

Artificium

Wordle

Runtime Limit – 3s

Problem Statement

Wordle is a word guessing game, where players have up to 6 *guesses* to identify a 5-letter *solution*. Each guess is given a result of colors for each letter in the guess.

Green (G): The letter appears in the *solution* in the same location

Yellow (Y): The letter appears in the *solution* in a different location

Gray (_): The letter does not appear in the *solution*

e.g. if the *solution* is **flies** and you guess **filed** then the result should be GYYG_ (**f** and **e** are correct, while **i** and **l** are in the wrong positions and **d** is not correct).

Given a *solution*, and then n 5-letter *guesses*. Print the n results for these guesses.

Note: None of the guesses will have repeated letters.

Format

Input

Line 1 : The *solution*, a 5-letter word

Line 2 : n , the number of *guesses* to follow

Next n lines : a *guess*, a 5-letter word to be compared to *solution* for a result

Output

N lines : the result for each *guess*, a 5-character string of _, G, Y for gray, green and yellow letters, respectively.

Constraints

$$0 < n \leq 6$$

solution and *guesses* will always be lowercase

guesses will never have repeated letters, to avoid ambiguity about yellow/gray results

Sample

Input

clash

1

coder

Output

G_____