[CS 11] Prac 8a – First Letter, Last Letter II: Electric Coogaloo

Problem Statement

A game of "Last letter, first letter" goes as follows. First, a category is picked—say "food". Then a player starts by naming anything that fits the category, e.g., "pizza". Each subsequent player then has to name something else, but with an extra restriction: its first letter must be the same as the last letter of the previous word!

Two players—Alice and Bob—have started playing the game, with Alice going first, and them taking turns. However, they're not very good at it, so they may have made some mistakes. For example, maybe the first letter of their word doesn't match the last letter or the previous word, or the word doesn't belong in the category. It is also a mistake to repeat a word that was already used in the game before.

Find the number of moves with mistakes each of them made.

Task Details

Your task is to implement a function called `game_mistakes`. This function has two parameters:

- the first is a `tuple` of `str`s representing all the words that belong to the chosen category.
- the second is a `tuple` of `str`s representing the sequence of words that were used. Note that Alice goes first.

The function must return a pair of `int`s:

- the first is the number of moves with mistakes Alice made.
- the second is the number of moves with mistakes Bob made.

Restrictions

In this lab session, many names are banned. Here are a few of them: `input`, `type`. This is *not* an exhaustive list. (If you accidentally use a variable name that turns out to be banned, please rename it.)

The following names are now allowed: `reversed`, `zip`.

The following import is now allowed: `count` from `itertools`.

`while` loops, `break`, and `continue` are now allowed.

This lab session focuses on generators. Therefore, recursion is banned.

For this problem:

- Loops and lists are allowed.
- Up to 8 function definitions are allowed.
- Recursion is **disallowed**. (The recursion limit has been greatly reduced.)
- Sets and dictionaries are allowed.
- Generators and comprehensions are allowed.
- The source code limit is 1700.

Example Calls

Example 1 Function Call

```
game_mistakes((
    'porkchop', 'kanin', 'ketchup', 'chopsuey', 'bulalo',
'adobo',
    'chicken', 'mami', 'longsilog', 'tocilog', 'tapsi',
'pancit',
    'lugaw', 'lomi', 'tokwatbaboy', 'paresbeef', 'friedsiomai',
    'siopao', 'burger', 'avocado', 'gulaman', 'apple',
'spaghetti',
    'taho', 'nut', 'croissant', 'linguine', 'pineapple',
'kutsinta',
    'edamame', 'hazelnut', 'yema', 'tinapay', 'durian', 'pizza',
    'orange', 'iodizedsalt', 'tea', 'eggplant', 'puto',
'legumes',
    'oatmeal', 'noodles', 'tofu', 'nutella', 'egg', 'udon',
'sago',
), (
    'pizza', 'apple', 'egg', 'hazelnut', 'tofu', 'udon', 'nut',
    'tinapay', 'yema', 'edamame', 'eggplant', 'durian',
'nutella',
    'avocado', 'orangutan', 'noodles', 'spaghetti',
'iodizedsalt',
    'toatmeal', 'linguine', 'egg', 'gulaman', 'nut', 'tea',
'uh',
))
```

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Example 1 Return Value

```
(5, 3)
```

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Constraints

- The function `game_mistakes` will be called at most $60{,}000$ times.
- The total number of words across all categories will be at most $200{,}000$.
- The total number of words across all games will be at most $200{,}000$.
- The number of words in each category will be at most $200{,}000$.
- The number of words in each games will be at most $200{,}000$.
- Each word is a nonempty string of at most 12 lowercase English letters.

Scoring

- You get 30 ❤️ points if you solve all test cases where:
  - the number of words in each category is ≤ 50.
  - the number of words in each game is ≤ 50.
  - the total number of words across all categories is at most 500.
  - the total number of words across all games is at most 500.
- You get 30 ❤️ points if you solve all test cases where:
  - the number of words in each category is $\leq 4{,}000$.
  - the number of words in each game is $\leq 4{,}000$.
  - the total number of words across all categories is at most $8{,}000$.
  - the total number of words across all games is at most $8{,}000$.
- You get 120 ❤️ points if you solve all test cases.

Clarifications

Report an issue

No clarifications have been made at this time.

[CS 11] Practice 8

My submissions

Points: 180 (partial)

Time limit: 4.0s

Memory limit: 1G

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Problem type

Allowed languages ~~NONE~~, py3