Alias

Alias is an assumed or additional name that constitutes a distinctive designation of a person. Consider a set of n persons and assume that each person has k distinct aliases. A person is identified using any one of its k aliases. The nk (= n×k) distinct aliases are identified using integers 1, 2,...nk . Integers 1, 2,..., n represent the first aliases of all n persons in an arbitrary order. In general, integers (j - 1)×n + 1,(j - 1)×n + 2,...,(j - 1)×n + n represent the jth alias of all n persons in an arbitrary order, for j = 1, 2,..., k . Persons in the set are totally ordered with respect to a quality characteristic Q associated with each person. Let Q(r) be the value of Q for a person identified by one of its alias r .

Given a sufficient number, say m , of inequalities of the type: Q(r) > Q(s) , you are required to write a program to sort all persons in descending order and recognize all aliases of each person in the set.

As a simple illustration consider distinct total marks scored by three students in an examination. Each student is identified by any one of three distinct aliases in the Name: {first-name middle-name last-name}. Let integers 1, 2, 3 represent the first names, 4, 5, 6 represent the middle names and 7, 8, 9 represent the last names in an arbitrary order. Let Q(r) be the total marks of student r, r being an alias. Given the following inequalities: Q(6) > Q(1), Q(9) > Q(4), Q(5) > Q(8), Q(2) > Q(9), Q(7) > Q(3), Q(9) > Q(3) , one can conclude that the names of students appearing in descending order of total marks are {2 6 7}, {1 5 9} and {3 4 8}.

Input

The input may contain multiple test cases.

For each test case the first input line gives the parameters n , k and m .

The second line contains m inequalities represented by 2×m integers. An integer r occurring in an odd numbered position in the line and the integer s occurring in the next even numbered position, represent the inequality Q(r) > Q(s) .

Assume that nk is less than 100 and each integer in the second input line is of two digits, including a non-significant 0 when required.

The input terminates with a line containing 0 as input.

Output

For each test case print n lines giving k aliases of each person in a line; a line contains aliases in increasing order. Arrange persons in descending order of the quality characteristic Q . As in input, each integer in output is of two digits, including a non-significant 0 when required.

A blank line appears after the last output line of a test case.

Example

Sample Input

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3 3 6
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06 01 09 04 05 08 02 09 07 03 09 03
2 4 2
03 08 02 05
0

Sample Output
02 06 07
01 05 09
03 04 08

02 03 06 07
01 04 05 08