# Functional Requirement

### Chapter 1: Functional Requirements   
#### 1.1 Customer Registration Function   
\*\*Function ID:\*\* FR-01   
\*\*Description:\*\* Enables new customers to register by providing personal information. Validates input, checks email uniqueness, creates customer profile, and sends confirmation email.   
\*\*Input:\*\* FirstName, LastName, Email, Password, Phone, Address.   
\*\*Output:\*\* New records in Customer, Account, and Contact Information entities; confirmation email sent.   
  
#### 1.2 Customer Login Function   
\*\*Function ID:\*\* FR-02   
\*\*Description:\*\* Authenticates registered customers using email and password. Initiates session upon successful validation.   
\*\*Input:\*\* Email, Password.   
\*\*Output:\*\* Active customer session; redirect to homepage/shopping cart.   
  
#### 1.3 Customer Logout Function   
\*\*Function ID:\*\* FR-03   
\*\*Description:\*\* Terminates active customer sessions and clears session data.   
\*\*Input:\*\* Active session token.   
\*\*Output:\*\* Session terminated; redirect to login page/homepage.   
  
#### 1.4 Customer Account Management Function   
\*\*Function ID:\*\* FR-04   
\*\*Description:\*\* Allows customers or administrators to update, suspend, or delete accounts. Handles associated data cleanup.   
\*\*Input:\*\* AccountID, updated fields (e.g., Password, Email), action type (update/suspend/delete).   
\*\*Output:\*\* Modified Customer/Account entities; notifications; cleanup of linked Shopping Cart/Order/Payment entities if deleted.   
  
#### 1.5 Add to Shopping Cart Function   
\*\*Function ID:\*\* FR-05   
\*\*Description:\*\* Adds selected products to the customer’s shopping cart after inventory availability checks.   
\*\*Input:\*\* ProductID, CustomerID, Quantity (default=1).   
\*\*Output:\*\* New/modified Shopping Cart entity record; cart display updated.   
  
#### 1.6 Modify Shopping Cart Function   
\*\*Function ID:\*\* FR-06   
\*\*Description:\*\* Adjusts quantities or removes items in the shopping cart. Validates against inventory limits.   
\*\*Input:\*\* CartID, updated Quantity or removal flag.   
\*\*Output:\*\* Updated Shopping Cart entity; recalculated total price.   
  
#### 1.7 View Shopping Cart Function   
\*\*Function ID:\*\* FR-07   
\*\*Description:\*\* Displays items, quantities, prices, and total cost in the customer’s cart.   
\*\*Input:\*\* CustomerID.   
\*\*Output:\*\* Shopping Cart entity data with product details and total price.   
  
#### 1.8 Place Order Function   
\*\*Function ID:\*\* FR-08   
\*\*Description:\*\* Processes checkout by creating orders, deducting inventory, processing payments, and clearing cart items.   
\*\*Input:\*\* CustomerID, Payment Information, Shipping/Billing details.   
\*\*Output:\*\* New Order and Order Item entities; updated Inventory; cleared Shopping Cart items; confirmation email.   
  
#### 1.9 View Order History Function   
\*\*Function ID:\*\* FR-09   
\*\*Description:\*\* Lists customer’s past orders with details (e.g., status, items, prices).   
\*\*Input:\*\* CustomerID.   
\*\*Output:\*\* Order and Order Item entity data filtered by CustomerID.   
  
#### 1.10 Order Confirmation Function   
\*\*Function ID:\*\* FR-10   
\*\*Description:\*\* Automatically generates and sends order confirmation emails post-payment.   
\*\*Input:\*\* OrderID.   
\*\*Output:\*\* Confirmation email; Order entity status updated to "Confirmed".   
  
#### 1.11 Administrator Login Function   
\*\*Function ID:\*\* FR-11   
\*\*Description:\*\* Authenticates administrators using credentials and initiates admin-specific sessions.   
\*\*Input:\*\* Username, Password.   
\*\*Output:\*\* Active administrator session; redirect to admin dashboard.   
  
#### 1.12 Administrator Logout Function   
\*\*Function ID:\*\* FR-12   
\*\*Description:\*\* Terminates active administrator sessions.   
\*\*Input:\*\* Active admin session token.   
\*\*Output:\*\* Session terminated; redirect to login page/homepage.   
  
#### 1.13 Manage Products Function   
\*\*Function ID:\*\* FR-13   
\*\*Description:\*\* Allows administrators to add, edit, or delete products. Validates inputs and handles inventory associations.   
\*\*Input:\*\* Product details (ProductName, Description, Price, CategoryID), action type (add/update/delete).   
\*\*Output:\*\* Added/updated/deleted Product entity; linked Inventory updates if deleted.   
  
#### 1.14 Manage Inventory Function   
\*\*Function ID:\*\* FR-14   
\*\*Description:\*\* Updates product stock levels or adds new inventory records.   
\*\*Input:\*\* ProductID, Quantity, Location.   
\*\*Output:\*\* Added/updated Inventory entity record.   
  
#### 1.15 Manage Orders Function   
\*\*Function ID:\*\* FR-15   
\*\*Description:\*\* Updates order statuses (e.g., to "shipped" or "canceled"), triggers refunds, and adjusts inventory.   
\*\*Input:\*\* OrderID, updated Status, refund flag (if canceled).   
\*\*Output:\*\* Modified Order entity; Inventory restocked if canceled; Payment Information refund processed.   
  
#### 1.16 Manage Payment Information Function   
\*\*Function ID:\*\* FR-16   
\*\*Description:\*\* Stores, updates, or deletes customer payment methods. Validates card details.   
\*\*Input:\*\* CardNumber, ExpiryDate, CVV, Billing Address, action type (add/update/delete).   
\*\*Output:\*\* Added/updated/deleted Payment Information entity record.   
  
#### 1.17 Manage Contact Information Function   
\*\*Function ID:\*\* FR-17   
\*\*Description:\*\* Handles customer contact details (e.g., phone, address). Validates formats and uniqueness.   
\*\*Input:\*\* Phone, Address, action type (add/update/delete).   
\*\*Output:\*\* Added/updated/deleted Contact Information entity record.   
  
#### 1.18 Manage Category Function   
\*\*Function ID:\*\* FR-18   
\*\*Description:\*\* Creates, edits, or deletes product categories. Reassigns products if categories are deleted.   
\*\*Input:\*\* CategoryName, Description, action type (add/update/delete).   
\*\*Output:\*\* Added/updated/deleted Category entity; Product entity reassignments if needed.   
  
#### 1.19 Manage Administrator Function   
\*\*Function ID:\*\* FR-19   
\*\*Description:\*\* Adds, edits, or deletes administrator accounts. Validates permissions and uniqueness.   
\*\*Input:\*\* Admin credentials (Username, Password, Role), action type (add/update/delete).   
\*\*Output:\*\* Added/updated/deleted Administrator entity record.   
  
#### 1.20 Manage Order Item Function   
\*\*Function ID:\*\* FR-20   
\*\*Description:\*\* Modifies or removes items within orders (admin-only). Adjusts inventory and order totals.   
\*\*Input:\*\* OrderItemID, updated Quantity or removal flag.   
\*\*Output:\*\* Updated Order Item entity; Order total recalculated; Inventory restocked if items removed.