Lab 3: Object-Oriented Programming (OOP) Tasks

1. Single Inheritance Task

Task:

Create a `Person` class with attributes like `name` and `age`, and a `Student` class that inherits from `Person` and adds a `student_id`.

2. Multiple Inheritance Task

Task:

Implement a `Sports` class and an `Academics` class. Create a `Student` class that inherits from both and displays the total achievements of a student in sports and academics.

3. Multilevel Inheritance Task

Task:

Create a class `Animal`, then inherit it into `Mammal`, and finally inherit `Dog` from `Mammal`. Add unique attributes/methods at each level and demonstrate calling methods from different levels.

4. Method Overriding (Polymorphism) Task

Task:

Create a `Shape` class with a `draw()` method, then create `Circle` and `Rectangle` classes that override the `draw()` method.

5. Encapsulation Task

Task:

Create a `BankAccount` class with private attributes `_balance`. Implement `deposit()` and `withdraw()` methods and ensure withdrawal is not possible if the balance is insufficient.

Search for IT

- **Can We Do Overloading in Python?**

  If Yes, Tell me How??

  If No, Tell me Why??

- **protected access modifier and clarify your searching with example and what is different between protected and public in python**

• Bounce

Real-World OOP Scenario Task: E-commerce System.

- **Task: Build a simple E-commerce system with classes like User, Product, Order, and Payment. Use inheritance (e.g., AdminUser and Customer from User) and encapsulation for secure data handling.**

End of Lab 3