Robot Vacuum

Input File: `robotin.txt`
Output File: `robotout.txt`

Time and Memory Limits: 1 second, 1 GB

Irene has a robot vacuum cleaner that automatically cleans her floor. Each day, the robot performs the same sequence of **K** instructions.

There are four possible instructions, each represented by an uppercase character. Each instruction moves the robot one *step* in one of the four cardinal directions:

- N - the robot moves one step north (↑).

- E - the robot moves one step east (→).

- S - the robot moves one step south (↓).

- W - the robot moves one step west (←).

After the sequence of **K** instructions, the robot is supposed to finish where it started, but the original programmers were a little bit rushed.

Irene has asked for your programming help. What is the smallest number of instructions needed to add to the end of the sequence so that the robot finishes where it started?

Input

- The first line of input contains the single integer **K**.

- The second line of input contains a string of **K** characters, the sequence of instructions.

Output

Your program should output a single integer, the fewest instructions you need to add to the end of the sequence.

Sample Input 1	Sample Input 2	Sample Input 3
5	7	8
ENNEE	EEWWWWE	SWWNENNS

| Sample Output 1	Sample Output 2	Sample Output 3
5	1	2

Sample Input 4

4
NESW

Sample Output 4

0

Explanation

Each of the sample cases are illustrated below. The starting point is marked by a square, the original instructions are marked by black arrows and instructions added to the sequence are marked by red arrows.
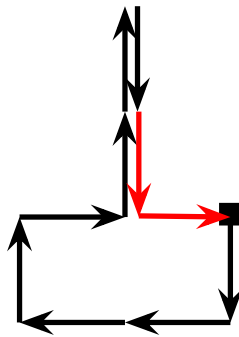
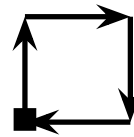Note that in the fourth sample input, no instructions need to be added, so the answer is 0.
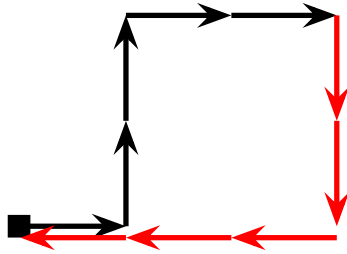
Sample Input 1

Sample Input 2

Sample Input 3

Sample Input 4

Subtasks & Constraints

For all test cases:

- $1 \le K \le 100\,000$.

Additionally:

- For Subtask 1 (35 points), the initial **K** instructions only move the robot north ($\uparrow$) and east ($\rightarrow$). However, you can use any of the four possible instructions to return the robot to the start.

- For Subtask 2 (35 points), the **K** instructions only move the robot east ($\rightarrow$) and west ($\leftarrow$). However, you can use any of the four possible instructions to return the robot to the start.

- For Subtask 3 (30 points), no special constraints apply.