

Homework Assignment #5: Programming Exercise #1

Note

This assignment constitutes 4% of your grade and is due 2:10PM Tuesday, April 22, 2014. Please write/type your answers/code on A4 (or similar size) paper. Drop your homework by the due time in Yih-Kuen Tsay's mail box on the first floor of Management College Building II. Late submission will be penalized by 20% for each working day overdue. You may discuss the problems with others, but copying answers/code is strictly forbidden.

Your work will be graded according to its correctness and presentation. Specifically, you should provide evidences showing that your program is correct. You should also organize and document your program in such a way that other programmers, for example your classmates, can understand it. **Some of you may be requested to demonstrate your program.**

Problem

Implement an algorithm that computes the skyline of a list of buildings, where the representations of a building and a skyline are as discussed in class. The height and width of a building can be real numbers; your implementation should allow this possibility.

You may assume that there are at most 1000 buildings in each input. The first line of an input should be an integer n , indicating the number of buildings. It is to be followed by n lines of three real numbers, indicating the coordinates of a building.

In the documentation of your program, you should describe how you have applied the algorithmic techniques, in particular design by induction, learned in class. For example, if you choose to use the merging of two skylines as a building block, try to elaborate on how induction has helped in the design.