# Functional Requirement

1. \*\*Functional Requirements\*\*  
  
1.1 \*\*Customer Account Registration\*\*   
Function ID: FR-01   
Description: Customers can register a new account by providing valid personal information. The system validates the email format and password strength and calls the Plugin API to ensure the email is not already registered.   
Input: Customer personal information (FirstName, LastName, Email, Password).   
Output: A new Customer record stored in the database with a "Verified" status.  
  
1.2 \*\*Customer Login\*\*   
Function ID: FR-02   
Description: Customers can log in using their registered email and password. The system validates the credentials and calls the Plugin API for authentication.   
Input: Email and password.   
Output: A valid Session record created and associated with the Customer.  
  
1.3 \*\*Customer Logout\*\*   
Function ID: FR-03   
Description: Customers can log out of the system, which invalidates their current session.   
Input: User session token.   
Output: Session invalidated and system logs the event.  
  
1.4 \*\*Customer Profile Management\*\*   
Function ID: FR-04   
Description: Customers can view, update, or delete their own profile information, such as name, email, and billing address.   
Input: Customer profile data (FirstName, LastName, Email, BillingAddress, etc.).   
Output: Updated or deleted Customer record in the database.  
  
1.5 \*\*Customer Purchase History View\*\*   
Function ID: FR-05   
Description: Customers can view a list of their completed orders, including order date, items, and total cost.   
Input: CustomerID.   
Output: A list of Order records with associated OrderDetail and Product data.  
  
1.6 \*\*Shopping Cart Management\*\*   
Function ID: FR-06   
Description: Customers can manage the contents of their shopping cart, including adding, removing, or modifying items.   
Input: ProductID, Quantity, CartID, ActionType (Add, Remove, Modify).   
Output: Updated CartItem records in the database with current cart state and recalculated total.  
  
1.7 \*\*Shopping Cart Checkout\*\*   
Function ID: FR-07   
Description: Customers can proceed to checkout by selecting a valid payment method, confirming the order, and converting the shopping cart to an order.   
Input: CartID, PaymentID, ShippingAddress.   
Output: A new Order record created with associated OrderDetails, and the CartItem records deleted.  
  
1.8 \*\*Order Status View\*\*   
Function ID: FR-08   
Description: Customers can view the current status of their orders, such as Processing, Shipped, Delivered, or Cancelled.   
Input: OrderID.   
Output: Order status and related details retrieved and displayed.  
  
1.9 \*\*Order Cancellation\*\*   
Function ID: FR-09   
Description: Customers can cancel an order if it has not yet been shipped. The system updates the order status and logs the event.   
Input: OrderID.   
Output: Order status updated to "Canceled" and the event is logged.  
  
1.10 \*\*Payment Information Management\*\*   
Function ID: FR-10   
Description: Customers can add, update, or delete their payment information.   
Input: CardNumberHash, ExpiryDate, HolderName, BillingAddress, ActionType (Add, Update, Delete).   
Output: Updated or deleted PaymentInfo records in the database.  
  
1.11 \*\*Inventory Management\*\*   
Function ID: FR-12   
Description: Administrators can manage product inventory by adding, updating, or deleting product records.   
Input: ProductID, Name, Description, Price, StockQuantity, ImageURL, CategoryID, ActionType (Add, Update, Delete).   
Output: Updated or deleted Product records in the database.  
  
1.12 \*\*Product Category Management\*\*   
Function ID: FR-13   
Description: Administrators can manage product categories by creating, updating, or deleting Category records.   
Input: CategoryID, Name, Description, ActionType (Create, Update, Delete).   
Output: Updated or deleted Category records in the database.  
  
1.13 \*\*Plugin Installation and Management\*\*   
Function ID: FR-14   
Description: Administrators can install, configure, or uninstall plugins to extend system functionality.   
Input: PluginID, ConfigurationSettings, ActionType (Install, Configure, Uninstall).   
Output: Updated PluginInstance records in the database, and system configuration adjusted accordingly.  
  
1.14 \*\*Order Confirmation Email Notification\*\*   
Function ID: FR-15   
Description: The system sends an email confirmation to the customer after order creation.   
Input: OrderID, CustomerID, Email template data (e.g., items, total price, shipping details).   
Output: EmailNotification record created and Plugin API called to send the email.  
  
1.15 \*\*Discount Code Application\*\*   
Function ID: FR-16   
Description: Customers can apply a discount code during the checkout process to reduce the total cost.   
Input: DiscountCode, CartID.   
Output: Updated CartItem records with adjusted total price and a log of the applied discount.  
  
1.16 \*\*Plugin API Integration\*\*   
Function ID: FR-17   
Description: The system integrates with the Plugin API for payment processing, inventory checks, email notifications, and other external functions.   
Input: PluginID, API request parameters (varies per function).   
Output: Plugin API response confirmation and corresponding system action (e.g., payment processed, inventory updated).  
  
1.17 \*\*Session Management\*\*   
Function ID: FR-18   
Description: The system manages user sessions to ensure secure login and logout operations.   
Input: CustomerID, Session token, IP address, UserAgent.   
Output: Session record created, updated, or deleted based on user activity.  
  
1.18 \*\*Order Detail Management\*\*   
Function ID: FR-19   
Description: Administrators can view and manage the details of each order, such as quantity and unit price per item.   
Input: OrderID, ProductID, Quantity, UnitPrice.   
Output: Updated OrderDetail records in the database and recalculated order total.  
  
1.19 \*\*Shopping Cart to Order Conversion\*\*   
Function ID: FR-20   
Description: The system converts the contents of a Shopping Cart into an Order when the customer completes the checkout process.   
Input: CartID, CustomerID, PaymentID, ShippingAddress.   
Output: New Order and OrderDetail records created, CartItem records deleted, and inventory updated.  
  
1.20 \*\*Email Notification Sending\*\*   
Function ID: FR-21   
Description: The system sends email notifications to customers for events such as order confirmation or account registration.   
Input: CustomerID, Email content (Subject, Body), OrderID (optional).   
Output: EmailNotification record created and Plugin API called for delivery.  
  
1.21 \*\*Administrator Account Management\*\*   
Function ID: FR-22   
Description: Administrators can manage other administrator accounts by creating, updating, or deleting them.   
Input: AdminID, Username, PasswordHash, Role, Permissions, ActionType.   
Output: Updated or deleted Administrator records in the database.  
  
1.22 \*\*System Event Logging\*\*   
Function ID: FR-23   
Description: The system logs all user actions and events for auditing and troubleshooting purposes.   
Input: Event type (e.g., login, checkout, plugin installation), ActorID (CustomerID or AdminID), Timestamp.   
Output: Event log entry stored in the system.  
  
1.23 \*\*Shopping Cart Creation and Access\*\*   
Function ID: FR-24   
Description: A Shopping Cart is created when a customer logs in and can be accessed to view or modify items.   
Input: CustomerID.   
Output: New or existing Shopping Cart record retrieved and displayed.  
  
1.24 \*\*Product Availability Check\*\*   
Function ID: FR-25   
Description: The system checks the availability of products in the inventory via the Plugin API before adding them to the cart or proceeding to checkout.   
Input: ProductID.   
Output: Availability status returned from the Plugin API and reflected in the system.  
  
1.25 \*\*Shopping Cart Total Calculation\*\*   
Function ID: FR-26   
Description: The system calculates the total price of the Shopping Cart based on the quantity and price of the selected items.   
Input: CartItem records (ProductID, Quantity, UnitPrice).   
Output: Updated cart total price and display.  
  
1.26 \*\*Inventory Update on Purchase\*\*   
Function ID: FR-27   
Description: The system updates the stock quantity of products in the inventory after an order is successfully placed.   
Input: OrderDetail records (ProductID, Quantity).   
Output: Updated Product records with reduced StockQuantity.