PE01: Programming Exercise

phone_number_search.py

Description:

This assignment is to practice python language (ex. class, method, Object-Oriented Programming concept, and syntaxes) and implement simple and binary search for looking up the phone number of a given name.

The "simple_search" and "binary_search" method should be part of a class named "SimpleSearchClass" class within "simple_search.py" file and "BinarySearchClass" class within "binary_search.py" file along with the class initialization method which takes in the alphabetically named array "name_list". The simple and binary search function itself will be called from another python file named "phone_number_search.py" with an input parameter that holds the person's name. From each search function, the result will be an index of where the person's name was located from the "name_list" array and should be used to lookup/print the person's phone number from "phone_number" array. To learn how the search algorithm works in simple search, **DO NOT** use index() method from the python standard library. Note that "name_list" and "phone_number" array indexes are synced.
Lastly, **"phone_number_search.py" file has already been provided (download attachment)**, which also uses a "time" module to compare the simple and binary search runtime.

As part of the assignment, compare each search algorithm's actual runtime and justify in a short paragraph on how and which search algorithm runs faster. Keep in mind to always **comment and document your class and methods.**

Documentation reference:

- Mertz, J. (n.d.). Documenting Python Code: A Complete Guide. https://realpython.com/documenting-python-code/).

Expected result:

1. "**phone_number_search.py**" file (This is already provided, but please include this file on your submission)
2. "**simple_search.py**" file (contains "SimpleSearchClass" and "simple_search" function)
    - "init(array)" function should act as a constructor and initializes an array of the object with "name_list" array.
    - "simple_search(searching_item)" function within the class should take in the value of the searching item.
3. "**binary_search.py**" file (contains "BinarySearchClass" and "binary_search" function)
    - "init(array)" function should act as a constructor and initializes an array of the object with "name_list" array.
    - "binary_search(searching_item)" function within the class should take in the value of the searching item.
4. Short paragraph on how and which search function runs faster.

The binary search algorithm performed much faster than the