QR Based Online Food Ordering System

The Project submitted to

Sant Gadgebaba Amravati University, Amravati

Towards partial fulfillment of the Degree of

Bachelor of Engineering

In

Information Technology

Guided by   **Submitted by**
Prof. S. N. Khandare   **Mr. Chirag Soni**
                                                                        Mr. Praful Wankhade
                                                                        Mr. Vedant Borkar
                                                                        Mr. Yash Khadole

DEPARTMENT OF INFORMATION TECHNOLOGY
SHRI SANT GAJANAN MAHARAJ COLLEGE OF
ENGINEERING, SHEGAON (M.S.)
2022- 2023

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2022-2023

CERTIFICATE

This is to certify that **Mr. Chirag Soni, Mr. Praful Wankhade, Mr. Vedant Borkar, Mr. Yash Khadole** students of final year B.E. (Information Technology) in the year 2022-2023 of the Information Technology Department of this institute have completed the project work entitled **"QR Based Online Food Ordering System"** based on syllabus and has submitted a satisfactory account of his/her work in this report which is recommended for the partial fulfilment of the degree of Bachelor of Engineering in Information Technology.

Prof. S. N. Khandare
(Project Guide)

Dr. A S Manekar
Head of the Department
SSGMCE, Shegaon

Dr. S. B. Somani
Principal
SSGMCE, Shegaon

SHRI SANT GAJANAN MAHARAJ COLLEGE OF ENGINEERING, SHEGAON

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This is to certify that the project work entitled **"QR Based Online Food Ordering System"** submitted by **Mr. Chirag Soni, Mr. Praful Wankhade, Mr. Vedant Borkar, Mr. Yash Khadole** students of final year B.E. (Information Technology) in the year 2022-2023 of the Information Technology Department of this institute, is a satisfactory account of his work based on the syllabus which is approved for the award of the degree of Bachelor of Engineering in Information Technology.

Internal Examiner   External Examiner

Date: Date:

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The real spirit of achieving goals through the way of excellence and lustrous discipline. We would have never succeeded in completing our task without the cooperation, encouragement and help provided to us by various personalities.

*We would like to take this opportunity to express our heartfelt thanks to our guide **Prof. S. N. Khandare** for his esteemed guidance and encouragement, especially through difficult times. His suggestions broaden our vision and guide us to succeed in this work. We are also very grateful for his guidance and comments while studying part of our project and learning many things under his leadership.*

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Student Names
1. Chirag Soni
2. Praful Wankhade
3. Vedant Borkar
4. Yash Khadole

ABSTRACT

The modern-day customer has new priorities when it comes to dine-out and the top of them is safety. Most of the restaurant's meal orders rely on the interaction with waiters to place orders into the kitchen. Due to the pandemic situation, there happens to be discomfort interacting with waiters and other stat members of the restaurant. To solve such problems this system is developed. This system covers the whole order process of a restaurant including the interaction between the customer, the waiter, the kitchen, and the cashier through a web application. Additionally, restaurant owners will be able to enhance sales by using this system to analyze data gathered. This system will attempt to replace the traditional manual ordering process. A better user experience that includes food recommendations can indirectly boost customer loyalty to the restaurant. It is a complete product for managing restaurant services with minimal human interaction while providing maximum contactless service. During the epidemic, people learned to limit their physical contact with others. With a QR code menu, you may reduce contact between your employees and customers as a restaurant owner/operator. The employees may still be required to deliver the meal to the table in some cases. However, to reduce human touch even further, you might implement a collecting point system within the restaurant.

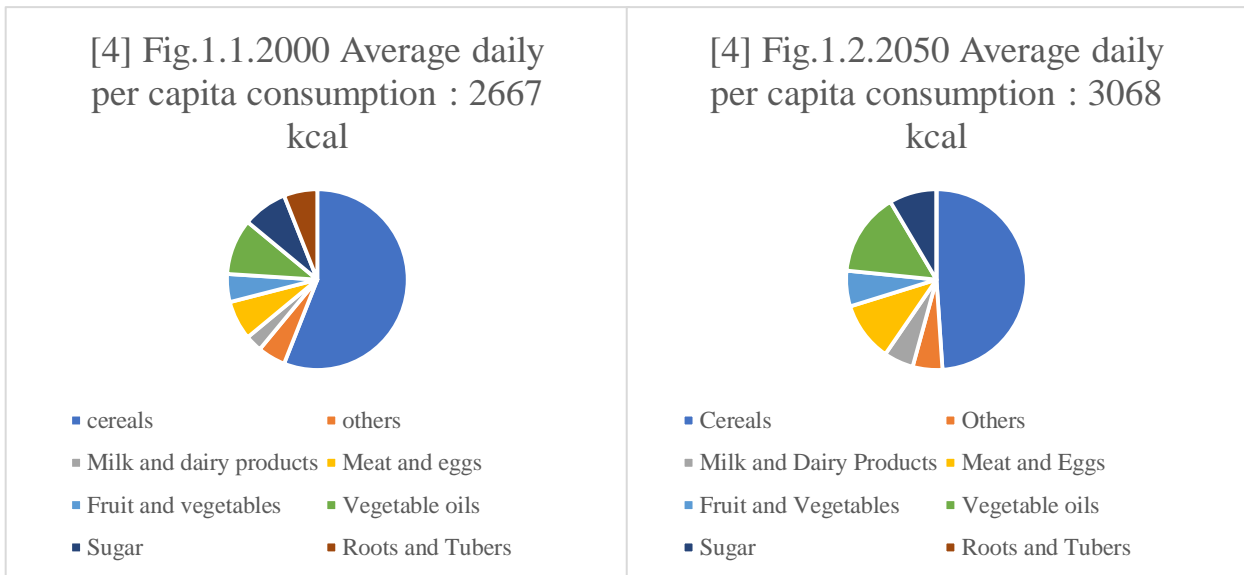# TABLE OF CONTENTS

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1. INTRODUCTION

1.1 Preface

The statistic from a recent restaurant survey says that the Annual food and beverage purchases at full-service restaurants totaled a projected $ 263 billion in 2017. This is a clear rise from the past years.[1]

A discussion "How to Feed the world in 2050" an article by the FAO (Food and Agriculture Organization), has clearly mentioned that feeding the expected 2.3 billion people growth between 2009 and 2050, would clearly see a continuous market demand for food. Food Production would need to escalate to 70% to feed a 9.1 billion population in 2050.[2]

A clear increase is evident in the average per capita consumption of a person in 2050. The growth in food production in different segments can be also clearly seen while comparing Fig.1 and Fig.2.

[4] Fig.1.1.2000 Average daily per capita consumption : 2667 kcal	[4] Fig.1.2.2050 Average daily per capita consumption : 3068 kcal
■ cereals ■ others ■ Milk and dairy products ■ Meat and eggs ■ Fruit and vegetables ■ Vegetable oils ■ Sugar ■ Roots and Tubers	■ Cereals ■ Others ■ Milk and Dairy Products ■ Meat and Eggs ■ Fruit and Vegetables ■ Vegetable oils ■ Sugar ■ Roots and Tubers

In the current times, a customer's dining experience has come a long way not from just eating food and enjoying the service but to its holistic experience including the processes that were involved in making that delicious looking meal. The customer now days, is looking for more detailed information like food being organic, sustainable etc. We have considered two of the major significant hospitality and tourism destinations to showcase the number of people dining out. The statistics of 2015 in US from Statista gives a clear inclination to consumers eat out especially quick service restaurants figures show over 49 million people and special dining at 19 million.[3]

When we look at Data taken from the survey done by KPMG on the Food and Beverage Industry in the UAE clearly indicates that it will remain one of the world's leading F&B markets measured at 81.9 billion in 2020 on the Euro monitor. Also, the statistics show that 67% of the consumers that were surveyed eat dinner out every weekend with QSR's (Quick service restaurants) and cafes being favorites due to quick service and value for money. On the other hand, the fine dining restaurants were kept for special occasions.[4] Moreover, topping the list would be safely and hygienically handled and prepared food right from its source to its consumption. High-end hotels and restaurants are understanding this paradigm shift in a customer meal experience and expectation. The need for this transparency means that the restaurants can prove to consumers that the food is as good as they say it is.

Hoteliers are moving ahead with this technology giving the customer an excellent experience. The ovens and the kitchen equipment are getting technology enabled and the process is transferring to the digitalized world from the chef's hand. At the same time the restaurants are also getting serious towards such innovations as it saves a lot of cost and creates the profit due to the growing demand of the food. The technology enables kitchen gets to know about the stage of the refrigerator and oven and the maintenance is reminded from time to time to ensure the timely replacement leads to less emergent situations. Similarly, the food must be digitalized to the table of the guest and the information of relevant food suggestions as per the dietary requirements of the guests can be made available through the significant usage of the technology and cloud-based data. This will

not only ensure the health standards followed by restaurant but will be enhancing the guest experience and ease of the regulatory authorities.

1.1.1 QR Code

QR (Quick Response) code is a two-dimensional barcode that can be scanned using a mobile device or scanner to quickly access information or perform a specific action, such as making a payment or opening a website. QR codes can store a wide range of data types, including URLs, text, images, and contact information, and can be easily generated and printed on a variety of materials. QR codes are commonly used in marketing, advertising, and mobile payments, as well as in a variety of other applications such as tracking inventory, managing documents, and identifying products. They have become increasingly popular due to their ease of use, versatility, and compatibility with a wide range of devices and applications.

Overall, QR codes are a useful tool for quickly accessing and sharing information, and have many potential applications in a variety of industries and settings. In general, classic 1D barcodes show us "product identification" and QR codes put emphasis on "product descriptions" (Lingyan, Zwei, Min, and Weining, 2008). QR codes provide an irreplaceable identifier for objects and applications to automatic checkout system, commerce, industry, hospital, etc. (Starnberger, Froihofer, and Goeschka, 2009). A smart phone can read the content from tags directly. At this point security issues are the first concern both for user and the code provider. When barcodes contain privacy information, it may result in the risk of security issue (Rouillard, 2008). Chuang, Hu & Ko (2010) argues about the security of the QR code system, as the writer explains that the confidential data is often stored in the back-end database. When a QR code is scanned, it only gets a network link from a tag and after connected to the back-end database through the Internet, hence, the user must be connected to the Internet. Only the user who has access right can login database to retrieve the information. If there is no limitation, everyone can access the product description instantly. In our research the QR codes used in tourism industry have no access limitations,

they are designed for everyone who scans them. The most obvious benefit of a QR code menu at a restaurant right now is that it lowers the number of objects consumers have to touch when dining in. When a group of people is deciding what to eat and drink, a menu is frequently handed around the table. Display your QR codes in prominent locations throughout the restaurant to make it as easy as possible for guests to locate and scan them.

1.2 Statement of Problem

The modern-day customer has new priorities when it comes to dine-out and the top of them is safety. Most of the restaurant's meal orders rely on the interaction with waiters to place orders into the kitchen. Due to the pandemic situation, there happens to be discomfort interacting with waiters and other stat members of the restaurant. To solve such problems this system is developed. This system covers the whole order process of a restaurant including the interaction between the customer, the waiter, the kitchen, and the cashier through a web application. Additionally, restaurant owners will be able to enhance sales by using this system to analyze data gathered. This system will attempt to replace the traditional manual ordering process. A better user experience that includes food recommendations can indirectly boost customer loyalty to the restaurant. It is a complete product for managing restaurant services with minimal human interaction while providing maximum contactless service. During the epidemic, people learned to limit their physical contact with others. With a QR code menu, you may reduce contact between your employees and customers as a restaurant owner/operator. The employees may still be required to deliver the meal to the table in some cases. However, to reduce human touch even further, you might implement a collecting point system within the restaurant.

One of the most difficult tasks for restaurant management is to serve as many customers as possible without making them feel rushed out the door. As a result, instead of waiting for a waiter to notice them and take their order, your clients may scan the QR code menu as soon as they are seated. You might even want to let them order before they sit down. This

greatly accelerates the process. Customers can also purchase more things during their meals. If you utilize the scan Restaurant Contactless ordering system for your restaurant, you will not have to deal with the periodic changes that come with using third-party aggregators. It is a one-time investment with fewer features. The expenditures may be reimbursed after a few months of use or even in the first month

1.3 Objectives of the project

Restaurants will have a competitive edge by providing this technology since most restaurant goers use smart phone and prefer convenient options if given. In this age of organic and health-conscious meal patterns, a service provider using this technology can market itself as QR and beacon adopted concept restaurant /service provider showing transparency in services. Geo-Fencing can tap on customers nearby in the area who had no intentions for dining, but when prompted with a promotion or offers could develop interest.

Similar kinds of concepts in relation to the usage to QR technology are evident in places around the world. QR codes on menus have been put to menus to showcase signature dishes preparations at the Radisson Edwardian Hotels in the UK and Mike's City Diner in Boston. Ayara Thai restaurant in California have chosen to put their professional photos of menu dishes via QR codes. Establishments have used this technology even in restrooms giving every opportunity to showcase specials such as the fusion restaurant in Minneapolis has done. To save on time while waiting in line to pick up an order, customers visiting a QSR's in Portugal "Convivio" can scan their choice of meal which can be played for and collected once they reach the cashier counter.[5] McDonalds has used QR codes to courage customer engagement with healthy consumer segment by printing QR code on take away bags and cups, which when scanned can give nutritional information [6].

Restaurants interested in taking up this concept of QR technology and beacon could see potential loss in revenue if it doesn't appeal and come across consumers especially the ones

who are interested in rewards or point based system (discounts, early bird offers, etc.),thus encouraging them to use this app. Identifying right areas for application for QR technology and beacon in the restaurant is important to avoid too much notifications and usage, posing as a nuisance and causing them to uninstall the app. Service providers should be sensitive when escalating prices of menu items on a pretext of technology usage to enhance guest experience, since a concept of affordable technology is consumer friendly. Consumers could fail to update the database of their famous restaurant in regards to their dietary needs health requirements which could affect menu selection when they visit the restaurant.

Food Ordering System will be an Internet – based application that will accept individual or group meal orders, process payments, and trigger delivery of the prepared meals to a designated location. For Restaurant owner who wants to take and grow their business online, with low budget can start their online restaurant business and get orders from many more customers. Restaurant owner can make more visibility over internet without any technical knowledge. We are fast growing online food ordering portal. We aim that even small restaurant business can take their business online without any cost. Making the best use of the time, available resources and knowledge, they have achieved several milestones in course of time but that doesn't satisfy our desire of becoming better. Thus, they are working day-in and day-out, implementing latest technology in the most efficient way

1.4 Scope and limitation of the Project

This project scope is targeted to be used in mid-range restaurant where customers will dine-in the restaurant and take order. Moreover, the proposed system is made to be used on 5 mobile phones only. Besides, the main focus of this system is the ordering process of the restaurant with two-way communication. Hence, payment system will not be included in this system. It is a computerized ordering system that adopts new technologies for supporting them in their best ways The system obtains a notification after receiving the order, confirmation to the inventory system for products monitoring. The system will be holding all the databases of the customers that order through it There are various prominent

things involved within it that attract both the customers and the food industries. Such as security structure, system back up, and system restore, system access; information about the order, and safe, secured, and reliable system. Companies need to keep their user information private to avoid any further complications.

System accessing will be in a simple Format, the administrator of the restaurant can edit modify add, and view the menu and reports through this easily. A food ordering system is software solution for users to take orders online easily and restore the customer's data. It is creating good communication between the customers and restaurants. The system is protecting the information from the risk of possible file loss and will have backup files, so that information will be safe.

The scope of a QR based online food ordering system is quite broad and can have a significant impact on the food industry. Here are some of the key areas where this type of system can provide value:

- Improved customer experience: By allowing customers to use their smartphones to quickly and easily order food, a QR based system can provide a more convenient and streamlined experience. This can lead to increased customer satisfaction and loyalty.

- Increased efficiency: By automating the ordering process, a QR based system can reduce the workload on restaurant staff and improve order accuracy. This can lead to faster service, shorter wait times, and higher throughput.

- Data collection and analysis: A QR based system can collect data on customer orders, preferences, and behavior. This data can be used to improve menu offerings, optimize pricing, and inform marketing efforts.

- Cost savings: By reducing the need for paper menus, order forms, and other manual processes, a QR based system can help restaurants save money on printing and labor costs.

- Increased revenue: By providing a more convenient and efficient ordering experience, a QR based system can increase sales and revenue for restaurants.

Overall, the scope of a QR based online food ordering system is quite broad and can provide significant benefits to both customers and restaurants. With the increasing popularity of mobile devices and digital ordering, this type of system is likely to become increasingly important in the food industry.

Limitations:

- An active internet connection is required for the process

- The loss of traditional restaurant face to face interactions

- At least one time contact with staff when the server brings over the food

- Users should have a smartphone with the app to access information. A good internal network of internet is needed to support this function.

- Placement on moving objects, such as a vehicle, makes scanning impossible. Lastly, QR codes also have the potential for security risks. In public places, QR codes can be pasted over or otherwise manipulated: Anyone scanning these codes runs the risk of being directed to a problematic URL, and it's difficult to tell at first glance whether or not you've being misled.

1.5 Organization of the Project

The project is organized as follows:

1. Chapter 1 gives Introduction about the project.
2. Chapter 2 gives Literature survey of the project.

3. Chapter 3 provides analysis of project.
4. Chapter 4 provides design phase of project.
5. Chapter 5 provides how project is implemented.
6. Chapter 6 gives conclusion with future scope of the project

The organization of a QR based food ordering system typically involves several key components:

- User interface: This is the part of the system that users interact with to place their orders. It includes the QR code scanner, menu display, and order confirmation screens.

- Order management system: This component handles the processing of orders, including order tracking, payment processing, and communication with the kitchen or other food preparation areas.

- Inventory management: This component is responsible for tracking inventory levels and notifying staff when supplies need to be restocked.

- Analytics and reporting: This component collect and analyzes data on customer behavior, order trends, and other metrics to help restaurants make informed decisions about their operations.

- Integration with other systems: A QR based food ordering system may need to integrate with other systems such as POS systems, accounting software, and marketing platforms to provide a seamless experience for users and restaurant staff.

Overall, the organization of a QR based food ordering system is designed to provide a streamlined and efficient ordering experience for customers while improving operational efficiency and providing valuable data for restaurant owners and managers.

2. LITERATURE SURVEY

Food Business such as restaurants keep enhancing the customer experience management (CEM) which is vital for enhancing customer loyalty and to remain ahead in

the market, in which technology is key in improving guest satisfaction [7]. Customer satisfaction form as a base for business operation enhancement. Operational efficiency can be achieved in terms of the 5 P's. Providing unique services and products will lead to continuous brand loyalty and satisfaction, thus leading to business enhancement [8].

[PAPER 1] "Eating Out Behavior in The U.S. - Statistics & Facts"

Description: In the United States, eating food out at a restaurant or ordering it for takeout/delivery has become increasingly popular. For the ten years leading up to 2019, food and drink sales in the United States restaurant industry steadily increased and reached over 773 billion U.S. dollars in 2019. Though this number fell in 2020 as a result of the sales were still higher that year than in most of the twenty years prior. This general increase is unsurprising considering the average annual expenditure on eating out in U.S. households also increased over the last decade, with American households spending an average of over three and a half thousand dollars on food away from home in 2019. That being said, the in-house dining market took a huge hit during the pandemic, with the number of sit-down dinners in the U.S. dropping by 100 percent in March 2020. This figure fluctuated throughout the remainder of 2020 and 2021 due to the changes in COVID-19 case numbers and regulations.

[PAPER 2] Sharma, Deependra. (2016). Enhancing Customer Experience Using Technological Innovations: A Study of The Indian Hotel Industry. Worldwide Hospitality and Tourism Themes. 8. 469-480. 10.1108/WHATT-04-2016-0018:

Description: The study aims to provide a comparative analysis of diverse challenges faced by different categories of hotels during the adoption of technological innovation. It also examines the role of technological innovations in enhancing the customer experience from a practitioner's perspective.

[PAPER 3] Thomas Wapp man, 1998 Rochester Institute of Technology Applying Continuous Improvement Through Process Management in A Restaurant Environment.

Description: The purpose of this study is to investigate how continuous improvement methods can be applied in a restaurant environment through process management. Increased competition in the service marketplace, and more knowledgeable customers has forced many organizations to focus on business re-engineering. Therefore, the ability to develop new systems aimed at the customers' needs has become imperative. This assessment will focus on the service delivery time in four areas of a student-operated restaurant utilizing process management techniques. The four processes that the researchers measured are:

1) promptness of greeting-seating the customer,

2) beverage service,

3) entree service, and

4) check-payout.

The data collected in this study can be applied for future means of improvement at Henry's Restaurant on the Rochester Institute of Technology campus. Furthermore, the utilization of the instruments in this study will prepare future service managers with experience in Statistical Process Control (SPC) methods, which are necessary for continuous improvement programs.

[PAPER 4] Safari Mohammad, Andalib Azam, "A Model for Ordering in Restaurant Based on QR Code Without Presence of AWaiter At the Table", International Academic Journal of Innovative Research Vol. 2, No. 12, 2015, pp. 1-9:

Description: Communication field has changed rapidly and an appropriate condition has been created to use this capacity in business due to developing technology in field of

information technology and availability of tools to work with this technology especially the arrival of smartphones to market and its expansion which provides the capability of connecting to internet with desired broadband. In this article, we have tried to design a system to be able to provide more advantages including electronic payment of bills as well as entertainment facilities in the time between ordering and delivering the goods to customers beside previous options by reviewing restaurants that take advantage of the electronic menu using QR code on the customer's mobile. Moreover, in this new model, there will be the possibility of internet-based remote ordering and also bill payment will be through bank portal before delivering the good to the customer by allocating QR code to the steady customers and entering their information in database such as phone number and exact address.

[PAPER 5] Smart QR-based Restaurant Dine-in System with Sales Analysis
Rameshkumar Singh1, Rupal Sonje1, Soham Salkar1, and Ashish Jadhav1,1Ramrao Adik Institute of Technology, DY Patil Deemed to be University, Nerul, Navi Mumbai, India

Description: The modern-day customer has new priorities when it comes to dine-out and the top of them is safety. Most of the restaurant's meal orders rely on the interaction with waiters to place orders into the kitchen. Due to the pandemic situation, there happens to be discomfort interacting with waiters and other sat members of the restaurant. To solve such problems this system is developed. This system covers the whole order process of a restaurant including the interaction between the customer, the waiter, the kitchen, and the cashier through a web application. Additionally, restaurant owners will be able to enhance sales by using this system to analyze data gathered. This system will attempt to replace the traditional manual ordering process. A better user experience that includes food recommendations can indirectly boost customer loyalty to the restaurant. It is a complete product for managing restaurant services with minimal human interaction while providing maximum contactless service.

[PAPER 6] Kavitha S., Shailaja K., Suma T.N., V. Shreenidhi, Asst Prof. Hari H., IJTRE, Paperless restaurant system, 6, Issue 9 pp. 5554-5557 (2019)

Description: The purpose of this project is to develop paperless restaurant system that can be used to transfigure the traditional ordering system. Normally in restaurants menu order system is actual provided in menu card format so that customer has to collect the menu item then the waiter has to come and take the order, which is long process. So, we designed this paperless restaurant system that displays food items for customers on their available devices such as user phone, tablet etc. It provides many advantages as great user friendly, saving time, reduce human error and provide customer feedback.

Nowadays, people's standard of living has been increased and changed due to the technology. It has totally changed the traditional methods of doing daily activities, thus making life easier and effective. But it is not much evident in the food sector specially in food ordering and serving areas in hotels, restaurants, cafes etc. Even today also restaurants use the common manual process of using waiter waiting to take order with pen and paper. In this traditional pen and paper approach the waiter writes down the order according to the customers which then is given to kitchen chefs, keeps records of it and then makes bill. This process is simple and common but may result in human errors. The waiter may mistake in noting the customer orders or may provide late order taking and late food serving which may result in customer dissatisfaction and restaurant losses. To solve this drawback on manual process paperless restaurant system is proposed to manage the overall food ordering and serving process. The following section explains that it enables one to interact with what is displayed directly in the screen, where it is displayed, rather than indirectly call the waiter and ordered the menu. These devices also allow multiple users to interact with the touch screen simultaneously. So, to overcome all these and save time of customers and waiter by providing facilities like digital food ordering thus beneficial for both restaurant and customer. The paperless Restaurant system project with user and admin accounts, ordering amount calculations and appropriate billing. The paperless restaurant

system helps the restaurant manager to manage the restaurant more effectively and efficiently by computerizing meal ordering, billing and hotel management system.

[PAPER 7] S. Priska, M. Liska, J. Jahani, "Intelligent Restaurant System Smart-menu" ,4th IEEE International Conference on Cognitive Info-comm. Dec-2013, Budapest, Hungry

Description: Digital technology is transforming business in many sectors, including restaurant systems and service processes. Digital technology is transforming business in many sectors, including restaurant systems and service processes. Customers may recognize the replacement of paper-based menus with digital ones as a first step of this process. Intelligent restaurant systems are an interesting application area for merging and extension of cognitive capabilities with both intra-cognitive and inter-cognitive communication. An intelligent restaurant system Smart menu, developed by Centrica and Delta Ltd., is an example of innovation which is based on merging and extending of cognitive capabilities. These kinds of systems may change the everyday life in restaurants in the future. The system covers the whole order process of a restaurant including the applications of the customer, the waiter, the kitchen and the cashier. The first pilot systems were recently tested in several restaurants in Finland. Piloting included also questionnaires and interviews analyzed by usability experts. In the future, Smart menu may be extended to include also service robots in the system. The first demonstrations of using service robot in a restaurant environment were already carried out

[PAPER 8] Noor Azah Samsudin, Shamsul Kamal Ahmad Khalid, Mohd Fikry Akmal Mohd Kohar, Zulkifli Senin and Mohd nor Hasan "User Requirements and Design Guidelines for Digital Restaurant Menus", Oct-2014

Description: The existence of wireless technology and the emergence of mobile devices enable a simple yet powerful infrastructure for business application. Some early efforts have been made to utilize both technologies in food ordering system implementations. However, the food ordering systems that have been proposed earlier exhibit limitations,

primarily in cost effectiveness, allowing customizations and supporting real-time feedback to customers. In this paper, we discuss the design and implementation of a customizable wireless food ordering system with real-time customer feedback for a restaurant (CWOS-RTF). The CWOS-RTF enables restaurant owners to setup the system in wireless environment and update menu presentations easily. Smart phone has been integrated in the CWOS-RTF implementation to facilitate real-time communication between restaurant owners and customers. A preliminary testing suggests that the CWOS-RTF has the potential to eliminate the limitations of existing food ordering systems.

[PAPER 9]: Noor Azah Samsudin, Shamsul Kamal Ahmad Khalid, Mohd Fikry Akmal Mohd Kohar, Zulkifli Senin, Mohd nor Hasan. 'A customizable wireless food ordering system with Realtime customer feedback' in proceedings of the IEEE Symposium on Wireless Technology and Applications (ISWTA).

Description: The existence of wireless technology and the emergence of mobile devices enable a simple yet powerful infrastructure for business application. Some early efforts have been made to utilize both technologies in food ordering system implementations. However, the food ordering systems that have been proposed earlier exhibit limitations, primarily in cost effectiveness, allowing customizations and supporting real-time feedback to customers. In this paper, we discuss the design and implementation of a customizable wireless food ordering system with real-time customer feedback for a restaurant (CWOS-RTF). The CWOS-RTF enables restaurant owners to setup the system in wireless environment and update menu presentations easily. Smart phone has been integrated in the CWOS-RTF implementation to facilitate real-time communication between restaurant owners and customers. A preliminary testing suggests that the CWOS-RTF has the potential to eliminate the limitations of existing food ordering systems. Conventionally, information and communication technology (ICT) has been utilized to automate routine tasks in business transactions such as customer registration system, billing system, and inventory system. However, the evolution of wireless technology and the emergence of mobile devices have not only provided end users enjoyment in utilizing automated systems

but also new ways to communicate information. In fact, the mobility and portability features of mobile devices have drawn researchers to establish a framework of mobile technology assessment in various ecommerce applications

[PAPER 10] P. Lessel, M. Bohmer, A. Kroner, A. Kreger, "User Requirements and Design Guidelines for Digital Restaurant Menus", Oct2014

Description: The online mess ordering system which identifies and locates nearby mess and order mess food services via online. Many times, customer cannot get the boarding facility, but in our system, customer can get delivery and boarding also. The meal service android application set up the menu online and the customers easily place the order with a simple touch. The users can select the desired food items from the displayed menu. The user orders the food items. The payment can be made online or cash-on-delivery system. It maintains a separate account for each user so that the user's details are maintained confidential. The user id and password are provided for each user. Therefore, it provides a more secure ordering system. User's location is detected by GPS which is used to show nearby mess service providers which have registered this application, by which user can easily be aware of the mess service providers which are near to its location and user can select required mess based on user's requirements to order food. Users can search the various varieties of mess which are providing good service

[PAPER 11] Mayur D Kakheti and Piyush C Mankar "Implementation of Smart Restaurant with e-menu card".

Description: Today's era is said to be the world of technology. So many efforts have been taken by restaurants owners also to adopt information and communication technologies such as Pauwelses LAN, costly multi-touch screens etc. to enhance dining experience. This paper highlights some of the limitations of the conventional paper based and PDA-based food ordering system and proposed the low-cost touch screen-based Restaurant Management System using an android Smartphone or tablet as a solution. The system consists of a Smartphone/tablet at the customer table contains the android application with

all the menu details. The customer tablet, kitchen display connects directly with each other through Wi-Fi. Orders made by the customers will be instantly reach the kitchen module. This wireless application is user-friendly, improves efficiency and accuracy for restaurants by saving time, reduces human errors and provides customer feedback. This system successfully overcomes the drawbacks in earlier automated food ordering systems and is less expensive as it requires a one-time investment for gadgets discussion of the challenges associated with crop yield prediction, such as the lack of reliable data and the difficulty in accounting for all the factors that affect crop yield. The authors emphasize the need for more research in this field to improve the accuracy of crop yield prediction models and to address the challenges faced in implementing these models in real-world scenarios.

[PAPER 12]   Dey S., Nath A., and Agarwal S., "Confidential Encrypted Data Hiding and Retrieval Using QR Authentication System," International Conference on Communication Systems and Network Technologies, DOI 10.1109/CSNT.2013.112, 2013 [3].

Description: ─Now, security and authenticity of data is a big challenge. To solve this problem, we propose an innovative method to authenticate the digital documents. In this paper, we propose a new method, where the marks obtained by a candidate will also be encoded in QR Code TM in encrypted form, so that if an intruder tries to change the marks in the mark sheet, then he cannot do that in the QR Code TM, because the encryption key is unknown to him. In this method, we encrypt the mark sheet data using the TTJSA encryption algorithm. The encrypted marks are entered inside QR code and that QR code is also printed with the original data of the mark sheet. The marks can then be retrieved from the QR code and can be decrypted using TTJSA decryption algorithm and then it can be verified with marks already there in the mark sheet.

[PAPER 13]   An Introduction to QR Code Technology by Sumit Tiwari

Description: "Quick Response" code is a 2D matrix code that is designed by keeping two points under consideration, i.e., it must store large amount of data as compared to 1D

barcodes and it must be decoded at high-speed using any handheld device like phones. QR code provides high data storage capacity, fast scanning, omni directional readability, and many other advantages including, error-correction (so that damaged code can also be read successfully) and different type of versions.

Different varieties of QR code symbols like logo QR code, encrypted QR code, qi Code are also available so that user can choose among them according to their need.

Day by day more people are getting aware of this technology and use it accordingly. The popularity of QR code grows rapidly with the growth of smartphone users and thus the QR code is rapidly arriving at high levels of acceptance worldwide.

[PAPER 14]   Takayuki Ishihara, MichiharuNiimi Compatible 2D-Code Having Tamper Detection System with QR-Code.

Description: The matrix barcodes known as Quick Response (QR) codes, which are enable us to import printed digital information into smart-phone or cell phone through its digital camera easily, are rapidly becoming widespread not only Japan but also Asia, Europe and America. However, an attacker is easily able to lead malicious web-sites by putting an unauthenticated QR code on an authenticated QR code. We propose a compatible 2d-code having tamper detection system with QR-code. In digital signature system, a hash value of a message is calculated firstly, and then the hash value is encrypted by a secret key which is a pair of public key cryptography system.

Then, a sender sends the message and the encrypted hash value to a receiver. In the receiver side, the hash value of a sent message is calculated and the hash value with encrypted is decrypted using a public key which is a pair of public key cryptography system. The receiver can detect modification of the message by comparing the two hash values. The encrypted hash value is embedded by using Wet Paper code within cells of QR-codes. In this paper, we report the robustness of reading cells of QR code which plays an important role in our code and the state of the progress for the implementation of the proposed system.

[PAPER15] PhaisarnSutheebanjard, WichianPremchaiswadi, "QR CodeGenerator", IEEE 2010 8th International Conference on ICT and Knowledge Engineering (24-25 Nov. 2010).

Description: Quick Response (QR) codes seem to appear everywhere these days. We can see them on posters, magazine ads, websites, product packaging and so on. Using the QR codes is one of the most intriguing ways of digitally connecting consumers to the internet via mobile phones since the mobile phones have become a basic necessity thing of everyone. In this paper, we present a methodology for creating QR codes by which the users enter text into a web browser and get the QR code generated. Drupal module was used in conjunction with the popular lubricate C library to develop user interface on the web browser and encode data in a QR Code symbol.

The experiment was conducted using single and multiple lines of text in both English and Thai languages. The result shows that all QR encoding outputs were successfully and correctly generated.

[PAPER 16] Lin, Pei-Yu, Yi-Hui Chen, Eric Jui-Lin Lu, and Ping Jung Chen. Secret Hiding Mechanism Using QR Barcode. In Signal-Image Technology &Internet Based Systems (SITIS), 2013 International Conference on, pp.22-25. IEEE, 201

Description: QR code is the commonly used two-dimensional (2D) barcode recently with the advantages of larger QR content and error correction capability. Based on the error correction property of QR code, we designed a secret hiding technique for QR barcode. The proposed scheme can conceal the secret data into the cover QR code without distorting the readability of QR content. That is, general browsers can read the QR content from the marked QR code for the sake of reducing attention. Only the authorized receiver can encrypt and retrieve the secret from the marked QR code. The secret payload of the designed scheme is adjustable.

The scheme can convey larger secret into a QR code according to the selection of the QR version and the error correction level. The simulations demonstrate that the designed scheme is efficient and low computational complexity. The mechanism can be applied to the QR reader and mobile phone. QR codes opens up the possibility to develop simple-to-use, cost-effective-cost, and functional systems based on the optical recognition of inexpensive tags attached to physical objects. These systems, combined with Web platforms, can provide us with advanced services that are already currently broadly used on many contexts of the common life.

[PAPER 17] "A review of QR code-based mobile payment system" Authors: Guohua Wu, Huan Xu Wang, and Shining Huang, Published in: Electronic Commerce Research and Applications, Volume 25, January-February 2017

Description: This research paper provides a comprehensive review of the use of QR codes for mobile payments. The authors discuss the advantages and limitations of QR codes as a mobile payment technology, and review the current state of QR code-based mobile payment systems. They also provide insights into future research directions for improving the usability and security of QR code-based mobile payment systems. The authors find that QR codes offer several advantages for mobile payments, including their ease of use, low cost, and compatibility with a wide range of mobile devices. QR codes are also highly versatile, and can be used for a variety of mobile payment applications, including retail payments, bill payments, and person-to-person payments. However, QR codes also face several challenges, including security concerns, interoperability issues, and the need for standardization. The authors discuss these challenges in detail, and suggest potential solutions for addressing them.

The authors conclude by proposing future research directions for QR code-based mobile payment systems. They suggest that future research should focus on improving the security and privacy of QR code-based mobile payment systems, as well as enhancing the user experience and promoting the adoption of QR code-based mobile payments. They also

suggest exploring the potential for QR codes to be integrated with other emerging technologies, such as blockchain and artificial intelligence.

Overall, this research paper provides a comprehensive overview of QR code-based mobile payment systems and highlights the potential benefits and challenges of this technology. It also identifies future research directions for improving the usability and security of QR code-based mobile payment systems.

[PAPER 18] "A Study on the Implementation of Mobile QR Code Payment in Food Industry" Authors: Jung-Hyun Kim and Hyun-Jung Lee, Published in: Journal of Foodservice Business Research, Volume 20, Issue 3, 2017

Description: This research paper explores the implementation of mobile QR code payment in the food industry. The authors conducted a survey among food industry workers to determine the challenges and opportunities for QR code payment implementation. They also analyzed the results of the survey to identify the factors that affect the adoption of QR code payment in the food industry.

The authors find that QR code payment is a promising technology for the food industry, as it offers several benefits such as convenience, speed, and cost-effectiveness. However, the adoption of QR code payment is not yet widespread, and there are several challenges that must be addressed to encourage its adoption.

The authors identify several factors that affect the adoption of QR code payment in the food industry, including security concerns, technical issues, and the need for training and education. They also find that the level of technology readiness and the perceived benefits of QR code payment are important factors that influence its adoption.

Based on their findings, the authors propose several recommendations for promoting the adoption of QR code payment in the food industry. These include enhancing the security

of QR code payment systems, improving the compatibility of QR code payment with different mobile devices, and providing training and education for food industry workers.

Overall, this research paper provides valuable insights into the challenges and opportunities for QR code payment implementation in the food industry. It highlights the importance of addressing the technical, security, and training issues associated with QR code payment to promote its adoption.

[PAPER 19] "QR Code-Based Food Ordering System: A Review" Authors: Arjun Krishnan and Likhitha S, Published in: International Journal of Engineering Research & Technology (IJERT), Volume 8, Issue 07, July 2019

Description: This research paper provides a review of QR code-based food ordering systems. The authors discuss the advantages and limitations of this technology, and review the current state of QR code-based food ordering systems. They also provide insights into future research directions for improving the usability and efficiency of QR code-based food ordering systems.

The authors find that QR code-based food ordering systems offer several advantages, including their ease of use, convenience, and potential for cost savings. They also enable businesses to better manage orders and reduce errors associated with traditional paper-based ordering systems. However, QR code-based food ordering systems face several challenges, including issues related to connectivity, compatibility, and security.

The authors review several existing QR code-based food ordering systems, including those used in restaurants and food delivery services. They also identify potential areas for improvement, such as the integration of artificial intelligence and machine learning to improve order accuracy and efficiency.

Overall, this research paper provides a useful overview of QR code-based food ordering systems and highlights the potential benefits and challenges of this technology. It also identifies future research directions for improving the usability and efficiency of QR code-based food ordering systems, making it a valuable resource for researchers and practitioners in the field

[PAPER 20] Abel, E.E. & Boutin, E. 2015, „Restaurant customer self-ordering system: a solution to reduce customer/guest waiting time at the point of sale, International Journal Computer Applications,

Description: Management Information System tends to provide support for restaurant managements in other to serve prospective guests effectively and facilitates inventory control. Presently, the Restaurant Point of Sale System is used by Fast-food Restaurants to take order from guests. In most cases, prospective guests have to wait endlessly on queue before their orders can be taken by Customer Service Providers. This research paper reviews the constraints of the existing system (Restaurant Point of sale system) and proposes a potential System solution called Restaurant Customer Self-Ordering System. An architectural research framework Design was also suggested that will aid the design and implementation of the proposed system. The researcher suggested a Clustered based System Architectural Design. Recommendations were also put forward in other to attract Restaurant entrepreneurs to invest in the proposed system. It will assist management to take decisive business decision to cut down capital expenditure on food and beverages that are not highly in demand. Also, how the proposed system could be enhanced in the future was discussed. Keywords Management Information System (RMS), Restaurant Customer Self-Ordering System (RCSS), Restaurant Point of Sale System (RPOSS), Customer Service Provider (CSP), Application Programming Interface (API)

[PAPER 21] Adithya, R., Singh, A., Pathan, S. & Kanade, V 2017, „Online food ordering system", International Journal of Computer Applications, vol. 180, no. 6.

Description: In the competition of this modern technology the aim of Mobile Ad-Hoc networking is to provide efficient communication in wireless technology by adopting routing functionality in mobile nodes. The main aim behind the developing of ad hoc networking is multi-hop relaying. Wireless Ad hoc networks or infrastructure less networks are very easy to establish by using radio waves as transmitting medium without the requirements of any other equipment or infrastructure. In such a network mobile node can be moved and organized freely in an arbitrary way. This dynamic connectivity of nodes allows mobile ad hoc network to be organized anywhere any time. Loads of research work and efforts have been done since last decade to provide support and solution to different problems and challenges related to mobile ad hoc networks. But still the fast-growing technology needs attention in many areas such as routing, bandwidth, security, power consumption, collisions, simulations, and topology control due to moving nodes especially for achieving 4 generation environment and resulting best QOS's. Sprint offers a 3G/4G connection plan, currently available in select cities in the United States. It delivers rates up to 10 Mbit/s. I have proposed three routing protocols (DSR, AODV, TORA) with different range, frequencies and parameters towards the contribution for best performance towards 4 generation cellular networks with an extension of ad hoc networks through a gateway I-e wireless routers or iPhone etc. This has a very good contribution using OPNET simulator for best results on Real Time basis towards 4G cellular networks.

[PAPER 22] Malviya, S.G., Deshpande, N.D., Mahala, S.G. & Tantarpale, S 2016, „A review paper on smart restaurant ordering system", International Journal of Scientific & Engineering Research, vol. 7

Description: As the usage of information technology is increasing nowadays, people have become dependent on their mobile phones. In this covid pandemic if we go to hotel, we get every order from same paper menu card which everyone touches and do not even update from time to time. The menu card is one of the most important forms of communication tool. Not only does it show hospitality to your restaurant and it offers your food, but it also reinforces the idea and style of your brand. But for it to be useful it must be done in a peculiar way. Customers view the menu for only 109 seconds (about 2 minutes) before selecting an order. Therefore, designing a restaurant menu not only affects the customer experience, but also the quality of the restaurant but some problem occurs with paper menu card like no updating in menu, in attention to detail, wrong pricing etc.

[PAPER 23] Sainath, R.K., Chaitanya, K.G.K., Abhinav, M. & Firoz K.T.H. 2016, „An online food court ordering system‟, Journal of Information Technology & Software Engineering.

Description: Developing an Online Food Court Ordering system to promote a greater count of food lovers to splurge into the field of Restaurant was the objective of this study. Is system providing the benefit of the easy ordering process online from anywhere along with ample choices for the customers in less time and less expenditures. Is latest effort will usher an edge in the existing manual platform effort will definitely usher an edge in the existing manual platform used so far for such an important aspect along with greater flexibility and sophistication in the use of the technology. This system also aided E-ordering option for the customers with multiple other benefits. Be user should register in the system to avail the utility. Users will be able to select their preferable food items from the existing E-menu card and order their requirement online. User will receive an onscreen presence of the selected items immediately after item selection. Application of this system will reduce the additional service associated manpower used in the hospitality industry, thus may provide financial benefit to the owners of such industry. Moreover, this system

will be useful during the rush hours in the food courts when waiters or other service providers remain busy and unavailable to all the customers at a time. user will have a username and a password for their regular use and personalized account maintenance.

[PAPER 24] Tan pure, S.S., Shidankar, P.R. & Joshi, M.M. 2013, „Automated food ordering system with real-time customer feedback‟, International Journal of Advanced Research in Computer Science and Software Engineering, vol. 3, no. 2.

Description: he Rampant growth of wireless technology and Mobile devices in this era is creating a great impact on our lives. Some early efforts have been made to combine and utilize both technologies in advancement of hospitality industry. This research work aims to automate the food ordering process in restaurant and improve the dining experience of customers. In this paper we discuss about the design & implementation of automated food ordering system with real time customer feedback (AOS-RTF) for restaurants. This system, implements wireless data access to servers. The android application on user's mobile will have all the menu details. The order details from customer's mobile are wirelessly updated in central database and subsequently sent to kitchen and cashier respectively. The restaurant owner can manage the menu modifications easily. The wireless application on mobile devices provides a means of convenience, improving efficiency and accuracy for restaurants by saving time, reducing human errors and real-time customer feedback. This system successfully over comes the drawbacks in earlier PDA based food ordering system and is less expensive and more effective than the multi-touchable restaurant management systems

[PAPER 25] Varsha Chavan, Priya Jadhav, Snehal Kormaed, Priyanka Teli,” Implementing Customizable Online Food Ordering System Using Web Based Application”, International Journal of Innovative Science, Engineering Technology (IJISET) 2015.

Description: Typically, in a restaurant food order process involves several steps for ordering the food where firstly customer starting from browsing the paper-based menu and then inform to the waiter for ordering items. Usually, the process require that the customer must be seated before starting. An alternative method for the customers is "Food Pre-Order System using Web Based Application" in which customer can be able to create the order before they approach the restaurant. Customer using Smartphone. When the customer approach to the restaurant, the saved order can be confirmed by touching the Smartphone. The list of selected pre-ordered items shall be shown on the kitchen screen, and when confirmed, order slip shall be printed for further order processing. The solution provides easy and convenient way to select pre-order transaction form customers.

[PAPER 26] Khairunnisa K., Ayob J., Mohd. Helmy A. Wahab, M. Erdi Ayob, M. Iwan Ayob, M. Alf Ayob," The Application of Wireless Food Ordering System" MASAUM Journal of Computing 2009

Description: - This research work aims to design and develop a wireless food ordering system in the restaurant. The project presents in-depth on the technical operation of the Wireless Ordering System (WOS) including systems architecture, function, limitations, and recommendations. It is believed that with the increasing use of handheld device e.g., PDAs in restaurants, pervasive application will become an important tool for restaurants to improve the management aspect by utilizing PDAs to coordinate food ordering could increase efficiency for restaurants and caterers by saving time, reducing human errors and by providing higher quality customer service. With the combination of simple design and readily available emerging communications technologies, it can be concluded that this system is an attractive solution for the hospitality industry.

The rapid growing of wireless telecommunication and the Internet lead an industry that are gaining more customers every day. Since users did not separately use the system, then WFOS was developed to answer for the new demand. Web-based applications provide access to data and services from a remote server, which may in turn access databases distributed across the enterprise network or the Internet. Web-based applications are the preferred method of accessing data remotely because they provide solutions that are easy to administer and user-friendly. The use of Internet protocols as well as subsets of World Wide Web formatting and coding standards for wireless applications has shorten the development cycle drastically and free up developers to concentrate on more important issues. Most of handheld device support these technologies and thus an excellent candidate for inclusion in solutions that required remote database access.

[PAPER 27] Serhat Murat Alagoas, Haluk Hekimoglub," A study on tam: analysis of customer attitudes in online food ordering system", Elsevier Ltd. 2012.

Description: While purpose of this study is to investigate the factors that influence the attitude of internet users towards online food ordering in Turkey among university students. It uses the Technology Acceptance Model (TAM) (Davis, 1986) as a theoretical grounding to study adoption of using the Web environment for ordering food. In addition to TAM; Trust, Innovativeness and External Influences are added to the model as main factors that influence internet users' attitudes. The research universe is composed of undergraduate and graduate students. Studying a homogeneous group allows us to overcome potential side effects of studying a heterogeneous group with diverse internet usage habits. There are more than 1.46 billion internet users around the world and the number is growing rapidly day by day (Internet World Stats, 2009). While the capabilities of internet become more complicated the marketing, accounting, advertising, educating habits and methods also change simultaneously. Online shopping is a new developing business, by which customers are able to reach the products on internet as well as sellers can reach to customers in the

same way. Besides, shopping online enables customers to find more different kinds of products than shopping in traditional way. It becomes possible to compare products, compare prices and shop from different magazines at the same time. The most visited online food ordering website in Turkey, 'yemeksepeti.com' has shared the user statistics of 2011. According to that, 28 million portion of food was ordered online just in 2011.

[PAPER 28] Patel Krishna, Patel Palak, Raj Nirali, Patel Lalit," Automated Food Ordering System", International Journal of Engineering Research and Development (IJERD) 2015.

Description: The Frequent growth of wireless technology and Mobile devices in this era is creating a huge impact on our lives. Some early efforts have been made to combine and utilize both technologies in advancement of hospitality industry. This research work aims to automate the food ordering process in restaurant and also improve the dining experience of customers. In this paper we discuss about the design & implementation of automated food ordering system with real time for restaurants. This system, implements wireless data access to servers. The android application on user's mobile will have all the menu details. The order details from customer's mobile are wirelessly updated in central database and subsequently sent to kitchen and cashier respectively. The restaurant owner can manage the menu modifications easily. The wireless application on mobile devices provides a means of convenience, improving efficiency and accuracy for restaurants by saving time, reducing human errors. The restaurants have two different departments that is cashier department and kitchen department. At the kitchen department, the order will display at the kitchen's screen. In communication with the first server are second and third servers for processing payments and transmitting orders to the restaurant for processing and fulfilment. Restaurants are one of the favorite premises with no regard to the actual reasons for visiting restaurants; customer will make orders and wait for the ordered meals. However, it is common if customers complain for not feeling satisfied about the services

offered there are many reasons leading to the feeling of dissatisfaction including being entertain late in terms of order taken by the waiter and meals serving the issue of being late entertain could be solved with the help of the advancement in the technologies of the communication. In accordance, this study initiates an integrated a networked system, with the focus is on its ability to solve the above describe limitations in order taking

[PAPER 29] Mayur D. Kakheti, Piyush C. Mankar," Implementation of Smart Restaurant with e-menu Card," International Journal of Computer Applications 2015 of Smart Restaurant with e-menu Card," International Journal of Computer Applications 2015

Description: The Frequent growth of wireless technology and Mobile devices in this era is creating a huge impact on our lives. Some early efforts have been made to combine and utilize both of these technologies in advancement of hospitality industry. This research work aims to automate the food ordering process in restaurant and also improve the dining experience of customers. In this paper we discuss about the design & implementation of automated food ordering system with real time for restaurants. This system, implements wireless data access to servers. The android application on user's mobile will have all the menu details. The order details from customer's mobile are wirelessly updated in central database and subsequently sent to kitchen and cashier respectively. The restaurant owner can manage the menu modifications easily. The wireless application on mobile devices provides a means of convenience, improving efficiency and accuracy for restaurants by saving time, reducing human errors. The restaurants have two different departments that is cashier department and kitchen department. At the kitchen department, the order will display at the kitchen's screen. In communication with the first server are second and third servers for processing payments and transmitting orders to the restaurant for processing and fulfilment.

[PAPER 30] Grace Lorraine INTAL; Jan Daryll Payas; Louise Mae Fernandez; Blanca Marie Domingo, 'Restaurant Information System (RIS) with QR Code to Improve Service Operations of Casual Fine Dining Restaurant'2020 IEEE 7th International Conference on Industrial Engineering and Applications (ICIEA)

Description: The rapid growth of technology makes people look forward for innovation that makes transactions faster and easier. For the food industry, a search for techniques that would improve their business functions for the customers would mean an increase in revenue and customer satisfaction. The study highlights on the business process improvements of casual dining restaurant in the Philippines thru the application of Restaurant information system (RIS). Analysis of the current business processes was conducted through interviews and observations. The level of customer satisfaction was evaluated through SERVPERF questionnaires using five (5) dimensions: Tangibles, Reliability, Responsiveness, Assurance, and Empathy. The results show that customer satisfaction levels in ordering, billing and payment processes require improvements. To address these issues, the researchers proposed a web-based system with Quick Response (QR) code functionality which is easy to use for mobile users. A prototype was made and comparison of service times between current and proposed processes was considered.

[PAPER 31] 'Modern Dine-In' V.K.G. Kalaiselvi; D. Pushkar Rani; Hemanth. P; Dinesh. P; Rosita. U 2021 4th International Conference on Computing and Communications Technologies (ICCCT) Year: 2021 | Conference Paper | Publisher: IEEE Cited by: Papers (2)

Description: "Respect for food is a respect for life, for who we are and what we do". - THOMAS KELLER. The Food is an essential and a very important component in day-to-day life. We had seen food is being wasted in garbage, so we came up with our idea of an app named "MODERN DINE-IN". We are creating an android mobile application in which students and staff can order their lunch online in their college canteen. Based on the Pre-

orders the lunch will be prepared. Hence there will be time allocation to order the lunch i.e., Today to next day 9 A.M. They will have payment options like pay while receiving the lunch or online payment through e-wallet, etc.… After that, a QR code would be generated respective to the order. Our main objective is to reduce the wastage of food by using our Android mobile application. We will declare whether the canteen is full or going to fill up, by using the no. of persons count. When the Canteen is fully occupied the students or the staff can wait till the canteen gets vacant or they can use the buffet system. After scanning the QR code in the canteen by the administrator, the lunch will be distributed by the staffs to the respective students.

3. ANALYSIS

3.1 Detailed Statement of the problem

It was recognized that the management system of a restaurant is still being manually operated by waiters and managers and is not automated yet. Due to the covid situation, interacting with restaurant personnel has created discomfort. It is found that transmission of viruses is higher when people interact in a closed environment s and customers wear face masks which mute conversation, the chance of miscommunication, mis ordering, or misinterpretation when receiving orders is greater. It is also a problem that customers have

to wait until the waiter responds to them. There are constraints on updating available dishes due to printed menu cards. Customers need to ask the waiter if a particular dish is available or not. Customer has to toil for improvising the dish according to his taste in a crowded quarter. Poor customer service on holidays and weekends when the number of customers increases. This project aims to provide a full-featured system that includes order and payment integration, rather than a menu-only solution. the online food ordering system sets up a food menu online and customers can easily place the order as per they like. Also, the online customers can easily track their orders. This system also provides a feedback system in which user can rate the food items.

Also, the proposed system can recommend hotels, food, based on the ratings given by the user, the hotel staff will be informed for the improvements along with the quality. The payment can be made online or cash or pay-on-delivery system. For more secured ordering separate accounts are maintained for each user by providing them an ID and a password. The technology we recommend is an easy-to-use online meal ordering system for customers. It overcomes the disadvantages of traditional queueing systems. Our system is both a convenient way to order food from restaurants and a mess service. The procedure of taking a customer's order is made easier with this technology. Customers may place orders fast utilizing the online meal ordering system, which generates an online menu. Customers can also use a meal menu to keep track of their orders. Users can also rate the food goods using this system's feedback feature. In addition, based on the user's ratings, the proposed system can recommend hotels and meals, and the hotel staff will be notified of any quality adjustments.

3.2 Requirement Specification

The Software Requirements Specification is produced at the culmination of the analysis task. The function and performance allocated to software as part of system engineering are

refined by establishing a complete information description, a detailed functional and behavioral description, an indication of performance requirements and design constraints, appropriate validation criteria, and other data pertinent to requirements.

The proposed system has the following requirements:

- System needs store information about new entry of Food Item.
- System needs to help the internal staff to keep information of Category and find them as per various queries
- System needs to maintain quantity record.
- System needs to keep the record of Customer.
- System needs to update and delete the record.
- System also needs a search area.
- It also needs a security system to prevent data

In this section we will look towards the Software and Hardware required for the implementation of the project. We have divided the requirements in two parts Software requirement and Hardware requirement.

Requirement specification for QR based Food Ordering System can be broken down into the following categories:

Functional Requirements:

- User registration and login functionality
- Menu browsing and selection
- Ordering and payment processing
- Order confirmation and tracking
- Rating and feedback system
- Admin dashboard for managing orders and menu items

Non-Functional Requirements:

- QR code generation and scanning functionality

- Security and privacy features

- Responsive design for mobile devices

- Fast and reliable performance

- Integration with third-party payment gateways

- Availability of customer support

User Requirements:

- Easy and intuitive user interface

- Quick and efficient ordering process

- Availability of a wide range of menu options

- Clear and detailed order confirmation and tracking information

- Timely and accurate delivery of orders

Technical Requirements:

- Compatibility with a range of devices and operating systems

- Use of scalable and reliable technologies

- Integration with existing systems and databases

- Regular software updates and maintenance

- Backup and disaster recovery mechanisms

Business Requirements:

- Increased efficiency and cost savings for the business

- Improved customer satisfaction and loyalty

- Ability to handle high volumes of orders during peak hours

- Ability to analyze and optimize sales data for business growth

Overall, the QR based Food Ordering System should be designed to meet the specific needs and requirements of the business and its customers, while also ensuring reliability, security, and scalability. It should be easy to use, fast and efficient, and provide a seamless experience for both customers and administrators.

3.2.1 Software Requirement

PHP: Hypertext Pre-processor is language which began for developing web applications, is also a general-purpose programming language. PHP code is executed in a given order where it is first started by a PHP interpreter, which is then implemented as a web server module. The output of both of the interpreted and executed PHP code is combined by web server, which may be any type that is associated with the created web page [6]. MySQL: It is an open-source relational database management system (RDBMS). MySQL is the central component of the XAMPP open-source web application software stack. XAMPP is an acronym for "Windows, Apache, MySQL, [7] and Perl/PHP". From source code MySQL can be built and installed manually, but it is always installed from a binary package due to customization. Although further steps are required to alert the

security and optimization settings.

3.2.2 Hardware Requirement

In this project, a computer with sufficient processing power is needed.

- System: Intel Processor i3/i5/i7

- Laptop

- RAM

- Hard Disk: 1GB

- A desktop computer with Intel Core i3 64-bit processor

- Mobile Device

• QR Code

3.3 Functional Requirement

Functional requirements are the features or functions of software system to accomplish the tasks. It basically explains how the system must work. They are the statements that describe what a system needs to do in order to provide a capability. A description of each major software function, along with data flow (structured analysis) or class hierarchy (Analysis Class diagram with class description for object-oriented system) is presented.

system should be able to integrate with other systems,

Customers should be able to examine their previous orders and reorder goods from previous orders.

• Menu display: The system should be able to display the menu items that are available, including descriptions and prices.

• Payment processing: Customers should be able to enter their payment information and process the transaction using the system.

• Administrative controls: The system should allow you to manage menu items, prices, and other parameters.

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3.4 Non-Functional Requirements

Non-functional requirements are the software specifications that describe the qualitative aspects of a software. It lists the desired qualitative features of a software or application, which don't fall under the category of any function/use-case. Non-functional features do not perform any action, instead they help in enhancing the software performance (efficiency).

• Performance: The system must be able to process large amounts of data quickly and provide recommendations in a timely manner, without causing delays or interruptions. The system should be able to process a high volume of orders

efficiently. This could include system speed, the quantity of orders it can process at once, and the ability to handle peak periods of activity

- Accuracy: The system's predictions and recommendations must be highly accurate and reliable, based on relevant data and proven models. It should be able to adapt to changing conditions and provide accurate results in different environments.

- Scalability: The system should be able to scale up or down based on the amount of data it processes and the number of users it serves, without affecting performance or accuracy.

- Security: The system must ensure the privacy and confidentiality of user data, protect against unauthorized access or hacking attempts, and comply with relevant data protection laws and regulations.

- Usability: The system should be user-friendly and easy to navigate, with clear and intuitive interfaces that allow users to input data, view results, and customize recommendations.
- The system should be simple to use for both customers and restaurant employees, with a clear and intuitive interface and simple navigation

- Reliability: The system must be highly reliable, with minimal downtime or errors, and be able to recover quickly from any failures or disruptions.

- Maintainability: The system should be easy to maintain and update, with clear documentation and support for troubleshooting and bug fixing. With a clear and well-documented codebase and a solid testing and deployment procedure, the system should be simple to upgrade and maintain over time. This could include

requirements for using version control, automated testing, and other tools and processes to keep the system reliable and up to date.

- Compatibility: The system must be compatible with different devices and platforms, including mobile devices and different web browsers.

3.5 Feasibility Study

The aim of the feasibility study activity is to determine whether it would be the financially and technically feasible to develop the system or not. A feasibility studies is carried out from following different aspects:

1) Operational Feasibility

This assessment involves undertaking a study to analyses and determine whether and how well the organization's needs can be met by completing the project. Operational feasibility studies also examine how a project plan satisfies the requirements identified in the requirements analysis phase of system development. The system has been developed for all the users who are interested in this product, irrespective of technical background. We have given a demo of our project to technical as well as non-technical users and all the users found the system user friendly.

2) Technical Feasibility

This assessment focuses on the technical resources available to the organization. It helps organizations determine whether the technical resources meet capacity and whether the technical team is capable of converting the ideas into working systems. Technical feasibility also involves the evaluation of the hardware, software, and other technical requirements of the proposed system.

3) Implementation Feasibility

This project can easily be made available online without much consideration of the hardware and software. The only required thing at the applicant's side is the Internet connection, which is a not difficult issue these days. After setting up the project, all the users can access and configure the system from any smartphone connected with the same network. Also, these particular modules can be controlled remotely through other devices.

4) Scheduling Feasibility

This assessment is the most important for project success; after all, a project will fail if not completed on time. In scheduling feasibility, an organization estimate how much time the project will take to complete.

When these areas have all been examined, the feasibility analysis help identify any constraints the proposed project may face, including:

3.6 Use Case Diagram

The purpose of a use case diagram is to capture the dynamic aspect of a system. Use case diagrams are used to gather the requirements of a system including internal and external influences. It encapsulates the system's functionality by incorporating use cases, actors, and their relationships. It models the tasks, services, and functions required by a system/subsystem of an application. It depicts the high-level functionality of a system and also tells how the user handles a system. These requirements are mostly design requirements. Hence, when a system is analyzed to gather its functionalities, use cases are prepared and actors are identified as shown in fig 3.4.

Use-case diagrams describe the high-level functions and scope of a system. These diagrams also identify the interactions between the system and its actors. The use cases and actors in

use-case diagrams describe what the system does and how the actors use it, but not how the system operates internally.

In the Unified Modelling Language (UML), a use case diagram can summarize the details of your system's users (also known as actors) and their interactions with the system. To build one, you'll use a set of specialized symbols and connectors.

An effective use case diagram can help your team discuss and represent:

• Scenarios in which your system or application interacts with people, organizations, or external systems.

• Goals that your system or application helps those entities (known as actors) achieve.

Following are the purposes of a use case diagram given below:

1. It gathers the system's needs.

2. It depicts the external view of the system.

3. It recognizes the internal as well as external factors that influence the system.

4. It represents the interaction between the actors.

It is essential to analyze the whole system before starting with drawing a use case diagram, and then the system's functionalities are found. And once every single functionality is identified, they are then transformed into the use cases to be used in the use case diagram. After that, we will enlist the actors that will interact with the system. The actors are the person or a thing that invokes the functionality of a system. It may be a system or a private entity, such that it requires an entity to be pertinent to the functionalities of the system to which it is going to interact.

Once both the actors and use cases are enlisted, the relation between the actor and use case/ system is inspected. It identifies the nod of times an actor communicates with the system. Basically, an actor can interact multiple times with a use case or system at a particular instance of time.

Following are some rules that must be followed while drawing a use case diagram:

1. A pertinent and meaningful name should be assigned to the actor or a use case of a system.

2. The communication of an actor with a use case must be defined in an understandable way.

3. Specified notations to be used as and when required.

4. The most significant interactions should be represented among the multiple n of interactions between the use case and actors.
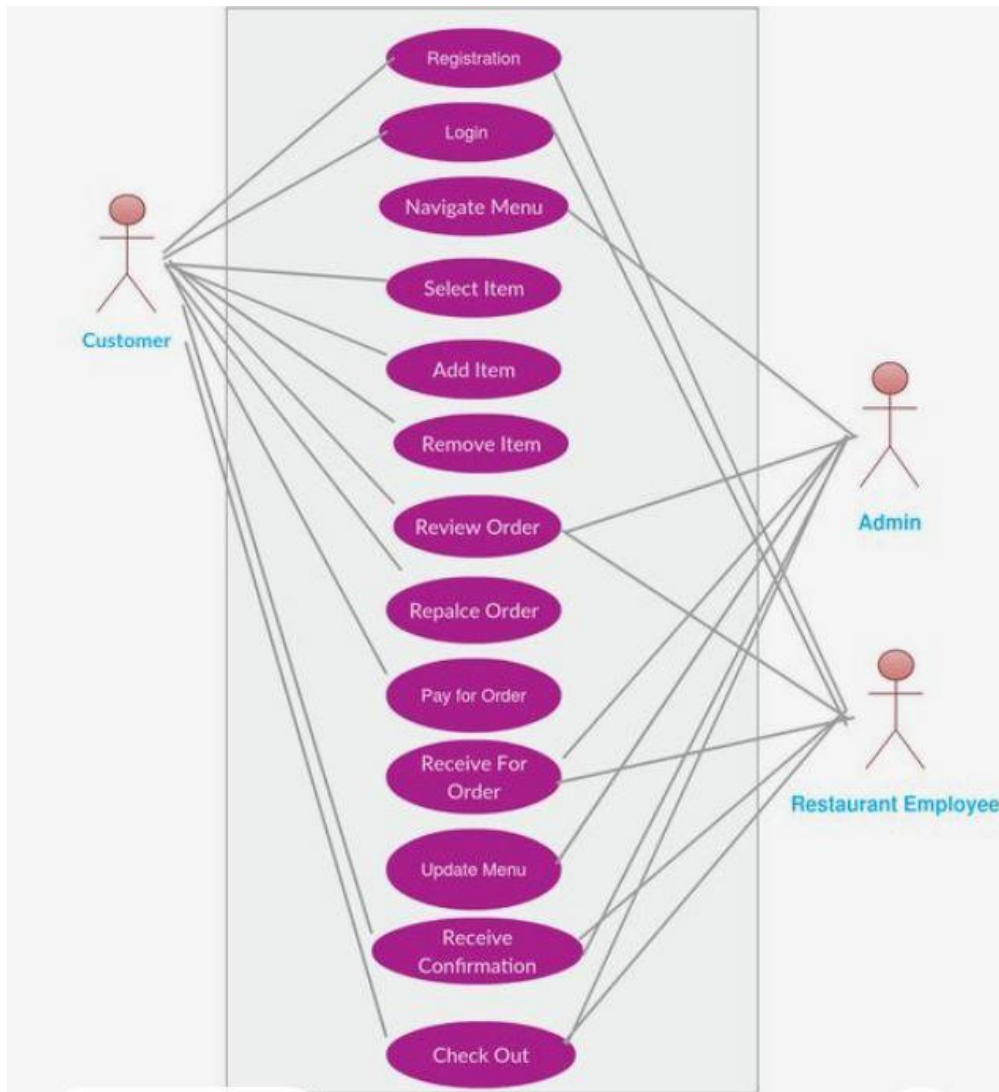
Figure 3.4: Use case diagram

3.7 Use Case Specification

Use case specification for a QR based food ordering system can be described as follows:

Customer Use Cases:

a. Scan QR Code: Customers scan the QR code displayed at the table using their smartphone camera.

b. View Menu: Customers can view the menu items and prices on their smartphone.

c. Place Order: Customers can select the desired items and place their order using their smartphone.

d. Customize Order: Customers can customize their orders by adding or removing ingredients or specifying cooking instructions.

e. Review Order: Customers can review their order, modify or cancel it, and confirm the final order.

f. Make Payment: Customers can pay for their order using a secure and convenient payment gateway.

g. Track Order Status: Customers can track the status of their order, receive notifications about the estimated time of delivery, and view order history.

Restaurant Use Cases:

a. Receive Order: Restaurant staff receive the order on their device or POS system, review and accept it.

b. Manage Inventory: The system automatically updates inventory levels in real-time, enabling staff to manage stock levels and replenish supplies as needed.

c. Assign Delivery: Staff can assign delivery to a specific delivery person or notify a delivery service for pick-up.

d. Track Order Status: Staff can track the status of the order, manage order.

e. Generate Reports: Staff can generate reports about order volume, sales, and other key performance indicators to aid decision-making.

f. Manage Discounts: Staff can set up discounts, promotional codes, and special offers to attract customers and increase sales.

Admin Use Cases:

a. Manage Menu: Admin can manage the menu, add or remove items, change prices or descriptions, and update item availability.

b. Manage Users: Admin can manage user accounts, track user activity, and set permissions for staff members.

c. Configure Settings: Admin can configure system settings, such as tax rates, currency, delivery fees, and tipping options.

d. Monitor System Health: Admin can monitor system performance, detect and resolve issues, and ensure system uptime.

e. Manage Payments: Admin can manage payment gateways, set up payment options, and view payment reports.

4. DESIGN

4.1 Design Goal

The Scan and Order app has to be installed in the user's smartphones. The data flow is as follows: Once the user scans the QR code, the data will be gathered by website and sent to a server running PHP [9]. The backend server processes and verifies the data and queries the database. The database sends requested data back to the backend which is transferred to the application.

In every table of the restaurant, there is a QR code unique to that restaurant. The patron requires to have a smartphone and the "Scan & Order" app present in the phone. The patron can scan the QR code with the app [11]. After scanning the code, a menu will be displayed in the phone. The user can see details about various food items, their price etc. and place orders directly from the mobile. The chef and customer have a sort of direct connection which saves time by cutting the middleman [12]. The chef also gets orders in a timely and ordered manner which reduces the chance of preparing the wrong order.

Restaurant owners may now generate real-time reports to learn about the most popular meals, peak times, daily sales, and other information in their establishments. The best part is that they have access to this data at any time and from any location. And can continue to be at the top of their game. A contactless scan QR code helps to reduce the expense of printing paper menus regularly. The spread of illness is facilitated by the use of paper menus. The proportion of orders placed may be increased, and staff labor can be minimized, thanks to QR Table Ordering for F&B Merchants. The expense of employees is also reduced. you must first engage with your team and stakeholders to establish your project's goals and desired outcomes. Start by organizing an ideation session where you record the overall project schedule and key deliverables. This helps you understand the and standards. By interacting with the team and getting their opinions on the project's practicality and feasibility, you reduce time spent on planning, executing, and reviewing and increase the chances of success.

4.2 Design Strategy

As we have researched a lot about how and what to do in our project. As we go deeper and deeper into research, we come to know there are various aspects to do. That's why we figured out how we can go further and plan our task so that the requirements of our project get fulfilled. So here we go following the approach shown in Figure 4.1. We have divided into a certain task. They are as follows:
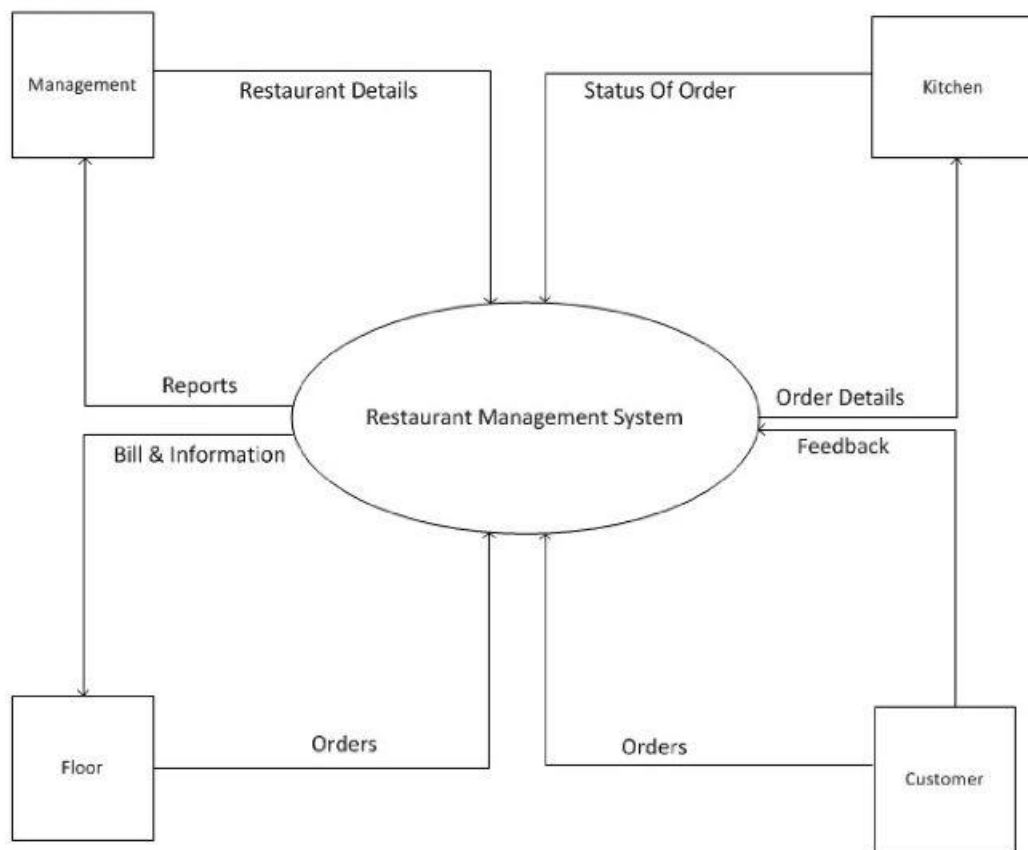

Figure 4.1: Strategy Diagram

1. Customer Aspect

• Can see images of menu, food items and ambience.

- Can order online for take away or delivery

- Can reserve a table for dine in

- Can see restaurants without registration

- Can changes profile information, password and email address

2. Super Admin Aspect

- Add Food Menu

- Can change the status of restaurant open/closed

- Can delete Food Item

- Can view all customer

3. Admin Aspect

- Can see all the orders and table reservation request

- Can accept and decline the orders

- Can accept or decline the request of table reservation

- Can edit restaurant's profile

- Can add menu images

- Restaurant owner can give discounts on food items

- Customer can order food item online with great discounts.

- Admin can track all the order Activity.

- Admin can see all the customers ordering food from their restaurant.

- Admin generate various reports almost instantly when required

4.3 Module Diagram
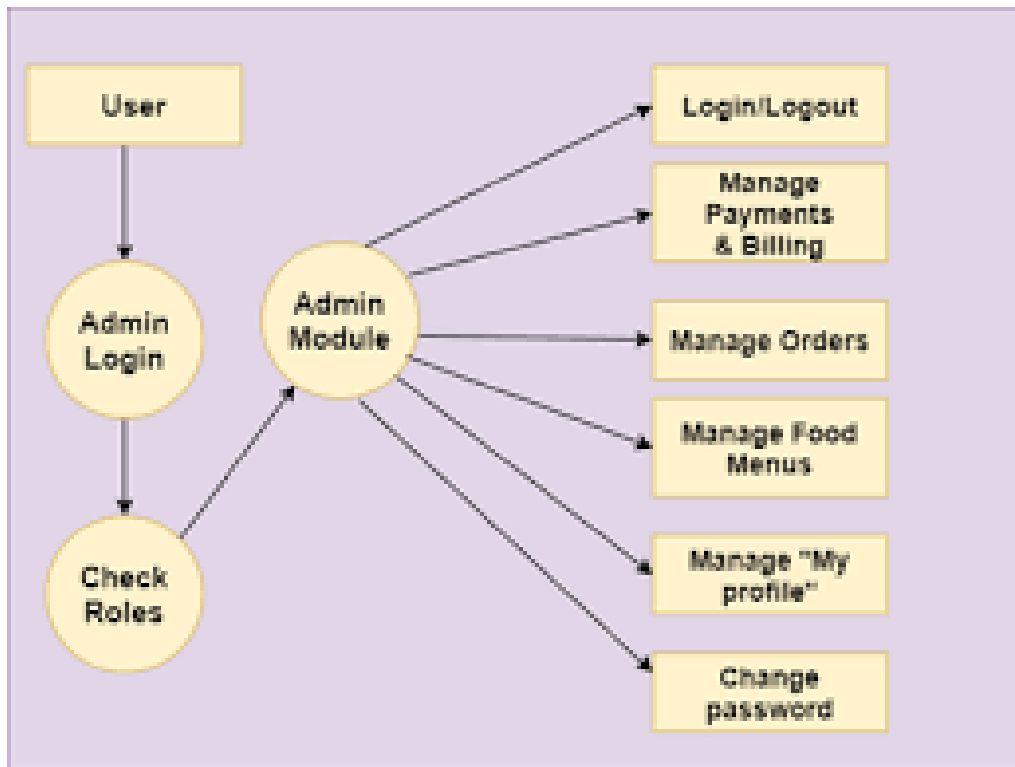
Figure 4.2: Module Diagram

A module diagram in software engineering is a type of diagram that shows the components of a software system and the relationships between them. It provides a high-level view of the system architecture and helps in understanding the system's organization, components, and dependencies.

The modules in a module diagram represent independent components or subsystems of a software system. These modules can be a collection of functions, classes, or files that are designed to perform a specific set of tasks or functions.

A module diagram typically includes the following elements:

- Modules: Modules represent independent components or subsystems of the software system. They are depicted as rectangles with the module name written inside. Each module represents a collection of functions, classes, or files that are designed to perform a specific set of tasks or functions.

- Relationships: Relationships represent the dependencies between modules. There are several types of relationships, such as "uses", "includes", "extends", and "implements". These relationships help to illustrate how modules interact with each other and how they depend on each other.

- Interfaces: Interfaces represent the external communication points of a module. They define the methods or functions that can be called by other modules or systems. Interfaces are represented as circles with the interface name written inside.

- Packages: Packages are used to group related modules together. They help to organize the modules into logical units and improve the overall structure of the system. Packages are represented as rectangles with the package name written inside.

Module diagrams are used in software development to help understand the architecture and organization of a software system. They are particularly useful for large systems with many components, as they provide a clear and concise view of the system's structure and dependencies. Module diagrams are also useful for identifying potential issues related to code organization and dependencies, and can help optimize the development process to ensure that the system is efficient, reliable, and maintainable.

4.4 Architecture Diagram

The figure 4.2 shows the architecture diagram of a system. It has various blocks like collecting data by using sensors, input data from user and applying a machine learning algorithm which is random forest model on input data. In this work, we need web-based application which is used to display the prediction which will be displayed on the screen.
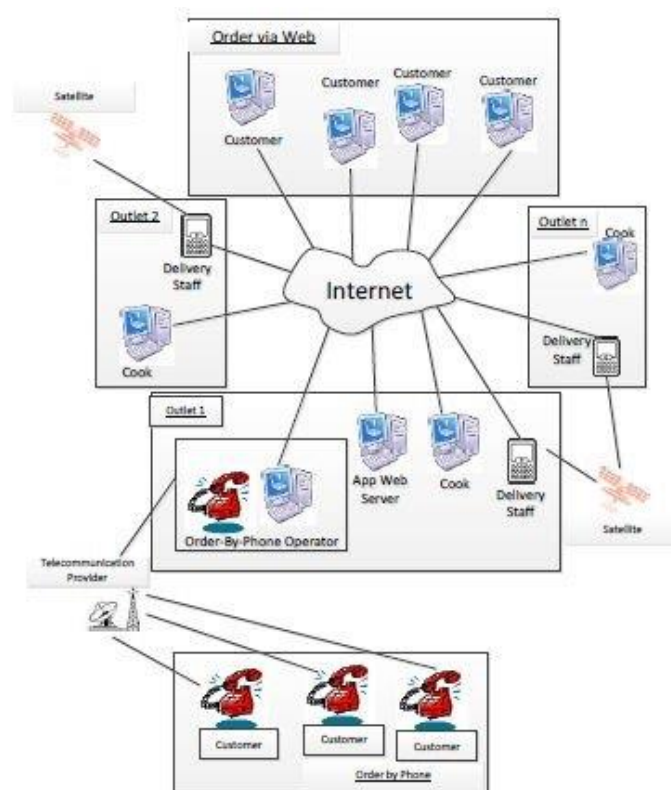

Figure 4.3: Architecture Diagram

An architecture diagram in software engineering is a high-level representation of the software system that shows its components, relationships, and interactions. It provides a visual representation of the system's structure and helps to understand the system's organization, components, and dependencies.

The main purpose of an architecture diagram is to provide a clear and concise overview of the software system, including its main components, their interactions, and the flow of data or information between them. Architecture diagrams are usually created during the early stages of software development, such as during the requirements gathering and design phases.

An architecture diagram typically includes the following elements:

- Components: Components are the building blocks of the software system. They can be modules, classes, functions, or other units of code that perform a specific set of tasks or functions.

- Relationships: Relationships represent the dependencies between components. They can be represented by lines, arrows, or other symbols, and they show how the components interact with each other.

- Data or Information Flow: Data or information flow represents the movement of data or information between the components of the system. It can be represented by lines, arrows, or other symbols, and it shows how data is processed, stored, and transmitted throughout the system.

- Interfaces: Interfaces represent the external communication points of the system. They define the methods or functions that can be called by other systems or users. Architecture diagrams are useful in software development as they provide a visual representation of the software system's structure and help to identify potential issues related to the system's architecture and design. They can be used to ensure that the system is efficient, reliable, and maintainable, and they help to

communicate the system's design to stakeholders such as developers, project managers, and users.

4.5 Sequence Diagram

Sequence diagrams are a popular dynamic modeling solution in UML because the specifically focus on lifelines, or the processes and objects that live simultaneously, and the messages exchanged between them to perform a function before the lifeline ends. They are the most commonly used Interaction diagrams. The sequence diagram represents the flow of messages in the system and is also termed as an event diagram. It helps in envisioning several dynamic scenarios. It portrays the communication between any two lifelines as a time-ordered sequence of events, such that these lifelines took part in the run time. In UML, the lifeline is represented by a vertical bar, whereas the message flow is represented by a vertical dotted line that extends across the bottom of the page. It incorporates iterations as well as branches.

Purpose of Sequence Diagrams

• To model high-level interaction among active objects within a system.

• To model interaction among objects inside a collaboration realizing a use case.

• It either models' generic interactions or some certain instances of interaction

sequence diagram is a type of interaction diagram that illustrates the interactions between objects or components in a system in a chronological order. It is used to depict the dynamic behavior of a system and the order in which different parts of the system interact with each other.

Sequence diagrams consist of a set of objects or components, each represented by a vertical lifeline, which shows the object's existence over time. The interactions between the objects are depicted by horizontal arrows, which show the messages or method calls between the objects. The sequence diagram shows the timeline of the interactions between the objects, which can help to identify potential issues related to the timing or order of interactions in the system.

Sequence diagrams are often used during the design and implementation phases of software development to help developers understand the interactions between different parts of the system. They can also be used for testing, debugging, and documentation purposes.

Some of the key elements of a sequence diagram are:

- Objects or components: The objects or components that are involved in the interaction are represented by vertical lifelines. These lifelines show the existence of the object over time.

- Messages or method calls: The interactions between the objects are depicted by horizontal arrows, which represent the messages or method calls between the objects. The arrows show the direction of the message flow and can include information such as the name of the message, parameters, and return values.

- Activation bars: The activation bars represent the time during which an object is executing a method or processing a message. They are depicted as vertical rectangles that extend from the lifeline of the object.

- Focus of control: The focus of control is the object that is currently executing or processing a message. This is represented by a dashed line that extends from the object's lifeline to the activation bar.

Sequence diagrams can be used to identify issues such as deadlocks, race conditions, and synchronization problems in the system. They can also be used to document the system's behavior and to communicate the system's design to stakeholders
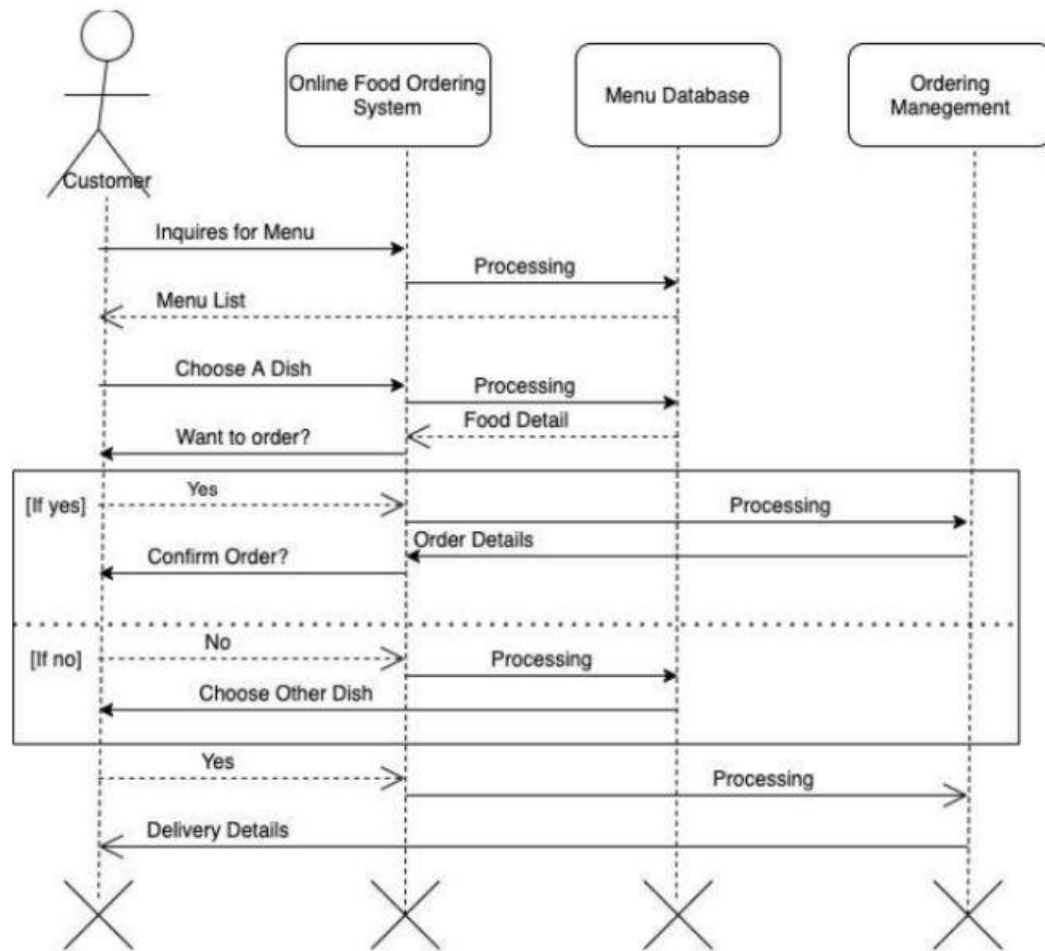
Figure 4.4: Sequence Diagram

4.6 Collaboration Diagram

The collaboration diagram is used to show the relationship between the objects in a system. Both the sequence and the collaboration diagrams represent the same information but differently. Instead of showing the flow of messages, it depicts the architecture of the object residing in the system as it is based on object-oriented programming. An object consists of several features. Multiple objects present in the system are connected to each other. The

collaboration diagram, which is also known as a communication diagram, is used to portray the object's architecture in the system. The collaborations are used when it is essential to depict the relationship between the object. Both the sequence and collaboration diagrams represent the same information, but the way of portraying it is quite different. The collaboration diagrams are best suited for analyzing use cases.

Purpose of Collaboration Diagrams

A collaboration diagram, also known as a communication diagram, is a type of interaction diagram that shows how objects collaborate to accomplish a particular task or function within a system. It illustrates the dynamic interactions between objects and the messages exchanged between them to accomplish a particular task. In a collaboration diagram, objects are represented as rectangular boxes, and the messages exchanged between them are represented as arrows. The arrows show the direction of the message flow between the objects, and may include information about the message content and timing.

The collaboration diagram is useful for showing the relationships between objects and the sequence of interactions required to accomplish a task or function. It can be used to model complex systems or processes, and can help developers identify potential issues or bottlenecks in a system's design.

Overall, the collaboration diagram is a powerful tool for visualizing the interactions between objects in a system and can help developers to design more effective and efficient systems.

• The collaboration diagram is also known as Communication Diagram.

• It mainly puts emphasis on the structural aspect of an interaction diagram, i.e., how lifelines are connected.

• The syntax of a collaboration diagram is similar to the sequence diagram; just the difference is that the lifeline does not consist of tails.

• The messages transmitted over sequencing is represented by numbering each individual message.

• The collaboration diagram is semantically weak in comparison to the sequence diagram.

• The special case of a collaboration diagram is the object diagram.

• It focuses on the elements and not the message flow, like sequence diagrams.
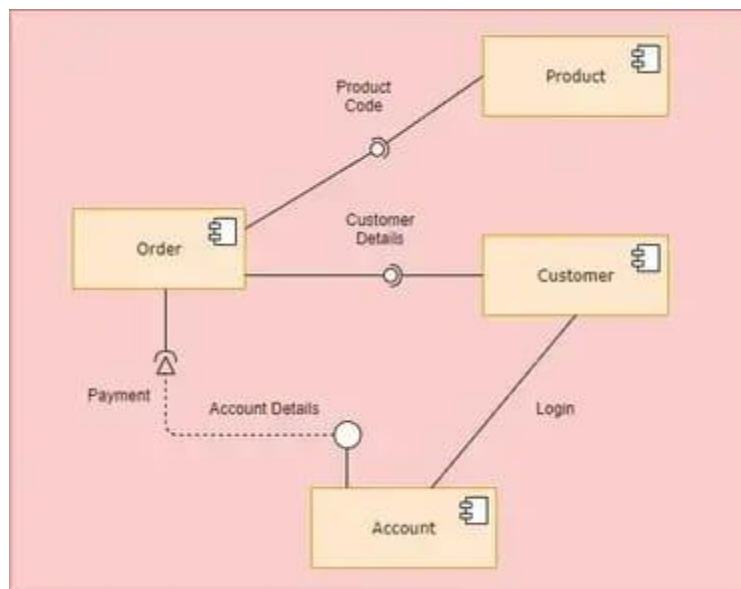
Following figure shown as Collaboration diagram

Figure 4.6: Collaboration Diagram

4.7 Sate Chart Diagram

State chart diagram theory

This state chart diagram represents the possible states and transitions in the QR-based online food ordering system. Here's a brief description of each state and transition:

1. Start: This is the initial state of the system, where the user opens the app or website to access the ordering system.

2. Select Restaurant: The user selects the restaurant where they want to place an order using a QR code or a search function.

3. View Menu: The system displays the restaurant menu to the user.

4. Select Items: The user selects the items they want to order from the menu.

5. Add to Cart: The selected items are added to the user's shopping cart.

6. View Cart: The user can view their shopping cart, modify the items or quantities, or proceed to checkout.

7. Checkout: The user proceeds to the checkout process, where they provide delivery or pickup details, select a payment method, and confirm the order.

8. Confirm Order: The user confirms the order and the system sends the order details to the restaurant.

9. Order Received: The system confirms that the order has been received by the restaurant and provides an estimated delivery or pickup time.

10. Order Ready: The system notifies the user when the order is ready for pickup or out for delivery.

11. Order Delivered/Picked Up: The system marks the order as delivered or picked up and completes the transaction.

12. Cancel Order: The user can cancel the order at any point before the order is confirmed by the restaurant.

Purpose of State Chart Diagrams

State chart diagram is one of the five UML diagrams used to model the dynamic nature of a system. They define different states of an object during its lifetime and these states are changed by events. State chart diagrams are useful to model the reactive systems. Reactive

systems can be defined as a system that responds to external or internal events. State chart diagram describes the flow of control from one state to another state. States are defined as a condition in which an object exists and it changes when some event is triggered. The most important purpose of State chart diagram is to model lifetime of an object from creation to termination. State chart diagrams are also used for forward and reverse engineering of a system. However, the main purpose is to model the reactive system. Following are the main purposes of using State chart diagrams –

• To model the dynamic aspect of a system.

• To model the life time of a reactive system.

• To describe different states of an object during its life time.

• Define a state machine to model the states of an object
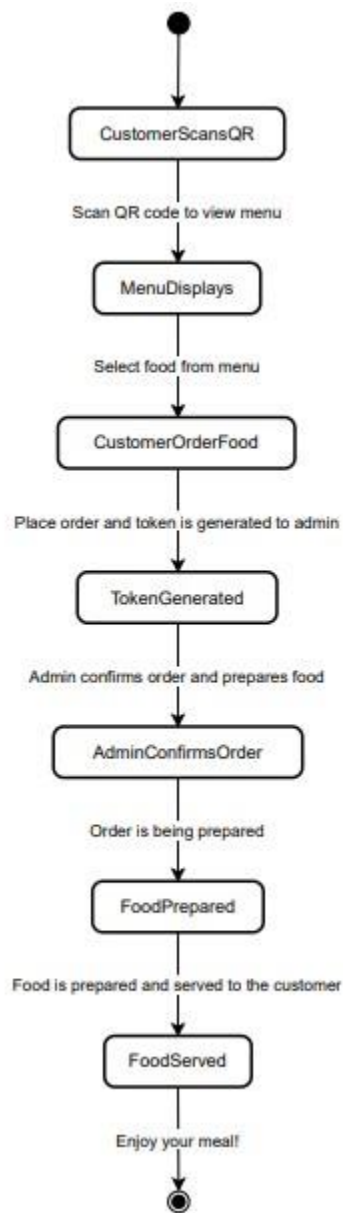
Figure 4.7: State Chart Diagram

4.8 Activity Diagram

The general work-flow of the planner can be graphically represented in an activity diagram. Figure 4. shows how user will use the system and the step-by-step process they will go through as they progress through the site. The diagram shows the workflow for all average

user. The user is then able to interact with selected modules, or open new modules. Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system. The control flow is drawn from one operation to another

Purpose of Activity Diagrams

The basic purpose of activity diagrams is similar to other UML diagrams. It captures the dynamic behavior of the system. Other UML diagrams are used to show the message flow from one object to another but the activity diagram is used to show message flow from one activity to another.

Activity is a particular operation of the system. Activity diagrams are not only used for visualizing the dynamic nature of a system, but they are also used to construct the executable system by using forward and reverse engineering techniques. The only missing thing in the activity diagram is the message part.

It does not show any message flow from one activity to another. Activity diagram is sometimes considered as the flowchart. Although the diagrams look like a flowchart, they are not. It shows different flows such as parallel, branched, concurrent, and single

The purpose of an activity diagram can be described as:

• Draw the activity flow of a system.
• Describe the sequence from one activity to another.
• Describe the parallel, branched and concurrent flow of the system

Activity diagrams are a type of behavioral diagram used in software engineering to illustrate the flow of activities within a system. They are used to model the behavior of a system, including the steps involved in a process or workflow, the decisions that are made, and the relationships between different activities.

Activity diagrams consist of nodes and edges that represent activities and the relationships between them. The nodes can be divided into two categories:

- Actions: These are the individual steps that make up a process or workflow. They can be represented by rectangles, circles, or other shapes, and are labeled with a description of the activity.

- Decisions: These are points in the process where a choice is made between two or more possible actions. They are represented by diamonds or other shapes, and are labeled with a question or condition that determines which path is followed.

The edges in an activity diagram represent the transitions between activities. They can be divided into two types:

- Control flows: These represent the normal flow of activities in a process, and are represented by solid lines.

- Object flows: These represent the flow of data or other objects between activities, and are represented by dashed lines.

Activity diagrams can be used to model a wide variety of systems and processes, including business processes, software workflows, and user interactions. They can be used to identify

inefficiencies or bottlenecks in a process, and can help to improve the overall efficiency and effectiveness of a system.

Some key benefits of activity diagrams include:

- They provide a clear and visual representation of complex processes, making it easier to understand and analyze the behavior of a system.

- They can help to identify inefficiencies and bottlenecks in a process, allowing for improvements to be made.

- They can be used to communicate the behavior of a system to stakeholders, making it easier to collaborate and make decisions.

- They can be used to support testing and debugging efforts, helping to ensure that a system is working as intended.

- Overall, activity diagrams are a powerful tool for modeling the behavior of a system and can be used to improve the efficiency and effectiveness of a wide range of processes and workflows.
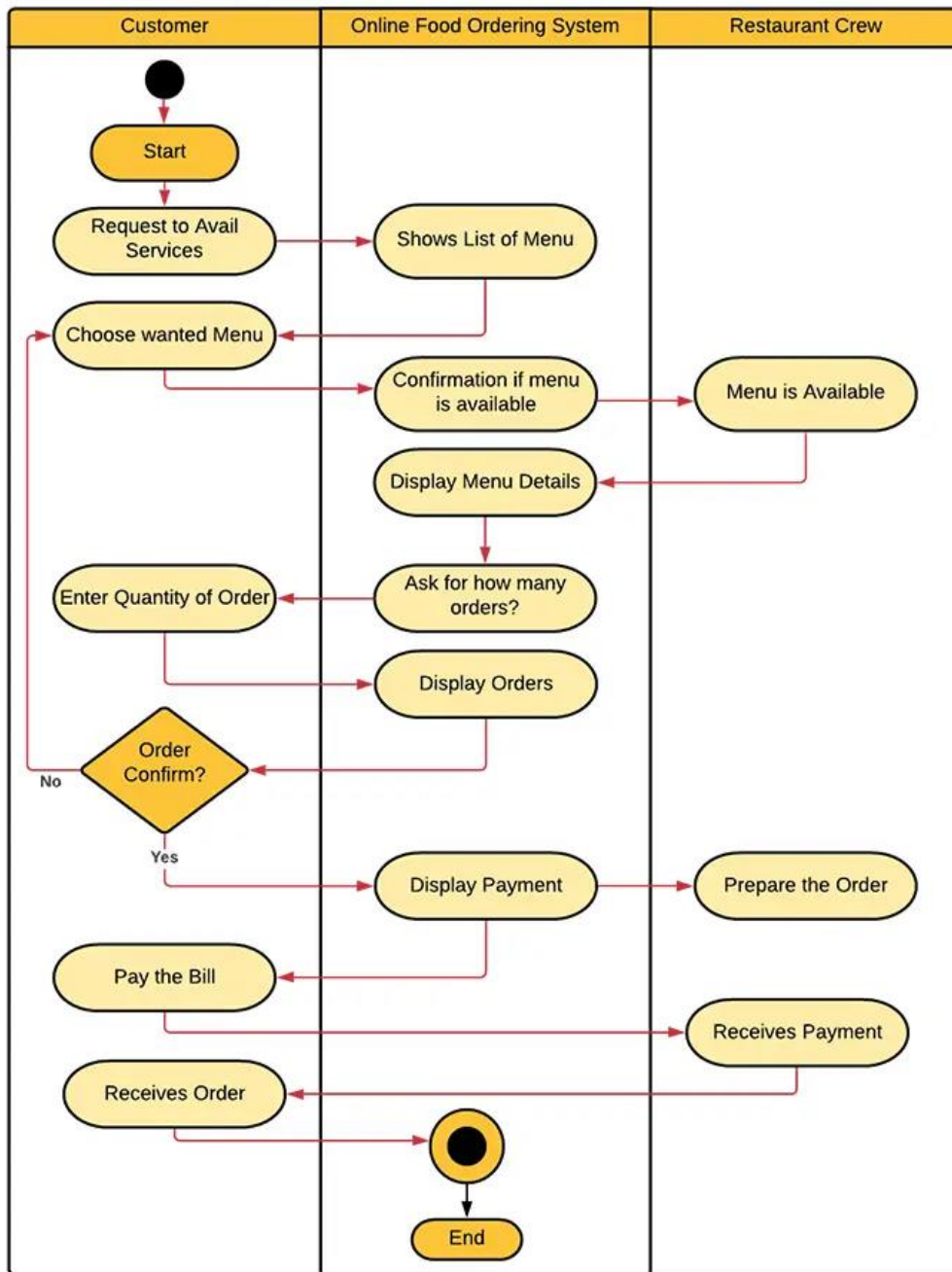
Figure 4.8: Activity Diagram

5. IMPLEMENTATION

5.1 Implementation Strategy

Implementing an online food ordering system requires careful planning and execution to ensure a smooth and successful launch. Here are some steps to consider when developing an implementation strategy for an online food ordering system:

- Identify the objectives and requirements: Define the goals of the online food ordering system, such as increasing sales and improving customer satisfaction, and identify the requirements for achieving those objectives.

- Choose a platform: Choose a platform or software that meets the requirements identified in step one. Consider factors such as ease of use, customization options, and integration with other systems.

- Develop the system: Create the necessary components of the online food ordering system, such as the ordering interface, payment gateway, and menu management system. Ensure that the system is user-friendly and intuitive.

- Integrate with existing systems: Integrate the online food ordering system with existing systems, such as the point-of-sale system, accounting software, and inventory management system.

- Train staff: Train staff on how to use the online food ordering system, including how to manage orders, process payments, and update menus.

- Test the system: Test the system thoroughly to ensure that it is functioning properly and that all components are integrated correctly.

- Launch the system: Launch the online food ordering system and communicate the availability to customers. Encourage customers to provide feedback on the system's functionality and usability.

- Monitor performance: Monitor the performance of the online food ordering system, including order volume, average order value, and customer satisfaction. Make adjustments to the system as necessary to improve performance.

By following these steps, you can develop and implement an effective online food ordering system that meets the needs of your business and your customers.

5.2 Hardware Platform Used

In this project, a computer with sufficient processing power is needed. This project also requires IoT sensors and hardware setup.

- Laptop/PC
- System: Intel Processor i3/i5/i7
- RAM
- Hard Disk: 1GB
- Mobile Device

5.3 Software Platform Used

- XAMPP Server
- PHP
- MySQL Database

- JavaScript
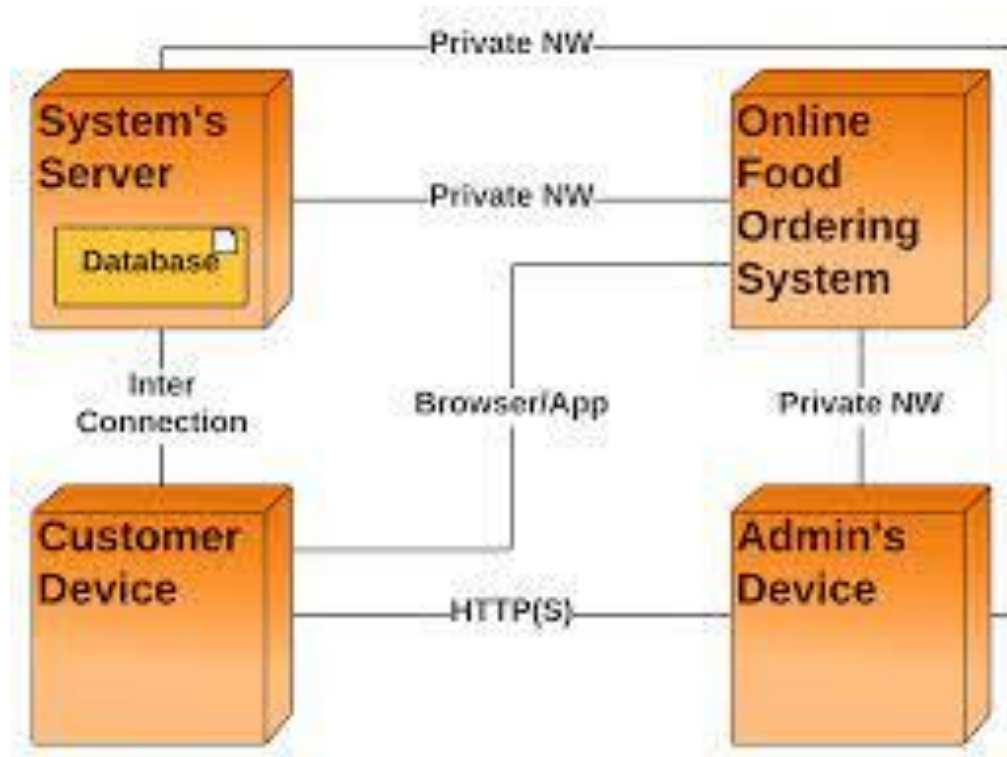- Chatbot – tawk.to

5.4 Deployment Diagram

Figure 5.1 Deployment Diagram

Deployment diagrams are used to visualize the topology of the physical components of a system, where the software components are deployed as shown in below figure 5.1. Deployment diagrams are used to describe the static deployment view of a system. Deployment diagrams consist of nodes and their relationships.

A deployment diagram in software engineering is a type of diagram that shows the physical deployment of software components, their relationships, and the environment in which they are deployed. It illustrates the hardware and software components that make up a system and their deployment, such as servers, devices, network connections, and other components.

The main purpose of a deployment diagram is to provide a visual representation of the physical architecture of a system. It helps software architects and developers to understand the hardware and software infrastructure that is required to deploy and run the software application. The components in a deployment diagram are represented by nodes, which are either physical or logical components. Physical nodes represent hardware components such as servers, workstations, or mobile devices, while logical nodes represent software components such as databases, web servers, or application servers.

The relationships between nodes are represented by connectors, which illustrate the communication paths between nodes. For example, a connector can represent a network connection between two nodes or a dependency relationship between two software components. Deployment diagrams are commonly used in software development to design and plan the deployment of software applications. They are useful for identifying potential issues related to hardware and software compatibility, performance, and security, and can help optimize the deployment process to ensure that the system is efficient, reliable, and secure

5.5 Implementation Level Details

Implementation level for an online food ordering system can involve several components and technologies working together. Here are some of the key components and their implementation level:

Front-end web development:

a. Design and layout: Implement user interface design and layout for the website and mobile app.

b. Responsive design: Ensure the website and app are optimized for different screen sizes and devices.

c. User experience: Implement intuitive and easy-to-use user experience, including the menu layout and ordering process.

Back-end development:

a. API development: Develop the application programming interfaces (APIs) that connect the front-end to the server and database.

b. Database design: Design and implement the database to store menu items, user profiles, orders, and other data.

c. Server-side scripting: Develop server-side scripts to handle user authentication, order processing, and payment transactions.

d. Integration with third-party services: Integrate with third-party services such as payment gateways, delivery services, and inventory management systems

Testing and deployment:

a. Quality assurance: Test the system for functionality, performance, and security.

b. Deployment: Deploy the system to the production environment, configure servers and databases, and set up monitoring and backup systems.

c. Maintenance and support: Provide ongoing maintenance and support to ensure the system runs smoothly, fix bugs, and provide customer support.

Other components:

a. QR code generation: Implement QR code generation and printing functionality for tables or menus.

b. Analytics: Implement analytics and reporting features to track user activity, orders, and sales.

c. Marketing: Implement marketing and promotion features such as loyalty programs, coupons, and referral bonuses to attract and retain customers

Here is a detailed implementation plan for a QR-based food ordering system with chatbots: Develop a mobile app for customers to scan QR codes displayed in the restaurant or on the restaurant's website.Allow customers to browse the restaurant's menu, select items, and customize their orders through the app.Implement a payment system to allow customers to pay for their orders through the app.Implement a chatbot system to enable customers to ask questions about the menu, make recommendations, and resolve any issues they may encounter.

Train the chatbot system using natural language processing to understand and respond to customer queries.Integrate the chatbot system with the food ordering system to enable seamless communication between customers and the restaurant staff.

Allow restaurant staff to monitor orders and communicate with customers through the chatbot system.Provide customers with real-time updates on the status of their orders through the app and chatbot system.

Implement a feedback system to allow customers to rate the quality of their orders and provide feedback to the restaurant.

Analyze customer feedback and usage data to identify areas for improvement and optimize the system for better user experience.By implementing a QR-based food ordering system with chatbots, restaurants can streamline their ordering process, reduce wait times, and

provide better customer service. The integration of chatbots allows customers to communicate with the restaurant staff in real-time, while the use of QR codes makes it easy for customers to access the ordering system from their mobile devices. With the right implementation plan, restaurants can leverage this technology to improve their operations and enhance the customer experience.

Working of chatbot:

A live chatbot in a food ordering system is an interactive software program designed to assist users in placing their food orders through a real-time conversation. It is typically integrated into a website or mobile application and serves as a virtual assistant to streamline the ordering process and provide customer support.

Here is how a live chatbot works in a food ordering system:

- User engagement: When a user visits the food ordering platform or app, they are presented with the option to chat with a live chatbot. This can be in the form of a chat window or a chatbot icon.

- Conversation initiation: The user can start a conversation with the chatbot by typing a message or selecting predefined options presented by the chatbot.

- Order placement: The chatbot guides the user through the ordering process by asking questions about their preferences, such as the type of cuisine, specific dishes, customization options, quantity, and delivery preferences.

- Menu recommendations: Based on the user's preferences, the chatbot can suggest popular or recommended menu items, provide descriptions, and offer special deals or promotions.

- Order customization: The chatbot allows users to customize their orders by selecting ingredients, toppings, sides, or any other relevant options. It may also provide information about allergens or dietary restrictions to ensure a tailored experience.

- Order confirmation: Once the user has finalized their order, the chatbot displays a summary of the selected items, along with the total cost. The user can review and confirm the order details.

- Payment processing: The chatbot securely collects payment information from the user, such as credit card details or digital wallet credentials, to facilitate a seamless and secure transaction.

- Order tracking: After the order is placed and confirmed, the chatbot may provide the user with an estimated delivery time and a tracking link to monitor the progress of their order in real-time.

- Customer support: Throughout the entire ordering process, the chatbot can address user queries, provide assistance, and resolve common issues. It may also handle order modifications, cancellations, or refunds.

- Closing the conversation: Once the user's order is successfully placed, the chatbot can provide a confirmation message, express gratitude, and offer additional support if needed. The conversation can be ended or saved for future reference.

By integrating a live chatbot into a food ordering system, businesses can enhance user experience, reduce manual customer support efforts, and streamline the ordering process, ultimately leading to increased customer satisfaction and operational efficiency.

5.6 Testing

Testing for a QR based online food ordering system is essential to ensure that the system is functional, secure, and user-friendly. Here are some of the key testing strategies and techniques that can be used:

Functional testing:

Test the system for functional requirements such as:

a. Scanning QR codes and displaying the menu on the customer's device.

b. Allowing customers to place orders and customize their orders.

c. Allowing restaurant staff to receive and manage orders, assign delivery, and update order status.

d. Allowing admins to manage the menu, user accounts, payment options, and system settings.

Advantage of Functional Testing:

- It helps to identify any issues with the system's functionality before they become too much of a problem.
- It can be used to verify that required features are working as expected and that the system is able to cope with unexpected conditions.
- It can help to ensure that the product meets customer expectations and is bug-free.
- It is an effective way to test the system under a variety of conditions and in a variety of scenarios.

- It can be used to track progress and revise testing plans as needed.

Disadvantages of Functional Testing:

Functional testing is slow – Because functional testing is a detailed process, it can take a long time to complete. This can be a problem if you need to test a new feature quickly.

Functional testing is less accurate – Functional testing is less reliable than other types of tests because it relies on the actual function of the software being tested. This means that it can be difficult to find bugs that occur during normal usage.

Functional testing can be tedious – Because functional testing is focused on the actual functionality of the software, it can be tedious to conduct. This can lead to slow test times and missed bugs.

Functional testing is more expensive -functional testing is more expensive than other types of tests because it requires more time and effort to complete.

- User acceptance testing: Test the system from the perspective of end-users, ensuring that the system is user-friendly, easy to use, and meets their expectations.

- Performance testing: Test the system's performance to ensure that it can handle peak loads and traffic volume. Performance testing should include:
- Load testing: Testing the system under normal and peak load conditions to ensure that it can handle a large number of users and orders.
- Stress testing: Testing the system under extreme load conditions to ensure that it can handle unexpected spikes in traffic and usage.
- Speed testing: Testing the system's response time, page load times, and transaction times to ensure that it meets acceptable performance standards.

- Security testing: Test the system for security vulnerabilities and potential risks such as:

- Authentication and access control: Ensuring that user authentication, access control, and password policies are secure and cannot be easily compromised.

- Data protection: Ensuring that sensitive data such as user profiles, payment information, and order details are encrypted and protected from unauthorized access.

- Vulnerability scanning: Scanning the system for potential security vulnerabilities such as SQL injection, cross-site scripting, and other web-based attacks.

Usability testing:

Test the system's user interface and user experience to ensure that it is easy to use, intuitive, and meets user expectations. Usability testing should include:

1. User interface testing: Testing the system's user interface design, layout, and navigation to ensure that it is easy to use and intuitive.

2. User experience testing: Testing the system's user experience to ensure that it meets user expectations and delivers a seamless and efficient ordering experience.

3. Accessibility testing: Testing the system's accessibility features to ensure that it is accessible to users with disabilities.

Unit Testing is a type of software testing where individual units or components of a software are isolate a section of code and verify its correctness. A unit may be an individual function, method, procedure, module, or object. Unit tests are automated and are run each time the code is changed to ensure that new code does not break existing functionality. Unit tests are designed to validate the smallest possible unit of code, such as a function or a method, and test it in isolation from the rest of the system. This allows developers to quickly identify and fix any issues early in the development process, improving the overall

quality of the software and reducing the time required for later testing. In SDLC, Unit testing is the first level of testing technique that is usually performed.

Objective of Unit testing:

- To isolate a section of code.
- To verify the correctness of the code.
- To test every function and procedure.
- To fix bugs early in the development cycle and to save costs.
- To help the developers to understand the code base and enable them to make changes quickly.
- To help with code reuse.

Advantages of Unit Testing:

- Early Detection of Issues
- Improved Code Quality
- Faster Development
- Better Documentation
- Facilitation of Refactoring
- Reduced Time and Cost

Disadvantages of Unit Testing:

- The process is time-consuming for writing the unit test cases.
- Unit testing will not cover all the errors.
- Unit testing is not efficient for checking the errors in the UI.
- It requires more time for maintenance when source code is changed frequently.
- Difficulty in testing complex units

Compatibility testing:

Test the system for compatibility with different devices, platforms, and web browsers. Compatibility testing should include testing on different operating systems, web browsers, and mobile devices to ensure that the system works correctly on all platforms.

Regression testing:

Test the system after each software update or change to ensure that no new bugs or issues have been introduced. Tests the software after changes or modifications have been made to ensure the changes have not introduced new defects. Regression testing is a black box testing technique. It is used to authenticate a code change in the software does not impact the existing functionality of the product. Regression testing is making sure that the product works fine with new functionality, bug fixes, or any change in the existing feature. Regression testing is a type of software testing. Test cases are re-executed to check the previous functionality of the application is working fine, and the new changes have not produced any bugs.

Regression testing can be performed on a new build when there is a significant change in the original functionality. It ensures that the code still works even when the changes are occurring. Regression means Re-test those parts of the application, which are unchanged. Regression tests are also known as the Verification Method. Test cases are often automated. Test cases are required to execute many times and running the same test case again and again manually, is time-consuming and tedious too.

Advantages of Regression Testing:

- Regression Testing increases the product's quality.
- It ensures that any bug fix or changes do not impact the existing functionality of the product.
- Automation tools can be used for regression testing.
- It makes sure the issues fixed do not occur again.

Disadvantages of Regression Testing:

- Regression Testing should be done for small changes in the code because even a slight change in the code can create issues in the existing functionality.
- If in case automation is not used in the project for testing, it will time consuming and tedious task to execute the test again and again.

Integration Testing:

Tests the integration of different components of the software to ensure they work together as a system. Integration testing is the second level of the software testing process comes after unit testing. In this testing, units or individual components of the software are tested in a group. The focus of the integration testing level is to expose defects at the time of interaction between integrated components or units. Unit testing uses modules for testing purpose, and these modules are combined and tested in integration testing. The Software is developed with a number of software modules that are coded by different coders or programmers. The goal of integration testing is to check the correctness of communication among all the modules. Once all the components or modules are working independently, then we need to check the data flow between the dependent modules is known as integration testing. Integration testing is a software testing technique that focuses on verifying the interactions and data exchange between different components or modules of a software application. The goal of integration testing is to identify any problems or bugs that arise when different components are combined and interact with each other.

Advantages of Integration Testing:

- It is convenient for small systems.
- Simple and straightforward approach.
- Can be completed quickly.
- Does not require a lot of planning or coordination.

- May be suitable for small systems or projects with a low degree of interdependence between components.

Disadvantages of Integration Testing:

- There will be quite a lot of delay because we have to wait for all the modules to be integrated.
- High-risk critical modules are not isolated and tested on priority since all modules are tested at once.
- Not good for long projects.
- High risk of integration problems that are difficult to identify and diagnose.
- Can lead to system downtime and increased development costs.
- Can lead to decreased efficiency and productivity.

System Testing:

Tests the complete software system to ensure it meets the specified requirements. System testing is a type of software testing that evaluates the overall functionality and performance of a complete and fully integrated software solution. It tests if the system meets the specified requirements and if it is suitable for delivery to the end-users. This type of testing is performed after the integration testing and before the acceptance testing. System Testing is a type of software testing that is performed on a complete integrated system to evaluate the compliance of the system with the corresponding requirements. In system testing, integration testing passed components are taken as input. The goal of integration testing is to detect any irregularity between the units that are integrated together. System testing detects defects within both the integrated units and the whole system. The result of system testing is the observed behavior of a component or a system when it is tested. System Testing is carried out on the whole system in the context of either system

requirement specifications or functional requirement specifications or in the context of both. System testing tests the design and behavior of the system and also the expectations of the customer.

Advantages of System Testing:

- Testers do not require more knowledge of programming.
- It will test the entire product or software so that we will easily detect the errors.
- Testing environment is similar to that of the real time production.
- It checks entire functionality of the system with different test cases.
- After this testing, the product will almost cover all the possible bugs or errors and hence the development team will confidently go ahead with acceptance testing.

Disadvantages of System Testing:

- This testing is time consuming process than others.
- The cost for the testing will be high since it covers the testing of entire software.
- It needs good debugging tool otherwise the hidden errors will not be found.

6. CONCLUSION

In conclusion, QR based food ordering systems offer several advantages to both customers and restaurants. Customers can easily access the menu, place orders, and make payments

through their mobile devices, while restaurants can streamline their order management and reduce costs associated with traditional paper menus and order taking.

Implementing a QR based food ordering system requires a combination of front-end and back-end development, mobile application development, and integration with third-party services such as payment gateways and delivery services. It is also important to conduct rigorous testing, including functional, performance, security, usability, compatibility, and regression testing, to ensure that the system is reliable, secure, and user-friendly.

Overall, a QR based food ordering system can provide a modern and convenient solution for restaurants and customers alike, offering an efficient and streamlined ordering process that can improve the dining experience for all parties involved.

7. FUTURE WORK

There are several areas of future work for QR based food ordering systems that can enhance their functionality and usability, including:

- Integration with emerging technologies: QR based food ordering systems can be integrated with emerging technologies such as augmented reality (AR) and virtual reality (VR) to enhance the customer experience. For example, AR can be used to provide customers with an interactive 3D view of menu items, while VR can be used to provide a virtual dining experience.

- Personalization: QR based food ordering systems can be further customized to meet the individual needs and preferences of customers. This can include personalized menus based on customer preferences, customized promotions and offers, and personalized recommendations based on order history.

- Integration with social media: QR based food ordering systems can be integrated with social media platforms to allow customers to share their dining experiences with friends and family, and to provide feedback and ratings on their orders.

- Voice-enabled ordering: With the increasing popularity of virtual assistants such as Siri and Alexa, QR based food ordering systems can be integrated with voice-enabled ordering capabilities to provide customers with a hands-free and seamless ordering experience. Alexa can be used in a restaurant in several ways to enhance the customer experience and streamline operations. Here are some examples:

- Voice-activated ordering: Customers can use Alexa to place orders, request menu items, and make special requests without having to wait for a server. This can help speed up the ordering process and reduce wait times for customers.

- Reservation management: Restaurants can use Alexa to manage reservations and provide customers with real-time updates on table availability. This can help reduce wait times and improve the overall dining experience.

- Menu recommendations: Alexa can suggest menu items to customers based on their previous orders, dietary preferences, and other factors. This can help customers discover new dishes and improve their overall dining experience.

- Payment processing: Customers can use Alexa to pay their bill without having to wait for a server or deal with a physical credit card machine. This can help streamline the payment process and reduce wait times for customers.

- Staff training: Restaurants can use Alexa to train staff on new menu items, customer service best practices, and other important aspects of running a successful restaurant. This can help improve the quality of service and enhance the overall customer experience.

- Integration with blockchain technology: QR based food ordering systems can be integrated with blockchain technology to enhance the security and transparency of transactions and to enable faster and more secure payments.

- Integration with IoT devices: QR based food ordering systems can be integrated with Internet of Things (IoT) devices such as smart refrigerators and kitchen appliances to enable automatic ordering and replenishment of food items.

In summary, future work in QR based food ordering systems can focus on integrating emerging technologies, personalization, social media integration, voice-enabled ordering, blockchain technology, and IoT device integration to enhance the customer experience and improve the overall efficiency and convenience of the ordering process.

User Manual
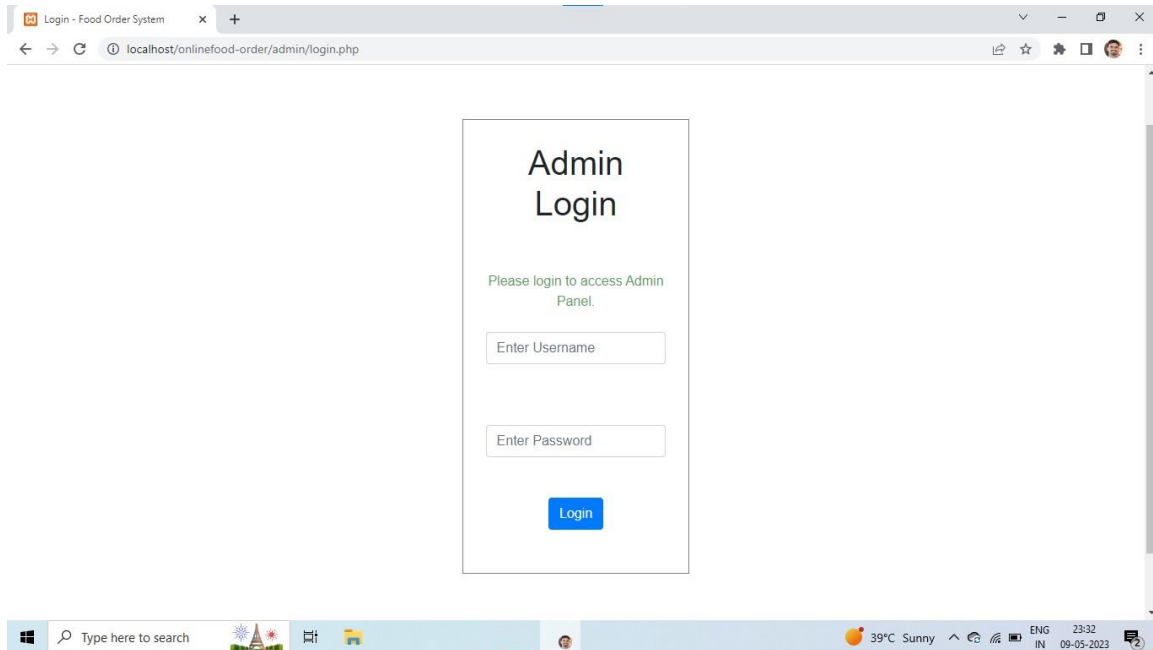
Here are the steps to log in using an email and password:

1. Go to the login page of the website or application you want to log in to.

2. Locate the fields for email and password on the login page.

3. Enter your email address in the email field.

4. Enter your password in the password field. Make sure that you enter your password correctly, as passwords are case-sensitive.

5. If the website or application has a "remember me" option, you can check this box to save your login credentials for future use.

6. Click on the "login" or "sign in" button.

If your login credentials are correct, you will be logged in and directed to your account page.

If your login credentials are incorrect, you may see an error message indicating that your email or password is incorrect. In this case, double-check your email and password and try again.

Once you are logged in, you can navigate to different pages or sections of the website or application and access your account information, settings, and other features
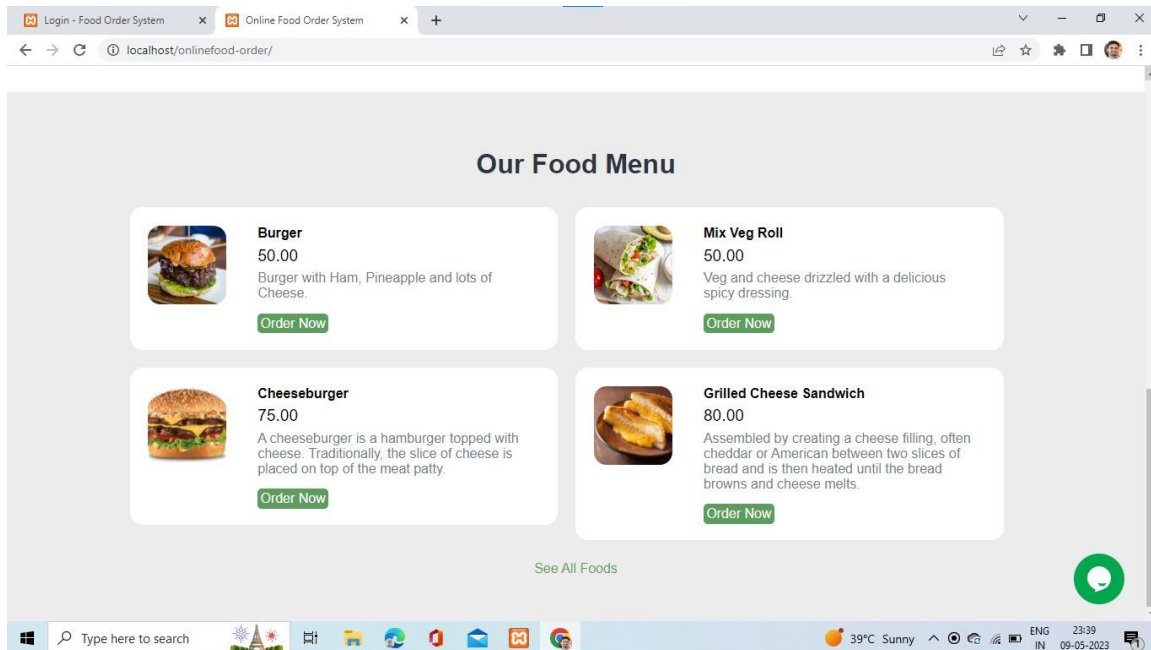
. A dashboard for a food delivery service can be a powerful tool for admins to track key metrics and monitor the performance of the business. Here are some elements that might be included on a dashboard:

- Login screen: The dashboard should require a login to access. This can help ensure that only authorized users can view sensitive data.

- Overview section: Upon logging in, the user should be presented with an overview section that displays high-level metrics such as total revenue, number of orders, and number of customers. This can help provide a quick snapshot of how the business is performing at a glance.
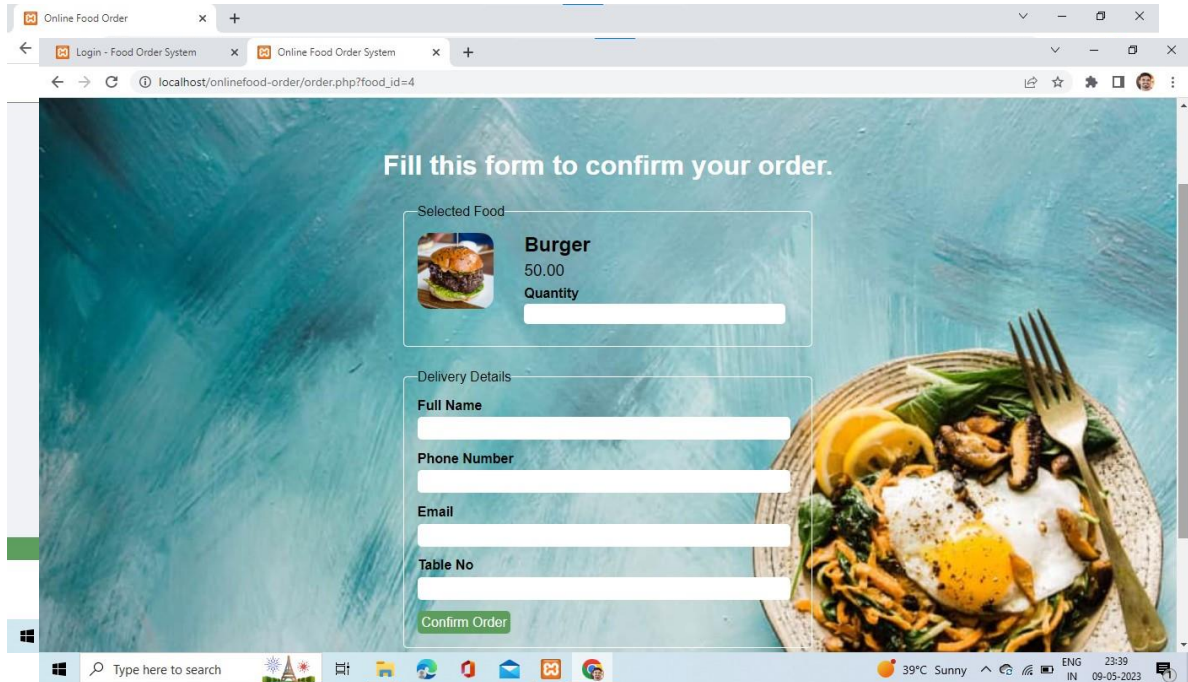
Once the customer has selected the items they want to order, ask them to confirm the order by providing the following information in sequence: quantity of food, name, email, phone number, and table number.

Start by confirming the quantity of each food item the customer has ordered. For example, if the customer ordered two pizzas and a side of fries, confirm by saying, "So that's two pizzas and one side of fries, correct?"

Next, ask for the customer's name. Say something like, "May I have your name please?" After the customer has provided their name, ask for their email address. Say something like, "And may I have your email address, please?" Once the customer has provided their email address, ask for their phone number. Say something like, "And can I have your phone number, please?"

Finally, ask for the table number where the customer will be sitting. Say something like, "And lastly, what is your table number?" After the customer has confirmed all of the information, repeat the order back to them to ensure that everything is correct. For example, "So that's two pizzas and one side of fries for [customer's name] at table number [table number], with the email address [customer's email address] and phone number [customer's phone number], is that correct?"

Once the customer confirms the order, you can proceed with processing their payment and preparing their food.

- Order details: The dashboard should include a section that displays information about individual orders, such as the order number, customer name, order status (e.g., confirmed, pending, delivered), and order total. This can help admins keep track of all incoming orders and ensure that they are being processed efficiently.

- Revenue tracking: The dashboard should display a revenue tracking section that shows total revenue for a given time period (e.g., daily, weekly, monthly, or yearly). This can help admins understand how much money is coming in and identify trends over time.

- Customer management: The dashboard should include a section that allows admins to manage customer information, such as names, email addresses, and phone numbers. This can help admins keep track of customer preferences and ensure that they are providing excellent customer service.

- Analytics: The dashboard may also include an analytics section that displays information such as popular items, order trends, and customer feedback. This can help admins identify areas for improvement and make data-driven decisions to improve the business.

Overall, a dashboard for a food delivery service can be a valuable tool for admins to monitor key metrics and make informed decisions about how to optimize the business for success. By providing detailed information about food orders, revenue, customers, and analytics, the dashboard can help admins stay on top of their operations and provide excellent service to customers. As an admin of a food delivery service, you may have access to a food dashboard that allows you to manage and update various aspects of the website or application. Here are some common tasks that you may need to perform on the food dashboard:

1. Add new food items: You can use the food dashboard to add new items to the menu, including the name, description, price, and any dietary information. You may also be able to upload images of the dish to make it more visually appealing to customers.

2. Delete food items: If a menu item is no longer available or has been discontinued, you can use the food dashboard to remove it from the menu. This can help keep the menu up-to-date and prevent customers from ordering items that are no longer available. Update food item information: If the price or description of a menu item needs to be updated, you can use the food dashboard to make these changes. This
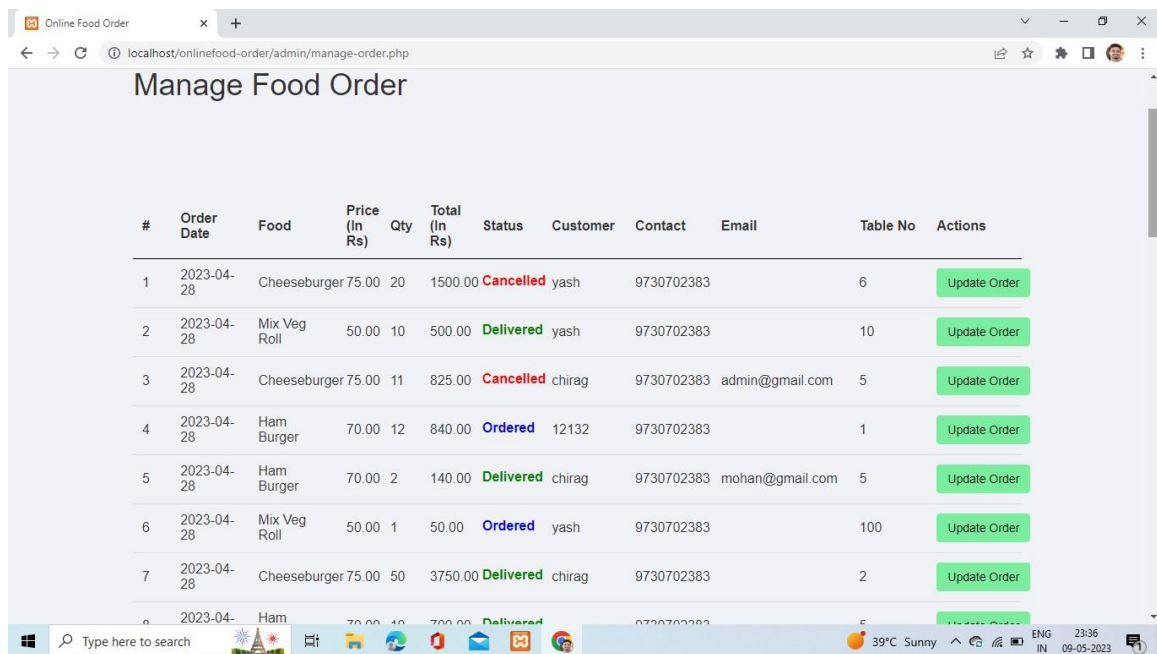
can help ensure that the menu is accurate and reflects the latest information about each dish.

3. Update order status: When customers place an order, you may need to update the order status to indicate that it has been received, prepared, or delivered. You can use the food dashboard to update the order status in real-time, which can help keep customers informed about the progress of their order. Manage customer details: If customers have questions or concerns about their orders, you may need to access their account information to resolve the issue. You can use the food dashboard to view customer details such as their name, email address, and order history, which can help you provide better customer service and support.
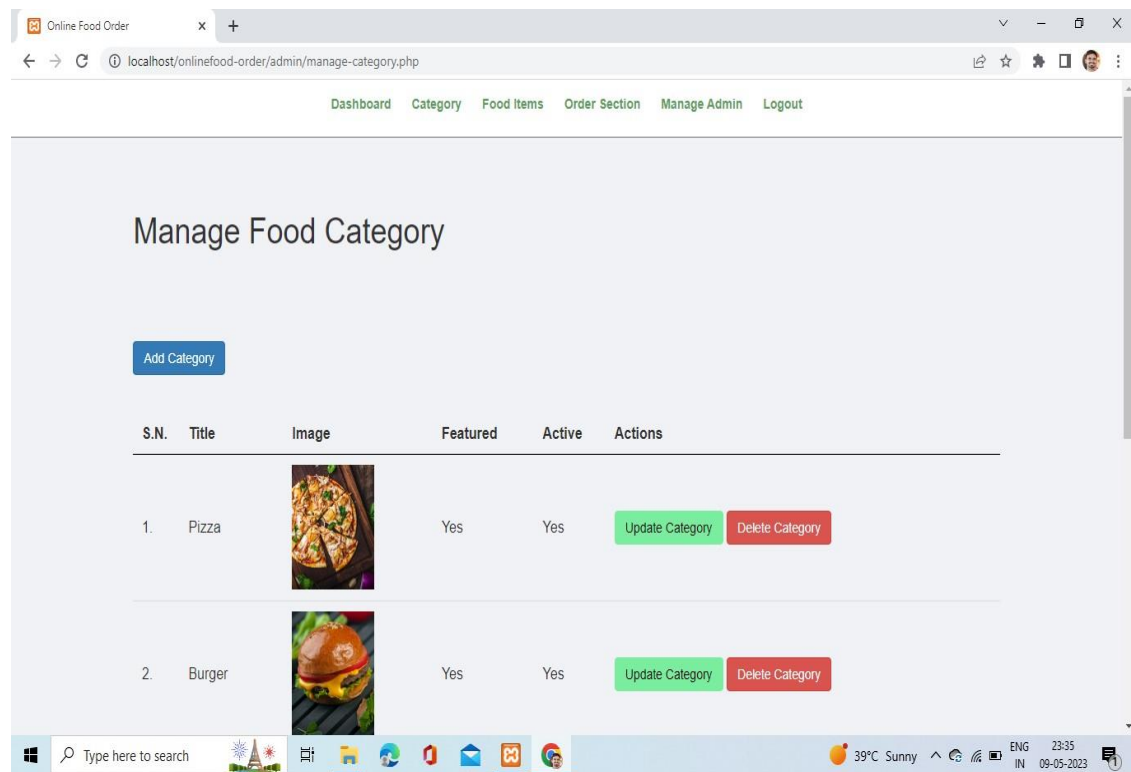
Overall, the food dashboard is an essential tool for managing and updating the food delivery service, allowing admins to add, delete, and update menu items, update order status, and manage customer details in a centralized and efficient way. As an admin, you can update the food categories of your restaurant's menu. This can include adding new categories, deleting existing categories, and adding images to each category to make them more visually appealing to customers. Here are some steps you can follow to update food categories:

Log in to your admin account on the website or application that manages your restaurant's menu. Navigate to the "menu" or "categories" section of the admin dashboard. To add a new category, click on the "add category" button and enter the name of the new category. You may also be able to add a description of the category to provide more information to customers. To delete an existing category, select the category you want to delete and click on the "delete" button.

Be sure to double-check that you want to delete the category, as this action cannot be undone. To add an image to a category, select the category and click on the "edit" button. Look for an option to upload an image, and choose an image that represents the category well. This could be a photo of a dish in the category, or an image that evokes the type of cuisine in the category. Once you have made your changes, be sure to save them by clicking on the "save" or "update" button.

After updating the categories, you may need to update the items within each category as well. For example, you may need to move items from one category to another, or add new items to reflect the changes you have made. By keeping your menu categories up-to-date and visually appealing, you can help customers navigate your menu more easily and make informed choices about what to order.

Accessing Live Chat - Steps

User Detailed steps on How to access live chat in food web application Talk.to

To access the live chat feature in a food web application, follow these detailed steps:

1. Open the food web application: Launch the web browser on your device (computer, smartphone, or tablet) and navigate to the website of the food web application you want to use.

2. Log in to your account: If you have an existing account, enter your login credentials (username and password) and click on the "Sign In" or "Log In" button. If you don't have an account, create a new one by clicking on the "Sign Up" or "Register" button and following the registration process.

3. Navigate to the support or help section: Look for a menu or navigation bar on the website. Typically, you'll find options like "Support," "Help," or "Contact Us." Click on the relevant option to proceed.

4. Locate the live chat feature: In the support or help section, there might be various support channels available, such as FAQs, email support, or live chat. Look for the live chat option or an icon that represents it, such as a speech bubble or a chat icon.

5. Initiate the live chat: Once you've located the live chat feature, click on it to start the conversation. In some cases, a chat window will open directly, while in others, you might be redirected to a separate chat support page.

6. Provide your query or request: In the live chat window, you'll usually see a text input field or a prompt asking you to enter your query or request. Type in a brief description of your question or issue, providing as much detail as possible.

7. Wait for a response: After submitting your query, wait for a support agent to respond. The response time may vary depending on the availability of support staff. Some applications provide estimated wait times or queue positions to manage expectations.

8. Engage in the chat conversation: Once a support agent responds, a chat conversation will begin. Engage in the conversation by reading their message and responding accordingly. Describe your issue or ask any follow-up questions if needed.

9. Follow the support agent's instructions: The support agent will guide you through the troubleshooting process or provide the necessary assistance. Follow their instructions, provide any additional information they request, and answer any questions they ask.

10. Conclude the chat: Once your issue has been resolved or your query has been adequately addressed, thank the support agent for their help. If you have any remaining questions or concerns, make sure to ask before ending the chat.

11. Close the chat window: After the chat session is complete, you can typically close the chat window or click on an "End Chat" or "Close Chat" button to disconnect from the live chat.

Note: The specific steps may vary slightly depending on the design and features of the food web application you're using. However, these general steps should help you access the live chat functionality in most applications.

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Dissemination of Work

1)Review Paper - International Journal of Advanced Research in Science, Communication and Technology
"Examining The Structure of QR Code to Improve Encryption and Decryption"

Authors: Chirag Soni, Praful Wankhade, Vedant Borkar, Yash Khadole

Journal: IJARSCT | ISSN 2581-9429 (online),

Date: 4th April 2023

DOI: 10.48175/IJARSCT-9287

2) Competition – IEEE Technovation 2023 Division 6

"QR Based Online Food Ordering System"

Members: Chirag Soni, Praful Wankhade, Vedant Borkar, Yash khadole

Date: 8th April 2023

      Certificate of participation

Information of members