Problem 2046: Sort Linked List Already Sorted Using Absolute Values

Problem Information

Difficulty: Medium
Acceptance Rate: 67.02%
Paid Only: Yes
Tags: Linked List, Two Pointers, Sorting

Problem Description

Given the `head` of a singly linked list that is sorted in **non-decreasing** order using the **absolute values** of its nodes, return _the list sorted in**non-decreasing** order using the **actual values** of its nodes_.

Example 1:

Input: head = [0,2,-5,5,10,-10] **Output:** [-10,-5,0,2,5,10] **Explanation:** The list sorted in non-descending order using the absolute values of the nodes is [0,2,-5,5,10,-10]. The list sorted in non-descending order using the actual values is [-10,-5,0,2,5,10].

Example 2:

Input: head = [0,1,2] **Output:** [0,1,2] **Explanation:** The linked list is already sorted in non-decreasing order.

Example 3:

Input: head = [1] **Output:** [1] **Explanation:** The linked list is already sorted in non-decreasing order.

Constraints:

* The number of nodes in the list is the range `[1, 105]`. * `-5000 <= Node.val <= 5000` * `head` is sorted in non-decreasing order using the absolute value of its nodes.

Follow up:

* Can you think of a solution with `O(n)` time complexity?

Code Snippets

C++:

```
/**
* Definition for singly-linked list.
* struct ListNode {
* int val;
* ListNode *next;
* ListNode() : val(0), next(nullptr) {}
* ListNode(int x) : val(x), next(nullptr) {}
* ListNode(int x, ListNode *next) : val(x), next(next) {}
* };
*/
class Solution {
public:
ListNode* sortLinkedList(ListNode* head) {

}
};
```

Java:

```
/**
* Definition for singly-linked list.
* public class ListNode {
* int val;
* ListNode next;
* ListNode() {}
* ListNode(int val) { this.val = val; }
* ListNode(int val, ListNode next) { this.val = val; this.next = next; }
* }
```

```
*/
class Solution {
public ListNode sortLinkedList(ListNode head) {

}
}
```

Python3:

```
# Definition for singly-linked list.
# class ListNode:
# def __init__(self, val=0, next=None):
# self.val = val
# self.next = next
class Solution:
def sortLinkedList(self, head: Optional[ListNode]) -> Optional[ListNode]:
```