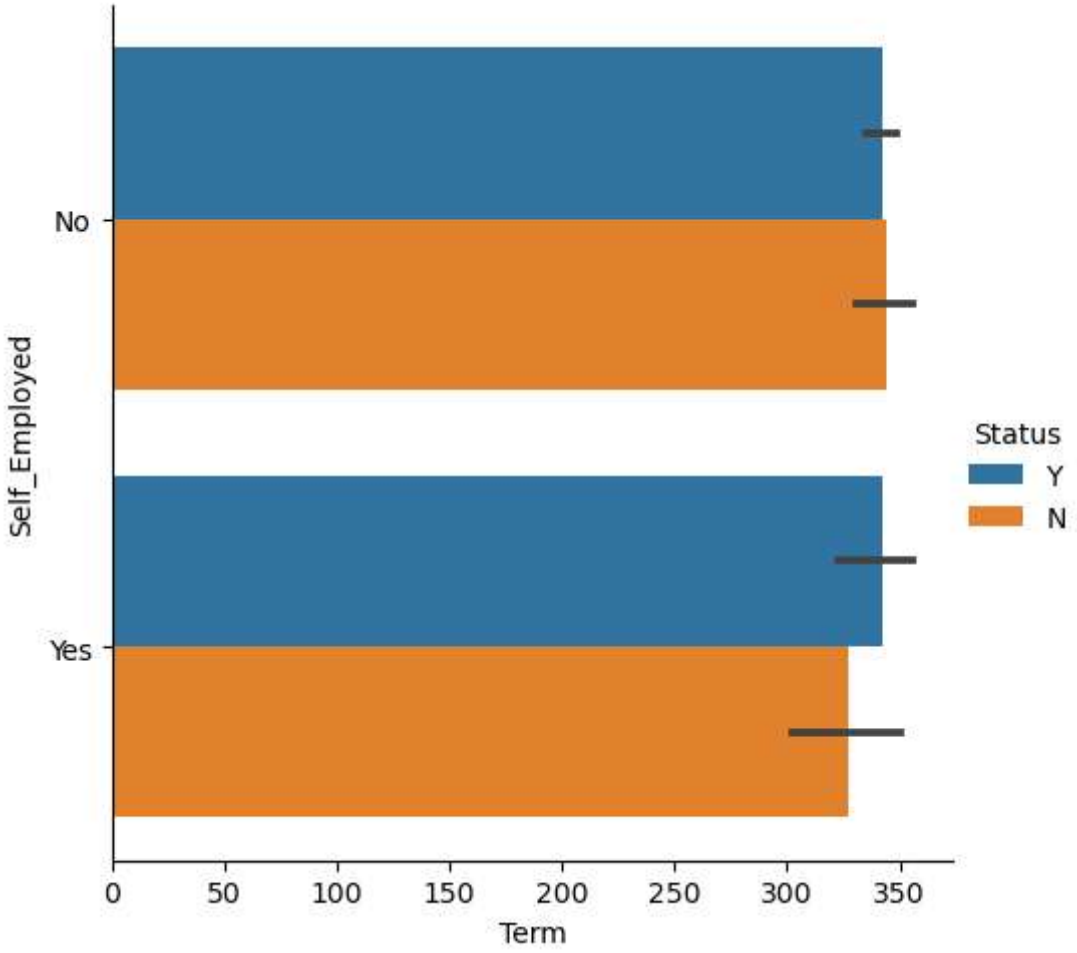
In [119…

```
sns.catplot(x='Term',y='Education',data=df,kind='bar',hue='Status')#Graduates with ter
plt.show()                                                          #Non graduates wit
```



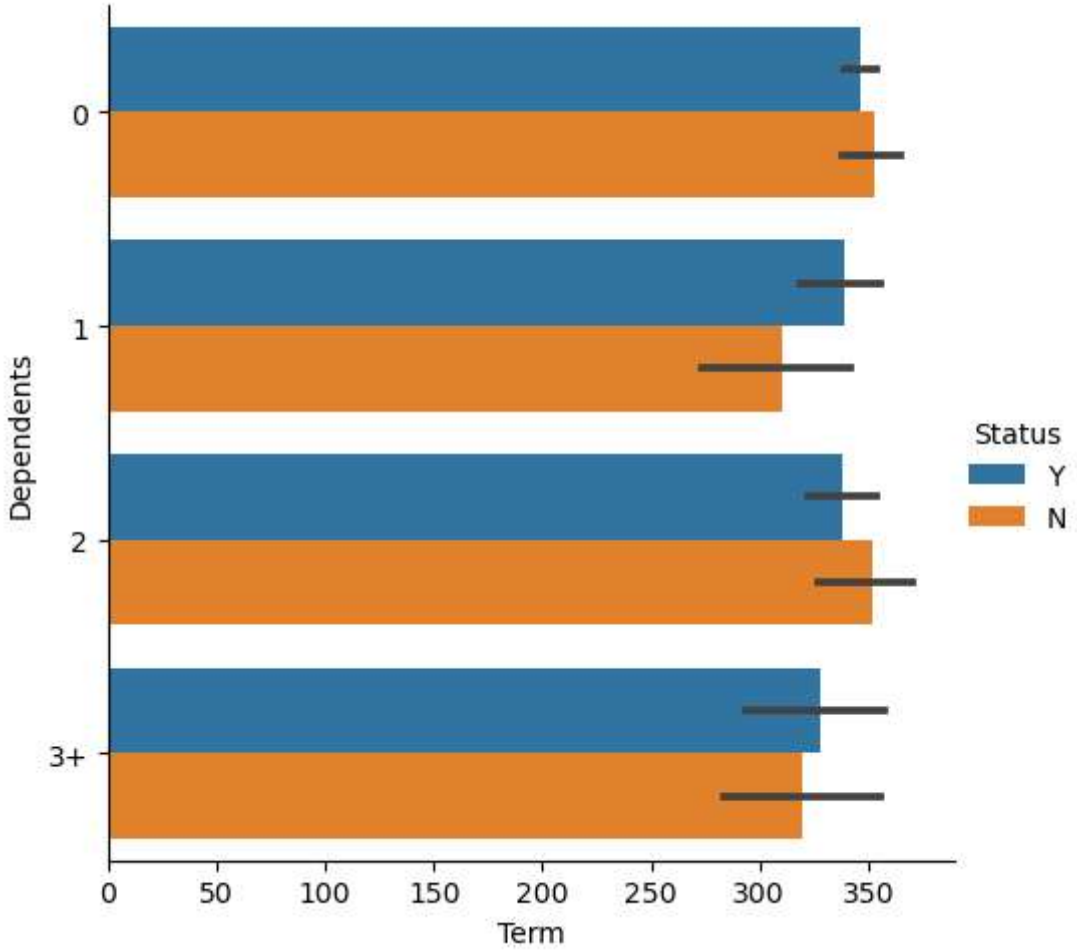
In [120…

```
sns.catplot(x='Term',y='Self_Employed',data=df,kind='bar',hue='Status')# notself emplo
plt.show()                                                              #self employe
```



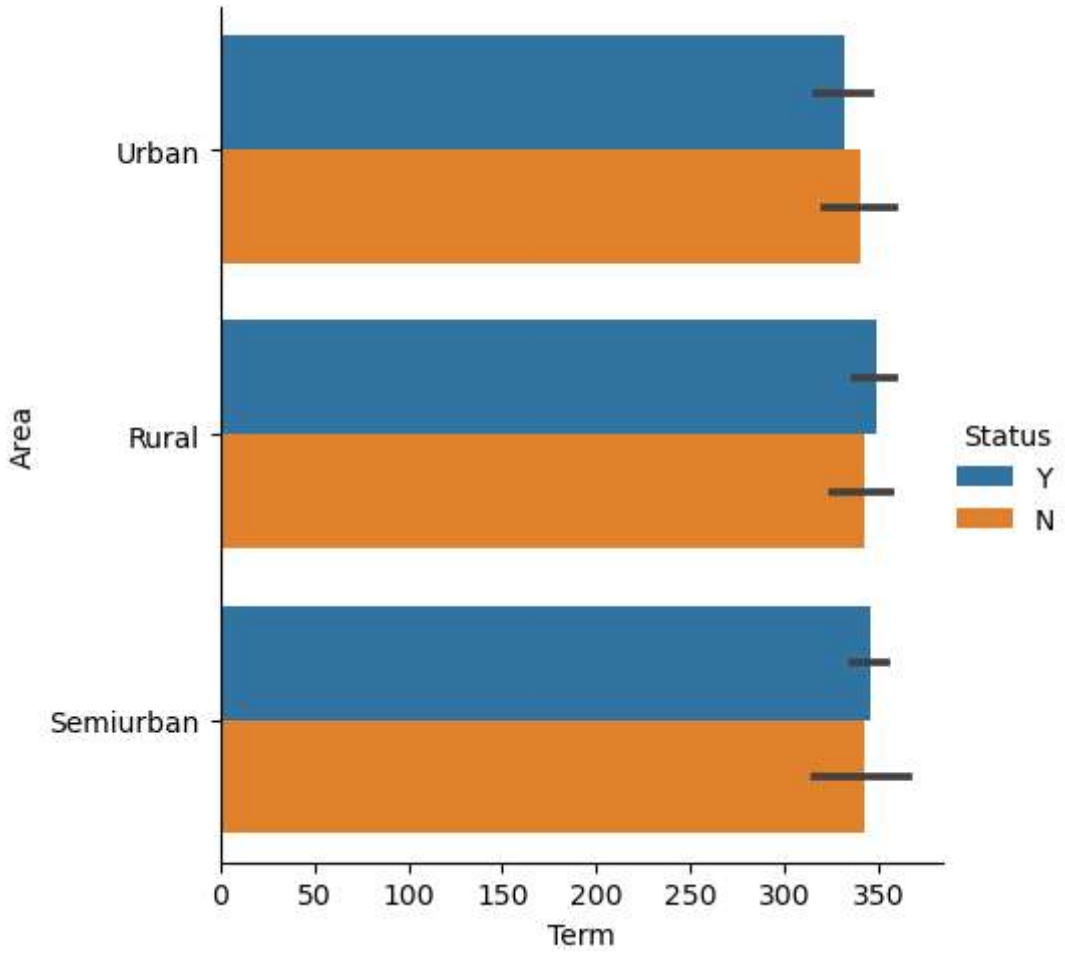
In [121…

```
sns.catplot(x='Term',y='Dependents',data=df,kind='bar',hue='Status')#all dependents wi
plt.show()
```



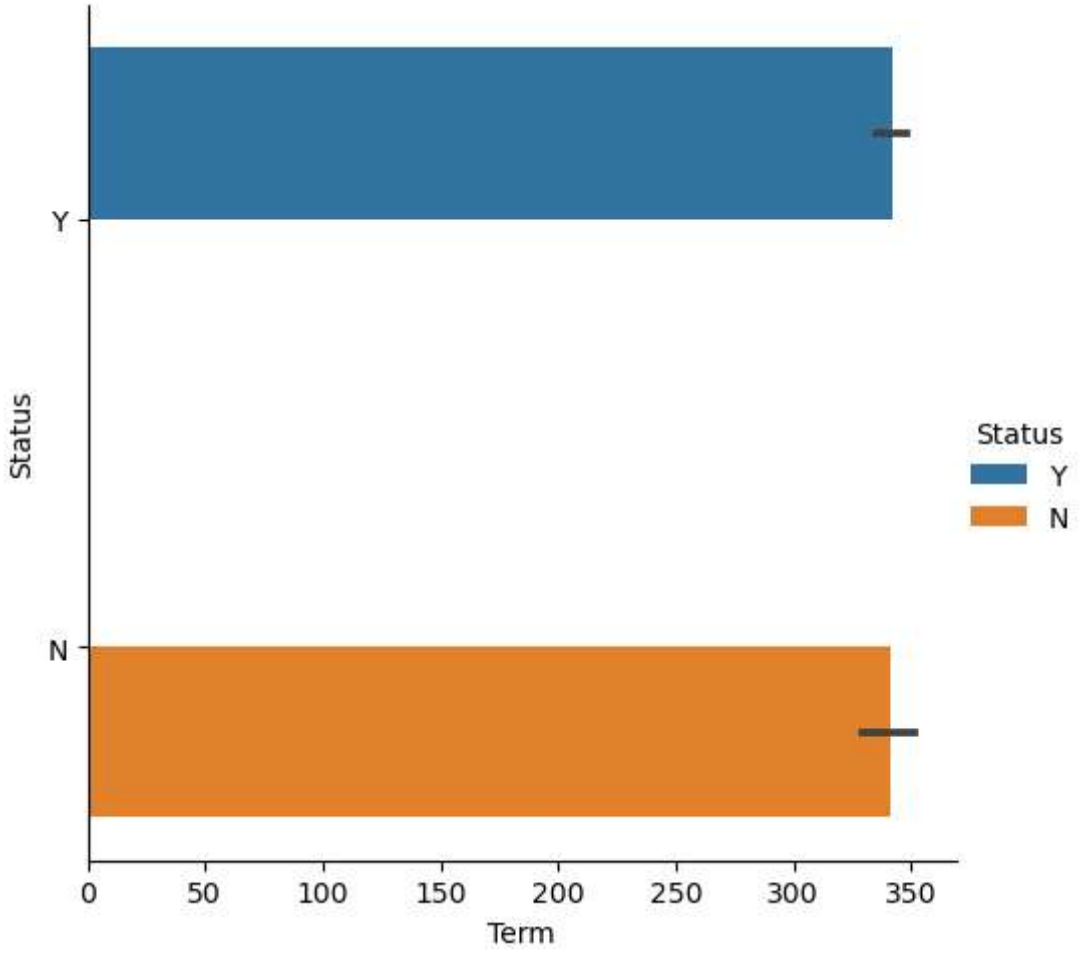
In [122…

```
sns.catplot(x='Term',y='Area',data=df,kind='bar',hue='Status')#all areas with more tha
plt.show()
```



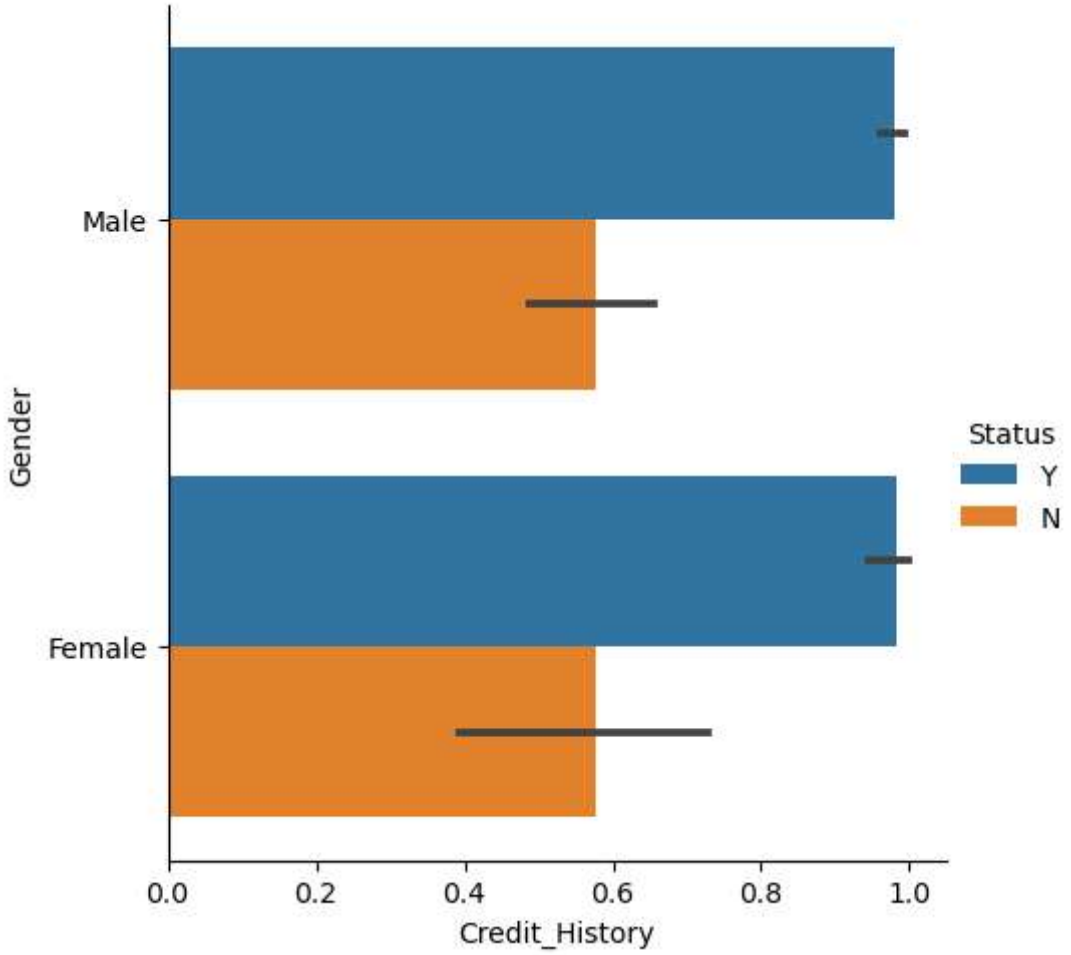
In [123…

```
sns.catplot(x='Term',y='Status',data=df,kind='bar',hue='Status')#with term 350 has mor
plt.show()
```



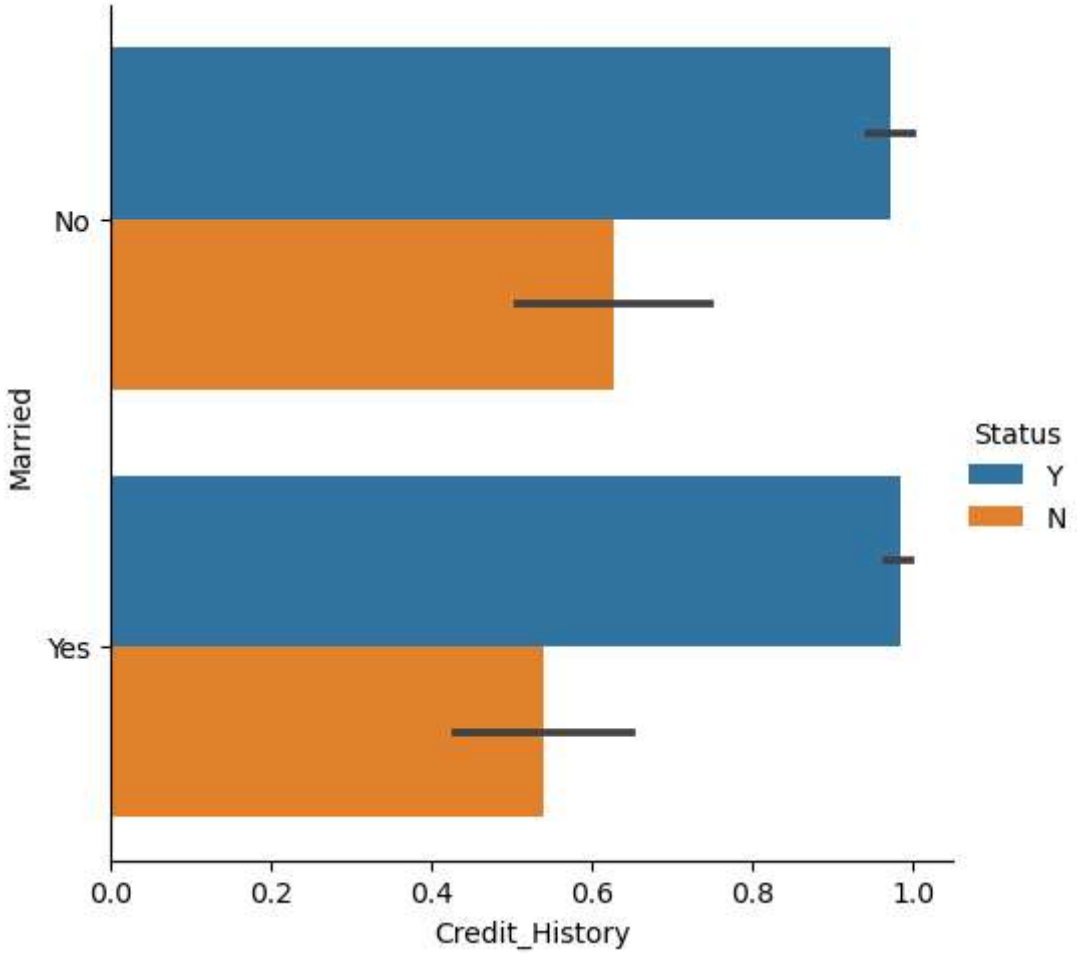
In [124…

```
sns.catplot(x='Credit_History',y='Gender',data=df,kind='bar',hue='Status') #males with
plt.show()
```



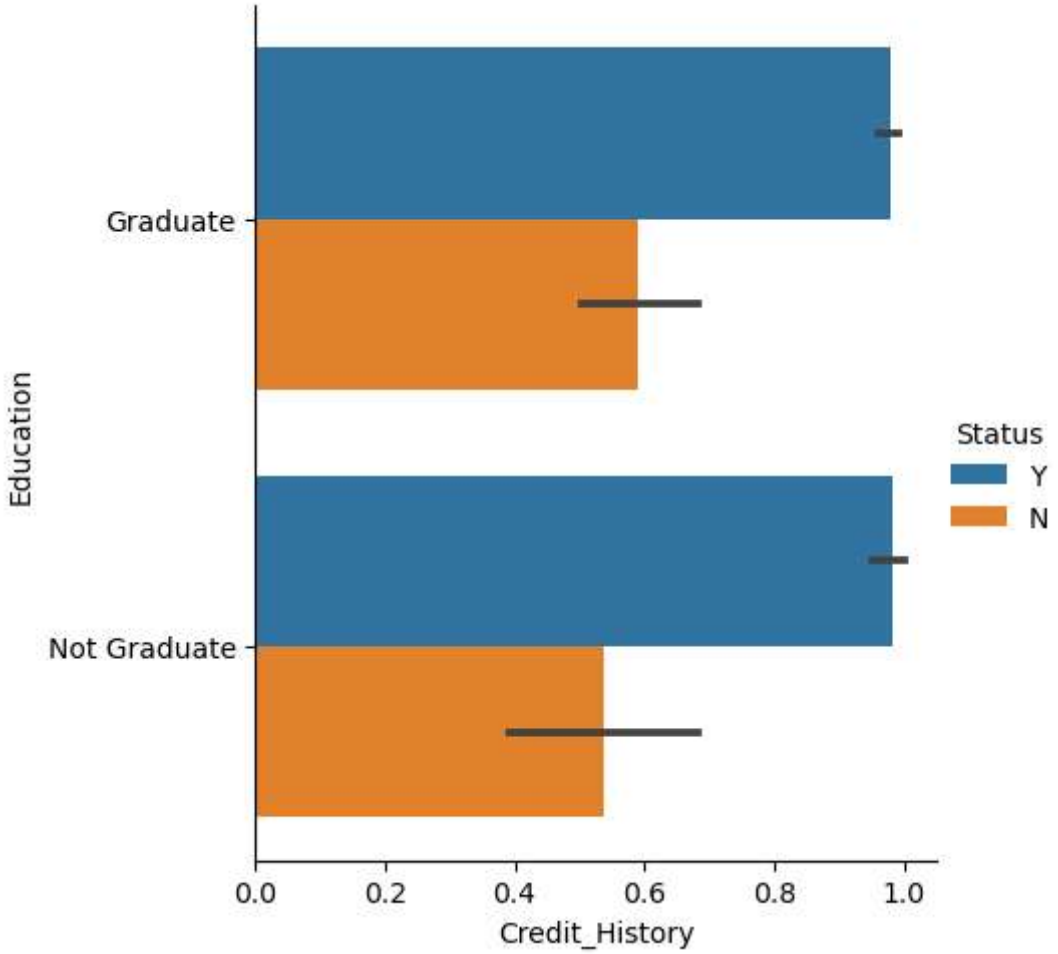
In [125…

```
sns.catplot(x='Credit_History',y='Married',data=df,kind='bar',hue='Status')# with no m
plt.show()                                                                  #with married and
```



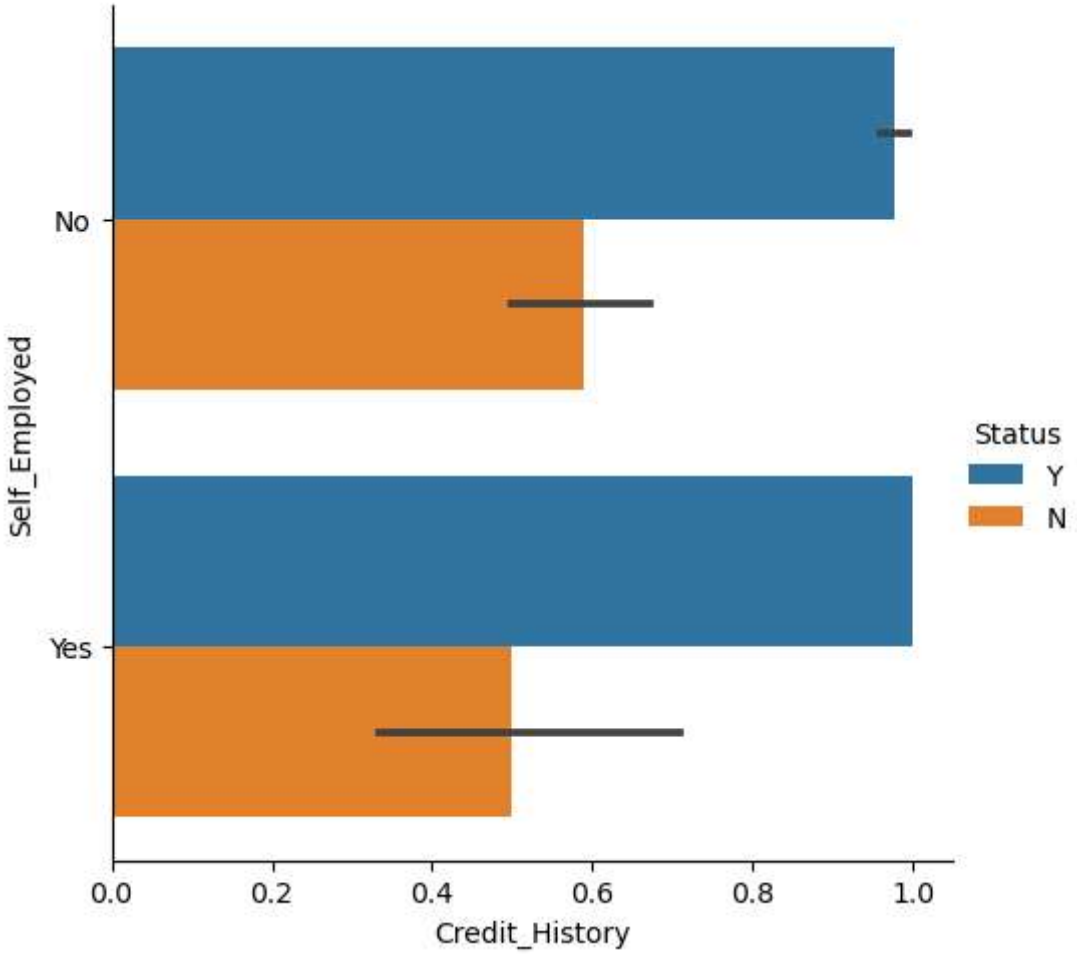
In [126…

```
sns.catplot(x='Credit_History',y='Education',data=df,kind='bar',hue='Status')#Graduate
plt.show()
```



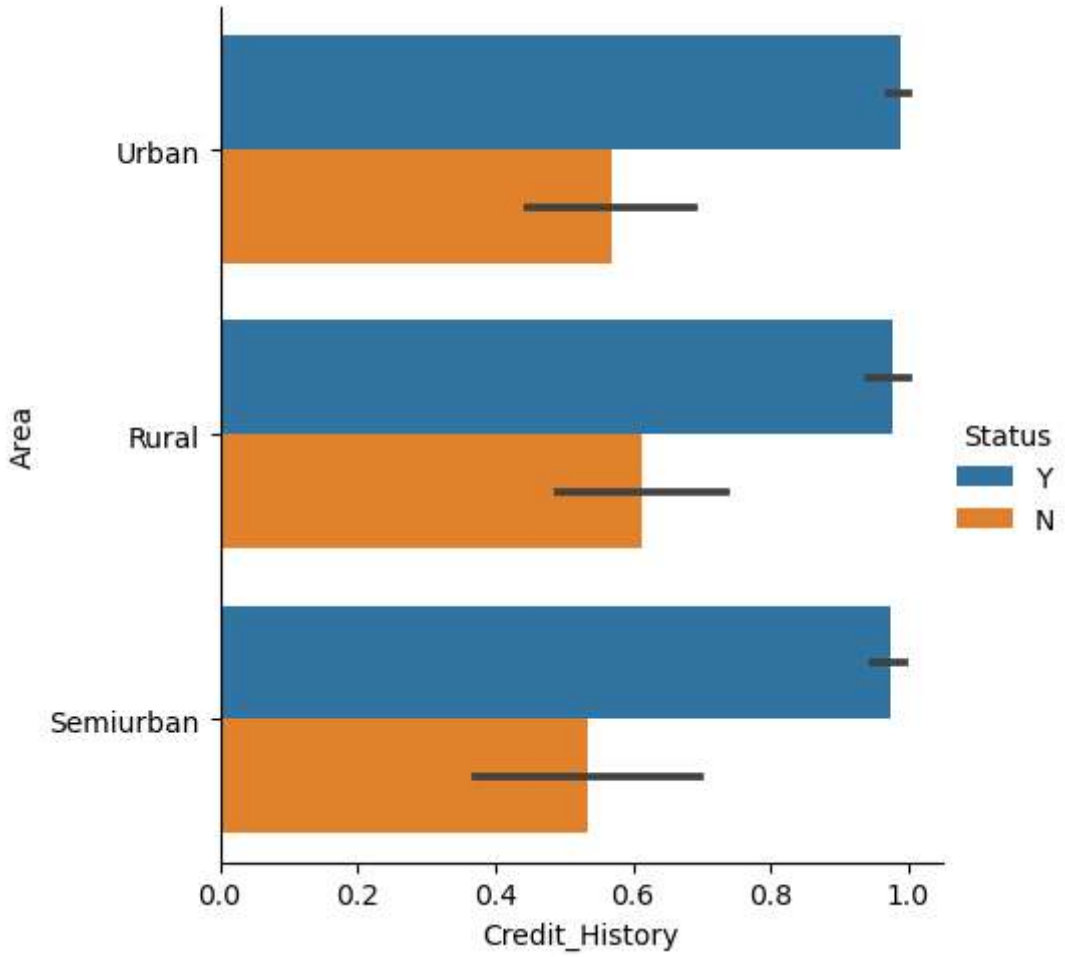
In [127…

```
sns.catplot(x='Credit_History',y='Self_Employed',data=df,kind='bar',hue='Status')#Sel
plt.show()
```



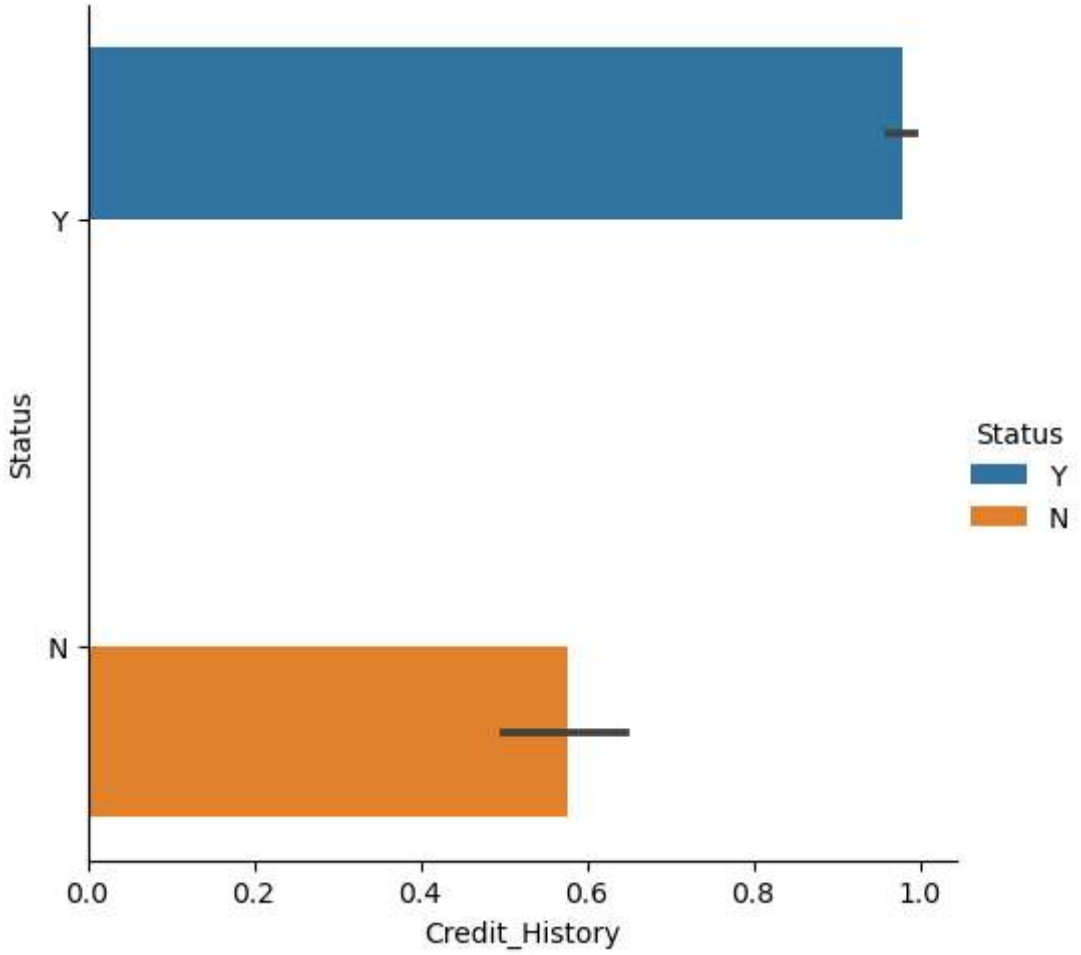
In [128…

```
sns.catplot(x='Credit_History',y='Area',data=df,kind='bar',hue='Status')#urban ,semiur
plt.show()
```

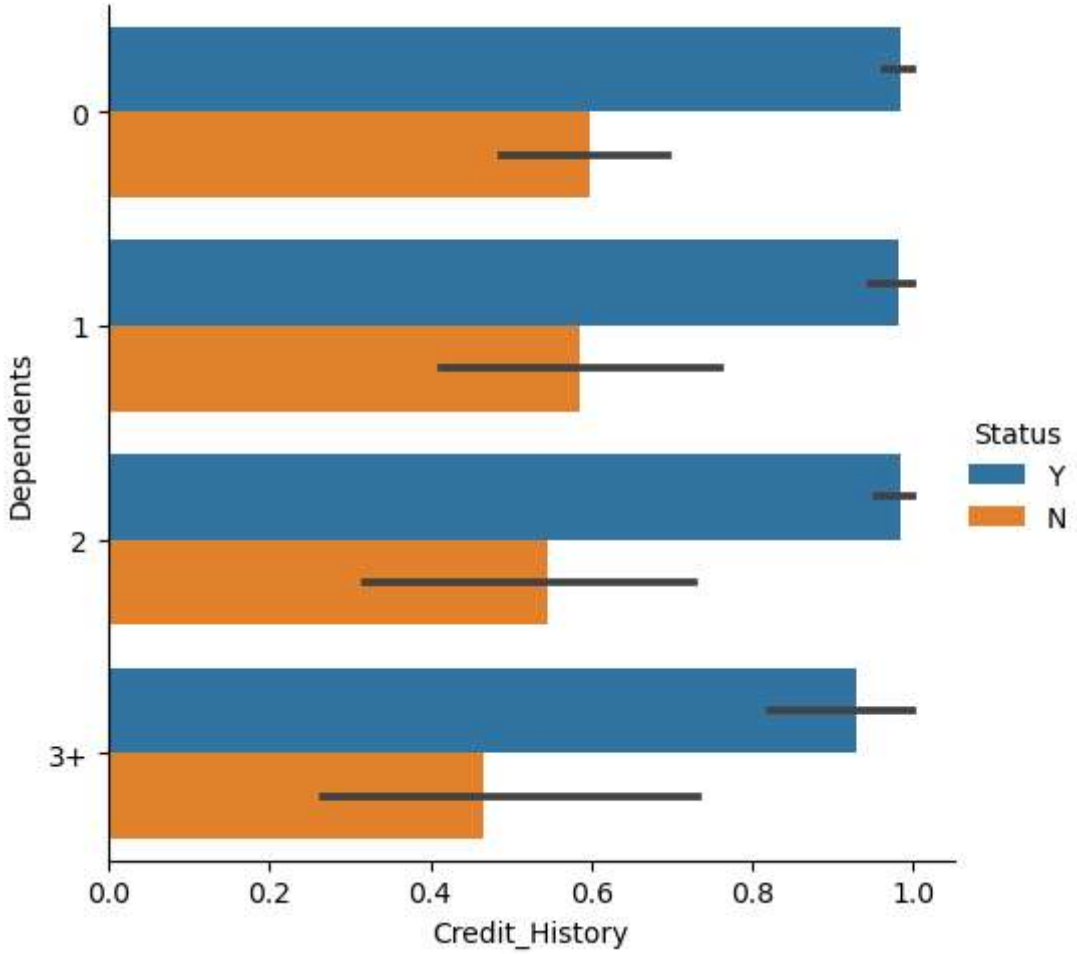


In [129…

```
sns.catplot(x='Credit_History',y='Status',data=df,kind='bar',hue='Status')#credit hist
plt.show()
```

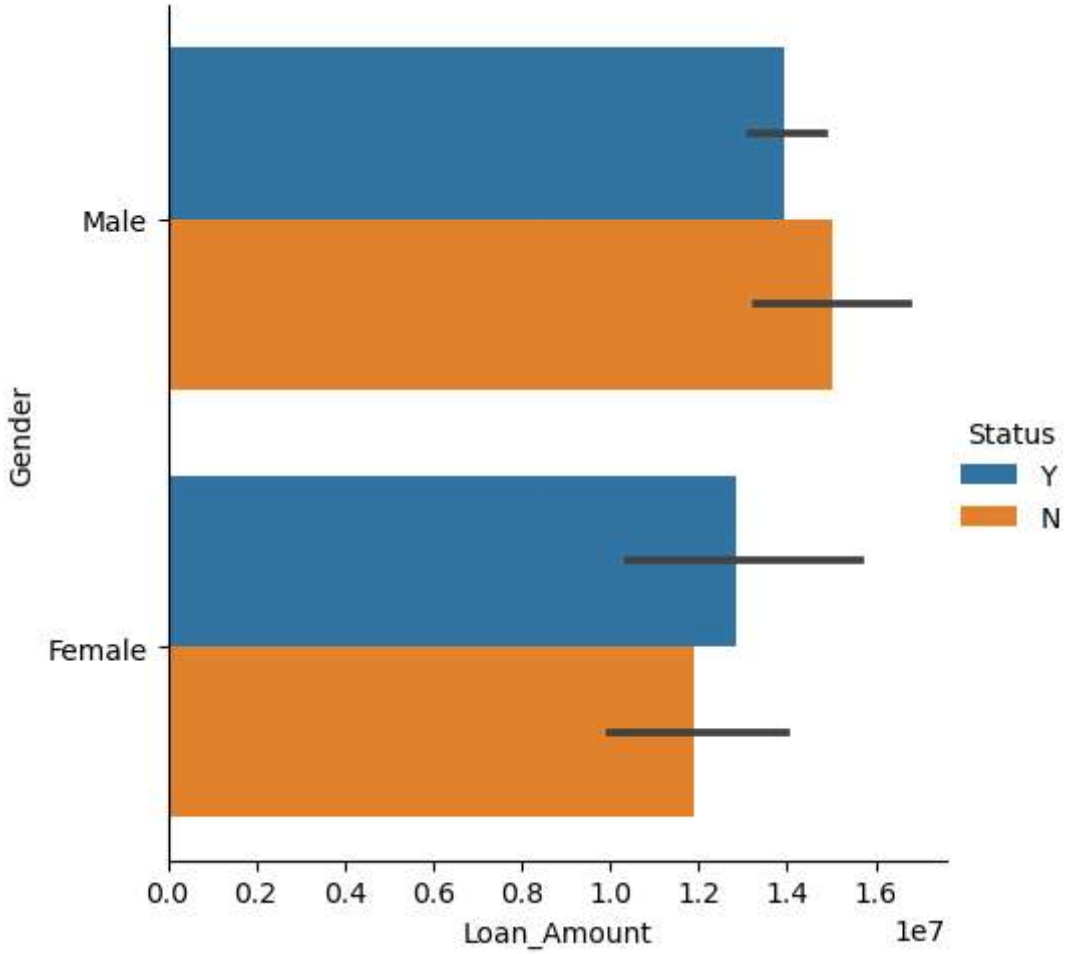


In [130…
```
sns.catplot(x='Credit_History',y='Dependents',data=df,kind='bar',hue='Status')#for 1.6
plt.show()
```



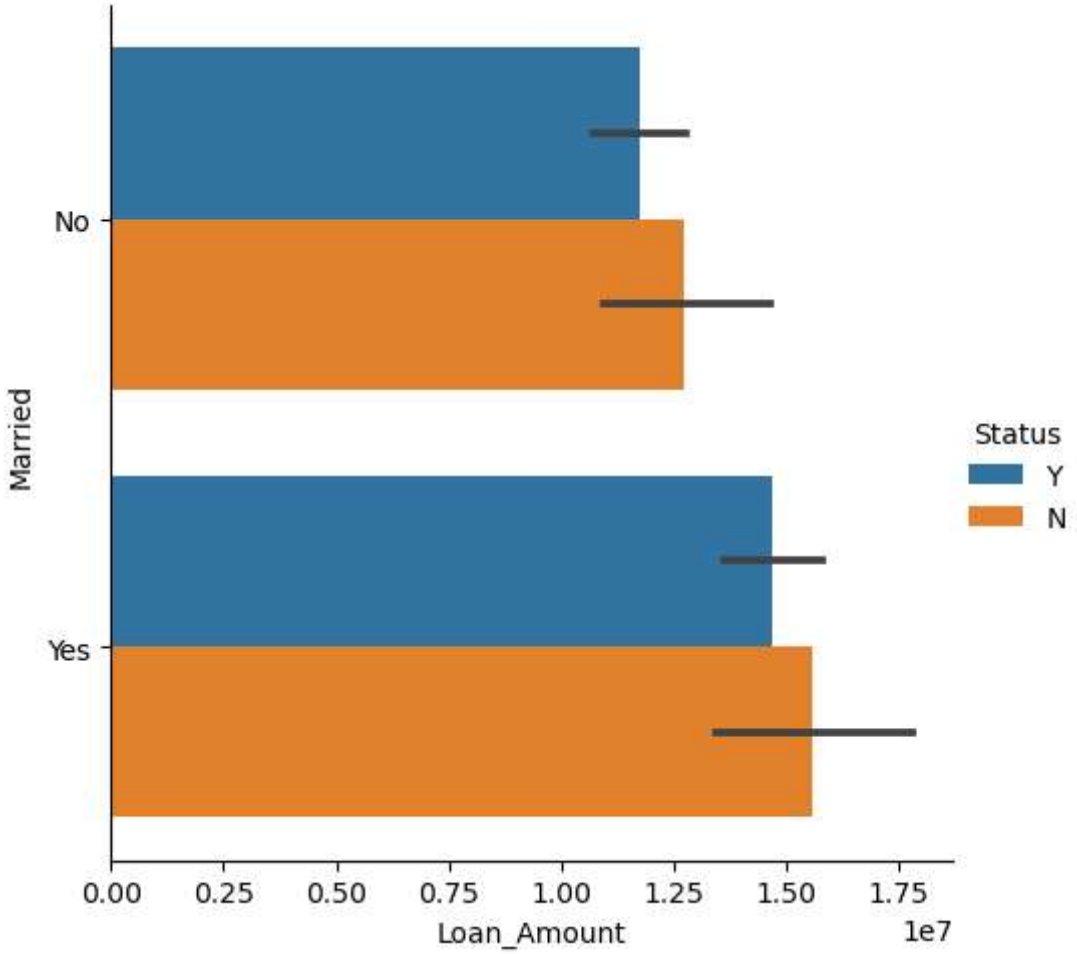
In [131…

```
sns.catplot(x='Loan_Amount',y='Gender',data=df,kind='bar',hue='Status')
plt.show()
```



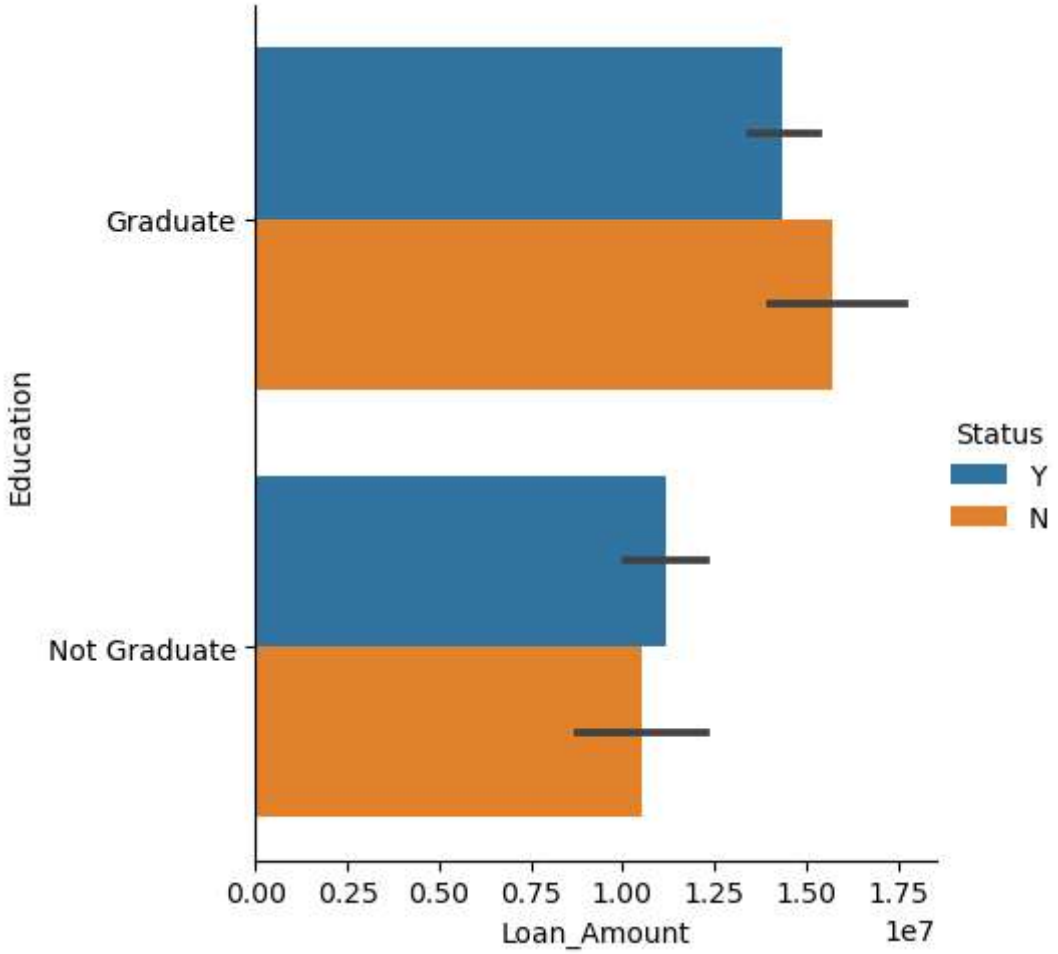
In [132…

```
sns.catplot(x='Loan_Amount',y='Married',data=df,kind='bar',hue='Status')#married with
plt.show()                                                              # Notmarried w
```



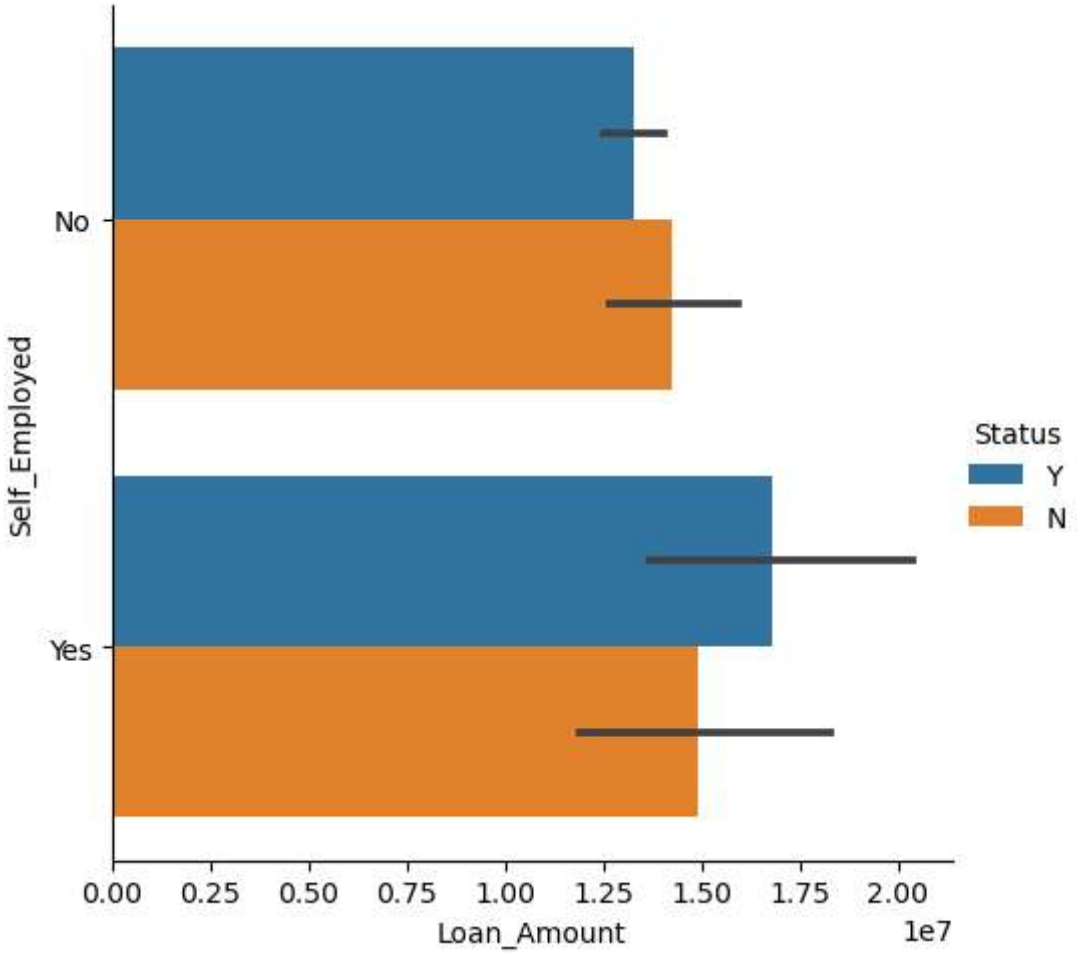
In [133…

```
sns.catplot(x='Loan_Amount',y='Education',data=df,kind='bar',hue='Status')#Graduates v
plt.show()                                                                #Non Graduates
```

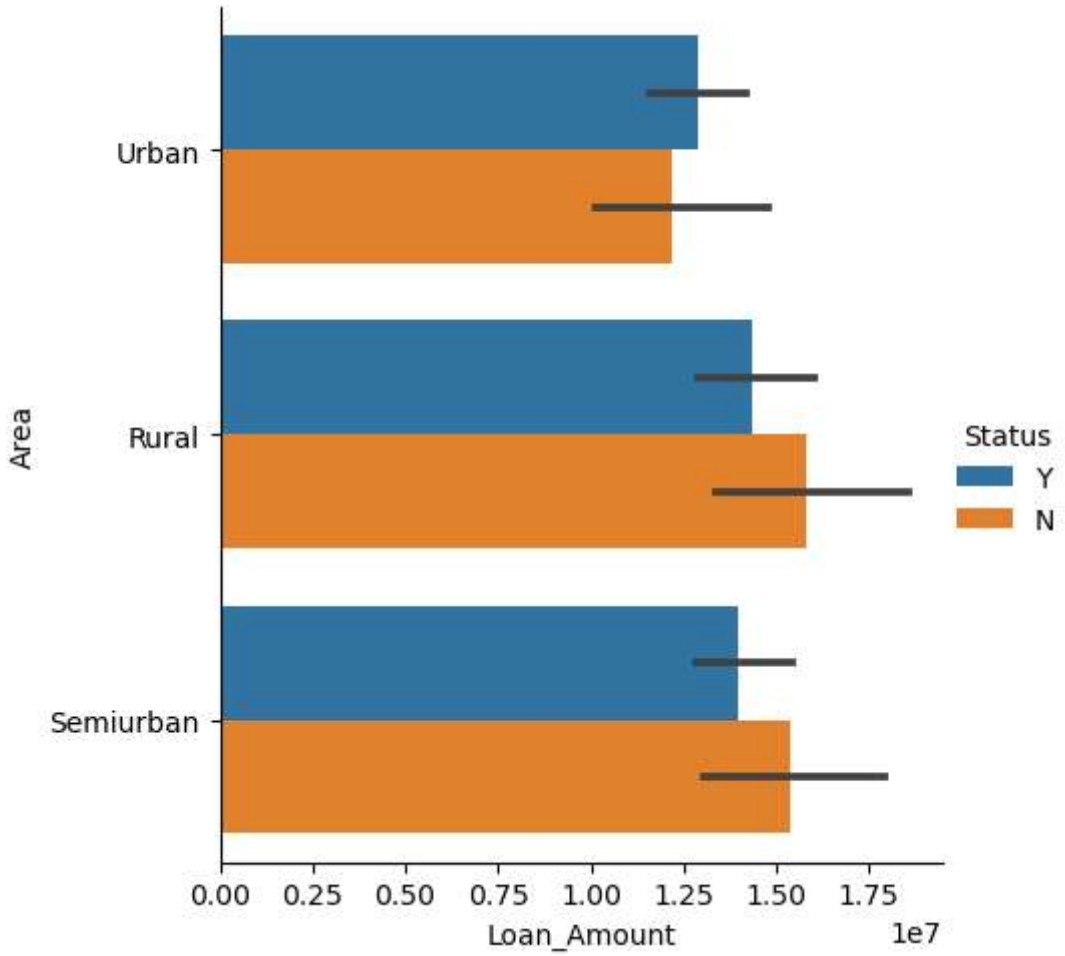


In [134…

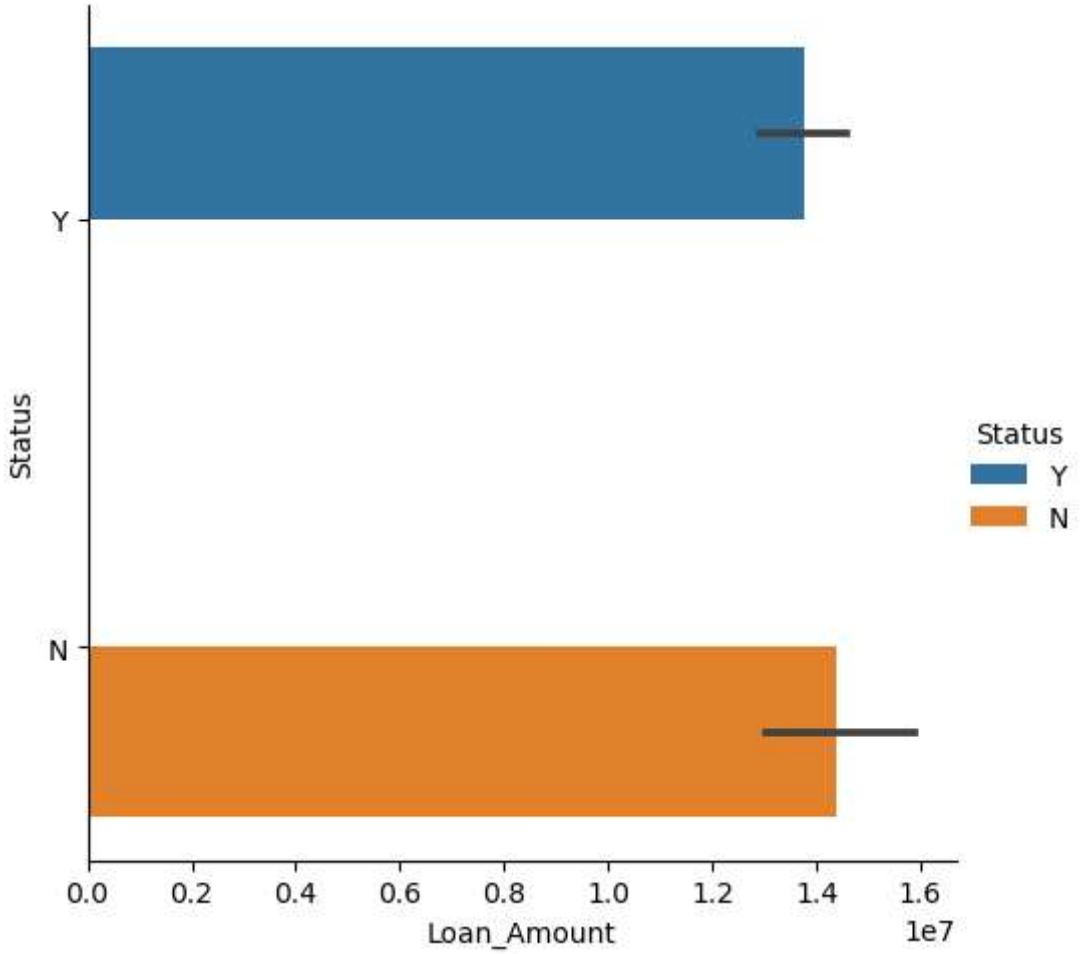
```
sns.catplot(x='Loan_Amount',y='Self_Employed',data=df,kind='bar',hue='Status')#self er
plt.show()                                                                    #not self empl
```



In [135…
```
sns.catplot(x='Loan_Amount',y='Area',data=df,kind='bar',hue='Status')#Loan amount 1.5
plt.show()
```

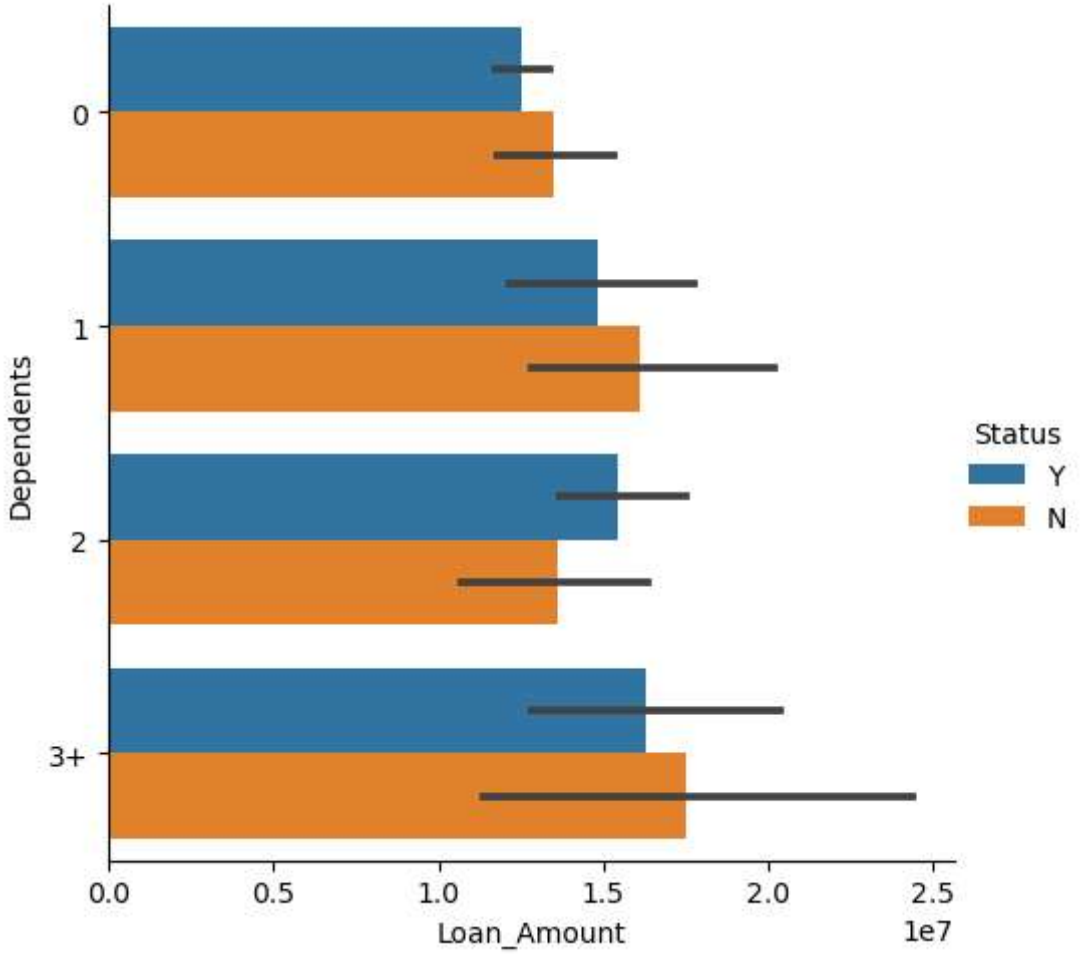


In [136…
```
sns.catplot(x='Loan_Amount',y='Status',data=df,kind='bar',hue='Status')# loan amount u
plt.show()
```



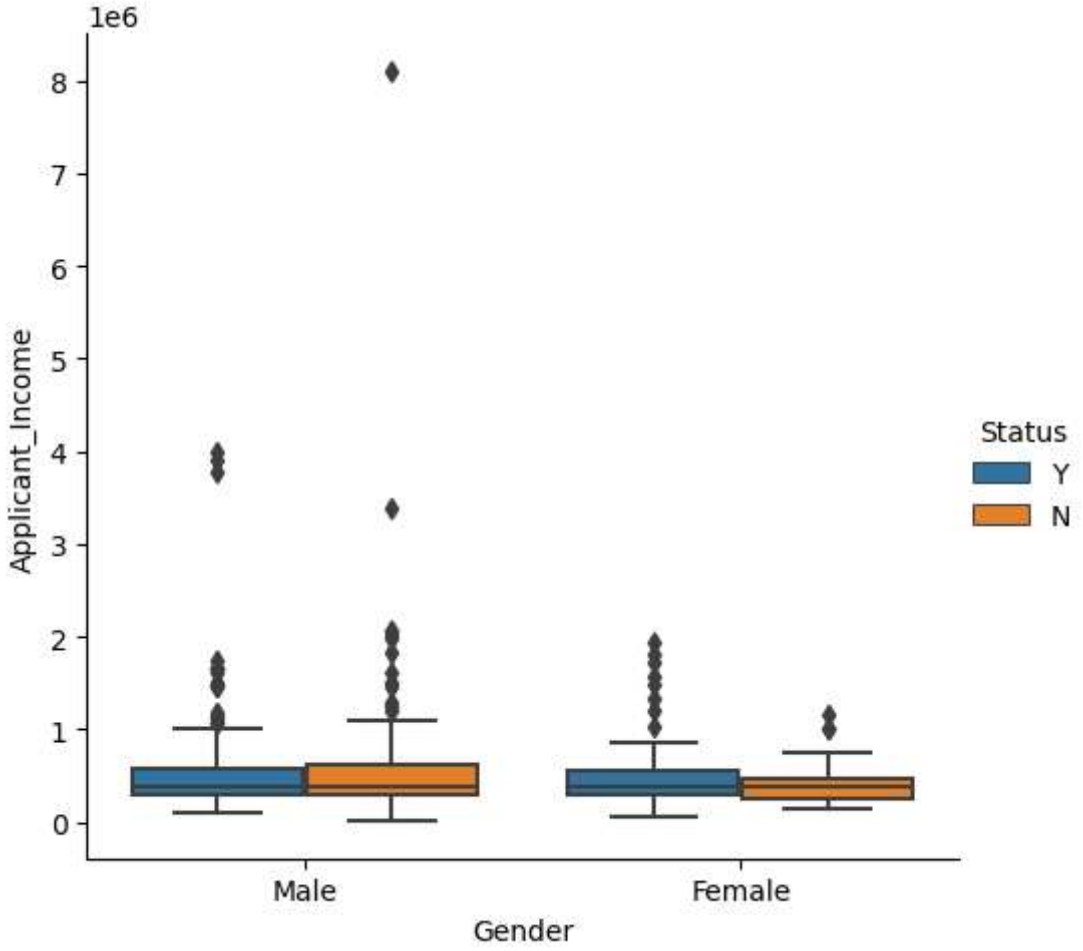
In [137…

```
sns.catplot(x='Loan_Amount',y='Dependents',data=df,kind='bar',hue='Status')# loan amou
plt.show()
```



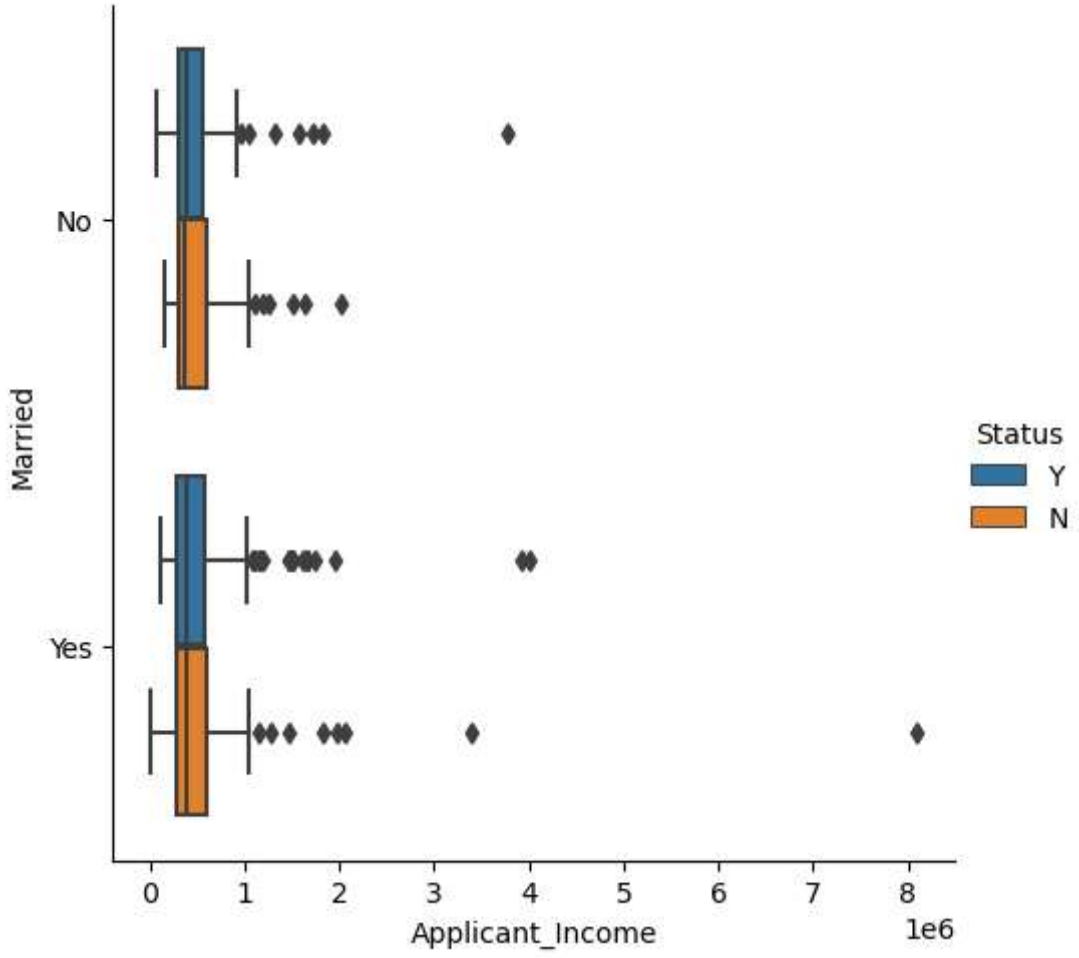
In [138…

```
sns.catplot(x='Gender',y='Applicant_Income',data=df,hue='Status',kind='box')#male appl
plt.show()                                                                  # Female applicar
```

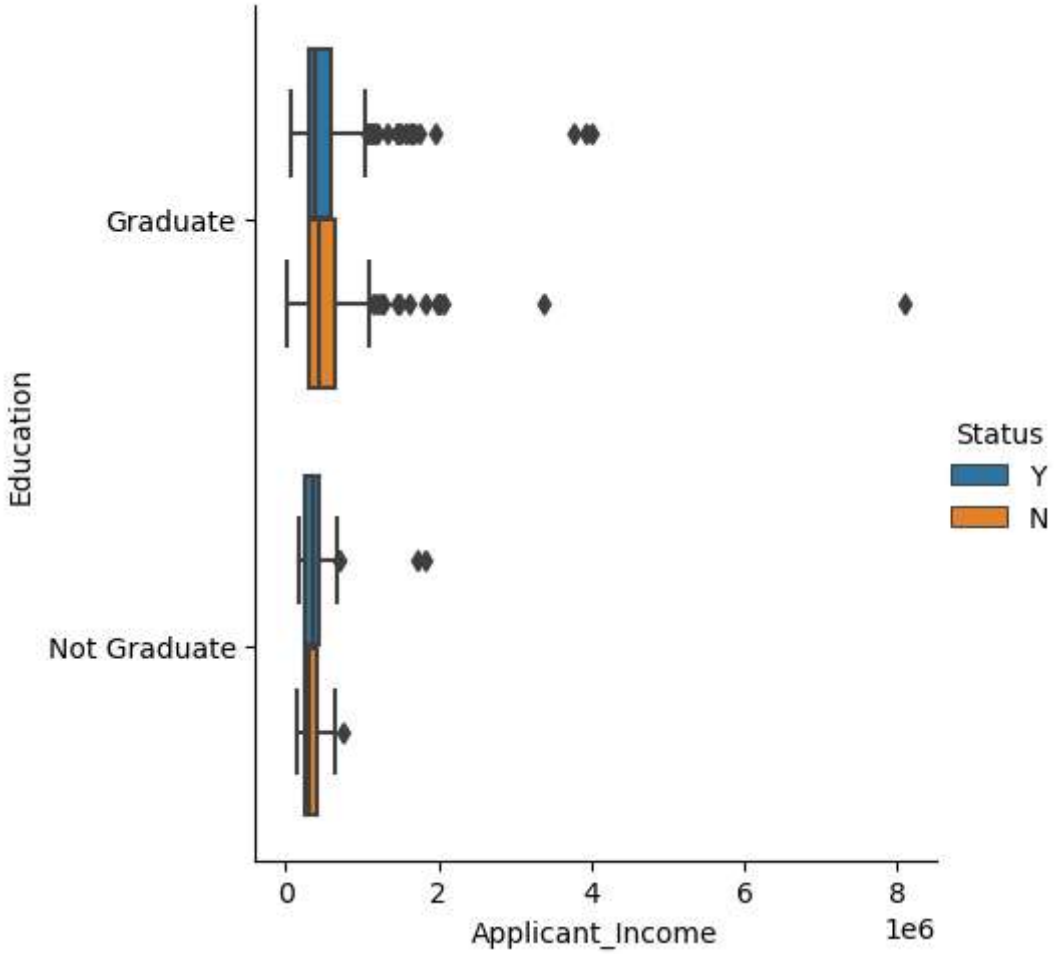


In [139…

```
sns.catplot(x='Applicant_Income',y='Married',data=df,hue='Status',kind='box')#married
plt.show()                                                                    #unmarried
```

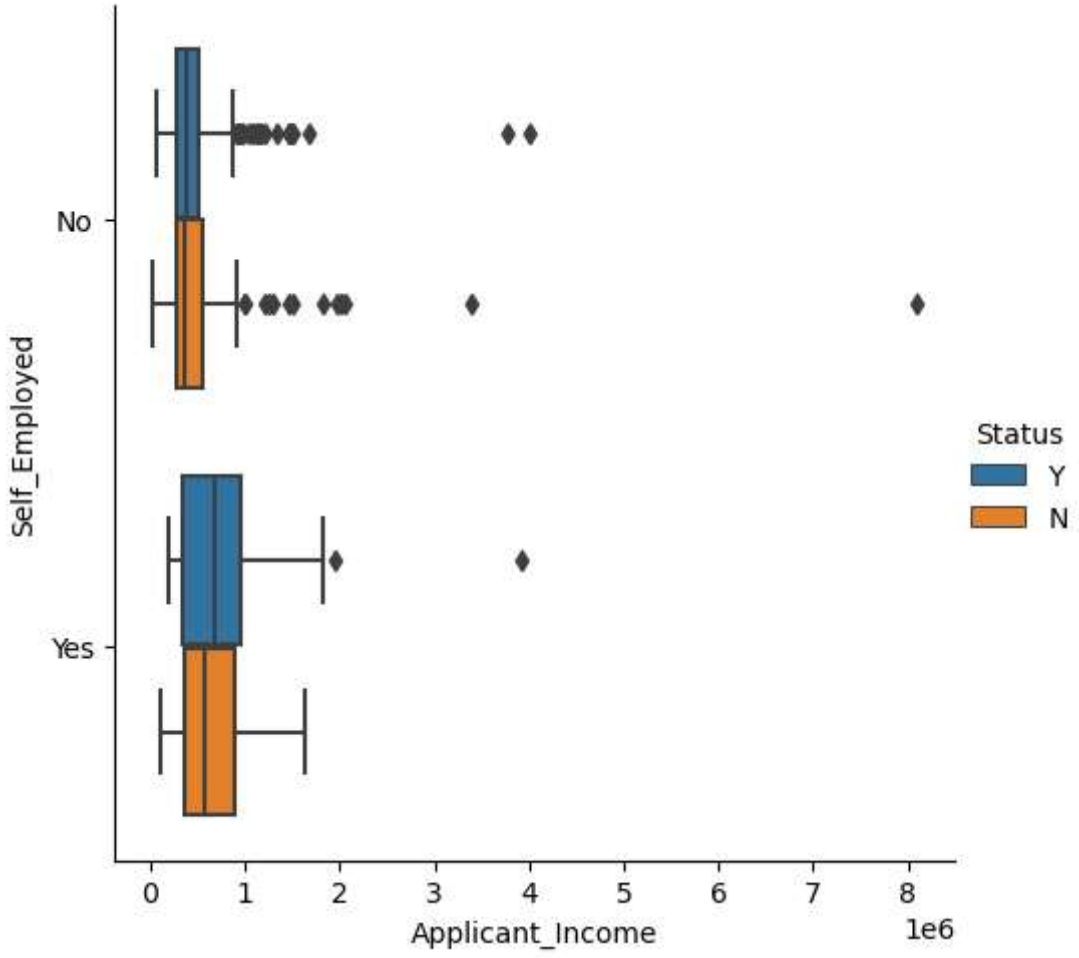


In [140…
```
sns.catplot(x='Applicant_Income',y='Education',data=df,hue='Status',kind='box')#Graduc
plt.show()                                                                    #Non Gr
```



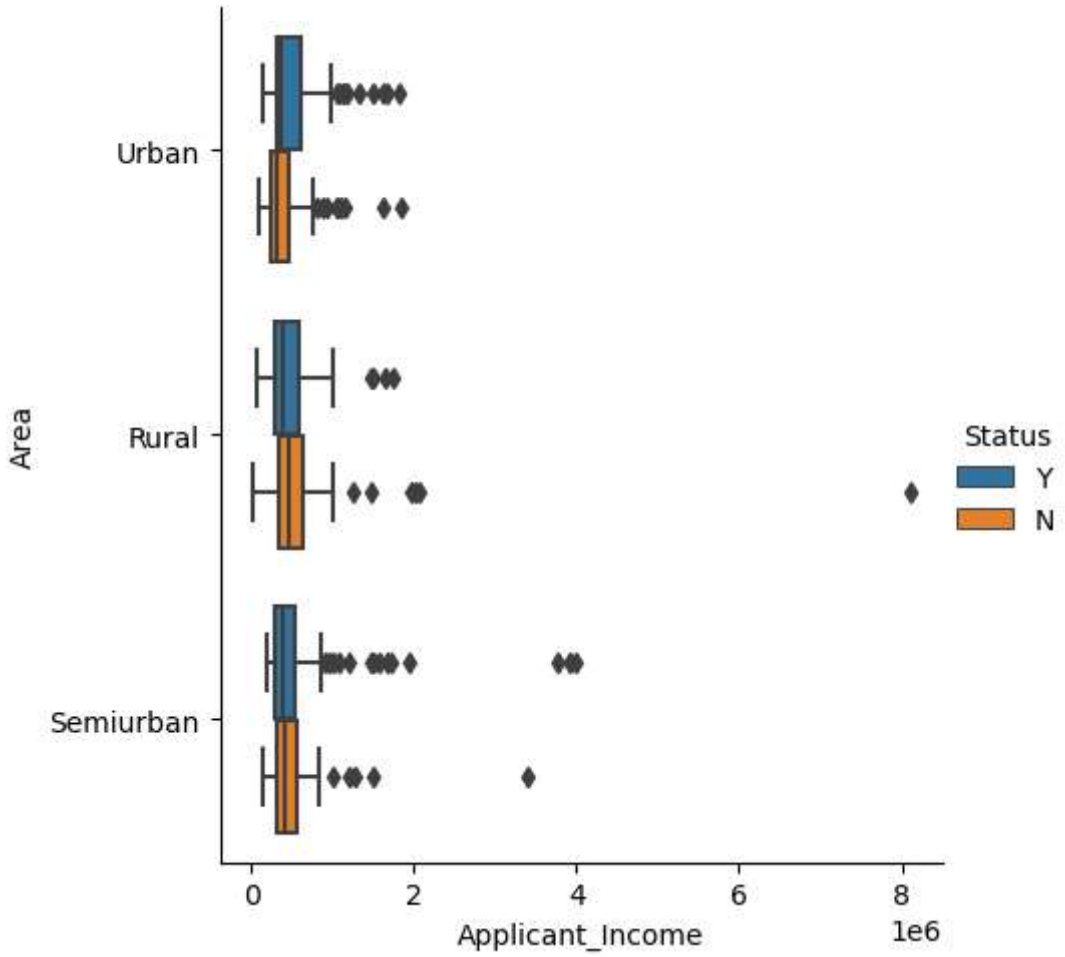
In [141…

```
sns.catplot(x='Applicant_Income',y='Self_Employed',data=df,hue='Status',kind='box')#w
plt.show()
```



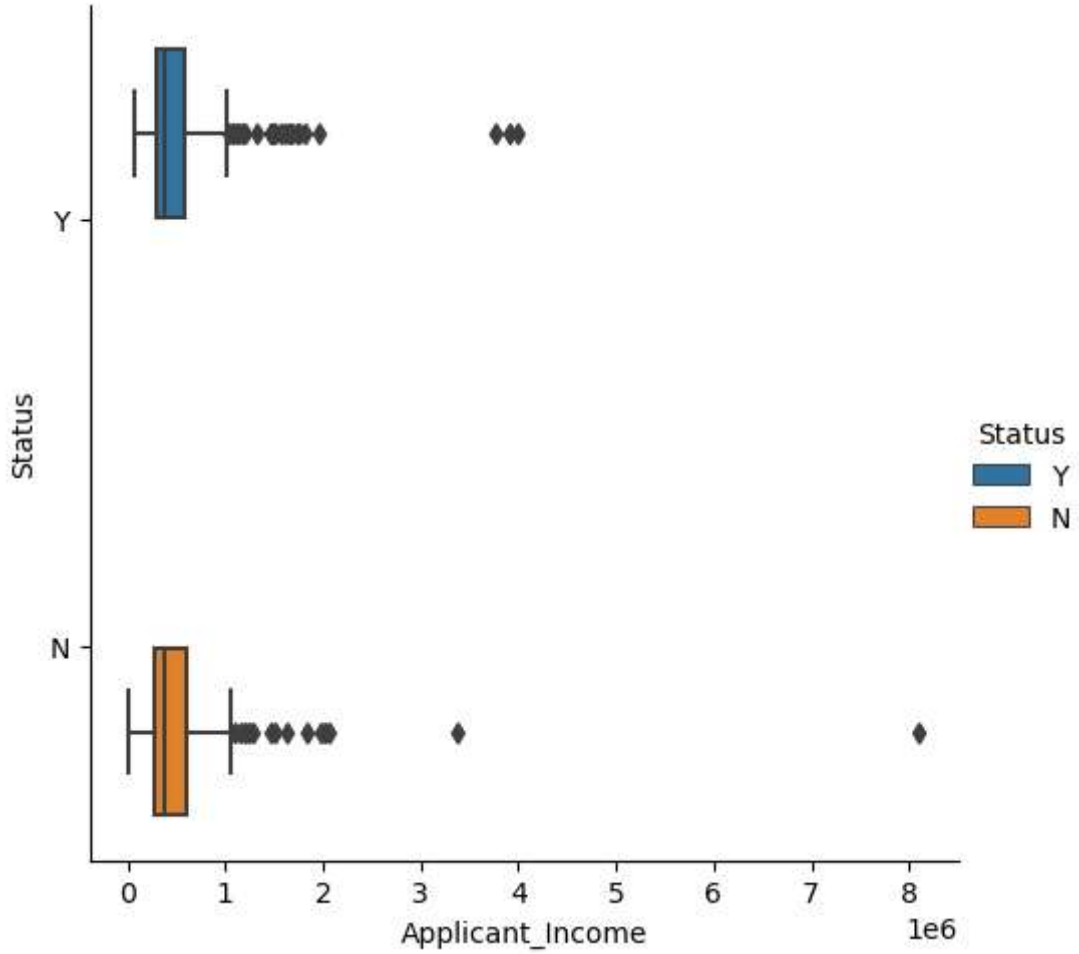
In [142…

```
sns.catplot(x='Applicant_Income',y='Area',data=df,hue='Status',kind='box')#all areas c
plt.show()
```



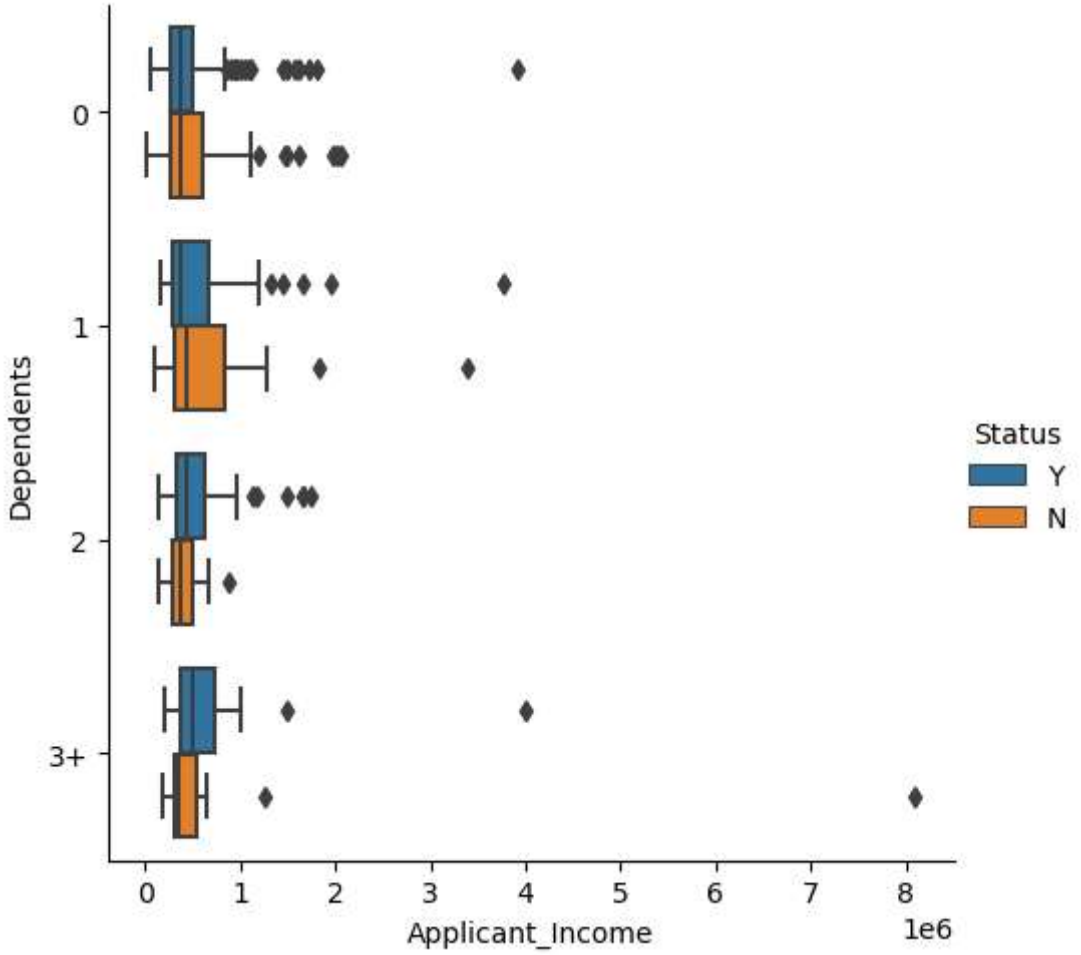
In [143…

```
sns.catplot(x='Applicant_Income',y='Status',data=df,hue='Status',kind='box')#applicant
plt.show()                                                                  #applicar
```

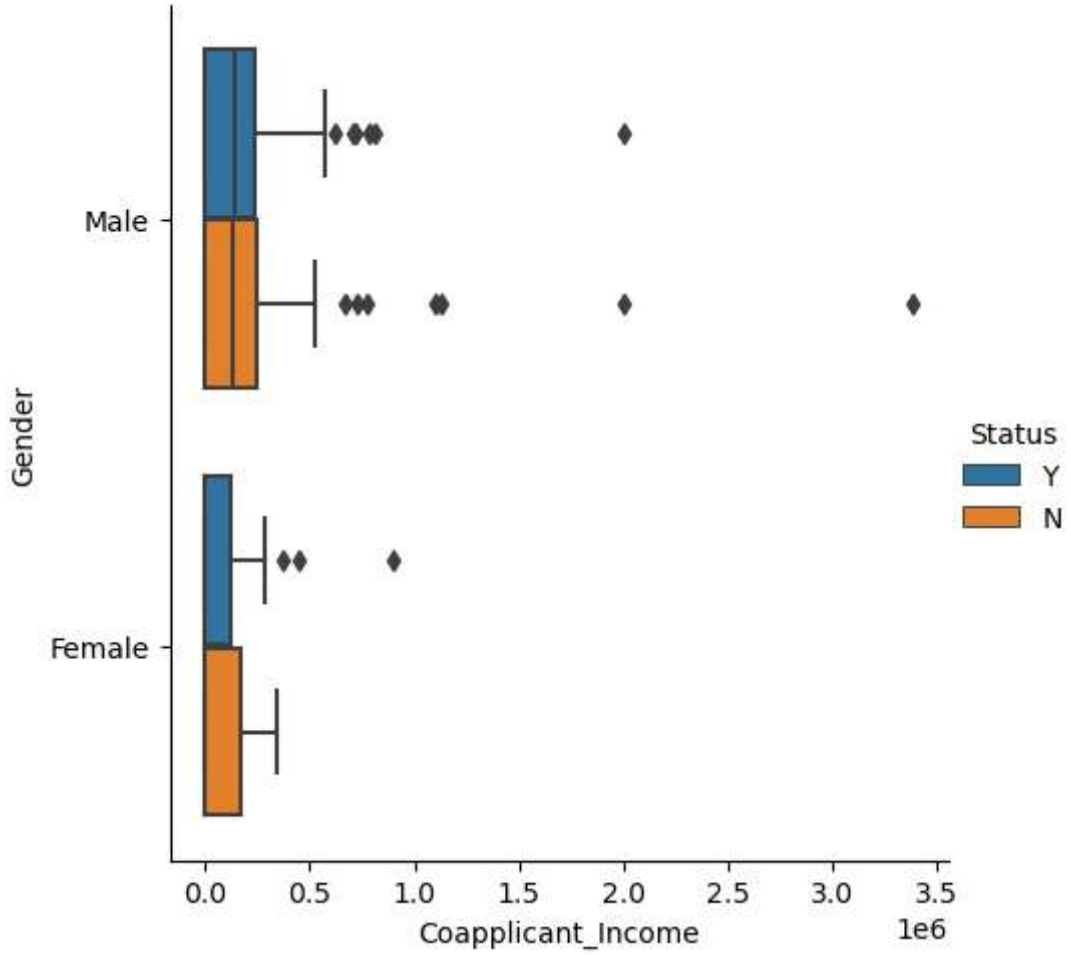


In [144…

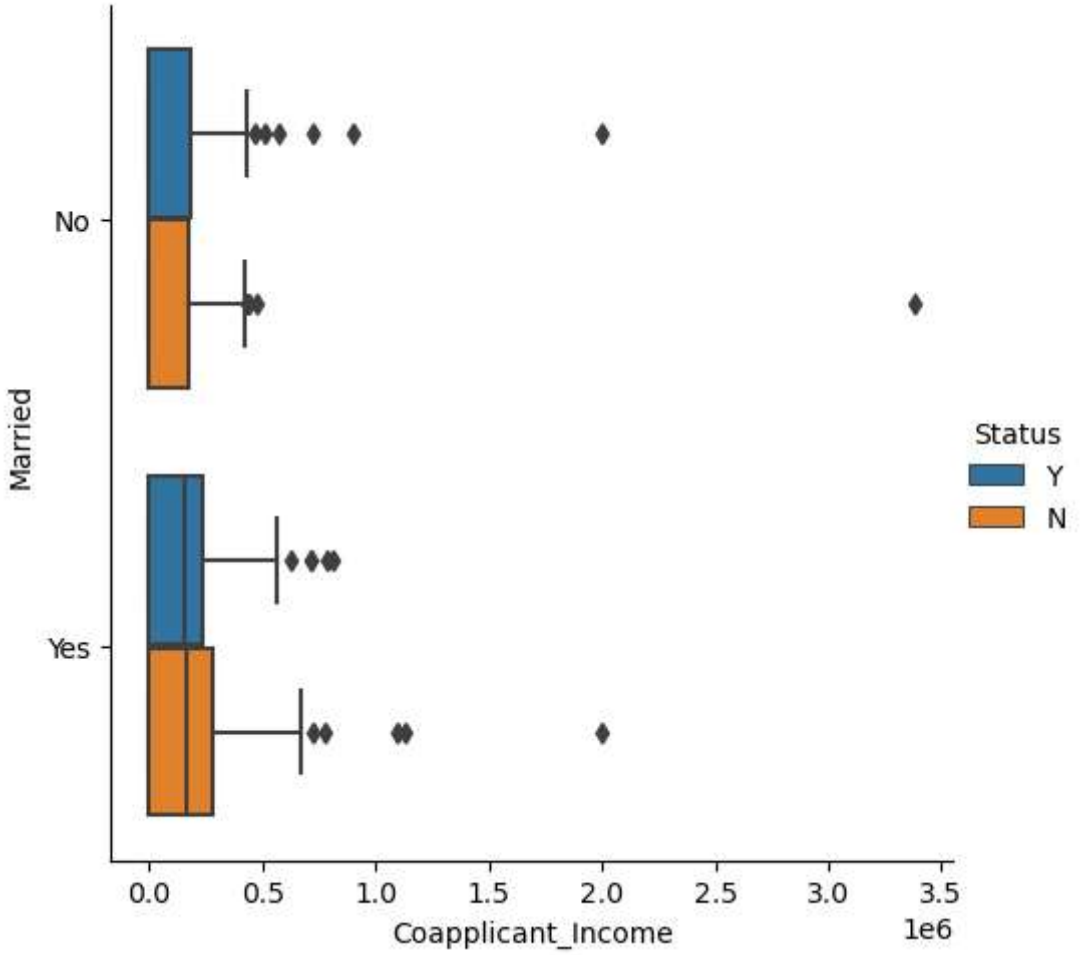
```
sns.catplot(x='Applicant_Income',y='Dependents',data=df,hue='Status',kind='box')#all l
plt.show()                                                                    #especially zero de
```



In [145…
```
sns.catplot(x='Coapplicant_Income',y='Gender',data=df,hue='Status',kind='box')#male co
plt.show()                                                                    #male co
```

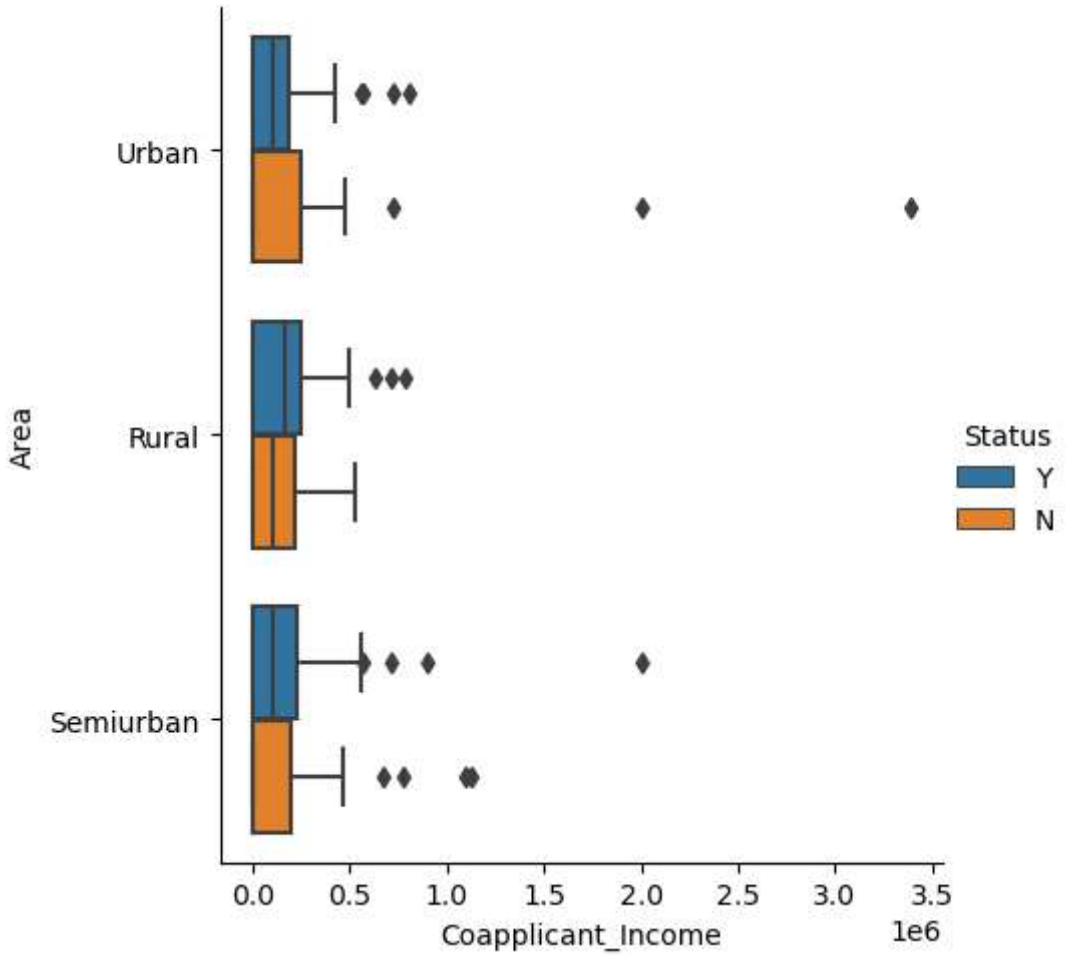


In [146…
```
sns.catplot(x='Coapplicant_Income',y='Married',data=df,hue='Status',kind='box')#marrie
plt.show()                                                                    #not m
```

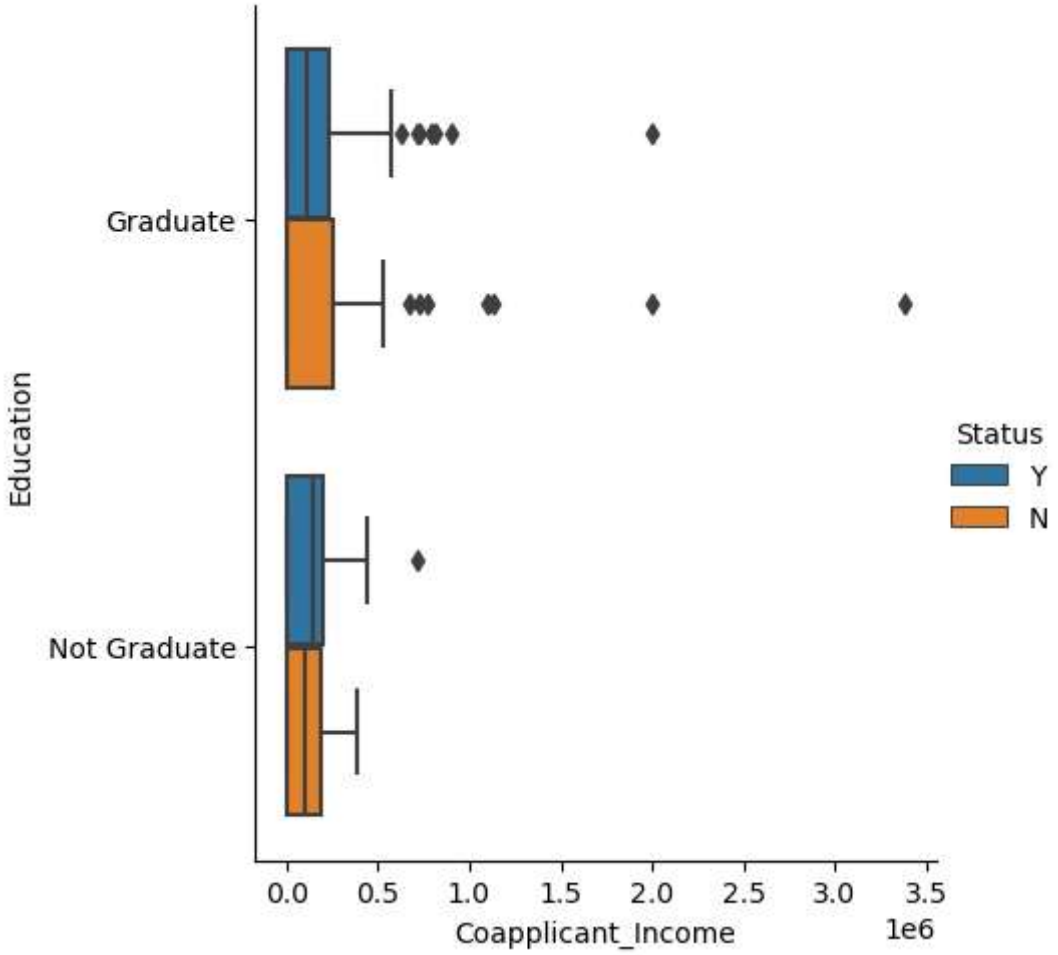


In [147…

```
sns.catplot(x='Coapplicant_Income',y='Area',data=df,hue='Status',kind='box')#male appl
plt.show()
```

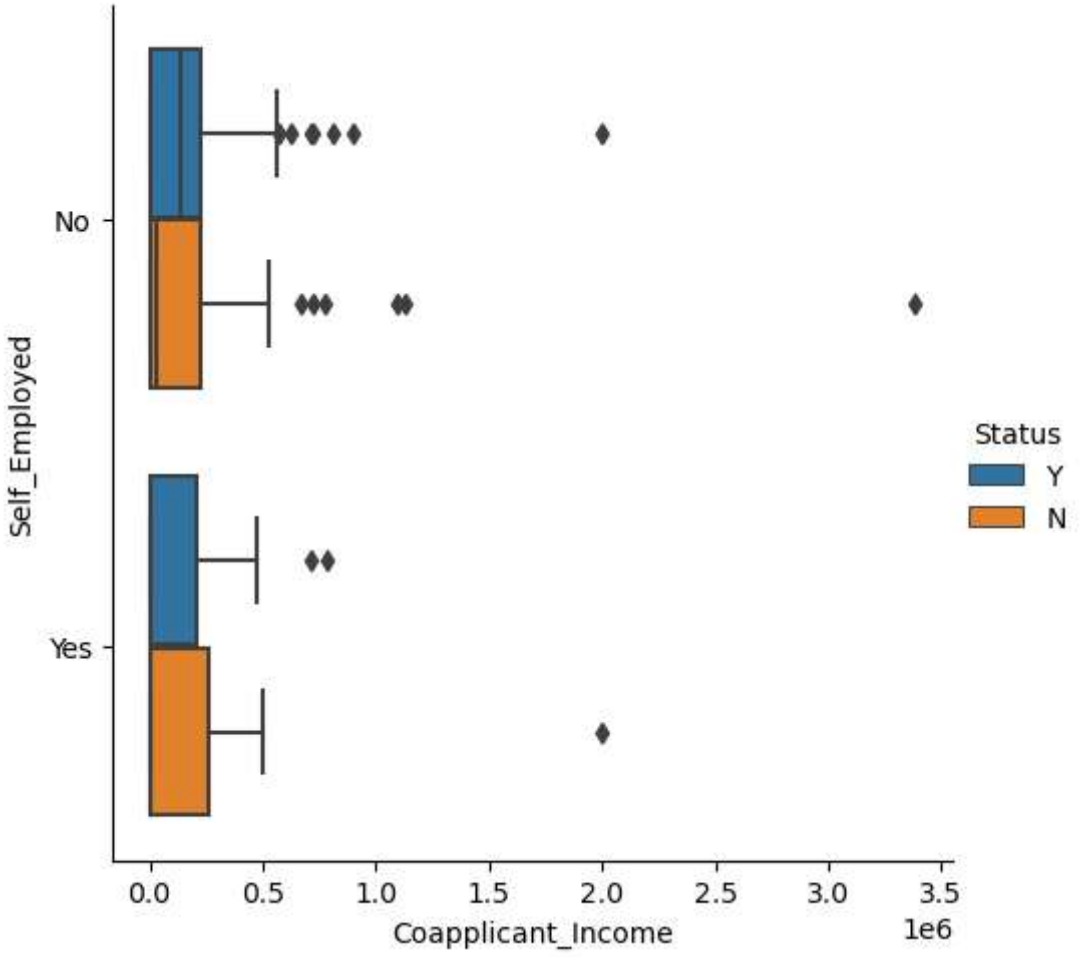


In [150…
```
sns.catplot(x='Coapplicant_Income',y='Education',data=df,hue='Status',kind='box') #gr
plt.show()                                                                        # not
```



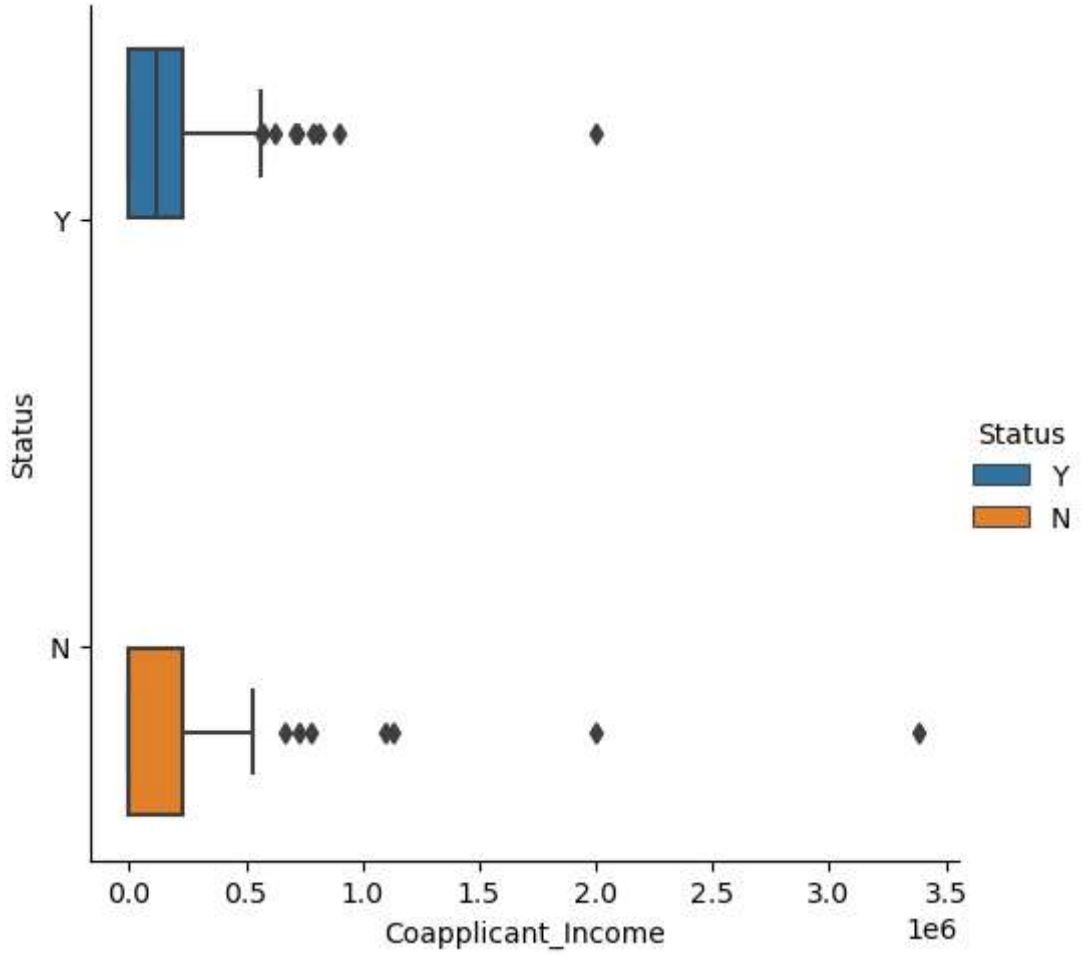
In [151…

```
sns.catplot(x='Coapplicant_Income',y='Self_Employed',data=df,hue='Status',kind='box')#
plt.show()                                                                          #s
```



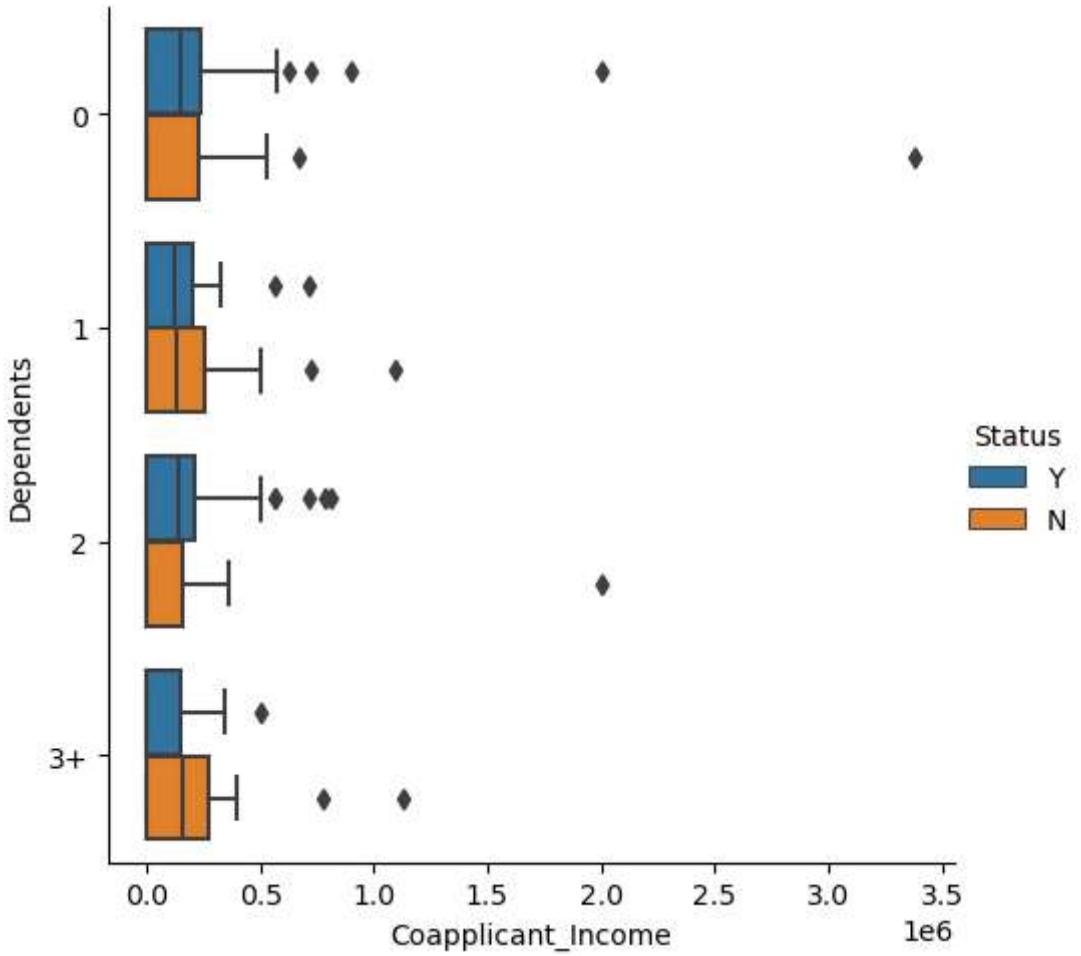
In [152…

```
sns.catplot(x='Coapplicant_Income',y='Status',data=df,hue='Status',kind='box')#co appl
plt.show()
```



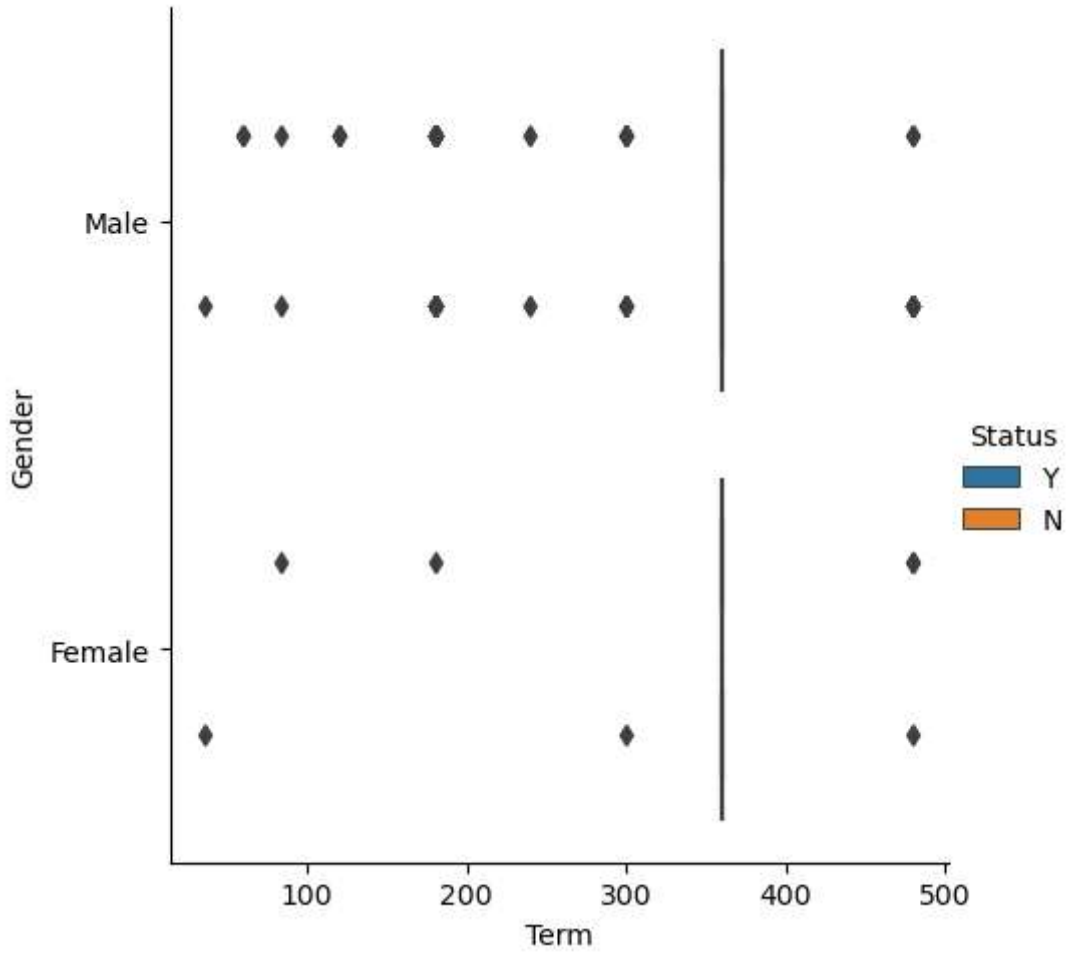
In [153…

```
sns.catplot(x='Coapplicant_Income',y='Dependents',data=df,hue='Status',kind='box')#Co
plt.show()
```

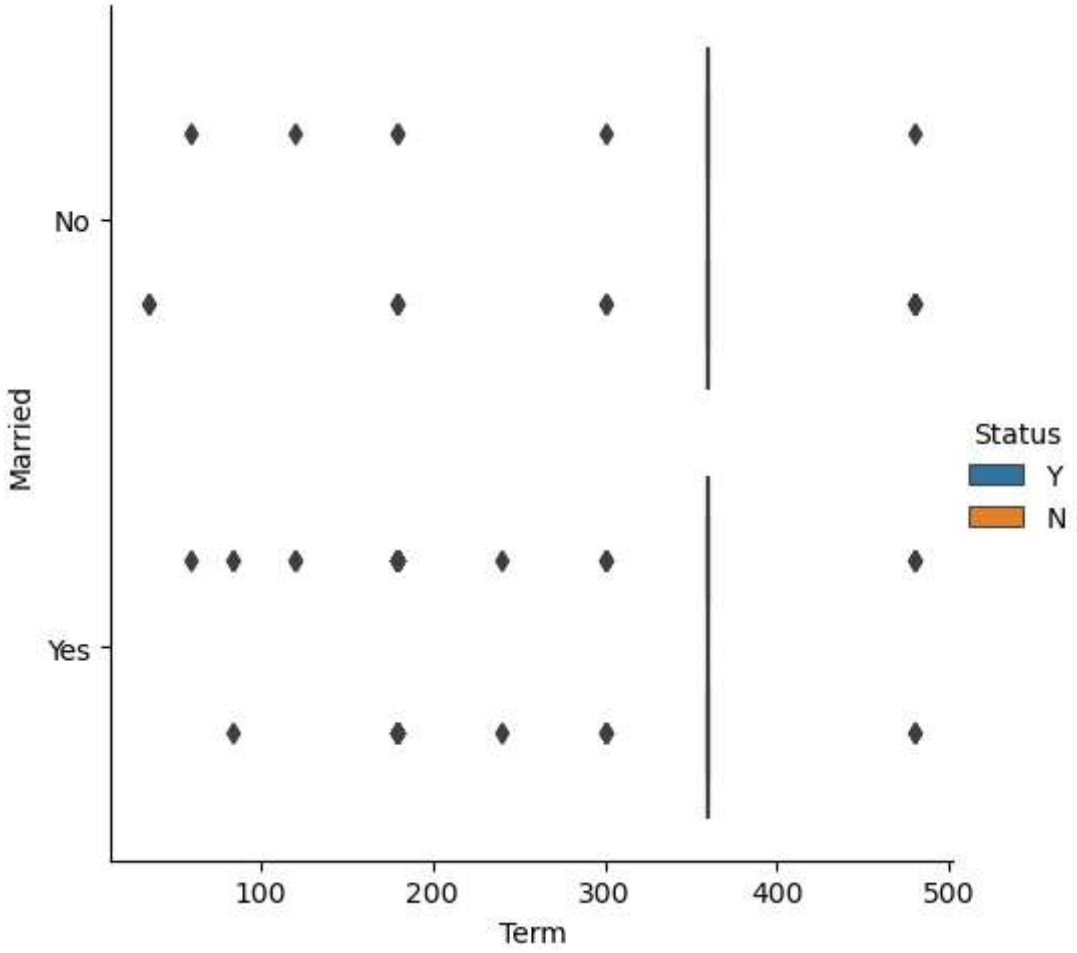


In [154…

```
sns.catplot(x='Term',y='Gender',data=df,hue='Status',kind='box')#male and female  term
plt.show()
```

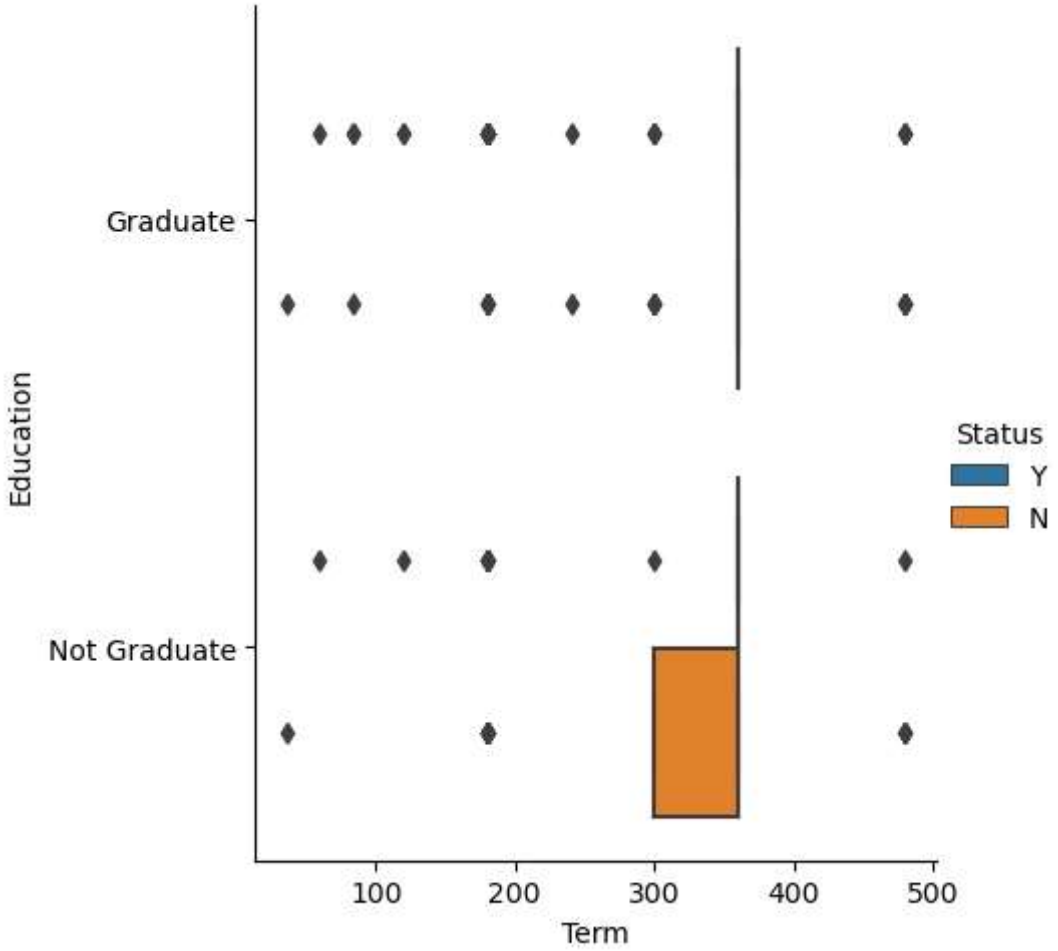


In [155…
```
sns.catplot(x='Term',y='Married',data=df,hue='Status',kind='box')# both married and nc
plt.show()
```

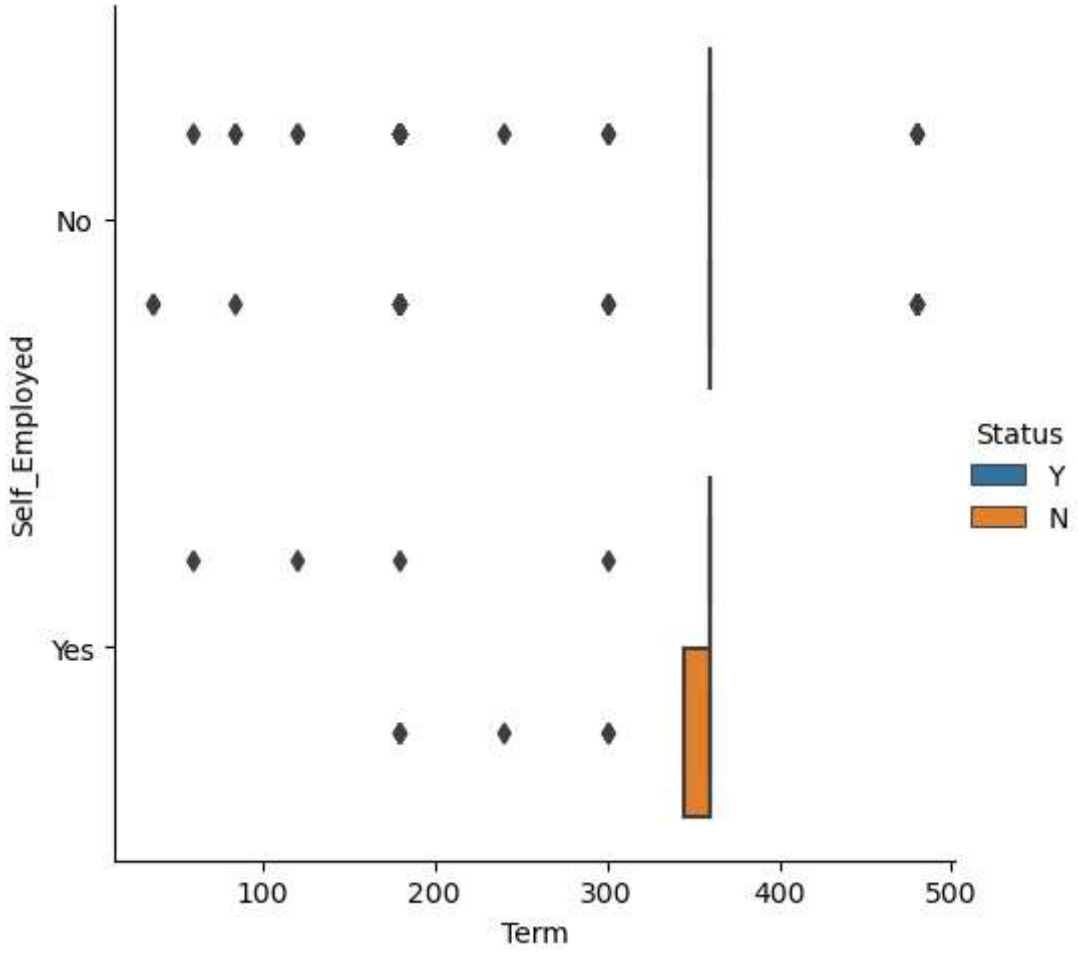


In [156…

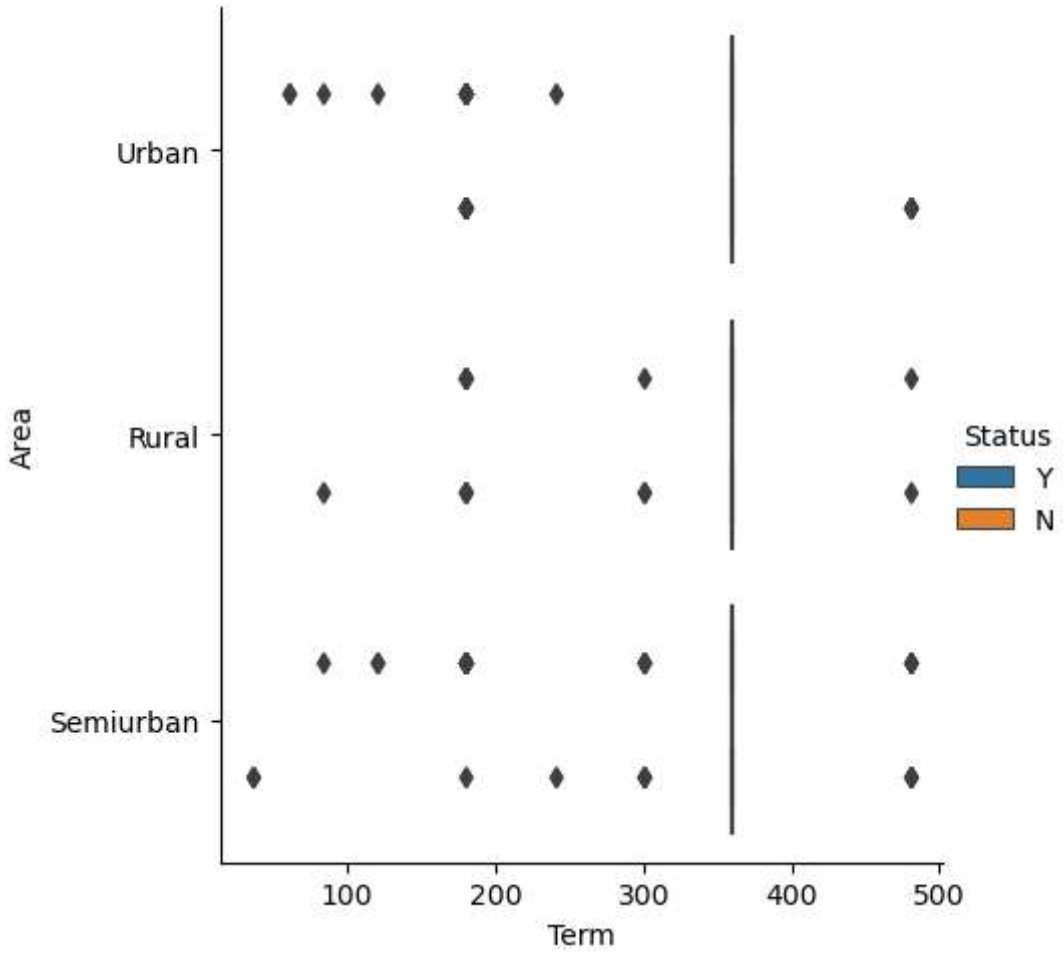
```
sns.catplot(x='Term',y='Education',data=df,hue='Status',kind='box')# Both Graduates ar
plt.show()
```



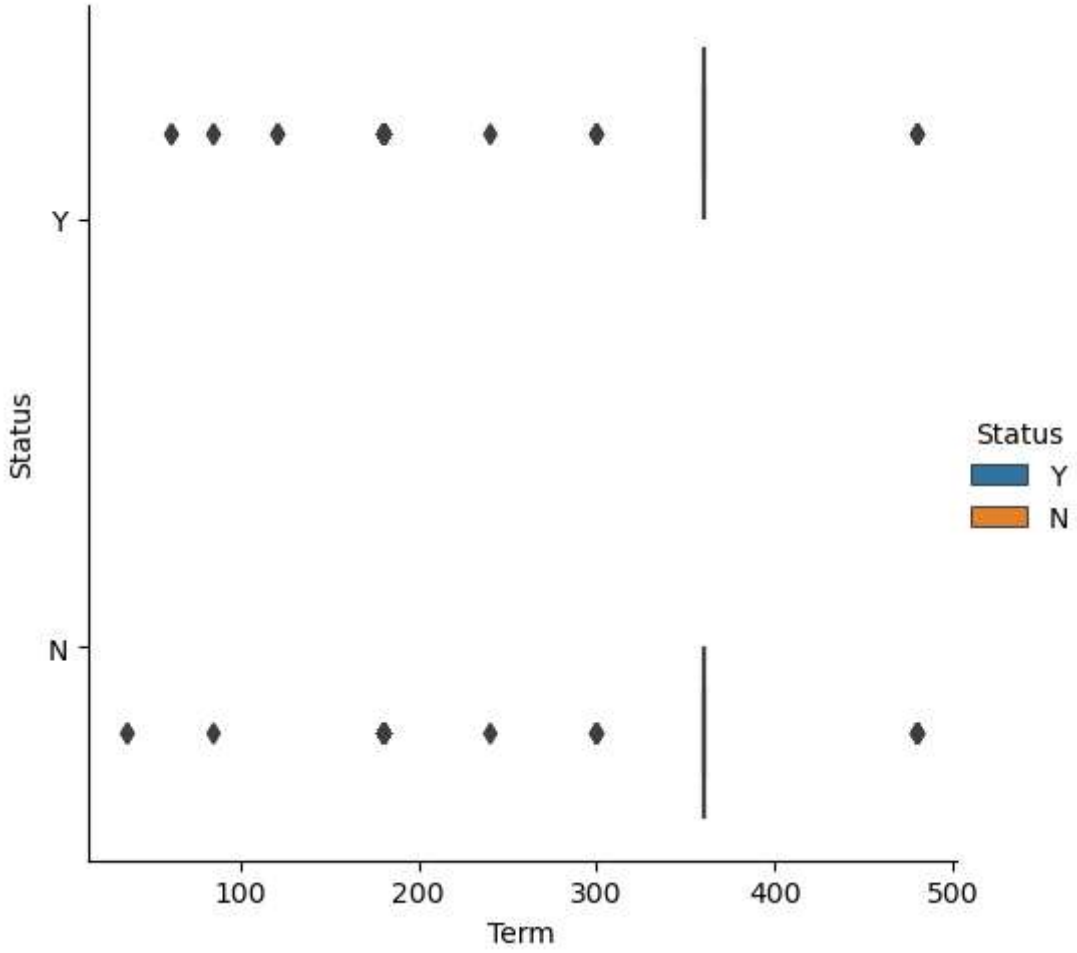
In [157…
```
sns.catplot(x='Term',y='Self_Employed',data=df,hue='Status',kind='box') # Both Employe
plt.show()
```



In [158…
```
sns.catplot(x='Term',y='Area',data=df,hue='Status',kind='box')#all area termshas more
plt.show()
```

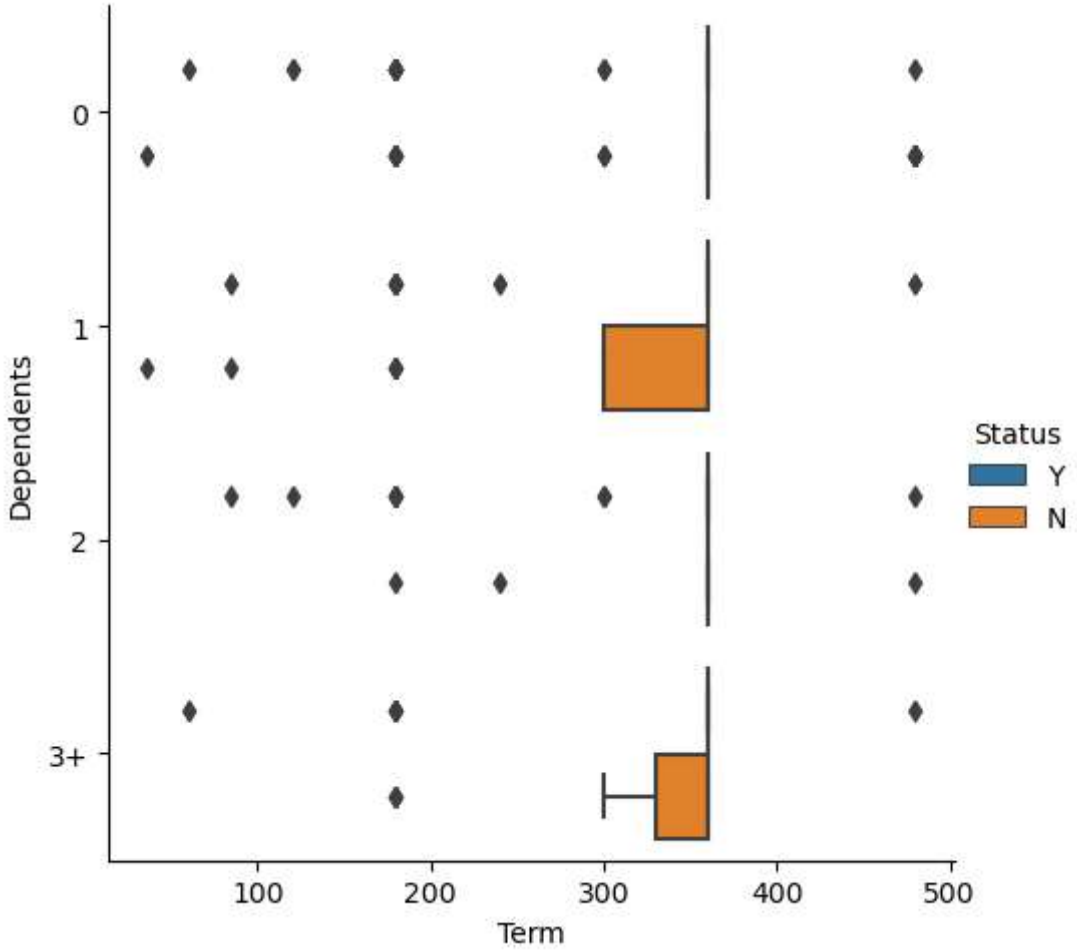


In [159…
```
sns.catplot(x='Term',y='Status',data=df,hue='Status',kind='box')#term has more outlier
plt.show()
```

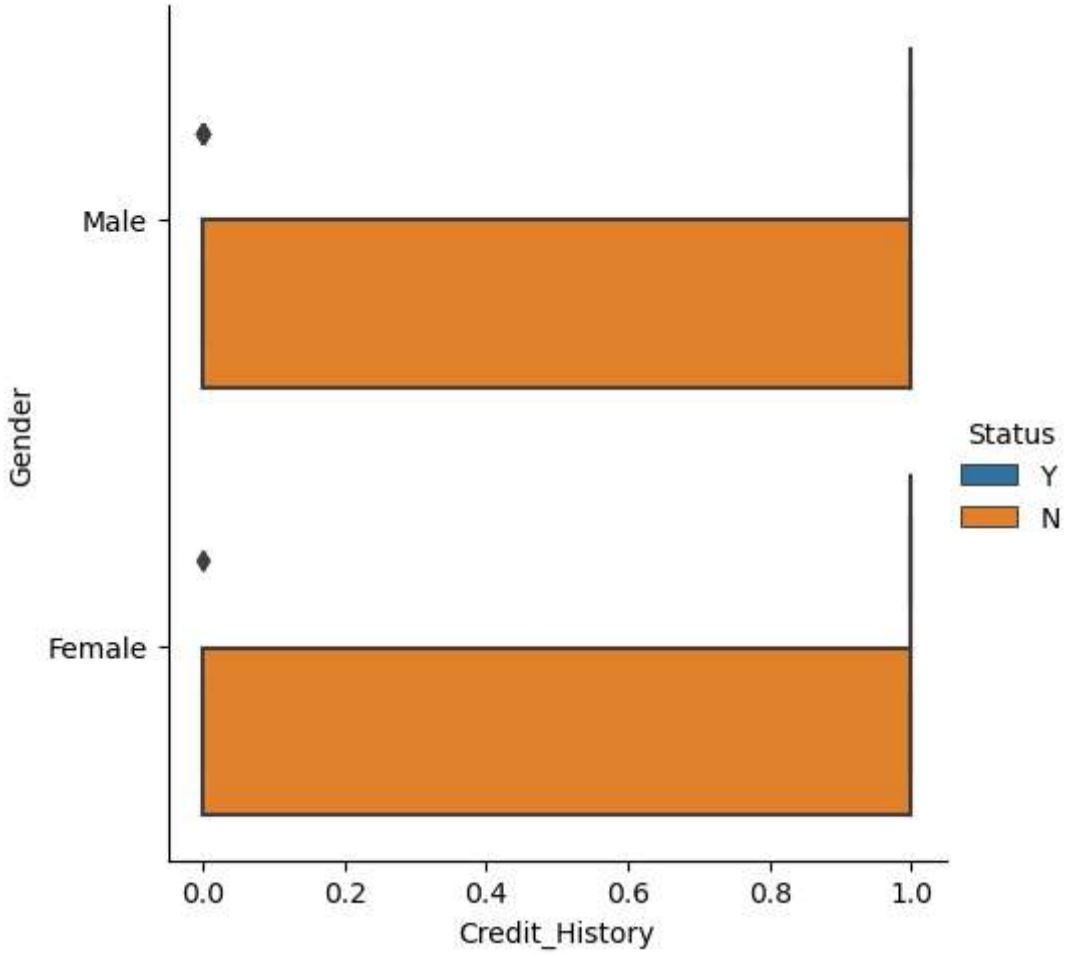


In [160…

```
sns.catplot(x='Term',y='Dependents',data=df,hue='Status',kind='box')#all types of depe
plt.show()
```

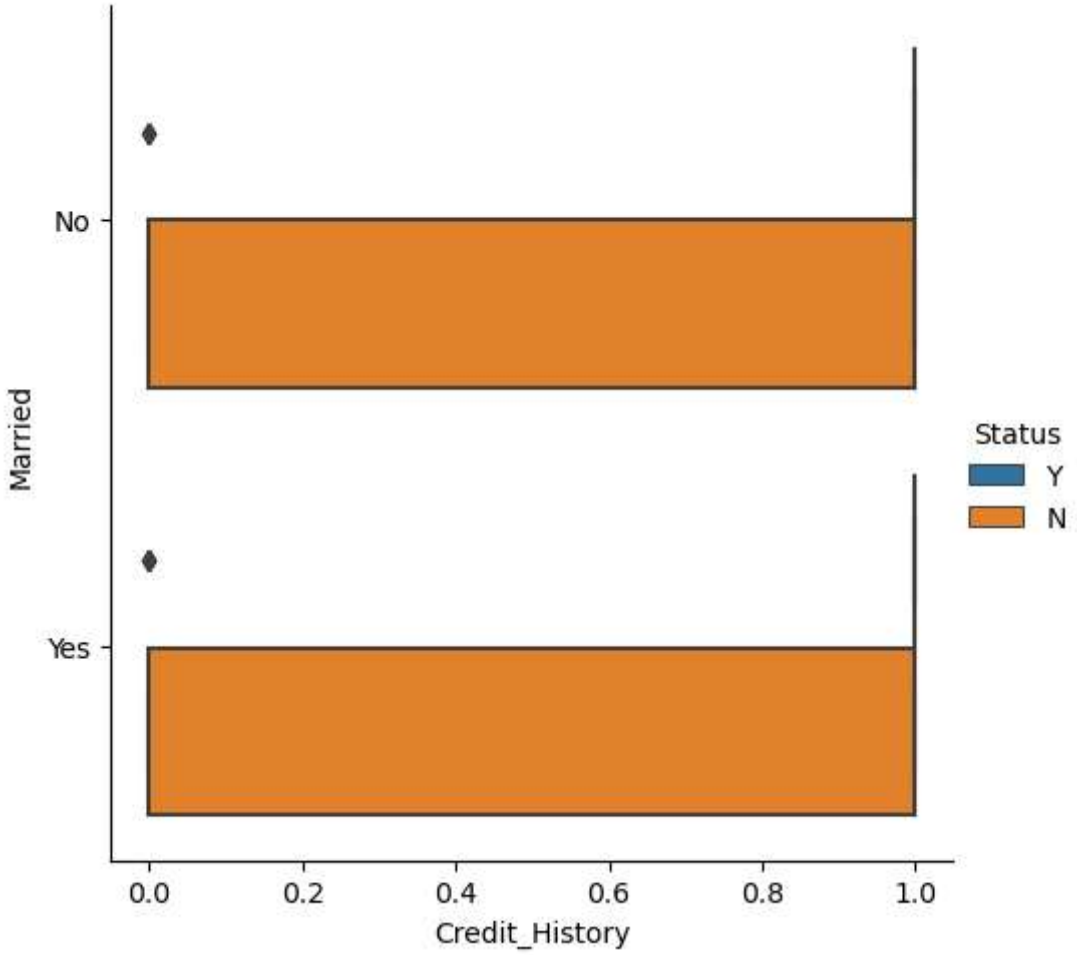


In [161…
```
sns.catplot(x='Credit_History',y='Gender',data=df,hue='Status',kind='box')#male and fe
plt.show()
```

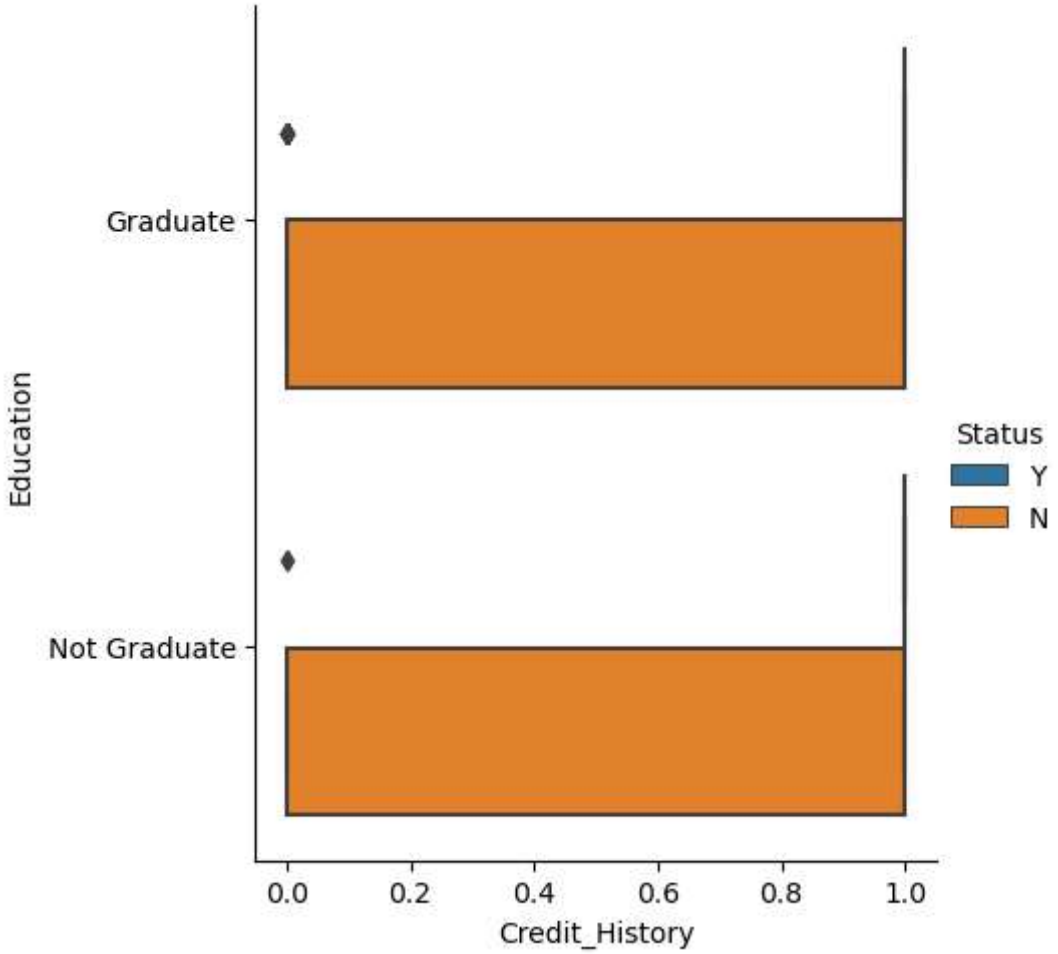


In [162…

```
sns.catplot(x='Credit_History',y='Married',data=df,hue='Status',kind='box')# no outlie
plt.show()
```

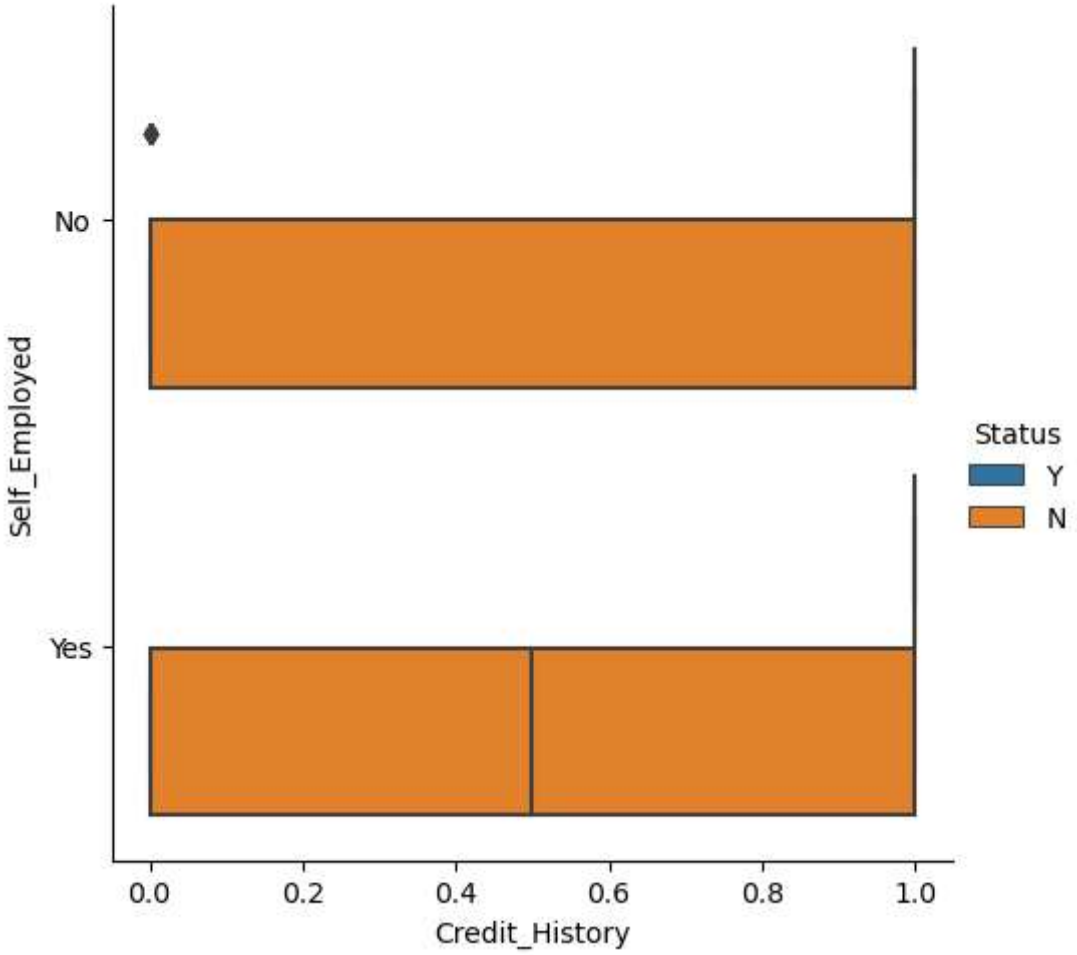


In [163…
```
sns.catplot(x='Credit_History',y='Education',data=df,hue='Status',kind='box')#no outl
plt.show()
```

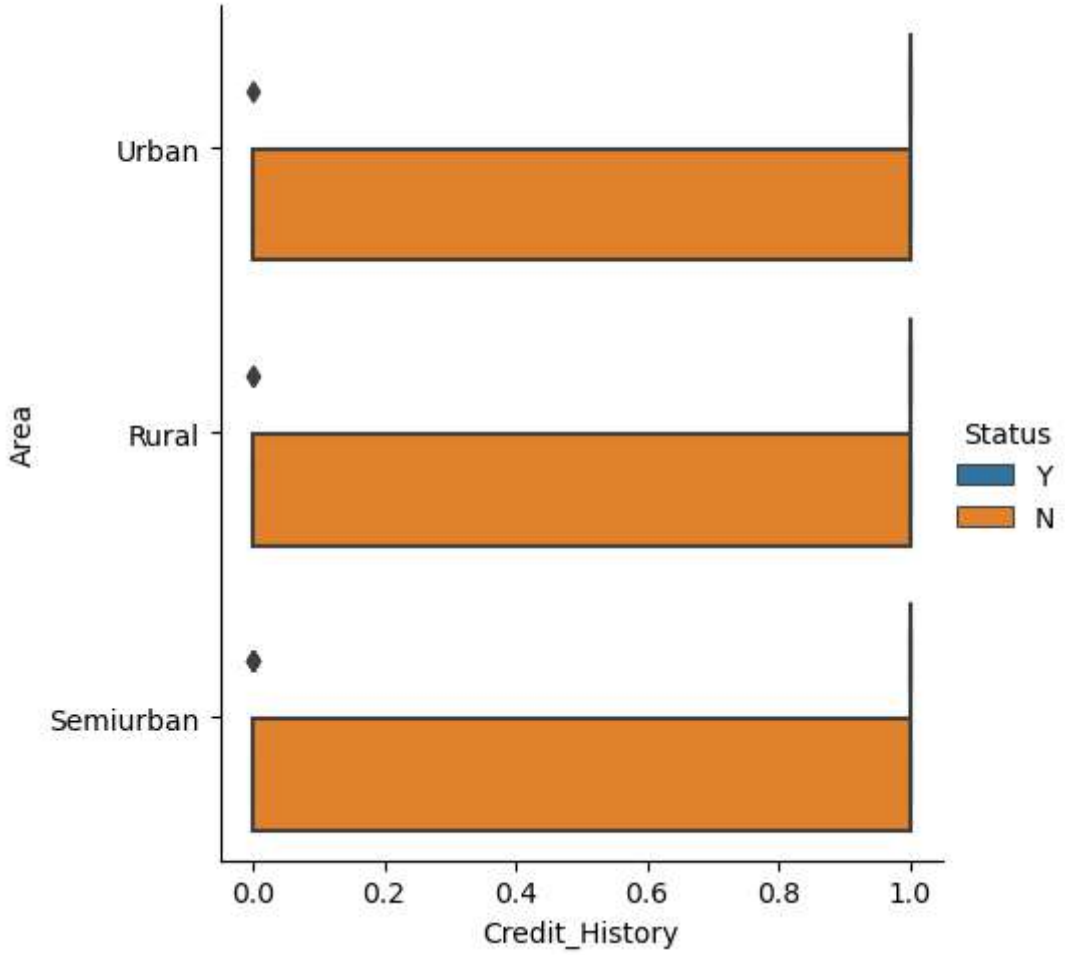


In [164…

```
sns.catplot(x='Credit_History',y='Self_Employed',data=df,hue='Status',kind='box')# no
plt.show()
```

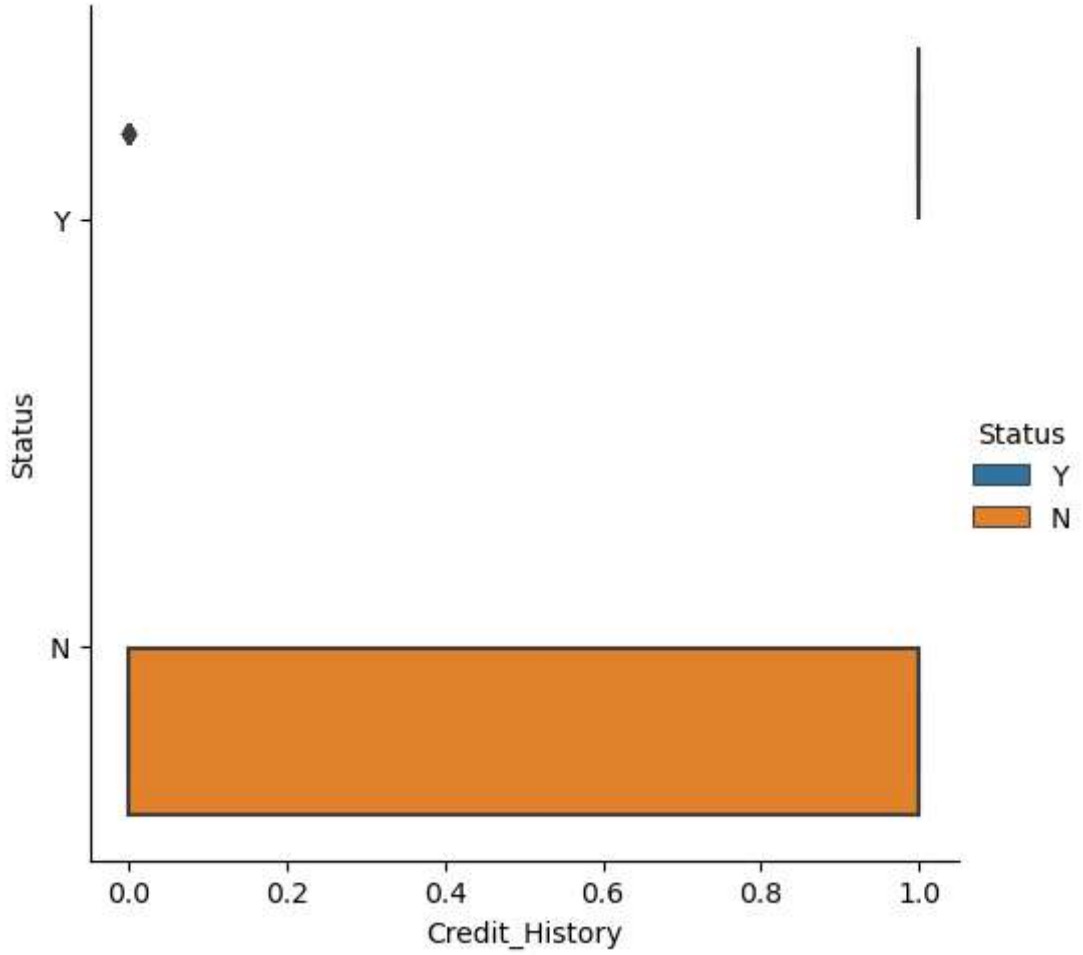


In [165…
```
sns.catplot(x='Credit_History',y='Area',data=df,hue='Status',kind='box')# no outliers
plt.show()
```

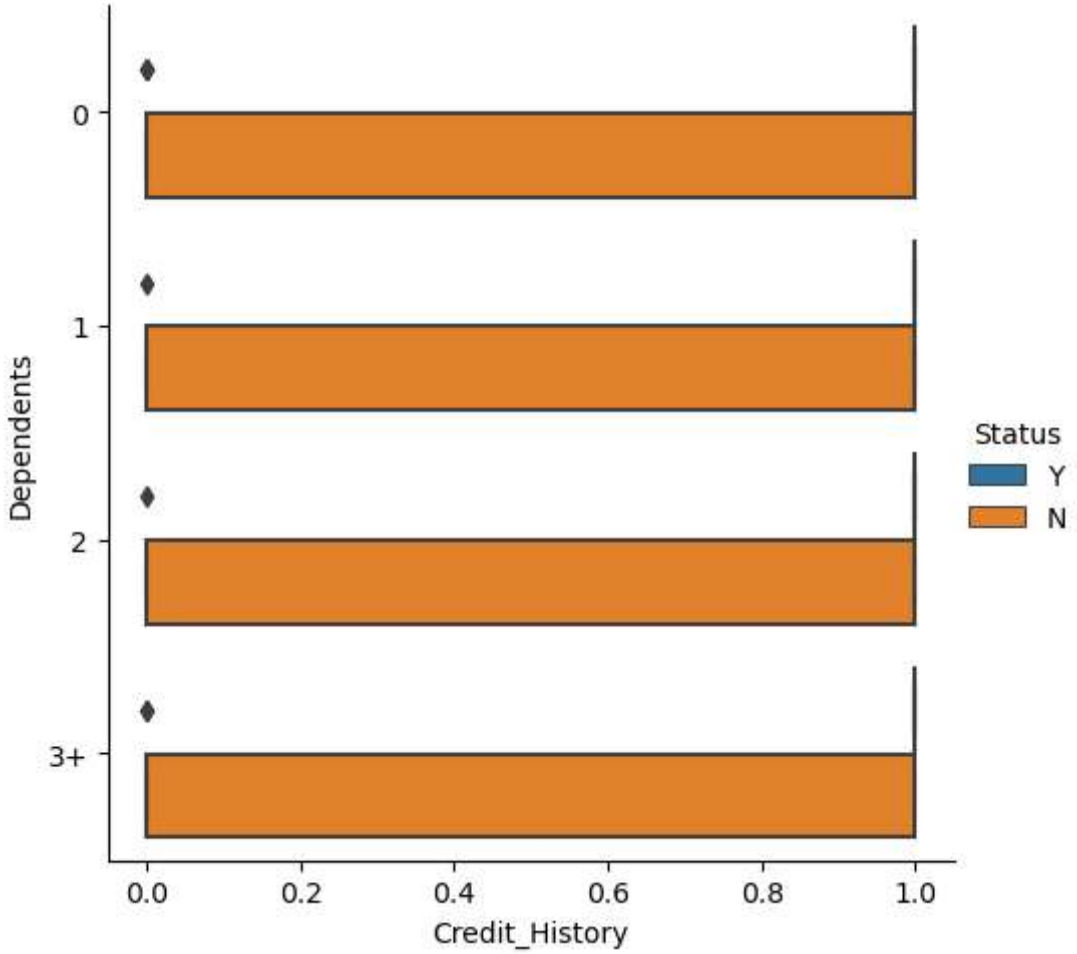


In [166…

```
sns.catplot(x='Credit_History',y='Status',data=df,hue='Status',kind='box')# no outlier
plt.show()
```

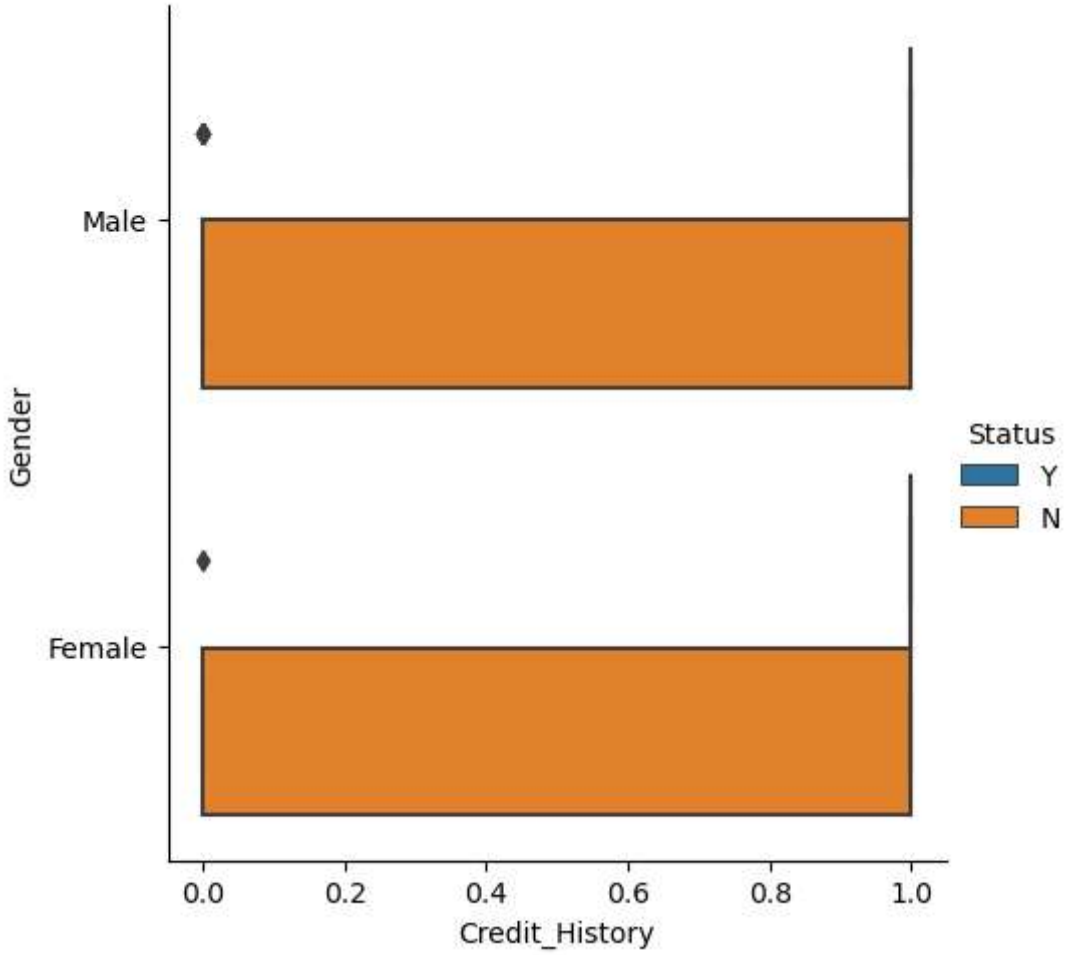


In [167…
```
sns.catplot(x='Credit_History',y='Dependents',data=df,hue='Status',kind='box')# no out
plt.show()
```

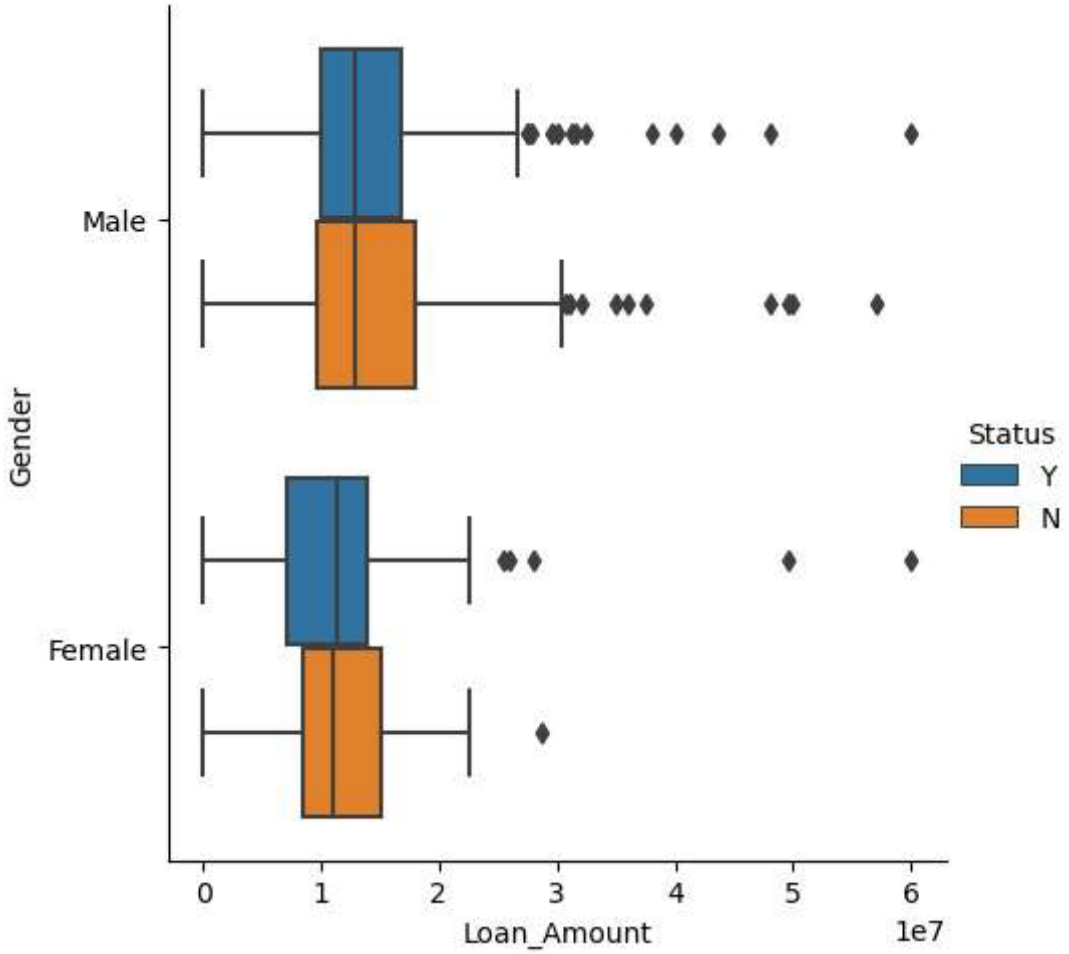


In [168…

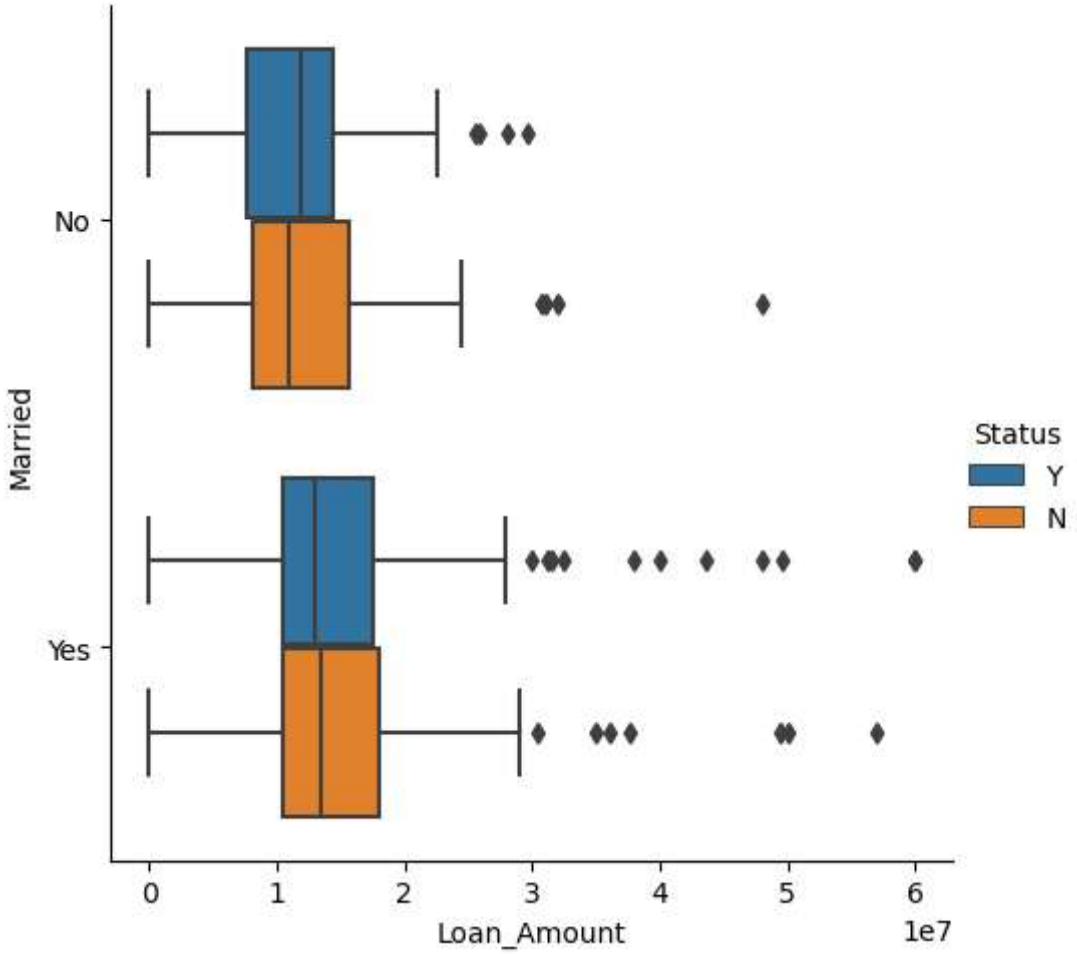
```
sns.catplot(x='Credit_History',y='Gender',data=df,hue='Status',kind='box')# no outlier
plt.show()
```



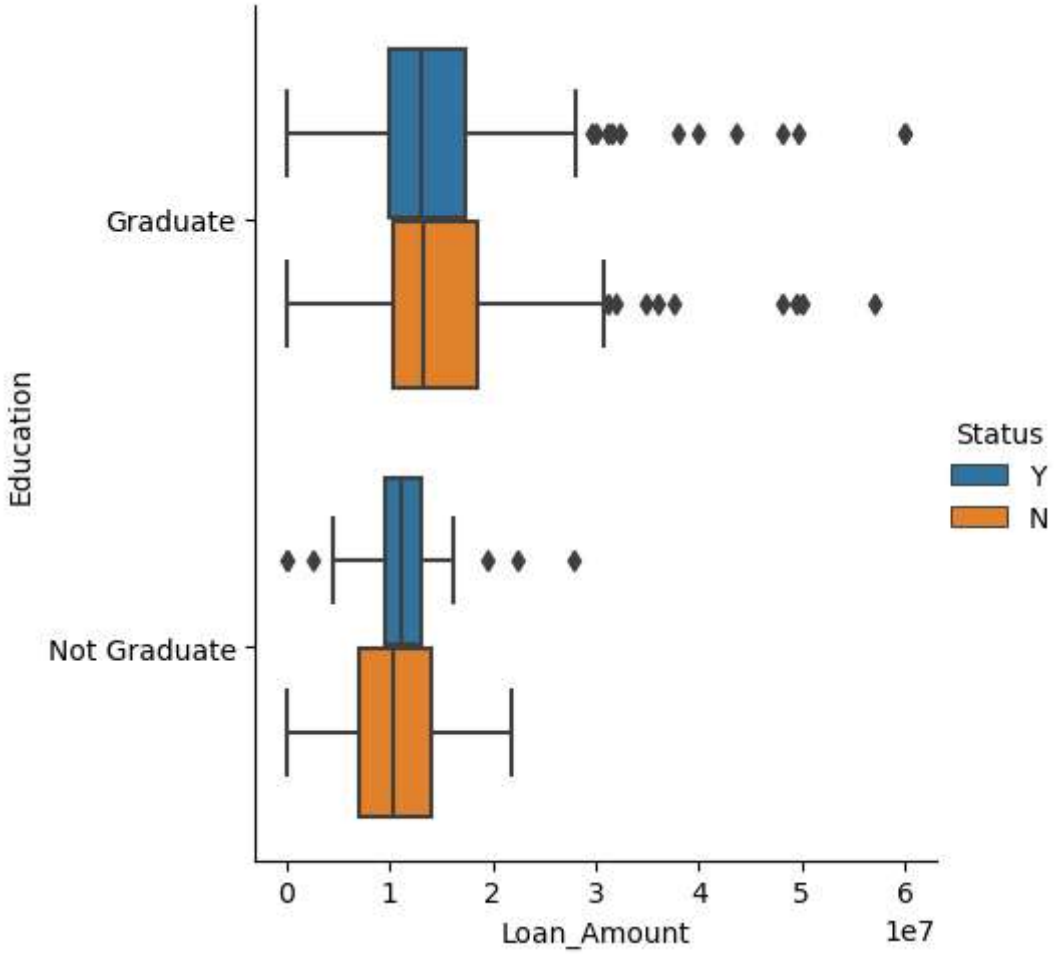
In [169…
```
sns.catplot(x='Loan_Amount',y='Gender',data=df,hue='Status',kind='box')#male and femal
plt.show()
```



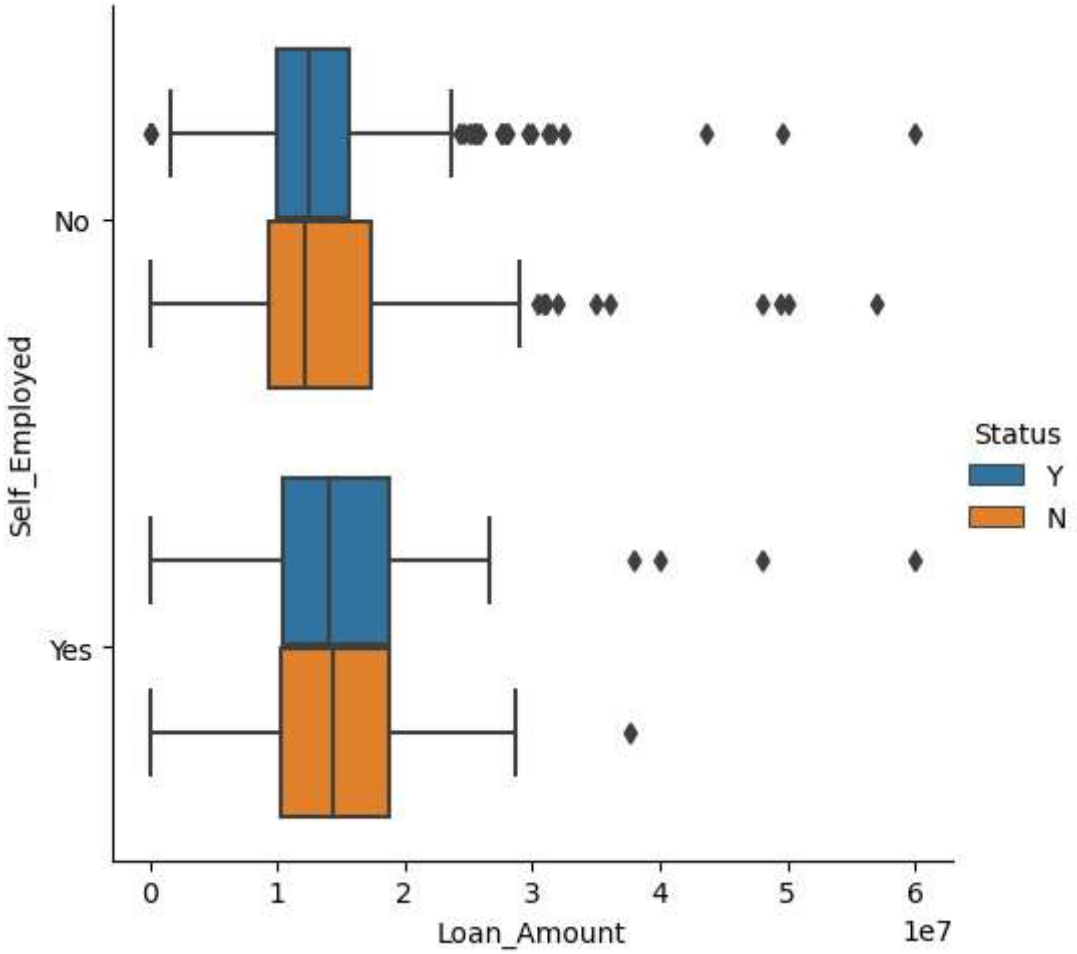
In [170…
```
sns.catplot(x='Loan_Amount',y='Married',data=df,hue='Status',kind='box')#married and r
plt.show()
```



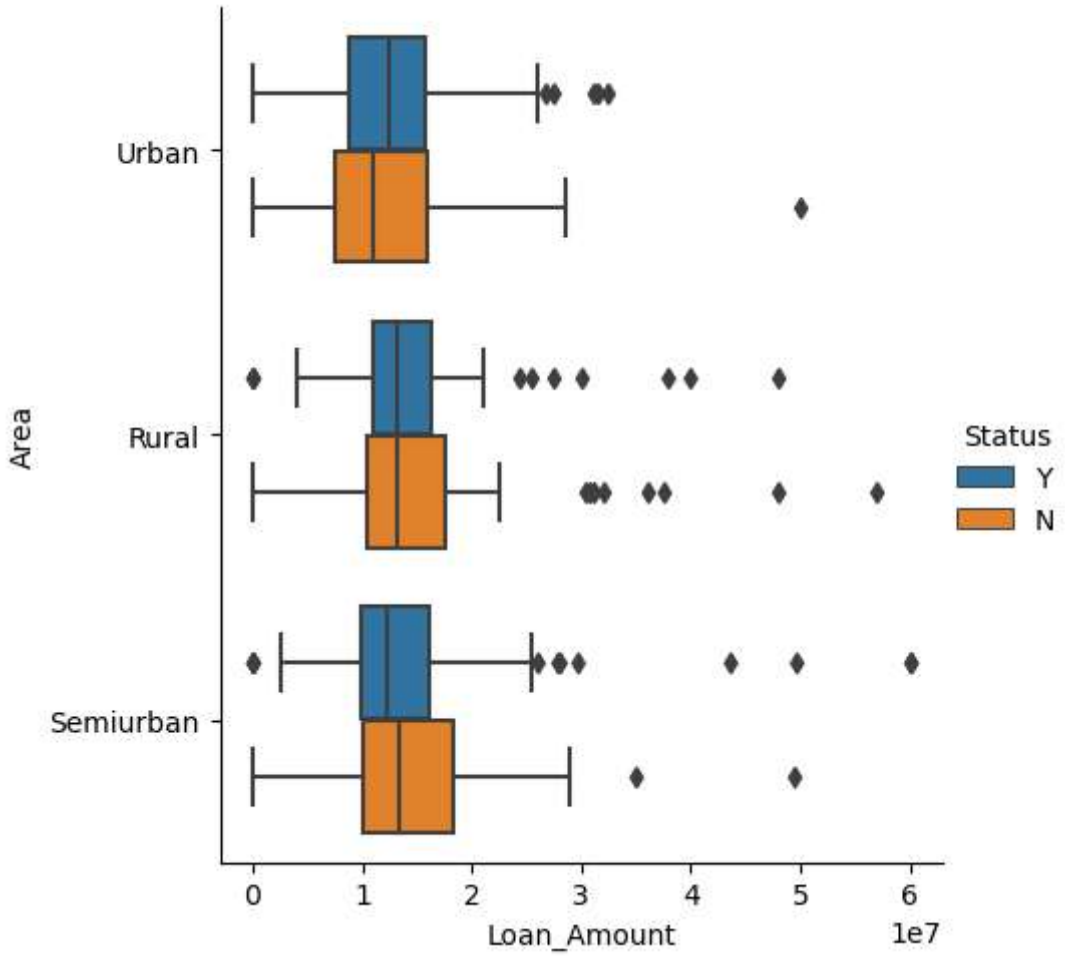
In [171…
```
sns.catplot(x='Loan_Amount',y='Education',data=df,hue='Status',kind='box')#both graduc
plt.show()                                                                  #graduates
```



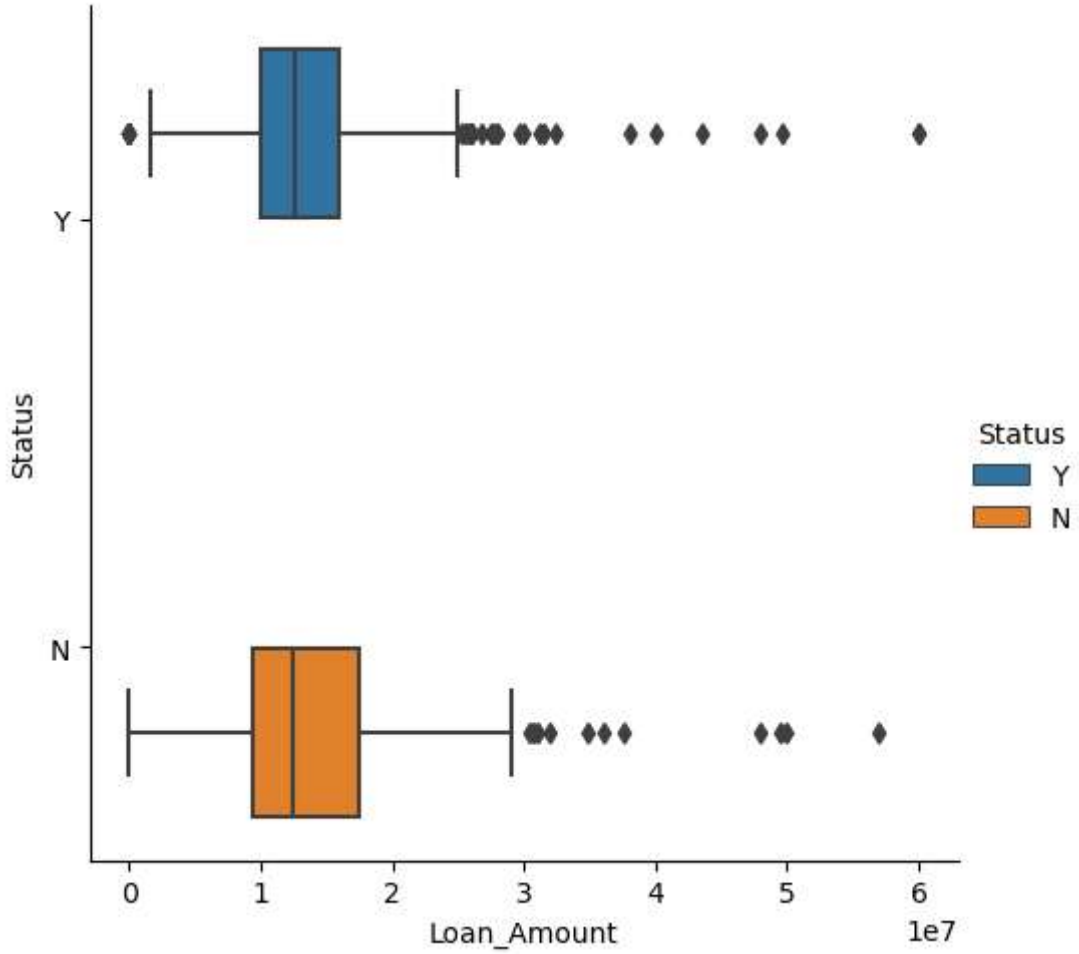
In [172…
```
sns.catplot(x='Loan_Amount',y='Self_Employed',data=df,hue='Status',kind='box')#Both se
plt.show()
```



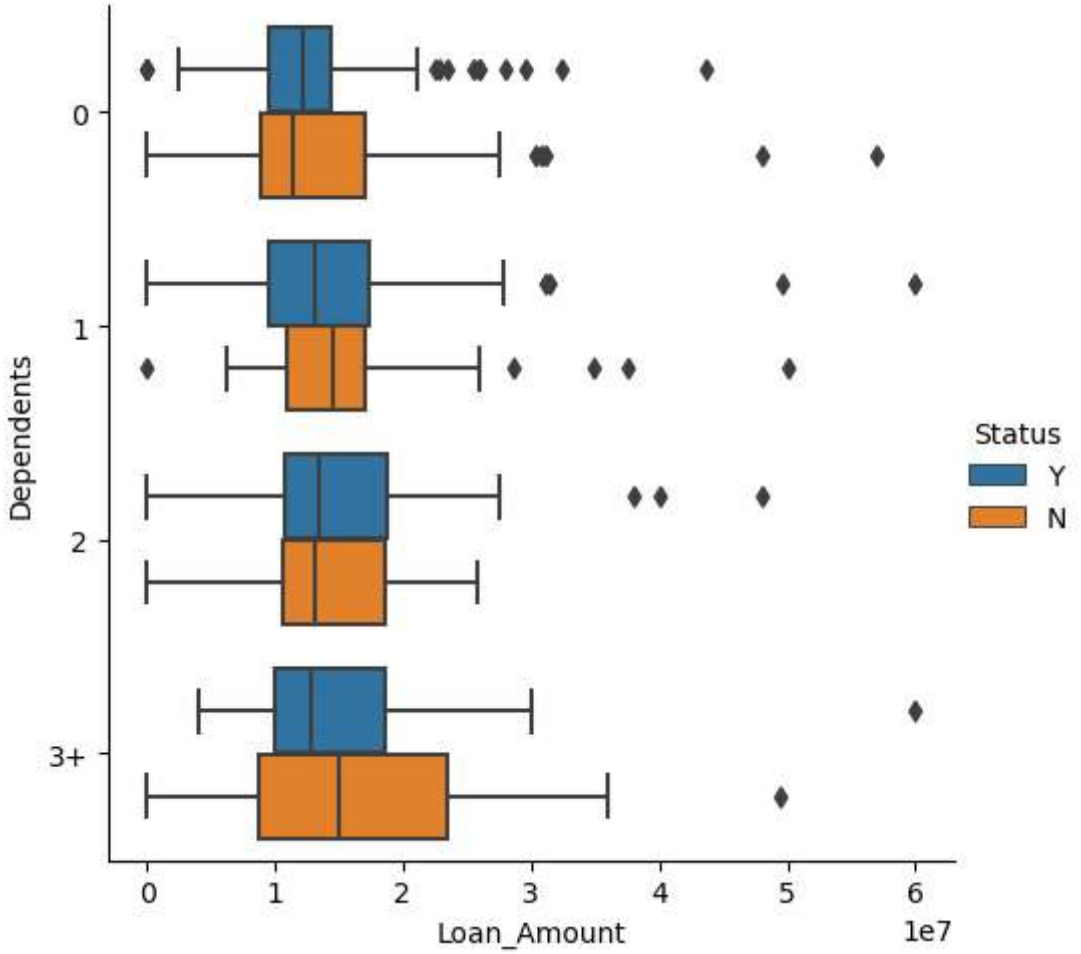
In [173…
```
sns.catplot(x='Loan_Amount',y='Area',data=df,hue='Status',kind='box')# all areas has m
plt.show()
```



In [174…
```
sns.catplot(x='Loan_Amount',y='Status',data=df,hue='Status',kind='box')#Loan amount st
plt.show()
```



In [175…
```
sns.catplot(x='Loan_Amount',y='Dependents',data=df,hue='Status',kind='box')# all deper
plt.show()
```



In [ ]:
```
#analysis

#in this data set the data is not normally distributed
# in this dataset Gender,married,Dependents,Term,Self-employed has null values
#in this dataset there is manyoutliers
#in this dataset the applicant income is highly related with coapplicantincome,loanamo
#applicant_income is highly related with loan amount,coapplicant income,term if depend
#Heatmap showing correlation between same variables is high
#in this data Yes status is more than No status
#In this data more males,more Graduates,married,Notselfemployed,more semiurban>urban>r
```

In [ ]:

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In [ ]: