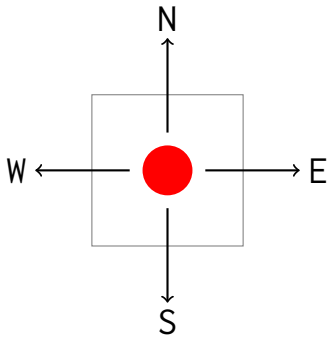
Problem Roboclean

Input data	`stdin`
Output data	`stdout`

Consider a $N \times M$ rectangular room represented as a matrix with N rows (indexed from top to bottom, using natural indices between 1 and N) and M columns (indexed from left to right, using natural indices between 1 and M). A robotic vacuum cleaner is initially placed on a cell at the (L_1, C_1) coordinates, that is guaranteed not to be on the border of the matrix, while the room's exit is at coordinates (L_2, C_2), which can only be a corner of the matrix, i.e. $(1,1)$, $(1,M)$, $(N,1)$, or (N,M).

The vacuum cleaner can be programmed to move one cell at a time in either one of the four possible directions: North (encoded with the letter `N`), South (encoded with the letter `S`), East (encoded with the letter `E`), or West (encoded with the letter `W`).



Write a program that outputs a set of movement instructions for the robotic vacuum cleaner, such that:

- it will be able to clean the maximum possible room surface
- it does not pass over any cell more than once
- the final destination of the robot's path will be the corner cell containing the exit.

Input Data

The input consists of two lines. The first line contains two space separated natural numbers N and M representing the room's dimensions. The second line contains four space separated natural numbers L_1, C_1, L_2, and C_2 representing the coordinates for the initial position of the robotic vacuum cleaner and the coordinates for the corner cell containing the exit, respectively.

Output Data

Output a single line containing a sequence of characters from the set $\{\texttt{N}, \texttt{S}, \texttt{E}, \texttt{W}\}$ representing the movement instructions given to the robot, such that it obeys the rules described above.

The task may admit multiple solutions. Any correct solution will be accepted.

Restrictions

- $4 \leq N, M \leq 1\,000$
- $2 \leq L_1 \leq N - 1$
- $2 \leq C_1 \leq M - 1$
- $L_2 = 1$ or $L_2 = N$
- $C_2 = 1$ or $C_2 = M$
- This problem has individual test scoring. See the notice for more details.

#	Points	Restrictions
1	84	$4 \leq N, M \leq 50$
2	16	No further constraints.

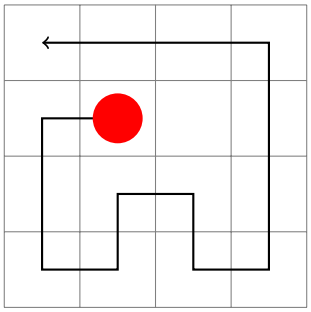
Examples

Input data	Output data
4 4 2 2 1 1	WSSENESENNNWWW
5 6 3 3 5 1	EESSENNNNWSWNWSWNWSSESEESWWW

Explanations

Example 1 The order of the cells over which the robot passes is the following (where ◯ denotes a cell that was not cleaned by the robot)

15	14	13	12
2	1	◯	11
3	6	7	10
4	5	8	9



Example 2 The order of the cells over which the robot passes is the following

19	18	15	14	11	10
20	17	16	13	12	9
21	22	1	2	3	8
◯	23	24	25	4	7
29	28	27	26	5	6