# Functional Requirement

# Chapter 1: Functional Requirements   
## 1.1 Customer Registration Function   
\*\*Function ID\*\*: FR-01   
\*\*Description\*\*: Customers can create new accounts by providing personal information. The system validates the input and stores it securely.   
\*\*Input\*\*: Personal information including name, email, password, and optional fields like address and phone number.   
\*\*Output\*\*: A new Customer data entity with the provided details and a confirmation message.   
  
## 1.2 Customer Login Function   
\*\*Function ID\*\*: FR-02   
\*\*Description\*\*: Customers or administrators can log in using their account credentials. The system validates the credentials and creates a session.   
\*\*Input\*\*: Username and password.   
\*\*Output\*\*: A valid LoginSession data entity and redirection to the appropriate dashboard.   
  
## 1.3 Customer Logout Function   
\*\*Function ID\*\*: FR-03   
\*\*Description\*\*: Customers or administrators can terminate their session. The system updates the session status and redirects to the login or home page.   
\*\*Input\*\*: Request to end the session.   
\*\*Output\*\*: A terminated LoginSession data entity and redirection to login/home page.   
  
## 1.4 Customer Profile Management Function   
\*\*Function ID\*\*: FR-04   
\*\*Description\*\*: Customers can view and edit their profile information. The system updates the Customer data entity if changes are made.   
\*\*Input\*\*: Updated profile information such as name, address, or phone number.   
\*\*Output\*\*: Updated Customer data entity and a confirmation message.   
  
## 1.5 Product Search Function   
\*\*Function ID\*\*: FR-05   
\*\*Description\*\*: Customers can search for products using keywords or product names. The system matches the query with the Product data entity and displays relevant results.   
\*\*Input\*\*: Search term or keyword.   
\*\*Output\*\*: A list of matching products from the Product data entity.   
  
## 1.6 Product Filtering Function   
\*\*Function ID\*\*: FR-06   
\*\*Description\*\*: Customers can filter products by category. The system retrieves products from the Product data entity and filters them based on the selected Category.   
\*\*Input\*\*: Selected category ID or name.   
\*\*Output\*\*: A list of filtered products from the Product data entity.   
  
## 1.7 Product View Function   
\*\*Function ID\*\*: FR-07   
\*\*Description\*\*: Customers can view detailed information about a specific product. The system retrieves the product data from the Product data entity and displays it.   
\*\*Input\*\*: Product ID or name.   
\*\*Output\*\*: Displayed product details such as description, price, image, and availability.   
  
## 1.8 Shopping Cart Management Function   
\*\*Function ID\*\*: FR-08   
\*\*Description\*\*: Customers can add, remove, or modify items in their shopping cart. The system updates the ShoppingCart data entity accordingly.   
\*\*Input\*\*: Product ID, quantity, and action (add, remove, or modify).   
\*\*Output\*\*: Updated ShoppingCart data entity and a summary of the cart contents.   
  
## 1.9 Proceed to Checkout Function   
\*\*Function ID\*\*: FR-09   
\*\*Description\*\*: Customers can proceed from the shopping cart to the checkout page. The system prepares the cart for order creation.   
\*\*Input\*\*: Request to proceed to checkout.   
\*\*Output\*\*: Redirected to the payment processing page and preparation of the ShoppingCart for order creation.   
  
## 1.10 Payment Information Management Function   
\*\*Function ID\*\*: FR-10   
\*\*Description\*\*: Customers can enter and save their payment information. The system validates the input and stores it securely in the PaymentInformation data entity.   
\*\*Input\*\*: Card number, expiration date, CVV, and billing address.   
\*\*Output\*\*: Updated PaymentInformation data entity and a confirmation message.   
  
## 1.11 Order Placement Function   
\*\*Function ID\*\*: FR-11   
\*\*Description\*\*: Customers can place an order using the items in their shopping cart and selected payment information. The system creates a new Order and links it to the Customer and PaymentInformation data entities.   
\*\*Input\*\*: ShoppingCart ID and selected PaymentInformation.   
\*\*Output\*\*: New Order data entity and confirmation message.   
  
## 1.12 Order Confirmation Function   
\*\*Function ID\*\*: FR-12   
\*\*Description\*\*: Customers can confirm their order after checkout. The system updates the Order data entity to reflect the confirmed status.   
\*\*Input\*\*: Order ID and confirmation request.   
\*\*Output\*\*: Updated Order data entity and a confirmation message.   
  
## 1.13 Order Cancellation Function   
\*\*Function ID\*\*: FR-13   
\*\*Description\*\*: Customers can cancel an order if it is in a cancellable state. The system updates the Order and ShoppingCart data entities.   
\*\*Input\*\*: Order ID and cancellation request.   
\*\*Output\*\*: Updated Order data entity and, if applicable, updated ShoppingCart data entity.   
  
## 1.14 Order Status Viewing Function   
\*\*Function ID\*\*: FR-14   
\*\*Description\*\*: Customers can view the current status of their orders. The system retrieves the Order data entity and displays the status.   
\*\*Input\*\*: Order ID or list of orders.   
\*\*Output\*\*: Displayed order status (e.g., processing, shipped, delivered, canceled).   
  
## 1.15 Product Purchase History Function   
\*\*Function ID\*\*: FR-15   
\*\*Description\*\*: Customers can view their purchase history. The system retrieves and displays a list of past orders and associated products.   
\*\*Input\*\*: Customer ID and request to view purchase history.   
\*\*Output\*\*: A list of previous orders and their details from the Order and OrderDetail data entities.   
  
## 1.16 Product Addition Function   
\*\*Function ID\*\*: FR-16   
\*\*Description\*\*: Administrators can add new products to the system, including assigning them to a category. The system updates the Product and Category data entities.   
\*\*Input\*\*: Product details such as name, description, price, category, and image.   
\*\*Output\*\*: New Product data entity and updated Category data entity.   
  
## 1.17 Product Update Function   
\*\*Function ID\*\*: FR-17   
\*\*Description\*\*: Administrators can modify existing product information. The system updates the Product and Category data entities.   
\*\*Input\*\*: Product ID and updated details.   
\*\*Output\*\*: Updated Product data entity and, if applicable, updated Category data entity.   
  
## 1.18 Product Deletion Function   
\*\*Function ID\*\*: FR-18   
\*\*Description\*\*: Administrators can delete a product from the system. The system removes the product from the Product and Category data entities.   
\*\*Input\*\*: Product ID and deletion request.   
\*\*Output\*\*: Updated Product and Category data entities and a confirmation message.   
  
## 1.19 Category Management Function   
\*\*Function ID\*\*: FR-19   
\*\*Description\*\*: Administrators can create, update, or delete product categories. The system updates the Category data entity.   
\*\*Input\*\*: Category details such as name and description.   
\*\*Output\*\*: Updated Category data entity and a confirmation message.   
  
## 1.20 Order Review and Management Function   
\*\*Function ID\*\*: FR-20   
\*\*Description\*\*: Administrators can review and manage existing orders. The system updates the Order data entity and may notify the customer of changes.   
\*\*Input\*\*: Order ID and requested action (update, cancel, ship, etc.).   
\*\*Output\*\*: Updated Order data entity and, if applicable, a notification to the customer.   
  
## 1.21 Order Detail Management Function   
\*\*Function ID\*\*: FR-21   
\*\*Description\*\*: Administrators can view and modify details of a specific order, such as product quantity or price. The system updates the OrderDetail data entity.   
\*\*Input\*\*: OrderDetail ID and modified information.   
\*\*Output\*\*: Updated OrderDetail data entity and a confirmation message.   
  
## 1.22 Inventory Management Function   
\*\*Function ID\*\*: FR-22   
\*\*Description\*\*: Administrators can manage product inventory levels. The system updates the Inventory data entity and adjusts the Product data entity if necessary.   
\*\*Input\*\*: Product ID and updated stock quantity.   
\*\*Output\*\*: Updated Inventory data entity and, if applicable, updated Product data entity.   
  
## 1.23 Plugin Installation Function   
\*\*Function ID\*\*: FR-23   
\*\*Description\*\*: Administrators can install new plugins to extend system functionality. The system updates the Plugin data entity.   
\*\*Input\*\*: Plugin ID or name.   
\*\*Output\*\*: Updated Plugin data entity and a confirmation message.   
  
## 1.24 Plugin Configuration Function   
\*\*Function ID\*\*: FR-24   
\*\*Description\*\*: Administrators can configure plugin settings to customize their behavior. The system updates the PluginSetting data entity.   
\*\*Input\*\*: Plugin ID and configuration key-value pairs.   
\*\*Output\*\*: Updated PluginSetting data entity and a confirmation message.   
  
## 1.25 Plugin Uninstallation Function   
\*\*Function ID\*\*: FR-25   
\*\*Description\*\*: Administrators can uninstall plugins when they are no longer needed. The system updates the Plugin data entity.   
\*\*Input\*\*: Plugin ID and uninstallation request.   
\*\*Output\*\*: Updated Plugin data entity and a confirmation message.   
  
## 1.26 Email Service Configuration Function   
\*\*Function ID\*\*: FR-26   
\*\*Description\*\*: Administrators can configure the email service used for sending order confirmations. The system updates the EmailService data entity.   
\*\*Input\*\*: Email service settings such as SMTP server, port, and authentication.   
\*\*Output\*\*: Updated EmailService data entity and a confirmation message.   
  
## 1.27 Email Notification Function   
\*\*Function ID\*\*: FR-27   
\*\*Description\*\*: The system sends order confirmation emails to customers after an order is placed and confirmed. The system updates the EmailService data entity and logs the activity.   
\*\*Input\*\*: Order details such as customer name, product list, and total amount.   
\*\*Output\*\*: Sent email notification and updated EmailService data entity.   
  
## 1.28 User Account Management Function   
\*\*Function ID\*\*: FR-28   
\*\*Description\*\*: Administrators can manage customer and administrator accounts, including creation, updates, and deletion. The system updates the Customer or Administrator data entities.   
\*\*Input\*\*: User account details such as name, email, password, and role.   
\*\*Output\*\*: Updated Customer or Administrator data entity and a confirmation message.   
  
## 1.29 System Documentation Access Function   
\*\*Function ID\*\*: FR-29   
\*\*Description\*\*: Users can access and view system documentation for plugins and other features. The system retrieves and displays the DocumentReference data entity.   
\*\*Input\*\*: Request to view documentation.   
\*\*Output\*\*: Displayed documentation content and logged access activity.   
  
## 1.30 Registration Record Management Function   
\*\*Function ID\*\*: FR-30   
\*\*Description\*\*: Administrators can view, update, or delete customer registration records. The system updates the RegistrationRecord data entity.   
\*\*Input\*\*: Registration record details such as email, status, and registration date.   
\*\*Output\*\*: Updated or deleted RegistrationRecord data entity and a confirmation message.   
  
## 1.31 Browser Access Control Function   
\*\*Function ID\*\*: FR-31   
\*\*Description\*\*: Administrators can configure access control settings for supported browsers. The system updates the Browser and SystemAccessControl data entities.   
\*\*Input\*\*: Selected browser types and access rules (allowed or restricted).   
\*\*Output\*\*: Updated Browser and SystemAccessControl data entities and a confirmation message.   
  
## 1.32 Browsing History Tracking Function   
\*\*Function ID\*\*: FR-32   
\*\*Description\*\*: The system tracks customer browsing behavior, including pages visited and time spent. The system updates the BrowsingHistory data entity.   
\*\*Input\*\*: Page URL and timestamp.   
\*\*Output\*\*: Updated BrowsingHistory data entity and logged activity.   
  
## 1.33 Product View Tracking Function   
\*\*Function ID\*\*: FR-33   
\*\*Description\*\*: The system tracks when customers view product details. The system updates the ProductView data entity.   
\*\*Input\*\*: Product ID and timestamp.   
\*\*Output\*\*: Updated ProductView data entity and logged activity.   
  
## 1.34 Search Query Tracking Function   
\*\*Function ID\*\*: FR-34   
\*\*Description\*\*: The system tracks customer search queries for analytics and improvement. The system updates the SearchQuery data entity.   
\*\*Input\*\*: Search term and timestamp.   
\*\*Output\*\*: Updated SearchQuery data entity and logged activity.   
  
## 1.35 Notification Management Function   
\*\*Function ID\*\*: FR-35   
\*\*Description\*\*: The system sends notifications to customers for order status changes. The system updates the NotificationLog data entity.   
\*\*Input\*\*: Message content and timestamp.   
\*\*Output\*\*: Updated NotificationLog data entity and sent notification to the customer.