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Digital Billing and Order Management System for Restaurant

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ABSTRACT:
The restaurant billing system is a web-based application designed to streamline restaurant billing operations. Manufactured using PHP and MySQL, it automatically to the process of order management, challan production and payment processing automatically. The system reduces human errors, increases efficiency, and protects the transaction records. It supports several payment methods including UPI transactions, which ensure spontaneous financial transactions. Digital record-keeping facility helps the owners of the restaurant make data-managed decisions in sales and reporting. This system modernizes traditional billing methods, providing a user -friendly interface in the restaurant and improves customer service by reducing waiting time and errors. Bill-based restaurant billing system to manage order and generate bill calculations using PHP and SQL to manage the order. It supports UPI payment and secure the transaction records, reduces manual errors and increases efficiency. Digital record assistance analysis and decision making, modernization of restaurant operations.

Keywords: Restaurant Billing, Invoices, UPI Transaction, User-Friendly Interface, Sales and Reporting, Error Reduction.

INTRODUCTION:

While the restaurant industry has changed a lot in recent years, some companies still to outdated billing systems, resulting in their suffering from inefficiencies and delays. With billing systems, there are calculations conducted manually, which means more chances for mistakes to crop up and customers waiting longer to be attended to. With an adaptive approach, work processes can be automated, resulting in better service. This project, the Restaurant Billing System, aims to eliminate these issues through the use of digital billing and order management. The system is built in PHP and MySQL which allows it to be accurate, fast, and secure. It also enables several payment methods so that there is less reliance on cash and so that customers will benefit. The system is designed to facilitate automatic invoice as well as record generation, which greatly reduces the likelihood of people making mistakes in their calculations, and increases the ease with which owners can analyse their sales performance. Technology and innovation in restaurant management minimizes human touch, thus creating a more efficient blend of performance and customer satisfaction by eliminating waiting times and streamlining service delivery. Old billing systems are inefficient and encourage making mistakes. This project improves the quality of service and customer satisfaction through automating order and invoice processing and device transactions. This system's

purpose is the focus of this paper. The study highlights the impact of digital transformation on restaurant management.

OBJECTIVE:

The purpose of this project is to design an intuitive billing system that helps the restaurant to handle its financial efficiently. System will take care of important activities like ordering, bill generation and payment, making them more accurate, safe and efficient. Restaurant employees can easily process customer orders, automatically calculate taxes and discounts, quickly generate invoices, and get payment through cash or online transactions. This billing record will also secure, monitor daily sales, and will prepare a useful report to assist in financial decisions. By reducing human errors, accelerating the transaction and providing an easy interface, the system enhances customer experience and streamlines the restaurant operation. Using an automated billing system helps restaurants in working more efficiently, helping to maintain clear records and manage data safely, resulting in trouble -free and reliable billing process.

LITERATURE SURVEY:

The billing system has greatly improved in years, making restaurant management faster and more efficient. Traditional manual billing often causes mistakes, slows down service, and a poor customer leads to experience. Research studies show how automated billing systems help restaurants to work better.

A study by **Patel et al. (2019)** found that manual billing can lead to miscalculations and financial errors. Digital billing systems, on the other hand, help keep records accurate and reduce mistakes. Similarly, **Kumar & Sharma (2020)** discovered that automated billing improves customer satisfaction by speeding up service and reducing wait times.

Modern billing systems now support different payment options, like mobile wallets and online banking. According to **Lee & Park (2021)**, these payment methods make transactions easier for customers and increase restaurant earnings. Real-time reporting also helps restaurant managers track sales, monitor inventory, and set better prices, as noted by **Gupta & Mehta (2022)**.

Security is another major benefit of automated billing. **Rajan & Thomas (2023)** explain that encrypted payment gateways and authentication features protect customer data and prevent fraud.

Some studies, like the one by **Alok & Verma (2022)**, highlight the advantages of integrating billing with order and inventory management. This helps reduce food waste, manage stock better, and improve overall efficiency.

A user-friendly system also makes work easier for restaurant staff. **Singhal & Nair (2021)** found that touch-screen POS systems simplify billing, reduce training time for employees, and boost productivity.

In summary, research shows that automatic billing systems make restaurant operation smooth, more secure and more efficient. "**Digital Billing and Order Management System for Restaurant**" creates these reforms to provide a sharp, accurate and reliable solution for modern restaurants.

WEB DEVELOPMENT PHASES

REQUIREMENT ANALYSIS:

USER REQUREMENTS:

Objective: create an easy-to-use billing system that helps restaurants manage their finances better.

FUNCTIONAL REQUREMENTS:

- **User Authentication:** Secure login for staff and admin.
- **Order Management:** Add, edit, and delete orders.
- **Bill Generation:** Automatic calculation of taxes and discounts.
- **Payment Processing:** Support for cash, and digital payments.
- **Reports & Analytics:** Generate sales reports and transaction summaries.

NON-FUNCTIONAL REQUREMENTS:

- **Security:** Secure user and transaction data.
- **Performance:** Fast processing even during peak hours.
- **Scalability:** Support for multiple restaurant branches if needed.

HARDWARE AND SOFTWARE REQUREMENTS:

- **Front-End:** HTML, CSS, JAVA SCRIPT (for designing and interactivity).
- **Back-End:** PHP (For Server Side Processing).
- **Database:** MySql(For Storing user and event data).
- **Hardware:** HardDisk:512GB, RAM:8GB, System with any Processor.

These are the key requirements needed to develop my web project, "**Digital Billing and Order Management System for Restaurant**". By implementing these features, my project will become more functional, attractive, and innovative. It will also help me enhance my web development skills by giving me hands-on experience in designing, coding, and managing different aspects of a web-based system.

BLOCK DIAGRAM:

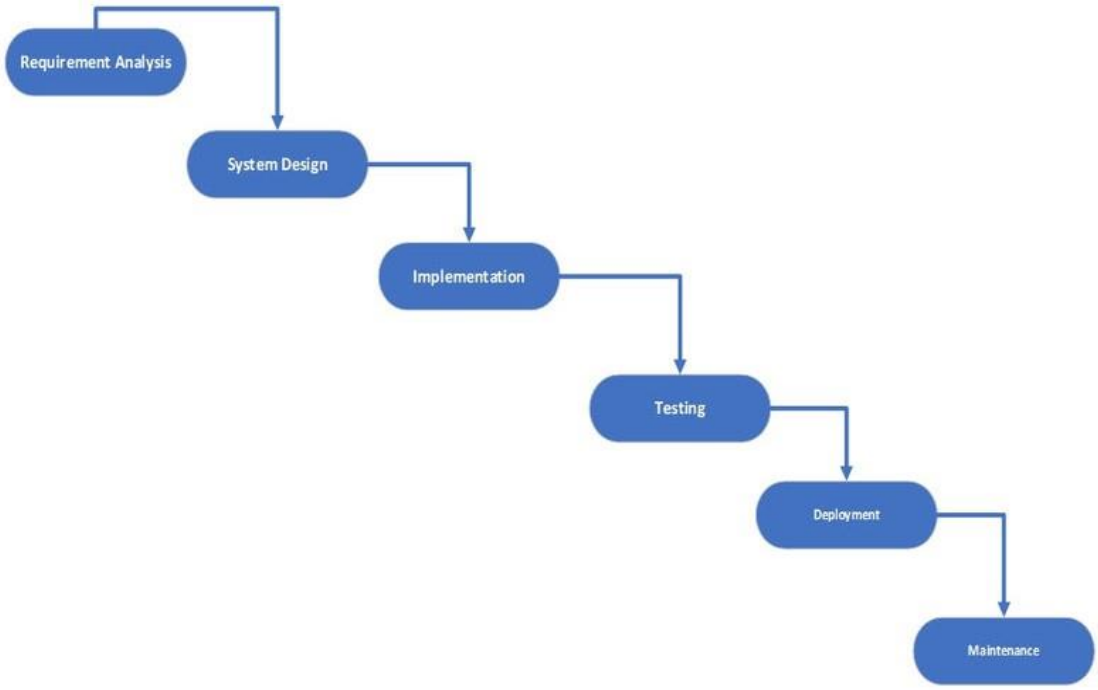

Figure 1: Block Diagram.

This Block Diagram Gives the overall implementation of the Billing System.

DESIGNING PHASE:

WIREFRAMES DIAGRAM:

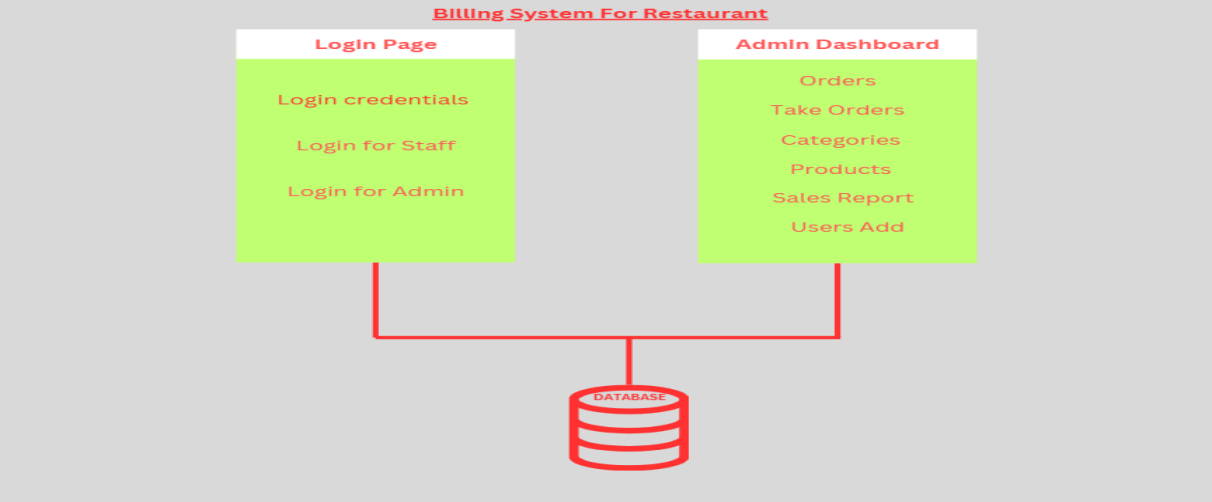

Figure 2: Wireframes Diagram.

1. Login Page – This page includes a Login Credentials. It includes:
Login For Staff.
Login For Admin.
2. Admin Dashboard – This page allows Admin to Access the Billing Software.
Orders – The Billed Orders Are Stored in Order Page.
Take Orders – Take Orders from User and Billed It.
Categories – Add/Remove the Categories.
Products – Add/Remove the Products in the Menu.
All these pages are connected to a database, which stores user and Order details. This structure helps in managing the platform efficiently.

WORKFLOW DIAGRAM:

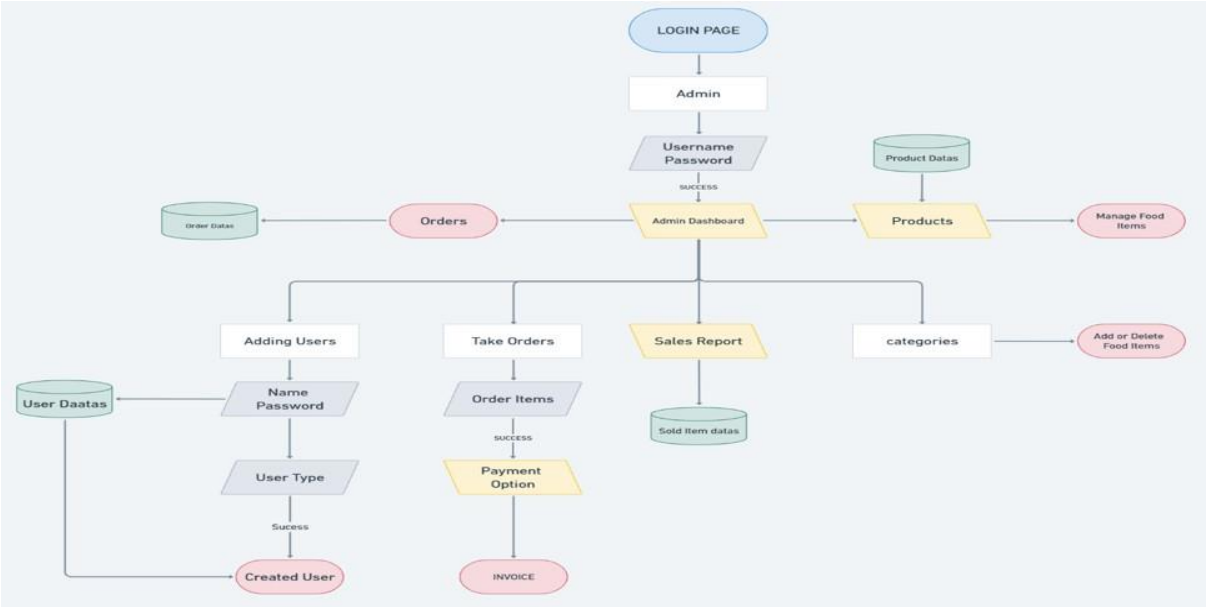

Figure 3: Workflow Diagram.

This work flow diagram shows how users interact with the Billing system. It explains the login process, access control, and Billing System.

Home Page & Login:

- Users start at the **Billing System** Home Page.
- They go to the **Login** page to enter their credentials.

User Roles:

- There are two types of users: **Staff, and Admin**.
- Each user must enter their **ID and Password** to log in.

Login Process:

- If login fails, the user is redirected back.
- If login succeeds, the user gets access based on their role.

Staff Access:

- Staff members can **add, update, and delete Products**.
- Their details are stored in the **Database**.

Admin Access:

- The **Admin** has the highest authority.
- Admin can perform **Maintenance** tasks and **Manage Users**.
- Admin actions are stored in the **Database**.

Database Storage:

- The system stores **Order details, user credentials, and Sale Report** in a **central database**.

This diagram explains how the system keeps user access secure, manages Order information, and stores important data in a database. It helps make Billing easy by clearly defining the roles and responsibilities of each user, ensuring smooth operation and organization.

SCOPE OF MY PROJECT:

The "**Digital Billing and Order Management System for Restaurant**" aims to modernize and optimize restaurant billing operations. The system enhances accuracy, efficiency, and customer experience by automating:

- Order management
- Bill calculations
- Payment processing
- Secure storage of billing records
- Reporting and sales analysis

This project is scalable for different types of restaurants, from small cafes to large chains.

Experimental Results:

This work was primarily focused on the billing system of a selected restaurant. We are presenting the design page of the webpage that is meant for billing. The following figure explains the procedure for food ordering and payment collection sequentially. The following table and chart depict the Point of Sale (POS) value for specific intervals of time.

Year	Value
2018	12.23
2019	13.78

2020	15.57
2021	17.66
2022	20.13
2023	23.07
2024	26.57

Table: Value for POS.

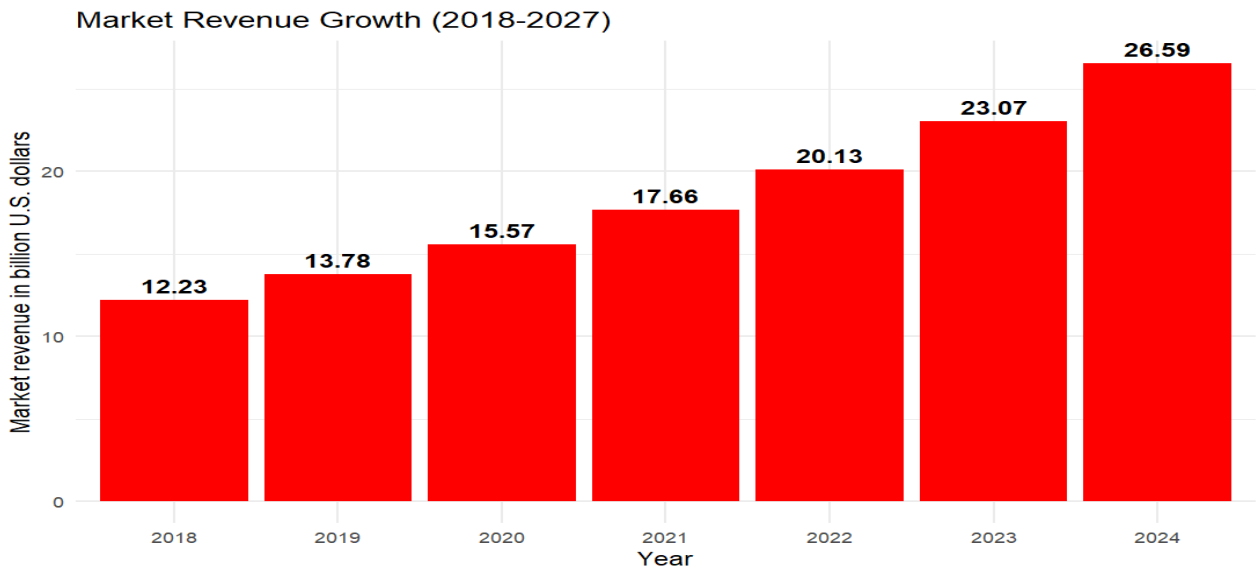

Figure 4: POS System Market.

OUTPUT DESIGN:

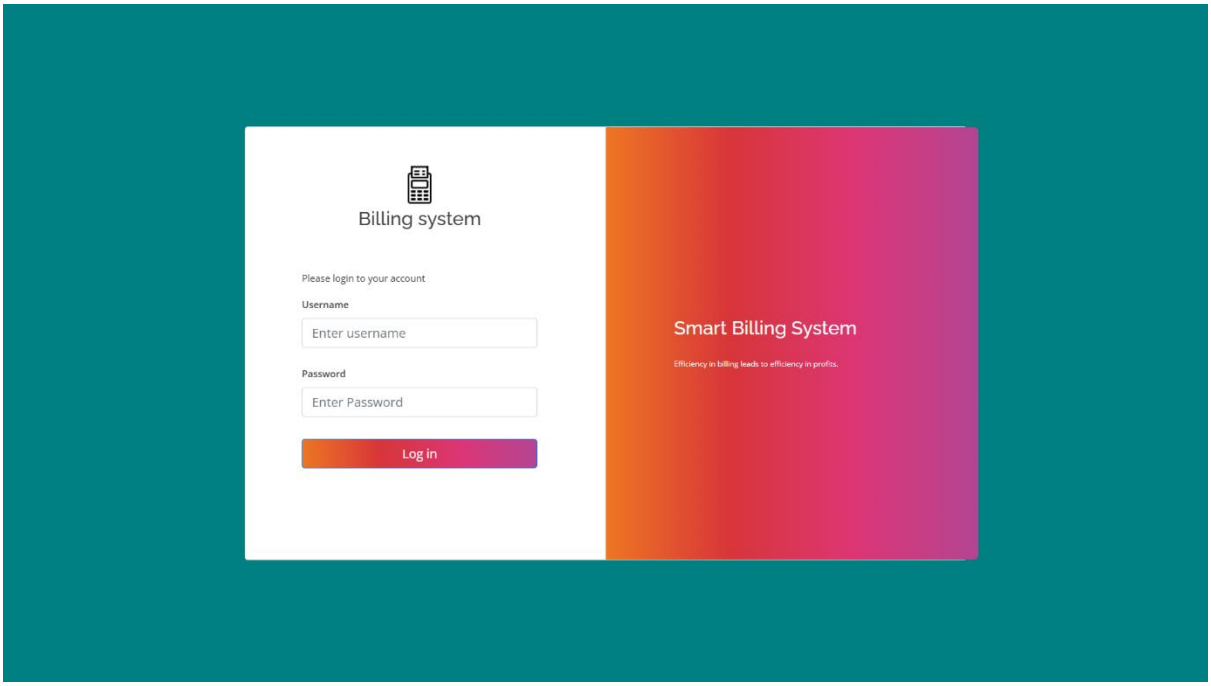

Figure 5.1: Login Page.

The Bill Bot has Safe and Secure login for Staff and Admin.

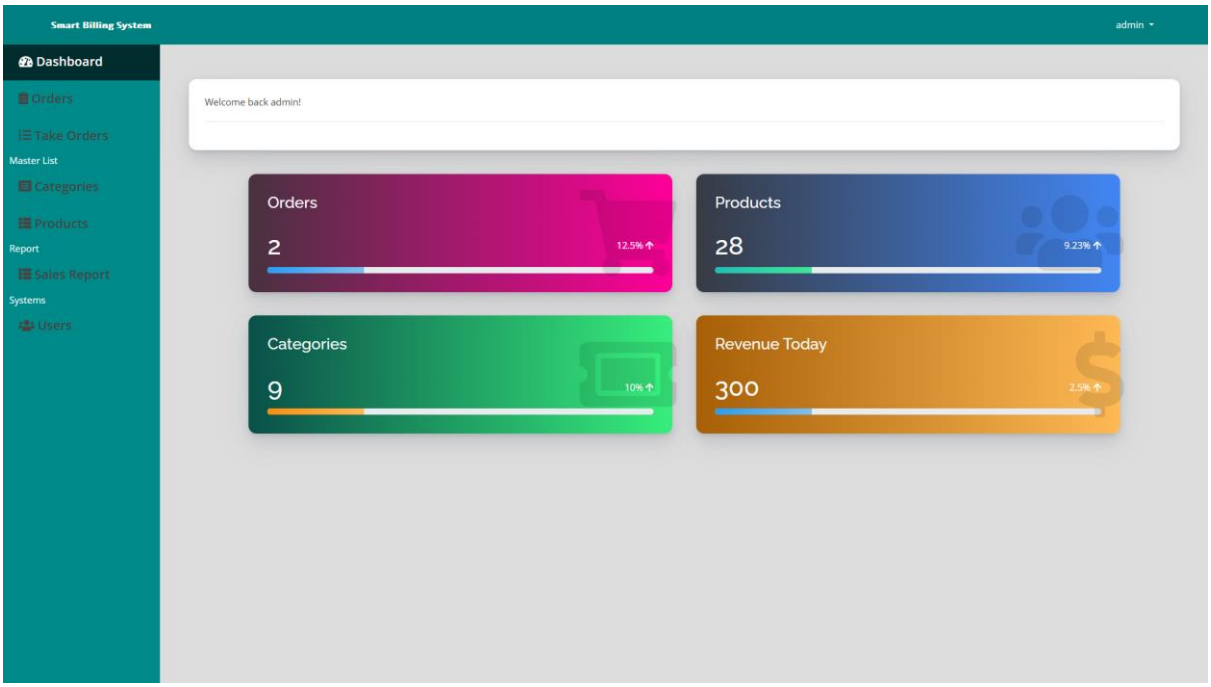

Figure 5.2: Home Page.

The Bill Bot provides navigation options for managing orders, products, categories, sales reports, and user accounts.

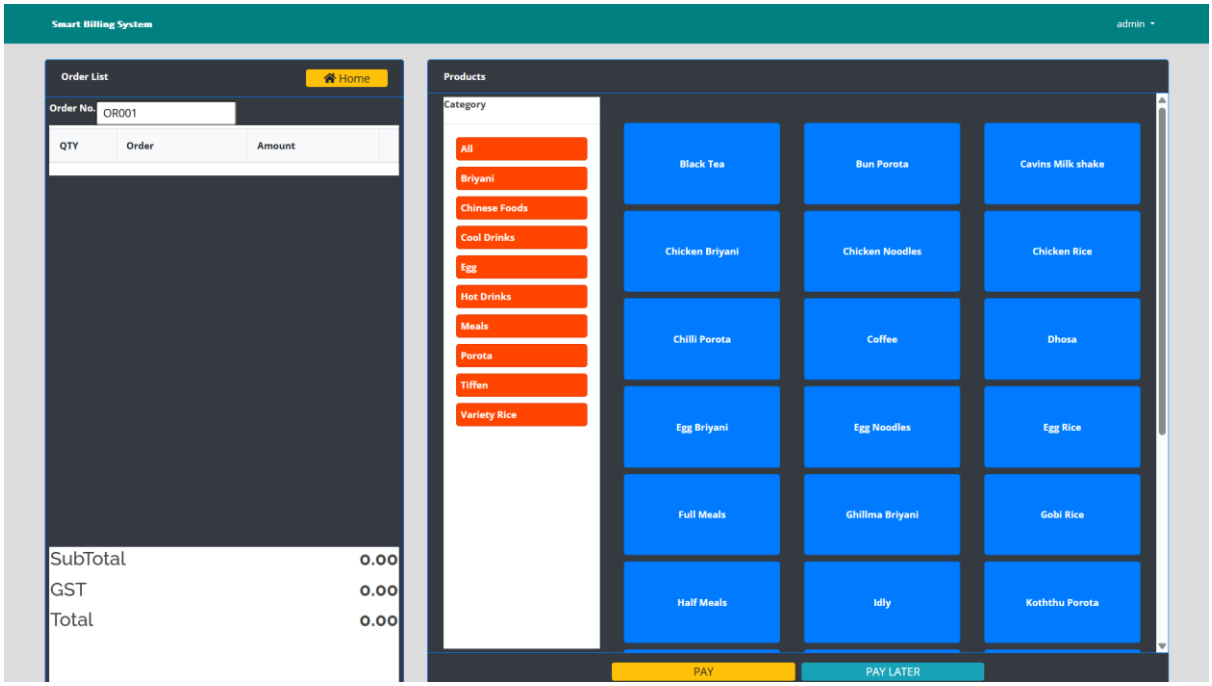

Figure 5.3: Billing Page.

The Billing Page contains the Menu Items and Calculating the Items Price and Billed.

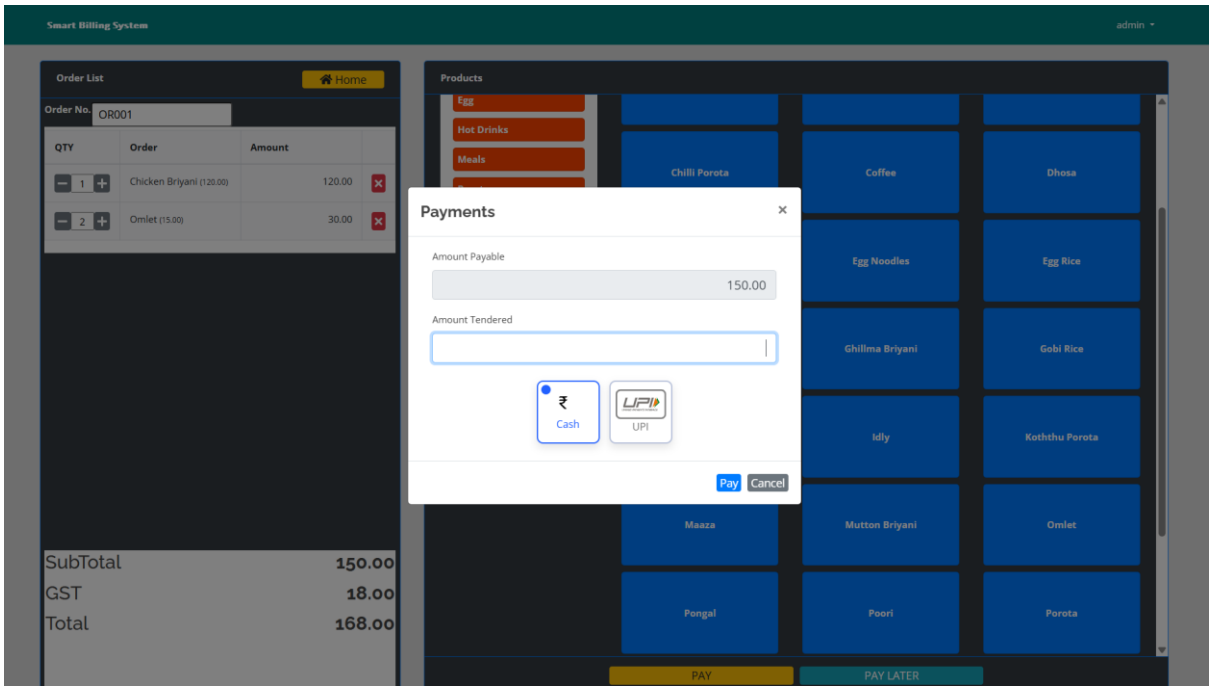

Figure 5.4: Payments Page.

The Payment Page Contains Both Cash and UPI Transactions Payment Methods.

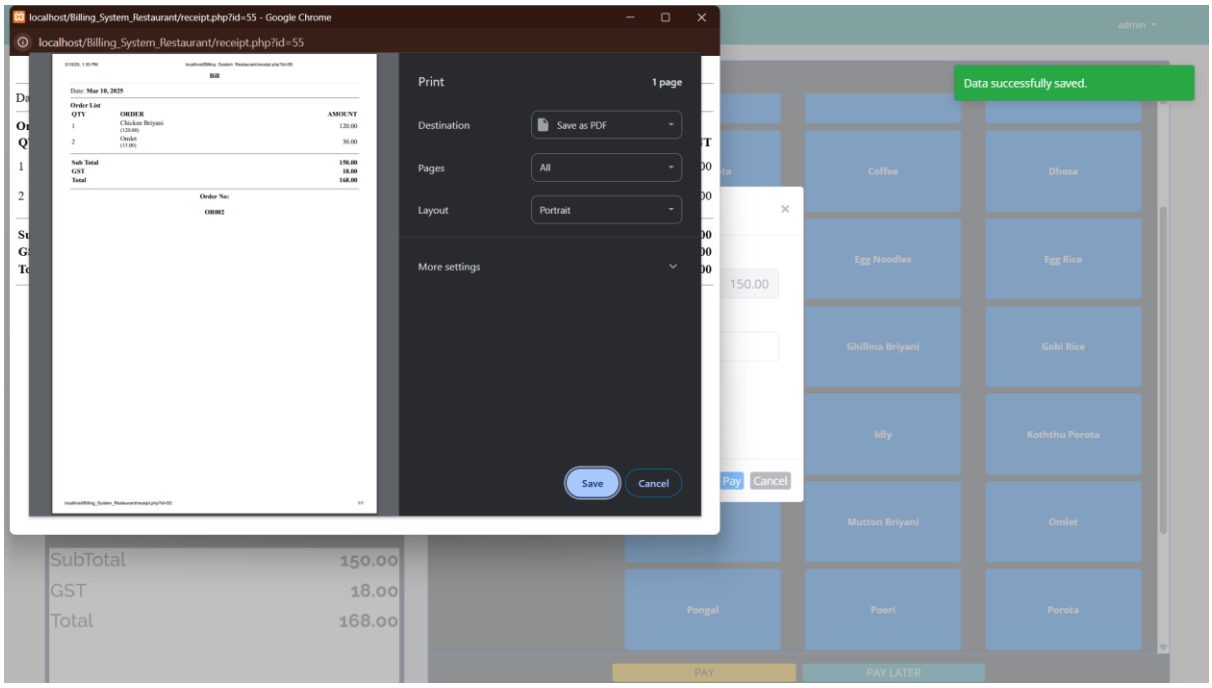

Figure 5.5: Invoice Page.

The Invoice Page Contains Receipt or Bill of the Menu Items.

CONCLUSION:

In depth has created an innovative "**Digital Billing and Order Management System for Restaurant**" which boosts a restaurant's operations by automating the billing process. This system lowers fraudulent transactions, increases accuracy in payments, and quickens customer service through automated order

processing, bill printing, and payment collection. The interface is friendly towards users allowing the employees of the restaurant to handle the orders, print challans, and receive payments through multiple safeguarded channels effortlessly. In addition to this, the system ensures safekeeping of transaction history records, and enables detailed report and analytics that assists restaurant owners in tracking business performance and making good business choices. The integration of automation with payment systems not only increases value to the customers but allows for increased security while optimizing restaurant operations. Evolving from traditional to modern restaurant management practices, this implementation of the billing system is an important step towards greater efficiency, scalability, and dependability. Integrating mobile applications alongside AI powered analytics are important future steps that can greatly enhance the capabilities of this system and benefit restaurant owners. In the end, the billing system for these restaurants guarantees a billing process that is error free and completely transparent.

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