

Pharmacy-Station Mobile Application

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Abstract

This paper proposes a mobile web application named Pharmacy-Station that sells medicines and permits a user to search for medications based on their symptoms, making it is easy to locate a specific drug online without the need to visit a pharmacy where it maybe out of stock. This application is developed using the jQuery Mobile framework, which uses many web technologies and languages such as HTML5, PHP, JavaScript and CSS3. To test the propsed application, we used data from popular pharmacies in Saudi Arabia that included important information such location, contact, and medicines in stock, etc. This document describes the different steps followed to create the Pharmacy-Station application along with screenshots. Finally, based on the results, the paper concludes with recommendations and further works planned to improve the Pharmacy-Station mobile application.

Keywords: Pharmacy, mobile application, jquery mobile framework, search, medicine

I. INTRODUCTION

The introduction of Web Mobile Applications [1] has greatly impacted many fields, including medicine. These applications are designed for Smartphones and tablets that combine both computing and communication features in a single device and that can be held in the hand allowing easy access and use at the point of care.

In this context, this study presents a proposed mobile application and its features. Pharmacy-Station is a web application designed for Smartphones like iPhone and Tablets and it is very easy to use; it permits a user to search for the nearest pharmacy having their desired medicine and to search for recommended medicine based on the symptoms on the user's illness.

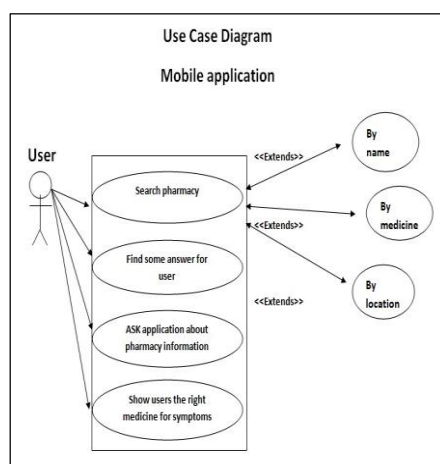


Fig. 1. Use Case Diagram

The following tables (Table 1 to Table 4) describe the specifications of each use case.

Use case	Search pharmacy
Goal	Help users to locate the nearest pharmacy stocking the requested medicines.
Precondition	None
Actor	User
Description	<i>Step / Actions</i>
	1. Find the right medicine.
	2. Show pharmacy location.
	3. Search pharmacy by name.

TABLE I. USE CASE 1

II. ANALYSIS

This section describes the requirements of the proposed application as well as a user case diagram [2] and the specifications of each case.

A PC equipped with jQuery Mobile Framework [3] was used to build the application which was then tested on a standard Smart phone.

Fig. 1 presents the use case diagram for the proposed application.

TABLE II. USE CASE 2

Use case	Ask some questions
Goal	Help users to find answers to questions
Precondition	No
Actor	User
Description	Step / Actions
	1. User answers to

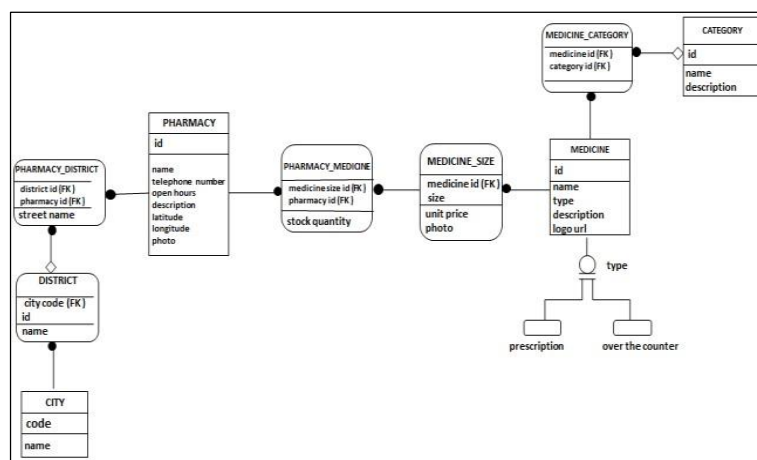


Fig. 2. Entity-Relationship Diagram

TABLE III. USE CASE 3

Use case	Ask about pharmacy information
Goal	Help users to find all the information about a pharmacy.
Precondition	Non
Actor	User
Description	Step / Actions
	1. Tell the user about pharmacy work times. 2. Give the user pharmacy contact (telephone..). 3. Determines the quantity and price for user.

Fig. 3 shows the class diagram of the proposed application in which there are 11 classes: District, Pharmacy, Medicine, Category, Thumbnail, Connection Manager, Database Manager, Get Pharmacy List, Get Medicine List, Get Pharmacy Details, Get Medicine Details.

TABLE IV. USE CASE 4

Use case	Show right medicine for symptoms
Goal	Help users to find the right medicines for entered symptoms
Precondition	Non
Actor	User
Description	Step / Actions
	1. Show some of medicines for the symptoms.

III. DESIGN

In this section, we will present the Entity-Relationship diagram [4] and the Class diagram [5] used to design the Pharmacy-Station application.

The database of our mobile application contains five principal tables (Category, Medicine, Pharmacy, District and City); the Entity-Relationship diagram (ER diagram), in which we specified the attributes of each entity (table) and the relations between them, are represented in Fig. 2.

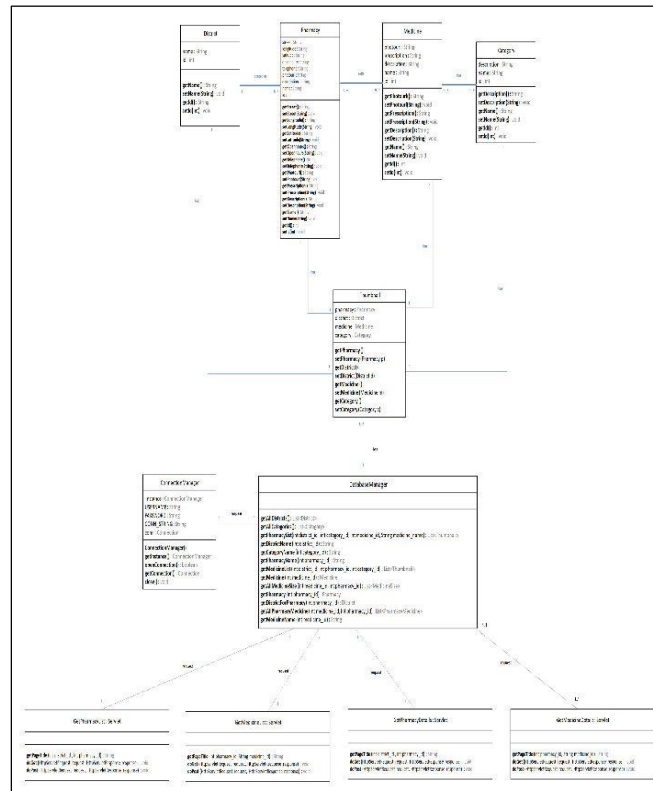


Fig. 3. Class Diagram

IV. IMPLEMENTATION

In this part, we will briefly present the languages and technologies used to implement the Pharmacy-Station application.

We used jQuery Mobile which is a framework for creating mobile web applications. JQuery Mobile works on all popular smartphones and tablets; it uses HTML5 and CSS3 [6] for laying out pages with minimal scripting. To make our web pages dynamics and to submit forms with search parameters like medicine id, pharmacy id, category id and district id, we used JavaScript.

We used also PHP language [7] to connect to MySQL [7] database and to execute queries e.g. retrieve pharmacy list. The picture shown in Fig. 4 below, represents the concept used to connect to our database.

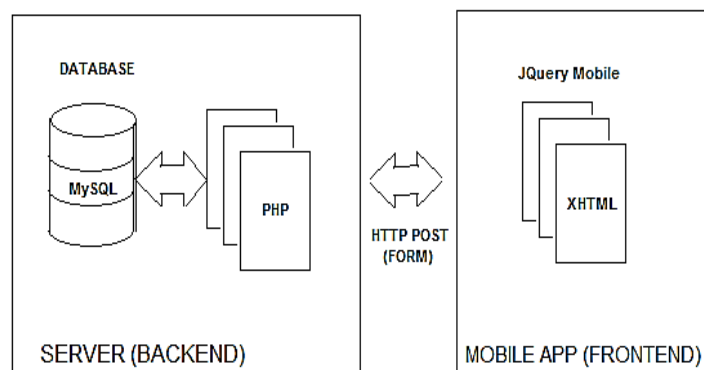


Fig. 4. Connecting to MySQL database

V. RESULTS

This section presents screen shots of the user interface of the proposed Pharmacy-Station mobile application.



Fig. 5. Finding medicine

Fig. 5 shows the graphical user interface that permits the user to search for a particular medicine by clicking the button.

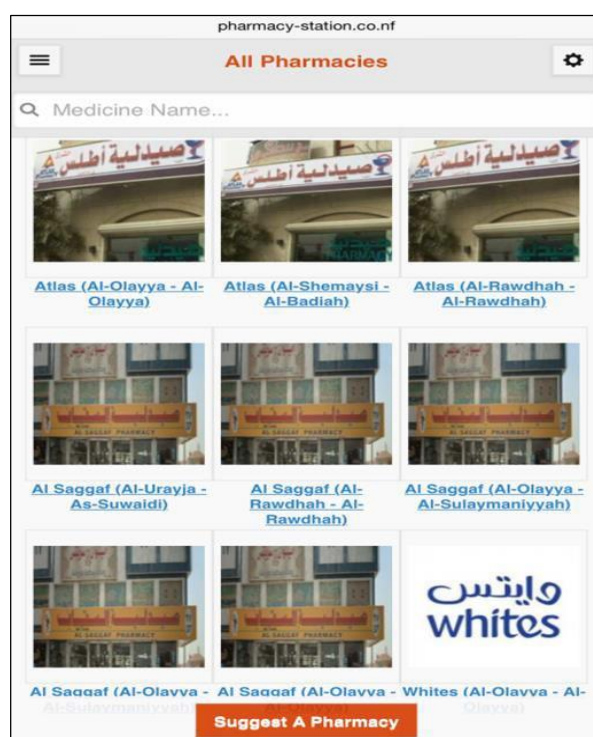


Fig. 6. List of pharmacies

Fig. 6 shows all the pharmacies including Whites, Al Saggaf; so we can choose a pharmacy from the list to search about the required medicine. Indeed, we can suggest a new pharmacy by entering its informations (name, location ,etc.), therefore it will be added to the application database.

Fig. 7, shows us the contact informations of the selected pharmacy.



Fig. 7. Pharmacy details

Fig. 7 presents the user interface that shows the details of the chosen pharmacy such as the address (Google Maps) [8]- [10] by clicking “Find Pharmacy” button. In addition, the user can call the pharmacy or viewing all medicines existing in the selected pharmacy, through buttons "call pharmacy" and "view all medecines".

For example, to contact Whites Pharmacy directly using their phone number, the following interface will appear, as shown in Fig. 8.

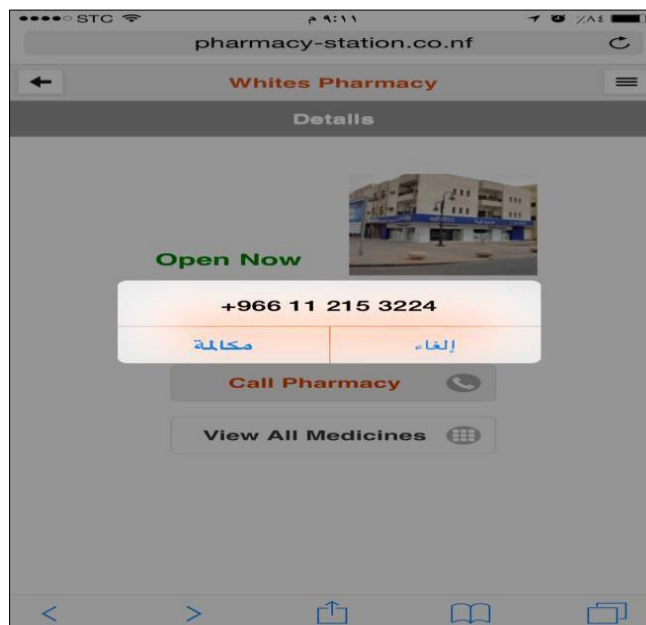


Fig. 8. Calling pharmacy

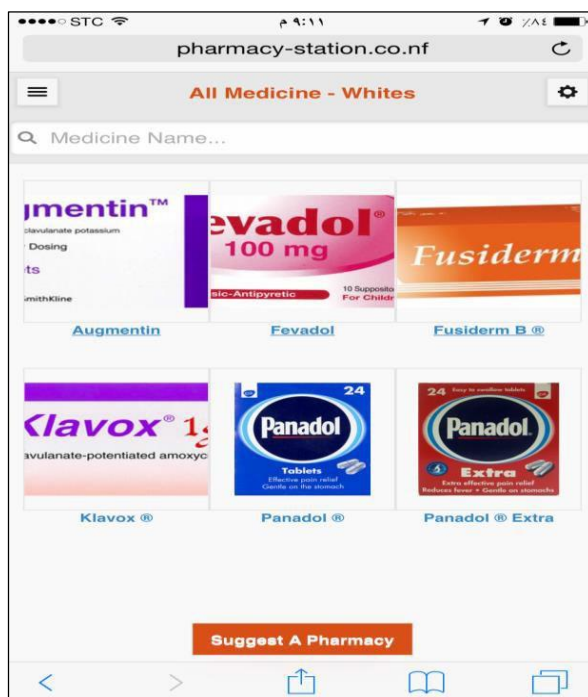


Fig. 9. Available medicines

To view all medicines available in the pharmacies, the following interface will appear (see Fig. 9).

Fig. 10 represents an example of when a medicine, Klavox, is selected by a user. The interface shows that the prescription requires a prescription from the doctor, as well as the packaging size and price options.

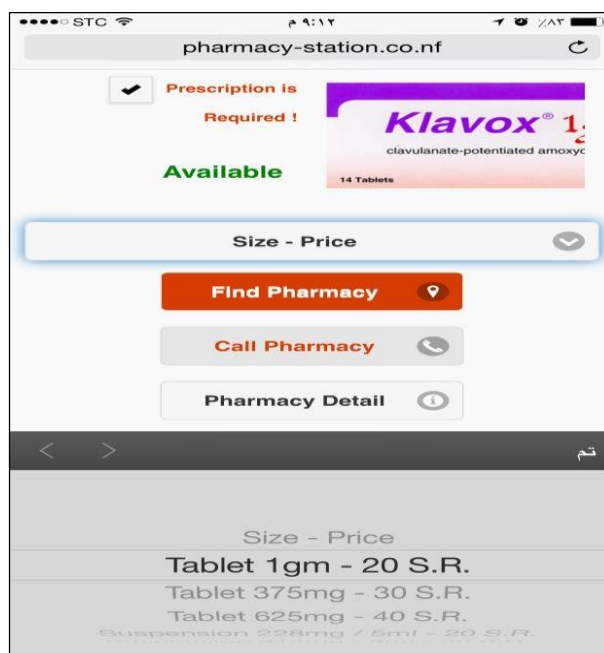


Fig. 10. Medicine details

The next pictures (Fig. 11 and Fig. 12) illustrate an example in which the user selects a district (e.g., Alolayya) and searches a medicine, in this case Adol, to determine which pharmacies in this district have this medicine stock. pain etc. and search for corresponding medicines (over-the- counter), in the nearest pharmacies (see Fig. 13).

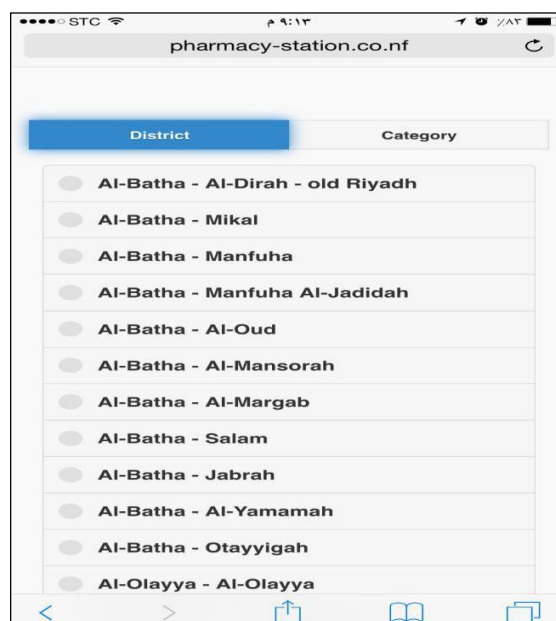


Fig. 11. Choosing a district

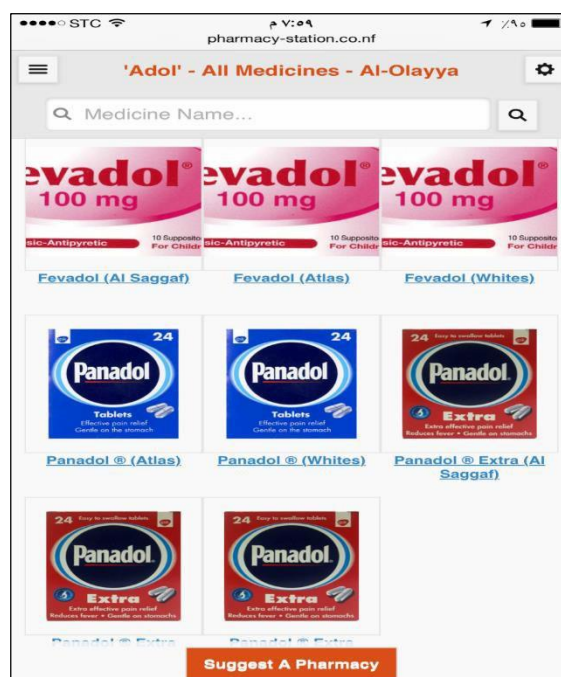


Fig. 12. List of pharmacies having a specified medicine

Another important feature of the Pharmacy-Station mobile application is that the user can enter symptoms such as fever,

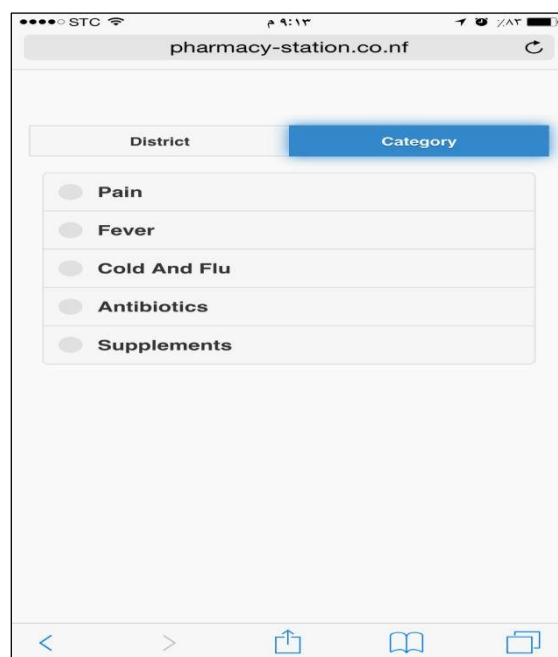


Fig. 13. Filter category with symptoms of the disease

The last interface (Fig. 13) allows the user to contact the administrator of the application to ask questions, make suggestions etc. by filling out the contact form with their name, email, subject of the inquiry and a message.

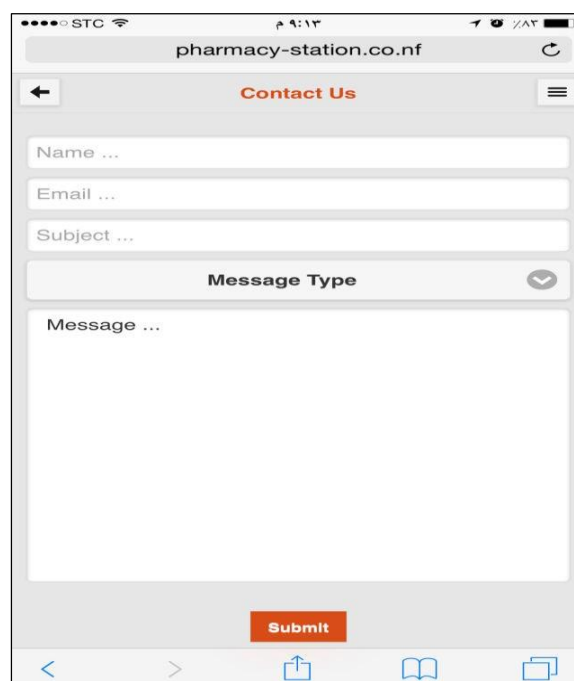


Fig. 14. Contacting the Pharmacy-Station administrator

VI. CONCLUSION AND FUTURE WORKS

In conclusion, this paper presents the different steps to develop the Pharmacy-Station mobile application which is an easy tool to help a user to search for information related to their health needs. At the same time, user's can search specifically for information about a selected medicine and the location of the nearest pharmacy where it is in stock.

The confronted difficulties, in this project, were in loading pharmacies and medicines details in the database.

As further works, we will try to improve this mobile application by adding other features and enhancing the design of the graphical interfaces. In addition, the database of the application is extensible to add other pharmacies and details of medicines.

REFERENCES

- [1] Ask, A.Julie & Hammond, S.Jeffrey. (2015) .The State Of Mobile App Development. *Forrester Research, For: eBusiness & Channel Strategy Professionals*, nc., 60 Acorn Park Drive, Cambridge, MA 02140 USA.
- [2] Kettenis, Jan. (2007, May). Getting Started With Use Case Modeling. *Oracle Corporation World Headquarters 500 Oracle Parkway Redwood Shores, CA 94065 U.S.A.*
- [3] Reid, Jon.(2011, May). jQuery Mobile. *O'Reilly Media, Inc., 1005 Gravenstein Highway North, Sebastopol, CA 9547.*
- [4] Song,Yeol, Evans, Mary, & Park, E.K Evans. (1995).A Comparative Analysis of Entity-Relationship Diagrams. *Journal of Computer and Software Engineering*, Vol. 3, No.4pp. 427-459.
- [5] Alhumaidan, Fahad. (2012, September). A Critical Analysis and Treatment of Important UML Diagrams Enhancing Modeling Power. *Intelligent Information Management*, p 231-237.
- [6] Nebra, Mathieu. (2013, September). Apprenez à créer votre site web avec HTML5 et CSS3. *OpenClassRooms, Licence Creative Commons 6 2.0.*
- [7] Kumar, L.Ashwin. (2012, January). Mobile Application for News and Interactive Services. *ARPJ Journal of Science and Technology*, vol. 2, no. 1, India.
- [8] Hughes, Devlin, & Jackson, Brett. (2007, May). Making Google Maps. *Trinity College, Zeemap, USA.*
- [9] Appleton, Ben. (2007, April). Using PHP/MySQL with Google Maps. *Google Geo Team, Lary Stucker, Maps API Developer USA.*
- [10] Kamar, Abdulla. (2009, June). From Info Windows to a Database: Saving User-Added Form Data. *Google Maps API Team.*