Singapore Museum Visitors 1

1. main.py

```
# Display Menu function
def displayMenu():
    print()
    # Display main menu
    print("""============================
Singapore Museum Visitors
==========================================================================================================================================
    1.Display the visitor numbers of all museums in the year 2014.
    2.Mean of museum visitors from 2015 to 2019 and the (mean) value and the name of the museum that has the lowest mean.
    3.Of the user's selected year, display the museums and their numbers of visitors, from the highest to the lowest number of visitors.
    4.Display Chart
    5.Exit/Quit
==========================================================================================================================================
    """)
```

```
# Main Function
def Main():
    readData()
    while True:
        displayMenu()
        # Get Menu Input
        inputOp = input("Choose your menu : ")
        print()
        # Menu 1
        if inputOp == '1':
            option1()
        # Menu 2
        elif inputOp == '2':
            option2()
        # Menu 3
        elif inputOp == '3':
            year = input("Enter selected year : ")
            option3(year)
        # Menu 4
        elif inputOp == '4':
            option4()
        # Menu 5
        elif inputOp == '5':
            quest = input("Are you sure ? (Y/N) : ")
            if quest == "Y":
                exit()
        # If nothing matches continue the loop
        else:
            continue
```

```
if __name__ == '__main__':
    Main()
```

2. data.py

```
import csv
import numpy as np
import matplotlib.pyplot as plt

Dataset = ""


# Read data from dataset and store it in a list
def readData():
    global Dataset
    Dataset = list(csv.reader(open("data/museumvisitors_dataset.csv")))


# Menu 1 Code
def option1():
    global Dataset
    print("The visitors in the year 2014 : ")
    print("-----------------------------------------------------")
    for ind, data in enumerate(Dataset):
        if ind == 0:  # ignore heading
            continue
        sp = 35 - len(data[0])
        sp = sp * " "
        sp = sp + "|"
        print("|", data[0], sp, data[2], "|")
    print("-----------------------------------------------------")
```

```
# Menu 2 Code
def option2():
    global Dataset
    MeanVals = []
    MuseumVals = []
    print("The mean of visitors from 2015 to 2019 : ")
    print("-----------------------------------------------------")
    for ind, data in enumerate(Dataset):
        if ind == 0:  # ignore heading
            continue
        sumVal = int(data[3]) + int(data[4]) + int(data[5]) + int(data[6]) + int(data[7])
        avgVal = sumVal/5
        MeanVals.append(avgVal)
        MuseumVals.append(data[0])
        sp = 35 - len(data[0])
        sp = sp * " "
        sp = sp + "|"
        print("|", data[0], sp, avgVal, "|")
    print("-----------------------------------------------------")
    print("{} has the lowest mean with {} average visitors.".format(MuseumVals[MeanVals.index(min(MeanVals))], min(MeanVals)))
    print()
```

```python
# Menu 3 Code
def option3(year):
    global Dataset
    value = ""
    dict_val = {}
    print("-----------------------------------------------------")
    for ind, data in enumerate(Dataset):
        if ind == 0:  # ignore heading
            if year in data:
                value = data.index(year)
                continue
            else:
                print("Year given not found !!")
                break

        dict_val[data[0]] = int(data[value])

    dict_val = sorted(dict_val.items(), key=lambda kv: kv[1], reverse=True)

    for i in dict_val:
        sp = 35 - len(i[0])
        sp = sp * " "
        sp = sp + "|"
        if value:
            print("|", i[0], sp, i[1], "|")

    print("-----------------------------------------------------")
```

```python
# Display Line Chart
def disp_linechart(year, ACM, TPM):
    # Title and the x, y label
    plt.title("Visitor numbers of ACM, TPM vs Year")
    plt.xlabel("Year")
    plt.ylabel("Visitors")

    # Plot the line chart
    plt.plot(year, ACM, label="Asian Civilisations Museum")
    plt.plot(year, TPM, label="The Peranakan Museum")

    # Display the year as x axis label
    plt.xticks(year)

    plt.legend(loc="upper left")
    plt.show()
```

```python
# Display Bar Chart
def disp_barchart(NMS):
    bar_width = 0.3
    NMS = np.array(NMS)
    seq = []
    NMS_sorted = np.sort(NMS)
    for i in NMS:
        result = np.where(NMS_sorted == i)
        for k in result:
            seq.append(int(k) + 1)

    # Title and the x, y label
    plt.title("The lowest to highest number of visitors to NMS vs their sequence number")
    plt.xlabel("Visitors to NMS")
    plt.ylabel("Sequence")

    # plot the bar
    plt.bar(np.arange(len(NMS)), seq, width=bar_width, label="NMS")

    # Display the year as x axis label
    plt.xticks(np.arange(len(NMS)) + (bar_width / 2), NMS)
    plt.legend(loc="upper left")
    plt.show()


# Menu 4 Code
def option4():
    global Dataset
    # Get Chart Data
    ACM, TPM, years = [], [], []
    NMS = []

    for ind, data in enumerate(Dataset):
        if ind == 0:  # ignore heading
            years = data[1:]
            continue

        if data[0] == "Asian Civilisations Museum":
            ACM = data[1:]
        elif data[0] == "The Peranakan Museum":
            TPM = data[1:]

        elif data[0] == "National Museum of Singapore":
            NMS = data[1:]

    # converting to integers
    ACM = [int(i) for i in ACM]
    TPM = [int(i) for i in TPM]
    years = [int(i) for i in years]
    NMS = [int(i) for i in NMS]

    # Line Chart
    disp_linechart(years, ACM, TPM)

    # Bar Chart
    disp_barchart(NMS)
```

Outputs:

```
============================
Singapore Museum Visitors
=================================================================================================================================================
    1.Display the visitor numbers of all museums in the year 2014.
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    5.Exit/Quit
=================================================================================================================================================

Choose your menu : 1

The visitors in the year 2014 :
-----------------------------------------------------
| Asian Civilisations Museum          | 423171 |
| National Museum of Singapore        | 902083 |
| Singapore Art Museum                | 743718 |
| Singapore Philatelic Museum         | 142106 |
| Sun Yat Sen Nanyang Memorial Hall   | 92287 |
| The Peranakan Museum                | 417057 |
-----------------------------------------------------
```

```
============================
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=================================================================================================================================================

Choose your menu : 2

The mean of visitors from 2015 to 2019 :
-----------------------------------------------------
| Asian Civilisations Museum          | 513531.4 |
| National Museum of Singapore        | 902459.4 |
| Singapore Art Museum                | 672307.6 |
| Singapore Philatelic Museum         | 127357.0 |
| Sun Yat Sen Nanyang Memorial Hall   | 157140.8 |
| The Peranakan Museum                | 345991.2 |
-----------------------------------------------------
Singapore Philatelic Museum has the lowest mean with 127357.0 average visitors.
```

```
============================
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=================================================================================================================================================

Choose your menu : 3

Enter selected year : 2016
-----------------------------------------------------
| National Museum of Singapore        | 777362 |
| Singapore Art Museum                | 732913 |
| Asian Civilisations Museum          | 534255 |
| The Peranakan Museum                | 508334 |
| Singapore Philatelic Museum         | 160034 |
| Sun Yat Sen Nanyang Memorial Hall   | 133159 |
-----------------------------------------------------
```

```
============================
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================================================================================================================================================================

Choose your menu : 4
```