Problem H. Helesta

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

You are given n points (x_i, y_i), $1 \le i \le n$ and m sets $S_j = \{(x_i, y_i) \mid A_j x_i + B_j y_i + C_j > 0\}$ $(1 \le j \le m)$.

You need to find a permutation $p_1, \ldots, p_m$ of $1, 2, \ldots, m$, such that $|S_{p_1}| + \sum_{i=2}^{m} |S_{p_i} \oplus S_{p_{i-1}}| \le M$, where $M = 1.8 \times 10^8$ is a given constant and $A \oplus B$ means $(A \cup B) - (A \cap B)$.

If there are several possible answers, you can print any of them.

Input

The first line contains two integers n, m $(1 \le n \le 10^5, 1 \le m \le 2 \times 10^5)$.

Each line in the next n lines contains two integers x_i, y_i $(-10^8 \le x_i, y_i \le 10^8)$.

Each line in the next m lines contains three integers A_j, B_j, C_j $(-10^8 \le A_j, B_j, C_j \le 10^8)$.

It is guaranteed that $A_j^2 + B_j^2 > 0$ for $1 \le j \le m$.

Output

Print m lines. In the i-th line, print a single integer p_i.

Example

standard input	standard output
5 3 2021 700 -9384 1031 2201 2561 4982 6255 -1700 388 -2151 1808 -4359815 -2850 -1980 7147359 -924 217 -8902828	2 1 3