String review for ICS4U1

Make sure that you know how to use the following string methods:

.length()
.charAt()
.indexOf()
.substring()
.split()

.trim()
.toUpperCase() or lowercase
.toCharArray()

NOTE: you do not need to change every string into a char array if you just want to go through each letter. Just use String.charAt() and a for loop.
A char array is useful if you want to replace one letter with another or exchange two letters.

You can also read over the notes on strings from ICS3U : https://quarkphysics.ca/ICS3U1/unit3/strings.html

TODO:

First, please write a small program that demonstrates how all of the 5 string methods in light blue (above) can be used to do something useful.

→ Show me this program in class. Don't bother handing it in.
→ If you want to work with a partner on this you can, as long as you both know how these methods work and can use them when needed.

Next:

We'll be using some steps in a typical software development cycle. (We won't be doing this in great detail until later, when we have more complex projects.)

- The requirements of the program are below.
- You need to plan (design) how to write the program **before** you start writing it.
  ○ Write down what data structures (if any) you need.
  ○ What objects are needed (probably none for this program)
  ○ What global variables will you need (these are the main variables that the program uses).
  ○ What methods will your program have?
  ○ Then write out your code using pseudocode

- Then you write the program.
- Then test it – Record any deficiencies or errors in your plan.

You'll be handing in two things:
(i) your initial plan, along with any notes on how it could have been made better.
(ii) your final working program.

You'll be writing a program that does the following:

1. Read through a long string of letters and find the longest sequence of repeated letters.
   1. The string can be either hardcoded or read from a file.
   2. Ignore case
   3. e.g. if String text = "aazzzbbbaaaazzzzbbbbbbaaapzz"; then your program should return "b 6" since the longest sequence of consecutive letters is 6 and it is made up of the letter b.
   4. If there is a tie for the longest sequence, take the <u>first</u> occurrence.
      String text = "aazzzbbbqq";   would have an answer of "z 3"

2. Now modify it (or make another similar program) to record the longest length of each letter found in the string.
   1. Print out the letter and occurrence in correct alphabetical order.
   2. Example: String text = "aazzzbbbaaaazzzzbbbbbbaaapzz"; would produce this result:
      a 4
      b 6
      p 1
      z 4
   3. Do not print out letters which have 0 occurrences. (ie, not "d 0" "e 0" ...)

BEFORE you write this program, plan how you will do it (see previous page)

Overview of Software Development Life Cycle (SDLC)

High level view of the different steps of the Software Development Lifecycle (SDLC)

Requirements Gathering • Gather business & technical requirements

Design • Determine how the system will be designed and built

Development (Code) • Design the solution and write the code

Testing • Execute various tests to ensure that all works as planned

Deployment • Make solution available to users

Maintenance • Address issues if needed

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