Calculating Averages: Mean, Median and Mode

To complete this task, you need to know how mean, median and mode are calculated.

*The **mean** of a data set is found by adding all numbers in the data set and then dividing by the number of values in the set.*

*The **median** is the middle value when a data set is ordered from least to greatest. If there are an even number of values, the mean of the two middle values is the median.*

*The **mode** is the number that occurs most often in a data set*

i) Change the code given so that it prints the following message.

```
Welcome to the averages calculator
List of numbers to be processed : [0, 1, 2, 3, 2, 3, 4, 8, 1, 9]
The mean of the values is 0
```

ii) Your sample code is hardcoded to return the value zero for the mean.
Change the function findMean(), so that it finds and returns the mean of the list of values passed in to the function. It should also round it to two decimal places.
Your output could look like this:

```
Welcome to the averages calculator
List of numbers to be processed : [0, 1, 2, 3, 2, 3, 4, 8, 1, 9]
The mean of the values is 3.3
```

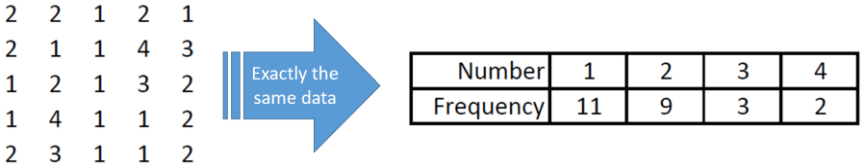
iii) Now change the code so that you offer the user a menu. The menu should be presented in a loop, only accepting values from 1 to 4. You do not need to validate that the input is numeric. The output should look like this:

```
Welcome to the averages calculator
List of numbers to be processed : [0, 1, 2, 3, 2, 3, 4, 8, 1, 9]
Choose from these options:
        Find Mean (1):
        Find Median (2):
        Find Mode (3):
        Exit (4)
5
Invalid option
Choose from these options:
        Find Mean (1):
        Find Median (2):
        Find Mode (3):
        Exit (4)
1
The mean of the values is 3.3
Choose from these options:
        Find Mean (1):
        Find Median (2):
        Find Mode (3):
        Exit (4)
4
Good-bye
```

iv) Now implement the code for finding median. Remember that you must consider cases where the number of values is even and where the number of values is odd.
Your output could look like this:

```
Welcome to the averages calculator
List of numbers to be processed : [0, 1, 2, 3, 2, 3, 4, 8, 1, 9]
Choose from these options:
        Find Mean (1):
        Find Median (2):
        Find Mode (3):
        Exit (4)
2
The median of the values is 2.5
```

v) Now complete the findMode() function. You will need to count how many times each value occurs and store this information in a data structure which needs to work like a frequency distribution table. This diagram shows how a frequency distribution table for 25 values would look. This is just an example. You will have to construct a table like this for your data.



Hint set up two lists: valuesList and freqList.
Alternatively, you could use a python dictionary.
You do not need to consider if there is more than one mode or no mode.

vi) Finally, modify the code so that it will report if there is no mode for the case where all the frequencies are 1.

```
Welcome to the averages calculator
List of numbers to be processed : [2.3, 4.2, 5.6, 1.7]
Choose from these options:
        Find Mean (1):
        Find Median (2):
        Find Mode (3):
        Exit (4)
3
This data has no mode
Choose from these options:
        Find Mean (1):
        Find Median (2):
        Find Mode (3):
        Exit (4)
4
Good-bye
```