Spring 2025: CS4710 – Intro to Machine Learning

Programming Assignment-3

1. Use a Python code to display the given pattern using the for loop.

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```

2. Consider the following Python code:

```python
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?**

3. 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
```

4. Use looping to output the elements from a provided list present at odd indexes.

my_list = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]

5. Write a function that takes a list and returns a new list with unique items of the first list.

Sample List: [1,2,3,3,3,3,4,5]

Unique List: [1, 2, 3, 4, 5]

6. 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 the Employee class**
- **Create the instances of the Fulltime Employee class and Employee class and call their member functions.**

** Follow the rubric guidelines.

Submission Guidelines:

1. Once finished document your code and make sure all parts if the assignments are completed.
2. Push your code to your GitHub repo and update the ReadMe file, add your info.
3. Submit the assignment before the deadline.
4. Record a short video (1~3) minute, proof of execution and complete assignment.
5. Add video link to ReadMe file.