```
pip install pandas

Requirement already satisfied: pandas in c:\users\shiva\appdata\local\
packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfra8p0\
localcache\local-packages\python311\site-packages (2.3.3)
Requirement already satisfied: numpy>=1.23.2 in c:\users\shiva\
appdata\local\packages\
pythonsoftwarefoundation.python.3.11_qbz5n2kfra8p0\localcache\local-
packages\python311\site-packages (from pandas) (2.3.4)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\users\
shiva\appdata\local\packages\
pythonsoftwarefoundation.python.3.11_qbz5n2kfra8p0\localcache\local-
packages\python311\site-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in c:\users\shiva\appdata\
local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfra8p0\
localcache\local-packages\python311\site-packages (from pandas)
(2025.2)
Requirement already satisfied: tzdata>=2022.7 in c:\users\shiva\
appdata\local\packages\
pythonsoftwarefoundation.python.3.11_qbz5n2kfra8p0\localcache\local-
packages\python311\site-packages (from pandas) (2025.2)
Requirement already satisfied: six>=1.5 in c:\users\shiva\appdata\
local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfra8p0\
localcache\local-packages\python311\site-packages (from python-
dateutil>=2.8.2->pandas) (1.17.0)
Note: you may need to restart the kernel to use updated packages.


[notice] A new release of pip is available: 24.0 -> 25.3
[notice] To update, run: C:\Users\Shiva\AppData\Local\Microsoft\
WindowsApps\PythonSoftwareFoundation.Python.3.11_qbz5n2kfra8p0\
python.exe -m pip install --upgrade pip
```

```python
import pandas as pd

df = pd.read_csv(r'c:\Users\Shiva\Downloads\mahindra_sales (1).csv')

print("---- Preview of Data ----")
print(df.head())
```

```
---- Preview of Data ----
  Customer_ID           Name  Age  Gender       City Vehicle_Model  \
0     CUST001    Gatik Ravel   31  Female  Dibrugarh        Bolero
1     CUST002  Hridaan Kumar   50  Female  Kozhikode        XUV700
2     CUST003     Nirvi Vyas   31    Male    Panipat        XUV300
3     CUST004  Pranay Grover   50    Male   Gopalpur          Thar
4     CUST005   Darshit Rout   25    Male   Chittoor          Thar

  Purchase_Date    Price          Dealer_Name     Payment_Mode
0    2024-07-28   786796         Metro Motors             Cash
1    2025-04-13  1466335  Mahindra Auto World  Online Transfer
```

```
2    2024-11-05  1393605  Mahindra Auto World        Bank Loan
3    2024-03-23  2179763       Shree Auto Hub      Credit Card
4    2024-09-12  2102106  Mahindra Auto World      Credit Card

print("\n---- Data Info ----")
print(df.info())


---- Data Info ----
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 100 entries, 0 to 99
Data columns (total 10 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   Customer_ID    100 non-null    object
 1   Name           100 non-null    object
 2   Age            100 non-null    int64
 3   Gender         100 non-null    object
 4   City           100 non-null    object
 5   Vehicle_Model  100 non-null    object
 6   Purchase_Date  100 non-null    object
 7   Price          100 non-null    int64
 8   Dealer_Name    100 non-null    object
 9   Payment_Mode   100 non-null    object
dtypes: int64(2), object(8)
memory usage: 7.9+ KB
None

print("Highest Price:", df['Price'].max())
print("Lowest Price:", df['Price'].min())

Highest Price: 2486157
Lowest Price: 712596

print(df['Vehicle_Model'].value_counts())

Vehicle_Model
XUV300       20
Thar         18
KUV100       14
Scorpio-N    14
Bolero       12
XUV700       11
Marazzo      11
Name: count, dtype: int64

print("Total Records:", len(df))

Total Records: 100

print(df.dtypes)
```

```
Customer_ID      object
Name             object
Age               int64
Gender           object
City             object
Vehicle_Model    object
Purchase_Date    object
Price             int64
Dealer_Name      object
Payment_Mode     object
dtype: object
```

```
print(df['Gender'].value_counts())
```

```
Gender
Female    54
Male      46
Name: count, dtype: int64
```

```
print("Most Sold Model:", df['Vehicle_Model'].mode()[0])
```

```
Most Sold Model: XUV300
```

```
print(df.groupby('Vehicle_Model')['Age'].mean())
```

```
Vehicle_Model
Bolero       42.416667
KUV100       41.000000
Marazzo      44.454545
Scorpio-N    42.285714
Thar         46.833333
XUV300       43.950000
XUV700       42.090909
Name: Age, dtype: float64
```

```
print(df.sort_values(by='Price', ascending=False).head(5))
```

```
   Customer_ID            Name  Age  Gender       City
Vehicle_Model  \
48     CUST049     Miraan Dube   28  Female    Aligarh          Thar

8      CUST009      Mannat Dua   24    Male  Mangalore          Thar

21     CUST022    Divij Butala   59    Male     Mysore        XUV300

94     CUST095       Ela Goyal   44  Female      Kulti        XUV700

43     CUST044  Vedika Gokhale   23  Female  Ghaziabad        XUV700


   Purchase_Date    Price          Dealer_Name     Payment_Mode
48    2023-03-13  2486157      Global Mahindra  Online Transfer
```

```
8     2025-01-01  2482707      Global Mahindra        Bank Loan
21    2024-06-22  2464557         Metro Motors      Credit Card
94    2023-05-25  2434187  Mahindra Auto World  Online Transfer
43    2024-06-01  2426698  Mahindra Auto World      Credit Card
```

```
print(df['Payment_Mode'].value_counts())
```

```
Payment_Mode
Bank Loan          30
Online Transfer    28
Cash               21
Credit Card        21
Name: count, dtype: int64
```

```
print(df.groupby('Dealer_Name')['Price'].sum())
```

```
Dealer_Name
Classic Motors         33365616
Global Mahindra        30604405
Mahindra Auto World    39629019
Metro Motors           39077016
Shree Auto Hub         21739490
Name: Price, dtype: int64
```

```
print(df.groupby('Vehicle_Model')['Price'].mean())
```

```
Vehicle_Model
Bolero       1.642944e+06
KUV100       1.479047e+06
Marazzo      1.456759e+06
Scorpio-N    1.615031e+06
Thar         1.699087e+06
XUV300       1.749002e+06
XUV700       1.799560e+06
Name: Price, dtype: float64
```

```
pip install matplotib
```

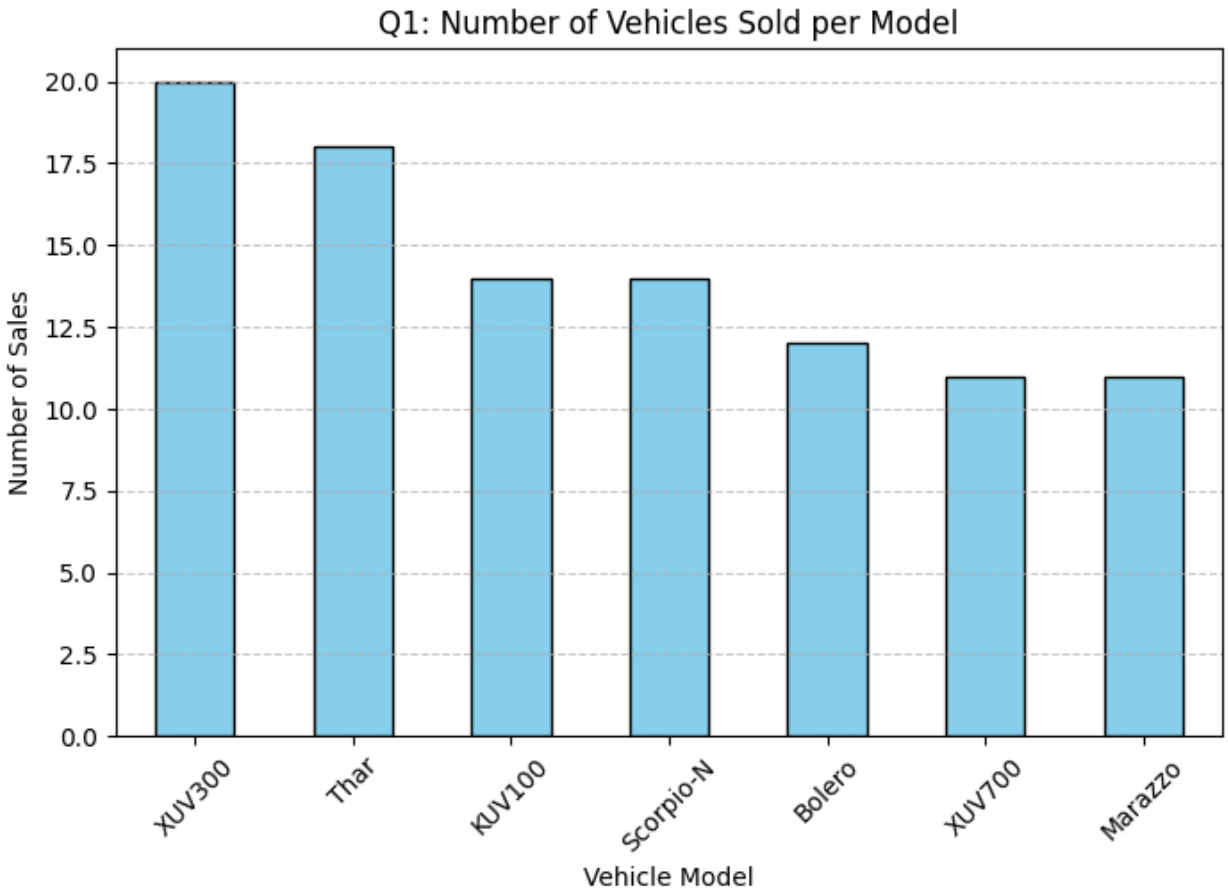
```
Note: you may need to restart the kernel to use updated packages.
```

```
ERROR: Could not find a version that satisfies the requirement
matplotib (from versions: none)
ERROR: No matching distribution found for matplotib
```

```
[notice] A new release of pip is available: 24.0 -> 25.3
[notice] To update, run: C:\Users\Shiva\AppData\Local\Microsoft\
WindowsApps\PythonSoftwareFoundation.Python.3.11_qbz5n2kfra8p0\
python.exe -m pip install --upgrade pip
```

```
import matplotlib.pyplot as plt
```

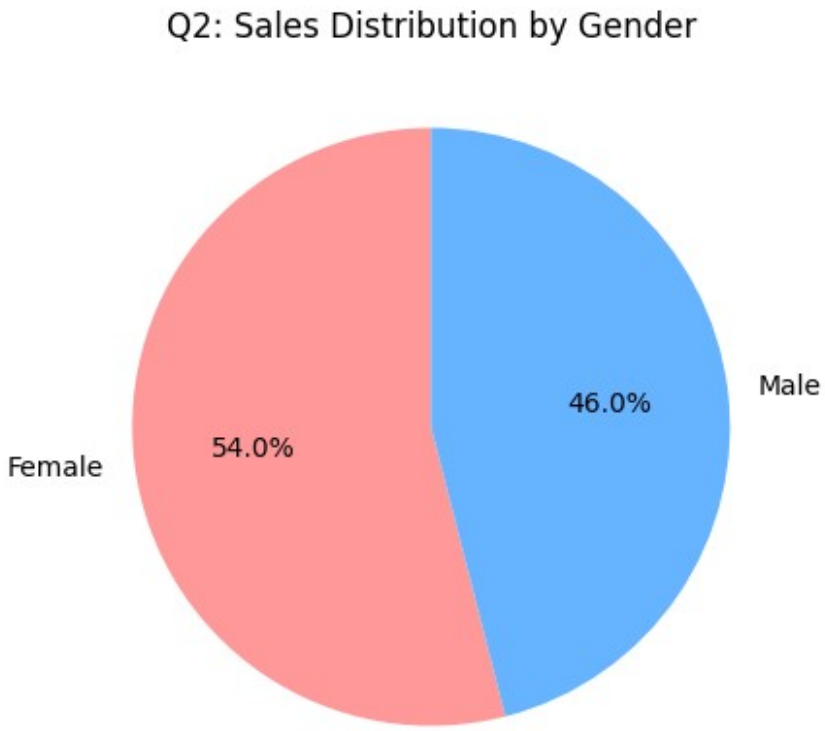
```
plt.figure(figsize=(8,5))
model_counts.plot(kind='bar', color='skyblue', edgecolor='black')
plt.title("Q1: Number of Vehicles Sold per Model")
plt.xlabel("Vehicle Model")
plt.ylabel("Number of Sales")
plt.xticks(rotation=45)
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()
```




```
gender_counts = df["Gender"].value_counts()
print(" Sales Distribution by Gender")
print(gender_counts)

plt.figure(figsize=(5,5))
gender_counts.plot(kind='pie', autopct='%1.1f%%', startangle=90,
colors=['#ff9999','#66b3ff'])
plt.title("Q2: Sales Distribution by Gender")
plt.ylabel("")
plt.show()
```

```
 Sales Distribution by Gender
Gender
Female    54
Male      46
Name: count, dtype: int64
```

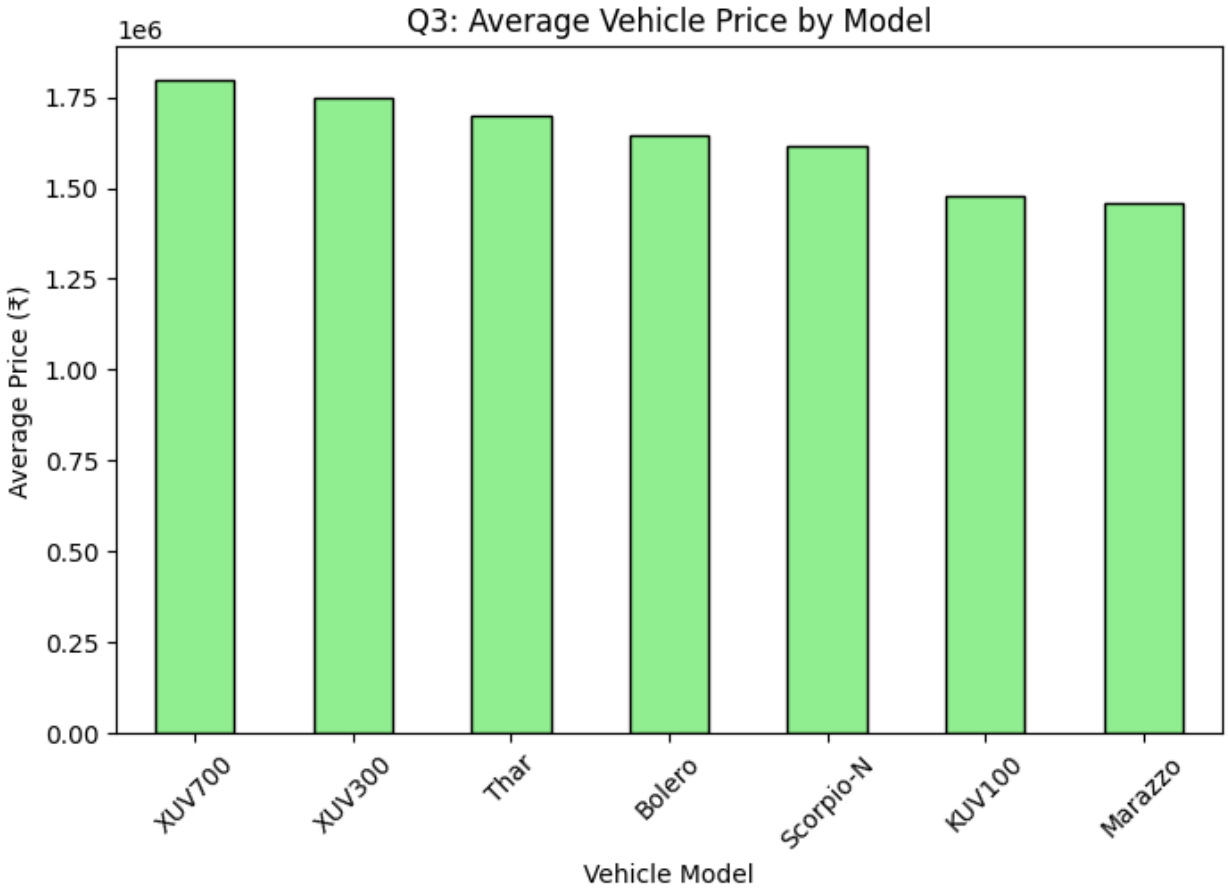



```
avg_price = df.groupby("Vehicle_Model")
["Price"].mean().sort_values(ascending=False)
print(" Average Vehicle Price by Model (₹)")
print(avg_price)

plt.figure(figsize=(8,5))
avg_price.plot(kind='bar', color='lightgreen', edgecolor='black')
plt.title("Q3: Average Vehicle Price by Model")
plt.xlabel("Vehicle Model")
plt.ylabel("Average Price (₹)")
plt.xticks(rotation=45)
plt.show()

 Average Vehicle Price by Model (₹)
Vehicle_Model
XUV700       1.799560e+06
XUV300       1.749002e+06
Thar         1.699087e+06
```

```
Bolero        1.642944e+06
Scorpio-N     1.615031e+06
KUV100        1.479047e+06
Marazzo       1.456759e+06
Name: Price, dtype: float64
```

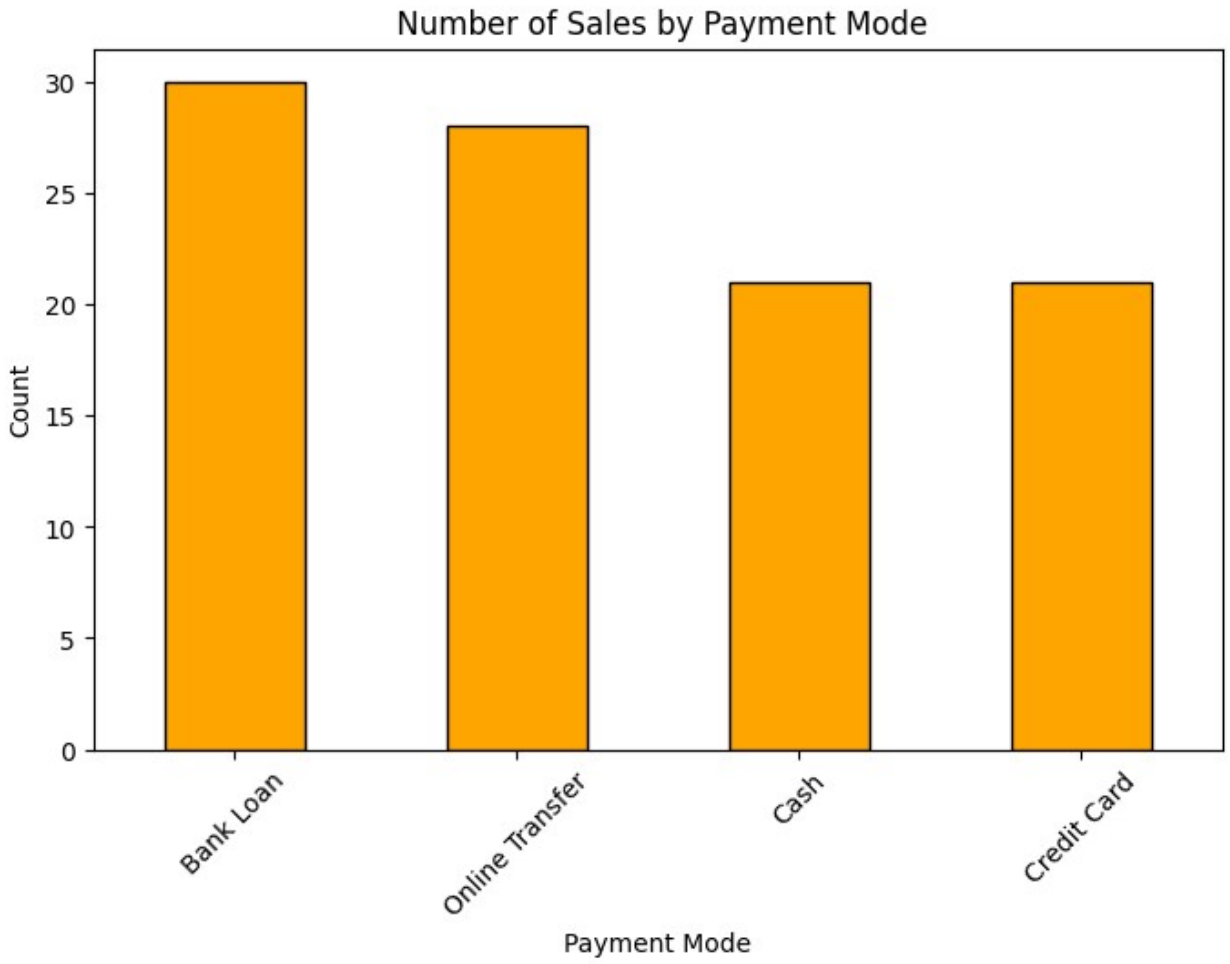



```
payment_counts = df["Payment_Mode"].value_counts()
print(" Number of Sales by Payment Mode")
print(payment_counts)

plt.figure(figsize=(8,5))
payment_counts.plot(kind='bar', color='orange', edgecolor='black')
plt.title(" Number of Sales by Payment Mode")
plt.xlabel("Payment Mode")
plt.ylabel("Count")
plt.xticks(rotation=45)
plt.show()
```

```
 Number of Sales by Payment Mode
Payment_Mode
Bank Loan          30
```

```
Online Transfer    28
Cash               21
Credit Card        21
Name: count, dtype: int64
```




```
city_sales = df.groupby("City")
["Price"].sum().sort_values(ascending=False).head(10)
print("\nQ5: Top 10 Cities by Total Sales (₹)")
print(city_sales)

plt.figure(figsize=(8,5))
city_sales.plot(kind='barh', color='violet', edgecolor='black')
plt.title("Top 10 Cities by Total Sales")
plt.xlabel("Total Sales (₹)")
plt.ylabel("City")
plt.gca().invert_yaxis()  # Highest at top
plt.show()
```

```
Q5: Top 10 Cities by Total Sales (₹)
```

```
City
Kulti              4914604
Ghaziabad          4560669
Danapur            3708348
Shimla             3072142
Chennai            2926472
Kolkata            2545252
Aligarh            2486157
Mangalore          2482707
Mysore             2464557
Sri Ganganagar     2405612
Name: Price, dtype: int64
```