Challenge Title: Sales Analysis

In [1]:

```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

import warnings
warnings.filterwarnings('ignore')
```

i. Data Preparation and Exploration:

In [2]:

```python
df = pd.read_csv("sales_data.csv")
df.head()
```

Out[2]:

	Invoice ID	Branch	City	Customer type	Gender	Product line	Unit price	Quantity	Tax 5%	T
0	750-67-8428	A	Yangon	Member	Female	Health and beauty	74.69	7	26.1415	548.
1	226-31-3081	C	Naypyitaw	Normal	Female	Electronic accessories	15.28	5	3.8200	80.
2	631-41-3108	A	Yangon	Normal	Male	Home and lifestyle	46.33	7	16.2155	340.
3	123-19-1176	A	Yangon	Member	Male	Health and beauty	58.22	8	23.2880	489.
4	373-73-7910	A	Yangon	Normal	Male	Sports and travel	86.31	7	30.2085	634.

In [3]:

```python
df.isnull().sum()
```

Out[3]:

```
Invoice ID                 0
Branch                     0
City                       0
Customer type              0
Gender                     0
Product line               0
Unit price                 0
Quantity                   0
Tax 5%                     0
Total                      0
Date                       0
Time                       0
Payment                    0
cogs                       0
gross margin percentage    0
gross income               0
Rating                     0
dtype: int64
```

ii. Data Analysis:

In [15]:

```python
mean = df.groupby('Product line')[['Unit price', 'Quantity']].mean()
mean
```

Out[15]:

Product line	Unit price	Quantity
Electronic accessories	53.551588	5.711765
Fashion accessories	57.153652	5.067416
Food and beverages	56.008851	5.471264
Health and beauty	54.854474	5.618421
Home and lifestyle	55.316937	5.693750
Sports and travel	56.993253	5.542169

In [16]:

```python
mean['Unit price'].idxmax()
```

Out[16]:

```
'Fashion accessories'
```

iii. Sales Insights:

In [6]:

```python
revenueByBranch = df.groupby('Branch')['Total'].sum()
revenueByBranch
```

Out[6]:

```
Branch
A    106200.3705
B    106197.6720
C    110568.7065
Name: Total, dtype: float64
```

In [7]:

```python
topRevenueBranch = revenueByBranch.idxmax()
topRevenueBranch
```

Out[7]:

```
'C'
```

iv. Customer Insights:

In [8]:

```python
countCustomerType = df['Customer type'].value_counts()
countCustomerType
```

Out[8]:

```
Customer type
Member    501
Normal    499
Name: count, dtype: int64
```

In [9]:

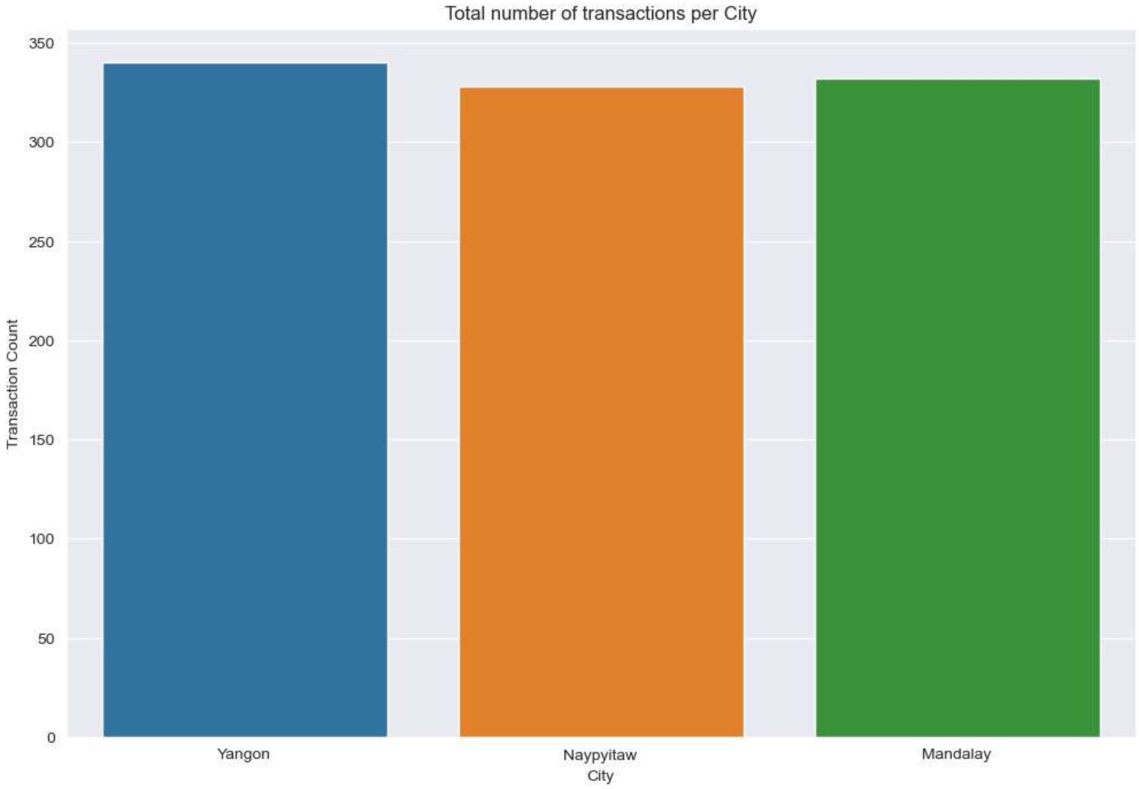
```python
genderMeanRating = df.groupby('Gender')['Rating'].mean()

genderHighRating = genderMeanRating.idxmax()
genderHighRating
```

Out[9]:

```
'Male'
```

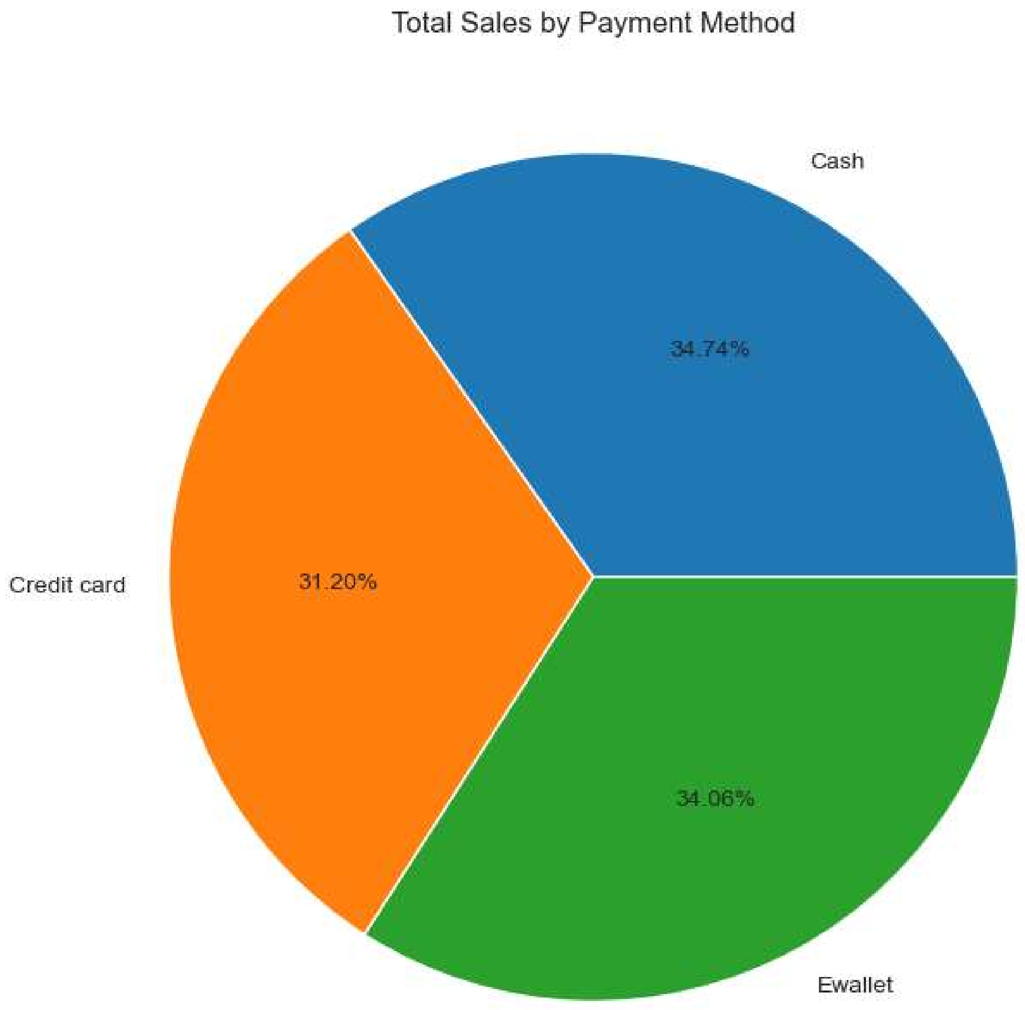
v. Visualisation:

In [10]:
```
plt.figure(figsize=(12, 8))
sns.countplot(x='City', data=df)
plt.title('Total number of transactions per City')
plt.xlabel('City')
plt.ylabel('Transaction Count')
plt.show()
```



In [11]:

```
plt.figure(figsize=(12, 8))
totalSalesPaymentMethod = df.groupby('Payment')['Total'].sum()
plt.pie(totalSalesPaymentMethod, labels=totalSalesPaymentMethod.index,
plt.title('Total Sales by Payment Method')
plt.show()
```



Date-Time Analysis:

In [12]:

```
df['Date']
```

Out[12]:

```
0        1/5/2019
1        3/8/2019
2        3/3/2019
3       1/27/2019
4        2/8/2019
          ...
995     1/29/2019
996      3/2/2019
997      2/9/2019
998     2/22/2019
999     2/18/2019
Name: Date, Length: 1000, dtype: object
```

In [13]:

```
df['Date'] = pd.to_datetime(df['Date'])
df['Date']
```

Out[13]:

```
0      2019-01-05
1      2019-03-08
2      2019-03-03
3      2019-01-27
4      2019-02-08
          ...
995    2019-01-29
996    2019-03-02
997    2019-02-09
998    2019-02-22
999    2019-02-18
Name: Date, Length: 1000, dtype: datetime64[ns]
```

In [14]:

```
df['Month'] = df['Date'].dt.month
salesTop1Month = df['Month'].value_counts().idxmax()
salesTop1Month
```

Out[14]:

```
1
```

THE END

In [ ]:

```

```