Handin 5

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1 Skyline

We wish to make an algorithm that produces the silhouette of a city. Each building in the city is represented by a tripple (l,h,r) where l (r) is the coordinate on the horizontal line where the building begins (ends) and h is the height of the building.
The sihouette of the city is a vector $(x_0, h_1, x_1, \ldots, x_{i-1}.h_i, x_i, \ldots, h_n, x_n)$ where $x_j < x_{j+1}$ and h_j represents the height between point x_{j-1} and x_j.

1.1 a)

Given a silhouette

$$(x_0, h_1, x_1, \ldots, x_{i-1}.h_i, x_i, \ldots, h_n, x_n) \tag{1.1}$$

We wish to add a building (l, h, r) we use zhe following algorithm

Time	Line nr	Pseudocode
1	0	Build-Radix-Tree(S)
1	1	T.root.key = false
m	2	for $s_j \in$ S
$n_j + 1$	3	InsertRT(s_j,T,T.root)

1.2 b)

Given 2 silhouettes

$$X = (x_0, h_1, x_1, \ldots, x_{i-1}.h_i, x_i, \ldots\ldots, h_n, x_n) \tag{1.2}$$
$$Y = (y_0, h'_1, y_1, \ldots, y_{i-1}.h'_i, y_i, \ldots, h'_m, y_m) \tag{1.3}$$

We wish to combine them into one. Assume without loss of generality that $m \leq n$

Time	Line nr	Pseudocode
		CombineSilhouette(X,Y)
m	1	for k = 1 to k=m
n	2	addBuilding(X,(y_{k-1}, h'_k, y_k)))

If addBuilding works, so does CombineSilhouette.

1.3 c)

We wish to write the divide and conquer algorithm to take care of this problem.