Multiply

Matrix multiplication is a basic tool of linear algebra, and as such has numerous applications in many areas. In more detail, if A is an n × m matrix and B is an m × p matrix, their matrix product AB is an n × p matrix, in which the m entries across a row of A are multiplied with the m entries down a column of B and summed to produce an entry of AB. You will be given matrix A with size N x N. You will be asked to compute A^N % 1,000,000,007.

Format Input
The first line will be an integer T, the number of test cases. In each test case, there is a positive integer N indicating the size of the matrix. This is followed by N^2 integers separated by whitespace (newlines and spaces). These N^2 integers make up the array in row-major order.

Format Output
For each test case, you should output the case number starting from 1. The next line should be the answer of A^N % 1,000,000,007.

Constraints
1 <= T <= 10
1 <= N <= 30
0 <= A_{ij} <= 1,000,000,000

Sample Input	Sample Output
2 2 1 1 1 1 3 10000 0 0 0 1 0 0 0 1	Case #1: 2 2 2 2 Case #2: 999993007 0 0 0 1 0 0 0 1

Note
You can use one of these equations to calculate the answer

$$(a+b)\,\%\,k \;==\; (\,(a\,\%\,k) \;+\; (b\,\%\,k)\,)\,\%\,k$$
$$(a-b)\,\%\,k \;==\; (\,(a\,\%\,k) \;+\; k \;-\; (b\,\%\,k)\,)\,\%\,k$$
$$(a*b)\,\%\,k \;==\; (\,(a\,\%\,k) \;*\; (b\,\%\,k)\,)\,\%\,k$$