Dolan and Nephews

Dolan has a stack of card. Each card is numbered from 1 to n from top to bottom. His nephews want to play with the cards. Each nephew can only do one kind of operation.

Nephew number 1 will reverse the order of the card from i-th to j-th position.

Nephew number 2 will ask uncle Dolan what is the card number on i-th position.

Nephew number 3 will ask uncle Dolan in what position is the card number i.

Since Dolan is a good uncle, he will have to answer all questions correctly. Please help Dolan.

Input

First line on input is n and q, the number of cards (n $\leq$ 100000) and number of operations by the nephews (q $\leq$ 100000). The next q lines will contain the operation by the nephews.

For each operation, the first number will be the nephew number. The second (and possibly third) number is i (and j) from the description above (1 $\leq$ i $\leq$ j $\leq$ n).

Output

For each question asked by the nephews (operation 2 and 3), output a single line containing the answer.

Example

Input:
10 5
1 2 6
2 5
1 4 9
3 4
2 4

Output:
3
9
9

Input file is huge, use faster I/O (scanf for C)