Old Dalmatian
P71356_en

Cinquè Concurs de Programació de la UPC - SemiFinal (2007-09-19)

Met, the psycho-killer bear, is an icon of Slovenia. This is why
Metel, a toy factory in the neighbourhood of Metelkova of the
Slovenian capital Ljubljana, wants to start the production of a
series of plush bears featuring Met and his friends. Moreover,
the members of the executive board of Metel want to mimic the
great success of Fur-bees, the speaking hairy insects, and have
decided that Met and his friends must also be able to speak.

Given their Balkan origins, they have decided that the bears
will speak in Old Dalmatian, a language of the twelfth century,
a time when many brave warriors were raised in that noble
land.

An extract from the *Old Dalmatian Grammar*, written by the Augustine monk Saint Thelonius
of Antioch in the sixteenth century, can give an impression of the language:

> "As a language of warriors, Old Dalmatian was simple. Sentences started
> with a subject, next came a single verb, and there could be an object after the
> verb. The subject and object consisted in a single noun, optionally preceded by
> a single adjective. Adjectives and nouns finished in **-o** if they were singular, and
> in **-a** if they were plural. A noun and its adjective had to agree in grammatical
> number. Verbs had a single form, formed by adding **-ta** to the verb root and
> meaning past tense, as there was no future for Old Dalmatians. (How prophetic
> these words of Saint Thelonius turned out to be!) The word order was the same
> as in English, with words written with no separation between them."

Since there has been no speaker of *Modern* Dalmatian (not to mention *Old* Dalmatian) for
more than a century, every toy in the Met series will come with an electronic translator, made
in China and painted with bright red paint, which will translate the Dalmatian sentences to
the buyer's native language.

As engineer of an enterprise subcontracted by an enterprise subcontracted by an enterprise
subcontracted by Metel, your task is to design the core of the English version of the electronic
translator: the module which converts the Dalmatian sentence to an English sentence.

Input

First of all comes a Dalmatian to English dictionary, consisting of a series of lines containing
four fields each: the root of the Dalmatian word; a single character 'v', 'n' or 'a' to tell if the
word is a verb, noun or adjective; and the word translated to English, in singular and plural
form if it is a noun or adjective, and in infinitive and simple past form if it is a verb. In some
nouns, the value of the last field is an asterisk, meaning that the word admits no plural. All
words are lowercase. The dictionary ends with a line with four asterisks.

Next comes a sequence of lines, each one containing a sentence in Old Dalmatian, all in
lowercase and ended in a dot. The last sentence finishes with two consecutive dots, which
was an Old Dalmatian form of invitation to stop speaking and start killing.

Output

For each sentence in Old Dalmatian, print all the possible translations of that sentence in English, all in lowercase and finished with a dot, in alphabetical order. A blank line must separate the set of translations for different input sentences. If a sentence has no correct and grammatical translation, print a single line with "???".

Sample input

```
t    a your your
m    n hand hands
mam  n mother mother
ro   v scream screamed
moro v twist twisted
maro v darken darkened
met  n met *
*    * * *

tamamorota.
tamamarota.
tomomorota.
tamamorota.
tamamorotameto.
metamarotatomo.
metomarotatama..
```

Sample output

```
your hands twisted.

your hands darkened.
your mother screamed.

your hand twisted.

your hands twisted.

your hands twisted met.

???

met darkened your hands.
```

Problem information

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Generation : 2024-05-02 22:36:27