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

In [11]:
```
#read the bank datasets file

file_path=r"C:\Users\Mrityunjay\Desktop\Data science naresh it\Class notes by me\ba
bank_df=pd.read_csv(file_path,sep=";")
bank_df
```

Out[11]:

	age	job	marital	education	default	balance	housing	loan	contact	da
0	30	unemployed	married	primary	no	1787	no	no	cellular	
1	33	services	married	secondary	no	4789	yes	yes	cellular	
2	35	management	single	tertiary	no	1350	yes	no	cellular	
3	30	management	married	tertiary	no	1476	yes	yes	unknown	
4	59	blue-collar	married	secondary	no	0	yes	no	unknown	
...	...	...	...	...	...	...	...	...	...	
4516	33	services	married	secondary	no	-333	yes	no	cellular	
4517	57	self-employed	married	tertiary	yes	-3313	yes	yes	unknown	
4518	57	technician	married	secondary	no	295	no	no	cellular	
4519	28	blue-collar	married	secondary	no	1137	no	no	cellular	
4520	44	entrepreneur	single	tertiary	no	1136	yes	yes	cellular	

4521 rows × 17 columns

In [65]:
```
#checks columns

bank_df.columns
```

Out[65]:
```
Index(['age', 'job', 'marital', 'education', 'default', 'balance', 'housing',
       'loan', 'contact', 'day', 'month', 'duration', 'campaign', 'pdays',
       'previous', 'poutcome', 'y'],
      dtype='object')
```

In [67]:
```
#checks columns data types of cloumns

dtypes=bank_df.dtypes
dtypes
```

Out[67]:
```
age           int64
job          object
marital      object
education    object
default      object
balance       int64
housing      object
loan         object
contact      object
day           int64
month        object
duration      int64
campaign      int64
pdays         int64
previous      int64
poutcome     object
y            object
dtype: object
```

In [69]:
```
#extract categorical columns using dict items()

catgorical_col=[]
for key,values in dict(bank_df.dtypes).items():
    if values=="object":
        catgorical_col.append(key)
catgorical_col
```

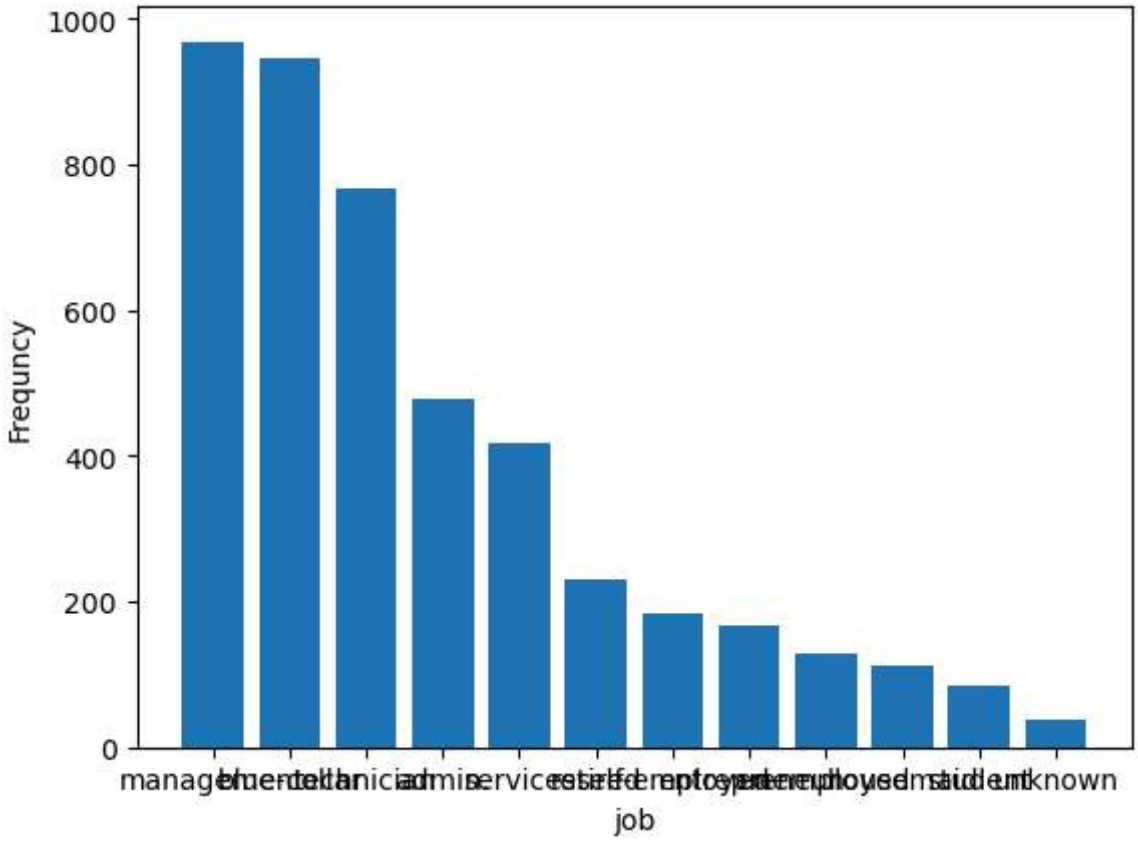
Out[69]:
```
['job',
 'marital',
 'education',
 'default',
 'housing',
 'loan',
 'contact',
 'month',
 'poutcome',
 'y']
```

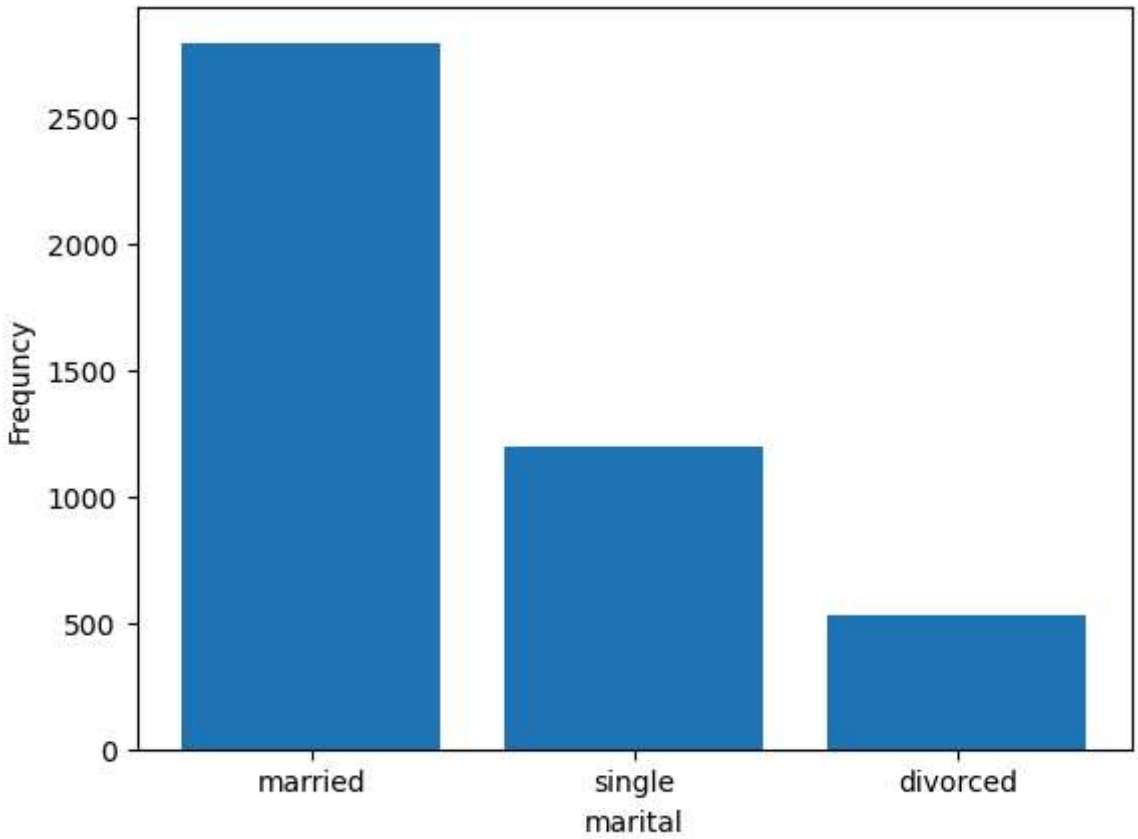
In [71]:
```
#check length of categorical columns

len(catgorical_col)
```

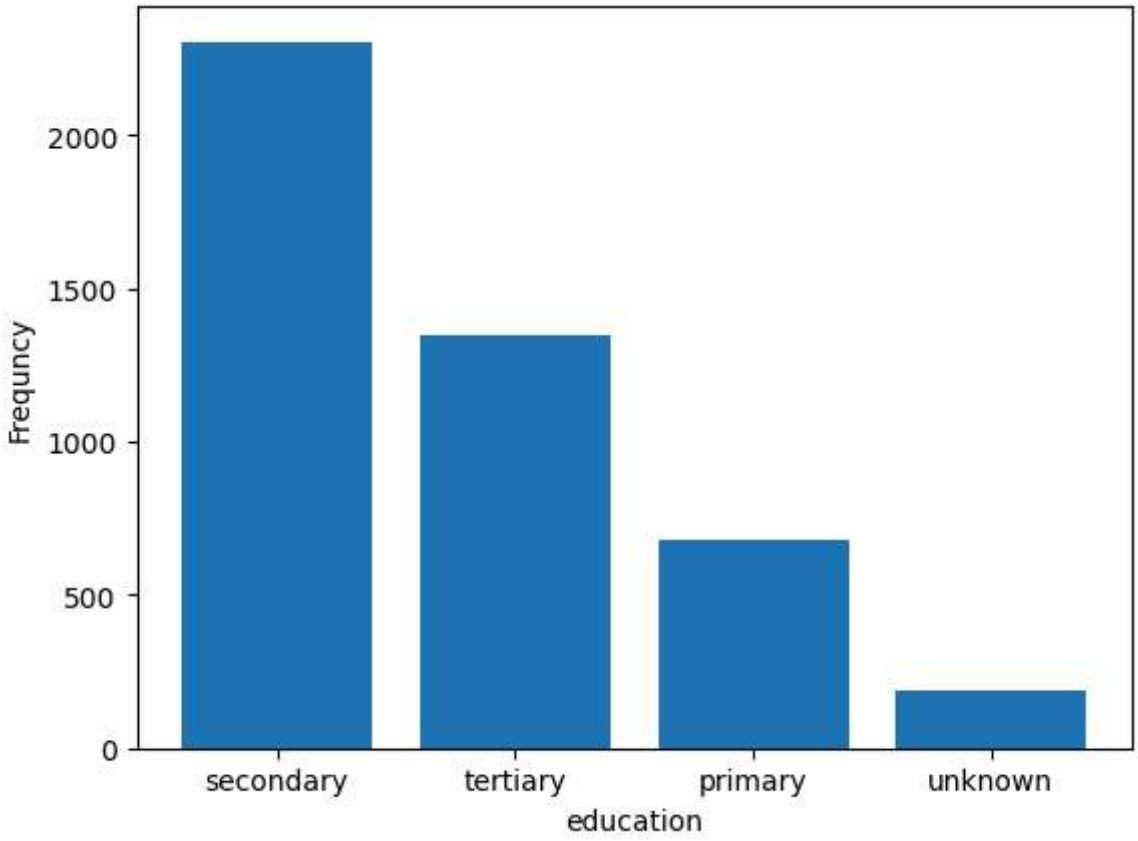
Out[71]:
```
10
```

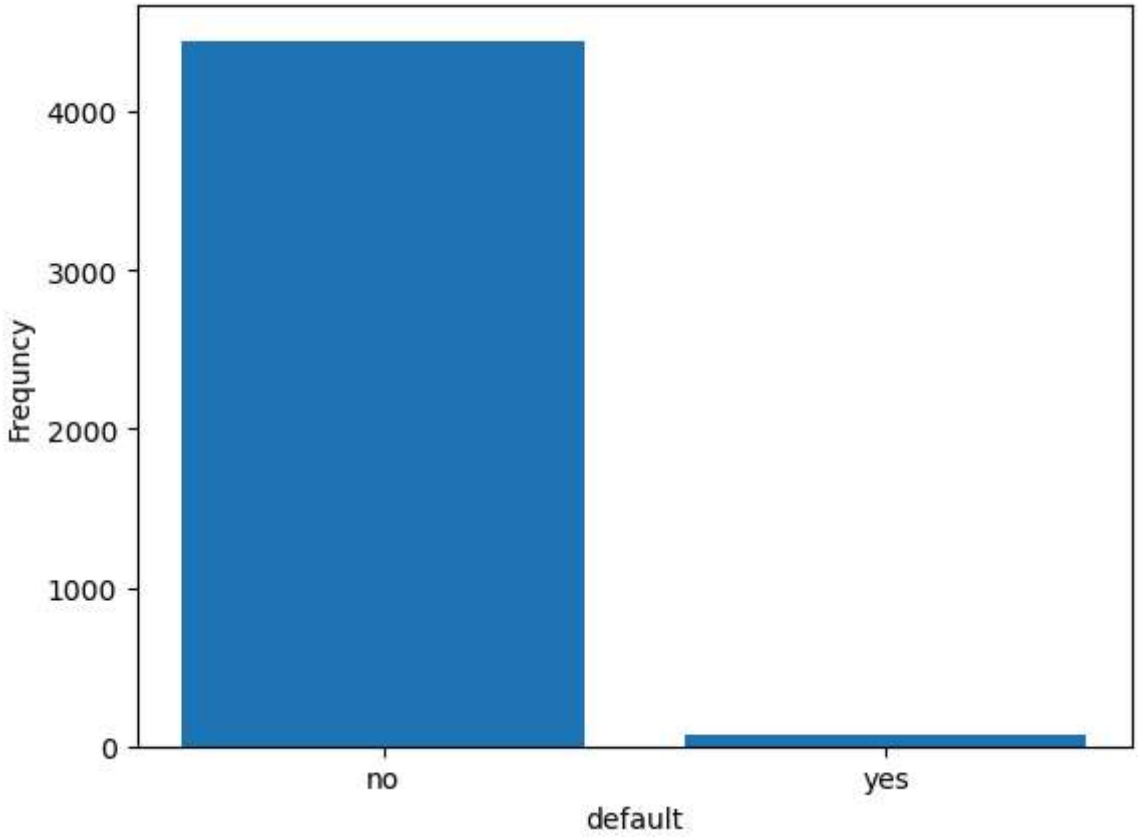
In [61]:
```
#plot all the categorical column using for loop

for i in catgorical_col:
    dfn=bank_df[i].value_counts()
    keys=dfn.keys()
    value=dfn.values
    df=pd.DataFrame(zip(keys,value),columns=[i,"count"])
    plt.bar(i,"count",data=df)
    plt.xlabel(i)
    plt.ylabel("Frequncy")
    plt.show()
```

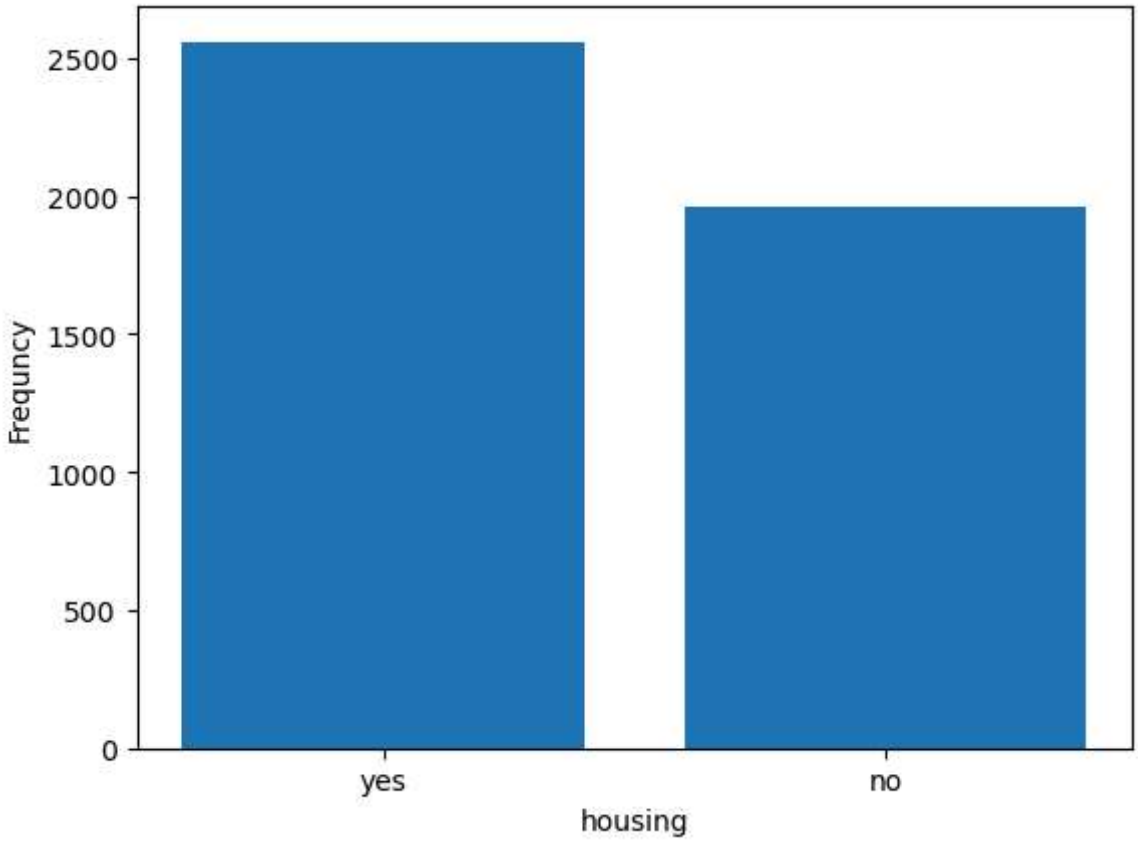
```
    plt.savefig(f"{i}.jpg")
```

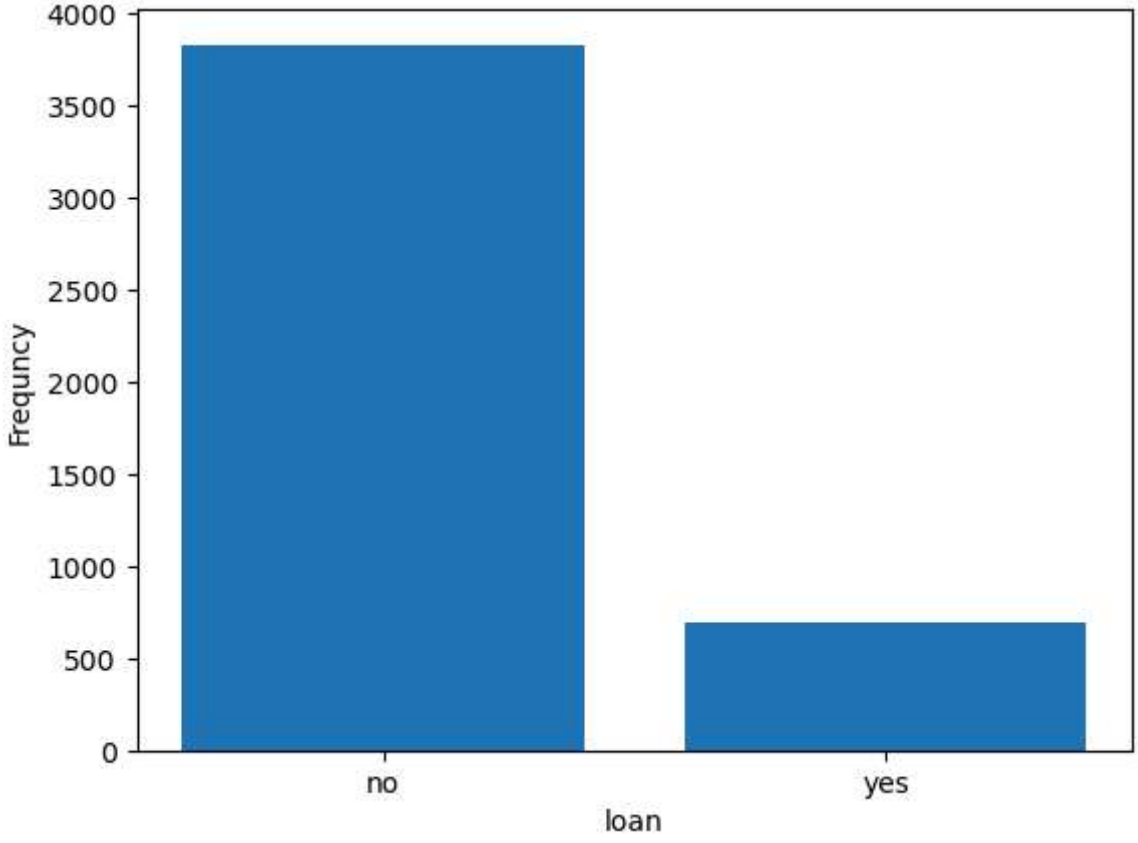


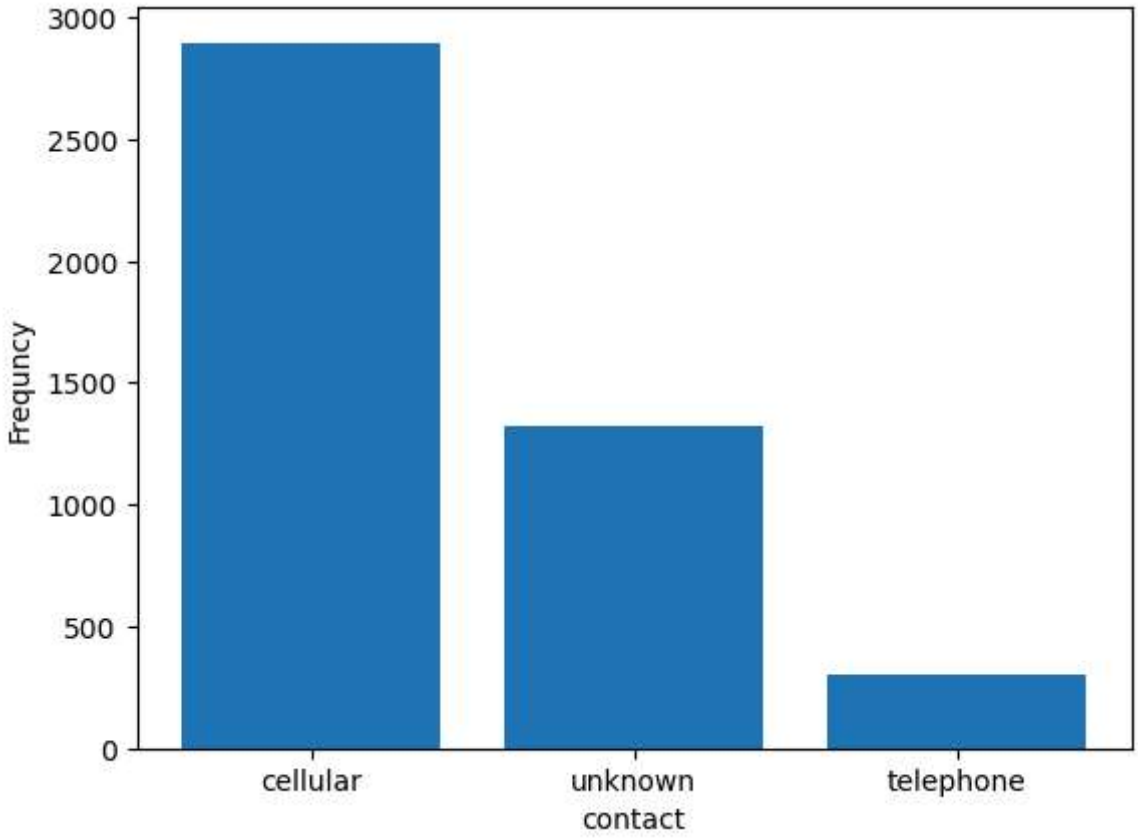


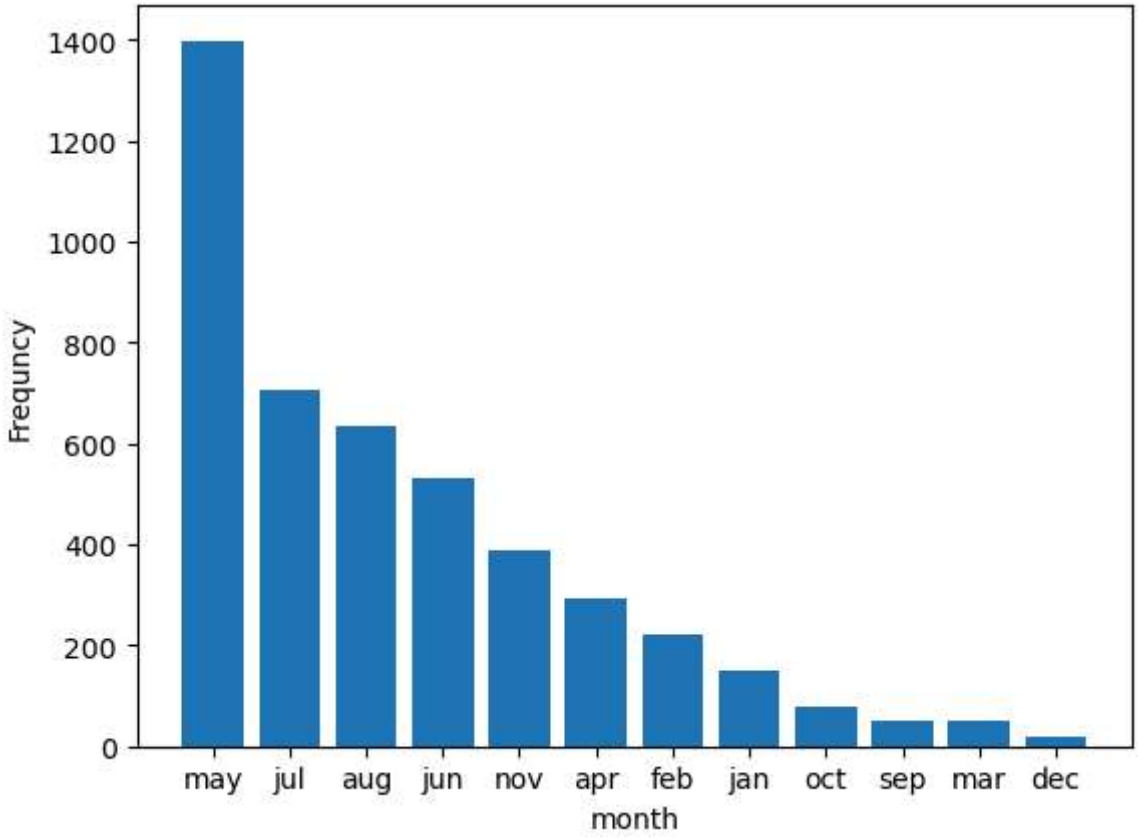

2000
1500
1000
500
0
Frequncy
secondary
tertiary
primary
unknown
education

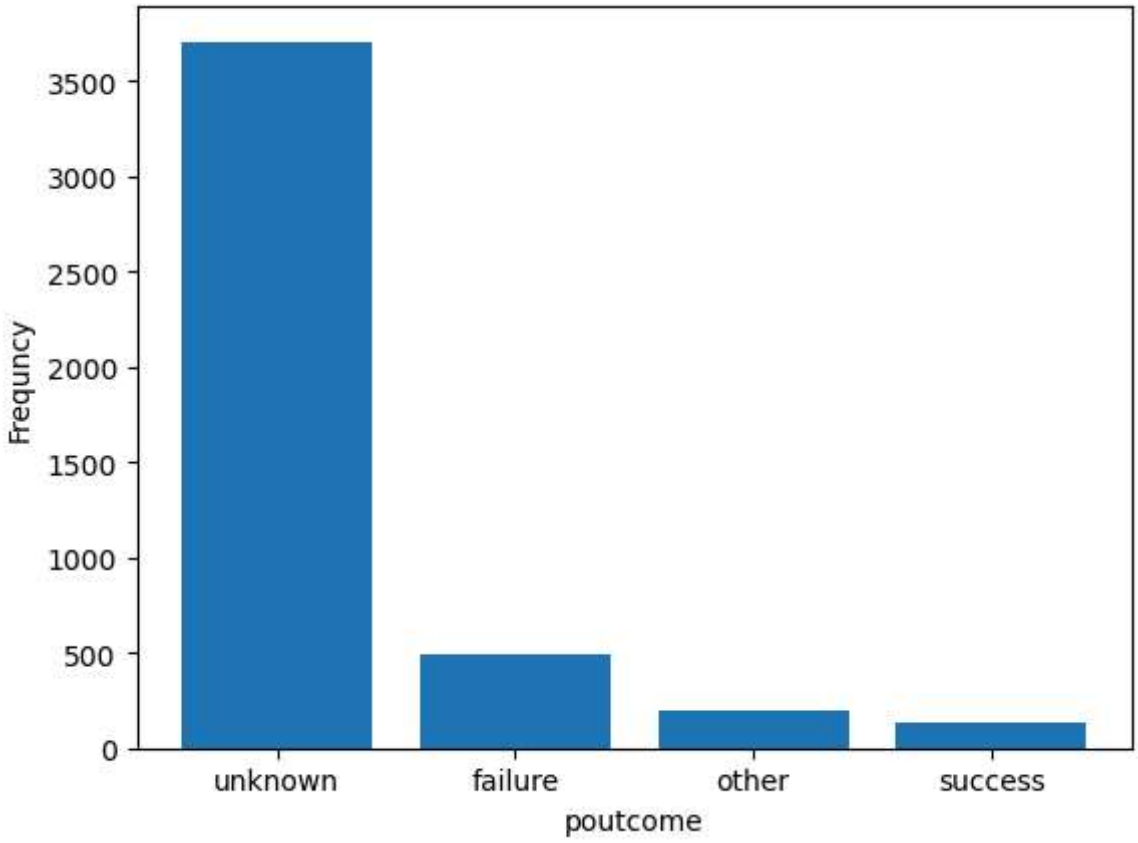

4000
3000
2000
1000
0
Frequncy
no
yes
default

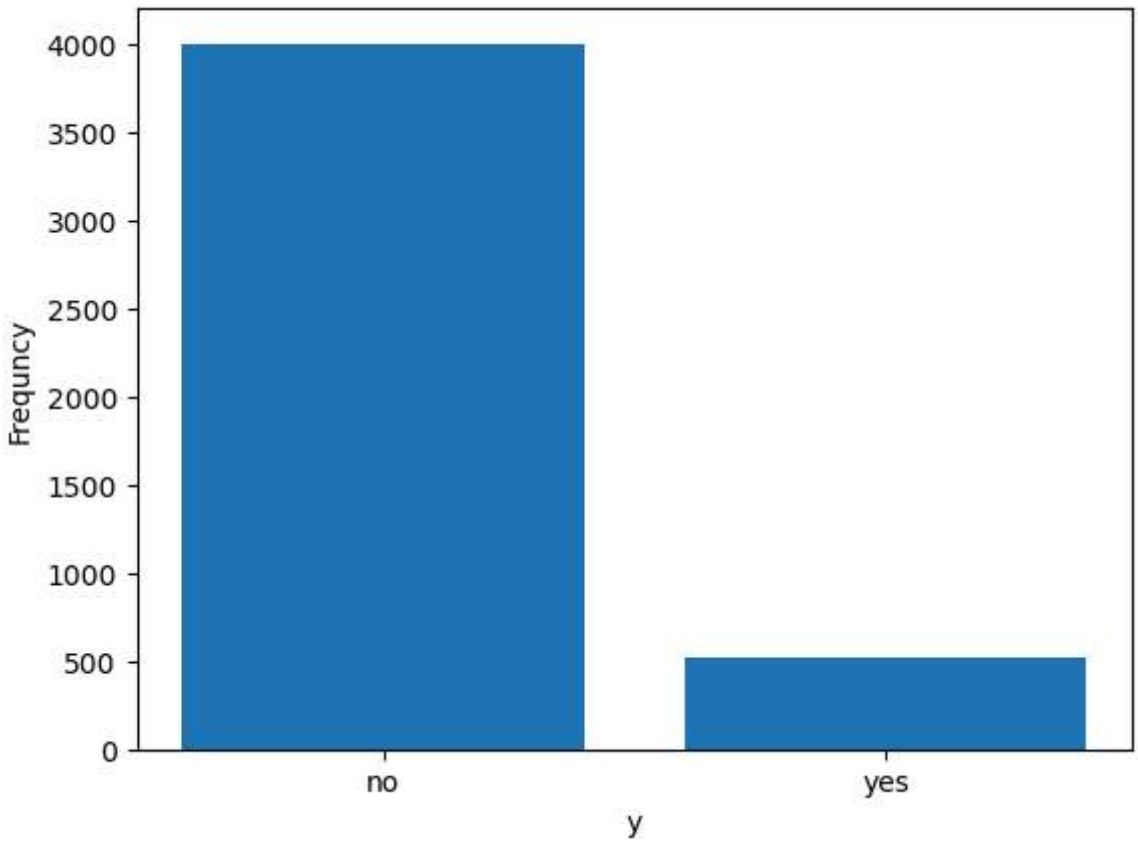

2500
2000
1500
1000
500
0
Frequncy
yes
no
housing


4000
3500
3000
2500
2000
1500
1000
500
0
Frequncy
no
yes
loan


3000
2500
2000
1500
1000
500
0
Frequncy
cellular
unknown
telephone
contact


1400
1200
1000
800
600
400
200
0
Frequncy
may
jul
aug
jun
nov
apr
feb
jan
oct
sep
mar
dec
month





In [ ]:
```
### Analysis

- Here we plot Bar Chart take class as coulunms name and class frequency as count c
```

- we see that bar char show data in box format and its frequency show the how many
- In this bank dataseta 10 categorical columns.
- columns name :job,marital,education,default,housing,loan,contact,month,poutcome,y
- we preasent their graph as bar charts.