```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

comcast_df=pd.read_csv("Comcast_telecom_complaints_data.csv")

comcast_df.head(3)
```

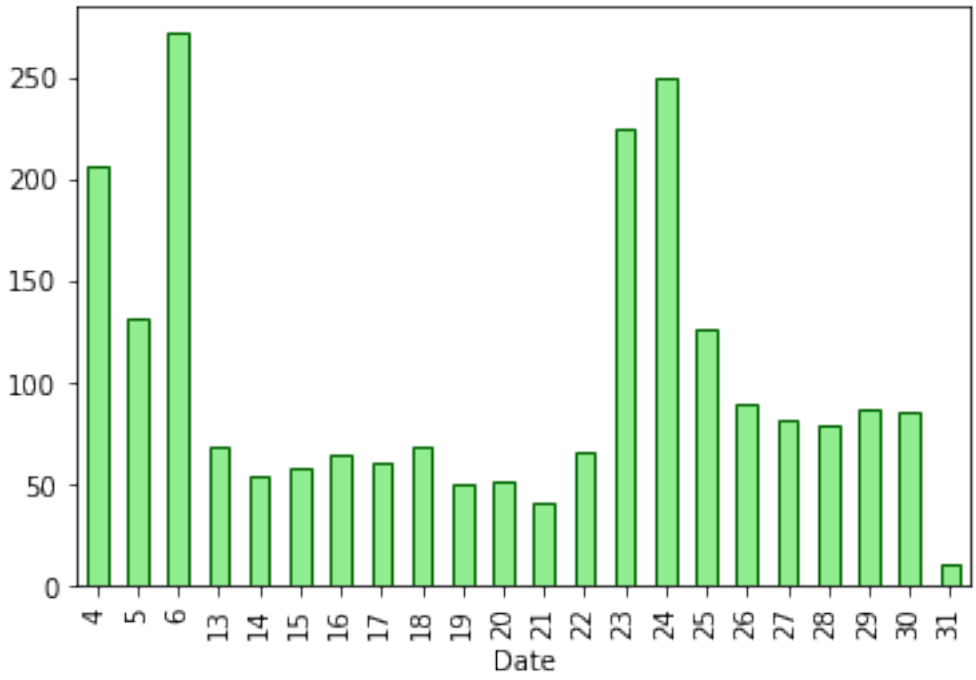
```
  Ticket #                             Customer Complaint      Date  \
0   250635                  Comcast Cable Internet Speeds  22-04-15
1   223441  Payment disappear - service got disconnected  04-08-15
2   242732                               Speed and Service  18-04-15

  Date_month_year         Time        Received Via      City     State
\
0       22-Apr-15   3:53:50 PM  Customer Care Call  Abingdon  Maryland

1       04-Aug-15  10:22:56 AM            Internet   Acworth   Georgia

2       18-Apr-15   9:55:47 AM            Internet   Acworth   Georgia


   Zip code  Status Filing on Behalf of Someone
0     21009  Closed                          No
1     30102  Closed                          No
2     30101  Closed                         Yes
```

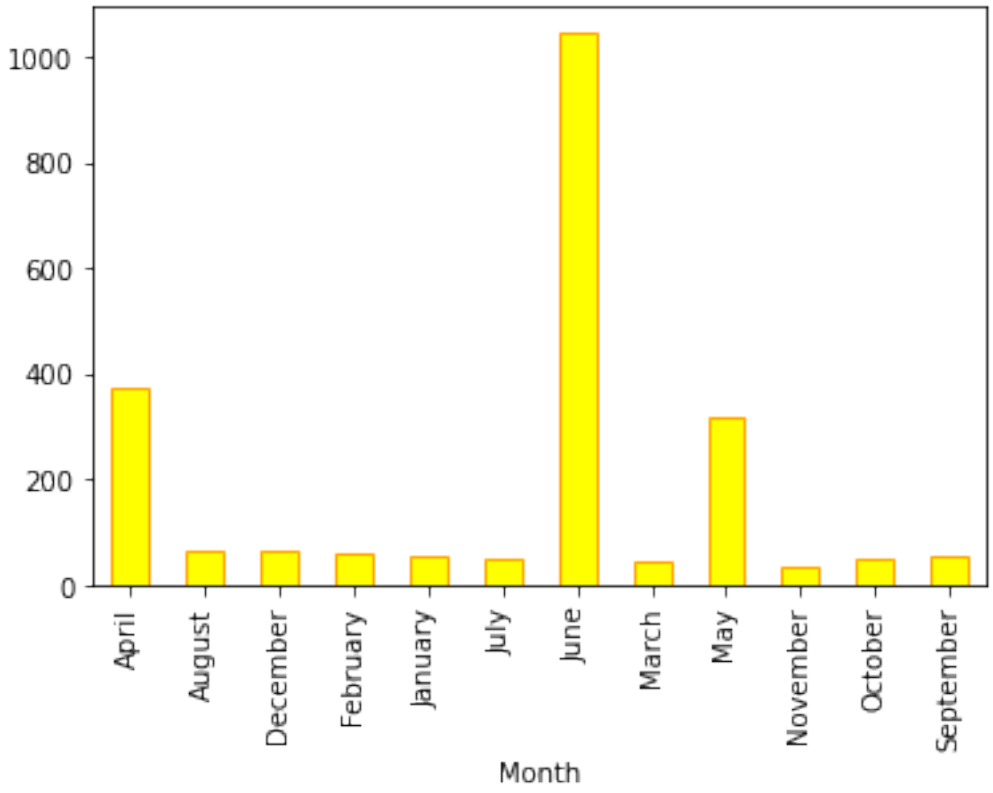
```
comcast_df.describe()
```

```
           Zip code
count   2224.000000
mean   47994.393435
std    28885.279427
min     1075.000000
25%    30056.500000
50%    37211.000000
75%    77058.750000
max    99223.000000
```

```
## - Provide the trend chart for the number of complaints at monthly
and daily granularity levels.

comcast_df['Month']=pd.to_datetime(comcast_df['Date_month_year']).dt.m
onth_name()
comcast_df['Date']=pd.to_datetime(comcast_df['Date_month_year']).dt.da
y

## Graph for date wise
comcast_df.groupby(['Date'])['Customer
Complaint'].count().plot(kind='bar',color="lightgreen",edgecolor="dark
green",)
```

```
plt.show()

## Graph for month wise
comcast_df.groupby(['Month'])['Customer
Complaint'].count().plot(kind='bar',color="yellow",edgecolor="orange")
plt.show()
```






```
## - Provide a table with the frequency of complaint types.

comcast_df['Customer
Complaint'].value_counts().to_frame().reset_index()

                                                  index  Customer
Complaint
0                                                Comcast
83
1                                       Comcast Internet
18
2                                       Comcast Data Cap
17
3                                                comcast
13
4                                        Comcast Billing
11
...                                                  ...
...
1836                                       Comcast fraud
1
1837    Comcast won't quit charging me for modem rental
1
1838                       Slow Internet / Monopoly Area
1
1839  ComCast continues to bill me though I canceled...
```

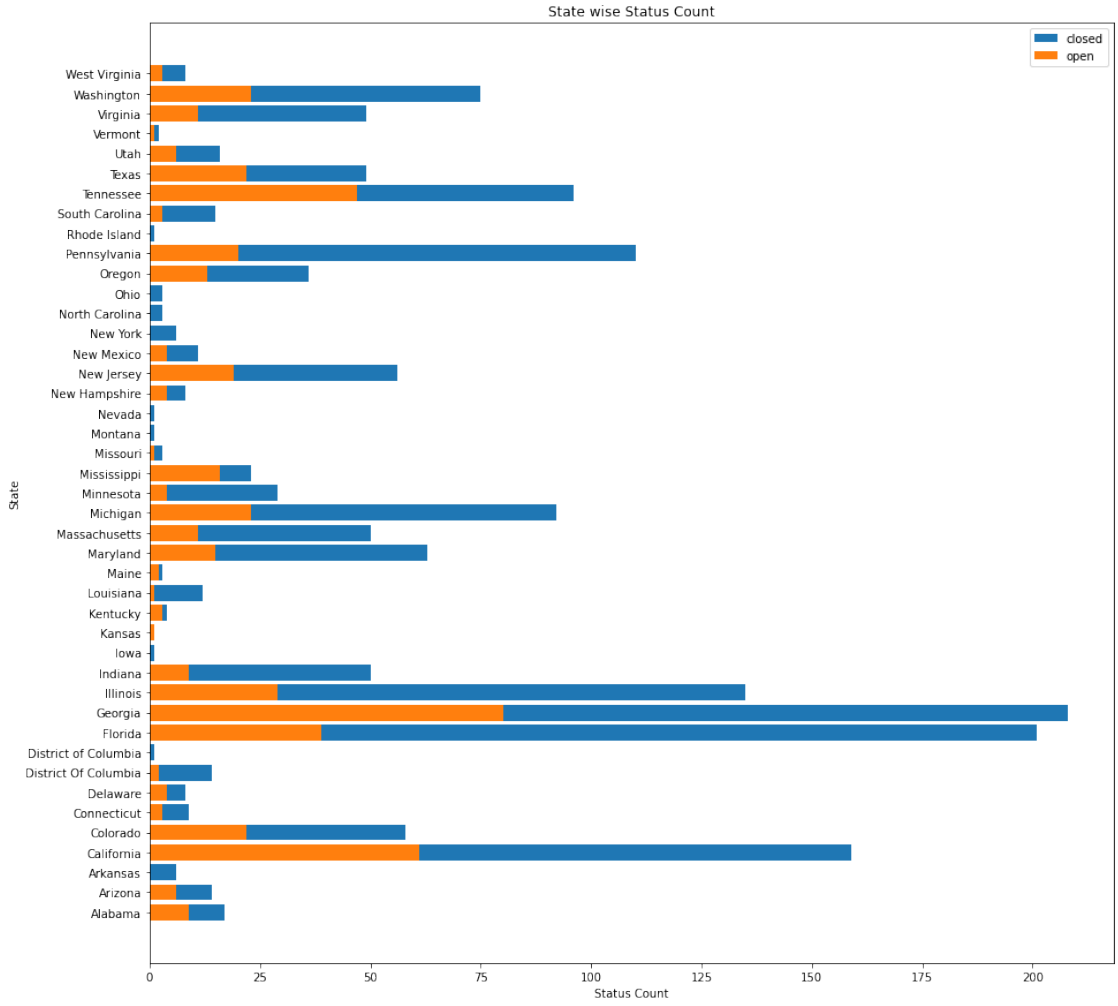
```
1
1840  Comcast Poor Customer Service and Degraded Ser...
1

[1841 rows x 2 columns]
```

```
## - Which complaint types are maximum i.e., around internet, network
issues, or across any other domains.
comcast_df['Customer Complaint'].value_counts().head(5)
```

```
Comcast             83
Comcast Internet    18
Comcast Data Cap    17
comcast             13
Comcast Billing     11
Name: Customer Complaint, dtype: int64
```

```
## - Create a new categorical variable with value as Open and Closed.
Open & Pending is to be categorized as Open and
## Closed & Solved is to be categorized as Closed.

comcast_df['Status']=comcast_df['Status'].apply(lambda x: 'Open' if
((x=='Open') | (x=='Pending')) else 'Closed')
```

```
## - Provide state wise status of complaints in a stacked bar chart.
Use the categorized variable from Q3.
opn=comcast_df[comcast_df['Status']=='Open'].groupby(['State'])
['Status'].count().to_frame().reset_index()
clos=comcast_df[comcast_df['Status']=='Closed'].groupby(['State'])
['Status'].count().to_frame().reset_index()

fig=plt.figure(figsize=(15,15))
plt.barh(clos.State, clos.Status)
plt.barh(opn.State, opn.Status)
plt.ylabel("State")
plt.xlabel("Status Count")
plt.legend(["closed", "open"])
plt.title("State wise Status Count")

plt.show()
```




```
## Which state has the maximum complaints
```

```
comcast_df.groupby("State")['Customer
Complaint'].agg("count").sort_values(ascending=False).head(1)
```

```
State
Georgia    288
Name: Customer Complaint, dtype: int64
```

```
## Which state has the highest percentage of unresolved complaints
```

```
State_Unsolved=comcast_df.loc[comcast_df['Status']=='Open',
['State']].value_counts()
State_Unsolved.head(1)/State_Unsolved.sum()*100
```

```
State
Georgia    15.473888
dtype: float64
```

```
# Provide the percentage of complaints resolved till date, which were
received through the Internet and customer care calls.
```

```
comcast_df[comcast_df['Status']=='Closed'].groupby('Status')['Received
Via'].value_counts(normalize=True)*100
```

```
Status  Received Via
Closed  Customer Care Call    50.615114
        Internet              49.384886
Name: Received Via, dtype: float64
```

```
# submitted by Avinash kumar
```