

COT5520 Computational Geometry

Homework Assignment # 4

Due: October 20, 2003

1. The following points are located in the plane at (x,y) coordinates: $(1,1), (6,3), (4,7), (4,4), (2,3), (3,4), (5,5)$ and $(4,2)$. Use the 2D range tree data structure to determine the points located in a rectilinear rectangle whose bottom left corner is at $(3,1)$ and the top right corner is at $(5,6)$.
2. Write a high level algorithm (with clear descriptions of all the relevant data structure: layered range tree) for the two-dimensional orthogonal range search problem using fractional cascading as explained in Section 5.6). Analyze the time, pre-processing and storage complexity of your algorithm. Write your answers using your own words and without looking at the text at the time of writing.
3. Question number 5.1 from text (p.117)
4. Question number 5.10 from text (p.119)
5. Question number 5.11 from text (p.119)