[CS 11] Prac 9n – Kris Kringle K

Problem Statement

As part of your company's Christmas celebration, it is tradition to hold a Kris Kringle, a fun event where each person gets assigned another person to give a gift to.

Unfortunately, your company culture, as a whole, is **lazy**. For example, here are some things about the Kris Kringle:

- No one bothers to set up the Kris Kringle assignments properly, so every year, each person gets assigned the same person to give a gift to. This removes all the suspense!
- Even worse, the employees are lazy as well. Instead of buying a new gift, they simply take the gift they received in the previous year's Kris Kringle, and then repackage that as their own gift for the Kris Kringle!

Thus, the event is completely predictable, and it involves the same few gifts getting passed around the same set of people. The only special one was the very first Kris Kringle, where people actually bought gifts for the first time.

You are given the list of n employees along with which employees they were assigned to give a gift to, as well as the list of gifts they received from the previous Kris Kringle. After k Kris Kringles, which gift will each person have at their possession?

Submit solution

[CS 11] Practice 9

Points: 180 (partial)

Time limit: 4.0s

Memory limit: 1G

Author:
kvatienza (Kevin Atienza)

Problem type

Allowed languages
~~NONE~~, py3

Task Details

Your task is to implement a function called `kris_kringle_k`. This function has two parameters. The first parameter is the `int` k. The second is a `list` or `tuple` of n triples. Each triple is composed of `str`s as follows:

- the first element is an employee name.
- the second element is the employee name they are supposed to give gifts to.
- the third element is the gift they received from the previous Kris Kringle.

The function must return a `dict` whose keys are the employee names. For each employee name, its corresponding value must be the gift they have at their possession after k Kris Kringles.

Restrictions

(See 9a for more restrictions)

For this problem in particular:

- Recursion is allowed.
- The source code limit is 2000.

Example Calls

Example 1 Function Call

```
kris_kringle_k(5, (
    ('Rufus', 'Rufus', 'Pistol'),
    ('Reno', 'Rude', 'Glasses'),
    ('Rude', 'Tseng', 'Shades'),
    ('Tseng', 'Reno', 'Glasses'),
    ('Elena', 'Cissnei', 'Materia'),
    ('Cissnei', 'Elena', 'Glasses'),
))
```

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Example 1 Return Value

```
{
    'Cissnei': 'Materia',
    'Elena': 'Glasses',
    'Rufus': 'Pistol',
    'Reno': 'Shades',
    'Rude': 'Glasses',
    'Tseng': 'Glasses',
}
```

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Constraints

- The function `kris_kringle_k` will be called at most $60{,}000$ times.
- $1 \le n \le 200{,}000$.
- The sum of all ns is at most $200{,}000$.
- Each employee or gift name is a nonempty string of at most 7 English letters.
- $0 \le k \le 10^{50}$.
- The employee names are distinct.
- Each employee name is assigned a unique employee name to give gifts to.
- Each employee name is assigned a unique employee name to receive gifts from.

Scoring

- You get 60 ❤ points if you solve all test cases where:
  - $n, k \le 50$
  - The sum of all ns is at most 500.
- You get 60 ❤ points if you solve all test cases where:
  - $n, k \le 4{,}000$
  - The sum of all ns is at most $8{,}000$.
- You get 60 ❤ points if you solve all test cases.

Clarifications

Report an issue

No clarifications have been made at this time.