

Nowadays, there are a lot of unusual people. We won't go into details, but instead focus on a certain type, to us personally the most interesting people. Of course, we're talking about barbarians!

There are a lot of barbarians, but only a few of them are truly important. This story has N important barbarians, denoted with integers from 1 to N . Each of them has their own stone tablet with their word written on it, consisting of only lowercase letters of the English alphabet.

Our barbarians are playing an interesting game with their good friend Tarzan.

The game is played in Q rounds. There are two round types and each is determined by Tarzan:

1st type: Tarzan shows the word P to the barbarians.

2nd type: Tarzan asks the barbarian denoted with S the following question: "Out of all the words I've shown you so far, how many of them are such that the word on your stone tablet is their consecutive substring?"

Given the fact that the barbarians go wild a lot and aren't really able to pay attention and keep up with what's happening in the game, they need your help. Help the barbarians answer each of Tarzan's questions correctly.

INPUT

The first line of input contains the integer N ($1 \leq N \leq 10^5$), the number of barbarians.

Each of the following N lines contains a single word consisting of only lowercase letters of the English alphabet, the i^{th} word corresponding to the word on the stone tablet of barbarian denoted with i .

After that, the integer Q ($1 \leq Q \leq 10^5$) follows, the number of rounds in the game.

The following Q lines describe the round of the game, the i^{th} line describing the i^{th} round of the game. Each line will contain the integer O . In the case when O is equal to 1, it denotes the first type of round and the shown word P follows in the same line, consisting of only lowercase letters of the English alphabet.

In the case when O is equal to 2, it denotes the second type of round and the number S ($1 \leq S \leq N$) follows in the same line, the label of the barbarian whom Tarzan asked the question.

The total length of all words written on the barbarians' stone tablets will not exceed $2 \cdot 10^6$.

The total length of all words that Tarzan shows the barbarians will not exceed $2 \cdot 10^6$.

OUTPUT

For each round of a different form, output a single line. The i^{th} line must contain the correct answer to Tarzan's question in the i^{th} round of type 2.

SCORING

In test cases worth 50% of total points, it will hold $N \leq 20\,000$.

SAMPLE TESTS

<p>input</p> <p>3 a bc abc 3 1 abca 2 1 2 3</p> <p>output</p> <p>1 1</p>	<p>input</p> <p>7 abba bbaa b bbaa abba a ba 7 1 aaabbabbaab 2 7 1 baabaaa 1 aabbbab 2 3 1 aabba 2 3</p> <p>output</p> <p>1 3 4</p>
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Clarification of the first example: The only word Tarzan has shown is abca. The answer to the first question is, of course, 1 because the word a is a substring of the word abca. The answer to the second question is also 1 because the word abc is a substring of the word abca.