Design Document

MenuScanOrder: QR Code-Based Ordering & Table Management System

Submitted by

Student: Raihan Fadhila Sukmana

Student ID: 47670677

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Overview

This design document outlines the development of MenuOrderScan, a SaaS application designed for food and beverage businesses. As the hospitality industry evolves, businesses are trying to find new and innovative ways to streamline their operations. Waiters hastily writing down orders which are prone to miscommunications, and hosts scrambling to find proper seating for each new guest, makes running a business less efficient. The emergence of digital ordering and table management systems is a response to this need, offering a comprehensive solution that aligns with the changing dynamics of the industry. MenuOrderScan is designed to revolutionize the dining experience by addressing key challenges and leveraging technological advancements to benefit both businesses and their customers.

The main demographic of this platform are business owners and managers who aspire to optimize their operations and customers who value convenience and efficiency in their dining experiences. By enabling business owners to manage tables, orders, and customer flow more effectively, the system facilitates a smoother operational process, directly impacting profitability and customer satisfaction. For customers, they get the ease of placing orders that respects their preferences.
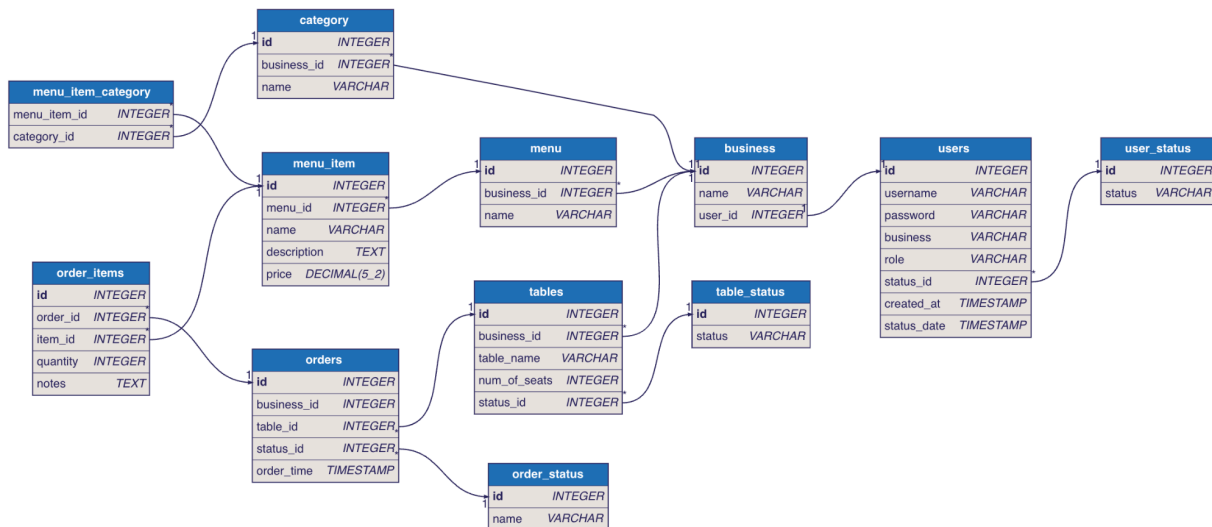
Key Features

These features are designed with the user experience in mind, ensuring that both business owners, the employees, and the customers can navigate the platform with ease:

- **Administration Dashboard**
  An admin dashboard will be used for managing the users of MenuScanOrder. This feature will facilitate the oversight of user activities and accounts.
- **Digital Menu Creation**
  This feature allows users to easily create and manage a digital menu along with categories, items, and pricing.
- **Table Management**
  Users can view and manage tables in real time, ensuring they can seat their customers with ease.
- **QR Code Generation**
  Automatically generates unique QR codes for each table and their dining session, facilitating easy access to the menu for customers.
- **Seamless Ordering**
  Customers can scan the QR code at their table to view the menu and place orders directly from their smartphones.
- **Order Management**: Staff can view and manage orders in real time, ensuring a smooth dining experience for guests and easy process for the employees.

Database Design

The database lets users be either an admin or a business owner. Each business owner can have only one restaurant, and each restaurant can have multiple menus. Each menu item can only belong to one menu, but they can optionally have additional categories that the business owners can create based on their needs. Each table can have multiple orders and the customers can submit multiple items for each order. The business owner can also manage the orders and tables by changing their status.

Mockups

Sign in and Register

MenuScanOrder

Sign In

Email address

Enter email

We'll never share your email with anyone else.

Password

Password

Submit

Don't have an account? Register here

MenuScanOrder

Register

Email address

Enter email

We'll never share your email with anyone else.

Password

Password

Business Name

Enter business name

Submit

Already have an account? Sign in here

Business Owner Dashboard

MenuScanOrder   Home   Menus   Tables   Orders   Categories   Logout

75%   —   +   Reset

Cafe Paradiso

Live Orders

Table 10 4 Items	In Process
Table 2 4 Items	In Process
Table 5 1 Item	Accepted/span>

Manage orders

Menus

Breakfast	Lunch & Dinner	Drinks
Number of items: 20	Number of seats: 4	Number of seats: 8
View Menu	View Menu	View Menu

View all menus

Tables

Table 1	Table 2	Table 3
Number of seats: 4	Number of seats: 4	Number of seats: 8
EMPTY	SEATED	EMPTY

View all tables

Admin dashboard

MenuScanOrder   Home   Logout

Users

Create New User

Search by username...

cafe_paradiso@gmail.com   Active
Establishment: Cafe Paradiso
Role: Business Owner
Active since: 2023-04-07

greenhouse_eatery@gmail.com   Inactive
Establishment: The Greenhouse Eatery
Role: Business Owner
Inactive since: 2023-09-07

admin@gmail.com   Inactive
Role: Admin
Active since: 2023-01-01

Menus page

MenuScanOrder   Home   Menus   Tables   Orders   Categories   Logout

Menus

Create New Menu

| **Breakfast** | |
| Number of items: 20 | 👁 ✏ 🗑 |

| **Lunch and Dinner** | |
| Number of items: 30 | 👁 ✏ 🗑 |

| **Drinks** | |
| Number of items: 10 | 👁 ✏ 🗑 |

| **Desserts** | |
| Number of items: 6 | 👁 ✏ 🗑 |

| **Specials** | |
| Number of items: 4 | 👁 ✏ 🗑 |

| **Wine List** | |
| Number of items: 30 | 👁 ✏ 🗑 |

Menu Item

MenuScanOrder   Home   Menus   Tables   Orders   Categories   Logout

Lunch and Dinner

Create New Menu Item

Grilled Chicken Caesar Salad $14.99
Classic Caesar salad topped with grilled chicken breast, croutons, and parmesan.
Dairy, Eggs, GF Available

✏ 🗑

Veggie Burger $13.99
Homemade veggie patty served with lettuce, tomato, and special sauce on a brioche bun.
Vegetarian, Vegan Available

✏ 🗑

Seared Salmon Fillet $22.99
Perfectly seared salmon served with a side of roasted vegetables and lemon herb sauce.
Fish, GF Available

✏ 🗑

Previous   1   2   3   Next

Orders page

Live Orders

Order #112	12:30:45
Table 5	
In Progress	$14.99

Past Orders

Order #111	11:15:42
Table 6	
Completed	$54.99

Categories

Categories   Add Category

Eggs	✎ 🗑
Vegan Available	✎ 🗑
GF Available	✎ 🗑
Vegetarian	✎ 🗑
Dairy	✎ 🗑

Previous   1   2   3   Next

Customer view after scanning QR code

MenuScanOrder

Your Order

Grilled Chicken Caesar Salad $14.99

2x

[✏️] [🗑️]

Submit Order

Cafe Paradiso   Table 1

Lunch and Dinner

Grilled Chicken Caesar Salad $14.99

Classic Caesar salad topped with grilled chicken breast, croutons, and parmesan.

Dairy, Eggs, GF Available

[+]

Veggie Burger $13.99

Homemade veggie patty served with lettuce, tomato, and special sauce on a brioche bun.

Vegetarian, Vegan Available

[+]

Seared Salmon Fillet $22.99

Perfectly seared salmon served with a side of roasted vegetables and lemon herb sauce.

Fish, GF Available

[+]

Drinks

Fresh Brewed Coffee $2.99

A cup of freshly brewed coffee, made from premium Arabica beans.

[+]

Tables page

MenuScanOrder   Home   Menus   Tables   Orders   Categories   Logout

Dining Tables   Add New Table

Table 1   EMPTY

Number of seats: 4

[▦] [✏️] [🗑️]

Table 2   SEATED

Number of seats: 8

[▦] [✏️] [🗑️]

Previous   1   2   3   Next

MenuScanOrder   Home   Menus   Tables   Orders   Categories   Logout

Dining Tables

Add New Table

Table 1
Number of seats: 4

EMPTY

Table 2
Number of seats: 8

SEATED

QR Code

Close

Technology Research

It is essential to select an appropriate QR code generation approach that aligns with the project requirements, considering factors like ease of integration, customization capabilities, performance, and compatibility with the technology stack. Below is a comparative analysis of three QR code generation approaches/libraries that were recommended from either the course slides or Ed Discussion boards: PHP QR Code by chillerlan, Endroid QR Code, and QRCode.js.

Feature	chillerlan/php-qrcode	Endroid QR Code Library	QRCode.js
Generation Method	Server-side PHP	Server-side PHP	Client-side JavaScript
Dynamic Session Management	Can be customized for unique sessions	Built-in support for unique sessions	Possible but not optimal
Custom Branding	Supports logo integration	Advanced options for logos and labels	Basic customization
Scalability for Peak Times	Suitable for moderate use	Designed for high demand and scalability	Dependent on client device
Integration Complexity	Requires PHP server setup	Simplified with Composer	Simple inclusion, no server needed
Compatibility with Server-Side Tech	Native to PHP-based servers	Native to PHP-based servers	Requires browser support
Real-time Order Handling	Can handle via PHP session management	Optimized for real-time processing	Not ideal for server-side processing

After considering the features of each option, the **Endroid QR Code Library** appears to be the most suitable choice. It's well-suited for the fast-paced food and beverage industry due to its efficient server-side generation, ability to handle high traffic, and flexible customization. The integration is also pretty straightforward.

Timeline

The timeline for this project spans from end of February 2024 and will be deployed and released around May 2024, with stages split into different phases to ensure enough time is allocated for each step of the development process.

1. **Planning**
   a. Create Design Document
   b. Research & Requirement Planning
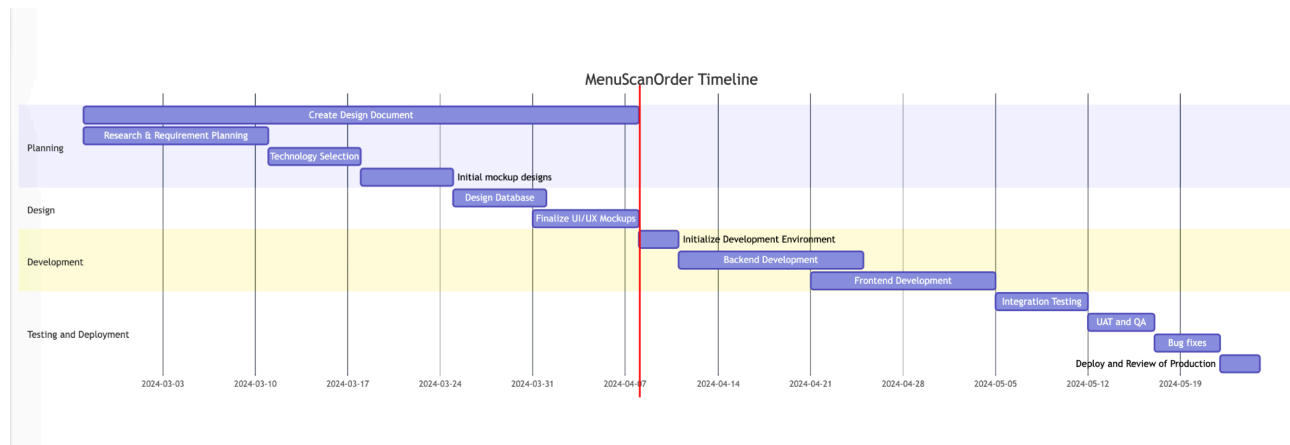   c. Technology Selection
2. **Design**
   a. Initial Mockup Designs
   b. Design Database
   c. Finalize UI/UX Mockups
3. **Development**
   a. Initialize Development Environment
   b. Backend Development
   c. Frontend Development
4. **Testing and Deployment**
   a. Integration Testing
   b. UAT and QA
   c. Deployment
   d. Bug Fixes
   e. Deploy and Review of Production

References

Use of GenAI and other tools:

- ChatGPT was used to:
    - Generate dummy data for the mockups
    - Brainstorm UI ideas
    - Help search and compare QR Code generation options
    - Brainstorm timeline
- Used https://kroki.io/ to render the DBML
- Used https://mermaid.live/ to create Gantt chart for project timeline