

## AMC FOSS CLUB

### Practice Questions - 2

07<sup>TH</sup> May 2023

1) Write a program to find the binary representation of a given number.

**Sample Input:** num = 4

**Sample Output:** 100

**Explanation:** The Binary Representation of 4 is 100

2) Given an array of size **N-1** such that it only contains distinct integers in the range of **1 to N**. Find the missing element.

**Sample Input:** N = 10

A[] = {6,1,2,9,3,4,7,10,5}

**Sample Output:** 8

**Explanation:** The Missing Number is 8 in the array

3) Find the first set bit for a given number.

**Sample Input:** num = 12

**Sample Output:** 3

**Explanation:** 1100 is the binary representation of the given number 12. Set bit is nothing but the '1' bits that are present in a binary number. In 1100 the first set bit from the right occurs in third position. Thus, the output is 3.

4) Find the two numbers with odd occurrences in an unsorted array.

**Sample Input:** {2, 4, 2, 5, 7, 5, 4, 6, 5, 7}

**Output:** 5 and 6

**Explanation:** The element 5 and 6 occurs odd times in the array that is element 5 occurs three times while element 6 occurs one time. Thus, the output is 5 and 6

**Input Constraints:** The array should contain only two elements that occurs odd no of times and not more than two.

**Other Constraints:** You cannot use nested loops to solve this problem

5) Count the no of set bits i.e no of '1' bits in an integer.

**Sample Input:** 7

**Sample Output:** 3

**Explanation:** The binary representation of 7 is 111 and the no of '1' bits present in 7 is three. Thus, the output is 3

**Reference Materials:**

<https://www.geeksforgeeks.org/bitwise-operators-in-c-cpp/>

<https://www.geeksforgeeks.org/python-bitwise-operators/>

<https://www.geeksforgeeks.org/bitwise-operators-in-java/>

<https://www.geeksforgeeks.org/javascript-bitwise-operators/>

<https://www.geeksforgeeks.org/all-about-bit-manipulation/>

<https://www.geeksforgeeks.org/bits-manipulation-important-tactics/>