
Rectangles (1)

P56635_en

In a popular manager of windows, the following definition is used to maintain 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 horizontal coordinate, the maximal horizontal coordinate, the minimal vertical coordinate, and the maximal vertical coordinate 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 any 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 strictly 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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