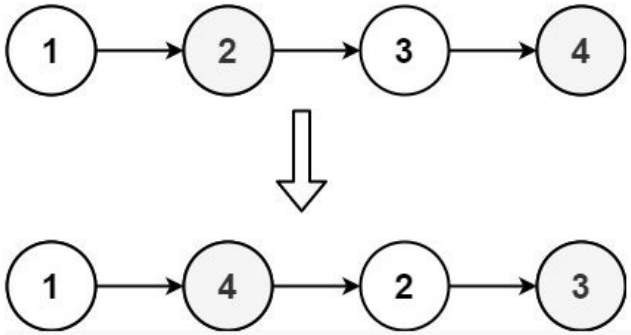
Linked List 143. Reorder List

Constraints:

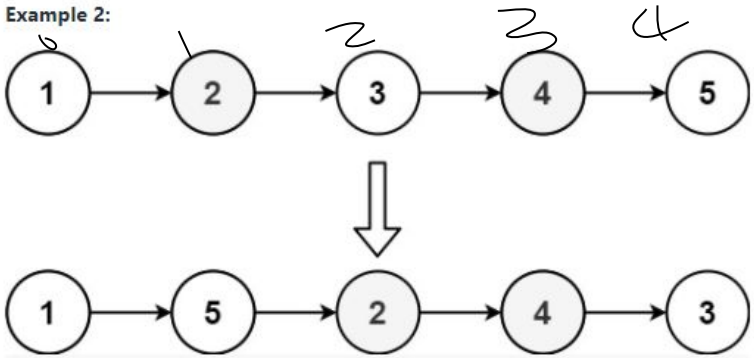
- The number of nodes in the list is in the range $[1, 5 * 10^4]$.
- $1 <= Node.val <= 1000$

Example 1:




```
Input: head = [1,2,3,4]
Output: [1,4,2,3]
```

Example 2:




```
Input: head = [1,2,3,4,5]
Output: [1,5,2,4,3]
```

Pattern:

1. Linked List
2. Every Position has clear next target Position
   Ex:
   0 - > n - 1
   n- 1 -> 1
   1 -> n - 2
   n - 2 -> 2
3. Indexing each node?
4. If linking nodes, when to stop?
5. Two pointer approach left, right

Seudo:

Func reorder(head):

1. Initial a list
2. Put every node in to the list
3. Initial pointers
   left and right

4. While left < right:
   aList[left].next = aList[right]
   Left += 1
   aList[right].next = aList[left]
   Right -= 1

!!!!! Check cycle in linked list

5. Set the last node next to be None
   aList[left].next = None