# Functional Requirement

\*\*1.1 Customer Account Registration\*\*   
Function ID: FR-01   
Description: Registers new customers by validating credentials, creating customer records, initializing shopping carts, and sending confirmation.   
Input: Name (string), Email (string), Password (string), Address (string), Phone (string)   
Output: Customer record (CustomerID, Name, Email, etc.), ShoppingCart record (CartID), confirmation message/email   
  
\*\*1.2 Customer Authentication\*\*   
Function ID: FR-02   
Description: Verifies customer credentials to establish authenticated sessions.   
Input: Email (string), Password (string)   
Output: Authenticated session token, LastLogin timestamp update, homepage redirect   
  
\*\*1.3 Session Termination\*\*   
Function ID: FR-03   
Description: Terminates active customer sessions and redirects to homepage.   
Input: Session token   
Output: Session invalidation, success message, homepage redirect   
  
\*\*1.4 Profile Retrieval\*\*   
Function ID: FR-04   
Description: Displays customer profile details including personal information and order history.   
Input: CustomerID   
Output: Customer record (Name, Email, Address, Phone), associated Order records   
  
\*\*1.5 Profile Modification\*\*   
Function ID: FR-05   
Description: Updates customer profile information after validation.   
Input: CustomerID, updated fields (Name/Email/Password/Address/Phone)   
Output: Updated Customer record, confirmation message   
  
\*\*1.6 Account Deletion\*\*   
Function ID: FR-06   
Description: Removes customer accounts and associated data per data policies.   
Input: CustomerID, confirmation flag   
Output: Deleted Customer record, anonymized associated data, confirmation message   
  
\*\*1.7 Administrator Authentication\*\*   
Function ID: FR-07   
Description: Verifies administrator credentials to grant system access.   
Input: Admin email (string), Password (string)   
Output: Authenticated admin session token, dashboard redirect   
  
\*\*1.8 Admin Session Termination\*\*   
Function ID: FR-08   
Description: Terminates active administrator sessions.   
Input: Admin session token   
Output: Session invalidation, success message, login page redirect   
  
\*\*1.9 Product Creation\*\*   
Function ID: FR-09   
Description: Creates new product records with validated details and category association.   
Input: Product details (Name, Description, Price, StockQuantity, ImageURL), CategoryID   
Output: New Product record, ProductCategory association, updated catalog   
  
\*\*1.10 Product Update\*\*   
Function ID: FR-10   
Description: Modifies existing product attributes and category associations.   
Input: ProductID, updated fields (Name/Description/Price/StockQuantity/ImageURL/CategoryID)   
Output: Updated Product record, modified ProductCategory association   
  
\*\*1.11 Product Removal\*\*   
Function ID: FR-11   
Description: Deletes product records after verifying no active order references.   
Input: ProductID, confirmation flag   
Output: Deleted Product record, updated catalog   
  
\*\*1.12 Product Display\*\*   
Function ID: FR-12   
Description: Retrieves and displays product details for viewing.   
Input: ProductID   
Output: Product record (Name, Description, Price, etc.)   
  
\*\*1.13 Category Creation\*\*   
Function ID: FR-13   
Description: Adds new product classification categories.   
Input: Category details (Name, Description)   
Output: New Category record, updated category list   
  
\*\*1.14 Category Modification\*\*   
Function ID: FR-14   
Description: Updates existing category attributes.   
Input: CategoryID, updated fields (Name/Description)   
Output: Updated Category record   
  
\*\*1.15 Category Removal\*\*   
Function ID: FR-15   
Description: Deletes unused categories after verifying no product associations.   
Input: CategoryID, confirmation flag   
Output: Deleted Category record   
  
\*\*1.16 Category Display\*\*   
Function ID: FR-16   
Description: Retrieves and displays category details with associated products.   
Input: CategoryID   
Output: Category record, associated Product records   
  
\*\*1.17 Cart Item Addition\*\*   
Function ID: FR-17   
Description: Adds products to shopping carts with stock validation.   
Input: CustomerID, ProductID, Quantity   
Output: New CartItem record, updated ShoppingCart total   
  
\*\*1.18 Cart Contents Retrieval\*\*   
Function ID: FR-18   
Description: Displays cart items with quantities, prices, and totals.   
Input: CustomerID   
Output: CartItem records, aggregated price/quantity totals   
  
\*\*1.19 Cart Modification\*\*   
Function ID: FR-19   
Description: Updates cart item quantities or removes items.   
Input: CartItemID, new Quantity (or removal flag)   
Output: Updated/deleted CartItem record, recalculated cart totals   
  
\*\*1.20 Order Placement\*\*   
Function ID: FR-20   
Description: Converts cart items to orders with payment processing and stock deduction.   
Input: CustomerID, PaymentMethodID, shipping/billing details   
Output: New Order record, OrderItem records, Payment record, stock update, cleared cart   
  
\*\*1.21 Order Retrieval\*\*   
Function ID: FR-21   
Description: Displays order details including products and status.   
Input: OrderID   
Output: Order record, associated OrderItem records   
  
\*\*1.22 Order Cancellation\*\*   
Function ID: FR-22   
Description: Cancels eligible orders and restocks products.   
Input: OrderID, confirmation flag   
Output: Updated Order status ("Canceled"), stock quantity adjustments   
  
\*\*1.23 Order Confirmation Delivery\*\*   
Function ID: FR-23   
Description: Sends order confirmation emails upon successful placement.   
Input: OrderID, Customer email   
Output: Email delivery status log, confirmation message   
  
\*\*1.24 Order Status Update\*\*   
Function ID: FR-24   
Description: Modifies order fulfillment status and notifies customers.   
Input: OrderID, new Status (e.g., "Shipped")   
Output: Updated Order status, notification email   
  
\*\*1.25 Payment Method Addition\*\*   
Function ID: FR-25   
Description: Stores validated customer payment instruments.   
Input: CustomerID, PaymentMethod details (Type, CardNumber, ExpiryDate, etc.)   
Output: New PaymentMethod record   
  
\*\*1.26 Payment Method Update\*\*   
Function ID: FR-26   
Description: Modifies existing payment method details.   
Input: PaymentMethodID, updated fields   
Output: Updated PaymentMethod record   
  
\*\*1.27 Payment Method Removal\*\*   
Function ID: FR-27   
Description: Deletes stored payment instruments.   
Input: PaymentMethodID, confirmation flag   
Output: Deleted PaymentMethod record   
  
\*\*1.28 Payment Method Display\*\*   
Function ID: FR-28   
Description: Shows stored payment instrument details.   
Input: PaymentMethodID   
Output: PaymentMethod record   
  
\*\*1.29 Payment Details Retrieval\*\*   
Function ID: FR-29   
Description: Displays transaction details for completed orders.   
Input: PaymentID   
Output: Payment record (Amount, TransactionDate, Status)   
  
\*\*1.30 Payment Status Update\*\*   
Function ID: FR-30   
Description: Modifies payment transaction status and synchronizes order state.   
Input: PaymentID, new Status (e.g., "Completed")   
Output: Updated Payment status, associated Order status update   
  
\*\*1.31 Category Assignment\*\*   
Function ID: FR-31   
Description: Links products to categories for classification.   
Input: ProductID, CategoryID   
Output: New ProductCategory association record   
  
\*\*1.32 Category Removal from Product\*\*   
Function ID: FR-32   
Description: Removes product-category classifications.   
Input: ProductID, CategoryID, confirmation flag   
Output: Deleted ProductCategory association record