# 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.
- What is the output of a.get_counts() and b.get_counts()?
- How does the increment method affect both the class and instance variables?

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
```

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)***

***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.*