UCF "Practice" Local Contest — August 19-23, 2024

World Cup Fever

filename: `soccer`
Difficulty Level: `Medium`
Time Limit: `2 seconds`

The 2018 World Cup was held in Russia. Some great soccer countries (e.g., Italy, Netherlands, Chile, USA) did not qualify for this World Cup. These countries found out that they needed more effective passing.

The Problem:

Given the player positions for two teams, determine the minimum number of passes needed to get the ball from one player to another player. For the purposes of this problem, players do not change position, i.e., they do not move.

Player P_1 can pass the ball directly to P_2 if they are on the same team and no other player is in between the two players.

Let's assume:

- P_1 and P_2 are on the same team
- P_1, P_2, P_3 form a line with P_3 between P_1 and P_2
- There are no other players on the line formed by P_1, P_2, P_3

Then,

- If P_3 is on the other team, P_1 cannot pass the ball directly to P_2.
- If P_3 is on the same team, P_1 can pass the ball to P_3 to pass it to P_2.

The Input:

The first input line contains an integer, n ($2 \leq n \leq 11$), indicating the number of players on each team. The second input line contains $2n$ integers, providing the (x,y) coordinates for the n players on Team 1; the first integer on this input line is the x coordinate for Player 1, the second integer is the y coordinate for Player 1, the third integer is the x coordinate for Player 2, etc. The third input line provides (in a similar fashion) the (x,y) coordinates for the n players on Team 2. Assume that all coordinates are integers between 1 and 999 (inclusive) and that all players are on distinct locations, i.e., no two players occupy the same spot (point).

Assume Player 1 on Team 1 has the ball and wants to pass the ball to Player n on Team 1. Assume that any player can pass the ball any distance.

The Output:

The output consists of a single integer, indicating the minimum number of passes needed to get the ball from Player 1 on Team 1 to Player n on Team 1. If it is not possible to get the ball from Player 1 to Player n, print `-1`.

Sample Input	Sample Output
3 10 15 13 17 10 19 10 17 16 17 13 19	2
5 1 1 3 1 5 1 7 1 9 1 2 1 4 1 6 1 8 1 10 1	-1
3 1 1 5 5 2 2 10 10 50 50 20 20	1