**Project Proposal**

**Restaurant Management System**

The modern food service industry requires efficiency, accuracy, and real-time control to meet growing customer expectations. Many restaurants, especially small to mid-sized businesses, still rely on manual processes for taking orders, managing inventory, handling billing, and analyzing performance. These outdated methods often result in numerous operational issues such as incorrect or delayed orders, mismanaged stock, billing errors including incorrect VAT calculations, and challenges in updating menu items promptly. Furthermore, sensitive data such as employee information, customer records, and financial transactions are often left unprotected, posing serious security concerns.

To address these challenges, this project proposes the development of an **Automated Restaurant Management System**. This system aims to streamline restaurant operations by integrating digital tools that reduce human error, optimize inventory management, and enhance billing accuracy. The platform will offer secure, role-based access for various users including owners, administrators, customers and employees, ensuring that sensitive data is protected and responsibilities are clearly defined. By incorporating modules for digital order management, inventory tracking, billing automation, menu control, and sales analytics, the system will significantly enhance operational efficiency and customer satisfaction.

The proposed solution will feature a comprehensive order management module that tracks realtime order statuses and reduces errors caused by manual entries. An automated inventory management system will monitor stock levels, generate alerts for low inventory, and help prevent shortages or overstocking. The billing module will calculate totals automatically, including VAT, and generate instant, printable invoices to simplify the checkout process. Menu and price management tools will allow quick updates to product offerings. Secure access control will ensure that only authorized personnel can view or edit critical data, maintaining business integrity and confidentiality.

In terms of user roles, the system will provide different levels of access and functionality. The owner will have full control over the platform, including the ability to hire or remove managers and employees, update salaries, and modify product categories and menu items. The administrator will handle operational tasks such as managing products and categories, customers allow to uses this system to see the items, price, availability and make an order for him own, overseeing employee functions, and accessing sales dashboards. Employees will use the system primarily for taking orders, generating bills, and reviewing their own work history and payment records.

The expected outcome of this project is a secure, user-friendly restaurant management system that simplifies daily operations and improves the customer experience. It will reduce manual workload, minimize errors, and offer valuable insights into business performance. Ultimately, this solution will help restaurant owners make better decisions, boost productivity, and increase profitability.

**Users**

Admin

Customers

Staff

Delivery Man

**Use Case**

**User: Admin**

**Account and Role Management**

* Create accounts for staff and delivery personnel
* Assign or revoke roles (e.g., Staff, DeliveryMan)
* Update admin profile and credentials
* Reset passwords for staff or delivery users

**Menu and Product Management**

* Add new food items and categories
* Edit existing menu items (name, description, price)
* Remove or disable unavailable items
* Set item availability (in stock / out of stock)

**Inventory Control**

* View current inventory levels
* Update or restock ingredient quantities
* Receive low stock alerts
* Generate inventory usage reports

**Sales and Analytics**

* Access real-time sales dashboards
* View order summaries and financial data
* Generate and export daily/weekly/monthly reports
* Monitor top-selling items and revenue trends

**Staff and Delivery Oversight**

* Update staff working hours and salary info
* Monitor order handling and delivery performance
* Manage delivery zones and rules
* View feedback and ratings on staff and delivery performance

**Platform Security and System Maintenance**

* Manage role-based access to sensitive modules
* Monitor activity logs and login history
* Perform data backup and restore
* Manage tax settings (e.g., VAT configuration)

**User: Customer**

**Account and Personalisation**

* Create a customer account
* Log in and log out securely
* Update profile and delivery address
* View order history

**Menu Browsing and Ordering**

* View food items by category with images and prices
* Search or filter items by type (e.g., veg, non-veg, drinks)
* Customize food items (e.g., extra cheese, no onions)
* Place orders for dine-in, takeout, or delivery

**Order Tracking and Notifications**

* View live order status (received, preparing, out for delivery)
* Get estimated preparation and delivery time
* Receive order confirmation and delivery notifications

**Payments and Receipts**

* Choose payment method (online, card, cash on delivery)
* View and download digital invoices
* Apply promo codes or discounts

**Feedback and Ratings**

* Rate food items and delivery experience
* Submit reviews or comments on orders
* Report issues or request refunds

**User: Staff (Waiter / Kitchen / Cashier)**

**Account and Work Dashboard**

* Log in to access assigned role-specific interface
* View shift timing and assigned tasks
* Track personal order handling and earnings

**Order Management**

* Receive and process dine-in/takeout orders
* Send orders to kitchen system
* Update order status (e.g., preparing, ready, served)
* Modify or cancel orders with permission

**Billing and Checkout**

* Generate and print customer bills
* Apply taxes and discounts
* Record payment method (cash/card/online)

**Inventory and Communication**

* Notify admin when items run low
* View kitchen inventory for stock awareness
* Internal chat or status updates between floor and kitchen staff

**User: Delivery Man**

**Account and Delivery Access**

* Log in to view delivery dashboard
* Update personal info and contact details
* Track daily assigned deliveries

**Delivery Handling**

* Accept or decline delivery requests
* View order details and customer location
* Mark delivery stages (picked up, out for delivery, delivered)
* Collect proof of delivery (signature, photo)

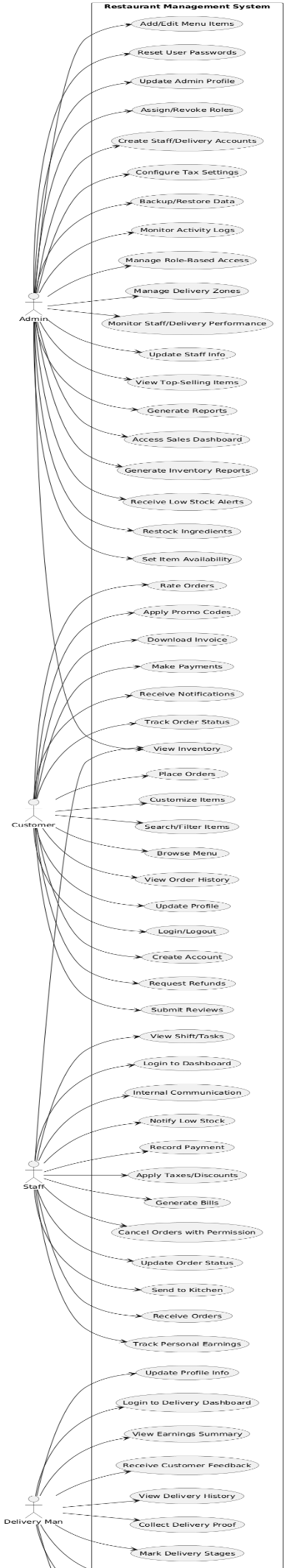
**Tracking and Feedback**

* View delivery performance and history
* Receive customer feedback or ratings
* Track total deliveries and earnings summary

**Scope**

* The system is designed specifically to **digitize and streamline restaurant operations** including order processing, billing, inventory tracking, and delivery coordination.
* Provides **role-based access** for Admin, Customers, Staff, and DeliveryMan to ensure task segregation, data privacy, and efficient functionality.
* Allows **Admin users** to:
  + Manage all restaurant operations from a central dashboard
  + Add, update, or remove food menu items and product categories
  + Monitor and control ingredient stock levels with inventory alerts
  + Handle employee roles, schedules, and salary records
  + Oversee order progress and delivery performance
  + Generate and export financial reports, sales data, and customer insights
  + Configure delivery zones, discounts, and tax (VAT) settings
* Enables **Customers** to:
  + Register and manage personal profiles with delivery details
  + View food menus, filter by categories, and check availability
  + Place orders for dine-in, takeout, or home delivery
  + Customize their orders based on preferences
  + Make secure payments through multiple methods
  + Track order status in real-time from placement to delivery
  + Rate and review food items and delivery experience
* Allows **Staff members (waiters, cashiers, kitchen staff)** to:
  + Take and manage customer orders via the system
  + Forward kitchen orders and track preparation status
  + Update order status and notify customers
  + Generate invoices and complete billing
  + Communicate internally for better service coordination
  + Access their shift schedule, earnings, and work history
* Supports **Delivery Man** functionalities to:
  + Log in and view available delivery assignments
  + Accept, reject, or mark orders as delivered
  + View customer contact info and directions
  + Submit delivery proof such as signatures or images
  + Track their delivery history and income summaries
* Integrates **automated inventory management**, ensuring:
  + Live tracking of ingredient stock levels
  + Notifications for restocking requirements
  + Prevention of over-ordering or stockouts
  + Optimized kitchen operations and reduced waste
* Facilitates **billing and tax handling**, including:
  + Auto-calculation of totals with VAT and discounts
  + Printable or digital receipts for all payment types
  + Secure transaction logging for auditing and reporting
* Offers a **user-friendly, responsive interface**:
  + Accessible from desktop or mobile devices
  + Optimized for both front-desk and kitchen environments
* Provides **analytics and reporting tools**:
  + Insights on best-selling items, peak hours, and customer behavior
  + Exportable financial summaries for accounting and management reviews
* Ensures **data protection and reliability**:
  + Password-protected login for all user types
  + Role-based access to limit unauthorized control
  + Secure storage of customer data, order history, and payments
* Designed to **scale** as the restaurant grows, with options to:
  + Add new branches or menus
  + Introduce loyalty programs or coupon systems
  + Integrate with SMS/email notification services
  + Expand to mobile app version in future

**Use Case Diagram**



**User Story**

|  |  |  |  |
| --- | --- | --- | --- |
| **As A/An** | **I want to** | **So that** | **Acceptance Criteria** |
| Admin | Create and manage accounts for staff and delivery personnel | I can control who accesses different parts of the system | Admin can add, update, or remove accounts with specific roles; roles determine access permissions |
|  | Add, edit, or remove food items and categories | The menu is always up to date | Menu management interface allows full CRUD operations on menu items and categories |
|  | Monitor inventory levels and get alerts when stock is low | The restaurant never runs out of key ingredients | System generates notifications when stocks fall below threshold |
|  | View real-time sales and performance dashboards | I can make data-driven business decisions | The dashboard displays sales, order summaries, and item trends |
|  | Update staff schedules and salaries | Employee management is efficient | Admin interface supports schedule and payroll updates |
|  | Manage tax settings (like VAT) | The billing system stays compliant | System allows admin to configure and update tax settings |
|  | Control delivery zones and rules | Deliveries are optimized for cost and time | Admin can define and edit delivery zones and related policies |
|  | View feedback on staff and delivery personnel | I can maintain high service quality | Feedback dashboard displays ratings and comments by customers |
| Customer | Register and manage my account | I can save my delivery address and order history | User registration supports address input and order history view |
|  | Browse the food menu with filters and images | I can quickly find what I want | Menu interface supports category filtering and image previews |
|  | Customize my order (e.g., add extra toppings) | I can get my food just the way I like it | Customization options available per item on order screen |
|  | Choose between dine-in, takeout, or delivery | I can order based on my preference | Customer can select order type before checkout |
|  | Track my order status in real-time | I know when to expect it | Order tracking page updates status in real time |
|  | Choose my payment method (cash, card, online) | I can pay in the way that's most convenient | Payment screen offers multiple payment options |
|  | Download a receipt after payment | I have a record of my order | System generates digital receipt upon order confirmation |
|  | Rate and review food or delivery experience | I can give feedback and help improve service | Review form available after each completed order |
| Staff (Common) | Log into the system and view my assigned tasks | I know what I need to do during my shift | Dashboard displays current shift and assigned duties |
| Staff (Common) | Receive and process customer orders | I can ensure accurate service | Order list shows active and pending customer orders |
| Staff (Common) | Update order status (e.g., 'preparing', 'served') | customers and admins are informed | Order panel allows status updates visible to customers |
| Kitchen Staff | See pending and active orders in real-time | I can prepare food efficiently | Kitchen dashboard shows live order queue |
| Cashier | Generate and print bills automatically | I can speed up the checkout process | Billing module supports automatic calculation and printing |
| Waiter or Kitchen Staff | Notify the admin when inventory is running low | Restocking can happen in time | Inventory alerts form available to staff for low stock reporting |
| Staff (Common) | View of my work history and earnings | I can track my performance | Profile page includes earnings summary and task history |
| Delivery Man | log in and view all my assigned deliveries | I can plan my route | The dashboard lists all pending deliveries with route info |
|  | See full order details and customer address | I can deliver correctly | Delivery details page shows order and address information |
|  | mark each delivery stage (picked up, out for delivery, delivered) | The system reflects real-time status | Delivery status buttons update tracking in system |
|  | collect proof of delivery (signature or photo) | the system can confirm successful handoff | Proof upload interface available after delivery |
|  | track my total deliveries and earnings | I know how much I’ve worked | The Dashboard displays delivery count and total earnings |