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Smart Canteen using Predictive Analysis

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Abstract: *The average person doesn't have much time these days to spend in the cafeteria simply waiting For the waiter to take their order. Many customers come to the canteen during their lunch break and Break, leaving them with little time to eat before heading back to their respective workplaces or educational institutions. As aresult, individuals can order food whenever they want without repeatedly ringing the waiter thanks to this software. Our Web application nenables customers to make earlier reservations for food. The customer must reserve their meal or seat using our website. When customers make a reservation for meals, the chefreceives the order and begins to prepare it.The current methods are manual, requiring paperwork for the billing system and file maintenance as well. In the recommended method The user will have access to the e-menu after making the payment online. Users will then provide feedback to restaurants on the basis of this feedback we recommend the best restaurants or hotels to the users. By donating leftover food to NGOs, we have attempted to reduce restaurant food waste in this system. In the event that eateries have any leftover food, NGOs will make a request. The restaurant management of that specific establishment receives this request.*

Keywords: NGO, Reduce food wastage, Web Application, Recommend Restaurant, Online food Menu

I. INTRODUCTION

Our system offers a web interface to businesses that enables them to establish an electronic menu and perform various functions, including the addition, removal, and modification of menu items. To use the service, consumers must create an account, which will provide them with a list of different canteens and their numerous menu items. Customers can then select the desired item, place an order for home delivery, and pay for it using the online payment gateway or cash on delivery. Additionally, users can book their desired hotel seat through the system. Once an order or seat is booked, the canteen staff receives the relevant information and prepares the food, which can be saved in a database. This means that customers will not have to wait at the delivery location, as their meal will be prepared ahead of time. Initially, the restaurant adds the menu and pricing information to the site, and can update it easily from time to time, including the details of any food items. The system also allows for the updating and deletion of any menu item. Feedback provided by customers who have ordered will be used to recommend the best restaurants, canteens, hotels, and cafes to other users. This will result in fast service and no wait times for meals. The restaurant will be responsible for keeping the database up to date.

The connection between NGOs and hotels, restaurants, canteens, or cafes will simplify the NGOs' job. They no longer need to search for these establishments or publicize their need for food donations. Rather, any hotel, canteen, or restaurant can request the assistance of NGOs in their activities. Any restaurant, canteen, or hotel with excess food can enter the details on our website, which will be forwarded to nearby NGOs via email or through the website. NGOs can then confirm the donation by selecting the food they require and clicking on the confirm button. The record of this donation will be stored in the database, and the restaurant will be notified accordingly. Donating food to those in need not only benefits the recipients, but also reduces food waste.

II. LITERATURE SURVEY

2.1Canteen Automation System: An Approach for “Smart City” Planning

In this project they have built an automated canteen management system that will make ordering and paying for food at any canteen easier and time-efficient, which will enable users to avoid all the current problems and have an effective

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and well-managed system. Using a NodeMCU, RFID reader and RFID tags they had proposed the solution of the aforementioned problems. NodeMCU would act as the development board and also allow seamless connection to Wi-Fi as it comes with a built-in Wi-Fi module. The RFID reader will allow the users to swipe their respective RFID tags for initiation of the process and update their information retrieved from the database. Together the system would allow a cashless, effective and time saving approach to the currently existing long queued systems.

2.2 Mobile Application for Canteen Automation System using Android

They proposed a system, which allows users to register, order food based on real time e-menu, which will go to cook , who will cook the food based on the order displayed on the screen nearby. Require an android phone if the user is ordering. It enables customers to register online, read and select the food from an E-menu card and the user wants to use an android application. The result after choosing the food from the E-menu card will directly appear on the screen near the chef. The gadget is a mixture of android as nicely as an internet application. The barcode system is used for reading the products. By the usage of this application the work of the waiter is decreased and we can also say that the paintings are nullified. The benefits of this is that if there is a rush in the canteen then there will be a chance that the waiter will be unavailable and the user can at once order the food to the chef on-line by the use of this application. The user will have a username and password, by which they can login into the system. This means that the purchaser is the regular consumer of the canteen. But the drawback of this system is that fake reviews cannot be detected. Also People need to download apps after going into the canteen.

2.3 Canteen Automation System with Payment Gateway

An automated web based system which will maintain, manage and process orders of customers in a speedy way using a website and its stored database. The user will login into the website and select the order and place it after confirmation and proceed towards making payment. They have used python, html, Django, css, mongoDB and xampp platform for the implementation of the project.

III. SYSTEM DESIGN

Our proposal is to develop a web-based application that can automate the food ordering process for restaurants and hotels, with the goal of addressing the limitations of current systems. We designed the module so as to decrease the waiting time of customers, make everything digital and reduce food wastage by connecting hotels/restaurants to NGOs. We have used Python language and Django Framework to implement the system. We store all the information related to restaurant, Ngo and customer in the Django sqlite3 database. Our system will dynamically add, update or delete the data from the database as per users need. Also our system will use this data to create recommendations to the customers. We have four module in this system which will do the following tasks,

3.1 Customer Module

- See Menu
- Order Food from favorite restaurant
- Unique user ID.
- Cart items viewed by the customer to do modifications if necessary.
- Make Payment.
- Payment gateway for cashless transactions Or Cash On Delivery transaction.

3.2 Admin Module

- Add or delete the account of all users.
- Also can delete the products from the database.

3.3 Restaurants Module

- Update Menu

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- Remove Food Items
- Manages food delivery from kitchen to customer's table.
- Views ordered food by customer.

3.4 NGO Module

- Request for food.
- Accept the food available by clicking a button.
- NGOs will get The Notification Of restaurants For Left Over food Based on their location

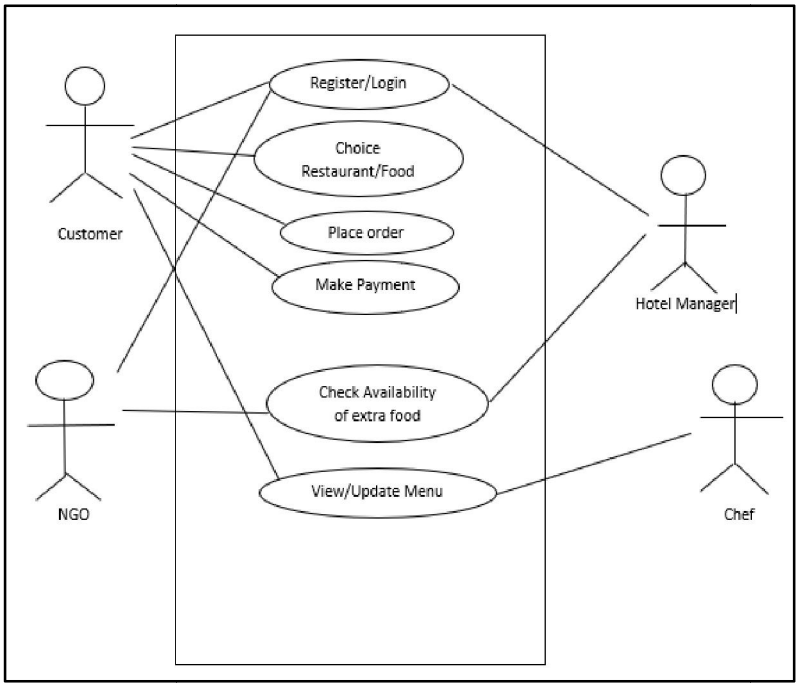

Figure 1: Use Case Diagram

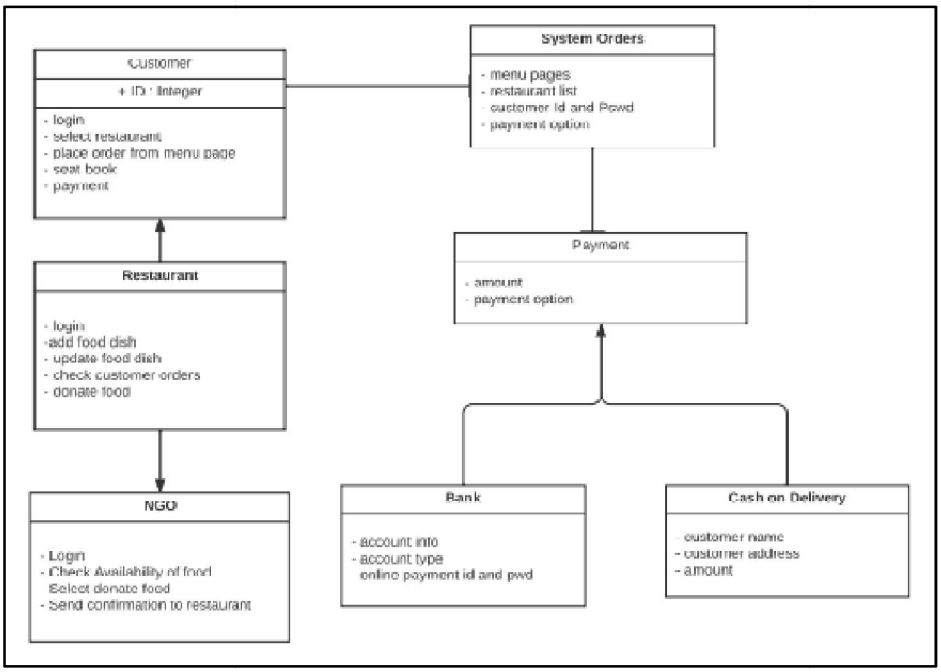

Figure 2: Class Diagram

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IV. SYSTEM IMPLEMENTATION

This is our system's main home page. In the beginning, every user will be directed to a page where they can select their user type, such as a customer, restaurant, or NGO. The login functionality on the main page allows users to access their accounts and interact with the system's capabilities.

Figure 3: Main Home page

This is the homepage of the Restaurant user , here the Restaurant can Add the food dish, Update the food dish, Check the food ordered by Customers and prepare dishes according to it efficiently and Donate food to NGOs .

- **Add Food Dish:** The Restaurant user can add food dishes that will appear on the menu page.
- **Update Food Dish:** The restaurant user can update the details of their food dishes by monitoring the food quantity remaining or by changing the price or description of the food based on their marketing strategy.
- **Food Ordered:** Here the restaurant user will be displayed all the orders placed by the customers for their restaurant/canteen. Based on the order they can start preparing their food.
- **Donate Food:** The restaurant user can give the leftover food to the NGO by providing information such as the name and quantity of food. This will send

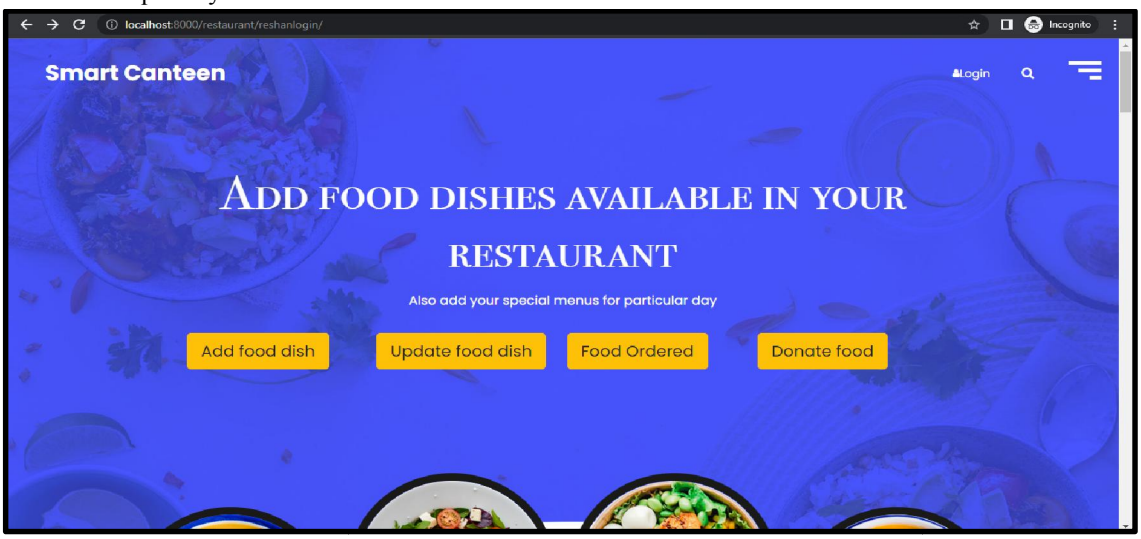

Figure 4: Restaurant Home Page

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This is the page which will be visible to NGOs when they will login into the website, here there will be a list of foods which is donated by the restaurant, canteen or cafe. NGO select any of this according to its preferences.

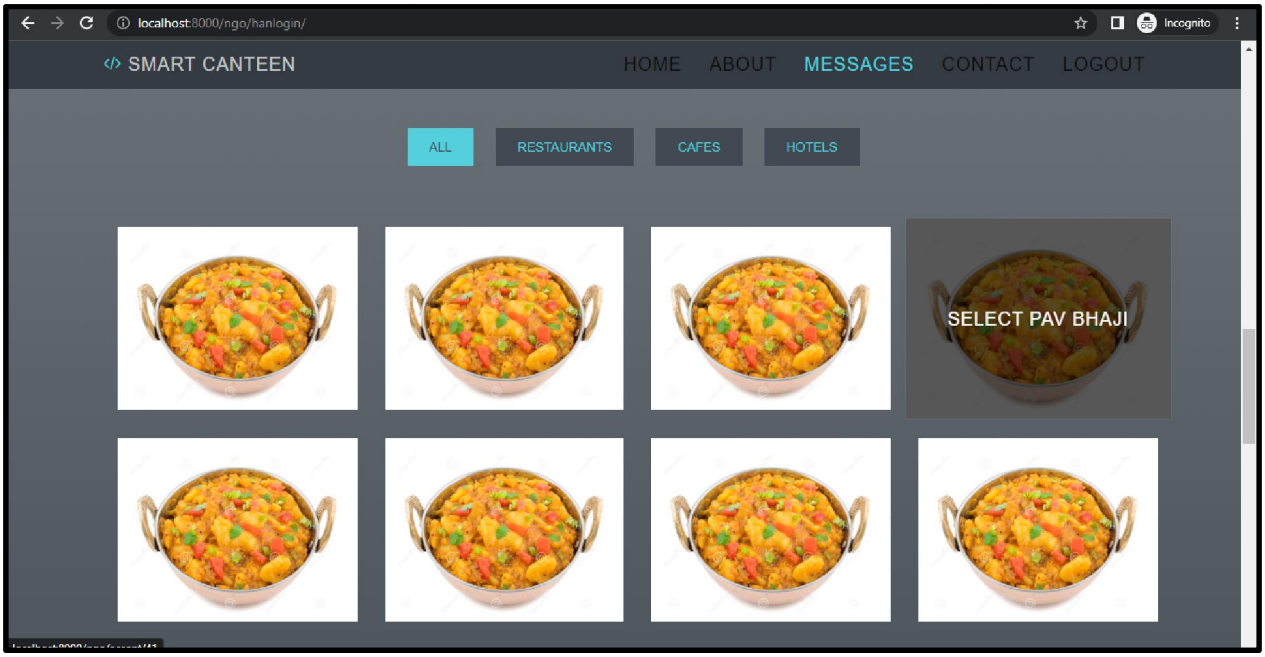

Figure 5: NGO Home Page

The Ngo user can view the details of the dish posted by the restaurant and accept the contribution by clicking on the confirm button. The System will then generate automated email which will then be forwarded to the NGO.
The Restaurant information like amount, hotel name, address, and timing of restaurant and food details will be provided in the email.

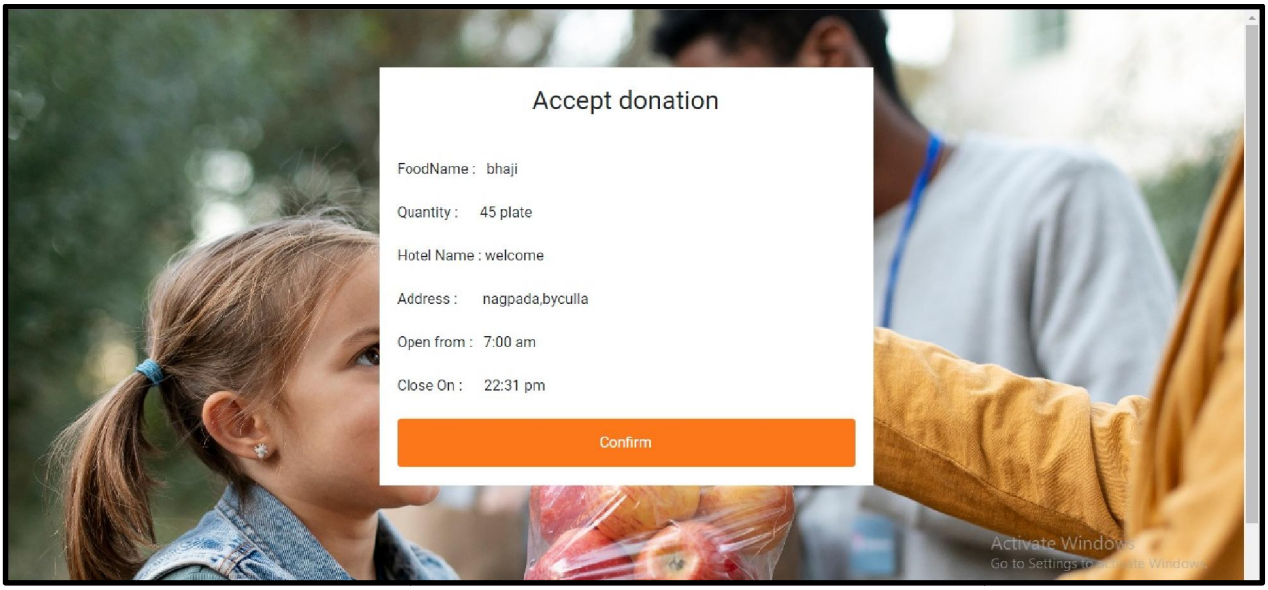

Figure 6: NGO Donation Accept Confirmation Page

This is the home page for Customers, who will order the food from restaurants/cafes/hotels. Here they will be listed with top 8 restaurants or hotels or cafes from which they can select one and order food which will be available into that restaurant. Additionally Customers can directly click on Food to check all the food items irrespective of restaurants. Also they can search for restaurants by providing its name and clicking on search.

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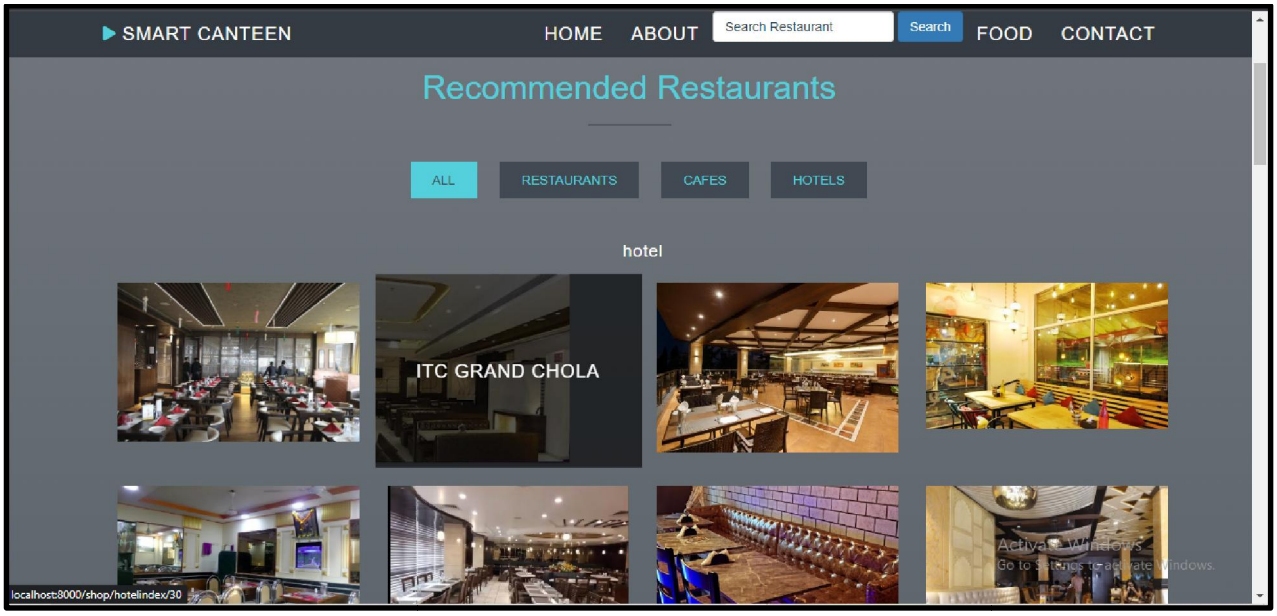

Figure 7: Recommendation of Restaurant Page

The customer can reserve a table ahead of time to save time and can provide information for booking the table. Here customers have to provide their name, phone number, time, food, people and time on which they want to book a table. Our system will automatically check in the database for the availability of tables at that particular time and book table for the customer based on that.

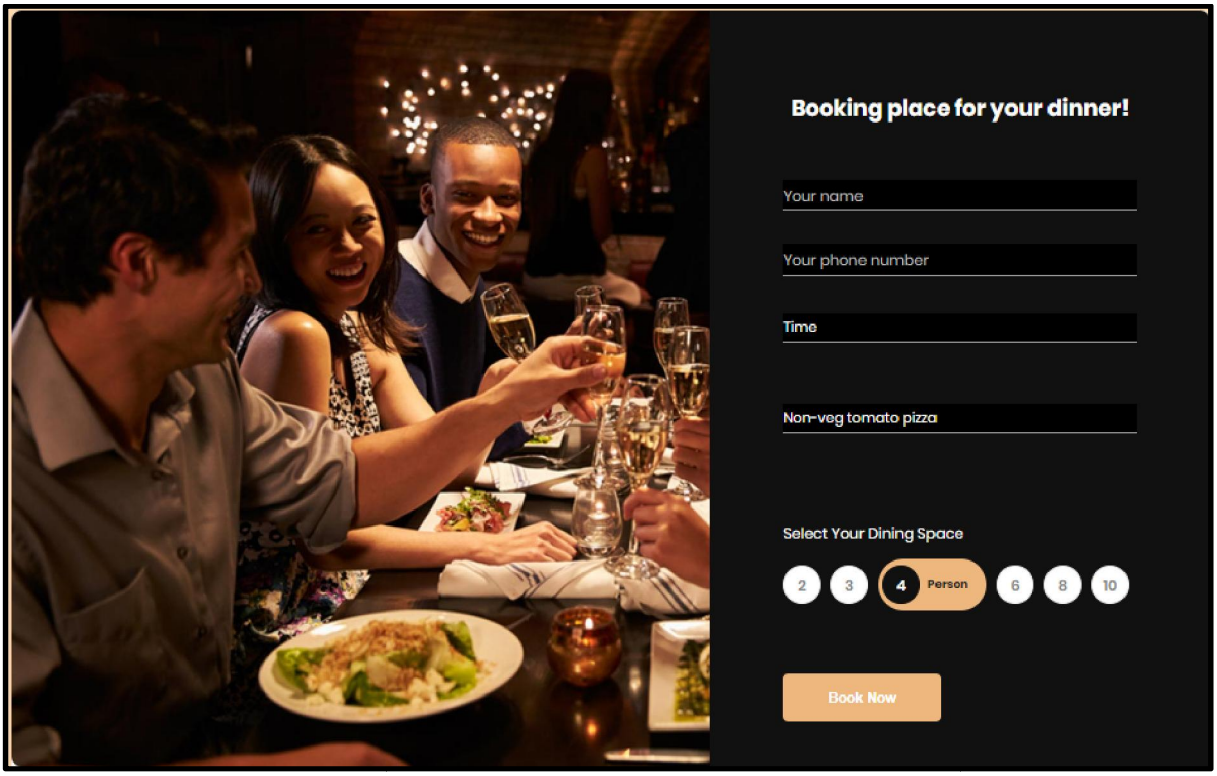

Figure 8: Table Booking Page

V. FUTURE SCOPE

1. A more appealing meal delivery website based on consumer demands. Customers will provide feedback, which will be entered into a database. These feedbacks will be analysed using machine learning algorithms,

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and favoured food products will be offered to frequent users on the web site. The shortcut approaches that use stronger learning algorithms can additionally change the menu list based on the admin's preferences.

2. Use blockchain technology to store hotel and NGO user data and documents in order to offer hotel and NGO users with integrity.
3. We may also use blockchain to try to create smart contracts between hotels and NGOs in order to ensure the quality of meals delivered by hotels to NGOs.
4. We may also register street food sellers using our website following proper verification in order to assist them enhance their profitability and expertise by going online.
5. In the future, we will build more dependable lengthy databases for retrieving records. We will also strive to give better services and online payment options.

VI. CONCLUSION

Our proposed system completely overcomes all the drawbacks of the current canteen system, including the need to maintain customer records, enter data into registers and then maintain those registers, monitor billing, maintain the repository, and keep track of how many items are still in the food inventory. The user first goes to our website, creates an account, and goes through the required steps. They are then directed to the following page, where they can peruse the available menu items and choose and confirm their order. A summary of their order is produced, and user approval is required. Following confirmation, the plan is given to the proprietor of the canteen, who prepares the food item and notifies the customer once it is complete. Also our system mainly focuses on social help by connecting NGOs with canteens, hotels or restaurants so they can easily help needy people.

VII. ACKNOWLEDGMENT

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