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1  /* Given a singly linked list where elements are sorted in ascending order, convert
   it to a height balanced BST.
2
3  For this problem, a height-balanced binary tree is defined as a binary tree in which
   the depth of the two subtrees of every node never differ by more than 1.
4
5  Example:
6
7  Given the sorted linked list: [-10,-3,0,5,9],
8
9  One possible answer is: [0,-3,9,-10,null,5], which represents the following height
   balanced BST:
10
11      0
12     /\
13    -3 9
14   /\  /\
15  -10 5 */
16
17  class ListNode {
18      int val;
19      ListNode next;
20
21      ListNode(int x) {
22          val = x;
23      }
24  }
25
26  class TreeNode {
27      int val;
28      TreeNode left;
29      TreeNode right;
30
31      TreeNode(int x) {
32          val = x;
33      }
34  }
35
36  class Solution {
37      public TreeNode sortedListToBST(ListNode head) {
38
39          if (head == null) {
40              return null;
41          }
42
43          return sortedListToBSTHelper(head, null);
44      }
45
46      private TreeNode sortedListToBSTHelper(ListNode head, ListNode tail) {
47
48          if (head == tail || head == null) {
49              return null;
50          }
51
52          ListNode middleListNode = findMiddleListNode(head, tail);
53
54          TreeNode root = new TreeNode(middleListNode.val);
55
56          root.left = sortedListToBSTHelper(head, middleListNode);
57          root.right = sortedListToBSTHelper(middleListNode.next, tail);
58
59          return root;
60      }
61
62      private ListNode findMiddleListNode(ListNode head, ListNode tail) {
63
64          ListNode slowPointer = head, fastPointer = head;
65
66          while (fastPointer != tail && fastPointer.next != tail) {
67              fastPointer = fastPointer.next.next;
68              slowPointer = slowPointer.next;
69          }
70

```

```
71     .....}
72
73     .....return slowPointer;
74     .....}
75
76
77     .....public static void main(String[] args) {
78
79     .....int[] input = {-10, -3, 0, 5, 9};
80     .....ListNode head = new ListNode(-10);
81     .....head.next = new ListNode(-3);
82     .....head.next.next = new ListNode(0);
83     .....head.next.next.next = new ListNode(5);
84     .....head.next.next.next.next = new ListNode(9);
85
86     .....TreeNode root = new Solution().sortedListToBST(head);
87
88     .....System.out.print("");
89     .....}
90 }
```