Correcting Cheeseburgers

Cheeseburgers are serious business. They are the most delicious food on earth, but there is a lot of room for error when making a cheeseburger. Even otherwise capable cooks often mess up the order of the assembled ingredients.

The only correct order of ingredients between the buns is, *of course*, as following from top to bottom:

1. Ketchup & Mustard
2. Beef Tomato
3. Pickles
4. Red Onions
5. Cheddar Cheese
6. Garlic
7. Salt & Pepper
8. Beef Patty, medium grilled
9. Corn Salad
10. Mayonnaise

Any deviation from this order is completely unacceptable. Therefore it is sometimes necessary to reassemble a cheeseburger.

Space on an average plate and social norms are rather restrictive when it comes to operating on a cheeseburger. The only feasible operation is the bit-shuffle (burger-ineptly-transformed). The bit-shuffle separates the entire burger into four parts of contiguous ingredients a, b, c and d and arranges them in the new order $c\ a\ d\ b$. The size of each of the four parts is selectable and may be zero.

Since the burger cools rapidly we are interested in the minimum required bit-shuffles to arrive at an acceptable burger.

Each given cheeseburger consists of n unique ingredients labeled from 1 to n. The correct order is always the natural order $1\ 2 \ldots n$.

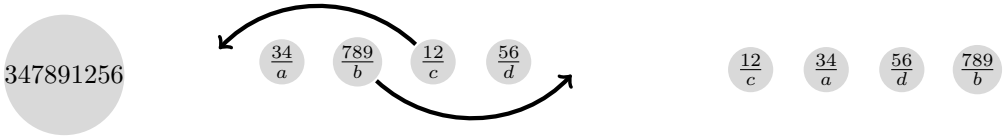

Figure 1: Illustration of the first sample input.

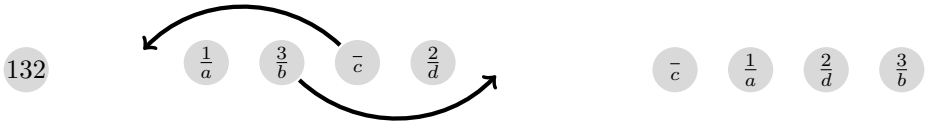

Figure 2: Illustration of the second sample input.

Input

The input consists of:

- one line with an integer n ($1 \leq n \leq 10$), where n is the number of ingredients used;

- one line with n integers describing the order of the ingredients of the given cheeseburger. The ingredients are numbered from 1 to n.

Output

Output the minimum number of bit-shuffles to correct the given cheeseburger.

Sample Input 1	Sample Output 1
9 3 4 7 8 9 1 2 5 6	1

Sample Input 2	Sample Output 2
3 1 3 2	1