CST-339 Milestone 3

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Programming in Java III and CST-339
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Table of Contents

List of Tasks Completed

- Finalized styles, fonts, color palette, and application theme across all modules.
- Refactored Login module using Spring Beans, Spring Core, and Dependency Injection (DI).
- Refactored Registration module using Spring Beans, Spring Core, and DI.
- Implemented Product Creation module following Spring MVC architecture and integrated form validation.
- Developed Product object model and corresponding database schema (ER Diagram) for future persistcence.
- Created common Thymeleaf layout templates for consistent UI across all views.
- Conducted peer code reviews and ensured inline documentation for all components.
- Recorded a technical screencast demonstrating full application functionality

Planning Documentation

The CLC team continued development of the Campus Bookstore Inventory Management System, focusing on implementing Spring's Inversion of Control (IoC) and Dependency Injection patterns for improved modularity and maintainability.

Team Member	Role	Main Tasks
Eric	Backend Developer	Spring Boot setup, database, services
Aaron	Frontend Developer	Thymeleaf views, Bootstrap, layout
Split Evenly	Security / API Developer	Spring Security setup, REST API endpoints
Alexis	QA / Documentation	Testing, reports, Git organization

Technologies and Tools Used

The Campus Bookstore Inventory Management System was developed using a modern Java enterprise technology stack designed for modularity, scalability, and maintainability. The following tools and frameworks were utilized throughout Milestone 3:

Spring Boot 3	Primary application framework for dependency management, configuration, and rapid development of enterprise applications.
Spring Core / Dependency Injection (DI)	Manages business layer beans and promotes loose coupling between application components.
Spring MVC	Handles controller routing, form processing, and validation within the application.
Thymeleaf	Provides dynamic server-side HTML templating integrated seamlessly with Spring MVC for rendering views.
Bootstrap 5	Ensures a consistent, responsive, and accessible user interface design across all pages.
Java 23	Core programming language used for all application logic and configuration.
Maven	Build automation tool responsible for managing project dependencies and compiling the application.
MySQL (Planned for Milestone 4)	Intended for database integration and persistent storage of user and product data.
GitHub	Used for version control, collaboration, and code review management among team members.
Loom	Utilized to record and share

Design Documentation

General Technical Approach

The project follows an N-Layer Architecture, separating responsibilities across layers:

- Presentation Layer: Implemented using Thymeleaf templates styled with Bootstrap.
- Business Logic Layer: Managed via Spring Beans and Dependency Injection, enabling loose coupling between services and controllers.
- Data Layer: Product and user models prepared for MySQL integration in upcoming milestones.

This approach ensures testability, maintainability, and clear separation of concerns.

Key Technical Decisions

- Spring Boot chosen for rapid configuration and built-in MVC support.
- Dependency Injection (DI) implemented to manage business services and promote code reusability.
- Spring Beans used for business logic encapsulation and inversion of control.
- JSR-303 Validation annotations added for form validation on product and registration pages.
- Bootstrap 5 adopted for a modern gray-white-black responsive UI theme.
- Thymeleaf fragments implemented to maintain layout consistency across all views.
- Future milestones will introduce Spring Security and MySQL persistence.

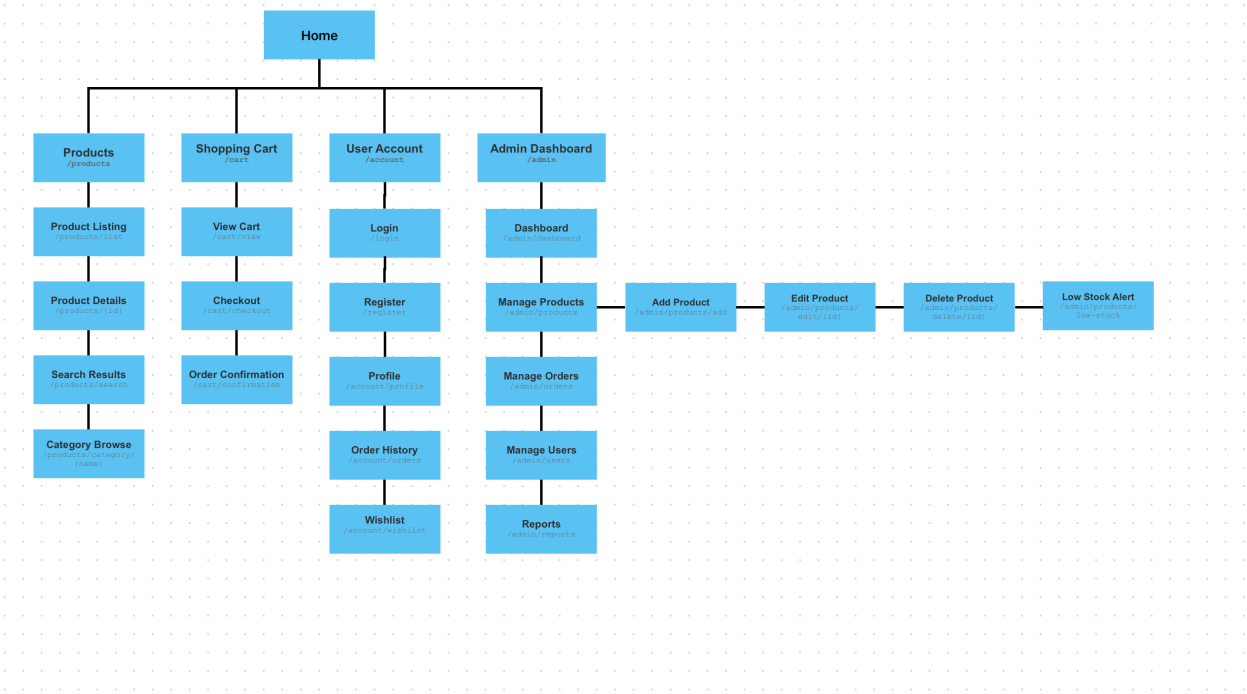
Installation and Configuration Instructions

1. Ensure Java 23 and Maven are installed.
2. Clone or extract the project repository:
   git clone https://github.com/GCU-AChaussignand/CST-339-Milestone.git
3. Open in IntelliJ IDEA, Eclipse, or Spring Tool Suite (STS).
4. Builds and run using:
   mvn spring-boot:run
5. Access the web app at:
   http://localhost:8080

Known Issues and Risks

Type	Description	Mitigation
UI Layout	Minor spacing inconsistencies on small screens	Responsive CSS tuning
Orientation	Some pages reload incorrectly after sign-in	Adjust redirect logic in controllers
Integration	Upcoming MySQL and Security setup may introduce conflicts	Plan early testing and validation
Code Merge	Potential merge conflicts during team commits	Regular branch sync and code reviews

Site Map


Home
Products
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Shopping Cart
/cart
User Account
/account
Admin Dashboard
/admin
Product Listing
/products/list
View Cart
/cart/view
Login
/login
Dashboard
/admin/dashboard
Product Details
/products/{id}
Checkout
/cart/checkout
Register
/register
Manage Products
/admin/products
Add Product
/admin/products/add
Edit Product
/admin/products/edit/{id}
Delete Product
/admin/products/delete/{id}
Low Stock Alert
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Search Results
/products/search
Order Confirmation
/cart/confirmation
Profile
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Manage Orders
/admin/orders
Category Browse
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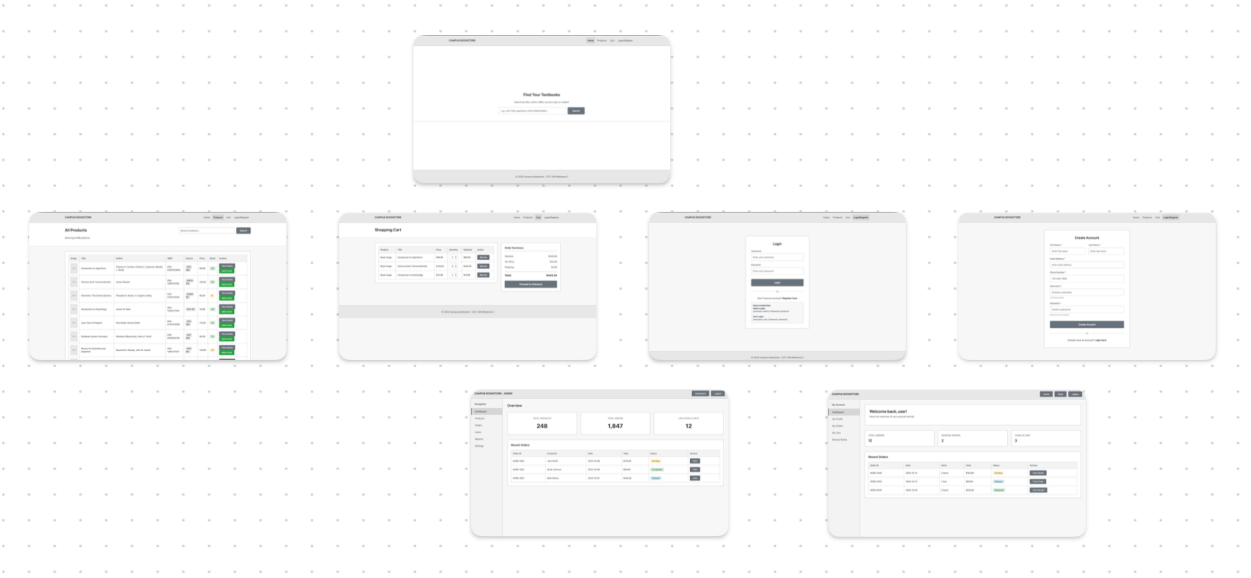
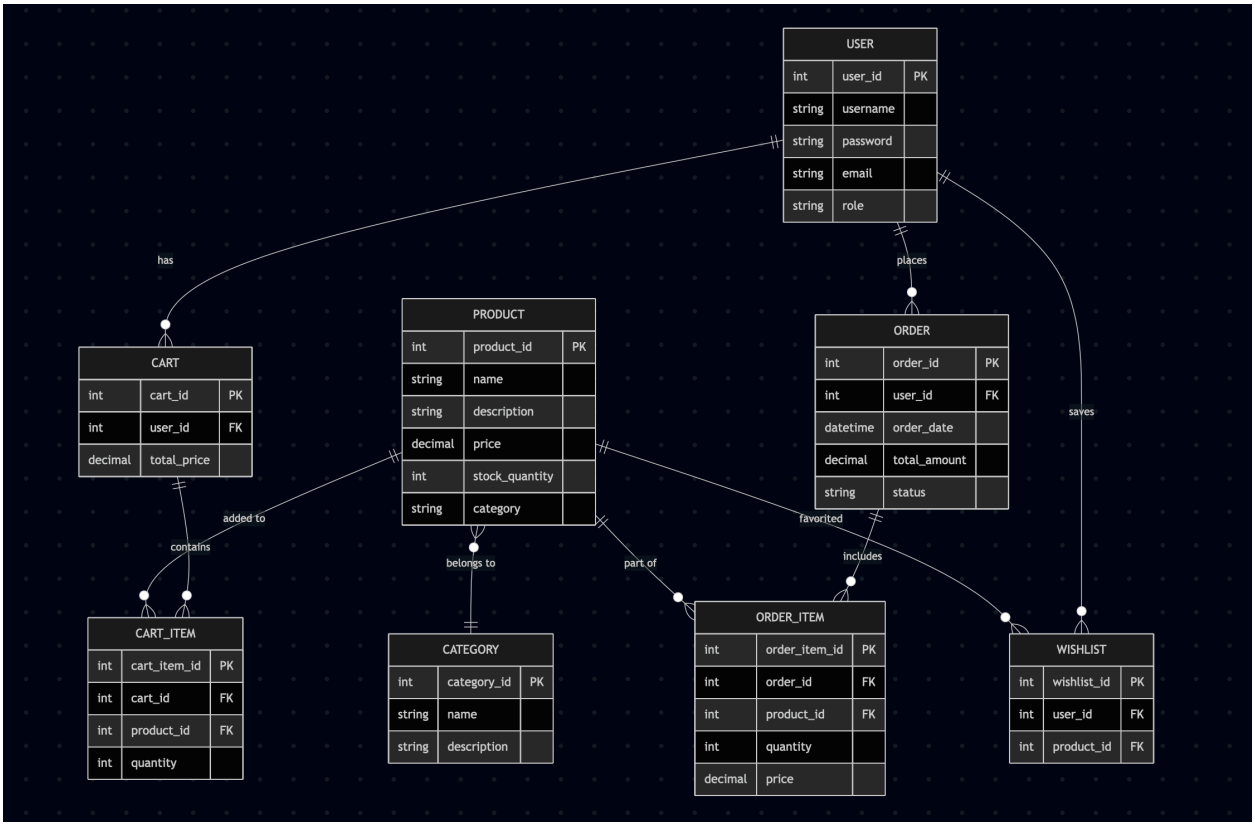
Order History
/account/orders
Manage Users
/admin/users
Wishlist
/account/wishlist
Reports
/admin/reports

Website Concept/ Wireframe



ER Diagram


USER
int user_id PK
string username
string password
string email
string role
has
places
saves
CART
int cart_id PK
int user_id FK
decimal total_price
PRODUCT
int product_id PK
string name
string description
decimal price
int stock_quantity
string category
ORDER
int order_id PK
int user_id FK
datetime order_date
decimal total_amount
string status
added to
contains
belongs to
part of
favorited
includes
CART_ITEM
int cart_item_id PK
int cart_id FK
int product_id FK
int quantity
CATEGORY
int category_id PK
string name
string description
ORDER_ITEM
int order_item_id PK
int order_id FK
int product_id FK
int quantity
decimal price
WISHLIST
int wishlist_id PK
int user_id FK
int product_id FK

GitHub Repository

Repository Link: https://github.com/GCU-AChaussignand/CST-339-Milestone.git
Branch Used: Milestone-3

Screen Cast

Loom Link:
Loom Link:

Reference

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