CyberChallenge.IT 2024
Programming Test

Sanitization [40 points]

Problem Statement

Alan Good afternoon, everyone, and welcome to the inaugural lecture of CyberChallenge.IT 2024! I'm Alan, your guide through the fabulous world of hacking! Let's kick off with a little magic trick!

Alan opens a web page, types some peculiar characters in an input field, and... Boom!

A cascade of user data appears publicly!

Bob Whoa! You just broke the internet!

Alan Not the whole internet, Bob. That was just a dummy website with fake data prepared for the lecture. But what can we learn from it?

Bob That most of the internet is broken?

Charlie That some inputs can be dangerous?

Alan Spot on, Charlie! So, your first task for the day is crafting a kind of sanitizer! You'll receive a list of banned words and a set of input strings. For each string, simply type SAFE or BANNED, depending on whether the corresponding input contains banned words.

Bob But wasn't this course about hacking?

Meanwhile, Charlie starts typing...

Problem Details

Input

The input consists of $N + M + 1$ lines:

- Line 1: two space-separated integers, N and M

- Lines $2, \ldots, M + 1$: the list of banned words, one per line

- Lines $M + 2, \ldots, M + N + 1$: the list of input strings, one per line

Both banned words and inputs are composed only of lowercase letters, uppercase letters and digits. In particular, they do not contain spaces. Their length is variable between 3 and 20 characters.

Output

The output consists of N lines. Print either `SAFE` if the corresponding input string does **not** contain any of the banned words, or `BANNED` if it contains at least one of them.

Scoring

Your program will be tested on a number of testcases grouped in subtasks. In order to obtain the score associated to a subtask, you need to correctly solve all its testcases.

- **Subtask 1** [**20 points**]: $1 \leq N \leq 100$, $M = 1$

- **Subtask 2** [**20 points**]: $1 \leq N \leq 1000$, $1 \leq M \leq 100$

Examples

INPUT	OUTPUT
5 1 banned safestring bannedstring notbanndstring notBannedstring StillNotb4nned	SAFE BANNED SAFE SAFE SAFE

Explanation

In the testcase we have only one banned word, the "banned" string. We have 5 given inputs, and only the second one contains exactly it as a substring. In particular, we notice that occurrences of "banned" with uppercase letters or digits are of course not counted.