Lab No: 11 by Arkadeep Ganguly

Lab Name: Data Visualization

Overview, Objectives & Concepts (Combined)

Data visualization is the graphical representation of information to make it easier to spot patterns, trends, and outliers in complex datasets. In Python, this is often done using libraries like matplotlib and pandas.For this lab,I have first generated a sample csv for each question,then have generate the respective visual aspects required to be generated from each question.

Initial Imports

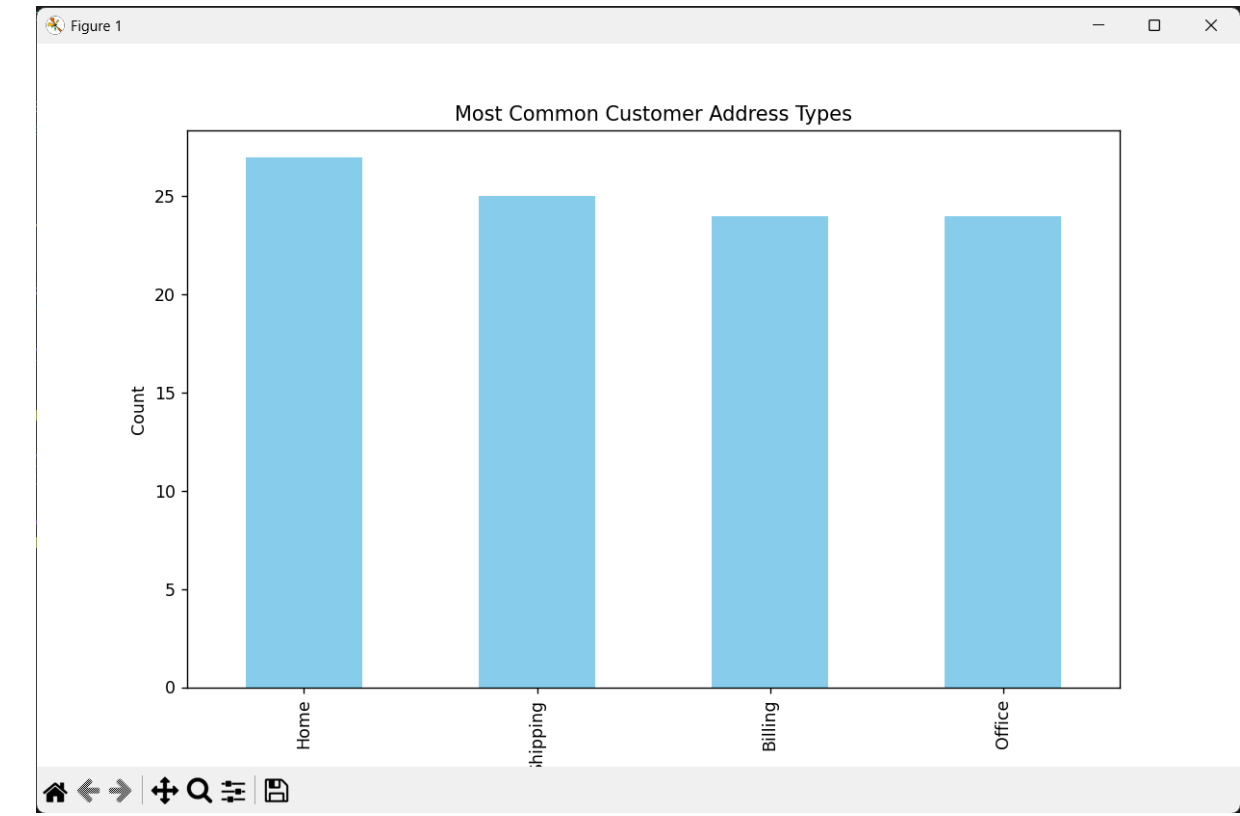1. Installed pandas and matplotlib using `pip install pandas matplotlib`.

```
C:\Users\Arko>pip install pandas matplotlib
Requirement already satisfied: pandas in c:\users\arko\appdata\local\programs\python\python313\lib\site-packages (2.2.3)
Requirement already satisfied: matplotlib in c:\users\arko\appdata\local\programs\python\python313\lib\site-packages (3.
10.1)
Requirement already satisfied: numpy>=1.26.0 in c:\users\arko\appdata\local\programs\python\python313\lib\site-packages
(from pandas) (2.2.4)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\users\arko\appdata\local\programs\python\python313\lib\site-
packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in c:\users\arko\appdata\local\programs\python\python313\lib\site-packages (
from pandas) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in c:\users\arko\appdata\local\programs\python\python313\lib\site-packages
 (from pandas) (2025.2)
Requirement already satisfied: contourpy>=1.0.1 in c:\users\arko\appdata\local\programs\python\python313\lib\site-packag
es (from matplotlib) (1.3.1)
Requirement already satisfied: cycler>=0.10 in c:\users\arko\appdata\local\programs\python\python313\lib\site-packages (
from matplotlib) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\arko\appdata\local\programs\python\python313\lib\site-packa
ges (from matplotlib) (4.56.0)
Requirement already satisfied: kiwisolver>=1.3.1 in c:\users\arko\appdata\local\programs\python\python313\lib\site-packa
ges (from matplotlib) (1.4.8)
Requirement already satisfied: packaging>=20.0 in c:\users\arko\appdata\local\programs\python\python313\lib\site-package
s (from matplotlib) (24.2)
Requirement already satisfied: pillow>=8 in c:\users\arko\appdata\local\programs\python\python313\lib\site-packages (fro
m matplotlib) (11.1.0)
Requirement already satisfied: pyparsing>=2.3.1 in c:\users\arko\appdata\local\programs\python\python313\lib\site-packag
es (from matplotlib) (3.2.3)
Requirement already satisfied: six>=1.5 in c:\users\arko\appdata\local\programs\python\python313\lib\site-packages (from
 python-dateutil>=2.8.2->pandas) (1.17.0)
```

Exercise / Output

1. Create a bar chart to visualize the most common address types (CustomerAddressType) used by customers
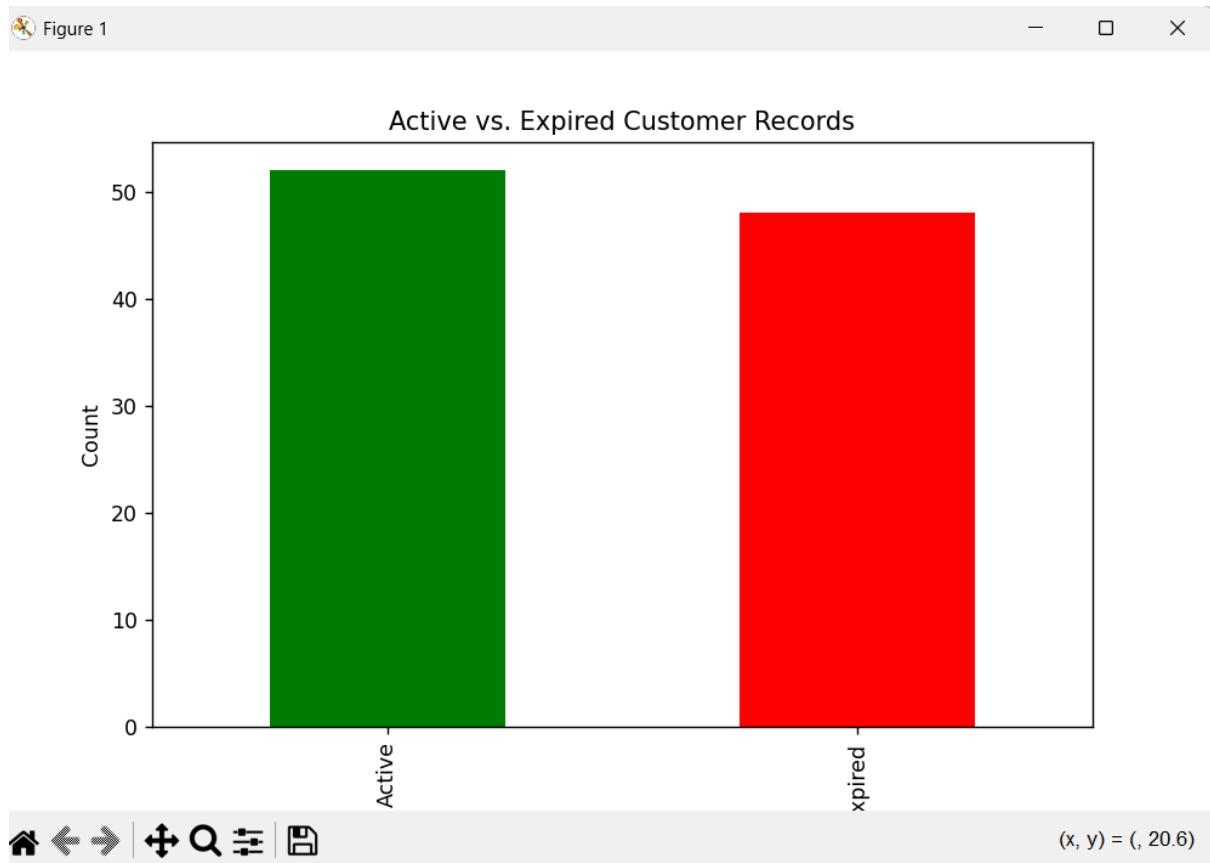
Output:

```
PS C:\Users\Arko> & C:/Users/Arko/AppData/Local/Programs/Python/Python313/python.exe c:/Users/Arko/Desktop/Lab11.py
   CustomerID CustomerAddressType
0          1            Shipping
1          2              Office
2          3                Home
3          4             Billing
4          5                Home
PS C:\Users\Arko>
```

2. How many customer IDs or contact info records have expired based on the EndDate field?

Output:

```
PS C:\Users\Arko> & C:/Users/Arko/AppData/Local/Programs/Python/Python313/python.exe c:/Users/Arko/Desktop/Lab11Q2.py
   CustomerID                 EndDate
0           1                     NaN
1           2  2025-05-27 18:03:27.937893
2           3  2025-07-13 18:03:27.953379
3           4  2025-09-08 18:03:27.953413
4           5  2024-10-08 18:03:27.953420
```

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3. Which languages (CustomerPreferredLanguage) are most preferred by customers?

Output:


```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\Arko> & C:/Users/Arko/AppData/Local/Programs/Python/Python313/python.exe c:/Users/Arko/Desktop/Lab11Q3.py
    CustomerID CustomerPreferredLanguage
0            1                    French
1            2                    German
2            3                   Spanish
3            4                    French
4            5                    French
```