DATA STRUCTURE

DSA Project

SRS (SOFTWARE REQUIREMENT SPECIFICATION)

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Software Requirements Specification

1. Introduction

1.1 Purpose The purpose of this document is to outline the Software Requirements Specification (SRS) for the Pizza Shop management project. This application is designed to handle various operations related to managing orders for Take-Away, Home Delivery, and Dine-In customers, as well as tracking and displaying order details.

1.2 Scope The project aims to streamline the order management process for a pizza shop, ensuring efficient handling of customer orders, serving, and billing. It provides functionalities to manage and display orders, calculate bills, and track earnings.

1.3 Overview The system includes functionalities such as placing and serving orders for different customer types, displaying order details, clearing order lists, and calculating total bills and earnings.

2. Overall Description

2.1 Product Perspective The system is a standalone application that will be installed and used in the pizza shop to manage orders. It interacts with users (staff) who will input and manage orders through a graphical user interface (GUI).

2.2 Product Functions

- Place orders for Take-Away, Home Delivery, and Dine-In customers.
- Serve the orders for aforementioned customer types.
- Display all orders for each customer type.
- Display and clear the list of served orders.
- Calculate and display the total bill for pending orders and the total earnings from served orders.

2.3 User Characteristics The primary users of the system are the pizza shop staff members. No advanced technical knowledge is required as the system is designed for ease of use with a user-friendly interface.

2.4Constraints

- Orders must be clearly categorized into Take-Away, Home Delivery, and Dine-In orders.
- The system should be responsive and handle multiple operations simultaneously.
- Adequate error handling for invalid inputs and operations.

2.5 Assumptions and Dependencies

- The application will run on a single machine in the pizza shop.
- The system assumes a consistent format for categorizing and displaying orders.
- Dependencies include libraries for GUI creation and data management.

3 Requirements

3.1 Data Structures

- **Linked List:** Used for maintaining the list of orders, as it allows for efficient insertion and deletion operations.
- **Binary Search Tree (BST):** Used for efficient searching and retrieval of orders based on various criteria.
- **AVL Tree:** Used to maintain a balanced BST, ensuring O(log n) time complexity for insertions and deletions, which optimizes the management of the order data.

3.2 Functional Requirements

SR #	Functionality	Description
FR1	Place order for Take-Away Customer	Allows staff to place take-away orders by selecting menu items.
FR2	Place order for Home Delivery Customer	Allows staff to place home delivery orders by selecting menu items and entering delivery details.
FR3	Place order for Dine-In Customer	Allows staff to place dine-in orders by selecting menu items.
FR4	Serve order for Take-Away Customer	Marks a take-away order as served and updates the order status.
FR5	Serve order for Home Delivery Customer	Marks a home delivery order as served and updates the order status.
FR6	Serve order for Dine-In Customer	Marks a dine-in order as served and updates the order status.
FR7	Serve All Orders	Serves all pending orders across all customer types.
FR8	Display all orders of Take-Away Customer	Displays a list of all take-away orders.
FR9	Display all orders of Home Delivery Customers	Displays a list of all home delivery orders.
FR10	Display all orders of Dine-In Customers	Displays a list of all dine-in orders.
FR11	Display all orders of all Customers	Displays a comprehensive list of all orders, regardless of type.
FR12	Display all served Orders	Displays a list of all served orders.
FR13	Search Served Orders	Provides a search function to find specific served orders based on criteria using the BST.
FR14	Clear the Served Orders List	Clears the list of served orders maintained in the linked list.
FR15	Display total bill of Pending Orders	Calculates and displays the total bill for all pending orders.
FR16	Display the total Earnings of Served Orders	Calculates and displays the total earnings from all served orders.

3.3 Non-Functional Requirements

NFR #	Requirement	Description
NFR1	Usability	The system should have an intuitive and user-friendly interface.
NFR2	Performance	The system should respond quickly to user inputs and manage orders efficiently, making use of AVL trees for optimal performance.
NFR3	Reliability	The system should ensure accuracy in order management and billing.
NFR4	Maintainability	The system should be easy to maintain and update.
NFR5	Compatibility	The system should be compatible with standard hardware and operating systems used in the pizza shop.