LA CUISINE HUB-THE FOOD ORDERING PROGRESSIVE WEB APPLICATION FOR DINING AT RESTAURANTS

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Abstract—the increasing amount of people going to the restaurants has made it important to make enhancements in the hospitality industry. This research work attempts to make the ordering procedure within the hotel more convenient from customer's perspective. The Web Application is a solution to the flaws present in the existing systems. It is built using latest technology which gives a progressive and dynamic environment to the users. Also, it works using request-response procedure for its tasks. The customers and hotel managers can interact with each other in real time thereby reducing the communication gap even in absence of hotel staff while taking orders.

Keywords- Progressive Web Application(PWA),Real-time database, Accelerating Web pages, Dynamic environment

I. INTRODUCTION

Popularity of restaurants has increased in recent years. The general practice in a restaurant involves the customer making his order and waiting for the ordered meal.However, the complaints received from customers regarding services offered in restaurants has increased too. This feeling of dissatisfaction is caused by many reasons, namely, delay in delivering customer's order. Advancement in communication technologies can be used to resolve these issues.

System aims at automating the procedure of food ordering within the hotel. There will be a web application, compatible with every type of OS. Home page will have two login categories:

Hotelier- Hotelier will configure their hotel statistics to this app and provide customer the liberty to have maximum control in ordering the food.

Customer- Customer would get the opportunity to explore and use this Web Application and have a good user-friendly experience.

II. RELATED WORK

The existing system is paper based. The traditional menu cards in the restaurants are paper based. Waiters use paper to write the order of customers. The records are stored on paper. There is wastage of time, money, and paper. As traditional menu cards are paper based, any changes that need to be made in the menu card will lead to wastage as it will require reprinting of all the menu cards. Also, for small changes it is not possible to print all the menu cards again and again. There is no power to dynamically make any changes in the menu card. To access a particular record from the stack of papers is not efficient. From the customer's point of view, this system is time consuming. As, one has to wait until the waiter comes to take the order, one has to call waiter number of times till he notices it, there can be misinterpretation while the waiter is writing your

order on paper, and it might be possible that you are served with a wrong dish. There have been improvements in the management for automating the food ordering in the industry.

Point Of Sale(POS)

The point of sale (POS) or point of purchase (POP) is the time and place where a retail transaction is completed. At the point of sale, the merchant calculates the amount owed by the customer, indicates that amount, may prepare an invoice for the customer (which may be a cash register printout), and indicates the options for the customer to make payment. It is also the point at which a customer makes a payment to the merchant in exchange for goods or after provision of a service. After receiving payment, the merchant may issue a receipt for the transaction, which is usually printed but is increasingly being dispensed with or sent electronically.

Android Application For Food-Ordering

There are android tablets kept at each table in the restaurants. The customers will go to the table, pick their device and order food. The human errors while taking orders eliminated but the cost required to purchase a tablet for each paper is a high. At some restaurants the waiters come to the table with a tablet from where they note orders. This will reduce the cost by circulating limited tablets across the restaurant but it will increase the dependency on waiters and might keep customers on waiting for placing their orders.

III. PROPOSED SYSTEM

This will use a progressive Web Application which the customers would install on their mobile phones. The cutomers will book a table in the restaurant. After the table is reserved, they will occupy their seats and place an order using the simple yet interactive interface that the Web Application provides. After the availability of the order is checked, the hotel manager will confirm the order and send it to the kitchen. At the end, the cutomers will ask for the final bill and a payment option either online or manual. Once the cutomer successfully pays the fill , he can give a feedback and rating if he wants.

The two interfaces that will be playing their role in the Web Application are Customer and hotel manager. The work flow on their respective sides is explained below:

Customer Side Flow

There would be a third party login i.e. Customers will login into the Web Application via Facebook,Google,Twitter etc.
There would be two options for the customer to choose from : Inside the Hotel , Outside the Hotel.
When the customer is outside the hotel:

- Their location on the phone will be integrated and there would be a search bar where the customer will enter their food choice.
- According tp the food item entered a list of the nearby hotel selling that food dish will be shown.
- If the hotel selected by the customer from the list has vacant tables he/she will proceed forward, else the customer will look out for other options where the table is available.
- Incase of vacant tables, the customer will enter a time slot in which they would reach the hotel.
- Later the appropriate payment is made.

When the customer is inside the hotel:

- The hotel's profile in which they are sitting in would be displayed.
- The customer would then check the menu
- The customer would go ahead and place their order once the manager has sent a positive authentication response to the customer's request. The customer would be able to send unlimited response, but only according to the hotel's available table configuration the manager would entertain the customer requests. We would use the First Come First Serve Algorithm to send responses to the customer's request. Around the range of 100-150 customer requests would be entertained using the FCFS algorithm. No network congestion would be ensured.
- Once their order is confirmed the manager would send the customer their unpaid bill.
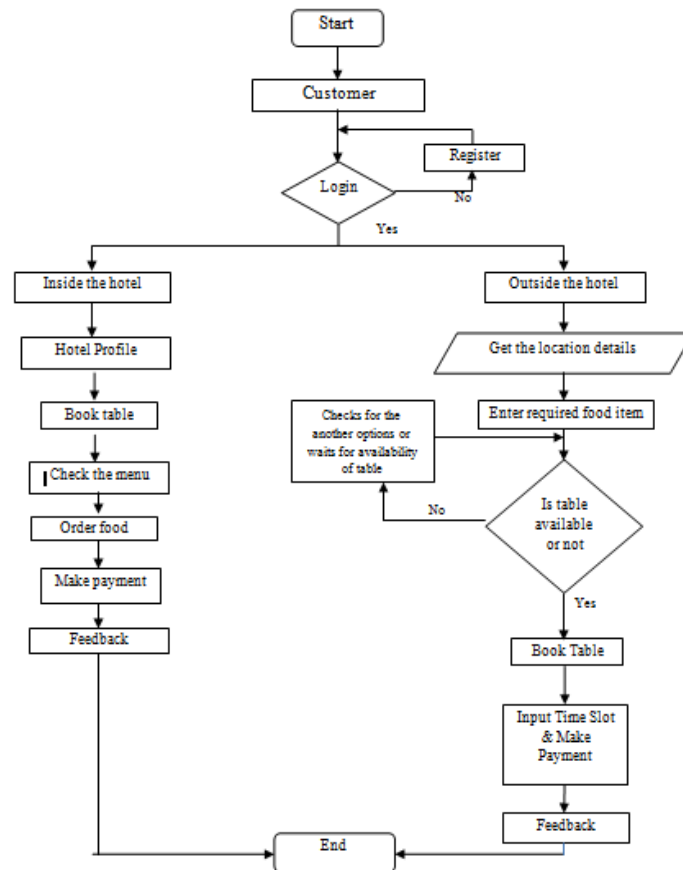- The customer would make the necessary payment and also enter their feedback.

Fig 1: Customer Side Flow

Manager Side Flow

- All the hotels that wish to have a tie up with this Web Application would have to register the first time and then login into their account.
- Dashboard of the Hotel would be viewed where all the necessary configuration that has already been done would be seen.
- So whenever a request would be sent to the manager, person would check the availability of the tables and allocate the tables accordingly or else deny the customer's request.
- When the manager will receive the request of food order from the customer he will store all the details related to that order into the database of the table at which the customerr is seated in.
- This food order along with the quantity of each food item would be sent to the kitchen.

- After the food order is fully completed by each table, the manager will send the unpaid bill to the customer.
- After receiving the payment, the manager will send the feedback form that is to be filled by the customer.
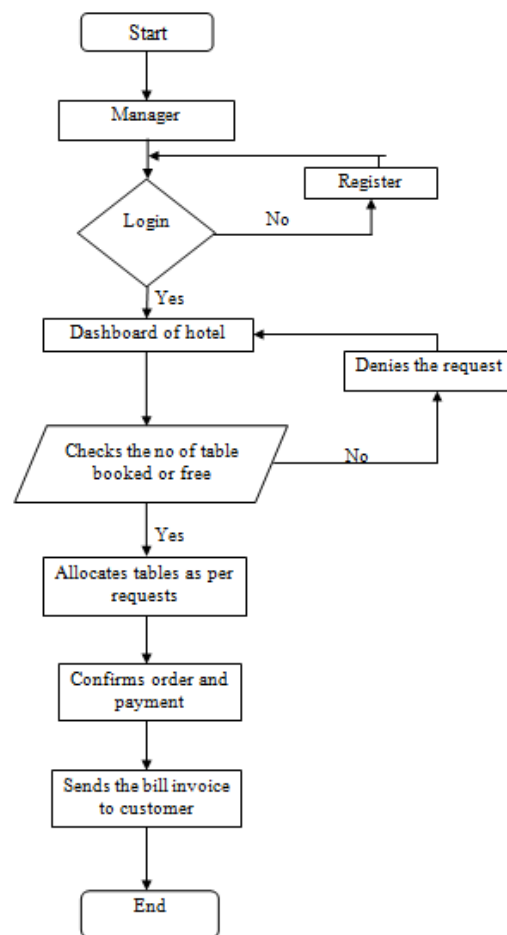
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                          ┌─────────┐
                          │  Start  │
                          └─────────┘
                               │
                          ┌─────────┐
                          │ Manager │
                          └─────────┘
                               │            ┌──────────┐
                               │            │ Register │
                               │            └──────────┘
                              ◇                  ▲
                          ╱ Login ╲    No        │
                          ╲       ╱ ──────────────┘
                              ◇
                               │ Yes
                     ┌───────────────────┐
                     │ Dashboard of hotel │◄──────────────┐
                     └───────────────────┘                │
                               │                  ┌───────────────────┐
                               │                  │ Denies the request │
                               │                  └───────────────────┘
                      ╱─────────────────╲                 ▲
                     ╱ Checks the no of table ╲    No      │
                     ╲  booked or free    ╱ ───────────────┘
                      ╲─────────────────╱
                               │ Yes
                     ┌───────────────────┐
                     │ Allocates tables as per │
                     │      requests       │
                     └───────────────────┘
                               │
                     ┌───────────────────┐
                     │ Confirms order and │
                     │      payment        │
                     └───────────────────┘
                               │
                     ┌───────────────────┐
                     │ Sends the bill invoice │
                     │   to customer       │
                     └───────────────────┘
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                          ┌─────────┐
                          │   End   │
                          └─────────┘
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Fig 1: Manager Side Flow

System Design

The restaurant owner or manager will have authority to log into the system and update the menu as per the availability of the dishes. The restaurant manager or owner and the kitchen staff will receive the ordered lists from the Customers. The Manager can update the order status into the system. The customer can also view the order status and he has authority to cancel the order. This is a Web Application so there will be no need of installing it on the device. It can be accessed directly using the URL and later by adding to home screen thereby using it just like a native application but much more efficient than them.
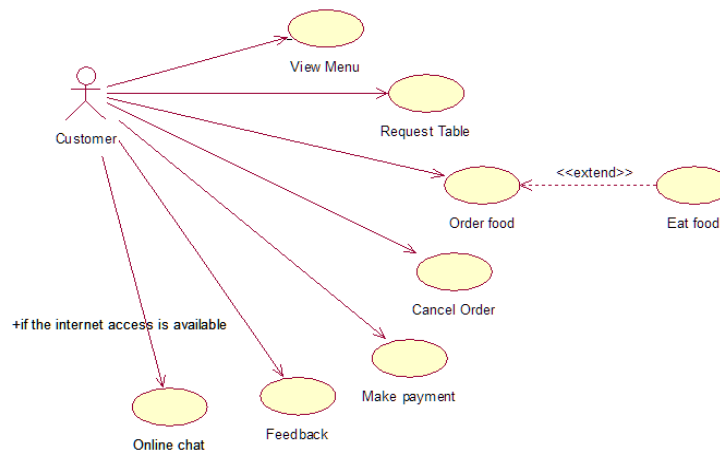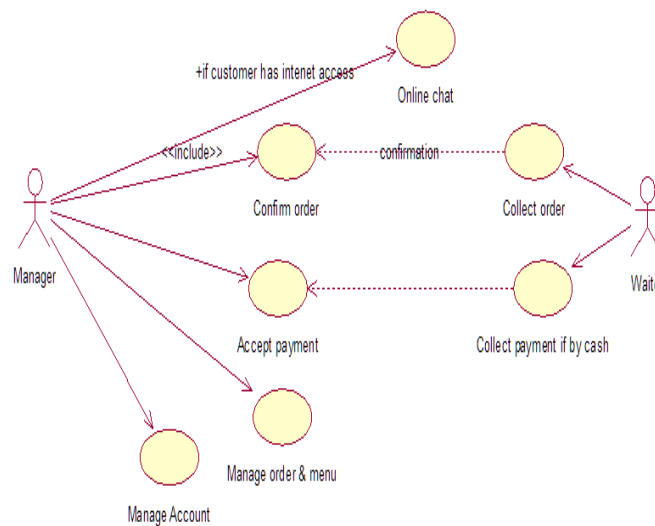
Fig 3: System Design for Customer

Fig 4: System Design for Manager

IV. ADDITONAL FEAUTRES

Progressive Web Application(PWA)

A progressive web application is basically a website built using modern web technologies but acts and feels like a mobile app. It starts out as accessible in tabs on the Web browser, shows the option of adding to the home screen of the device and progressively starts exhibiting app-like properties such as offline usage, push notifications and background sync.

To be considered a Progressive Web Application, it must be:
Progressive
Work for every user, regardless of browser choice
Responsive
Fit any form factor, desktop, mobile, tablet, or whatever is next.

Connectivity independent

Enhanced with service workers to work offline or on low quality networks.Users can browse their previous searches and recently visited categories as they are stored in the cache.

App-like

Use the app-shell model to provide app-style navigation and interactions. In PWA you can easily add the web app to your homepage and the home screen icon lets you access it with one touch, without having to type in a URL every single time.

Fresh

Always up-to-date.

Safe

Served via HTTPS to prevent snooping and ensure content has not been tampered with.

Re-engage able

Make re-engagement easy through features like push notifications.

Installable

Allow users to keep apps they find most useful on their home screen without the hassle of an app store.

Linkable

Easily share via URL and not require complex installation.

Real Time Database:-

A Real-time database is a database system which uses real-time processing to handle workloads whose state is constantly changing. This differs from traditional databases containing persistent data, mostly unaffected by time. Real-time processing means that a transaction is processed fast enough for the result to come back and be acted on right away.

Accelerating Mobile And Web Pages:-

Google announced Accelerated Mobile Pages (AMP), a very accessible framework for creating fast-loading mobile web pages. The PWA will load faster even in low network areas.

SSL Certification-

SSL certificates are an essential component of the data encryption process that make internet transactions secure. They are digital passports that provide authentication to protect the confidentiality and integrity of website communication with browsers.

Chatting System- The Customer and Manager can interact with each other in real-time using the chatting system that the PWA provides. The hotel manager can open multiple chat windows and respond to customers asking queries. Even though the waiters taking orders are eliminated and interaction is reduced, there will be chatting system to ask queries and communicate directly with the manager.

V. ASSUMPTIONS AND DEPENDENCIES

It is assumed that both Customer and Manager have proper working internet connection for the application to work smoothly.

Hardware requirements are dual Core 1.6GHz or faster RAM(1 GB or higher).Software requirements are operating System with Windows (Vista/7 or above) and Web Browser(IE 10 or above, Mozilla FF 31 and above or Google Chrome).

VI. ADVANTAGES

The system helps the restaurant owners to upload their menus online so that they can be easily managed or changed, and customers can order online for their favorite cuisines. Moreover recipes can be customized according to the taste and preferences of the customers. Adding more to this, the system has various others features which prove to be propitious for the restaurant owners.

Easy to Use Service

The system is quite easier to use and access. Since it is a web based service so there is no need for installation.

All Time Accessibility

The system provides all time accessibility to your customers with an all time open online restaurant .They can reach the restaurant online even when it is closed. With various payment gateways, your customers can pay online which proves to be a more convenient and secure way of doing business.

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