

Interval Cover

Problem ID: intervalcover


CPU Time limit: 2 seconds

Memory limit: 1024 MB

Difficulty: 5.8

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For this problem, you are given two things: a numeric interval $[A, B]$, and a list of other numeric intervals which, when combined, should “cover” (overlap completely with) the interval $[A, B]$. In particular, you should find a *minimal* set of the intervals needed for the cover.

Input

The input consists of up to 30 test cases. Each test case begins with two real numbers $A \leq B$, indicating that $[A, B]$ is the interval to be covered. Then follows an integer $1 \leq n \leq 20\,000$, giving the number of intervals available. After this follow n lines, the i 'th of which contains two real numbers $a_i \leq b_i$, indicating that the i 'th interval is $[a_i, b_i]$. All real numbers have at most 6 digits after the decimal point.

Output

For each test case, output one line containing the minimal number of intervals needed to cover $[A, B]$, followed by a line containing the indices of one such optimal covering (the first interval has index 0, the second index 1, and so on). The intervals can be given in any order.

If it is not possible to cover $[A, B]$ using the intervals, output a line containing the word “impossible” instead.

Sample Input 1

```
-0.5 1
3
-0.9 -0.1
-0.2 2
-0.7 1
0 1
3
0 0.25
0.25 0.75
0.75 0.999
0 1
3
0 0.25
0.25 0.75
0.75 1
1 1
1
1 1
```

Sample Output 1

```
1
2
impossible
3
0 1 2
1
0
```