Plane Hopping

This man has grown so rich that, when he travels between any two locations he always takes at least K flights. In a region of N cities, we need to find the minimal cost required for the man to travel between every pair of cities. There are provisions (especially for this type of rich men,) to fly from i-th city to the i-th city itself!

Input

T – The number of test cases.
In each test case :
K N
NxN matrix representing the costs of the tickets. The i-th line, j-th column's entry represents the cost of a ticket from city i to city j. The numbers are of course space separated.

Constraints :
$T <= 20$
$N <= 50$
$K <= 10^9$
The cost of each ticket <= 100
Each element of the output matrix will fit into a 64-bit integer.

Output

For the i-th test case , 1st line is of the form "Region #i:".
In the following N lines, output an NxN matrix where the j-th element of the i-th line represents the minimal cost to travel from city i to city j with taking at least K flights. The numbers on a line must be separated by at least one space. Output a blank line after each testcase (including the last one).

Example

Sample Input:
```
2
3 4
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
10999 4
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
```

Sample Output:
```
Region #1:
3 4 5 6
7 8 9 10
11 12 13 14
15 16 17 18
```

Region #2:
10999 11000 11001 11002
11003 11004 11005 11006
11007 11008 11009 11010
11011 11012 11013 11014