12-XC

优先级队列

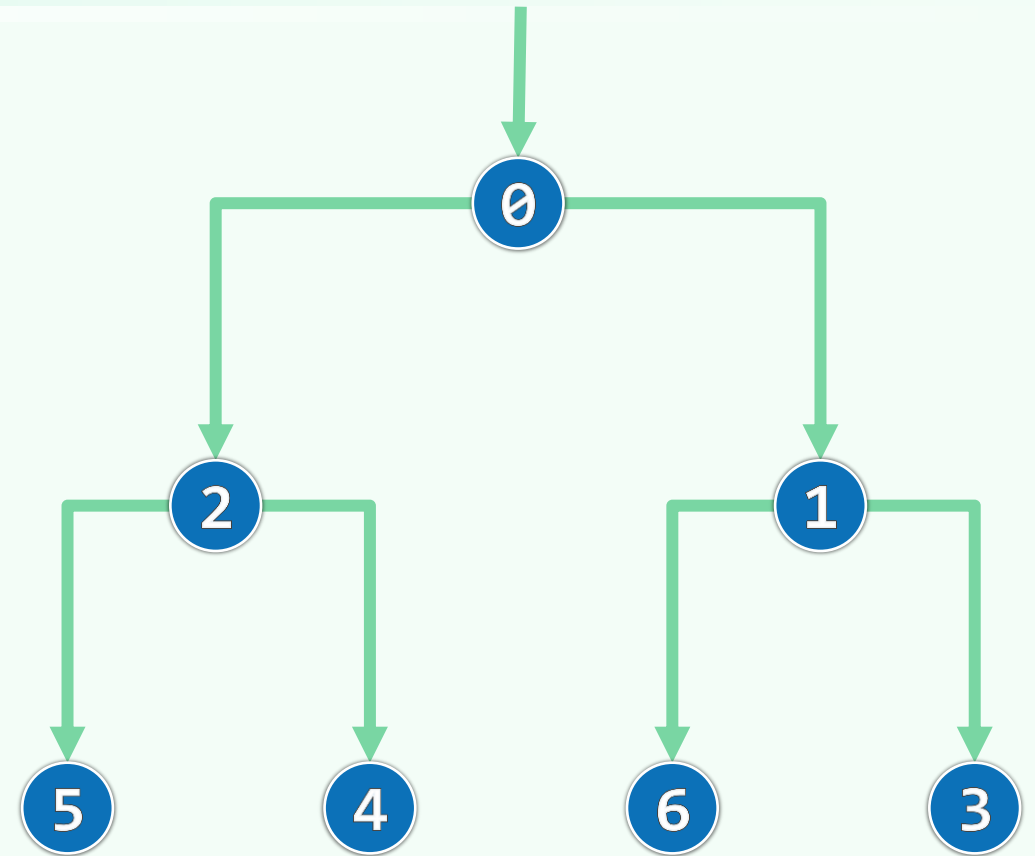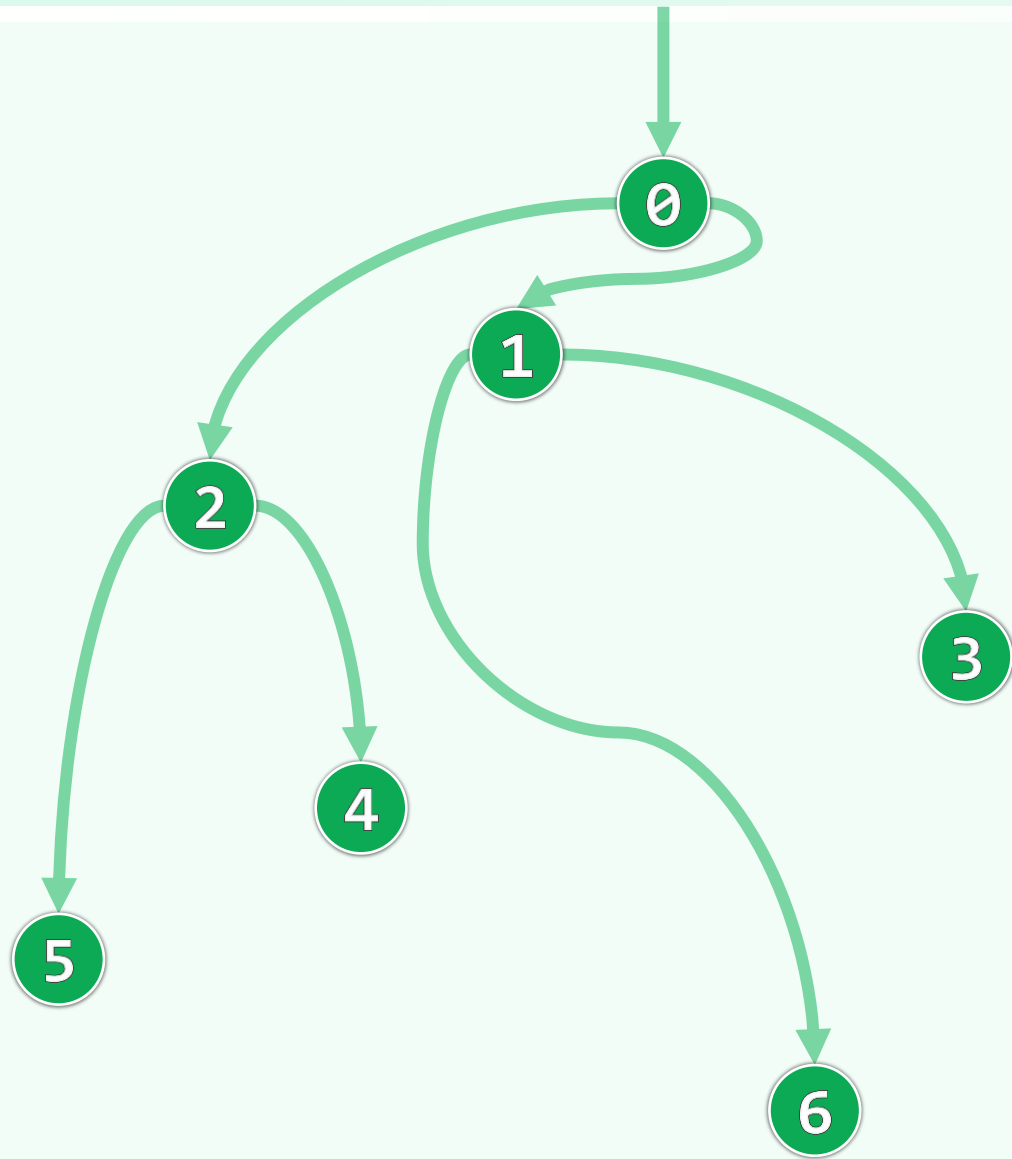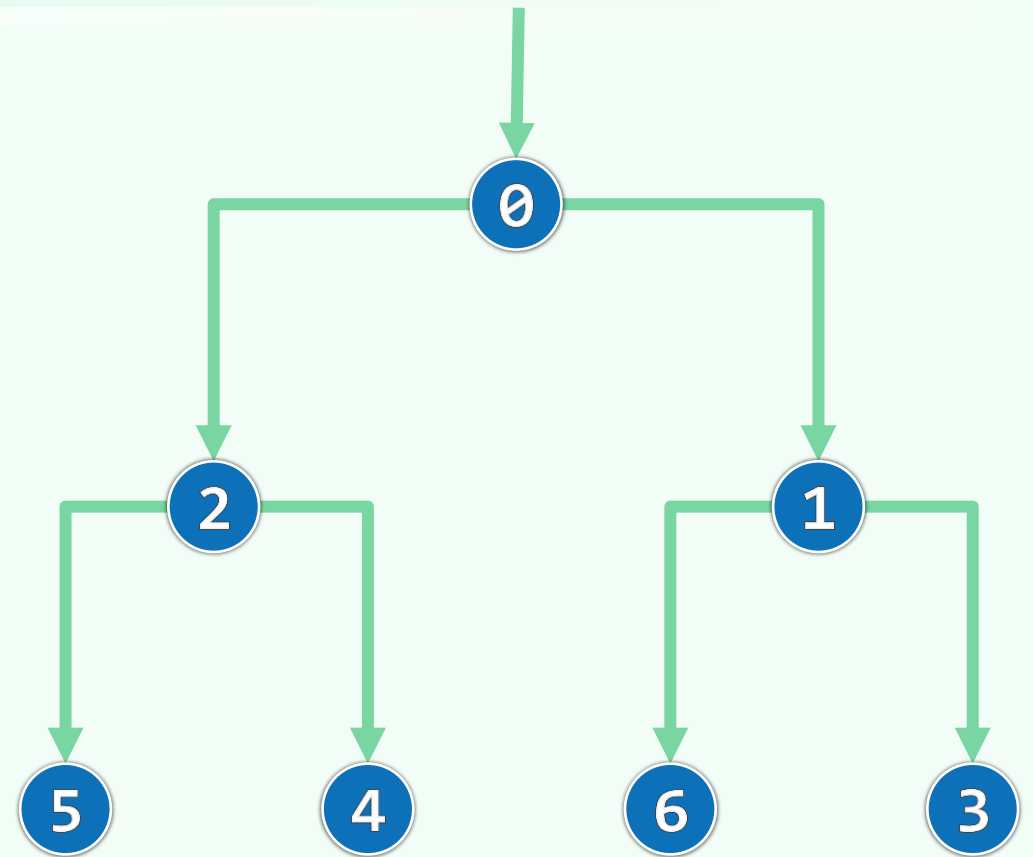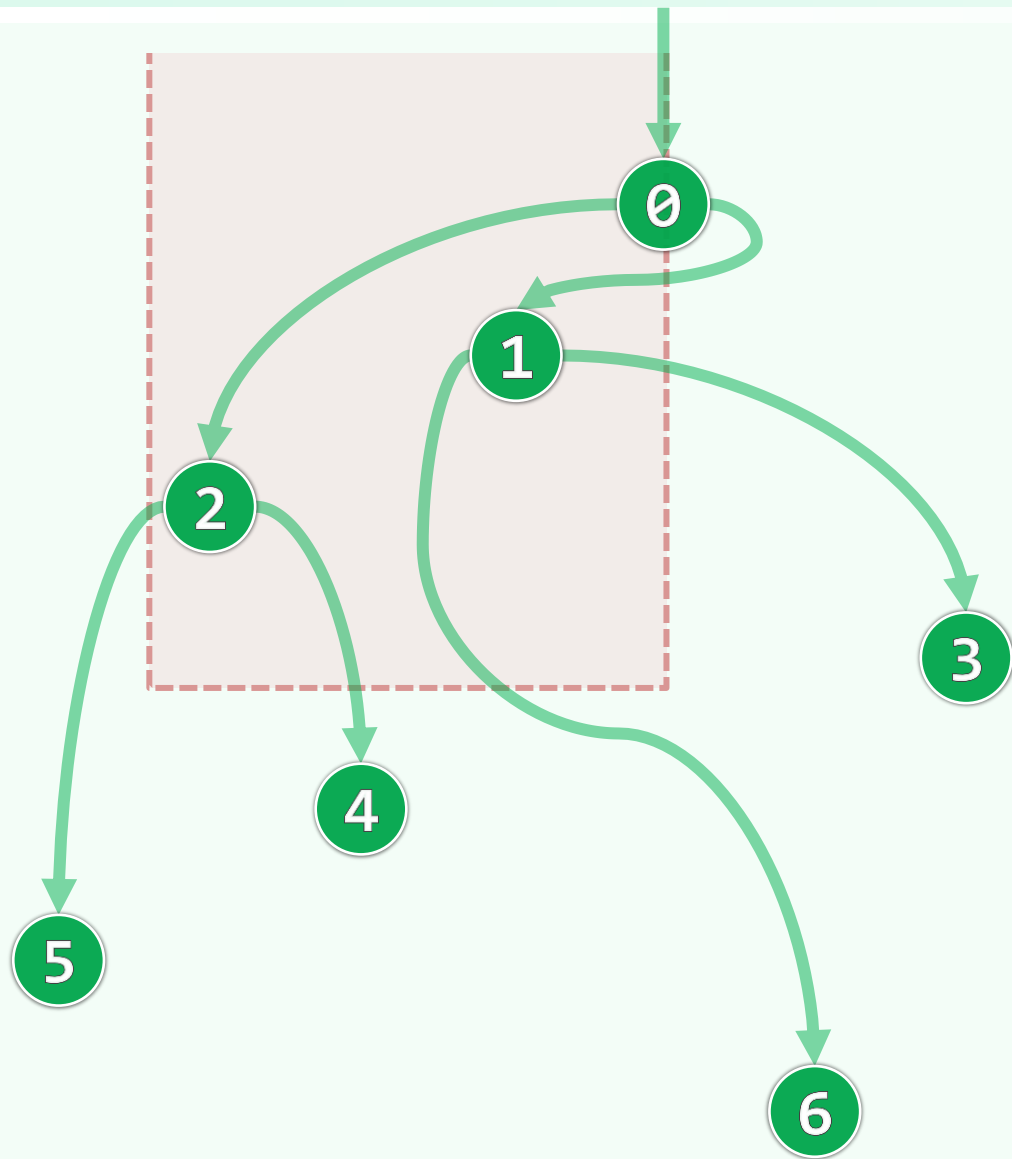**优先级搜索树**

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Priority Search Tree = BST + PQ

Grounded Range Query

queryPST(PSTNode v, int x, int y1, int y2)

❖ `if ( !v || x < v.x )`

●   `return //pruned for bad X`

   `if ( ( y1 < v.y ) && ( v.y < y2 ) )`

●   `output(v) //accepted`

● `//else rejected for bad Y`

   `if ( y1 ≤ v.ym )`

     `queryPST( v.lc, x, y1, y2 )`

● `//else pruned for bad Y`

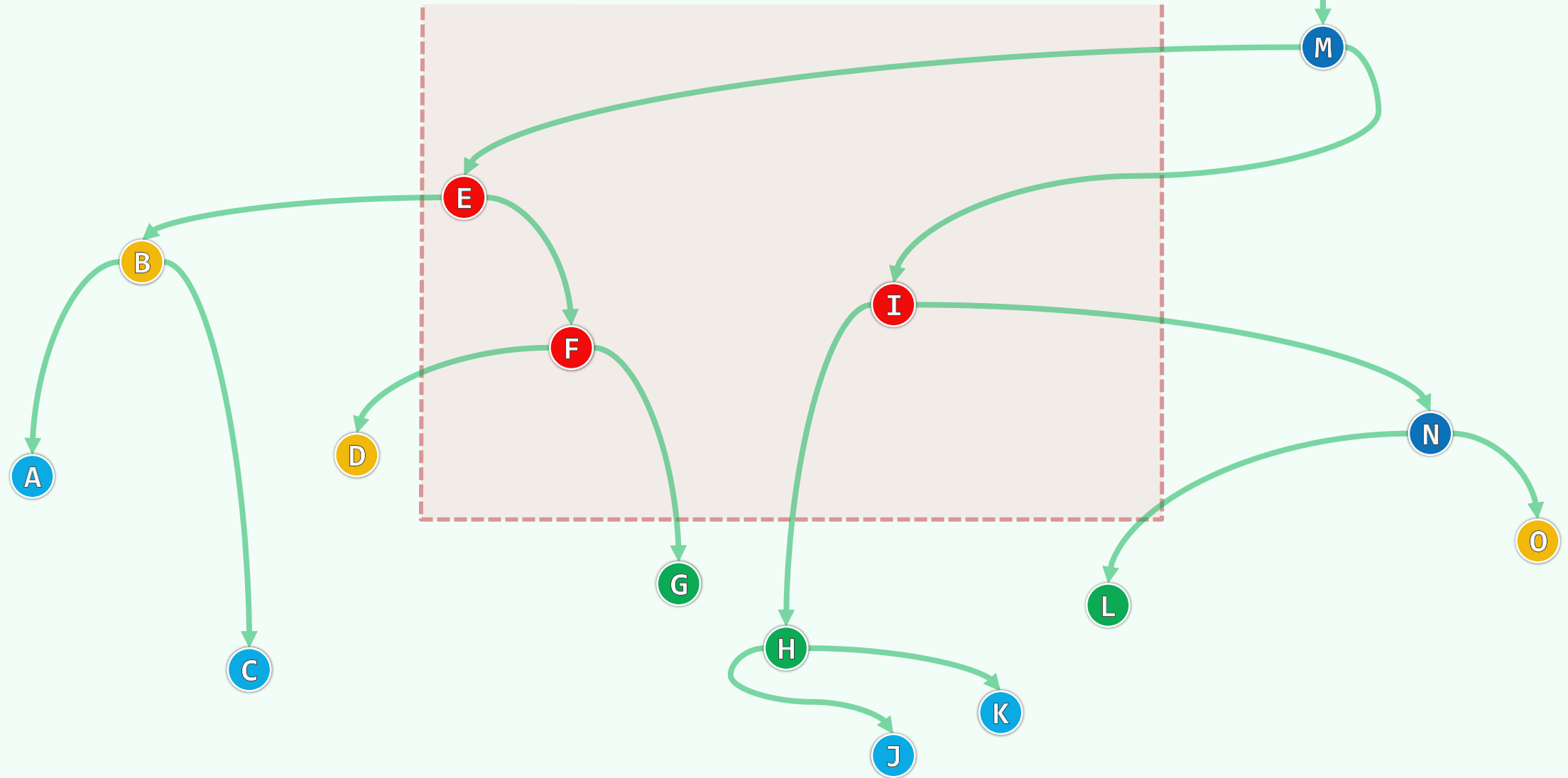   `if ( v.ym < y2 )`

     `queryPST( v.rc, x, y1, y2 )`

● `//else pruned for bad Y`

Example

Query Time

● ❖ P: **Pruned** with descendants due to **bad Y**

    - no more time cost

● ❖ A: Visited and **accepted**

    - exactly r = output size

● ❖ BY: Visited but rejected due to **bad Y**

    - no more than 2 for each level

    - altogether $O($**logn**$)$

● ❖ BX: Visited but rejected due to **bad X**

    - having an A or BY parent

    - no more than $O($r + **logn**$)$