

CS23331-Design and Analysis of Algorithms-2023 Batch-CSE

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Started on	Wednesday, 20 November 2024, 2:57 AM
State	Finished
Completed on	Wednesday, 20 November 2024, 3:11 AM
Time taken	13 mins 51 secs
Marks	1.00/1.00
Grade	10.00 out of 10.00 (100%)

Question 1

Correct

Mark 1.00 out of 1.00

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Problem statement:

Find the length of the Longest Non-decreasing Subsequence in a given Sequence.

Eg:

Input:9

Sequence:-1,3,4,5,2,2,2,3]

the subsequence is [-1,2,2,2,3]

Output:6

Answer: (penalty regime: 0 %)

```
1 #include <stdio.h>
2
3 int longestNonDecreasingSubsequence(int arr[], int n) {
4     int dp[n];
5     for (int i = 0; i < n; i++) {
6         dp[i] = 1;
7     }
8
9     for (int i = 1; i < n; i++) {
10        for (int j = 0; j < i; j++) {
11            if (arr[j] <= arr[i]) {
12                dp[i] = (dp[i] > dp[j] + 1) ? dp[i] : (dp[j] + 1);
13            }
14        }
15    }
16
17    int maxlen = 0;
18    for (int i = 0; i < n; i++) {
19        if (dp[i] > maxlen) {
20            maxlen = dp[i];
21        }
22    }
23
24    return maxlen;
25 }
26
27 int main() {
28     int n;
29
30     scanf("%d", &n);
31     int arr[n];
32
33     for (int i = 0; i < n; i++) {
34         scanf("%d", &arr[i]);
35     }
36     int result = longestNonDecreasingSubsequence(arr, n);
37     printf("%d\n", result);
38
39     return 0;
40 }
41
```

	Input	Expected	Got	
✓	9 -1 3 4 5 2 2 2 3	6	6	✓
✓	7 1 2 2 4 5 7 6	6	6	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

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→ 3-DP-Longest Common Subsequence

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1-Finding Duplicates- $O(n^2)$ Time Complexity, $O(1)$ Space Complexity →