

# RIPHAH INTERNATIONAL UNIVERSITY, LAHORE CAMPUS.

*RIPHAH SCHOOL OF COMPUTING & INNOVATION (RSCI)*



## COMPLEX PROBLEM SOLVING

### ASSIGNMENT 02

Issue Date: 22-10-2022

Due Date: 28-10-2022

Semester: FALL 2022

Class: BSCS (7A)

Total Marks: 100

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#### Objectives:

- Practice on problem solving.

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#### Instructions:

- Assignment type is individual, so no sharing is allowed.
- You can use internet and books as helping resources but sharing content with peers is strictly prohibited.
- **Plagiarized assignments will get zero and may fail the course.**
- I am available for your help/guidance.
- **Start early!**

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#### Submission Method:

- Write everything in word file. You can also solve on paper and attach pictures in word file.
  - Submit only MS Word or PDF file at [this link](#).
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**Design algorithms for following given problems.**

**It is recommended to write code in any programming language of your choice.**

### **Problem A2-1**

Given the array of size **4**, containing a four-digit number. Each digit in a number is stored on a single index of array. You are required to add 1 in array

#### **Example1:**

*Input: 2512 is a single number which is stored in an array*

2	5	1	2
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*Output: 1 is added in 2512 (2512+1=2513)*

2	5	1	3
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#### **Example 2:**

*Input: 8999 is a single number which is stored in an array*

8	9	9	9
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*Output: 1 is added in 8999 (8999+1=9000)*

9	0	0	0
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### Problem A2-2

The heights of different peaks at a mountain are given in the array. Each element of array shows the peak height. A climber has some superpowers and can directly jump from one peak to another peak. Your task is to find the maximum jump that a climber made during his journey.

**For Example:**

*Input:*

4	6	2	1	7	3	8	5
---	---	---	---	---	---	---	---

*Output:*

6

*Explanation:*

The maximum jump made is from '1' to '7' elements which is 6.

### Problem A3-3

Given the array of size **n**, find the **Majority Element** from the array. Return -1 if there is no any majority element.

Majority element is an element that exist more than half of the size of array.

**Example 1:**

*Input:*

5	1	2	1	6	3	9	5
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*Output:*

-1

*Explanation:*

There is no any element that exists more than half of the array. So answer is -1.

**Example 2:**

*Input:*

3	1	3	2	3	3	9	3
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*Output:*

3

*Explanation:*

3 exists five times in array that is more than half ( $8/2=4$ ) of the size of array.

**SELF STUDY**

Code all the problems done so far in any language of your choice to get in hands experience of coding.

\*Self-study is highly recommended for you before coming to the next class. Anyhow, it is optional in submission.

**Good Luck** 😊