Balloon Boxes

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Mina finished his bachelor project with the best grade ever.

Since Mina loves balloons, each of his friends decided to give him a colored balloon. Mina has n boxes in his room and when he receives a new balloon, he puts it in one of the boxes because he is very tidy. Unfortunately, these balloons may blow up.

Sometimes, Mina wants to know the different colors of the balloons in the boxes numbered from l to r. Can you help Mina with this task?

Input

The first line contains n, q ($1 \leq n, q \leq 10^5$) — the number of boxes and events.

Then q lines follow, each describing an event. An event can be one of the following types:

- `1 i c`: Mina puts a balloon of color `c` into box `i`.
- `2 i c`: A balloon of color `c` in box `i` blows up.
- `3 l r`: Mina asks for the number of different colors of the balloons in the boxes l, $l+1$, ..., r.

where $1 \leq i \leq n; 1 \leq l \leq r \leq n; 1 \leq c \leq 50$.

It is guaranteed that for each event of the form `2 i c`, there will be at least one balloon of the color `c` in box `i` before this event occurs.

Output

For each event of the third type, print a single line that contains an integer k followed by k integers representing the different colors of the balloons in the boxes from l to r. Colors must be printed in increasing order.

Example

standard input	standard output
4 11 1 1 1 1 1 2 1 2 3 1 2 3 3 1 4 1 4 4 3 1 4 2 1 1 3 1 4 2 1 2 3 1 4	3 1 2 3 4 1 2 3 4 3 2 3 4 2 3 4