Rectangles

Nitin Puranik

Objective:.

This is a utility that can be used to analyze the mutual spatial characteristics of two given 2-D rectangular objects. The application accepts 2-D coordinate inputs (of type ints and floats) from the user for the rectangle's vertices and then reports the overlapping features of the rectangle.

Basic Features:

Below are the features that the application is capable of reporting :

- Whether the two rectangles are completely non overlapping
- Whether the two rectangles are adjacent, i.e., if they share an edge.
- Whether one rectangle is completely contained inside another rectangle.
- Whether the two rectangles intersect, and if they do, then the points of intersection.

Additional features :

- The application is capable of supporting rotated rectangles. The input rectangles don't necessarily have to be aligned with the two axes. They can be tilted in the 2-D plane at any angle.

- The application is completely object oriented, with the base class "Shape" providing the common interface to all polygonal objects (including triangles). This base class also does all the feature analysis work that will work for any polygon, not just a rectangle. Hence, extending this application for say, a pentagon or a hexagon, is only a matter of declaring a pentagon or hexagon class that inherits from the base class and providing the appropriate data input interface. The rest of the feature analysis and reporting is handled by the generic "Shape" base class. Hence, this application is highly open ended, reusable and extensible.

Files Included :

BaseClassShape.h : The base header file.
DerivedClassRectangle.cpp : The inheriting Rectangle source file.

Environment :

Runs on Windows and Linux. Normal compilation of DerivedClassRectangle.cpp will be sufficient, with the BaseClassShape.h header file placed in the same directory. No external frameworks required.