

Coders Collaborate

time limit per test: 1 second (2 seconds for Python)
memory limit per test: 976.6 megabytes
input: standard input
output: standard output
points: 100 · problem code: codersassemble

In MonTech, there are M collaborative projects, each uniquely identified from 1 to M . Today, N coders assemble, numbered from 1 to N . Due to the multitude of projects, each coder will only contribute to a specific range of projects. The i -th coder will contribute to projects numbered a_i -th, $(a_i + 1)$ -th, ..., b_i -th project.

You are given a task. For each coder, what is the number of other coders they are collaborating with?

Note: Two coders are collaborating if and only if, they contribute to one or more projects with the same id.

Input

The first line contains two integers, N and M – the number of coders and projects respectively.

The next N lines contain two integers each a_i, b_i – the numbers of the projects that the i -th coder is contributing to.

Output

N lines, where the i -th line contains the number of other coders that are collaborating with the i -th coder.

Constraints

- $1 \leq N \leq 2 \times 10^5$
- $1 \leq M \leq 10^9$
- $1 \leq a_i \leq b_i \leq M$

Example 1

Input

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

Output

```
2
3
3
4
2
```