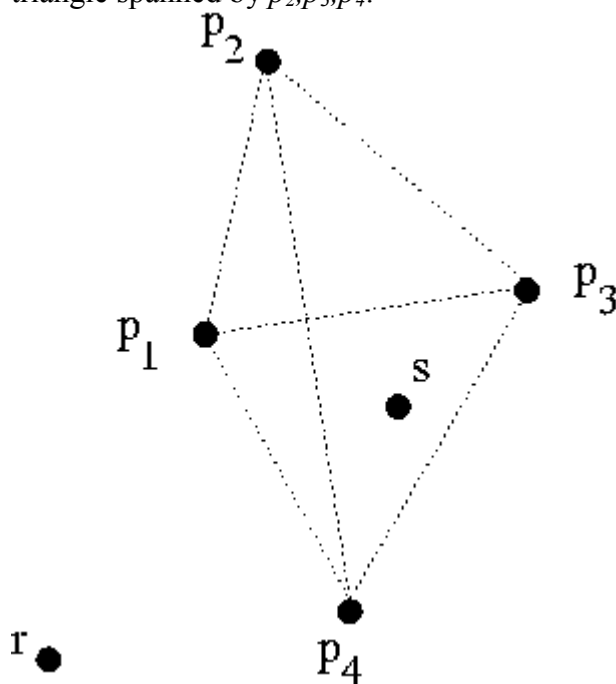


Points

In this problem you will be given a set of points in the Euclidian plane. The number of points in the set will never exceed 100000 . The coordinates of these points will be integer coordinates and will have an absolute value smaller than 10000 . There will be no identical points in the first set. Then you will be given a second set of points. For each point in the second set you will have to determine whether it lies in a triangle spanned by three points in the first set. A point lying on the edge of a triangle is considered to be "inside" the triangle.

In the following example the points p_1, p_2, p_3, p_4 belong to the first set. The points r and s belong to the second set. The point r isn't contained in any triangle spanned by three points of the first set. The point s is contained in two triangles. For example, the triangle spanned by p_2, p_3, p_4 .



Input

You will be given several testcases. A testcases consists of the number of points p , $3 \leq p \leq 100000$ in the first set. It is followed by p pairs of numbers, each describing a point of the first set, the first number of a pair denoting the x -coordinate of the point, the second the y -coordinate. Each pair is on a seperate line. There may be colinear points in the first set. The next number in the input gives you the number of points r in the second set. It is followed by r pairs of numbers, each describing a point, each on a separate line. The first number of a pair being the x -coordinate, the second number being the y -coordinate of the point. All coordinates in the input will be integer coordinates.

Output

For each point in the second set, output if the point lies in a triangle spanned by three points of the first set. If the point lies inside a triangle output **inside** otherwise output **outside**.

Sample input

```
4
0 0
4 4
0 4
4 0
6
2 2
4 4
1 1
0 2
0 10
10 0
```

Sample output

```
inside
inside
inside
inside
outside
outside
```