CS 1400 - Assignment #4

Maximum Points: 20 pts

Topics:

- Control Flow - Conditional and repetition (loop) statements
- Methods

Coding Guideline (You will be graded on this)

1) Give identifiers semantic meaning and make them easy to read (examples numStudents, grossPay, etc).
2) Keep identifiers to a reasonably short length.
3) Use uppercase for constants. Use upper camel case for classes. Use lower camel case for all other identifiers (variables, methods, objects).
4) Use tabs or spaces to indent code within blocks (code surrounded by braces). This includes classes, methods, and code associated with ifs, switches and loops. Be consistent with the number of spaces or tabs that you use to indent.
5) Use white space to make your program more readable.
6) Use comments to explain how the parts of your program work.

Important Note: All submitted assignments must begin with a descriptive block comment (multi-line comments) similar to the one shown below. It must contain your name and the other information illustrated. To avoid losing trivial points, make sure this comment header is included in every assignment you submit, and that it is updated accordingly from assignment to assignment.

```
/*-----------------------------------------------------------------------------
// AUTHOR: YOUR NAME
// FILENAME: TITLE OF THIS SOURCE FILE
// SPECIFICATION: DESCRIPTION OF THIS PROGRAM
// FOR: CS 1400 - ASSIGNMENT #4
// TIME SPENT: HOW LONG IT TOOK YOU TO FINISH THIS ASSIGNMENT
//*/
```

Problem Description

Write a program called Assignment4 (saved in a file Assignment4.java) that reads in a sequence of positive integers until a user enters -1 to quit (we don't know how many numbers the user may enter).

The loop continues to ask for user input until the user enters negative one:

Enter a positive integer. Enter -1 to quit.

For each positive integer, check whether it is a prime number or not.

If it is prime, then print out:

The number X is a prime number.

If it is not prime print out:

The number X is not a prime number.

Note that X is a positive number entered by the user.

Once the user enters -1, then the program stops asking for more positive integers, and computes the **maximum and minimum** among the integers entered by the user, the **sum**, the **count**, and the **average** of these integers. These computations **DO NOT** include -1 (the last read number). Note that max, min, sum, and count will be computed through the iterations of a loop.

Requirements: The tasks that 1) check whether it is a prime number or not and 2) compute the average of the read integers must be executed by **separate** void methods isPrime(int number) and average(int sum, int count). Those two methods are responsible to make the computations and to produce the output messages, NOT the main method. Your average should be formatted with two digits to the right of the decimal point.

Hint:
There are two parts to this program.

Part 1: reads a sequence of positive numbers (1 number in each iteration of the loop) and finds the maximum, minimum, sum, count, and average.
Part 2: for each positive integer, you need to determine if whether is a prime number or not.

A prime number (integer) is an integer that can be divided only by itself and 1. For example, 7 is a prime number and 6 is not (6 can be divided by 2 and 3). We can check if an integer can be divided by another integer using the remainder operator (%). If the remainder is 0, it can be divided. And we need to check this for all integers between 2 and n/2 for a positive integer n.

Sample Output: (the integers entered by a user are shown in bold)

Enter a positive integer. Enter -1 to quit.
43
The number 43 is a prime number.

Enter a positive integer. Enter -1 to quit.
6
The number 6 is not a prime number.

Enter a positive integer. Enter -1 to quit.
7
The number 7 is a prime number.

Enter a positive integer. Enter -1 to quit.
9
The number 9 is not a prime number.

Enter a positive integer. Enter -1 to quit.
12
The number 12 is not a prime number.

Enter a positive integer. Enter -1 to quit.
4
The number 4 is not a prime number.

Enter a positive integer. Enter -1 to quit.
-1

The maximum positive number is: 43
The minimum positive number is: 4
The sum is: 81
The count of number(s) is: 6
The average is: 13.5

Submit your homework by following the instructions below:

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- Submit your **Assignment4.java** file on GradeScope. Your assignment will be graded only if it is submitted there, NOT on Canvas or sent by email.
- Assignment4.java file should have the following, in order:
  - In comments, the assignment Header described and demonstrated in "Important Note".
  - The working Java code requested in “Problem Description”.
- The Assignment4.java file must compile and run as you submit it

Important Note: You may resubmit as many times as you like until the deadline. Only your last submission will be considered.

NO LATE ASSIGNMENTS WILL BE ACCEPTED. ALWAYS SUBMIT WHATEVER YOU HAVE COMPLETED FOR PARTIAL CREDIT BEFORE THE DEADLINE!