



International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

Peer Reviewed, Referred & Indexed Journal

ISSN: 3068-272X

www.ijdim.com

Original Research Paper

AI-Based Fake Media Detection Using Machine Learning and Natural Language Processing

MANTENA ANISHA VARMA

PG Scholar. Department of MCA, DNR College, Bhimavaram, Andhra Pradesh

A.Durga Devi

(Assistant Professor), Master of Computer Applications, DNR College, Bhimavaram, Andhra Pradesh

ABSTRACT

The rapid advancement of digital technologies has significantly transformed the hospitality and restaurant industry. Traditional food ordering systems often involve manual processes, long waiting times, and inefficiencies in managing customer requests, which can negatively impact customer satisfaction. To address these challenges, this research proposes a QR Code-Based Smart Food Ordering System developed using web technologies and the Django framework. The proposed system enables customers to access restaurant menus by scanning a unique Quick Response (QR) code assigned to each restaurant. Upon scanning, users are redirected to a web interface where they can browse menu items, view prices, and place orders seamlessly without requiring direct interaction with restaurant staff. This contactless approach not only enhances user convenience but also aligns with modern hygiene and safety standards. The system architecture is designed with three primary modules: customer, restaurant owner, and administrator. The customer module allows users to register, log in, scan QR codes, browse menus, and place orders. The restaurant owner module provides functionalities to manage menu items, upload images, add dining capacity details, and monitor daily orders. The backend is implemented using Django, ensuring scalability and robust request handling, while MySQL is used for efficient database management. Additionally, QR code generation is integrated into the system, allowing restaurant owners to generate and download unique QR codes for their establishments. These QR codes are linked to dynamic menu pages, ensuring real-time updates. The system also maintains transaction records, enabling customers to view their order history and restaurant owners to analyze order trends. The implementation leverages Python libraries for QR code generation and image handling, ensuring seamless integration with the web application. The system is designed to be user-friendly, efficient, and adaptable to different restaurant environments.

Experimental evaluation demonstrates that the proposed system reduces order processing time, minimizes human errors, and improves overall service efficiency. Furthermore, it supports digital transformation in the food service industry by providing a cost-effective and scalable solution. In conclusion, the QR Code-Based Smart Food Ordering System



offers a modern, contactless, and efficient alternative to traditional ordering methods, enhancing both customer experience and operational efficiency in restaurants.

Keywords : QR Code ,Food Ordering System ,Django Framework,Web Application , Contactless Ordering ,MySQL Database ,Restaurant Management ,Digital Transformation

I. INTRODUCTION

The increasing adoption of digital technologies has revolutionized various sectors, including the food and hospitality industry. In recent years, there has been a growing demand for efficient, contactless, and user-friendly food ordering systems that minimize human interaction while maximizing service quality. Traditional restaurant ordering methods rely heavily on waitstaff, handwritten orders, and manual billing processes, which can lead to delays, miscommunication, and reduced customer satisfaction. With the emergence of smartphones and internet connectivity, digital solutions such as online food ordering and mobile applications have gained significant popularity. However, many small and medium-sized restaurants still face challenges in adopting such systems due to cost constraints and technical complexity. Therefore, there is a need for a simple, scalable, and cost-effective solution that can be easily integrated into existing restaurant operations. This research introduces a QR Code-Based Smart Food Ordering System that leverages web technologies and the Django framework to streamline the ordering process. QR codes serve as a bridge between physical and digital environments, enabling customers to access restaurant menus instantly by scanning a code using their smartphones. This eliminates the need for printed menus and reduces waiting time. The proposed system provides a comprehensive solution that includes menu management, order processing, and user authentication. Customers can browse menu items, view detailed descriptions and images, and place orders directly through a web interface. Restaurant owners can manage their menus, monitor orders, and update information in real time. The system also supports secure login and registration functionalities to ensure data integrity and user authentication. The use of Django as the backend framework offers several advantages, including rapid development, scalability, and built-in security features. The integration of MySQL ensures efficient data storage and retrieval, while Python libraries facilitate QR code generation and file handling. Moreover, the system addresses the growing need for contactless services, especially in the context of health and safety concerns. By minimizing physical interaction, the proposed solution enhances hygiene standards and improves customer confidence. In summary, this project aims to develop a modern food ordering system that combines the simplicity of QR technology with the power of web applications, providing an efficient and user-friendly solution for restaurants and customers alike.



International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

Peer Reviewed, Referred & Indexed Journal

ISSN: 3068-272X

www.ijdim.com

Original Research Paper

II. LITERATURE SURVEY (WITH EXISTING METHODS)

The development of smart food ordering systems has been an active area of research, driven by the need to improve efficiency and customer experience in the restaurant industry. Various approaches have been proposed, ranging from traditional online ordering systems to advanced mobile applications and IoT-based solutions. Early systems focused on web-based ordering platforms where customers could browse menus and place orders remotely. While these systems improved convenience, they often required dedicated applications or complex interfaces, limiting their usability. Researchers have also explored mobile application-based solutions, which provide enhanced user experiences but require installation and maintenance, making them less accessible for occasional users. In recent years, QR code technology has gained popularity as a simple and effective solution for bridging physical and digital interactions. QR codes enable instant access to information without the need for specialized applications, making them ideal for restaurant environments. Several studies have demonstrated the effectiveness of QR-based systems in reducing waiting times and improving order accuracy. Existing research has also explored the integration of cloud-based systems and real-time data processing to enhance scalability and performance. Machine learning techniques have been applied to analyze customer preferences and recommend menu items, further improving user experience. However, such systems often involve high implementation costs and technical complexity. Database management plays a crucial role in food ordering systems. Relational databases such as MySQL are widely used for storing user information, menu details, and order records. Efficient database design ensures fast data retrieval and reliable system performance. Security is another important aspect addressed in the literature. Authentication mechanisms, data encryption, and secure communication protocols are essential to protect user data and prevent unauthorized access. Despite these advancements, many existing systems lack simplicity, affordability, and ease of deployment. Small-scale restaurants often struggle to adopt advanced solutions due to limited resources. Therefore, there is a need for a lightweight, cost-effective system that combines essential features with ease of use. The proposed system addresses these gaps by utilizing QR code technology, Django framework, and MySQL database to create a scalable and user-friendly solution. It eliminates the need for mobile applications while providing real-time access to menus and ordering functionalities, making it suitable for a wide range of restaurant environments.

III. EXISTING SYSTEM

The existing food ordering systems primarily rely on traditional methods or partially digitized solutions. In conventional restaurants, customers place orders through waitstaff, who manually record and communicate the orders to the kitchen. This process is time-consuming and prone to human errors, such as incorrect order entry or



International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

Peer Reviewed, Referred & Indexed Journal

ISSN: 3068-272X

www.ijdim.com

Original Research Paper

miscommunication. Some restaurants have adopted digital ordering systems, including mobile applications and web-based platforms. While these systems improve efficiency, they often require customers to download specific applications, which can be inconvenient and limit accessibility. Additionally, these systems may involve high development and maintenance costs, making them unsuitable for small and medium-sized businesses. Another limitation of existing systems is the lack of real-time updates and integration. Menu changes, availability of items, and order tracking are often not synchronized effectively, leading to customer dissatisfaction. Furthermore, many systems do not support contactless interaction, which has become increasingly important in recent times. QR code-based solutions have been introduced as an alternative, but many implementations are limited in functionality, offering only static menus without interactive ordering capabilities. These systems fail to provide a complete solution for restaurant management and customer engagement.

Overall, existing systems face challenges such as high cost, limited accessibility, lack of scalability, and inefficiencies in order management. These limitations highlight the need for a comprehensive, cost-effective, and user-friendly solution that can address the evolving requirements of the restaurant industry.

IV. PROPOSED METHOD

The proposed system is a **QR Code-Based Smart Food Ordering System** designed to overcome the limitations of traditional and partially digital restaurant ordering methods. The system integrates QR code technology with a web-based platform developed using Django, enabling seamless interaction between customers and restaurant owners. In this system, each restaurant is assigned a unique QR code generated dynamically during registration. Customers can scan the QR code using their smartphones, which redirects them to the restaurant's digital menu interface. This eliminates the need for physical menus and reduces dependency on waitstaff. The menu interface displays item details such as name, price, description, and images, allowing customers to make informed decisions. The system supports multiple user roles, including customers and restaurant owners. Customers can browse menus, place orders, and view order history. Restaurant owners can manage menu items, update pricing, monitor daily orders, and manage dining capacity. The system also provides QR code download functionality for easy deployment within restaurant premises. A centralized database is used to store user details, menu items, orders, and transaction records. The system ensures real-time data updates, enabling efficient order processing and improved service quality. The proposed solution is scalable, cost-effective, and user-friendly, making it suitable for small and medium-sized restaurants. It enhances operational efficiency, reduces human errors, and supports contactless service, which is increasingly important in modern dining environments.



V. IMPLEMENTATION

The implementation of the proposed system is carried out using a combination of **Python, Django framework, MySQL database, and QR code generation libraries**. The system follows a modular architecture, ensuring scalability and maintainability. The frontend is developed using HTML templates rendered through Django's view functions. Each user interaction, such as login, registration, menu viewing, and order placement, is handled via HTTP requests and responses. The backend is responsible for processing these requests, interacting with the database, and returning appropriate responses. User authentication is implemented through login and registration modules. The system supports two types of users: customers and restaurant owners. Based on user roles, different interfaces are rendered. For example, restaurant owners are redirected to a dashboard where they can manage menu items and view orders, while customers can browse restaurants and place orders. The database is implemented using MySQL and consists of multiple tables such as register, menu, bookorder, and addchairs. These tables store user credentials, menu details, order records, and seating information respectively. SQL queries are used for data retrieval and manipulation.

QR code generation is implemented using the pyqrcode library. When a restaurant owner registers, a unique QR code is generated based on their username and stored as an image file. This QR code is displayed and can be downloaded for use within the restaurant. The menu management module allows restaurant owners to add new items, upload images, and update details. Images are stored using Django's file storage system, ensuring efficient file handling. Order processing is handled through the BookOrder module, which records customer orders along with timestamps. The system assigns unique order IDs and stores order details in the database. Customers can view their order history, while restaurant owners can monitor daily orders. Visualization and reporting features can be integrated to analyze order trends and improve decision-making. The system also ensures error handling and validation to maintain data integrity. Overall, the implementation demonstrates a robust, scalable, and efficient web-based solution for modern restaurant management.

VI. ALGORITHMS

The system utilizes several algorithms and logical procedures to ensure efficient operation:

1. QR Code Generation Algorithm

- Input: Restaurant username
- Process: Encode username into QR format



- Output: QR image stored in system

This allows quick access to restaurant-specific menus.

2. User Authentication Algorithm

1. Receive username and password
2. Query database for matching records
3. If match found → assign user role
4. Redirect to respective dashboard
5. Else → display error

3. Order Processing Algorithm

1. Retrieve selected item ID and price
2. Generate unique order ID
3. Capture current date
4. Insert order details into database
5. Confirm order to user

4. Menu Retrieval Algorithm

1. Receive restaurant name
2. Query menu table
3. Fetch all items
4. Display in tabular format

5. Sentiment/Trend Insight (Optional Extension)

Modern systems may integrate analytics to improve services. Research shows QR-based systems improve efficiency and reduce manual workload .

VII. SYSTEM DESIGN

The system architecture follows a **three-tier architecture**, consisting of presentation, application, and database layers.



1. Presentation Layer (Frontend)

This layer consists of user interfaces developed using HTML and Django templates. It includes pages such as login, registration, menu display, and dashboards. The frontend interacts with the backend through HTTP requests.

2. Application Layer (Backend)

The backend is implemented using Django and handles business logic. It includes modules such as:

- User authentication
- QR code generation
- Menu management
- Order processing
- Data retrieval

Django's MVC (Model-View-Controller) architecture ensures separation of concerns and improves maintainability.

3. Database Layer

The database is designed using MySQL and includes the following key tables:

- **Register Table** – Stores user details
- **Menu Table** – Stores food items
- **BookOrder Table** – Stores order details
- **AddChairs Table** – Stores seating information

4. System Workflow

1. Restaurant registers → QR code generated
2. Customer scans QR → accesses menu
3. Customer selects items → places order
4. Order stored in database
5. Restaurant views orders

5. Architecture Diagram (Conceptual)



International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

Peer Reviewed, Referred & Indexed Journal

ISSN: 3068-272X

www.ijdim.com

Original Research Paper

User (Customer) → QR Scan → Web Interface → Django Server → MySQL Database
↑
Restaurant Owner

6. Design Advantages

- Scalable and modular
- Real-time updates
- Secure authentication
- Contactless operation

Studies confirm that QR-based ordering systems simplify business processes and eliminate manual errors .

SYSTEM DESIGN IMAGES

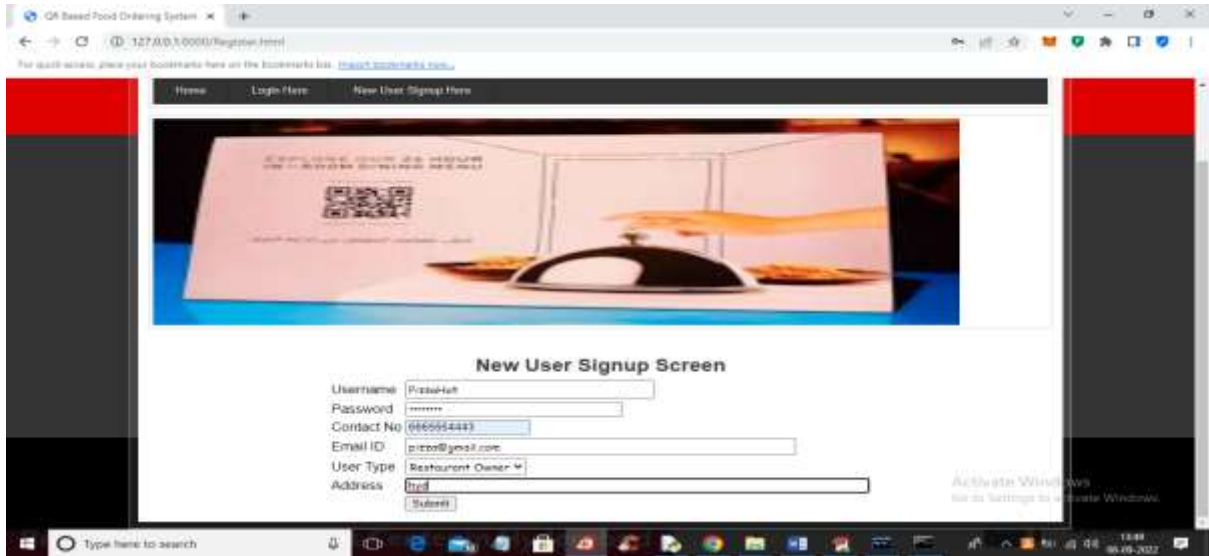
This project designed for restaurant owners and customers/users where restaurants owners can signup with the application and then login and then execute following modules

- 1) Add Chairs: using this module they can add some details about their restaurant environment
- 2) Create Menu: using this module they will create menus and all menus will linked with restaurant owner QR code. If any customer scan QR code then this restaurant menu will appear
- 3) View Menus: using this module owners can view menu details with QR code and menu image
- 4) View Orders: using this module they can view all orders coming from customers

Customers/user also has to signup and login to application and after login can execute below modules

- 1) View Restaurants: using this module all users can view all available restaurants and download their QR codes
- 2) Scan QR Codes: user has to download QR codes and then load or transfer to their mobile using Bluetooth and then can scan that QR code from their mobile to get menu. After seeing menu they can book desire item
- 3) View Bills: after making order they can view bills

In above screen click on 'New User Signup Here' link to register restaurant owner or user



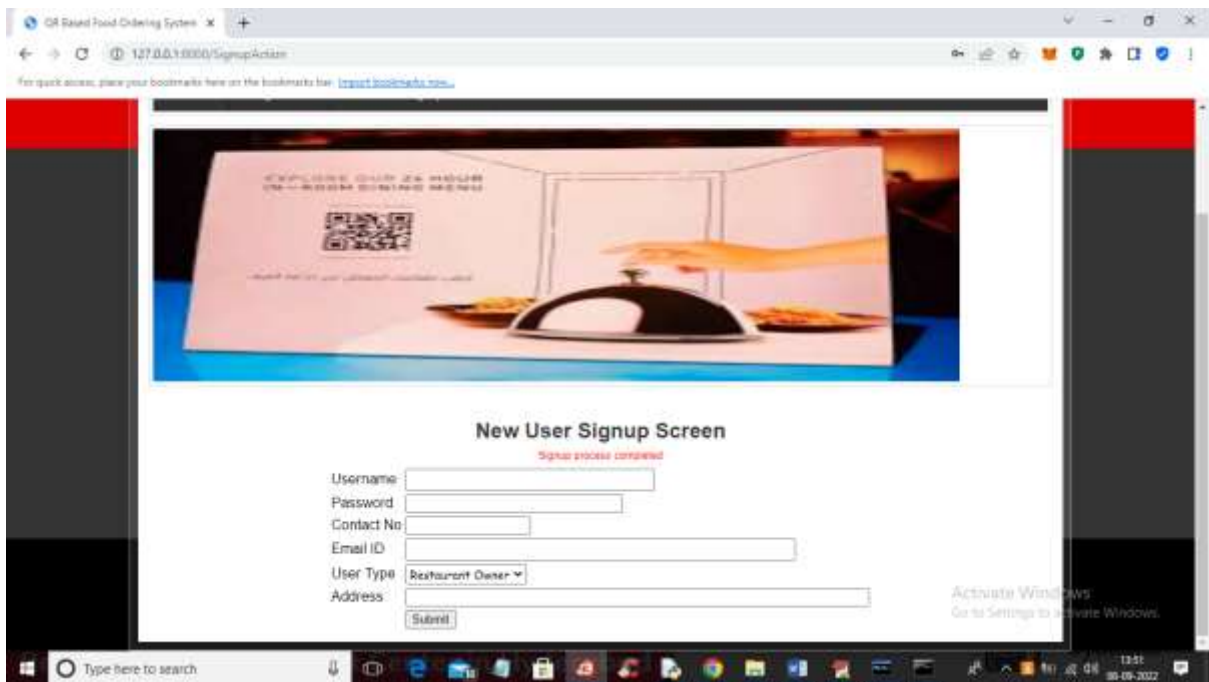
In above screen I am entering Restaurant owner details and then press button to complete signup process and get below output



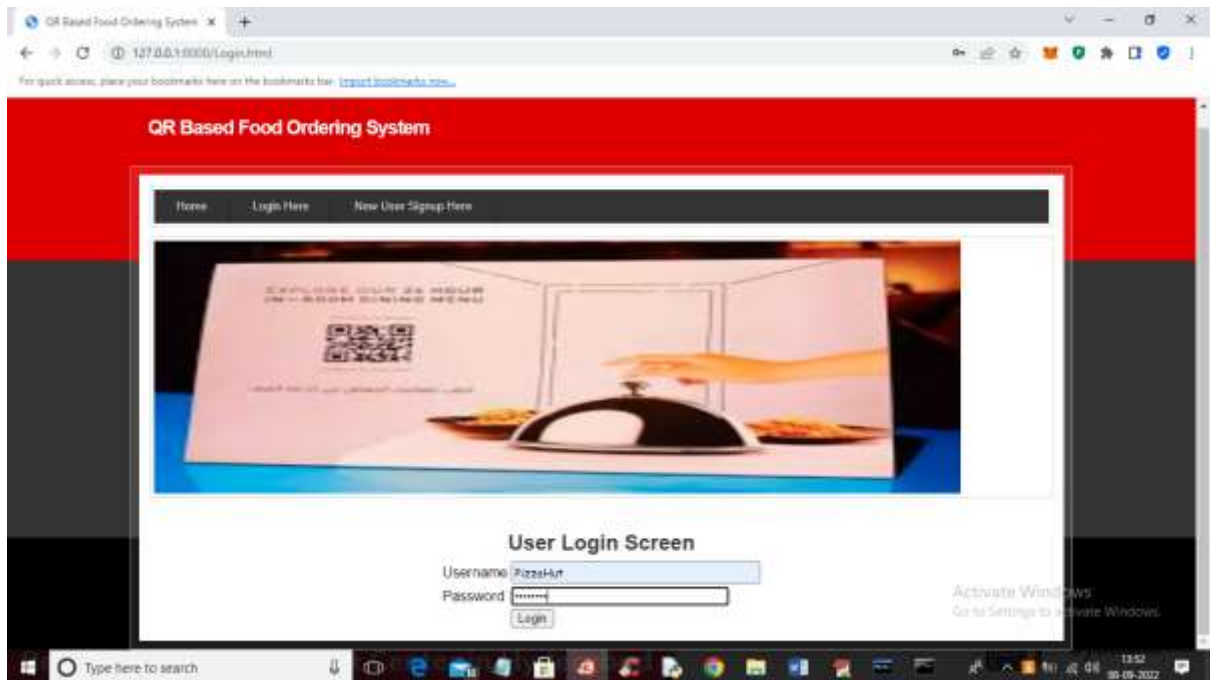
In above screen in red colour text we got response as signup completed and now add normal customer like below screen



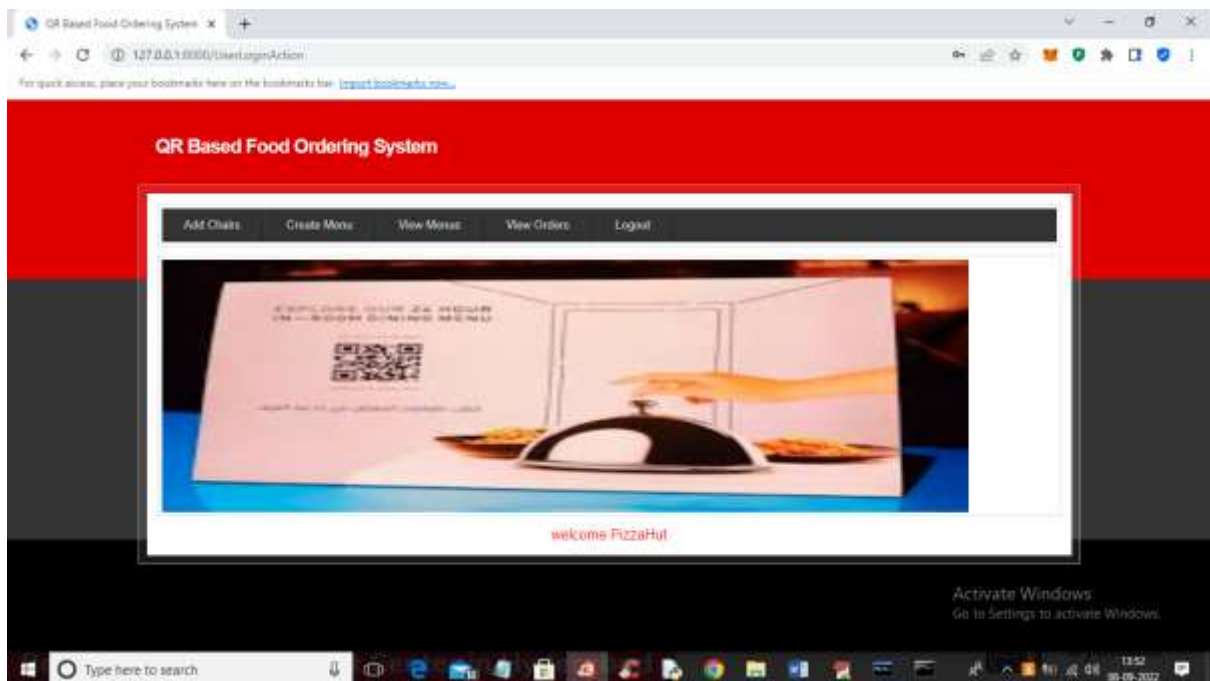
In above screen I am adding customer details and then press button to get below output



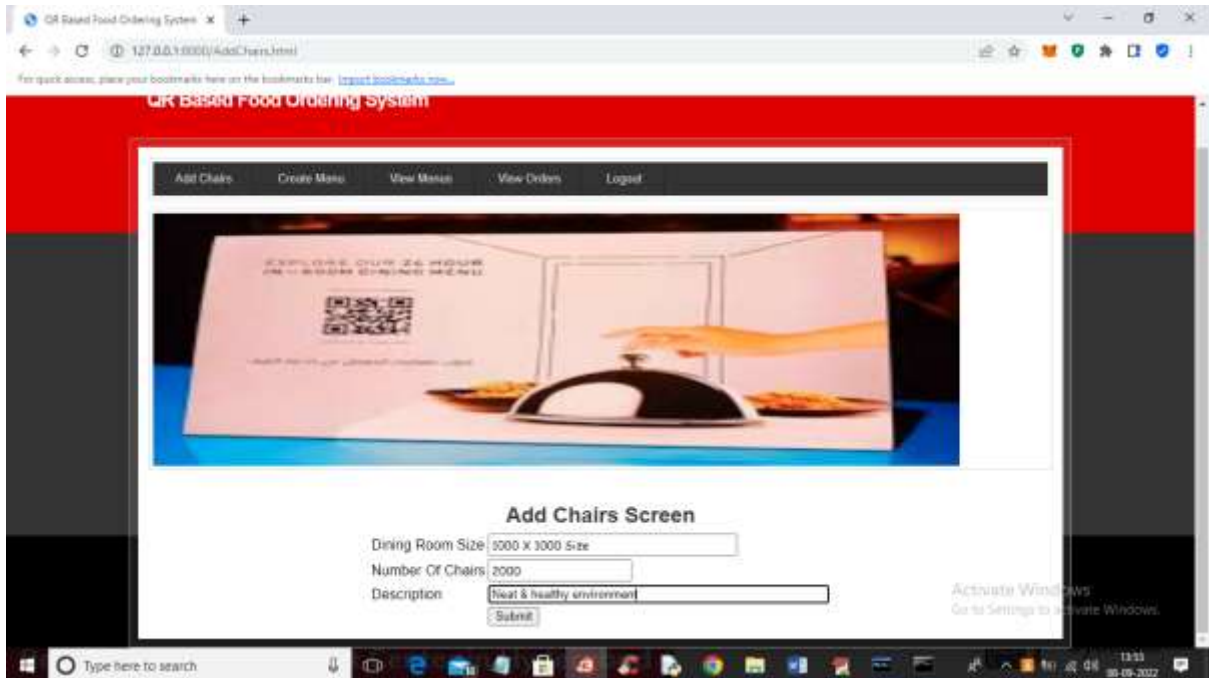
In above screen we can see customer details added and now click on 'Login Here' link to login restaurant owner



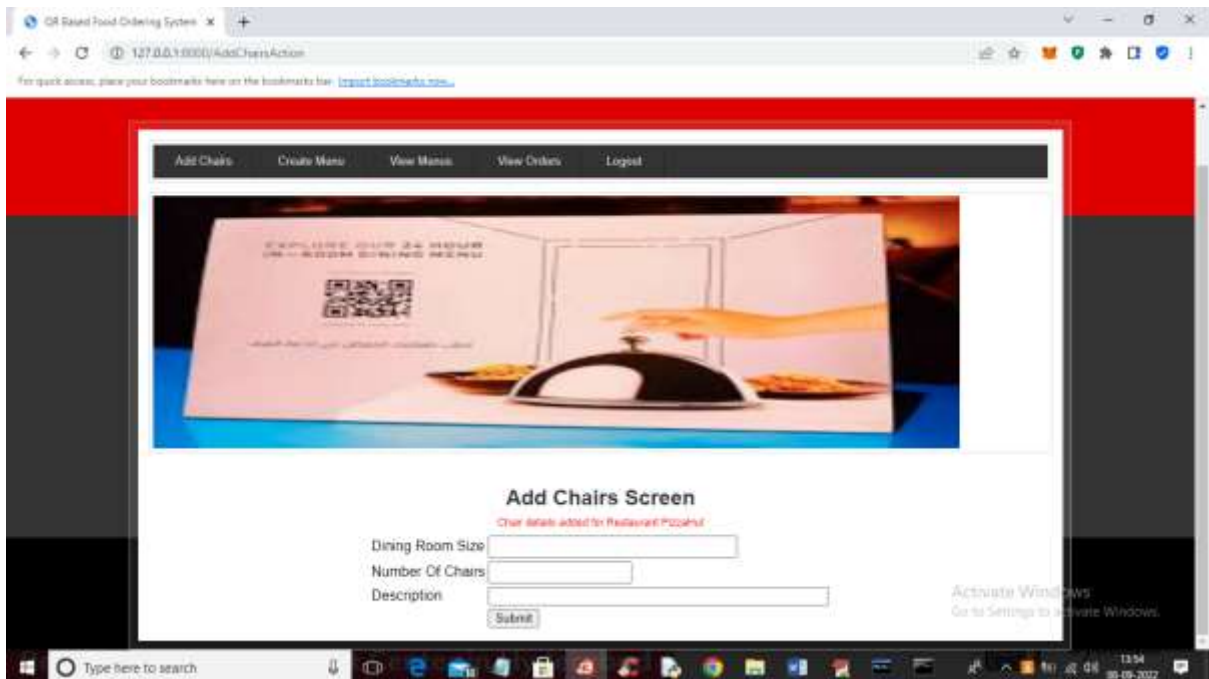
In above screen restaurant owner is login and after login will get below output



In above screen click on 'Add Chairs' link to add restaurant details



In above screen owner can add restaurant environment details and now press button to add details and get below output





International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

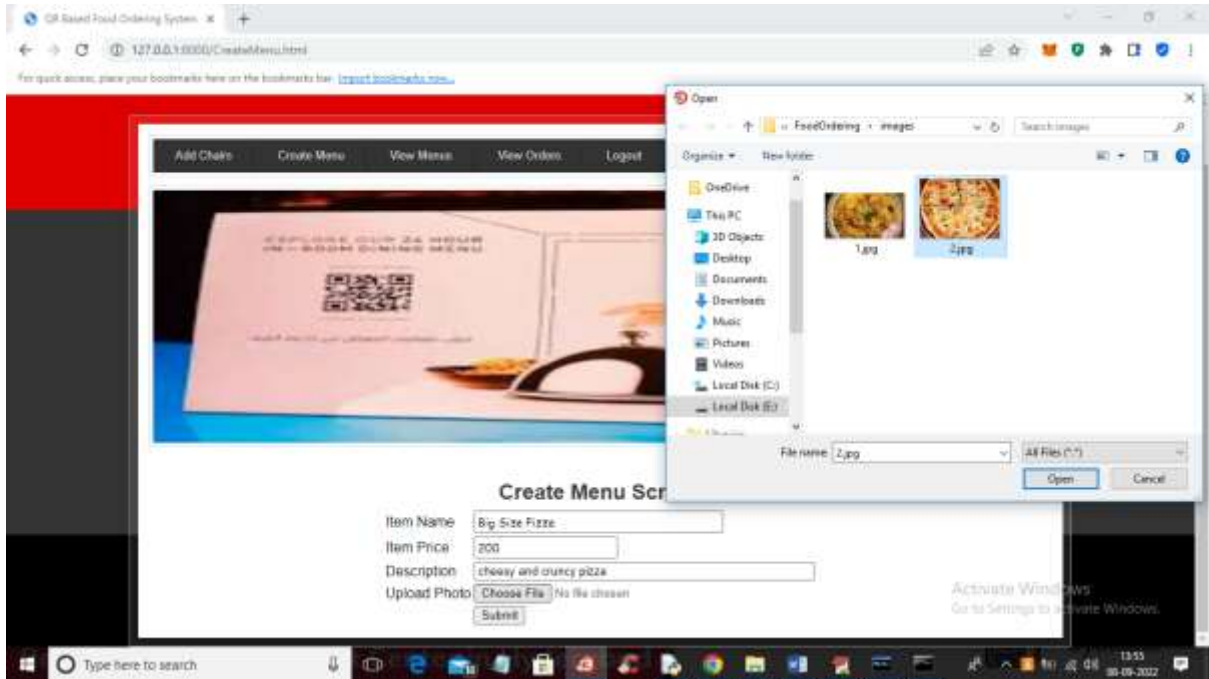
Peer Reviewed, Referred & Indexed Journal

ISSN: 3068-272X

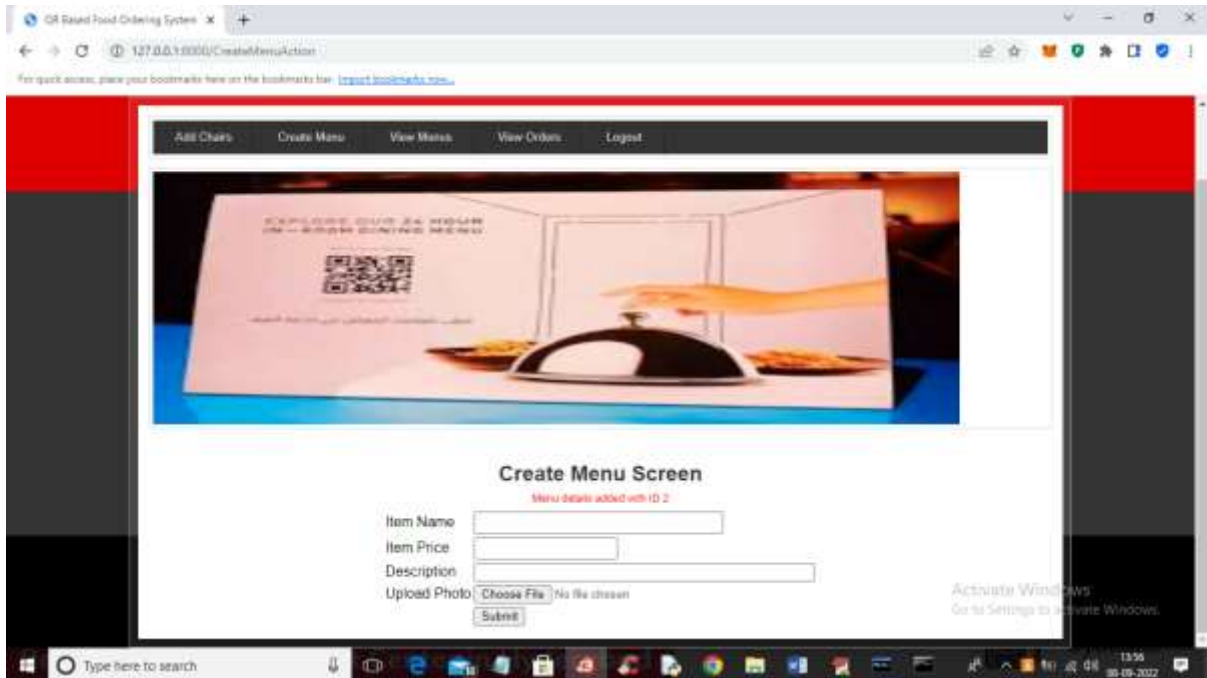
www.ijdim.com

Original Research Paper

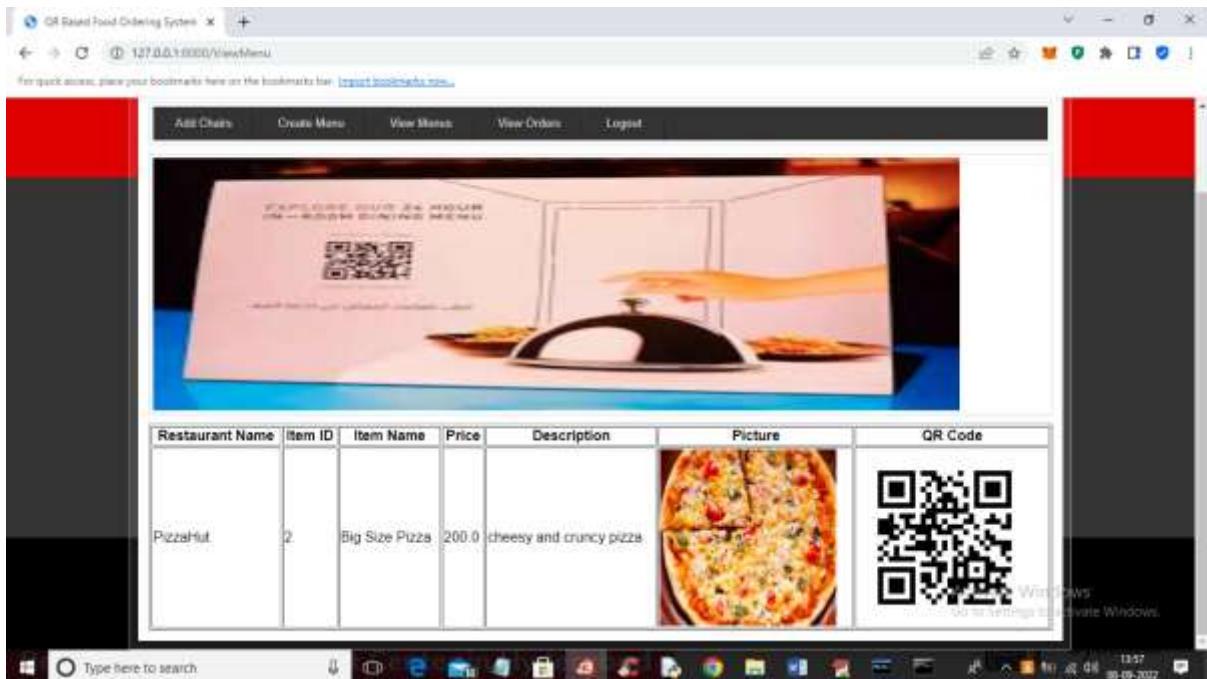
In above screen chairs details added and now click on 'Create Menu' link to add menu details



In above screen owner can add item menu details and then upload related image and then press button to get below output



In above screen in red colour text we can see item details added with ID 2 and now click on 'View Menus' link to view all menus added by owner





International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

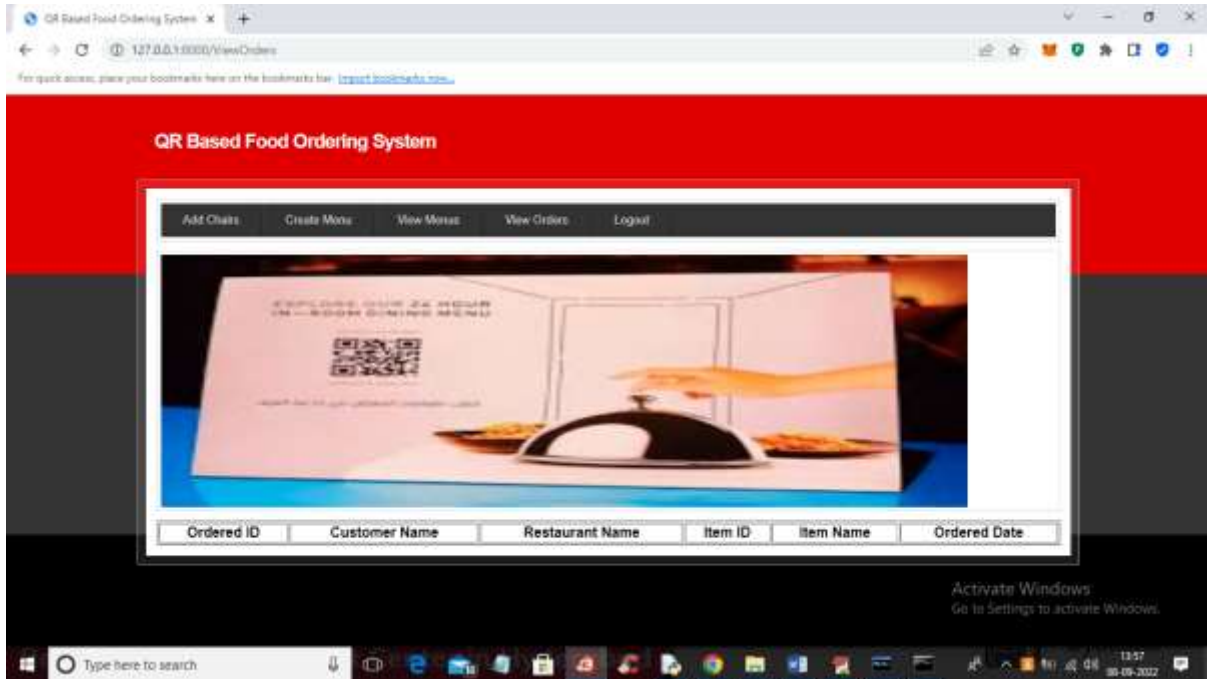
Peer Reviewed, Referred & Indexed Journal

ISSN: 3068-272X

www.ijdim.com

Original Research Paper

In above screen owner can view all menu details with QR code and now click on 'View Orders' link to view past orders came from customers



In above screen no orders are displaying and once customer booked any order then will get all order details in above screen. Now logout and login as 'customer' to get below output



International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

Peer Reviewed, Referred & Indexed Journal

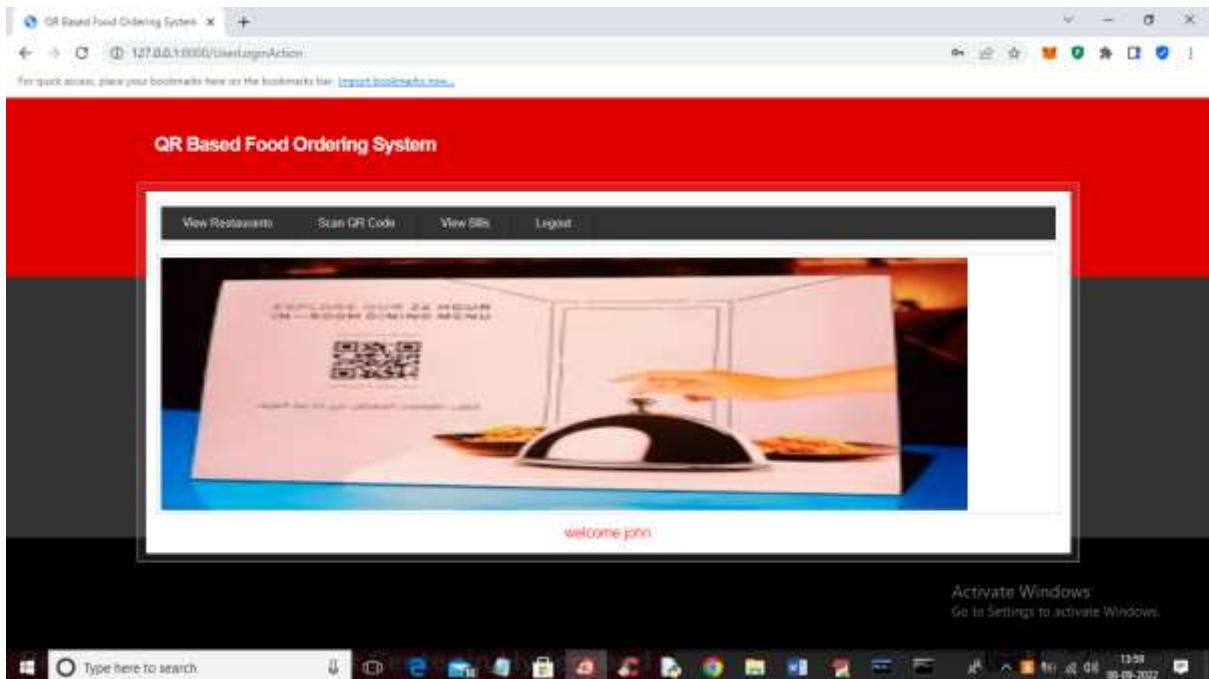
ISSN: 3068-272X

www.ijdim.com

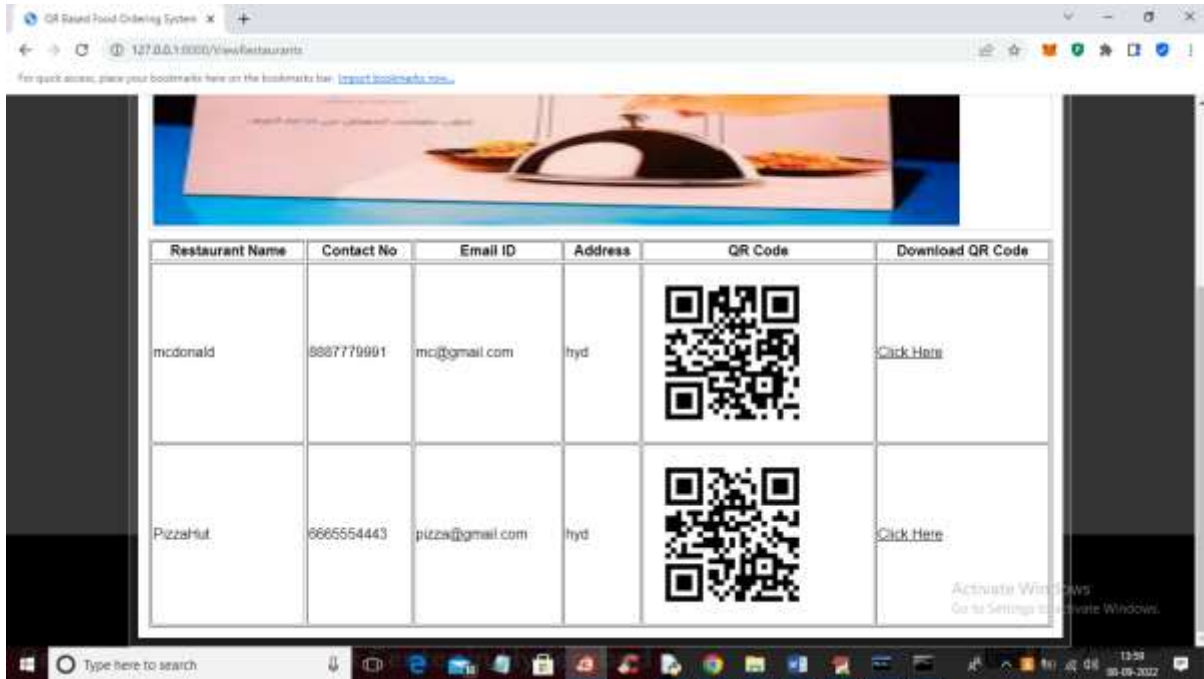
Original Research Paper



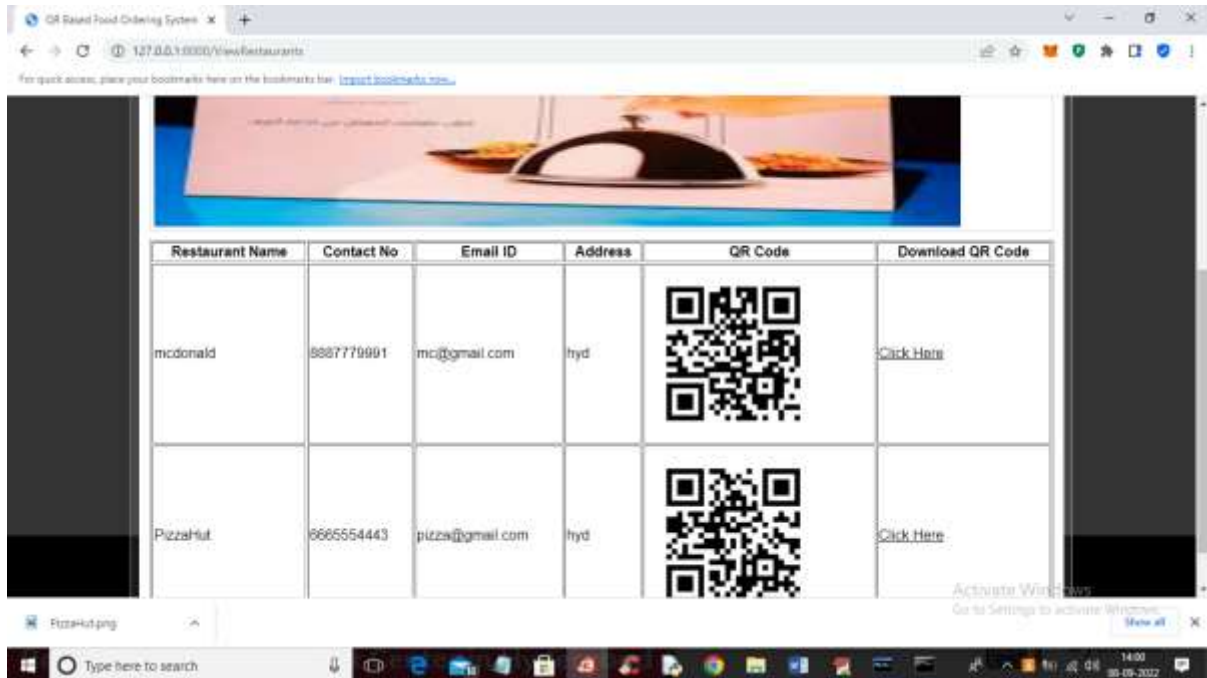
In above screen customer is login and after login will get below output



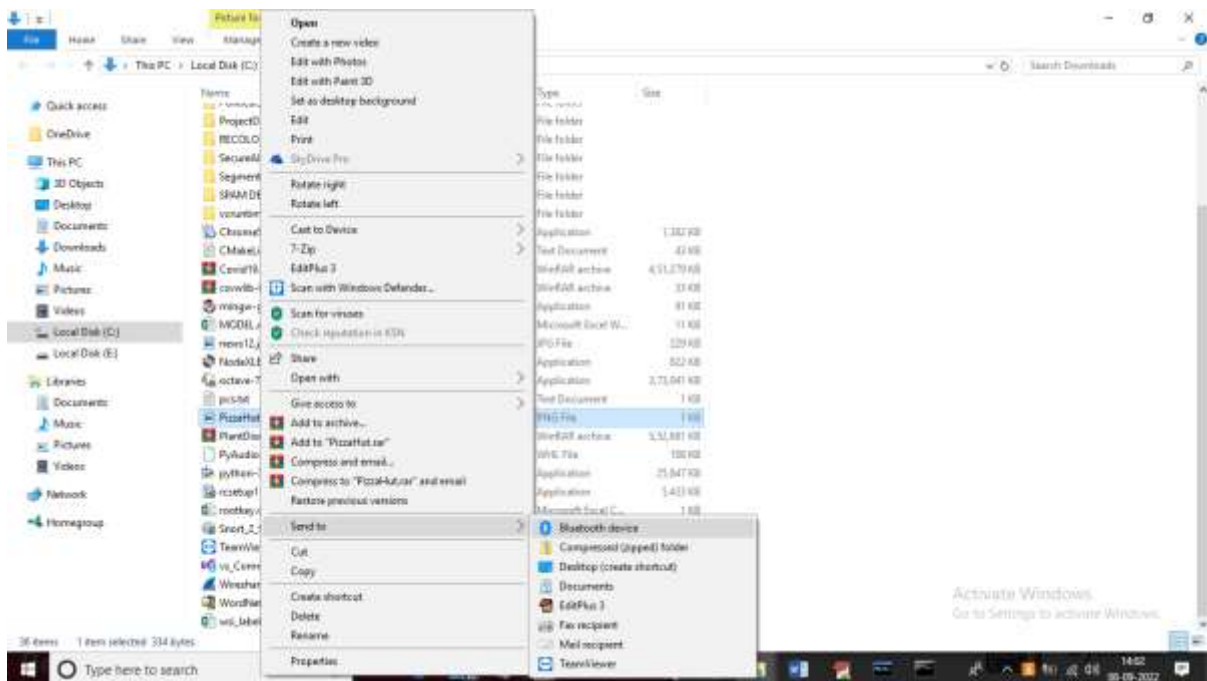
In above screen customer can click on 'View Restaurants' link to view all restaurants details like below screen



In above screen customer can view all restaurants details with QR code and now click on 'Click Here' on desired restaurant row to download QR code and then scan that QR code from their mobile like below screen



In above screen in browser status bar we can see QR code downloaded and now transfer that QR code to your mobile through Bluetooth like below screen





International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

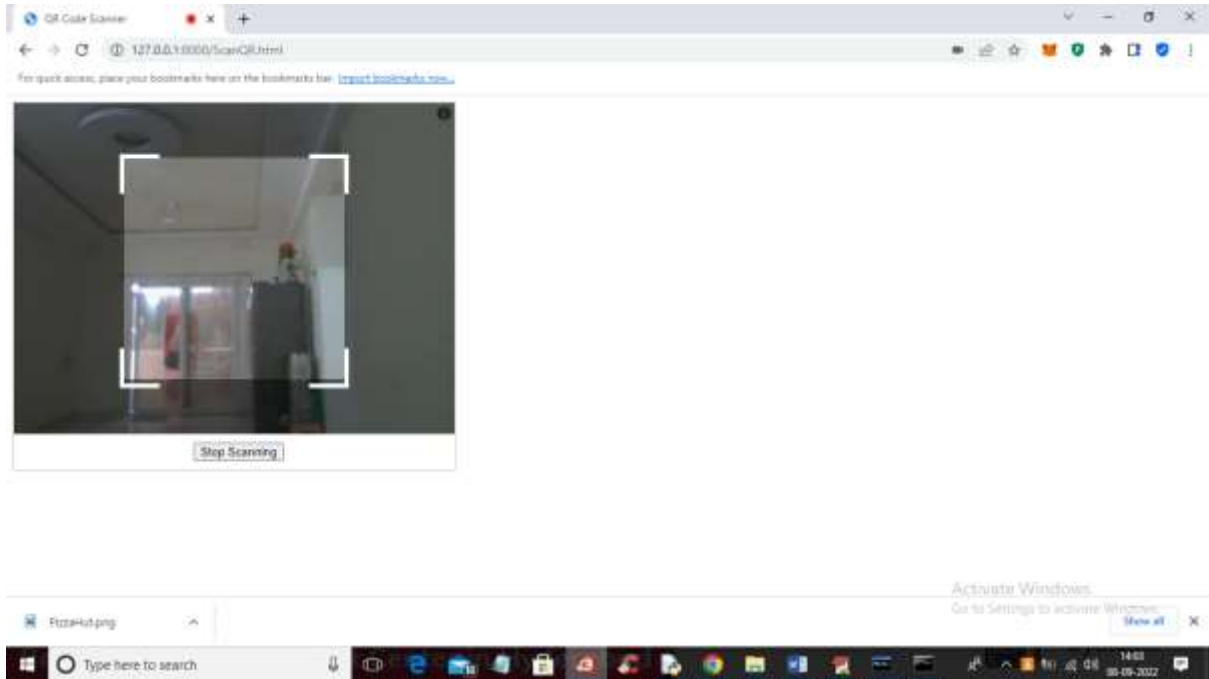
Peer Reviewed, Referred & Indexed Journal

ISSN: 3068-272X

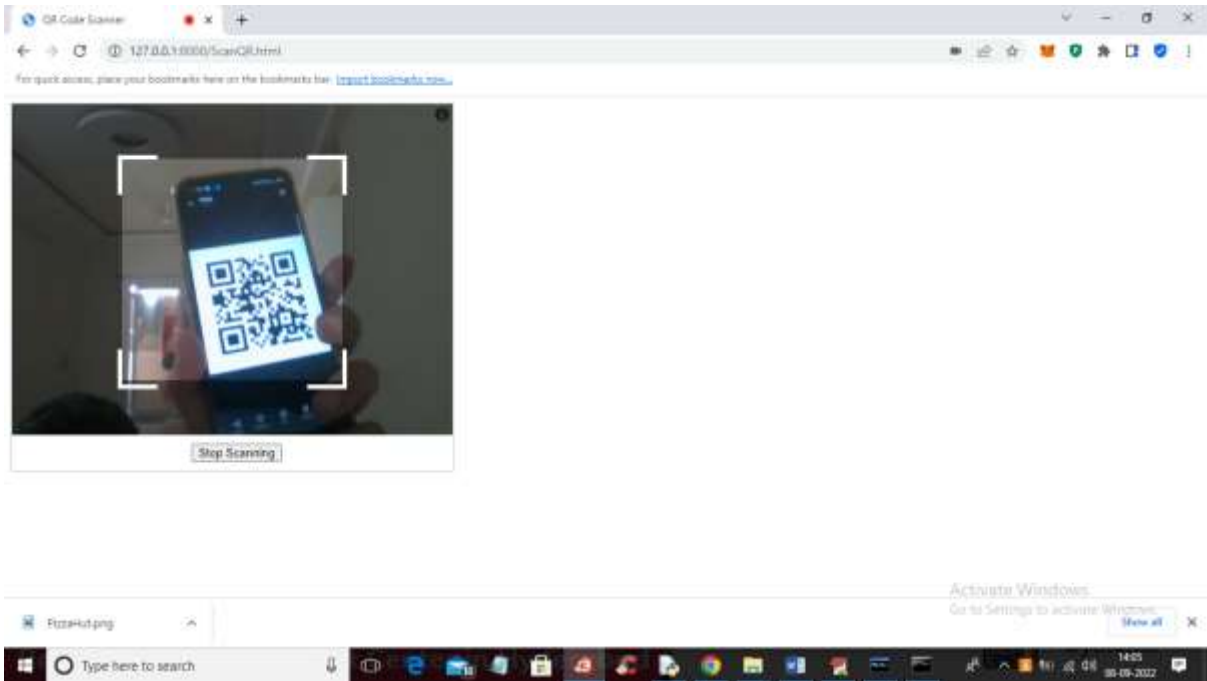
www.ijdim.com

Original Research Paper

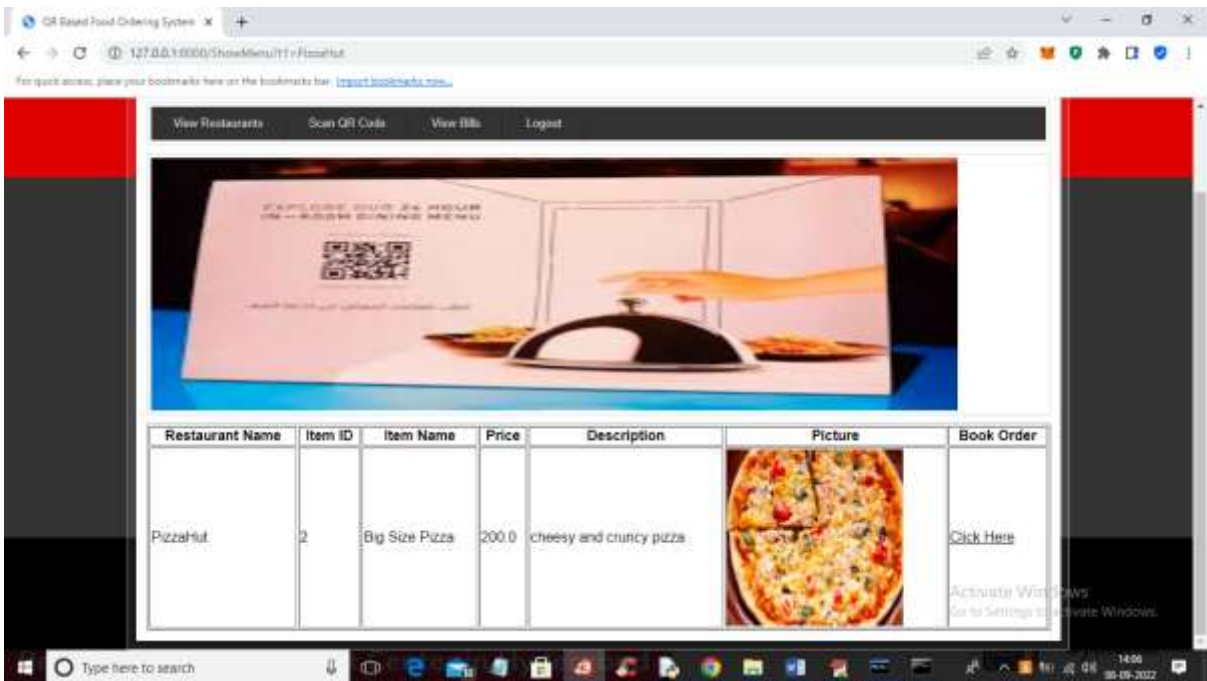
Using above screen I am sending QR code to mobile and now click on 'Scan QR Code' link to get below screen



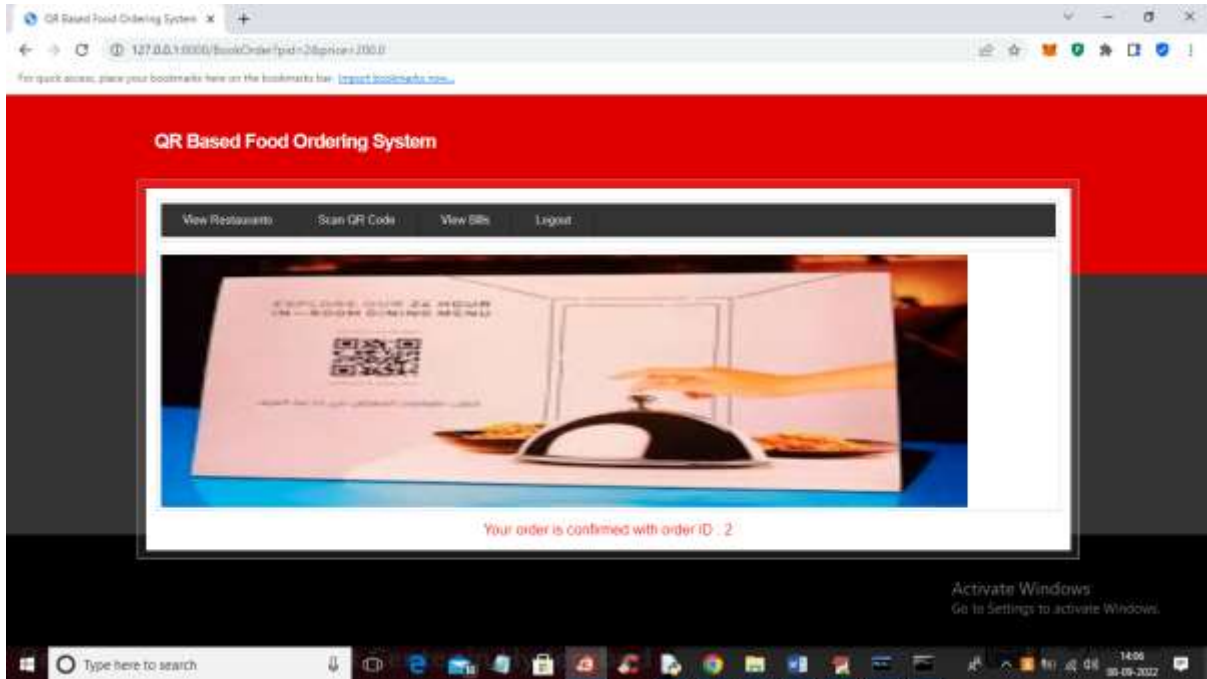
In above screen QR code reader is ready and now show QR code to get menu details like below screen



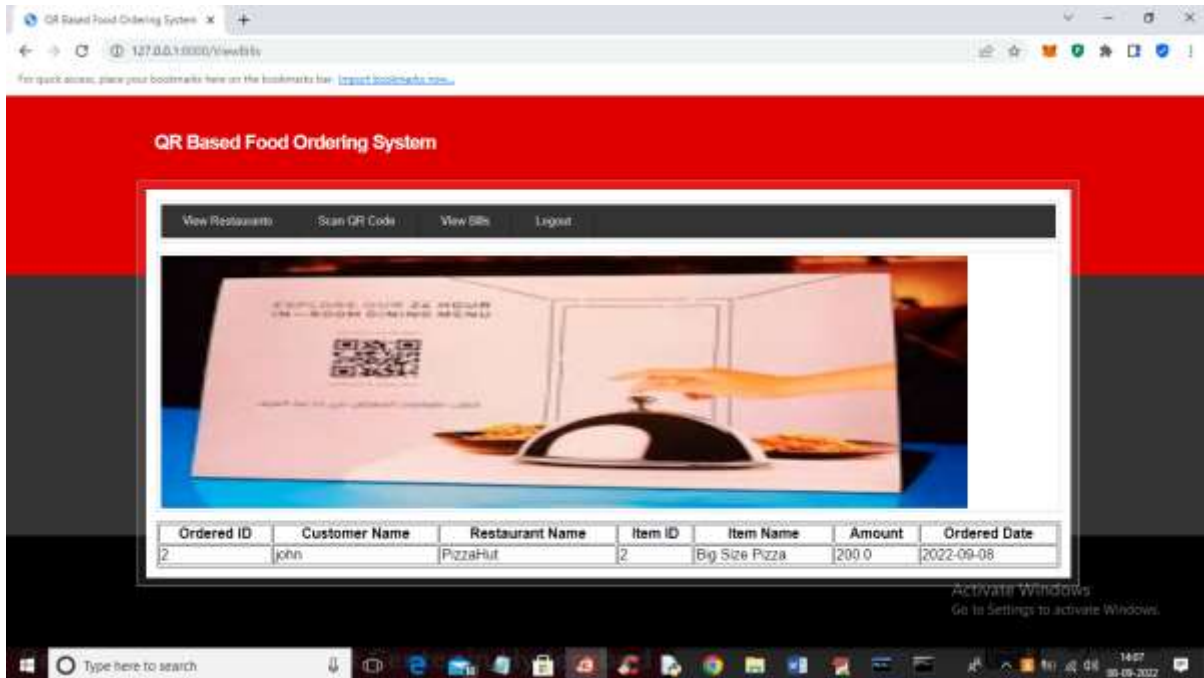
In above screen showing QR code from mobile and once code RECOGNIZED then will get below MENU details



In above screen customer got menu details and now click on 'Click Here' link to BOOK ORDER and get below output



In above screen in red colour text we can see order is confirmed with ordered ID 2 and now click on 'View Bills' to view bill details



In above screen customer can view his order and bill details.

Similarly you can add any number of restaurant owner, menus and customers and can SCAN QR code and make booking

VIII. CONCLUSION

The QR Code-Based Smart Food Ordering System presents an effective and modern solution to the limitations of traditional restaurant ordering methods. By integrating QR code technology with a web-based platform developed using the Django framework and a MySQL database, the system enables seamless, contactless interaction between customers and restaurant owners. The proposed system successfully reduces dependency on manual processes, minimizes human errors, and significantly decreases order processing time. Customers can conveniently scan QR codes to access menus, place orders, and view their order history without requiring physical menus or direct interaction with staff. This enhances user experience while maintaining hygiene and safety standards, which are increasingly important in modern dining environments. From the restaurant owner's perspective, the system provides an efficient platform to manage menu items,



International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

Peer Reviewed, Referred & Indexed Journal

ISSN: 3068-272X

www.ijdim.com

Original Research Paper

monitor orders in real time, and update information dynamically. The inclusion of QR code generation and download functionality simplifies deployment and ensures scalability across multiple restaurants. Additionally, the system architecture ensures reliability, data integrity, and ease of maintenance. The implementation demonstrates that the integration of web technologies and QR-based access can significantly improve operational efficiency and customer satisfaction. The system is cost-effective and suitable for small and medium-sized restaurants, making it a practical solution for digital transformation in the food service industry. In conclusion, the proposed system offers a scalable, user-friendly, and efficient approach to food ordering. Future enhancements may include online payment integration, AI-based recommendation systems, and advanced analytics to further improve decision-making and personalization in restaurant services.



International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

Peer Reviewed, Referred & Indexed Journal

ISSN: 3068-272X

www.ijdim.com

Original Research Paper

1. **REFERENCES:** Wong, C. C., Lee, K. Y., & Tan, S. H., “QR Food Ordering System with Data Analytics,” 2023.
2. Nikose, A., Patil, R., & Jadhav, S., “Cafeteria Food Ordering System Using QR Code,” 2023.
3. Putri, D. A., Rahman, M., & Sari, N., “Design of Ordering System Using Web-Based Quick Response (QR) Code Technology,” 2024.
4. Bhattarai, I., Shrestha, S., & Karki, P., “QR-Based Canteen Management System,” 2024.
5. Ali, A. S., Ahmed, R., & Khan, M., “Food Ordering System Using QR Code Technology,” 2023.
6. Li, J., Wang, H., & Zhao, Y., “Food Ordering Recommendation Systems Using Machine Learning,” 2023.
7. Scanzio, S., “QRscript: Advanced QR Code Applications in Web Systems,” 2024.
8. Akram, M. W., “Security and Privacy Issues in QR Code-Based Systems,” 2025.
9. Liao, J., Chen, X., & Wu, T., “Aesthetic QR Code Generation Using Deep Learning Techniques,” 2024.
10. Sadiku, M. N. O., Musa, S. M., & Momoh, O. D., “Big Data in the Food Industry,” 2022.
11. Sharma, D., “QR Code Encryption and Secure Data Transmission Techniques,” 2017.
12. Khairunnisa, K., “Wireless Food Ordering System for Restaurants,” 2009.
13. Qianyu, J., “Applications of QR Codes in Business and Marketing,” 2014.
14. Kumar, P., & Singh, R., “Web-Based Restaurant Management Systems: A Survey,” 2022.
15. Patel, V., & Mehta, D., “Digital Transformation in Food Service Industry Using Smart Technologies,” 2023.