

BST Application

kd-Tree: Canonical Subsets

e9-B4

韦小宝跟著她走到桌边，只见桌上大白布上钉满了几千枚绣花针，几千块碎片已拼成一幅完整无缺的大地图，难得的是几千片碎皮拼在一起，既没多出一片，也没少了一片。

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## Canonical Subset

⦿ Each node corresponds to

- a rectangular sub-region of the plane, as well as
- the subset of points contained in the sub-region

❖ Each of these subsets is called a **canonical subset**

⦿ For each internal node  $X$  with children  $L$  and  $R$ ,

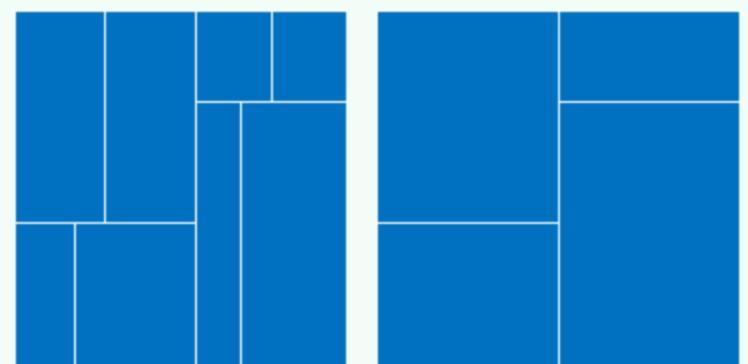
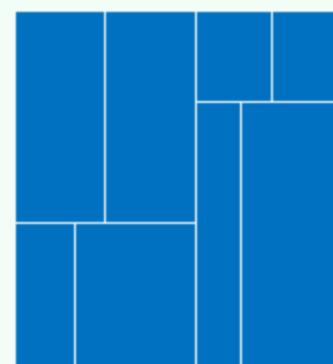
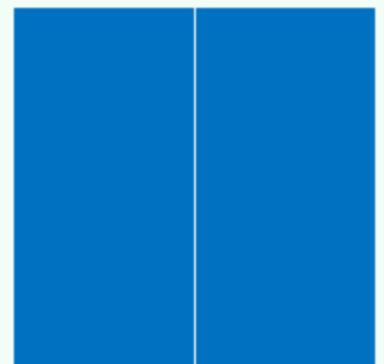
$$\text{region}(X) = \text{region}(L) \cup \text{region}(R)$$

⦿ Sub-regions of nodes at a same depth

- never intersect with each other, and
- their union covers the entire plane

❖ We will see soon that each 2D GRS can be

answered by the **union** of a number of CS's



## Example

