Lab 6: Repetition Structures

For this lab, you are going to do a few small exercises to practice with loops. All the problems should be in the same file and there should be clear headings and spacing to divide the problems, like the examples. Once you are finished creating all the lab scripts, there are a total of five problems, save your file as **lab6*yourlastname*.py** (For example: lab6Davison.py). Then, submit the file to Canvas as an attachment.

Create a new folder in your project folder, named **Lab6**. This is where you will save your Python script.

Goal: The goal of this lab is to give you practice using repetition structures.

Problem 1: Write a simple program that uses a for loop to add all the even numbers between 100 and 200, *inclusive*, then displays the result. The first line should display a title that says something like "Problem 1: Practice using a for loop". There is no input from the user on this problem.

Example Output:

```
-----Problem 1: Practice using a for loop-----
...Adding up even numbers between 100 and 200, inclusive!...

The total value equals: 7650
```

Problem 2: Repeat problem 1, but using a while loop. The first line should display a title like "Problem 2: Practice using a while loop". There is no input from the user on this problem.

Example Output:

```
-----Problem 2: Practice using a while loop-----
...Adding up even numbers between 100 and 200, inclusive!...

The total value equals: 7650
```

Problem 3: Write a simple program that sums a series of integers entered by the user. You will use a sentinel value (also known as a flag value) to control the loop. If the user wants to quit summing up the numbers, the user will enter **-1**. The first line should display a title that says something like "Problem 3: Summing values entered by the user".
Assumptions: The user will enter numeric values.
Note: For this problem you can only use a while loop, as you do not know how many numbers the user wants to enter. Using a for loop would not be possible.

Example Output:

```
-----Problem 3: Summing values entered by the user-----
Enter a number (-1 to quit): 5
Enter a number (-1 to quit): 6
Enter a number (-1 to quit): 4
Enter a number (-1 to quit): 2
```

```
Enter a number (-1 to quit): -1
The sum is: 17
```

Problem 4: Write a simple program that sums a series of **positive** integers entered by the user, **excluding all numbers greater than 100**. We are going to use a sentinel value to control the loop. If the user wants to quit summing up numbers, the user will enter **-1**. The first line should display a title like "Problem 4: Summing positive values entered by user that are less than 100".
Assumptions: The user will enter numeric values.
Note: For this problem you can only use a while loop, as you do not know how many numbers the user wants to enter. Using a for loop would not be possible.

Example Output:

```
-----Problem 4: Summing positive values entered by user that are less
than 100-----
Enter the first number to sum (-1 to quit): 5
Enter the next number (-1 to quit): 4
Enter the next number (-1 to quit): 2
Enter the next number (-1 to quit): -3
Enter the next number (-1 to quit): 3
Enter the next number (-1 to quit): 200
Enter the next number (-1 to quit): 1
Enter the next number (-1 to quit): -1
The sum of all the positive values less than 100 is: 15
```

Problem 5: Write a simple program that the user can enter any number of positive and negative integer values and display the total number of positive values entered and the total number of negative values entered. We are going to use a sentinel value to control the loop. If the user wants to quit counting positive and negative numbers, the user will enter **'q'**. The first line should display a title that says something like "Problem 5: Counting the number of positive and negative values entered by the user".
Assumptions: The user will only enter numeric values or the sentinel.

Example Output:

```
-----Problem 5: Counting the number of positive and negative values
entered by the user-----
Enter the first number (enter q to quit): 5
Enter the next number (enter q to quit): 4
Enter the next number (enter q to quit): -2
Enter the next number (enter q to quit): 0
Enter the next number (enter q to quit): -1
Enter the next number (enter q to quit): 100
Enter the next number (enter q to quit): q

The number of positive values entered is: 3
The number of negative values entered is: 2
```

Finished: Don't forget to save your file and turn it in via Canvas as an attachment to Lab 6. **lab6*yourlastname*.py**