

CENG 773

Computational Geometry

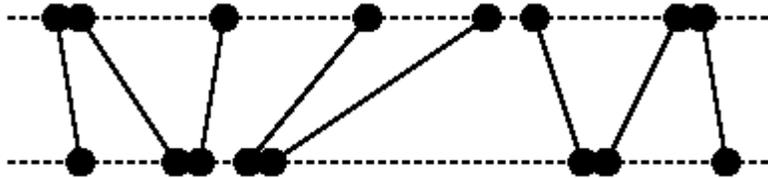
Assignment #2

Due Date: October 14, 2011 (in class)

1. Exercise 2.1 from the book

2.1 Let S be a set of n disjoint line segments whose upper endpoints lie on the line $y = 1$ and whose lower endpoints lie on the line $y = 0$. These segments partition the horizontal strip $[-\infty : \infty] \times [0 : 1]$ into $n + 1$ regions. Give an $O(n \log n)$ time algorithm to build a binary search tree on the segments

in S such that the region containing a query point can be determined in $O(\log n)$ time. Also describe the query algorithm in detail.



2. Give an example line segment intersection instance in which the same intersection event is detected twice during plane sweep. If you cannot find such an instance, prove that no such intersection event exists.