

CSCI 2540 Assignment 5

70 points

Due date: Saturday, Oct. 8, by 11:59pm

Part 1 (30 pts)

Write two **recursive** methods called *replace* and *replaceAll*. Both methods have three parameters, a string *str*, a character *oldChar*, and a character *newChar*. In the *replace* method, replace the first occurrence of *oldChar* with *newChar* in the string *str* and return the new string. In the *replaceAll* method, replace all the occurrences of *oldChar* with *newChar* in the string *str* and return the new string. In both cases, if the *oldChar* is not in the input string, return the original string. **Both methods have to be recursive.**

You also need to write a main method to test the two recursive methods. Your main method should print a menu such as the following:

1. Test replace method
2. Test replaceAll method
3. Exit

The menu should be repeated until user selects 3 to exit. For each testing, your program should ask user to enter the input string, the old character, and the new character, each on a separate line, and then print the output string after calling the corresponding method.

Place all three methods in the same class. Name your class as **StringReplaceRecursion**. Place your class in a named package and name your package as `assg5_yourPirateId`.

Part 2 (40 pts)

You need to write a program to perform JUnit testing on the *Point* class and *ExtendedCircle* class you wrote in assignment 2. An examples of JUnit test has been discussed in class and it is also available on Canvas. As demonstrated in class, Eclipse can be used for JUnit test (you will need to create a new JUnit Test Case and add the Junit 4 library). **Use JUnit 4 for this assignment.**

You need to write the **TestPoint** and **TestExtendedCircle** class which include methods to test all the constructors and methods in your **Point** and **ExtendedCircle** class. Make sure you also test all the different cases for each method.

For most of the test methods, you can compare the actual result with the expected result, or to test if a condition is true or false.

You need to include your *Point.java* and *ExtendedCircle.java* files in the same package for this assignment. Even if you do not make any changes to those two classes, you still need to include them for this assignment so that your JUnit test program can be tested.

To test whether two floating point values are equal using *assertEquals* method, you will need another parameter to be used as the threshold for the difference between the two numbers.

Note: Javadoc comments are needed for question 1, but not for question 2.

Submission instructions

You need to submit your programs electronically on Canvas.

Please **use a named package for each of your assignment**. For example, for assignment 5, create a new package and **name your package as `assg5_yourPirateId`** (use lower case for your pirate id), such as `assg5_smithj21`. You also need to include a statement such as “package `assg5_smithj21`;” at the beginning of each of your .java file. **Please follow this naming convention exactly for all future assignments. You will be deducted points for not doing so.**

When you submit your files to Canvas, please submit a zip file with your package folder inside the zip file. The package folder should include only .java files (make sure you include .java files, not .class files). The name of the folder should match with your package name. (You can use 7-zip software to zip files/folder).