

Problem A. Mines

Input file: *standard input*
Output file: *standard output*
Time limit: 3 seconds
Memory limit: 256 mebibytes

There are N mines on the number line. Mine i is at position p_i and has an explosion radius r_i . It initially costs c_i to detonate. If mine i is detonated, an explosion occurs on interval $[p_i - r_i, p_i + r_i]$ and all mines in that interval (inclusive of the endpoints) are detonated for free, setting off a chain reaction. You need to process Q operations of the form (m, c) : Change the cost of detonating mine m to c . Output the minimum cost required to detonate all mines after each change. Note that each change is permanent.

Input

The first line contains integers N and Q ($1 \leq N, Q \leq 200\,000$). The next N lines contain information on the mines. The i -th of these lines contains integers p_i, r_i and c_i ($1 \leq p_i, r_i, c_i \leq 10^9$). The next Q lines each contains space separated integers m and c ($1 \leq m \leq N, 1 \leq c \leq 10^9$).

Output

Output Q lines. The i -th line should contain the minimum cost required to detonate all mines after the i -th operation.

Example

standard input	standard output
4 2	4
1 1 1	6
6 3 10	
8 2 5	
10 2 3	
1 1	
4 11	