Software Requirements Specification

For

Restaurant Management System

Version 1.0

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1. Introduction

1.1 Purpose

The main goal of the Restaurant Management System (RMS) is to offer a detailed online solution that improves restaurants' operational efficiency by automating and simplifying different processes in daily operations. The Restaurant Management System (RMS) is created to manage various important aspects of restaurants such as making reservations, processing orders, managing inventory, engaging with customers, and coordinating staff. The system's goal is to centralize these functions in one convenient platform to enhance user experience.

1.2 Intended Audience

The Restaurant Management System (RMS) is designed to cater to a diverse group of stakeholders, each with distinct needs and responsibilities within the system. The intended audience for this Software Requirements Specification (SRS) includes:

Programmers: SRS gives developers a thorough and precise comprehension of the system's requirements, features, and limitations. It acts as a plan for growth, making sure that the system is constructed based on the defined requirements and operates as anticipated.

Staffs: Comprehend the functionalities of the RMS and its potential to enhance operations, boost customer service, and raise efficiency levels. It describes the essential functions of the system needed for their responsibilities, like managing reservations, tracking orders, controlling inventory, and coordinating staff.

Customers: Engage with the system to schedule appointments, make purchases, and offer comments.

1.3 Intended Use

The Restaurant Management System (RMS) is designed to be used by various stakeholders within the restaurant ecosystem to streamline operations, enhance customer experiences, and facilitate data-driven decision-making. The intended uses of the RMS are outlined below.

Restaurant Administrators and Managers:
Administrators can use the system to create, update, and manage menu items, including setting prices, adding descriptions, and managing availability. This ensures that the menu is always up-to-date and accurately reflects what is offered to customers.

Managers can oversee table reservations, manage seating arrangements, and optimize the flow of customers during peak hours. This helps in minimizing wait times and ensuring a smooth dining experience.

Restaurants Staff:
Staff members can use the system to view and process customer orders in real-time. Orders are transmitted directly to the kitchen, reducing errors, and speeding up service. Staff can view their schedules, request time off, and swap shifts through the system. This simplifies shift management and ensures that staff are well-coordinated.

Customer:
Customers can use the RMS to make reservations online, select preferred seating, and specify the size of their party. This provides convenience and ensures that their dining experience is well-planned.

1.4 Scope

The Restaurant Management System (RMS) encompasses a wide range of functionalities designed to streamline and optimize the various operations within a restaurant. The scope of the RMS includes, but is not limited to, the following key features and functionalities:

User Authentication and Role Management: Secure login and authentication processes for diverse types of users, including customers and staff. The system will manage user roles and permissions, ensuring that users have access only to the features relevant to their role. Administrators will have full system access, staff will have access to operational functions, and customers will have access to reservation and order functionalities.

Reservation Management: Reservation system that allows customers to book tables online. The system will enable customers to select their preferred date, time, and seating arrangement. It will also allow restaurant managers to view and manage all reservations, ensuring optimal table utilization and minimizing wait times.

Order Management: The system will allow customers to place orders through a user-friendly interface, with the option to customize their orders. Orders will be transmitted directly to the kitchen and updated in real-time for staff and customers. The system will also track order statuses, ensuring timely preparation and delivery.

Menu Management: Administrators can add new menu items, update existing ones, and remove items that are no longer available. The system will also allow for the inclusion of detailed descriptions, images, and pricing for each menu item. This ensures that the menu is always current and accurately reflects what the restaurant offers.

Customer Feedback and Review Management: Customers will be able to leave reviews and rate their dining experience. Restaurant managers can view, respond to, and manage these reviews, using the feedback to make improvements to service quality and customer satisfaction.

The RMS is intended to be a comprehensive solution that addresses the core operational needs of a restaurant while also providing advanced tools for enhancing customer satisfaction and

optimizing business performance. By covering these areas, the system aims to be an indispensable tool for modern restaurant management.

1.5 Definitions and Acronyms

Restaurant Management System (RMS): A web-based system designed to enhance the operational efficiency of restaurants by automating and simplifying processes like reservations, order management, inventory control, and customer engagement.

User Authentication: The process of verifying the identity of users to provide secure access to the RMS, with different access levels for administrators, staff, and customers.

Reservation Management: A feature that allows customers to book tables online, and restaurant managers to optimize seating arrangements.

Acronyms:

RMS: Restaurant Management System

SRS: Software Requirements Specification

2. Overall Description

2.1 Product perspective

The Restaurant Management System (RMS) is a web-based system intended to streamline the management operation and customer experience. This system allows customers to interact with the restaurant online, making reservations, ordering meals for delivery, and accessing other services offered by the restaurant. As a standalone system, it operates entirely over the World Wide Web, requiring only internet access for both the restaurant staff and customers.

In addition to customer related features, the system also gathers valuable information from customer interaction. Restaurant managers can use this data to make informed decisions about managing walk in customers, staff allocation, inventory management, and estimating food requirements. By analyzing patterns such as peak reservation times, popular menu items, trends, and customer feedback managers can improve overall restaurant operations to their advantage.

- User Interfaces: Web-based interface for customers, staff, and administrators.
- Hardware Interfaces: Compatible with standard web-enabled devices.
- Software Interfaces: Integrates with third-party payment gateways and email/SMS services.
- Communications Interfaces: Utilizes HTTP/HTTPS protocols for communication between client devices and servers.
- Memory: Requires sufficient server memory for handling concurrent user interactions and data processing.

- Site Adaptation Requirements: Adaptable to various screen sizes and operating systems requires a reliable internet connection.

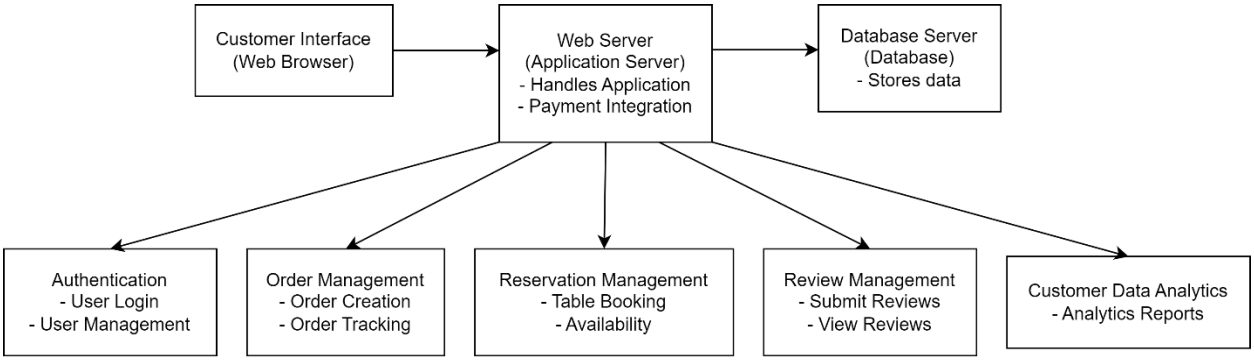

Figure 1RMS System Architecture Diagram

2.2 Product functions

The Restaurant Management System (RMS) provides the following functions:

- User Authentication: Provides secure login and account management for customers, restaurant staff, and administrators, with administrators having full system access.
- Reservation System: Enables customers to reserve tables online, select seating preferences, party size, and reservation time.
- Walk-In Customer Management: Manages walk-in customers alongside online reservations ensuring efficient seating and service.
- Menu Management: Allows administrators to add, update, or remove menu items including pricing, ingredients, and availability.
- Order Management: Tracks dining, delivery, and pickup orders, with a function to send orders directly to the kitchen for timely preparation.
- Payment System: Supports secure online payments for reservations and orders, integrating with trusted payment gateways.
- Customer Review: Allows customers to leave feedback and ratings on their dining experience, which managers can use to make improvements.
- Staff Management: Assists managers in tracking staff availability, managing shifts, and planning for peak times and events.
- Inventory Management: Tracks inventory levels based on orders and sales, helping managers estimate food requirements and plan accordingly.
- Customer Data Analytics: Analyzes customer interactions to generate visual reports, such as graphs, which assist managers in making informed decisions on staffing, inventory, and service delivery.

- Notification System: Sends automated notifications to customers about reservation confirmations, order status updates, and promotional offers via email or Short Message Service (SMS).

2.3 User characteristics

The Restaurant Management System (RMS) supports three primary user types:

- Customers: Users with basic access to make reservations, order food, and provide feedback. The RMS is designed to be user-friendly, requiring minimal technical expertise.
- Staff: Users responsible for managing orders, updating statuses, and handling daily operational tasks. Staff access is limited to operational functions, requiring minimal training.
- Administrators and Managers: Users with full access to manage menu items, analyze customer data, and generate reports. This user needs higher levels of experience and technical expertise to effectively use the system's advanced features.

2.4 Assumptions and dependencies

The RMS assumes integration with third-party payment gateways for handling online transactions, which relies on these services' security and compliance with financial regulations. It also assumes that stable internet connectivity will be available for both customers and restaurant staff to ensure continuous operation of the system. The performance of the system is dependent on the reliability of external services for payment processing and communication, such as email and SMS. Additionally, the system's performance relies on the stability of the server and the speed of the internet connection.

2.5 Apportioning of requirements

The RMS system will be implemented in three phases:

- Phase 1: Core functionalities including user authentication, reservation system, menu management, order management, and customer analytics.
- Phase 2: Additional functionalities such as walk-in customer management, customer review, staff management, and inventory management.
- Phase 3: Finally, implement the notification system and third-party payment gateway integration.

This phased approach ensures that the core functionality is established before additional functionalities are added. The exact timeline and prioritization of these phases will be adjusted based on development progress and external dependencies.

3. System Features and Requirements

3.1 Functional Requirements

Functional requirements describe system actions or functions. For a restaurant management system, these may include:

1. Reservation Management:
   - Allow customers to make reservations, make changes and cancel.
   - Enable staff to view and manage reservations.
   - Send acceptance notices and reminders to customers.

2. Order Management:
   - Customers can order for dine in, takeout, or delivery.
   - Enable staff to manage and update orders.
   - Monitor orders from preparation to delivery.

3. User Menu:
   - Allow administrators to add, update, and remove menu items.
   - Display menu items with descriptions, prices, and availability.
   - Enable customers to browse and select menus.

4. Billing and Payment Processing:
   - Create invoices for orders.
   - Accept various payment methods (cash, credit/debit cards, digital wallets).
   - Record payments and maintain outstanding balances.

5. Inventory Management:
   - Check the inventory of materials and supplies.
   - Alert staff when inventory is low.
   - Issues purchase orders to suppliers.

6. Customer Management:
   - Maintain customer information with contact details and order history.
   - Offer loyalty programs and discounts.
   - Collect feedback and reviews.

3.2 External Interface Requirement

External interface requirements refer to how the system interacts with other systems and users. For a restaurant management system, these may include:

1. User Interfaces:
   - Web and mobile interfaces for customers to make reservations and place orders.
   - Admin interface for staff to manage reservations, orders, and inventory.
   - Kitchen display system for chefs to view and manage orders.

2. Methods of Payment:
   - Connectivity with payment gateways for online payment processing.
   - Support for multiple payment methods.

3. Third-Party Services:
   - Coordinating with delivery services to fulfil orders.
   - Integration of accounting software for financial management.

3.3 System Features

System features define the highest capacity of the system. In the case of a restaurant management system, these may include:

1. Real-Time Updates:
   - Provide real-time updates on order status and inventory levels.
   - Notify customers of changes in order status via SMS or email.

2. Reporting and Analytics:
   - Create reports on sales, inventory, and customer interactions.
   - Provide insights and analysis to improve performance.

3. User Freedom and Authorization:
   - Safe access for staff and customers.
   - Using role-based measures to restrict access to sensitive information.

4. Multi-Language Support:
   - Support multiple languages for different customers.
   - Allow administrators to change language in the admin interface.

3.4 Non- Functional Requirements

Non-functional requirements define the system's operational qualities and constraints. For a restaurant management system, these may include:

1. Usability:
   - Provide an intuitive and user-friendly interface.
   - Ensure ease and accessibility for all users.

2. Performance:
   - Ensure the system can manage high volumes of orders and reservations.
   - Optimize response times for user actions.

3. Reliability:
   - Ensure the system is available when the restaurant is in operation.
   - Implemented backup and recovery systems to prevent data loss.

4. Scalability:
   - Design the system to accommodate growth in the number of users and transactions.
   - Support new features and integrations as needed.

5. Security:
   - Protect sensitive customer and financial data.
   - Implement encryption and secure communication protocols.

6. Maintainability:
   - Ensure the system is easy to update and maintain.
   - Provide clear documentation for developers and administrators.

Specifications

Programming Languages and Technologies:

1. Frontend:
   - HTML/CSS: Designs and creates web interfaces.
   - JavaScript: For interactive objects and dynamic objects.
   - Frameworks/Libraries: To create functional and efficient applications.

2. Backend:
   - PHP: Server-side scripting language used to create dynamic web pages and applications.
   - Node.js: For server-side scripting and managing asynchronous operations.
   - Express.js: Web application framework for Node.js to building APIs.
   - Python: Alternatively, Python can be used for a strong backend.

3. Database:
   - SQL Databases: A set of MYSQL databases.

4. Resources:
   - Cloud Services: AWS, Azure, or Google Cloud for scalable and reliable hosting solutions.

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