Experiment No. - 1

Student Name:
UID:
Branch: BE-CSE
Section/Group:
Semester: 6th
Date of Performance:
Subject Name: Competitive coding - II
Subject Code: 20CSP-351

1. **Aim/Overview of the practical:**

   Q1. Jump Game II

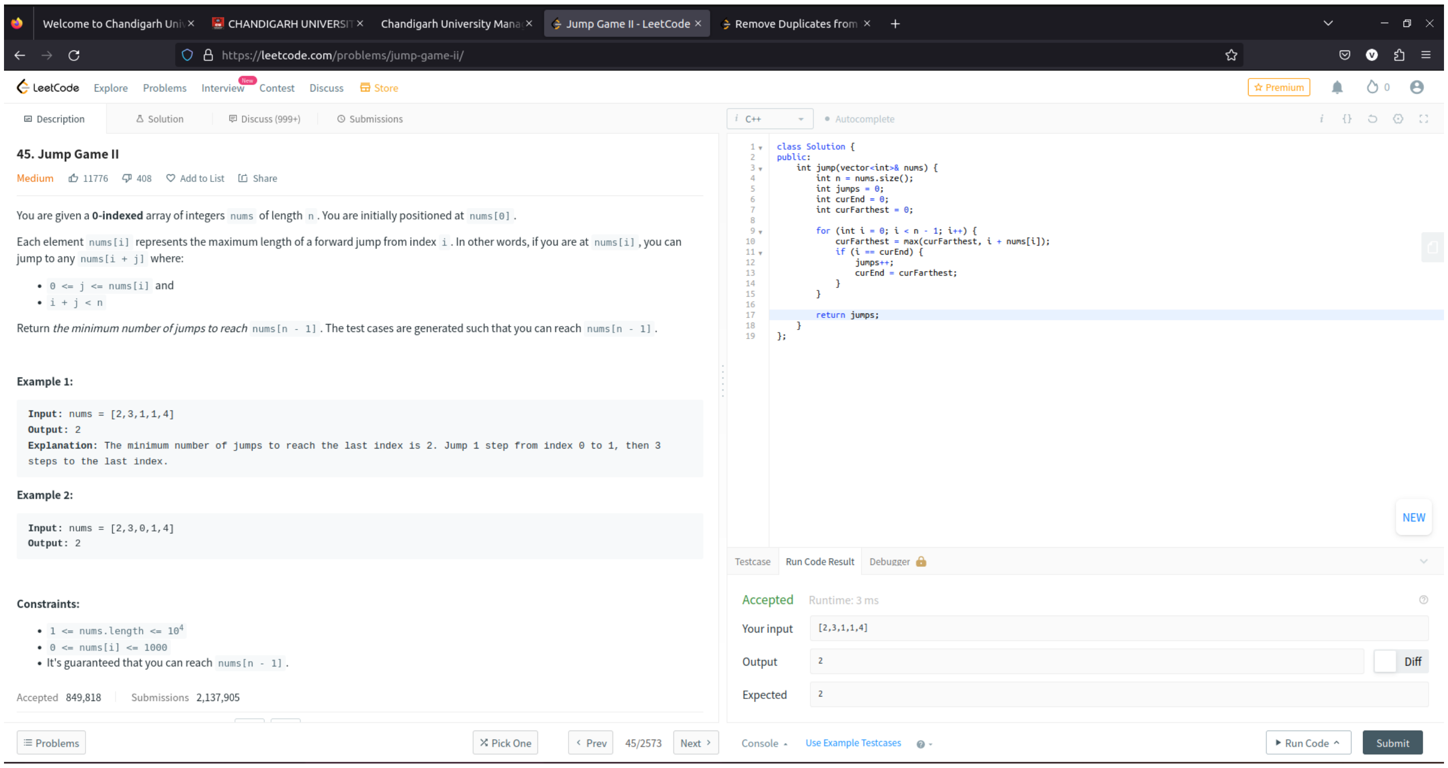
   https://leetcode.com/problems/jump-game-ii/

2. **Apparatus / Simulator Used:**
   1. Windows 7 or above
   2. Google Chrome
3. **Objective:**
   a. To understand the concept of Array and Jump Concept
   b. To implement the concept of Array Implementation.

4. **Code:**

```
class Solution {
public:
    int jump(vector<int>& nums) {
        int n = nums.size();
        int jumps = 0;
        int curEnd = 0;
        int curFarthest = 0;

        for (int i = 0; i < n - 1; i++) {
            curFarthest = max(curFarthest, i + nums[i]);
            if (i == curEnd) {
                jumps++;
                curEnd = curFarthest;
            }
        }
        return jumps;
    }
};
```

5. Result/Output/Writing Summary:



https://leetcode.com/problems/jump-game-ii/

45. Jump Game II

Medium 11776 408 Add to List Share

You are given a **0-indexed** array of integers `nums` of length `n`. You are initially positioned at `nums[0]`.

Each element `nums[i]` represents the maximum length of a forward jump from index `i`. In other words, if you are at `nums[i]`, you can jump to any `nums[i + j]` where:

- `0 <= j <= nums[i]` and
- `i + j < n`

Return *the minimum number of jumps to reach* `nums[n - 1]`. The test cases are generated such that you can reach `nums[n - 1]`.

Example 1:

```
Input: nums = [2,3,1,1,4]
Output: 2
Explanation: The minimum number of jumps to reach the last index is 2. Jump 1 step from index 0 to 1, then 3
steps to the last index.
```

Example 2:

```
Input: nums = [2,3,0,1,4]
Output: 2
```

Constraints:

- `1 <= nums.length <= 10^4`
- `0 <= nums[i] <= 1000`
- It's guaranteed that you can reach `nums[n - 1]`.

Accepted 849,818 Submissions 2,137,905

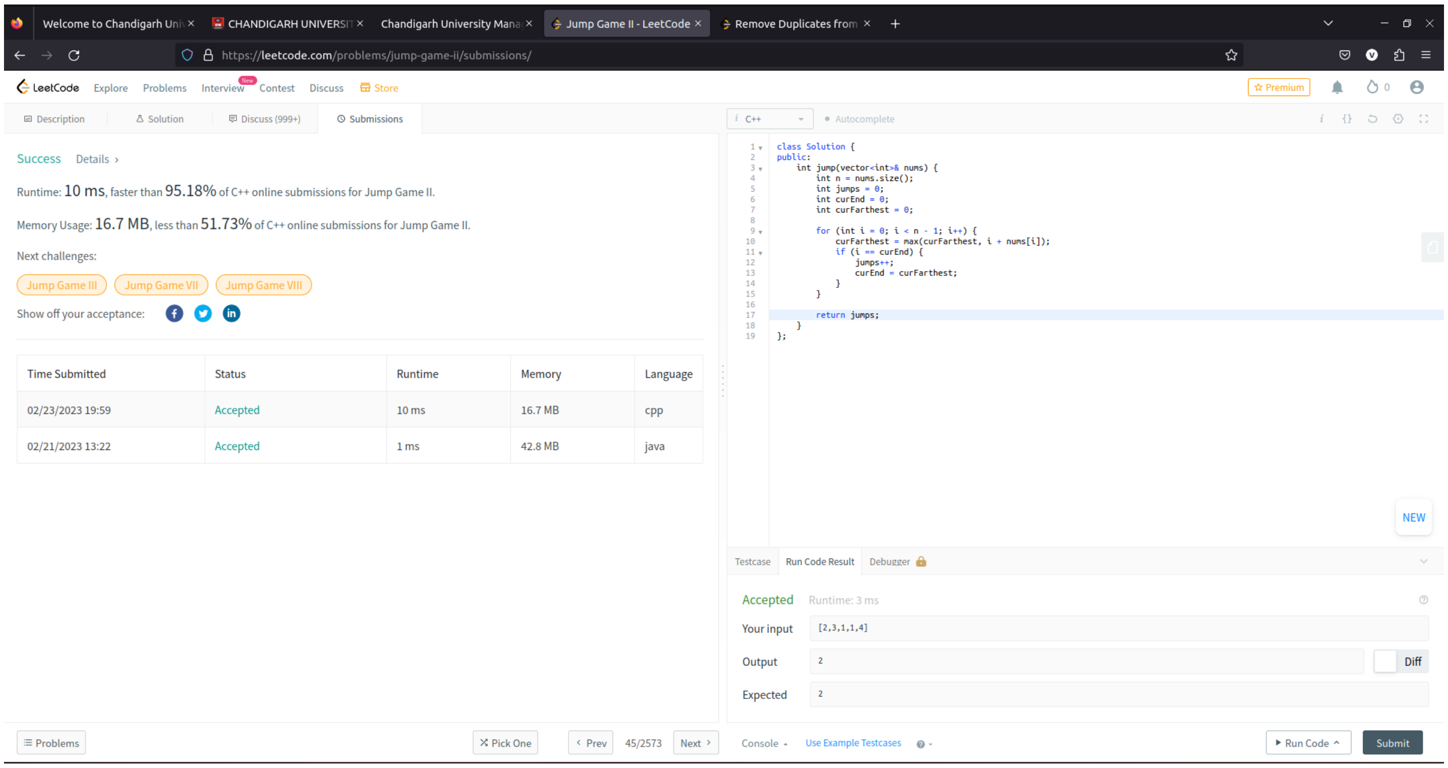
```cpp
class Solution {
public:
    int jump(vector<int>& nums) {
        int n = nums.size();
        int jumps = 0;
        int curEnd = 0;
        int curFarthest = 0;

        for (int i = 0; i < n - 1; i++) {
            curFarthest = max(curFarthest, i + nums[i]);
            if (i == curEnd) {
                jumps++;
                curEnd = curFarthest;
            }
        }

        return jumps;
    }
};
```

Accepted Runtime: 3 ms

Your input [2,3,1,1,4]

Output 2

Expected 2



https://leetcode.com/problems/jump-game-ii/submissions/

Success Details ›

Runtime: 10 ms, faster than 95.18% of C++ online submissions for Jump Game II.

Memory Usage: 16.7 MB, less than 51.73% of C++ online submissions for Jump Game II.

Next challenges: Jump Game III Jump Game VII Jump Game VIII

Time Submitted	Status	Runtime	Memory	Language
02/23/2023 19:59	Accepted	10 ms	16.7 MB	cpp
02/21/2023 13:22	Accepted	1 ms	42.8 MB	java

Accepted Runtime: 3 ms

Your input [2,3,1,1,4]

Output 2

Expected 2

1. **Aim/Overview of the practical:**

   Q2. Merge Two Sorted List

   https://leetcode.com/problems/remove-duplicates-from-sorted-list-ii/

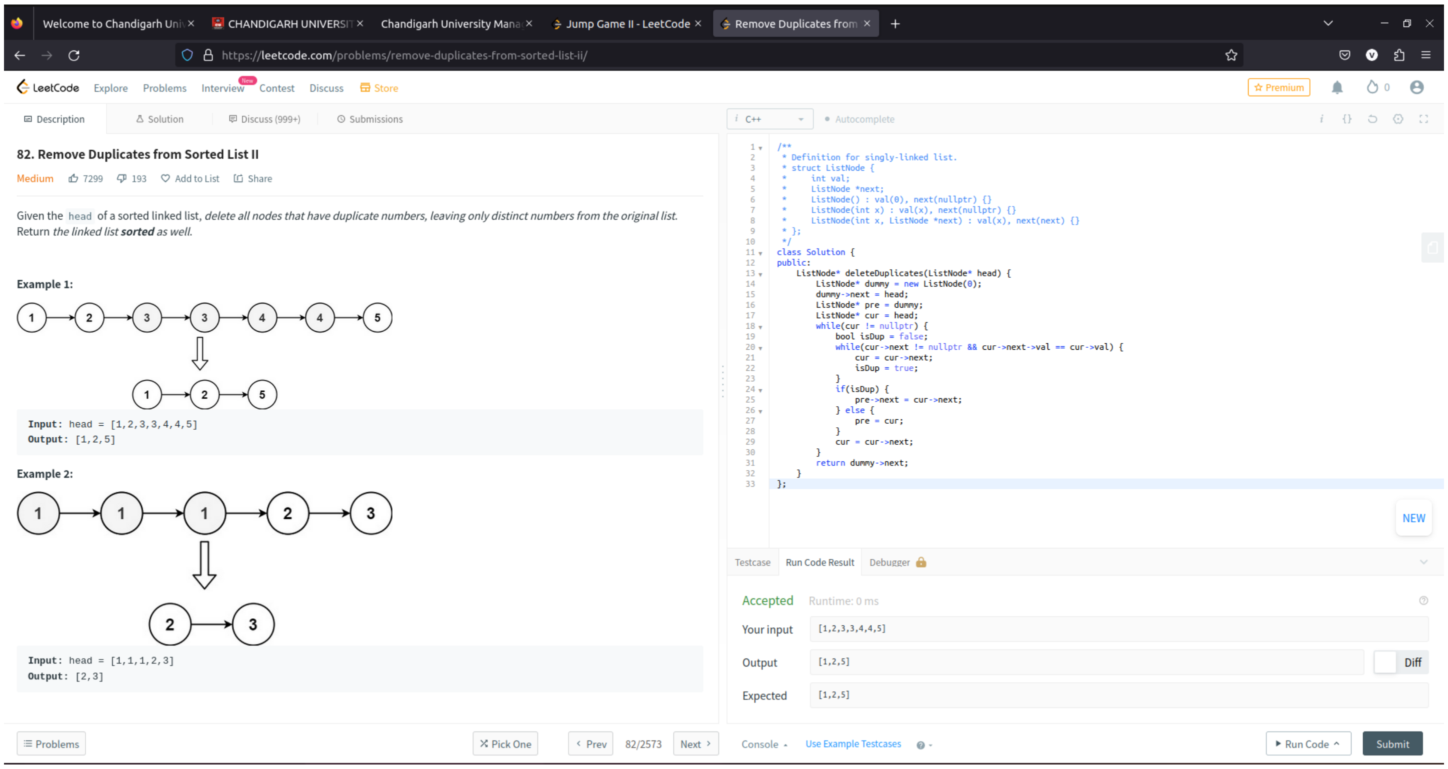
2. **Apparatus / Simulator Used:**
 1. Windows 7 or above
 2. Google Chrome

3. **Objective:**
- To understand the concept of List and Node
- To implement the concept of Remove duplicates from the list

4. **Code:**

```
class Solution {
public:
    ListNode* deleteDuplicates(ListNode* head) {
        ListNode* dummy = new ListNode(0);
        dummy->next = head;
        ListNode* pre = dummy;
        ListNode* cur = head;
        while(cur != nullptr) {
            bool isDup = false;
            while(cur->next != nullptr && cur->next->val == cur->val) {
                cur = cur->next;
                isDup = true;
            }
            if(isDup) {
                pre->next = cur->next;
            } else {
                pre = cur;
            }
            cur = cur->next;
        }
        return dummy->next;
    }
};
```

5. Result/Output/Writing Summary:



https://leetcode.com/problems/remove-duplicates-from-sorted-list-ii/

82. Remove Duplicates from Sorted List II

Medium 7299 193 Add to List Share

Given the `head` of a sorted linked list, *delete all nodes that have duplicate numbers, leaving only distinct numbers from the original list*. Return *the linked list **sorted** as well.*

Example 1:

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

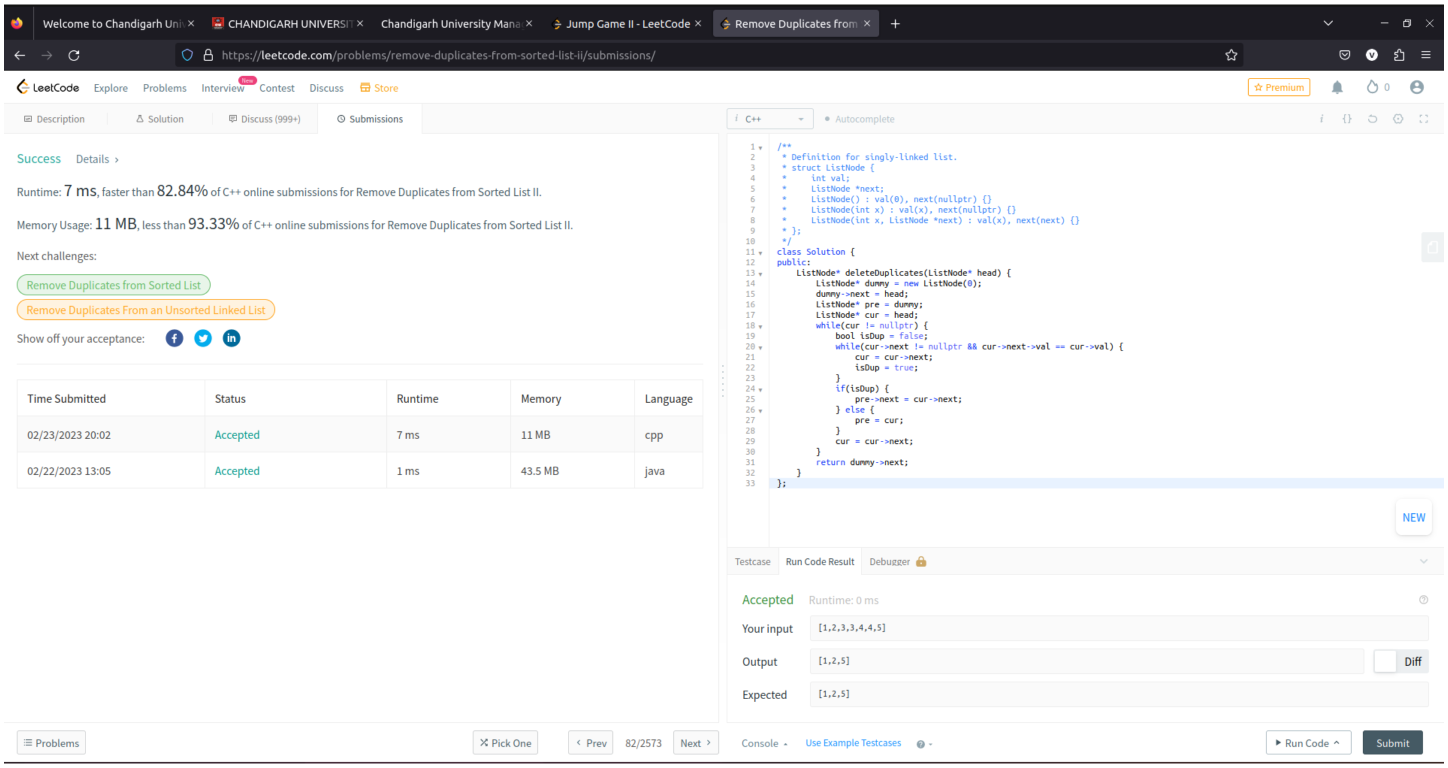
Example 2:

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

```cpp
/**
 * Definition for singly-linked list.
 * struct ListNode {
 *     int val;
 *     ListNode *next;
 *     ListNode() : val(0), next(nullptr) {}
 *     ListNode(int x) : val(x), next(nullptr) {}
 *     ListNode(int x, ListNode *next) : val(x), next(next) {}
 * };
 */
class Solution {
public:
    ListNode* deleteDuplicates(ListNode* head) {
        ListNode* dummy = new ListNode(0);
        dummy->next = head;
        ListNode* pre = dummy;
        ListNode* cur = head;
        while(cur != nullptr) {
            bool isDup = false;
            while(cur->next != nullptr && cur->next->val == cur->val) {
                cur = cur->next;
                isDup = true;
            }
            if(isDup) {
                pre->next = cur->next;
            } else {
                pre = cur;
            }
            cur = cur->next;
        }
        return dummy->next;
    }
};
```

Accepted Runtime: 0 ms

```
Your input  [1,2,3,3,4,4,5]
Output      [1,2,5]
Expected    [1,2,5]
```



https://leetcode.com/problems/remove-duplicates-from-sorted-list-ii/submissions/

Success Details ›

Runtime: 7 ms, faster than 82.84% of C++ online submissions for Remove Duplicates from Sorted List II.

Memory Usage: 11 MB, less than 93.33% of C++ online submissions for Remove Duplicates from Sorted List II.

Next challenges:

Remove Duplicates from Sorted List

Remove Duplicates From an Unsorted Linked List

Show off your acceptance:

Time Submitted	Status	Runtime	Memory	Language
02/23/2023 20:02	Accepted	7 ms	11 MB	cpp
02/22/2023 13:05	Accepted	1 ms	43.5 MB	java

```cpp
/**
 * Definition for singly-linked list.
 * struct ListNode {
 *     int val;
 *     ListNode *next;
 *     ListNode() : val(0), next(nullptr) {}
 *     ListNode(int x) : val(x), next(nullptr) {}
 *     ListNode(int x, ListNode *next) : val(x), next(next) {}
 * };
 */
class Solution {
public:
    ListNode* deleteDuplicates(ListNode* head) {
        ListNode* dummy = new ListNode(0);
        dummy->next = head;
        ListNode* pre = dummy;
        ListNode* cur = head;
        while(cur != nullptr) {
            bool isDup = false;
            while(cur->next != nullptr && cur->next->val == cur->val) {
                cur = cur->next;
                isDup = true;
            }
            if(isDup) {
                pre->next = cur->next;
            } else {
                pre = cur;
            }
            cur = cur->next;
        }
        return dummy->next;
    }
};
```

Accepted Runtime: 0 ms

```
Your input  [1,2,3,3,4,4,5]
Output      [1,2,5]
Expected    [1,2,5]
```

Learning outcomes (What I have learnt):

- Learned the concept of LinkedList.
- Learnt about Removing Duplicates from the List.

Evaluation Grid (To be created per the faculty's SOP and Assessment guidelines):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Worksheet completion including writing learning objectives/Outcomes. (To be submitted at the end of the day).		
2.	Post-Lab Quiz Result.		
3.	Student Engagement in Simulation/Demonstration/Performance and Controls/Pre-Lab Questions.		
	Signature of Faculty (with Date):	Total Marks Obtained:	