EasyMart E-Commerce Platform

Project Documentation

1. Introduction

Project Overview

EasyMart is an e-commerce web application built using ASP.NET Core MVC, designed to provide a seamless online shopping experience.

Objectives

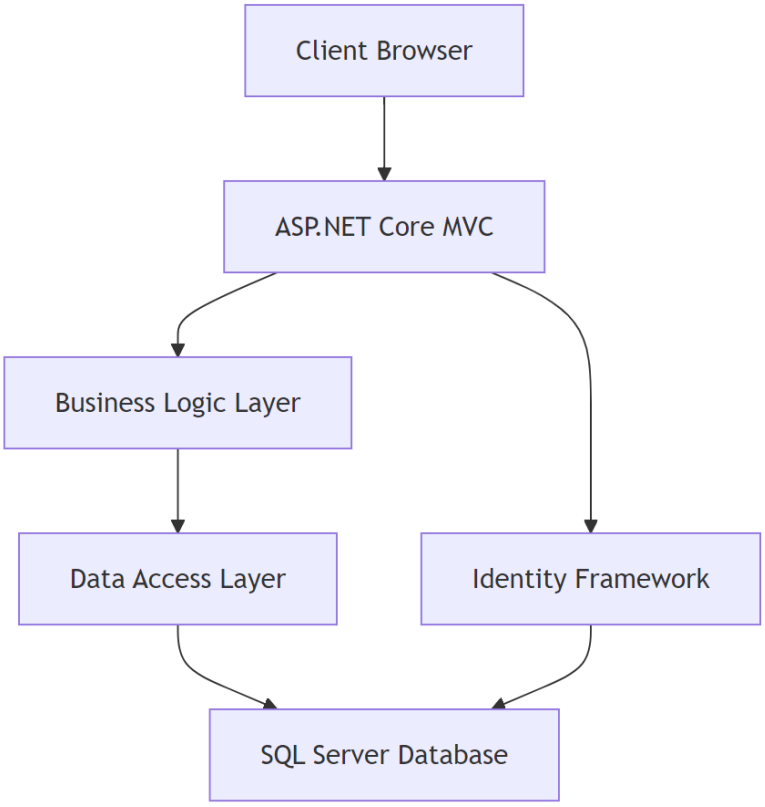
- Create a secure and scalable e-commerce platform
- Implement comprehensive product management
- Provide intuitive shopping cart functionality
- Enable secure user authentication and authorization
- Develop order processing and tracking capabilities

2. System Architecture

Technology Stack

- Backend: ASP.NET Core 8.0 MVC
- Database: SQL Server LocalDB
- ORM: Entity Framework Core 8
- Frontend: HTML5, CSS3, Bootstrap 5
- JavaScript Libraries: jQuery
- Authentication: ASP.NET Core Identity

Architecture Diagram

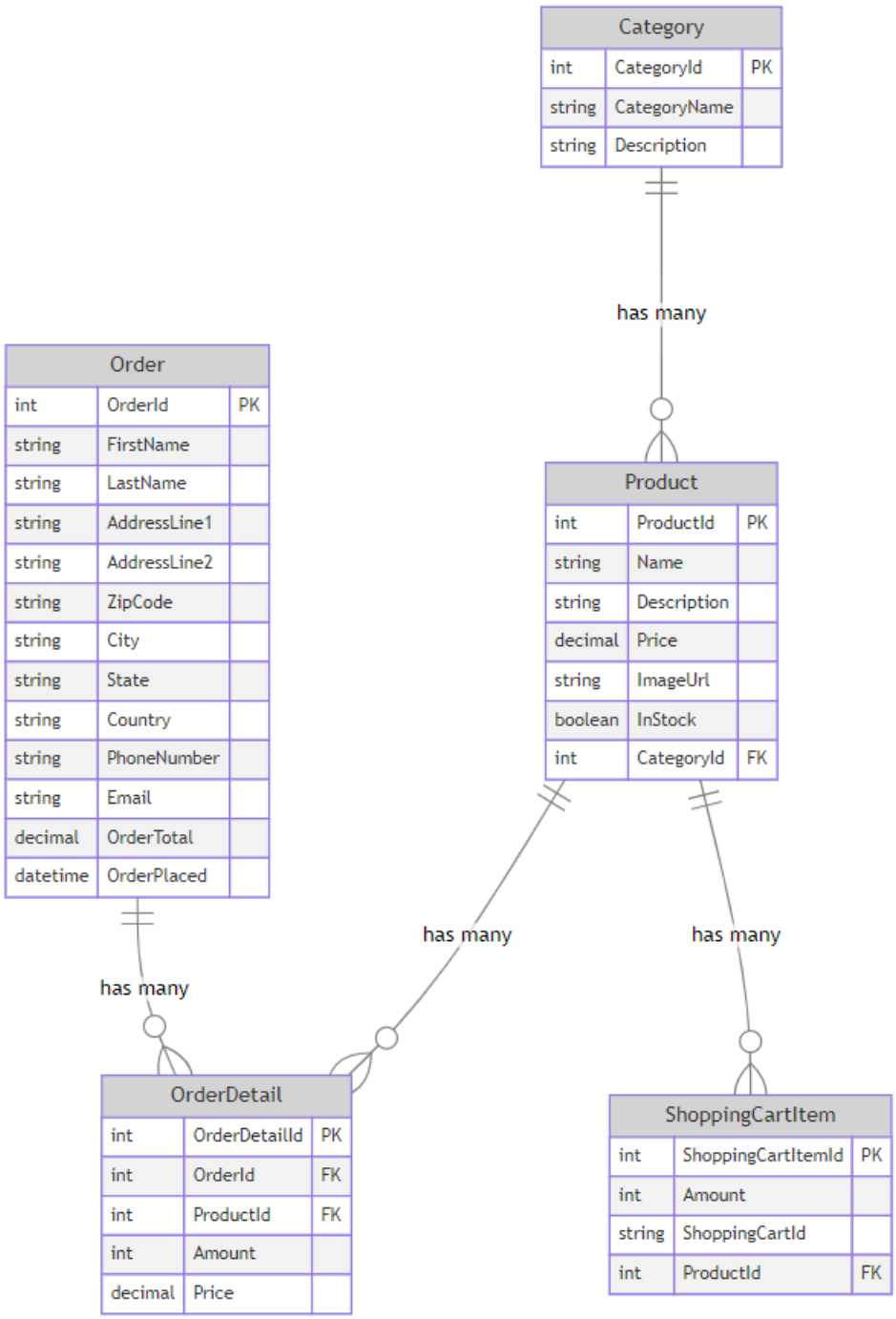


Design Patterns

1. Repository Pattern
    - Separation of data access logic
    - Interface-based design
    - Unit testing support
2. MVC Architecture
    - Model: Data and business logic
    - View: User interface
    - Controller: Request handling

3. Database Schema

Entity Relationship Diagram



4. Implementation Details

Key Features Implementation

- **Product Management**

```
public interface IProductRepository
{
    8 references
    IEnumerable<Product> AllProducts { get; }
    2 references
    Product? GetProductById(int productId);
    3 references
    IEnumerable<Product> SearchProducts(string searchQuery);
}
```

- **Category Management**

```
public interface ICategoryRepository
{
    3 references
    IEnumerable<Category> AllCategories { get; }
}
```

- **Shopping Cart**

```
public interface IShoppingCart
{
    void AddToCart(Product product);

    int RemoveFromCart(Product product);

    List<ShoppingCartItem> GetShoppingCartItems();

    void ClearCart();

    decimal GetShoppingCartTotal();
    11 references
    List<ShoppingCartItem> ShoppingCartItems { get; set; }
}
```

- **Order Processing**

```
public interface IOrderRepository
{
    3 references
    void CreateOrder(Order order);
}
```

5. Testing Strategy / Unit Tests

```
[Fact]
0 references
public void Generates_Email_Link()
{
    EmailTagHelper emailTagHelper = new EmailTagHelper() { Address =
      "test@easymart.com", Content = "Email" }; ;

    var tagHelperContext = new TagHelperContext(
        new TagHelperAttributeList(),
        new Dictionary<object, object>(), string.Empty);

    var content = new Mock<TagHelperContent>();

    var tagHelperOutput = new TagHelperOutput("a",
        new TagHelperAttributeList(),
        (cache, encoder) => Task.FromResult(content.Object));

    // Act
    emailTagHelper.Process(tagHelperContext, tagHelperOutput);

    Assert.Equal("Email", tagHelperOutput.Content.GetContent());
    Assert.Equal("a", tagHelperOutput.TagName);
    Assert.Equal("mailto:test@easymart.com", tagHelperOutput.Attributes
      [0].Value);
}
```

6. Deployment Guide

Prerequisites

- .NET 8.0 SDK
- SQL Server 2022+
- Visual Studio 2022

Installation Steps

1. **Clone Repository**

   git clone https://github.com/rimo802020/EasyMartDepiProject.git

2. **Database Setup**

   ```
   dotnet ef database update
   ```

3. **Configuration**

{ "ConnectionStrings": { "DefaultConnection": "Server=(localdb)\\mssqllocaldb;Database=EasyMart;Trusted_Connection=True" } }

7. User Manual / Customer Guide

1. Registration/Login
    - Create account
    - Login process
2. Shopping
    - Browse categories
    - Search products
    - Add to cart
    - Checkout process

9. Security Implementation

Authentication

- ASP.NET Core Identity
- Role-based authorization