DEPI

E-Commerce

Full Stack .Net Web Developers

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Team Members

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Introduction

This project is an Online Book Shopping built with ASP.NET Core MVC . It allows users to browse, add books to a cart, and place orders securely. Admins can manage books, genres, stocks, and view reports. The system ensures a smooth and secure shopping experience for all users.

Idea

This project is an online bookstore web application.Users can browse books, add them to a shopping cart, and place orders.Admins can manage books, genres, stock, and reports easily.The platform aims to deliver a fast and secure online shopping experience.

Objectives

- Easy-to-use interface.
- Fast, secure checkout.
- Manage books and stock easily.
- Support multiple categories and genres.

System Analysis

- We started by understanding the business needs and defining the main entities like Books, Users, Orders, and Genres.

- Through Entity Framework, the database was generated automatically based on my models and configurations.

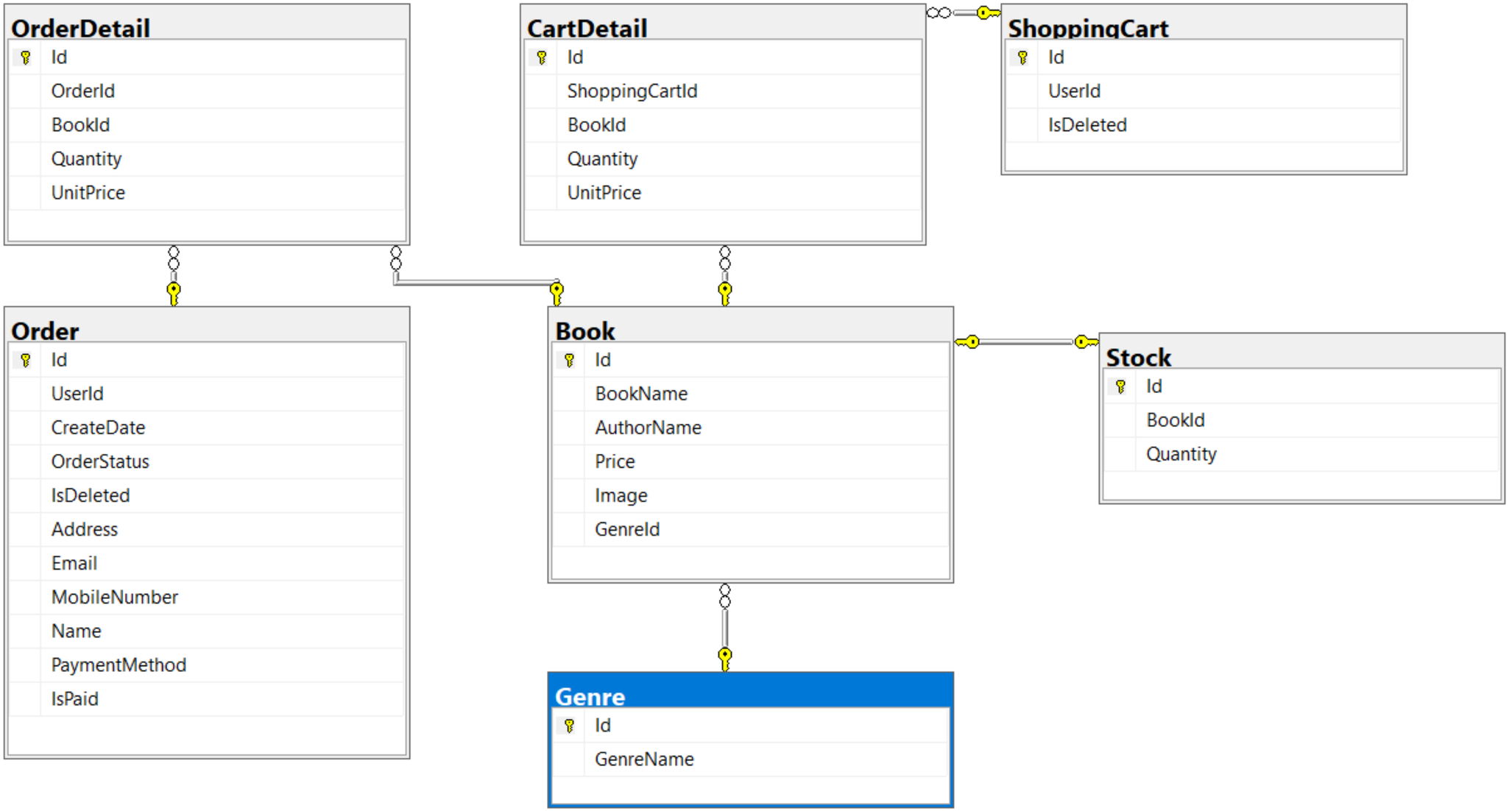
- I designed the database structure using the Code First approach by creating models and setting their relationships.

- Finally, I analyzed user roles and system operations to ensure a complete and organized structure before development.

System Requirements

- Login/Registration
- Display-Add-Update(Book)
- Homepage
- Cart
- Checkout
- Admin Dashboard
- Top Selling Books
- Display-Update (Stock)
- Display-Add-Update(Genre)
- Orders(Details-Update-Status)

Data Base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Order
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CreateDate
OrderStatus
IsDeleted
Address
Email
MobileNumber
Name
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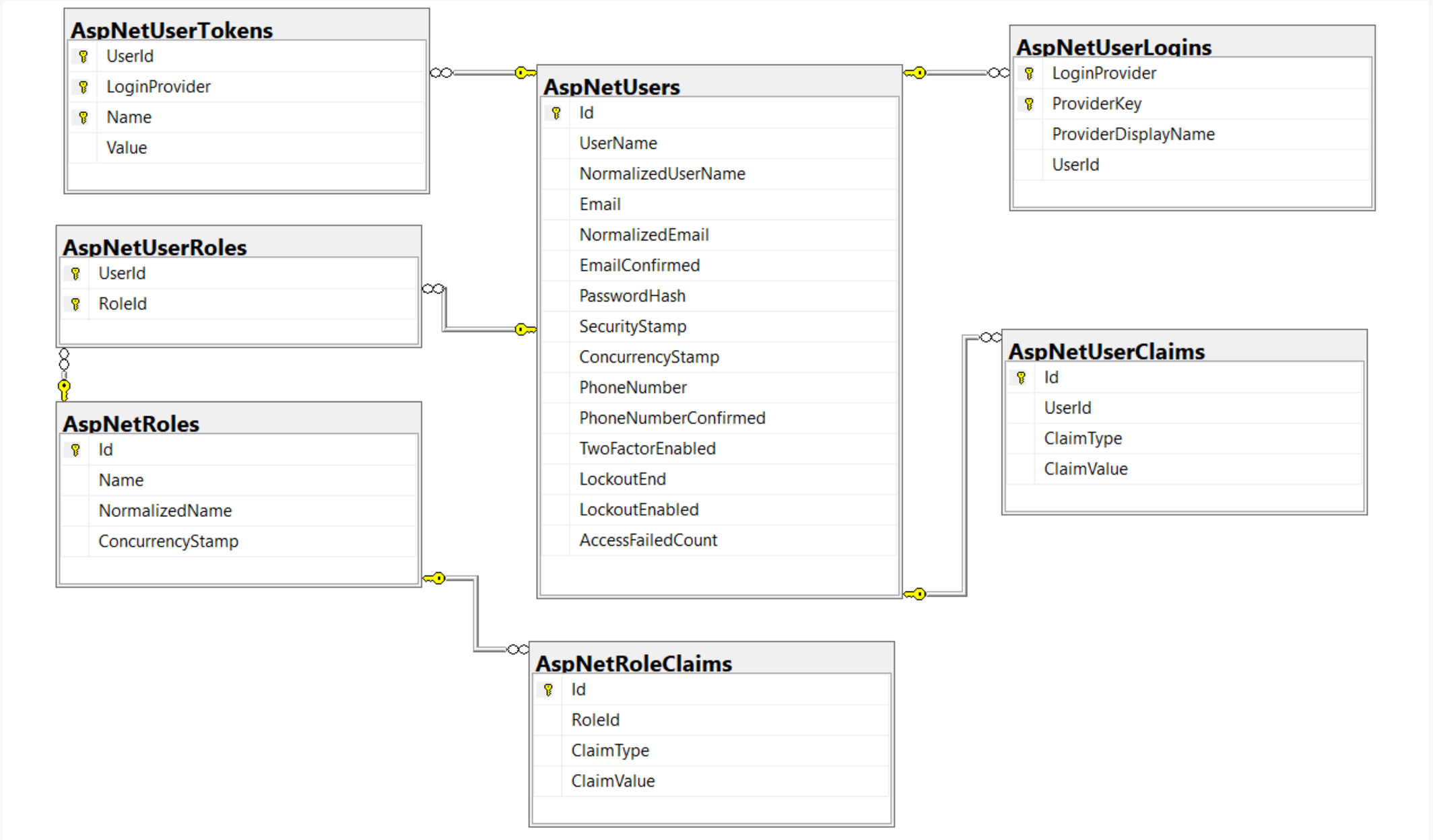
Data Base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LoginProvider
Name
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PhoneNumber
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TwoFactorEnabled
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AspNetUserLogins
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Id
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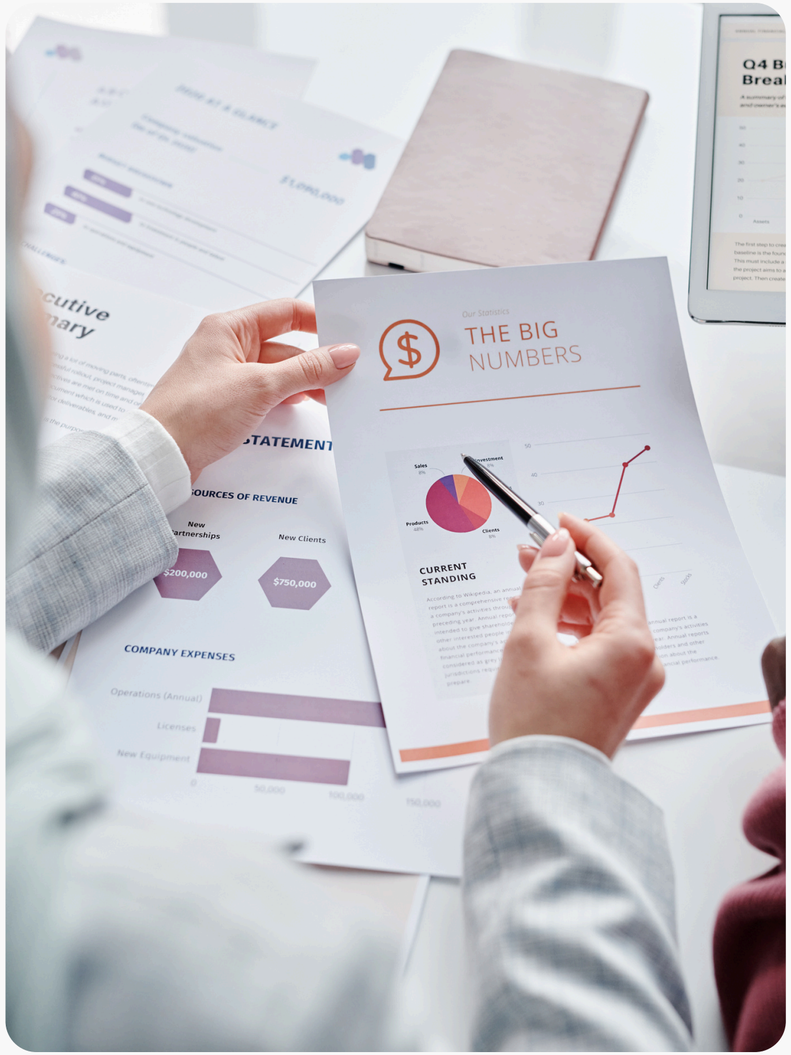
Implementation



-Architecture Used:

The project uses the MVC (Model-View-Controller) architecture, which organizes the application into three main components:

- Model: Manages data and business logic.
- View: Handles the display of information to the user.
- Controller: Handles user input and interactions, updates the model and view accordingly.

-Benefits of MVC:

- Separation of concerns: makes the code easier to manage and scale.
- Improves testability and maintainability.
- Enables parallel development: designers can work on views while developers work on controllers.
- Supports clean and organized project structure.

Implementation

- In this project, we used the Code First approach to easily design the database directly from the C# classes, giving us more control over the models and saving time during development
- We chose ASP.NET Core MVC (.NET 9) because it offers high performance, security, and flexibility for building modern web applications. ASP.NET was selected for its strong support, built-in authentication features, and its ability to create scalable and maintainable projects.
- Finally, we used C# as the main programming language because it is powerful, object-oriented, and perfectly integrates with the .NET ecosystem, making development faster and more efficient.

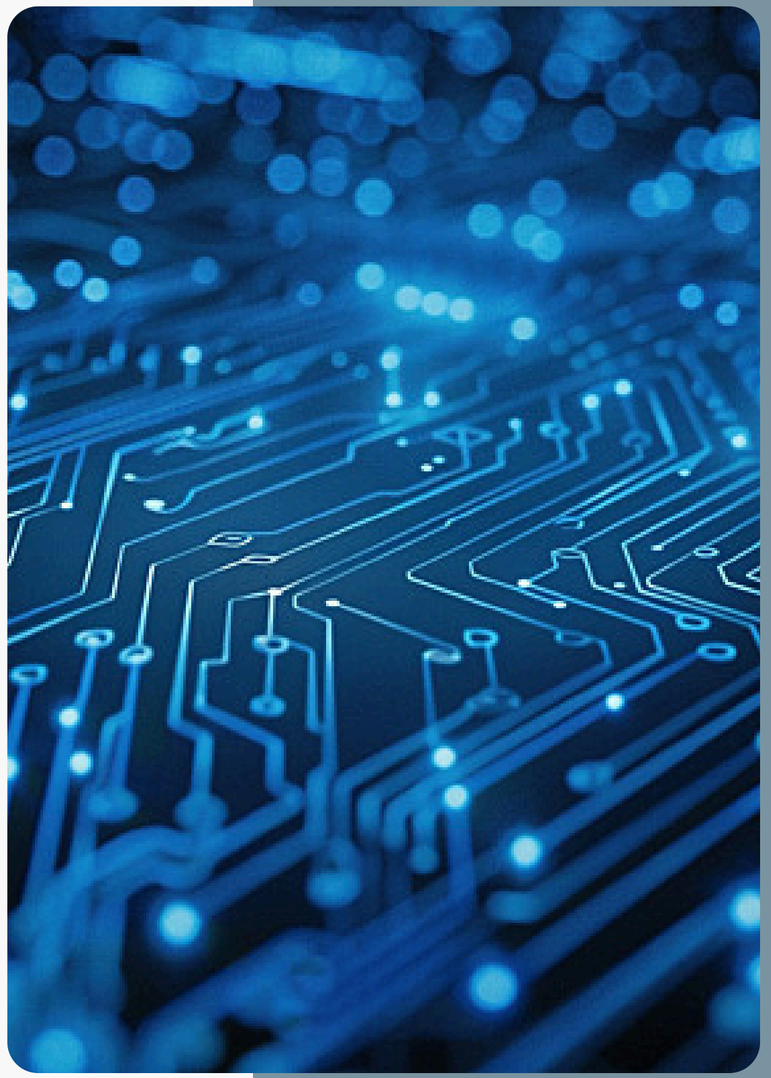
Algorithms

- Sorting & Filtering (LINQ Algorithms):
  - OrderBy, Where used for product listing, and search filters.
  - Efficient in-memory or deferred execution using LINQ-to-Entities.

- Hashing (Security):
  - ASP.NET Identity uses hashing algorithm for securely storing user passwords.

- Model Validation Algorithms:
  - Data Annotations trigger validation logic via reflection and attribute-based checks.

- Session & State Management:
  - ASP.NET uses built-in stateful session tracking algorithms to manage user carts and data across requests.



Methods

- Model-View-Controller (MVC)
  - Separates data (Model), UI (View), and control logic (Controller).
- Entity Framework (EF)
  - Handles database CRUD operations with LINQ queries.
- Session Management
  - Cart data is stored per user session.

Techniques

- Form Validation
  - Data Annotations used to enforce constraints on models.
- Security Measures
  - ASP.NET Identity for login, roles, and claims-based authorization.
- Shopping Cart Logic
  - Total = Σ (Item Price × Quantity).
  - Cart actions: Add, Update, Remove.

Test Cases

Test Case 1

Test Case 1 Test Case Identifier	TC-1
Use Case tested	Create Account
Pass/Fail criteria	The test passes if the user enter valid id and email) it has not been used by another account before)
Input data	Id , Name , Email , Password
Test Procedure	**Expected Result**
Step.1 Insert invalid id with valid mail	System will show a message “The id used before ”
Step.2 Insert invalid id with invalid mail.	System will show a message “The id and mail used before ”
Step.3 Insert valid id with invalid mail	System will show a message “The mail used before ”
Step.4 Insert valid id with valid mail.	User account is created successfully.

Test Case 2

Test Case 2 Test Case Identifier	TC-2
Use Case tested	User Login
Pass/Fail criteria	Valid credentials grant access; invalid ones show errors.
Input data	Email , Password
Test Procedure	**Expected Result**
Step.1 Valid email + wrong password	Error: "Invalid password"
Step.2 Invalid email + any password	Error: "Email not found"
Step.3 Valid credentials	Redirect to homepage

Test Case 3

Test Case 3 Add Items to Cart	TC-3
Use Case tested	Add Items to Cart
Pass/Fail criteria	Items added if stock available
Input data	Book ID, Quantity
Test Procedure	**Expected Result**
Step.1 Quantity > stock	"Only [X] items available" warning
Step.2 Valid quantity	Item added to cart
Step.3 Same book added again	Quantity increases (if stock allows)

Test Case 4

Test Case 4 Checkout Process	TC-4
Use Case tested	Complete Purchase
Pass/Fail criteria	Order placed with valid payment
Input data	Payment Info, Shipping Address
Test Procedure	**Expected Result**
Step.1 Empty cart checkout	"Your cart is empty" error
Step.2 Invalid payment	"Payment failed" error
Step.3 Valid checkout	Order confirmation page

Innovation & Added Value

This system brings innovation by providing an easy and efficient way for users to browse, order, and manage books online. It adds value through features like a user-friendly shopping cart, secure order handling, and dynamic stock management. Using modern technologies like ASP.NET Core MVC ensures high performance, security, and a smooth user experience. The system also supports admin control, reporting, and real-time updates, making it a complete solution for online book shopping.

Demo

Thank you