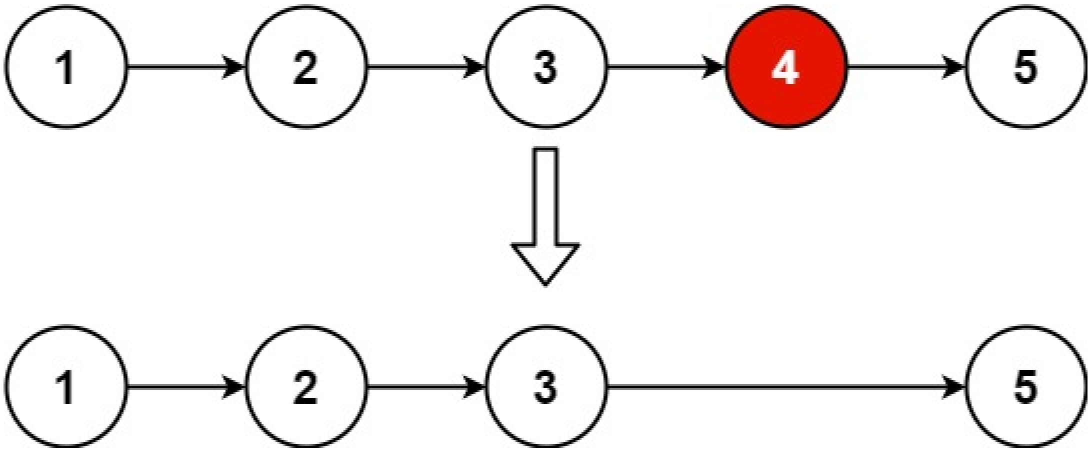
19. Remove Nth Node From End of List

Created	@July 15, 2020 7:25 PM
Difficulty	Medium
LC Url	https://leetcode.com/problems/remove-nth-node-from-end-of-list/vv
Importance	****
Tag	LinkedList NEET Two pointers
Video	https://www.youtube.com/watch?v=XVuQxVej6y8

Given the `head` of a linked list, remove the `n` `th` node from the end of the list and return its head.

Example 1:



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

Example 2:

```
Input: head = [1], n = 1
Output: []
```

Example 3:

```
Input: head = [1,2], n = 1
Output: [1]
```

Constraints:

- The number of nodes in the list is `sz`.
- `1 <= sz <= 30`
- `0 <= Node.val <= 100`
- `1 <= n <= sz`

Follow up: Could you do this in one pass?

Solution

```
# Definition for singly-linked list.
# class ListNode:
#     def __init__(self, val=0, next=None):
#         self.val = val
#         self.next = next
class Solution:
    def removeNthFromEnd(self, head: ListNode, n: int) -> ListNode:
        dummy = ListNode(0)
        dummy.next = head
        slow = fast = dummy

        for _ in range(n):
            fast = fast.next

        while fast.next:
            slow = slow.next
            fast = fast.next

        slow.next = slow.next.next

        return dummy.next
```

```
/**
 * 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 removeNthFromEnd(ListNode head, int n) {
        ListNode dummy = new ListNode(0);
        dummy.next = head;
        ListNode fast = dummy;
        ListNode slow = dummy;
        for (int i = 0; i < n; i++) {
            fast = fast.next;
        }
        while (fast.next != null) {
            fast = fast.next;
            slow = slow.next;
        }
        slow.next = slow.next.next;
        return dummy.next;
    }
}
```