D	# XOR Subset **Input:** Standard Input **Output:** Standard Output	

Fermat's little theorem states that if ***p*** is a prime number, then for any integer ***a***, the number ($\boldsymbol{a^p - a}$) is an integer multiple of ***p***. In the notation of modular arithmetic, this is expressed as

$$a^p \equiv a \pmod p.$$

For example, if a = 2 and p = 7, 2^7 = 128, and 128 − 2 = 7 × 18 is an integer multiple of 7. We can also write 128 % 7 = 2, here % is the modulo operator used in C/C++ or Java.

If a is not divisible by p, Fermat's little theorem is equivalent to the statement that $a^{p-1} - 1$ is an integer multiple of p, or in symbols

$$a^{p-1} \equiv 1 \pmod p.$$

For example, if a = 2 and p = 7 then 2^6 = 64 and 64 − 1 = 63 is a multiple of 7. We can also write 64 % 7 = 1.

You are given a set S which contains 1 to N. You want to find two subsets of S, X and Y such that the following conditions are met:

1. X ∩ Y = ∅
2. Let bitwise XOR of every element of X equals U and Y equals V. U must be less than or equal to V.

You want to find out number of ways you can choose such subset X and Y. Two ways (X1, Y1) and (X2, Y2) will be equal if X1 equals X2 and Y1 equals Y2 or X1 equals Y2 and Y1 equals X2.

For example is S = {1, 2}, the ways are:

1. X = ∅, Y = ∅. [U = 0, V = 0]
2. X = ∅, Y = {1}. [U = 0, V = 1]
3. X = ∅, Y = {1,2}. [U = 0, V = 1 ^ 2 = 3, (^ means bitwise XOR in C/C++/Java)]
4. X = ∅, Y = {2}. [U = 0, V = 2]
5. X = {1}, Y = {2}. [U = 1, V = 2]

Now, given **N**, you need to find the number of ways you can choose two subsets of **S** such that the 2 conditions meet, modulo **1000000007 (10^9 + 7)**.

Input

First line contains **T (T<=100)**, the number of test cases. Each of the next **T** lines each contains an integer **N (0<=N<10^{10000})**.

Output

For each case print one line, "**Case C: W**", where **C** is the case number, and **W** is the required answer for that case.

Sample Input	Output for Sample Input
2 2 3	Case 1: 5 Case 2: 14

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Special Thanks: Md. Shiplu Hawlader, Muhammad Ridowan