

# Canteen Coupon Management System with GPS as a Coupon Checker

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**Abstract:** Current wireless communications enable people to easily exchange information directly, while web services provide loosely coupled and platform-independent ways of linking applications across the Internet or Intranet. This paper represents an integration of wireless communication technologies and web services technologies to realize a food ordering system. With the help of both desktop PCs and mobile devices such as PDAs, it implements wired and wireless data access to the servers and food ordering functions over a wired/wireless integrated local area network in this system. To ensure the security of the system, the secure web service architecture and some security strategies to ensure mobile communication security are discussed. Web services-based wireless applications on mobile devices provide a means of simplicity, improving efficiency and accuracy for restaurants by saving time, reducing human errors and efforts etc.

**Keywords:** Canteen Coupon Management System, GPS, Coupon Checker, wireless communications, PDA.

## I. INTRODUCTION

The rapid developments in information technology, particularly in wireless communication and web services technologies, are greatly changing the way people access and work with information. The convenience and powerful features are given by mobile devices such as PDAs, has encouraged many people to investigate the benefits of using them. Wireless and handheld devices abound as vendors pitch the common themes of one-to-one computing, communication at anytime, anywhere information access. Web services provide a technology for service oriented computing and it allow programs written in different languages on various platforms to communicate with each other in a standard and efficient way. By integrating these technologies, consistent business models can be implemented on a broad array of devices: not just on mobile devices operating over mobile networks, but also on servers and PCs connected to the Internet. The food ordering process in restaurants requires the coordination of simple tasks. Instruction flows mainly from customers to waiters then to kitchen and/or the bar staff, finally to the cashier. In a medium to large and busy restaurant this coordination is a challenge and requires an efficient ordering system. Errors in ordering processes lead to incorrect or out of sequence meal preparation or no consumable and results in added cost to the business.

## II. PROBLEM STATEMENT

Today, people getting busy and tension when facing their daily work, further more when they are required to queue up so long just to order a food in the food court. Although the food ordering system in most of the food court was successfully improve the food ordering process, but this should not mean it is the most efficient way of solution. Every industries and every single work has been computerized to improve the services and productivity, especially in this IT world. The information about the meal or drink that offers in the food court was not stated

clearly in the menu. Other than that, the food court does not update their menu from time to time.

## III. THE GROWING IMPORTANCE OF ANDROID MOBILE

Android is a software stack for mobile devices that includes an operating system, middleware and various key applications. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language. It is a Linux-based operating system for mobile devices such as Smartphone's and tablet computers. It is developed by the Open Handset Alliance led by Google. Android has a large community of developers writing applications ("apps") that extend the functionality of the devices. Developers write primarily in a customized version of Java. Applications can be downloaded from third-party sites or through online stores such as Android Market, the application store run by Google. As of October 2011 there were more than 400,000 apps available for Android, and the estimated number of applications downloaded from the Android Market as of December 2011 exceeded 10 billion.

## IV. FEATURES

- Application framework enabling reuse and replacement of components easily.
- Dalvik virtual machine optimized for mobile devices.
- Integrated browser based on the open source Web Kit engine.

## V. PROPOSED SYSTEM

This system presents an integration of wireless communication technologies and web services technologies to know about food ordering system. In this system, it implements wired and wireless data access to the servers and food ordering functions through both

desktop PCs and mobile devices such as PDAs over a wired/wireless integrated local area network. To ensure mobile communication security, system is based on secure web service architecture and some security strategies. Applications on mobile devices provide a means of convenience, improving efficiency and accuracy based on web services & wireless application. The system will maintain location wise canteen details of particular region of organization. The system will also maintain available menus with their rates and quantity. The system is going to maintain a calendar for canteen. For particular timeslot, administrator can preplan the menus. For User Identification and Authentication of transactions at Canteen, the system will interact with QR code.

- The customer application which resides personal information gathering, buying coupon, pin code validation, generating QR code, GPS coupon validation and stored into cloud database.
- The checker application is to validate the coupon by entering the coupon number of the user and searching in the cloud

## VI. SYSTEM DESIGN

### A.EXPLANATION

#### 1. Personal Information Gathering:

The work here starts during the first time installation of our application. It gathers the basic user information like first name, last name, date of birth, city, state etc., and it will be stored into user mobiles, SQLite database. Every time when the user orders the meal, this user information is also sent to the database for security purpose and this information used also in the QR generation.

#### 2. Food Ordering:

The user selects food menu items from menu list. Then the user browses through the menu option to choose menu prices as per user requirements.

#### 3. Buy:

Once the customer hits the buy button the Canteen server validates the pin number and passwords, if it is successful it saves both the order details and customer information in the server's MySQL database. After successful validation, food items and time of buying is generated and the bill amount will be display on phone screen.

#### 4. User location Tracing:

Once generates the coupon number and time of buy the details saved in the MySQL database are sent to Google Chart API engine in order to generate the user's location using latitude & longitude. Here all the personal and order information are displayed in the phone screen and sent back to the user mobile as HTTP response and saved in the application memory of mobile device.

#### 5. Coupon Validation:

The GPS plays the role of the Coupon checker, where when the user orders the food, the menu items, location geo points, time & date are stored in a mobile SQLite database. This service checks the user's current location in accordance with the destination geo points, after which the order is checked. Accordingly the order is deleted if the order time is more than three hours then the order is automatically deleted even then it is not completed on time.

### B. ARCHITECTURE

The structure of system divided into two components (fig 1):

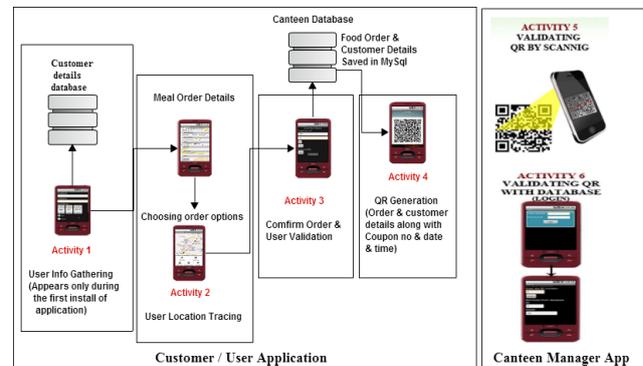


Fig 1: Architecture of system

## VII. WORK FLOW OF SYSTEM

1. Initially, user can install application & then register their details.
2. At the time of food order, the menu item on the input device will be selected as per alternative.
3. On the menu item choice, the device will issue the canteen coupon in to the QR code.
4. This coupon acts as a confirmed order information of the menu selected by the person, inclusive of name, card code, date, time and menu item selected by the user.
5. The same coupon is bestowed by the person visiting the canteen at the time of meals to the Canteen Personnel using validating QR code generated during food ordering.
6. Whenever a coupon is issued, device can store constant 'coupon-data' in its non-volatile memory. Gradually, of these records are sent to the computer at once.

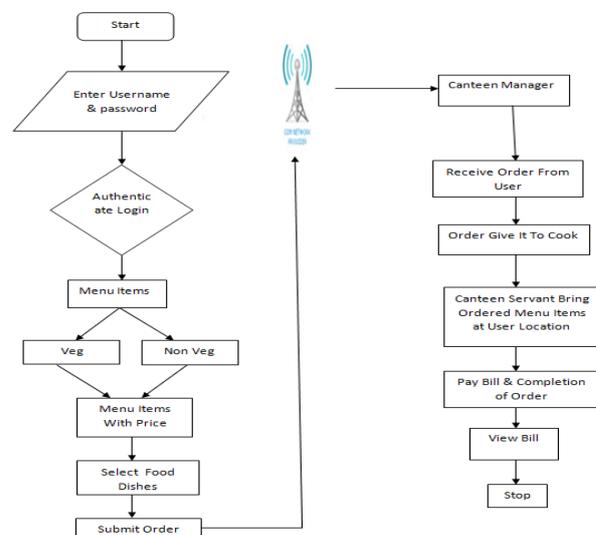


Fig 2: Work flow of system

7. Within few minutes, a canteen report is prepared which might be sent to the Canteen Manager, to make arrangements for the meals in this specific shift consequently.
8. If Canteen computer is on constant network, this report will be viewed by Canteen Manager.

### VIII. TECHNOLOGY USED

#### A. JAVA

Java is a computer programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere" (WORA), meaning that code that runs on one platform does not need to be recompiled to run on another platform. To manage memory in the object lifecycle, java uses an automatic garbage collector. Once objects are no longer in use the java runtime is responsible for recovering the memory, when objects are created by the programmer. Once no references to an object remain, the unreachable memory is allowed to be freed automatically by the garbage collector.

#### B. Android

Android allows you to build innovative apps and games for mobile devices in a Java language environment and it also provides rich application framework. The documents altered in the left navigation provide details and helps us to know about how to build apps using Android's various APIs. Android apps are built as a combination of distinct components that can be called individually. For instance, an individual activity provides a single screen for a user interface, and a service independently performs work in the background.

#### C. MySQL

MySQL is well known as world's most widely used open-source database (back-end). It is most supportive database for PHP as PHP-MySQL is most frequently used open-source scripting database pair. The user-interface which WAMP, LAMP and XAMPP servers provide for MySQL is easiest and reduces our work to a large extent.

### IX. CONCLUSION

The wireless ordering system has set upon progressively and changed the restaurant business industry and other fields. This system is simple, easy and power to produce required effects thereby improving the canteen staff's works performance besides providing quality of service and customer satisfaction. By reducing the time of customer & management for ordering of food & cost for the pen & papers this system has addressed many difficulties in food ordering process. This system provides pleasure to customers for making orders and management to improve their management.

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