P6

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a)

```
- Sort the set of points P along x-axis into a BST, P. Use x as a key and y as a value.   ] O(n log n) with merge sort.

- initialize 'layers' a 2D list

- While P is not empty:
    - start from rightmost in P   ← it is sorted and keyed by x so can be reached O(1).
    - Add to layer
    - save y-value as $max_y$
    - For point in P :
        - If $point_y > max_y$:
            - add $point_y$ to layer   ← O(1)
            - pop point from P   ← O(log n)
```

Complexity:

- Sorting O(n log n)

- Sorting $O(n \log n)$

- Each point is visited only once because they are removed when visited.

- Delete on every traversal $O(n \cdot \log(n))$

- Add to list on every traversal $O(n)$

$O(n)\log n + n\log n + n)$

$O(2n\log n)$

$\underline{O(n\log n)}$

b)