Real-time Food Monitoring and Analytics

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ABSTRACT
A real-time food monitoring and analytics system is an advanced technology platform that uses sensors, data analytics, and machine learning algorithms to provide real-time insights into food supply chain operations. This system enables food businesses to monitor and manage their food products from farm to table, ensuring quality, safety, and efficiency. The system tracks food products throughout the supply chain, including production, processing, transportation, storage, and distribution. It collects data on key variables such as temperature, humidity, and location, and uses this information to optimize food handling and storage conditions. Real-time analytics enable businesses to identify potential issues and make informed decisions to prevent food spoilage, reduce waste, and improve overall supply chain efficiency. With the increasing demand for transparency and traceability in the food industry, a real-time food monitoring and analytics system has become an essential tool for businesses to meet regulatory compliance and consumer expectations.

Keywords: Consumer, Food monitoring, Products, Potential issue, Real time, Supply chain efficiency

INTRODUCTION
The traditional food management process can be time-consuming, inefficient, and prone to errors. However, with a Smart Food Management System, organizations can achieve greater efficiency and accuracy in food management processes, while minimizing waste and maximizing profitability. The system helps organizations manage their food inventory and track sales, providing real-time data that enables better decision-making. moreover, a Smart Food Management System can also enhance the customer experience by providing self-service kiosks, mobile apps, and other tools that enable customers to easily place orders, track their orders, and receive notifications when their orders are ready. This not only improves the customer experience but also reduces the workload on staff. In addition, the system can be customized to meet the unique needs of different organizations, such as dietary restrictions, nutritional guidelines, and allergen warnings. This ensures that food items are safe, compliant, and meet customer preferences. Overall, a Smart Food Management System is a powerful solution that helps organizations optimize their food management processes, reduce waste, and enhance customer satisfaction. By leveraging technology, organizations can achieve greater efficiency and accuracy in food management processes, leading to improved profitability and success in a competitive market.

LITERATURE REVIEW
In an automated food ordering system is proposed which will keep track of user orders smartly. Basically, they implemented a food ordering system for different type of in which user will make order or

make custom food by one click only. By means of android application this system was implemented. In Customer using a Smartphone is considered as a basic assumption for the system. When the customer approach to the mess, the saved order can be confirmed by touching the Smartphone.

The list of selected preordered 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. In This system was a basic dynamic database utility system which fetches all information from a centralized database. In research work aims to design and develop a wireless food ordering system in the mess. Technical operations of Wireless Ordering System (WOS) including systems architecture, function, limitations, and recommendations were presented in this system in along with customer feedback for a mess a design and execution of wireless food ordering system was carried out.

It enables mess owners to setup the system in wireless environment and update menu presentations easily. Smart phone has been integrated in the customizable wireless food ordering system with real-time customer feedback implementation to facilitate real-time communication between mess owners and customers. In Paper, the research work aims to automate the food ordering process in mess .Design implementation of food ordering system for mess were discuss in this paper. This system, implements wireless data access to servers. The android application on user's mobile will have all the menu details. Kitchen and cashier receive the order details from the customer mobile wirelessly. These order details are updated in the central database. The mess owner can manage the menu modifications easily. In Paper, this research works on efforts taken by mess owners also to adopt information and communication technologies such as PDA, wireless LAN, costly multi-touch screens etc. to enhance dining experience.

PROPOSED SYSTEM

This system is a bunch of benefits from various point of views. As this online application enables the end users to register to the system online, select the food items of their choice from the menu list, and order food online. Also, the payment can be made through online mode or at the time of home delivery depending upon the customer's choice and convenience. The selection made by the customers will be available to the hotel reception or to the person handling work assignment. Now this same person will assign the orders to the specialist chef to be completed within a fixed duration of time. As soon as the chef prepares the food, the later person forwards the parcels to the delivery persons assigned with the location and customer identity of the customer along with the bill status. With this application the work load of the waiter in the hotels are reduced or in some situations the work is abolished. One of the various benefits of this is system is that if there is rush or a huge crowd present in the restaurant then in that case sometimes unavailability of tables cut downs the restaurants customer. Also, there will be chances that the waiters are unavailable as they are busy in handling others, so the customer can directly order the food to the chef online by using this application, by checking the seat availability in the restaurant. This system allows the staff to serve customer within less time as compared to the manual system.

BASICS AND REQUIREMENTS

This project aims at creating an E-menu for online food ordering from all over the Multan. This allows registered users of the system to easily log in and can easily visit all restaurant's menu online that are available on the site and choose the menu available for the order. Saving time, money & easily order

by sitting at home are major goals of this project. Customers can register themselves and view all the allowed details of the Restaurants of all Multan.

The Main objective of E-menu is to gather all the Restaurants details to one same place and suggest. In this way, every customer will be A Web Based Food Selection Assistant App for the Restaurant of Multan City Department of Information Technology 3able to order any kind of food from any Restaurant from this App/Website. Below are some objectives we will cover in this project.

- We can save detail of all Restaurants in Multan
- All Deals and Food Staff Record.
- All Customer Details.
- Ordering System for any person, any place and from any Restaurant.

FUNCTIONAL REQUIREMENTS

Network Login

Since the system needs to handle a lot of confidential customer information, a network login function is essential for ensuring security. Users who do not have the correct access rights will be prevented from connecting to the database. There are two groups of users of the system with different access rights:

Admin: Acts as the system administrator and can perform all functions.

Customer: Can view and order deals and food Items.

Customer Information Management:

This function allows the personal information of customer, such as their name, phone no., address, etc., to be managed. Using this function, a customer can:
View or order the deals and food items,can Check his/her order status.

Admin Information Management:

Menu app needs to change the records of items/ deals, such as the particulars, their prices, the type or Image, etc. Using this function and admin can:

- Insert a new record for a deal/Food Item;
- Make changes to the record of a Food Items;
- Search for a particular item or a group of items in a record.

NON-FUNCTIONAL REQUIREMENTS:

Reliability

Menu reliability requirements deals with failures to provide online food order services. As this project is based totally on PHP so it provides the advanced functionality of better Security and Usability**.**

Supportability

Menu is designed & developed in HTML5, CSS3, Bootstrap4, PHP7.0, and JavaScript, it is supported by every device including PCs, Laptops, Tablet, Smart phones, and any hand-held devices connected to the internet. It supports all the browsers versions.

Usability

- The system shall allow the users to access the E-Menu from the Internet using HTML or it's derivative technologies. The E-Menu uses a web browser as an interface**.**
- No specific training is required as every person knows how to use Browser nowadays.
- The E-Menu is user-friendly, self-explanatory, and responsive.

Efficiency

Menu is very efficient and compatible to every hardware on which it will run. Whenever admin or customer search any query, it will respond in no time (very fast).

Portability

Menu is adaptable to every environment of other Restaurants of Multan. It is designed and developed in such a way that it can be ported to any hardware of Restaurants.

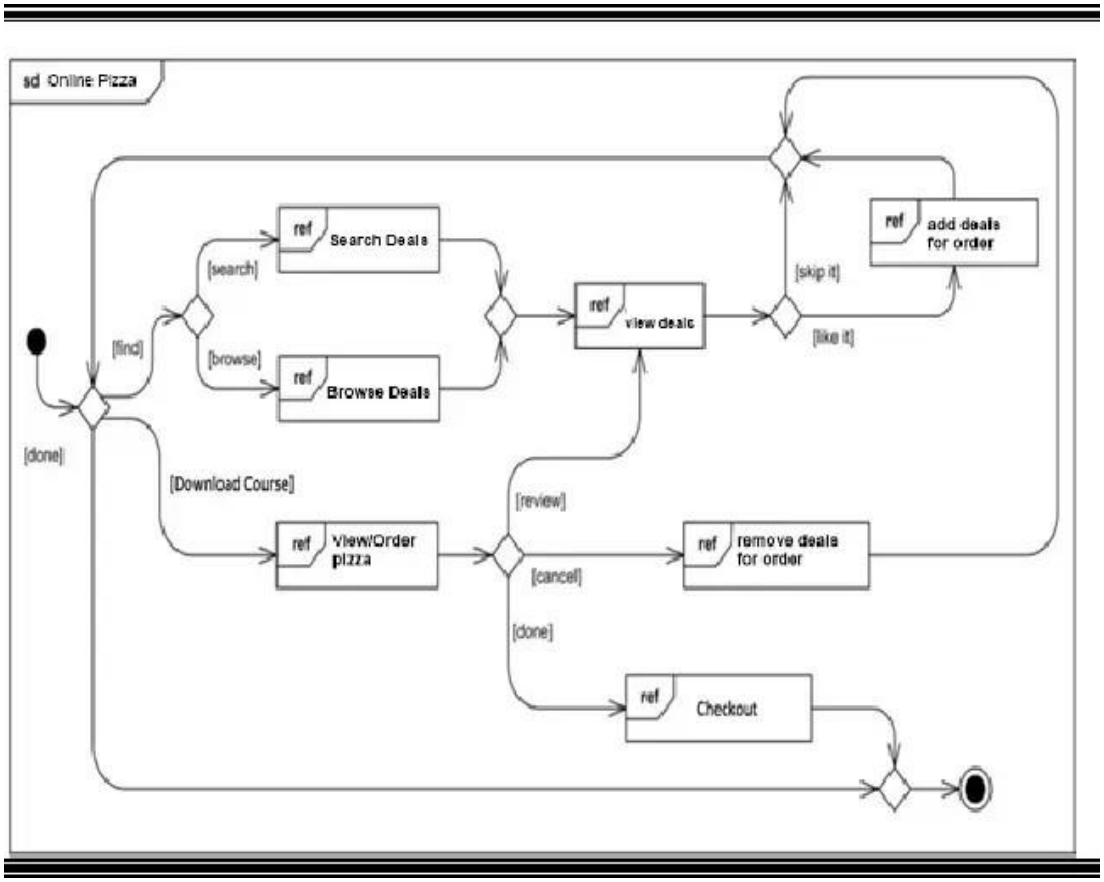

Fig.1: Flow chart for Food Order.

An online food ordering system allows your business to accept and manage orders placed online for delivery or takeaway. Allow your users to search for different restaurants, cafes by location, and cuisines. Using the search filter, users can easily find their favourite eating places, list menu, offers, etc. The user can place an order of selected dishes and food. They just need to cross-verify their preferred dish, delivery time, and proceed check-out. With real-time tracking features, it becomes easy for users to track delivery drivers and know their real-time location information. Users can check the time taken by the food delivery executive to deliver their parcel. You provide the users with multiple payment options like credit/debit cards, different wallets like Google Pay, Paytm, Phonepe, UPI, etc. Venues will then receive

the order details via their chosen online food ordering system and produce the order ready for delivery or customer pickup.

SYSTEM ARCHITECTURE

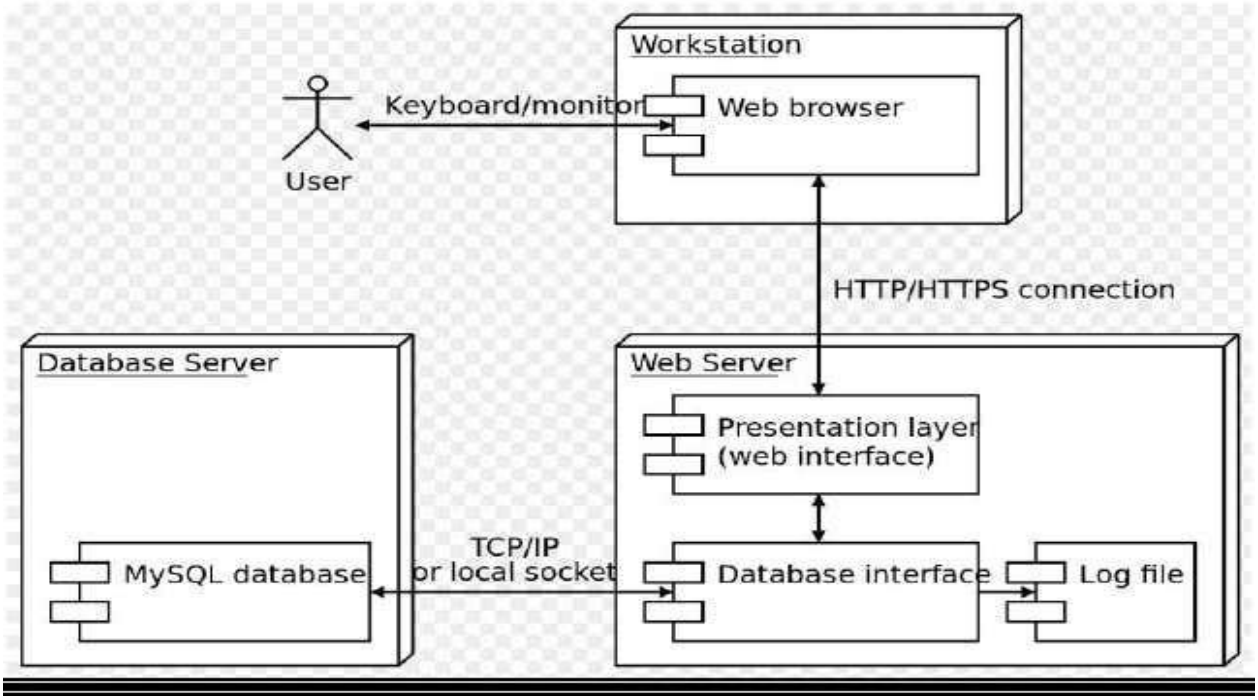

Fig.2: Architecture of Food Order Management System

We must build a scalable application that can handle a huge customer base. In this case, restaurants will be listed from the backend team. The data will be store in Restaurant store. In this case, Primary data i.e. Restaurant owners will be adding and managing food inventory. Once the food is listed, Delivery executes are required to pick it from the nearest location and deliver. Their Location is required to be updated at interval of few seconds.

RESULT AND ANALYSIS

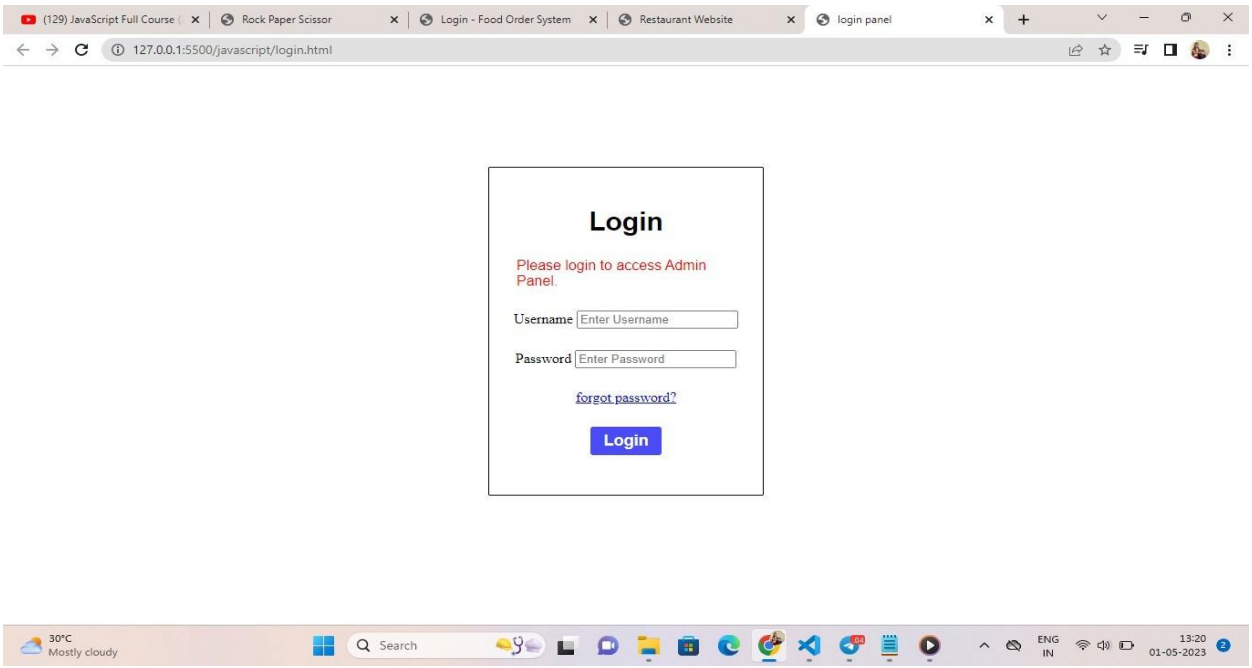

Fig.3: Login Page Of The Application.

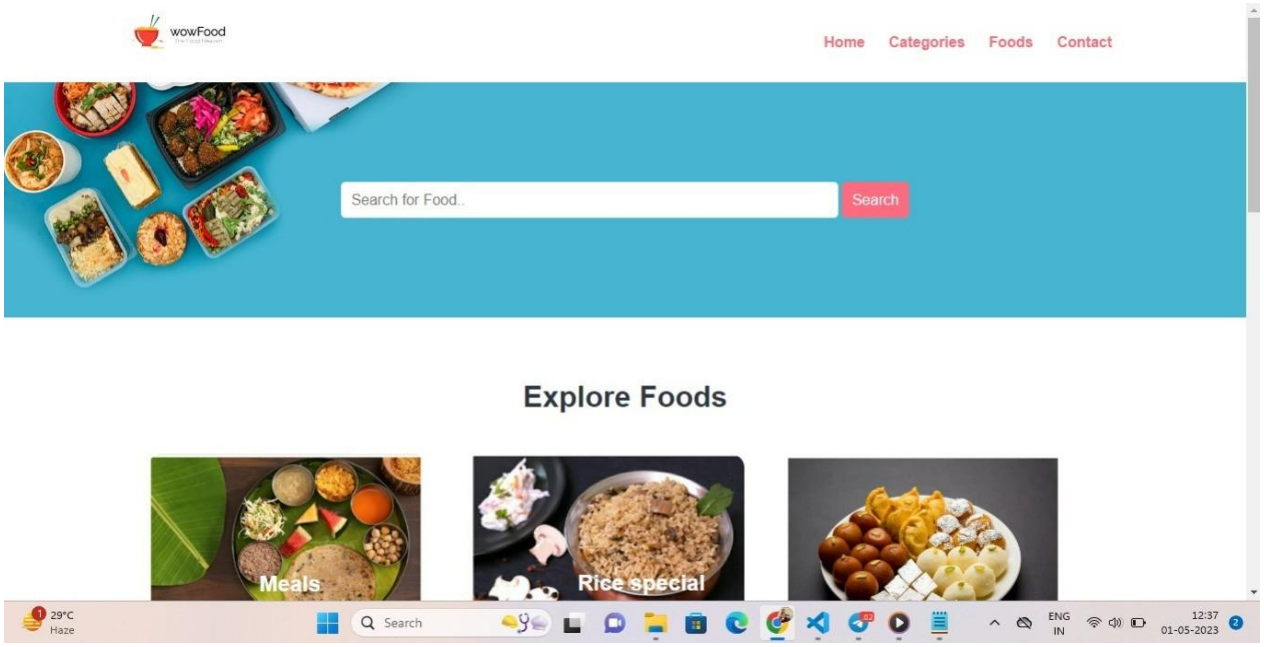

Fig.3: Home Page Of The Application.

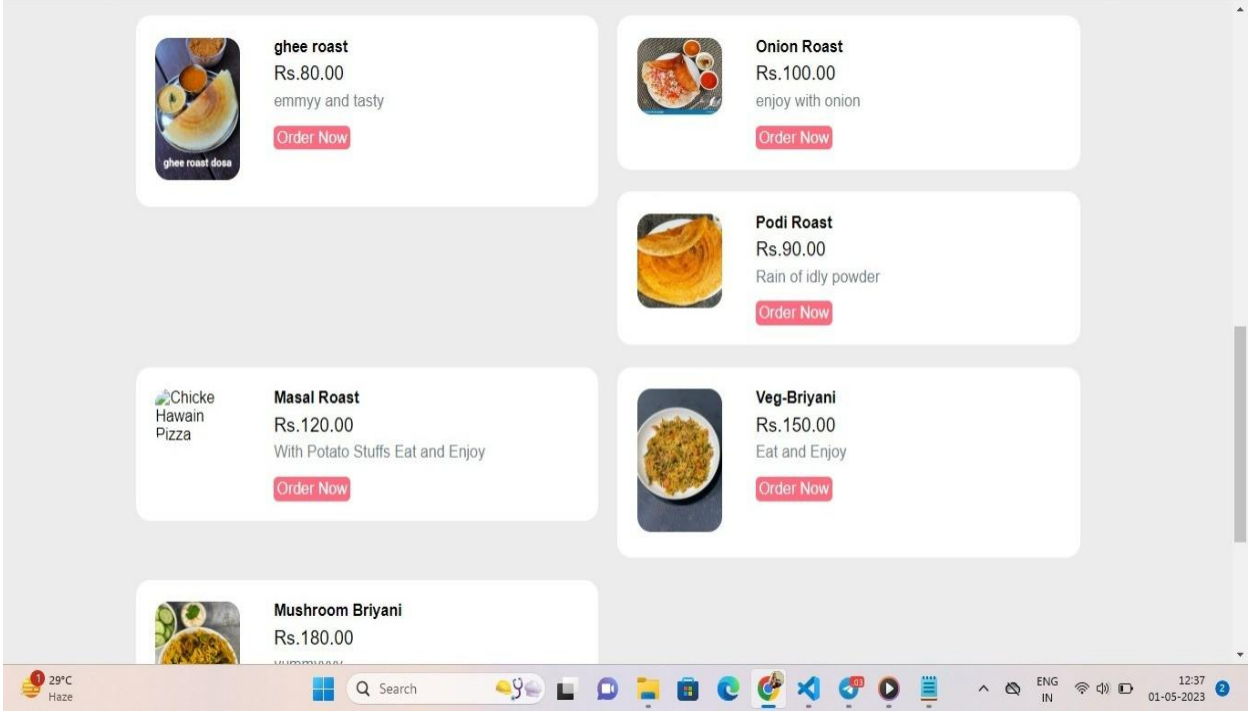

Fig.4: List of the Foods.

Once the primary data is available, the customer who is the consumer of the data is required to search from all the data. These data needs to be searchable. Using a pipeline data to be indexed and made searchable. Once the data is indexed to be consumed, customer can start searching the data. Once customer searched the data and selected what to be ordered, they'll order and make payment. One the order is placed, as a final step, it'll be assigned to delivery executive and to restaurant owner for preparation. They'll get notification to prepare and deliver. Restaurant order acceptance, Customer notification, Customer delivery Update and 100s of use cases are possible. But the important use case is covered in the above design.

CONCLUSION:

A Smart Food Management System is a sophisticated solution that uses technology to improve food management processes in various organizations. By leveraging artificial intelligence, machine learning, and automation, the system streamlines food preparation, ordering, and inventory management, leading to greater efficiency, accuracy, and profitability. Moreover, the system can enhance the customer experience by providing self-service tools, mobile apps, and other features that make it easy for customers to place orders and track their orders. This not only improves the customer experience but also reduces the workload on staff. Furthermore, the system can be customized to meet the unique needs of different organizations, ensuring that food items are safe, compliant, and meet customer preferences. This is especially important in food service establishments where dietary restrictions, nutritional guidelines, and allergen warnings are critical. Overall, a Smart Food Management System is a valuable investment for any food service organization looking to improve their operations, reduce waste, and enhance customer satisfaction. By adopting a data-driven, technology-enabled approach to food management, organizations can achieve greater success in a highly competitive market.

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