Big data Analytics: ICP2

In class programming:

1. **Question: Consider the following Python code:**

```
class Counter:
    count = 0

    def __init__(self):
        self._count = 0

    def increment(self):
        self._count += 1
        Counter.count += 1

    def get_counts(self):
        return f"Instance count: {self._count}, Class count: {Counter.count}"

a = Counter()
b = Counter()

a.increment()
a.increment()
b.increment()

print(a.get_counts())  # What will this print?
print(b.get_counts())  # What will this print?
```

Tasks:

• Explain the difference between Counter.count and self._count.

The main difference between Counter.count and self.count is that Counter.count will count the total number of times anything is incremented, as it is declared in the class and not in the function. But self._count only counts each specific instance, like a or b.

• What is the output of a.get_counts() and b.get_counts()?
a.get_counts() = instance count: 2, Class count: 3

b.get_counts() = instance count: 1, Class count: 3

• How does the increment method affect both the class and instance variables?

It affects both because Counter.count is declared in the class, so it updates that value, whereas self._count is declared in init, so it only increments self

2. Find and remove the bug from the code to obtain the given output.

```
def sum_all(args):
    return sum(args)

print("Sum of 1, 2, 3 is:", sum_all(1, 2, 3))
print("Sum of 4, 5, 6, 7 is:", sum_all(4, 5, 6, 7))
```

```
Sum of 1, 2, 3 is: 6
Sum of 4, 5, 6, 7 is: 22
```

The bug with this code is that at first sum_all is only expecting one argument, if you change args to *args it will fix the problem and will work as intended.

3. Write a function called first_word that takes a list of character strings as input and returns the first element of the list in alphabetical order. For example, your function should work like this:

students = ['Mary', 'Zelda', 'Jimmy', 'Jack', 'Bartholomew', 'Gertrude'] (***Input)***

first_word(students) (***Function)***

'Bartholomew' (***Output)***

```
def first_word():
    names = list(input("Please enter list of names seperated by ' ': ").split())
    #asks the user to input a list of names such as: Mary Zelda Jimmy Jack Bart Gertrude …
    #return min(names) will search through this list and return the word that comes first alphabetically
    return min(names)

print(first_word())
```

This function ^^^ will output the element that comes first alphabetically.

Hint: **You'll need to first sort your list in the function to accomplish this, then identify the first element. Within a function, it is a good idea to use multiple lines of code to separate out the different steps. Just make sure all the code that belongs to the function is indented!**

4. Create a class Employee and then do the following

- Create a data member to count the number of Employees
- Create a constructor to initialize name, family, salary, department
- Create a function to average salary
- Create a Fulltime Employee class and it should inherit the properties of Employee class
- Create the instances of Fulltime Employee class and Employee class and call their member functions.

Follow the submission guidelines used for previous ICP.

Evaluation Criteria:

1. Completeness of Features
2. Code Quality (https://en.wikipedia.org/wiki/Best_coding_practices)
3. Time

Note: *Cheating, plagiarism, disruptive behavior and other forms of unacceptable conduct are subject to strong sanctions in accordance with university policy.*