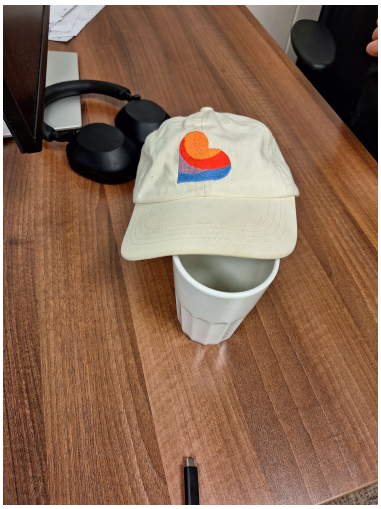
Rotating Mugs

Problem ID: rotatingmugs



At Lovable's office, they have some really cool coffee mugs. Even though the mugs are cool, we model each mug as a simple object with four sides: `North`, `West`, `South`, and `East`.

You have M mugs, indexed from 0 to $M-1$, in front of you, and your task is to rotate the mugs so that the `North` side faces you. However, you may perform only *magical rotations*. A magical rotation consists of the following three steps:

1. Choose integers a and b such that $0 \leq a < M$, $0 \leq b < M-1$, and $a \neq b$. Note that b cannot be the last index.
2. Swap the mugs at indices a and b without rotating them.
3. Take the mug now at index a (the one moved from index b) and its neighbor to the right, then rotate both by $90°$.

When rotating a mug by $90°$:

- A mug with its `North` side facing you will now have its `West` side facing you.
- A mug with its `West` side facing you will now have its `South` side facing you.
- A mug with its `South` side facing you will now have its `East` side facing you.
- A mug with its `East` side facing you will now have its `North` side facing you.

You may wonder whether it is possible to arrange all the mugs so that their `North` sides face you using only magical rotations. To impress the task assigner, you would like to minimize the number of magical rotations.

If you do not have enough mugs on hand to experiment, you can use this website, created by Lovable, to simulate the magical rotations.

Input

The first line contains one integer M ($2 \leq M \leq 5 \cdot 10^5$), the number of cups infront of you.

The second line contains a string of M characters $c_1, c_2, \ldots, c_M$ ($c_i \in \{$"N", "W", "S", "E"$\}$), the character representing the current side of the mug that is faced towards you.

Output

Print one integer, the minimum number of Magical Rotations such that all mugs has the 'North' side faced towards you. If it is impossible, print -1.

Scoring

Your solution will be tested on a set of test groups, each worth a number of points. Each test group contains a set of test cases. To get the points for a test group you need to solve all test cases in the test group.

Group	Points	Constraints
1	15	From the start, all mugs either have their 'North' or 'East' side facing you.
2	25	$M \leq 100$
3	60	No additional constraints.

Sample Input 1	Sample Output 1
2 WW	3

Sample Input 2	Sample Output 2
3 ESE	2