

COMP161

Lab 8 & Homework 8

Spring 2019

In this lab you'll work up recursive and iterative procedures for strings.

The Problem: Count Vowels

For this lab you'll work on a functional solution to the problem of counting all the vowels in a string. To make them distinct, put them in different namespaces¹.

When we take case sensitivity into account there are total of ten vowels². This problem definitely begs for a helper predicate, *isVowel*, to abstract away³ the check to see if a character is a vowel or not. Add this procedure to your library and place it in the top level namespace.

Putting this all together, you should be setting up three procedures. If we assume the top level namespace is *lab8* with nested, implementation specific namespaces *recur* and *iter*, then we end up with: *lab8::isVowel*, *lab8::recur::numVowels*, and *lab8::iter::numVowels*.

¹ You've seen me do this in a lot of code so check lecture notes and labs for examples if need be.

² excluding y and Y

³ simplify by hiding details

Lab 8

For lab, you should begin by setting up the documentation, stubs, and tests for the three procedures described above. To do the recursive procedure efficiently you'll need to add another helper that lets you recurse on the range of index values as opposed to the string itself. For more details see lecture notes 11. Submit this code with handin as assignment *lab8*.

Homework 8

Due by class time on Wednesday 3/20. Submit as assignment *hwk8*.

For homework, complete the implementation of both versions of the function.

Practice Problems

The following problems are good practice problems for developing your recursive and iterative problem solving skills.

- Remove letters
- Remove everything but digits

- Shift letters up so that A becomes B, B becomes C, etc. The letter Z should wrap around to A.