**Design Singly Linked List - Solution**

[Report Issue](https://github.com/LeetCode-Feedback/LeetCode-Feedback/issues)

Let's briefly review the structure definition of a node in the singly linked list.

A white background with black text

AI-generated content may be incorrect.

Based on this definition, we are going to give you the solution step by step.

**1. Initiate a new linked list: represent a linked list using the head node.**

A screenshot of a computer

AI-generated content may be incorrect.

**2. Traverse the linked list to get element by index.**

A screenshot of a computer program

AI-generated content may be incorrect.

A screenshot of a computer code

AI-generated content may be incorrect.

**3. Add a new node.**

A computer screen shot of a computer code

AI-generated content may be incorrect.

A computer code with blue text

AI-generated content may be incorrect.

A screenshot of a computer code

AI-generated content may be incorrect.

It is worth noting that we have to get the (index - 1)th node or the last node before we add the new node (except adding at the head) and it takes O(N) time to get a node by index, where *N* is the length of the linked list. It is different from adding a new node after a given node.

**4. Delete a node.**

A screenshot of a computer program

AI-generated content may be incorrect.

Similar to the add operation, it takes O(N) time to get the node by the index which is different from deleting a given node. However, even if we already get the node we want to delete, we still have to traverse to get its previous node.