C. Bitwise OR and AND

time limit per test: 1 second
memory limit per test: 1024 megabytes
input: standard input
output: standard output

There is an array of n elements, initially filled with zeros. You need to write a data structure that processes two types of queries:

- apply the operation $a_i = a_i | v$ (bitwise OR) to all elements from l to $r - 1$
- find bitwise AND of elements in the range from l to $r - 1$.

Input

The first line contains two numbers n and m ($1 \le n, m \le 100000$), the size of the array and the number of operations. The following lines contain the description of the operations. The description of each operation is as follows:

- 1 l r v: apply the operation $a_i = a_i | v$ (bitwise OR) to all elements from l to $r - 1$ ($0 \le l < r \le n$, $0 \le v < 2^{30}$).
- 2 l r: find bitwise AND of elements in the range from l to $r - 1$ ($0 \le l < r \le n$).

Output

For each operation of the second type, print the corresponding value.

Examples

input Copy

```
5 6
1 0 3 3
2 1 2
1 1 4 4
2 1 3
2 1 4
2 3 5
```

output Copy

```
3
7
4
0
```

input Copy

```
2 3
1 0 1 3
1 1 2 9
2 0 2
```

output Copy

```
1
```