H	Milk Packing	
	Input	**h.in**
	Output	**Standard Output**

The milk packing bell basically works as 'first come first serve'. The condition is if the bell has empty slots, you can put a number of milk in the bell. There are two types of transaction; in is to put the milk in the bell, out is to take the milk out of the bell.

Input

The input consists of several test cases.
The first line of each test case is a bell capacity n, 1 <= n <= 100.
The second line is the integer t represents number of transaction, 1<= t <= 100.
The next t lines are the detail of transaction. Each line consists of two tokens, number of milk and transaction type. Each token is separated by a space. The input ends with zero.

Output

For each of the test cases, the first line of each output states the word “case_”, and the case number (without any spaces). The following t lines of each test case states number of milk that currently stays in the bell. Each number is separated by a space. If a transaction makes an empty bell, the output must state empty.

You must display the results in an exact form as shown in the sample output below.

Sample Input	Sample Output
5 3 1 in 3 in 2 out 5 6 3 out 1 out 5 in 2 in 3 out 7 out 10 5 10 in 2 in 10 out 5 in 3 in 0	case_1 1 1 2 3 4 3 4 case_2 empty empty 1 2 3 4 5 1 2 3 4 5 4 5 empty case_3 1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 10 empty 11 12 13 14 15 11 12 13 14 15 16 17 18