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Restro-Directeur: App Based Restaurant Management System

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Abstract—
People are rapidly moving towards a smarter world, with implementation of 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. Here the user using android application books a table online places his order and then visits the restaurant and after having his meal by calling the waiter makes payment. This is a time saving way rather than waiting in restaurants for hours for getting our placed order.

Keywords— Android Mobile, Mobile application, Wireless food ordering system, Restaurant.

1. INTRODUCTION

Restaurants are one of the favorite 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 entertained late in terms of order taking by the waiter and meals serving. The issue of being late entertained could be solved with help of the advancement in the technologies of communication. The earlier food ordering system was entirely a manual process which involved waiters, pen and paper. The waiter had to note down orders from customers, take these orders to kitchen, update them in records and again make bill. Even though this system is simple it may involve human errors in noting down the orders. There are many reasons

leading to the feeling of dissatisfaction including being entertained late in terms of order taking by the waiter and meals serving. Here we have developed an application where user books a table online, places his order and then visits the restaurant and after having his meal by calling the waiter makes payment. This is a time saving way rather than waiting in restaurants for hours for getting our placed order.

2. MOTIVATION

Motivation of this system is to,

- Get rid of the time consuming process at the restaurants
- When the customer enters the restaurant, customer will place his order with the help of the android application right from the selection of menu items, confirming the order and viewing offers.
- The customer will select from the food options according to his choice and the system will display the payment amount customer has to make once finished with the order.

3. OBJECTIVE

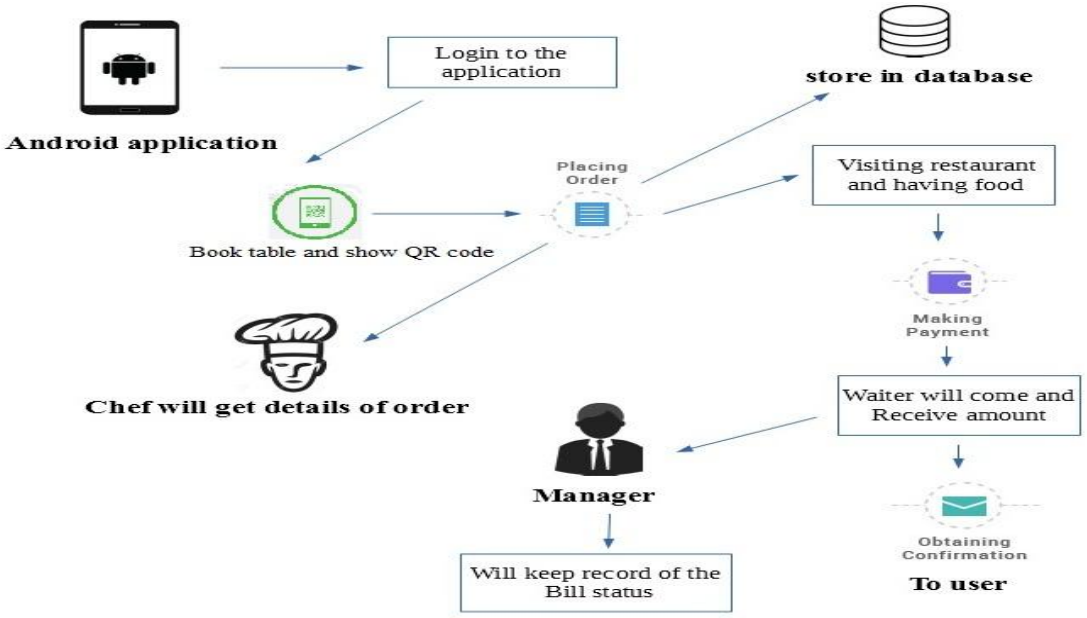
Objectives of this system are,

- Without waiting for long hours person will get food by booking the order online
- 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 so for this using booking process through application.

4. 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.

5. Architectural Diagram



6. TECHNOLOGIES TO BE USED

Android:

The C standard doesn't care about embedded, but vendors of embedded systems usually provide standalone implementations with whatever number of libraries they're willing to provide. C is a widely used general purpose high level programming language mainly intended for system programming. Embedded language. embedded language. A programming language that is included in an application. Examples of embedded languages are VBA for Microsoft applications and various versions of LISP in programs such as Emacs and AutoCAD.

MYSQL:

MySQL is the most popular Open Source Relational SQL Database Management System. MySQL is one of the best RDBMS being used for developing various web-based software applications. MySQL is developed, marketed and supported by MySQL AB, which is a Swedish company.*MySQL* is the most popular Open Source Relational SQL Database Management System.

MYSQL Enterprise edition includes the most comprehensive set of advanced features & management tools for MYSQL.

MYSQL is the world's most popular open source database. Whether you are a fast-growing web property, technology ISV or large enterprise, MYSQL can cost-effectively help you deliver high performance, scalable database applications

MYSQL is popular choice of database for used in web application & is a central component of widely used LAMP open source web application software stack.

MYSQL Query Analyzer: To optimize performance by visualizing query activity and fixing problem SQL code.

SQLite:
SQLite is a relational database management system contained in a small (~350 KiB) C programming library. In contrast to other database management systems, SQLite is not a separate process that is accessed from the client application, but an integral part of it. SQLite is ACID-compliant and implements most of the SQL standard, using a dynamically and weakly typed SQL syntax that does not guarantee the domain integrity. SQLite is a popular choice as embedded database for local/client storage in application software such as web browsers. It is arguably the most widely deployed database engine, as it is used today by several widespread browsers, operating systems, and embedded systems, among others. OS like Android, Web browsers like Mozilla etc. SQLite has many bindings to programming languages.

7. Overall Description

7.1 PRODUCT PERSPECTIVE:

Without waiting for long hours person will get food by booking the order online
- 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 so for this using booking process through application.

7.2 REQUIREMENTS:
SOFTWARE REQUIREMENTS:

Programming language: JAVA, Android
1) Android Studio 2.1.1
2) JDK 1.7.

HARDWARE REQUIREMENTS:

Android Phone
250 GB HD
4 GB RAM

7.3 PRODUCT FUNCTION:

User(Customer) –
- User Registration in App then login on mobile
- Then Customer would select a hotel from a list
- He would book a table of that hotel for specific time period then a QR- Code would generate

- When users would enter the hotel he would scan the generated QR-Code manager's application
- Then customer do selection of items in menu on a screen
- One option On some screen their would be a button to call waiter
- Once users is finished with the consuming food
- He would get payment option he would pay the bill and would leave the hotel
- Update password and information

Chef:

- Chef Registration in App then login on mobile
- When customer do selection of items in menu then chefs would view orders in queue on table.
- Update password and information

Cashier:

- Cashier registration in app then login on mobile.
- Cashier would be able to find the users bill paid status and particulars of the bill.
- Update password and information

Manager:

- When customer click on button to call waiter then manager will be receive a notification
- Manager would be able to find the users bill paid status.

9. Mathematical Model:

S={s, e, X, Y, T, $F_{main,}$ NDD, DD, Success, Failure}

•**S(System)** = Is our proposed system which includes following tuple.

•**s (initial state at time T)** = GUI of search engine. The GUI provides space to enter a query/input for user.

•**X (input to system)**:- Input Query. The user has to first enter the query. The query may be ambiguous or not. The query also represents what user wants to search.

•**Y (output of system)**:- List of URLs with Snippets. User has to enter a query into search engine then search engine generates a result which contains relevant and irrelevant URL's and their snippets.

•**T (No. of steps to be performed)**:-**10**. These are the total number of steps required to process a query and generates results.

•**f_{main}(main algorithm)**:- It contains Process P. Process P contains Input ,Output and subordinates functions. It shows how the query will be processed into different modules and how the results are generated.

•**DD (deterministic data)**:- It contains Database data. Here we have considered MySQL, SQLite which contains number of queries. Such queries are user for showing results. Hence, SQLite is our DD.

•**NDD (non-deterministic data)**:- No. of input queries. In our system, user can enter numbers of queries so that we cannot judge how many queries user enters into single session. Hence, Number of Input queries are our NDD.
•**Memory shared**:- SQLite. SQLite will store information like User Authentication, Performing Operations like book table, Scan QR code, Selection of items in menu, Button to call waiter, Payment. Since it is the only memory shared in our system, we have included it in the SQLite.
•**CPU_{count}**: - 1. In our system, we require 1 CPU for server.

•**Success** = successfully recommended best system as per user's interest
•**Failure** = If application will not send the notification to user it will fail.
Subordinate functions:

$S=\{s,e,X,Y,F_{main},NDD,DD,Success,Failure\}$
Where
s=Start State
e=End State
X={Set Of Inputs}
= {x1,x2,x3,x4,x5}
Where x1= Registration (name, age, gender, address, mobile, email), Login
x2= Book a table, Scan QR code
x3= Selection of items in menu
x4= Button to call waiter
x5= Payment, Find the users bill paid status

Y={Set of Outputs}
= {y1,y2,y3,y4,y5}
Where y1=List of hotel
y2= Generated QR-Code
y3= Menu
y4= Total amount
y5= Orders in queue on table, Display bill payment status

F_{main} = {Set of procedure}

= {f1,f2f3,f4,f5,f6,f7,f8,f9,f10}

Where
f1= Take x1 Input
f2= Give y1 Output
f3= Take x2 Input
f4= Give y2 Output
f5= Take x3 Input
f6= Give y3 Output

f7= Take x4 Input
f8= Give y4 Output
f9= Take x5 Input
f10= Give y5 Output

State Transition Diagram:

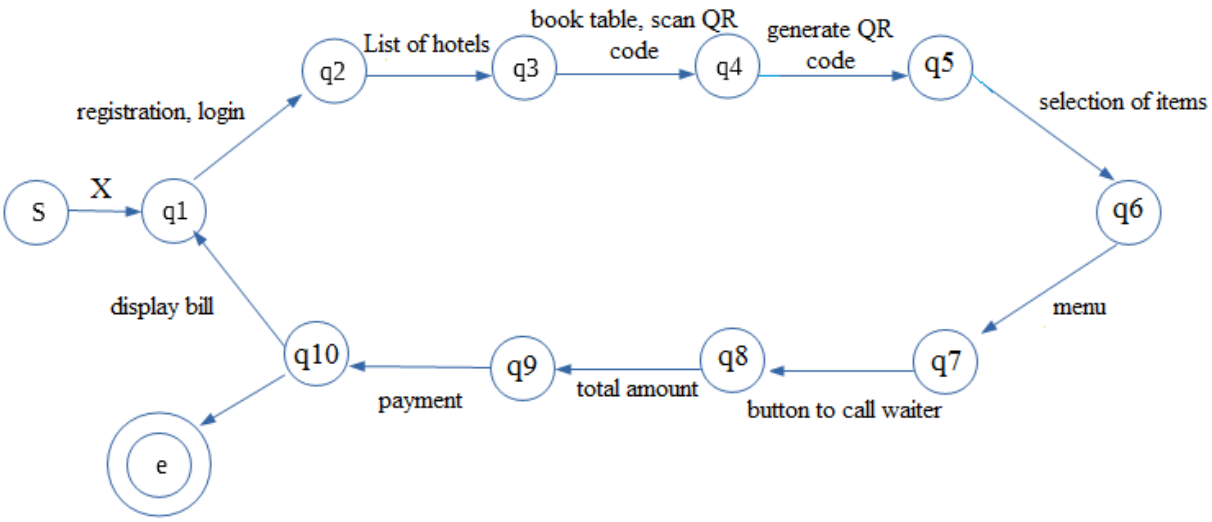


Fig: State Transition Diagram

Where,
s = input state
x = query

q1= Registration (name, age, gender, address, mobile, email), Login

q2=List of hotel

q3= Book a table, Scan QR code

q4= Generated QR-Code

q5= Selection of items in menu

q6= Menu

q7= Button to call waiter

q8= Total amount

q9= Payment, Find the users bill paid status

q10 = Orders in queue on table, Display bill payment status

Explanation:

- The q1 state accept the ambiguous query 'x' from the state 's' which is our initial state
- The q2 state is meant for Registration (name, age, gender, address, mobile, email), Login that stores the query x which is accept in state q3. The application will Book a table, Scan QR code
- The q4 state will Generated QR-Code and in state q5 Selection of items in menu will be done
- Menu will be selected and Button to call waiter will be pressed in state q6
- State q7 will give Total amount to user and Payment, Find the users bill paid status will be done in state q8
- In the last state q10 Orders in queue on table, Display bill payment status.

10. CONCLUSION

We conclude that this would attract customers and also adds to the efficiency of maintaining the restaurant's ordering and billing sections. Lessens manual work, manual errors. It Display list of hotel then Customer should be also book a table (display list of table). Option menu for selection of hotel menu. One button for calling the waiter. One button for Payment option. View bill payment status in table format.

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