



TOPICS: Arrays

Allowed Time: 60 Minutes

Instructions:

Total Marks: 50

1. Gossips are not allowed.
2. Teacher assistants are for your help, so be nice with them. Respect them as they are teaching you. Raise your hands if you have some problem and need help from TA. Avoid calling them by raising your voice and disturbing the environment of Lab.
3. TA may deduct your marks for any kind of ill-discipline or misconduct from your side.
4. Evaluation will be considered final and you cannot debate for the marks. So, focus on performing the tasks when the time is given to you.

Task 01:

(5 Marks, 10 min)

Write a function given an integer array nums, return true if any value appears at least twice in the array, and return false if every element is distinct. **(BONUS: TRY SOLVING IT WITHOUT NESTED LOOPS)**

Sample Output:

Input: nums = [1, 2, 3, 1] Output: true

Task 02:

(10 Marks, 10 min)

Write a function given an array of integers nums and an integer target, print indices of the two numbers such that they add up to target and return true else return false.

You may assume that each input would have exactly one solution, and you may not use the same element twice.

Sample Output:

Input: nums = [2, 7, 11, 15], target = 9
Output: [0, 1] are the indices of numbers which add up to target
Explanation: Because $\text{nums}[0] + \text{nums}[1] == 9$, we return [0, 1].

Task 03:

(10 Marks, 10 min)

Write a function that toggles the case of each letter in the string.

('A' becomes 'a', and 'B' becomes 'b')

Sample Output:

Input: "Hello" Output: "hELLO"

Task 04:

(10 Marks, 15 min)

Write a function that you are given an Array containing int data, and you have to rotate it k times to the right and print it. Rotation means each element moves k steps to the right.

Assuming nums = {1,2,3,4,5} and k = 4, then after rotating to the right we have :
nums = {2,3,4,5,1}.

Task 05:

(15 Marks, 15 min)

The tallest building in the city of Lahore has only one elevator. A request list for the elevator is made up of N positive numbers. In the specified order, the numbers denote which elevator floors will stop. It costs 6 seconds to move the elevator up one floor, and 4 seconds to move down one floor. The elevator will stay for 5 seconds at each stop. For a given request list, you are to compute the total time spent to fulfill the requests on the list. The elevator is on the ground floor (0th floor) at the beginning. The input will be in the form of an int array. So write the function to calculate the total seconds.

Sample Output:

Input: 1 2 Output: 17 (6+5+6)
Input: 3 2 3 1 Output: 51 (6+6+6+5+4+5+6+5+4+4)