

Decoding Morse Sequences

Before the digital age, the most common "binary" code for radio communication was the Morse code. In Morse code, symbols are encoded as sequences of short and long pulses (called dots and dashes respectively). The following table reproduces the Morse code for the alphabet, where dots and dashes are represented as ASCII characters "." and "-":

```
A .- B -... C -.- D -..
E . F ..- G -- H ....
I .. J .--- K -.- L -.-
M -- N -. O --- P .--
Q --.- R .- S ... T -
U ..- V ...- W .-- X -.-
Y -.- Z --..
```

Notice that in the absence of pauses between letters there might be multiple interpretations of a Morse sequence. For example, the sequence `-.-.-` could be decoded both as `CAT` or `NXT` (among others). A human Morse operator would use other context information (such as a language dictionary) to decide the appropriate decoding. But even provided with such dictionary one can obtain multiple phrases from a single Morse sequence.

Task

Write a program that:

- reads a Morse sequence and a list of words (a dictionary),
- computes the number of distinct phrases that can be obtained from the given Morse sequence using words from the dictionary,
- writes the result.

Notice that we are interested in full matches, i.e. the complete Morse sequence must be matched to words in the dictionary.

Input

The first line of the input contains exactly one positive integer d equal to the number of data sets, $1 \leq d \leq 20$. The data sets follow.

The first line of each data set contains a Morse sequence - a nonempty sequence of at most 10000 characters "." and "-" with no spaces in between.

The second line contains exactly one integer n , $1 \leq n \leq 10000$, equal to the number of words in a dictionary. Each of the following n lines contains one dictionary word - a nonempty sequence of at most 20 capital letters from "A" to "Z". No word occurs in the dictionary more than once.

Output

The output should consist of exactly d lines, one line for each data set. Line i should contain one integer equal to the number of distinct phrases into which the Morse sequence from the i -th data set can be parsed. You may assume that this number is at most $2 \cdot 10^9$ for every single data set.

Example

Sample input:

1

.....

6

AT

TACK

TICK

ATTACK

DAWN

DUSK

Sample output:

2