Sherlock and Array

by darkshadows

Watson gives Sherlock an array of integers. His challenge is to find an element of the array such that the sum of all elements to the left is equal to the sum of all elements to the right. For instance, given the array $[5, 6, 8, 11]$, 8 is between two subarray that sum to 11. If your starting array is $[1]$, that element satisfies the rule as left and right sum to 0.

You will be given arrays of integers and must determine whether there is an element that meets the criterion.

Input Format

The first line contains T, the number of test cases.

The next T pairs of lines each represent a test case.
- The first line contains n, the number of elements in the array a.
- The second line for each test case contains n space-separated integers a_i where $0 \leq i < n$.

Constraints

$1 \leq T \leq 10$
$1 \leq n \leq 10^5$
$1 \leq a_i \leq 2 \times 10^4$
$0 \leq i < n$

Output Format

For each test case print `YES` if there exists an element in the array, such that the sum of the elements on its left is equal to the sum of the elements on its right; otherwise print `NO`.

Sample Input 0

```
2
3
1 2 3
4
1 2 3 3
```

Sample Output 0

```
NO
YES
```

Explanation 0

For the first test case, no such index exists.
For the second test case, $A[0] + A[1] = A[3]$, therefore index 2 satisfies the given conditions.

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```cpp
#include <cmath>
#include <cstdio>
#include <vector>
#include <iostream>
#include <algorithm>
using namespace std;


int main() {
    /* Enter your code here. Read input from STDIN. Print output to STDOUT */

    int t;
    cin>>t;

    for(int i=1;i<=t;i++)
    {
         int sum1=0;
    int sum2=0;
    int sherlock=0;
        int n;
        cin>>n;
        vector<int>a(n);
        for(int i=0;i<n;i++)
        {
              cin>>a[i];
            sum2=sum2+a[i];


        }
        for(int i=0;i<n;i++)
        {
            if(i>=1)
                sum1=sum1+a[i-1];
            sum2=sum2-a[i];

            if(sum2==sum1)
            {
                sherlock=1;
                break;
            }
        }

        if(sherlock==1)
        {
        cout<<"YES"<<endl;
        }
     else if(sherlock==0||n==1)
     {
         cout<<"NO"<<endl;
    }

```

```
    }
    return 0;
}

```

Line: 1 Col: 1

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