

3 Wavy Tree

3.1 Problem Description

An array a of length n is said to be wavy, if for each $1 < i < n$ either $a_i > \max\{a_{i-1}, a_{i+1}\}$ or $a_i < \min\{a_{i-1}, a_{i+1}\}$ holds.

You are given an array b of length n ($1 \leq b_i \leq 10^9$), consisting of integers. You want to make the array wavy. To do that you can spend some coins, with each coin you can make one element in b increase or decrease by 1. Calculate the minimum number of coins you need to spend to make the array wavy.

3.2 Input

The first line contains the number of test cases T ($1 \leq T \leq 10^3$).

The first line of each test case contains one integer n ($1 \leq n \leq 10^6$) - the length of array b .

The second line contains n integers b_1, b_2, \dots, b_n ($1 \leq b_i \leq 10^9$) - the array b .

It's guaranteed that the sum of n among all test cases is not greater than 3×10^6 .

3.3 Output

For each test case, output one integer, the minimum number of coins you need to spend to make the array wavy.

3.4 Sample Input

```
3
4
1 7 6 5
6
1 2 3 4 5 6
6
1 1 4 5 1 4
```

3.5 Sample Output

```
2
4
4
```