CS 111 - Week 9 Lab Exercise - 2016-10-21

Deadline

Due by the end of lab. (Submit whatever you have by the end of lab, even if incomplete.)

How to submit

Submit your resulting `.cpp` and `.h` files for this lab using `~st10/111submit` on nrs-labs, with a homework number of **89**.

Purpose

To practice designing and writing C++ functions involving `if` and `switch` statements.

Important notes

- You are required to work in **pairs** on this lab exercise. If you are not pair-programming, then you may not receive full credit for your lab exercise.
- Put **both of your names** either at the beginning or the end of your `purpose` statements for lab exercise functions.
- If you have a question during lab, and I am helping another pair, add one or both of your names to the "Next:" list on the board, and I will get to you as soon as I can.

Problem 1

Make a directory for this lab exercise on nrs-labs:

```
mkdir lab9
chmod 700 lab9
cd lab9
```

Recall that C++ `string` class instances have a `length` method (which we used in Week 8 Lab's `name_length` function).

Using `funct_play` and the design recipe, design and write a C++ function `ck_length` that expects a string and a maximum string length, and if the string's length is less than or equal to that given length, it returns the given string unchanged -- otherwise, it returns the string `"TOO LONG"`.

Problem 2

Using `funct_play` and the design recipe, design and write a C++ function `next_color` that expects a current traffic light color expressed as a `string` -- `"red"`, `"yellow"`, or `"green"` -- and produces the color that a traffic light should switch to next, based on:

- currently `"red"`? next color should be `"green"`
- currently `"yellow"`? next color should be `"red"`

- currently "`green`"? next color should be "`yellow`"
- what if some joker calls this with a string or color that isn't one of the above? return the string "`error`"

Problem 3

CHOOSE **one** of the following two options.

(OR -- do **BOTH**, and

- IF ((you submit working functions each appropriately using a `switch` statement with all design recipe parts for options 1 and 2)

  AND (you submit correct signature, purpose statement, header, at least the minimum number of examples, and body for BOTH options in Problem 3))

{

I'll add 20 points to your semester homework grade total (the effect of this is like adding 20 points to one of your homework grades)

}

)

3 option 1

Consider the following chart, showing Roman numeral symbols and their corresponding values:

I	1
V	5
X	10
L	50
C	100
D	500
M	1000

Using `funct_play` and the design recipe, develop a function `roman_val` that expects a single character, and if it is one of those above in the chart, it returns its value; otherwise, it returns 0. For full credit, appropriately use a `switch` statement in this function.

3 option 2

Consider: there are times (such as when you are converting words into pig latin) when you'd like to know if a letter is a vowel or not.

Using `funct_play` and the design recipe, develop a function `is_vowel` that expects a single character, and if it is a vowel, it returns `true`; otherwise, it returns `false`. For full credit, appropriately use a `switch` statement in this function.

(For our purposes here, a vowel is a, e, i, o, u, A, E, I, O, U.)