Rectangles (1) P56635_en

In a popular manager of windows, the following definition is used to mantain the information of the visible windows in the screen of the computer:

> **struct** *Rectangle* {
>   **int** *x_left* , *x_right* , *y_down*, *y_up*;
> };

Here, the rectangles have the parallel sides in the axes *x* and *y*, and *x_left* , *x_right* , *y_down* and *y_up* are respectively the minimal horitzontal coordenate, the maxmal horitzontal coordenate, the minimal vertical coordenate, and the maximal vertical coordenate of each rectangle.

Write a procedure that reads a rectangle:

> **void** *read* (*Rectangle* & *r*);

which is given in the input with the four integer numbers *x_left* , *x_right* , *y_down* and *y_up* in this order.

Write also a function that indicates the relationship that have two given rectangles *r1* and *r2*:

> **int** *relationship* (**const** *Rectangle* & *r1*, **const** *Rectangle* & *r2*);

that must return 1 if *r* is inside *r2*, 2 if *r2* is inside *r1*, 3 if none is inside the other one but the rectangles intersect, 4 if the rectangles are identical, and 0 otherwise (if the rectangles do not have ay point in common).

Suppose that two rectangles intersect even if they coincide only in a segment or a point. Moreover, suppose that all the rectangles are correctly formed, that is, that *x_left* is strictly smaller than *x_right* , and that *y_down* is srictly smaller than *y_up*.

Use these definitions and procedures to write a program that reads a series of pairs of rectangles, and for each one prints which relationship have.

Input

Input consists of a natural *n*, followed by *n* lines, each one with two rectangles (eight integer numbers).

Output

For each pair of rectangles, print their relationship as it is shown in the examples.

Sample input

```
6
2 3 4 6      0 5 2 8
0 10 0 10    9 10 0 1
0 2 0 2      1 3 1 3
-1 1 -2 2    -1 1 -2 2
0 1 0 2      5 7 4 7
0 2 0 2      2 4 2 4
```

Sample output

```
the first rectangle is inside the second one
the second rectangle is inside the first one
rectangles intersect
rectangles are identical
rectangles do not intersect
rectangles intersect
```

Problem information

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Generation : 2024-05-02 19:46:30