

Problem H. Teyberrs

Input file: **standard input**
 Output file: **standard output**
 Time limit: 8 seconds
 Memory limit: 512 megabytes

Teyberrs is a paradise for birds to live in. Assume you are a bird in Teyberrs, you are now flying somewhere like the game “Flappy Bird”. You start flying at $(0, s)$, and every time when you are at $(x-1, y)$ ($1 \leq x \leq n$), you must fly to either $(x, y-1)$ with cost a_x or $(x, y+1)$ with cost b_x . Like the map in “Flappy Bird”, you can not hit obstacles at (x, y) where $y < l_x$ or $y > r_x$.

You will be given q queries. In each query, you will be given two integers x and y . Assume your target is at (x, y) , can you find the path with the minimum cost, or determine it is impossible?

Input

The first line contains a single integer T ($1 \leq T \leq 200$), the number of test cases. For each test case:

The first line of the input contains three integers n, q and s ($1 \leq n, q \leq 200\,000, 1 \leq s \leq n$), denoting the size of the map, the number of queries, and the start point.

In the next n lines, the i -th line contains four integers a_i, b_i, l_i and r_i ($1 \leq a_i, b_i \leq 10^9, 1 \leq l_i \leq r_i \leq n$).

In the next q lines, the i -th line contains two integers x and y ($1 \leq x, y \leq n$), describing a target point.

It is guaranteed that the sum of all n is at most 1 000 000, and the sum of all q is at most 1 000 000.

Output

For each query, print a single line containing an integer, denoting the minimum total cost. When it is impossible to reach the target, please print “-1” instead.

Example

standard input	standard output
1	1
3 9 2	-1
1 2 1 3	2
3 1 2 3	-1
4 3 1 2	2
1 1	-1
1 2	6
1 3	-1
2 1	-1
2 2	
2 3	
3 1	
3 2	
3 3	