CODEFORCES
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PROBLEMS   SUBMIT   STATUS   STANDINGS   CUSTOM TEST

C. Registration system

time limit per test: 5 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

A new e-mail service "Berlandesk" is going to be opened in Berland in the near future. The site administration wants to launch their project as soon as possible, that's why they ask you to help. You're suggested to implement the prototype of site registration system. The system should work on the following principle.

Each time a new user wants to register, he sends to the system a request with his `name`. If such a `name` does not exist in the system database, it is inserted into the database, and the user gets the response `OK`, confirming the successful registration. If the `name` already exists in the system database, the system makes up a new user name, sends it to the user as a prompt and *also inserts the prompt into the database*. The new name is formed by the following rule. Numbers, starting with 1, are appended one after another to `name` (`name1`, `name2`, ...), among these numbers the least i is found so that `name`i does not yet exist in the database.

Input

The first line contains number n ($1 \le n \le 10^5$). The following n lines contain the requests to the system. Each request is a non-empty line, and consists of not more than 32 characters, which are all lowercase Latin letters.

Output

Print n lines, which are system responses to the requests: `OK` in case of successful registration, or a prompt with a new name, if the requested name is already taken.

Examples

input   Copy

```
4
abacaba
acaba
abacaba
acab
```

output   Copy

```
OK
OK
abacaba1
OK
```

input   Copy

```
6
first
first
second
second
third
third
```

output   Copy

```
OK
first1
OK
second1
```

→ Attention

Package for this problem was not updated by the problem writer or Codeforces administration after we've upgraded the judging servers. To adjust the time limit constraint, solution execution time will be multiplied by 2. For example, if your solution works for 400 ms on judging servers, then value 800 ms will be displayed and used to determine the verdict.

Codeforces Beta Round #4 (Div. 2 Only)

Finished

Practice

⭐

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest]

→ Clone Contest to Mashup

You can clone this contest to a mashup.

[Clone Contest]

→ Submit?

Language: [Java 1.8.0_241   ▾]

Choose file: [Choose file] No file chosen

[Submit]

→ Problem tags

data structures   hashing

OK
third1

implementation   *1300

No tag edit access