07-C-01

Geometric Range Search

kd-Tree: Structure

- 2d-Tree

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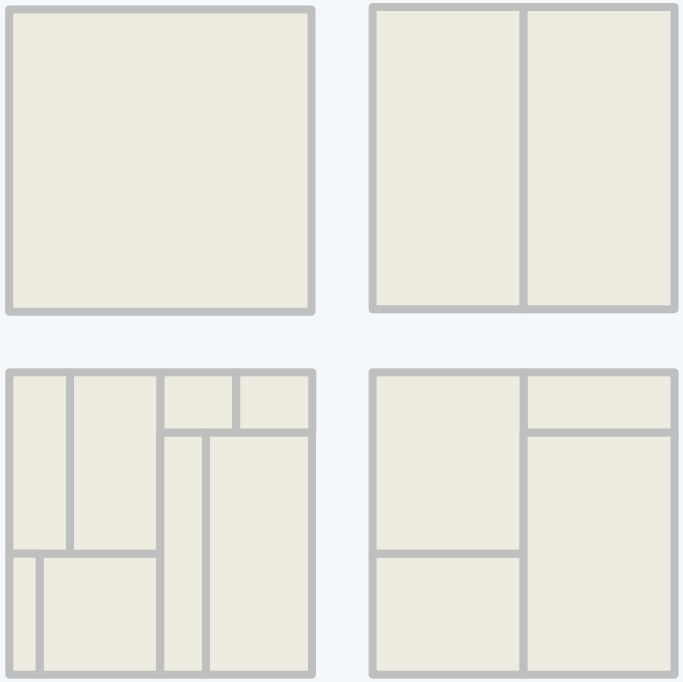
Divide-And-Conquer

❖ To extend the BBST method to planar GRS, we

- divide the plane recursively and
- arrange the regions into a kd-tree



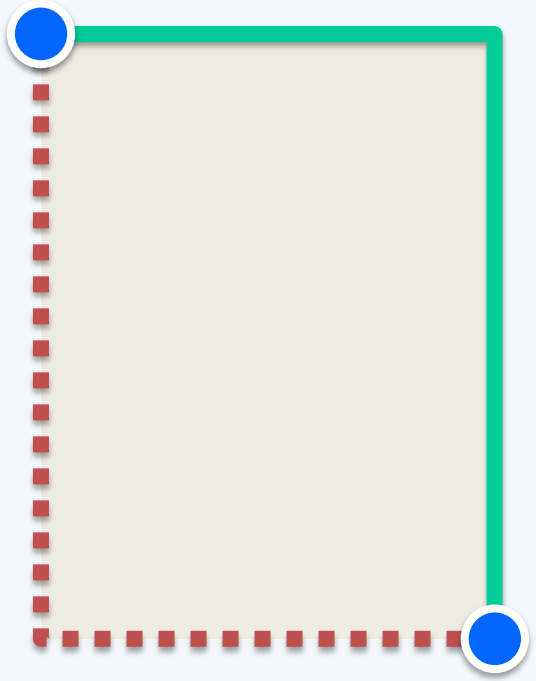
❖ Start with a single region (the entire plane)

Partition the region vertically/horizontally on each even/odd level

Partition the sub-regions recursively

More Details

- To make it work,
  - each partition should be done as **evenly** as possible (at median)
  - each region is defined to be **open**/**closed** on the **left-lower**/**right-upper** sides



- Degeneracy assumption:
  - no two input points lie on a same vertical/horizontal line