

EXAMPLE

INPUT.TXT

```
6
0 0
0 50
50 50
50 100
100 100
100 0
```

OUTPUT.TXT

```
70 10
```

Time Limit per Test: 1 second

DAY 2

Problem 1: Crime Statistics (30 points)

A police officer has undertaken the duty to produce statistical data about the crime in a large city. His/her project is to find for a convex area in the city how many of the committed crimes took place there.

INPUT

Your program should read the input from the file INPUT.TXT as follows. The first line contains an integer N ($3 \leq N \leq 1000$) which represents the number of corners of the convex area in question. The N following lines contain two integers X and Y each (ranging from -1000 to 1000) separated by a space character, which represent the coordinates of the corners in order around the area's border. The next line contains an integer M ($1 \leq M \leq 10000$) which is the number of committed crimes. The following M lines contain two integers X and Y each (ranging from -1000 to 1000) separated by a space character, which represent the coordinates of the location of a crime.

OUTPUT

Your program should write its output to the file OUTPUT.TXT as follows. There is one line containing an integer, which is the number of crimes that took place inside or on the border of the specified area.

EXAMPLE

INPUT.TXT

```
4
0 0
0 100
100 100
100 0
2
50 50
-30 50
```

OUTPUT.TXT

```
1
```

Time Limit per Test: 1 second

DAY 2

Problem 2: River Highwater (30 points)

Westmouth and Eastmouth are two towns located on the west and east banks of river Highwater respectively; Westmouth is to the south of Eastmouth. The river's banks, which are polygonal lines, are such that an east-west line intersects each one of them in exactly one point. Captain Hook sails frequently between the two towns. In order to minimize his fuel expenses, he would like to find the shortest route from Westmouth to Eastmouth.

INPUT

Your program should read the input from the file INPUT.TXT as follows.

The first line contains two integers M and N ($2 \leq M, N \leq 2000$) which represent the number of corners of the west and east bank respectively. The M lines that follow contain two integers X and Y each ($0 \leq X, Y \leq 3600$), which represent the coordinates of the west bank's corners from Westmouth to a point at the same geographic latitude (that is, the same Y-coordinate) as Eastmouth. The N lines that follow contain two integers X and Y each ($0 \leq X, Y \leq 3600$), which represent the coordinates of the east bank's corners from a point at the same geographic latitude (that is, the same Y-coordinate) as Westmouth to Eastmouth.

OUTPUT

Your program should write its output to the file OUTPUT.TXT as follows.

The lines contain two integers X and Y each, separated by a space character, which are the coordinates of the corners of the route from Westmouth to Eastmouth. (It is clear that the first line should have the coordinates of Westmouth and the last line the coordinates of Eastmouth).

EXAMPLE

INPUT.TXT

```
3 3
0 0
50 50
0 150
100 0
50 100
100 150
```

OUTPUT.TXT

```
0 0
50 50
50 100
100 150
```

Time Limit per Test: 1 second

DAY 2

Problem 3: Knowing people (40 points)

A gathering is taking place in a large room. Each participant may know none, some, or all the other participants. We want to see whether there is a way to place all these people in a queue, so that for everyone in the queue, his/her acquaintances located behind him/her all know each other.

INPUT

Your program should read an input file INPUT.TXT that has the following structure.

The first line contains the total number N of people ($1 \leq N \leq 50$). The second line contains the total number M of pairs of people that know each other ($0 \leq M \leq 1225$). Each of the following M lines contains two integers I and J ($1 \leq I, J \leq N$) separated by a space character and indicates that persons I and J know each other.

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OUTPUT

Your program should produce an output file OUTPUT.TXT that should be as follows.

The first line contains the string "YES" if there is a way to place all the people in a queue; otherwise, the