**Project Title: *Bookstore Management System*Group 3**

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# Project Vision and Description

**Project Vision and Description**

The Bookstore Management System is designed to automate and streamline the operations of a rare bookstore. The system replaces the paper-based process with a digital platform to improve efficiency and accuracy.

**Core Features Include:**

* Inventory Management
* Sales Record Management
* Customer Order Tracking
* Order Placement to Suppliers
* Real-Time Low-Stock Alerts
* User Authentication (Customers & Staff)
* Personalized Recommendations
* Secure Payment Gateway Integration
* Mobile Compatibility for Staff

**Expanded Scope Includes:**

* Notification System
* Role-Based Access Control
* Data Encryption
* Cloud Deployment for Scalability

# Team Roles

Each team member has been assigned a **specific Scrum role** to ensure the project runs efficiently:

## Team Roles and Assignment

Each team member is assigned a distinct role based on their strengths and contributions to the overall system scope. Below is a detailed breakdown of individual responsibilities as they relate to the Bookstore Management System:

|  |  |  |
| --- | --- | --- |
| **Name** | **Role** | **Responsibilities** |
| Latherio Kidd | Developer | • Develop and maintain the backend architecture (Node.js or Django).  • Design and manage the database schema in PostgreSQL or MySQL.  • Implement CRUD operations and ensure backend logic aligns with business rules.  • Perform unit and integration testing.  • Coordinate with front-end for API consumption. |
| Johnathan Kavanaugh | Developer | • Create wireframes and design layouts for the web interface.  • Build responsive UI components using React.js or Angular.  • Integrate login forms and dynamic elements tied to backend services.  • Work closely with backend to ensure smooth front-end/back-end integration.  • Document front-end development guidelines. |
| Cody Peterson | Product Owner | • Define and maintain the product backlog.• Collaborate with team members to translate business needs into user stories.• Prioritize backlog items for each sprint.• Serve as the primary liaison for requirements clarification.• Approve or reject deliverables based on acceptance criteria. |
| Larry Hezekiah | Scrum Master | • Facilitate Scrum ceremonies (planning, daily standups, retrospectives).  • Remove impediments to progress and ensure agile best practices.  • Monitor sprint velocity and guide workflow efficiency.  • Support communication across the team and manage collaboration tools.  • Provide quality assurance support for early sprint reviews. |
| ------------------ | ----------------- | ------------------ |
| Latherio Kidd | Developer | Frontend/backend development, database setup, unit testing |
| Johnathan Kavanaugh | Developer | UI development, documentation, wireframes |
| Cody Peterson | Product Owner | Maintains backlog, prioritizes features, clarifies requirements |
| Larry Hezekiah | Scrum Master | Facilitates ceremonies, ensures Agile practices, supports team operations |

# Collaboration Methodology

Our team follows the Scrum framework, emphasizing iterative development and continuous feedback.

**Processes:**

* Sprint Planning (bi-weekly)
* Daily Standups (async updates in Teams/Discord)
* Sprint Reviews & Retrospectives

**Tools:**

* Trello for task tracking
* GitHub for version control
* MS Teams / Discord for communication
* Google Drive for document collaboration
* CTU Email and Messenger for academic communication

# The Definition of “Done”

## ****4.**** A task is considered "done" when:

## It meets all functional/non-functional requirements

## It passes all forms of testing (unit, integration, system)

## It is peer-reviewed and merged

## It includes supporting documentation

## It is approved by the Product Owner

# Product Design

**Architecture:**

* Front-End: React.js or Angular
* Back-End: Node.js or Django
* Database: PostgreSQL or MySQL

**Design Artifacts:**

* Use Case Diagram: Details user interactions across the system (e.g., logging in, managing inventory, placing orders).
* Activity Diagram: Displays the flow of activities from user actions to system processing.
* Class Diagram: Shows relationships between entities such as Book, Order, Customer, and Employee.

**Security & Non-Functional Requirements:**

* Authentication & Authorization: Role-based access for employees and customers
* Data Protection: Encrypt sensitive user and payment data
* Scalability: Enable cloud-based auto-scaling
* Performance: Implement caching for fast responses

**Use Case Diagram**

**he Use Case Diagram represents the core functionalities of the Bookstore Management System and how users interact with them. Below are detailed actors and their corresponding use cases:**

**Actors:**

* **Customer: Interacts with the storefront, places orders, creates accounts.**
* **Employee: Manages inventory, fulfills orders, updates book entries.**
* **Manager/Admin: Oversees sales reports, user access, and restock levels.**
* **System (internal actor): Handles notifications, authentication, and payment processes.**

**Primary Use Cases:**

* **Register/Login (Customer, Employee): Authenticate using secure credentials.**
* **Browse Inventory (Customer): View available books, filter by category.**
* **Add to Cart (Customer): Queue books for purchase.**
* **Place Order (Customer): Submit orders using integrated payment gateway.**
* **View Order Status (Customer): Check shipping status, history.**
* **Manage Inventory (Employee): Add, edit, or delete book entries.**
* **Generate Reports (Manager): View sales data, stock levels, order frequency.**
* **Receive Notifications (System): Alert managers on low stock or failed transactions.**
* **Authorize Access (System): Enforce RBAC policies depending on user roles.**

**Activity Diagram**

This diagram outlines the high-level business processes within the system and how they flow from user interaction to backend processing.

**Primary Activities:**

1. **Customer Browses Inventory** → Filters/searches for books → Adds to cart → Initiates checkout.
2. **System Validates Cart** → Applies promotions/taxes → Sends data to payment gateway.
3. **Customer Completes Purchase** → System sends order to backend → Inventory updated.
4. **Employee Receives Order** → Prepares package → Marks order as shipped.
5. **Manager Reviews Reports** → Views sales data, out-of-stock alerts → Initiates restock orders.
6. **System Sends Notifications** (email/SMS) to customers and suppliers based on triggers.

**Decision Points:**

* Is the item in stock?
* Was payment successful?
* Does the order require manual approval?

**Endpoints:**

* Confirmation page for customers
* Admin dashboards
* REST API logs for analytics

**Class Diagram**

This diagram identifies and defines the core entities of the system and their relationships.

**Classes:**

* **User** (Customer, Employee, Admin) → Attributes: userID, role, email, passwordHash
* **Book** → Attributes: ISBN, title, author, stock, price, category
* **Order** → Attributes: orderID, userID, bookList[], totalPrice, status, timestamp
* **Cart** → Attributes: cartID, userID, items[], subtotal
* **Payment** → Attributes: paymentID, orderID, amount, status, method
* **Notification** → Attributes: type, targetUser, messageContent, triggerEvent

**Relationships:**

* One-to-many: User → Orders
* Many-to-many: Books ↔ Orders (via OrderItem or BookList)
* One-to-one: Order → Payment
* One-to-many: User → Notifications

**Architecture:**

* Front-End: React.js or Angular
* Back-End: Node.js or Django
* Database: PostgreSQL or MySQL

**Design Artifacts:**

* Use Case Diagram: Details user interactions across the system (e.g., logging in, managing inventory, placing orders).
* Activity Diagram: Displays the flow of activities from user actions to system processing.
* Class Diagram: Shows relationships between entities such as Book, Order, Customer, and Employee.

**Security & Non-Functional Requirements:**

* Authentication & Authorization: Role-based access for employees and customers
* Data Protection: Encrypt sensitive user and payment data
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* Performance: Implement caching for fast responses

# Sprint 1 Retrospective Summary Report

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| --- |
| **Things That Went Well** |
| * Clear role assignments * Communication channels established * Initial setup completed on schedule * Backend completed ahead of time * Front-end development made strong progress on layout and wireframes * Team members were responsive and proactive in offering help |
| **Things That Could Have Gone Better** |
| * The onboarding process for new team members took extra time * Some features underestimated in scope * Front-end/backend handoff was not clearly defined * Some tasks lacked clear definitions or acceptance criteria |
| **Things That Surprised Us** |
| * Backend development moved faster than anticipated * Integration issues arose due to unclear file handoffs * Not all planned test coverage was achieved by end of sprint |
| **Lessons Learned** |
| * Weekly check-ins should be formalized to maintain sync * Break large user stories into smaller tasks to improve estimations * Ensure clearer alignment on integration responsibilities between frontend and backend * Start testing earlier in the sprint to avoid end-loading QA work * Finalize and share UI components early to reduce integration delays |

# Sprint 2 Retrospective Summary Report

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| --- |
| **Things That Went Well** |
|  |
| **Things That Could Have Gone Better** |
|  |
| **Things That Surprised Us** |
|  |
| **Lessons Learned** |
|  |

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