Importing necessary modules

In [66]:
```
import pandas as pd
from IPython.display import display
```

Task1: To import data and show male graduates who have loan status as "Y"

In [21]:
```
bank=pd.read_csv(r"K:\Desktop\NIIT\tables\DS1_C4_S3_Loan_Data_Practice.csv.csv")
```

Out[21]:
```
Index(['Loan_ID', 'Gender', 'Married', 'Dependents', 'Education',
       'Self_Employed', 'ApplicantIncome', 'CoapplicantIncome', 'LoanAmount',
       'Loan_Amount_Term', 'Credit_History', 'Property_Area', 'Loan_Status'],
      dtype='object')
```

In [132]:
```
bank[(bank.Gender=="Male") & (bank.Loan_Status=="Y") & (bank.Education=="Graduate")]
```

Out[132]:

	Loan_ID	Gender	Married	Dependents	Education	Self_Employed	ApplicantIncome	CoapplicantIncome	LoanAmount	Loan_Amount_Term	Credit_History	Property_Area	Loan_Status
0	LP001002	Male	No	0	Graduate	No	5849	0.0	146	360	1	Urban	Y
2	LP001005	Male	Yes	0	Graduate	Yes	3000	0.0	66	360	1	Urban	Y
4	LP001008	Male	No	0	Graduate	No	6000	0.0	141	360	1	Urban	Y
5	LP001011	Male	Yes	2	Graduate	Yes	5417	4196.0	267	360	1	Urban	Y
8	LP001018	Male	Yes	2	Graduate	No	4006	1526.0	168	360	1	Urban	Y
...	...	...	...	...	...	...	...	...	...	...	...	...	...
606	LP002961	Male	Yes	1	Graduate	No	3400	2500.0	173	360	1	Semiurban	Y
608	LP002974	Male	Yes	0	Graduate	No	3232	1950.0	108	360	1	Rural	Y
610	LP002979	Male	Yes	3+	Graduate	No	4106	0.0	40	180	1	Rural	Y
611	LP002983	Male	Yes	1	Graduate	No	8072	240.0	253	360	1	Urban	Y
612	LP002984	Male	Yes	2	Graduate	No	7583	0.0	187	360	1	Urban	Y

279 rows × 13 columns

In [131]:
```
print("The number of male customers for corresponding condition is = ",len(bank[(bank.Gender=="Male") & (bank.Loan_Status=="Y") & (bank.Education=="Graduate")]))
```

```
The number of male customers for corresponding condition is =  279
```

Task2: To display all female candidates who are self employed and earn more than 4000

In [12]:
```
bank[(bank.Gender=="Female") & (bank.Self_Employed=="Yes") & (bank.ApplicantIncome>4000)]
```

Out[12]:

	Loan_ID	Gender	Married	Dependents	Education	Self_Employed	ApplicantIncome	CoapplicantIncome	LoanAmount	Loan_Amount_Term	Credit_History	Property_Area	Loan_Status
54	LP001186	Female	Yes	1	Graduate	Yes	11500	0.0	286	360	0	Urban	N
113	LP001392	Female	No	1	Graduate	Yes	7451	0.0	146	360	1	Semiurban	Y
353	LP002142	Female	Yes	0	Graduate	Yes	5500	0.0	105	360	0	Rural	N
370	LP002194	Female	No	0	Graduate	Yes	15759	0.0	55	360	1	Semiurban	Y
404	LP002301	Female	No	0	Graduate	Yes	7441	0.0	194	360	1	Rural	N
430	LP002377	Female	No	1	Graduate	Yes	8624	0.0	150	360	1	Semiurban	Y
439	LP002407	Female	Yes	0	Not Graduate	Yes	7142	0.0	138	360	1	Rural	Y
463	LP002489	Female	No	1	Not Graduate	Yes	5191	0.0	132	360	1	Semiurban	Y
493	LP002582	Female	No	0	Not Graduate	Yes	17263	0.0	225	360	1	Semiurban	Y
534	LP002731	Female	No	0	Not Graduate	Yes	18165	0.0	125	360	1	Urban	Y
561	LP002813	Female	Yes	1	Graduate	Yes	19484	0.0	600	360	1	Semiurban	Y
613	LP002990	Female	No	0	Graduate	Yes	4583	0.0	133	360	0	Semiurban	N

Task3: To find count customers who have loan approved,dependents more than 3 and property as rural

In [20]:
```
bank[(bank.Property_Area=="Rural") & (bank.Loan_Status=="Y") & (bank.Dependents=="3+")]
```

Out[20]:

	Loan_ID	Gender	Married	Dependents	Education	Self_Employed	ApplicantIncome	CoapplicantIncome	LoanAmount	Loan_Amount_Term	Credit_History	Property_Area	Loan_Status
126	LP001448	Male	Yes	3+	Graduate	No	23803	0.0	370	360	1	Rural	Y
213	LP001715	Male	Yes	3+	Not Graduate	Yes	5703	0.0	130	360	1	Rural	Y
255	LP001846	Female	No	3+	Graduate	No	3083	0.0	255	360	1	Rural	Y
324	LP002065	Male	Yes	3+	Graduate	No	15000	0.0	300	360	1	Rural	Y
352	LP002141	Male	Yes	3+	Graduate	No	2666	2083.0	95	360	1	Rural	Y
376	LP002219	Male	Yes	3+	Graduate	No	8750	4996.0	130	360	1	Rural	Y
390	LP002255	Male	No	3+	Graduate	No	9167	0.0	185	360	1	Rural	Y
391	LP002262	Male	Yes	3+	Graduate	No	9504	0.0	275	360	1	Rural	Y
481	LP002536	Male	Yes	3+	Not Graduate	No	3095	0.0	113	360	1	Rural	Y
515	LP002659	Male	Yes	3+	Graduate	No	3466	3428.0	150	360	1	Rural	Y
522	LP002692	Male	Yes	3+	Graduate	Yes	5677	1424.0	100	360	1	Rural	Y
539	LP002740	Male	Yes	3+	Graduate	No	6417	0.0	157	180	1	Rural	Y
610	LP002979	Male	Yes	3+	Graduate	No	4106	0.0	40	180	1	Rural	Y

Task4: To calculate the average of income for customers who have loan amount greater than 240000

In [93]:
```
print("Average salary of applicant corresponding condition - >", bank[(bank.LoanAmount>290) & (bank.Loan_Status=="Y")].ApplicantIncome.mean())

```

```
Average salary of applicant corresponding condition - > 18641.7
```

Task5: To find all customers who loan are rejected and thier unmarried and self employed also show count of records based on gender

In [68]:
```
display(bank[(bank.Loan_Status=="N") & (bank.Self_Employed=="Yes") & (bank.Married=="No")])
unapproved_F=bank[(bank.Loan_Status=="N") & (bank.Self_Employed=="Yes") & (bank.Married=="No") & (bank.Gender=="Female")]
unapproved_M=bank[(bank.Loan_Status=="N") & (bank.Self_Employed=="Yes") & (bank.Married=="No") & (bank.Gender=="Male")]
print("Total females whose were rejected with corresponding conditions are = ",len(unapproved_F))
print("Total males whose were rejected with corresponding conditions are = ",len(unapproved_M))
```

	Loan_ID	Gender	Married	Dependents	Education	Self_Employed	ApplicantIncome	CoapplicantIncome	LoanAmount	Loan_Amount_Term	Credit_History	Property_Area	Loan_Status
32	LP001097	Male	No	1	Graduate	Yes	4692	0.0	106	360	1	Rural	N
95	LP001326	Male	No	0	Graduate	Yes	6782	0.0	146	360	1	Urban	N
107	LP001370	Male	No	0	Not Graduate	Yes	7333	0.0	120	360	1	Rural	N
199	LP001673	Male	No	0	Graduate	Yes	11000	0.0	83	360	1	Urban	N
245	LP001813	Male	No	0	Graduate	Yes	6050	4333.0	120	180	1	Urban	N
254	LP001844	Male	No	0	Graduate	Yes	16250	0.0	192	360	0	Urban	N
280	LP001910	Male	No	1	Not Graduate	Yes	4053	2426.0	158	360	0	Urban	N
286	LP001925	Female	No	0	Graduate	Yes	2600	1717.0	99	300	1	Semiurban	N
404	LP002301	Female	No	0	Graduate	Yes	7441	0.0	194	360	1	Rural	N
410	LP002318	Female	No	1	Not Graduate	Yes	3867	0.0	62	360	1	Semiurban	N
438	LP002403	Male	No	0	Graduate	Yes	10416	0.0	187	360	0	Urban	N
449	LP002444	Male	No	1	Not Graduate	Yes	2769	1542.0	190	360	1	Semiurban	N
600	LP002949	Female	No	3+	Graduate	Yes	416	41667.0	350	180	0	Urban	N
613	LP002990	Female	No	0	Graduate	Yes	4583	0.0	133	360	0	Semiurban	N

```
Total females whose were rejected with corresponding conditions are =  5
Total males whose were rejected with corresponding conditions are =  9
```

Task6: To Display area and applicant income side by side

In [124]:
```
#display(bank.loc[:,["ApplicantIncome","Property_Area"]].sort_values(["Property_Area","ApplicantIncome"]))
income_area=pd.DataFrame(bank.value_counts(bank.Property_Area),columns=["Count"])
income_area["Sum of salaries"]=[bank[bank.Property_Area=="Semiurban"].ApplicantIncome.sum(),
                                bank[bank.Property_Area=="Urban"].ApplicantIncome.sum(),
                                bank[bank.Property_Area=="Rural"].ApplicantIncome.sum()]
income_area
```

Out[124]:

Property_Area	Count	Sum of salaries
Semiurban	233	1233097
Urban	202	1090446
Rural	179	994181

Task7: To find customers who co applicant salary is less than average and have thier loan approved

In [137]:
```
print("Number of applicants who abide corresponding conditions are ->",
      len(bank[(bank.CoapplicantIncome<bank.CoapplicantIncome.mean()) & (bank.Married=="Yes") & (bank.Loan_Status=="Y")]))
```

```
Number of applicants who abide corresponding conditions are -> 147
```

Task8: To find the number of customers who are graduates and have income in range

In [135]:
```
graduates=bank[(bank.Education=="Graduate") & (10256<bank.ApplicantIncome) & (bank.ApplicantIncome<150000)]
graduates
```

Out[135]:

	Loan_ID	Gender	Married	Dependents	Education	Self_Employed	ApplicantIncome	CoapplicantIncome	LoanAmount	Loan_Amount_Term	Credit_History	Property_Area	Loan_Status
9	LP001020	Male	Yes	1	Graduate	No	12841	10968.0	349	360	1	Semiurban	N
34	LP001100	Male	No	3+	Graduate	No	12500	3000.0	320	360	1	Rural	N
54	LP001186	Female	Yes	1	Graduate	Yes	11500	0.0	286	360	0	Urban	N
67	LP001233	Male	Yes	1	Graduate	No	10750	0.0	312	360	1	Urban	Y
102	LP001350	Male	Yes	1	Graduate	No	13650	0.0	146	360	1	Urban	Y
106	LP001369	Male	Yes	2	Graduate	No	11417	1126.0	225	360	1	Urban	Y
115	LP001401	Male	Yes	1	Graduate	No	14583	0.0	185	180	1	Rural	Y
119	LP001422	Female	No	0	Graduate	No	10408	0.0	259	360	1	Urban	Y
126	LP001448	Male	Yes	3+	Graduate	No	23803	0.0	370	360	1	Rural	Y
128	LP001451	Male	Yes	1	Graduate	Yes	10513	3850.0	160	180	0	Urban	N
130	LP001469	Male	No	0	Graduate	Yes	20166	0.0	650	480	1	Urban	Y
138	LP001492	Male	No	0	Graduate	No	14999	0.0	242	360	0	Semiurban	N
144	LP001508	Male	Yes	2	Graduate	No	11757	0.0	187	180	1	Urban	Y
146	LP001516	Female	Yes	2	Graduate	No	14866	0.0	70	360	1	Urban	Y
155	LP001536	Male	Yes	3+	Graduate	No	39999	0.0	600	180	0	Semiurban	Y
171	LP001585	Male	Yes	3+	Graduate	No	51763	0.0	700	300	1	Urban	Y
183	LP001637	Male	Yes	1	Graduate	No	33846	0.0	260	360	1	Semiurban	N
185	LP001640	Male	Yes	0	Graduate	Yes	39147	4750.0	120	360	1	Semiurban	Y
191	LP001656	Male	No	0	Graduate	No	12000	0.0	164	360	1	Semiurban	N
199	LP001673	Male	No	0	Graduate	Yes	11000	0.0	83	360	1	Urban	N
254	LP001844	Male	No	0	Graduate	Yes	16250	0.0	192	360	0	Urban	N
258	LP001859	Male	Yes	0	Graduate	No	14683	2100.0	304	360	1	Rural	N
271	LP001891	Male	Yes	0	Graduate	No	11146	0.0	136	360	1	Urban	Y
278	LP001907	Male	Yes	0	Graduate	No	14583	0.0	436	360	1	Semiurban	Y
284	LP001922	Male	Yes	0	Graduate	No	20667	0.0	146	360	1	Rural	N
308	LP001996	Male	No	0	Graduate	No	20233	0.0	480	360	1	Rural	N
324	LP002065	Male	Yes	3+	Graduate	No	15000	0.0	300	360	1	Rural	Y
333	LP002101	Male	Yes	0	Graduate	No	63337	0.0	490	180	1	Urban	Y
369	LP002191	Male	Yes	0	Graduate	No	19730	5266.0	570	360	1	Rural	N
370	LP002194	Female	No	0	Graduate	Yes	15759	0.0	55	360	1	Semiurban	Y
409	LP002317	Male	Yes	3+	Graduate	No	81000	0.0	360	360	0	Rural	N
424	LP002364	Male	Yes	0	Graduate	No	14880	0.0	96	360	1	Semiurban	Y
432	LP002386	Male	No	0	Graduate	Yes	12876	0.0	405	360	1	Semiurban	Y
438	LP002403	Male	No	0	Graduate	Yes	10416	0.0	187	360	0	Urban	N
443	LP002422	Male	No	1	Graduate	No	37719	0.0	152	360	1	Semiurban	Y
467	LP002501	Male	Yes	0	Graduate	No	16692	0.0	110	360	1	Semiurban	Y
475	LP002527	Male	Yes	2	Graduate	Yes	16525	1014.0	150	360	1	Rural	Y
478	LP002531	Male	Yes	1	Graduate	Yes	16667	2250.0	86	360	1	Semiurban	Y
483	LP002541	Male	Yes	0	Graduate	No	10833	0.0	234	360	1	Semiurban	Y
487	LP002547	Male	Yes	1	Graduate	No	18333	0.0	500	360	1	Urban	N
506	LP002624	Male	Yes	0	Graduate	No	20833	6667.0	480	360	1	Urban	Y
509	LP002634	Female	No	1	Graduate	No	13262	0.0	40	360	1	Urban	Y
525	LP002699	Male	Yes	2	Graduate	Yes	17500	0.0	400	360	1	Rural	Y
533	LP002729	Male	No	1	Graduate	No	11250	0.0	196	360	1	Semiurban	N
561	LP002813	Female	Yes	1	Graduate	Yes	19484	0.0	600	360	1	Semiurban	Y
572	LP002855	Male	Yes	2	Graduate	No	16666	0.0	275	360	1	Urban	Y
594	LP002938	Male	Yes	0	Graduate	Yes	16120	0.0	260	360	1	Urban	Y
604	LP002959	Female	Yes	1	Graduate	No	12000	0.0	496	360	1	Semiurban	Y

In [136]:
```
print("The number of customers in corresponding conditions = ",len(graduates))
```

```
The number of customers in corresponding conditions =  48
```