

Design and Implementation of General Drug Purchase Search Application

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Abstract: -Medicine has been used from BC and many diseases are now treated with medicine only without attending hospitals in modern times. In South Korea, general pharmaceuticals defined the drug classification system are now allowed to be sold at the outside of pharmacy since May 2 of 2012. Thus, household medicines are now selling in convenience stores or small stores. The present paper designs and implements an app that provides store locations that sell medicines including pharmacy and various instructions in relation to emergency situations. The app implemented in the present paper searches nearby places for the users to buy drugs easily and quickly thereby relieving pain and coping with emergency situation.

Key-Words: - IOT, Web Application, HTML5, Mobile Application, Mobile Device, Software Usability

1 Introduction

Medicine is a substance administered to living thing to treat diseases, injuries, or other abnormal physical conditions via oral administration, liniment, or direct injection. The record of medicinal plant has been found from 1,550 BC in the West and from 250 BC in the Orient [1]. A survey reported that minor diseases may be treated with medicine without visiting hospitals and most people purchase drugs once or twice per six month [2]. The current drug classification system in South Korea divides drug into two classes: prescription and general drugs. Since May 2 of 2012, general drugs, which are non-prescription drugs, are allowed to be sold at the outside of pharmacy [3][4]. General drugs are less likely to be misused and can be used without the prescription of a doctor or dentist [5][6]. As a result, household medicines are now available in general shops or convenient stores without going to pharmacy [7].

It may be hard to find a nearby pharmacy sometimes whereas convenience store or general shops are relatively easy to find. In this regard, the present paper designs and implements an app that can provide all locations where drugs are available not only pharmacy but also surrounding convenient stores [8]. The app provides not only locations of drug purchase simply but also alarm function to notice users to take medicine on time, emergency response instructions to provide emergency situation information and how to cope with emergency

situation, and medical examination function through symptoms without going to hospital through consultation with experts to improve convenience of users.

2 Related Studies

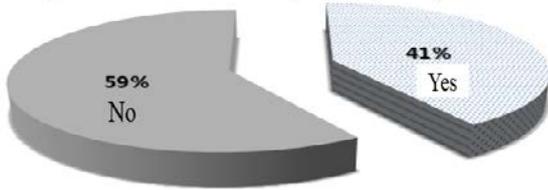
2.1 Requirement Analysis

In order to implement the app designed and implemented in the present paper, 'gooddoc' or 'Medication Reminder,' 'Emergency Medical Information Service,' and 'My Pharmacy,' which are currently available in the market, are studied and benchmarked. Furthermore, the validity of the application implementation is surveyed using a Naver Form from April 6 to 20 in 2016. The number of surveyed respondents is 106 persons. Figure 1 shows only the significant results among the survey results via graphs.

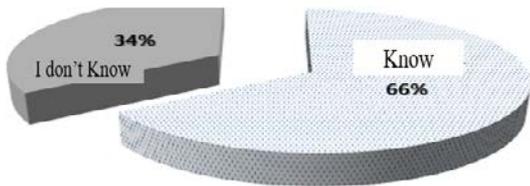
The survey results show that 41% of the respondents experience purchase of drugs at pharmacy which is farther than nearby convenient store. In addition, 66% of the respondents know some drugs are also available in convenient stores. The survey said that 59% of the respondents will purchase drugs from convenience store without going to pharmacy if the available drug information is known. As found in the above survey results, although respondents visited pharmacy to buy a drug rather than convenient store, they were also willing to use convenience store to buy a drug if the

available drug information in convenience store or shops is known beforehand.

Have you ever been to a remote pharmacy to buy medicine?



Do you know that you can buy medicines at convenience stores?



If you can buy medicines at convenience stores, will you buy them at convenience stores?

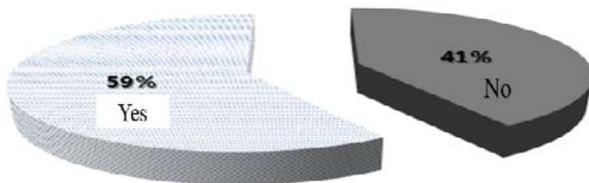


Figure 1. Survey Results

The 'General drug purchase search application' implemented in the present paper provides a function that searches drug sellers such as pharmacy as well as convenience store and shops basically. Because drugs sold in convenience store or other shops are limited, the application also provides

information about available drugs and efficacy through prior search thereby expecting acquisition of information about the drug and taking fast treatment proactively.

2.2 App Inventor

App Inventor is a program that can be used to develop apps on an Android phone or emulator. An advantage of this program is that there is no need to install a separate program to produce apps because it is done in Google Chrome browser [9]. App Inventor also has its own server, which allows users to save their work and easily manage projects. Anyone who is not a programmer can easily produce applications by using blocks instead of manually writing the code [10].

3 Design

3.1 System Flowchart

Figure 2 shows a flowchart of overall process about main function of search for drug sellers, alarm, emergency treatment, and expert consultation.

3.2 UI Design

The 'Main Page' in Figure 3 is a screen displayed immediately after login or guest use. It displays recent notices published in the information notice board as well as a list of the main menu. Upon clicking the 'Search Page, it searches nearest drug sellers from the user location based on global positioning system (GPS) information and displays

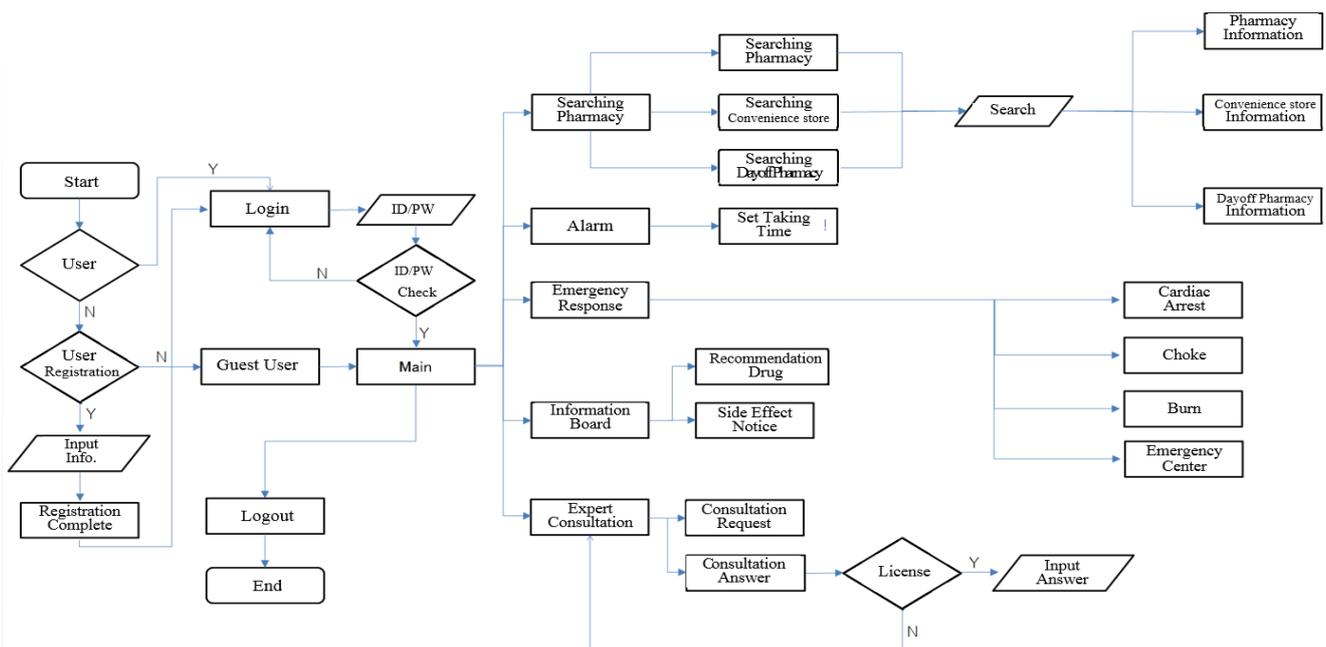


Figure 2. Flowchart of System

available drug sellers once a user enters preferred business name. The search result is displayed in the lower end of the map as shown in the figure.



Figure 3. UI for 'Main Page' and 'Search Page'

The 'Alarm Page' in Figure 4 sets alarm. A user employs the alarm function to set the medication time to remind the user to take the drug. The 'Emergency Page' provides a response manual during emergency situation such as cardiopulmonary resuscitation, fracture, and suffocation and a function to contact emergency medical center for users to cope with emergency situations through information.



Figure 4. UI for 'Alarm' and 'Emergency' Page

4 Implementation

The present paper implements five functions: login, user registration, search drug sellers, alarm, and emergency situation response but expert consultation and notice board function are not implemented yet so they are not described in the present paper.

4.1 Implementation of Login and User Registration

Figure 5 shows the implemented screens for 'Login' and 'User Registration' functions. It is the guest function, which is next to the login button. It enables users to use the application without login. Minimum information is filled for user registration for users to register. Expert qualification attachment is a function to attach a license and only certified expert with qualification can answer in the consultation function.



Figure 5. Screen for 'Login' and 'User Registration'

For the implementation, App Inventor is used in the present paper. Figures 6 and 7 show block diagrams of 'User Registration' and 'Login' in App Inventor.

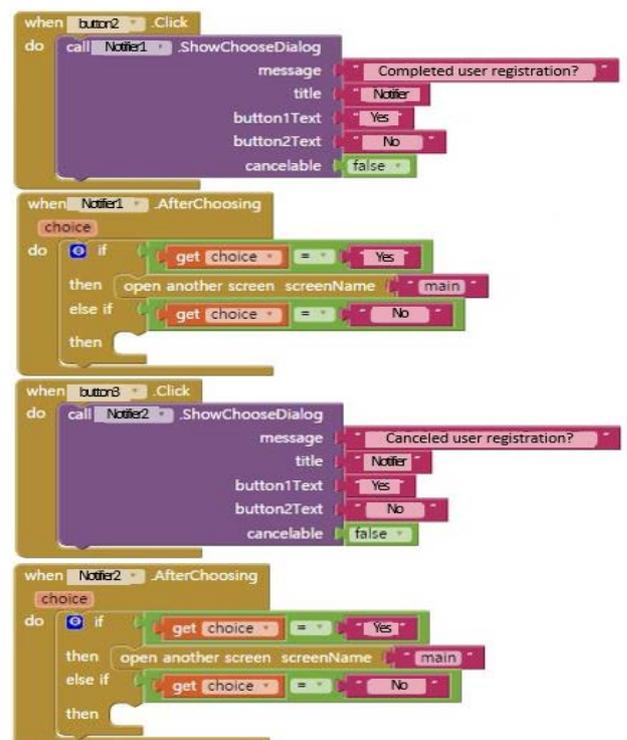


Figure 6. App inventor Block 'User Registration'

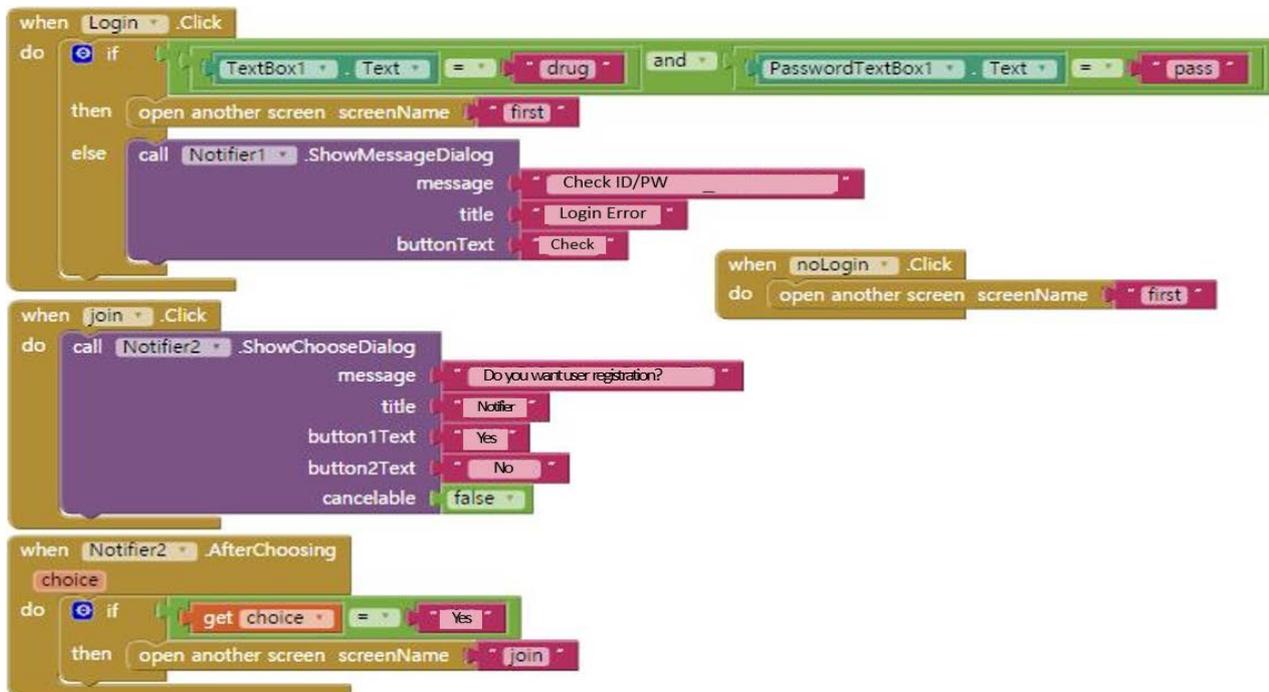


Figure 7. App inventor Block for 'Login'

4.2 Implementation of Main Screen

Figure 8 shows an implemented screen of the 'Main Screen.' A recent list in the notice board is displayed in the upper side of the notice board and buttons to select each of the functions are shown in the lower end.



Figure 8. 'Main Screen'

Figure 9 shows a block diagram of the 'Main Screen' in App Inventor.

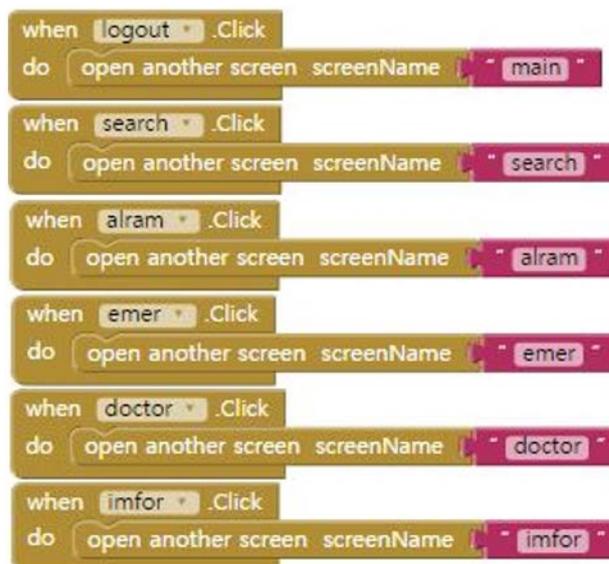


Figure 9. App Inventor block for 'Main Screen'

4.3 Implementation of Search for Drug Sellers

Figures 10, 11, and 12 show the implemented screens of the functions: 'search for pharmacy or drug sellers' and alarm, as well as a block diagram in App Inventor. In the search function, business name of the store is entered followed by searching the business name in the order of nearest place based on GPS information. The alarm function reminds of the user to take a drug at the set time of drug administration via alarm.



Figure 10. ‘Search for pharmacy’ and ‘Alarm’

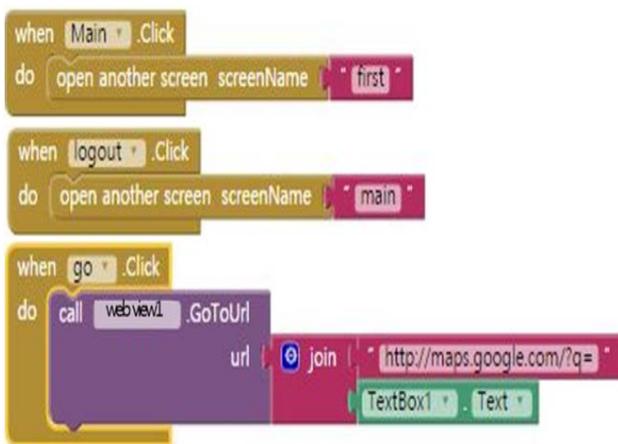


Figure 11. App Inventor block for ‘Search for pharmacy or drug sellers’

4.4 Screen of Emergency Situation Response
 Figures 13 and 14 show the implemented ‘Screen of Emergency Situation Response’ function and a block diagram in App Inventor. Basically, it provides buttons connected to links and pages of emergency response center about cardiopulmonary resuscitation, burn, and suffocation.

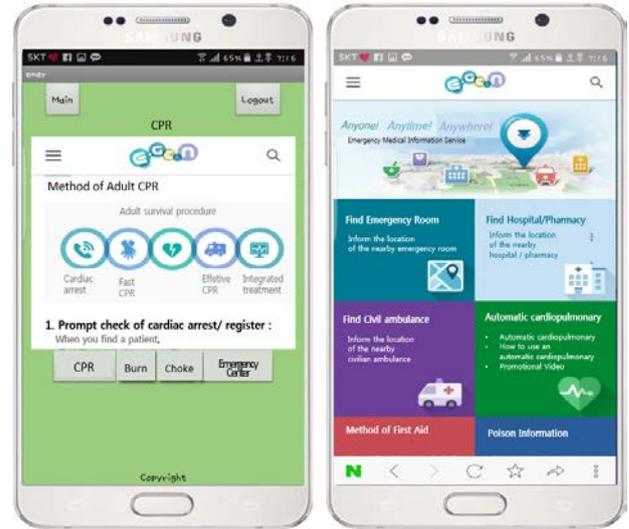


Figure 13. Screen of ‘Emergency Situation Response’

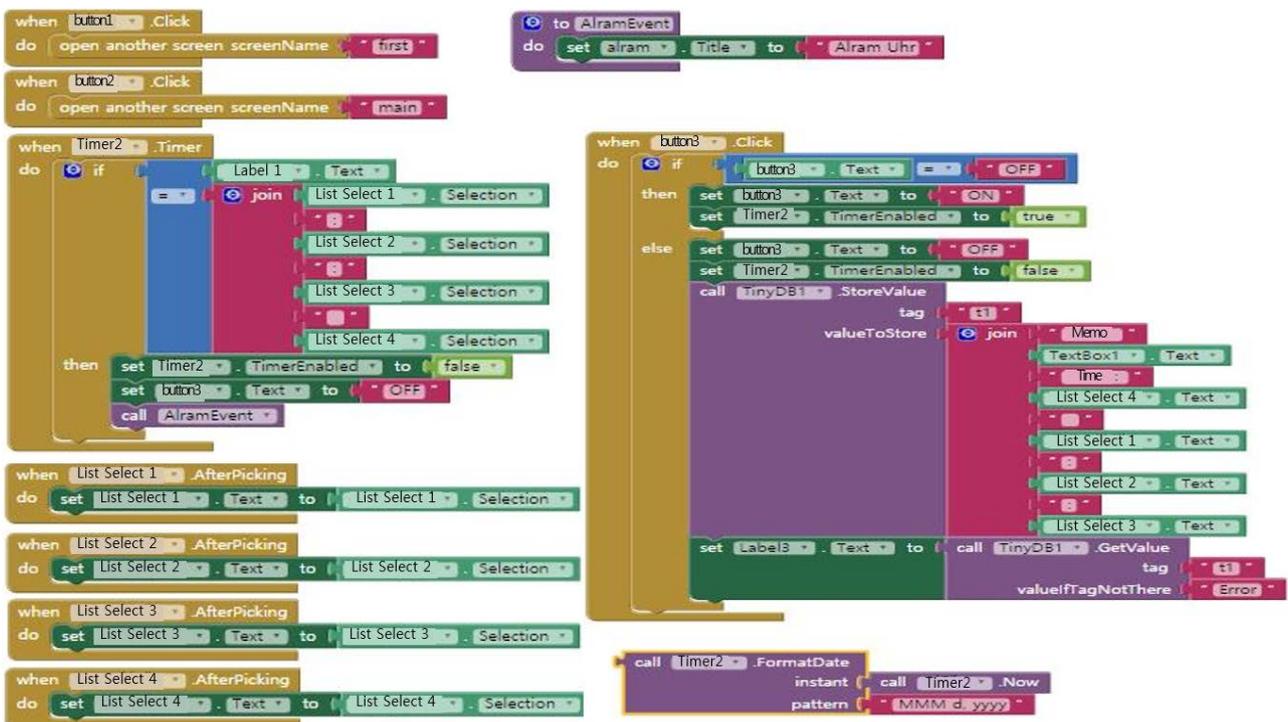


Figure 12. App Inventor block for ‘Alarm’

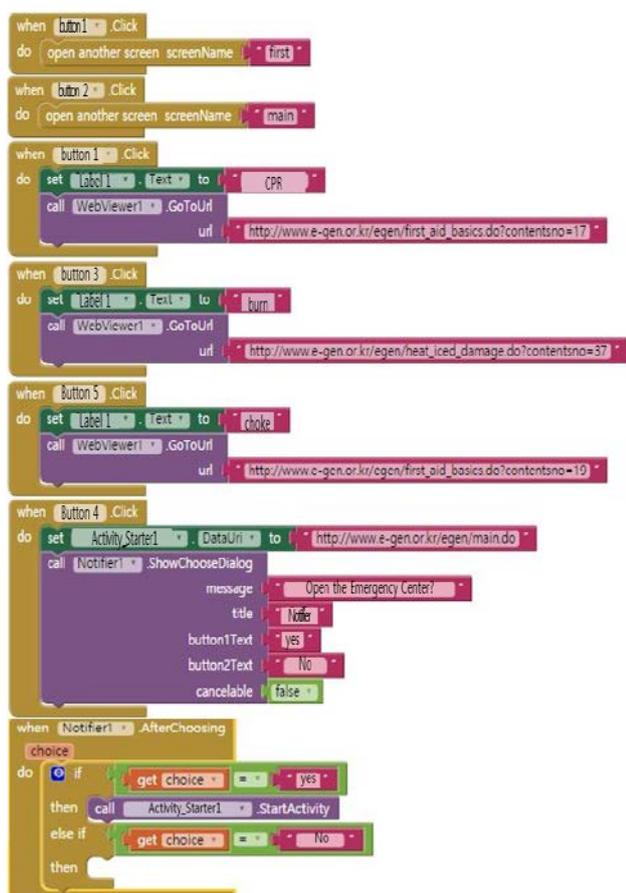


Figure 14. App Inventor block for 'Screen of Emergency Situation Response'

5 Conclusion

The present paper designs and implements an application to search for drug sellers for those who are looking for drugs. It is designed to search for the nearest drug sellers including pharmacy using GPS among many stores where general drugs are available. In addition, it is also implemented to provide not only drugs but also drug administration time through alarm and emergency treatment information, and cope with emergent situations.

Medicine is an important means to recover human body from diseases rapidly thereby keeping normal condition and daily living activities. The present paper aims to help users find a drug seller fast and conveniently so that users can treat their diseases properly after taking their preferred drugs.

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