Life & Motor Insurances Analysis

Aim :

The aim of this project is to know the performances of Life Insurance & Motor Insurances. And to determine and analyse sales and revenue of both Life Insurance & Motor Insurances.

In [1]:

```
#Libraries

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

In [2]:
```
#Import Excel File

df = pd.read_excel("C:/Users/HP/Downloads/Life and Motor Dataset.xlsx")

df
```

Out[2]:

	S.No.	Policy Type	Insurer	Month	Year	PPT	E Nach	Payment Mode	Gender	State	Edu
0	1	Life	HDFC Life	January	2021	Annually	Yes	Credit Card	Male	Andhra Pradesh	Gr
1	2	Life	ICICI Lombard	February	2021	Annually	No	Debit Card	Female	Arunachal Pradesh	
2	3	Life	Max	February	2021	Annually	No	Net Banking	Female	Assam	
3	4	Motor	Bajaj	February	2021	Annually	NaN	Credit Card	Female	Bihar	Gr
4	5	Life	Tata AIA	February	2021	Annually	No	Debit Card	Female	Chhattisgarh	
...	...	...	...	...	...	...	...	...	...	...	
995	996	Life	SBI Life	April	2022	Monthly	No	Net Banking	Female	Manipur	
996	997	Life	HDFC Life	April	2022	Monthly	Yes	Credit Card	Female	Meghalaya	Gr
997	998	Life	ICICI Lombard	April	2022	Monthly	No	Debit Card	Female	Mizoram	
998	999	Life	Max	April	2022	Monthly	Yes	Net Banking	Male	Nagaland	
999	1000	Motor	Bajaj	April	2022	Monthly	NaN	Credit Card	Male	Odisha	Gr

1000 rows × 16 columns

In [3]:
```
#Shape of Table

df.shape
```

Out[3]:
```
(1000, 16)
```

In [4]:
```
#Rows & Columns

print("Number of Rows : " , df.shape[0])
print("Number of Column : " , df.shape[1])
```

```
Number of Rows :  1000
Number of Column :  16
```

In [5]:

```
#Information of Table

df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1000 entries, 0 to 999
Data columns (total 16 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   S.No.            1000 non-null   int64         
 1   Policy Type      1000 non-null   object        
 2   Insurer          1000 non-null   object        
 3   Month            1000 non-null   object        
 4   Year             1000 non-null   int64         
 5   PPT              1000 non-null   object        
 6   E Nach           501 non-null    object        
 7   Payment Mode     1000 non-null   object        
 8   Gender           1000 non-null   object        
 9   State            1000 non-null   object        
 10  Education        1000 non-null   object        
 11  Maritial Status  1000 non-null   object        
 12  Working Status   1000 non-null   object        
 13  Amount           1000 non-null   int64         
 14  Month Number     1000 non-null   int64         
 15  Date             1000 non-null   datetime64[ns]
dtypes: datetime64[ns](1), int64(4), object(11)
memory usage: 125.1+ KB
```

In [9]:

```
#Top

df.head(5)
```

Out[9]:

	S.No.	Policy Type	Insurer	Month	Year	PPT	E Nach	Payment Mode	Gender	State	Educa
0	1	Life	HDFC Life	January	2021	Annually	Yes	Credit Card	Male	Andhra Pradesh	Grad
1	2	Life	ICICI Lombard	February	2021	Annually	No	Debit Card	Female	Arunachal Pradesh	
2	3	Life	Max	February	2021	Annually	No	Net Banking	Female	Assam	
3	4	Motor	Bajaj	February	2021	Annually	NaN	Credit Card	Female	Bihar	Grad
4	5	Life	Tata AIA	February	2021	Annually	No	Debit Card	Female	Chhattisgarh	

In [11]:

```
#Bottom

df.tail(5)
```

Out[11]:

	S.No.	Policy Type	Insurer	Month	Year	PPT	E Nach	Payment Mode	Gender	State	Educati
995	996	Life	SBI Life	April	2022	Monthly	No	Net Banking	Female	Manipur	[
996	997	Life	HDFC Life	April	2022	Monthly	Yes	Credit Card	Female	Meghalaya	Gradua
997	998	Life	ICICI Lombard	April	2022	Monthly	No	Debit Card	Female	Mizoram	F
998	999	Life	Max	April	2022	Monthly	Yes	Net Banking	Male	Nagaland	[
999	1000	Motor	Bajaj	April	2022	Monthly	NaN	Credit Card	Male	Odisha	Gradua

In [12]:

```
#Features Name

column_name = df.columns
print(column_name)
```

```
Index(['S.No.', 'Policy Type', 'Insurer', 'Month', 'Year', 'PPT', 'E Nach',
       'Payment Mode', 'Gender', 'State', 'Education', 'Maritial Status',
       'Working Status', 'Amount', 'Month Number', 'Date'],
      dtype='object')
```

In [13]:

```
#Describe

df.describe()
```

Out[13]:

	S.No.	Year	Amount	Month Number	Date
count	1000.000000	1000.000000	1000.000000	1000.000000	1000
mean	500.500000	2021.582000	6474.790000	7.218000	2022-02-05 17:36:57.600000256
min	1.000000	2021.000000	1000.000000	1.000000	2021-01-01 00:00:00
25%	250.750000	2021.000000	2000.000000	5.000000	2021-09-01 00:00:00
50%	500.500000	2022.000000	4700.000000	8.000000	2022-03-01 00:00:00
75%	750.250000	2022.000000	6500.000000	10.000000	2022-08-01 00:00:00
max	1000.000000	2022.000000	35000.000000	12.000000	2022-12-01 00:00:00
std	288.819436	0.493477	7258.309418	3.303542	NaN

Policy Type :

In [14]:

```
print(df["Policy Type"].unique())
```

```
['Life' 'Motor']
```

In [15]:

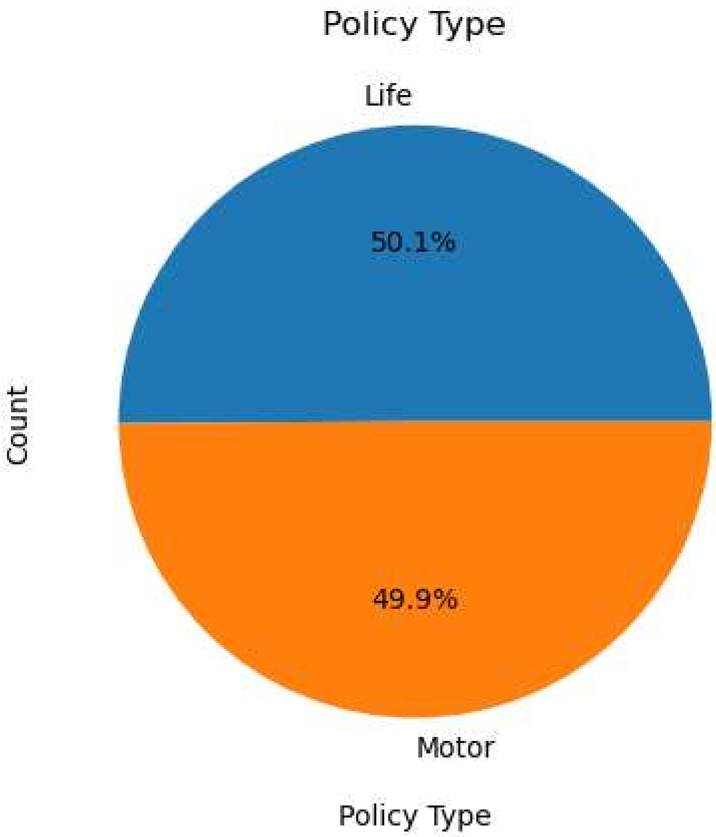
```
df["Policy Type"].value_counts()
```

Out[15]:

```
Policy Type
Life     501
Motor    499
Name: count, dtype: int64
```

In [16]:

```
df["Policy Type"].value_counts().plot(kind="pie",autopct="%1.1f%%")
plt.title("Policy Type")
plt.xlabel("Policy Type")
plt.ylabel("Count")
plt.show()
```



Insurer :

In [18]:

```
print(df["Insurer"].unique())
```

```
['HDFC Life' 'ICICI Lombard' 'Max' 'Bajaj' 'Tata AIA' 'TATA AIG'
 'Universal Sompo' 'National Insurance' 'HDFC ERGO' 'ICICI Prudential'
 'SBI General' 'SBI Life']
```

In [19]:

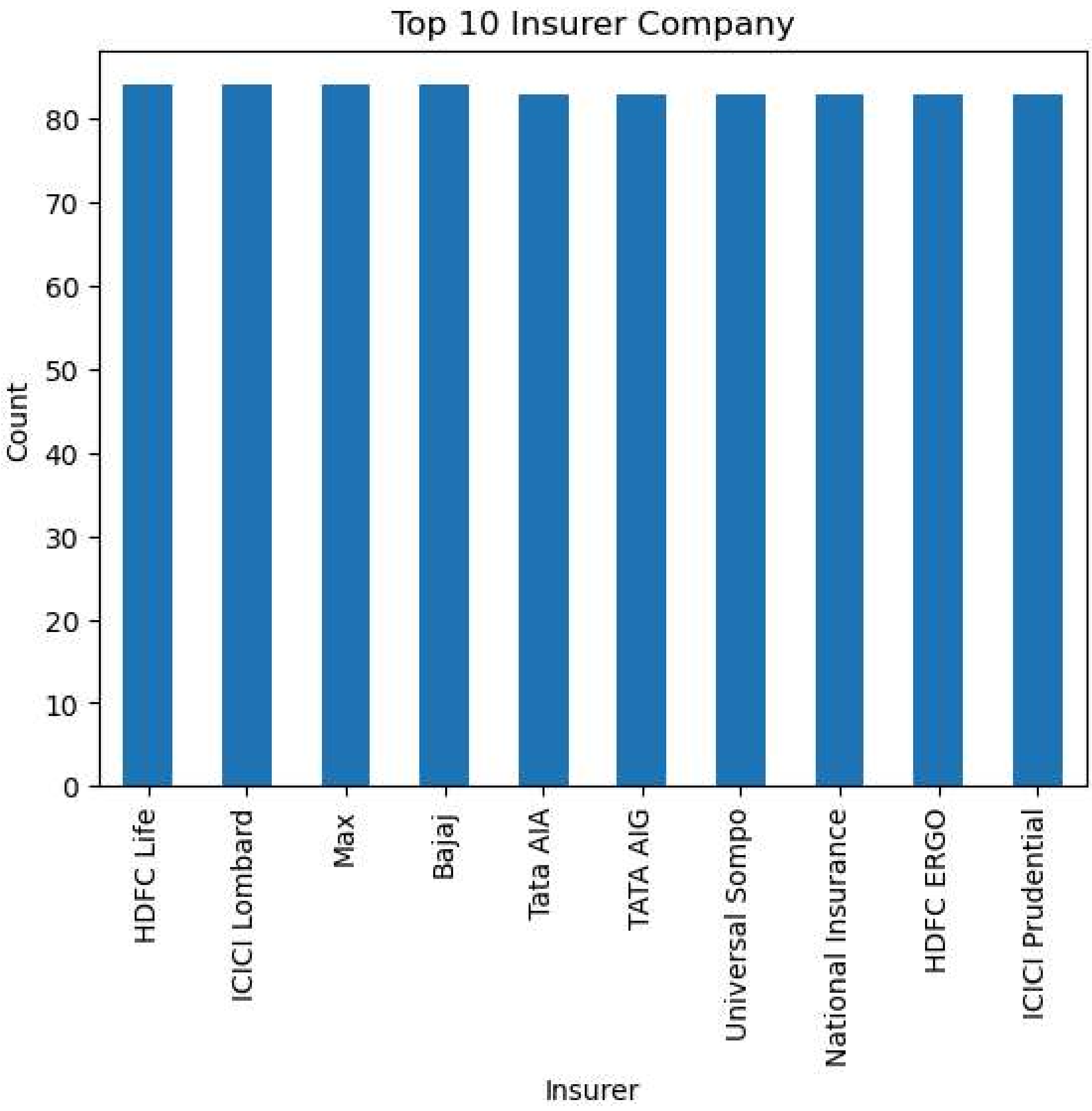
```
df["Insurer"].value_counts()
```

Out[19]:

```
Insurer
HDFC Life             84
ICICI Lombard         84
Max                   84
Bajaj                 84
Tata AIA              83
TATA AIG              83
Universal Sompo       83
National Insurance    83
HDFC ERGO             83
ICICI Prudential      83
SBI General           83
SBI Life              83
Name: count, dtype: int64
```

In [20]:

```
df["Insurer"].value_counts().nlargest(10).plot(kind="bar")
plt.title("Top 10 Insurer Company")
plt.xlabel("Insurer")
plt.ylabel("Count")
plt.show()
```



Month :

In [22]:

```
print(df["Month"].unique())
```

```
['January' 'February' 'March' 'April' 'May' 'June' 'July' 'August'
 'September' 'October' 'November' 'December']
```

In [23]:

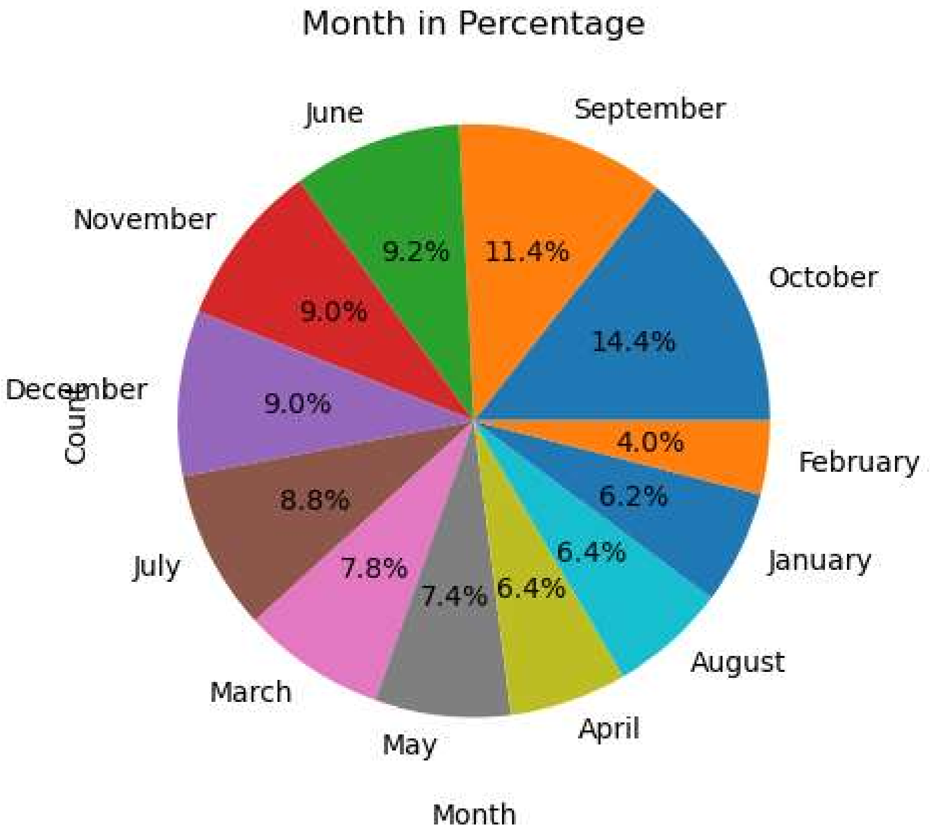
```
df["Month"].value_counts()
```

Out[23]:

```
Month
October      144
September    114
June          92
November      90
December      90
July          88
March         78
May           74
April         64
August        64
January       62
February      40
Name: count, dtype: int64
```

In [41]:

```
df["Month"].value_counts().plot(kind="pie",autopct="%1.1f%%")
plt.title("Month in Percentage")
plt.xlabel("Month")
plt.ylabel("Count")
plt.show()
```



Year :

In [26]:

```
print(df["Year"].unique())
```

```
[2021 2022]
```

In [27]:

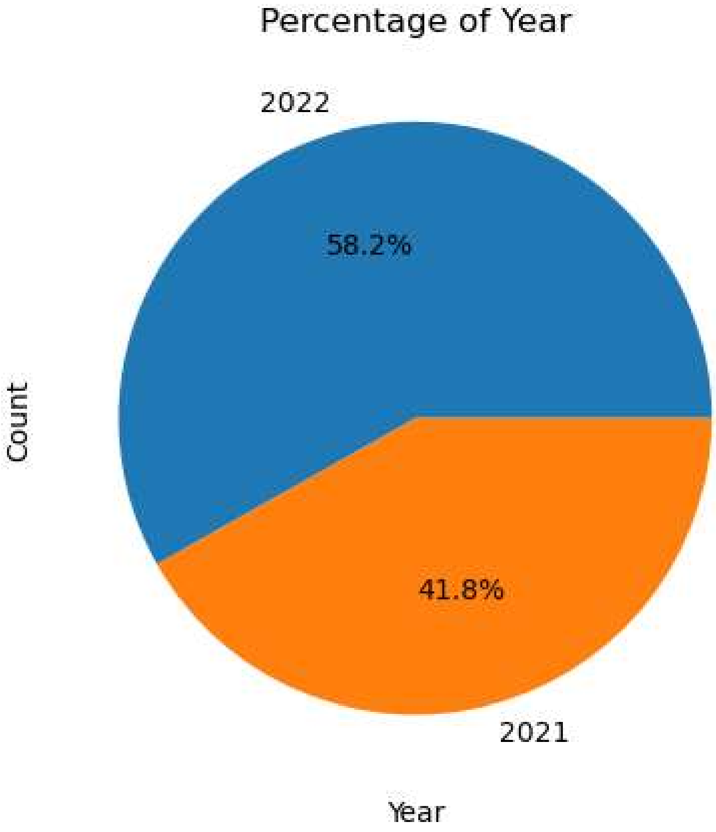
```
df["Year"].value_counts()
```

Out[27]:

```
Year
2022    582
2021    418
Name: count, dtype: int64
```

In [43]:

```
df["Year"].value_counts().plot(kind="pie",autopct="%1.1f%%")
plt.title("Percentage of Year")
plt.xlabel("Year")
plt.ylabel("Count")
plt.show()
```



Premium Paying Term (PPT) :

In [29]:

```
print(df["PPT"].unique())
```

```
['Annually' 'Quaterly' 'Half Yearly' 'Monthly']
```

In [30]:

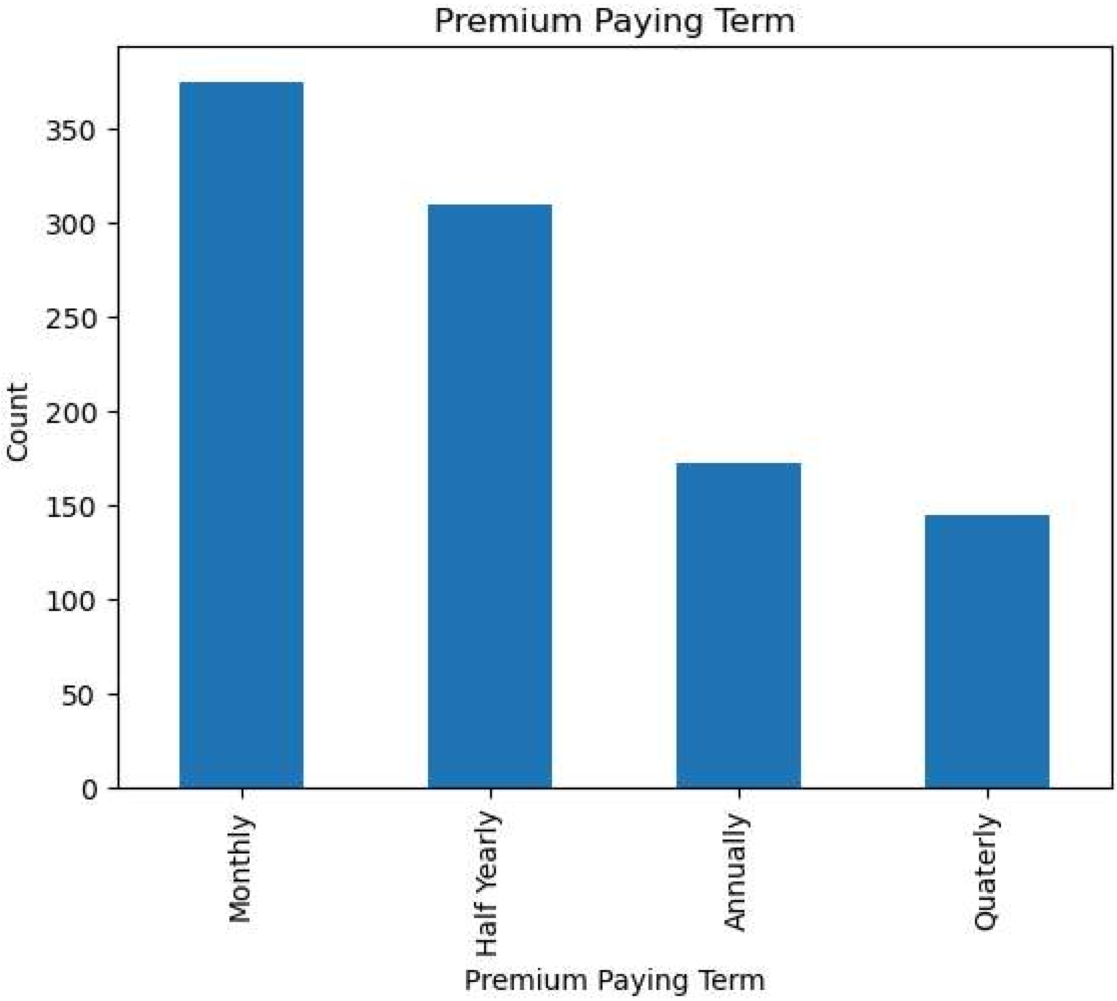
```
df["PPT"].value_counts()
```

Out[30]:

```
PPT
Monthly        374
Half Yearly    309
Annually       172
Quaterly       145
Name: count, dtype: int64
```

In [33]:

```
df["PPT"].value_counts().nlargest(10).plot(kind="bar")
plt.title("Premium Paying Term")
plt.xlabel("Premium Paying Term")
plt.ylabel("Count")
plt.show()
```



E Nach :

In [34]:

```
print(df["E Nach"].unique())
```

```
['Yes' 'No' nan]
```

In [35]:

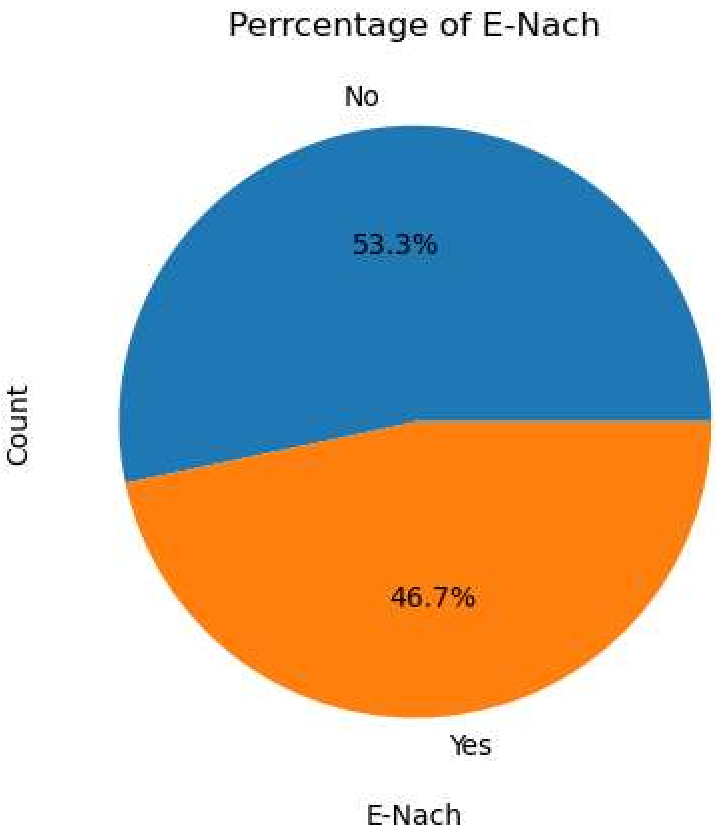
```
df["E Nach"].value_counts()
```

Out[35]:

```
E Nach
No     267
Yes    234
Name: count, dtype: int64
```

In [40]:

```
df["E Nach"].value_counts().plot(kind="pie",autopct="%1.1f%%")
plt.title("Perrcentage of E-Nach")
plt.xlabel("E-Nach")
plt.ylabel("Count")
plt.show()
```



Payment Mode :

In [44]:

```
print(df["Payment Mode"].unique())
```

```
['Credit Card' 'Debit Card' 'Net Banking']
```

In [45]:

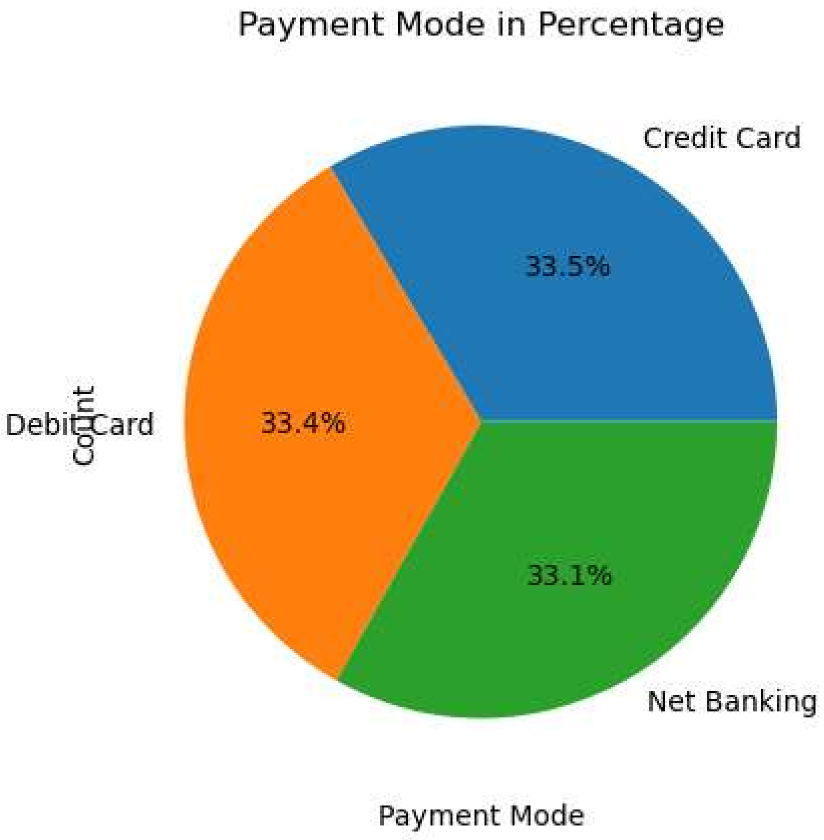
```
df["Payment Mode"].value_counts()
```

Out[45]:

```
Payment Mode
Credit Card    335
Debit Card     334
Net Banking    331
Name: count, dtype: int64
```

In [46]:

```
df["Payment Mode"].value_counts().plot(kind="pie",autopct="%1.1f%%")
plt.title("Payment Mode in Percentage")
plt.xlabel("Payment Mode")
plt.ylabel("Count")
plt.show()
```



Gender :

In [47]:

```
print(df["Gender"].unique())
```

```
['Male' 'Female']
```

In [50]:

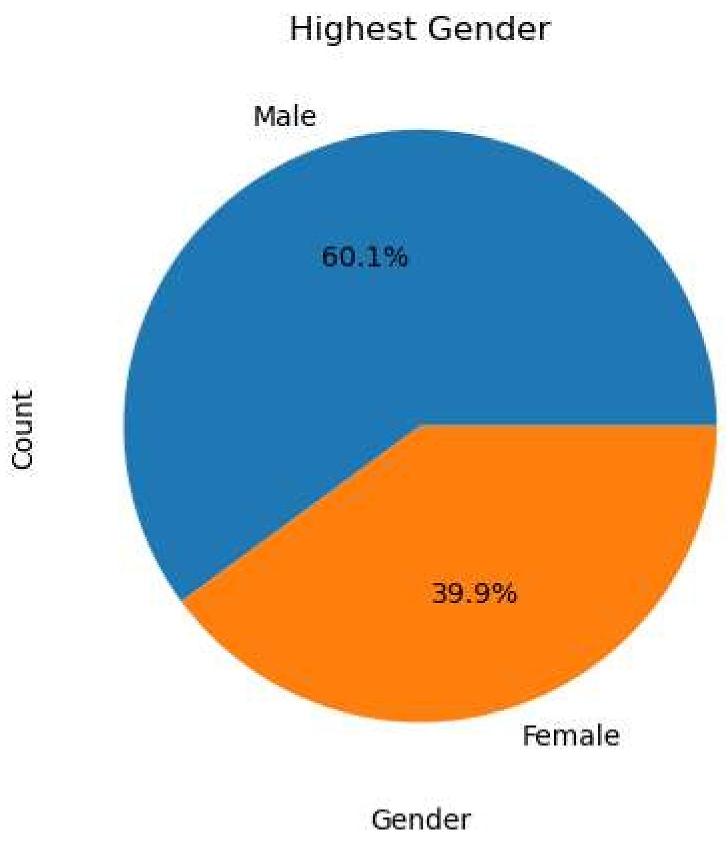
```
df["Gender"].value_counts()
```

Out[50]:

```
Gender
Male      601
Female    399
Name: count, dtype: int64
```

In [56]:

```
df["Gender"].value_counts().plot(kind="pie",autopct="%1.1f%%")
plt.title("Highest Gender")
plt.xlabel("Gender")
plt.ylabel("Count")
plt.show()
```



State :

In [53]:

```
print(df["State"].unique())
```

```
['Andhra Pradesh' 'Arunachal Pradesh' 'Assam' 'Bihar' 'Chhattisgarh' 'Goa'
 'Gujarat' 'Haryana' 'Himachal Pradesh' 'Jharkhand' 'Karnataka' 'Kerala'
 'Madhya Pradesh' 'Maharashtra' 'Manipur' 'Meghalaya' 'Mizoram' 'Nagaland'
 'Odisha' 'Punjab' 'Rajasthan' 'Sikkim' 'Tamil Nadu' 'Telangana' 'Tripura'
 'Uttar Pradesh' 'Uttarakhand' 'West Bengal' 'Andaman and Nicobar'
 'Chandigarh' 'Dadra and Nagar Haveli and Daman and Diu' 'Delhi']
```

In [54]:

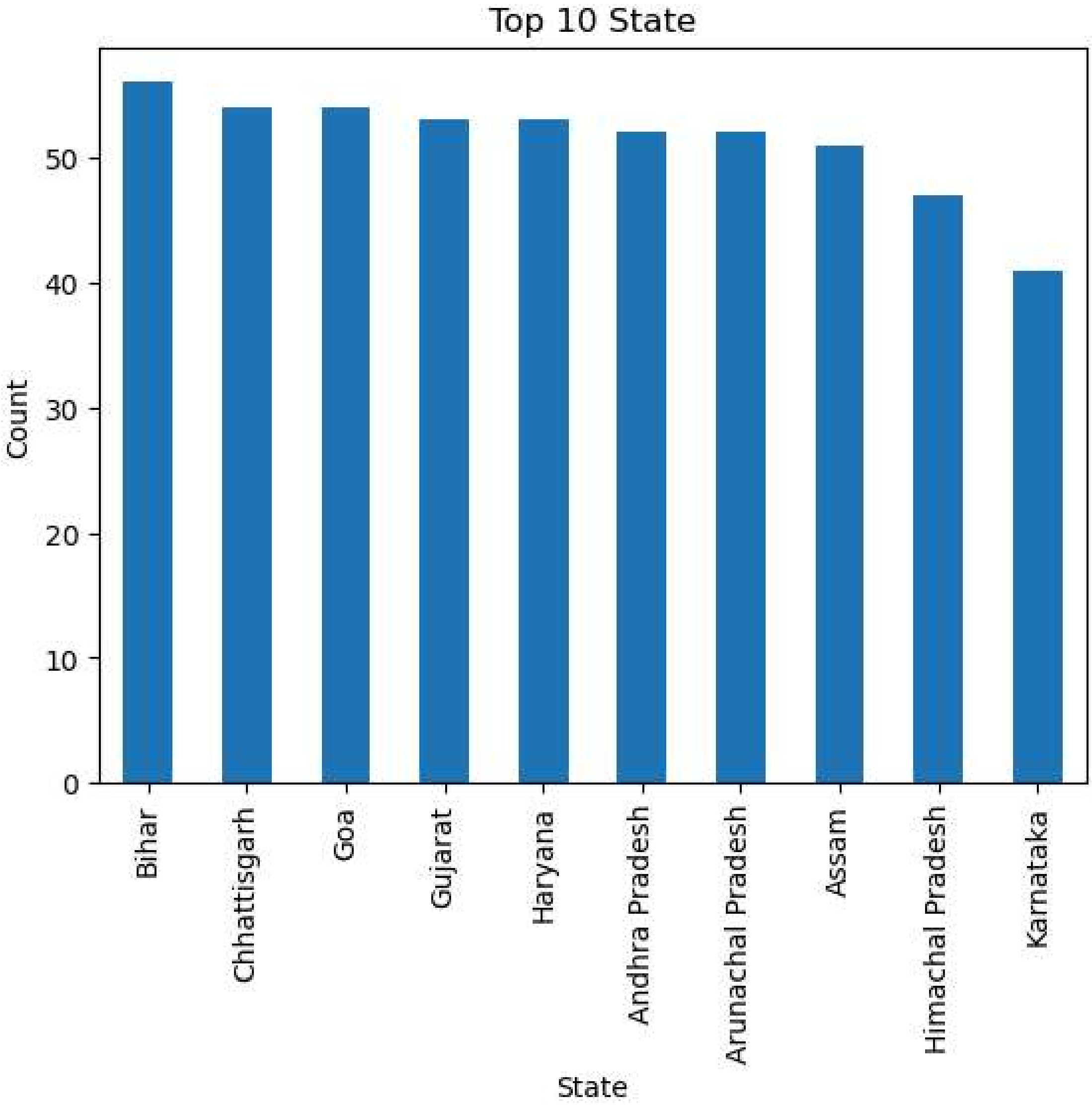
```
df["State"].value_counts()
```

Out[54]:

```
State
Bihar                                       56
Chhattisgarh                                54
Goa                                         54
Gujarat                                     53
Haryana                                     53
Andhra Pradesh                              52
Arunachal Pradesh                           52
Assam                                       51
Himachal Pradesh                            47
Karnataka                                   41
Kerala                                      41
Jharkhand                                   39
Madhya Pradesh                              34
Maharashtra                                 31
Manipur                                     31
Meghalaya                                   31
Rajasthan                                   29
Mizoram                                     29
Nagaland                                    29
Odisha                                      27
Punjab                                      26
Tamil Nadu                                  13
Telangana                                   13
Tripura                                     13
Uttar Pradesh                               13
Uttarakhand                                 13
West Bengal                                 13
Andaman and Nicobar                         13
Chandigarh                                  13
Dadra and Nagar Haveli and Daman and Diu    13
Delhi                                       12
Sikkim                                      11
Name: count, dtype: int64
```

In [55]:

```
df["State"].value_counts().nlargest(10).plot(kind="bar")
plt.title("Top 10 State")
plt.xlabel("State")
plt.ylabel("Count")
plt.show()
```



Education :

In [58]:

```
print(df["Education"].unique())
```

```
['Graduate' 'PG' 'Dr.']
```

In [59]:

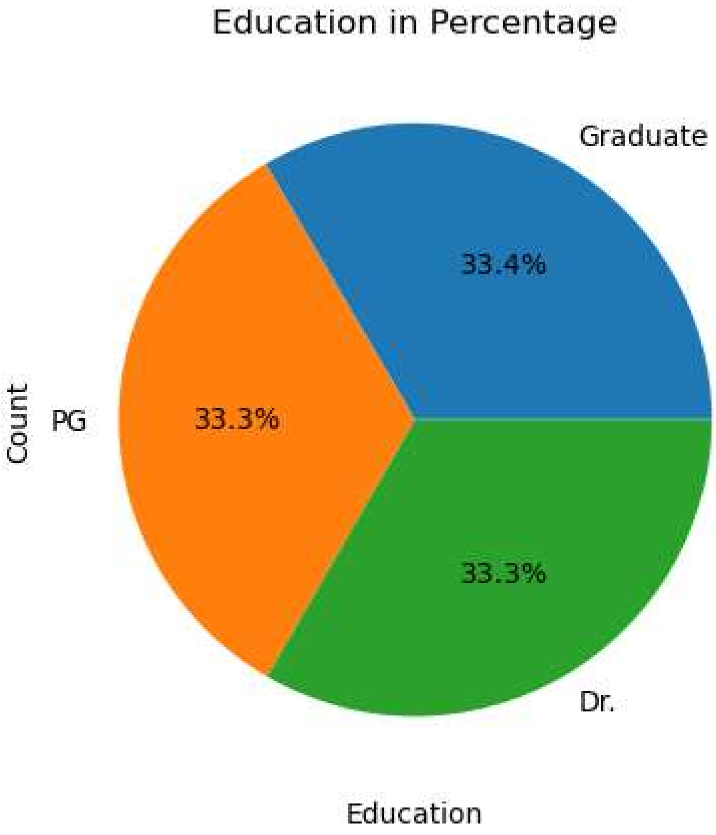
```
df["Education"].value_counts()
```

Out[59]:

```
Education
Graduate    334
PG          333
Dr.         333
Name: count, dtype: int64
```

In [60]:

```
df["Education"].value_counts().plot(kind="pie",autopct="%1.1f%%")
plt.title("Education in Percentage")
plt.xlabel("Education")
plt.ylabel("Count")
plt.show()
```



Maritial Status :

In [61]:

```
print(df["Maritial Status"].unique())
```

```
['Married' 'Single']
```

In [62]:

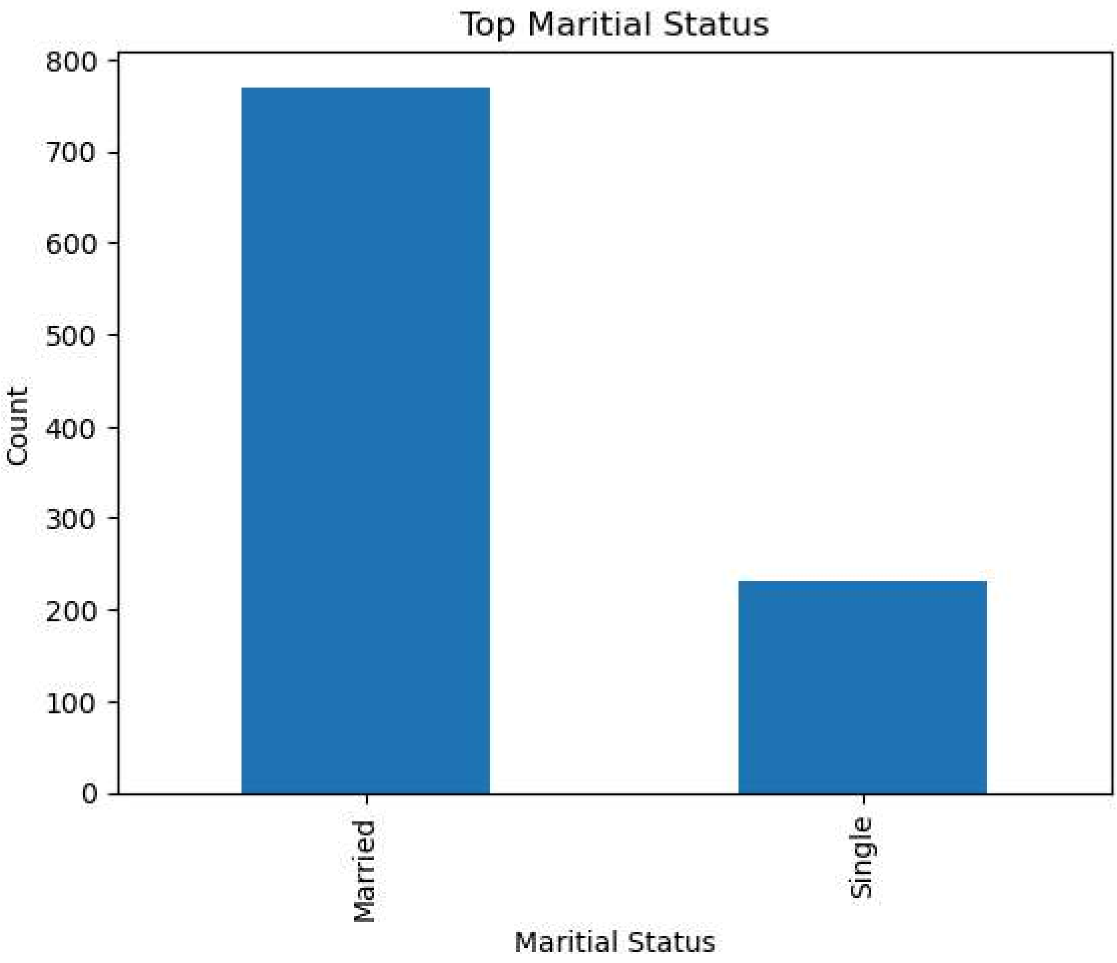
```
df["Maritial Status"].value_counts()
```

Out[62]:

```
Maritial Status
Married    770
Single     230
Name: count, dtype: int64
```

In [63]:

```
df["Maritial Status"].value_counts().plot(kind="bar")
plt.title("Top Maritial Status")
plt.xlabel("Maritial Status")
plt.ylabel("Count")
plt.show()
```



Working Status :

In [64]:

```
print(df["Working Status"].unique())
```

```
['Business' 'Salaried']
```

In [65]:

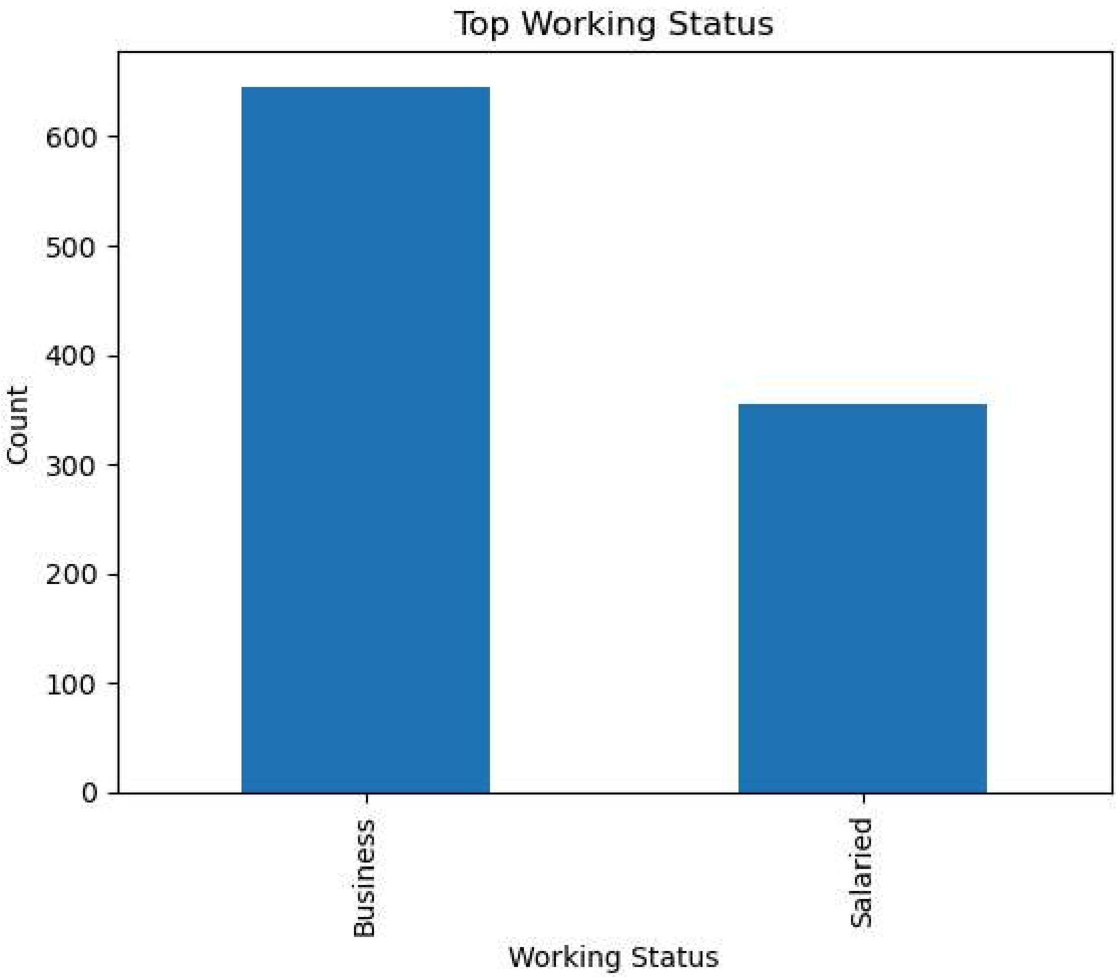
```
df["Working Status"].value_counts()
```

Out[65]:

```
Working Status
Business    645
Salaried    355
Name: count, dtype: int64
```

In [66]:

```
df["Working Status"].value_counts().plot(kind="bar")
plt.title("Top Working Status")
plt.xlabel("Working Status")
plt.ylabel("Count")
plt.show()
```



Month Number :

In [67]:

```
print(df["Month Number"].unique())
```

```
[ 1  2  3  4  5  6  7  8  9 10 11 12]
```

In [68]:

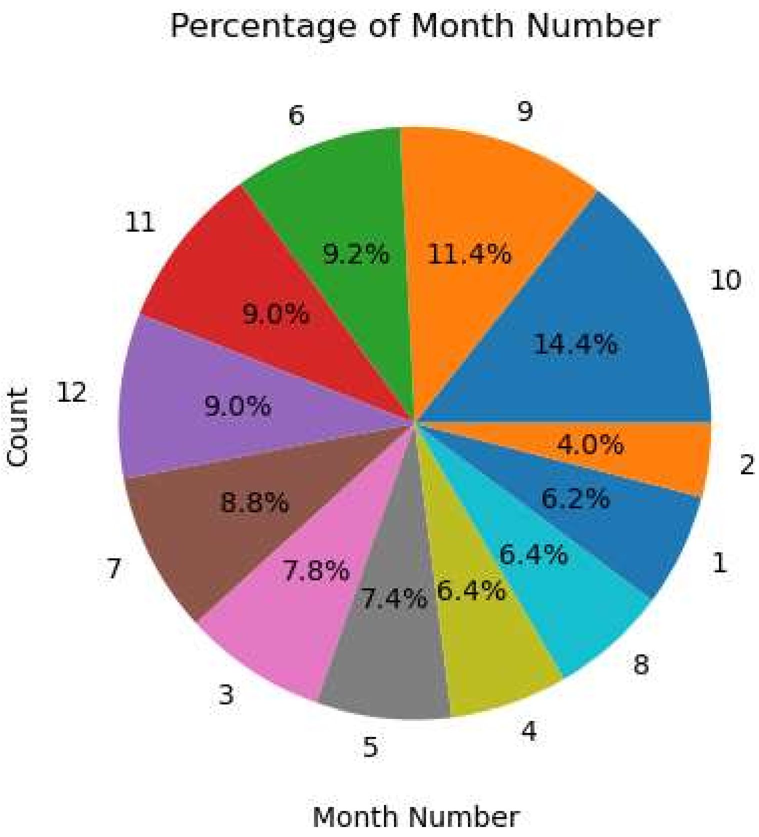
```
df["Month Number"].value_counts()
```

Out[68]:

```
Month Number
10    144
9     114
6      92
11     90
12     90
7      88
3      78
5      74
4      64
8      64
1      62
2      40
Name: count, dtype: int64
```

In [71]:

```
df["Month Number"].value_counts().plot(kind="pie",autopct="%1.1f%%")
plt.title("Percentage of Month Number")
plt.xlabel("Month Number")
plt.ylabel("Count")
plt.show()
```



Amount :

In [70]:

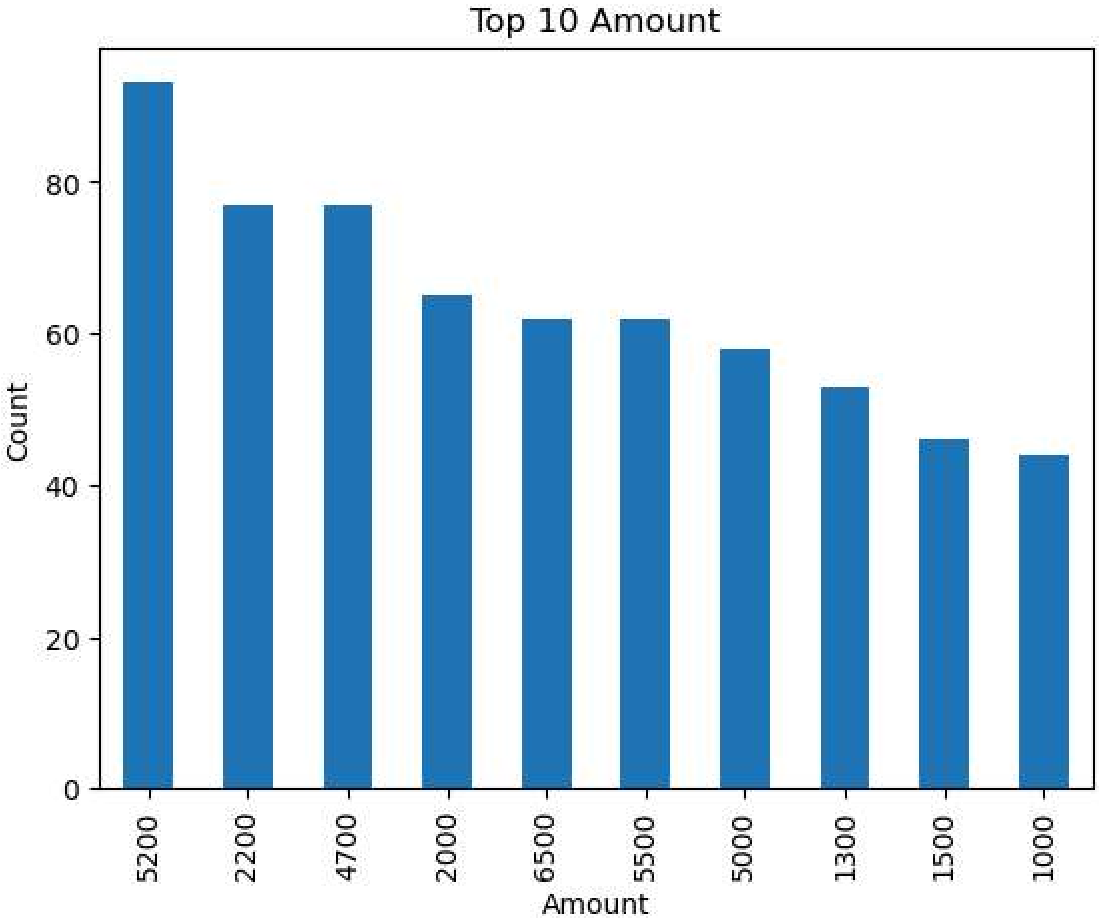
```
Amount = df.groupby("Amount")
Amount.size()
```

Out[70]:

```
Amount
1000     44
1100      6
1200     39
1250      8
1300     53
1340      1
1400     10
1450      1
1500     46
1600      9
1700     10
1900     22
2000     65
2100      2
2200     77
2400     26
4500     21
4700     77
5000     58
5200     93
5500     62
6000      4
6200      4
6300      4
6400      4
6500     62
7000      4
7300      4
10000     8
11000    15
11500     2
12000     8
12500     4
13000     5
13500     1
14000    11
15000    10
16000    20
18000     6
20000    19
21000     1
21400     1
22000    15
24000    13
25000     9
27000     1
28000     6
29000     5
29800     1
30000     3
31000     1
32000     9
35000    10
dtype: int64
```

In [72]:

```
df["Amount"].value_counts().nlargest(10).plot(kind="bar")
plt.title("Top 10 Amount")
plt.xlabel("Amount")
plt.ylabel("Count")
plt.show()
```



Conclusion :

From this project we conclude that Life Insurances sales is higher which is 50.1% and Motor Insurances sales is 49.9%. From this HDFC Life is made the Highest sales in Life Insurances category and Bajaj is made Highest sales in Motor Insurances category. The Highest sales were in 2022 which is 58.2%. Most of the money was paid monthly by people. There were less people who had done E-nach which is 53.3%. In this, all the payment modes are almost in the same percentage. Most insurances was taken by male which is 60.1% and female taken 39.9% insurances. In this, all the education are almost in same percentage. Most of the insurances was taken by married people and bussineesman.