

Binomial-Heap writing

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1) Delete(h, x):

Node* BinomialHeapDelete(Node* h, int key)

{
if($h == \text{NULL}$)
return NULL;

decreaseKey($h, \text{key}, \text{INT_MIN}$);

return extractMin(h);

}

2) decreaseKey():

void decreaseKey(Node* h, int x, int k)

{ Node* node = findNode(h, x);

if($\text{node} == \text{NULL}$)
return;

node->val = k;

Node* parent = node->parent;

while($\text{parent} != \text{NULL} \ \&\& \ \text{node->val} < \text{parent->val}$)

{ swap($\text{node->val}, \text{parent->val}$);

node = parent;

parent = parent->parent;

}

}

Node* findNode(Node* h, int val) {

if($h == \text{NULL}$) return NULL;

if($h->\text{val} == \text{val}$) return h;

Node* res = findNode($h->\text{child}, \text{val}$);

if($\text{res} != \text{NULL}$) return res;

return findNode($h->\text{sibling}, \text{val}$);

}