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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:

- ullet 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	Сору
5 6	
1 0 3 3	
2 1 2	
1 1 4 4	
2 1 3	
2 1 4	
2 3 5	
output	Сору
3	
7	
4	
0	
input	Copy

input

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

output

Copy

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