

## Problem 1: Divide And Conquer Method

### Question:

#### Problem Statement

Given an array of 1s and 0s this has all 1s first followed by all 0s. Aim is to find the number of 0s.

Write a program using Divide and Conquer to Count the number of zeroes in the given array.

#### Input Format

First Line Contains Integer m – Size of array

Next m lines Contains m numbers – Elements of an array

#### Output Format

First Line Contains Integer – Number of zeroes present in the given array.

### Program:

```
1 #include <stdio.h>
2
3 int countZeros(int arr[], int low, int high, int size) {
4     if (low > high)
5         return 0;
6
7     int mid = (low + high) / 2;
8
9     if (arr[mid] == 1) {
10         return countZeros(arr, mid + 1, high, size);
11     } else {
12
13         if (mid == 0 || arr[mid - 1] == 1) {
14             return size - mid;
15         } else {
16             return countZeros(arr, low, mid - 1, size);
17         }
18     }
19 }
20
21 int main() {
22     int m;
23     scanf("%d", &m);
24
25     int arr[m];
26     for (int i = 0; i < m; i++) {
27         scanf("%d", &arr[i]);
28     }
29
30     int result = countZeros(arr, 0, m - 1, m);
31     printf("%d\n", result);
32
33     return 0;
34 }
```

	Input	Expected	Got	
✓	5 1 1 1 0 0	2	2	✓
✓	10 1 1 1 1 1 1 1 1 1 1 1 1	0	0	✓