

Little T2 and Dead Cats

Limits: 1s, 1.0 GB

The planet earth has become peaceful again because all the cats are dead. An evil robot named **Xorged** wants to import some cats from planet **GUNEA76/85** to make the earth sorrowful again. But here is our Hero, **Little T2** who will save the world once again. She has to solve many puzzles to destroy **Xorged**. As, you are her sidekick, you have to help her with one puzzle that she has told you to solve.

You are given a **KxN** grid. You have two types of tiles. one is **1xK** and another one is **Kx1**. You have infinite amount of them and they can not be rotated. You have to tell how many ways you can fill up the grid with these tiles. No two tiles can overlap with each other and every cell of the grid should be filled.

This number is very important because this is the decryption key of **Xorged**'s secret files.

Input

Input starts with an integer, **T**, denoting the number of test cases. Each of the next **T** lines contains two integers **K** and **N**.

Constraints

Easy Sub-Task:

$1 \leq T \leq 40$

$2 \leq K \leq 3$

$1 \leq N \leq 20$

Medium Sub-Task:

$1 \leq T \leq 10000$

$2 \leq K \leq 10$

$1 \leq N \leq 100000$

Hard Sub-Task:

$1 \leq T \leq 10000$

$2 \leq K \leq 10$

$1 \leq N \leq 1000000000$

Output

For each test case print a line like this format **Case X: Y**. **X** denotes the case number and **Y** denotes the number of ways you can fill up the grid. This number can be huge so that you will print it modulo **1000000007** ($1e9+7$).

Samples

Input	Output
4	Case 1: 1
2 1	Case 2: 1
3 2	Case 3: 21
2 7	Case 4: 144
2 11	

Statistics

