

Big number only

We call:

$F1(x,y)$ is $x*y$.

$F2(x,y)$ is x/y if x/y is an integer, else it is 1.

$F3(x,y)$ is the max number k that $x/k, y/k$ are integer.

$F4(x,y)$ is the min number k that more than 0 and $k/x, k/y$ are integer.

For S is an array of integer. First, all of them are one. We have Q query that one forms of:

1 x y k : Change $a[x]$ become $Fk(a[x], y)$.

2 x y k : Change $a[x]$ become $Fk(a[x], a[y])$.

3 x y : Let 4 number: $F1(a[x], a[y]); F2(a[x], a[y]); F3(a[x], a[y]); F4(a[x], a[y])$.

Input:

The first line: Two integer, n is the size of S and number Q .

One of Q line next is a query.

Output:

Many line, one of them is result of a query that type 3.

Example:

Input:

2 4

1 2 100 1

3 1 2

1 2 1000 2

3 1 2

Output:

100 1 1 100

1 1 1 1

Note:

$0 < n, Q < 10001$;

In the query of type 1: $0 < x < n+1$; $0 < k < 5$; $0 < y < 10001$.

In the query of type 2: $0 < x, y < n+1$; $0 < k < 5$.

In the query of type 3: $0 < x, y < n+1$.