Initial Project Proposal: Ecommerce Database System (db_E_Commerce)

Basic Idea

The **db_E_Commerce** database is an SQL Server-based system designed to manage all data operations for an ecommerce platform, supporting a marketplace where buyers purchase products and vendors manage listings. It handles user authentication, product catalogs, cart management, order processing, product reviews, and analytics, ensuring data integrity, scalability, and efficient querying through 13 structured tables, foreign key constraints, triggers, stored procedures, and views.

Purpose

- Store user profiles (buyers, vendors), product details, cart items, orders, addresses, and reviews.
- Support secure CRUD operations for registration, authentication, cart management, checkout, and product management.
- Enforce business rules via stored procedures (e.g., stock validation, checkout, auto-delivery).
- Provide aggregated data through views for buyer dashboards, cart displays, order histories, and vendor analytics.
- Automate tasks (e.g., default address setting, role assignment, review validation) via triggers.

Database Behavior

- **Registration**: Creates user, role, buyer/vendor, and address records, with automatic role assignment via trigger.
- **Buyer Operations**: Browse products by category/preference, add/remove cart items, checkout with default address, view order history/reviews.
- **Vendor Operations**: Add/update/delete products, view orders, reviews, and analytics (orders, revenue, ratings).
- **Order Processing**: Creates orders, updates stock, clears carts, auto-delivers orders after 24 hours.
- **Auditing**: Validates reviews for purchased products, cleans up carts on product deactivation.

ER Diagram

The ER Diagram below represents the db_E_Commerce schema, detailing all 13 tables, attributes, and relationships.