Problem Statement/Description:  
  
​​​​​​​In the heart of a bustling town stood Book Haven, a magical bookstore that captivated hearts with its endless shelves of stories. Led by the wise Bookmaster, the staff curated a haven where every book found its reader, and every reader found their adventure.

With the town's love for books growing, the Bookmaster sought the aid of a skilled software engineer to craft a digital portal – the Book Haven Digital Chronicles. This portal would weave together the bookstore's inventory, customer journeys, and sales magic into one enchanting experience.

Within the digital realm, the Bookmaster and staff could conjure new books into the inventory, guide readers on personalized quests, and celebrate each purchase with a digital scroll of confirmation. The Chronicles also unveiled secrets of sales trends and reader preferences, guiding Book Haven's magical offerings.

Yet, even in this digital adventure, rules governed the realm. No book could be sold beyond its inventory, and customers with unpaid dues found their paths paused until debts were settled. The Book Haven Digital Chronicles became a beacon of literary wonder, uniting books and readers in a timeless tale of enchantment.

You have been hired by a local bookstore, "Book Haven," to develop a web-based software solution to manage their inventory and customer transactions. As the Lead Software Engineer, your task is to design and implement a system that meets the following requirements:

1. Inventory Management:

- The system should allow the bookstore staff to add new books to the inventory, including details such as Title, Author, Genre, Price, and Quantity.

- Staff members should be able to update existing book information and remove books from the inventory if they are no longer available.

2. Customer Management:

- The system should enable the staff to register new customers by collecting information such as Customer ID, First Name, Last Name, Contact Phone Number, Email, and Address.

- Customers should be able to log in to the system to view their purchase history and update their contact information if needed.

3. Sales and Transactions:

- Staff members should be able to process customer purchases by selecting books from the inventory and recording the quantity sold for each book.

- The system should calculate the total amount due for each transaction, including any applicable taxes or discounts.

- Customers should receive a confirmation email with the details of their purchase after completing a transaction.

4. Reporting and Analytics:

- The system should generate reports for the bookstore's management, showing sales trends, best-selling books, inventory levels, and revenue summaries.

- Staff members should be able to generate custom reports based on specified time periods or book categories.

5. System Limitations:

- Staff members should not be able to sell more books than are currently available in the inventory.

- Customers with outstanding unpaid bills should not be allowed to make new purchases until their balance is settled.

Your task is to design and implement a web-based software solution using Java that fulfills these requirements. You'll need to create appropriate classes, methods, and data structures to represent books, customers, transactions, and the bookstore's inventory. The system should also incorporate authentication and authorization mechanisms to ensure secure access for staff and customers.