Aror University of Art, Architecture, Design & Heritage Sukkur

Department of AI-Multimedia and Gaming

Lab 01: Fundamentals of Linked List data structure Date: Sep 10, 2024 Subject: Data Structure (CSC221), Fall 2024 Instructor: Abdul Ghafoor

Lab objectives: Objective: To practice and understand the basic operations in a singly linked list, including insertion, deletion, Searching, and traversal of nodes.

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Lab Part_01

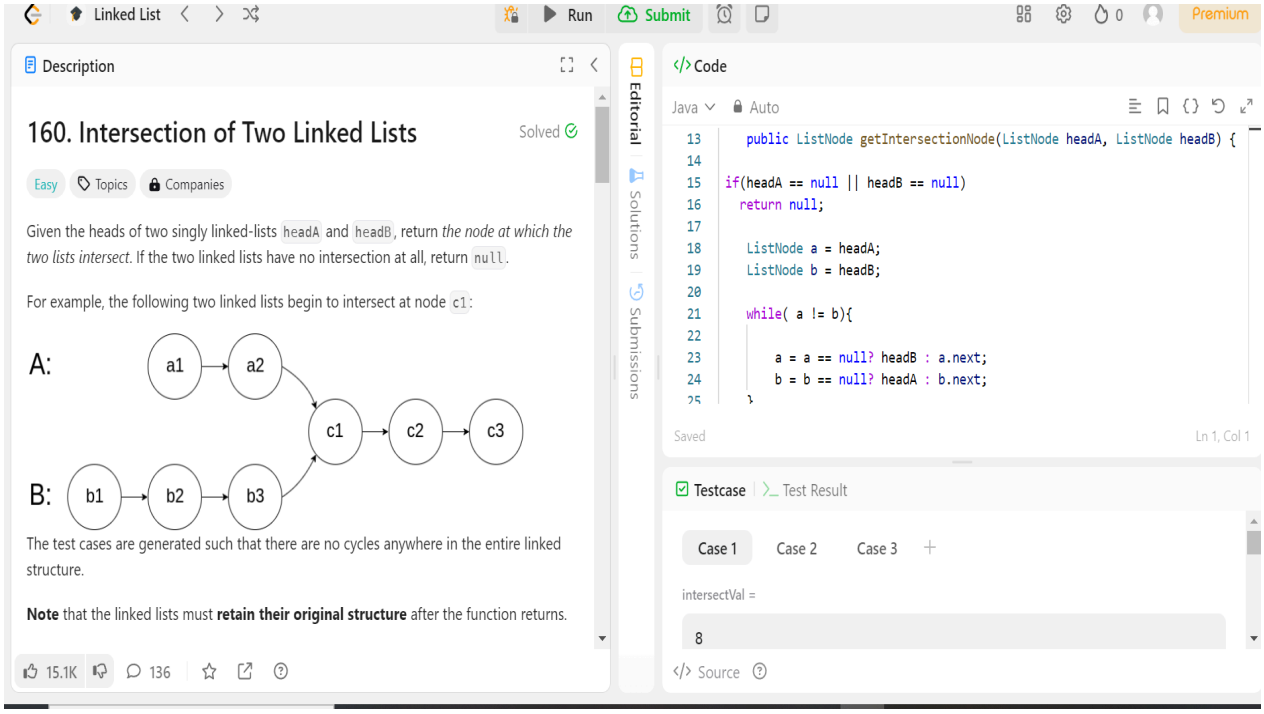
Github link for task

https://github.com/Saeed-Shaikh01/DSA_LAB_02_Task-1

Lab Part 02: LeetCode

Task 01:

https://leetcode.com/problems/intersection-of-two-linked-lists/description/?envType=problem-list-v2&envId=linked-list



Task 02:

https://leetcode.com/problems/remove-duplicates-from-sorted-list/description/?envType=problem-list-v2&envId=linked-list

```java
class Solution {
    public ListNode deleteDuplicates(ListNode head) {

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

        ListNode current = head;
        while (current.next != null) {
            if (current.val == current.next.val) {
                current.next = current.next.next;
            } else {
                current = current.next;
            }
        }
        return head;
    }
```

Saved Ln 13, Col 1

Testcase | Test Result

Output

```
[1,2]
```

Task 03:

https://leetcode.com/problems/merge-two-sorted-lists/description/?envType=problem-list-v2&envId=linked-list

Code

Java Auto

```
3       public ListNode mergeTwoLists(ListNode list1, ListNode list2) {
4
5   if(list1!=null && list2!=null){
6           if(list1.val<list2.val){
7               list1.next=mergeTwoLists(list1.next,list2);
8               return list1;
9               }
10              else{
11                  list2.next=mergeTwoLists(list1,list2.next);
12                  return list2;
13          }
14          }
15          if(list1==null)
16              return list2;
17          return list1;
18      }
19  }
```

Saved Ln 22, Col 1

Testcase | Test Result

Output

```
[1,1,2,3,4,4]
```

Task 04:

https://leetcode.com/problems/add-two-numbers/description/?envType=problem-list-v2&envId=linked-list