String Jutsu

Naruto has used a Jutsu to encrypt a top secret message consisting of any possible character of length<=10^3 ,he wants to send to Sakura Chan. You are a ninja of Hidden Mist Village, and your task is to decrypt it by using following rules:-

You have to output a string such that:-

- If the letter is lower case convert it into upper case and vice versa.
- if there is a special character (any character other than numbers, alphabets, space) convert it into dot(.).
- any number apperaring as a substring is to be converted into coresponding lowercase letter(a for 1, b for 2.....z for 0) and if the number is greater than 26 then the number is modulo 26. 😊

Input

First line of input tells number of test cases(t<=100). Each of next t lines contain a string s (|s| <=10^3).

Output

For each test case output the Naruto's message.

Example

Input:
1
Ha74E 235 144i3e 82A51*:)

Output:
hAve a nIcE day...