

Task: PRA

Lawyers



XXV OI, Stage I. Source file pra.* Available memory: 128 MB.

16.10–13.11.2017

“Byteasar & sons” law office has received an urgent and demanding assignment from an important client. The case requires k out of n of the firm’s lawyers to hold a meeting. Every lawyer has a contiguous interval of available time in which they are not otherwise engaged. We seek a subset of lawyers that maximizes the maximum possible meeting’s duration, i.e., has the longest interval in which all the selected lawyers are available.

Input

The first line of the standard input contains two integers n and k ($1 \leq k \leq n$), separated by a single space, which specify the number of lawyers in the firm and the number of lawyers to hold the meeting. The next n lines detail the lawyers’ availability; the i -th such line contains two integers a_i and b_i ($1 \leq a_i < b_i \leq 10^9$), separated by a single space, which indicate that the i -th lawyer is available throughout the time period starting at a_i and ending at b_i .

Output

The maximum possible duration of the meeting should be printed to the first line of the standard output. You may assume that it is possible to hold a meeting of duration at least 1. The second line of output should contain a sequence of k integers, separated by single spaces, which are the numbers of lawyers to hold the meeting. Should there be more than one correct answer, your program can pick one among them arbitrarily.

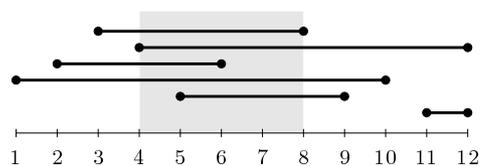
Example

For the following input data:

```
6 3
6 3
3 8
4 12
2 6
1 10
5 9
11 12
```

a correct result is:

```
4
1 2 4
```



Explanation for the example: The maximum possible duration of a meeting of three lawyers is 4: the meeting starts at 4, ends at 8, and can be attended by lawyers no. 1, 2, and 4. Another equally good solution is a meeting of the lawyers no. 2, 4, and 5, from 5 till 9.

Sample grading tests:

- 1ocen:** $n = 7$, $k = 3$, two groups of lawyers that satisfy the requirements;
- 2ocen:** $n = k = 1000$, $a_i = i$, $b_i = 10^6 + i$;
- 3ocen:** $n = 1000$, $k = 1$, $a_i = 2i - 1$, $b_i = 2i$.

Grading

The set of tests consists of the following subsets. Within each subset, there may be several unit tests.

If your program prints the correct number in the first line but the rest of its output is incorrect, you will receive 40% of the points for a given test.

Subset	Property	Score
1	$n \leq 20$	20
2	$n \leq 300$ and $a_i, b_i \leq 300$	15
3	$n \leq 5000$	15
4	$n \leq 1\,000\,000$ and $k = 1$ or $k = n$	15
5	$n \leq 1\,000\,000$	35