Rectangles

Problem Description:

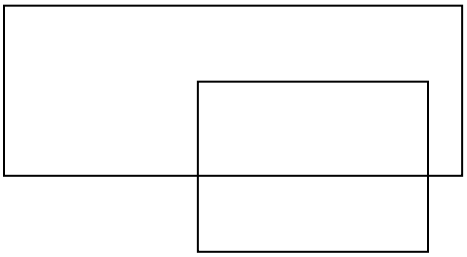
You are required to write code in the language of your choice implementing certain algorithms that analyze rectangles and features that exist among rectangles. Your implementation is required to cover the following:

1. **Intersection:** You must be able to determine whether two rectangles have one or more intersecting lines and produce a result identifying the points of intersection. For your convenience, the scenario is diagrammed in Appendix 1.
2. **Containment:** You must be able to determine whether a rectangle is wholly contained within another rectangle. For your convenience, the scenario is diagrammed in Appendix 2.
3. **Adjacency:** Implement the ability to detect whether two rectangles are adjacent. Adjacency is defined as the sharing of a side. Side sharing may be proper or sub-line, where a sub-line share is one where one side of rectangle A is a line that exists as a set of points wholly contained on some other side of rectangle B. For your convenience, the scenario is diagrammed in Appendix 3.

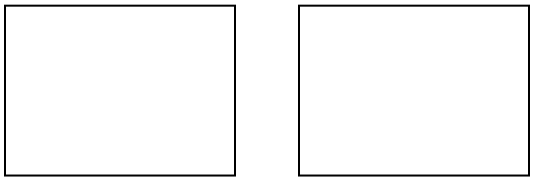
Your implementation should capture the rectangle entity as well as the operations listed above. Feel free to expand on this problem as you wish. Document any expansion and provide it as part of your submission.

Your submitted source code must compile (if necessary) and the resulting executable must run on the Windows platform. Please document any library or framework dependencies.

Appendix 1

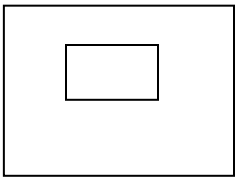


Intersection

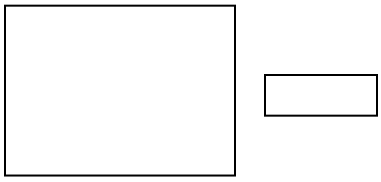


No Intersection

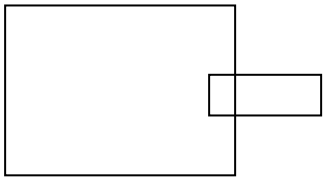
Appendix 2



Containment

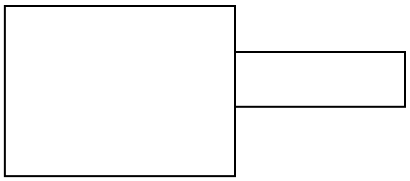


No Containment

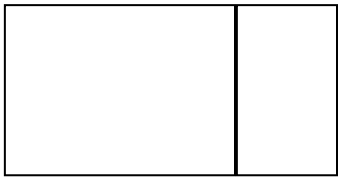


Intersection - No Containment

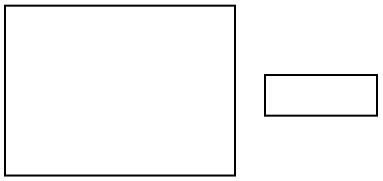
Appendix 3



Adjacent



Adjacent



Not adjacent