# Functional Requirement

1. Functional Requirements   
1.1 Customer Management Function   
 Function ID: FR-01   
 Description: Administrators can create, update, and delete customer records. This function ensures that customer data is accurately maintained in the system.   
 Input: Customer details including name, email, phone number, password, and address information.   
 Output: Updated or new customer records in the Customer data entity, along with confirmation messages for each action.  
  
1.2 Product Catalog Management Function   
 Function ID: FR-02   
 Description: Administrators can add, update, delete, and view products in the catalog. This function ensures that the product information is current and accurate.   
 Input: Product details such as product name, price, description, category, and availability status.   
 Output: Updated or new product records in the Product data entity and ProductCatalog, along with confirmation messages for each action.  
  
1.3 Order Placement Function   
 Function ID: FR-03   
 Description: Customers and administrators can place orders by selecting products and specifying quantities. This function ensures that orders are correctly recorded and linked to products and customers.   
 Input: Selected product(s) and quantity(ies).   
 Output: A new Order record in the Order data entity, with associated OrderItem(s) and updated Product inventory, along with a confirmation message.  
  
1.4 Order Cancellation Function   
 Function ID: FR-04   
 Description: Customers and administrators can cancel orders that are in a cancellable state. This function ensures that cancellations are only allowed when appropriate and updates the system accordingly.   
 Input: Order ID and confirmation of cancellation.   
 Output: Updated Order status in the Order data entity and adjusted Product inventory if necessary, along with a confirmation message and notification to the customer.  
  
1.5 Payment Processing Function   
 Function ID: FR-05   
 Description: Customers and administrators can process payments for eligible orders. This function ensures that payment details are validated and the system is updated to reflect completed transactions.   
 Input: Order ID, payment method, and amount.   
 Output: A new Payment record in the Payment data entity, updated Order status in the Order data entity, and a confirmation message and notification to the customer.  
  
1.6 Cart Management Function   
 Function ID: FR-06   
 Description: Customers and administrators can manage the contents of a cart, including adding, removing, and updating product quantities. This function ensures the cart accurately reflects the user’s intended purchases before checkout.   
 Input: Product ID, quantity, and cart management actions (add, remove, update).   
 Output: Updated Cart record in the Cart data entity and confirmation message for each cart action.  
  
1.7 Order History Viewing Function   
 Function ID: FR-07   
 Description: Customers and administrators can view the history of all orders associated with a specific customer. This function provides access to order details, status, and product information.   
 Input: Customer ID and optional filters or search criteria for orders.   
 Output: A list of Order records in the Order data entity with associated OrderItem and Payment details, along with a confirmation message.  
  
1.8 Product Review Management Function   
 Function ID: FR-08   
 Description: Customers can add, update, or delete product reviews. This function ensures that product reviews are properly managed and stored for future reference.   
 Input: Review details including product ID, customer ID, rating, and review text.   
 Output: Updated or new ProductReview records in the ProductReview data entity, along with confirmation messages for each action.  
  
1.9 Address Management Function   
 Function ID: FR-09   
 Description: Customers can add and manage their shipping addresses. This function ensures that address data is correctly stored and associated with the customer's account.   
 Input: Address details including street, city, state, zip code, country, and customer ID.   
 Output: Updated or new Address records in the Address data entity, along with confirmation messages for each action.  
  
1.10 Administrator Access Management Function   
 Function ID: FR-10   
 Description: Administrators can manage other administrator accounts, including adding, updating, and deleting access rights. This function ensures secure and controlled access to administrative functions.   
 Input: Administrator details including name, email, password, and role.   
 Output: Updated or new Admin records in the Admin data entity, along with confirmation messages for each action.

# External Description

2. External Interfaces  
  
This chapter describes 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 devices, other software systems, and communication channels.  
  
2.1 User Interface Output  
  
The system provides a web-based user interface for both customers and administrators to interact with. The interface is designed to be intuitive and user-friendly, supporting the following functions:  
  
- \*\*Customer Management Interface\*\*: Administrators can create, update, and delete customer records. The interface includes input fields for name, email, phone number, password, and address information. Confirmation messages are displayed upon successful actions.  
- \*\*Product Catalog Management Interface\*\*: Administrators can add, update, delete, and view products. The interface includes fields for product name, price, description, category, and availability status. Confirmation messages are shown after each action.  
- \*\*Order Placement Interface\*\*: Customers and administrators can place orders by selecting products and specifying quantities. The interface includes options to select products and input quantities. A confirmation message is displayed once an order is successfully placed.  
- \*\*Order Cancellation Interface\*\*: Customers and administrators can cancel orders that are in a cancellable state. The interface includes a form to input the Order ID and a confirmation prompt for the cancellation. A confirmation message is shown after the cancellation is processed.  
- \*\*Payment Processing Interface\*\*: Customers and administrators can process payments for eligible orders. The interface includes fields for Order ID, payment method, and amount. A confirmation message is displayed after the payment is successfully processed.  
- \*\*Cart Management Interface\*\*: Customers and administrators can manage the contents of a cart, including adding, removing, and updating product quantities. The interface includes options to perform these actions and displays confirmation messages for each.  
- \*\*Order History Viewing Interface\*\*: Customers and administrators can view the history of all orders associated with a specific customer. The interface includes input fields for Customer ID and optional filters or search criteria. A list of orders, along with associated details, is displayed after retrieval.  
- \*\*Product Review Management Interface\*\*: Customers can add, update, or delete product reviews. The interface includes input fields for Product ID, Customer ID, rating, and review text. Confirmation messages are displayed for each action.  
- \*\*Address Management Interface\*\*: Customers can add and manage their shipping addresses. The interface includes fields for street, city, state, zip code, country, and Customer ID. Confirmation messages are shown after each action.  
- \*\*Administrator Access Management Interface\*\*: Administrators can manage other administrator accounts, including adding, updating, and deleting access rights. The interface includes fields for name, email, password, and role. Confirmation messages are displayed for each action.  
  
2.2 Hardware Interface Output  
  
The system does not have direct hardware dependencies or interfaces. It is designed to operate on standard computing hardware, such as servers and client devices, without requiring specialized hardware components.  
  
2.3 Software Interface Output  
  
The system interacts with several external software components, primarily databases and third-party tools, to manage data and perform specific functions:  
  
- \*\*Customer Data Entity (Database)\*\*: Stores customer records, including name, email, phone number, password, and address information. This database is accessed to create, update, delete, and retrieve customer data.  
- \*\*Product Data Entity (Database)\*\*: Stores product details such as product name, price, description, category, and availability status. This database is accessed to add, update, delete, and view products in the catalog.  
- \*\*Order Data Entity (Database)\*\*: Maintains order records, including Order ID, customer ID, product details, and order status. This database is updated when orders are placed, canceled, or processed for payment.  
- \*\*ProductCatalog (Database)\*\*: Provides a structured catalog of products for display and management. It is used in conjunction with the Product Data Entity to maintain accurate product listings.  
- \*\*Payment Data Entity (Database)\*\*: Stores payment records, including Order ID, payment method, and amount. This database is updated when payments are processed and is used to track completed transactions.  
- \*\*Cart Data Entity (Database)\*\*: Maintains cart records, including Product ID, quantity, and cart management actions. This database is used to store the contents of a user's cart before checkout.  
- \*\*Address Data Entity (Database)\*\*: Stores shipping address information, including street, city, state, zip code, country, and Customer ID. This database is accessed when customers add or update their addresses.  
- \*\*Admin Data Entity (Database)\*\*: Stores administrator account information, including name, email, password, and role. This database is accessed when managing other administrator accounts.  
- \*\*ProductReview Data Entity (Database)\*\*: Stores product reviews, including Product ID, Customer ID, rating, and review text. This database is accessed when customers add, update, or delete reviews.  
  
2.4 Communication Interface Output  
  
The system utilizes various communication interfaces to interact with external systems and users:  
  
- \*\*Email Notifications\*\*: Used to send confirmation messages to customers and administrators for actions such as order placement, order cancellation, and payment processing. These notifications include relevant details about the action taken and are sent via email.  
- \*\*Web Browsing\*\*: The system is accessed through a web browser by both customers and administrators. This allows for a flexible and accessible interface, supporting various browsers and devices.  
- \*\*APIs (if applicable)\*\*: The system may interact with external APIs for payment processing or other services. These APIs would provide data in standard formats (e.g., JSON) and would be integrated into the system to ensure seamless functionality.  
  
By clearly defining these external interfaces, the system ensures that all interactions with external entities are well understood, consistent, and easy to implement. This reduces the potential for errors and misunderstandings during development and maintenance.