

Problem G. Guess The String

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 256 mebibytes

This is an interactive problem.

Alice and Bob are playing a game. Alice chooses a string s consisting of lowercase English letters. Bob may ask queries of sort “? t ”, which means “is the string t a **subsequence** of s ?”. For example, if $s = \text{abc}$, the answer for the query “? ac ” is “YES”, while for the query “? bb ” the answer is “NO”. Total length of t 's in Bob's queries must not be too large, otherwise the players will grow bored with the game.

At any point, Bob may claim that he knows the chosen string s , and reveal his guess. If he is right, he wins, otherwise he loses.

Your task is to write a program which interactively asks queries and wins every game while not making too much queries.

Input

At the start of the interaction there is no input for your program.

After each “?”-query (refer to the output format), a single line is fed — “YES” if t is a **subsequence** of s , and “NO” otherwise.

It is known that s is a non-empty string of lowercase English letters. Length of s doesn't exceed 500.

Output

Print descriptions of your queries on a single line each, according to the following format:

- “? t ” for a subsequence query with the string t ,
- “! t ” for submitting a guess that $s = t$. After making this query, your program must terminate.

Total size of t in “?”-queries must not exceed $6 \cdot 10^5$.

Don't forget to flush your output after each query.

Example

standard input	standard output
YES	? a
NO	? b
NO	? c
NO	? aa
	! a

Note

The empty lines are only for clarity of the interaction order; no actual line breaks are fed.

Note that the guess in the provided sample case is surely correct if **a**, **b** and **c** letters only are allowed; for the original problem the guess would probably be judged as incorrect as there exist other strings which are in accordance with all queries, for instance, “**ad**”.

A string t is a *subsequence* of a string s if it possible to erase some characters of s (possibly none) to obtain t . Changing the order of the remaining characters is not allowed.