Programming task Morse

Memory limit: 2 MB
Time limit: 0.2 second
Input file: `morse.in`
Output file: `morse.out`

Description

While listening to the air, the national security services received some messages that aroused their interest. The messages consisted of short and long beeps and small pauses from time to time. Messages were written on paper - short signals with a dot '.', long signals with a minus sign '-' and small pauses with a vertical bar '|'. The young employees have long misunderstood what it is. Is it a spy? Maybe aliens?

After a long unsuccessful effort to decipher the strange messages, they consulted with the retired employee whether he had ever had to deal with such a thing. The old employee looked at the recorded messages and laughed heartily at the young generation, fascinated by new IT technologies and no longer knew anything about the good old Morse code.

From his memory, he wrote in the table some of the meanings of the Morse symbols:

Letter	Morse encoding	Number or symbol	Morse encoding
A	.-	0	-----
B	-...	1	.----
C	-.-.	2	..---
D	-..	3	...--
E	.	4	....-
F	..-.	5	.....
G	--.	6	-....
H	....	7	--...
I	..	8	---..
J	.---	9	----.
K	-.-	.	.-.-.-
L	.-..	,	--..--
M	--	:	---...
N	-.	?	..--..
O	---	-	-....-
P	.--.	/	-..-.

Letter	Morse encoding	Number or symbol	Morse encoding
Q	--.-	Space ' '	.----.
R	.-.	Pause	|
S	...		
T	-		
U	..-		
V	...-		
W	.--		
X	-..-		
Y	-.--		
Z	--..		

P.S. After the memory, the restored one may not match the real Morse https://en.wikipedia.org/wiki/Morse_code, such as symbols and letter/word breaks.

After trying to decipher the text a bit, he found that either due to weak signals or the recorder's carelessness, not all the pauses were marked or there were too many pauses. He also warned that the Morse code created from memory could be incomplete, i.e. part of the text will not be deciphered until the complete Morse code is found.

The security service immediately turned to students of the Faculty of Computing with a request to write a program deciphering the report. All fragments of the message between the two pauses and not found in Morse's table must be marked with "!". You need to ignore the extra pauses. If there is no pause at the end of the text, the last fragment is unrecognizable.

Input

The file contains only one row that can be very long (up to 1 MB) and consists only of symbols '.', '-' and '|'.

Output

According to the input file, the result is a single line containing the decipherment according to the Morse code of the task. Unencrypted snippets are marked with a '!' symbol.

Example:

The content of input file `morse.in`:

```
...|---|...|.----.|-....-|.----.|--.|.-..|.-|-...|..|.|-|.----.|--|..-|...|..-|.----.|-..|...-|.|...|.|.-..|.|...|.-.-.-|
```

The content of output file `morse.out`:

```
SOS — GLABIET MUSU DVESELES.
```