CSC 212 Project

E-Commerce Inventory & Order Management System

Fall 2025

Phase I – Due Date October 30th, 2025

The project for this semester aims to implement an E-Commerce Inventory Management System that will help the business manage the stock of products and process orders. The business also would like to have insight and challenging queries to be answered. You as developers will be tasked to build the system and make sure your code will provide answers to all queries needed from the business.

1. **Products**
    - Attributes: productId, name, price, stock, list of reviews.
    - Operations:
        - Add/remove/update products.
        - Search by ID or name (linear).
        - Track out-of-stock products.
2. **Customers**
    - Attributes: customerId, name, email, orders list.
    - Operations:
        - Register new customer.
        - Place a new order for a specific customer.
        - View order history.
3. **Orders**
    - Attributes: orderId, customer reference, list of products, total price, order date, status (pending, shipped, delivered, canceled).
    - Operations:
        - Create/cancel order.
        - Update order status.
        - Search order by ID.

4. **Reviews**
    - Attributes: rating score (1-5) and text comment.
    - Linked to products.
    - Operations:
        - Add/edit review.
        - Get an average rating for product.

You are required to implement the core classes above and their appropriate data structures. In addition, you are required to implement functional requirements to help the business understand what the popular products are, how to forecast and enhance the stock of products if demand is high and so on.

Requirements

- Read data from CSV file that contains products, customers, orders, and reviews.
- You can add a product, customer, and place an order.
- Customers can add reviews to products.
- Extract reviews from a specific customer for all products with the most efficient linear data structure possible.
- Suggest "top 3 products" by average rating.
- All Orders between two dates
- Given two customers IDs, show a list of common products that have been reviewed with an average rating of more than 4 out of 5.

All requirements above should include a time complexity analysis for your solutions.

Deliverables

- A complete class diagram that shows classes, methods, relationships
- Your codebase which should include the methods in the requirement section
- A written report that shows all classes, methods, also the analysis of time complexity and space complexity.
- All submissions will be using a single zip folder through LMS

Rules

- All data structures used in this assignment must be implemented by the student. The use of Java collections or any other data structures library is strictly forbidden.
- Posting the code of the assignment or a link to it on public servers, social platforms or any communication media including but not limited to Facebook, Twitter or WhatsApp will result in disciplinary measures against any involved parties.
- All submitted code will be automatically checked for similarity, and if plagiarism is confirmed penalties will apply.
- You may be selected to discuss your code with an examiner at the discretion of the teaching team. If the examiner concludes plagiarism has taken place, penalties will apply.
- You are allowed up to 3 team members per project.