Code Jam to I/O for Women 2016 - Code Jam to I/O for Women

Polynesiaglot

Problem

Ursula is a big fan of constructing artificial languages. Today, she is starting to work on a language inspired by real Polynesian languages. The only rules she has established are:

- All words consist of letters. Letters are either consonants or vowels.
- Any consonant in a word must be immediately followed by a vowel.

For example, in a language in which *a* is the only vowel and *h* is the only consonant, *a*, *aa*, *aha*, *aaha*, and *haha* are valid words, whereas *h*, *ahh*, *ahah*, and *ahha* are not. Note that the rule about consonants disallows ending a word in a consonant as well as following a consonant with another consonant.

If Ursula's new language has **C** different consonants and **V** different vowels available to use, then how many different valid words of length **L** are there in her language? Since the output can be a really big number, we only ask you to output the remainder of dividing the result by the prime 10^9+7 (1000000007).

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each consists of one line with three integers **C**, **V**, and **L**.

Output

For each test case, output one line containing `Case #x: y`, where `x` is the test case number (starting from 1) and `y` is the number of different valid words of length **L** in the language, modulo the prime 10^9+7 (1000000007).

Limits

Time limit: 20 seconds per test set.
Memory limit: 1GB.

Small dataset 1 (Test set 1 - Visible)

T = 15.
C = 1.
V = 1.
1 ≤ **L** ≤ 15.

Small dataset 2 (Test set 2 - Visible)

1 ≤ **T** ≤ 100.
1 ≤ **C** ≤ 50.
1 ≤ **V** ≤ 50.
1 ≤ **L** ≤ 15.

Large dataset (Test set 3 - Hidden)

1 ≤ **T** ≤ 100.
1 ≤ **C** ≤ 50.
1 ≤ **V** ≤ 50.
1 ≤ **L** ≤ 500.

Sample

Input	Output
2 1 1 4 1 2 2	Case #1: 5 Case #2: 6

In Case #1, suppose that the only vowel is *a* and the only consonant is *h*. Then the possible valid words of length 4 are: *aaaa*, *aaha*, *ahaa*, *haaa*, *haha*.

In Case #2 (which would not appear in Small dataset 1), suppose that the two vowels are *a* and *e* and the only consonant is *h*. Then the possible valid words of length 2 are: *aa*, *ae*, *ea*, *ee*, *ha*, *he*.