Problem 1—Möbius Maze

Eunice “Lovey” Howell has gotten lost in a maze. Her husband Thurston is in a panic because she happens to have his teddy bear with her. Unfortunately for Mr. Howell, the maze containing Lovey is topologically a Möbius strip, and it's been a long time since Mr. Howell took topology.

The maze has *r* rows and *c* columns. There are boundaries at the northern and southern borders of this maze. However, if Mr. Howell were to step off the western edge, he would magically appear on the eastern edge, and vice versa. But, since this is a Möbius strip, something strange happens. If he steps off the western (or eastern) edge, *k* squares from the northern border, he will appear on the eastern (or western) edge, *k* squares from the *southern* border! Additionally, whenever he crosses the eastern/western edge the north and south directions reverse themselves. North becomes south; south becomes north. (East and west remain the same, though.) So, from Mr. Howell's perspective, even though he is now *k* squares from the southern border, he thinks he is still *k* squares from the northern border because north and south (to him) have changed places. Fortunately, Mrs. Howell is staying put in the maze; only Mr. Howell moves.

Given the maze, and Mr. and Mrs. Howell's initial positions, you are to compute his shortest path through the maze to find Mrs. Howell. You may assume that there *is* such a path, and that the shortest path is unique. Also, presume that when Mr. Howell begins, N and S are unreversed.

INPUT SPECIFICATION. The first line of each input case will consist of six unsigned decimal integers, separated by exactly one space and the line terminated by **<EOLN>**. The first two integers are the row and column (*r* and *c*) of the maze, each inclusively between 2 and 10. The next two integers represent Lovey's row and column; the final two integers represent Thurston's starting row and column. Both positions will be valid, and row and column numbers begin with 1 (e.g. rows go from 1 to *r* rather than from 0 to *r*–1). There will then follow *r* lines of *c* characters each representing the layout of the maze. A 0 character represents a free space; a 1 character represents a boundary. Each line will be terminated by **<EOLN>**. Following the last case will be a single line consisting of 0 followed by **<EOLN>**. This line is not to be processed; it simply represents the end of input.

OUTPUT SPECIFICATION. The output solutions should appear in the same order as their corresponding input cases. Each solution consists of a string of directions (N, S, E, W) corresponding to the shortest path Thurston must take to reach Lovey. Each line should be terminated by **<EOLN>** and there should be no additional **<EOLN>**'s nor any spaces at all anywhere in this file.

SAMPLE INPUT.

```
4·5·3·5·2·2<EOLN>
00000<EOLN>
00000<EOLN>
00000<EOLN>
00000<EOLN>
5·6·4·5·2·1<EOLN>
000000<EOLN>
000000<EOLN>
111111<EOLN>
000001<EOLN>
000000<EOLN>
0<EOLN>
<EOF>
```

SAMPLE OUTPUT.

```
WW<EOLN>
NWWS<EOLN>
<EOF>
```