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PROBLEMS   SUBMIT   STATUS   STANDINGS   CUSTOM TEST

G. Multidimensional Queries

time limit per test: 6 seconds
memory limit per test: 512 megabytes
input: standard input
output: standard output

You are given an array a of n points in k-dimensional space. Let the distance between two points a_x and a_y be $\sum_{i=1}^{k} |a_{x,i} - a_{y,i}|$ (it is also known as Manhattan distance).

You have to process q queries of the following two types:

- $1\ i\ b_1\ b_2\ ...\ b_k$ — set i-th element of a to the point $(b_1, b_2, \ldots, b_k)$;
- $2\ l\ r$ — find the maximum distance between two points a_i and a_j, where $l \le i, j \le r$.

Input

The first line contains two numbers n and k ($1 \le n \le 2 \cdot 10^5$, $1 \le k \le 5$) — the number of elements in a and the number of dimensions of the space, respectively.

Then n lines follow, each containing k integers $a_{i,1}, a_{i,2}, ..., a_{i,k}$ ($-10^6 \le a_{i,j} \le 10^6$) — the coordinates of i-th point.

The next line contains one integer q ($1 \le q \le 2 \cdot 10^5$) — the number of queries.

Then q lines follow, each denoting a query. There are two types of queries:

- $1\ i\ b_1\ b_2\ ...\ b_k$ ($1 \le i \le n$, $-10^6 \le b_j \le 10^6$) — set i-th element of a to the point $(b_1, b_2, \ldots, b_k)$;
- $2\ l\ r$ ($1 \le l \le r \le n$) — find the maximum distance between two points a_i and a_j, where $l \le i, j \le r$.

There is at least one query of the second type.

Output

Print the answer for each query of the second type.

Example

input	Copy

```
5 2
1 2
2 3
3 4
4 5
5 6
7
2 1 5
2 1 3
2 3 5
1 5 -1 -2
2 1 5
1 4 -1 -2
2 1 5
```

output	Copy

```
8
4
4
12
10
```

Educational Codeforces Round 56 (Rated for Div. 2)
Finished
Practice
⭐

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest]

→ Clone Contest to Mashup

You can clone this contest to a mashup.

[Clone Contest]

→ Submit?

Language: GNU G++11 5.1.0 ▼
Choose file: 选择文件 未选择任何文件

[Submit]

→ Last submissions

Submission	Time	Verdict
47073811	Dec/15/2018 19:34	**Accepted**

→ Problem tags

bitmasks ✕   data structures ✕

Add tag

→ Contest materials

- Announcement   ✕

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