**Lab Tasks**

**1. Task: Book Library Management**

**Description:**

Create a Swing-based library management system where users can add, view, search, and delete books from a collection.

**Requirements:**

* Use an ArrayList to store Book objects (each containing a title, author, and ISBN).
* The application should allow users to:
  + Add books through a form.
  + Display all books in a JTable.
  + Search for a book by ISBN or title.
  + Remove a book from the collection using the ISBN.

**2. Task: Shopping Cart System**

**Description:**

Design a shopping cart system where users can add products to a cart, view cart details, and remove products from the cart.

**Requirements:**

* Use a HashMap<String, Integer> where the key is the product name, and the value is the quantity.
* The system should allow users to:
  + Add products to the cart by specifying the name and quantity.
  + View the cart's contents in a JTable.
  + Update or remove items from the cart.
  + Calculate the total price (using predefined product prices in a HashMap<String, Double>).

**3. Task: Student Grading System**

**Description:**

Develop a system where a teacher can enter students' names and their grades. The system will allow calculating the average grade, finding the highest/lowest grades, and displaying all student grades.

**Requirements:**

* Use a TreeMap<String, Integer> where the key is the student name, and the value is the grade.
* The system should allow:
  + Adding a student with their grade.
  + Displaying all students and their grades in a JTable.
  + Calculating the class average, and displaying the student with the highest and lowest grades.

**4. Task: Contact List Application**

**Description:**

Create a simple contact management application where users can add contacts (name, phone number, and email), view the contact list, and search for specific contacts.

**Requirements:**

* Use a HashSet<Contact> where Contact is a class with fields for name, phone number, and email.
* The application should:
  + Add contacts and ensure no duplicates (by checking name or phone number).
  + Display all contacts in a JList or JTable.
  + Allow searching for a contact by name or phone number.

**5. Task: To-Do List Application**

**Description:**

Create a to-do list application where users can add tasks, mark them as completed, and remove tasks from the list.

**Requirements:**

* Use an ArrayList<String> to store the task descriptions.
* The system should allow:
  + Adding tasks to the list.
  + Marking tasks as completed (by selecting and removing them from the list).
  + Displaying the current tasks in a JList or JTable.
  + Clearing all completed tasks from the list.