SMART RESTAURANT

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Abstract - The smart restaurant is a concept where a restaurant working is based on using state of the art technology from reservation to ordering and storing customer records. The traditional restaurant system working is replaced by use of smart phones, tablets or graphical user interface interactive touch screens. Customers will order their meal through tablets, so that the order is directly rooted to the kitchen via a central server. Also customer's records are permanently maintained in the central server which can be used later for marketing, accounts and sales purposes. The smart restaurant reduces the staff employed for hospitality services thus increasing the profit margins. The kitchen will have an interface where orders will be served according to priority (first come first serve). The customers will order from an android app installed on a tablet either from the hotel or their home. An application on android will also help customers to know more about the restaurant and its services, and will facilitate online ordering and prior reservation of table.

I. INTRODUCTION

People are rapidly moving towards a smarter world, with implementation of smart cities, smart classrooms and smart phones. At present, information and communication technology has been brought to a number of business models in order to make the operation more convenient and effective. Restaurant management can be more efficient with the help of smart technology. In India, though there is a trend for moving towards a smarter society, the hospitality and services sector still doesn't see an implementation of smart technology.

As the standard of living is improving, people are spending more on luxury dining. People are nowadays more meticulous on the ambience and services provided. The traditional system of restaurant working is encountering a lot of day to day problems with most of the operations done by hand, waiters rushing around with hardbound menus, data and information maintenance inability increasing the system inefficiency and probability of error.
The Smart Restaurant takes into account of all the small and large scale errors, providing a very efficient and effective way of system maintenance and delivery.

II. LITERATURE SURVEY

Various wireless applications for restaurant ordering have been developed, analysed and implemented in restaurants. These have been implemented using PDA's (Personal Digital Assistant) [1], Windows Mobiles or Android Mobiles. Also many wireless technologies are available today. The PDA technology has been developed specifically for medium and large scale restaurants which uses Wi-Fi (Wireless Fidelity) systems.

Captain Pad, a web based ordering system, is a wireless technology which was being used for automating the ordering system in hotels and restaurants. Using Captain Pad, orders can be sent directly by the customer to the kitchen, this ensures that the customer will be served faster. Developers used MS Disk Operating System, Win 3.11, Win95, 98 and Win NT, Win XP, Linux.as operating systems, C++, C, Hyper Text Mark-up Language (HTML) , XML, and Java as programming language and web based technologies like XML, JSP, EJB, Struts, HTML and Hibernate. They also used MySQL and Oracle 8 for databases and JBoss, Apache and Tomcat for web servers. The whole menu is loaded in the Captain Pad device.

A project was proposed with the Bluetooth technology as the communication medium and Peripheral Interface Controller (PIC) [2] as the hardware which implements faster ordering system. It consists of a keypad at customer's table as a remote control and monitor at kitchen to display the ordering information systematically.

III. SYSTEM DESCRIPTION

A. BLOCK DIAGRAM

Fig. 1 shows the block diagram of a Smart Restaurant. The system consists of four modules namely Customer module, Server Module, Kitchen Module and Home Delivery Module.

The Customer, Server and Kitchen module work in the restaurant environment within a home network with the help of wireless fidelity whereas the Home Delivery and Reservation module works anywhere with proper Internet connectivity.

Fig. 1 Block Diagram of a Smart Restaurant
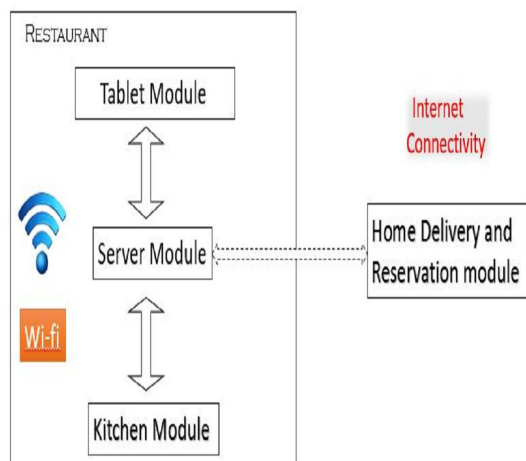
a. Customer Module
The customer module is an android based application that provides a user friendly graphical user interface. With the help of this module the customer can order the meal. This module contains the details of the food to be ordered which includes price of the menu, ingredients and a visual display of the food items. Special dishes (e.g. the Chef's Choice) if any could be changed and modified easily at any time by the admin/manager and displayed. Any personalization required by the customer in the food item can easily be implemented under this module. The customer module is run on a tablet and the application to be run on it is made in Eclipse and Android Studio using Java programming. The customer module is connected to the server module through a wireless fidelity network.

b. Server Module
Server module is a web based module which is handled by the admin (restaurant manager) for managing the database and controlling the entire system. Here the entire details of the item ordered by the customer, time of ordering, bill amount, bill status etc. is maintained. Also the admin can anytime add and modify menus (e.g. Today's Special), their prices and advertise specific food item including special discount and combo offers. Server Module is being implemented in XAMPP server where database management is done in MySQL and programming is done using java server pages.

c. Kitchen Module
Kitchen module is a graphical user interface which would be used by the chef. This module will display the food item to be prepared by the chef and the orders will be in first come first serve basis. Kitchen module will also provide a feedback on order completion and this information will be notified to the admin as well as the customer.

d. Home Delivery and Reservation Module
Home delivery and reservation module is also an android based application through which the customer can order the food from anywhere through internet connectivity. The customers can also book a table in advance before coming for dinner or lunch and can know whether a table is available or not. This module will communicate with server module and the database will be accordingly updated. This will be an android application which will be available on google play store for free.

B. SOFTWARE DESCRIPTION

a. Eclipse
Eclipse [3-4] is an integrated development environment which is mostly written in java. Developing java application is its primary purpose although it may also be used to develop applications in other programming languages like C, C++ etc. Customer module (Android application) is designed using eclipse in this project. Both front end user interface and back end coding of the android application is done using eclipse. The operating systems that support eclipse are Linux, Mac Operating System, Solaris, and Windows. It works on both 32 and 64-bit variant Windows.

b. XAMPP
XAMPP [5-6] is an integrated web server developed by 'Apache friends' consisting of mainly Apache, MySQL, PHP and Perl programming language. Officially XAMPP's designers intended it to be used as a development kit to allow web designers to test their code on their machines without the need to access internet. 'X' implies that it is a cross platform server. It supports Windows, Linux as well as Mac Operating System. Apache server will be used as a web server and MySQL will be used for database handling.

c. NetBeans
NetBeans [7-8] is a platform for software development written in java. It consists of set of software components known as modules. It supports other languages like PHP, C++ and HTML5. It is also a cross platform Integrated Development Environment (IDE). In this project, NetBeans is used to write java server pages. It acts as an interface between customer module and server module. The operating systems that support NetBeans Windows, Linux, Mac Operating System and Solaris. The NetBeans IDE can be installed by the users on custom basis according to users' needs.

IV. RESULTS AND ANALYSIS

The project is under its development phase. Till now, work has been done for the customer module. The

basic layout of dashboard and the login page has been designed. Fig. 2 shows the login page for customer module which will be password protected and can be logged in only by the administrator.
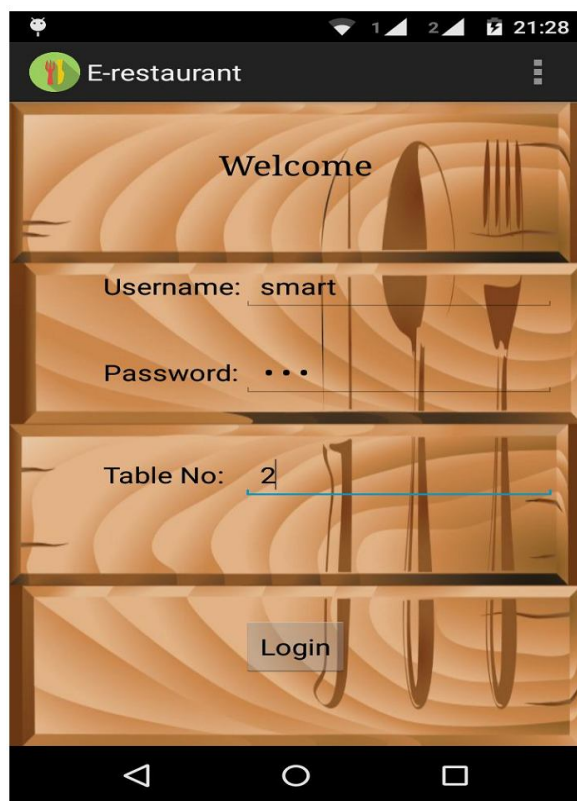

Fig. 2 Login Screen

Fig. 3 is a Dashboard type layout which contains the fragments like home, starters, main course and all other types of food made in the restaurant.
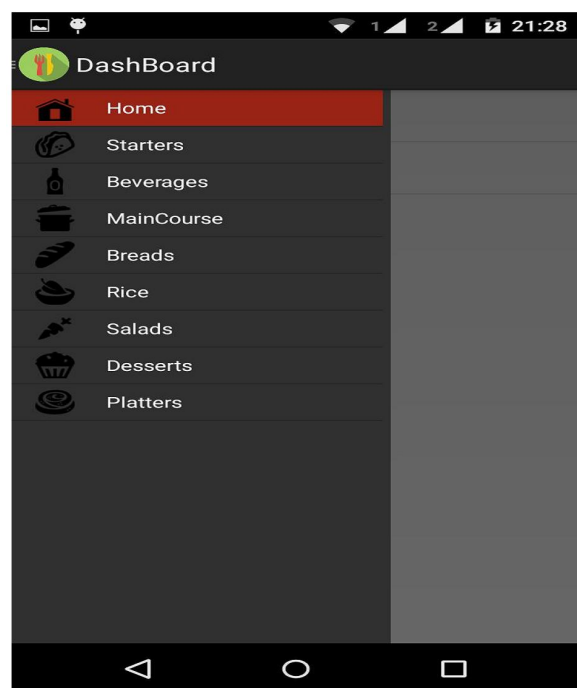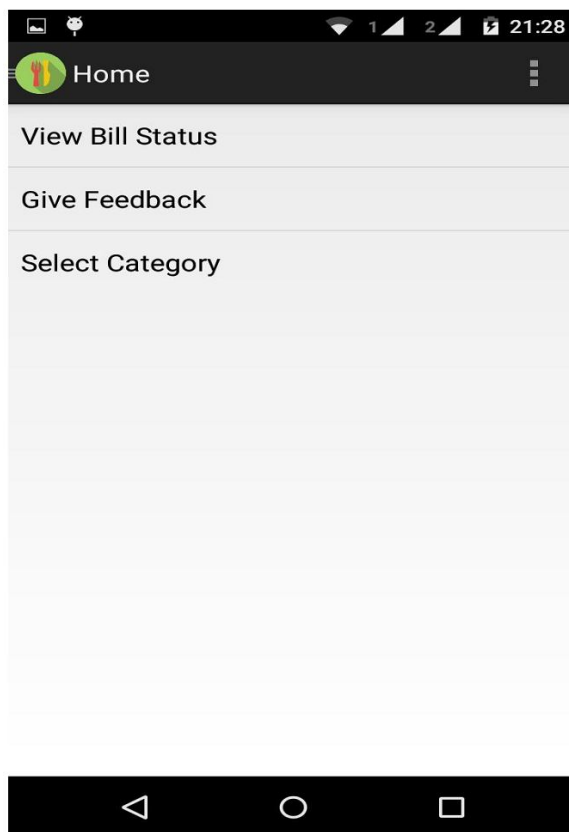

Fig. 3 Dashboard

Fig. 4 Home screen

Fig. 4 shows the home screen of the customer module with the billing and feedback system.

A lot of work has to be done on visual improvisation of the application along with additional features related to the project.

CONCLUSION

In this paper, we present an automated food ordering system with-real time customer feedback. This system is convenient, effective and easy thereby improving the performance of restaurant's staff. It will also provide quality of service and customer satisfaction. Overall conclusion is that, this is a smart food ordering system for the restaurant sector, made by combining the Android and Wireless technology.
In the next phase, we will be working on providing provisions to customers for reservation in the hotel from their homes as well as parcel ordering to enhance the automated system. The project will reduce workload of the servicemen who take orders and hence guarantee more attention towards each and every customer. It will increase the speed of order with real time monitoring along with minimum ambiguity, fault or cheat for an instance, no mislead of customers by waiters or change in orders by the customers etc. A calculator will not be required if one's budget is limited. As an interesting and attractive user interface will attract more customers

and with an increasing trend towards a smarter world, it will bring in a good profitable business.

There are possibilities of further additional automated sub-systems like banking system which will be able to provide bill payment online using net banking or a credit card. Also, a visual graphical user interface can be projected on the table itself for a more attractive and user friendly ordering system.

ACKNOWLEDGMENT

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