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BAKERY MANAGEMENT SYSTEM

**Ho Chi Minh City, June 2024**

Record of change

\*A - Added M - Modified D - Deleted

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| Effective Date | Changed Items | A\* M, D | Change Description | New Version |
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TABLE OF CONTENTS

[1 Introduction 4](#_Toc171983180)

[1.1 Purpose 4](#_Toc171983181)

[1.2 Scope 4](#_Toc171983182)

[1.3 Definitions, Acronyms, and Abbreviations 4](#_Toc171983183)

[1.4 References 5](#_Toc171983184)

[1.5 Overview 5](#_Toc171983185)

[2 Overall Description 6](#_Toc171983186)

[3 FUNCTIONAL Requirements 7](#_Toc171983187)

[4 NON-FUNCTIONAL Requirements 19](#_Toc171983188)

[4.1 Logical Data Model 19](#_Toc171983189)

[4.2 Data Dictionary 19](#_Toc171983190)

[4.3 Reports 21](#_Toc171983191)

[4.4 Data Acquisition, Integrity, Retention, and Disposal 21](#_Toc171983192)

[5 External Interface Requirements 23](#_Toc171983193)

[5.1 User Interfaces 23](#_Toc171983194)

[5.2 Software Interfaces 23](#_Toc171983195)

[5.3 Hardware Interfaces 24](#_Toc171983196)

[5.4 Communications Interfaces 24](#_Toc171983197)

[6 QUALITY ATTRIBUTES 26](#_Toc171983198)

[7 OTHER REQUIREMENTS 29](#_Toc171983199)

# Introduction

## Purpose

The purpose of this Software Requirements Specification (SRS) document is to outline the functional and non-functional requirements of an Interior Construction Quotation System. This document serves as a guide for the development team to understand the scope of the project, the features to be implemented, and the constraints under which the system will operate.

## Scope

|  |  |  |  |
| --- | --- | --- | --- |
| Feature | Release 1 | Release 2 | Release 3 |
| FE-1 Feedback and Rating System | Users can provide feedback and rate their experience with the bakery's products and services through a basic feedback form. | Implementation of a star-rating system and detailed review options. Admins can view and respond to customer feedback. | Advanced analytic on feedback and ratings to identify trends and areas for improvement. Integration with customer loyalty programs to reward users for providing feedback. |
| FE-2, Inventory Management | Admins can monitor and manage inventory levels in real-time. Basic alerts for low stock levels. | Enhanced reporting features for inventory management, including usage trends and order forecasts. Integration with supplier systems for automated reordering of supplies. | Advanced inventory optimization tools, such as predictive analytics to prevent overstocking or stock outs. Multi-location inventory management for larger operations with multiple bakery locations. |
| FE-3, Sales and Revenue Reporting | The system can generate basic sales and revenue reports, including daily, weekly, and monthly summaries. | Advanced reporting features with customization report generation options. Integration with financial software for seamless data transfer and analysis. | Enhanced account features and personalized recommendations. |

## Definitions, Acronyms, and Abbreviations

* SRS: Software Requirements Specification
* UI: User Interface
* API: Application Programming Interface
* CRM: Customer Relationship Management
* ERP: Enterprise Resource Planning

## References

 **"The Baker's Guide to Opening a Successful Bakery" by Ann Krier and Michelle Anderson**

* This book provides insights into the essential aspects of running a bakery, including the role of management systems.

 **"Bakery Technology and Engineering" by Samuel A. Matz**

* This book covers the technical and engineering aspects of bakery production, including the importance of efficient management systems.

 **"The Art and Science of Bakery Production" by Samuel A. Matz**

* A comprehensive guide to the processes involved in bakery production, highlighting the need for systematic management.

 **"How to Open a Financially Successful Bakery" by Sharon L. Fullen and Douglas Brown**

* Offers practical advice on the business side of running a bakery, including the use of management systems.

## Overview

The Interior Construction Quotation System is a comprehensive software solution designed to facilitate the entire process of obtaining quotes for interior construction projects. From presenting past projects and industry news to generating standard quotes and estimating preliminary construction costs, the system aims to provide a seamless experience for both customers and construction professionals.

By centralizing customer requests, managing the quote process, and offering insights through dashboards and reports, the system enhances efficiency and transparency in the interior construction industry. Throughout this document, detailed requirements will be outlined to ensure the successful development and deployment of the system.

# Overall Description

A Bakery Management System (BMS) is a comprehensive software solution designed to streamline and automate the various operations of a bakery business. This system encompasses several key functionalities to manage daily activities efficiently, ensuring smooth operations and enhancing customer satisfaction.

# FUNCTIONAL Requirements

**3.1 User Registration**

**3.1.1 Description and Priority**

* **Description**: This feature enables guests to register for a new account. It is a high-priority feature as it is fundamental for user access and experience.
* **Priority**: High

**3.1.2 Stimulus/Response Sequences**

**Sequence 1 (User Registration):**

* **Stimulus**: A guest selects the "Register" option.
* **Response**: The system presents a registration form to gather user information.

**3.1.3 Functional Requirements**

**REQ-1: User Registration:**

* The system shall allow guests to create new accounts by providing personal information. The registration process should include validation of user data and email confirmation.

**3.2 User Login**

**3.2.1 Description and Priority**

* **Description**: This feature enables existing members to log in. It is a high-priority feature as it is fundamental for user access and experience.
* **Priority**: High

**3.2.2 Stimulus/Response Sequences**

**Sequence 1 (User Login):**

* **Stimulus**: A guest selects the "Login" option.
* **Response**: The system provides a login form for existing members to enter their credentials.

**Sequence 2 (Forgot Password):**

* **Stimulus**: A user clicks the "Forgot Password" link.
* **Response**: The system guides the user through a password recovery process.

**3.2.3 Functional Requirements**

**REQ-2: User Login:**

* The system shall authenticate existing members based on their provided credentials. Access to member-specific features is granted upon successful login.

**REQ-3: Forgot Password:**

* The system shall assist users who have forgotten their passwords in recovering their accounts. A password reset link shall be sent to the user's registered email.

**3.3 Search Products**

**3.3.1 Description and Priority**

* **Description**: This feature allows both guests and members to search for bakery products. It is a high-priority feature as it directly impacts the user experience.
* **Priority**: High

**3.3.2 Stimulus/Response Sequences**

**Sequence 1 (Search Products):**

* **Stimulus**: A guest or member initiates a search query.
* **Response**: The system displays a list of products matching the search criteria.

**3.3.3 Functional Requirements**

**REQ-4: Search Products:**

* The system shall enable users to search for products using keywords and categories.

**3.4 View Products**

**3.4.1 Description and Priority**

* **Description**: This feature allows both guests and members to view detailed information about bakery products. It is a high-priority feature as it directly impacts the user experience.
* **Priority**: High

**3.4.2 Stimulus/Response Sequences**

**Sequence 1 (View Product Details):**

* **Stimulus**: A guest or member selects a product to view its details.
* **Response**: The system displays detailed information about the selected product.

**3.4.3 Functional Requirements**

**REQ-7: View Product Details:**

* The system shall display detailed information about a product when a user selects it, including description, price, and available options.

**3.5 Place Order**

**3.5.1 Description and Priority**

* **Description**: This feature allows guests and members to place orders for bakery products. It is a high-priority feature as it is crucial for sales and revenue generation.
* **Priority**: High

**3.5.2 Stimulus/Response Sequences**

**Sequence 1 (Place Order):**

* **Stimulus**: A guest or member selects the "Order" option.
* **Response**: The system presents a form to collect order details.

**3.5.3 Functional Requirements**

**REQ-8: Place Order:**

* The system shall enable users to place orders by providing necessary order details, including product selection and quantity.

**REQ-9: Order Details:**

* The system shall display a summary of the order details before final submission for confirmation.

**REQ-12: Pre-order:**

* The system shall allow users to place pre-orders for products, which includes selecting a future delivery or pickup date.

**3.6 Payment Methods**

**3.6.1 Description and Priority**

* **Description**: This feature allows guests and members to complete payment transactions using various methods. It is a high-priority feature as it is crucial for sales and revenue generation.
* **Priority**: High

**3.6.2 Stimulus/Response Sequences**

**Sequence 1 (Choose Payment Method):**

* **Stimulus**: A guest or member selects a payment method (Internet banking, Cash, Gift).
* **Response**: The system processes the payment based on the selected method.

**3.6.3 Functional Requirements**

**REQ-10: Payment Methods:**

* The system shall provide multiple payment options, including Internet banking, Cash, and Gift vouchers.

**REQ-11: Payment Processing:**

* The system shall process payments securely and confirm the order once the payment is successful.

**REQ-13: Membership Benefits:**

* For logged-in members, the system shall provide additional benefits such as discounts based on their membership status.

**3.7 Provide Feedback**

**3.7.1 Description and Priority**

* **Description**: This feature enables members to provide feedback about their experience, including rating products, reporting issues, and requesting refunds. It is a medium-priority feature as it enhances user engagement and satisfaction.
* **Priority**: Medium

**3.7.2 Stimulus/Response Sequences**

**Sequence 1 (Provide Feedback):**

* **Stimulus**: A member selects the "Provide Feedback" option.
* **Response**: The system presents a feedback form to gather the member's comments, ratings, and any specific issues or refund requests.

**Sequence 2 (Rating):**

* **Stimulus**: A member opts to rate a product.
* **Response**: The system allows the member to give a rating and submit it.

**Sequence 3 (Report Issue):**

* **Stimulus**: A member selects the "Report" option within the feedback form.
* **Response**: The system captures the details of the issue being reported and submits it to the support team for review.

**Sequence 4 (Request Refund):**

* **Stimulus**: A member selects the "Request Refund" option within the feedback form.
* **Response**: The system gathers the necessary details for the refund request and submits it for processing.

**3.7.3 Functional Requirements**

**REQ-14: Provide Feedback:**

* The system shall allow members to provide feedback on their experience, including a text comment area for detailed feedback.

**REQ-15: Rating:**

* The system shall enable members to rate products on a predefined scale (e.g., 1 to 5 stars).

**REQ-16: Report Issue:**

* The system shall provide an option for members to report issues encountered with products or services, including capturing necessary details about the issue.

**REQ-17: Request Refund:**

* The system shall allow members to request refunds for products or services, capturing necessary information such as order number and reason for the refund.

### 3.8 Respond to Customer Inquiries

#### 3.8.1 Description and Priority

* **Description**: This feature allows customer care staff to respond to customer inquiries. It is a high-priority feature as it is essential for customer support and satisfaction.
* **Priority**: High

#### 3.8.2 Stimulus/Response Sequences

Sequence 1 (Respond to Inquiry):

* **Stimulus**: A customer care staff receives an inquiry from a customer.
* **Response**: The system displays the inquiry and provides an interface for the staff to respond.

#### 3.8.3 Functional Requirements

**REQ-18**: Respond to Inquiries:

* The system shall allow customer care staff to view and respond to customer inquiries through a dedicated interface.

### 3.9 Process Refunds

#### 3.9.1 Description and Priority

* **Description**: This feature allows customer care staff to process refunds for customers. It is a high-priority feature as it directly impacts customer satisfaction and trust.
* **Priority**: High

#### 3.9.2 Stimulus/Response Sequences

Sequence 1 (Process Refund):

* **Stimulus**: A customer care staff receives a refund request from a customer.
* **Response**: The system verifies the request and processes the refund, updating the customer's account accordingly.

#### 3.9.3 Functional Requirements

REQ-19: Process Refunds:

* The system shall allow customer care staff to verify and process refund requests, updating customer accounts and order statuses accordingly.

### 3.10 Handle Complaints

#### 3.10.1 Description and Priority

* **Description**: This feature allows customer care staff to handle customer complaints. It is a high-priority feature as it is critical for maintaining customer satisfaction and trust.
* **Priority**: High

#### 3. 10.2 Stimulus/Response Sequences

Sequence 1 (Handle Complaint):

* **Stimulus**: A customer care staff receives a complaint from a customer.
* **Response**: The system records the complaint and provides tools for the staff to address and resolve the issue.

#### 3. 10.3 Functional Requirements

REQ-20: Handle Complaints:

* The system shall allow customer care staff to record, address, and resolve customer complaints, ensuring proper follow-up and communication with the customer.

### 3.11 Product Management (Staff)

#### 3.11.1 Description and Priority

* **Description**: This feature allows storekeepers to manage products, including adding, updating, and deleting products. It is a high-priority feature as it ensures the product catalog is accurate and up-to-date.
* **Priority**: High

#### 3.11.2 Stimulus/Response Sequences

Sequence 1 (Add Product):

* **Stimulus**: A storekeeper selects the "Add Product" option.
* **Response**: The system presents a form to gather product details and adds the new product to the catalog.

Sequence 2 (Update Product):

* **Stimulus**: A storekeeper selects a product to update.
* **Response**: The system presents the product details and allows the storekeeper to make changes.

Sequence 3 (Delete Product):

* **Stimulus**: A storekeeper selects a product to delete.
* **Response**: The system confirms the action and removes the product from the catalog.

#### 3.11.3 Functional Requirements

REQ-21: Add Product:

* The system shall allow storekeepers to add new products by providing necessary product details.

REQ-22: Update Product:

* The system shall allow storekeepers to update existing product details.

REQ-23: Delete Product:

* The system shall allow storekeepers to delete products from the catalog.

### 3.12 Manage Orders (Staff)

#### 3.12.1 Description and Priority

* **Description**: This feature allows storekeepers to manage orders, including declining and confirming orders and creating delivery schedules. It is a high-priority feature as it ensures efficient order processing.
* **Priority**: High

#### 3.12.2 Stimulus/Response Sequences

Sequence 1 (Decline Order):

* **Stimulus**: A storekeeper selects an order to decline.
* **Response**: The system presents a confirmation prompt and updates the order status upon confirmation.

Sequence 2 (Confirm Order):

* **Stimulus**: A storekeeper selects an order to confirm.
* **Response**: The system updates the order status and allows the storekeeper to create a delivery schedule.

#### 3.12.3 Functional Requirements

REQ-24: Decline Order:

* The system shall allow storekeepers to decline orders, updating the order status and notifying the customer.

REQ-25: Confirm Order:

* The system shall allow storekeepers to confirm orders, updating the order status and enabling the creation of delivery schedules.

### 3.13 Manage Account (Administrator)

#### 3.13.1 Description and Priority

* **Description**: This feature allows administrators to manage user accounts, including creating, updating, and deleting accounts. It is a high-priority feature as it is essential for user management and security.
* **Priority**: High

#### 3.13.2 Stimulus/Response Sequences

Sequence 1 (Manage Account):

* **Stimulus**: An administrator selects a user account to manage.
* **Response**: The system provides options to create, update, or delete the account.

#### 3.13.3 Functional Requirements

REQ-26: Manage Account:

* The system shall allow administrators to create, update, and delete user accounts, ensuring proper user management and security.

### 3.14 Statistic Product (Administrator)

#### 3.14.1 Description and Priority

* **Description**: This feature allows administrators to view product statistics, including sales data and trends. It is a high-priority feature as it helps in strategic decision-making.
* **Priority**: High

#### 3.14.2 Stimulus/Response Sequences

Sequence 1 (View Product Statistics):

* **Stimulus**: An administrator selects the "Product Statistics" option.
* **Response**: The system displays various statistics and trends related to product sales.

#### 3.14.3 Functional Requirements

REQ-27: Statistic Product:

* The system shall provide administrators with detailed product statistics, including sales data and trends.

### 3.15 Generate Reports (Administrator)

#### 3.15.1 Description and Priority

* **Description**: This feature allows administrators to generate various reports related to sales, products, and user activity. It is a high-priority feature as it aids in monitoring and decision-making.
* **Priority**: High

#### 3.15.2 Stimulus/Response Sequences

Sequence 1 (Generate Report):

* **Stimulus**: An administrator selects the "Generate Report" option.
* **Response**: The system presents a form to select report criteria and generates the report based on the selected parameters.

#### 3.15.3 Functional Requirements

REQ-28: Generate Reports:

* The system shall allow administrators to generate reports based on various criteria, providing insights into sales, products, and user activity.

### 3.16 View Orders (Baker)

#### 3.16.1 Description and Priority

* **Description**: This feature allows bakers to view orders that need to be fulfilled. It is a high-priority feature as it ensures timely preparation of products.
* **Priority**: High

#### 3.16.2 Stimulus/Response Sequences

Sequence 1 (View Orders):

* **Stimulus**: A baker selects the "View Orders" option.
* **Response**: The system displays a list of orders that need to be fulfilled.

#### 3.16.3 Functional Requirements

REQ-29: View Orders:

* The system shall allow bakers to view a list of orders that need to be fulfilled, including details such as product, quantity, and delivery time.

### 3.17 Baking (Baker)

#### 3.17.1 Description and Priority

* **Description**: This feature allows bakers to mark the baking status of products. It is a high-priority feature as it tracks the preparation process.
* **Priority**: High

#### 3.17.2 Stimulus/Response Sequences

Sequence 1 (Update Baking Status):

* **Stimulus**: A baker updates the status of a product being baked.
* **Response**: The system records the updated status and notifies relevant staff.

#### 3.17.3 Functional Requirements

REQ-30: Baking:

* The system shall allow bakers to update the baking status of products, ensuring accurate tracking of the preparation process.

### 3.18 Update Order Status (Baker)

#### 3.18.1 Description and Priority

* **Description**: This feature allows bakers to update the status of orders they are working on. It is a high-priority feature as it keeps the order processing information current.
* **Priority**: High

#### 3.18.2 Stimulus/Response Sequences

Sequence 1 (Update Order Status):

* **Stimulus**: A baker updates the status of an order.
* **Response**: The system records the updated status and notifies relevant staff and customers.

#### 3.18.3 Functional Requirements

REQ-31: Update Order Status (Baker):

* The system shall allow bakers to update the status of orders, ensuring that order processing information is current and communicated to relevant parties.

### 3.19 Update Order Status (Transporter)

#### 3.19.1 Description and Priority

* **Description**: This feature allows transporters to update the status of orders during delivery. It is a high-priority feature as it ensures real-time tracking and transparency of the delivery process.
* **Priority**: High

#### 3.19.2 Stimulus/Response Sequences

Sequence 1 (Update Order Status During Delivery):

* **Stimulus**: A transporter updates the status of an order during delivery (e.g., "Out for Delivery," "Delivered").
* **Response**: The system records the updated status and notifies relevant staff and customers.

#### 3.19.3 Functional Requirements

REQ-32: Update Order Status (Transporter):

* The system shall allow transporters to update the status of orders during delivery, providing real-time updates to relevant staff and customers.

### 3.20 Tracking Order (Transporter)

#### 3.20.1 Description and Priority

* **Description**: This feature allows customers and staff to track the status and location of orders in transit. It is a high-priority feature as it enhances the customer experience by providing real-time updates.
* **Priority**: High

#### 3.20.2 Stimulus/Response Sequences

Sequence 1 (Track Order):

* **Stimulus**: A customer or staff member requests the current status and location of an order.
* **Response**: The system provides real-time updates on the order's status and location.

#### 3.20.3 Functional Requirements

REQ-33: Tracking Order:

* The system shall provide real-time tracking information for orders, including status updates and location data, to both customers and staff.

# NON-FUNCTIONAL Requirements

## A diagram of a computer Description automatically generatedLogical Data Model

## Data Dictionary

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Entity | Attribute | Description | Data Type | Length | Format | Allowed Values |
| User | UserID | Unique identifier for the user | Integer | 10 | N/A | Auto increment |
| User | Username | Username of the user | String | 50 | N/A | Alphanumeric characters |
| User | Password | Password of the user | String | 50 | N/A | Encrypted |
| User | Role | Role of the user in the system | String | 20 | N/A | Guest, Member, Baker, Transporter, Administrator |
| Product | ProductID | Unique identifier for the product | Integer | 10 | N/A | Auto increment |
| Product | Name | Name of the product | String | 100 | N/A | Alphanumeric characters |
| Product | Price | Price of the product | Decimal | 10,2 | N/A | Positive decimal |
| Order | OrderID | Unique identifier for the order | Integer | 10 | N/A | Auto increment |
| Order | OrderDate | Date of the order | Datetime | N/A | YYYY-MM-DD | N/A |
| OrderItem | OrderItemID | Unique identifier for the order item | Integer | 10 | N/A | Auto increment |
| OrderItem | Quantity | Quantity of the product ordered | Integer | 5 | N/A | Positive integer |
| Feedback | FeedbackID | Unique identifier for the feedback | Integer | 10 | N/A | Auto increment |
| Feedback | Rating | Rating given by the user | Integer | 1 | N/A | 1-5 |
| Transaction | TransactionID | Unique identifier for the transaction | Integer | 10 | N/A | Auto increment |
| Transaction | PaymentMethod | Method of payment | String | 50 | N/A | Cash, Credit card, Gift |

## Reports

The Bakery Management System will generate various reports for different users. Below are the key reports that the system will produce:

* **Sales Report:**
  + **Description:** Summarizes sales data over a specified period.
  + **Content:** OrderID, OrderDate, Username, TotalAmount.
  + **Sort Sequence:** Sorted by OrderDate.
  + **Totaling Levels:** Daily, Weekly, Monthly totals.
* **Inventory Report:**
  + **Description:** Lists current inventory levels and alerts for low stock items.
  + **Content:** ProductID, ProductName, StockQuantity, ReorderLevel.
  + **Sort Sequence:** Sorted by ProductName.
  + **Totaling Levels:** Total stock per product category.
* **Customer Feedback Report:**
  + **Description:** Provides details on customer feedback and ratings.
  + **Content:** FeedbackID, OrderID, Username, Rating, Comments.
  + **Sort Sequence:** Sorted by Rating.
  + **Totaling Levels:** Average rating per product, user, and overall.

## Data Acquisition, Integrity, Retention, and Disposal

This section describes how data is acquired, maintained, and protected within the Bakery Management System, as well as policies for data retention and disposal.

#### 1. Data Acquisition

* **Source:** Data will be acquired through user inputs (e.g., order placement, feedback), external data feeds, and system-generated data.
* **Method:** Data entry forms, APIs, and automated processes.

#### 2. Data Integrity

* **Techniques:** Regular backups, data validation checks, error detection mechanisms, and data encryption.
* **Policies:** Ensuring data consistency through ACID (Atomicity, Consistency, Isolation, Durability) principles.

#### 3. Data Retention and Disposal

* **Retention Policies:**
  + Transactional data will be retained for a minimum of 5 years.
  + Audit logs will be retained for 1 year.
  + Customer data will be retained as long as the customer is active and for 2 years after account deactivation.
* **Disposal Policies:**
  + Secure deletion of data no longer required, using methods like data wiping and shredding for physical media.
  + Temporary data and cache will be cleared periodically (e.g., every 30 days).
* **Backup Policies:**
  + Daily incremental backups and weekly full backups.
  + Backups will be stored off-site for disaster recovery purposes.

# External Interface Requirements

## User Interfaces

Admin Dashboard: The admin dashboard should be intuitive and user-friendly, offering a comprehensive overview of the cake store's operations. It should provide easy access to various modules such as order management, inventory tracking, staff management, and sales analytics.

Staff Portal: The staff portal should provide functionalities for staff to update inventory, manage baking schedules, process orders, and track their working hours and attendance.

Customer Interface: The customer interface should be engaging and easy to navigate. It should feature online cake ordering with customization options, a gallery of available cakes, detailed product descriptions, customer reviews, and a secure payment system.

Baker Portal: The baker portal should allow bakers to access and manage baking schedules, view order details, update cake status, and manage ingredient inventory.

Delivery Interface: The delivery interface should enable delivery personnel to view delivery schedules, access customer addresses and contact information, update delivery status, and track delivery routes.

Analytic Dashboard: The analytic dashboard should provide detailed reports and insights into sales performance, customer preferences, inventory levels, and staff productivity to support data-driven decision-making.

## Software Interfaces

The Cake Store Management Website Application interfaces with various software components to ensure seamless operation, data exchange, and integration with external systems. This section describes the connections between the application and other software components, including applications, databases, operating systems, tools, libraries, websites, and integrated commercial components.

|  |  |
| --- | --- |
| **Software Used** | **Description** |
| Operating System | **Windows/Linux:** The application is designed to run on both Windows and Linux operating systems for flexibility and robust support. |
| Database | **MySQL:** MySQL is used to store data related to customers, orders, inventory, products, and employees. It ensures reliable data management and retrieval. |
| Back-end Framework | **Spring Boot:** Spring Boot is chosen for its ability to create production-ready applications with minimal configuration, offering interactive and efficient support for back-end operations. |
| Web Server and Hosting Environment | **Apache/Tomcat:** The web server hosts the Cake Store Management website, handling HTTP/HTTPS requests and responses, ensuring efficient and secure communication. |
| Front-end Framework | **React.js:** React.js is utilized for building a responsive and dynamic user interface, providing a smooth user experience. |

## Hardware Interfaces

**Web Browsers:**

* Description: Devices used by customers and staff to access the Cake Store Management System through web browsers.
* Logical Characteristics: Must be compatible with popular web browsers such as Chrome, Firefox, and Safari.
* Physical Characteristics: Can be accessed from computers, smartphones, and tablets.

**Database Server:**

* Description: The server that stores and manages the website's database, including customer information, orders, and inventory.
* Logical Characteristics: Compatible with MySQL database management system.
* Physical Characteristics: High-performance server hardware with sufficient storage capacity for the database.

## Communications Interfaces

**Web Browsers:**

● Compatibility: Supports all major web browsers like Chrome, Firefox, Safari, and Edge.

Forms: Uses simple forms for cake orders, feedback, and contact inquiries.

**Email Communications:**

● Notifications: Sends emails for order confirmations, shipping updates, promotions, and password resets.

→ *These communication interfaces ensure the Cake Store Management Website Application is secure, efficient, and easy to use for customers and staff.*

# QUALITY ATTRIBUTES

**6.1 Usability**

The bakery shop software must be designed to be highly user-friendly to ensure a seamless user experience for both customers and staff. The following usability requirements must be met:

* **Ease of Use**: The user interface must be intuitive and simple, requiring minimal effort to navigate and perform tasks.
* **Ease of Learning**: New users should be able to learn how to use the software with minimal training. A comprehensive user guide and tooltips within the software should be provided.
* **Memorability**: Users should be able to remember how to use the software effectively after a period of non-use without requiring re-learning.
* **Error Avoidance**: The software should minimize the risk of user errors by providing clear instructions and confirmations for critical actions.
* **Error Handling and Recovery**: In the event of an error, the software must provide clear messages about what went wrong and guide the user on how to correct it.
* **Efficiency of Interactions**: The software should allow users to complete tasks quickly and efficiently, minimizing the number of steps required.
* **Ergonomics**: The software should be designed to reduce strain on users, considering factors such as screen layout and input device usage.

The software must conform to the bakery’s internal user interface design standards, which emphasize clarity, simplicity, and accessibility.

**6.2 Performance**

The performance requirements for the bakery shop software are as follows:

* **Response Time**: The system should respond to user inputs within 2 seconds under normal operating conditions.
* **Transaction Processing**: Transactions, such as sales or inventory updates, should be processed within 3 seconds.
* **Load Handling**: The system should be able to handle up to 100 simultaneous users without performance degradation.
* **Scalability**: The system should be scalable to accommodate future growth, supporting up to 500 simultaneous users with proportional performance maintenance.
* **Data Processing**: Daily sales reports and other analytics should be generated within 1 minute.

These performance goals should be integrated with the corresponding functional requirements to ensure clarity and coherence.

**6.3 Security**

Security requirements for the bakery shop software are critical to protect sensitive data and ensure privacy:

* **User Authentication**: The software must support secure login mechanisms, including multi-factor authentication (MFA).
* **Data Encryption**: All sensitive data, including user information and financial transactions, must be encrypted both in transit and at rest using industry-standard encryption protocols.
* **Access Control**: The system must enforce role-based access control (RBAC) to restrict access to sensitive functions and data based on user roles.

**6.4 Safety**

The bakery shop software must address safety concerns to prevent any potential loss, damage, or harm:

* **Data Backup**: The system must automatically back up critical data at regular intervals to prevent data loss.
* **Fail-Safe Mechanisms**: The software should have fail-safe mechanisms in place to handle unexpected failures gracefully, ensuring data integrity and system stability.
* **User Confirmation**: Critical actions, such as deleting data or processing refunds, must require user confirmation to prevent accidental operations.

**6.5 Other Relevant Attributes**

* **Availability**: The system must have an uptime of 99.9% to ensure it is available for use almost all the time.
* **Efficiency**: The software should optimize resource usage to avoid unnecessary consumption of system resources.
* **Installability**: The software should be easy to install, with clear instructions and minimal configuration required.
* **Integrity**: The system should ensure data integrity by validating inputs and maintaining consistency across the database.
* **Interoperability**: The software should be able to integrate with other systems used by the bakery, such as accounting software and inventory management systems.
* **Modifiability**: The system should be designed to allow easy modifications and updates to meet changing business needs.
* **Portability**: The software should be compatible with various operating systems and devices, including Windows, macOS, and mobile platforms.
* **Reliability**: The system should be reliable, with minimal downtime and few critical bugs.
* **Reusability**: Code and components should be designed for reuse in other projects or future versions of the software.
* **Robustness**: The software should be robust, capable of handling unexpected inputs and conditions without crashing.
* **Scalability**: The system should support scalability to handle increased load as the business grows.
* **Verifiability**: All requirements should be specific, quantitative, and verifiable through testing and validation procedures.

# OTHER REQUIREMENTS

**7.1 Legal and Regulatory Compliance**

The bakery shop software must comply with the following legal and regulatory requirements:

* **Data Protection Regulations**: The software must comply with regulations to protect customer personal data. In Vietnam, this includes the **Law on Cybersecurity (2018)** and **Decree No. 13/2023/ND-CP on the Protection of Personal Data**.
* **Financial Compliance**: The software must adhere to current accounting and financial standards, including regulations on data storage and financial reporting.

**7.2 Installation and Configuration Requirements**

* **Installation**: The software must provide detailed installation instructions, including system requirements and steps to install the software on various platforms.
* **Configuration**: The software must allow easy configuration, including setting up system parameters, user management, and interface customization.
* **Startup and Shutdown**: The software must support clear startup and shutdown procedures, ensuring all data is safely stored and not lost.

**7.3 Logging, Monitoring, and Audit Trail Requirements**

* **Logging**: The software must log all significant activities, including sales transactions, inventory updates, and system configuration changes.
* **Monitoring**: The software must provide monitoring tools to track system performance and detect potential issues.
* **Audit Trail**: The system must maintain a detailed audit trail of all user activities, including logins, access changes, and significant actions.