**Bitwise AND of the Array**

**Medium**

Given an array **A[ ]** of **N** integers and an integer **X**. In one operation, you can change the **ith** element of the array to any integer value where **1 ≤ i ≤ N**. Calculate minimum number of such operations required such that the **bitwise** [**AND**](https://en.wikipedia.org/wiki/Bitwise_operation#AND) of all the elements of the array is strictly greater than **X**.

**Example 1:**

**Input:**

N = 4, X = 2

A[] = {3, 1, 2, 7}

**Output:**

2

**Explanation:**

After performing two operations:

Modified array: {3, **3**, **11**, 7}

Now, Bitwise AND of all the elements

is 3 & 3 & 11 & 7 = 3

**Example 2:**

**Input:**

N = 3, X = 1

A[] = {2, 2, 2}

**Output:**

0

**Expected Time Complexity:**O(N \* Log(max(A[ ])))  
**Expected Auxiliary Space:**O(1)

**Constraints:**  
1 ≤ N ≤ 105  
1 ≤ A[i] ≤ 109  
1 ≤ X ≤ 109

**Topic Tags**

[**Arrays**](https://practice.geeksforgeeks.org/explore/?category%5b%5d=Arrays) [**Greedy**](https://practice.geeksforgeeks.org/explore/?category%5b%5d=Greedy)[**Bit Magic**](https://practice.geeksforgeeks.org/explore/?category%5b%5d=Bit%20Magic)[**Data Structures**](https://practice.geeksforgeeks.org/explore/?category%5b%5d=Data%20Structures) [**Algorithms**](https://practice.geeksforgeeks.org/explore/?category%5b%5d=Algorithms)

//{ Driver Code Starts

//Initial Template for Java

import java.io.\*;

import java.util.\*;

class CodingMaxima{

public static void main(String args[]) throws IOException {

BufferedReader read = new BufferedReader(new InputStreamReader(System.in));

int t = Integer.parseInt(read.readLine());

while(t-- > 0){

String input\_line[] = read.readLine().trim().split("\\s+");

int N = Integer.parseInt(input\_line[0]);

int X = Integer.parseInt(input\_line[1]);

input\_line = read.readLine().trim().split("\\s+");

int A[]= new int[N];

for(int i = 0; i < N; i++)

A[i] = Integer.parseInt(input\_line[i]);

Solution ob = new Solution();

int ans = ob.count(N, A, X);

System.out.println(ans);

}

}

}

// } Driver Code Ends

//User function Template for Java

class Solution

{

int count(int N, int A[], int x)

{

int setbit=0, min=Integer.MAX\_VALUE;

for(int i=30;i>=0;i--){

if(((1<<i)&x)>0)

setbit |=1<<i;

else{

int temp=setbit, c=0;

temp |=1<<i;

for(int num : A){

if((temp&num)!=temp)

c++;

}

min=Math.min(min, c);

}

}

return min;

}

}