**Minimum Number :-**

Easy Accuracy: 54.83% Submissions: 10K+ Points: 2

You are given an array **arr**of **n**elements. In one operation you can pick two indices **i**and **j**, such that **arr[i] >= arr[j]** and replace the value of **arr[i]** with **(arr[i] - arr[j])**. You have to **minimize** the values of the array after performing any number of such operations.

**Example 1:**

**Input:**

n = 3

arr = {3,2,4}

**Output:**

1

**Explanation:**

1st Operation : We can pick 4 & 3, subtract 4-3 => {3,2,1}

2nd Opeartion : We can pick 3 & 2, subtarct 3-2 => {1,2,1}

3rd Operation : We can pick 1 & 2, subtract 2-1 => {1,1,1}

4th Opeartion : We can pick 1 & 1, subtract 1-1 => {1,0,1}

5th Operation : We can pick 1 & 1, subtract 1-1 => {0,0,1}

After this no operation can be performned, so maximum no is left in the array is 1, so the ans is 1.

**Example 2:**

**Input:**

n = 2

arr = {2,4}

**Output:**

2

**Explanation:**

1st Operation : We can pick 4 & 2, subtract 4-2 => {2,2}

2nd Operation : We can pick 2 & 2, subtract 2-2 => {0,2}

After this no operation can be performned, so maximum no is left in the array is 2, so the ans is 2.

**Your Task:**  
You don't need to read input or print anything. Your task is to complete the function **minimumNumber()**which takes an integer **n**and an array **arr**, as input parameters and returns the **maximum** number which is minimized after performing operations.

**Expected Time Complexity**: O(n)  
**Expected Space Complexity**: O(1)

**Constraints:**  
1 ≤ n ≤ 105  
1 ≤ arr[i] ≤ 109

**Code :-**

//{ Driver Code Starts

//Initial Template for C++

#include <bits/stdc++.h>

using namespace std;

// } Driver Code Ends

//User function Template for C++

class Solution{

public:

int minimumNumber(int n,vector<int> &arr){

int gcd = arr[0];

for(int i=1; i<n; ++i){

int divisor=min(gcd, arr[i]);

int dividend=max(gcd, arr[i]);

int rem = dividend % divisor;

while(rem>0){

dividend = divisor;

divisor = rem;

rem = dividend % divisor;

}

gcd = divisor;

}

return gcd;

}

};

//{ Driver Code Starts.

int main(){

int t;

cin>>t;

while(t--){

int n;

cin>>n;

vector<int> arr(n);

for(int i=0;i<n;i++){

cin>>arr[i];

}

Solution ob;

cout<<ob.minimumNumber(n,arr)<<endl;

}

}

// } Driver Code Ends

**Logic :-**

The GCD among all the array integers make all the other elements “0” for any pair of numbers choosen from the array fulfilling the given condition.

(8,4)

=> (4,4) as 8-4=4

=> (0,4) or (4,0) as 4-4=0