DATABASE SYSTEMS

DETAILED REQUIREMENT DOCUMENT

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Restaurant Management System

A Restaurant Management System is a database application designed for the management of restaurant business processes, to enable greater efficiency in order processing, reservations, payment processing, inventory control, employee monitoring, and customer service.

Description

User Management

The user authentication module in the system, where different restaurant users, from administrators to managers and waiters to chefs and cashiers, log in based on their role. The Users table keeps those credentials, allowing you to unlock the system.

Customer Management

Customers are the backbone of the restaurant system. Any customers who contact you, along with customer service information and loyalty points, are stored in the Customers table so the restaurant can track repeat customers, offer them special discounts, and send out promotional offers.

Employee Management

The restaurant staff, including waiters, chefs, and managers, are also recorded in the Employees table, where it is controlled to ensure the correct staffing needs are being met during peak hours.

Table Reservations

The Reservation Table is for physical seating in the restaurant (storing seat numbers, capacity and availability status). The reservation table allows you to book a table in advance so you can schedule reservations more efficiently and avoid double bookings.

Menu and Order Processing

The restaurant menu is organized into categories like appetizers, main course and beverages, and menu items are in the Menu Categories table. The Menu Items table contains information on each dish, including its name, description, price, and availability. When a customer places an order, it is recorded in the Orders table and linked to the customer, waiter, and table. The Order Details table contains each item ordered, quantity and price, ensuring accurate orders are recorded and prepared.

Kitchen Management

The system tracks food preparation in the kitchen. Kitchen Management table monitors ongoing and completed orders, assigns specific dishes to chefs, reports the status of food preparation to ensure smooth working conditions in the kitchen.

Payments

The software generates invoices and makes payments. Payment table keeps a record of transactions, including order ID, payment method, amount paid, and payment status enabling a fast checkout process.

Inventory & Supplier Management

Inventory is adjusted automatically when ingredients are consumed while preparing food. Inventory level, units of measure are stored so managers would recognize when to place an order to reorder. This information is used to track purchases as well as to ensure supply chain efficacy involving suppliers.

Customer Feedback and Service Improvement

Customer feedback is utilized to assess customer experience so managers can utilize that data to figure out what was done correctly and what was not to improve customer demand.

Offers & Discounts

The system also handles special promotions and discount prices for certain items.

Features

User and employee management

Each person at your restaurant—admin, managers, cashiers and waiters—has their own login. Employees can easily manage their schedules, attendance and roles. Different levels of access ensure that workers see only information that they're authorized to see.

Customer and table reservations

We can track all customers along with their relevant loyalty points for discounts. Table reservations improve time management and higher efficiency resulting in just-in-time table management. Know beforehand which table is reserved and which table is available.

Menu and order management

Our menu is digital, and it can be categorized by a starter, main course, and drink. The customer places their order and that order (whether single or multiple) will be sent directly to the kitchen. You can track the status of an order whether it is 'Pending', 'Preparing', 'Served', or 'Completed'.

Kitchen management and food preparation

As soon as an order is placed, the chef will be notified as part of the order. Once the order is ready to be served, the wait staff will be notified. If the food is taking an unreasonably amount of time to prep cook, then the manager can step in and take the necessary action.

Inventory and supplier management

When you use an ingredient to make something, the stock updates automatically. The system responds in real-time to stock inventory updates.

Benefits

- **Enhanced Efficiency:** It automates processes such as order taking, inventory tracking, and billing, resulting in reduced manual labor.
- **Accurate Ordering**: It digitizes the ordering, reduces human errors when it comes to order taking, ensuring the customer gets what they ordered.
- **Customer Experience**: It provides quicker service and to the point ordering methods which increases customer satisfaction and business blooms.
- **Inventory Management**: It allows real-time inventory tracking, managing stock levels, and tracking inventory usage reduces waste as well as costs.
- **Central Management:** Allows restaurant managers to monitor and manage multiple locations (kitchen, waitstaff) from a single platform.
- **Data-Driven Insights:** Provides reports on sales, customer preferences, and inventory usage, which allows owners to make more informed and educated decisions.
- **Staff Management:** Offsets the cost of hiring a manager or supervisor, allowing better scheduling, payroll, and monitoring of employee performance.
- **Payments Process:** Allows for a more efficient and quicker payment process, which is secure and includes a myriad of payment options (credit card, digital wallet, cash).

Domain Classes

User

Represents users of restaurant (admin, waiters, chefs, managers, cashiers), along with authentication details and roles.

Customer

Stores information specific to customers including contact information, loyalty points, and past orders.

Employee

Represents all employees of the restaurant, their roles, shifts, and salaries.

Table Reservation

Represents table availabilities, a waitlist, and them being booked.

Item Menu

Represents each item on the menu of the restaurant, including the name of the item, price of the item, category, and availability.

Order

Represents an order placed by a customer, linking it to a table, waiter, and customer.

Order Detail

Represents a detail regarding an item ordered, including quantity and price.

Kitchen Management

Responsible for monitoring food preparations happening including assigning employees to cook and marking the food as completed.

Payment

Responsible for payment for the order and linking it back to the order (cash, card, digital payment).

Inventory

Represents a stocked item used in the restaurant, and adjusts stock when an item is consumed on an order.

Software Classes

User Management (Login & Access Control)

➞ Authenticates users and provides access in relation to roles given.

Example: A manager has access to financial reports, a waiter accesses orders.

Booking Manager (Responsible for Table Reservations)

➞ Manages the reservation process, checking availability, confirming.

Example: A customer tries to book a table, and the system will check availability for confirmation.

Order Processor (Point of Sale Management System)

➞ Manages the ordering process in totality, order placed, movement and up to the order.

Example: A order is placed and the system assigns to related worker (waiter).

Kitchen Manager (Responsible for Orders in the Kitchen)

➞ Monitors the status of orders in the kitchen, assigning the orders to chef. Keep track of status of food being prepared to their tables.

Example: The chef received a new order, the status changes,(cooking) then (ready for orders), waiter notified once the food is ready to serve.

Payment Processor (Handling Financial Transactions)

➞ Take processing handle payments and invoices to checkout process.

Example: A customer pays their bill, system records the transaction, then prints a receipt.

Inventory Manager (Managing all Stock & Suppliers)

➞ Monitors stock levels and sends notifications when needing to be restocked.

Example: When the stock of flour is down to an order quantity of 10 KG total, will notify supplier(s) to place order.

Entities in ERD

Users

It stores system users like admin, manager, cashier.
Primary Key (PK): user_id
Attributes: username, password, role

Customers

It stores customer details and loyalty points.
Primary Key (PK): customer_id
Attributes: name, contact, email, loyalty_points

Employees

It stores the restaurant staff details.
Primary Key (PK): employee_id
Attributes: name, role, shift, salary

Tables

It stores the restaurant seating information.
Primary Key (PK): table_id
Attributes: capacity, status (available/reserved)

Reservations

It stores details for booking a table.
Primary Key (PK): reservation_id
Foreign Keys (FK): table_id, customer_id
Attributes: date_time, status

Menu Items

It stores details for menu items, including food and drinks.
Primary Key (PK): item_id
Attributes: name, category, price, availability

Orders

It stores customer food orders.
Primary Key (PK): order_id
Foreign Key (FK): customer_id, employee_id (waiter who took order)
Attributes: status, total_amount

Order Details

It stores the items within an order.
Primary Key (PK): order_detail_id
Foreign Key (FK): order_id, item_id
Attributes: quantity, price

Payments

It stores payment transactions.
Primary Key (PK): payment_id
Foreign Key (FK): order_id
Attributes: amount, payment_method, status

Feedback

It stores customer feedback and rating.
Primary Key (PK): feedback_id
Foreign Key (FK): customer_id
Attributes: rating, comments, date

Database Tables

- **Users Table**
  Stores information about system users (Admin, Manager, Cashier, Waiter).
- **Customers Table**
  Stores customer details and points of loyalty.
- **Employees Table**
  Stores details of restaurant staff (Waiters, Chefs, Managers).
- **Tables Management Table**
  Stores restaurant seating details (capacity, availability).
- **Reservations Table**
  Stores table reservation details and details for the customer and table_management.

- **Menu Items Table**
  Stores restaurant menu items (Food, Drinks, Prices, Availability).
- **Orders Table**
  Stores orders customers place for food and relates to the employee and table.
- **Order Details Table**
  Stores each item under an order (Quantity, Price).
- **Payments Table**
  Stores customer payments and payment transaction details.
- **Feedback Table**
  Stores the ratings and comments by customers about the restaurant.
- **Inventory Table**
  Stores the restaurant items found in inventory (ingredients, stock levels).
- **Suppliers Table**
  Stores information about suppliers to the restaurant and for items in inventory.
- **Discounts & Offers Table**
  Stores promotional type discounts, special offers, and coupons.
- **Kitchen Management Table**
  Tracks and records how customers' food is prepared, assigned chefs, and food cooking status.
- **Employee Attendance Table**
  Tracks employee attendance, shifts, and hours worked.

Conclusion

The system simplifies the operations for restaurants by controlling/end using user roles for processing orders (admin, waiter, chef, manager, cashier, etc.) and allowing relevant features for that user role. It manages customer details, such as customer information (loyalty points), contact details, and past orders, which assist in customer service. It functions to manage table reservations and control reservations to overbook tables but provide exemplary dining experiences and customer service. Order processing is simplified as the user (waiter/guard/chef even) tracks the order from the time the order is placed to the delivery of order items. If the order is placed through a kiosk or the guest held the responsibility of ordering, the order processing is integrated into order management, therefore alerting the chef as soon as an order is placed, while communicating appropriate meal details to the wait staff. The system updates Inventory levels once an ingredient is used and notifies suppliers to restock if it reaches a user-defined minimum level too. The system processes payments (cash, card, and digital), which are secure, approval for a purchase in less than three minutes. The system works on employees detail (maintaining shifts, changes to salary, and attendance) for labor management. Customer comments are managed to help evaluate the quality of service delivery. The system manages discounts and special pricing for thier indicative table 'spots' and manages needed hospitality promotions. The integration of real time order status, automatic inventory updates, an iterative report of sales, the system reduces errors, improves

transparency and decision making and optimizes operational efficiency, improving customer satisfaction & loyalty, and increasing profits.