9/21/24, 11:06 PM Problem - D - Codeforces





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Please read the new rule regarding the restriction on the use of Al tools.

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PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS STANDINGS CUSTOM INVOCATION

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 $1 \le i \le k$. 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 ($1 \le t \le 10^4$) — the number of test cases.

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

 $1 \leq n \leq 10^{\circ}, 1 \leq d, k \leq n)$ — the number of total days, duration of the visits, and the number of jobs.

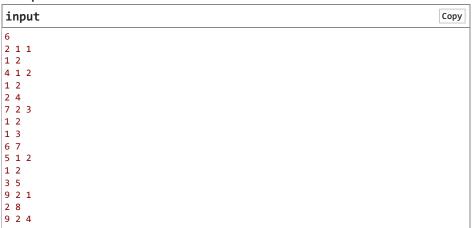
Then follow k lines of each test case, each with two integers l_i and r_i ($1 \le l_i \le r_i \le n$) — the start and end day of each job.

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

Output

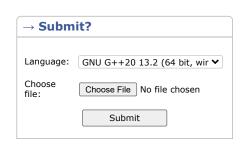
For each test case, output two integers, the best starting days of Robin's brother and mother respectively. Both visits must fit between day 1 and n inclusive.

Example

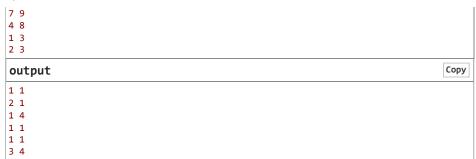


Finished Practice









Note

In the first test case, the only job fills all $2\ \mbox{days}$, 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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