Sorting a Three-Valued Sequence

IOI'96 - Day 2

Sorting is one of the most frequently performed computational tasks. Consider the special sorting problem in which the records to be sorted have at most *three* different key values. This happens for instance when we sort medalists of a competition according to medal value, that is, gold medalists come first, followed by silver, and bronze medalists come last.

In this task the possible key values are the integers 1, 2 and 3. The required sorting order is non-decreasing. However, sorting has to be accomplished by a sequence of exchange operations. An exchange operation, defined by two position numbers p and q, exchanges the elements in positions p and q.

You are given a sequence of key values. Write a program that computes the minimal number of exchange operations that are necessary to make the sequence sorted.

PROGRAM NAME: sort3

INPUT FORMAT

Line 1:	N (1 <= N <= 1000), the number of records to be sorted
Lines 2-N+1:	A single integer from the set {1, 2, 3}

SAMPLE INPUT (file sort3.in)

```
9
2
2
1
3
3
3
2
3
1
```

OUTPUT FORMAT

A single line containing the number of exchanges required

SAMPLE OUTPUT (file sort3.out)

```
4
```

Submit a solution: