Delete Last of Singly Linked List

Given a linked list, the task is to remove the last node of the linked list and update the head pointer of the linked list.

Examples:

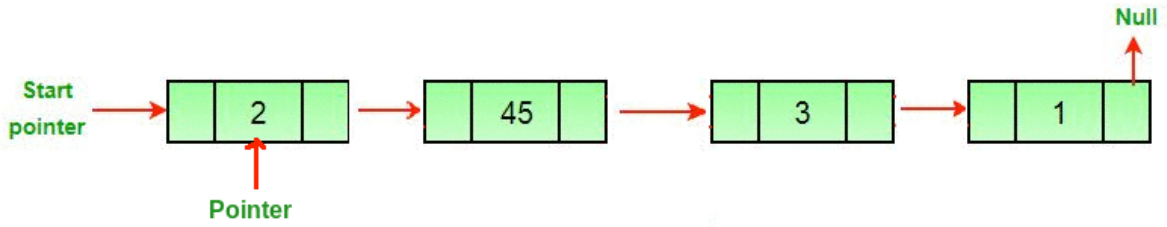
```
Input: 1 -> 2 -> 3 -> 4 -> 5 -> NULL
Output: 1 -> 2 -> 3 -> 4 -> NULL

Explanation: The last node of the linked list
is 5, so 5 is deleted.

Input: 2 -> 4 -> 6 -> 8 -> 33 -> 67 -> NULL
Output: 2 -> 4 -> 6 -> 8 -> 33 -> NULL

Explanation: The last node of the linked list
is 67, so 67 is deleted.
```

Approach: To delete the last node of a linked list, find the second last node and make the next pointer of that node null.



Algorithm:

1. *If the first node is null or there is only one node, then they return null.*
    - *if headNode == null then return null*
    - *if headNode.nextNode == null then free head and return null*
2. *Create an extra space secondLast, and traverse the linked list till the second last node.*
    - *while secondLast.nextNode.nextNode != null*

to null.

C++ Java

```
class GFG {

    // Link list node /
    static class Node {
        int data;
        Node next;
    };

    // Function to remove the last node
    // of the linked list /
    static Node removeLastNode(Node head)
    {
        if (head == null)
            return null;

        if (head.next == null) {
            return null;
        }

        // Find the second last node
        Node second_last = head;
        while (second_last.next.next != null)
            second_last = second_last.next;

        // Change next of second last
        second_last.next = null;

        return head;
    }

    // Function to push node at head
    static Node push(Node head_ref, int new_data)
    {
```

```
        new_node.next = (head_ref);
    }

    // Driver code
    public static void main(String args[])
    {
        // Start with the empty list /
        Node head = null;

        // Use push() function to construct
        // the below list 8 . 23 . 11 . 29 . 12 /
        head = push(head, 12);
        head = push(head, 29);
        head = push(head, 11);
        head = push(head, 23);
        head = push(head, 8);

        head = removeLastNode(head);
        for (Node temp = head; temp != null; temp = temp.next)
            System.out.print(temp.data + " ");
    }
}
```

Output

```
8 23 11 29
```

Complexity Analysis:

- **Time Complexity: O(n).**
  The algorithm involves traversal of the linked list till its end, so the time complexity required is *O(n)*.
- **Space Complexity: O(1).**
  No extra space is required, so the space complexity is constant.

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23 of **132** Complete. (18%)