Assignment # 4

This homework assignment covers python lists and dictionaries. It includes 2 mandatory questions and 1 bonus question (no partial credit).

Submission instructions:

- You are required to submit your source code (.py) for each question unless specified otherwise.
- At the beginning of each code add a comment specifying your name, assignment #, and question # following the below format:

```
'''
Your name [First last]
ID
Homework x
Question x
'''
```

- At the end of your code add as a comment your answer for each question (if any) along with your code sample output.
- Compress the source code file(s) (using zip or tar) and submit the compressed file through Moodle.

Q1. Write a python code that reads students' total, then print a table with the letter grades and frequencies. The program should also print a bar chart as shown below in the sample output (next page).

You are required to use a dictionary to find the frequency of each letter grade. You dictionary should have the letter as the key, and the frequency as the value. Use the following predefined dictionary to map total to letter grades:
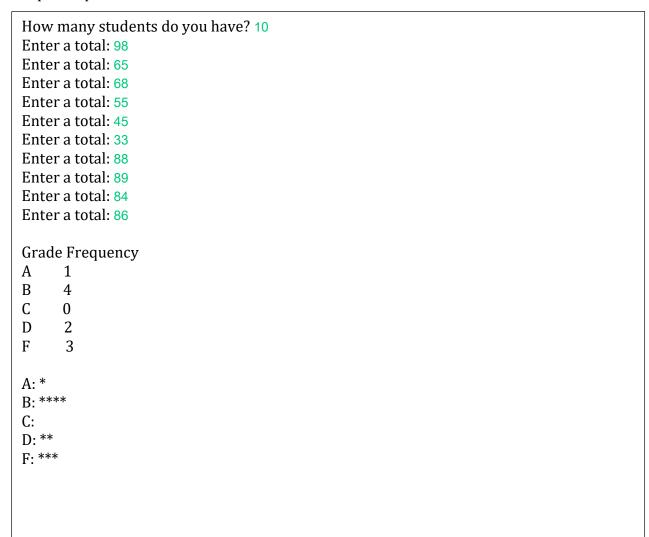grades = {90: 'A', 80: 'B', 70: 'C', 60: 'D', 50: 'F'}

Hint: use division to change a total to 90, 80, 70, 60, or 50. For example: if the total is 67, this student should get D, to convert 67 to 60, divide by 10, then convert it to integer. The result will be 6, now you want 6 to be changed to 60, how you could do that?

Write the following functions:

- read data: this method reads the students' totals, and returns a list of totals
- count frequency: this method takes the total as a list and returns a dictionary of the grade frequencies
- print table: this method prints the table
- print chart: this method prints the bar chart

Sample output:

```
How many students do you have? 10
Enter a total: 98
Enter a total: 65
Enter a total: 68
Enter a total: 55
Enter a total: 45
Enter a total: 33
Enter a total: 88
Enter a total: 89
Enter a total: 84
Enter a total: 86

Grade Frequency
A      1
B      4
C      0
D      2
F      3

A: *
B: ****
C:
D: **
F: ***
```

Q2. Write a program that creates a dictionary containing the names of the Galilean moons of Jupiter as keys and their mean radius (in kilometers) as values. The dictionary should, contain the following key-value pairs:

Moon Name (key)	Mean Radius (value)
Io	1821.6
Europa	1560.8
Ganymede	2634.1
Callisto	2410.3

The program should also create a dictionary containing the moon names and their surface gravity (in meters per second squared). The dictionary should contain the following key-value pairs:

Moon Name (key)	Surface Gravity (value)
Io	1.796
Europa	1.314
Ganymede	1.428
Callisto	1.235

The program should also create a dictionary containing the moon names and their orbital periods (in days). The dictionary should contain the following key-value pairs:

Moon Name (key)	Orbital Period (value)
Io	1.769
Europa	3.551
Ganymede	7.154
Callisto	16.689

The program should let the user enter the name of a Galilean moon of Jupiter, then it should display the moon's mean radius, surface gravity and orbital period. (It should accept capital or small or combination)

Sample output 1:

Enter name of Galilean moon of Jupiter (Io, Europa, Ganymede, Callisto): europa
Details of Europa are:
Mean Radius: 1560.8 km
Surface Gravity: 1.314 m/s^2
Orbital Period: 3.551 days

Sample output 2:

Enter name of Galilean moon of Jupiter (Io, Europa, Ganymede, Callisto): Gany
Gany is an invalid moon name.

Q3 (bonus). A company has 3 salesmen and sells 5 different products. Each month the company computes:

- The total number of sold items of each product, and
- The total number of sold item for each salesman.

Use a list of lists to store the number of products sold by each salesman. Read the number of sold items of each salesman from the user. Then print the total number of sold items for each product and the total number of sold item of each salesman.

Sample output:

Enter the number of sold items for salesman 0
Product 0: 2
Product 1: 5
Product 2: 3
Product 3: 4
Product 4: 2

Enter the number of sold items for salesman 1
Product 0: 6
Product 1: 7
Product 2: 2
Product 3: 4
Product 4: 5

Enter the number of sold items for salesman 2
Product 0: 2
Product 1: 4
Product 2: 3
Product 3: 9
Product 4: 6

Total Number of sold items for salesman 0 is 16
Total Number of sold items for salesman 1 is 24
Total Number of sold items for salesman 2 is 24

Total number of sold items for product 0 is 10
Total number of sold items for product 1 is 16
Total number of sold items for product 2 is 8
Total number of sold items for product 3 is 17
Total number of sold items for product 4 is 13