**C++ II Final**

**Final Project Option (Shapes Project)**

**Description:**

This program uses classes and vectors to create shapes. There’s three classes (triangle, circle, rectangle) that inherit from a shape class. This shapes all have values that have to do with their shape. For example, triangle has base and height. The program allows the user to create their own shapes, state their values like name, color, height, width, etc. It then allows the user to save them to a text file which can be also opened to load the stored shapes.

**List**

**•       Opening screen with a description of the application and instructions. Menu for the user to choose options**

The code starts with a menu displaying multiple inputs available for the user. Each input is labeled and informs the user as to what it does.

**•       4 classes, Inheritance (minimum 2 derived classes)**

There is 4 classes, Shapes, Circle, Rectangle and Triangle. Circle, Rectangle and Triangle inherit from Shapes.

**•       Polymorphism, Encapsulation**

Depending on what shape is being used, different functions are being called and each class has encapsulation to prevent having to access the data directly.

**•       File input and output processing OR network communication (remote data storage). Minimum of one search and one sort not from the STL (Note: You can sort the input file to meet this criteria), Iterators**

There’s a text filed named shapes that is read to get the shapes and its values or used to save the input values for the shape the user used. Iterators are used in both the redrawShape and writeToFile function to help with the shape list.

**•       Templates**

Not used on project shapes.

**•       Vectors**

Vectors are used for the shapes to be able to use push.back and pop.back.

**•       Exception handling**

Not used on project shapes.

**•       Design Pattern(s) (must be described and documented)**

Not used on project shapes.

**•       Boost Library**

Not used on project shapes.