Movement's direction X76609_en

Given two points $(x1, y1)$ and $(x2, y2)$ in a two-dimensional plane, if we move in a straight line from the first to the second point we advance in one of the following 8 directions: N (north), S (south), E (east), W (west), NE (northeast), NW (northwest), SE (southeast), SW (southwest). For example:

- If we move from $(0, 0)$ to $(0, 5)$ we advance in the N direction;
- If we move from $(0, 5)$ to $(0, 0)$ we advance in the S direction;
- If we move from $(0, 0)$ to $(3, 4)$ we advance in the NE direction;
- If we move from $(3, 4)$ to $(0, 0)$ we advance in the SW direction.

Given a sequence of pairs of points, we want to know, for each pair, the direction in which we move going from the first to the second point.

Input

The input starts with a non-negative integer n. Then, it follows a sequence of n quartets of integers $x1\ y1\ x2\ y2$ representing the pair of points $(x1, y1)$ and $(x2, y2)$. Assume that $(x1, y1)$ and $(x2, y2)$ are different.

Output

For each pair of points $(x1, y1)$ and $(x2, y2)$ in the input sequence, the program outputs the direction in which we move when going from $(x1, y1)$ to $(x2, y2)$. Follow the format of the examples.

Sample input 1

```
8
0 0 0 5
0 5 0 0
0 0 3 4
3 4 0 0
-2 -3 1 -3
2 4 -1 4
-1 -1 0 -5
3 -2 -1 -1
```

Sample output 1

```
N
S
NE
SO
E
O
SE
NO
```

Sample input 2

```
0
```

Sample output 2

Problem information

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