

COMP163 Homework Assignment 2: Due Wednesday, January 30, 2008

Reading: Please read ALL of Chapter 1 of the Required Text, and also explore the "Lecture Notes" and/or other recommended texts.

Problems: Please start each problem at the top of a fresh piece of paper. Remember to cite *ALL* your sources (TA, friends, faculty members, books, websites).

1) Do problem 1.1 on pp. 15-16 of the Text.

2) Do problem 1.3 on pp. 15-16 of the Text.

3) Consider the following problem:

Given two arbitrary convex polygons P and Q with n vertices each (their boundaries may intersect one, two, or more times; they may be disjoint; one may be contained within the other), compute the convex hull of $P \cup Q$.

- a. Specify as efficient an algorithm as you can to solve this problem. Analyse its complexity and prove its correctness.
- b. Use this algorithm to generate a divide-and-conquer algorithm without presorting for finding the convex hull of an arbitrary set of n points.

4) Do problem 1.8 on pp. 15-16 of the Text