11612   Sultan and Khairun Shundori

Flowerland is in festive mood. Their princess Khairun Shundori will choose her life-partner today. Princes and handsome young men from distant and neighboring countries have gathered in the capital. Princess will interview them one after one. Among these young men, theres Sultan from Codeland.

The interviews start. One after one, failed young men get out of King's castle in great disappointment. Then comes our hero Sultan. He impresses the Princess with his amazing grace and smartness. He passes all the tests the Princess poses before him. Almost impressed, the Princess gives him one last task — he have to collect roses from all the gardens in the city for her.

Seems like an easy task, doesn't it? Especially when Sultan has already pin-pointed every garden in the city using Google Maps. But there are some catches — as soon as Sultan gets out of the castle, the losers will try to kill him out of jealousy. Sultan will be followed and followed in great number. So he can't afford to take the risk of going through a point he previously visited i.e. he can't intersect his previous path. Then again, he wants to finish this task as soon as possible. So he will always run from one garden to another in a straight line.

Input

There will be at most 50 test cases. Each test case starts with an integer n, number of points of interest (one of them is the castle and the rest are gardens) $[3 \leq n \leq 1000]$. Each point of interest will be specified by the integer (x, y) co-ordinate of that point $[-10000 \leq x, y \leq 10000]$. No two points of interest will be located in the same co-ordinate. The castle will always be the first point in input. Sultan has to start and end his journey in the Castle. Input is terminated by a case where n equals 0.

Output

For each test case, you have to output a sequence of indices of points of interest in one line that will ensure the task. Any sequence that doesn't violate the conditions will be accepted. Points will be indexed from 0 in the output. If there is no valid sequence for the input, you have output 'no solution'.

Sample Input

```
4
0 0
1 0
1 1
0 1
5
5 5
10 0
10 10
0 10
0 0
0
```

Sample Output

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