

Move the Robot

A robot is initially at a position (x_{st}, y_{st})

in the 2D plane.

You need to move it to the location (x_{en}, y_{en})

In one move you can make the robot travel one unit in the direction of

- North (Move from (x, y)

to $(x, y+1)$

-)

- South (Move from (x, y)

to $(x, y-1)$

-)

- East (Move from (x, y)

to $(x+1, y)$

-)

- West (Move from (x, y)

to $(x-1, y)$

-)

Find a sequence of moves that results in the robot's location at (x_{en}, y_{en})

, of length no more than 103

.

If there are many solutions, you can print **any** of them.

It can be proven that for the given constraints, there always exists a solution.

Input

First line contains an integer T

, the total number of testcases.

Each testcase contains a single line with four space separated integers $x_{st}, y_{st}, x_{en}, y_{en}$ respectively.

Output

For each testcase print two lines,

In the first line print the number of moves you would like to make. (Say this number is m

)

In the second line print a string with m

characters. The i th

character should be either 'N', 'S', 'E' or 'W' depending on whether you want the robot to move one unit in the North, South, East and West directions respectively.

Constraints

$$1 \leq T \leq 100$$

$$-250 \leq x_{st}, y_{st}, x_{en}, y_{en} \leq 250$$

Sample Input

```
1
0 0 0 1
```

Sample Output

```
5
ENWSN
```

Explanation

After four moves, the robot comes back to the same position and then moves North to the destination.

Note that the single move 'N' is also a valid solution.

As long as the final location of the robot is (x_{en}, y_{en})

and the number of moves is not greater than 1000, your answer will be considered correct.