Bonus points
1 second, 64MB

In an RPG on-line game, a special bonus give away event is organized. Initially, ***N*** players form a line each with currently zero bonus points. (1 <= ***N*** <= 50,000) Then a special game angel walks around the queue giving away bonus points and also adding more players to the queue. There are 4 possible actions for the angel:

Action 0 – The angel flies back to be with the first player in the queue.

Action 1 – The angel flies to be with the next player.

Action 2 – The angel insert a new player with zero bonus point after the current player. The angel remains with the same player (**not the new one**).

Action 3 – The angel give ***X*** bonus points to the current player.

The angel will perform ***M*** actions. (1 <= ***M*** <= 200,000) After the angel is done with bonus give away, your program should print the list of bonus each player get, from the first player in the queue to the last one.

Input

First line contains two integers ***N*** and ***M***. (1<=***N***<=50,000; 1<=***M***<=200,000)

The next ***M*** lines describe all the actions. Each line start with an integer ***T*** the type of the action. (0 <= T <= 3.) When T = 3, the line also contains an integer ***X***, the bonus points given to the current player (1 <= X <= 1,000).

Output

The output should be a single line listing the bonus each player received from the first player in the queue to the last one. (In the same order as in the queue.)

Example

Input	Output
5 13 1 3 10 0 2 1 1 3 20 1 3 50 0 1 3 20 2	0 20 0 30 50 0 0

Explanation: List of players' bonuses after each actions; (stars marks where the angel is)

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Initially:    0*     0      0      0      0
1:            0      0*     0      0      0
2:            0      10*    0      0      0
3:            0*     10     0      0      0
4:            0*     0      10     0      0      0
5:            0      0*     10     0      0      0
6:            0      0      10*    0      0      0
7:            0      0      30*    0      0      0
8:            0      0      30     0*     0      0
9:            0      0      30     50*    0      0
10:           0*     0      30     50     0      0
11:           0      0*     30     50     0      0
12:           0      20*    30     50     0      0
13:           0      20*    0      30     50     0      0
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