Restaurant Billing Software — Detailed Project Report

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1. Introduction

The Restaurant Billing Software is a comprehensive billing and reporting system designed for restaurants, cafés, and food trucks. It automates the order-taking and billing process, reducing human error, improving efficiency, and providing valuable business insights through analytics. Built using Python for backend logic and Streamlit for the frontend interface, it offers an easy-to-use solution for managing daily restaurant operations.

2. Abstract

This application serves as a point-of-sale (POS) system with integrated sales analytics. Staff can enter orders, select menu items, apply taxes and discounts, process payments, and store the transactions securely in a local SQLite database. The system can generate various reports such as total daily sales, best-selling items, and payment method usage statistics. Additionally, it allows data export in multiple formats for backup and further analysis.

3. Objectives

- To create an easy-to-use billing system for restaurants. - To ensure secure and reliable storage of transactions. - To provide analytics for better business decision-making. - To allow flexible menu management and quick updates. - To support multiple payment methods. - To facilitate export of data for record-keeping and auditing.

4. Key Features

1. **Menu Management** — Add, edit, and remove menu items; bulk upload via CSV. 2. **Order Placement** — Supports dine-in and takeaway; select items, apply GST, discounts. 3. **Multi-Payment Processing** — Accept cash, card, and UPI payments. 4. **Bill Storage** — Automatically saves bills to an SQLite database. 5. **Bill Export** — Download bills as CSV or JSON. 6. **Sales Dashboard** — Daily sales, top items, and performance trends. 7. **Testing Mode** — Create dummy bills for demonstration or testing. 8. **User-Friendly UI** — Minimal learning curve for restaurant staff.

5. Tools & Technologies

Technology	Version/Details	Purpose
Python	3.10+	Backend logic and integration
Streamlit	1.x	Frontend web interface
SQLite	3	Database for bills and menu

Pandas	1.x	Data manipulation and reporting
Matplotlib	3.x	Graph generation for analytics
CSV/JSON	-	Data export formats

6. System Design

The system follows a modular architecture: - **Frontend (Streamlit)**: Handles user interaction, order entry, and displaying reports. - **Backend (Python)**: Implements the core business logic, calculations, and database interactions. - **Database (SQLite)**: Stores menu items, orders, and transaction records. - **Data Analytics Module**: Generates KPIs, charts, and summaries for sales analysis.

7. Workflow

1. **Start Application** — The user launches the app using `streamlit run app.py`. 2. **Menu Setup** — Admin uploads or edits the menu. 3. **Order Processing** — Staff select items, enter quantities, apply taxes/discounts. 4. **Bill Generation** — The system calculates the final amount and displays the bill. 5. **Payment Processing** — User selects payment method and confirms transaction. 6. **Data Storage** — Transaction is stored in the SQLite database. 7. **Reporting** — Owner can view and export sales reports anytime.

8. Future Enhancements

- Integration with online ordering platforms. - Inventory and stock management system. - Multi-branch and cloud-based synchronization. - Role-based access control for staff and admins. - Advanced customer loyalty programs.

9. Conclusion

The Restaurant Billing Software is a scalable, efficient, and user-friendly solution for managing restaurant billing and sales tracking. Its modular design allows easy integration of new features, making it a future-proof investment for small and medium-sized businesses.