**III Year A and B**

**Problem Solving Questions**

**Date: 25.01.23**

1. Find the first non-repeating element in a given array**arr** of **N** integers.  
   **Note:** Array consists of only positive and negative integers and **not zero**.

**Example 1:**

**Input :** arr[] = {-1, 2, -1, 3, 2}

**Output :** 3

**Explanation:**

-1 and 2 are repeating whereas 3 is

the only number occuring once.

Hence, the output is 3.

**Example 2:**

**Input :** arr[] = {1, 1, 1}

**Output :** 0

1. Given **n** integer ranges, the task is to find the maximum occurring integer in these ranges. If more than one such integer exits, find the smallest one. The ranges are given as two arrays **L**[] and **R**[].  L[i] consists of starting point of range and R[i] consists of corresponding end point of the range.

For example consider the following ranges.  
L[] = {2, 1, 3}, R[] = {5, 3, 9)  
Ranges represented by above arrays are.  
[2, 5] = {2, **3**, 4, 5}  
[1, 3] = {1, 2, **3**}  
[3, 9] = {**3**, 4, 5, 6, 7, 8, 9}  
The maximum occurred integer in these ranges is 3.

**Example 1:**

**Input:**

n = 4

L[] = {1,4,3,1}

R[] = {15,8,5,4}

**Output:** 4

**Explanation:** The given ranges are [1,15]

[4, 8] [3, 5] [1, 4]. The number that

is most common or appears most times in

the ranges is 4.

**Example 2:**

**Input:**

n = 5

L[] = {1,5,9,13,21}

R[] = {15,8,12,20,30}

**Output:** 5

**Explanation:** The given ranges are

[1,15] [5, 8] [9, 12] [13, 20]

[21, 30]. The number that is most

common or appears most times in

the ranges is 5.

1. Given an array **arr[]** of **N** elements, the task is to find the maximum sum of lengths of all non-overlapping subarrays with **K** as the maximum element in the subarray.

**Example 1:**

**Input:** N = 9, K = 4

arr[] = {2, 1, 4, 9, 2, 3, 8, 3, 4}

**Output:** 5

**Explanation**: {2, 1, 4} => Length = 3

{3, 4} => Length = 2

So, 3 + 2 = 5 is the answer.

**Example 2:**

**Input:** N = 7, K = 4

arr[] = {1, 2, 3, 2, 3, 4, 1}

**Output:**  7

**Explanation:** {1, 2, 3, 2, 3, 4, 1}

=> Length = 7.

4. You are given heights of consecutive buildings. You can move from the roof of a building to the roof of next adjacent building. You need to find the maximum number of consecutive steps you can put forward such that you gain an increase in altitude with each step.

**Example 1:**

**Input:**

N = 5

A[] = {1,2,2,3,2}

**Output:** 1

**Explanation:** 1, 2 or 2, 3 are the only consecutive

buildings with increasing heights.

**Example 2:**

**Input:**

N = 4

A[] = {1,2,3,4}

**Output:** 3

**Explanation:** 1 to 2 to 3 to 4 is the jump of

length 3 to have maximum number of

buildings with increasing heights.