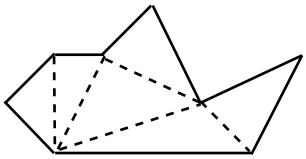
2009 DESPERATE MEASURES

Far below that small knot of villages known as *The Endians*, lie caverns measureless to man. But no more. Recent subsidence has had worried villagers sending down spelunkers to map the caverns so that supporting beams can be added.

Several caverns have already been mapped. In a cross section of each cavern, the floor and ceiling consist of a sequence of joined straight lines, which run contiguously from left to right. In other words, the end point of each straight line is always further right than its start. The map is also efficient — the angle between two successive lines is never 180°. Ceilings and floors never touch, except at the extreme left and right of the caverns where they meet.

Supporting beams are to be added to each cavern. To prevent deformation these beams, which can be of any length, are to divide the cavern up into triangles. Beams are not allowed to cross and the endpoints of the beams must be at the endpoints of the lines defining the floor and ceiling. No other point on a beam may touch the floor or ceiling.



For example, the diagram shows a typical cavern cross-section. The ceiling starts at (0,1), goes up to (1,2), across to (2,2), up to (3,3), down to (4,1) and ends at (6,2). The floor starts at (0,1), goes down to (1,0), across to (5,0) and ends at (6,2). The dotted lines show a potential set of beams.

SAMPLE INPUT

```
6 4
0 1
1 2
2 2
3 3
4 1
6 2
0 1
1 0
5 0
6 2
```

Write a program which, given the map of the ceiling and floor, gives a valid set of beams. The first line of the input will contain a pair of integers, c *(3 ≤ c < 50,000)* followed by f *(3 ≤ f < 50,000)*, indicating the number of co-ordinates defining the ceiling and floor respectively. This will be followed by c lines, giving the co-ordinates from left to right for the ceiling, then f lines giving the co-ordinates from left to right for the floor. Each line will give the X co-ordinate followed by the Y co-ordinate, and co-ordinates will be integers between 0 and 2^{30} inclusive.

Your output should consist of a list of the beams, one on each line. Each beam should be given by the co-ordinates of its start point (X then Y), followed by those of its end point (X then Y).

SAMPLE OUTPUT

```
1 0 1 2
1 0 2 2
1 0 4 1
2 2 4 1
4 1 5 0
```