Counting suffixes P88868_en

Please implement a data structure D to efficiently support four operations:

- `I` s: Inserts the string s into D. No changes are made if s is already in D.
- `E` s: Erases the string s from D. No changes are made if s is not in D.
- `C` s: Counts the number of strings in D that end with the suffix s.
- `R`: Resets D, that is, removes all strings from D.

Input

Input consists of several operations over an initially empty D. Assume that each s is made up of between 1 and 100 lowercase letters. At no moment the sum of the sizes of the strings stored in D will be larger than 10^6.

Output

Print the result of each `C` s operation, and three dashes for each `R` operation.

Sample input 1

```
E a
I abba
C a
I cba
C cba
C abba
C a
C ba
I abba
C ba
E cba
C cba
C a
E ba
C ba
R
C ba
I eggs
I zzeggs
C eggs
E eggs
C eggs
```

Sample output 1

```
1
1
1
2
2
2
0
1
1
---
0
2
1
```

Problem information

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