1096 – nth Term

You have to find the $\mathbf{n^{th}}$ term of the following function:

f(n) = a * f(n-1) + b * f(n-3) + c, if(n > 2)

= 0, if(n ≤ 2)

Input

Input starts with an integer **T (≤ 100)**, denoting the number of test cases.

Each case contains four integers **n (0 ≤ n ≤ 10^8), a b c (1 ≤ a, b, c ≤ 10000)**.

Output

For each case, print the case number and **f(n)** modulo **10007**.

Sample Input	Output for Sample Input
2 10 1 2 3 5 1 3 9	Case 1: 162 Case 2: 27