Product and Customer Management System with Data Validation

This document describes the structure, fields, and validation rules for a Product and Customer Management System implemented with ASP.NET MVC, Entity Framework, and Data Transfer Objects (DTO). The system includes CRUD operations with appropriate validation logic to ensure data integrity.

Entities: Product and Customer

1. Product

The Product entity represents items available in inventory and includes fields such as name, price, stock quantity, and category. The following validations are applied to ensure data integrity:

Fields and Validation:

- - ProductId: Primary Key – auto-generated.
- - Name: Required, maximum length of 100 characters.
- - Description: Optional, maximum length of 500 characters.
- - Price: Required, must be greater than 0.
- - StockQuantity: Required, must be a positive integer (0 or more).
- - Category: Required, maximum length of 50 characters, must match pre-defined categories (e.g., electronics, clothing, etc.).

DTO: ProductDTO with similar properties to transfer data between the view and controller.

CRUD Operations: Implement CRUD functionality for Product, using validations to ensure only valid data is added or updated.

2. Customer

The Customer entity represents users who purchase products and includes fields such as name, email, phone, and date joined. The following validations are applied to ensure data integrity:

Fields and Validation:

- - CustomerId: Primary Key – auto-generated.
- - FirstName: Required, maximum length of 50 characters.
- - LastName: Required, maximum length of 50 characters.
- - Email: Required, must be a valid email format.
- - Phone: Optional, must be a valid phone number format (10-15 digits).
- - Address: Optional, maximum length of 250 characters.
- - DateJoined: Required, cannot be a future date.

DTO: CustomerDTO to encapsulate data for Customer.

CRUD Operations: Enable CRUD operations for Customer, using these validations to maintain data integrity.