Problem A - All we hear is Radio GaGa!

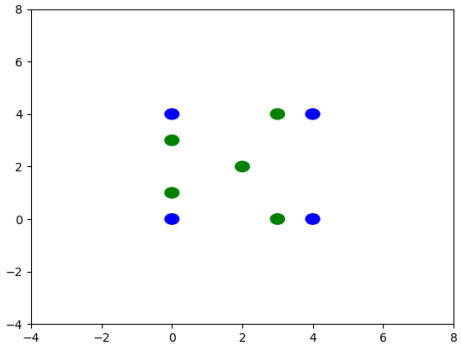
Description

You are the head member of a Pirate Radio named **Radio GaGa**. Your clandestine emissions are attracting more and more listeners, but your distribution infrastructure is small and provides limited geographical coverage, thus denying listeners from farther distances the opportunity to listen the fantastic contents that Radio GaGa broadcasts on a daily basis.

There is only one option: expand the infrastructure! To do so, you have identified the locations of new listeners that manifested interest in the radio and candidate locations to install new antennas to extend the coverage of Radio GaGa. However, Radio GaGa has a low budget and the investments in new antennas must be done with caution... There are different antenas with different coverage radius and costs, and the choice of which type of antenna is to be installed in which locations is critical.

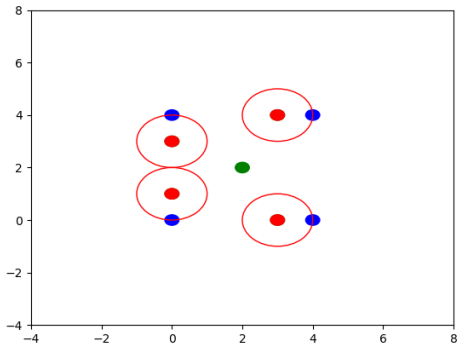
Your job is to decide which antennas to place at which locations in order to provide full coverage to all the new listeners spending the least money you can.

Consider the following image, showing in blue the locations of the new listeners and in green the possible locations for new antennas.



Imagine you can choose between 2 different types of antennas: Antenna A with coverage of radius of 1 Km that costs 1k euros and Antenna B with coverage of radius of 5 Km that costs 5k euros.

The cheapest solution is presented in the following figure, using 4 antennas A placed at the red locations



Note that there may be cases in which you cannot provide coverage to all the new

listeners.

Input

Each test case starts with the number of new listeners, $1 \leq p \leq 200$. Each of the following p lines contains two integers, the (x,y)-coordinate of the location of a new listener, in Km ($0 \leq x \leq 99$ and $0 \leq y \leq 99$).

Then, a line with the number of possible places to install new antennas, $1 \leq n \leq 100$. Each of the following n lines contains two integers, the (x,y)-coordinate of a possible place to install an antenna, in Km ($0 \leq x \leq 99$ and $0 \leq y \leq 99$).

Then, a line with the number of different types of antennas you have available, $1 \leq t \leq 10$. Each of the following t lines contain two integers (r, c), representing the coverage radius r (in Km) and the installation costs c (in thousands of euros) for that type of antena ($1 \leq r \leq 100$ and $1 \leq c \leq 1000$).

Please note that each input file contains only one test case.

Output

You shoud print one integer with the minimum cost needed to provide coverage for all the new listeners, followed by a '\n'

If it is impossible to provide coverage for all the new listeners, the output should be the text *no solution* followed by a '\n'.

Visualization

A python script is available at https://git.dei.uc.pt/snippets/18 which you can use to plot the test case and respective solution, that might help you to visualize them. If you want to use it, follow the instructions in the script.

Example 1

Example input:

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

Example output:

```
4
```

Example 2

Example input:

```
5
0 0
0 4
4 0
4 4
20 20
5
0 1
0 3
2 2
3 0
3 4
2
1 1
4 5
```

Example output:

```
no solution
```
