Delete Alternate Nodes

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Platform	GeeksForGeeks
difficulty	Easy
tags	Linked List
language	C++
solved on	@13/10/2024
link	https://www.geeksforgeeks.org/problems/delete-alternate-nodes/1
Completion	☑

Intuition

The problem is about deleting every alternate node in a linked list. The idea is to traverse the list and for every node, skip the next node by updating the current node's `next` pointer to point to the node after the next one, and then delete the skipped node.

Approach

1. Start at the head of the linked list.
2. Traverse the list, and for each node:
    - Skip the next node by updating the `next` pointer of the current node.
    - Delete the node that is skipped to free the memory.
    - Move to the new `next` node (after the skipped node).
3. Continue this process until there are no more nodes to process or no more pairs of nodes to consider.

Complexity

Time Complexity:

The time complexity is **O(n)**, where `n` is the number of nodes in the linked list. We traverse the list once, visiting each node and performing constant-time operations.

Space Complexity:

The space complexity is **O(1)** since we are using a constant amount of extra space, regardless of the input size.

Code

```
class Solution {
  public:
    void deleteAlt(struct Node *head) {
        if(head == NULL || head->next == NULL) return;
        Node* temp = head;

        while(temp != NULL && temp->next != NULL) {
            Node* toDelete = temp->next;
```

```
            temp->next = temp->next->next;
            delete toDelete;
            temp = temp->next;
        }
    }
};
```