# Functional Requirement

1. Functional Requirements   
1.1 Add Product Function   
 Function ID: FR-01   
 Description: Administrators can add new products to the store by providing product name, description, price, category, stock quantity, and uploading a product image.   
 Input: Product name, description, price, category ID, stock quantity, product image file.   
 Output: A new product record is added to the database with a unique ProductID and is available for viewing and purchasing.   
  
1.2 Manage Product Function   
 Function ID: FR-02   
 Description: Administrators can edit or delete existing product records. Editing includes updating product name, description, price, category, and stock quantity. Deletion removes the product from the system.   
 Input: Product ID, updated product information (optional), confirmation for deletion.   
 Output: The product information is updated or the product is deleted from the database, and the changes are reflected in the product catalog.   
  
1.3 View Product Details Function   
 Function ID: FR-03   
 Description: Customers can view the details of a selected product, including name, description, price, category, and product image.   
 Input: Product ID (selected by the customer).   
 Output: Displayed product details on the customer interface.   
  
1.4 Delete Product Function   
 Function ID: FR-04   
 Description: Administrators can delete a product from the store.   
 Input: Product ID, confirmation for deletion.   
 Output: The product is removed from the database and is no longer available for viewing or purchasing.   
  
1.5 Register Customer Function   
 Function ID: FR-05   
 Description: Customers can register a new account by providing personal information such as full name, email address, password, and contact details.   
 Input: Full name, email address, password, contact information, acceptance of terms and conditions.   
 Output: A new customer account is created in the database with a unique CustomerID and a confirmation email is sent to the customer.   
  
1.6 View Customer Information Function   
 Function ID: FR-06   
 Description: Administrators can view detailed information about a specific customer, including their contact details, order history, and account status.   
 Input: Customer ID or search criteria.   
 Output: Displayed customer information on the administrator interface, including associated orders and account details.   
  
1.7 Manage Customer Account Function   
 Function ID: FR-07   
 Description: Administrators can edit or delete existing customer accounts. Editing includes updating customer name, contact details, or account status. Deletion removes the customer from the system.   
 Input: Customer ID, updated customer information (optional), confirmation for deletion.   
 Output: The customer account is updated or deleted in the database, and the changes are reflected in the system interface.   
  
1.8 Place Order Function   
 Function ID: FR-08   
 Description: Customers can place an order by selecting products, specifying quantities, providing shipping address information, and selecting a payment method.   
 Input: Product IDs, quantities, shipping address details, selected payment method.   
 Output: A new order record is created in the database with a unique OrderID, and the inventory is updated accordingly.   
  
1.9 View Order Status Function   
 Function ID: FR-09   
 Description: Customers can view the status of their orders, including order date, items, quantities, total cost, and delivery status.   
 Input: Customer ID or search criteria.   
 Output: Displayed order status and details for the customer.   
  
1.10 Cancel Order Function   
 Function ID: FR-10   
 Description: Customers or administrators can cancel an order before it is shipped. Cancellation updates the order status and restores the inventory for the ordered items.   
 Input: Order ID, confirmation for cancellation.   
 Output: The order status is updated to "Canceled" in the database, and the inventory is restored.   
  
1.11 Process Payment Function   
 Function ID: FR-11   
 Description: Customers can process payment for their orders by entering payment details and confirming the transaction. The system validates the payment and updates the order status.   
 Input: Order ID, selected payment method, payment details (e.g., card number, expiration date).   
 Output: A new payment record is added to the database with a unique PaymentID, and the order status is updated to "Paid".   
  
1.12 View Payment Information Function   
 Function ID: FR-12   
 Description: Administrators can view the payment details for a specific order, including the method, amount, status, and transaction date.   
 Input: Order ID or search criteria.   
 Output: Displayed payment information for the administrator.   
  
1.13 Manage Payment Method Function   
 Function ID: FR-13   
 Description: Administrators can add, update, or delete payment methods available for customers to use during checkout.   
 Input: Payment method ID (optional), name, description, integration settings (e.g., API keys).   
 Output: The payment method is added, updated, or deleted in the database and is reflected in the customer checkout interface.   
  
1.14 Manage Product Category Function   
 Function ID: FR-14   
 Description: Administrators can add, update, or delete product categories to help organize the product catalog.   
 Input: Category ID (optional), name, description, parent category (if applicable).   
 Output: The product category is added, updated, or deleted in the database and is reflected in the product catalog.   
  
1.15 Manage Payment Function   
 Function ID: FR-15   
 Description: Administrators can update or refund a payment for a specific order.   
 Input: Payment ID or order ID, selected action (e.g., refund, update status), confirmation for the action.   
 Output: The payment status is updated or a refund is processed, and the database is updated accordingly.   
  
1.16 Manage Store Function   
 Function ID: FR-16   
 Description: Administrators can update store information such as store name, logo, contact information, and delivery settings.   
 Input: Store ID, updated store details (e.g., name, logo, address, delivery options).   
 Output: The store information is updated in the database and is reflected in the store interface for both customers and administrators.   
  
1.17 Manage Administrator Account Function   
 Function ID: FR-17   
 Description: Administrators can add, update, or delete other administrator accounts.   
 Input: Administrator ID (optional), name, email, password, role.   
 Output: The administrator account is added, updated, or deleted in the database and is reflected in the system interface.

# External Description

2. External Interfaces   
This chapter details the external interfaces of the system, including user interfaces, hardware interfaces, software interfaces, and communication interfaces. These interfaces define how the system interacts with external entities such as users, hardware, software, and communication channels.   
  
2.1 User Interface   
The system provides two primary user interfaces: one for administrators and one for customers. These interfaces support various functions and interactions.   
  
\*\*2.1.1 Administrator Interface\*\*   
- \*\*Description\*\*: The administrator interface allows administrators to manage products, customers, payment methods, and store settings.   
- \*\*Functions Supported\*\*:   
 - Adding, editing, or deleting product records (FR-01, FR-02, FR-04).   
 - Viewing and managing customer accounts (FR-06, FR-07).   
 - Managing payment methods and processing refunds (FR-13, FR-15).   
 - Updating store information (FR-16).   
- \*\*Input Methods\*\*:   
 - Form-based input for product details (e.g., product name, description, price, category ID, stock quantity, and image file).   
 - Form-based input for customer information (e.g., name, email, contact details, and account status).   
 - Form-based input for payment methods (e.g., name, description, integration settings).   
 - Confirmation prompts for deletion or cancellation actions.   
- \*\*Output Methods\*\*:   
 - Display of product details, customer information, and payment method data.   
 - Confirmation messages for successful operations (e.g., "Product added successfully").   
 - Error messages for invalid inputs or failed operations (e.g., "Product not found").   
  
\*\*2.1.2 Customer Interface\*\*   
- \*\*Description\*\*: The customer interface allows customers to view products, place orders, and check order status.   
- \*\*Functions Supported\*\*:   
 - Viewing product details (FR-03).   
 - Registering for a new account (FR-05).   
 - Placing orders (FR-08).   
 - Viewing order status and payment information (FR-09, FR-12).   
- \*\*Input Methods\*\*:   
 - Form-based input for registration (e.g., full name, email address, password, contact information).   
 - Selection of products and quantities for ordering.   
 - Input of shipping address and payment method during checkout.   
- \*\*Output Methods\*\*:   
 - Display of product details (name, description, price, category, and image).   
 - Confirmation of order placement and payment processing.   
 - Order status updates (e.g., "Processing", "Shipped", "Canceled").   
  
2.2 Hardware Interface   
The system does not directly interact with external hardware devices. However, it relies on hardware infrastructure for its operation, such as servers, storage devices, and client-side hardware (e.g., computers, smartphones). The system is compatible with standard web browsers and does not require any specialized hardware components.   
  
2.3 Software Interface   
The system interacts with various software components and databases to ensure functionality and data integrity.   
  
\*\*2.3.1 Database System\*\*   
- \*\*Description\*\*: The system uses a database to store and manage product records, customer accounts, order data, payment information, and store settings.   
- \*\*Functions Supported\*\*:   
 - Storing and retrieving product data (FR-01, FR-02, FR-03, FR-04).   
 - Managing customer accounts and their associated orders (FR-05, FR-06, FR-07, FR-09).   
 - Storing and updating order and payment records (FR-08, FR-11, FR-15).   
 - Managing payment methods and store settings (FR-13, FR-14, FR-16).   
- \*\*Data Stored\*\*:   
 - Product table: ProductID, name, description, price, category ID, stock quantity, image file.   
 - Customer table: CustomerID, name, email, contact information, account status.   
 - Order table: OrderID, customer ID, product IDs, quantities, total cost, delivery status, order date.   
 - Payment table: PaymentID, order ID, method, amount, status, transaction date.   
 - Category table: CategoryID, name, description, parent category.   
 - Administrator table: AdministratorID, name, email, password, role.   
  
\*\*2.3.2 Payment Gateway API\*\*   
- \*\*Description\*\*: The system integrates with a payment gateway API to process customer payments.   
- \*\*Functions Supported\*\*:   
 - Processing payments (FR-11).   
 - Refunding payments (FR-15).   
- \*\*Inputs\*\*:   
 - Payment method details (e.g., card number, expiration date).   
 - Order ID and transaction amount.   
- \*\*Outputs\*\*:   
 - Confirmation of successful or failed transactions.   
 - Transaction details (e.g., payment status, transaction date).   
  
\*\*2.3.3 Email Service\*\*   
- \*\*Description\*\*: The system utilizes an email service to send confirmation emails to customers after registration or payment.   
- \*\*Functions Supported\*\*:   
 - Sending registration confirmation emails (FR-05).   
- \*\*Inputs\*\*:   
 - Customer email address.   
 - Email content (e.g., confirmation message, links).   
- \*\*Outputs\*\*:   
 - Confirmation email sent to the customer.   
  
2.4 Communication Interface   
The system communicates with external entities via standard network protocols and email notifications.   
  
\*\*2.4.1 Web Browsing\*\*   
- \*\*Description\*\*: The system is accessible via web browsers using HTTP/HTTPS protocols.   
- \*\*Functions Supported\*\*:   
 - Viewing product details, placing orders, and managing accounts (FR-03, FR-05, FR-08, FR-09, FR-11).   
- \*\*Interaction Method\*\*:   
 - Web-based HTTP/HTTPS requests and responses.   
 - JSON or HTML-formatted data for transmitting and receiving information.   
  
\*\*2.4.2 Email Notifications\*\*   
- \*\*Description\*\*: The system sends email notifications to customers for account confirmation and payment receipts.   
- \*\*Functions Supported\*\*:   
 - Sending registration confirmation emails (FR-05).   
- \*\*Interaction Method\*\*:   
 - SMTP or similar email protocols are used to send emails.   
 - Emails are sent from the system's email service to the customer's email address.   
  
\*\*2.4.3 API Communication\*\*   
- \*\*Description\*\*: The system communicates with external APIs, such as the payment gateway API, to perform transactions.   
- \*\*Functions Supported\*\*:   
 - Payment processing (FR-11).   
 - Refund processing (FR-15).   
- \*\*Interaction Method\*\*:   
 - RESTful API calls using JSON data format.   
 - Secure communication via HTTPS.   
  
This section ensures that all external data sources and interfaces referenced in the functional requirements are clearly defined and categorized. Developers can use this information to understand how the system interacts with external components and to implement these interfaces accordingly.