Workshop

Python Programming for Linguists

Exercises

2020, Ingo Kleiber

There are multiple ways you can approach these exercises. However, it is best if you actually try to write some code! You can do this on **_Google Colab_** (in any notebook or in an empty one, e.g., "playground") or in your **own development environment** (see Video "*Setting Up Your Development Environment*"). If you do not have the time or resources, I want to encourage you to think about these problems, even without writing out some code.

Please be aware that some of these exercises are very challenging for beginners. Please do **not feel disheartened** by them! You can always look at the **provided solutions** and use them as a starting point for your own exploration.

The Pizza Problem

Exercise 4 – Adding More Pizzas

In order to work on this problem, I would recommend modifying the notebook for the Pizza Problem video.

Add one or two additional pizzas to the mix.

If you want to challenge yourself, add a third shape option: *triangle-shaped pizzas*.

Exercise 5 – Just the Right Combination of Pizzas *(Challenging)*

For this exercise you do not need to modify the existing code. To make this exercise less complex, ignore the PTER.

Try to develop a function that, given a set of pizza options, determines the combination of pizzas for a desired amount of pizza that requires the least number of pizzas. The goal is to order as little pizzas as possible while still getting enough pizza.

Example:

Let's assume there are two pizzas:

Small (20cm, A=1,257) and **Large (30cm, A=2,827)**

We want to have 6,000 cm^2 of pizza. While we could order about **five small pizzas** (A=6,285), the solution to this exercise would be **two large ones and a small one** (A=6,911).

Task:

To make things easier, we will use a modified data structure that only contains the required information:

```
pizzas = [
        ['small', 531],
        ['large', 707],
        ['party', 1518]
]
```

Try to find the ideal combination for a desired area of 3,800 cm^2 of pizza.

Ps. If you are interested, this is a variation of the Change-Making Problem.