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 Please read [the new rule regarding the restriction on the use of AI tools](#).

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## D. Robert Hood and Mrs Hood

 time limit per test: 2 seconds  
 memory limit per test: 256 megabytes

*Impress thy brother, yet fret not  
thy mother.*

Robin's brother and mother are visiting, and Robin gets to choose the start day for each visitor.

All days are numbered from 1 to  $n$ . Visitors stay for  $d$  continuous days, all of those  $d$  days must be between day 1 and  $n$  inclusive.

Robin has a total of  $k$  risky 'jobs' planned. The  $i$ -th job takes place between days  $l_i$  and  $r_i$  inclusive, for  $1 \leq i \leq k$ . If a job takes place on any of the  $d$  days, the visit overlaps with this job (the length of overlap is unimportant).

Robin wants his brother's visit to overlap with the maximum number of **distinct jobs**, and his mother's the minimum.

Find suitable start days for the visits of Robin's brother and mother. If there are multiple suitable days, choose the earliest one.

### Input

The first line of the input contains a single integer  $t$  ( $1 \leq t \leq 10^4$ ) — the number of test cases.

The first line of each test case consists of three integers  $n, d, k$  ( $1 \leq n \leq 10^5, 1 \leq d, k \leq n$ ) — the number of total days, duration of the visits, and the number of jobs.

Then follow  $k$  lines of each test case, each with two integers  $l_i$  and  $r_i$  ( $1 \leq l_i \leq r_i \leq n$ ) — the start and end day of each job.

It is guaranteed that the sum of  $n$  over all test cases does not exceed  $2 \cdot 10^5$ .

### Output

For each test case, output two integers, the best starting days of Robin's brother and mother respectively. Both visits must fit between day 1 and  $n$  inclusive.

### Example

input

Copy

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

### Codeforces Round 974 (Div. 3)

Finished

Practice



### → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

### → Submit?

Language: GNU G++20 13.2 (64 bit, w...

Choose file: Choose File No file chosen

Submit

### → Problem tags

sortings sortings

No tag edit access

```
7 9
4 8
1 3
2 3
```

**output**

Copy

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

**Note**

In the first test case, the only job fills all 2 days, both should visit on day 1.

In the second test case, day 2 overlaps with 2 jobs and day 1 overlaps with only 1.

In the third test case, Robert visits for days [1, 2], Mrs. Hood visits for days [4, 5].

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