The knights' meeting

Cost: 14 | Solved: 42

Memory limit: 256 MBs

Time limit: 1 s

Input: standard input

Output: standard output

Task:

The Green knight and the Red knight live in an 8*8 chessboard. Usually they just gallop around and eat grass, but today is a special day: it's the Green knight's birthday! He chose to celebrate this event with the Red knight. But to make this happen they have to meet in one cell at the same time.

The Red and Green knights are different from usual black and white: they go simultaneously and don't eat each other after appearing in the same cell. How many turns would they have to take to make the celebration happen?

Input:

The first line contains coordinates (x_1, y_1) of the cell the Red knight stands in.

The second line contains coordinates (x_2, y_2) of the cell the Green knight stands in.

Output:

The first line should contain the minimal number of turns ***k*.**

The next ***k*** lines should contain four numbers each – firstly – the move of the Red knight, secondly – the move of the Green knight.

If it's impossible to make the knights meet, write -1.

Example:

Input	Output

1 1 1 3	1 3 2 3 2
1 6 4 1	2 3 7 5 3 4 5 4 5