Complexity:

The submitted solution has a time complexity of O (nk log k),

Where,

k = Number of convex hull objects

n = Average number of points on each object

Algorithm:

1. Get the UP coordinates of the first convex hull object (chosen randomly) by choosing the left most point (min. x-coordinate value) and then traversing anti-clockwise till the right most point (max. x-coordinate value). (Including both of them)

2. Get the LO coordinates by choosing the left most coordinate and going in clockwise direction till the right most point. (Excluding both of them)

3. Merge the UP and LO coordinate vectors to get the sorted coordinate array of the first convex hull object. (Sorted based on x-coordinates, ties are broken based on y-coordinates)

4. Repeat steps 1-3 for all the k convex hull objects on the plane and store them in vectors as the leaves of a binary tree.

5. Merge the vectors of the k objects by merging two children of a parent in the tree and so on till we have only one merged parent left.

6. This merged parent is the sorted list of coordinates of the k convex hull objects.

7. Create a convex hull from these sorted coordinates using the standard convex hull algorithm. [O(nk)]