Benevolent Professor: Passing All Students

In a tough examination conducted by a kind-hearted professor, there are **N students** from various academic backgrounds. The students are categorized into **K classes** based on their academic performance.

After the examination, each student eagerly awaits the results, hoping to pass the exam. However, the professor has a unique approach to grading the students. **A student is declared as passed if all the students who scored higher marks than him belong to better classes** (with smaller indices than his own).

Ultimately, the professor intended to make sure all the students pass while going through this grading process. So, the professor decided to keep conducting exams until every student managed to pass. Also, **he can decide which students participate in each exam**.

Your goal is to determine the minimum number of exams needed such that every student passes at least once.

Input Format

- The first line contains two integers **N** and **K**, where **N represents the number of students** and **K represents the number of classes**.
- Each of the next N lines contains two integers a_i and b_i. The first integer a_i represents the class of student **i**, while the second integer b_i represents his rank in the exam among all N students.

Constraints

- $1 \leq K \leq N \leq 10^5$
- There will be at least one student from each class
- The value b will be a permutation from 1 to N

Output Format

- Print the minimum number of exams needed such that every student passes at least once.

Sample Input 0

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

Sample Output 0

```
4
```

Explanation 0

Note that all students are in the same class. This means that the rank is determined only by the second value, in rank in the exam with all students.

One way to make 4 exams would be: 2 3 1 3 4 3 4

Sample Input 1

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

Sample Output 1

```
2
```

Explanation 1

One way to make 2 exams would be: 3 1 4 2 4 2

- In the first exam, both student 3 and 1 will pass. Because student 3 has a better class compared to 1.
- In the second exam, remaining 2 students also will pass. Because student 4 has a better class compared to 2.

Sample Input 2

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

Sample Output 2

```
3
```

Explanation 2

One way to make 3 exams would be: 3 2 5 4 1 2 4 1 1

- In the first exam, student 3 and 5 will pass. Student 2 who was placed in front of 5 won't pass. (Because student 2 has a better class than 3)
- In the second exam, student 2 and 4 will pass.
- In the third exam, student 1 will pass