iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** V **Month of publication:** May 2023

DOI: https://doi.org/10.22214/ijraset.2023.53011

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue V May 2023- Available at www.ijraset.com

E-Canteen System

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Abstract: ***E-canteen System is designed to reduce time of both customers and staffs. This project reduces people's work because everything is automatic. The main advantage of ordering online is that ordering is very easy for customers and employees. When customers go to main menu page, they can see an updated interactive menu with all available options, and prices will vary according to the options selected. Once the food item is selected, it is added to their order and customers can view the details at any time before checkout. This provides an instant visual overview of what has been selected. When ordering from the web page, it is entered into the database and then received in real time by the web-based application on the restaurant side. In this system, all items in the order are displayed along with their status. For the convenience of our customers, our system also includes a pre-reservation function. Our restaurant management system keeps track of everyone who uses the restaurant for lunch. The solution is designed to meet the needs of all potential customers. Our solutions can be used to provide restaurants for the entire organization.***

Keywords: Online Payment, Social Distancing, Table Booking, Event Notification, Discount, E-menu , Automatic Customer-ID, Home Delivery.

I. INTRODUCTION

The e-canteen has an electronic menu with food recommendations. Users must first create an account to use the service. It will provide a list of different menu categories and their different food items. Customers can choose the product they want and pay the price via the online payment gateway system or in cash. After the order is placed, the restaurant staff will instantly receive the order information and prepare the order. In our system there is also a feature of booking tables. Customers can also do booking for events such as birthday or anniversary celebrations etc. Digitizing the restaurant will help provide better services to the users and reduce the time spent. The languages used in this system are vue, nodejs, sql database, html and CSS. Initially the menu will be entered on the website by the administrator along with the prices. All items can be edited and deleted. Finally, we will use user feedback to improve the service and make it accessible to everyone. The online system will help food companies prepare food in advance. Admin can edit meal plans and deliveries. Therefore, customers will receive fast service. Updates to the database will be monitored by managers or employees authorized by the manager. User information, such as identifying consumer products, will be processed and sent to the database. Data security is done by the standard encrypted and server database.

II. LITERATURE SURVEY

1) B. Sutar et al. [1] -This Application provides the list of different menus with different categories user can select any food item from canteen and order for it by using debit card or Google-Pay. The main purpose of this application is that it demonstrates the route from adapting materials for developing an online environment and maintained social distancing.

2) Kowshik reddy et al.[2]-proposed in which The Users of web ordering system will connect with the application through a series of simple forms(IV). For Each category of food has own form associated with it which presents a drop down menu for choosing which specific item from the category should be added to the order. The user's feedback will be taken to improve the service and to make it available to everyone.

3) Tazeen Khan et al.[3]-proposed the application in which is a cloud based cashless system which is based on RFID and e wallets for transactions. The card provided is an RFID based card that will hold the number of the customer. Card number and customer's mobile number uniquely identifies a customer. Card is used to place an order at the counter. Order is notified to the cooks who will also have a touch enabled tablet in which they can view the order and any customization if specified.

4) Rupali B. Kale et al[4]-This system will allow their users to know what items are available under their canteen shop and its price at which they are available. In the meantime, customers are also provided with the option of buying a specific item. If the customer enters the yes option, then they can enter the number of quantities for each product they will able to get the bills for the items which they have purchased and finally back up their purchased items from the pickup center. Thus, the admin will only be having the duty to visualize the final bills and supply higher services to their new and existing customers.

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5) Shourya Pradhan et al[5]- this project is to develop a system which can take orders at the counter and via online application and display them on monitors in the kitchen The orders placed in advance will have an ORDER ID which shall be used to get the order delivered directly to the serving counter. Payments can be made via cash or e-wallet at the counter. Payments for online ordering can be made only via e-wallet. SMS alerts would be sent for events like 'Order Placed','Order Accepted','Order Declined','e-Wallet Payment Successful','eWallet Recharge Successful',Wallet Refund Successful' and 'Order Delivered'.
6) N. Durga Swathi & T. Durga et al[7]-proposed the project system contains the e-menu cards that contain the details of the food. The user initially has to create an account for the utilization of the service. It will provide the list of different canteens and their various items menu list. The customer can select the desired item and can pay the amount through online payment gateway system. Immediately after booking the order, the canteen people will get the information of the order and they prepare the order.
7) J Rajanikanth et al.[8]-proposed the project in which canteen owner or canteen administrative person will give a RFID card to the user. This user can be a student in case of collages and an employee in case of an organization or company. This system is very effective. Advantage of this system is that it is really help full and effective for those people who have to go to canteen on daily basis. They need not to carry cash. A card is allocated to each user and user can recharge this card with a certain amount.
8) Ashwini J et al [9]-The proposed system is based on touch technology in restaurants based on android technology. The architecture attempts at a full coverage of the three main areas of restaurant: the Serving area, the Kitchen, and the Manager counter

III. PHASES

A. *User Phases*

Users of the E-canteen system, namely canteen customers, must be provided with the following functionalities:

1) Create an account.
2) Log into the system.
3) Navigate the menu.
4) Apply filters in menu as per choice.
5) Select an item from menu.
6) Add an item to the cart.
7) Remove item from the cart.
8) Adjust quantity of the item.
9) Provide address and contact number for delivery.
10) Select Payment mode.
11) Place an order.
12) Table reservation.
13) Customers can track their order status.

B. *Staff/Admin Phase*

1) Real time access of an order.
2) Automatic Bill id generator.
3) Check payment status.
4) View user id.
5) View delivery details.
6) Check date and time of an order.
7) Check Total amount for order.
8) Update Status of an order.
9) Cancel order.
10) Update payment status.
11) Check Reservations details

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IV. METHODOLOGY

The development of this application went through SDLC (Software Development Lifecycle). "The software development lifecycle, also known as SDLC, is the process of creating or modifying software using the standards and methods used to create it" (Alshamrani and Bahattab 2015). The waterfall methodology is referred to as the linear sequential model, providing a sequential process of definition, design, implementation, testing and maintenance(as shown in fig-1). This waterfall method also provides easy-to use software as the model is complete. Using the Waterfall method, the project is divided into phases, each continuous without overlapping. The project emphasize planning, timelines, target dates, budgets and implementation. In addition, strict control is maintained throughout the life of the project through extensive documentation (use of specific materials, use of specific requirements and designs) and review and approval.

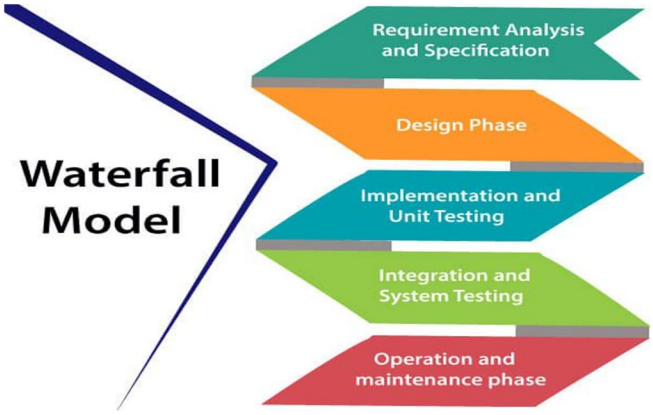

fig-1

V. MODULES

The proposed system is divided into distinct named and addressable components known as modules which are integrated to meet the requirements of the problem.

- User Module
- Admin /Staff Module
- Menu Order Module
- Cart Module Table
- Table Reservation Module
- Payment Module

1) User Module

User modules are modules that create user accounts (as shown in fig 1) in the system. After creating an account, the user can log in to the system. Users must save their information and then use their username and password to access the application. In this model, the user can also navigate the menu and order food from the menu. The module also provides users with options to update account details as well as delete account details.

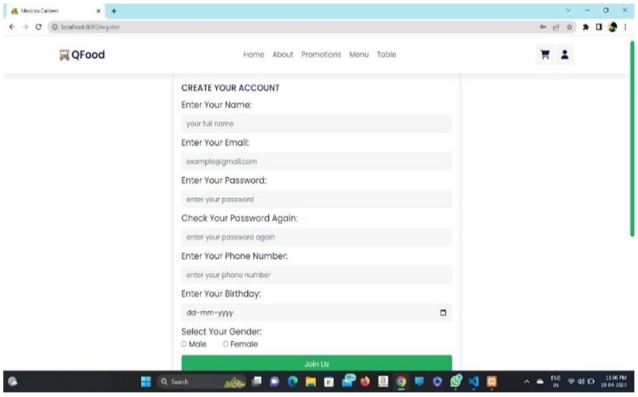

fig-2

2) Admin/Staff Module

In this module admin can track all orders that are being received. He can also track user details which included user id, contact details and address. All user details are stored in database. Admin can also check and update status of payment. Admin can also accept or reject the order. Day to day orders details can be tracked by admin (as shown in fig-3 and fig 4) Order Status can also be updated by admin which is directly viewed by customer.

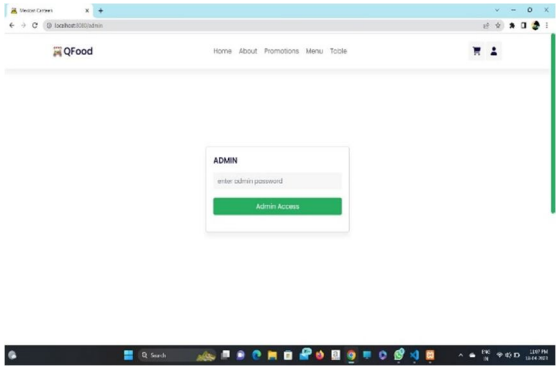

fig-3

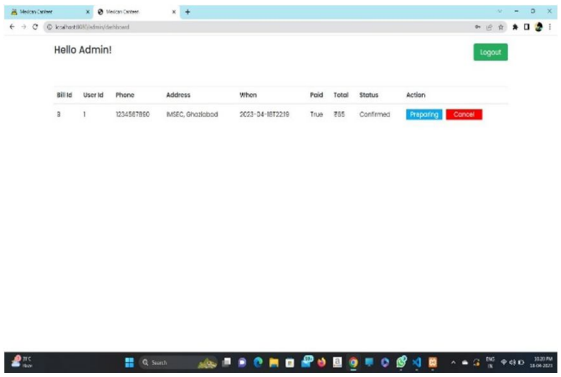

fig-4

3) Menu Module

In this module customers can navigate the menu after login to system . Customer can apply the filter to check menu dishes as per choice . In E- menu all food items and their prices are listed there by categories and by offers. There is also different offers and discounts are visible in e-menu. Order can be selected and can be added to cart by clicking a single button. Customer can change quantity during selecting the items(as shown in fig-5).

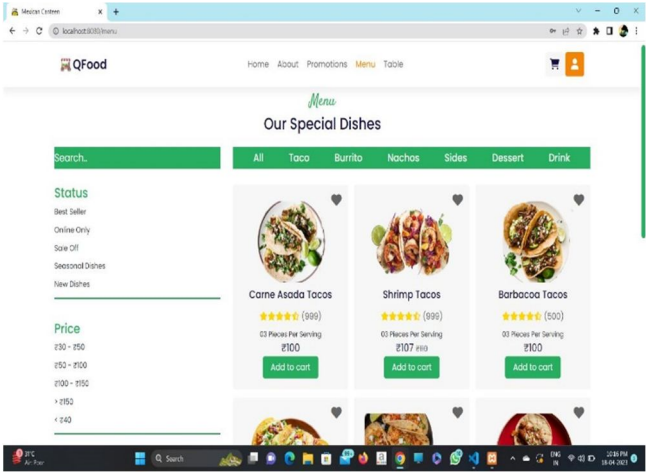

fig-6

4) Cart Module

The cart module is to adding the food to cart and also can change quantity of food item. Customer can add or delete item from cart and during checkout operation(as shown in fig-7).

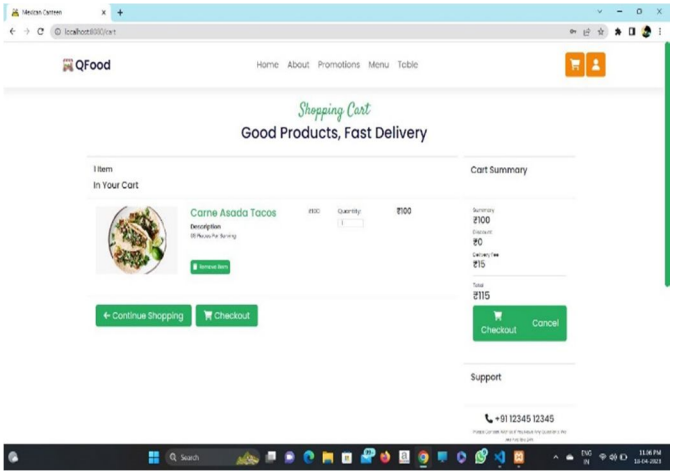

fig-7

5) Payment Module

In this module, users can confirm their orders by paying for their orders. The user can select any of the two provided method that is either cash on delivery or UPI (as shown is fig-8 and fig-9). If the user selects UPI a QR code will pop-up for the user to scan and pay or else if user will select cash the payment will be collected at the time of delivery in cash and admin will be able to update the payment status from pending to paid after collecting the money.

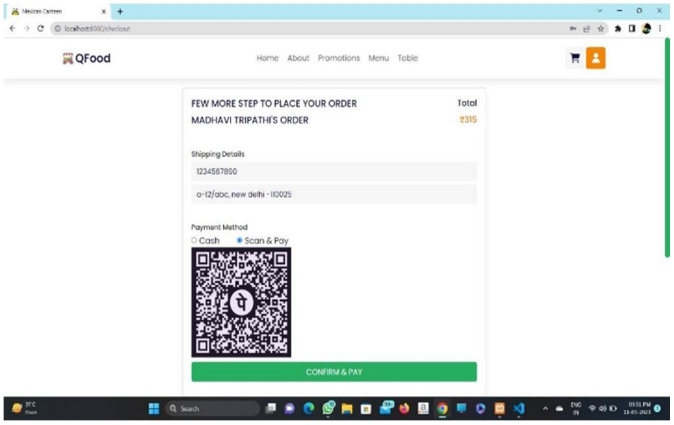

fig-8

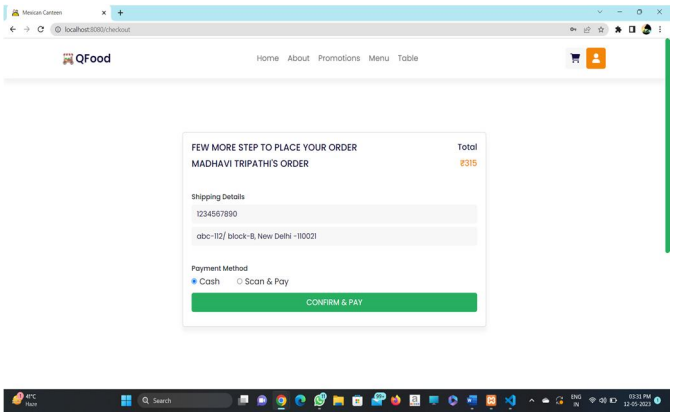

Fig-9

6) Table Reservation Module

In this module customers can make a reservation for a table by providing some details such as name, phone number, number of people, number of tables required, date and time and a membership card. The maximum of people allowed is less then 50 as per the capacity of canteen. The customer can add any note or message as per the requirement and can easily make a reservation. The customer who is making the reservation must have taken the membership of the canteen and must provide the membership card number to make the reservation (as shown in fig-10).

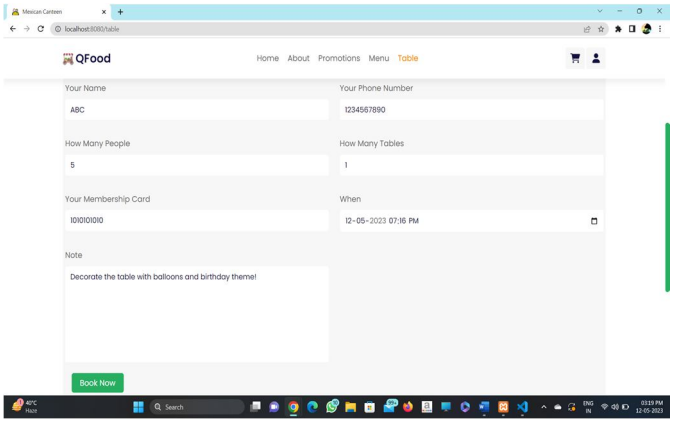

fig-10

A. Use Case Diagrams

The use case diagram of E-Canteen system is used to show all processes that are involved when the customer makes a call forth the system. This diagram possesses (as shown in fig-11) the structure. Actors of this proposed system are customer and Admin/Staff. The use case is listed down enclosed in bubbles or oval shape and all the use cases are connected with the help of arrow to the respective actors who can perform the provided use case. The diagram is a visual representation of what are the actions which can be performed and at what end the functions can be performed. This diagram make it easy for people to understand the basic idea of the project and its functionality.

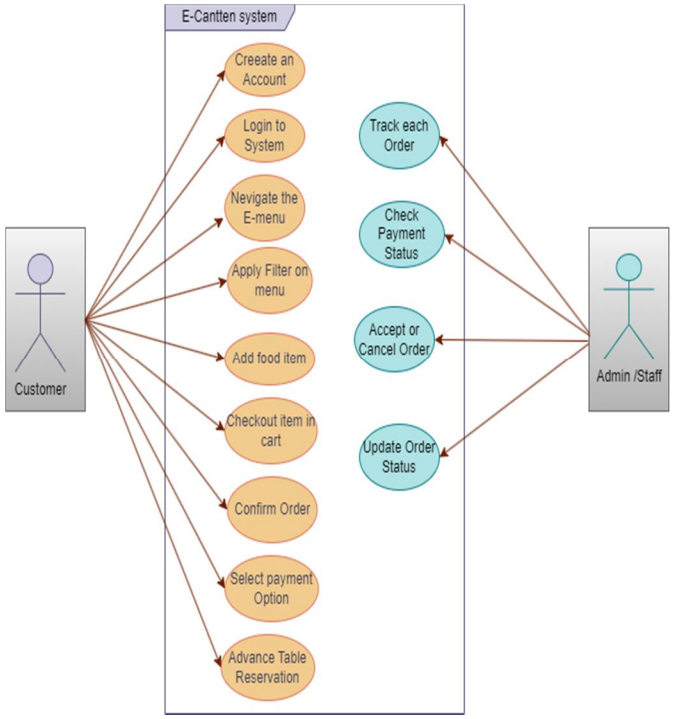

fig-11

B. Activity Diagram

Activity diagram of this e-canteen system is a planned picturization of how this project will work. It shows that how this system interacts with its customers. The activity diagram of proposed system is shown in fig-12. The activity diagram displays the basic flow of the application and at what stage which action will lead to which phase. The stages and phases of the application is displayed in rectangular box and the decisions to be taken are shown in diamond shaped box whereas the decision is shown by the arrows connecting to what the decision will lead to.

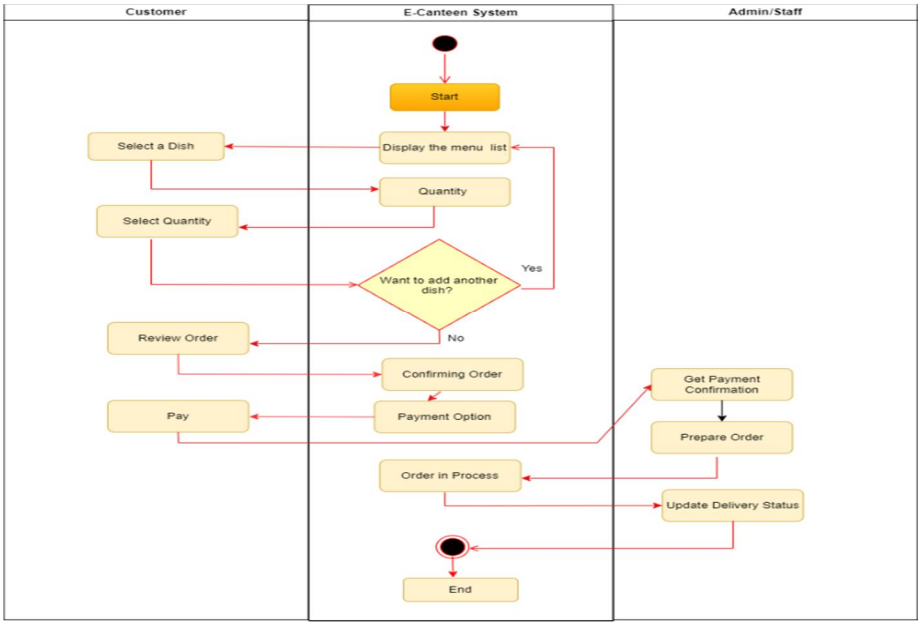

fig-12

C. Hardware Requirements

1) Processor i7 based computer or higher
2) Memory up to 8 GB Ram
3) Hard drive: 237 GB

D. Tools And Techniques Requirment

1) *HTML, CSS:* HTML is known as Hyper Text Markup Language and it is used to create documents which are required to be displayed in a web browser. Where as CSS also known as Cascading Style Sheets is used to describe the style and look of the HTML document in a web browser. It allows us to put colors, change font style and make the content of web page attractive and eye catchy. These both are the basic requirement to make any website.

2) *VUE. JS:* VUE.JS is an open-source JavaScript frontend framework used for building UI (user interface) for a website or web application. It is used over HTML and CSS built web pages to modify the basic user interface and make it more attractive and easier to understand for users. The main reason for selecting Vue for our project is that it consists of single-file component-based architecture which means that every part of the application can be tested and programmed independently, which make it less complex and provide better understanding of the code.

3) *Node JS:* Node JS is an open-source server environment which run on any operating system, Node is basically a backend JavaScript runtime environment. The basic advantage of using Node.JS is that it helps in programming both client side and server-side JavaScript without using any other language making it easy and efficient for programmer to use it and also decrease the overall complexity and need of another language for client-side development.

4) *MYSQL:* MYSQL is an open-source relational database management system. A relation here refers to the way of storing the database in tabular format making it easy to manage and organize. The main reason of selecting a relational database management system is that it makes data more structured and make use of operations easy as compared to other database management system. MYSQL is used for storing different data of our canteen such as user data, menu items with price and type, cart information of users, reserved table details, bill status of users and mode of payment and also bill details.

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5) *visual studio code:* Visual Studio Code also known as VS Code is a popular tool used for editing source-code. It is made by Microsoft and runs on any operating system. Visual Studio Code makes it easy to use any programming language to code without switching the editor or its interface. The main reason to use visual studio code is that it is light weight and powerful source-code editor which is easy to run and support many different programming languages and allow us to use and integrate them on the same platform.

E. Advantages

1) *High Data Security:* As the data is stored in database and the access of database is only with the admin, all the user data is safe ensuring no data breach.
2) *Good Data Accuracy:* The admin gets all the user detail along with date and time of the order, payment status, reservation details, bill details, etc. All the data is maintained in a relational database which ensures a very precise data accuracy.
3) *Good Business and Service:* Since the admin receives order in Realtime and can update about the same to the customer it increases the chances of good user experience and attract the customers more towards the business.
4) *Communication Equipment and good Customer Service:* The customer gets a clear view of applicable discounts and can apply filters to the menu to select the food. These features improve the customer service and as it requires just internet connection and browser the equipment needed are minimum.
5) *Minimum time Work:* As most of the works like taking orders, taking reservations, applying discount are done automatically done which decrease the work load on the staff of the canteen and let them focus on other works like providing customer delicious food and service.

F. Cons

1) Requires internet connection.
2) Customers first need to create an account to access service.
3) The customer must have membership card to reserve the table

G. Application

This application can be used in the cafeteria, canteen (College, Organization), and restaurants.

VI. FUTURE SCOPE

An E-canteen system based on online management. This can be improved through the fully automation of the software. Data collection requires human oversight. We can collect data instantly with automation. This will reduce the effort and time of manual review. The updated information will be finalized and the admin will be informed periodically. We can also use machine learning algorithms to predict which foods customers will like the most. Customers will also provide feedback to be sent to the database. Using machine learning algorithms, this feedback will be analyzed to determine which foods customers like best and should be displayed first. The menu can also be customized according to the manager's choice and availability.

VII. CONCLUSION

The E-Canteen application is designed to help both customer and admin by providing best possible service to the customer and improving sales and attracting more business for admin. The canteen application help customers in saving their time by ordering food from anywhere which also reduce physical rush at the canteen itself. Users can also book tables to experience hassle free experience of enjoying at the canteen's ambience itself and not keep waiting in queue to find a seat. The canteen application divides the customers in two directions- virtual and physical respectively which attract more customers in both areas and let admin focus more on providing quality serv ice and delicious food.

As we analyze some previous papers, we observed that there were many other techniques used previously for this project like RFID card, E-wallet, Real Time Clock, etc. But there are some drawbacks in them like card could be misplaced, payment might not be completed with only reliability on E-wallet.

Features which make our web application different from other are that we support both UPI as well as cash payment for the cases when UPI might not be completed, table reservation system for celebrations, filters in menu according to price, category, taste for ease of customer to select appropriate dishes. We can implement this system in public places like bus stand, railway stations for customers so that they can save their time by pre-ordering their food to avoid last moment rush.

Also, managing accounts for admin is easy with the help of application as it keeps a track of the payment mode, status and the amount. Admin can also easily calculate the total sales of any day or month as required. The admin gets trouble free management experience of the order and can update the status of the same for customers. Admin can also take a look at people who have booked tables and at what time along with the number of tables required. This application improves user experience and sales of canteen at the same time.

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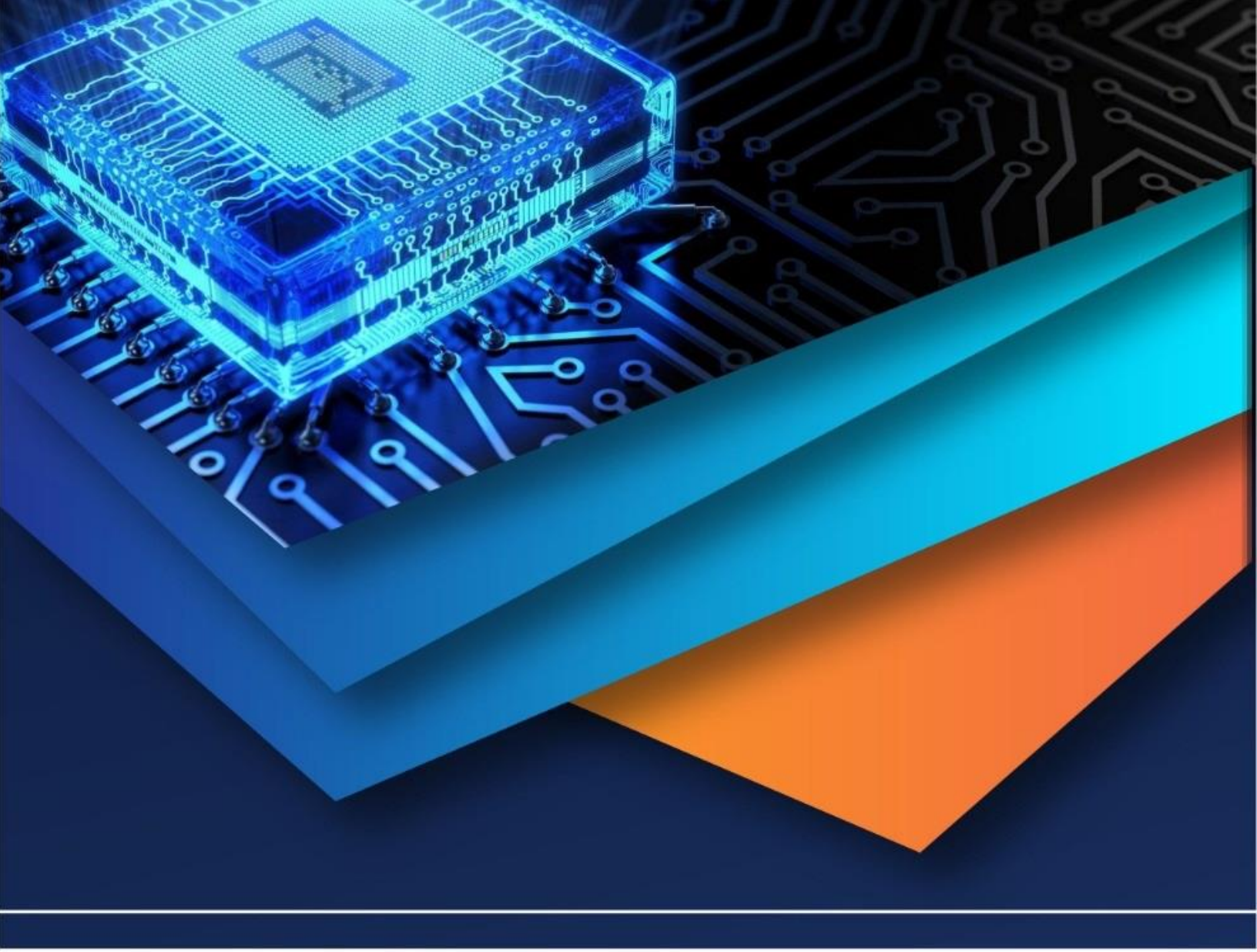

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