

QR BASED FOOD ORDERING SYSTEM

C M Shahida Banu¹ V.Abdul Razzaq²

¹M. Tech Student, Department of Computer science and engineering, Golden valley integrated campus, Kadiri Road, Angallu Post, Madanapalli, Chittoor, Andhra Pradesh 517326

²Assistant Professor, Department of Computer science and engineering, Golden valley integrated campus, Kadiri Road, Angallu Post, Madanapalli, Chittoor, Andhra Pradesh 517326

Abstract:The **QR Based Food Ordering System** is a digital solution designed to simplify and automate the food ordering process in restaurants, cafés, hotels, and food courts. The system allows customers to scan a **QR code** placed on their table using a smartphone and access the digital menu without requiring a physical menu. Customers can browse food items, view prices and descriptions, select desired items, add them to a cart, and place orders directly through the system.

Once an order is submitted, it is automatically sent to the restaurant staff or kitchen for processing, reducing the need for manual order taking. The system can also provide order status updates, helping customers track their orders. An administrator can manage food categories, menu items, prices, customer orders, and availability through an admin interface. The proposed system reduces waiting time, minimizes errors caused by manual order entry, improves order accuracy, and provides a more convenient and contactless dining experience. It also helps restaurant management maintain organized order records and improve operational efficiency. Overall, the **QR Based Food Ordering System** provides a fast, user-friendly, cost-effective, and modern approach to restaurant order management.

1. INTRODUCTION

The **QR Based Food Ordering System** is a modern restaurant management solution developed to make the food ordering process faster, easier, and more efficient. In traditional restaurants, customers usually

depend on printed menus and wait for staff members to take their orders. This process can lead to delays, incorrect orders, communication problems, and increased workload for restaurant staff. The proposed system addresses these issues by using **Quick Response (QR) codes** to provide customers with direct access to a digital menu.

In this system, each table is provided with a unique QR code. Customers can scan the QR code using their smartphone and access the restaurant's digital menu without installing a separate application. The menu displays available food items along with their names, descriptions, prices, and images. Customers can select items, specify quantities, add them to a cart, and place their order digitally.

After the customer confirms the order, the details are automatically transmitted to the restaurant's kitchen or staff interface. This reduces manual communication between customers and waiters and helps minimize order-entry errors. Restaurant administrators can manage menu items, categories, prices, availability, and customer orders through an administrative interface.

The **QR Based Food Ordering System** also improves the overall dining experience by reducing waiting time and providing a convenient contactless ordering method. For restaurant owners, it can improve order management, reduce operational workload, and maintain digital records of orders. Therefore, the system provides an efficient and user-friendly approach to modern restaurant food ordering and management.

2. EXISTING SYSTEM

In the existing food ordering system, customers generally depend on **printed menus and restaurant staff** to place their orders. A waiter provides the menu, takes the customer's order manually, and communicates the order to the kitchen. The staff may also need to write the order on paper or enter it into a separate system. After the food is prepared, the waiter serves it to the customer and handles the billing process.

Some restaurants use basic digital ordering systems, but these may require staff involvement at multiple stages. The absence of direct customer-to-kitchen communication can result in delays and errors.

2.1 Disadvantages of Existing System

1. **Long Waiting Time:** Customers may have to wait for a waiter to become available before placing an order.
2. **Manual Order Errors:** Incorrectly written or communicated orders can lead to mistakes.
3. **Increased Staff Workload:** Waiters need to take orders, communicate with the kitchen, and update customers.
4. **Use of Printed Menus:** Printed menus require regular replacement when prices or food items change.
5. **Communication Problems:** Miscommunication between customers, waiters, and kitchen staff can affect order accuracy.
6. **Limited Order Tracking:** Customers may not have an easy way to know the current status of their order.
7. **Higher Operational Cost:** Restaurants may spend money on printing menus and maintaining manual processes.
8. **Difficulty Managing Large Orders:** During peak hours, handling multiple customer orders manually can become difficult.
9. **Paper-Based Records:** Manual records can be difficult to maintain, search, and analyze.
10. **Less Contactless:** Traditional ordering requires frequent interaction between customers and staff.

3. PROPOSED SYSTEM:

The **Proposed QR Based Food Ordering System** is a digital restaurant ordering solution that allows customers to place food orders directly using their smartphones. A unique **QR code** is placed on each table. Customers simply scan the QR code to open the restaurant's digital menu. They can view available food items, prices, descriptions, and images, select the required items, add them to the cart, and place the order.

Once the customer confirms the order, it is automatically sent to the restaurant's kitchen or staff dashboard. The staff can view, accept, and process orders efficiently. An administrator can manage food items, categories, prices, availability, tables, and orders through an admin panel. The system can also maintain digital order records and provide order status information.

3.1 Advantages of Proposed System

1. **Fast Ordering:** Customers can place orders immediately by scanning the QR code.
2. **Reduced Waiting Time:** Customers do not need to wait for a waiter to take their order.
3. **Improved Order Accuracy:** Direct digital submission reduces errors caused by manual order taking.
4. **Contactless Ordering:** Customers can order food without unnecessary physical interaction.
5. **Easy Menu Management:** Administrators can easily add, update, or remove food items and prices.
6. **Reduced Staff Workload:** Restaurant employees can focus more on food preparation and customer service.
7. **Real-Time Order Management:** Kitchen staff can receive and process orders directly through the system.
8. **Digital Records:** Orders can be stored electronically for easy management and future reference.
9. **Better Customer Experience:** Customers can conveniently browse the menu and customize their orders.

10. **Cost Effective:** Reduces the need for printed menus and minimizes manual work

4. SYSTEM ANALYSIS:

The **QR Based Food Ordering System** is analyzed to identify the requirements, limitations, and operational needs of a modern restaurant ordering process. The system is designed to replace traditional manual ordering with a digital and contactless approach. Customers can scan a QR code available at their table using a smartphone and access the restaurant's digital menu. They can view food details, select items, specify quantities, add items to a cart, and place orders. The order information is then stored in the system and made available to the restaurant staff or kitchen for processing. The administrator can manage menu items, categories, prices, availability, tables, and orders through an admin interface. The system analysis focuses on improving order accuracy, reducing customer waiting time, minimizing staff workload, and maintaining organized digital records. It also considers important requirements such as **usability, security, reliability, performance, database management, and scalability** to ensure that the system operates efficiently and provides a convenient experience for both customers and restaurant staff.

5. SYSTEM REQUIREMENTS:

HARDWARE REQUIREMENTS:

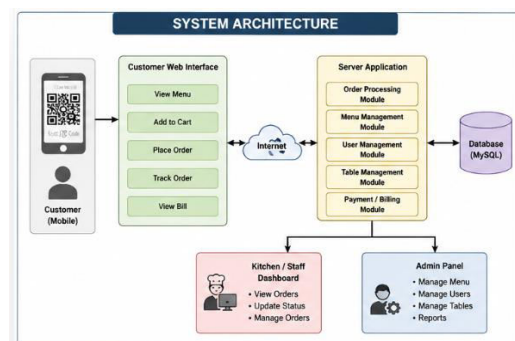
The QR Based Food Ordering System requires the following hardware components:

- **Processor:** Intel Core i3 or equivalent and above
- **RAM:** Minimum 4 GB
- **Storage:** Minimum 500 GB HDD or 128 GB SSD
- **Display:** 15-inch monitor or above
- **Keyboard and Mouse:** Standard keyboard and mouse

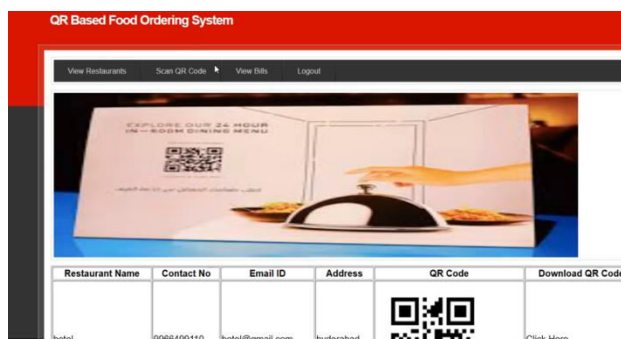
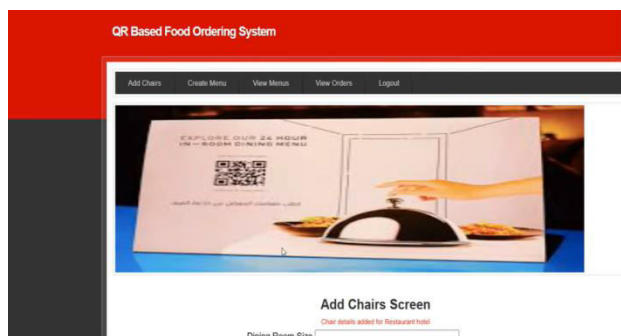
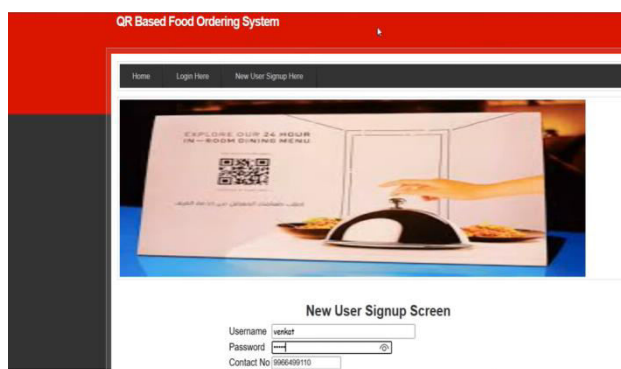
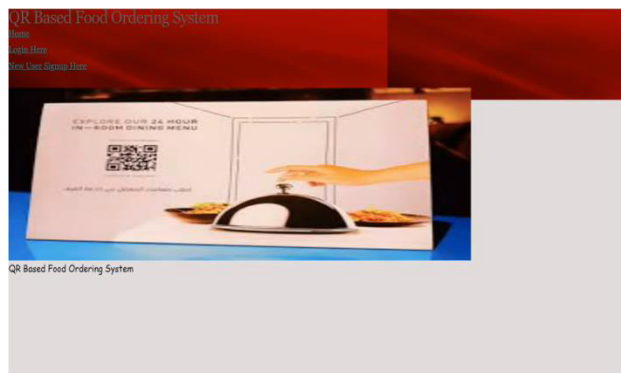
- **Smartphone:** Android/iOS smartphone with a camera for scanning QR codes
- **Internet Connection:** Wi-Fi or broadband connection
- **Server:** Local or cloud server for storing application and database data
- **Printer:** Optional printer for bills and order receipts
- **QR Codes:** Printed QR codes for individual restaurant tables

Software Requirements

- **Operating System:** Windows 10/11, Linux, or macOS
 - **Frontend:** HTML, CSS, JavaScript, Bootstrap
 - **Backend:** Python / Java / PHP / Node.js
 - **Database:** MySQL
 - **Web Server:** Apache or equivalent server
 - **Development Environment:** Visual Studio Code / Eclipse / IntelliJ IDEA
 - **Web Browser:** Google Chrome, Mozilla Firefox, or Microsoft Edge
 - **QR Code Technology:** QR code generation and scanning library
 - **Database Connectivity:** Appropriate database connector/API
- System Architecture:**



6. RESULTS AND ANALYSIS



7. CONCLUSIONS

The **QR Based Food Ordering System** provides an efficient, convenient, and contactless solution for modern restaurant food ordering. The system replaces the traditional manual ordering process with a digital approach in which customers can scan a QR code, view the menu, select food items, place orders, and track their order status using a smartphone. The system also helps restaurant staff receive and manage orders more accurately and efficiently.

By automating menu management, order processing, billing, and order-status updates, the system reduces customer waiting time, minimizes manual errors, and decreases the workload of restaurant employees. The administrator can easily manage food items, prices, tables, users, and orders through the admin panel. Overall, the proposed system improves restaurant operations and provides a better customer dining experience.

REFERENCES:

1. Ian Sommerville, **Software Engineering**, Pearson Education.
2. Roger S. Pressman and Bruce R. Maxim, **Software Engineering: A Practitioner's Approach**, McGraw-Hill.
3. Herbert Schildt, **Java: The Complete Reference**, McGraw-Hill.
4. **MySQL Documentation**, Oracle Corporation.
5. **MDN Web Docs**, documentation for HTML, CSS, and JavaScript.
6. **W3C Web Standards**, World Wide Web Consortium.
7. **Bootstrap Documentation**, Bootstrap framework documentation.
8. **QR Code Standard – ISO/IEC 18004**, Information technology — Automatic identification and data capture techniques — QR Code bar code symbology specification.