

E. DZY Loves Colors

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

DZY loves colors, and he enjoys painting.

On a colorful day, DZY gets a colorful ribbon, which consists of n units (they are numbered from 1 to n from left to right). The color of the i -th unit of the ribbon is i at first. It is colorful enough, but we still consider that the colorfulness of each unit is 0 at first.

DZY loves painting, we know. He takes up a paintbrush with color x and uses it to draw a line on the ribbon. In such a case some contiguous units are painted. Imagine that the color of unit i currently is y . When it is painted by this paintbrush, the color of the unit becomes x , and the colorfulness of the unit increases by $|x - y|$.

DZY wants to perform m operations, each operation can be one of the following:

1. Paint all the units with numbers between l and r (both inclusive) with color x .
2. Ask the sum of colorfulness of the units between l and r (both inclusive).

Can you help DZY?

Input

The first line contains two space-separated integers n, m ($1 \leq n, m \leq 10^5$).

Each of the next m lines begins with a integer $type$ ($1 \leq type \leq 2$), which represents the type of this operation.

If $type = 1$, there will be 3 more integers l, r, x ($1 \leq l \leq r \leq n$; $1 \leq x \leq 10^8$) in this line, describing an operation 1.

If $type = 2$, there will be 2 more integers l, r ($1 \leq l \leq r \leq n$) in this line, describing an operation 2.

Output

For each operation 2, print a line containing the answer — sum of colorfulness.

Examples

input
3 3 1 1 2 4 1 2 3 5 2 1 3
output
8

input
3 4 1 1 3 4 2 1 1 2 2 2 2 3 3
output
3 2 1

input

10 6
1 1 5 3
1 2 7 9
1 10 10 11
1 3 8 12
1 1 10 3
2 1 10

output

129

Note
In the first sample, the color of each unit is initially [1, 2, 3], and the colorfulness is [0, 0, 0].

After the first operation, colors become [4, 4, 3], colorfulness become [3, 2, 0].

After the second operation, colors become [4, 5, 5], colorfulness become [3, 3, 2].

So the answer to the only operation of type 2 is 8.