Distributed System

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

A distributed system has n worker nodes numbered from 0 to $(n-1)$. The system is going to process q tasks, where the i-th task can be represented by two integers a_i and b_i, meaning that the task has a_i subtasks numbered from 0 to (a_i-1), and subtask j will be assigned to worker $(b_i+j) \bmod n$.

For each $0 \le k < n$, calculate the total number of subtasks assigned to worker k after all tasks are processed.

Input

There are multiple test cases. The first line of the input contains an integer T ($1 \le T \le 10^4$), indicating the number of test cases. For each test case:

The first line contains two integers n and q ($1 \le n, q \le 2 \times 10^5$), indicating the number of worker nodes and the number of tasks.

For the following q lines, the i-th line contains two integers a_i and b_i ($1 \le a_i \le 10^9$, $0 \le b_i < n$), indicating the i-th task.

It's guaranteed that neither the sum of n nor the sum of q of all test cases will exceed 2×10^5.

Output

For each test case output one line containing n integers $v_0, v_1, \cdots, v_{n-1}$ separated by a space, where v_k is the total number of subtasks assigned to worker k after all tasks are processed.

Example

standard input	standard output
2 7 3 10 0 4 2 21 1 1 2 200 0 100 0	5 5 6 5 5 5 4 300