

# Problem 2074: Reverse Nodes in Even Length Groups

## Problem Information

**Difficulty:** Medium

**Acceptance Rate:** 62.66%

**Paid Only:** No

**Tags:** Linked List

## Problem Description

You are given the `head` of a linked list.

The nodes in the linked list are **sequentially** assigned to **non-empty** groups whose lengths form the sequence of the natural numbers (`1, 2, 3, 4, ...`). The **length** of a group is the number of nodes assigned to it. In other words,

\* The `1st` node is assigned to the first group.  
\* The `2nd` and the `3rd` nodes are assigned to the second group.  
\* The `4th`, `5th`, and `6th` nodes are assigned to the third group, and so on.

Note that the length of the last group may be less than or equal to `1 + the length of the second to last group`.

**Reverse** the nodes in each group with an **even** length, and return `_the_ `head` _of the modified linked list_`.

**Example 1:**



**Input:** head = [5,2,6,3,9,1,7,3,8,4] **Output:** [5,6,2,3,9,1,4,8,3,7] **Explanation:** - The length of the first group is 1, which is odd, hence no reversal occurs. - The length of the second group is 2, which is even, hence the nodes are reversed. - The length of the third group is 3, which is odd, hence no reversal occurs. - The length of the last group is 4, which is even, hence the nodes are reversed.

**\*\*Example 2:\*\***



**\*\*Input:\*\*** head = [1,1,0,6] **\*\*Output:\*\*** [1,0,1,6] **\*\*Explanation:\*\*** - The length of the first group is 1. No reversal occurs. - The length of the second group is 2. The nodes are reversed. - The length of the last group is 1. No reversal occurs.

**\*\*Example 3:\*\***



**\*\*Input:\*\*** head = [1,1,0,6,5] **\*\*Output:\*\*** [1,0,1,5,6] **\*\*Explanation:\*\*** - The length of the first group is 1. No reversal occurs. - The length of the second group is 2. The nodes are reversed. - The length of the last group is 2. The nodes are reversed.

**\*\*Constraints:\*\***

\* The number of nodes in the list is in the range `[1, 105]`. \* `0 <= Node.val <= 105`

## 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* reverseEvenLengthGroups(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 reverseEvenLengthGroups(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 reverseEvenLengthGroups(self, head: Optional[ListNode]) ->  
        Optional[ListNode]:
```