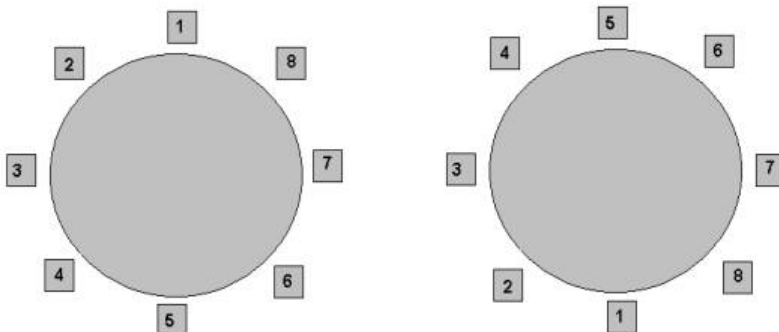


The aliens are in an important meeting just before landing on the earth. All the aliens sit around a round table during the meeting. Aliens are numbered sequentially from 1 to  $N$ . It's a precondition of the meeting that  $i$ 'th alien will sit between  $(i - 1)$ 'th and  $(i + 1)$ 'th alien. 1st alien will sit between 2nd and  $N$ 'th alien.



Though the ordering of aliens are fixed but their positions are not fixed. In the above figure two valid sitting arrangements of eight aliens are shown. Right before the start of the meeting the aliens sometimes face a common problem of not maintaining the proper order. This occurs as no alien has a fixed position. Two maintain the proper order, two aliens can exchange their positions. The aliens want to know the minimum number of exchange operations necessary to fix the order.

### Input

Input will start with a positive integer,  $N$  ( $3 \leq N \leq 500$ ) the number of aliens. In next few lines there will be  $N$  distinct integers from 1 to  $N$  indicating the current ordering of aliens. Input is terminated by a case where  $N = 0$ . This case should not be processed. There will be not more than 100 datasets.

### Output

For each set of input print the minimum exchange operations required to fix the ordering of aliens.

### Sample Input

```
4
1 2 3 4
4
4 3 2 1
4
2 3 1 4
0
```

### Sample Output

```
0
0
1
```