$R$ is an axis-parallel rectangle.

Prob 1: What is the number of points within $R$?

Prob 2: Report the points within $R$.

Given a set $P$ of points in the plane, build a data structure to solve the above problems.
Suppose each point has two attributes, age and salary
\[ x_i: \text{age} \quad y_i: \text{salary} \]

A rectangle in a cartesian product of intervals \([x_1, x_2] \times [y_1, y_2]\)

\[\text{Prob} 1: \text{Can we achieve } O(\log n) ?\]
\[\text{Prob} 2: O(\log n + q)\]

Space : \(O(n)\)
Pre-processing Time : ? \(O(n \log n)\)

Store points as sorted array \(x_2\)
Space is $O(n)$

What is the query time?

→ Query time is related to the no. of sub-rectangles created by the query

→ Alternately, no. of nodes visited by the query process