**3805ICT Advanced Algorithms**
**Geometric Algorithms Problems**

1. Review in C++ and test the following algorithms from the lecture:

    - Counter_clockwise
    - Intersect for line segment intersection
    - Closed simple path
    - Point in polygon

2. Implement in C++ a quick algorithm for deciding if two line segments are parallel (without using any divisions).
3. Implement in C++ a quick algorithm for deciding if four line segments form a square (without using any divisions).
4. Given an array of line segments, how would you test to see if they formed a simple closed polygon.
5. What does the *intersect* function return when called with two copies of the same line segment.
6. What is the maximum value achievable by count when *inside* is executed on a polygon with N vertices? Give an example supporting your answer.
7. In C++ implement the brute force and divide and conquer algorithms for the closest pair problem.
8. In C++ implement the Graham Scan algorithm for finding the convex hull of a set of points.