Tries: Contacts

We're going to make our own *Contacts* application! The application must perform two types of operations:

1. `add name`, where $name$ is a string denoting a contact name. This must store $name$ as a new contact in the application.
2. `find partial`, where $partial$ is a string that denotes a partial name to search the application for. It must count the number of contacts starting with $partial$ and print the count on a new line.

Given n sequential *add* and *find* operations, perform each operation in order.

Input Format

The first line contains a single integer, n, the number of operations to perform.
Each line i of the n subsequent lines contains an operation in one of the two forms defined above.

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq |name| \leq 21$
- $1 \leq |partial| \leq 21$
- It is guaranteed that $name$ and $partial$ contain lowercase English letters only.
- The input does not have any duplicate $name$ for the add operation.

Output Format

For each `find partial` operation, print the number of contact names starting with $partial$ on a new line.

Sample Input

```
4
add hack
add hackerrank
find hac
find hak
```

Sample Output

```
2
0
```

Explanation

We perform the following sequence of operations:

1. Add a contact named `hack`.

2. Add a contact named `hackerrank`.

3. Find and print the number of contact names beginning with `hac`. There are currently two contact names in the application and both of them start with `hac`, so we print 2 on a new line.

4. Find and print the number of contact names beginning with `hak`. There are currently two contact names in the application but neither of them start with `hak`, so we print 0 on a new line.