

Assignment 9

Arizona State University - CSE205 - Assignment #9

Due Date Friday, April 3rd, 5:30pm

Important: This is an individual assignment. Please do not collaborate.

No late assignment will be accepted.

Make sure that you write every line of your code. Using code written by someone else will be considered a violation of the academic integrity and will result in a report to the Dean's office.

It must be submitted on-line (Course website).

Go to "GradeScope" tab on Canvas -> CSE205 -> Assignment9, and upload your program file.

Minimal Submitted Files

You are required, but not limited, to turn in the following source file:

Assignment9.java file (you need to create this file)

Requirements to get full credits in Documentation

1. The assignment number, your name, StudentID, Lecture day/time, and a class description need to be included at the top of each file/class.
2. A description of each method is also needed.
3. Some additional comments inside of methods (especially for a "main" method) to explain code that are hard to follow should be written.

You are not allowed to use the Scanner class in this assignment and any assignment after this one. You will need to use InputStreamReader and BufferedReader (they are in java.io package) to process input and also take care of IOException.

New Skills to be Applied

In addition to what has been covered in previous assignments, the use of the following items, discussed in class, will probably be needed:

- Recursion
- One-dimensional arrays

Program Description

Assignment #9 will be the construction of a program that reads in a sequence of integers from standard input **until 0 is read**, and store them in an array (including 0). This is done using iteration (choose one of for, while, or do while loop). You may assume that there will not be more than 100 numbers.

Then compute the minimum number, count odd integers, compute the sum of numbers that are larger than the first number in the array, and compute the largest even integer in the sequence **using recursion**. Thus, you will create recursive methods ***findMin***, ***countOddNumbers***, ***computeLargestEven***, and ***sumOfNumbersLargerThanFirst*** in Assignment9 class and they will be called by a main method.

Specifically, the following **recursive** methods must be implemented (These methods **should not contain any loop**):

```
public static int findMin(int[] numbers, int startIndex, int endIndex)
```

```
public static int countOddNumbers(int[] elements, int startIndex, int  
endIndex)
```

```
public static int computeLargestEven(int[] elements, int startIndex, int  
endIndex)
```

```
public static int sumOfNumbersLargerThanFirst(int[] elements, int  
startIndex, int endIndex, int firstNumber)
```

If these methods are implemented using a Loop or any Static Variable, points will be deducted even if your program passes test cases. DO NOT use any Static Variables.

The program should output the results of those calculations to standard output. Your program will continue to read in numbers until the number 0 is entered. At this point, the calculations will be outputted in the following format:


- The minimum number is 0
- The count of odd integers in the sequence is 0
- The largest even integer in the sequence is 0
- The sum of numbers larger than the first is 0


Note that the result values will be different depending on test cases (not always 0).


Do not output a prompt to query for the numbers. The number 0 is included in the sequence of numbers and should be included in all of your calculations.


Test Cases


Download the following input files, input1.txt, input2.txt, input3.txt, and input4.txt, and the following output files, output1.txt, output2.txt, output3.txt, and output4, and save them in the same directory as Assignment9.java is located.


[input1.txt \(https://canvas.asu.edu/courses/44324/files/14227809/download?wrap=1\)](https://canvas.asu.edu/courses/44324/files/14227809/download?wrap=1)  <https://canvas.asu.edu/courses/44324/files/14227809/download?wrap=1>


[input2.txt \(https://canvas.asu.edu/courses/44324/files/14227810/download?wrap=1\)](https://canvas.asu.edu/courses/44324/files/14227810/download?wrap=1)  <https://canvas.asu.edu/courses/44324/files/14227810/download?wrap=1>


[input3.txt \(https://canvas.asu.edu/courses/44324/files/14227811/download?wrap=1\)](https://canvas.asu.edu/courses/44324/files/14227811/download?wrap=1)  <https://canvas.asu.edu/courses/44324/files/14227811/download?wrap=1>

[input4.txt \(https://canvas.asu.edu/courses/44324/files/14227812/download?wrap=1\)](https://canvas.asu.edu/courses/44324/files/14227812/download?wrap=1)  <https://canvas.asu.edu/courses/44324/files/14227812/download?wrap=1>

[output1.txt \(https://canvas.asu.edu/courses/44324/files/14227815/download?wrap=1\)](https://canvas.asu.edu/courses/44324/files/14227815/download?wrap=1)  <https://canvas.asu.edu/courses/44324/files/14227815/download?wrap=1>

[output2.txt \(https://canvas.asu.edu/courses/44324/files/14227818/download?wrap=1\)](https://canvas.asu.edu/courses/44324/files/14227818/download?wrap=1)  <https://canvas.asu.edu/courses/44324/files/14227818/download?wrap=1>

[output3.txt \(https://canvas.asu.edu/courses/44324/files/14227819/download?wrap=1\)](https://canvas.asu.edu/courses/44324/files/14227819/download?wrap=1)  <https://canvas.asu.edu/courses/44324/files/14227819/download?wrap=1>

[output4.txt \(https://canvas.asu.edu/courses/44324/files/14227820/download?wrap=1\)](https://canvas.asu.edu/courses/44324/files/14227820/download?wrap=1)  <https://canvas.asu.edu/courses/44324/files/14227820/download?wrap=1>

Error Handling

Your program should be robust enough to handle all test cases above.

What to turn in:

-Submit your Assignment9.java file using Gradescope-> Assignment9 on canvas.asu.edu. Make sure that your files are compiling and passing all test cases. You can submit multiple times until the assignment deadline.

Grading Criteria:

____/ 5 Documentation (Each class file needs to have a header with your name, your information, and program description, each method needs its description and comments within your code)

____/ 1 Indentation and spacing (easy to read)

____/ 6 Required classes/methods and functionalities implemented

____/ 8 Produces correct results (test cases – auto graded)

Total points: 20

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