TIME: 05:07/03:00:00 Submit Code

Problem Statement

Raju and marriage ceremony (100 Marks)

Raju is attending a marriage ceremony. There are lot of people who are coming and going from the gate. Raju is standing near the gate and observing everything. There are **N** persons and for each person Raju knows A_i and B_i which is the time interval in seconds $[A_i, B_i]$ in which a person is present at the gate. Now Raju wants to answer 2 queries:

Query 1: The maximum number of people which can be present at the gate at any point of time.
Query 2: The maximum time at which there are exactly **P** people standing at the gate.

Note: If there is no such time for **Query 2** then output **-1** for the query.

Input Format

First line of input contains an Integer **N** i.e. the number of rows.
Second line of input contains Integer 2 i.e. the number of columns.
Next **N** lines of input containing two space separated integers A_i and B_i.
Next line contains an Integer **P**.

Constraints

1 <= **N** <= 100000
1 <= A_i <= B_i <= 10^6
1 <= **P** <= 100000

Output Format

2 space separated integer denoting answer to the **Query1** and **Query2** respectively.

Sample TestCase 1

Input

```
5
2
1 4
3 5
3 8
5 9
4 10
3
```

Output

```
4 8
```

Explanation

Query 1: The maximum number of people which can be present at the gate at any point of time.

```
1 2 3 4
    3 4 5
    3 4 5 6 7 8
        5 6 7 8 9
      4 5 6 7 8 9 10
```

Here, in this case at point of time 4 and 5 - we have maximum 4 people. Hence, answer for Query 1 is 4.

Query 2: The maximum time at which there are exactly P people standing at the gate.

```
1 2 3 4
    3 4 5
    3 4 5 6 7 8
        5 6 7 8 9
      4 5 6 7 8 9 10
```

Here, P=3, So, 8 will be maximum common time for 3 people standing at the gate at one time.

Sample Problem with Solution (https://www.techgig.com/platform-faq)