Programming Exercises

Classes

1. **Bank Account Management**: An object-oriented solution for bank account management requires modeling class definitions for account holders, savings account, checking account, and transactions. The class definitions must include attributes such as account number, account balance, and account type, and methods such as deposit, withdrawal, and balance inquiry.

2. **Inventory Management**: In an inventory management system, an object-oriented solution involves modeling class definitions for products, suppliers, and orders. The class definitions should include attributes such as product name, supplier name, price, quantity, and methods such as adding new products, updating product details, and generating reports.

3. **Library Management**: An object-oriented solution for library management involves modeling class definitions for books, authors, borrowers, and library staff. The class definitions should include attributes such as book title, author name, borrower name, due date, and methods such as issuing books, returning books, and searching for books.

4. **Online Shopping**: An object-oriented solution for online shopping requires modeling class definitions for customers, products, shopping carts, and orders. The class definitions must include attributes such as customer name, product name, product price, and methods such as adding products to a cart, updating cart details, and placing orders.

5. **Car Rental System**: An object-oriented solution for a car rental system involves modeling class definitions for customers, cars, rentals, and rental staff. The class definitions must include attributes such as customer name, car make and model, rental start and end dates, and methods such as renting a car, returning a car, and generating rental reports.

6. Design a class for a **shopping cart** that stores a list of items along with their prices. The class should have methods for adding and removing items, but without any ability to calculate discounts or taxes based on the total price of the items.

7. Create a class for a **restaurant menu** that stores information such as the item name, description, and price. The class should have methods for adding and removing items, but without any ability to categorize the items or to display the menu in a particular order.

8. **Grocery Store Inventory**: Design a class for a grocery store inventory system. The class should have attributes such as product name, product code, price, quantity in stock, and supplier information. The class should also have methods for adding and removing products from the inventory, updating product information, and displaying the current inventory status.

9. **Student Records System**: Design a class for a student records system. The class should have attributes such as student name, student ID, address, phone number, and email address. The class should also have methods for adding and removing students from the system, updating student information, and displaying student records.

10. **Library Catalog**: Design a class for a library catalog system. The class should have attributes such as book title, author, ISBN, publication date, and number of copies available. The class should also have methods for adding and removing books from the catalog, updating book information, and displaying the current catalog status.

11. **Bank Account Management**: Design a class for a bank account management system. The class should have attributes such as account number, account holder name, account balance, and account type. The class should also have methods for depositing and withdrawing funds, transferring funds between accounts, and displaying account information.

12. **Employee Management System**: Design a class for an employee management system. The class should have attributes such as employee name, employee ID, department, job title, and salary. The class should also have methods for adding and removing employees from the system, updating employee information, and displaying employee records.