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Construct a Cartesian tree from in order traversal

- anonymus 4 years ago in United States | Report Duplicate | Flag



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Revision and simplified version:

```
public class CartesianTree {
public static class Node {
 public int value;
 public Node left;
 public Node right;
public static Node build(int[] data) {
 if (data == null || data.length == 0) return null;
 return build(data, 0, data.length - 1);
private static Node build(int[] data, int start, int end) {
 if (end < start) return null;</pre>
 int min = Integer.MAX_VALUE;
 int minIndex = -1;
  for (int i = start; i <= end; i++) {</pre>
  if (data[i] < min) {</pre>
   min = data[i];
   minIndex = i;
 Node node = new Node();
 node.value = min;
  node.left = build(data, start, minIndex - 1);
 node.right = build(data, minIndex + 1, end);
  return node;
```

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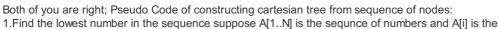
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2. Make this A[i] root of the tree.

- 3. Devide whole tree into two part A[1..i-1] and A[i+1..N]
- 4. Apply step 1 to 3 on these two subtrees.



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jovicas said Not only that rand3() should return 0, 1 or 2

alokkumar said O(nlogn) Solution - Create a Min Heap O(n), Extract ...



packersandmove said With a specific end goal to ensure that migration procedure ...



packersandmove said There are many surveys said on the sites of the ...



nansu305 said Here's my solution {{{ import java.util.*; public class HelloWorld ...

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public class CartesianTree { public static class Node { public int value; public Node left; public Node right; public static Node build(int[] data) { if (data == null || data.length == 0) return null; return build(data, 0, data.length - 1, null, false); private static Node build(int[] data, int start, int end, Node parent, boolea n fromLeft) if (end < start) return null;</pre> int min = Integer.MAX VALUE; int minIndex = -1; for (int i = start; i <= end; i++) {</pre> if (data[i] < min) {</pre> min = data[i]; minIndex = i; Node node = new Node(); node.value = min; if (parent != null) { if (fromLeft) parent.left = node; else parent.right = node; node.left = build(data, start, minIndex - 1, node, true); node.right = build(data, minIndex + 1, end, node, false); return node:

- Anonymous 4 years ago | Flag

There is a O(n) solution to this problem. Yours is not O(n)

- guest 4 years ago | Flag



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```
public TreeNode build(int[] a)
                TreeNode root = null;
                Stack<TreeNode> stack = new Stack<TreeNode>();
                for(int i = 0; i < a.length; i++) {</pre>
                        TreeNode last = null;
                        while(!stack.empty() && stack.peek().val > a[i]) last
= stack.pop();
                        TreeNode node = new TreeNode(a[i]);
                        node.left = last;
                        if(stack.empty()) root = node;
                        else stack.peek().right = node;
                        stack.push(node);
                return root;
```

This code has a problem. By definition root is the minimum of the array, but the codes seems get the first element as the root of array?	▲ 0 ▼ of 0 votes
- Anonymous 3 years ago Flag	



// following is the O(N) time algorithm for constructing Cartesian tree from in-order traversal of the binary search tree (i.e. sorted sequence).

Please suggest improvement

```
static Node cTree(int[] a, int start, int end) {

    // let's construct 1...
    // for the remaining array...
    // construct the left child... 2n + 1
    // construct the right child... 2n + 2.
    if (start > end)
        return null;

int key = a[start];
Node n = new Node(key);
n.left = cTree(a, 2*start + 1, end);
n.right = cTree(a, 2*start + 2, end);

return n;
}
```

- <u>Laiq Ahmed</u> 3 years ago | <u>Flag</u>

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It is never said that it is a BST....

- <u>rajofchennai</u> 2 years ago | <u>Flag</u>

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