1955C - Inhabitant of the Deep Sea

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1 Problem

Problem Description : https://codeforces.com/problemset/problem/1955/C

2 Objective

Check how many ships sunk after the kraken finished attacking The Kraken attacked the ships k times in a specific order. First, it attacks the first of the ships, then the last, then the first again, and so on.

Each attack by the Kraken reduces the durability of the ship by 1 . When the durability of the ship drops to 0 , it sinks and is no longer subjected to attacks (thus the ship ceases to be the first or last, and the Kraken only attacks the ships that have not yet sunk). If all the ships have sunk, the Kraken has nothing to attack and it swims away.

3 Solution

First we lalbel the durability of the first and last ship as al and ar, let m = min(al,ar), After two attacks, the durability of both ships decreases by 1. k2m, then both ships have their durability reduced by m, and the remaining attacks of the Kraken are decreased by 2m. If k¡2m, the Kraken will inflict k/2 damage to the r-th ship. If k is odd, the l-th ship will receive k/2 + 1 damage. otherwise, it will receive k/2 damage. repeat until l = r and check if the kraken can sink the last ship

4 Code

```cpp
#include<bits/stdc++.h>
using namespace std;

int main(){
    int t;
    cin >> t;
    while(t-- > 0){
        int n;
        signed long long int k;
        cin >> n >> k;
        int arr[n] = {0};
        for(int i=0;i<n;i++){
            cin >> arr[i];
        }
        int s=0,e=n-1;
        while((e-s+1) > 1 && k > 0){
            signed long long int m = min(arr[s],arr[e]);
            if (k < 2 * m) {
                arr[s] -= k / 2 + k % 2;
                arr[e] -= k / 2;
                k = 0;
            }
            else {
                arr[s] -= m;
                arr[e] -= m;
                k -= 2 * m;
            }
            if (arr[s] == 0) s++;
            if (arr[e] == 0) e--;
        }
        cout << n - (e-s+1) + ((e-s+1) && arr[s] <= k) << endl;
    }
}
```