

109. Convert Sorted List to Binary Search Tree ★

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Given a singly linked list where elements are sorted in ascending order, convert it to a height balanced BST.

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C++



```
1  /**
2   * Definition for singly-linked list.
3   * struct ListNode {
4   *     int val;
5   *     ListNode *next;
6   *     ListNode(int x) : val(x), next(NULL) {}
7   * };
8   */
9  /**
10 * Definition for a binary tree node.
11 * struct TreeNode {
12 *     int val;
13 *     TreeNode *left;
14 *     TreeNode *right;
15 *     TreeNode(int x) : val(x), left(NULL), right(NULL) {}
16 * };
17 */
18 class Solution {
19 public:
20     // bottom-up
21     TreeNode* sortedListToBST(ListNode*& list, int start, int end) {
22         if (start > end)
23             return nullptr;
24         int mid = start + (end - start) / 2;
25         TreeNode* leftChild = sortedListToBST(list, start, mid - 1);
26         TreeNode* parent = new TreeNode(list->val);
27         parent->left = leftChild;
28         list = list->next;
29         parent->right = sortedListToBST(list, mid + 1, end);
30         return parent;
    }
```

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Notes

```
31     }
32
33     TreeNode* sortedListToBST(ListNode* head) {
34         int len = 0;
35         ListNode* p = head;
36         while (p) {
37             p = p->next;
38             ++len;
39         }
40         return sortedListToBST(head, 0, len - 1);
41     }
42 }
```

Notes

Custom Testcase ☐

Run Code

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