

Homework 4

Fully functional

Due October 14, 2022 at 5pm

In this homework, you will be doing a series of exercises designed to make you practice using functions (and a bit more practice at loops). Each one of these should be in a separate Python file. For this assignment, you may assume that all the input you get will be of the correct type. You should use the elements of good basic Python style discussed in class.

Learning Goals

1. Create and use functions.
2. Gain insight into scope.
3. Practice loops some more.
4. Identify and fix errors.
5. Use elements of good basic coding style.

The Assignment

Write three small programs to do the following three tasks. For each program, you must prompt politely for input and print out the answer in an explanatory sentence. Each program you write **must** use at least one function!

1. **hw4a.py** Write a program to ask the user annual number of visitors at their five favorite Maine parks and then print out some descriptive statistics of those figures. The descriptive statistics should include the minimum attendance at any park, the maximum attendance at any park, the total attendance, and the average attendance at all the parks. The report on the minimum and maximum should include the name of the park.

You should write functions for each of the descriptive statistics, specifically `attendMin()`, `attendMax()`, `attendTotal()`, and `attendAvg()`. Each function should take the attendance at the five parks as input and return the value computed.

The most natural way to store the park data is in a list. Since you know the number of entries and the identities of each, you should be able to do this with your current understanding of lists. Specifically, you can create lists of five elements – one element for each park. You do not need the more flexible capabilities to alter lists that we will discuss later.

Sample output:

```
What is one of your favorite Maine parks? Camden Hills
```

How many thousand people visit Camden Hills in a year? **750**
 What is one of your favorite Maine parks? **Acadia**
 How many thousand people visit Acadia in a year? **3440**
 What is one of your favorite Maine parks? **Quoddy Head**
 How many thousand people visit Quoddy Head in a year? **400**
 What is one of your favorite Maine parks? **Baxter**
 How many thousand people visit Baxter in a year? **1200**
 What is one of your favorite Maine parks? **Moose Point**
 How many thousand people visit Moose Point in a year? **50**
 The park with the fewest visitors is Moose Point with 50 thousand.
 The park with the most visitors is Acadia with 3,440 thousand.
 The total number of visitors at those parks is 5,840 thousand.
 The average number of visitors per park is 1,168 thousand.

2. **hw4b.py** Write a program that celebrates a favorite feature of favorite parks. Get the favorite feature from the user for each favorite park, until the user enters 'done', and celebrate the feature of a specified park. You should create a function that prints the celebratory messages for a given park. This message should identify the park and print the favorite thing about that park once for each 10,000 visitors in a year (round up so that the message prints at least once for any park, no matter how small the attendance). This function will need the three arguments: the name of the park, the favorite feature, and the attendance. You may repurpose bits of code that you wrote for part 4a.

Sample output:

What is one of your favorite Maine parks (or 'done' to end)? **Camden Hills**
 What is your favorite thing about Camden Hills? **Mt. Battie**
 How many thousand people visit Camden Hills in a year? **750**
 What is one of your favorite Maine parks (or 'done' to end)? **Acadia**
 What is your favorite thing about Acadia? **Schoodic Point**
 How many thousand people visit Acadia in a year? **3440**
 What is one of your favorite Maine parks (or 'done' to end)? **Quoddy Head**
 What is your favorite thing about Quoddy Head? **Lighthouse**
 How many thousand people visit Quoddy Head in a year? **400**
 What is one of your favorite Maine parks (or 'done' to end)? **Moose Point**
 What is your favorite thing about Moose Point? **Tidal pools**
 How many thousand people visit Moose Point in a year? **50**

What is one of your favorite Maine parks (or 'done' to end)? **done**

Which park to celebrate (between 0 and 3)? **3**

At Moose Point, I love the:

Tidal pools!

Tidal pools!

Tidal pools!

Tidal pools!

Tidal pools!

3. **hw4c.py**. Write a program to generate silly song lyrics about favorite Maine foods. Your program should get the food and number of verses from the user and call a function named `singVerse()` the requested times to generate the verses.

Here is some sample output, with the user input in bold. (Yours does not have to match this exactly, but it should be similar. You may assume that all foods come in bottles. Don't worry about the details of grammar related to singular/plural.)

What is your favorite Maine food? **Maple syrup**

How many verses? **3**

3 bottles of Maple syrup on the wall, 3 bottles of Maple syrup,
Take one down, pass it around, 2 bottles of Maple syrup on the wall.

2 bottles of Maple syrup on the wall, 2 bottles of Maple syrup,
Take one down, pass it around, 1 bottles of Maple syrup on the wall.

1 bottles of Maple syrup on the wall, 1 bottles of Maple syrup,
Take one down, pass it around, 0 bottles of Maple syrup on the wall.

Oh, no. The maple syrup is all gone!

How to turn in your homework

Turn in each program in its own file. When turning in your own assignment make sure to add your last name to the file name (for example: Rheingans_hw4a.py).