Problem G
Kingdom Distance

Time limit: **1 second**
Memory limit: **1024 megabytes**

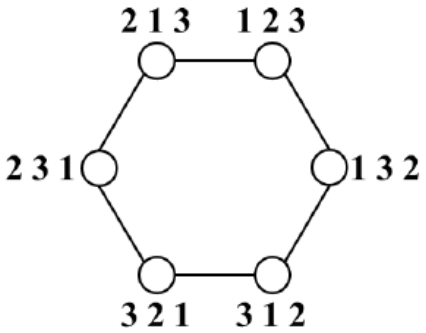
Problem Description

Wonder kingdom has $n!$ cities. Each city is encoded with n number $d_1 d_2 \dots d_n$ which is a permutation of $12 \dots n$. The castle of Wonder kingdom is located in the city encoded as $12 \dots n$. Let $a_1 a_2 \dots a_n$ and $b_1 b_2 \dots b_n$ be the codes of cities A and B, respectively. A road with distance one is built between cities A and B in the kingdom if and only if there exists an i, $1 \leq i < n$, such that the following two conditions are satisfied.

1. $a_i = b_{i+1}$ and $b_i = a_{i+1}$;
2. $a_j = b_j$ for $j \in \{1, 2, \dots, n\} \setminus \{i, i+1\}$

One day the king invites all mayors for a meeting in the castle. Please help mayors calculate their travel distance to the castle. Notice that the city of the castle is encoded with $123 \dots n$.

See the following example. There are 6 cities in the kingdom. Each city is encoded with a permutation of 1 2 3.



Input Format

The first line contains an integer m which represents the number of test cases. Each test case below contains two lines. For each test case, the first line is an integer n, $3 \leq n \leq 100$ which indicates that there are $n!$ cities in the kingdom and the second line consists of different n numbers in $\{1, 2, \dots, n\}$ with a space between two numbers which indicates the encoding of the given city.

Output Format

For each test case, output one line containing an integer which indicates the distance between the given city and the castle.

Technical Specification

- $1 \leq m \leq 50$

- $1 \leq n \leq 100$

Sample Input 1

```
5
3
3 1 2
4
4 3 2 1
5
4 1 2 3 5
7
2 6 1 5 4 3 7
10
3 2 1 5 7 6 4 10 8 9
```

Sample Output 1

```
2
6
3
8
9
```