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 <= M, N <= 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 <= X, Y <= 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 <= X, Y <= 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	OUTPUT.TXT
3 3	0 0
0 0	50 50
50 50	50 100
0 150	100 150
100 0	
50 100	
100 150	

Time Limit per Test: 1 second