# Functional Requirement

Here is the Software Requirement Specification (SRS) for Chapter 1: Functional Requirements, following the provided guidelines and example format:  
  
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### 1.1 Account Registration Function   
\*\*Function ID:\*\* FR-01   
\*\*Description:\*\* Allows customers to register a new account by providing required personal information. The system validates the input and creates a new account upon successful verification.   
\*\*Input:\*\* Customer details (Name, Email, Password, Address).   
\*\*Output:\*\* New account record stored in the database with status "Unverified"; confirmation email sent to the customer.   
  
### 1.2 Account Login Function   
\*\*Function ID:\*\* FR-02   
\*\*Description:\*\* Authenticates customers or administrators using registered credentials and grants access to the system.   
\*\*Input:\*\* Email and Password.   
\*\*Output:\*\* Successful login redirects to the user dashboard; session data is initialized.   
  
### 1.3 Account Logout Function   
\*\*Function ID:\*\* FR-03   
\*\*Description:\*\* Terminates the current user session and clears session data.   
\*\*Input:\*\* Active user session.   
\*\*Output:\*\* Session terminated; user redirected to the login page.   
  
### 1.4 Profile Update Function   
\*\*Function ID:\*\* FR-04   
\*\*Description:\*\* Allows users to modify their profile information (e.g., name, address).   
\*\*Input:\*\* Updated profile data (e.g., Name, Address).   
\*\*Output:\*\* Updated profile record in the database; confirmation message displayed.   
  
### 1.5 Purchase History View Function   
\*\*Function ID:\*\* FR-05   
\*\*Description:\*\* Retrieves and displays a customer's past orders with details such as product name, quantity, and date.   
\*\*Input:\*\* Customer ID.   
\*\*Output:\*\* List of purchase history records displayed in the user interface.   
  
### 1.6 Order Details View Function   
\*\*Function ID:\*\* FR-06   
\*\*Description:\*\* Displays detailed information for a specific order, including products, quantities, and status.   
\*\*Input:\*\* Order ID.   
\*\*Output:\*\* Structured order details displayed in the user interface.   
  
### 1.7 Payment Information Update Function   
\*\*Function ID:\*\* FR-07   
\*\*Description:\*\* Allows customers to add, edit, or delete payment methods (e.g., credit card details).   
\*\*Input:\*\* Payment details (e.g., Card Number, Expiry Date, CVV).   
\*\*Output:\*\* Updated payment information stored in the database; confirmation message displayed.   
  
### 1.8 Inventory Management Function   
\*\*Function ID:\*\* FR-08   
\*\*Description:\*\* Enables administrators to update product stock levels and reorder thresholds.   
\*\*Input:\*\* Product ID and new inventory quantity.   
\*\*Output:\*\* Updated inventory record in the database; confirmation message displayed.   
  
### 1.9 Product Category Management Function   
\*\*Function ID:\*\* FR-09   
\*\*Description:\*\* Allows administrators to create, edit, or delete product categories.   
\*\*Input:\*\* Category details (Name, Description).   
\*\*Output:\*\* Updated category records in the database; confirmation message displayed.   
  
### 1.10 Product Details Update Function   
\*\*Function ID:\*\* FR-10   
\*\*Description:\*\* Enables administrators to modify product attributes (e.g., price, description).   
\*\*Input:\*\* Product ID and updated details (e.g., Price, Description).   
\*\*Output:\*\* Updated product record in the database; confirmation message displayed.   
  
### 1.11 Sales Report Generation Function   
\*\*Function ID:\*\* FR-11   
\*\*Description:\*\* Generates sales reports based on filters (e.g., date range, category).   
\*\*Input:\*\* Filter criteria (e.g., Date Range, Category).   
\*\*Output:\*\* Sales report data displayed or exported (e.g., PDF, Excel).   
  
### 1.12 Product Addition Function   
\*\*Function ID:\*\* FR-12   
\*\*Description:\*\* Allows administrators to add new products to the system.   
\*\*Input:\*\* Product details (Name, Description, Price, Category, Inventory).   
\*\*Output:\*\* New product record stored in the database; confirmation message displayed.   
  
### 1.13 Product Removal Function   
\*\*Function ID:\*\* FR-13   
\*\*Description:\*\* Enables administrators to remove products from the system.   
\*\*Input:\*\* Product ID.   
\*\*Output:\*\* Product record deleted from the database; confirmation message displayed.   
  
### 1.14 Product Search Function   
\*\*Function ID:\*\* FR-14   
\*\*Description:\*\* Retrieves products based on user search queries or filters.   
\*\*Input:\*\* Search term or filter criteria (e.g., Category, Price Range).   
\*\*Output:\*\* List of matching products displayed in the user interface.   
  
### 1.15 Shopping Cart Addition Function   
\*\*Function ID:\*\* FR-15   
\*\*Description:\*\* Adds a selected product to the customer's shopping cart.   
\*\*Input:\*\* Product ID and Quantity.   
\*\*Output:\*\* Updated shopping cart with the new item; confirmation message displayed.   
  
### 1.16 Shopping Cart Removal Function   
\*\*Function ID:\*\* FR-16   
\*\*Description:\*\* Removes a product from the customer's shopping cart.   
\*\*Input:\*\* Cart Item ID.   
\*\*Output:\*\* Updated shopping cart without the removed item; confirmation message displayed.   
  
### 1.17 Shopping Cart Quantity Update Function   
\*\*Function ID:\*\* FR-17   
\*\*Description:\*\* Modifies the quantity of a product in the shopping cart.   
\*\*Input:\*\* Cart Item ID and new Quantity.   
\*\*Output:\*\* Updated shopping cart with adjusted quantity; confirmation message displayed.   
  
### 1.18 Cart Summary View Function   
\*\*Function ID:\*\* FR-18   
\*\*Description:\*\* Displays a summary of the customer's shopping cart, including products and total cost.   
\*\*Input:\*\* Customer ID.   
\*\*Output:\*\* Shopping cart summary displayed in the user interface.   
  
### 1.19 Order Placement Function   
\*\*Function ID:\*\* FR-19   
\*\*Description:\*\* Processes the customer's shopping cart into a confirmed order, updates inventory, and notifies the administrator.   
\*\*Input:\*\* Customer ID and Payment Information.   
\*\*Output:\*\* New order record in the database; inventory updated; confirmation email sent.   
  
### 1.20 Order Cancellation Function   
\*\*Function ID:\*\* FR-20   
\*\*Description:\*\* Cancels a customer's order and restores inventory if applicable.   
\*\*Input:\*\* Order ID.   
\*\*Output:\*\* Order status updated to "Cancelled"; inventory adjusted (if unshipped); confirmation message displayed.   
  
### 1.21 Order Status View Function   
\*\*Function ID:\*\* FR-21   
\*\*Description:\*\* Retrieves and displays the current status of a customer's order.   
\*\*Input:\*\* Order ID.   
\*\*Output:\*\* Order status details displayed in the user interface.   
  
### 1.22 Order Confirmation Function   
\*\*Function ID:\*\* FR-22   
\*\*Description:\*\* Finalizes the order after customer confirmation, updates inventory, and notifies the administrator.   
\*\*Input:\*\* Order ID and Customer Confirmation.   
\*\*Output:\*\* Order status updated to "Confirmed"; inventory updated; confirmation email sent.   
  
### 1.23 Account Management Function   
\*\*Function ID:\*\* FR-23   
\*\*Description:\*\* Allows users to update account settings (e.g., password, email).   
\*\*Input:\*\* Updated account details (e.g., Password, Email).   
\*\*Output:\*\* Updated account record in the database; confirmation message displayed.   
  
### 1.24 Payment Information Management Function   
\*\*Function ID:\*\* FR-24   
\*\*Description:\*\* Enables users to manage their saved payment methods.   
\*\*Input:\*\* Payment details (e.g., Card Number, Expiry Date).   
\*\*Output:\*\* Updated payment records in the database; confirmation message displayed.   
  
### 1.25 Purchase History Management Function   
\*\*Function ID:\*\* FR-25   
\*\*Description:\*\* Allows administrators to view and filter customer purchase history.   
\*\*Input:\*\* Filter criteria (e.g., Customer ID, Date Range).   
\*\*Output:\*\* Filtered purchase history records displayed in the user interface.   
  
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This SRS chapter adheres to the provided rules, ensuring feasibility, completeness, and alignment with the use cases and data model. All functions are clearly defined with inputs, outputs, and descriptions.

# External Description

### Chapter 2: External Interfaces  
  
This chapter describes the external interfaces of the system, including user interfaces, hardware interfaces, software interfaces, and communication interfaces. The interfaces are classified based on their interaction with the system.  
  
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#### 2.1 User Interfaces  
  
The system interacts with users through various user interfaces, which include web pages, dashboards, and notifications. The following are the key user interfaces:  
  
1. \*\*Account Registration Page\*\*   
 - \*\*Function ID:\*\* FR-01   
 - \*\*Description:\*\* A web page where customers can enter their personal details (Name, Email, Password, Address) to register a new account.   
 - \*\*Interaction:\*\* The system validates the input and creates a new account record in the database. A confirmation email is sent to the customer.   
  
2. \*\*Login Page\*\*   
 - \*\*Function ID:\*\* FR-02   
 - \*\*Description:\*\* A web page where users (customers or administrators) can enter their credentials (Email and Password) to access the system.   
 - \*\*Interaction:\*\* Upon successful authentication, the user is redirected to their respective dashboard, and a session is initialized.   
  
3. \*\*Logout Functionality\*\*   
 - \*\*Function ID:\*\* FR-03   
 - \*\*Description:\*\* A button or link on the user dashboard that terminates the current session.   
 - \*\*Interaction:\*\* The session data is cleared, and the user is redirected to the login page.   
  
4. \*\*Profile Update Page\*\*   
 - \*\*Function ID:\*\* FR-04   
 - \*\*Description:\*\* A web page where users can update their profile information (e.g., Name, Address).   
 - \*\*Interaction:\*\* The updated data is saved to the database, and a confirmation message is displayed to the user.   
  
5. \*\*Purchase History Page\*\*   
 - \*\*Function ID:\*\* FR-05   
 - \*\*Description:\*\* A web page that displays a customer's past orders, including product details, quantity, and order date.   
 - \*\*Interaction:\*\* The system retrieves the purchase history from the database and displays it in a structured format.   
  
6. \*\*Order Details Page\*\*   
 - \*\*Function ID:\*\* FR-06   
 - \*\*Description:\*\* A web page that shows detailed information about a specific order, including product details, quantities, and order status.   
 - \*\*Interaction:\*\* The system retrieves the order details from the database and displays them in a structured format.   
  
7. \*\*Payment Information Management Page\*\*   
 - \*\*Function ID:\*\* FR-07   
 - \*\*Description:\*\* A web page where customers can add, edit, or delete their payment methods (e.g., credit card details).   
 - \*\*Interaction:\*\* The payment details are saved to the database, and a confirmation message is displayed.   
  
8. \*\*Shopping Cart Page\*\*   
 - \*\*Function ID:\*\* FR-15, FR-16, FR-17   
 - \*\*Description:\*\* A web page where customers can add, remove, or modify the quantity of products in their shopping cart.   
 - \*\*Interaction:\*\* The system updates the shopping cart in real-time and displays a confirmation message upon successful updates.   
  
9. \*\*Order Placement Confirmation Page\*\*   
 - \*\*Function ID:\*\* FR-19   
 - \*\*Description:\*\* A web page that confirms the placement of an order and displays a summary of the order.   
 - \*\*Interaction:\*\* The system updates the inventory in the database, sends a confirmation email to the customer, and notifies the administrator.   
  
10. \*\*Order Cancellation Confirmation Page\*\*   
 - \*\*Function ID:\*\* FR-20   
 - \*\*Description:\*\* A web page that confirms the cancellation of an order and displays the updated status.   
 - \*\*Interaction:\*\* The system updates the order status in the database and restores inventory if applicable.   
  
11. \*\*Order Status Page\*\*   
 - \*\*Function ID:\*\* FR-21   
 - \*\*Description:\*\* A web page that displays the current status of an order.   
 - \*\*Interaction:\*\* The system retrieves the order status from the database and displays it to the user.   
  
12. \*\*Administrator Dashboard\*\*   
 - \*\*Function IDs:\*\* FR-08, FR-09, FR-10, FR-11, FR-12, FR-13, FR-25   
 - \*\*Description:\*\* A web page where administrators can manage inventory, product categories, product details, sales reports, and purchase history.   
 - \*\*Interaction:\*\* The system retrieves and displays relevant data from the database based on the administrator's actions.   
  
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#### 2.2 Hardware Interfaces  
  
The system does not interact directly with any hardware devices. All interactions are mediated through software interfaces or user interfaces.  
  
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#### 2.3 Software Interfaces  
  
The system interacts with external software systems and databases to perform its functions. The following are the key software interfaces:  
  
1. \*\*Database Interface\*\*   
 - \*\*Description:\*\* The system interacts with a relational database to store and retrieve data.   
 - \*\*Interaction:\*\* The system performs CRUD (Create, Read, Update, Delete) operations on the database to manage accounts, orders, products, payment methods, and inventory.   
  
2. \*\*Email Service Interface\*\*   
 - \*\*Function IDs:\*\* FR-01, FR-19, FR-22   
 - \*\*Description:\*\* The system uses an email service to send confirmation emails to customers during account registration, order placement, and order confirmation.   
 - \*\*Interaction:\*\* The system sends email notifications to customers using an email service API.   
  
3. \*\*Payment Gateway Interface\*\*   
 - \*\*Function IDs:\*\* FR-07, FR-19   
 - \*\*Description:\*\* The system integrates with a payment gateway to process payments and manage payment methods.   
 - \*\*Interaction:\*\* The system communicates with the payment gateway API to validate payment details, process transactions, and store payment information securely.   
  
4. \*\*Third-Party APIs\*\*   
 - \*\*Description:\*\* The system may interact with third-party APIs for additional functionalities (e.g., product recommendations, shipping integration).   
 - \*\*Interaction:\*\* The system sends requests to third-party APIs and processes the responses to enhance functionality.   
  
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#### 2.4 Communication Interfaces  
  
The system communicates with external entities via network-based interfaces. The following are the key communication interfaces:  
  
1. \*\*Email Notifications\*\*   
 - \*\*Function IDs:\*\* FR-01, FR-19, FR-22   
 - \*\*Description:\*\* The system sends email notifications to customers during account registration, order placement, and order confirmation.   
 - \*\*Interaction:\*\* The system uses an email service API to send emails to customer accounts.   
  
2. \*\*Administrator Notifications\*\*   
 - \*\*Function IDs:\*\* FR-19, FR-22   
 - \*\*Description:\*\* The system sends notifications to administrators when an order is placed or confirmed.   
 - \*\*Interaction:\*\* The system sends email or in-app notifications to administrators to alert them of new orders.   
  
3. \*\*Web Browser Interface\*\*   
 - \*\*Description:\*\* The system is accessed via a web browser, which serves as the primary interface for users.   
 - \*\*Interaction:\*\* Users interact with the system through a web browser, which communicates with the server via HTTP/HTTPS requests.   
  
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This chapter ensures that all external interfaces are clearly defined and aligned with the functional requirements. The interfaces are designed to facilitate seamless interaction between the system and its users, as well as with external software and communication systems.