

# CPAN 212 Project Phase 1

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## Business Case Definition:

A small independent bookstore is planning to expand its operations beyond its physical storefront. Until now, the company has been using Excel spreadsheets to manage inventory, track shipments and store customer information. While this worked given the initial size of the company, it's no longer efficient as business operations continue to grow and plans to implement an online store are underway.

To support this expansion, the bookstore requires a centralized web application that can manage inventory, track shipments and allow customers to browse and purchase books online. The system must also support different access levels for managers, employees and customers.

## Problem Statement:

The current Excel-Based tracking system creates several challenges. Inventory updates are done manually, meaning an increased risk in errors and outdated information. Shipment tracking is not structured, making it difficult to track the status of books and whether they've been ordered, arrived, and processed. There is also no proper access control, meaning different roles do not have clearly defined permissions, specifically between employees, manager, and administrators.

As the business expands, these issues can lead to inventory inaccuracies, operation delays and limit the growth opportunities. Additionally customers cannot view book availability or purchase online, this restricts the bookstore's ability to compete in the modern retail environment.

## Use Case:

The application will support multiple types of Users:

- Manager:
  - Can view, add, update, or delete book records,
  - Can view, add, update, or delete shipment records
- Admin
  - Can view, add, update, or delete book records,
  - Can view, add, update, or delete shipment records
  - Can view, add, update, or delete users

- Employee
  - Can view book records and shipment information
  - Can view shipment details and update shipment statuses
- Customer: Can access the online store to browse books, view prices and inventory quantities, add items to cart and complete purchases online.

Shipments will move through clear statuses such as Ordered, Arrived and Processed. Once a shipment has been processed the system will automatically update the book inventory.

## Solution:

The proposed solution is a web-based Inventory and Online Sales Management System built using MVC architecture with MERN or MEAN technologies. The system will centralize all data, introduce role-based access levels and automate inventory updates based on shipment processing status. It will also include an online storefront, allowing customers to purchase books directly through the platform.

This solution improves the accuracy of operations by replacing manual spreadsheet tracking with a more structured and centralized system. It reduces human error, increases transparency in shipment tracking and supports business growth through online sales. By implementing this application the bookstore can continue to grow its operations more effectively, improve internal efficiency, and expand its customer base in a competitive retail market.

## Data Models:

### User:

Field	Type	Required	Notes
id	string(uuid)	system	generated
username	string	yes	min 5 chars
password	string	yes	Hashed
email	string	yes	Must be valid email (using regex to validate)

role	enum	yes	CUSTOMER / EMPLOYEE/ MANAGER/ ADMIN
createdAt	ISO string	system	generated

## Book:

Field	Type	Required	Notes
id	string(uuid)	system	generated
title	string	yes	min 5 chars
description	string	no	min 10 chars
genre	enum	yes	FICTION/ NON_FICTION
publishedDate	string	no	optional
quantity	string	yes	Updated on any change
price	int	yes	Cannot be lower than 0
coverImg	string	no	optional

## Shipment:

Field	Type	Required	Notes
id	string(uuid)	system	generated
title	string	yes	min 5 chars
genre	enum	yes	FICTION/ NON_FICTION
quantity	string	yes	Added to book

			quantity once processed
status	enum	yes	ORDERED/ ARRIVED/ PROCESSED

## Shopping cart

Field	Type	Required	Notes
userId	string(uuid)	yes	Retrieved from user
books	array	no	Updated on changes, can be empty
totalQuantity	int	yes	Default 0
totalPrice	int	yes	Default 0

## Checkout System:

Field	Type	Required	Notes
userId	string(uuid)	yes	Retrieved from user
books	array	yes	Updated on changes
totalQuantity	int	yes	Default 0
totalPrice	int	yes	Default 0
shippingAddress	string	yes	Street, city, postal code
customerName	string	yes	

paymentMethod	string	yes	Nice to have: Stripe integration for payment processing.
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