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Java
Linked List 2

Assignment Questions

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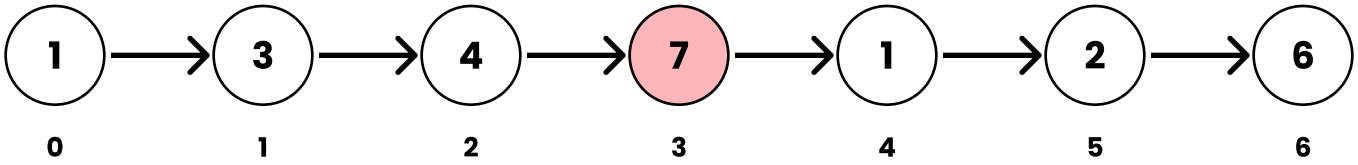
Q1. You are given the head of a linked list. Delete the middle node, and return the head of the modified linked list. [Leetcode 2095]

The middle node of a linked list of size n is the ⌊n / 2⌋th node from the start using 0-based indexing, where ⌊x⌋ denotes the largest integer less than or equal to x .
For n = 1 , 2 , 3 , 4 , and 5 , the middle nodes are 0 , 1 , 1 , 2 , and 2 , respectively.

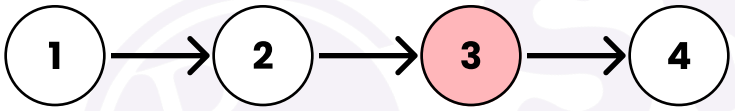
Example 1:



Input: head = [1,3,4,7,1,2,6]
Output: [1,3,4,1,2,6]

Explanation: The above figure represents the given linked list. The indices of the nodes are written below.
Since n = 7, node 3 with value 7 is the middle node, which is marked in red.
We return the new list after removing this node.

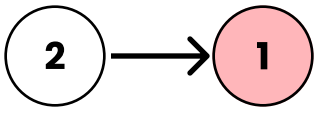
Example 2:



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

Explanation: The above figure represents the given linked list.
For n = 4, node 2 with value 3 is the middle node, which is marked in red.

Example 3:

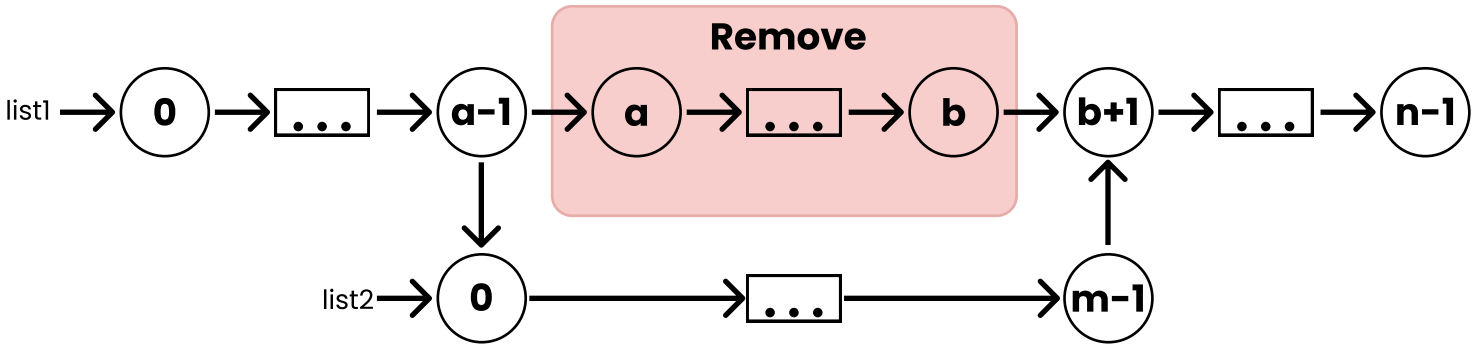


Input: head = [2,1]
Output: [2]

Explanation: The above figure represents the given linked list.
For n = 2, node 1 with value 1 is the middle node, which is marked in red.
Node 0 with value 2 is the only node remaining after removing node 1.

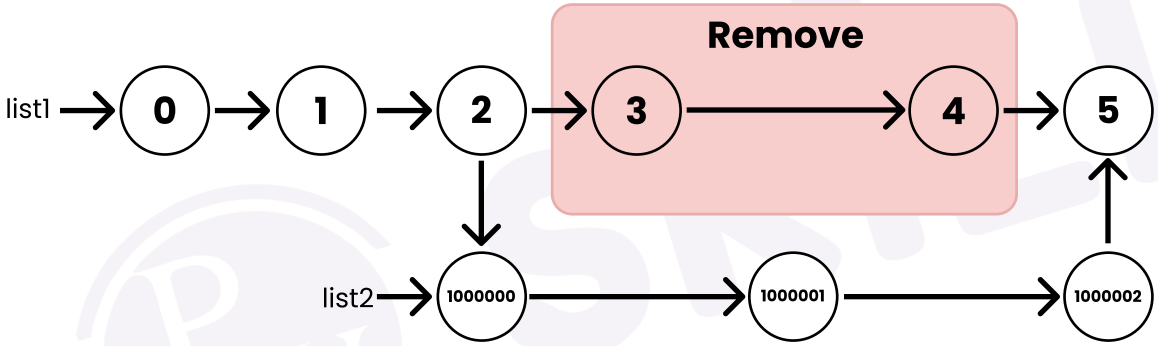
Q2. You are given two linked lists: list1 and list2 of sizes n and m respectively.
Remove list1 's nodes from the ath node to the bth node, and put list2 in their place. [Leetcode 1669]

The blue edges and nodes in the following figure indicate the result:



Build the result list and return its head.

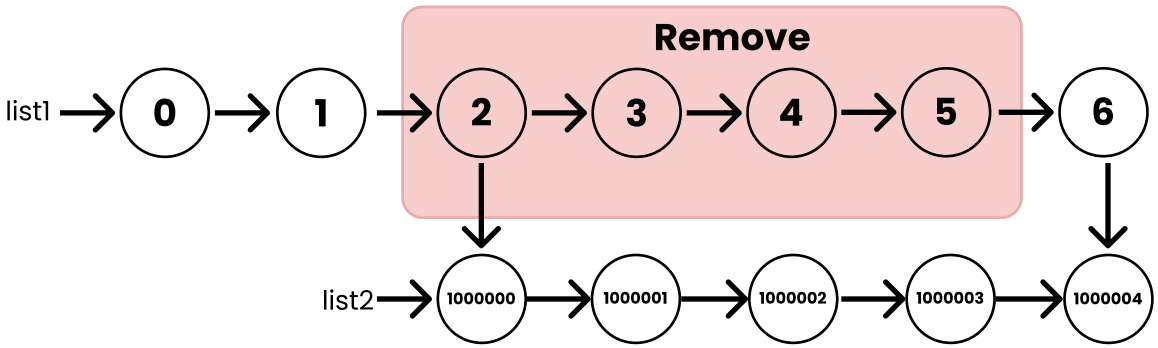
Example 1:



Input: list1 = [0,1,2,3,4,5], a = 3, b = 4, list2 = [1000000,1000001,1000002]
Output: [0,1,2,1000000,1000001,1000002,5]

Explanation: We remove the nodes 3 and 4 and put the entire list2 in their place. The blue edges and nodes in the above figure indicate the result.

Example 2:



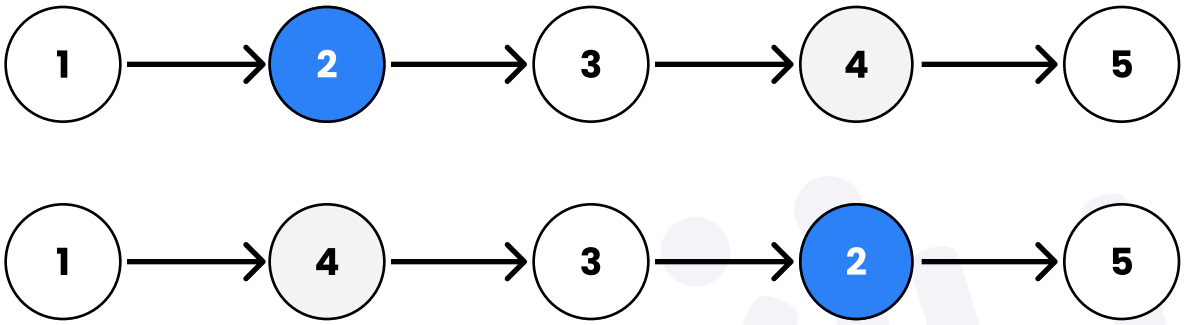
Input: list1 = [0,1,2,3,4,5,6], a = 2, b = 5, list2 = [1000000,1000001,1000002,1000003,1000004]
Output: [0,1,1000000,1000001,1000002,1000003,1000004,6]

Explanation: The blue edges and nodes in the above figure indicate the result.

Q3. You are given the head of a linked list, and an integer k.

Return the head of the linked list after swapping the values of the kth node from the beginning and the kth node from the end (the list is 1-indexed). [Leetcode 1721]

Example 1:



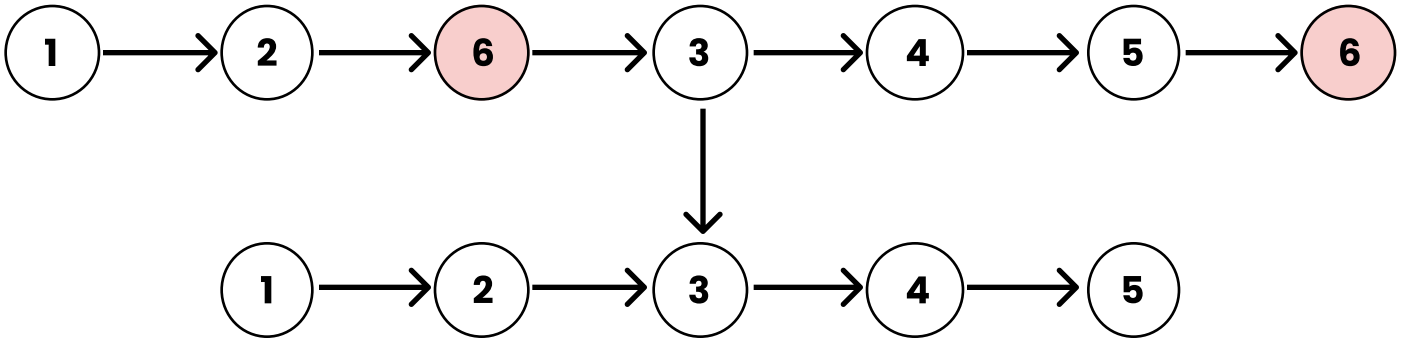
Input: head = [1,2,3,4,5], k = 2
Output: [1,4,3,2,5]

Example 2:

Input: head = [7,9,6,6,7,8,3,0,9,5], k = 5
Output: [7,9,6,6,8,7,3,0,9,5]

Q4. Given the head of a linked list and an integer val , remove all the nodes of the linked list that has Node.val == val , and return the new head.

Example 1:



Input: head = [1,2,6,3,4,5,6], val = 6
Output: [1,2,3,4,5]

Example 2:

Input: head = [], val = 1
Output: []

Example 3:

Input: head = [7,7,7,7], val = 7
Output: []

Q5. Find the length of loop in Cycle of Linked List.

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THANK YOU !

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