ASSIGNMENT 1

winter 2023

Part 1

Question 1

Write a method swap which takes as input two int values x and y. Your method should do 3 things:

1. Print the value of x and y

2. Swap the values of the variables x and y, so that whatever was in x is now in y and whatever was in y is now in x

3. Print the value of x and y again.

For example, if your method is called as follows: swap(3,4) the effect of calling your method should be the following printing

inside swap: x is:3 y is:4 inside swap: x is:4
y is:3

Question 2

Consider the program you have just written. Create two integer variables in the main method. Call them x and y. Assign values to them and call the swap method you wrote in the previous part using x and y as input parameters.

After calling the swap() method—inside the main method— print the values of x and y. Are they different than before? Why or why not?

Question 3

Write a method that takes three integers x, y, and z as input. This method returns true if z is equal to 3 or if z is equal to the sum of x and y, and false otherwise.

Question 4

Let's write a method incrementally:

1. Start by writing a method called getRandomNumber that takes no inputs, and returns a random double between 0 (included) and 10 (excluded).

2. Now, modify it so that it returns a random int between 0 and 10 (still excluded).

3. Finally, let the method take two integers min and max as inputs, and return a random integer greater than or equal to min and less than max.

Question 5

Create a file called Counting.java, and in this file, declare a class called Counting. This program takes as input from the user (using args) a positive integer and counts up until that number. eg:

> run Counting 10
I am counting until 10: 1 2 3 4 5 6 7 8 9 10

Question 6

For this question you have to generalize the last question. The user will give you the number they want the computer to count up to and the step size by which it will do so.

> run Counting 25 3
I am counting to 25 with a step size of 3:

Question 7

Write a method getFirstHalf() that takes as input a String and returns a String composed of the first half of the characters from the specified String. For example, getFirstHalf("cucumber") returns the String "cucu", while getFirstHalf("apple") returns the String "ap" (thus, if the number of characters is odd, you should round down).

Question 8

Write a method alphaString() which takes two Strings as input and returns the String between the two that comes first in the alphabet. For example, alphaString("banana", "apple") returns the String "apple", while alphaString("snake", "squirrel") returns the String "snake".

Question 9

Write a method replaceAll() which takes as input a String and two characters. The method returns the String composed by the same characters of the given String where all occurrences of the first given character are replaces by the second given character. For example, replaceAll("squirrel", 'r' , 's') returns the String "squissel", while replaceAll("squirrel", 't', 'a') returns the String "squirrel".