Practice problems for week 6

Question 1 - “Non-Fancy Trains”

Problem Description

There are n stations numbered $1, 2, ...n$. Stations i and j are connected via a train ($1 \leq i, j \leq n$) iff $|i - j| \leq 2$. The price of such a train would be $|a_i - a_j|$ where a_i is an input array denoting the ratings of stations. If you travel optimally, find the minimum cost to travel form station 1 to station n .

Input Format

The first line of input contains a single integer n denoting the number of stations.

The second line contains n space-seperated integers, a_i .

Input constraints

- $2 \leq n \leq 10^5$
- $1 \leq a_i \leq 10^4$

Output Format

Print one integer, the minimum cost to travel from station 1 to station n .

Sample Input 1

```
4
10 30 40 20
```

Sample Output 1

```
30
```

Sample Explanation

One valid path is to go through the stations $1 \to 2 \to 4$, which incurs the cost $|10 - 30| + |30 - 20| = 30$

**Sample Input 2 **

```
2
10 10
```

Sample Output 2

```
0
```

Question 2 - “String Palindrome Check”

Problem Description

Given a string S , check if it is a palindrome using **recursion**.

Input Format

The first line of input contains a single integer $2T$ that denotes the number of test-cases. Then, $2T$ lines follow. The first line of each test-case contains a single integer N denoting the length of the string. The second line of each test-case contains a string S of length N .

Input constraints

- $1 \leq T \leq 2 \times 10^5$
- $1 \leq N \leq 2 \times 10^5$
- $|S| = N$

- S consists of only lowercase English alphabets
- The sum of N over all test-cases does not exceed 2×10^5

Output Format

For each test-case, on a single line, output `YES` if the string is a palindrome and `NO` if not

Sample inputs and outputs

Sample Input 1

```
2
addd
sss
```

Sample Output 1

```
NO
YES
```

Sample Input 2

```
3
addfdfdda
a
addfdffdda
```

Sample Output 2

YES

YES

NO