时间限制：C/C++/Rust/Pascal 4秒，其他语言8秒

空间限制：C/C++/Rust/Pascal 512 M，其他语言1024 M

64bit IO Format: %lld

题目描述

The input data for this problem is large, please use a faster input method.

In a mysterious spacetime, there are x unknown energies, numbered from 1 to x. These energies appear at specific times and positions, following these rules:

1. **Spacetime Appearance Rule**:

- There are n different time points, numbered from 1 to n.
- At time point t, all energies in the interval $[l, r]$ will appear and disappear at time point $t + 1$.

2. **Generation Rule**:

- There are m generators, numbered from 1 to m. Each generator i requires all energies in the interval $[L_i, R_i]$.
- If at some integer time point t, at least k_i energies in the interval $[L_i, R_i]$ appear simultaneously, then generator i will be activated at time point t.
- Each generator is activated only once at the earliest moment when requirements are met.

You need to process q queries. Each query gives `tl tr l r`, asking:

- Within the time range $[\mathrm{tl}, \mathrm{tr}]$, what is the earliest time point t such that: there exists some generator i satisfying $l \leq L_i \leq R_i \leq r$ that is activated at time point t.
- If no such t exists, output -1.

输入描述：

The first line contains a number $1 \leq T \leq 10^5$, indicating there are T test cases, each in the following format:

The first line contains four integers $1 \leq n, m, x, q \leq 5 \times 10^5$.

The next n lines, each containing three integers $1 \leq t \leq 10^9$, $1 \leq l \leq r \leq x$, indicating that at time point t, all energies in interval $[l, r]$ appear. (The problem guarantees all time points are different)