Software Requirements Specification (SRS) for Restaurant Management System

1. Introduction

1.1 Purpose

This document specifies the requirements for the Restaurant Management System. The system is designed to streamline the operations of a restaurant, including managing orders, reservations, menus, and kitchen workflows, as well as handling customer authentication and interactions.

1.2 Scope

The Restaurant Management System is intended for use by restaurant staff and customers. It provides an integrated platform to manage daily restaurant operations efficiently. The system will handle tasks such as order processing, menu management, table reservations, and kitchen coordination, ensuring seamless communication between different subsystems.

1.3 Definitions, Acronyms, and Abbreviations

- **RMS:** Restaurant Management System
- **UI:** User Interface
- **API:** Application Programming Interface
- **DBMS:** Database Management System

1.4 References

- IEEE Standard for Software Requirements Specifications (IEEE Std 830-1998)

1.5 Overview

This document is structured into sections detailing the system's functional and non-functional requirements, external interface requirements, system features, and additional requirements such as regulatory and environmental considerations.

2. Overall Description

2.1 Product Perspective

The Restaurant Management System is designed as a comprehensive solution to integrate various restaurant operations. It is connected to a central database that stores information

related to menus, orders, reservations, and customer details. The system is modular, allowing for scalability and customization according to the specific needs of the restaurant.

2.2 Product Functions

The Restaurant Management System will provide the following functionalities:

- **Authentication subsystem:** Secure login for staff and customers.
- **Menu subsystem:** Management of the restaurant's menu, including updating items and prices.
- **Reservation subsystem:** Allows customers to book tables in advance.
- **Order subsystem:** Handles order placement, modification, and status tracking.
- **Kitchen subsystem:** Manages kitchen workflows and order processing.

2.3 User Classes and Characteristics

- **Customers:** Access the system for making reservations, placing orders, and viewing the menu.
- **Restaurant staff:** Use the system for managing orders, updating the menu, and handling reservations.
- **Administrators:** Responsible for maintaining the system, troubleshooting issues, and updating system components.

2.4 Operating Environment

- **Software:** Runs on web-based or desktop-based platforms compatible with the restaurant's existing infrastructure.
- **Hardware:** Requires devices such as computers, tablets, and printers for order management, as well as kitchen display systems for order processing.

2.5 Design and Implementation Constraints

- **Compliance:** Adherence to local health regulations and data protection laws.
- **Security:** Secure handling of customer data and payment information.
- **Usability:** Ensuring the system is intuitive and easy to use for both staff and customers.

2.6 Assumptions and Dependencies

- The system assumes reliable internet connectivity for online operations.
- Regular updates and maintenance are performed to ensure system reliability.

3. External Interface Requirements

3.1 User Interfaces

- **Web interface:** Accessible by customers for reservations and orders, and by staff for management tasks.
- **Admin dashboard:** For system administrators to manage user roles, monitor system performance, and handle troubleshooting.

3.2 Hardware Interfaces

- **Tablets/Computers:** For taking orders and managing reservations.
- **Printers:** For printing order receipts and kitchen orders.
- **Kitchen Display Systems:** For viewing and managing incoming orders.

3.3 Software Interfaces

- **API Integration:** Integration with the restaurant's payment gateway and customer relationship management (CRM) software.

3.4 Communication Interfaces

- **Secure Protocols:** SSL/TLS for secure data transmission between the system and external interfaces.

4. System Features

4.1 Authentication

- **Description:** The system requires users to authenticate before accessing any functionalities.
- **Functional Requirements:**
    - The system shall validate user credentials against stored data.
    - The system shall provide role-based access to different modules.

4.2 Menu Management

- **Description:** Allows the restaurant staff to manage the menu items.
- **Functional Requirements:**
    - The system shall allow the addition, deletion, and modification of menu items.
    - The system shall update the menu in real-time.

4.3 Table Reservation

- **Description:** Allows customers to reserve tables in advance.
- **Functional Requirements:**
    - The system shall allow customers to select a date, time, and table for reservation.
    - The system shall send confirmation notifications to customers.

4.4 Order Management

- **Description:** Handles customer orders from placement to completion.
- **Functional Requirements:**
    - The system shall allow customers to place orders and modify them before submission.
    - The system shall track the status of each order and notify the kitchen.

4.5 Kitchen Management

- **Description:** Manages kitchen workflows and order processing.
- **Functional Requirements:**
    - The system shall display orders to kitchen staff as they are placed.
    - The system shall allow kitchen staff to update order status as it progresses.

4.6 Error Handling

- **Description:** Handles system errors and provides feedback to users.
- **Functional Requirements:**
    - The system shall notify users of errors and provide recovery options.
    - The system shall log errors for future analysis.

5. Non-Functional Requirements

5.1 Performance Requirements

- The system shall process orders within 2 seconds of submission.
- The system shall handle up to 200 concurrent users without performance degradation.

5.2 Security Requirements

- The system shall encrypt all sensitive data during transmission.
- The system shall implement secure authentication protocols to prevent unauthorized access.

5.3 Usability Requirements

- The system shall have an intuitive user interface, accessible to users with varying levels of technical expertise.
- The system shall be accessible on multiple devices, including tablets and desktop computers.

5.4 Reliability Requirements

- The system shall have an uptime of 99.9%.
- The system shall be resilient to network interruptions and continue to function in offline mode.

6. Other Requirements

6.1 Regulatory Requirements

- The system shall comply with local health and safety regulations.
- The system shall adhere to data protection laws, ensuring customer data is stored and processed securely.

6.2 Environmental Requirements

- The system shall operate effectively in a temperature range of 10°C to 40°C.
- The system shall be compatible with standard restaurant hardware environments.

Requirements Traceability Matrix (RTM)

Requirement ID	Requirement Description	Design Specification	Implementation Module	Test Case ID
R1	Validate user credentials for login	Section 4.1.2, Design A	Module 1: Authentication	TC1
R2	Real-time menu updates	Section 4.2.2, Design B	Module 2: Menu Management	TC2
R3	Process table reservations	Section 4.3.2, Design C	Module 3: Reservation Management	TC3
R4	Track and manage orders	Section 4.4.2, Design D	Module 4: Order Management	TC4
R5	Display orders to kitchen staff	Section 4.5.2, Design E	Module 5: Kitchen Management	TC5
R6	Handle and log system errors	Section 4.6.2, Design F	Module 6: Error Handling	TC6

The RTM ensures that all requirements are covered by design, development, and testing activities, maintaining traceability throughout the project lifecycle.