Computer Programming

04/11/2016

Lab 6

Exercise 1: Write a Java program to ask the user to enter how many integers she/he would like to input. After knowing the number of integer inputs, store those inputs in an array. The program should then print out the length of the array, the elements of the array, the sum of the integer numbers, and the average of those numbers. The following is a sample run of the program:

```
Please input the number of int you wish to store in the array: 5
Input the 1 number to be stored in array: 2
Input the 2 number to be stored in array: 3
Input the 3 number to be stored in array: 4
Input the 4 number to be stored in array: 8
Input the 5 number to be stored in array: 6
Length of array: 5
Elements of array: 2 3 4 8 6
Sum of array: 23
Average of array: 4.6
The numbers larger than average: 8 6
```

Exercise 2: The value of π can be derived by carrying out the Leibniz series:

$$\pi = 4 \times \sum_{n=0}^{\infty} \frac{(-1)^n}{2n+1}$$

The default value of n is 0, and could be given by the user at the time of execution. Write a program that displays the computational results. Below is output of a single run:

```
The result of PI for n = 0 in the Leibniz series is: 4.00000
Please provide the value of n, or increase n (c), or quit (q): c
The result of PI for n = 1 in the Leibniz series is: 2.66667
Please provide the value of n, or increase n (c), or quit (q): C
The result of PI for n = 2 in the Leibniz series is: 3.46667
Please provide the value of n, or increase n (c), or quit (q): 6
The result of PI for n = 6 in the Leibniz series is: 3.28374
Please provide the value of n, or increase n (c), or quit (q): c
The result of PI for n = 7 in the Leibniz series is: 3.01707
Please provide the value of n, or increase n (c), or quit (q): R2D2
Wrong input!
Please provide the value of n, or increase n (c), or quit (q): 25
The result of PI for n = 25 in the Leibniz series is: 3.10315
Please provide the value of n, or increase n (c), or quit (q): C
The result of PI for n = 26 in the Leibniz series is: 3.17862
Please provide the value of n, or increase n (c), or quit (q): c
```

```
The result of PI for n = 27 in the Leibniz series is: 3.10589
Please provide the value of n, or increase n (c), or quit (q): 20000
The result of PI for n = 20000 in the Leibniz series is: 3.14164
Please provide the value of n, or increase n (c), or quit (q): c
The result of PI for n = 20001 in the Leibniz series is: 3.14154
Please provide the value of n, or increase n (c), or quit (q): Q
Byebye Leibniz series!
```

Exercise 3: Write a Java program that prompts the user to enter an integer and displays a reversed pyramid, as shown in the following sample runs:

```
Please input pyramid's height: 3
333
 **
  1

Please input pyramid's height: 8
********
 7777777
  ******
   55555
    ****
     333
      **
       1
```