

# International Journal of Innovative Research in Science, Engineering and Technology

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## YEDY, A Common Platform of Digital Ordering System for Restaurants Using Android

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**ABSTRACT:** The conventional method of food ordering system involves the hard copy of the menu and manpower. It is time-consuming and the expenditure on resources used for the menu and manpower make the system cost inefficient. A digitized system can be implemented by scanning the QR code thereby automating the ordering system. This strategy takeovers the manpower which in turn reduces the expenditure for the hotel and replaces the traditional menu thereby preventing the consumption of resources that are scarcely available but are essential for our environment. YEDY, the food ordering app is proposed as the solution to the above-mentioned problem. The system is implemented using QR code scanner and android application for mobile phones. The front end will be developed using JAVA Android and the back end will work on MySQL database.

**KEYWORDS:** YEDY- Croatian translation of food i.e. name of this application, QR code - QuickResponse Code, Automation, Artificial intelligence, Machine learning, Recommendation engine.

### I. INTRODUCTION

Restaurants are one of the ideal choices of premise with any reason for the customers to visit. Customers place order and wait for their ordered meal. The resource i.e. the hard copy of a menu used till now, for food ordering, are paper-based, and they are quite tedious and complex as it includes structuring, designing and printing. If the menu must be updated, the restaurateurs are forced to go back to square one. YEDY, the food ordering application eased the above-mentioned issue and reduces the consumption of resources thereby saving the expenditure for restaurateurs. During the rush hours, the waiters are unable to approach each customer to take order at the same time which leads to feeling of dissatisfaction for the customers. YEDY is an integrated system developed to assist the restaurant organizations by allowing customers to immediately place orders on their own selves. This will reduce waiting time for the meal to be served. The app is installed using WI-FI or cellular data. The users will have to register themselves in the application. The application consists of QR code scanner. QR code is a trademark for the type of matrix barcode. A barcode is a machine-readable optical label that contains information about the item to which it is attached. After scanning the QR code, the app will lead to the digitized menu page where the customers can select the items simultaneously. The QR code is customized for each restaurant individually. The menu submitted is sent to the database and checked whether the ordered items are available currently. The order summary is again sent back to the customer for confirmation. The serving of food is based on FCFS i.e. first come first serve scheduling algorithm. The recommendation engine is a part of this application. The item-based collaborative filtering technique is used to recognize the regular customers to provide additional offers. The Apriori algorithm is used for this filtering process. Thus, the YEDY app comprises machine learning and artificial intelligence.

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## II. SCOPE

The traditional menu is paper-based, and it should be prevented from various factors like the coffee stain, fire and getting lost. If in case of any changes or updating, the menu must be printed again, and this will lead to expenses. YEDY is a common platform where the customer can check out the menu at any restaurant. It provides an easy way of ordering where the customers need not require any traditional menu. The customers must install the app on their mobile phones or tablets and register themselves. The application consists of a QR code scanner. Once the customer has gone to the restaurant, they will have to open the application and scan the QR code placed on their respective table. Once the QR code is scanned, it will get connected to the respective hotel database. After scanning the QR code, the menu will be displayed. The customers can simultaneously place the order by checking out the menu and the updating feature becomes easy because the menu is a digitized menu. Once the order is selected from the menu and submitted, it goes to the restaurant database to check the availability of the ordered dishes. After checking the availability, the customers will receive the order summary and once the confirmation is clicked, the order is placed. In the meantime, of waiting for the ordered meal, the customers can play games in our application. We also have a feedback editorial where customers can give their reviews and feedback about the restaurant. The application will maintain a customer relationship, and they can improve their services and cuisines from the feedback. When the visit of a customer to the restaurant exceeds a certain limit, they are separately put under regular customers and the additional offers are given to them.

## III. EXTERNAL INTERFACES REQUIREMENTS

### 3.1.1 User interfaces

*User device:*

An android smartphone is the basic need for placing order. The app can be installed by enabling Wi-Fi connectivity in the restaurant. The items in the menu are non-editable for the users. The device will display all the items of the menu with sufficient visibility. Customer from any layer of the society will be able to handle and operate all the functions easily.

*Admin device:*

This device is especially for the use of the restaurant manager. The manager should be able to control the functions of whole restaurant from a single device. He will be able to make changes or disable particular item from the menu if it is not available at that particular time.

*Display at Kitchen:*

These are present at the kitchen near chef so that he would be able to see what the orders are. All the ordered items are displayed on the screen giving the table number below. They should be sufficiently large to be seen by chef at a reasonable distance.

### 3.1.2 Hardware Interfaces

There are three external hardware devices used by the proposed system, each related to a user interface. These devices are the wireless smartphones or tablets and the displays. The devices behave as 'terminals' in the sense that they never have a full system image, do not store data and are not used for the core logic of the system. However, they should be fully capable that can use textual data from the server along with local UI/interpretation code to display UI elements and takes input. All order and transaction records should be stored on the server. In all the cases, the hardware device takes information from the proposed system and processes the information to display. It also provides user input information to the proposed system to deal with a JSP/Servlet that stores the information necessary for our system to operate. The JSP/Servlet must be able to provide, on request and with low latency, data concerning the restaurant's menu, employees (and their passwords) and available dietary requirements. Additionally, it should take and archive data provided to it. This data will include records of all orders and transactions (system states and state changes) executed. JSP/Servlet must store all data such that it can be used for accounting, as well as accountability.

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### 3.1.3 Software Interfaces

A JSP/Servlet is required to store the necessary information for the system to run. The JSP/Servlet must be able to provide, on request and with low latency, data concerning the restaurant's menu, employees (and their passwords) and available dietary requirements. Additionally, it should take and archive data provided to it. This data will include records of all orders and transactions (system states and state changes) executed. JSP/Servlet must store all data such that it can be used for accounting, as well as accountability.

### 3.1.4 Communication Interfaces

YEDY will interact with Wi-Fi to support communication with all its devices.

### 3.1.5 Other Requirements

*DB requirements:*

The database required for this system is SQLite database for storing details. It also needs a database on the server which is handled by JSP and SQL. SQLite is a relational database management system contained in 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. SQLite is a popular choice as embedded database for local/client storage in application software. It is arguably the most widely deployed database engine, as it is used today by several widespread browsers, operating systems, and embedded systems, OS like Android. SQLite has many bindings to programming languages.

## IV. SYSTEM ARCHITECTURE

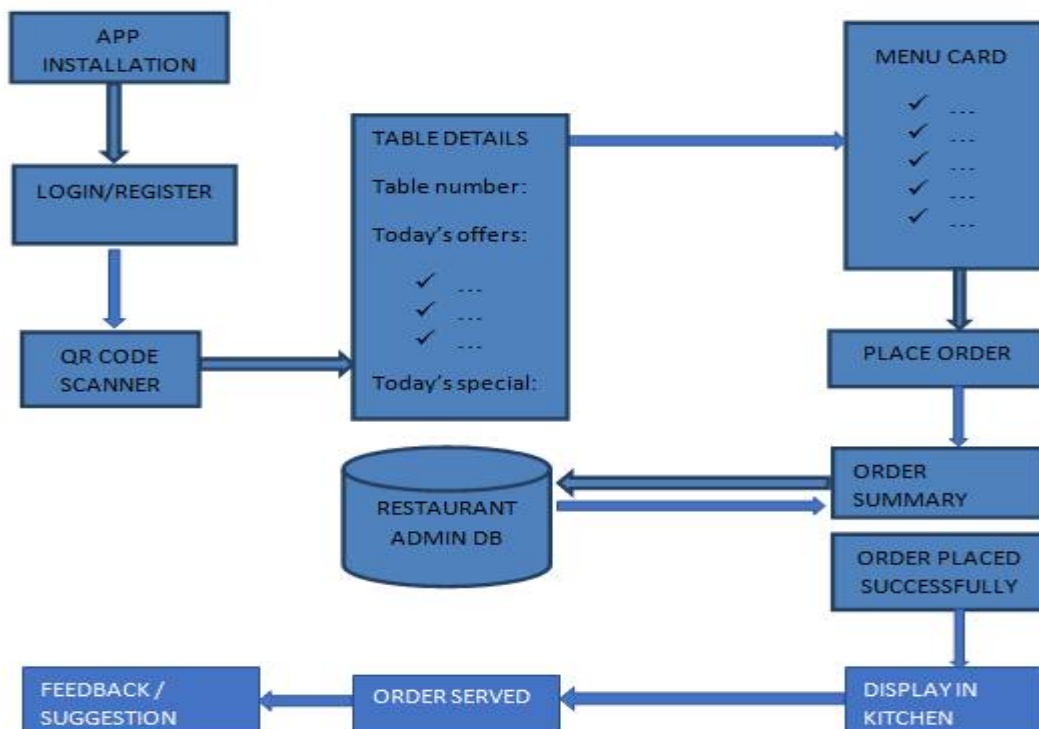


FIG: SYSTEM BLOCKDIAGRAM

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- YEDY app is made as a common platform for all the partnered restaurants where customers can use the same app for all their favorite restaurants.
- This app can be installed either from Play Store or by scanning the QR code in the restaurant.
- After installation, the app has a QR code scanner is again used for viewing and ordering that restaurant's particular list of menus.
- Offers and chef's special food items are listed for the customers to be aware about.
- The customers can customize their own menu by selecting their desired one from the list of items displayed. In the same module, the quantity of each menu can be customized by the user.
- Once the customer confirms the menu, the data gets stored in the admin database and checks the availability once again and shown in the next module to the customer indicating the status.
- The menu sent to the database is instantly relayed to the kitchen and food is served on first cum first reserve basis to the table number they specified.
- The suggestion module is dedicated to the customers to help the restaurateurs to improve food and service.

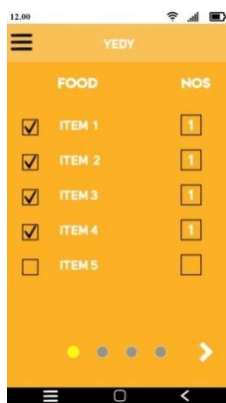


FIG 4.1

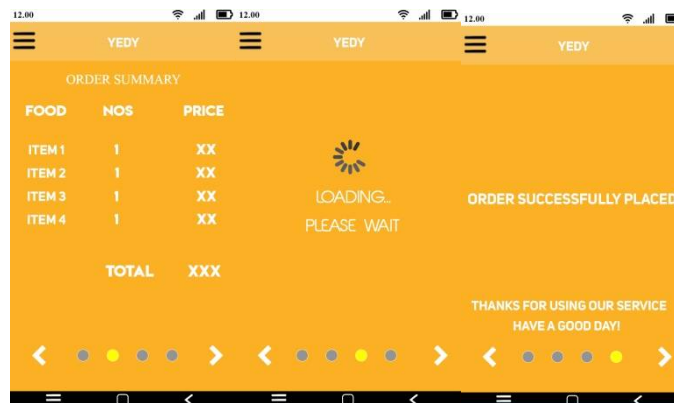


FIG 4.2

FIG 4.3

FIG 4.4

### ALGORITHM:

This algorithm is based on item based collaborative filtering i.e. one of the type of recommendation engine that has been used in filtering regular customers to give additional offers.

1. **START**
2. **DECLARE x, No.of visits.**
3. **READ variables.**
4. **IF No.of visits  $\geq$  x**  
**THEN additional discounts**  
**ELSE festive offers**

5. **STOP**

### V. TECHNICAL SPECIFICATION

The technologies which are used to implement the system are:

- 1) Android version 5.0 (Smart Phone) and Android version 5.0 -8.0 for user device is required.
- 2) Java SE 6 Programming Language is used to develop the software.
- 3) Eclipse Indigo is used as a Rapid Application Development Tool (RAD) or as an Integrated Development Environment (IDE) for coding the software.
- 4) JSP/SERVLET is used for Remote Database Access from the main system of the restaurant.
- 5) SQLite is a lightweight Database which is used for database access from handheld device or the tablet.

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## VI. FUTURE SCOPE

Billing system can be made through the app directly to pay the bill amount. Games, puzzles or riddles and even chat bots can also be added as additional modules so that customers will be engaged during the wait time.

## VII. CONCLUSION

The proposed system would attract customers and ease the job of waiters. It also adds to the efficiency of maintaining the restaurant's ordering and billing sections.

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