CSC270 Survey of Programming Languages October 13, 2022

Homework 6

1. Create a class called `Rectangle` that includes four pieces of information as data members—an `xCoordinate` (type float), a `yCoordinate` (type float), a `length` (type float), and a `width` (type float). Your class should have a constructor with four parameters that uses the parameters to initialize the four data members. Provide the following functions:

   - `setCoordinates` for changing the x and y coordinates
   - `setSides` for changing the length and width
   - `getXCoordinate` for returning the xCoordinate
   - `getYCoordinate` for returning the yCoordinate
   - `getLength` for returning the length
   - `getWidth` for returning the width
   - `area` for returning the area
   - `perimeter` for returning the perimeter

   Write a test program that reads an x coordinate, a y coordinate, a length and a width from user. Use those four values to create a rectangle and then print out the area and perimeter of the rectangle.

   You should have three files: one header file that contains the class declaration (only member functions' prototypes), one cpp file that contains the class definition (specific implementation of each member function), and another cpp file that contains the `main`.

   After you have done with the task above, let's do the next part of work by updating the existing files. Create an exception class called `negativeSide` that only has one attribute which is a string. The class should have a constructor with one parameter and use the parameter to initialize the attribute. It also has a method called `getMessage` that returns the attribute string.

   In the class `Rectangle`, method `setSides`, `area`, and `perimeter` should throw a `negativeSide` exception if the length or width is negative. You should update your `main` so it uses `try catch` block to handle the exception.

   To organize your program, you will have one header file that includes both `Rectangle` and `negativeSide`'s declarations, and have one cpp file that includes both classes' functions definitions.

   To submit your work, put the final header file, the final two cpp files into a zip file and then submit the zip file.