**OOPS Assignments**

**Assignment 1: Library Management System**

Create a Java program for a basic Library Management System using OOP principles. The system should have the following classes:

* + **Book**: This class represents a book with attributes like title, author, and publication year. It should have methods to display book details.
  + **Student**: This class represents a student with attributes like name, roll number, and a list of borrowed books. It should have methods to borrow and return books.
  + **Library**: This class manages the books in the library and the students who borrow them. It should have methods to add books to the library, display available books, allow students to borrow and return books, and display a student's borrowed books.

**Requirements:**

* + Create the **Book** class with appropriate attributes and methods.
  + Create the **Student** class with attributes and methods for borrowing and returning books.
  + Create the **Library** class that maintains a list of books and students.
  + Demonstrate inheritance by creating a **ReferenceBook** class that inherits from **Book** and has additional attributes like ISBN and reference section.
  + Implement a basic user interface in the **Main** class to interact with the library system. Allow users to add books, add students, borrow and return books, and display information.

**Assignment 2: Simple Banking Account System**

Create a Java program for a simple bank account system using OOP principles. The system should have the following classes:

* + BankAccount: This class represents a bank account with attributes like account number, account holder's name, and balance. It should have methods to deposit, withdraw, and display the balance.
  + Main: This class contains the main method to interact with the bank account system. It should allow users to create accounts, perform deposits, withdrawals, and display account details.

Requirements:

* + Create the BankAccount class with attributes and methods for depositing, withdrawing, and displaying balance.
  + Create the Main class with a user interface to interact with the bank account system.

**Assignment 3: Encapsulation and Access Modifiers**

Create a Java program for a simple bank account system using OOP principles

* + Design a class BankAccount with private attributes: accountNumber, accountHolder, and balance.
  + Provide public methods to deposit, withdraw, and display the balance.
  + Create a subclass SavingsAccount that adds an interest rate. Override the withdrawal method to prevent overdrawing.
  + Create another subclass CheckingAccount that adds a minimum balance requirement. Override the display method to show the account type.

**Assignment 4: Abstraction and Interfaces**

* + Create an interface Vehicle with methods start() and stop().
  + Implement the Vehicle interface in classes Car, Motorcycle, and Truck.
  + Create an abstract class Animal with abstract methods sound() and move().
  + Extend Animal to create concrete classes Dog, Cat, and Bird, implementing the abstract methods.