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Majmaah University

College of Science in Al-Zulfi

**Department of Computer Science and Information**

Project Report for the 1<sup>st</sup> Semester of year 1439-1440

**Project Title: Take a Tour in AL RYADH**

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# Chapter 1

## Introduction

### 1.1 Kingdom of Saudi Arabia (KSA)

KSA is a Middle Eastern country that occupies most of the Arabian peninsula and has coastlines on the Persian Gulf and Red Sea. Neighboring countries include Jordan to the northwest, Iraq and Kuwait to the northeast, Bahrain and Qatar to the east, the United Arab Emirates to the southeast, and Oman and Yemen to the south as shown in Figure (1.1).

Saudi Arabia contains the holy Muslim cities of Mecca and Medina, to which all physically and financially able Muslims are required to make a pilgrimage at least once if possible and where non-Muslims are forbidden from entering.



Figure 1. Location of SAUDI ARABIA

## 1.2 why Al Riyadh

The city of Riyadh is both a modern metropolis and a historical and cultural treasure. Its characteristics are diverse, that range from the shimmering golden sand dunes, to modern shopping malls, distinctive heritage and cultural sites to urban construction panaches. Such diversity makes Riyadh city the core of life and vitality in the Kingdom.



Figure 2. Al Riyadh City

There are many historical and attraction sites in Al Riyadh city, like:

- Masmak Fortress (Qasr al-Masmak), The heart of old Riyadh, this was the fortress stormed by King Abdul Aziz and his men in their daring reconquest of Riyadh in 1902. Renovated in 2008 to an inch of its life, the mud brick structure now looks like it was built yesterday, but the museum inside does a pretty good job of recounting the story of the raid and has some fascinating photos of old Riyadh as well.



Figure 3. Masmak Fortress

- Qasr Al-Murabba, Riyadh's second old mud-brick palace, built by King Abdul Aziz after he conquered Masmak Fortress and figured he should build something harder to conquer.



Figure 4. Qasr Al Murabba

- National Museum, the top sight in Riyadh, this museum (opened in 1999) is done up with the latest technology and is very accessible to visitors, with almost everything available in English. There are so many video presentations and mini-theatres that you could probably spend an entire day here doing virtual tours and watching re-enactments of the Prophet Mohammed's battle of Medina.



Figure 5. National Museum

- Also, there are many other important places such as, As-Sufaat (Deira Square), Kingdom Centre (Al Mamlaka), Wadi Hanifa, Al-Dir'iyyah).



- As shown in Figure (1.6), Al Riyadh city was the third Arabian city and 42<sup>nd</sup> internationally that had been visited in 2014 with (4.1) million visitors.



Figure 6. Statistics of Al Riyadh visitors

### 1.3 problem Definition

When someone visit AL Riyadh city for the first time, he will spend a lot of time for exploring the city for any services he wants such as: hotels, hospitals, governmental institutions, and tourist attractions.

Concerning hotels, if the visitor needs to book a room in any hotel, he wants to see a list of all hotels around him anywhere and all information about them, such as location, star ranking, prices, and offers.

Also, any visitor needs to know the legal papers to stay in the city, he wants to reach the governmental institutions in an effortless way.

## 1.4 Project objectives

This project will provide a system that will save time and effort for anyone who will visit AL Riyadh city for the first time to explore any service. It will provide an effortless way to reach the important places in the city.

## 1.5 Project Description

The idea of the project is to provide a Mobile Application that will provide some facilities for anyone in Al Riyadh city especially the visitors.



Figure 1.7. Mobile App

This mobile application will provide a lot of services:

- (1) Display the near-by important places around the person using it.
- (2) List all hospitals and governmental institutions in the city.
- (3) Show the important tourist attractions in the city.
- (4) List all information about the hotels such as location, star ranking, prices and offers.

## 1.6 Benefits of using this Mobile Application for users.

- Using this mobile application will make it easy to use the application anywhere with any restrictions of your location.
- Also, it will display near-by important places automatically depending on GPS service in the mobile.
- It will save much time and effort for users to reach any destination.

## 1.7 Benefits of using this Mobile Application for the community

- This application will increase the number of visitors of the city due to the facilities it provided.
- It will increase the national income of the city.

## 1.8 Existing solutions (Literature Review)

There are some attempts that applied to address the problems that face visitors to Al Riyadh city, from which:

### (1) Saudi Tourism website (<http://sauditourism.sa>)

This website provides information about the tourist attractions in Saudi Arabia inside Al Riyadh city and other cities.

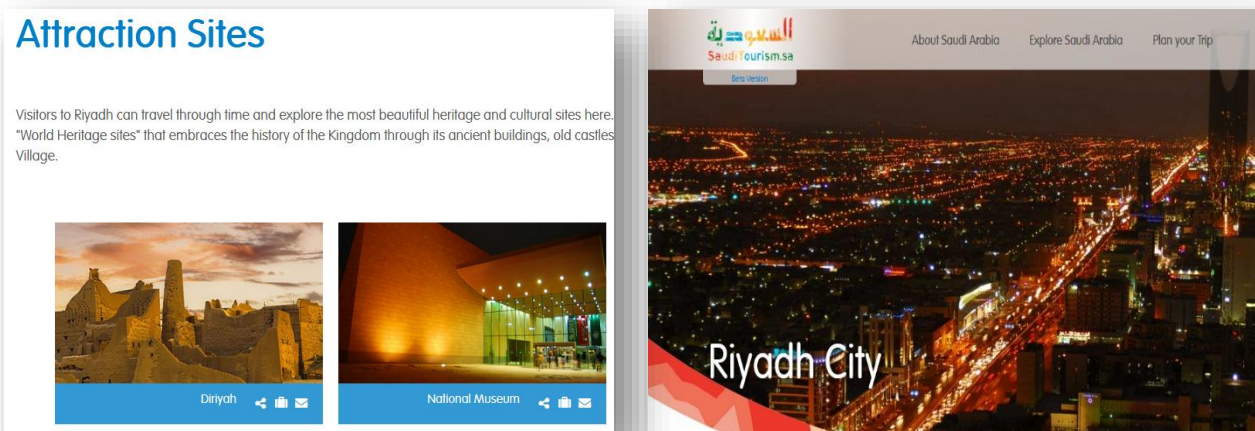


Figure 7. Saudi Tourism website

### Advantages:

- It provides all information about tourist attractions such as museums, historical sights.
- It facilitates searching for hotels, car hiring, and tourist offers.

### Disadvantages:

- It can be accessed just by the website not a mobile application.
- It doesn't provide information about hospitals or governmental institutions.
- It doesn't provide near-by service.

## (2) **Al Riyadh Travel website** (<http://www.alriyadhtravel.com>)

This website serves only Al Riyadh city. It provides information about flights, hotels, tourist offers.

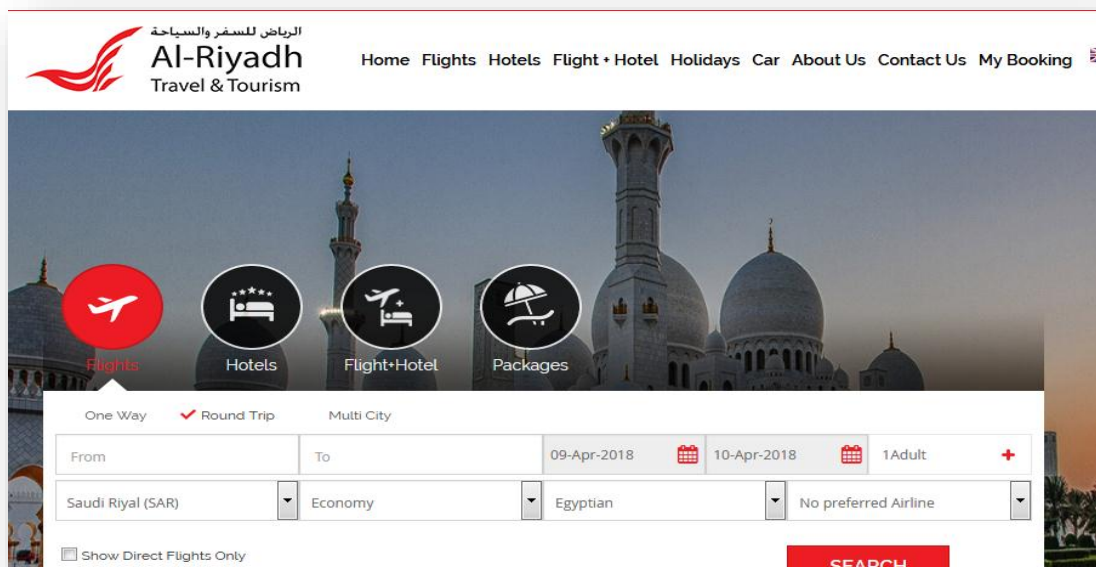


Figure 8. Al Riyadh Travel website

### Advantages:

- It focuses on hotels and flight booking.
- It provides offers for hotels and car hiring.

### Disadvantages:

- It doesn't provide information about governmental institutions in the city.
- It doesn't provide information about tourist attractions in the city.
- It can be accessed just by the website not a mobile application.
- It doesn't provide Map service to reach places.
- It doesn't provide near-by service to reach important places around you.

### **(3) Al Riyadh City website (<http://www.arriyadh.com>)**

This website serves only Al Riyadh city. It provides detailed information about tourism, sports, E-Government, restaurants, shopping, and education.



Figure 9. Al Riyadh City website

### Advantages:

- It provides detailed information about the city than the others.
- It provides updated news about Al Riyadh city.

### Disadvantages:

- It can be accessed just by the website not a mobile application.
- It doesn't provide near-by service for users.

## **1.9 Feasibility Study**

The feasibility study is defined as the practical extent to which a project can be performed successfully. To evaluate feasibility, a feasibility study is performed, which determines whether the solution considered to accomplish the requirements is practical and workable in the software.

Information such as resource availability, cost estimation for software development, benefits of the software to the organization after it is developed and cost to be incurred on its maintenance are considered during the feasibility study.

Here, we will discuss the Feasibility report of the project which includes:

#### ▪ Technical Feasibility

To be able to use the system, we only need a smart phone with Android operating system. The smart phone should be connected to the internet to be able to use GPS and Google Maps and to explore any destination we want.

#### ▪ Social Feasibility

The application will be available to anyone. To make the system easy to use, it will be provided with a help button to clear how to deal with it. Also, we can provide some training for users who cannot use the application.

- Market Research

The market research indicates that this application will be very beneficial to any person in Al Riyadh city, especially the visitors of the city who need to explore any place or stay in the city for a time.

- Economic Feasibility

The cost plan of the project contains the hardware requirements, which indicates the cost of the Tablet PC or the smart phone with Android OS and the software packages which depend on the number of users who will use the application daily. All in all, the project can be carried out within budget.

- Alternative Solution

The alternative solution to the Android mobile application would be IOS mobile application if the number of Apple phones become much larger than Android ones. Also, another alternative of the mobile application would be a web application if it will provide the same features of the mobile application as soon as possible.

## **1.10 Limitations of the application**

There are some limitations that would be occurred such as:

(1) Distractions of the environment:

Mobile users much more liable to dropping off than their web counterparts. Phones are often used in non-work settings, whereas personal computers are more commonly used in workspaces such as coffee shops, home offices, and at work. This means there are a host of possible distractions in a busy world, causing them to disengage.

(2) Making Any Update Is Incredibly Hard:

Updates of the mobile application would be difficult for some users.

(3) Lack of Android users in the city.

(4) Internet connection would not be available.

(5) Users would not be capable of using the application.

## 1.11 Project Scheduling

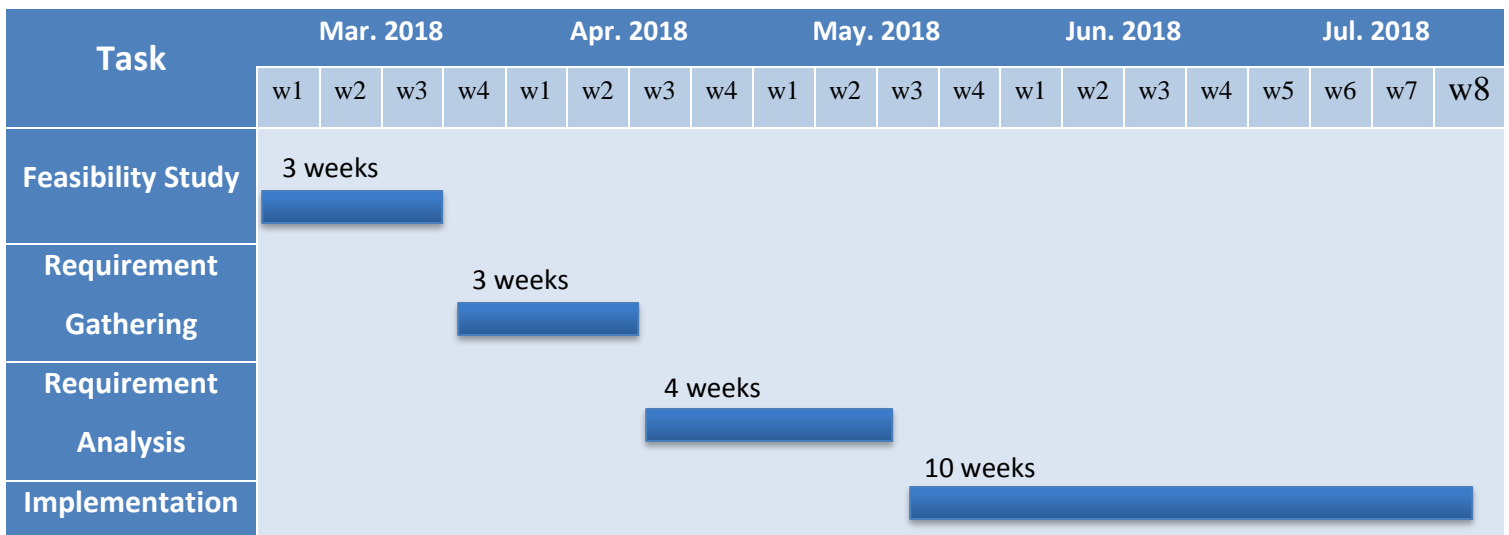


Figure 10. Project Scheduling

## 1.12 Tools to be used

- Android Studio IDE: Android Studio is Android's official IDE. It is purpose built for Android to accelerate your development and help you build the highest-quality apps for every Android device. It offers tools custom-tailored for Android developers, including rich code editing, debugging, testing, and profiling tools.

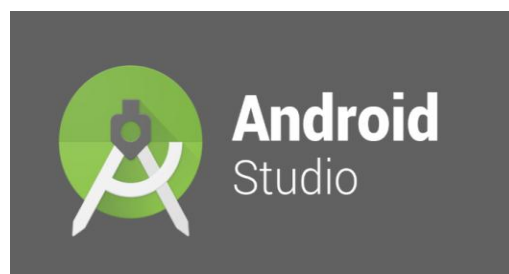


Figure 11. Android Studio IDE



- Google Maps: A web mapping service developed by Google. It offers satellite imagery, street maps, 360° panoramic views of streets (Street View), real-time traffic conditions (Google Traffic), and route planning for traveling by foot, car, bicycle (in beta), or public transportation.



Figure 12. Google Maps

- Google APIs: A set of application programming interfaces (APIs) developed by Google which allow communication with Google Services and their integration to other services. Examples of these include Search, Gmail, Translate or Google Maps.
- JAVA: A general-purpose computer-programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. Java is the programming language that used for Android mobile applications.



Figure 13. Java programming lang.

- SQLite: A software library that implements a self-contained, serverless, zero-configuration, transactional SQL database engine. SQLite is the most widely deployed SQL database engine in the world. We depend on SQLite as a database engine for our Android mobile application.



Figure 14. SQLite Database Engine

# Chapter 2

## Requirement analysis



### 2.1 System Purpose

The purpose of this Documentation is to explain the whole system of AL Riyadh, present all features of the system, interfaces that used to perform the operation, what the system will do in each step, this documentation is proposed for stakeholders and developers of the system and it's organized in proper manner for this purpose.

### 2.2 Scope of the system

This software system will be a mobile application for helping lost people to search for any places they want in an easy way, using this app user can search for hospitals, historical places, governmental institutions and so in the other hand he can know his position and distances between him and other places in the city Riyadh.

The second part of this system, allow admin to add new places and update the data for every place in any time and in a friendly way.

## 2.3 Glossary

<b>Term</b>	<b>definition</b>
<b>Attribute</b>	A named property or characteristic of an entity that is of interest to the organization
<b>Class Diagram</b>	Shows the static structure of an object-oriented model: the object classes, their internal structure, and the relationships in which they participate.
<b>Field</b>	A cell within a forum.
<b>Visitor</b>	Any one that can visit and view Al-Riyadh places.
<b>Admin</b>	The controller of the system.
<b>Database</b>	The application data.

Table 1. Glossary

## 2.4 System Environment

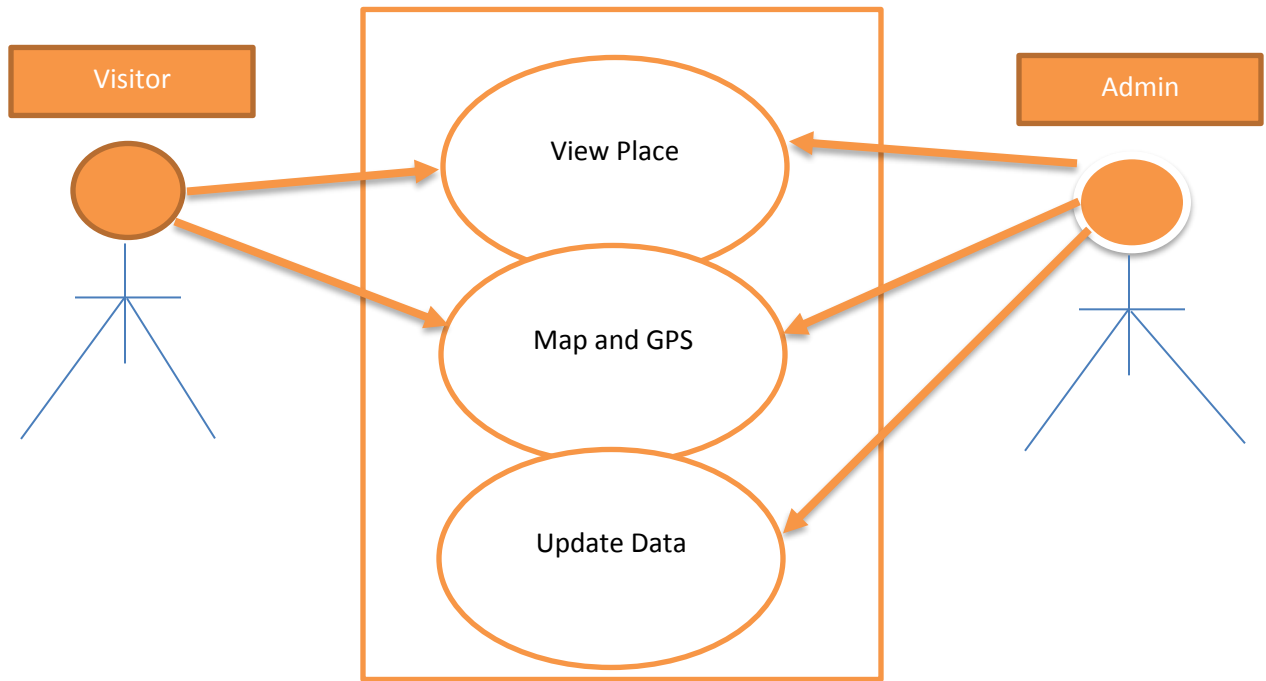


Figure 15. System Block Diagram

Al Riyadh system has two main actors, visitor and the admin, the visitor is the user that can view places and searching for anything in the system and maps, the admin is the controller that can update the data and delete it.

## 2.5 Functional Requirements.

For the functional requirements, Google Maps is required to be shown and the GPS Location must be enabled for performing functions of get nearby places and get position location and searching for any place for the visitor.

## **2.6 User Characteristics.**

Characteristics of the visitor are his name, age, phone, address and email for contact and for booking.

## **2.7 Requirement Specification**

Requirement System: Android System

Requirement Hardware: Android Device

## **2.8 Requirement Analysis.**

### **2.8.1 External Interface Requirement**

The external links are existing for verifying the visitor and get the data to the application from the database in the server and for booking, the visitor must communicate with the server to perform these operations.

### **2.8.2 Non-Functional Requirements**

Nonfunctional requirement like:

- Usability
- Reliability
- Performance
- Supportability
- Implementation
- Interface
- Packaging
- Legal

### 2.8.3 Detailed Functional Requirement

#### Create Account

<b>Usecase name</b>	Create Account
<b>Trigger</b>	The user press create account
<b>Precondition</b>	The visitor in the home page of the application, can show places and search any place.
<b>Postcondition</b>	Account created successfully.
<b>Exception paths</b>	If there is no internet connection.

Table 2. Create Account

<b>Usecase name</b>	Login
<b>Trigger</b>	The user press login button.
<b>Precondition</b>	The visitor in the home page of the application, can show places and search any place.
<b>Postcondition</b>	login successfully.
<b>Exception paths</b>	If there are mistakes in the username or password or e-mail.

Table 3. Login

<b>Usecase name</b>	Update account
<b>Trigger</b>	The user press update account setting.
<b>Precondition</b>	The visitor in the home page of the application, can show places and search any place.

<b>Postcondition</b>	Account updated successfully.
<b>Exception paths</b>	If there is no internet connection or not following constraints.

Table 4. update account

<b>Usecase name</b>	Browse Place
<b>Trigger</b>	The visitor search for place and click on it to show information.
<b>Precondition</b>	The visitor in the home page of the application, can show places and search any place.
<b>Postcondition</b>	The place is shown successfully.
<b>Exception paths</b>	If there is no internet connection.

Table 5. Browse place

<b>Usecase name</b>	GetPosition
<b>Trigger</b>	The user press get position button
<b>Precondition</b>	The visitor in the home page of the application.
<b>Postcondition</b>	Visitor's location is displayed in the map using GPS.
<b>Exception paths</b>	If there is no internet connection.

Table 6. GetPosition

<b>Usecase name</b>	Nearby places.
<b>Trigger</b>	The user press nearby places.
<b>Precondition</b>	The visitor in the home page of the application, can show places and search any place.

<b>Postcondition</b>	Nearby places are shown in the Google Maps.
<b>Exception paths</b>	If there is no internet connection.

Table 7. Nearby places.

<b>Usecase name</b>	Logout
<b>Trigger</b>	The user press logout
<b>Precondition</b>	The visitor in the home page of the application, can show places and search any place.
<b>Postcondition</b>	logout successfully.
<b>Exception paths</b>	If there is no internet connection.

Table 8. Logout.

<b>Usecase name</b>	Update data
<b>Trigger</b>	The admin press update place , he can choose to delete ,add or update any place in the server.
<b>Precondition</b>	In the home page.
<b>Postcondition</b>	Information updated successfully.
<b>Exception paths</b>	If there is no internet connection.

Table 9. Update Data



# Chapter 3

## System Diagrams

3.1 The concept of the project can be categorized into two categories according to different users' perspectives:

### User:

- User can create an account.
- Browse (shops, cinemas, restaurants) offers and sees the navigation to this place.
- Browse nearby place depend on GPS location.

### Admin:

- Create account to update data.
- Add a city and city category (restaurants, hotels, cinemas).
- Add information about any place.
- Delete a city, city category.
- Update profile data, he can edit his profile if wanted.

### 3.2 View of project Class Diagram:

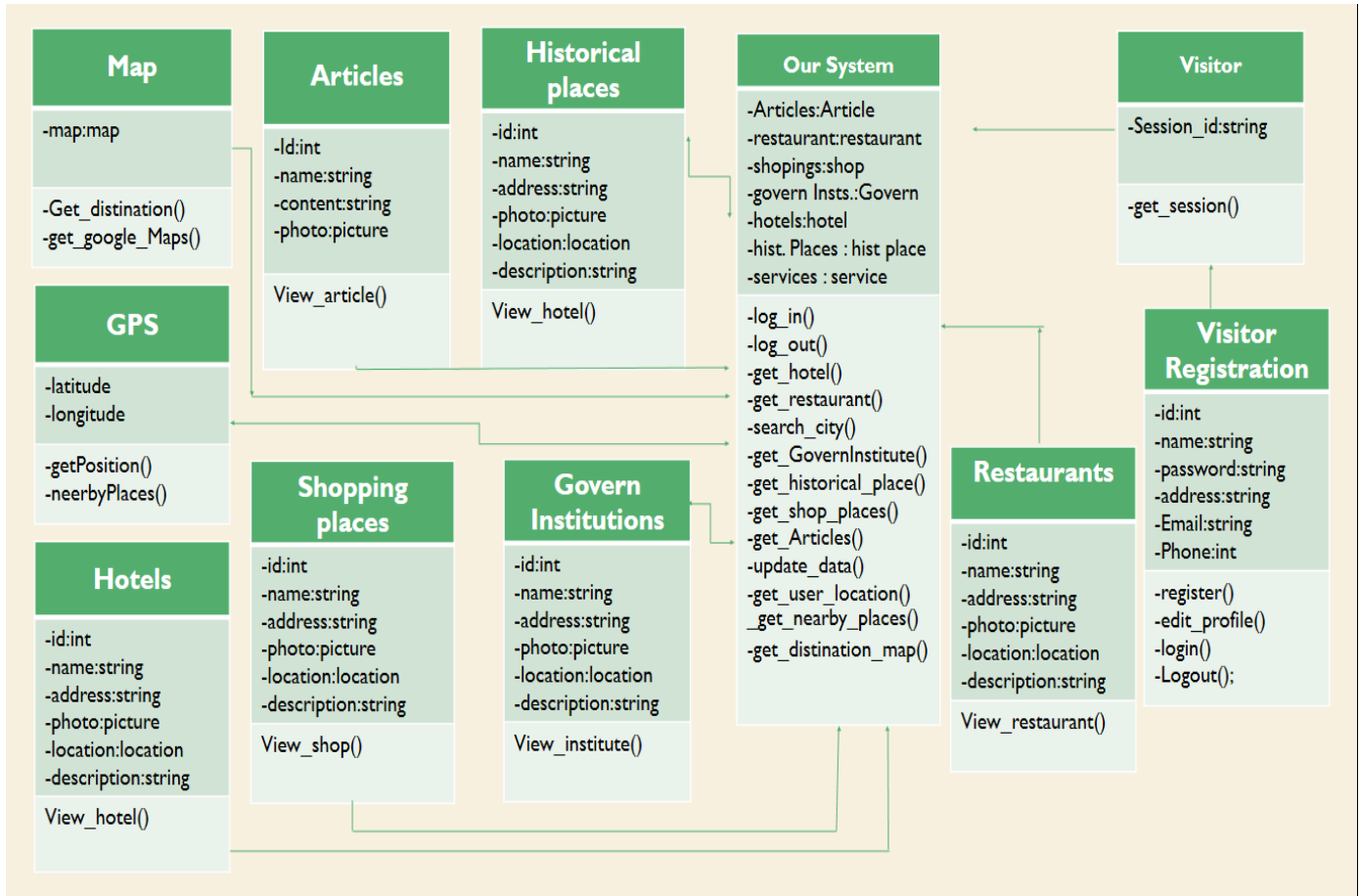


Figure 16. class diagram for the system

### 3.3 Use Case Diagram:

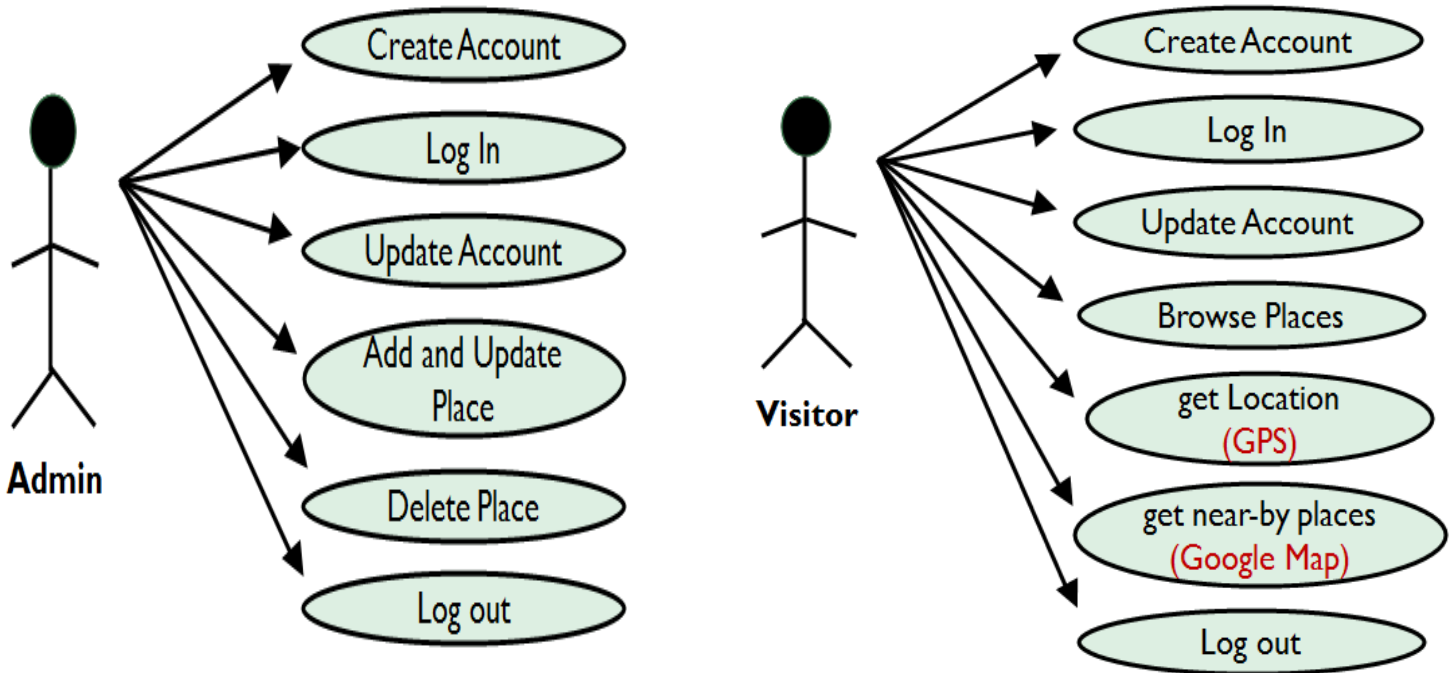


Figure 17. Use Case diagram for the visitors and admins

- Use case that shows the difference between admin and visitors and how they act to the application.

### 3.4 Sequence Diagram:

#### 3.4.1 Sequence Diagram of admin:

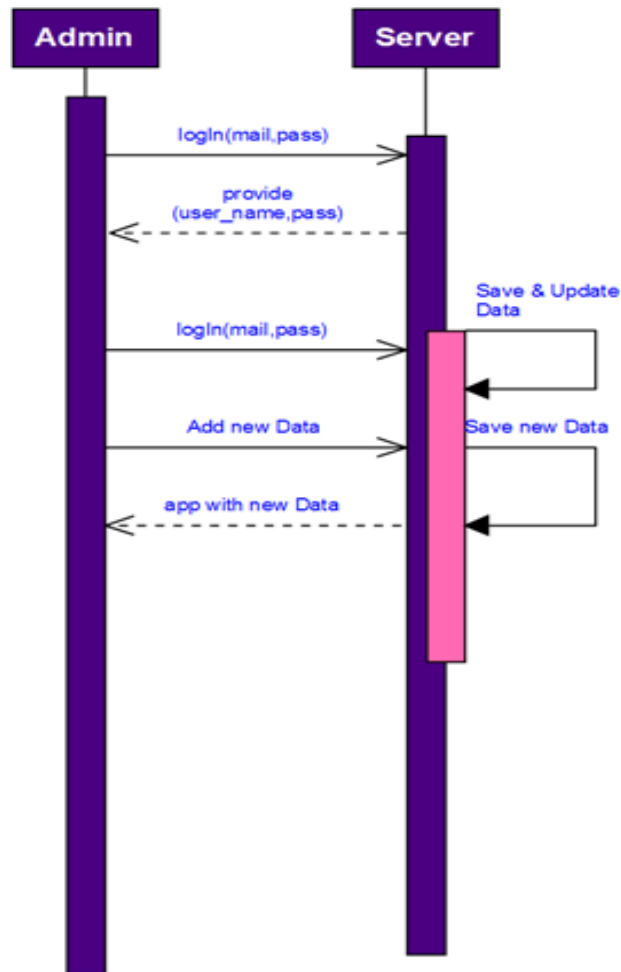


Figure 18. Sequence diagram of Admin

- Sequence diagram of the admin in the system and how he interacts with the system via login, add new places, delete places and update system states.

### 3.4.2 Sequence Diagram of user:

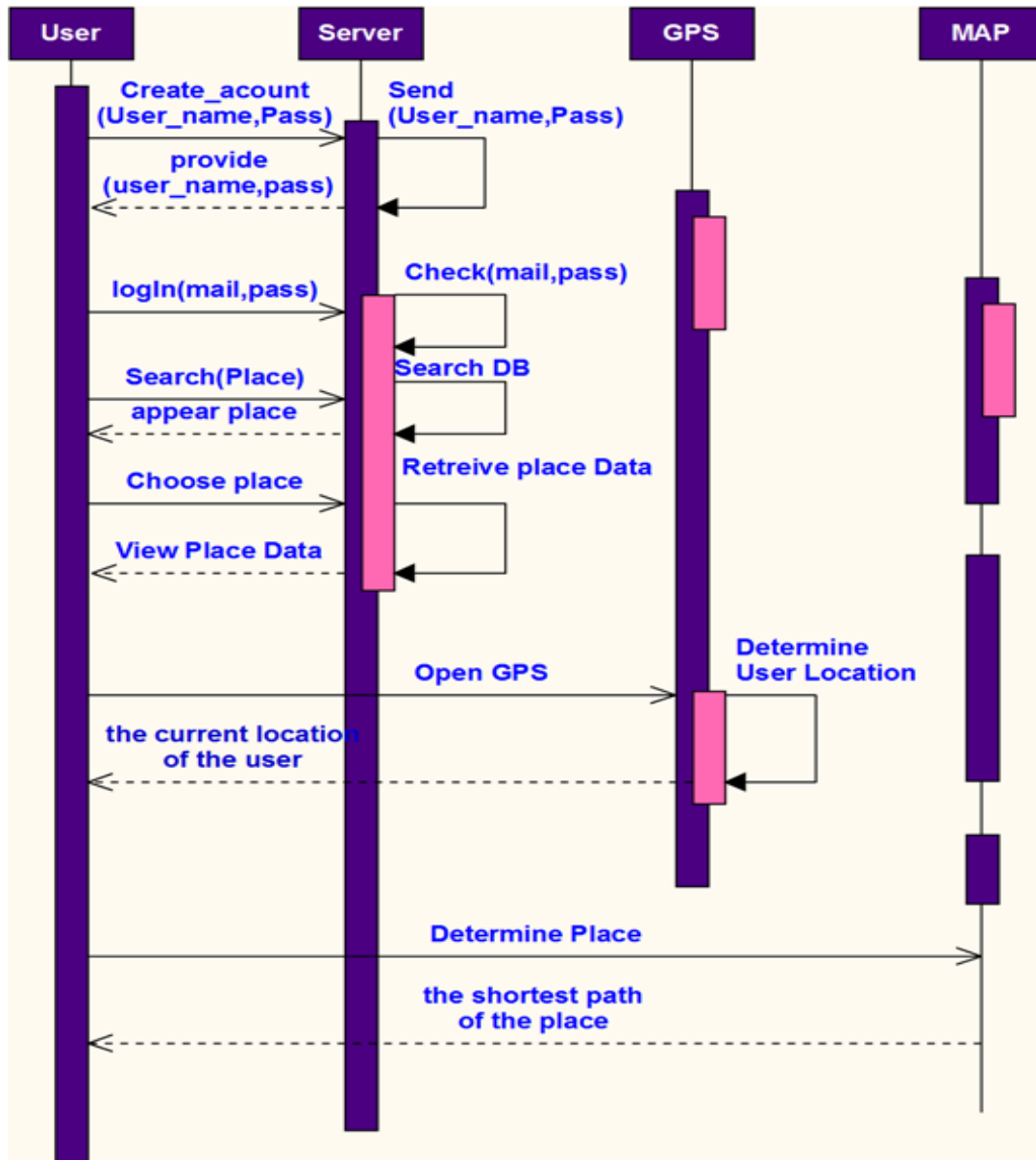


Figure 19. Sequence diagram of User

- Sequence diagram of the user in the system and how he interacts with the system via logIn, Browse Categories, Search for places and View Nearby places.

### 3.5 Activity Diagram

The basic purposes of activity diagrams. It captures the dynamic behavior of the system. Other diagrams are used to show the message flow from one object to another, but activity diagram is used to show message flow from one activity to another.

Activity is an operation of the system. Activity diagrams are not only used for visualizing dynamic nature of a system, but they are also used to construct the executable system by using forward and reverse engineering techniques. The only missing thing in activity diagram is the message part.

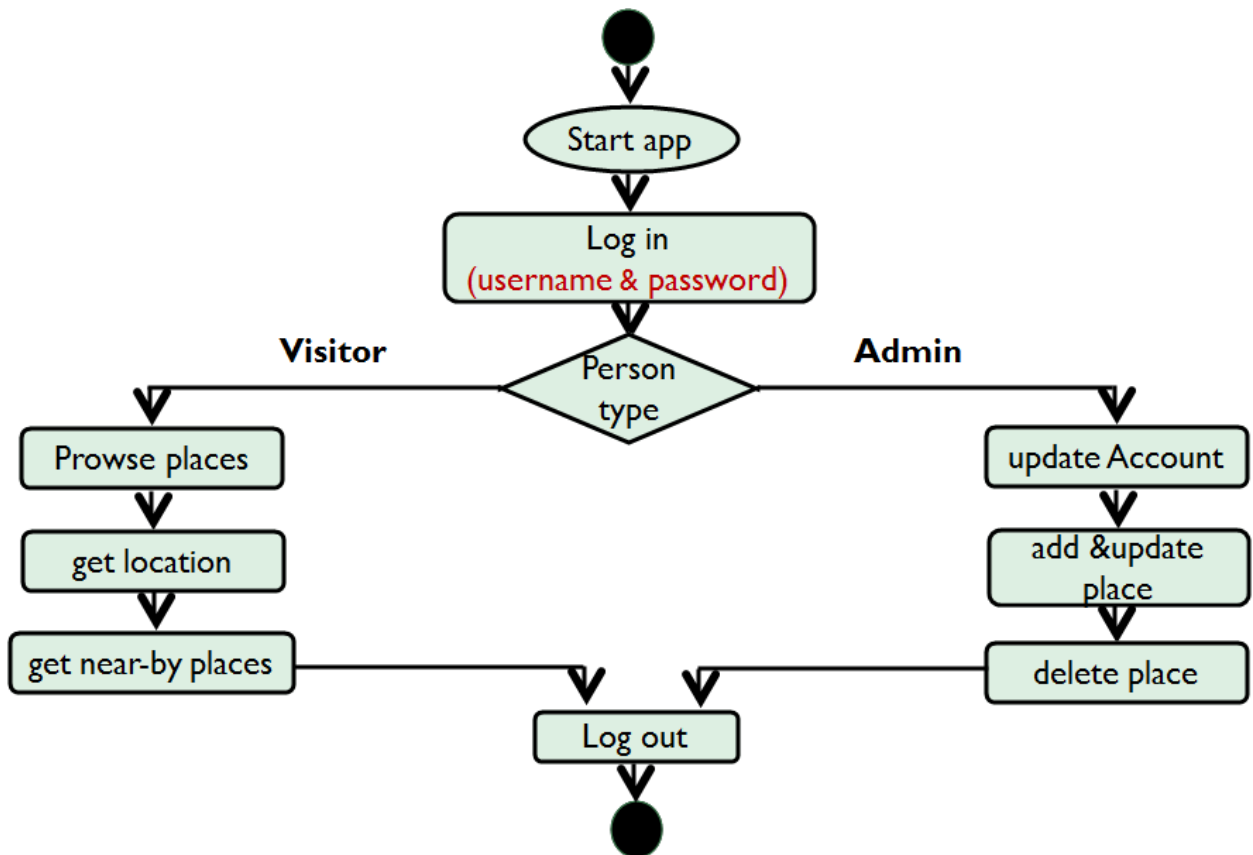


Figure 20. Activity diagram

### 3.6 State Diagram

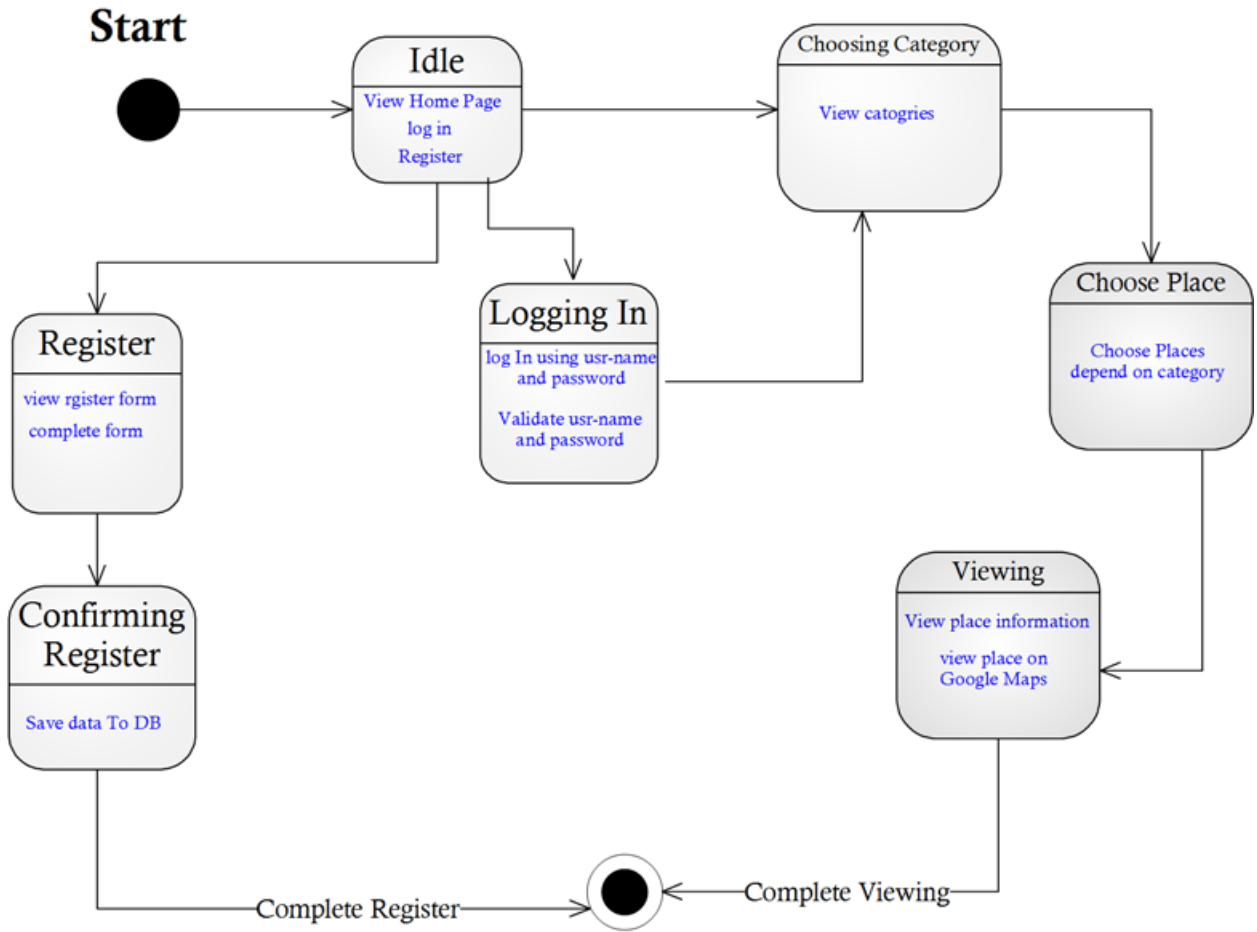


Figure 21. State diagram

### 3.7 Entity Relationship Diagram (ERD)

An entity-relationship model (ERM) is an abstract and conceptual representation of data. Entity-relationship modeling is a database modeling method, used to produce a type of conceptual schema or semantic data model of a system, often a relational database, and its requirements in a top-down fashion. Diagrams created by this process are called entity-relationship diagrams, ER diagrams, or ERDs.

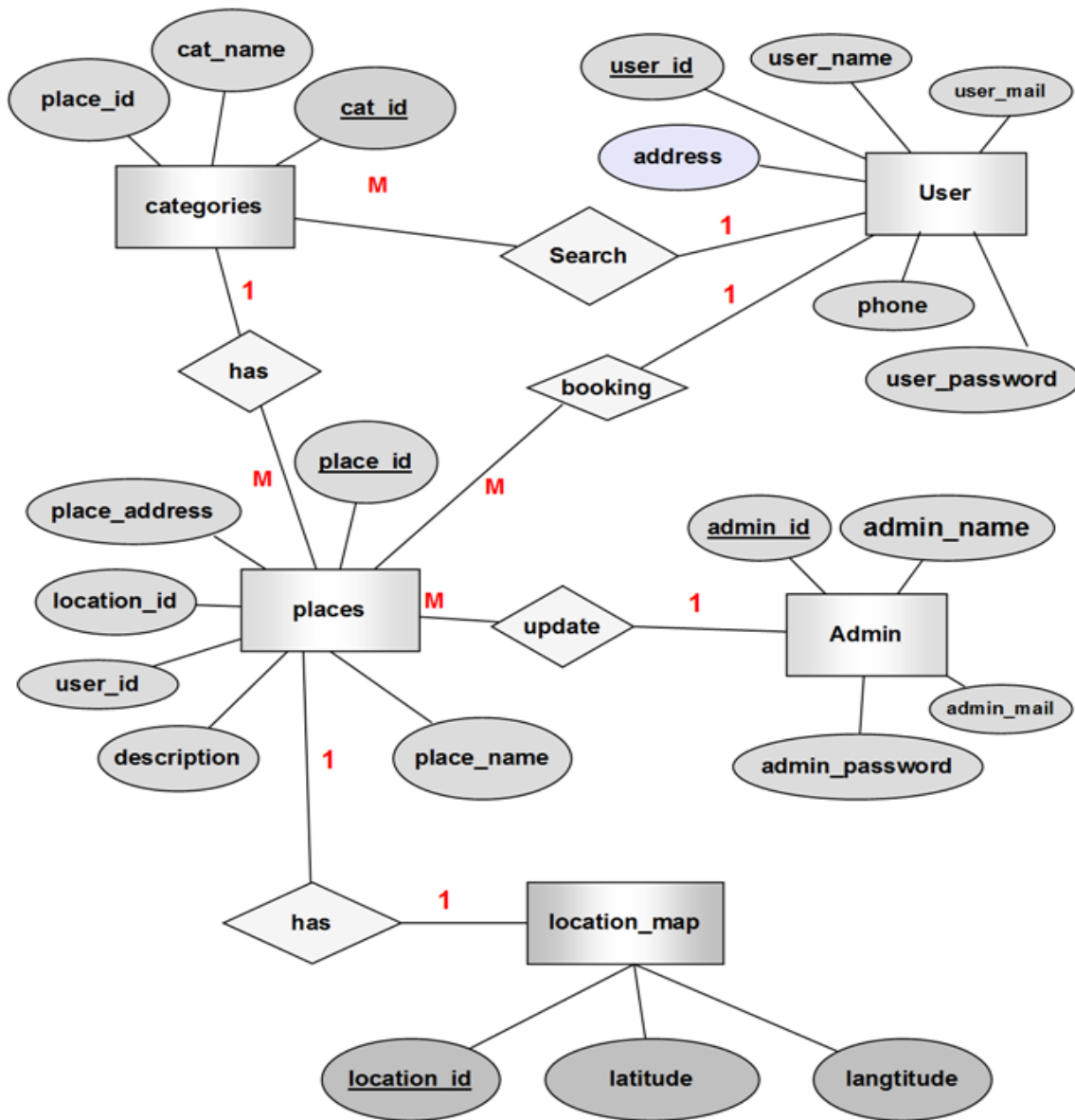


Figure 22. Entity Relationship Diagram



### 3.8 Mapping Diagram

Mapping is the process of converting the entity relationship diagram (ERD) to database tables which we use it to create the database in any framework such as MY SQL workbench, Oracle or SQL Server. In this diagram, we join between tables by foreign key.

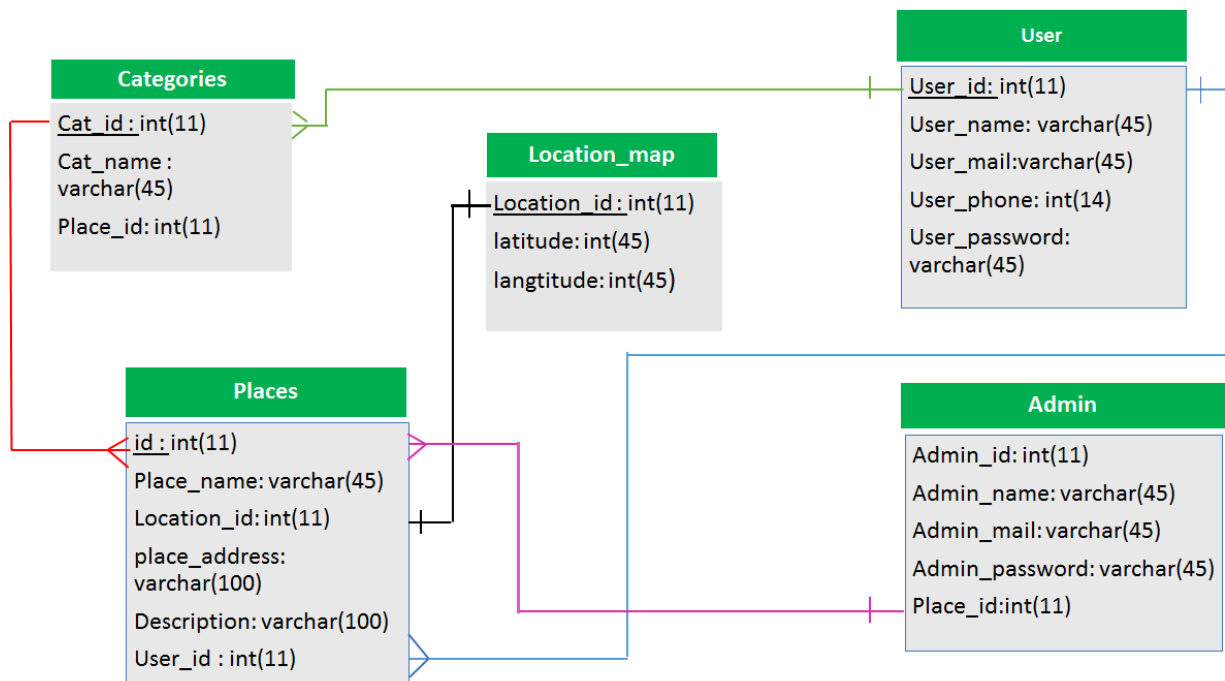


Figure 23. Entity Relationship Diagram

## 3.9 User Interface

### 3.9.1 Log In and Sign Up screens

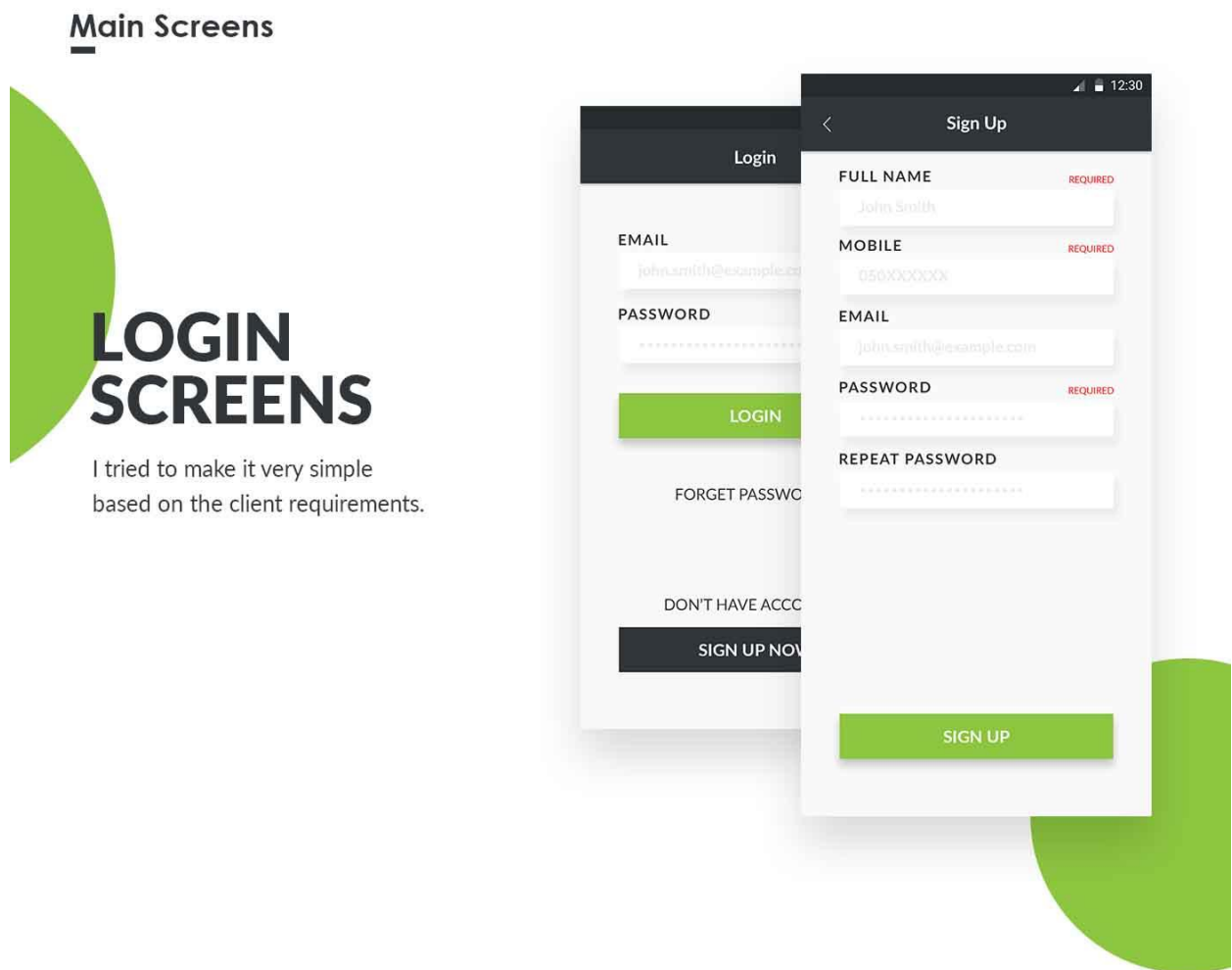


Figure 24. login and signup

### 3.9.2 Main Menu Screen

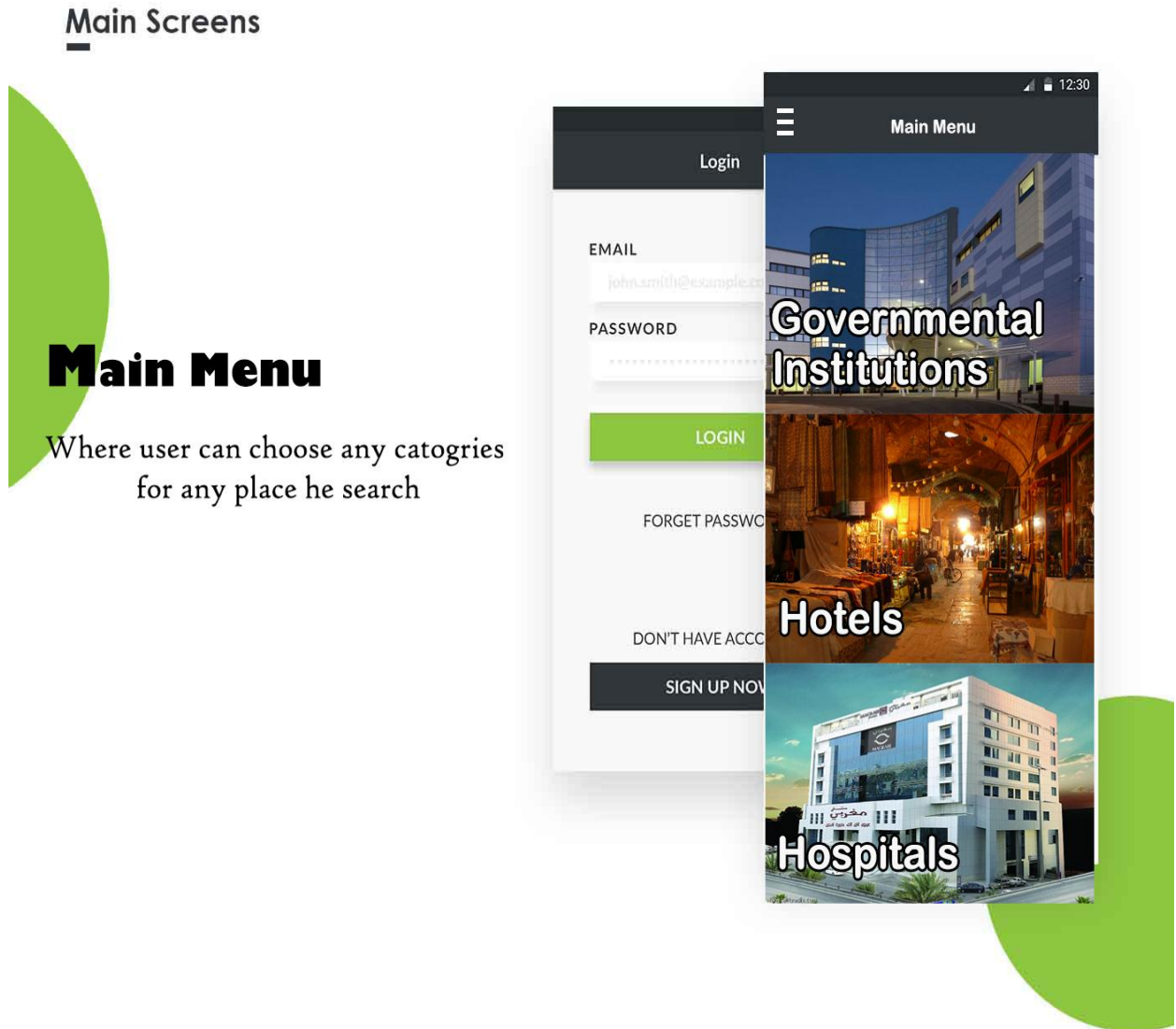


Figure 25. Main Menu Screen

### 3.9.3 Admin Screen

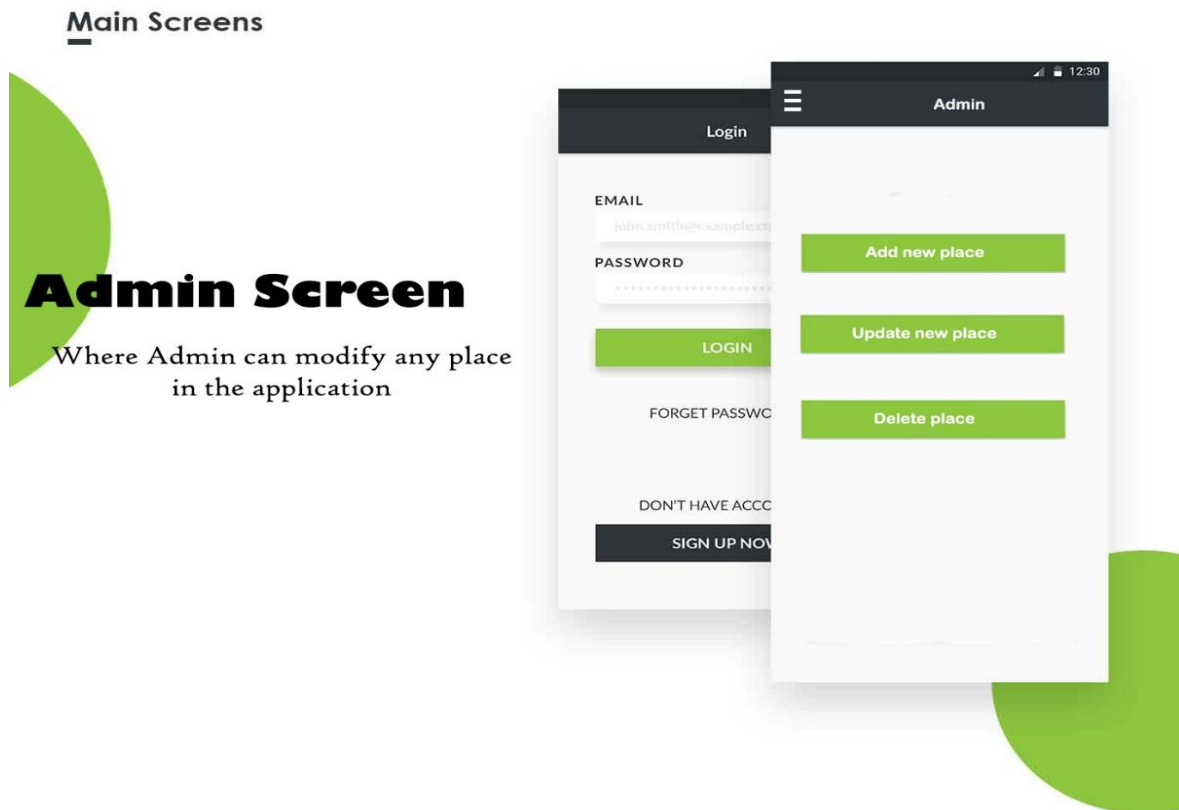


Figure 26. Admin Screen

### 3.10 Summary

Proposed system actions are mentioned and described. Also, main building blocks of the conceptual model related to the proposed system. The description of interaction between the proposed system and users is presented in separate ways, also Described in this chapter, the design phase of the proposed system. The components interaction leads to define proposed system processes and data. The processes modeling section describes the class diagram that describes the proposed system processes as object oriented classes. Then the data modeling described by describing entity relationship diagram and Mapping diagram.

# Chapter 4

## 4.1 Future Work:

- Web application will provide powerful support to the system.
- The proposed system maps capabilities will be improved to provide more ease of use.
- Using a real server to enable access to the application from everywhere via internet.
- Develop the application in other programming languages to be run on different operating systems such as iOS, Windows phone, .....etc.

## 4.2 References:

- [1] <http://www.arriyadh.com>.
- [2] <http://sauditourism.sa/en/Pages/default.aspx>.
- [3] <https://www.alriyadh.gov.sa/en/subsites>.
- [4] [https://wikitravel.org/en/Saudi\\_Arabia](https://wikitravel.org/en/Saudi_Arabia).
- [5] <http://alriyadhtravel.com>.
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