RAJDHANI COLLEGE, BHUBANESWAR

DEPARTMENT OF PROFESSIONAL STUDIES

(BCA & BBA)

Project Name : Table Scan Billing System

Group Members:

Kalyani Priyadarshini Sahoo
Laxmikanta Ranjit
Pratyush Parida

Guided by:

MR. Kaibalya kar
(Asst. Professor Dept. of BCA)

TABLE SCAN BILLING SYSTEM

TABLE SCAN BILLING SYSTEM :

Enhancing Restaurant Efficiency

Welcome to the future of dining, where technology meets convenience, and efficiency reigns supreme. Today, we'll explore the Table Scan Billing System, a smart restaurant billing solution designed to streamline your operations and enhance the customer experience.

The Problem: Traditional Billing Inefficiencies

Traditional billing methods suffer from manual errors, slow processing times, and limited customer engagement, leading to inefficiencies and dissatisfaction.

- **Manual Order Taking:** Mistakes in communication lead to wrong orders and wasted food. Staff can mishear what people want, causing errors and waste.
- **Slow Billing Process:** Long waits bother customers and make it harder to serve more people. It takes too long to figure out bills and get payments, especially when busy.
- **Limited Customer Interaction:** Restaurants miss chances to get feedback and make things personal. Regular billing doesn't offer much contact with customers besides taking orders and payment.

Functionality:

Visualizing how Table Scan Billing enhances customer convenience and restaurant efficiency:

QR Code Ordering: Scan the table's QR code to access the digital menu.

Digital Menu & Ordering: Select items and place orders via the web interface.

Automated Billing: The system calculates the total bill automatically.

SMS Notification: Receive an SMS with payment details and a receipt link.

PDF Invoice: Get a detailed PDF receipt via SMS or email.

Use Case Diagram -

Overview of the Use Case Diagram -

This diagram represents the interactions between different system actors and functionalities in our **Table Scan Billing System**.

The system has two main actors:

1.Customer – Scans the QR code, views the menu, selects food items, places orders, and makes payments.

2.Admin – Manages the menu and views customer orders.

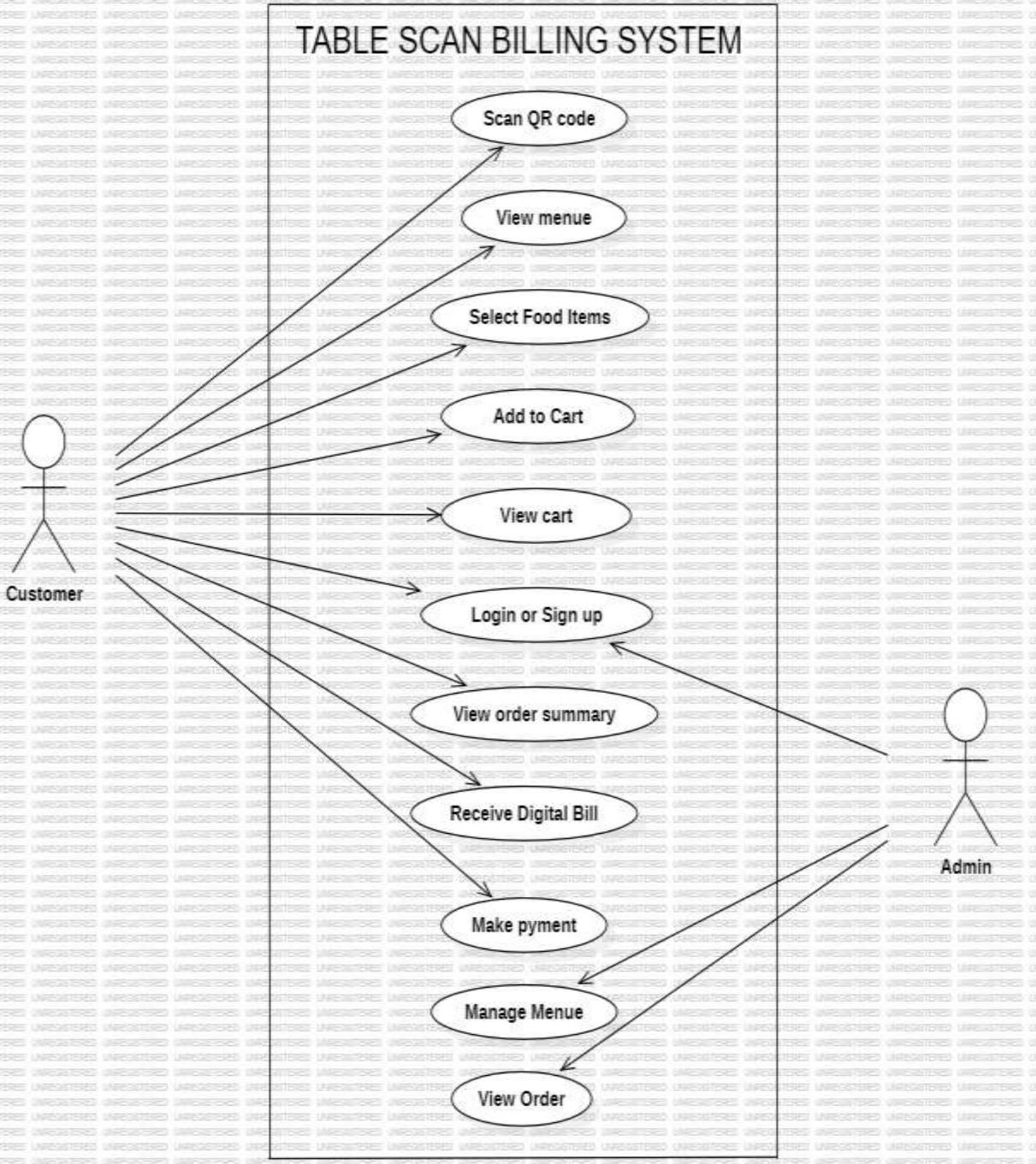
Explanation of Use Cases -

1.Scan QR Code (Customer): The customer scans the QR code placed on the table to access the restaurant menu.

2.View Menu (Customer): After scanning, the customer can browse the restaurant's menu.

3.Select Food Items (Customer): Customers can choose food items they want to order.

4.Add to Cart (Customer): Selected food items are added to the cart before finalizing the order.



5.View Cart (Customer): Customers can review the selected items before proceeding.
6.Login or Sign Up (Customer): Users can log in or sign up for order tracking and personalized experience.
7.View Order Summary (Customer): Before confirming, customers can check the order details, including item names and prices.
8.Receive Digital Bill (Customer): Once the order is placed, a digital bill is generated and sent.
9.Make Payment (Customer): Customers complete the payment using available digital payment methods.
10.Manage Menu (Admin): The admin can update the restaurant menu, including food items, prices, and availability.
11.View Order (Admin): Admin can monitor incoming orders placed by customers

ER Diagram :

This **Entity-Relationship (ER) Diagram** represents the structure of a **Table Scan Billing System**, showing the relationships between different entities and their attributes. The system mainly consists of **Customers, Orders, Payments, and Digital Bills**, along with an **Admin** for management.

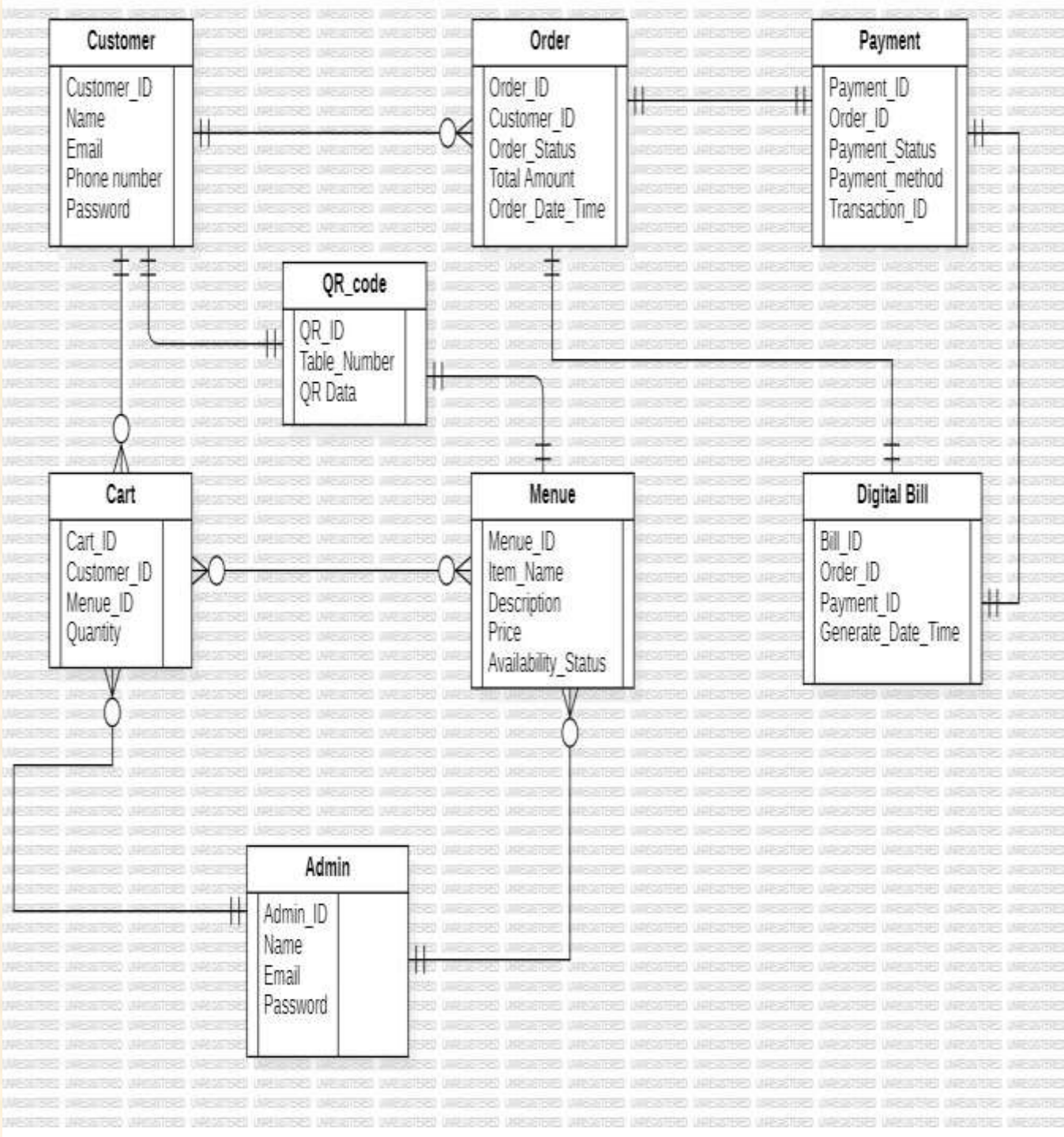
Entities and Attributes in the ER Diagram

1. Customer
- Customer_ID (PK)
- Name
- Email
- Phone number
- Password

2. Admin
- Admin_ID (PK)
- Name
- Email
- Password

3. Menu
- Menue_ID (PK)
- Item_Name
- Description
- Price
- Availability_Status

4. Cart
- Cart_ID (Primary Key)
- Customer_ID (Foreign Key)
- Menue_ID (Foreign Key)
- Quantity



5. Order
•Order_ID (PK)
•Customer_ID (FK)
•Order_Status
•Total Amount
•Order_Date_Time

6. QR Code
•QR_ID (PK)
•Table_Number
•QR Data

7. Payment
•Payment_ID (PK)
•Order_ID (FK)
•Payment_Status
•Payment_Method
•Transaction_ID

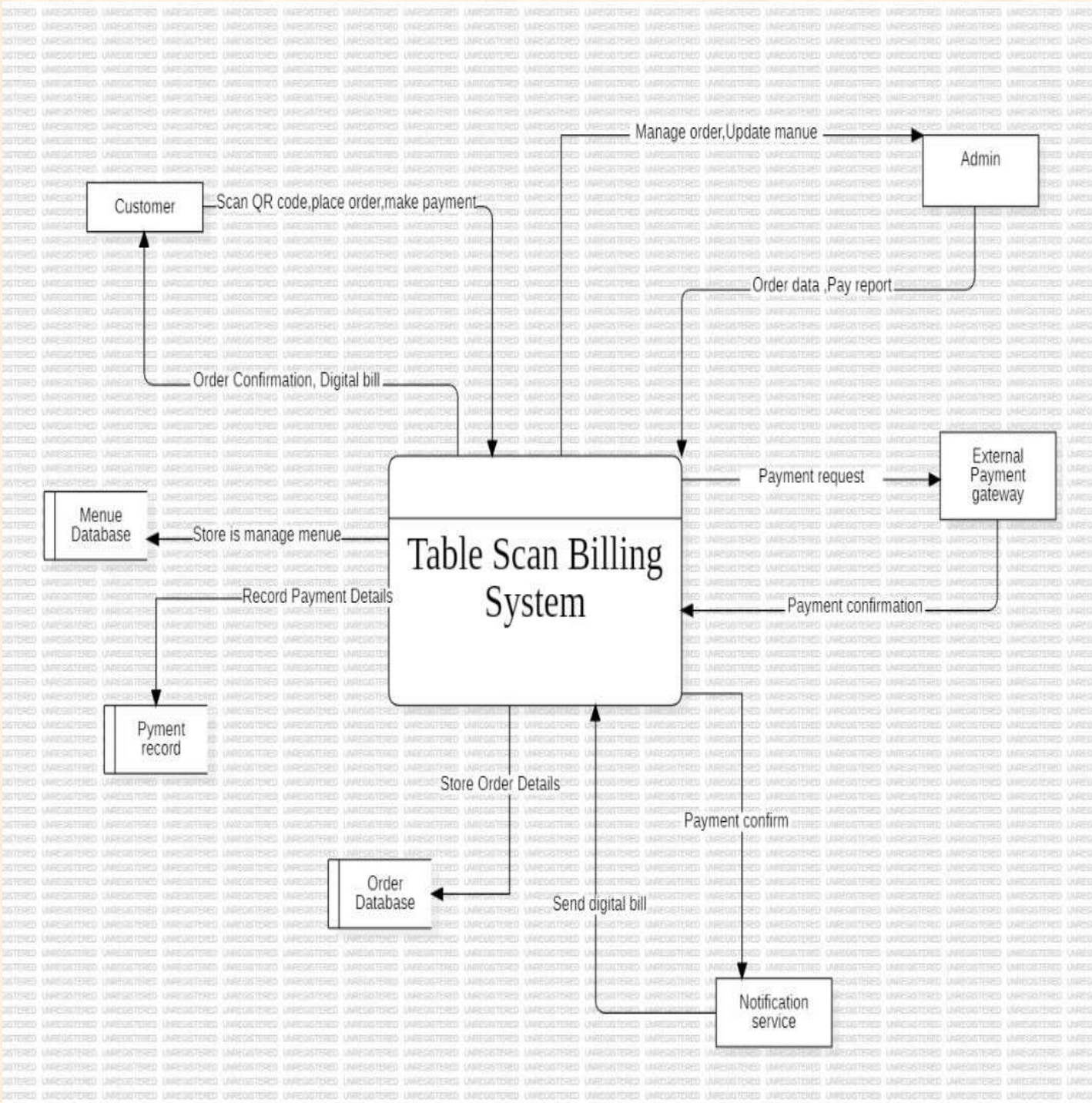
8. Digital Bill
•Bill_ID (PK)
•Order_ID (FK)
•Payment_ID (FK)
•Generate_Date_Time

Relationships Between Entity & Attributes:

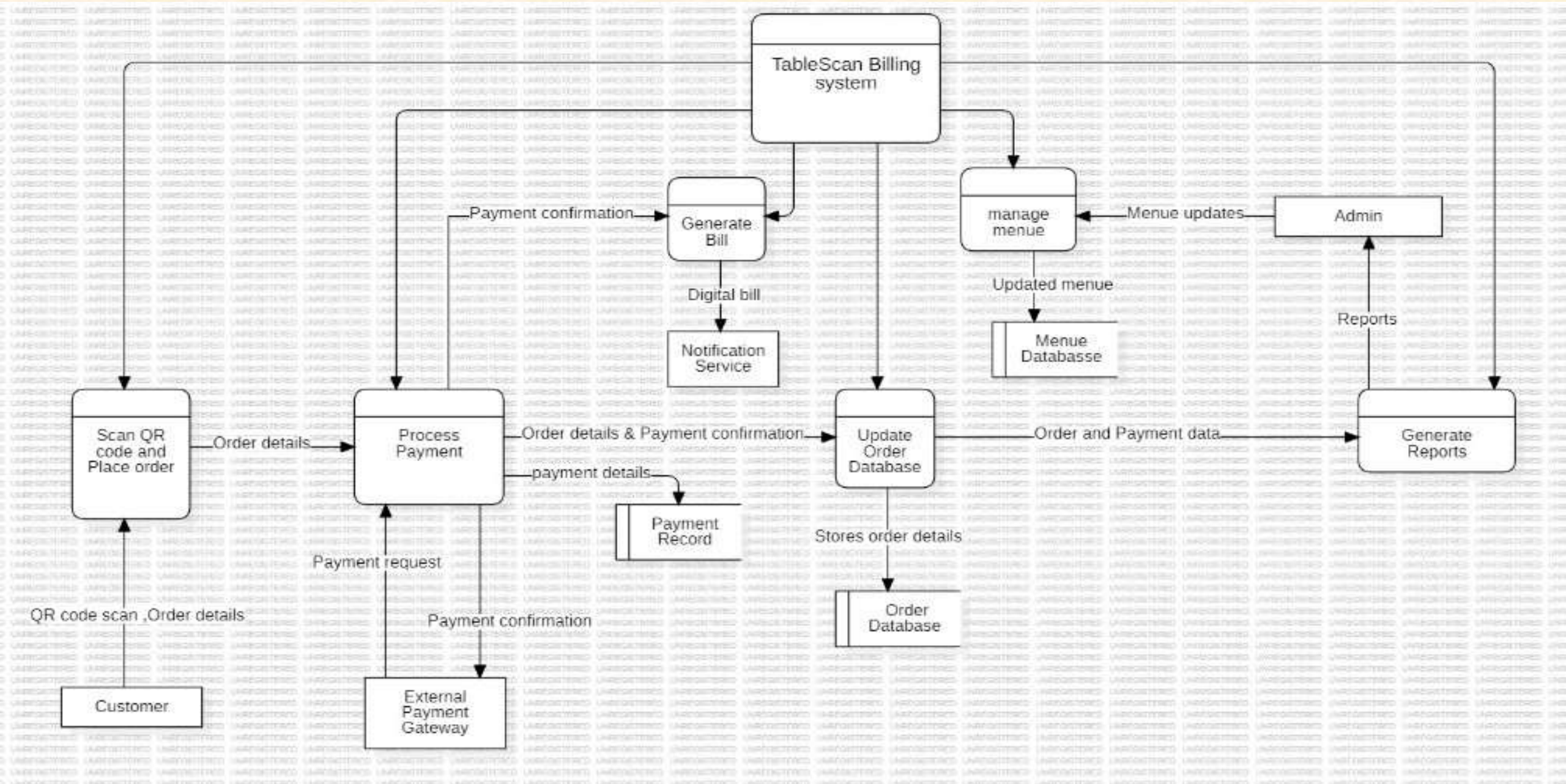
•**Customer** → Adds items to **Cart**
•**Customer** → Places **Order**
•**Admin** → Manages **Menu** and **User Data**
•**Menu** → Linked to **Cart** (items selected)
•**Cart** → Contains **Menu** items before order placement
•**Order** → Contains **Menu** items from **Cart**
•**Order** → Linked to **Customer** (who placed it)
•**Order** → Associated with **QR Code** for table identification
•**QR Code** → Identifies **Table** and links to **Order**
•**Order** → Requires **Payment** for processing
•**Payment** → Generates **Digital Bill** after successful transaction

DFD level 0 :

Customer: Scans the **QR code**, views the digital menu, places an order, and makes a payment.
Table Scan Billing System: Manages orders, processes payments, and generates digital bills.
Admin: Updates the menu, tracks orders, and views payment reports.
Menu Database: Stores and manages the restaurant's menu items.
Order Database: Saves order details for tracking and future reference.
Payment Processing:
Sends **payment requests** to an **external payment gateway**.
On successful payment, confirms with the **system**.
Payment Record: Stores all transaction details for reference.
Notification Service: Sends digital bills and payment confirmation to customers.



DFD Level 1 :


TableScan Billing system
Generate Bill
Payment confirmation
Digital bill
Notification Service
manage menue
Menue updates
Admin
Updated menue
Menue Databasse
Reports
Scan QR code and Place order
Order details
Process Payment
Order details & Payment confirmation
payment details
Payment Record
Update Order Database
Order and Payment data
Generate Reports
Stores order details
Order Database
Payment request
Payment confirmation
QR code scan ,Order details
Customer
External Payment Gateway

Customer Interaction

•The **customer scans a QR code**, which loads the restaurant's menu.

•The customer selects items and places an **order**.

Payment Processing

•The system sends the **order details** to the **Process Payment** module.

•A **payment request** is sent to an **External Payment Gateway** for transaction processing.

•Once the payment is successful, the **payment confirmation** is sent back to the system.

Order & Payment Management

•The system updates the **Order Database** with the order details and payment confirmation.

•A **Payment Record** is maintained for tracking transactions.

Bill Generation & Notification

•After successful payment, the system **generates a digital bill**.

•The **Notification Service** sends the **digital bill** to the customer.

Menu & Order Management

•The **Admin** manages the **menu** through the **Menu Database**, updating items as needed.

•The system updates order and payment data in the **Generate Reports** module for analysis.

Modules Breakdown:

Module 1 :

User Interface & Order Management Module (Frontend)

Module 2 :

Billing & Invoice Generation Module (Backend)

Module 3 :

QR Code Integration & Payment Module (Frontend & Backend)

Module 4 :

Database & Backend Management Module (Backend)

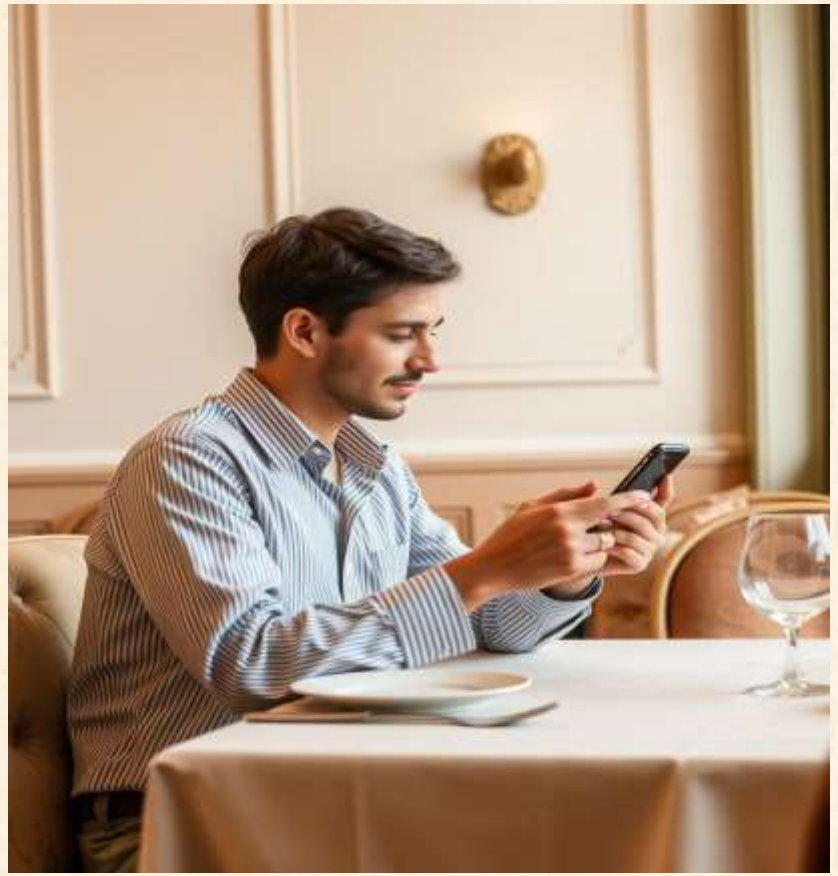
Module 5 :

Testing, Deployment & Security Module (Frontend & Backend)

Module 1: User Interface & Order Management Module

The **User Interface & Order Management Module** handles customer interactions in the **Table Scan Billing System**. It includes a **Home Page with a menu display**, an **order selection system with cart management** (add, remove, modify items), and an **order confirmation UI for processing orders smoothly**.

In our project we also divide our module 1 into sub modules those Are as follows :



✓ **Digital Menu Page**

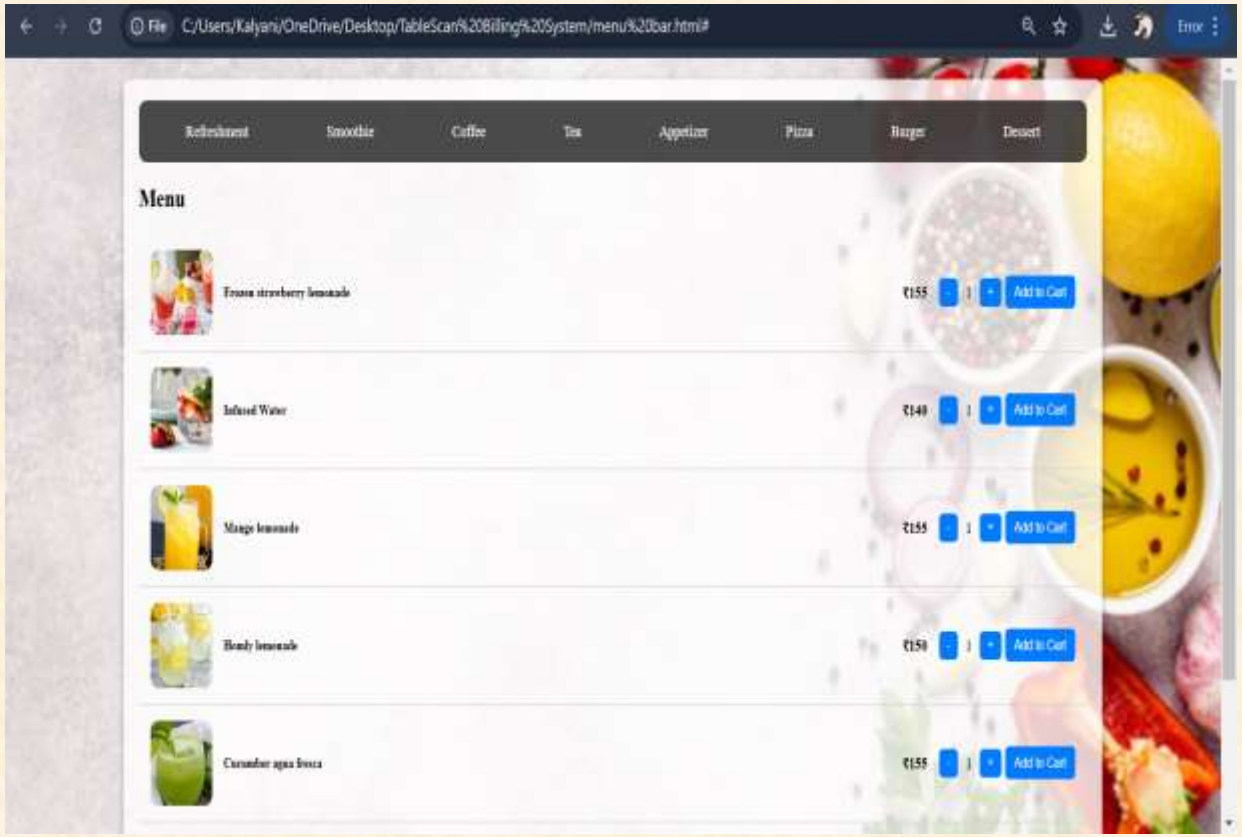
✓ **View Cart Page**

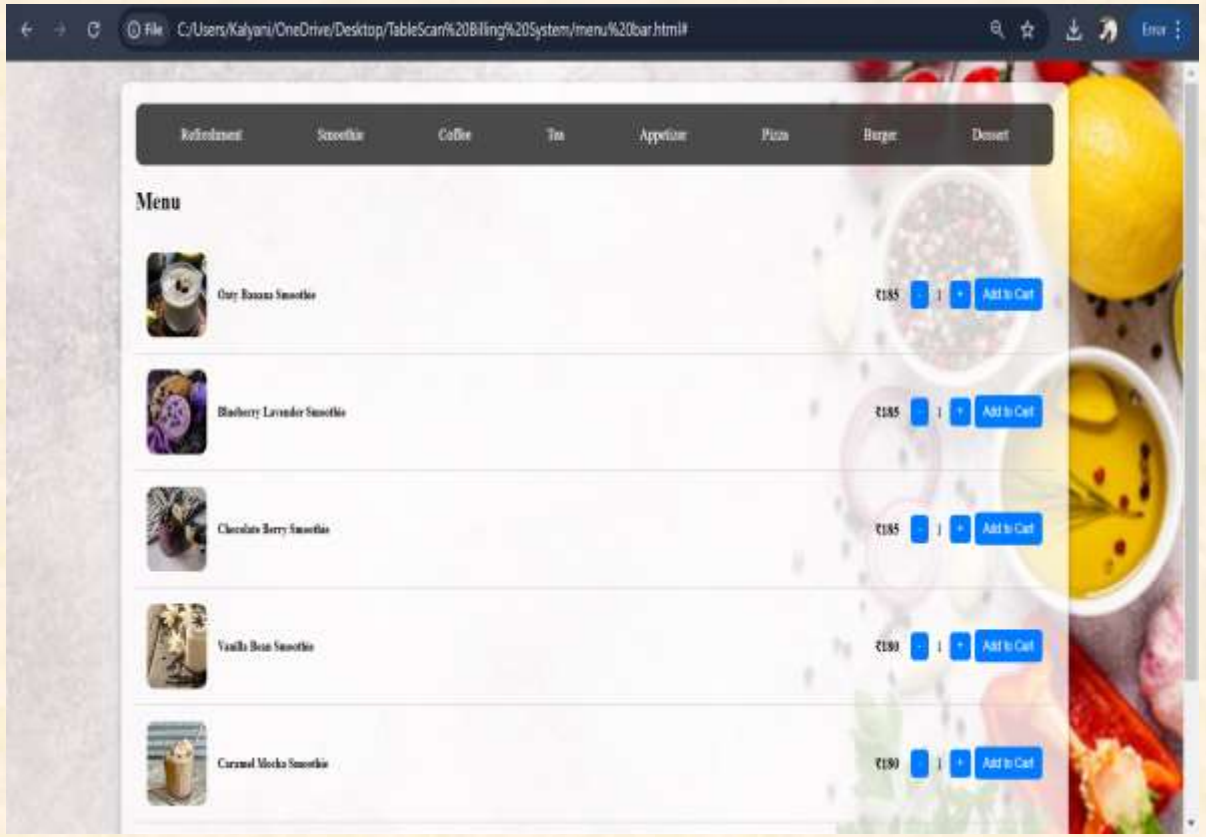
✓ **Order Summary Page**

✓ **Login/Sign Up Page**

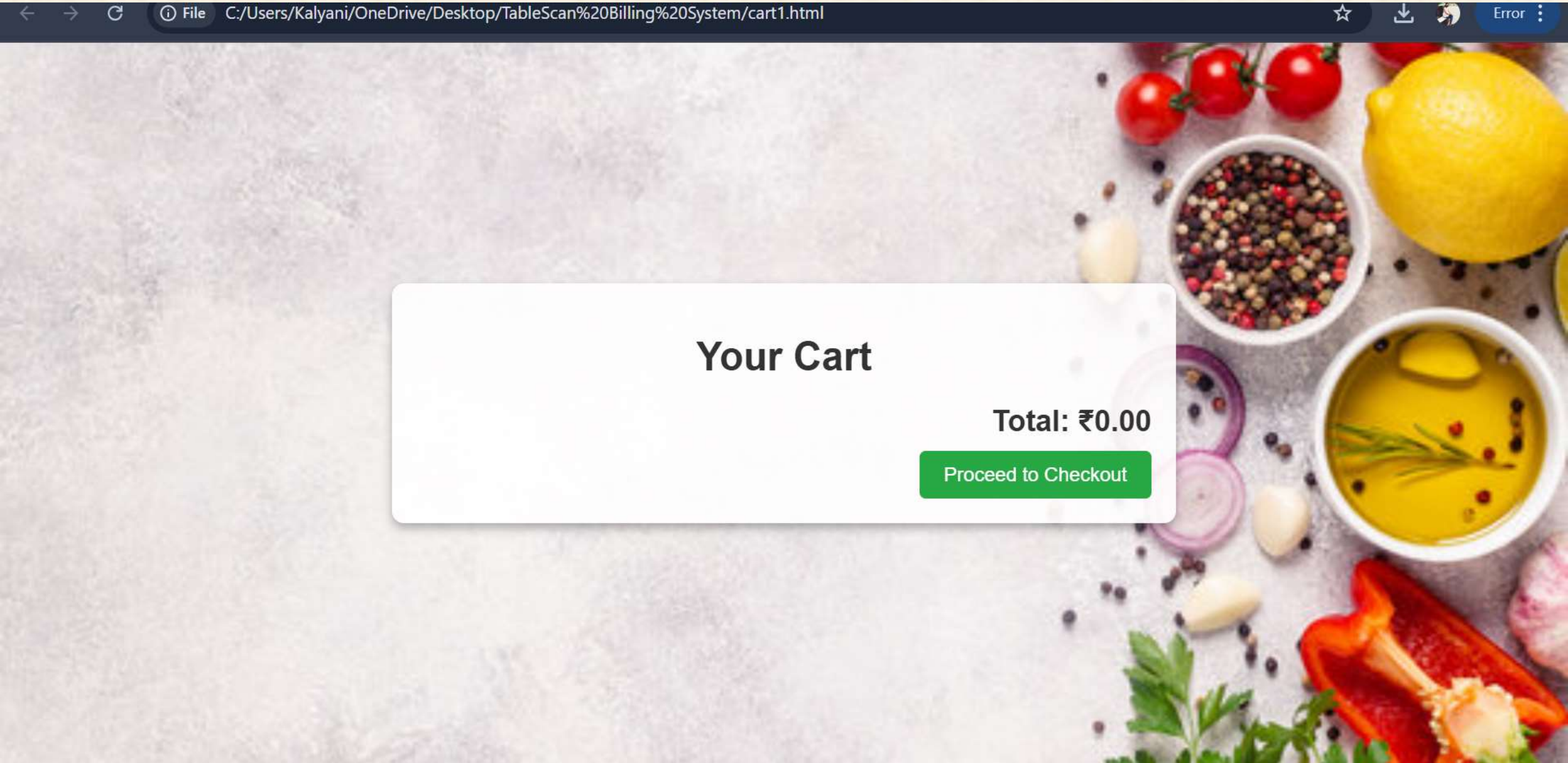
✓ **Digital Bill Page**

Digital Menu Page – Browse food items and options. Easy navigation with images and categories. Includes dietary and allergen info.

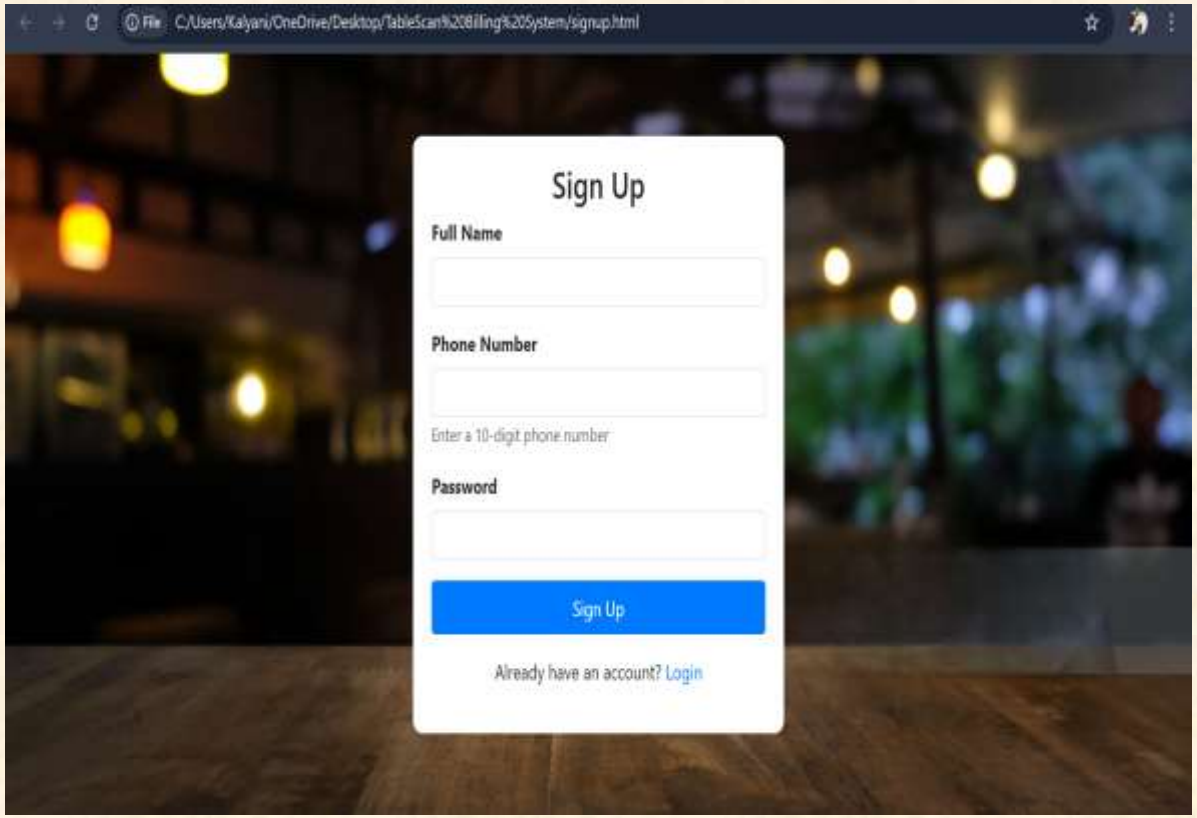


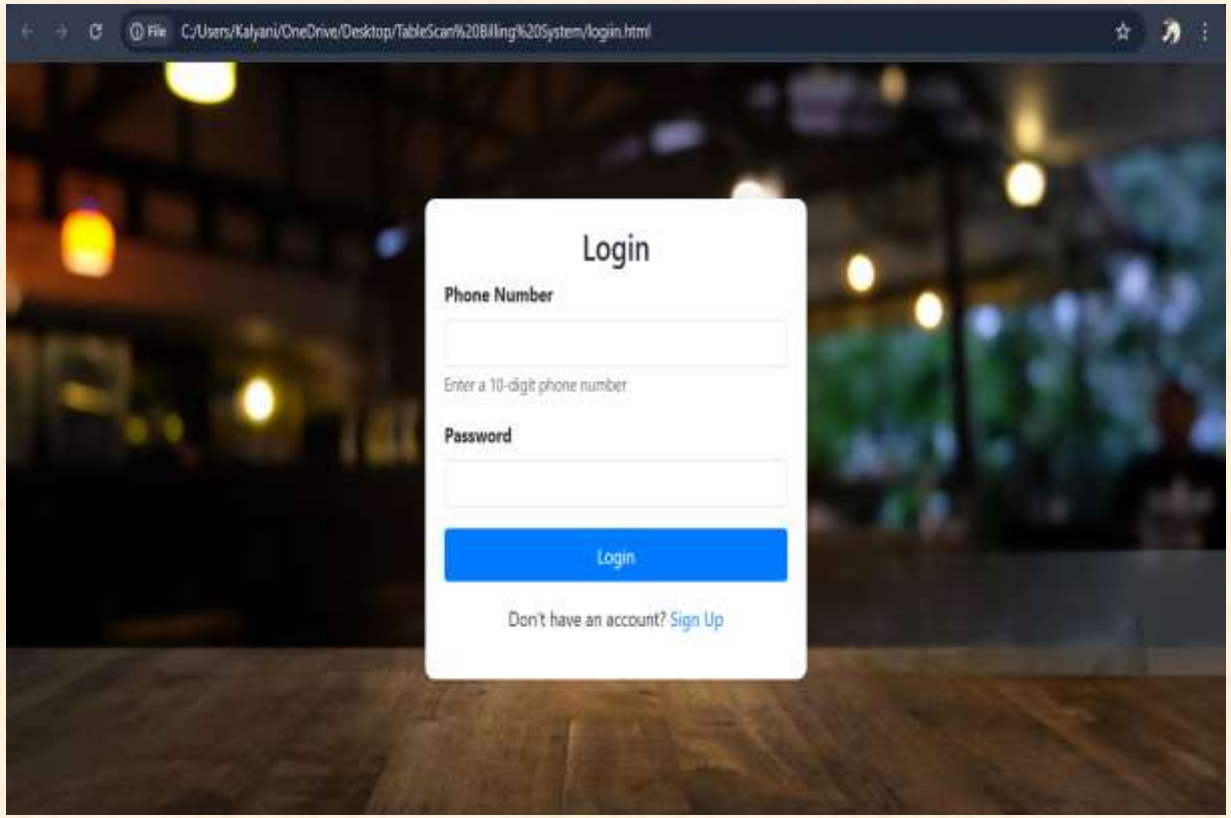


View Cart: Allows customers to review selected items, quantities, and the total amount before ordering.

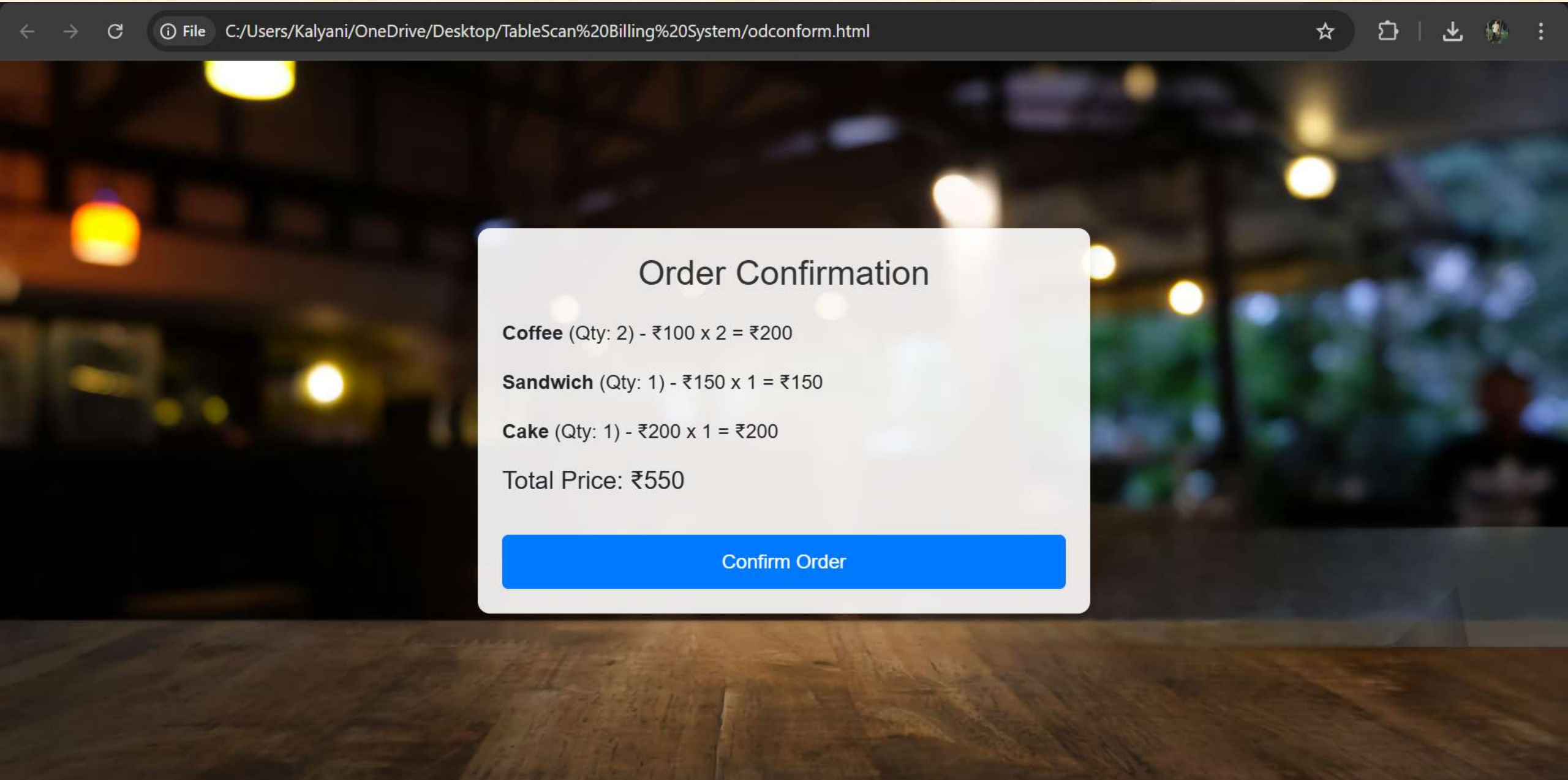


Login/Sign Up Page: Allows new and returning users to access personalized features and order history.

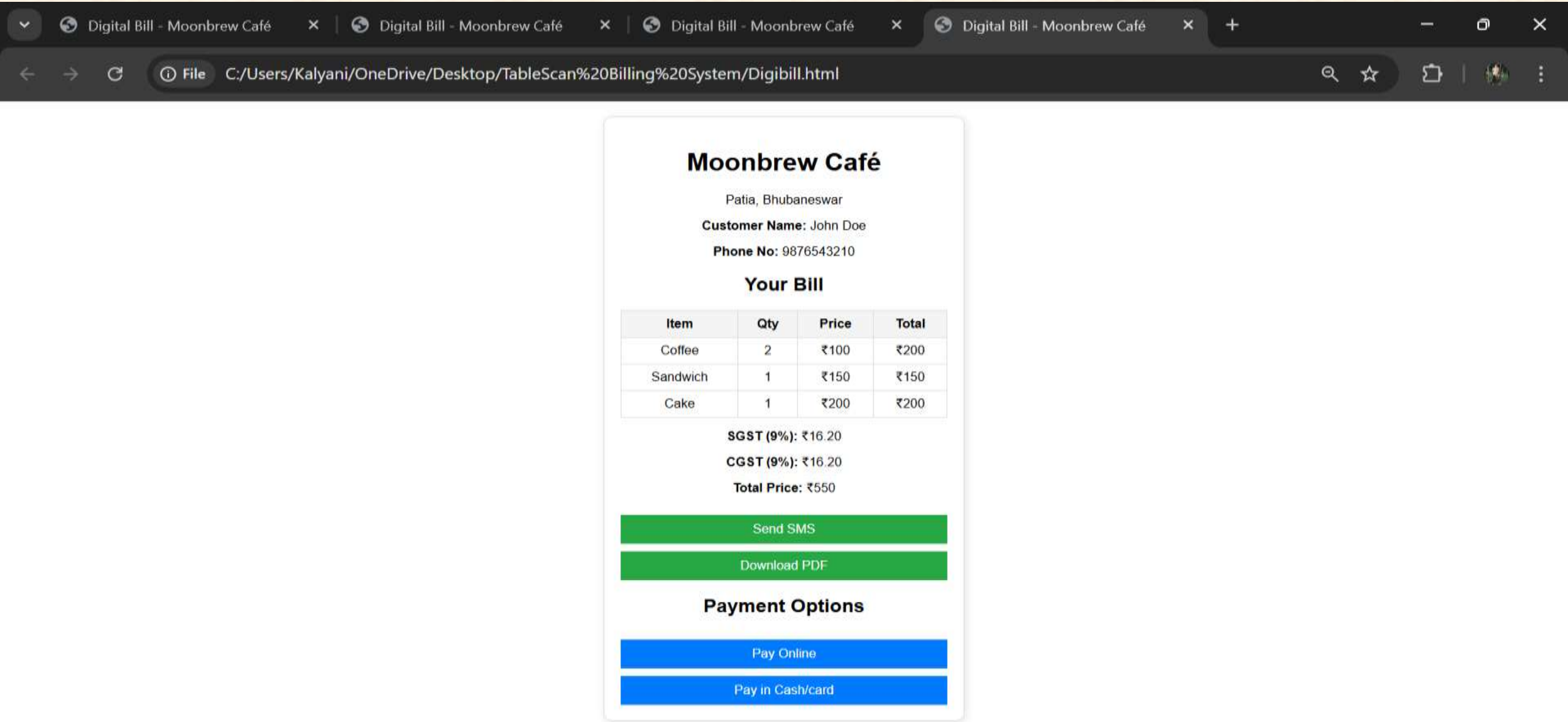




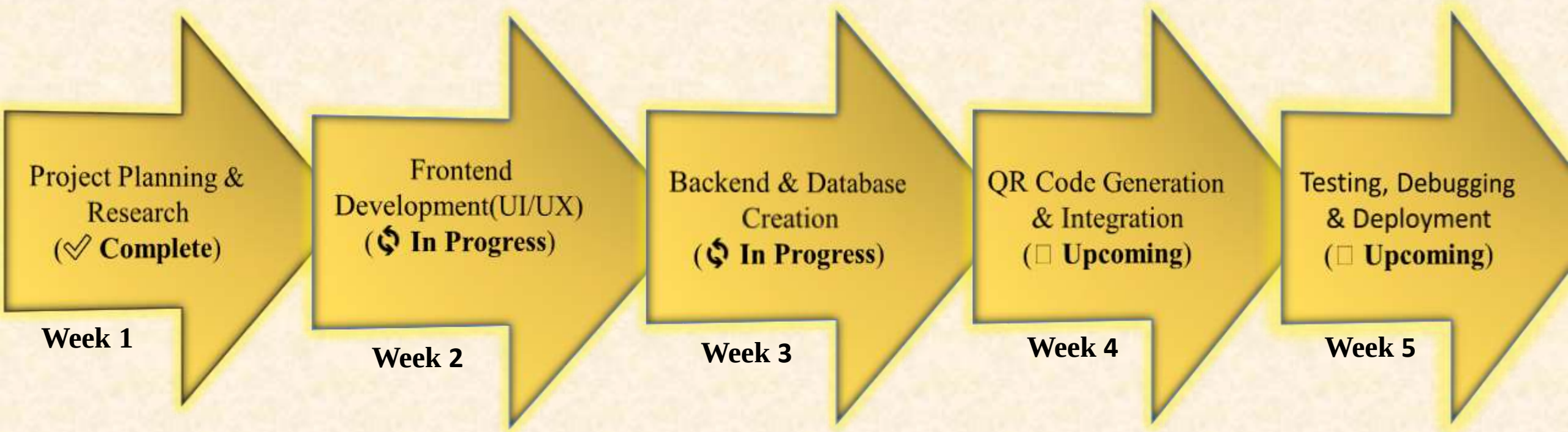
Order Confirmation Page – Review selected items, quantities, and total bill before checkout.



Digital Bill Page: Provides a detailed final bill and generates PDF invoices for convenient record-keeping and sharing.



Timeline Chart:



Contribution :

Kalyani Priyadarshini Sahoo (Frontend & UI/UX Development)

Work Completed This Week:

- Designed & implemented **Home Page UI** (Basic layout, buttons, navigation).
- Created **Digital Menu Page** with menu items using HTML & CSS.
- Developed **Cart & Order Summary UI** (Users can add/remove items).

Laxmikanta Ranjit (Backend & Database Planning)

Work Completed This Week:

- Designed **ER Diagram** (Entities: Customers, Orders, Payments, QR Code).
- Planned **Database Schema** (Tables: Users, Orders, Menu, Payments).

Pratyush Parida (QR Code, Payment Integration, Testing & Deployment)

Work Completed This Week:

- Explored **SMS & PDF receipt generation** for order confirmation.

Conclusion :

The **Table Scan Billing System** revolutionizes restaurant billing by offering a **smart, paperless, and efficient solution** using **QR code-based ordering and digital invoicing**. Customers can seamlessly scan a table-specific QR code, browse an interactive digital menu, place orders, and receive a **digital bill via SMS or PDF download**. With **secure payment integration**, multiple payment options, and automated notifications, the system enhances **customer convenience** while minimizing manual billing errors. By streamlining the **ordering, billing, and payment process**, this system **optimizes restaurant operations**, improves customer experience, and supports **digital transformation** in the food service industry.

THANK YOU