Problem K

Kapitan Amazing

Time Limit: 1 second

Captain Amazing (*Kapitan Kamangha-mangha* in the original Tagalog version) is investigating the mysterious disappearances of several prominent superheroes, and his detective-work has led him to infiltrating the secret lair of an as-of-now unknown supervillain. Most people don't think that he and the other "dumb brute" supers are capable of smart detective work, but Captain Amazing likes to prove them wrong. He calls it the *Investigative Capabilities of Powerhouse Capes*

He was able to find the room that contains the data that he needs, but unfortunately, the room is protected by password. The input device for the password is a standard QWERTY keyboard whose layout can be described with three strings, as follows:

```
QWERTYUIOP
ASDFGHJKL
ZXCVBNM
```

Captain observed that the security guards here do not wear any gloves, meaning that they leave trace amounts of oil on everything they touch. Also, it seems that this keyboard is only used for inputting the password, and nothing else. Therefore, Captain concludes that the keys with a significant amount of oil residue on them *and only those keys* must be included in the password!

For example, consider the following QWERTY keyboard. The letters whose keys had a significant amount of oil residue on them have been replaced with `*` asterisks.

```
QWERTYU*O*
*SDFGHJK*
ZX*VB**
```

This reveals that the password contains the letters `I`, `P`, `A`, `L`, `C`, `M`, `N`, and *only* those letters.

We can deduce that none of the following are possible passwords:

- `CLAMPING`, because otherwise the letter `G` would also have had oil residue.
- `MAILMAN`, because otherwise the letters `P` and `C` would *not* have had oil residue.
- `PASSWORD`, for many reasons.

On the other hand, these are all possible passwords:

- `ICPCMANILA`
- `CLIPMAN`
- `CAMPANILLA`
- `ALPACAMANIA`
- `IPAAAAAAAAAAAAAAAAAAAAAAAALCMN`

Let's help Captain Amazing! Given the oily keyboard, your program must then be able to answer Q different queries of the following form: Given some string s, is s a possible password?

Input Format

Input begins with three lines, describing a QWERTY keyboard in the same format as described in the problem statement. Some of these letters have been replaced by asterisks $\star$, meaning that the keys with those letters had oily residue.

This is followed by a line containing a single integer Q, the number of queries to answer.

Then, Q lines follow, each containing a string s.

Constraints

- At least one key is oily
- $1 \leq Q \leq 100$
- Each s consists of at most 30 uppercase letters

Output Format

For each query, output `POSSIBLE` if its s is a possible password, considering the oily keyboard, and `IMPOSSIBLE` if it is not a possible password.

Sample Input 1

```
QWERTYU*O*
*SDFGHJK*
ZX*VB**
8
CLAMPING
MAILMAN
PASSWORD
ICPCMANILA
CLIPMAN
CAMPANILLA
ALPACAMANIA
IPAAAAAAAAAAAAAAAAALCMN
```

Sample Output 1

```
IMPOSSIBLE
IMPOSSIBLE
IMPOSSIBLE
POSSIBLE
POSSIBLE
POSSIBLE
POSSIBLE
POSSIBLE
```

Sample Input 2

```
QWERTYUIOP
*SDFGHJKL
ZXCVBNM
5
A
AA
AAAA
AAAAAAAA
AAAAAAAAHHHHHHHH
```

Sample Output 2

```
POSSIBLE
POSSIBLE
POSSIBLE
POSSIBLE
IMPOSSIBLE
```