OBJECT ORIENTED PROGRAMMING
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THE SKYLINE PROBLEM SOLUTION

Building Class:

Every building has a widht, height and position. We should set them left, right and height for easy understanding. In this algorithm, every line means a building.

Edge Class:

The skyline result has many lines. So each line has a start point and end point. The **Edge** class simply records an edge by using two **java.awt.Point** objects.

DrawSkyline Class:

The class draws final skyline scene to the JFrame. Includes Graphics and JPanel. For a good drawing skyline, we should modify them like expand.

Main Class:

Main class has three methods: getInput,compute and complete. getInput method reads rectangle informations from data.txt and returns a List of buildings. Compute method calculates coordinates which the most high building and local high buildings. It has TreeSet and HashMap. This code constructs a set from the left- and right- coordinates of the buildings so it can sweep through the coordinates from left to right.

The code creates two HashMap objects. lefts enables the retrieval of an ArrayList of Building objects that all share the same left x-coordinate. Similarly, the rights HashMap stores an ArrayList of Building objects that all share the same right x-coordinate.

- The for loop executes *n* times.
- Each add to a TreeSet is guaranteed to perform with *O(log n)* behavior.
- Each get on a HashMap is *O(1)* time.
- Each put operation on a HashMap is *O(1)* time.
- Each add on a ArrayList is amortized constant time.

    So, *O(n log n)* algorithm because those are the dominant terms in the computation.

    In the complete method, edge.start refers to the left point of a horizontal edge and edge.end refers to its right point. Each point has an x-coordinate and a y-coordinate, so edge.end.x refers to the x-coordinate of the right point of the given edge.