Problem C. Distance Calculator

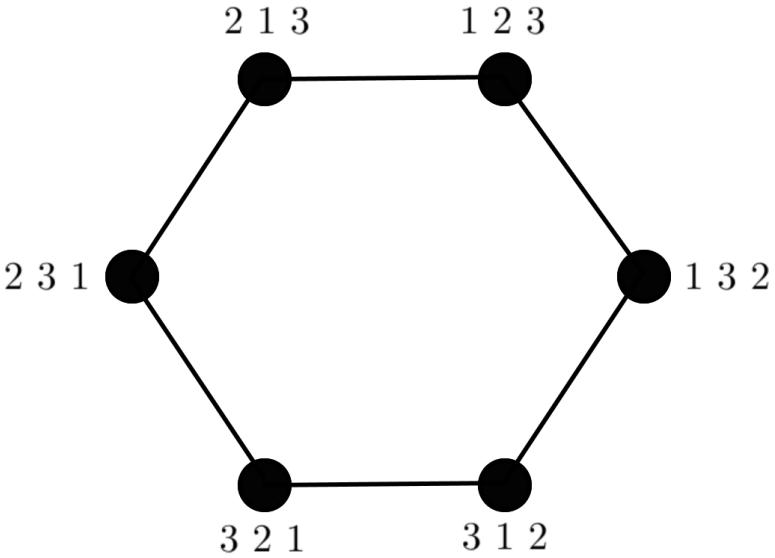
Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

Wonder kingdom has $n!$ cities. Each city is encoded with n number $d_1 d_2 \dots d_n$ which is a permutation of $1\ 2 \dots n$. The castle of Wonder kingdom is located in the city encoded as $1\ 2 \dots n$. 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, $1 \le i < n$, 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 $1\ 2\ 3 \dots n$.

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



Input

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, $3 \le n \le 100$ 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.

Constraints

- $1 \le m \le 50$.
- $1 \le n \le 100$.

Output

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

Examples

standard input	standard output
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	2 6 3 8 9