**The University of Azad Jammu and Kashmir, Muzaffarabad**



**Name: Sughra Mumshad**

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**Instructor Name: Engr. Muhammad Awais**

**Department of Software Engineering**

**Report on Restaurant Management and Billing System**

1. **Introduction**

The Restaurant Management and Billing System is a C++ program designed to streamline restaurant operations by handling customer orders, inventory management, loyalty rewards, and billing. The system provides a menu-based interface where customers can place orders, check loyalty points, and make payments while ensuring efficient inventory tracking.

**2. Key Features**

This system incorporates the following features:

**Restaurant Branding:**

Displays the restaurant name: "TASTE OF PARADISE" at the start of the program.

**Customer Registration:**

Stores customer names and assigns loyalty points.

Prevents exceeding the maximum allowed customers.

**Menu System:**

Offers Breakfast, Lunch, and Dinner menus.

Uses a structured format with price details.

Provides an intuitive submenu selection for ordering.

**Order Management:**

Customers can place multiple orders.

A detailed order summary is displayed.

Items can be removed from the order if needed.

**Inventory Management:**

Checks stock availability before confirming an order.

Updates stock levels automatically.

Alerts when stock falls below 5 items.

**Discounts & Promotions:**

Implements a Happy Hour (2 PM - 5 PM) for special offers.

Provides a 10% discount on orders exceeding Rs 500.

**Loyalty System:**

Awards 1 point for every Rs 100 spent.

Allows customers to check their loyalty points.

**Real-time Notifications:**

Sends alerts about order confirmations, stock shortages, and discounts.

Billing and Exit Process:

Displays total bill with applicable discounts.

Updates loyalty points before exiting.

**3. Technical Implementation**

The system is implemented using C++ concepts, including:

**Structures (struct)**

OrderItem (Stores order details: item name, price, and quantity).

InventoryItem (Stores inventory details: item name and stock availability).

**Arrays**

customerNames[] and loyaltyPoints[] store customer details.

inventory[] manages restaurant stock.

Vectors (vector<OrderItem>)

Stores customer orders dynamically.

**Functions**

displayRestaurantName() → Shows restaurant branding.

displayMenu() → Displays main menu options.

displaySubMenu() → Shows submenus for Breakfast, Lunch, and Dinner.

displayOrderSummary() → Displays order details in a formatted way.

updateInventory() → Checks and updates stock availability.

isHappyHour() → Determines if it's Happy Hour (2 PM - 5 PM).

sendNotification() → Sends real-time notifications.

getCustomerIndex() → Manages customer loyalty data.

**Control Structures (Loops & Conditionals)**

while and do-while loops handle menu navigation.

if-else conditions check stock availability, discounts, and validity.

switch statements manage menu selection.

**Pointers**

Used to manage inventory item names and pricing dynamically.

**4. Execution Flow**

**User Registration**

Customer enters their name.

If the user is new, they are added to the system.

**Menu Selection**

Displays Breakfast, Lunch, and Dinner options.

Customers select items from the respective category.

**Order Processing**

Customers enter quantity for selected items.

Inventory is checked, and stock is updated accordingly.

**Order Review**

Customers can view or remove items from their order.

**Loyalty Points & Discounts**

Discounts are applied based on order value.

Loyalty points are updated accordingly.

**Billing & Exit**

The final bill is displayed with applicable discounts.

Order confirmation is sent via notifications.

**5. Sample Output**

