

Cloud based Android App for college Canteen Management System

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Abstract: Any institute canteen is a chaotic place since in short time the student has to eat and the canteen persons have to prepare to serve the food. The delay in getting and serving the order often results in missing the next lectures after the lunch recess. To avoid this situation a new application is proposed. This paper proposes a system to reduce manual and paper work for efficient canteen management systems at college canteens. It can lead to reliable and fast management system for better services to students during lunch breaks. Using cloud storage for canteen app will help organizations to maintain computerized records avoiding redundant entries. This system makes the process from token counter to service counter much easier and time-efficient with the use of digital order tokens. It also encourages use of digital payment modes through the app.

Keywords- Android application, cloud storage, digital token, e-wallet, database

I. INTRODUCTION

In the existing system, ordering meal and having food during recess slots is time consuming due to overcrowded canteen area. In addition, a lot of paper waste is generated for coupons. The focus of our proposed system is to have a mobile application for college students wherein every order will be identified using a unique token id. After successful login the student can access the menu and place order through the app. The order gets finalized after the payment process. If the student cancels order after certain amount of time, fine gets generated. The student also receives notification, when order is ready. The details of every individual are stored in the cloud database which helps to maintain account of student orders. This is an advantage over the manual record keeping. The system at the chef side maintains received order as per the token numbers and notifies user when order is ready.

This system reduces the load on the canteen's end, as the entire process is automated. Within this system, all items in the order are displayed, in a concise and easy to read manner. This allows canteen employees to quickly go through the orders as they are placed and produce the necessary items with minimal delay and confusion. [1]

II. EXISTING SYSTEM

The traditional college canteens are based on pen-paper records, cash and manual record keeping systems, resulting in crowded canteens during recess. Since the existing system is paper based it can be manipulated easily thus, it lacks data integrity. [2] Traditional practices follow manual distribution of coupons to students which needs to be given at the service counter and receiving the order. Also there is a queue at the coupon counter and orders may get mismanaged. The disadvantages of current system can be overcome in an automated, cloud based canteen management system.

The following figure represents the existing canteen scenario where the student takes a coupon (token) from the order counter, submits it to serving counter and waits till the order is ready. The chef receives order in large numbers which increases the waiting time and chaos during lunch breaks.

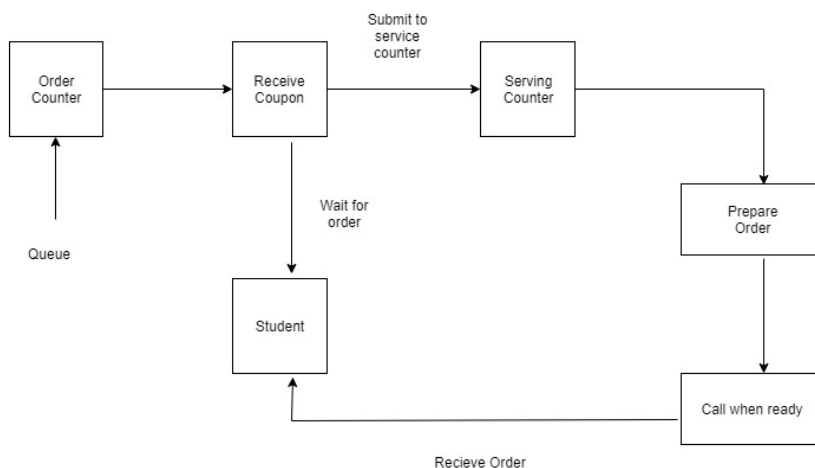


Fig.1 Existing System

III. PROPOSED SYSTEM:

The proposed Canteen Management System is an adept solution for chaos at college canteens. It is a cloud based cashless framework. As a result of cloud cost and upkeep of equipment is dispensed with. Highlights of cloud for example auto-scaling, load adjusting and pay as you go improve the working of the system and to some extent unravel the motivation behind the proposed system.

A. Working

Initially the students will register on the app with unique email-id and will be able to access the app after admin approval. The process of getting registered with admin will happen in no time. Registered user information will be stored on the cloud database. After successful login menu card will be displayed. User can now browse through the menu and add the required food items to the cart. The application also provides the facility to search the required food item in the menu card and adding it to cart. The cart items are put in the cloud database to the user cart. The order gets confirmed after completion of the payment process through the e-wallet. Embedding e-wallet with the mobile application makes the payment process easier and cashless. Alert is sent to the customer .Specifying the details about deduction from his account Balance. [3]Order confirmation generates a unique token id for every order which is placed through the app. The user receives an acknowledgement for the placed order. The final cart details are updated in the database by importing user cart .The system at the chef's side receives the order and the sequence is maintained as per the token id. The chef notifies the customer when the order is ready. The user has the privilege to cancel the placed order within specified time limit for example within 5 minutes after placing the order. If the order is cancelled after the specified time limit, fine will be generated. The record of fine will be updated in the database. After user collects the order, delivered status is marked and again the user will be notified. The delivered record gets marked in the database as well. Admin has the privilege of accessing and maintaining the cloud database. Consequently, the record for day to day deals and students can be effectively recovered through administrator login for the database.

B. Cloud for canteen management system

Cloud storage is known for its advantages over pen paper based records and commodity hardware storage. Instead of maintaining records manually, cloud services facilitate storage, management and analysis of data. There is no limit on amount of data stored along with a benefit of pay as much you use. Canteen management staff can easily keep track of daily sales, profit/loss and user accounts. Such analysis can certainly aid in effective management thus making the management committee aware of food item preferences of students.

The following figure represents the overview of working of the proposed system. The token is generated digitally when student places his order thus eliminating paper waste and queues at the coupon counter. Also, the chef receives the orders in advance which help in reducing the chaos.

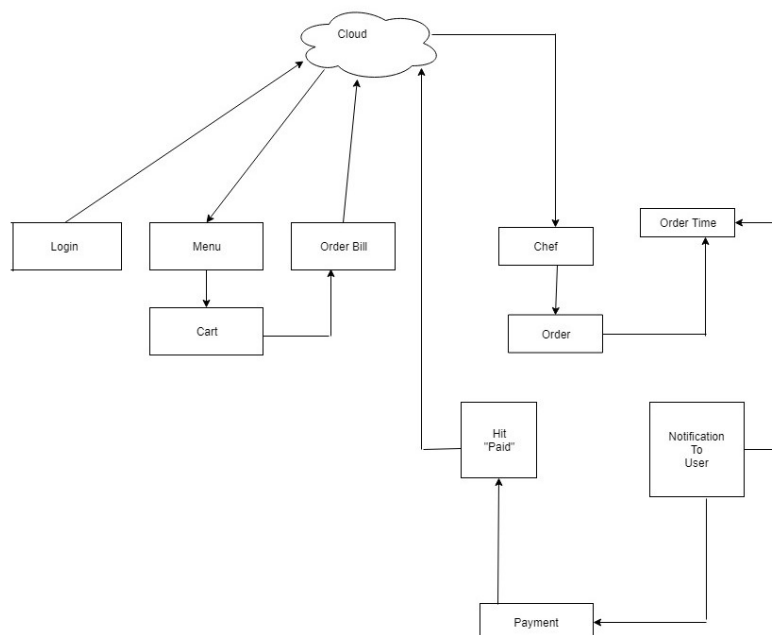
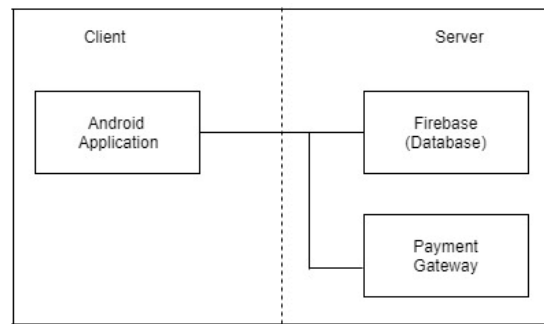


Fig 2. Proposed System

C. System Methodology:



The system has two tier architecture and follows a client-server communication model. The client side is the android application which provides a GUI for communication of client with the system. The android application can be built using Android Studio SDK and the schemes for GUI can be plotted using XML files. The resource file consisting of xml files are to be included in Java activities for its functioning. The android app uses JSON format to interchange data with the server. The data is stored as JSON in Firebase and synchronized in real time to every connected client. The payment gateway API can be integrated by importing the required dependencies to android project from native SDK available.

D. Process Flow

The following diagram suggests the sequence of occurrences of activities in the proposed system. The process begins with logging in to the app to receiving order or cancelling the order within short interval of time.

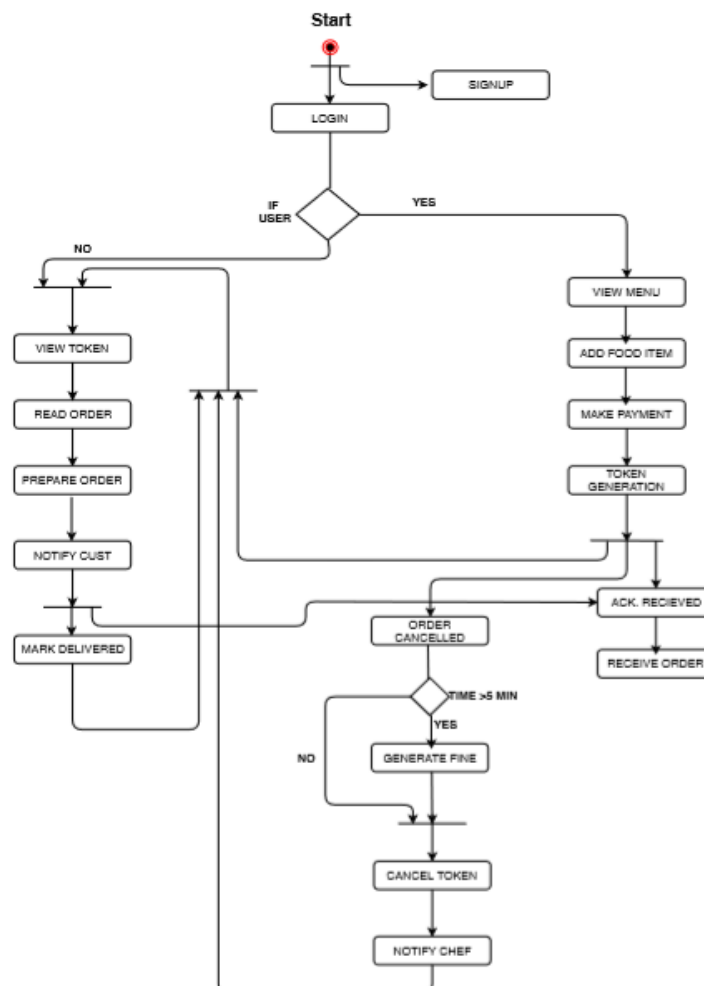


Fig. Process Flow

IV. Conclusion:

The proposed system effectively addresses the issue of bottlenecking and crammed canteens during lunch breaks. This will help to serve the timing related issues as well as encourage use of digital tokens and cashless payment processes. Use of cloud based system gives the advantage of better analysis and administration of data. This app will contribute to smart canteen management system and can have additional features like automatic generation of sales report. This can be useful in analysis of materials used and consumed.

V. References:

- (1) Monik Shah , Shalin Shah , Mohd Danish Shaikh, Kaustubh Tiwari , “Canteen Automation System”, “International Research Journal of Engineering and Technology” , (Volume 4, Issue 2 2018)
- (2) Lavina Mall, Nihal Shaikh , “CANTEEN MANAGEMENT SYSTEM USING RFID TECHNOLOGY BASED ON CLOUD COMPUTING” , [Mall* et al., 6(4): April, 2017]
- (3) Tazeen Khan, Daniel Yunus , “Cloud Based Canteen Management System”, “International Journal for Research in Engineering Application & Management” (IJREAM) ISSN : 2494-9150 Vol-02, Issue 08, Nov 2016
- (4) Ashutosh Bhargave, Niranjana Jadhav, Apurva Joshi, Prachi S. Oke, and Shivaji R. Lahane , “Digital ordering system for restaurants using android” ,”International Journal of Scientific and Research Publications”, Volume 3, Issue 4, April 2013 1 ISSN 2250-3153
- (5) Mayur D. Jakhete, Piyush C. Mankar , “implementation of smart restaurant with e-Menu card”, “Implementation of Smart Restaurant with e-menu Card International Journal of Computer Applications” (0975 – 8887) Volume 119 – No.21, June 2015
- (6) Akash Katkar , Kalpesh Juvekar, Nitin Rohira, Smita Jangale,” Canteen management system using the E-wallet”, “ International Journal of Advance Research, Ideas and Innovations in Technology”
- (7) A Venkatesh, Marrynal S Eastaf , “A Study of Data Storage Security Issues in Cloud Computing”, “International Journal of Scientific Research in Computer Science, Engineering and Information Technology” , 2018 IJSRCSEIT | Volume 3 | Issue 1 | ISSN : 2456-3307
- (8) Syed Neha Samreen,, Neha Khatri-Valmik,Supriya Madhukar Salve, Pathan Nouman Khan, “ Introduction to Cloud Computing “, “International Research Journal of Engineering and Technology (IRJET)”, Volume: 05 Issue: 02 | Feb-2018
- (9) An introduction to Firebase – the easiest way to build powerful, cloud-enabled Android apps, <https://www.androidauthority.com/introduction-to-firebase-765262/>