Thời gian còn lại 0:20:27

Câu hỏi 2

Không hoàn thành

Chấm điểm của 2,00

Class `BSTNode` is used to store a node in binary search tree, described on the following:

```
class BSTNode {
public:
    int val;
    BSTNode *left;
    BSTNode *right;
    BSTNode() {
        this->left = this->right = nullptr;
    }
    BSTNode(int val) {
        this->val = val;
        this->left = this->right = nullptr;
    }
    BSTNode(int val, BSTNode*& left, BSTNode*& right) {
        this->val = val;
        this->left = left;
        this->right = right;
    }
};
```

Where `val` is the value of node, `left` and `right` are the pointers to the left node and right node of it, respectively. If a repeated value is inserted to the tree, it will be inserted to the left subtree.

Also, a static method named `createBSTree` is used to create the binary search tree, by iterating the argument array left-to-right and repeatedly calling `addNode` method on the root node to insert the value into the correct position. For example:

```
int arr[] = {0, 10, 20, 30};
auto root = BSTNode::createBSTree(arr, arr + 4);
```

is equivalent to

```
auto root = new BSTNode(0);
root->addNode(10);
root->addNode(20);
root->addNode(30);
```

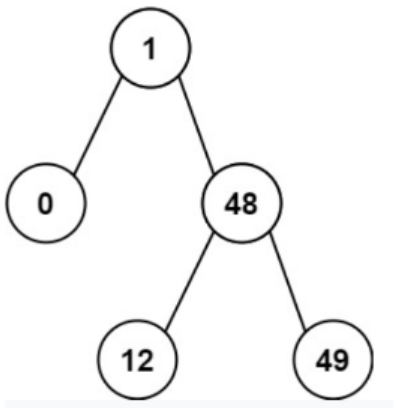
Request: Implement function:

```
int kthSmallest(BSTNode* root, int k);
```

Where `root` is the root node of given binary search tree (this tree has `n` elements) and `k` satisfy: `1 <= k <= n <= 100000`. This function returns the `k`-th smallest value in the tree.

Example:

Given a binary search tree in the following:



With `k = 2`, the result should be `1`.

Note: In this exercise, the libraries `iostream`, `vector`, `stack`, `queue`, `algorithm`, `climits` and `using namespace std` are used. You can write helper functions; however, you are not allowed to use other libraries.

For example:

Test	Result

`int arr[] = {6, 9, 2, 13, 0, 20};`
`int k = 2;`
`BSTNode* root = BSTNode::createBSTree(arr, arr + sizeof(arr)/sizeof(int));`
`cout << kthSmallest(root, k);`
`BSTNode::deleteTree(root);`
	2

Answer: (penalty regime: 0, 0, 0, 5, 10, ... %)

Reset answer

```
1 ▾ int kthSmallest(BSTNode* root, int k) {
2       // STUDENT ANSWER
3   }
```

Precheck Kiểm tra

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