Python Assignments Draft (1ed)

$ Generator

Create fibonacci numbers that are less than 100 using Generator

$ Iterable Class

Create an iterable class Range that has the exact same functionality as the built-in range() function, which takes three arguments: start, stop, and step.

This class Range can be iterated by using the next() method and will raises an error when out of range occurs. You should also prevent possible infinite loop by raising RuntimeError when necessary.

$ Decorator (first class function && closure)

1. Create a decorator function that can check zero division error.

2. Create a logging function that logs every decorated function into a file named by this function with the following format:

function_name.log: Ran with arguments: arg1, arg2, arg3... and keyworded arguments: kwarg1, kwarg2, kwarg3...

(In this assignment, you could use the logging model)

3. Create a timing decorator that prints out the running time of decorated functions.

4. Slightly modify the logging and timing decorators created in question 2 and 3 so that they can be chained together properly without losing information. (You may need to use the wraps decorator from the functools model.)

5. Assume you want to create a simple HTML web page. However, you only want to write the content do not want to repeatedly type all the tags yourself. Greate a reusable decorator to generate HTML tags automatically for you and using it write the following html. (Ignore the indentation)

```
<h1>Learning Python</h1>
    <h2>Chapter 1</h2>
    <h2>Chapter 2</h2>
        <p>
          <h3>Section2.1</h3>
        </p>
    <h2>Chapter 3</h2>
```

$ Functional programming basics (lambda && reduce && map)

1. Using lambda to create a function that takes two numbers as parameters and returns the bigger one as its result.

2. Create a function that takes a list of numbers as parameters and calculates their

2. Create a function that takes a list of numbers as parameters and calculates their products.

3. Write one-line code using reduce fuction to replace the function that you created in question 2.

4. In python, functions are the first-class citizen. The built-in map function lets us apply a function to every item in an iterable. Typically we want to apply a function to every item in a list, but know that it's possible for most iterables. The map takes 2 inputs, the function to apply and the iterable object. Create a my_map() function that has the same functionality as the map function.

$ List comprehension && map && filter

1. Create a function that takes a list of number as its argument. Calculates the cube of odd each number in the list and append them to a new list. Then, return this list as its result.

2. Using the list comprehension to replace the function that you create in the first question. (only one line is needed)

3. Using theuse lambda, map and filter functions to replace the function that you create in the first question. (only one line is needed)

$ Set, dictionary comprehension && zip

1. Calculate the cartesian products of the provided names and heroes lists and put results into a set where each result is a tuple. (Using set comprehension and only one line is needed)e cartesian product of the provided names and heroes lists and put results into a set. (Using set comprehension and only one line is needed)

2. Create a dictionary in "[names]: heroes" format using provided names and heroes lists below excluding Wade. (Using dictionary comprehension and only one line is needed)