Salama’s Birthday

It's a wonderful day, today is Salama's 20_{th} birthday.

Being joyful and triumphant, every year he gains the love of the people. He noticed that each year the number of friends $\mathbf{t_i}$ he makes increases by a factor ***r***, while in his first year he made ***a*** friends. (***a* = *r*-1**)

The number of friends he makes in the i_{th} year is $\mathbf{a\ r^{i-1}}$.

It's commonly known that Salama loves math. Help him calculate $\mathbf{S_n}$ (the number of friends he will make in his first **n** years) modulo 1000003 ($10^6 + 3$).

$$S_n = a + a\,r + a\,r^2 + a\,r^3 + ... + a\,r^{n-1}$$

Note:
X modulo Y (X%Y) is the remainder of dividing X by Y.

Input

Your program will be tested on one or more test cases. The first line of input will be a single integer T,
The number of test cases (1<=T<=20).Followed by T lines, each line consists of three integers a, r and n.
a = r-1
1 < r < 10
0 < n < 10^6 (May he live long and happily!)

Output

For each test case, print “Case_#i:_X” where “X” is your answer modulo 1000003(10^6 +3), “i” is the number of the test case (starting with 1) and “_” is a white space. Each output should be printed in a separate line.

Example

Input:
3
1 2 1
8 9 3
2 3 2

Output:
Case #1: 1
Case #2: 728
Case #3: 8