

3598 Frugal Search

For this problem you will write a search engine that takes a query, searches a collection of words, and finds the lexicographically smallest word that matches the query (i.e., the matching word that would appear first in an English dictionary). A *query* is a sequence of one or more terms separated by single vertical bars (“|”). A *term* is one or more letters followed by zero or more signed letters. A *signed* letter is either $+s$ (“positive” s) or $-s$ (“negative” s), where s is a single letter.

All letters are lowercase, and no letter will appear more than once within a term. A query will not contain spaces. A term matches a word if the word contains at least one of the unsigned letters, all of the positive letters, and none of the negative letters; a query matches a word if at least one of its terms matches the word.

Input

The input consists of one or more test cases followed by a line containing only ‘#’ that signals the end of the input. Each test case consists of 1–100 words, each on a line by itself, followed by a line containing only ‘*’ that marks the end of the word list, followed by one or more queries, each on a line by itself, followed by a line containing only ‘**’ that marks the end of the test case. Each word will consist of 1..20 lowercase letters. All words within a test case will be unique. Each query will be as defined above and will be 1..79 characters long.

Output

For each query, output a single line containing the lexicographically smallest word *within that test case* that matches the query, or the word ‘NONE’ if there is no matching word.

At the end of each test case, output a dollar sign on a line by itself.

Sample Input

```
elk
cow
bat
*
ea
acm+e
nm+o|jk+l
**
debian
slackware
gentoo
ubuntu
suse
fedora
mepis
*
yts
cab-e+n
r-e|zjq|i+t|vs-p+e-u-c
```

```
**  
#
```

Sample Output

```
bat  
NONE  
elk  
$  
gentoo  
ubuntu  
NONE  
$
```