

# CSC 1302 Principles of Computer Science II

## **Assignment 1: Writing Java Programs with Methods**

(Due on 11:59 pm, 6/15/2021)

### **Purpose:**

A Java method is a collection of statements that perform some specific tasks. A method may be created to return the (task) results to the caller or return nothing to the caller. Methods allow us to reuse the codes. In this assignment, you will understand how to define a method with parameters in Java and how to call the method you defined by supplying necessary arguments. When defining your methods, you should be able to use loops and operations on numbers/strings to complete some specific tasks.

### **Task1:**

This task is to write a program named ChrisTree that produces images of Christmas trees as the output. It should have a method with two parameters: one for the number of segments in the tree and one for the height of each segment. For example, the tree shown here on the left has three segments of height 4 and the one on the right has two segments of height 5.

```
      *          *
    ***        ***
  *****      *****
*****          *****
   ***         *****
  *****      ***
*****          *****
*****          *****
*****          *****
*****          *****
*****          *
*****          *
      *          *****
      *
*****
```

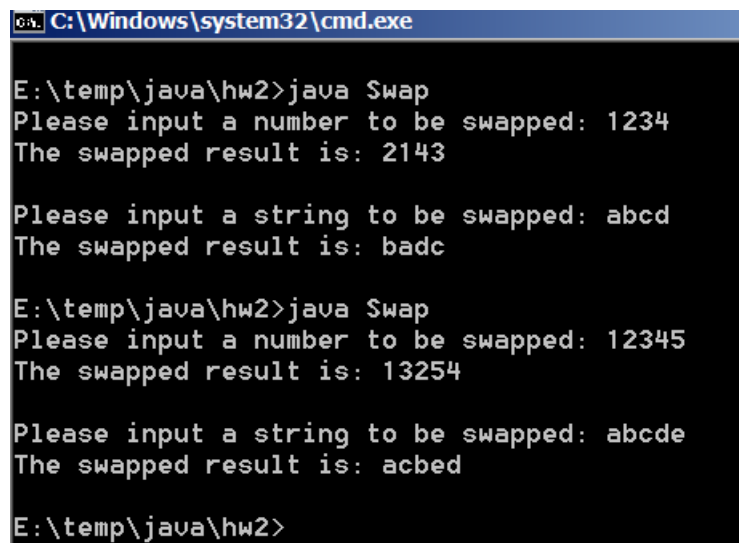
### **Task2:**

In this task, you are asked to write a program called Swap.java, including at least 3 following methods:

- Main()
- swapDigitPairs ( parameter)
- swapLetterPairs (parameter)

In the main method,

- Use your Panther Number as the input argument, call swapDigitPairs ( parameter)
- Ask user to input a number and call a method swapDigitPairs to swap the number as shown in the example of the following figure.
- Ask the user to input a string of letters/numbers and call a method swapLetterPairs to swap the letters as shown in the following example.



```
C:\Windows\system32\cmd.exe

E:\temp\java\hw2>java Swap
Please input a number to be swapped: 1234
The swapped result is: 2143

Please input a string to be swapped: abcd
The swapped result is: badc

E:\temp\java\hw2>java Swap
Please input a number to be swapped: 12345
The swapped result is: 13254

Please input a string to be swapped: abcde
The swapped result is: acbed

E:\temp\java\hw2>
```

The method swapDigitPairs accepts an integer  $n$  as a parameter and returns a new integer whose value is similar to  $n$ 's but with each pair of digits swapped in order. For example, the call of swapDigitPairs(482596) would return 845269. Notice that the 9 and 6 are swapped, as are the 2 and 5, and the 4 and 8. If the number contains an odd number of digits, leave the leftmost digit in its original place. The method swapDigitPairs should not use String class to help the swapping operation.

The method swapLetterPairs will conduct similar swapping operation as swapDigitPairs, but accepts a String as a parameter and return the swapped String. You can use String class in this method.

## **Criteria:**

1. Upload all of the .java and the .class files to the CSc1302 dropbox on <http://icollege.gsu.edu>.
2. Your assignment will be graded based on the following criteria: (a) Are your programs runnable without errors? (b) Do your programs complete the tasks with specified outputs? (c) Do you follow the specified rules to define your methods and programs? (d) Do you provide necessary comments include the programmer information, date, title of the program and brief description of the program.
3. Make sure that both the .java and .class files are named and uploaded to icollege correctly. If any special package is used in the program, be sure to upload the package too. Should you use any other subdirectory (whatsoever) your program would not be graded, and you will receive a **0 (zero)**.
4. No copying allowed. If it is found that students copy from each other, all of these programs will get **0**.