

NEAR EAST UNIVERSITY

FACULTY OF ECONOMICS AND ADMINISTRATIVE SCIENCES

DEPARTMENT OF COMPUTER INFORMATION SYSTEMS

2014-2015 SPRING TERM

CIS 400

(GRADUATION PROJECT)

**NEAR EAST UNIVERSITY HOSPITAL
MOBILE APPLICATION**

**SUBMITTED TO: Dept. of CIS
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Nicosia, 2015

ACKNOWLEDGEMENTS

The success and final outcome of this project required a huge support and I am very thankful to have received this throughout my project work.

I wish to respect and thank, first and foremost, my dear advisor **Assoc. Prof Nadire Cavus** for giving me an opportunity to do the project work about Near East University Hospital Mobile Application. I do appreciate her for providing me all supports and guidances which made me complete the project on time.

I am thankful and fortunate to get constant encouragement supports from all the teaching staff of the Department of Computer Information System in Near East University especilly to **Omer Gumus** who kindly helped me to successfully complete my project work by his effective guidances. Also I would like to extend my regards to **Sahar Shokuhi** Tabrizi for her kind treatment and constant help.

I would like to heartly thank to my ever dear family who are always my nearest specially my parents by their non stop supports and affection which were a strong encouragement in my difficult days that I can not find words to express my immense gratitude.

Last but not least, I owe my deepest thanks to my very kind wife, my dear Jeiran, for her all-round and timely supports who have purely provided me with such a strong love shield that always surrounds me and never lets any sadness enter inside, and I would like to dedicate this project work to her.

ABSTRACT

Near East Hospital Android Mobile Application, is the application that has been created with the aim of having better and optimized communication between hospital and Costumers, Patients and users of health services.

Introducing the hospital to everyone who is looking for medical care is the main reason of creating this application. So with using this software, users are able to become familiar with hospital and its history.

The departments and facilities of hospital will be presented in the application, and also users will find out the information about Physicians and their expertise. In addition they have a chance to choose the best doctor according to their disease. Also the application will give complete data about Medical services is provided in this hospital.

Keywords : NEU Hospital , Android , Mobile Application , Activity , PHP , Mysql , Webservices.

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1. INTRODUCTION

Nearest Hospital in Nicosia, North Cyprus, is high quality equipment and huge facilities. It has done vast investing by different therapeutic sectors.

In spite of high expectation, low interest was seen and hospital had not had high benefits.

One of it's reason is having less information about this huge facilitated hospital and people do not know so much about there. Therefore, therapeutic sectors, cost of treatments, the specialists and other parts are not known and our target is introducing Nearest Hospital.

Nearest Hospital's stockholders were looking for a platform to attract high range of visitors with least cost of time and money by the aim of introducing the hospital and its services.

1.1. PURPOSE

What we are going to discover in this document, is evaluating the system overall functionality and then know the details of Nearest university Hospital mobile application.

The audience which are intended in this document, includes the stockholders and developers of project.

It is trying to introduce a comprehensive guide including system's analysis, requirement's analysis, requirements of system and requirement of development team about the project for the stockholders and developers.

1.2. SCOPE

In this section briefly we are considering all kind of features that application provides for each group of users which are classified in to two categories that include administrator and system's users. We are going to discover the way of using of NEU Hospital mobile application by them.

Users of system are able to use the application and operate the features after they download and install the application on their smart phones.

Information that are included in this application are online and offline contents. Offline information are along with application and online information would update by the administrator of the system.

1.3. DEFINITIONS, ACRONYMS, AND ABBREVIATIONS

Title	Definition
Android	Android is a mobile operating system (OS) based on the Linux kernel and currently developed by Google.
Android Studio	Android Studio is the official IDE for Android application development, based on IntelliJ IDEA.
Android SDK	The Android SDK (software development kit) is a set of development tools used to develop applications for Android platform.
Java	Java is a general-purpose computer programming language that is concurrent, class-based, and object-oriented that widely are used for developing Android application.
XML	Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format which is both human-readable and machine-readable.
GUI	A graphical user interface (GUI) is a human-mobile application interface (i.e., a way for humans to interact with mobiles application) that uses icons and menus and can be manipulated by touch.
IP Addresses	In this study we try to explain particularly the IP address as a unique string of numbers separated by full stops that identifies each mobile application using the Internet Protocol to communicate over a network.
System Users	System users are typical users that install the application and use that.
System Administrator	System administrators are those that provide online content of mobile application

Figure 1. Definitions, acronyms, and abbreviations

2. SYSTEM ANALYSIS OF THE PROJECT

2.1. SWOT ANALYSIS

A SWOT analysis (alternatively SWOT matrix) is a structured planning method used to evaluate the strengths, weaknesses, opportunities and threats involved in a project or in a business venture. ASWOT analysis can be carried out for a product, place, industry or person.

2.1.1. STRENGTH

- Mobile application of Nearest Hospital, includes complete, net and comprehensive information and avoid expressing unnecessary information.
- The cost of mobile application is much lesser than any other projects.
- Using mobile application is easy and does not need special training.
- The mobile application is available anywhere and works so fast.
- The mobile application plays a significant role in advertisement that is visible.
- The mobile application provides a continuous communication between users and hospital and is in touch all the time.
- The mobile application has a very shapely, stylish and simple design which is so easy to understand and also attractive.
- Using the mobile application in some part of that, does not need connection to internet and users do not have to pay for internet to be online all the time.

2.1.2. WEAKNESSES

- As the mobile application of hospital is working by Android, we will lose some of customers who have iPhone.
- In some part of using mobile application, connection to internet is needed.
- As there are so many smart phones which are different and have different operating systems, the mobile application might not install on some of them due to not supporting. Or some phones, cannot show the application as beautiful as it is because the size of their display is not completely proper and match.

- Mobile applications need huge advertisement so that users know and install them. Applications of mobiles are not as easy as websites to search and install.
- As mobile application is written only in English, users who do not know English are not able to understand and use the mobile application.

2.1.3. OPPORTUNITY

- By developing this mobile application and improving that, more services will also provide in according to them.
- Other parts of the Nearest University will also develop mobile applications similar to application of hospital in order to introduce and improve their works.
- Using mobile application of Near East Hospital by consumers, would be a good advertisement tool for other parts of the University.
- As a huge part of citizens in North Cyprus are from other nationalities, developing and using Nearest Hospital's application, will introduce there to neighbor countries and a big business of "Health Tourism" will also expanded.

2.1.4. THREAT

- There might be negative impacts due to a small misunderstanding from the initial working experiences by mobile applications.
- Mobile application for hospital, might make other competitors companies also develop the similar application and will advertise and raise as serious competitors.
- There might be a threat for our project in practical works regarding to the manager of Near East hospital. He might not accept publishing the mobile application.
- There may be not enough time and opportunities for updating the application and fixing the errors.

2.2. FEASIBILITY ANALYSIS

The main target of feasibility study is considering all possible factors which are associating to the project and try to specify whether the investment of time and costs have achieved the favorable results or not. It also comprises determining the investments, manpower and costs which had done for the project. Feasibility on three categories which used in this projects are:

- Economic feasibility
- Technical feasibility
- Social feasibility

2.2.1. ECONOMIC FEASIBILITY

In order to evaluate the effectiveness of a new system, economic analysis is used as the most frequent method. Since this project requires only a mobile phone with Android operating system, is economically feasible.

Once the application would release into Android market, will be free to download. Users will only pay for internet to access to the application through mobile phone and internet is the only cost caused by project.

2.2.2. TECHNICAL FEASIBILITY

There are some items which are needed for developing this application including; a high speed internet connection, a database server, a web server and IDE like Android Studio. As the application was successfully developed on android emulator, the project is technically done feasible.

2.2.3. TECHNICAL FEASIBILITY

There are some items which are needed for developing this application including; a high speed internet connection, a database server, a web server and IDE like Android Studio. As the application was successfully developed on android emulator, the project is technically done feasible.

2.3. REQUIRMENT MODELING (RUP)

2.3.1. PRODUCT PERSPECTIVE

Nearest Hospital Mobile application is a client based system which has two sections. The main one is Android application which has installed on smart phones of system user. And the second one is the administration part that has the role of producing and updating the online content of Android application.

2.3.2. SYSTEM INTERFACES

System consists of two sections and each of them has its own interface. In this way, one of the interface is considered for the system user and the other one for the administrator of the system.

2.3.3. SYSTEM USER INTERFACE

This interface is designed for system users that in principle is android application and has installed on the smart phone. There are some functions of that like getting the general information of hospital, services, doctors, their working hours, facilities of each therapeutic sectors and being informed of the recent news of hospital.

2.3.4. SYSTEM ADMINISTRATOR INTERFACE

System Administrator interface is managing the online information used in android application. It is a simple PHP web application that has the connection to MySql database and also use it for inserting and updating the information and deleting if necessary.

2.3.5. SOFTWARE INTERFACES

For designing and implementing this application, we will use these software.

- Android Studio Version 1.2
- Adobe Dreamweaver, Version CC 14
- PHP 5.4
- MySQL database

2.3.6. USER CHARACTERISTICS

The main users of NEU Hospital mobile application are system user and system administrator.

System administrator is a trained person that manages the mobile application online content by using the PHP website.

System user can be any person including the patients or normal users that use the android smart phone.

2.3.7. GENERAL CONSTRAINS

As system is controlled by system admins, they have to be authenticated by system. Therefore they must have the authentication information like username and password.

2.3.8. PRODUCT FUNCTIONS

Expectations functions for the application regarding nearest university hospital are as followed:

This application will introduce the hospital completely and in general. We would like to make people familiar to hospital by explaining “the history of hospital, the way of its’ managing, the way of contacting to there, the recent news about last happening and success of hospital and etc.”

Briefly, all different sectors of hospital will explain. For example, mentioning the manager of a specific part of hospital and particular characteristics of that sector by different new method of treating. We also would like to introduce the specialists of each sectors and all different services inside of the hospital. Different hours of working specialist is also going to be mentioned in the mobile application.

Other characteristics of this application is putting the exact address of hospital and its’ location in the form of digital map in mobile. So the location will be shown and people who are not familiar to the city, will find there from the Google map so easy from the mobile application of hospital.

These feature also must be considered:

- The Admin User should be able to logon to system securely
- The provided interface must be user friendly and easy to use.
- The information which is given to users must be updated and reliable.
- The content of android app must separate in two parts, online content and offline content
- Offline content, including general information about hospital, this information will be along with installed application on System User smartphone.

- Online content will be updated during connection of smart phone to internet.
- Online content, including information which maybe change during time.
- Admin user will managing (submitting, deleting, updating) online content of application.

2.4. REQUIREMENT ANALYSIS

2.4.1. FUNCTIONAL REQUIREMENTS

The NEU Hospital Mobile Application shall contain the following functionality organized by object:

2.4.1.1. Get general information of hospital

The system user should be able to get general information of hospital by using android application.

Input: the user touch the about us icon of application.

Output: the about us page (activity) will show the general information of hospital.

Process: after user touch the icon, the about us activity (page) will be created.

Precondition: Na

2.4.1.2. Get physicians information of hospital

The system user should be able to get physicians information of hospital by using android application.

Input: the user touch the physicians icon of application.

Output: the physicians page (activity) will show the physicians information of hospital.

Process: after user touch the icon, the physicians activity (page) will be created.

Precondition: internet connection must be available and active. Otherwise system will ask about internet connection.

2.4.1.3. Get services information of hospital

The system user should be able to get services information of hospital by using android application.

Input: the user touch the services icon of application.

Output: the services page (activity) will show the services information of hospital.

Process: after user touch the icon, the services activity (page) will be created.

Precondition: internet connection must be available and active. Otherwise system will ask about internet connection.

2.4.1.4. Get news of hospital

The system user should be able news of hospital by using android application.

Input: the user touch the news icon of application.

Output: the news page (activity) will show the services information of hospital.

Process: after user touch the icon, the news activity (page) will be created.

Precondition: internet connection must be available and active. Otherwise system will ask about internet connection.

2.4.1.5. Make a call to hospital

The system user should be able make a call to hospital by using android application.

Input: the user touch the call icon of application.

Output: system will call to the hospital.

Process: after user touch the call icon, the application will make a call to hospital.

Precondition: the application should have the possibility to make call.

2.4.1.6. Get hospital location (optional)

The system user should be able to get hospital position and address by using google map in android application.

Input: the user touch the location icon of application.

Output: application will show the location of hospital on map to user.

Process: after user touch the location icon, the application will show the location of hospital on map.

Precondition: the application should have connection to internet and global positioning system (gps must be active on smart phone.)

2.4.1.7. Logon capabilities

The admin user should be able to log in to administrating part of application by use this capabilities.

Input: the username and password

Output: the dashboard page will be displayed.

Process: the system check the validity of identity by retrieving data from mysql database.

Precondition: the system admin should have authentication information.

It is basically the login page through which system admin interacts with the neu hospital mobile application admin part.

2.4.1.8. Register new physician capabilities

The system admin user shall be able to register new doctor.

Input: the valid information of new physician.

Output: the success/ failure message or page will be displayed to show the result of the operation.

Process: the system will submit information inside database.

Precondition: the system admin should submit valid data otherwise system will prevent of doing operation.

2.4.1.9. Update physician information capabilities

Input: the new information which related to exciting physician.

Output: the success/ failure message or page will be displayed to show the result of the operation.

Process: the system will update information inside database.

Precondition: the physician information must be exist and system admin should submit valid data otherwise system will prevent of doing operation.

2.4.1.10. Delete physician information capabilities

Input: the identity of physician who we want to remove.

Output: the success/ failure message or page will be displayed to show the result of the operation.

Process: the system will delete information of physician from database.

Precondition: the physician information must be exist and system will check the existence of information, otherwise system will prevent of doing operation.

2.4.1.11. Register new sector capabilities

The system admin user shall be able to register new sector information of hospital.

Input: the valid information of new sector.

Output: the success/ failure message or page will be displayed to show the result of the operation.

Process: the system will submit information inside database.

Precondition: the system admin should submit valid data otherwise system will prevent of doing operation.

2.4.1.12. Update sector information capabilities

Input: the new information which related to exciting sector.

Output: the success/ failure message or page will be displayed to show the result of the operation.

Process: the system will update information inside database.

Precondition: the sector information must be exist and system will check the existence of information, otherwise system will prevent of doing operation.

2.4.1.13. Delete sector information capabilities

Input: the identity of sector which we want to remove.

Output: the success/ failure message or page will be displayed to show the result of the operation.

Process: the system will delete information of sector from database.

Precondition: the sector information must be exist and system will check the existence of information, otherwise system will prevent of doing operation.

2.4.1.14. Submit new news capabilities

The system admin user shall be able to insert new news of hospital.

Input: the valid information of new news.

Output: the success/ failure message or page will be displayed to show the result of the operation.

Process: the system will submit news inside database.

Precondition: the system admin should submit valid data otherwise system will prevent of doing operation.

2.4.1.15. Update news capabilities

Input: the new information which related to exciting news.

Output: the success/ failure message or page will be displayed to show the result of the operation.

Process: the system will update information inside database.

Precondition: the news must be exist and system will check the existence of news, otherwise system will prevent of doing operation.

2.4.1.16. Delete news capabilities

Input: the identity of news which we want to remove.

Output: the success/ failure message or page will be displayed to show the result of the operation.

Process: the system will delete information of service from database.

Precondition: the news must be exist and system will check the existence of news, otherwise system will prevent of doing operation.

2.4.2. NONFUNCTIONAL REQUIREMENTS

2.4.2.1. Usability

- The system shall allow the users to access the system from the internet using secure channel.
- The system shall be user friendly and self-explanatory.

2.4.2.2. Reliability

- The system has to be very reliable due to the importance of data and the damages incorrect or incomplete data can do.
- The system is available 100% for the user and is used 24 hrs. A day and 365 days a year. The system shall be operational 24 hours a day and 7 days a week.
- The system will be developed in such a way that it may fail once in a year.
- Even if the system fails, the system will be recovered back up within an hour or less.
- The system shall provide 100% access reliability.

2.4.2.3. Performance

- The splash page or information page should be able to interact and able to work less than 5 second.
- Every inaction must be done less than 10 second after user confirmation.
- The system is capable of handling 5000 users at a time

2.4.2.4. Supportability

- The system designers shall take in to considerations the following supportability and technical limitations.
- The system shall be comply with the TCP/IP protocol standards and shall be designed accordingly.
- The system shall support the information security requirements and use the same standard as the central information bank use.

2.4.2.5. Design constraints

Software language used

The languages that shall be used for coding the near university hospital application are java (android development kid) and php for administration part. For working on the coding phase of the application, the apachi server must be installed.

Development tools

Will make use of the available android development tool kit, Android Studio 1.2.2 for working with app project and dreamweaver cc 14.0.1 for administration design part.

2.5. PROJECT PLANNING, SCHEDULING, MONITORING AND REPORTING

We will operate developing of NEAR UNIVERSITY HOSPITAL application due this table.











1		Choosing Project Title	5d	04/07/2015	04/13/2015
2		Requirement Analysis	10d	04/14/2015	04/27/2015
3		Creating SRS Documnet	5d	04/28/2015	05/04/2015
4		Studying About Project New Technology	10d	05/05/2015	05/18/2015
5		Database Design	4d	05/18/2015	05/21/2015
6		PHP Website For Admin Part Design	4d	05/21/2015	05/26/2015
7		Android App Interface Design	4d	05/27/2015	06/01/2015
8		Android Codeing	5d	06/02/2015	06/08/2015
9		Monitoring And Testing	4d	06/08/2015	06/11/2015
10		Creating Final Report	4d	06/12/2015	06/17/2015

Figure 2. Project planning, scheduling, monitoring and reporting

2.6. DATA FLOW DIAGRAM

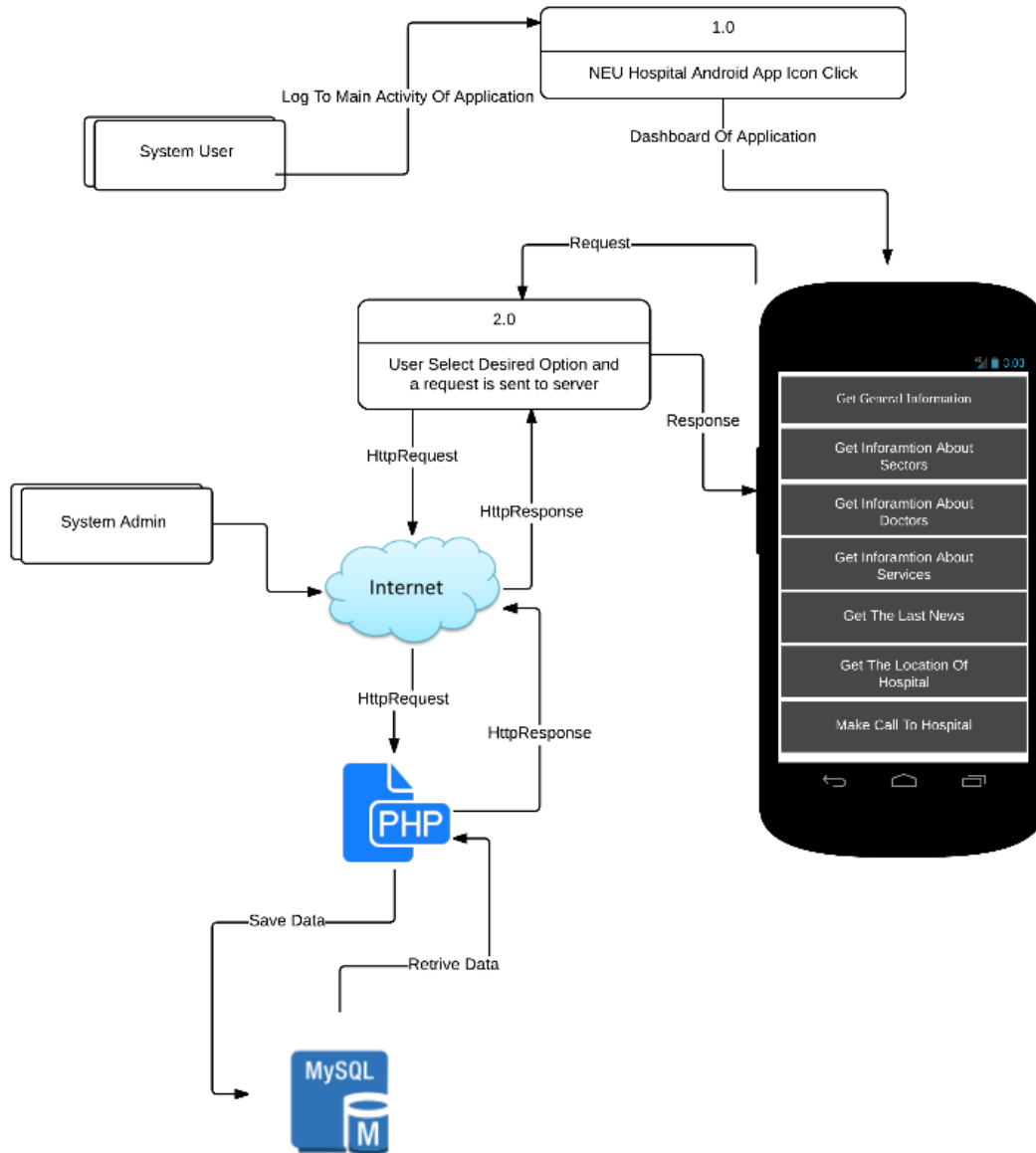


Figure 3. Data flow diagram

2.7. OBJECT MODELING

2.7.1. USE CASE DIAGRAM

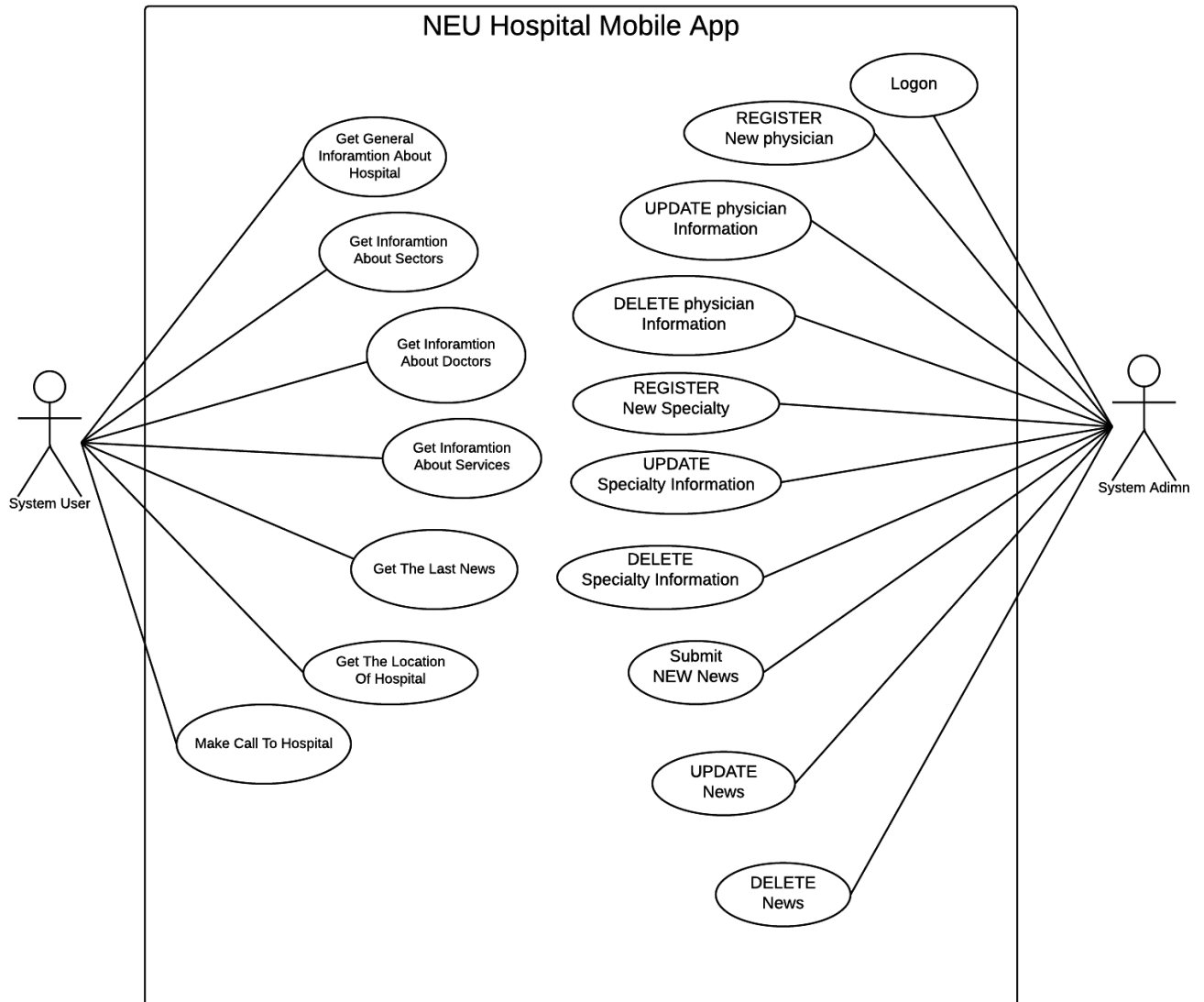


Figure 4. Use Case Diagram

2.7.2. CLASS DIAGRAM

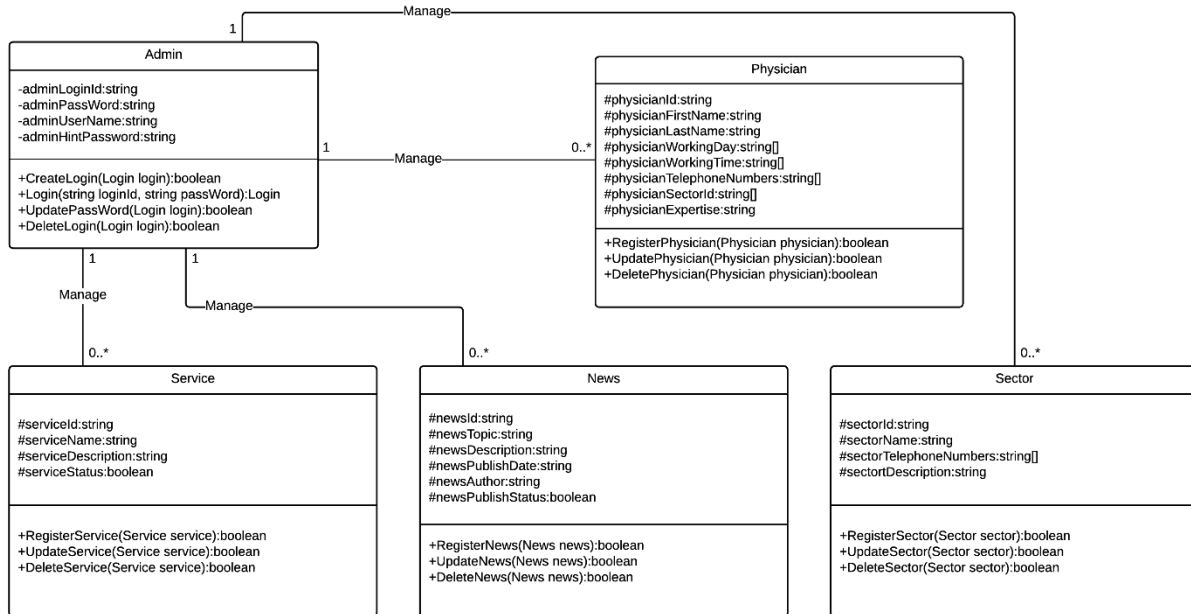


Figure 5. Class Diagram

2.7.3. SEQUENCE DIAGRAM

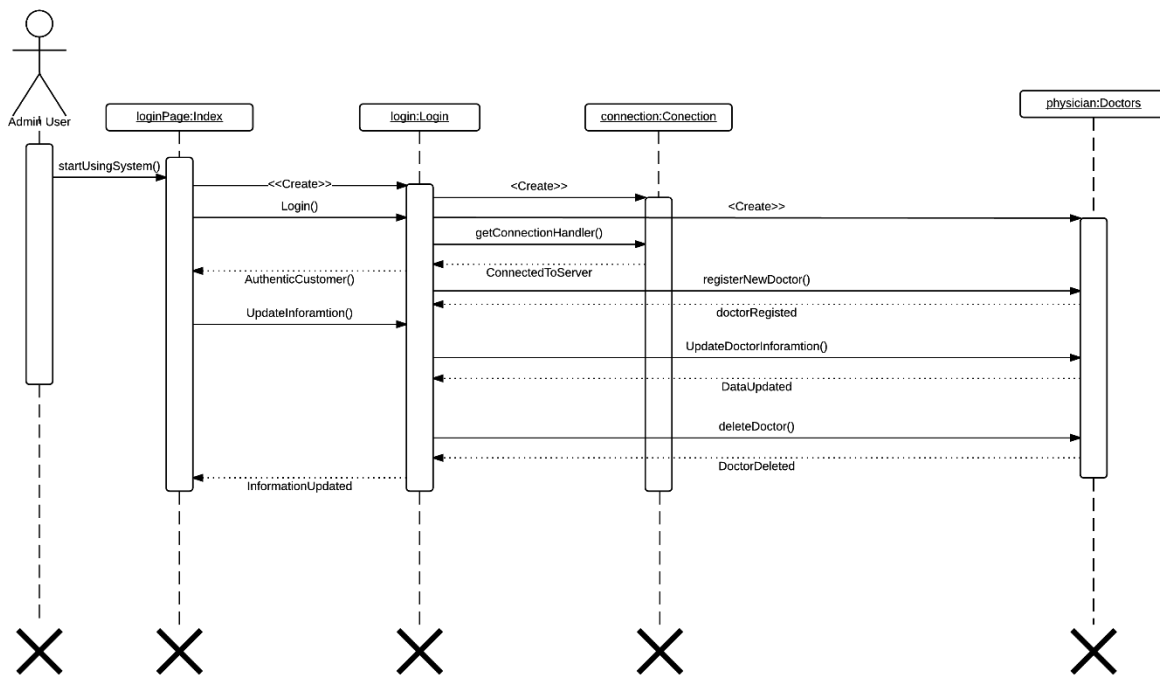


Figure 6. Sequence Diagram

2.8. SYSTEM BLOCK DIAGRAM

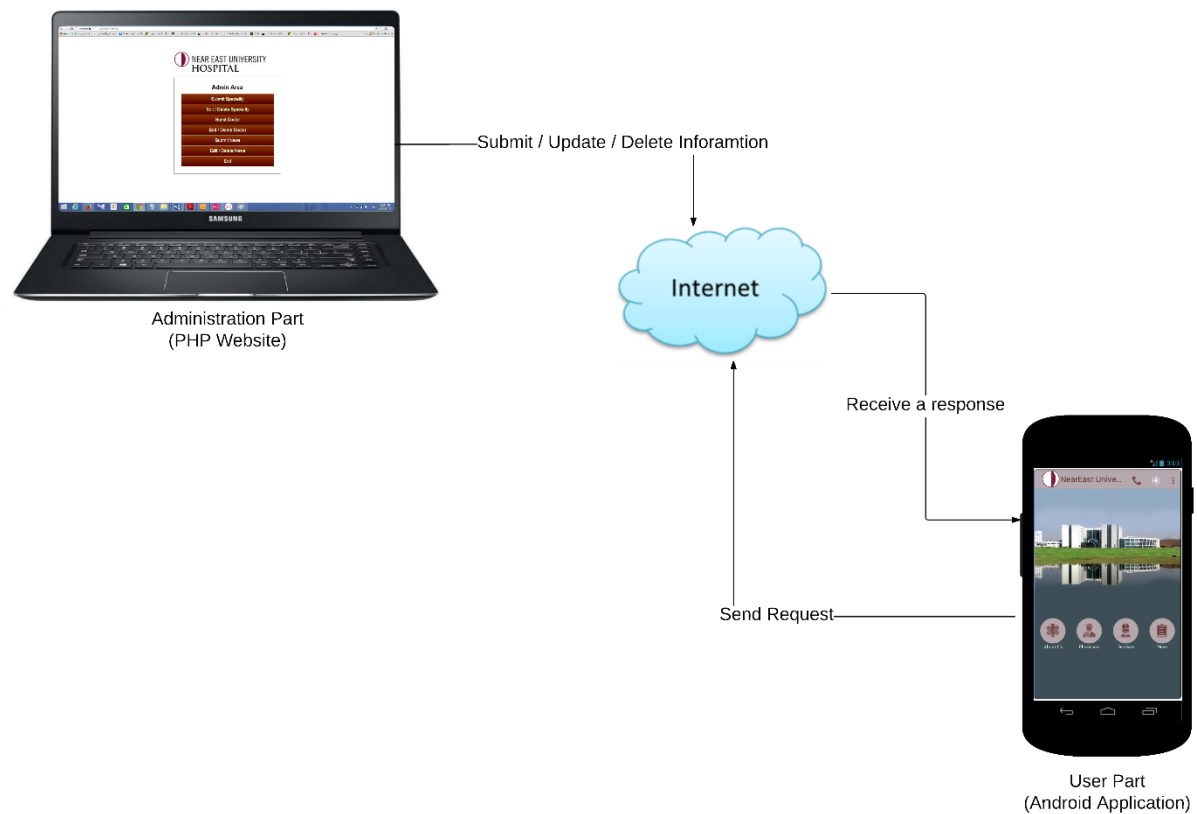


Figure 7.System Block Diagram

2.9. Database Design

Table 1 : User (Login) Table

Column	Type	Null	Default	Comments
ID	int(11)	No		
usr_name	varchar(30)	No		
usr_passwd	varchar(50)	No		
user_level	varchar(6)	No		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	ID	6	A	No	
usr_name	BTREE	Yes	No	usr_name	6	A	No	

Table 2: Doctor Table

Column	Type	Null	Default	Links to	Comments
doctor_id	int(10)	No			
doctor_first	varchar(255)	No			
doctor_last	varchar(255)	No			
doctor_title	varchar(255)	No			
doctor_specialty_id	int(11)	Yes	NULL	specialty -> specialty_id	
doctor_sub_specialty_id	int(11)	Yes	NULL		
doctor_image_id	varchar(200)	Yes	NULL		
doctor_description	text	Yes	NULL		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	doctor_id	6	A	No	
doctor_specialty_id	BTREE	No	No	doctor_specialty_id	6	A	Yes	
doctor_sub_specialty_id	BTREE	No	No	doctor_sub_specialty_id	2	A	Yes	
doctor_specialty_title	BTREE	No	No	doctor_specialty_id	6	A	Yes	

Table 3 :Specialty Table

Column	Type	Null	Default	Comments
specialty_id	int(11)	No		
specialty_title	varchar(100)	No		
specialty_description	text	Yes	NULL	

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	specialty_id	21	A	No	
specialty_title	BTREE	Yes	No	specialty_title	21	A	No	

Table 4 : News Table

Column	Type	Null	Default	Comments
news_id	int(11)	No		
news_date	date	Yes	NULL	
news_title	varchar(255)	No		
news_text	text	No		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	news_id	1	A	No	
news_title	BTREE	Yes	No	news_title	1	A	No	

2.10. Coding

The Cd of code, attached to do hardcopy of this document.

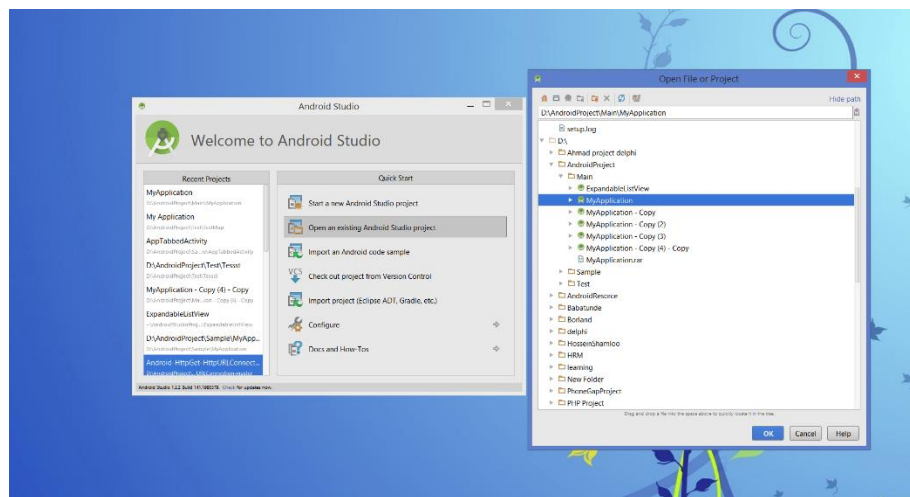
3. USER MANUAL

For running the application on local host we need Android Studio and Wamp Server installed on computer , actually we need Genymotion Emulator to run mobile app.

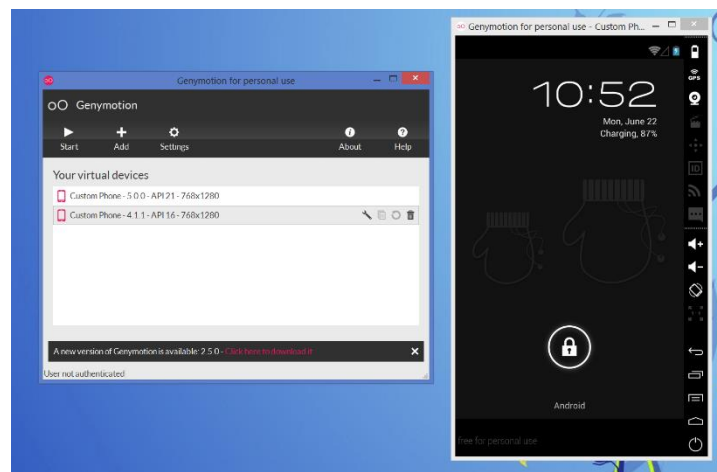
3.1. User Guideline & Interface (User Part)

To open the mobile application project in android studio we need to run the Android Studio. And we follow this steps to run application.

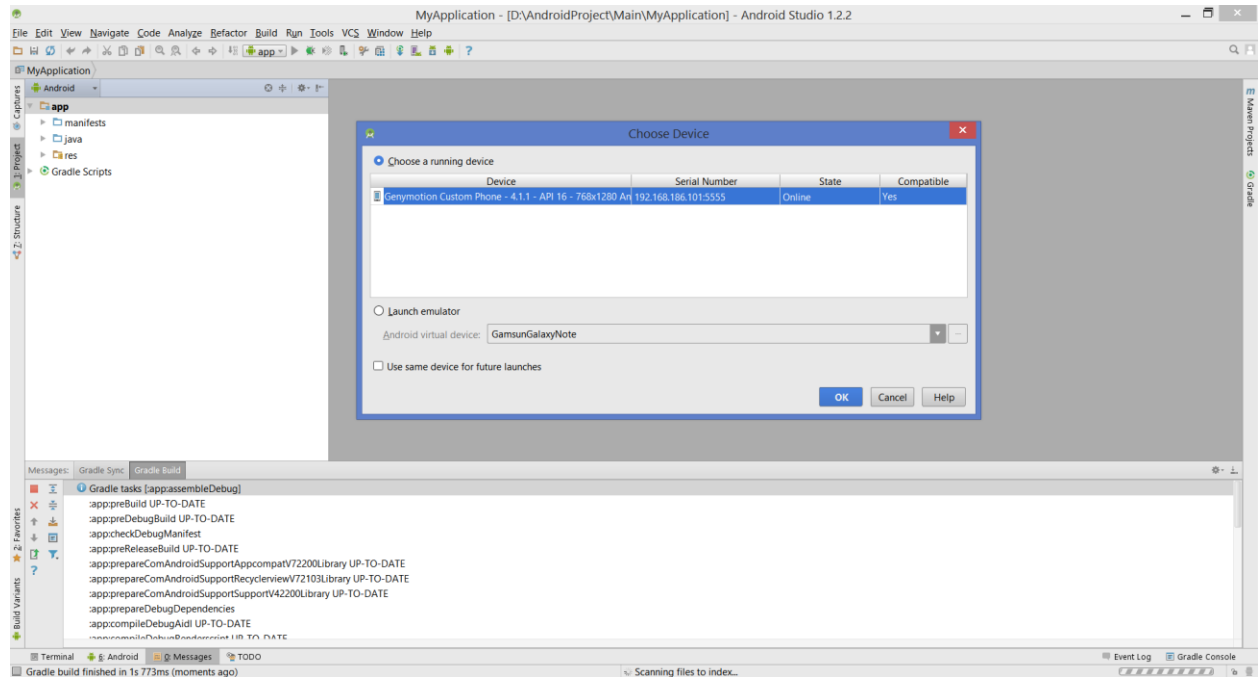
- Run Android Studio and click “Open an existing Android Studio Project ” and follow the path of project. “My Application”



- Run Genymotion and start the desire emulator.



- Use green Triangle in android studio to run the application and choose the running emulator.



- The application will be start in emulator .

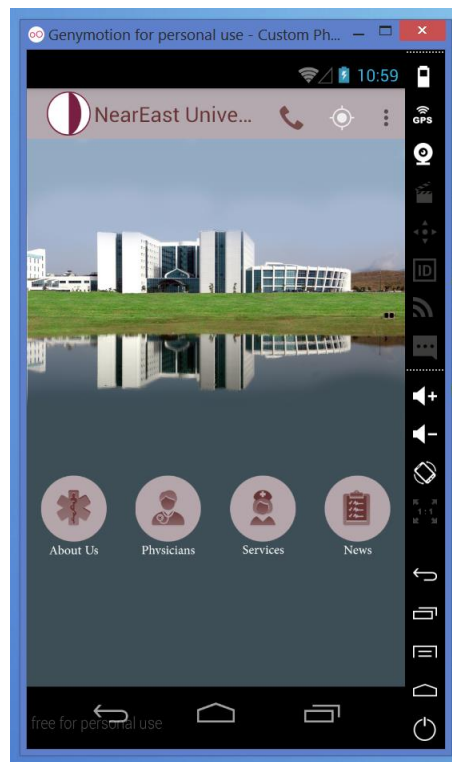


Figure 8.Dashboard of Android Application

- Start About Us page by pressing about us button . in this page you can get general information about hospital and managers .

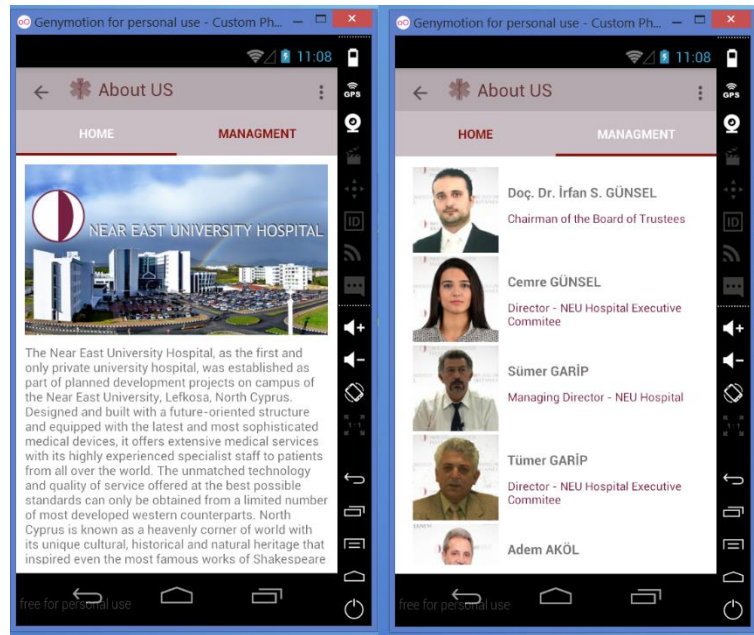


Figure 9.About Us Page

- By Touching Physician icon, you can see list of available specialty and by pressing any specialty, you can find out the name of doctor who have that specialty.

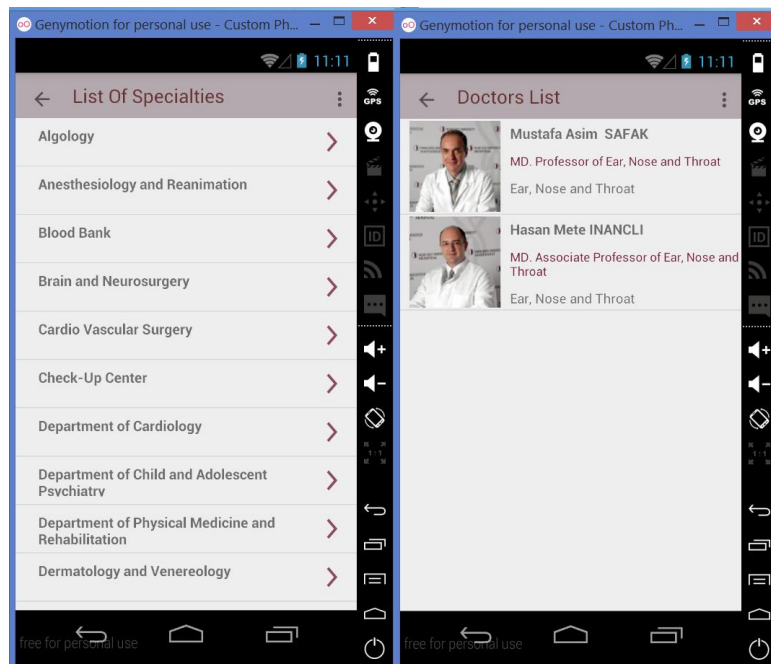


Figure 10. Specialties and Doctors list

- By pressing service button, you can see the information of any department of in hospital.

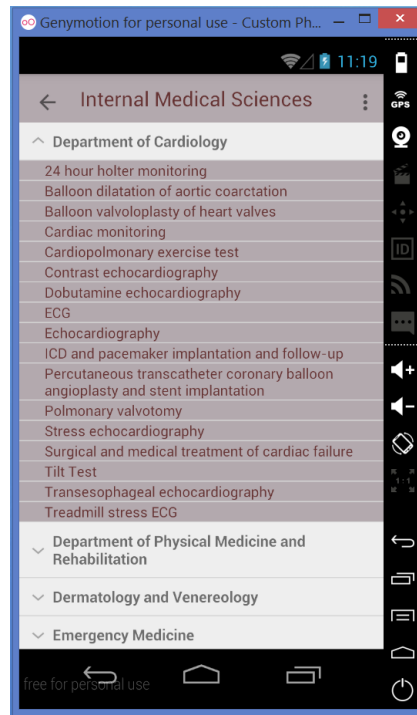


Figure 11. Service Page

- By pressing news button, you can get the last news of hospital.

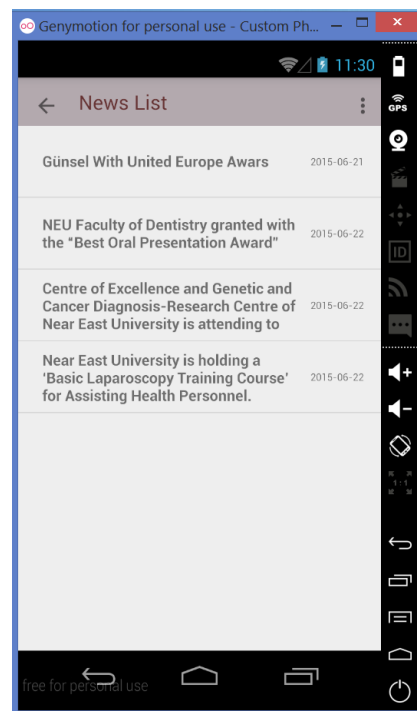


Figure 12. List Of Last News

- By pressing call button, you can make call to hospital.

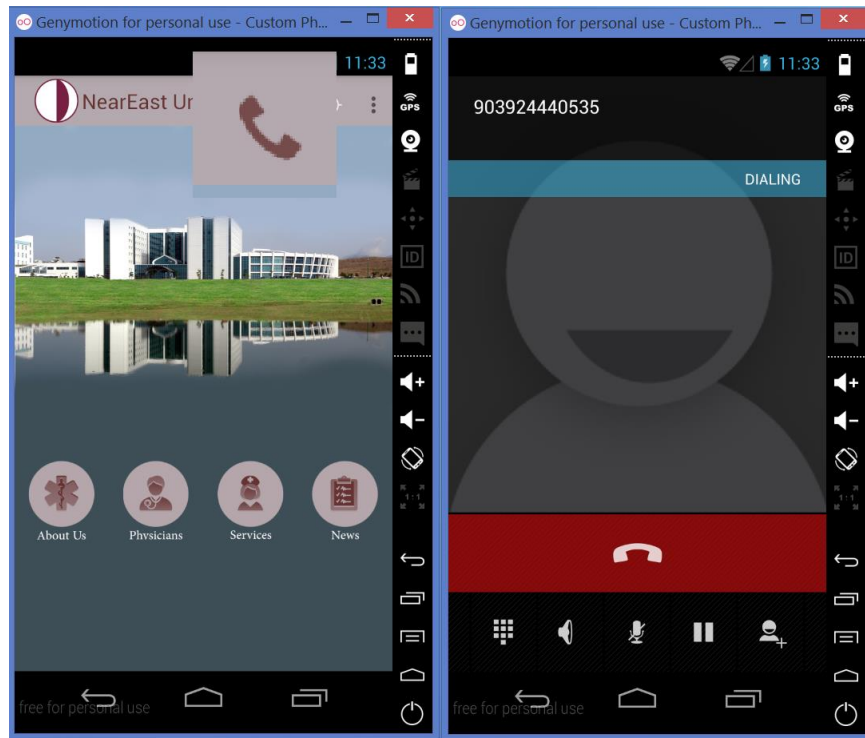
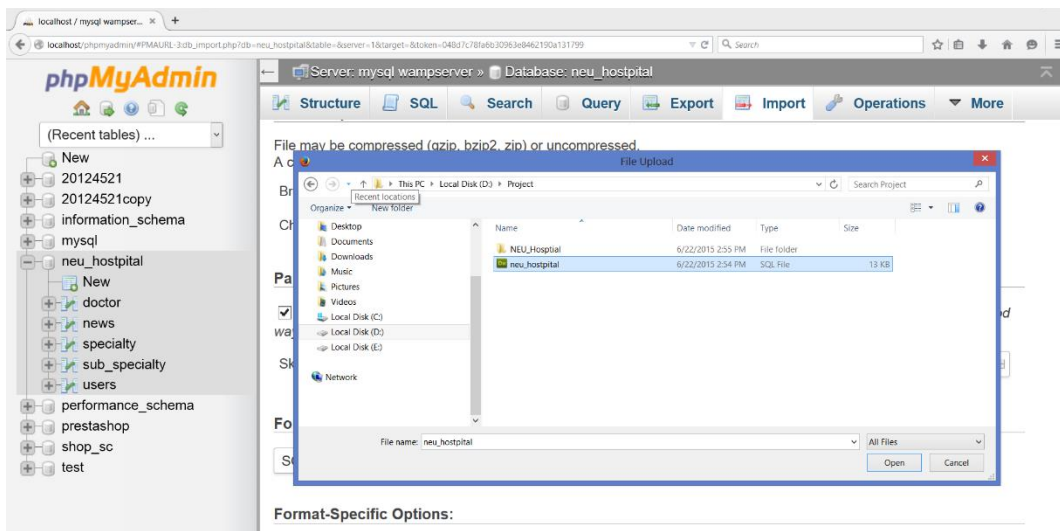
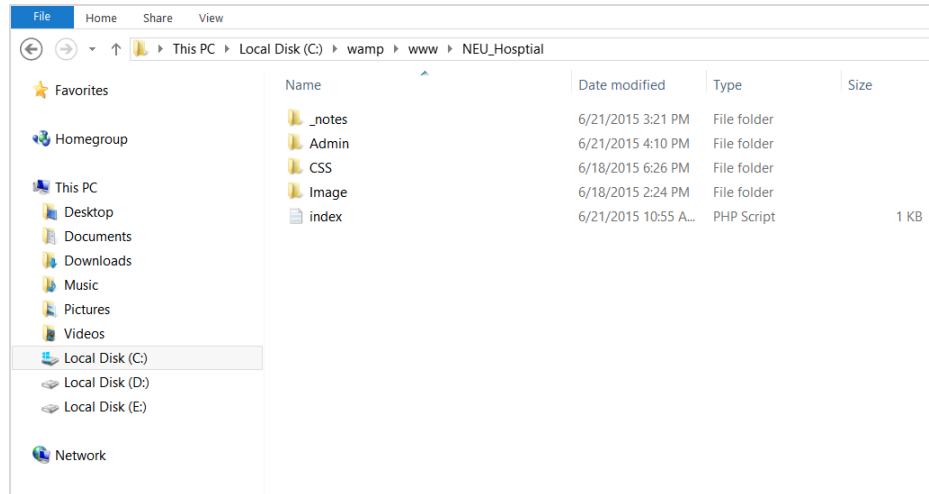


Figure 13. Make Call to Hospital

3.2. User Guideline & Interface (Administration Part)

- To using admin part of application on local host, you have to import Sql file on cd to in MySql enviroment and past the site file in www folder of wamp.





- Go to this address to access to login page of administration

http://localhost/NEU_Hospital/

NEAR EAST UNIVERSITY
HOSPITAL

Sign In

Email
h@h.com

Password
.....

submit

Figure 14.Login Page of Admin Part

- After logging to system the dashboard page will be displayed



Figure 15.Admin page dashboard

- Submit Speciality page is used to submit new speciality.

The image shows the 'Submit Speciality' page for 'NEAR EAST UNIVERSITY HOSPITAL'. The page has a white background. At the top, the title 'Submit Speciality' is highlighted in a blue box. Below the title, there are two text input fields: 'Speciality Title' and 'Speciality Description'. At the bottom right of the form, there is a dark red 'Submit' button.

Figure 16.Submit Specialty page

- Delete and Edit Speciality Page is used to delete and edit speciality



NEAR EAST UNIVERSITY
HOSPITAL

Delete Speciality


Speciality Title

Algology

Submit

Figure 17.Delete and Edit Speciality Page

- Sumit Doctor Page is used to submit new doctor



NEAR EAST UNIVERSITY
HOSPITAL

Sumit New Doctor

First Name

Last Name

Title

Specialty

Algology

Image


Choose File No file chosen

Description

submit

Figure 18.Submit Doctor Page

- Edit and Delete Doctor Page is used to edit and delete doctor information

**NEAR EAST UNIVERSITY
HOSPITAL**

Doctor Name

Barcin OZCEM ▼

Search

Information Of Doctor

First Name

Nedim

Last Name

ÇAKIR


Title

MD. Professor of Clinical Microbiology and Infe

Specialty

Brain and Neurosurgery ▼

Image



Choose File No file chosen


Description

CXVXCVCV

submit

Figure 19.Edit and Delete Doctor Page

- Submit News Page is used to submit new news



**NEAR EAST UNIVERSITY
HOSPITAL**

Submit News


News Title

News Description

Submit

Figure 20.Submit News Page

- Edit and delete news page is used to edit and delete news



**NEAR EAST UNIVERSITY
HOSPITAL**

News Title

Search

Information Of News

News Title

Description

Edit **Delete**

Figure 21.Edit and delete news page

3.3. User Flowcharts

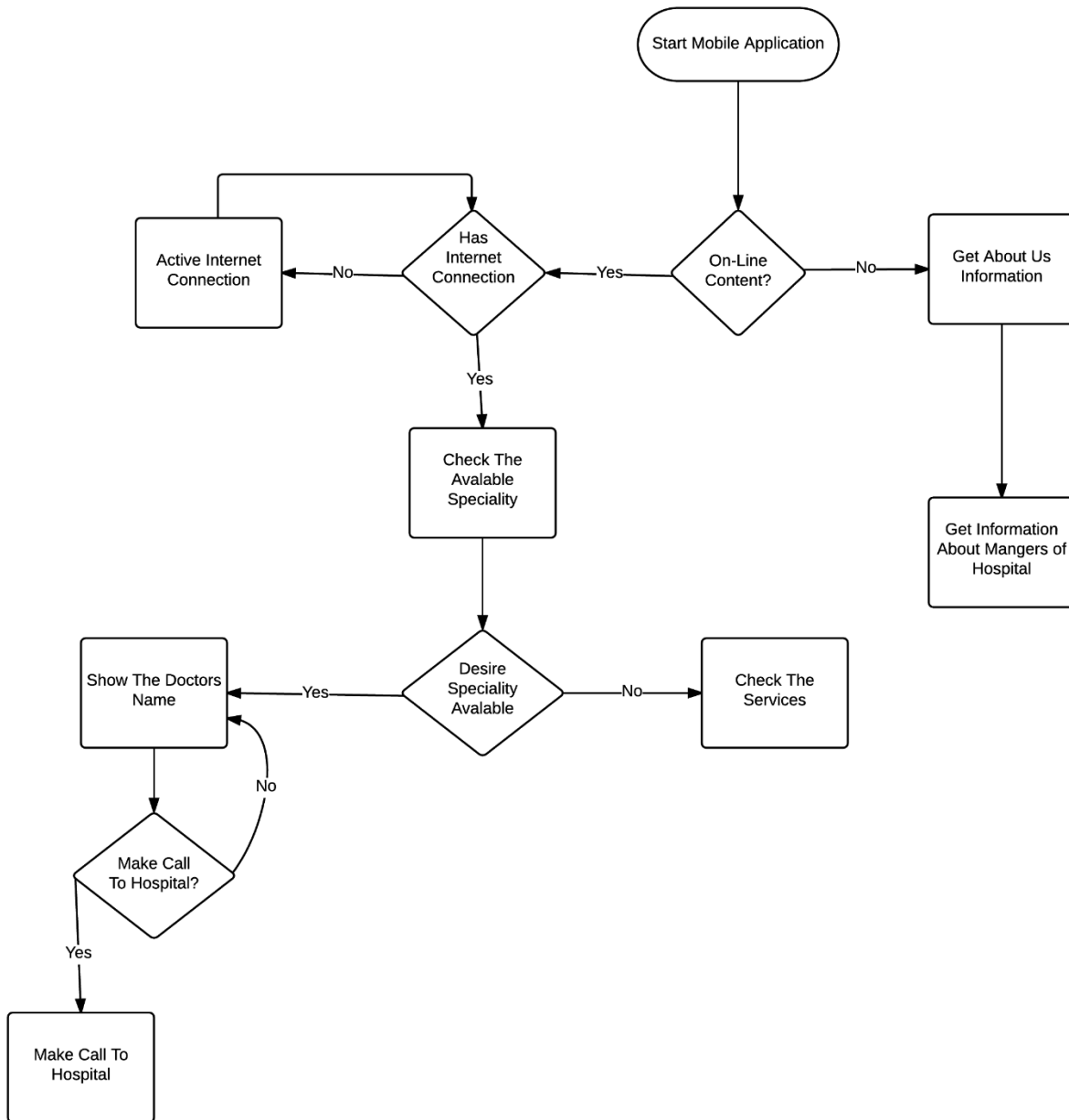


Figure 22. User Flowcharts

4. Conclusions

This project was focused on Near East Hospital Android Mobile Application, which has been created in order to have easy and good communication between hospital and Costumers, Patients and those who use the health services.

Creating the application on this project had a significant reason which is introducing the hospital to those who is looking for reliable medical care and later they become familiar with Near East Hospital.

The focus of creating Nearest Hospital Android Mobile Application, was enabling the customers and patient having a better comminication with hospital by a powerful and complete user-friendly application. We tried to use the latest technology and final version of IDEs to create updated software. Programming mobile software is complex and time-consuming process, but the passion and hard work helped me to solve problems and build the software. We are looking forward to a shining early future of this hospital's succeed as the most professional health system since is tried to introduce by a good system which is easy to access and use.

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3. Herbert, Schildt. (2013) . Java 2 The Complete Reference . New York, NY : McGraw-Hill

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1. Android application development (2015). From : <http://developer.android.com/training/basics/firstapp/index.html>
2. Android Material Design (2015) From : <http://developer.android.com/design/index.html>

APPENDIX 1: SCREEN OUTPUTS

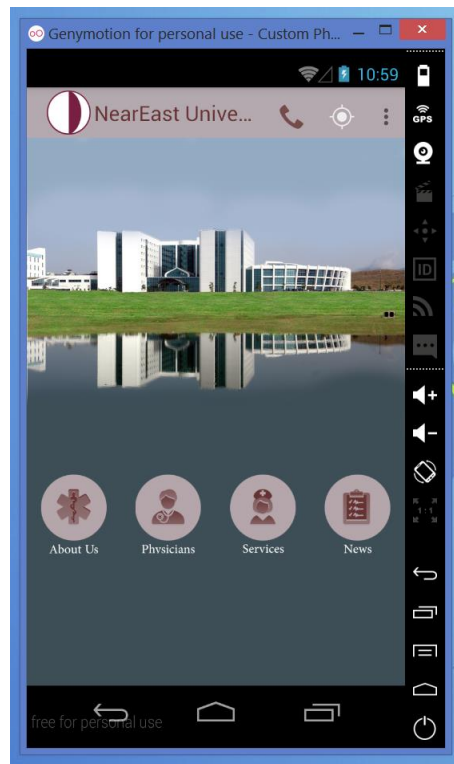


Figure 23. Mobile Application Dashboard

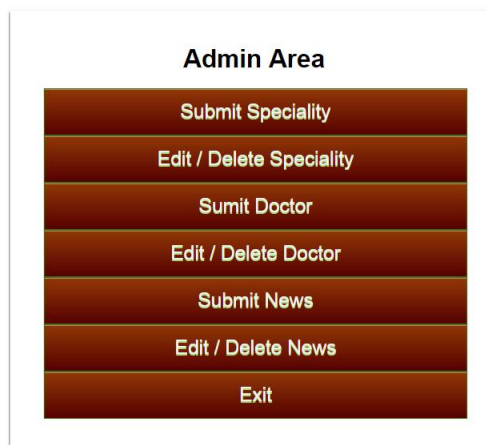


Figure 24. Administration Part Dashboard