

Business Rules for RetailEase: Online Retail Management

1. USERS TABLE

- Unique Users: Each user must have a unique Email and Username.
- Required Fields: First_Name , Last_Name, Email, Username, and Password cannot be NULL.
- Mobile Number Format: Must contain only digits without special characters.
- Email Format Validation: Emails must follow the standard format (example@domain.com).
- Default Registration Timestamp: Registration_Date is automatically set to the current timestamp.
- Last Login Date: Updates each time the user logs in.

2. CATEGORIES TABLE

- Category_id should be Unique and not NULL
- Mandatory Field: Category_Name cannot be NULL.

3. PRODUCTS TABLE

- Product Naming: Each product must have a Product_Name that cannot be NULL.
- Valid Stock Quantity: Stock_Quantity cannot be negative.
- Price Validation: Actual_Price must be a positive value.
- Category Relationship: Each product must be associated with a valid Category_ID.
- Category Deletion Impact: If a category is deleted, all associated products are automatically removed due to ON DELETE CASCADE.

4. ORDERS TABLE

- Mandatory Fields: User_ID, Shipping_Method, and Order_Date cannot be NULL.

- Valid Order Status: Only the following values are allowed: Order Placed or Cancelled.
- Shipping Method Options: Standard, Express, or Same-Day.
- Default Order Date: Automatically set to the current timestamp if not provided.
- Order Deletion Impact: Deleting an order also removes all its associated OrderItems.

5. ORDER ITEMS TABLE

- Mandatory Fields: Order_ID, Product_ID, and Quantity cannot be NULL.
- Quantity Validation: Quantity must be greater than zero.
- Referential Integrity: If an order is deleted, all corresponding order items are automatically deleted (ON DELETE CASCADE).

6. REVIEWS TABLE

- Mandatory Fields: User_ID , Product_ID, Rating, and Review_Date cannot be NULL.
- Valid Ratings: Rating values must be between 1 and 5.
- Maximum Comment Length: Comment can have a maximum of 1000 characters.
- Review Date: Automatically set to the current timestamp.

7. PAYMENTS TABLE

- Mandatory Fields: Payment_Method, Payment_Date, and Order_ID cannot be NULL.
- Default Payment Date: Automatically set to the current timestamp.
- Payment Method Options: Valid payment methods can be restricted (e.g., Credit Card, Debit Card, PayPal) at the application level.
- Nullify Payment on Order Deletion: When an order is deleted, its associated payment Order_ID is set to NULL due to ON DELETE SET NULL.

8. PRODUCT PROMOTIONS TABLE

- Mandatory Fields: Product_ID, Discount_Percentage, Start_Date, and End_Date cannot be NULL.
- Discount Range: Discount_Percentage must be between 0 and 100.
- Promotion Date Validation: End_Date must be greater than or equal to Start_Date.
- Price Validation: After applying a discount, the final selling price cannot be higher than the Actual_Price.

9. WISHLIST TABLE

- Mandatory Fields: User_ID cannot be NULL.
- Referential Integrity: If a user is deleted, their Wishlist is automatically removed (ON DELETE CASCADE).