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Mobile Application for General Stores

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Abstract: In the recent past, the advancement of technology develops more mobile devices and internet services are offered at affordable cost. Moreover, the mobile devices have become essential need for the humankind to communicate with others and share the information. Therefore, the number mobile phone users increase day-by-day. General stores are the stores that are located in a small town or the rural area. The general store carries the different merchandise. These stores sell food items such as milk, bread, etc. Moreover, these stores are located nearby houses therefore the travel time to reach the urban area to purchase few and a very essential commodity is reduced. The general stores play a significant role in satisfying the needs of the people living in rural area and small town. In most of the stores, the storekeeper or shopkeeper works as sales man due to the shortage of manpower and fund. Therefore, the availability and the stock of essential commodity are displayed on board or the screen in the store. However, the buyer needs to know the availability and the price of the required commodity of the store sitting at their home since going to the shop for an unavailable commodity wastes the time and energy. Therefore, this paper presents a mobile application for general store in order to know the availability of the commodity and their prices for purchase the commodity with less effort.

Keywords: Mobile application; m-commerce; m-shopping; short message service; multimedia messaging service;

I. INTRODUCTION

Nowadays, general stores play a significant role in rural and semi-urban areas in meeting the needs of the humankind. The general stores provide the basic and essential commodities such as food items, stationary items, and basic electrical and mechanical goods, etc. In general, the general stores are located nearby the houses. Therefore, people can easily access these general stores to buy any urgent items so that the time taken to go to urban area to buy an urgent item is saved. In some of the general stores, the shopkeeper or storekeeper is working as the sales man due to the unavailability of labors and inadequate fund. Therefore, explaining the availability and price of the commodity to the customer is quite complex. Big shopping malls are constructed with large space therefore customers are allowed to visit the products so that the customer can know the availability of needed commodity without others assistant which is not the case in general stores.

Moreover, in shopping mall, the price tag is pined with the product therefore the customer can know the price without any assistance. The general stores are constructed with limited space therefore the customers are not allowed to directly access the commodities as in the shopping mall. Therefore, the customer needs assistance to know the availability and the price of the commodity. If a customer needs urgent item, if he is unaware of the availability of the particular item in the general store, the customer goes to the general store and wastes his time. If the desired item is not available in the nearby shops, the time to take alternate arrangement is very high. Therefore, knowing the availability and the price of the commodities of the general stores are essential to reduce time to take alternative decisions to get the commodity.

In the recent past, the growth of the information technology produces more number of mobile devices in affordable prices and reduces the cost for the mobile usage and internet usage. Moreover, the communication is very essential for everyone to carry out the day-to-day activities. Therefore, the growth of the mobile users is increased day-by-day. Mobile phones with cellular network and internet provides various facilities such as voice call, video call, short message service (SMS), multimedia messaging service (MMS), internet browsing, mobile application, etc. Through, these facilities most of the transactions and communications are carried out. Nowadays, many mobile applications are developed to perform the communication, transactions, and computing, etc. The mobile applications can be categorized into two types namely native-based application and web-based application. The web-based application can work only with the internet and the speed of this application depends on the internet connectivity. Moreover, this web-based application is slower than the native-based applications. The native-based application is faster than web-based application and it can work even in the absence of internet connectivity since it downloads the necessary contents when the mobile device is connected with internet. The native-based application is developed for a particular operating system that operates the particular mobile device.

Therefore, the native-based mobile application can work with the particular mobile device which has the compatible operating system. This paper develops a Java mobile application for general store to know the availability and prices of the commodities of the general store.

II. LITERATURE REVIEW

This section presents a various research works that are carried out by various researchers that are related to the proposed work. In the recent past, buying and selling are carried out through wireless mobile devices such as mobile phones, tablets, etc. This kind of commercial activity is known as mobile commerce or m-commerce). The m-commerce plays a significant role in the business and commercial sectors. The m-commerce is a thirst research

area. Ngai, E.W.T et al conducted a review on the m-commerce and categorized m-commerce research into five categories such as theory and research for m-commerce, wireless communication network infrastructure for m-commerce, mobile middleware that form m-commerce, wireless user infrastructure for m-commerce, and applications and cases for m-commerce. The mobile application for shopping comes under the category of the application and case for m-commerce [1].

The shopping application needs directory services to identify the shops and locate them. Yana Hendriana et al presented a mobile application for generic shopping mall directory with Java and PHP programming languages. Through this shopping mall directory, the user can view the shopping mall and locate the shopping mall. Moreover, this application reduces the time to find the shopping malls [2]. On the other hand, preserving privacy of customer personal information, sensitive information, etc. are very essential. Therefore, the researchers focus on privacy preserving system with shopping application. Andreas, P. et al. developed a mobile shopping application with privacy preserving. This application is enabled with the facility of customer loyalty programs [3]. Tobing, R. D. H. et al. developed a customizable commerce mobile application. This application consists of commerce business process and mobile technology. This mobile application is designed for the Android based mobiles [4].

Moreover, the mobile devices become payment devices due to its sophisticated features. Sahnoune, Z. et al. suggested a research methodology for privacy disclosure in mobile payment platforms. They conducted an empirical study on privacy disclosure for mobile payment [5]. The researchers also focused on effortless shopping at shopping malls. Therefore, researchers developed mobile robot-based application for assisting customers while they shop. The mobile robot-based mobile shopping carts are employed for carrying the selected items for purchase. This mobile cart is controlled by the gesture of the human using the perception sensors. Gai, S. et al. designed a mobile shopping cart with the perception sensor Kinect. This shopping cart is designed with a mobile robot. The cart is controlled by the gesture of the human arms with the help of Kinect sensor [6].

Furthermore, the mobile application is enabled with location-based services to identify the nearest shops for buying the commodities or to get the service. Waghmare, V. et al. presented a location-based mobile application for bakery shop. This mobile application is designed with the Apache Tomcat web server, MySQL for database, and the Google cloud messaging (GCM) is used to send the order information to the shopkeeper. Moreover, the Google map service application program interface is used to identify the location of the bakery shop [7].

Some of the researchers focused on effortless content retrieval from the databases for mobile application usage. Lofi, C. et al. developed a mobile application to guide the user with the product database. This mobile application uses the content-based data retrieval technique for navigation [8]. However, the internet connectivity is more essential for the function of the mobile phone for shopping hence some researchers concentrate on the indoor positioning system to deploy the Wi-Fi access point to provide the signal coverage to the customers those who are inside the mall. Zhang, M. et al. presented a scheme coarse-grained Wi-Fi localization system to the customers for receiving the signal for their mobiles at the shop level [9]. The mobile devices are used not only for shopping, but also for many other applications. However, the mobile device has the limitations such as low computing and battery power and lesser memory. In order to overcome these limitations, researchers use the cloud-based approach to make decision for performing the tasks. Tawalbeh, L. A. et al. presented a mobile cloud system for application. This application uses sensors for collecting different data and to store the data on cloud for decision making to perform the tasks [10]. Moreover, D.A.G. Singh et al. presented the mobile application for the various purposes such as m-learning, managing the student attendance and marks, and online shopping [11] [12] [13].

From this literature, it is observed that the mobile application plays a significant role in m-commerce especially in shopping. Many researches focus on the mobile applications for m-commerce and shopping. Moreover, the researchers concentrated on the payment gateway for purchase, data retrieval from mobile database, mobile shopping cart for carrying the purchased items, indoor position system for shopping, and various mobile applications for shopping. Thus, this paper presents a mobile application for the general store in order to know the availability of the commodity and their prices for purchase the commodity with less effort.

III. Mobile Application for General Store

The mobile application environment for general store is shown in Figure 1. The cloud server is used to process the data based on the request received from the client. The general store database is used to keep all the details about the general store, commodity price, and availability. The mobile application for general store is installed in the mobile devices of the user or the customer. The mobile user or customer can update the general store information through internet with their mobile phone. Hence, the customer can get the availability of the commodity and the price when they need. Then, based on the availability and price of the commodity, the customer can purchase the commodities. This mobile application for general store consists of several modules namely registration, login, availability checking, price checking.

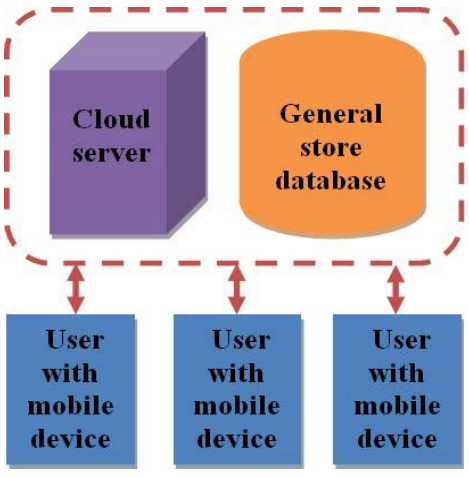


Figure 1. The environment for the mobile application for the general store

The new customers or users can register themselves with the registration module and they can get username and password from the registration module. The login module authenticates users or customers with the username and password. The availability checking module is used to check the availability of the commodities in the general store. The

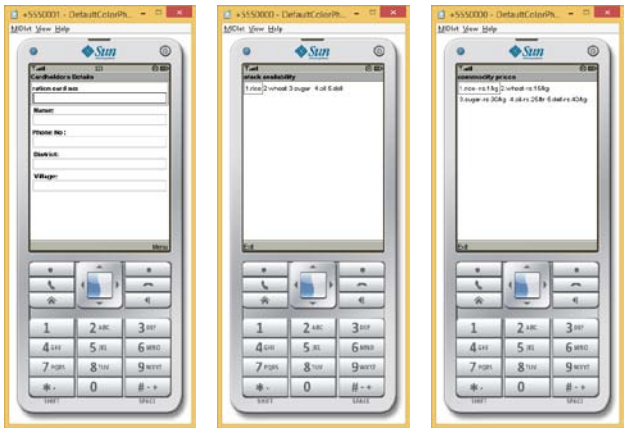
price checking module is used to check the price of the commodity of the general store.

IV. IMPLEMENTATION DETAILS

This application is implemented using Sun Java Wireless Toolkit 2.5.2_01 with the computer system specification of Windows10 operating system, 4GB RAM, 500GB hard disk, and CPU: Intel(R) Core(TM) i5 – 3470 CPU@ 3.20GHz. The following steps are carried out for the implementation of the mobile application for the general store. Initially the Sun Java Wireless Toolkit 2.5.2 is launched. From the Sun Java Wireless Toolkit window, the new project option is selected. Then, the project name and the MIDlet name as public class name are given. Then, the project is created by selecting create project option. The application program is written on the notepad and save the program with the file extension of (.java) into the specified path follows: "C:\... ...\j2mewtk\2.5.2\apps\...<Project name>...\src". Then, Sun Java Wireless Toolkit window is launched and the open project option is selected to open the saved project. The application is built using the build option. Then, the application is run using the run option.

V. OUTPUT AND DISCUSSION

This section discusses the outputs that are obtained for the mobile application for general store. The implementation outputs are shown in the Figure 2. Figure 2 (a) shows the customer registration form. Figure 2 (b) shows the available commodity list for the general store. Figure 2 (c) shows the commodity price list for the general store. Figure 2 (a) shows that the user or customer can register themselves with the mobile application by providing their personal information. Figure 2 (b) shows that the customer can view the available commodities of the general store. Figure 2 (c) shows that the customer can view the price list of the commodities of the general store. Therefore, the customer can make purchase decision using this mobile application.



(a) (b) (c)

Figure 2. (a) Customer registration form (b) Available commodity list for the general store (c) Commodity price list for the general store

VI. CONCLUSION

This paper presented a mobile application for the general store. Using this application, the customer can check the availability and price of commodities of the general store. Based on the availability and price of the commodity, the customer can make decision to purchase the particular commodity from the general store. In addition, this mobile application avoids the travel time to reach the general store in order to enquire about the availability and price list of the commodities of the general store. Moreover, the customers can make purchase decision using this mobile application.

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