B. Sail

time limit per test

1 second

memory limit per test

256 megabytes

input

standard input

output

standard output

The polar bears are going fishing. They plan to sail from (s_x, s_y) to (e_x, e_y). However, the boat can only sail by wind. At each second, the wind blows in one of these directions: east, south, west or north. Assume the boat is currently at (x, y).

- If the wind blows to the east, the boat will move to $(x + 1, y)$.
- If the wind blows to the south, the boat will move to $(x, y - 1)$.
- If the wind blows to the west, the boat will move to $(x - 1, y)$.
- If the wind blows to the north, the boat will move to $(x, y + 1)$.

Alternatively, they can hold the boat by the anchor. In this case, the boat stays at (x, y). Given the wind direction for t seconds, what is the earliest time they sail to (e_x, e_y)?

Input

The first line contains five integers t, s_x, s_y, e_x, e_y ($1 \le t \le 10^5$, $-10^9 \le s_x, s_y, e_x, e_y \le 10^9$). The starting location and the ending location will be different.

The second line contains t characters, the i-th character is the wind blowing direction at the i-th second. It will be one of the four possibilities: "E" (east), "S" (south), "W" (west) and "N" (north).

Output

If they can reach (e_x, e_y) within t seconds, print the earliest time they can achieve it. Otherwise, print "-1" (without quotes).

Examples

input

```
5 0 0 1 1
SESNW
```

output

```
4
```

input

```
10 5 3 3 6
NENSWESNEE
```

output

```
-1
```

Note

In the first sample, they can stay at seconds 1, 3, and move at seconds 2, 4.

In the second sample, they cannot sail to the destination.