

Automated Food Ordering System

Patel Krishna M., Patel Palak P. , Raj Nirali R., Patel Lalit A.

ITM UNIVERSE, Jarod, Vadodara

krishnapatel4894@gmail.com, nirali84@gmail.com, ppatel511@ymail.com, leetpatel@gmail.com

Abstract:- The Frequent growth of wireless technology and Mobile devices in this era is creating a huge impact on our lives. Some early efforts have been made to combine and utilize both of these technologies in advancement of hospitality industry. This research work aims to automate the food ordering process in restaurant and also improve the dining experience of customers. In this paper we discuss about the design & implementation of automated food ordering system with real time for restaurants. This system, implements wireless data access to servers. The android application on user's mobile will have all the menu details. The order details from customer's mobile are wirelessly updated in central database and subsequently sent to kitchen and cashier respectively. The restaurant owner can manage the menu modifications easily. The wireless application on mobile devices provides a means of convenience, improving efficiency and accuracy for restaurants by saving time, reducing human errors. The restaurants have two different departments that is cashier department and kitchen department. At the kitchen department, the order will display at the kitchen's screen. In communication with the first server are second and third servers for processing payments and transmitting orders to the restaurant for processing and fulfilment.

Keywords:- Point of Sale , WIFI , Magnetic Stripe Reader , Thermal Printer, Tablet , Wireless Food Ordering System

I. INTRODUCTION

Restaurants are one of the favourite premises with no regard to the actual reasons for visiting restaurants; customer will make orders and wait for the ordered meals. However, it is common if customers complain for not feeling satisfied about the services offered there are many reasons leading to the feeling of dissatisfaction including being entertain late in terms of order taken by the waiter and meals serving the issue of being late entertain could be solved with the help of the advancement in the technologies of the communication. In accordance, this study initiates an integrated an networked system, with the focus is on its ability to solve the above describe limitations in order taking .[1]



This study names the system as Food Ordering System (FOS). Food Ordering System (FOS) is a computerize system that applies in a restaurant ordering service. This FOS involves in four subsystems, which is the waiter (tablet device), the cashier (system controller), the kitchen department (screen display), and the web service system. And also, the system is includes with two clients, that is PC client and mobile device client. On the PC client, it is divided into two parts that is one for the cashier that also act as the controller of the system and the other one is for the kitchen department. The connection between these three systems is using the wireless intranet. By using mobile device, it helps to make the system possible to increase to overall productivity of an organization. The mobile device will have to communicate with other systems, which are the server database, the cashier, kitchen department.

II. RELATED WORKS

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. As with anything paper based, it is so easy for things to get damaged by coffee stains etc, or paper being lost due to fire or accidents or just generally lost. 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 has been improvements in the management of restaurants. Each waiter is assigned a group of tables, after taking orders for a table the waiters enter the orders (a list of dishes and drinks ordered by the diner or group of diners) into the system at the PC. The waiter usually knows of any dishes that are unavailable before taking an order. The system must confirm the availability of dishes. Should an item not be available the system must allow the waiter to change or even delete a customer's order. Dishes to be prepared are sent to the kitchen, drinks orders to the bar. Starters and main course orders are usually taken together. Drinks and desert orders may be taken separately. Kitchen staff sees the dish orders on their screen, prepare them in an appropriate sequence and confirm preparation to the system when complete, similarly with the bar. When a waiter sees the completion indications on his terminal he collects the items and takes them to the table. The waiter can also check on the status of dish and drink orders. At the end of the meal the waiter will have the system print a bill, and he will enter the details of payment for it. The management can give discounts. The system keeps track of the numbers of customers served by each waiter and the amount of money taken by each waiter. The management can view these statistics [2]. The next advancement was "QORDER": the portable ordering system for Android devices. Here the waiter no longer approaches the table with his notepad, but rather with the QOrder hand held device. He enters order information on the touch screen and then sends it to the kitchen in real time for processing. Simultaneously, your POS system receives the sales information for later billing. QOrder utilizes WIFI to easily reach to your most remote corner spot in your establishment. Once the guests wish to leave, the waiter prints the receipt out on his belt printer and processes payment with the handheld unit much like he would on the POS system [3].

III. SCOPE OF PROJECT

In today's Generation whenever we visit a restaurant, a waiter comes with a note and pen and takes an order in it. In this traditional way there are chances of misinterpretation of order so there is an automated food ordering system which manages all orders of customers. In this system, Tablet is provided on each table through which customers can place their order which will be displayed on screen in a kitchen, and once order will be ready waiter can serve on the respective table. Records of customers are kept at cashier side for bill payment and further use.

3.1 System Features Tablet on table:-•

There will be a tablet on each table.

- This will allow the customers to browse the food items for the time they wish.
- This will allow the customers to browse the food items the way the customer wish. Customer feedback:-
- Customer can enter the feedback about the service and the food served.
- This helps the Restaurant owner to analyse the service and make necessary changes if needed.
- This also helps the Customer's to decide a particular food item with a positive feedback. Searching Item:-
- Customer can search a particular food item according to name, price, category etc.
- This saves a lot of time of customer to order an item.

Offers for Customer:-

- The Restaurant owner can post various offers on tablet.
- This will help the customer as well as the restaurant owners.

Attractive Presentation:-

- The Menu is organized in an attractive way.
- There are images of every food item which will make the view of customers more clear about how the food will look like after delivery.
- Here is an attractive use of various themes and colour schemes.

Sorting an Item:-

- The food items will be sorted according to price, season and user ratings.
- This helps the customer to find or select a food item which has a good rating and which is liked by a many customers.
- This also helps the Restaurant owner to make changes in a particular food item if it has low ratings which improves the quality of food.

Time to Serve:-

- The menu includes the approximate time to be served of a particular food item.
- This will help the customer to select the food item accordingly.

Modifiable Menu:-

- The menu card can be modified by the Kitchen manager.[1]

3.2 Hardware Interfaces

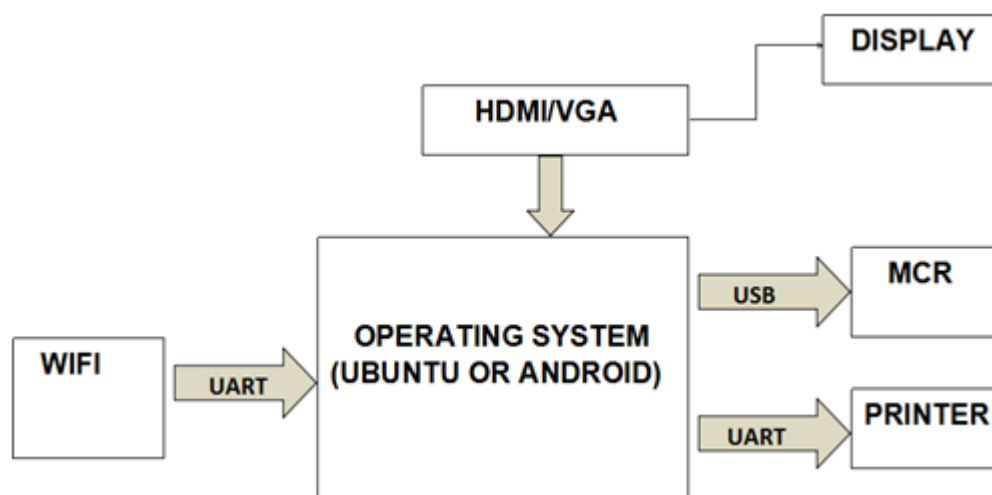


Figure 1 Block Diagram of FOS system

- Above figure shows basic block diagram of food ordering system (FOS), in which pandaboard OMAP 4460 is the heart of this system. Pandaboard OMAP4460 coordinates all the modules and makes the complete system. As shown in figure pandaboard is connected with the display, magnetic card reader, thermal printer, and WIFI module.

3.2.1 Tablet

A tablet computer or a tablet is a mobile computer, larger than a mobile phone or personal digital assistant, integrated into a flat touch screen and primarily operated by touching the screen rather than using a physical keyboard. It often uses an onscreen virtual keyboard, a passive stylus pen, or a digital pen.

It is a practical low-cost ARM-9 single board computer (SBC) with a very high performance/cost ratio. It uses a four-layer board design with gold immersion processing, and has high quality equal-length bus routing in a timing critical areas. The production environment and quality control are the same as those of modern high-speed mother boards. Usage in environments not conducive to a keyboard and mouse such as lying in bed, standing, or handling with a single hand. Tablet has lighter weight, low power models can function similarly to dedicated E-book readers like the Amazon Kindle, touch environment makes navigation easier than conventional use of keyboards and mouse or touch pads in certain contexts such as image manipulation, musical, or mouse oriented games and for people with certain disabilities. Some users find it more direct and pleasant to use a stylus, pen, or finger to point and tap on object, rather than use a mouse or touch pad, which are not directly connected to pointer or screen.

- Operating system: Ubuntu
- Company/developer: Mark Richard Shuttleworth
- Programmed in: Java

- OS Family: Linux
- Source Model: Open source
- Linux Kernel
- The Linux kernel is the operating system kernel used by the Linux family of unix- like operating systems. It is one of the most prominent examples of free and open source software.

3.2.2 Magnetic Stripe Reader

Information can be read by swiping the card through a slot in reading devices. The magnetic card reader uses a specific component to read data from a magnetic card, which is referred to as the read head. Using good coding techniques, interrupt driven sampling can be used to read and handle the data. Most of the head will read the first and second tracks simultaneously. Some of advanced read heads can read all three tracks simultaneously. Linear conditioning is used for noise reduction and signal conditioning. The reader also contains an oscillator section that provides the clocks for the recovery section and for the enable/disable timers. The enable/disable counters provide initialization for the recovery section. The recovery section locks onto the data rate and recovers individual data bits from data stream.

3.2.3 Thermal Printer

Thermal printers print more quietly and usually faster than impact dot matrix printers. They are also smaller, lighter and consume less power, making them ideal for portable and retail applications. Roll-based printers can be rapidly refilled. Commercial applications of thermal printers include filling station pumps, information kiosks, kitchen order ticket system, voucher printers in slot machines, print on demand labels for shipping and products, and for recording live rhythm strips on hospital cardiac monitors. Thermal transfer printing is a digital printing process in which material is applied to paper (or some other material) by melting a coating of ribbon so that it stays glued to the material on which the print is applied. It contrasts with direct thermal printing where no ribbon is present in the process. It was invented by SATO Corporation around the late 1940s.

3.3.4 Display

Graphic LCD can display text and graphics on LCD panel. It can display layered text and graphics, scroll the display in any direction and partition the display into multiple screens.

It stores text, character codes and bitmapped graphics in the external memory. Display controller functions include transferring data from the controlling microprocessor to the buffer memory, reading memory data, converting data to display pixels and generating timing signals for the buffer memory, LCD panel.

It has 8 bit input/output pins and two registers namely command register and data register. The command register stores the command instruction given to the graphic LCD. A command is a instruction given to the graphic LCD to do predefined tasks like initializing it, clearing its display, setting the cursor position and controlling the display etc. A data register stores the data to be displayed on the graphic LCD.

3.3 Software Interfaces

The system is designed using JAVA Programming language. We have used android technology (a linux based operating system) to design the user interface. The system administrator will have ubuntu operating system on his laptop or desktop. WiFi (wireless Fidelity) is used to send information from customer to kitchen and reception.

3.4 Advantages Of System

This system provides a more convenient and accurate method for restaurant staff since orders are transferred to server in kitchen immediately and displayed to the chefs for further process. Other than that, it also can minimize the waiting time spent at the restaurant because of the greater speed of service. By using this system, the restaurant efficiency and productivity also can be increased.

- Increases productivity and reduces labour cost.
- Reduces turn around between orders and time to serve.
- Eliminates revenue leakages by ensuring all orders are billed.
- Leads to better controls by mapping all orders to customer's bills.
- Enables centralized real time monitoring of business at multiple locations
- Minimal implementation cost.
- Application can be installed in Android mobiles and tablets.

- Creates an additional communication channel with the customers.

3.5 Disadvantages

- Computer based kitchen order ticket has high initial cost.
- Complex programming for hardware.

3.6 Application

- FOS management is generally used in hotels.
- It is used to place orders in the restaurant through tablets with fully atomized system.

IV. CONCLUSIONS

The system would attract customers and atomized system will reduce chaos and confusion at food pick up counters. And also adds to the efficiency of maintaining the restaurant's ordering and billing sections.

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