

# 024. Swap Node in Pairs

## 024 Swap Nodes in Pairs

- Linked List

### Description

Given a linked list, swap every two adjacent nodes and return its head.

For example,

Given `1->2->3->4`, you should return the list as `2->1->4->3`.

Your algorithm should use only constant space. You may **not** modify the values in the list, only nodes itself can be changed.

### 1. Thought line

### 2. Linked List

```
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 class Solution {
10 public:
11     ListNode* swapPairs(ListNode* head) {
12         ListNode* dummyHead = new ListNode (0);
13         dummyHead->next = head;
14         ListNode* ptrBeforeOdd = dummyHead;
15         ListNode* ptrOdd = dummyHead;
16         ListNode* ptrEven = dummyHead;
17         while (ptrBeforeOdd != nullptr){
18             // Only when odd and even both exist, continue
19             if (ptrOdd->next != nullptr && ptrOdd->next->next != nullptr){
20                 ptrOdd = ptrOdd->next;
21                 ptrEven = ptrOdd->next;
22                 ptrOdd->next = ptrEven->next;
23                 ptrEven->next = ptrOdd;
24                 ptrBeforeOdd->next = ptrEven;
25                 ptrBeforeOdd = ptrEven = ptrOdd;
26             }
27             else break;
28         }
29         return dummyHead->next;
30     }
31 };
```