

# **AR Map 2Go!**

## **Software Design Document**

By

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## Document History

Document Name	Version	Status	Date	Viewable	Reviewer	Responsible
<b>Documents</b>						
<b>AR Map 2GO!_SDD_1.0a</b>	AR Map 2GO!_SDD <ul style="list-style-type: none"><li>• SDD Outline</li><li>• Introduction and Background</li><li>• Feature</li><li>• Add System Architecture</li></ul>	Initial Version	15-06-2016	PP, JH	PP	PP
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# Chapter One | Introduction

## 1.1 Purpose

The purpose of this document (Software Design Document: SDD) is written for describing the high level of software design, system architecture, database system and graphic user interfaces which related all about “AR Map 2Go!” application. Also consists of the user requirement. This SDD is the baseline for limited changing in the scope of the system. The important thing, this document is the blueprint for facilitating the developer team members to understand the direction of the system.

## 1.2 Software Scope

The scope of software has controlled by the user requirements. The software developed in the form of mobile application integrating with Augmented Reality technology and the web service.

The main features of software have 5 features;

- Registration and Authorization Management
- Web-Application and server Management
- Augmented Reality Management
- Map and Navigation Management
- Notification Management

The user should register before operating the activity in the system by using user email address as a username. After registration, the user information will send to the server for creating the new user account in the server database. The user can be interacting with the common features which provide by the application.

The system operates by scanning the specified picture (e.g. map shape) and location text title by using mobile camera view via this application. After that, the system will display all related Point of Interest (POI) locations in term of interactive 3D-object, create and operate with **Augmented Reality** technology, to the user. The user can touch on each 3D-object to get an action e.g. showing the location information or start navigating the user to the target destination.

The administrator will manage the data and information on the server side via the web application by adding a new location and new 3D object symbol into the server database to keep this application are newly and up-to-date.

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## 1.3 Operation Environment

AR Map 2 Go2! is developing in form of mobile application. This application needs an Android operating system version 2.3.3(Gingerbread) and API 11 or higher because of the function of database system, Google API v.2.1 and application widget require. The user must have smartphone that is an Android operating system for running this application. This application requires the internet connection while using. Therefore, it is suitable and high mobility for mobile devices to run the system.

## 1.4 Dependency Document

This software project management plan is depended with the following documents

- Software Project Management Plan Version 1.1
- Software Requirement Specification Version 1.1
- Test Plan Version 1.0
- Test Record Version 1.0b
- Requirement Traceability Matrix Version 1.1

## 1.5 User Characteristic

### 1.5.1 User

These are the general users that did not register to the system.

### 1.5.2 Member

These are the people who have registered as a member. They can login to get an authorization and identity from the system. The system will allow member to use fully function in the application.

### 1.5.3 Administrator

These are the people who have registered as a administrator. They have a permission to management the web-application system to provide the new location information, new 3D object files, edit or update the data on the server side.

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## 1.6 Product Features

### **Feature #1: Registration and Authorization Management**

**Description:** This feature supports web-application management system for administrator.

#### **Target: Users**

- The user can register a new account.
- The user can delete an account.
- The user can login to the system.
- The user can logout from the system.
- The user can recover the password.
- The user can view the user profile.
- The user can update profile information.
- The user can change profile picture.

### **Feature #2: Web-Application and server Management**

**Description:** This feature supports registration of users for using the system.

#### **Target: Administrator**

- The administrator can login into the web application system.
- The administrator can logout from the web application system.
- The Administrator can add the new location into the server.
- The Administrator can add the new 3D object symbol into the server.

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### **Feature #3: Augmented Reality Management**

**Description:** This feature supports Augmented Reality management to show the 3-dimension object on the map.

#### **Target: Users**

- The system can scan on the specified map picture.
- The system can scan on the specified text title.
- The system can show the 3D-object via camera view.
- The user can interact with 3D-object by click to get the action.

### **Feature #4: Map and Navigation Management**

**Description:** This feature supports map management system on mobile application.

#### **Target Users**

- Develop Map using Google Maps API.
- The user can click on each 3D-object to get route direction planning.
- The system can navigate route direction via Google Map application.
- The system can show nearby locations related with the specified target.

### **Feature #5: Notification Management**

**Description:** This feature supports map management system on mobile application.

#### **Target: Users**

- The system can send the notification to the user when the system has been updated.

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# 1.7 User Characteristic

## 1.7.1 Key Definition Key Definition

IEEE	Institute for Electrical and Electronics Engineers. Biggest global interest group for engineers of different branches and for computer scientists. [IEEE90]
Augmented reality	Augmented reality (AR) is a live, copy, view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data.
Requirement	A condition or capability needed by a user to solve a problem or achieve an objective. A condition or capability that must be met or possessed by a system or system component to satisfy a contract, standard, specification, or other formally imposed document. A documented representation of a condition or capability as in definition
Feature	Transformation of input parameters to output parameters based on a specified algorithm. It describes the functionality of a product in the language of the product. Used for requirements analysis, design, coding, testing or maintenance. [IEEE90]
Use Case	Concept to describe a system based on usage of system resources by its environment. Characterized by an objective-set of interactions within and at the borders of that system. Notation from UML for describing a scenario (Usage approach, operational scenario) from the perspective of its users. [IEEE90]
Web Application	A computer software application that is coded in a browser-supported and reliant on a common web browser to render the application executable.
Software Engineering	The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software.” [IEEE90]

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Specification	Precise description of an activity or work product which serves as basis or input for further activities or work product. A specification can comprise requirements to a product and how they will be solved. Different parts of a specification (e.g., what is to be done, how it will be done) must not be mixed. [IEEE90]
Server	“a computer program running to serve the requests of other programs, the "clients". Thus, the "server" performs some computational task on behalf of "clients". The clients either run on the same computer or connect through the network. In most common use, server is a physical computer (a computer hardware system) dedicated to running one or more such services (as a host), to serve the needs of users of the other computers on the network. Depending on the computing service that it offers it could be a database server, file server, mail server, print server, web server, or some other kind of server.”

## 1.7.2 Key Definition Key Definition

KEY	ABBREVIATIONS
VSE	Very Small Entity
IEEE	Institute of Electrical and Electronics Engineers Software
UML	Unified Modeling Language

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KEY	ABBREVIATIONS
CD-AXX	Class Diagram on Android Application number XX
CD-WYY	Class Diagram on Web Application number YY
SD-XXX	Sequence Diagram number XXX
GUI-WXX	Graphic User Interface from Web Application Number XXX
GUI-AXX	Graphic User Interface from Android Application Number XXX

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# Chapter Two | System Architecture



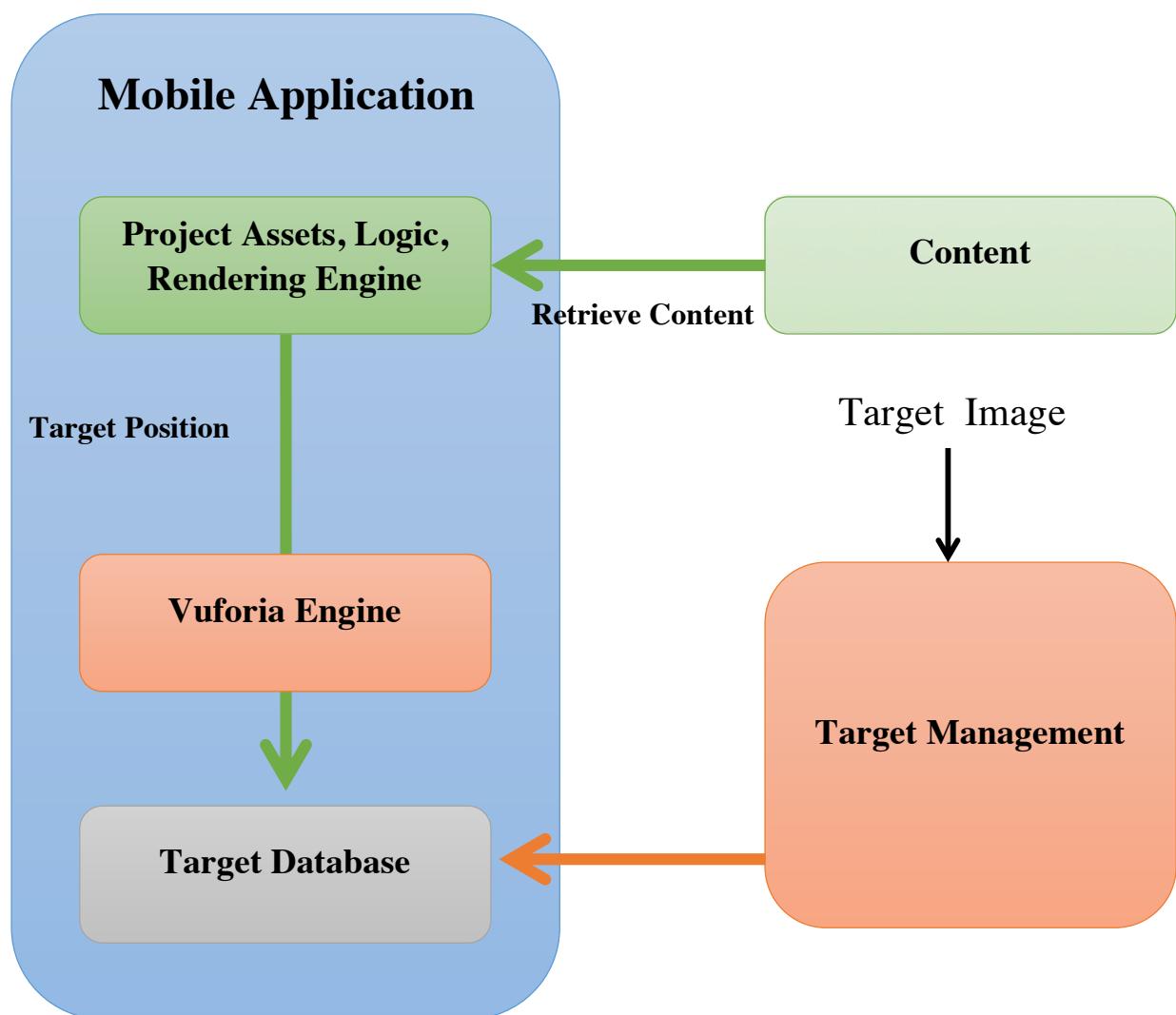
**Figure 1:** System Architecture

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This **figure 1** shows the system architecture of AR Map 2Go! mobile application has separated to two sides that are mobile application and web server. The user can access the application via using mobile. The application will transfer data between web servers via JSON and XML. The mobile application has build-in database (SQLite) to manage and maintain data between mobile application and the server.

The server has database system on the server side also. The server can synchronize the data and information between mobile application and web server each other. Administrator can access to manage and maintain the data into the server via using web browser (e.g. Google Chrome). The applications using external APIs are “Vuforia” library, to read and rendering 3-Dimension object model, Google Map API version 2.1

## Augmented Reality Architecture



**Figure 2:** Vuforia AR Engine Architecture

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## Android Activity/Fragment Flow Diagram

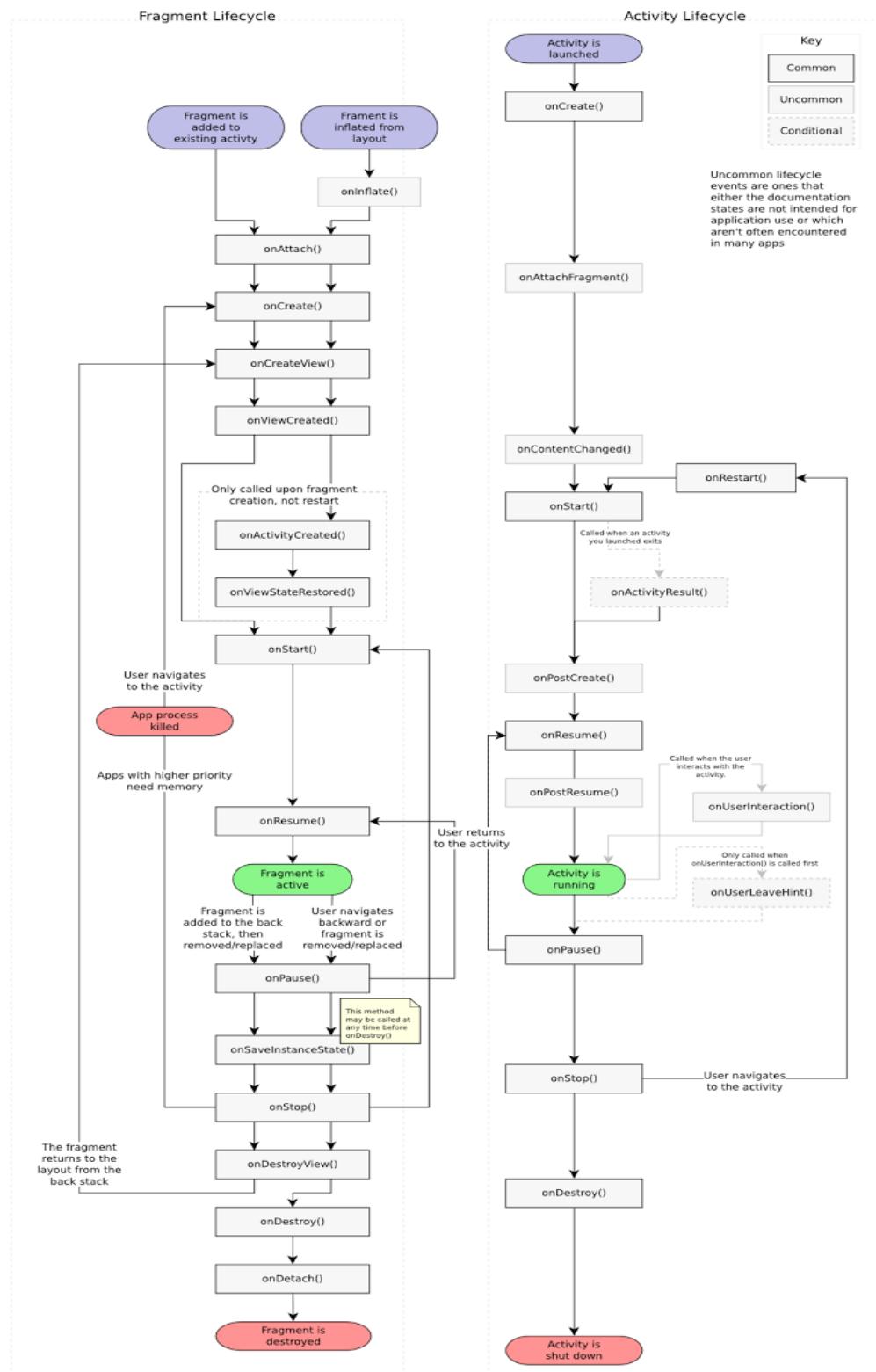


Figure 2: Android Activity/Fragment Lifecycle

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# Chapter Three | Detail Design

## 3.1 Class Diagram

### 3.1.1 Package: com.android.se.armap2go.application

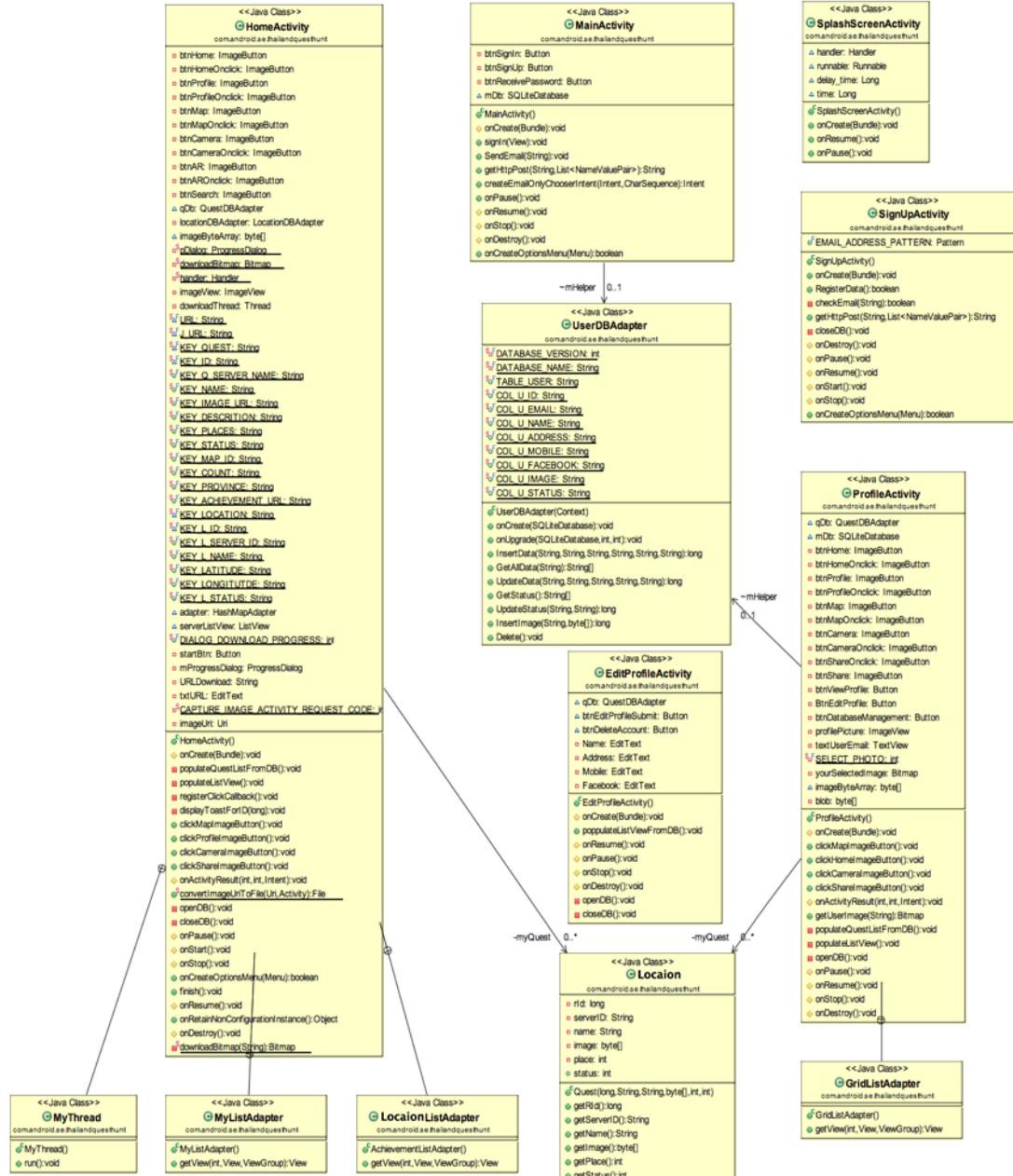
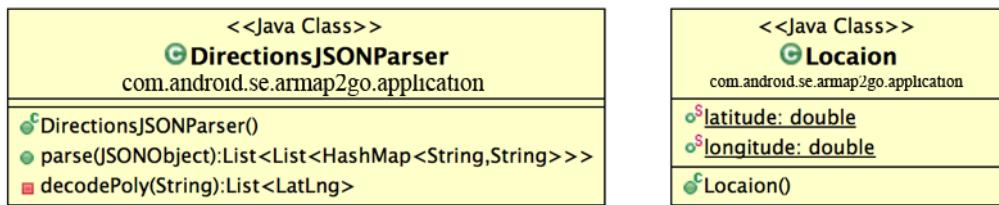


Figure 3.1: The Overview of Class Diagram

in package: com.android.se.armap2go.application

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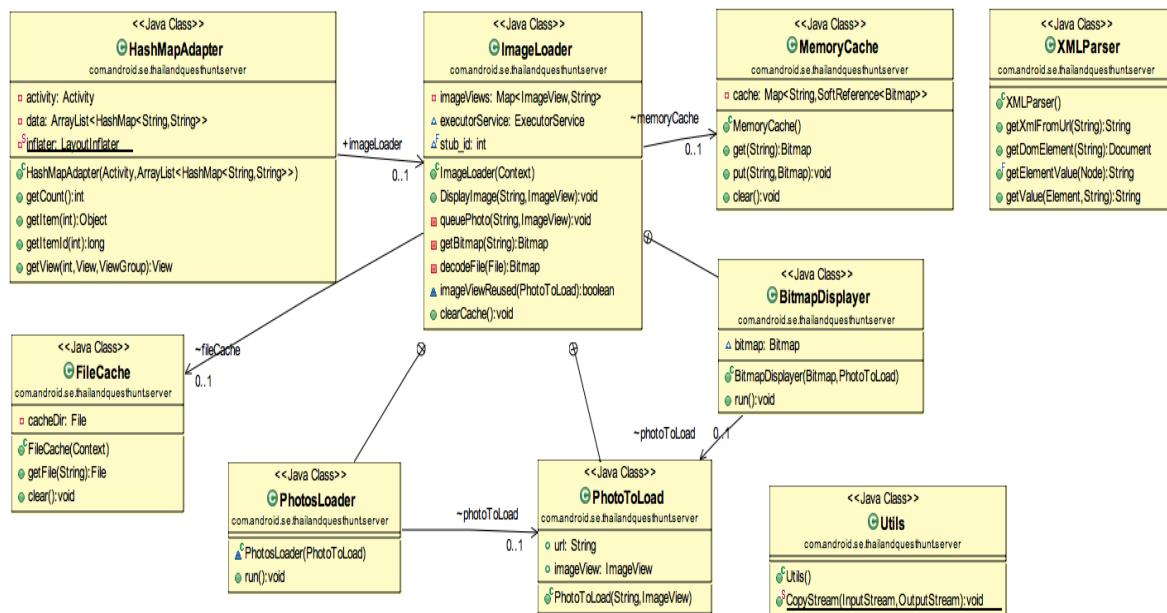
### 3.1.2 Package: com.android.se.armap2go.map



**Figure 3.2:** The Overview of Class Diagram

in package: **com.android.se.armap2go.map**

### 3.1.3 Package: com.android.se.armap2go.server



**Figure 3.3:** The Overview of Class Diagram

in package: **com.android.se.armap2go.server**

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### 3.1.4 Package: com.android.se.armap2go.ar

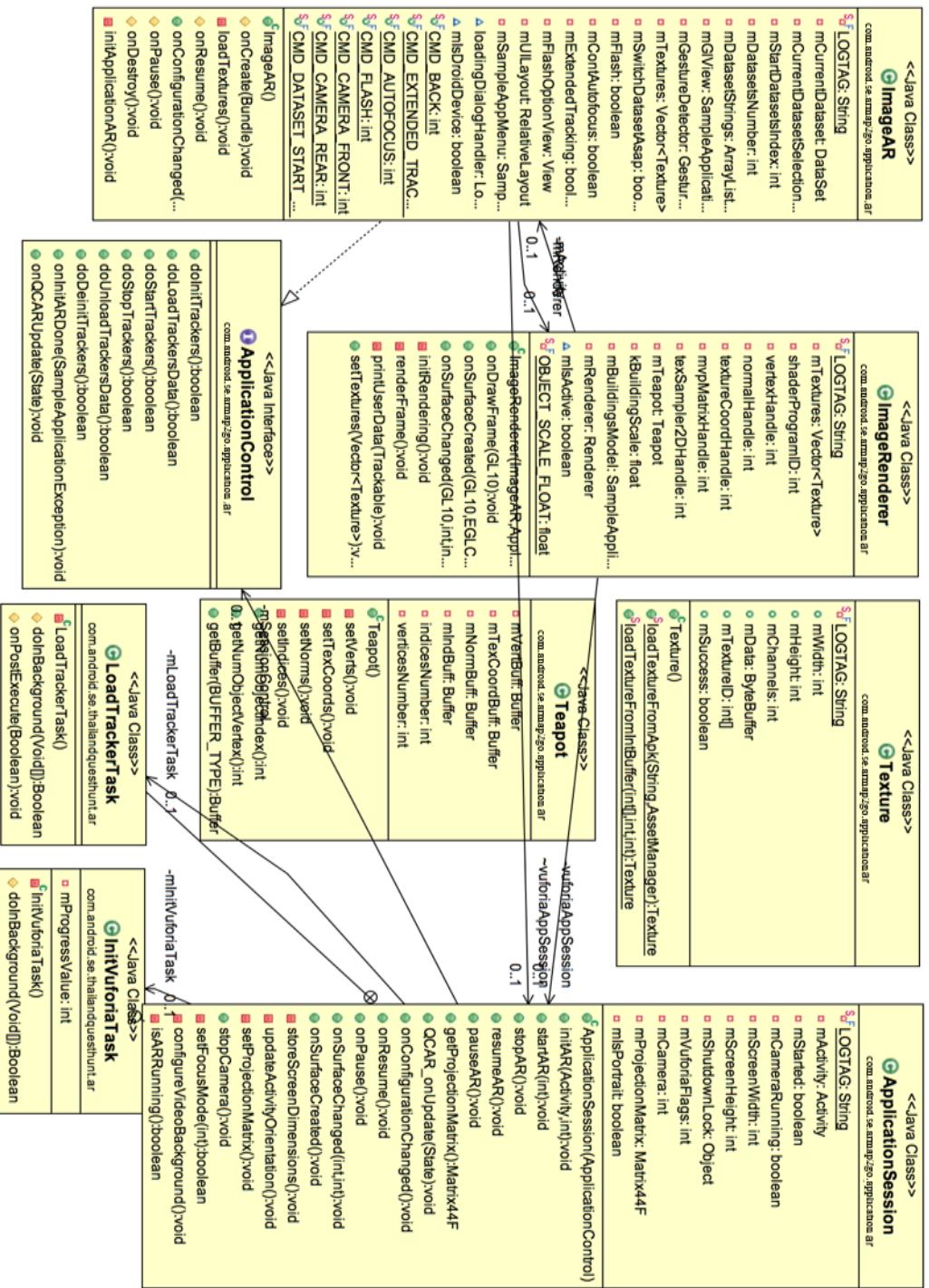
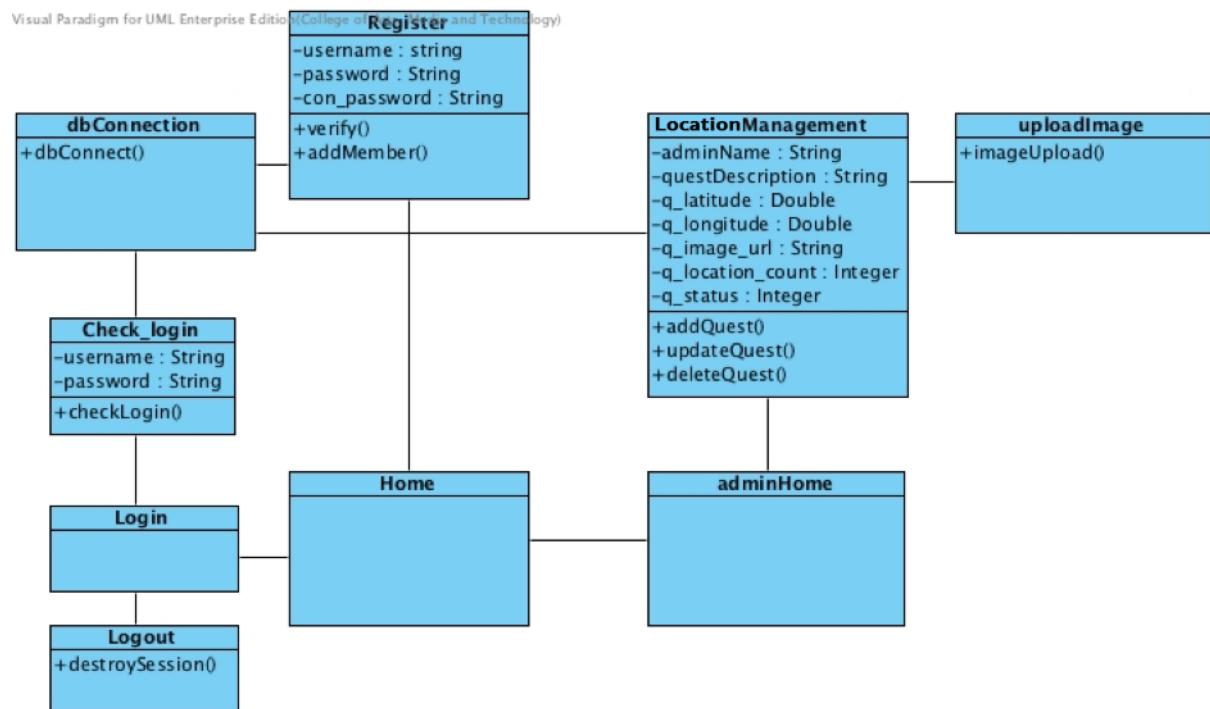


Figure 3.4: The Overview of Class Diagram

in package: com.android.se.armap2go.ar

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### 3.1.5 Web Application Class Diagram



**Figure 3.5:** The Overview of Web Application Class Diagram

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## 4.1 Class Diagram Description

### 4.1.1 Android Application Class Diagram Description

#### CD-A1 Class Name: UserDBAdapter

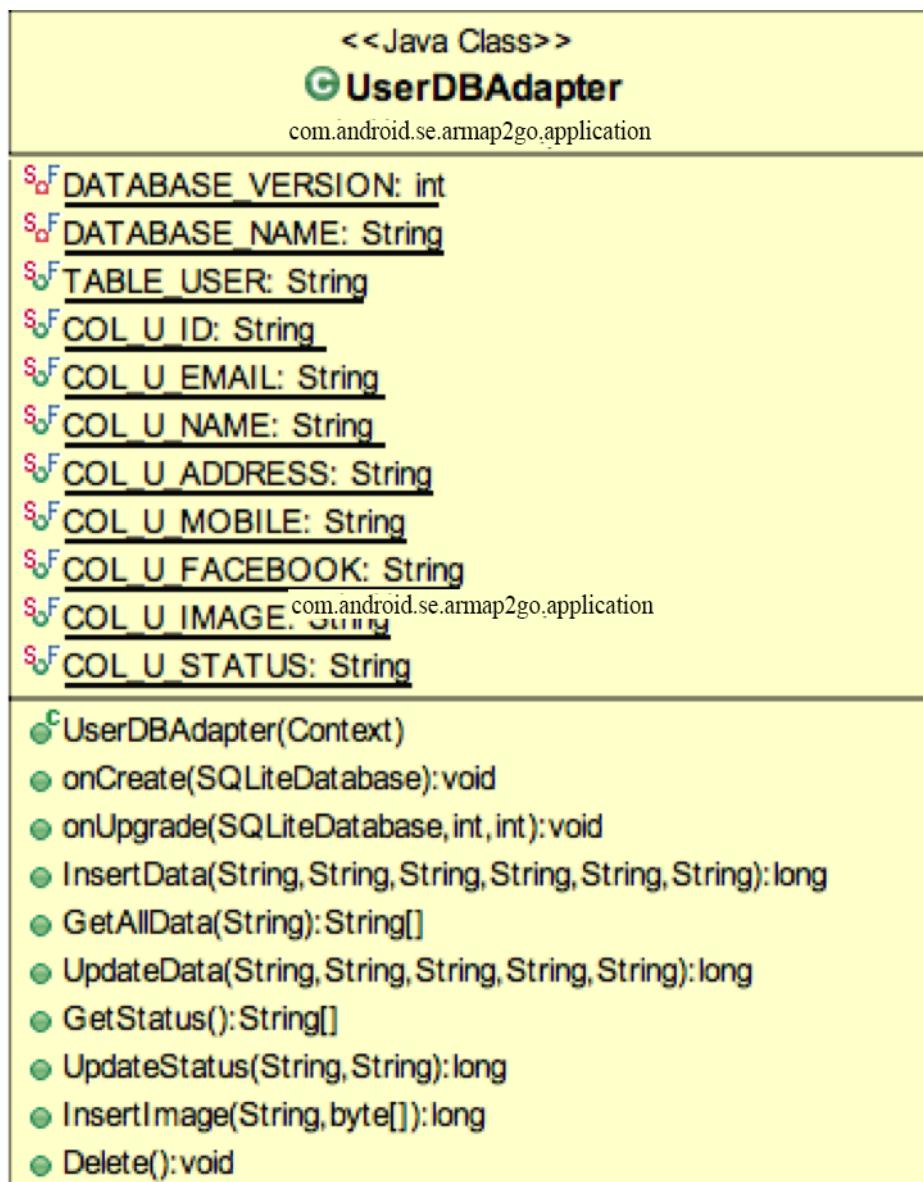


Figure 4.1: CD-A1: UserDBAdapter

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## Entities:

ID	Name	Description	Remarks
1	DATABASE_VERSION	Store the database version	Type: Integer
2	DATABASE_NAME	Store the database name	Type: String
3	TABLE_USER	Store the table name	Type: String
4	COL_U_ID	Store the column user's ID	Type: String
5	COL_U_EMAIL	Store the column user's email	Type: String
6	COL_U_NAME	Store the column username	Type: String
7	COL_U_ADDRESS	Store the column user's address	Type: String
8	COL_U_MOBILE	Store the column user's mobile number	Type: String
9	COL_U_FACEBOOK	Store the column user's Facebook account	Type: String
10	COL_U_IMAGE	Store the column user's image	Type: String
11	COL_U_STATUS	Store the column user's status	Type: String

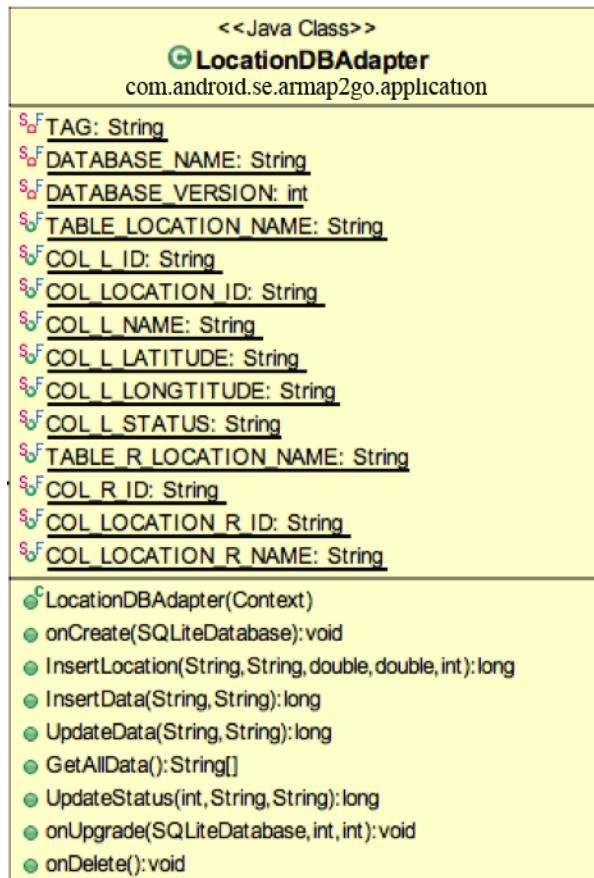
## Methods:

ID	Name	Description	Remarks
1	UserDBAdapter(Context)	Constructor of the UserDBAdapter Class	-
2	onCreate(SQLiteDatabase)	Create the table of UserDBAdapter class	-
3	onUpgrade(SQLiteDatabase, int, int)	Upgrade the information of UserDBAdapter class	-

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4	InsertData(String, String, String, String, String)	Insert user information into database table	Return Type: Long
5	GetAllData(String, String, String, String, String)	Get all of element on database table	Return Type: String []
6	UpdateData(String, String, String, String, String)	Update the data on database	Return Type: Long
7	GetStatus()	Get the user status from the database	Return Type: String []
8	UpdateStatus()	Update the user status into the database	Return Type: Long
9	InsertImage(String, byte [])	Insert user image into database	Return Type: Long
10	Delete()	Delete the user information from database	Return Type: -

## CD-A2 Class Name: LocationDBAdapter



**Figure 4.2:** CD-A2: LocationDBAdapter

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## Entities:

ID	Name	Description	Remarks
1	TAG	Store the tag of LocationDBAdapter class	Type: String
2	DATABASE_NAME	Store the database name	Type: String
3	DATABASE_VERSION	Store the database version	Type: Integer
4	TABLE_LOCATION_NAME	Store table of location's name	Type: String
5	COL_L_ID	Store the location ID	Type: String
6	COL_L_LOCATION	Store the description of location	Type: String
7	COL_L_STATUS	Store the location's status	Type: String
8	COL_L_LATITUDE	Store the location's latitude	Type: String
9	COL_L_LONGITUDE	Store the location's longitude	Type: String
10	TABLE_R_LOCATION_NAME	Store the location register's table name	Type: String
11	COL_LOCATION_R_ID	Store the location register's ID	Type: String
12	COL_LOCATION_R_NAME	Store the location register's name	Type: String

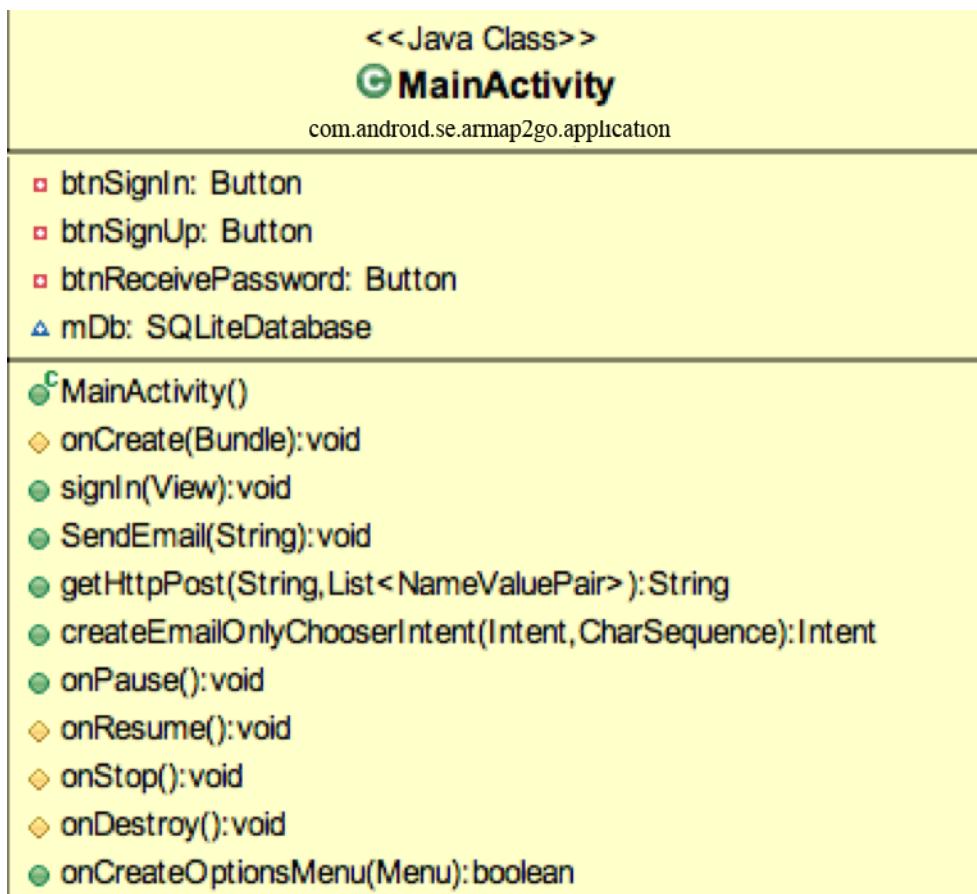
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## Methods:

ID	Name	Description	Remarks
1	LocationDBAdapter(Context)	Create the constructor of the LocationDBAdapter class	-
2	onCreate(SQLiteDatabase)	Create the table of LocationDBAdapter class	-
3	InsertLocation(String, String, double, double, int)	Insert location information into database	Return Type: Long
4	GetAllData()	Get all of element on database table	Return Type: String []
5	UpdateData(String, String, String, String, String)	Update the data on database	Return Type: Long
6	UpdateStatus(int, String, String)	Update the location status from the database	Return Type: String []
7	onUpgrade(SQLiteDatabase, int, int)	Upgrade the information of LocationDBAdapter class	-
8	onDelete()	Delete the data on database table	-

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## CD-A3 Class Name: MainActivity



**Figure 4.3:** CD-A3: MainActivity

### Entities:

ID	Name	Description	Remarks
1	btnSignIn	Button declaration	Type: Button
2	btnSignUp	Button declaration	Type: Button
3	btnReceivePassword	Button declaration	Type: Button
4	mDB	Calling to use SQLite Database	Type: SQLiteDatabase

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## Methods:

ID	Name	Description	Remarks
1	MainActivity()	Create the constructor of the MainActivity class	-
2	onCreate(Bundle)	Create the constructor and assign the default value of the MainActivity class	-
3	signIn(View)	Navigate the user to Sign In view	-
4	SendEmail(String)	Navigate the user to input the user's email to receive the password	-
5	getHttpPost(String, List<NameValuePair>)	Use getHttpPost to sending the list of data to the server	Return Type: String
6	createEmailOnlyChooserIntent(Intent, CharSequence)	Sending an Email for receive the password if the user forgot	Return Type: Intent
7	onPause()	Pause the process	-
8	onResume()	Resume the process	-
9	onStop()	Stop the process	-
10	onDestroy()	Destroy the process	-
11	onCreateOptionsMenu(Menu)	Create Option Menu for Android	Return Type: Boolean

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## CD-A4 Class Name: HomeActivity

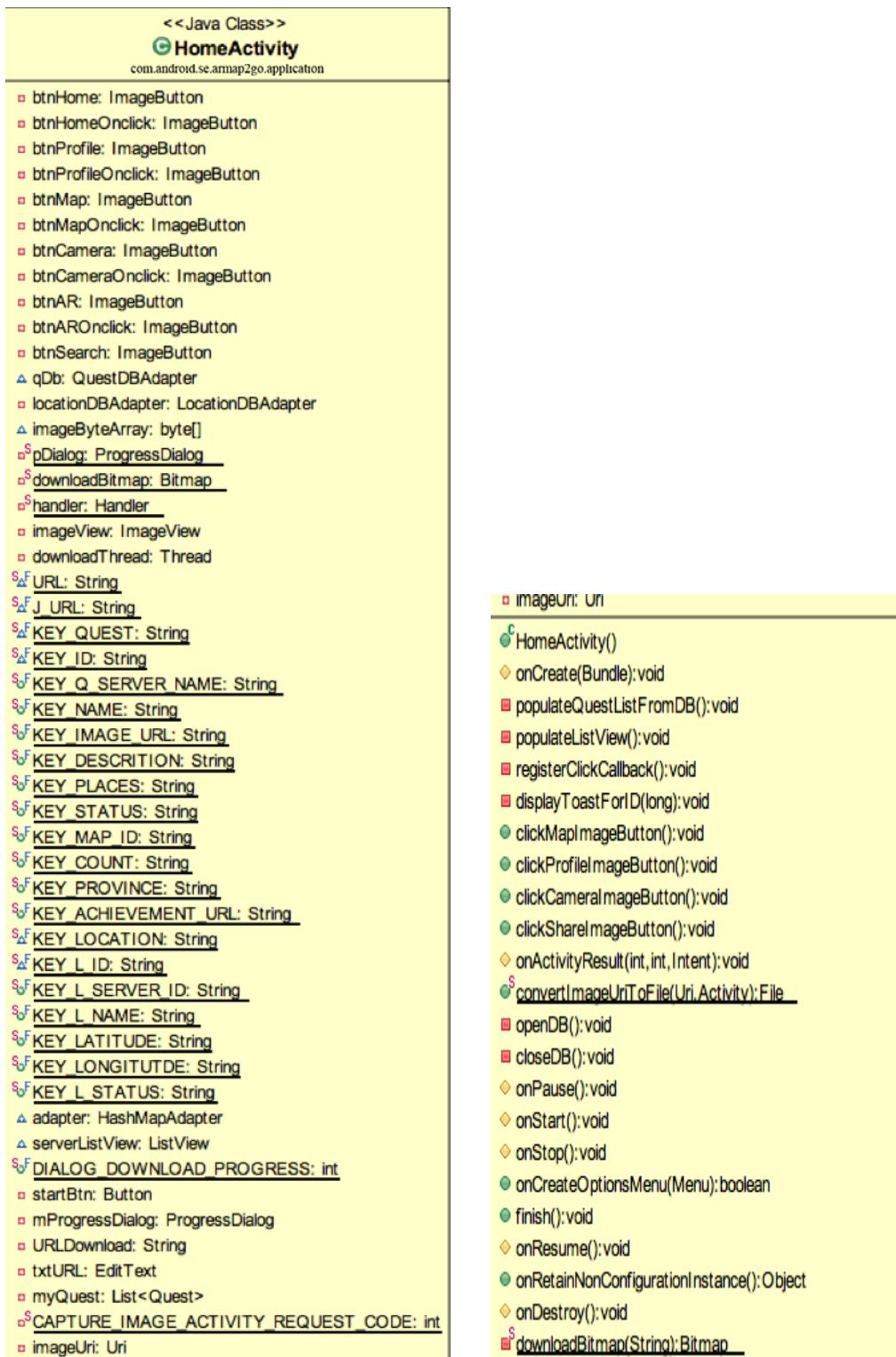


Figure 4.4: CD-A4: HomeActivity

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## Entities:

I D	Name	Description	Remarks
1	btnHome	Button declaration	Type: Button
2	btnHomeOnclick	Button declaration	Type: Button
3	btnProfile	Button declaration	Type: Button
4	btnProfileOnclick	Button declaration	Type: Button
5	btnMap	Button declaration	Type: Button
6	btnMapOnclick	Button declaration	Type: Button
7	btnCamera	Button declaration	Type: Button
8	btnCameraOnclick	Button declaration	Type: Button
9	btnAR	Button declaration	Type: Button
10	btnAROnclick	Button declaration	Type: Button
11	btnSearch	Button declaration	Type: Button
12	qDb	Initial value for qDb database object	Type: SQLiteDatabase
13	locationDBAdapter	Create object of LocationDBAdapter class	Type: LocationDBAdapter Class
14	imageByteArray	Initial value for imageArray object	Type: Byte []
15	pDialog	Initial value for pDialog process object	Type: ProcessDialog
16	downloadBitmap	Initial value for downloadBitmap object	Type: Bitmap
17	handler	Initial value for handler object	Type: Handler
18	imageView	Initial value for imageView object	Type: View
19	downloadThread	Initial value for downloadThread object	Type: Thread
20	URL	Initial value for URL to getting the value from database	Type: String
21	J_URL	Initial value for J_URL for getting the information from XML	Type: String
22	KEY_QUEST	Initial value for KEY_QUEST to getting the value from database	Type: String
23	KEY_ID	Initial value for KEY_ID to getting the value from database	Type: String
24	KEY_Q_SERVER_NAME	Initial value for KEY_Q_SERVER_NAME to getting the value from database	Type: String
25	KEY_NAME	Initial value for KEY_NAME to getting the value from database	Type: String
26	KEY_IMAGE_URL	Initial value for KEY_IMAGE_URL	Type: String

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		to getting the value from database	
27	KEY_DESCRIPTION	Initial value for KEY_DESCRIPTION to getting the value from database	Type: String
28	KEY_PLACES	Initial value for KEY_PLACES to getting the value from database	Type: String
29	KEY_STATUS	Initial value for KEY_STATUS to getting the value from database	Type: String
30	KEY_MAP_ID	Initial value for KEY_MAP_ID to getting the value from database	Type: String
31	KEY_COUNT	Initial value for KEY_COUNT to getting the value from database	Type: String
32	KEY_PROVINCE	Initial value for KEY_PROVINCE to getting the value from database	Type: String
33	KEY_ACHIEVEMENT_URL	Initial value for KEY_ACHIEVEMENT_URL database	Type: String
34	KEY_LOCATION	Initial value for KEY_LOCATION to getting the value from database	Type: String
35	KEY_L_ID	Initial value for KEY_L_ID for getting the information from XML	Type: String
36	KEY_L_SERVER_ID	Initial value for KEY_L_SERVER_ID for getting the information from XML	Type: String
37	KEY_L_NAME	Initial value for KEY_L_NAME for getting the information from XML	Type: String
38	KEY_LATITUDE	Initial value for KEY_LATITUDE for getting the information from XML	Type: String
39	KEY_LONGITUDE	Initial value for KEY_LONGITUDE for getting the information from XML	Type: String
40	KEY_L_STATUS	Initial value for KEY_L_STATUS for getting the information from XML	Type: String
41	adapter	Initial value for Hash Map object	Type: HashMap
42	serverListView	Initial value for ListView	Type: ListView
43	DIALOG_DOWNLOAD_PROGRES	Initial value for progress dialog	Type: ProgressDialog
44	startBtn	Button declaration	Type: Button
45	mProgressDialog	Initial value for progress dialog	Type: ProgressDialog
46	URLDownload	Initial value for URLDownload	Type: String
47	txtURL	Initial value for txtURL EditText	Type: EditText
48	CAPTURE_IMAGE_ACTIVITY_RE QUEST_CODE	Initial value for CAPTURE_IMAGE_ACTIVITY_RE QUEST_CODE value	Type: Integer

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49	imageUri	Initial value for Uri object	Type: Uri
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## Methods:

ID	Name	Description	Remarks
1	HomeActivity()	Create the constructor of the HomeActivity class	-
2	onCreate(Bundle)	Create the constructor and assign the default value of the HomeActivity class	-
3	populateQuestListFromDB()	Query the data from the database	-
4	populateListView(String)	Populate the data to showing in ListView	-
5	registerClickCallback()	Prepare the data when the user click to select the information on lists	-
6	displayToastForID(long)	Show all of information of selected item	-
7	clickMapImageButton()	Navigate the user to MapActivity page	-
8	clickProfileImageButton()	Navigate the user to ProfileActivity page	-
9	clickCameraImageButton()	Navigate the user to CameraActivity page	-
10	clickShareImageButton()	Navigate the user to ShareActivity page	-
11	onActivityResult(int, int, Intent)	Call intent to show to execute result to the user	-
12	convertImageUriToFile(Uri,Activity)	Convert image Uri to file (jpeg)	Return Type: File
13	openDB()	Open the database connection	-
14	closeDB()	Destroy the database connection	-
15	onPause()	Pause the process	-
16	onStart()	Start the process	-
17	onResume()	Resume the process	-

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18	onStop()	Stop the process	-
19	onDestroy()	Destroy the process	-
20	downloadBitmap(String)	Download Bitmap from server	Return Type: Bitmap

## CD-A5 Class Name: SplashScreenActivity

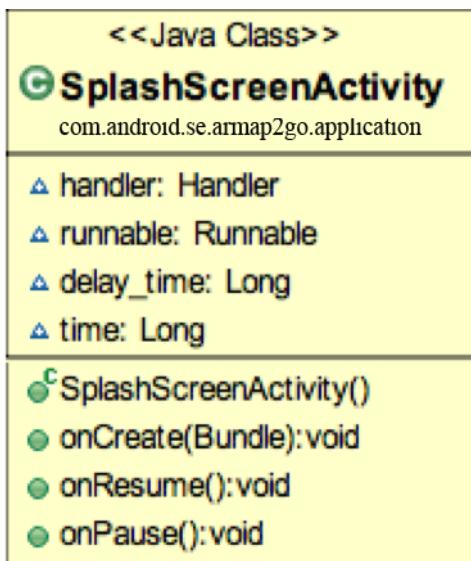


Figure 4.5: CD-A5: SplashScreenActivity

## Entities:

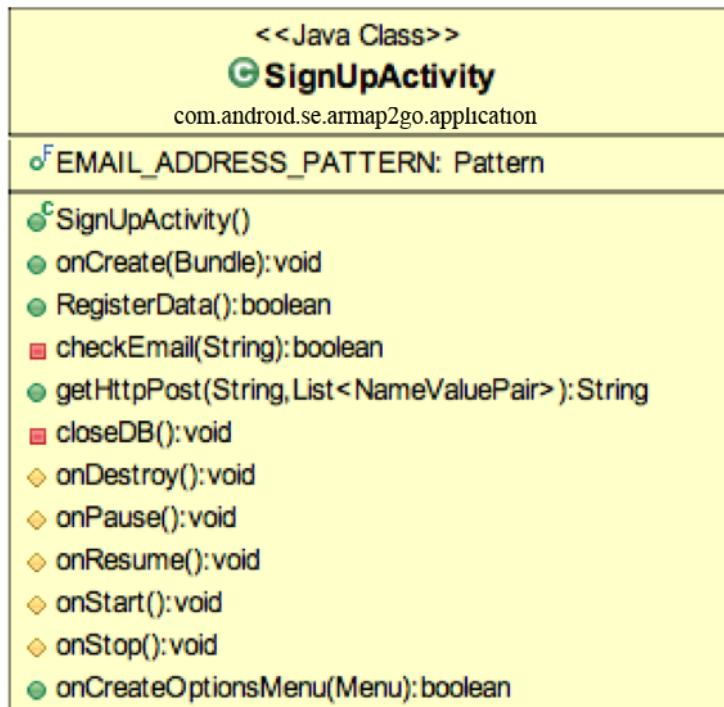
ID	Name	Description	Remarks
1	handler	Initial handler object	Type: Handler
2	runnable	Initial runnable object	Type: Runnable
3	Delay_time	Initial Delay_time	Type: Long
4	time	Initial time	Type: Long

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## Methods:

ID	Name	Description	Remarks
1	SplashScreenActivity()	Create the constructor of the SplashScreenActivity class	-
2	onCreate(Bundle)	Create the constructor and assign the default value of the SplashScreenActivity class	-
7	onPause()	Pause the process	-
8	onResume()	Resume the process	-

## CD-A6 Class Name: SignUpActivity



**Figure 4.6:** CD-A6: SignUpActivity

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## Entities:

ID	Name	Description	Remarks
1	EMAIL_ADDRESS_PATTERN	Pattern declaration to verify the Email Address format	Type: Pattern

## Methods:

ID	Name	Description	Remarks
1	SignUpActivity()	Create the constructor of the MainActivity class	-
2	onCreate(Bundle)	Create the constructor and assign the default value of the MainActivity class	-
3	RegisterData(View)	Navigate the user to Sign Up view to input the user information for registration	Return Type: Boolean
4	checkEmail(String)	Verify the Email address format are correct or not	Return Type: Boolean
5	getHttpPost(String, List<NameValuePair>)	Use getHttpPost to sending the list of data to the server	Return Type: String
6	closeDB()	Close database connection	-
7	onPause()	Pause the process	-
8	onResume()	Resume the process	-
9	onStop()	Stop the process	-
10	onDestroy()	Destroy the process	-
11	onCreateOptionsMenu(Menu)	Create Option Menu for Android	Return Type: Boolean

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## CD-A7 Class Name: Location

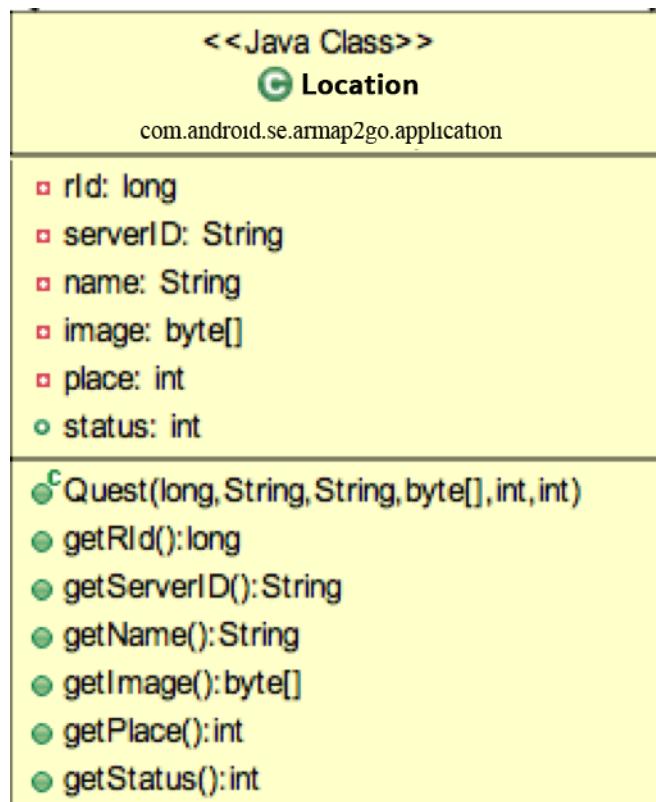


Figure 4.7: CD-A7: Location

### Entities:

ID	Name	Description	Remarks
1	rId	Initial location register ID	Type: Long
2	serverID	Initial server ID	Type: String
3	name	Initial location's name	Type: String
4	image	Initial location's image	Type: Byte []
5	place	Initial location's place count	Type: Integer
6	status	Initial location's status	Type: Integer

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## Methods:

ID	Name	Description	Remarks
1	Quest(long, String, String, byte [], int, int)	Create the constructor of the Location class	-
2	getRID()	Create the method to get location register ID data	Return Type: Long
3	getServerID()	Create the method to get location server ID data from server	Return Type: String
4	getName()	Create the method to get location's name data	Return Type: String
5	getImage()	Create the method to get location's image	Return Type: Byte []
6	getPlace()	Create the method to get location's place count	Return Type: Integer
7	getStatus()	Create the method to get location's status	Return Type: Integer

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## CD-A8 Class Name: ProfileActivity



**Figure 4.8:** CD-A8: ProfileActivity

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## Entities:

ID	Name	Description	Remarks
1	btnHome	Button declaration	Type: Button
2	btnHomeOnclick	Button declaration	Type: Button
3	btnProfile	Button declaration	Type: Button
4	btnProfileOnclick	Button declaration	Type: Button
5	btnMap	Button declaration	Type: Button
6	btnMapOnclick	Button declaration	Type: Button
7	btnCamera	Button declaration	Type: Button
8	btnCameraOnclick	Button declaration	Type: Button
9	btnShare	Button declaration	Type: Button
10	btnShareOnclick	Button declaration	Type: Button
11	btnViewProfile	Button declaration	Type: Button
12	btnEditProfile	Button declaration	Type: Button
13	btnDatabaseManagement	Button declaration	Type: Button
14	lDb	Create LocationDBAdapter class object in this class	Type: LocationDBAdapter
15	mDb	Create SQLite database object in this class	Type: SQLite Database
16	mHelper	Create UserDBAdapter class object in this class	Type: UserDBAdapter
17	profilePicture	Reference ImageView	Type: ImageView
18	textUserEmail	Reference EditText type	Type: TextView
19	SELECT_PHOTO	Initial value for SELECT_PHOTO	Type: Integer
20	yourSelectedImage	Initial value for yourSelectedImage bitmap object to store the user chosen image	Type: Bitmap
21	imageByteArray	Initial value for imageByteArray to streaming process	Type: Byte []
22	blob	Initial value for blob	Type: Byte []
23	myLocation	Initial list value for Location class object	Type: List<Location>

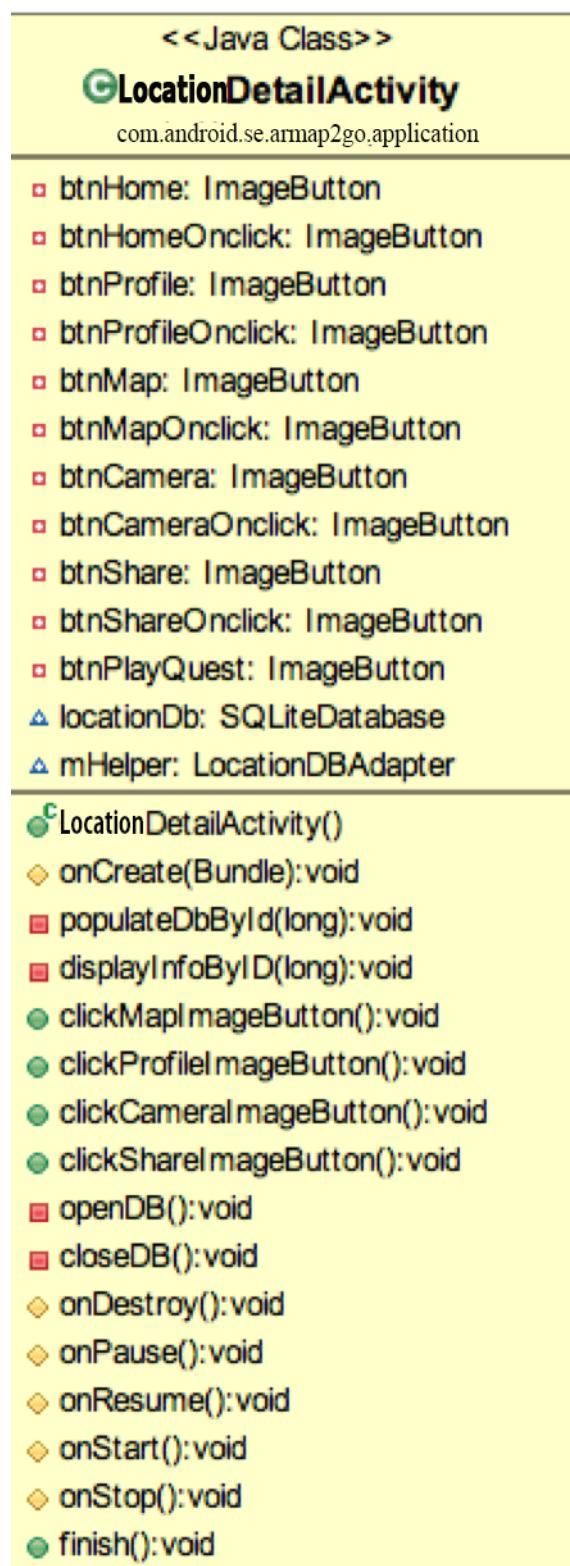
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## Methods:

ID	Name	Description	Remarks
1	ProfileActivity()	Create the constructor of the ProfileActivity class	-
2	onCreate(Bundle)	Create the constructor and assign the default value of the ProfileActivity class	-
3	populateLocationListFromDB()	Query the data from the database	-
4	populateListView()	Populate the data to showing in ListView	-
5	getUserImage(String)	Get the user image URL (physical dress) to get the user image and store in the database	-
6	clickHomeButton()	Navigate the user to HomeActivity page	-
7	clickMapImageButton()	Navigate the user to MapActivity page	-
8	clickCameraImageButton()	Navigate the user to CameraActivity page	-
9	clickShareImageButton()	Navigate the user to ShareActivity page	-
10	onActivityResult(int, int, Intent)	Call intent to show to execute result to the user	-
11	openDB()	Open the database connection	-
12	onPause()	Pause the process	-
13	onStart()	Start the process	-
14	onResume()	Resume the process	-
15	onStop()	Stop the process	-
16	onDestroy()	Destroy the process	-

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## CD-A9 Class Name: LocationDetailActivity



**Figure 4.9:** CD-A9: LocationDetailActivity

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## Entities:

ID	Name	Description	Remarks
1	btnHome	Button declaration	Type: Button
2	btnHomeOnclick	Button declaration	Type: Button
3	btnProfile	Button declaration	Type: Button
4	btnProfileOnclick	Button declaration	Type: Button
5	btnMap	Button declaration	Type: Button
6	btnMapOnclick	Button declaration	Type: Button
7	btnCamera	Button declaration	Type: Button
8	btnCameraOnclick	Button declaration	Type: Button
9	btnShare	Button declaration	Type: Button
10	btnShareOnclick	Button declaration	Type: Button
11	btnPlayQuest	Button declaration	Type: Button
12	btnEditProfile	Button declaration	Type: Button
13	btnDatabaseManagement	Button declaration	Type: Button
14	locationDb	Create SQLite database object in this class	Type: SQLite Database
15	mHelper	Create UserDBAdapter object in this class	Type: UserDBAdapter
16	profilePicture	Reference ImageView	Type: ImageView

## Methods:

ID	Name	Description	Remarks
1	LocationDetailActivity()	Create the constructor of the LocationDetailActivity class	-
2	onCreate(Bundle)	Create the constructor and assign the default value of the LocationDetailActivity class	-
3	populateDBById(long)	Query the data from the database by using location ID	-
4	displayInfoByID ()	Display all of information about quest by location ID	-

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6	clickProfileButton()	Navigate the user to ProfileActivity page	-
7	clickMapImageButton()	Navigate the user to MapActivity page	-
8	clickCameraImageButton()	Navigate the user to CameraActivity page	-
9	clickShareImageButton()	Navigate the user to ShareActivity page	-
10	openDB()	Open the database connection	-
11	onPause()	Pause the process	-
12	onStart()	Start the process	-
13	onResume()	Resume the process	-
14	onStop()	Stop the process	-
15	onDestroy()	Destroy the process	-
16	closeDB()	Close the database connection	
17	Finish()	Implement the finish() method to openDB() before resume to prevent system crash	

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## CD-A10 Class Name: EditProfileActivity



**Figure 4.10:** CD-A10: EditProfileActivity

### Entities:

ID	Name	Description	Remarks
1	qDb	Calling QuestDBAdapter into this class	Type: QuestDBAdapter class
2	btnEditProfileSubmit	Button declaration	Type: Button
3	btnDeleteAccount	Button declaration	Type: Button
4	Name	Initial Value for EditText	Type: EditText

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5	Address	Initial Value for EditText	Type: EditText
6	Mobile	Initial Value for EditText	Type: EditText
7	Facebook	Initial Value for EditText	Type: EditText

## Methods:

ID	Name	Description	Remarks
1	EditProfileActivity()	Create the constructor of the EditProfileActivity class	-
2	onCreate(Bundle)	Create the constructor and assign the default value of the EditProfileActivity class	-
3	populateListViewFromDB()	Populate information from database and show in ListView to the user	-
4	openDB()	Open database connection	-
5	closeDB()	Close database connection	-
6	onPause()	Pause the process	-
7	onStart()	Start the process	-
8	onResume()	Resume the process	-
9	onStop()	Stop the process	-
10	onDestroy()	Destroy the process	-

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## CD-A11 Class Name: Location

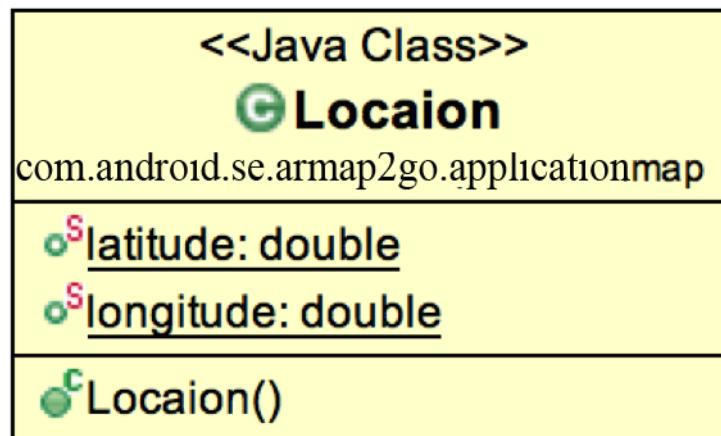


Figure 4.11: CD-A11: DirectionsJSONParser

### Entities:

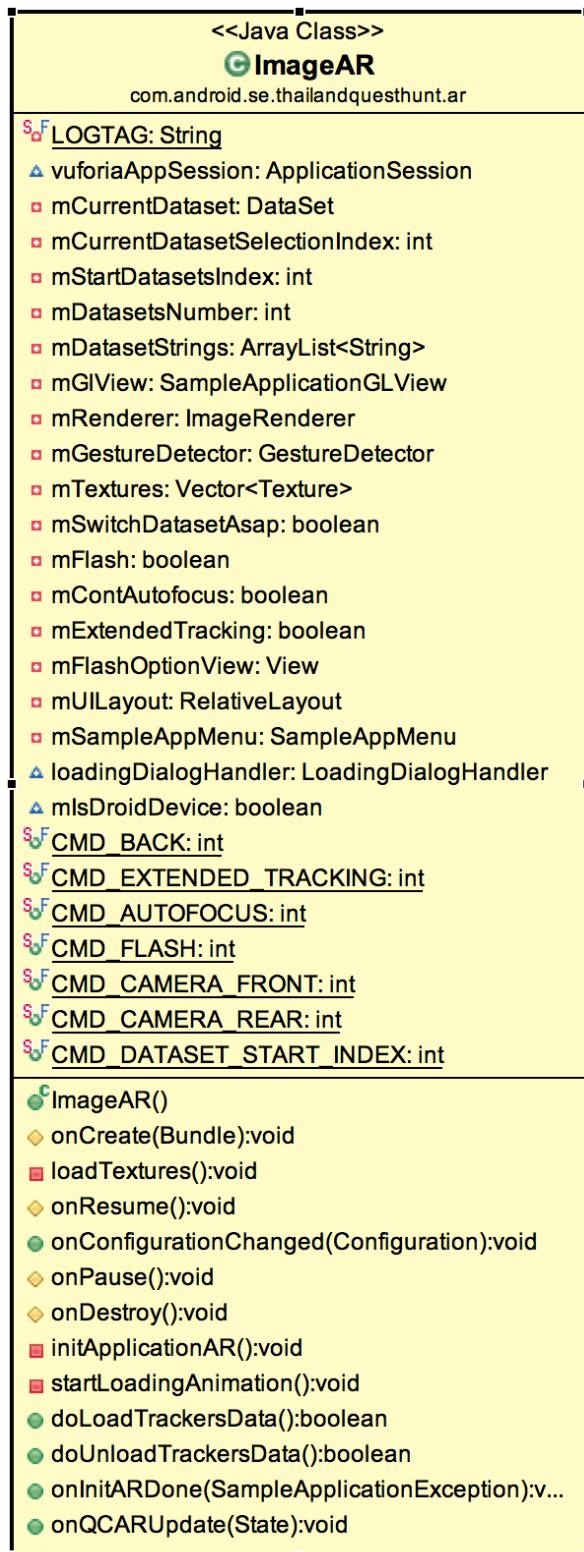
ID	Name	Description	Remarks
1	latitude	Variable used to store value of latitude	Type: Double
2	longitude	Variable used to store value of longitude	Type: Double

### Methods:

ID	Name	Description	Remarks
1	Location()	Create the constructor of the Location class	-

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## CD-A12 Class Name: ImageAR



**Figure 4.12:** CD-A12: ImageAR

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## Entities:

ID	Name	Description	Remarks
1	LOGTAG	Store class log data for show some error after running application	Type: String
2	vuforiaAppSession	Store the database name	Type: Object Class ApplicationSession
3	mCurrentDataset	Store the table name	Type: DataSet
4	mCurrentDatasetSelectionIndex	Store the column user's ID	Type: Integer
5	mStartDatasetsIndex	Store the column user's email	Type: Integer
6	mDatasetsNumber	Store the column username	Type: Integer
7	mDatasetsStrings	Store the column user's address	Type: ArrayList<String>
8	mGIView	Store the column user's mobile number	Type: Object Class: ApplicationGLView
9	mRenderer	Store the column user's Facebook account	Type: Object Class: ImageRenderer
10	mGestureDetector	Store the column user's image	Type: Object Class : GestureDetector
11	mSwitchDatasetAsap		Type: boolean
12	mFlash		Type: boolean
13	mContAutofocus		Type: boolean
14	mExtendedTracking		Type: boolean
15	mFlashOptionView		Type: View
16	mUILayout		Type: RelativeLayout
17	loadingDialogHandler		Type: Object Class loadingDialogHandler
18	mIsDroidDevice		Type: boolean
19	CMD_BACK		Type: Integer
20	CMD_EXTENDED_TRACKING		Type: Integer
21	CMD_AUTOFOCUS		Type: Integer
22	CMD_FLASH		Type: Integer
23	CMD_CAMERA_FRONT		Type: Integer
24	CMD_CAMERA_REAR		Type: Integer
25	CMD_DATASET_START_INDEX		Type: Integer

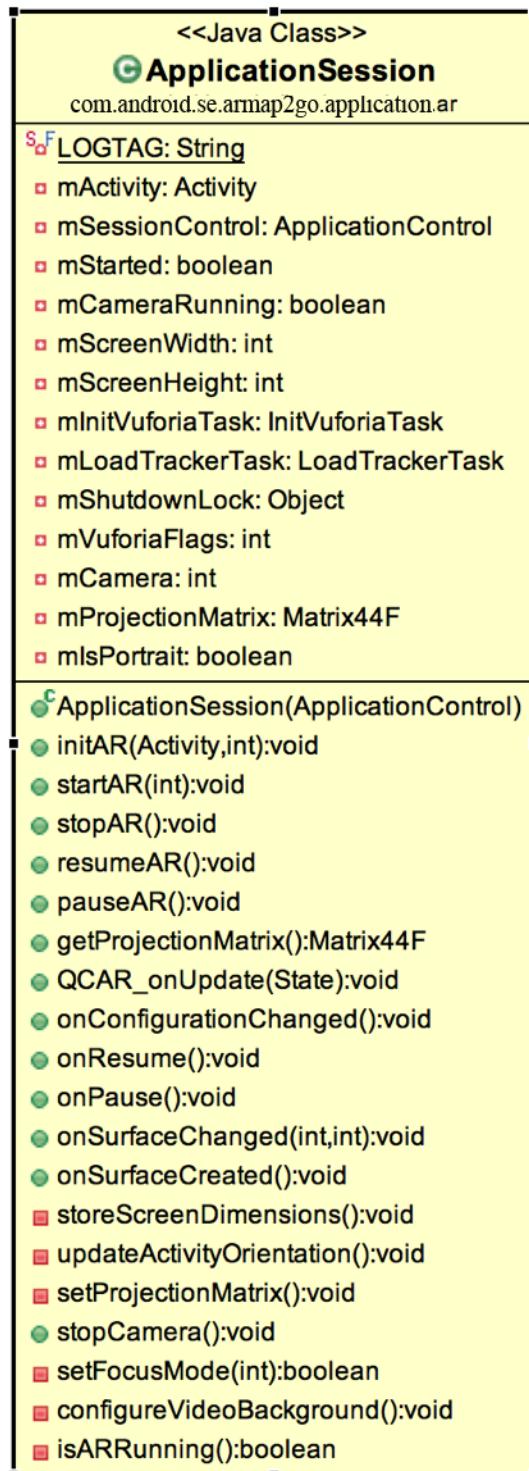
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## Methods:

ID	Name	Description	Remarks
1	ImageAR()	Constructor of the ImageAR Class	-
2	onCreate(Bundle)	Create the main method and initializing of this class	-
3	loadTextures()	Call method for loading texture information	-
4	onResume()	Method for resume to the application	-
5	onConfigurationChanged(Configuration)	Method for listener the action and target data, position change from the user	-
6	onPause()	Method for onPause activity	-
7	onDestroy()	Method for destroy activity and session	-
8	initApplicationAR()	Initial data and value for AR when running the calling from main	-
9	startLoadingAnimation()	Method for loading animation to handle the object while the user have some movement	-
10	doLoadTrackersData()	Method works with startLoadingAnimation() for tracking the user movement	Return Type: Boolean
11	doUnLoadTrackersData()	Method works with startLoadingAnimation() for cancel tracking the user movement	Return Type: Boolean
12	doInitARDone()	Method to reset dataset on AR activity	-
13	onQCARUpdate()	Method to work with the project library (QCAR.Jar)	-

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## CD-13 Class Name: ApplicationSession



**Figure 4.13:** CD-A13: ApplicationSession

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## Entities:

ID	Name	Description	Remarks
1	LOGTAG	Store class log data for show some error after running application	Type: String
2	mActivity	Start this activity	Type: Activity
3	mSessionControl	Initial default value for class object	Type: Object Class mSessionControl
4	mStarted	Create attribute to check the activity already start	Type: Boolean
5	mCameraRunning	Create attribute to check the camera movement	Type: Boolean
6	mScreenWidth	Create attribute to store screen width value	Type: Integer
7	mScreenHight	Create attribute to store screen hight value	Type: ArrayList<String>
8	mInitVuforiaTask	Initial Vuforia Engine data	Type: Object Class: mInitVuforiaTask
9	mLoadTrackerTask	Initial mLoadTrackerTask value	Type: Object
10	mShutdownLock	Initial mShutdownLock value	Type: Object
11	mVuforiaFlags	Initial datatype value of mVuforiaFlags (Long )	Type: Integer
12	mCamera	Initial datatype value of camera	Type: Integer
13	mProjectionMatrix	Initial datatype value of matrix object	Type: Matrix Object
14	mIsPortrait	Initial datatype value to check the screen position	Type: Boolean

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## Methods:

ID	Name	Description	Remarks
1	ApplicationSeesion(ApplicationControl)	Constructor of the ApplicationSeesion Class	Return Type: Class Object
2	initAR(Activity, int)	Create method to initial AR dataset and value from outside request from other class	-
3	startAR(int)	Method to check AR already start or not	-
4	stopAR()	Method for stop AR activity	-
5	resumeAR()	Method for resume AR activity	-
6	pauseAR()	Method for pause AR activity	-
7	onDestroy()	Method for destroy AR activity and session	-
8	getProjectionMatrix()	Method to getting Matrix data for rendering the object model	Return Type: Object Matrix
9	QCAR_onUpdate(state)	Method for checking the status of project AR Engine	-
10	onConfigurationChanged(Configuration)	Method for listener the action and target data, position change from the user	-
11	onResume()	Method for resume to the application	Return Type: Boolean
12	onPause()	Method for pause the application activity	-
13	onSurfaceChanged(int, int)	Method for listener the camera surface are change or not	Return Type: Boolean
14	onSurfaceCreated()	Method for create the camera surface initial data and value	-

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15	stopScreenDimensions()	Method to stop detecting the surface dimension	-
16	updateActivityOrientation()	Method to update Activity Orientation value	-
17	setProjectionMatrix()	Method for setting ProjectionMatrix value	-
18	stopCamera()	Method for stop camera activity	-
19	setFocusMode	Method for setting FocusMode	Return Type: Boolean
20	configureVideoBackground()	Method for setting configureVideoBackground value	-
21	isARRunning()	Method for checking the AR activity are already runung	Return Type: Boolean

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## CD-A14 Class Name: ImageRenderer

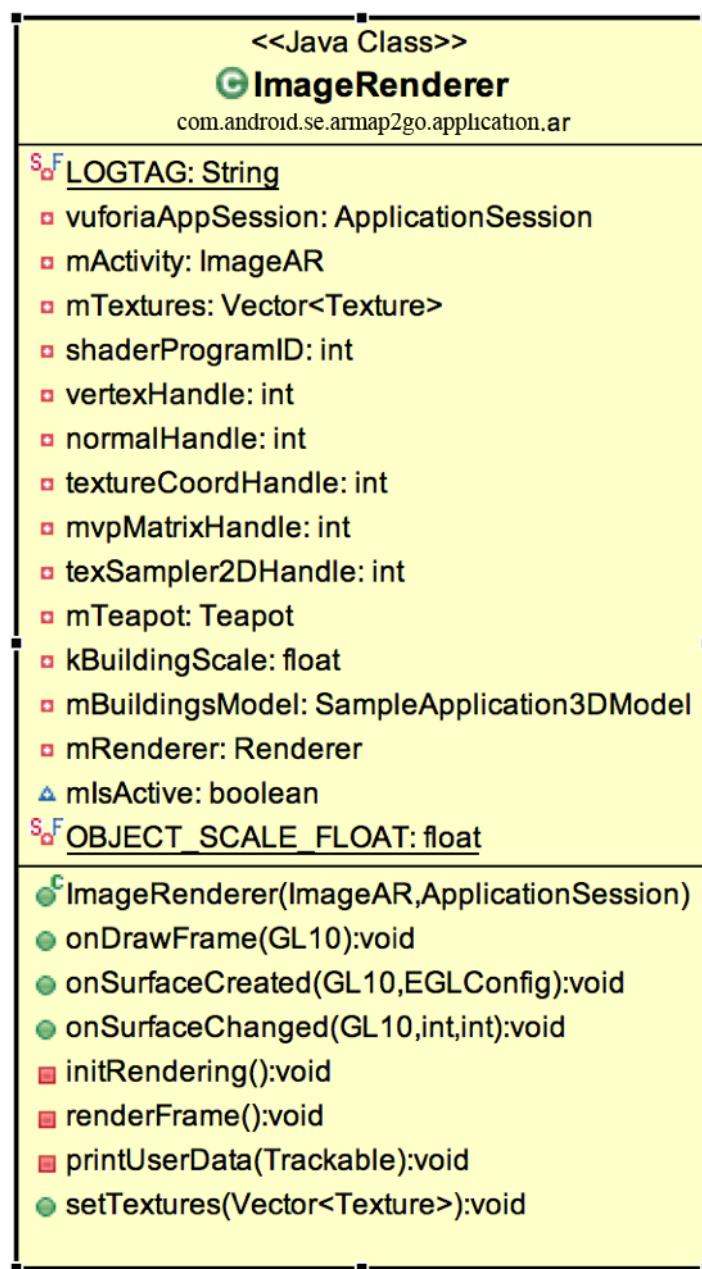


Figure 4.14: CD-A14: ImageRenderer

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## Entities:

ID	Name	Description	Remarks
1	LOGTAG	Store class log data for show some error after running application	Type: String
2	vuforiaAppSession	Create Class vuforia object	Type: Class Object
3	mActivity	Initial default value of mActivity	Type: Object Class ImageAR
4	mTextures	Initial default value of textureCoorHandle	Type: Vector<Texture>
5	shaderProgramID	Initial default value of shaderProgramID	Type: Integer
6	vertexHandle	Initial default value of vertexHandle	Type: Integer
7	normalHandle	Initial default value of normalHandle	Type: Integer
8	textureCoorHandle	Initial default value of textureCoorHandle	Type: Integer
9	mvpMatrixHandle	Initial default value of mvpMatrixHandle	Type: Integer
10	texSampler2DHandle	Initial value of texSampler2DHandle to handle about 2D image	Type: Integer
11	mTeapot	Initial value of mTeapot object model	Type: Class Object
12	kBuildingScale	Initial value of kBuildingScale	Type: Float
13	mBuildingsModel	Initial value value of matrix object	Type: Class Object
14	mRenderer	Initial value of mRenderer attribute	Type: Class Object
15	mIsActive	Attribute to check this activity is running	Type: Boolean
16	OBJECT_SCALE_FLOAT	Initial the scale value of target object screen position	Type: Float

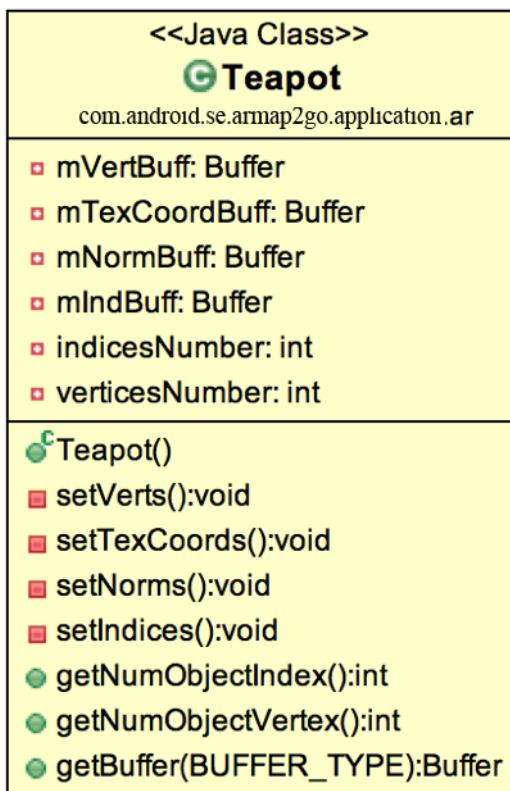
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## Methods:

ID	Name	Description	Remarks
1	ImageRenderer(ImageAR, ApplicationSession)	Constructor of the ImageRenderer Class	-
2	onDrawFramw(GL10)	Create method to calling OpenGL	-
3	onSurfaceCreated(GL 10, EGLConfig)	Method to create and set default value for camera surface view	-
4	onSurfaceChangeed(GL 10, int, int)	Method for tracking surface changing position	-
5	initRendering()	Method for initial render	-
6	renderFrame()	Method for render frame	-
7	printUserData	Method for display object from rendering to user	-
8	setTextures(Vector<Texture>)	Method to setting texture to target object	-

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## CD-A15 Class Name: Teapot



**Figure 4.15:** CD-A15: Teapot

### Entities:

ID	Name	Description	Remarks
1	mVertBuff	Create mVertBuff for buffer stream	Type: Buffer
2	mTextCoordBuff	Create mTextCoordBuff for buffer stream	Type: Buffer
3	mNormBuff	Create mNormBuff for buffer stream	Type: Buffer
4	mIndBuff	Create mIndBuff for buffer stream	Type: Buffer
5	indicesNumber	Initial default value of indicesNumber	Type: Integer
6	verticesNumber	Initial default value of verticesNumber	Type: Integer

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## Methods:

ID	Name	Description	Remarks
1	Teapot	Constructor of the Teapot Class	-
2	setVerts()	Method to set setVerts value	-
3	setTextCoords()	Method to set setTextCoords value	-
4	setNorms()	Method to set setNorms value	-
5	setIndices()	Method to set setIndices value	-
6	getNunObjectIndex()	Method for get getNunObjectIndex value	Return Type: Integer
7	getNumObjectVertex()	Method to get getNumObjectVertex value	Return Type: Integer
8	getBuffer(BUFFER_TYPE)	Method to getting Buffer from target buffer type	Return Type: Buffer

## CD-A16 Class Name: Texture

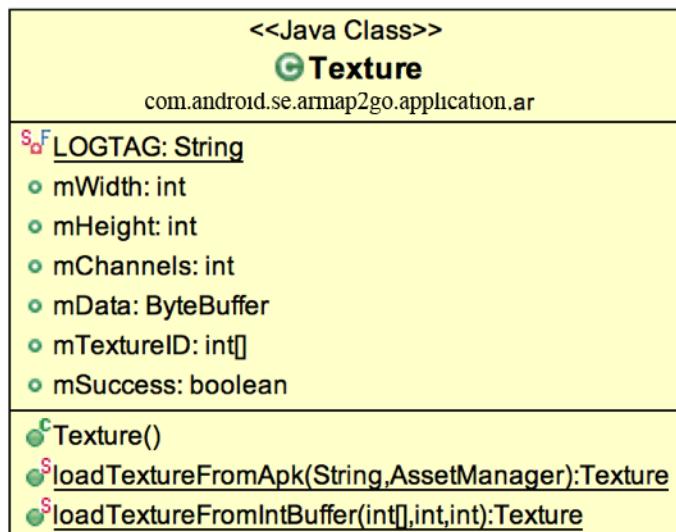


Figure 4.16: CD-A16: Texture

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## Entities:

ID	Name	Description	Remarks
1	LOGTAG	Store class log data for show some error after running application	Type: String
2	mWidth	Create mWidth attribute	Type: Integer
3	mHeight	Create mHeight attribute	Type: Integer
4	mIChannels	Create mIChannels attribute	Type: Integer
5	mData	Create mData attribute	Type: ByteBuffer
6	mTextureID	Create mTextureID attribute	Type: Array [] Integer
6	mSuccess	Create mSuccess attribute	Type: Boolean

## Methods:

ID	Name	Description	Remarks
1	Texture	Constructor of the Texture Class	-
2	loadTextureFromApk(String, AssetManager)	Method load object texture from Application apk file on asset folder	Return Type : Object Class
3	loadTextureFromIntBuffer(int[], int, int)	Method load object texture from Stream Buffer	Return Type : Object Class

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## CD-A17 Class Name: ApplicationControl

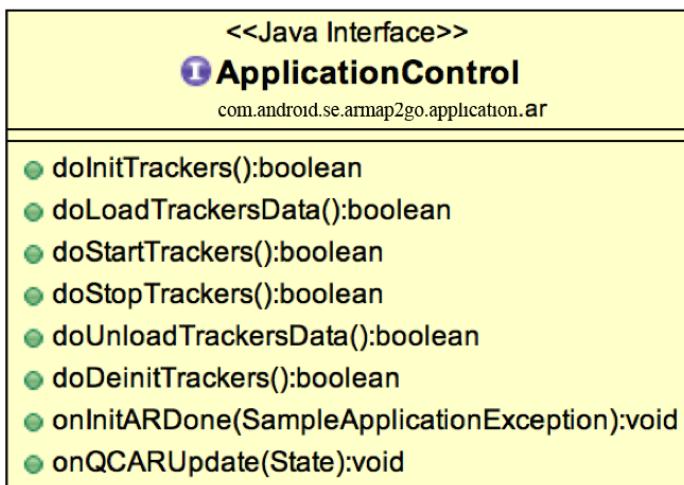


Figure 4.17: CD-A17: ApplicationControl

### Entities:

ID	Name	Description	Remarks
1	-	-	-

### Methods:

ID	Name	Description	Remarks
1	doInitTrackers()	Method to initial Tracker	Return Type: Boolean
2	doLoadTrackers()	Method to load Tracker	Return Type: Boolean
3	doStartTrackers()	Method to start Tracker	Return Type: Boolean
4	doStopTrackers()	Method to stop Tracker	Return Type: Boolean
	doUnloadTrackersData()	Method to unload Tracker data	Return Type: Boolean
	doDeInitTrackers()	Method to delete Tracker	Return Type: Boolean
	onInitARDone	Method to check AR	-

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		Activity is already done	
	onQCARUpdate()	Method to check Camera status	-

## CD-A18 Class Name: InitVuforiaTask

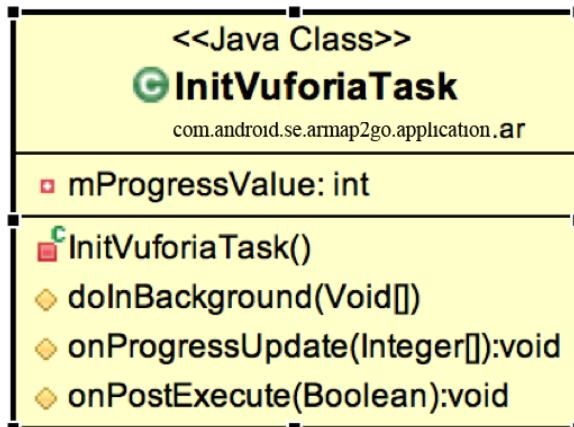


Figure 4.18: CD-A18: InitVuforiaTask

### Entities:

ID	Name	Description	Remarks
1	mProgressValue	Initial mProgressValue default value	Type: Integer

### Methods:

ID	Name	Description	Remarks
1	InitVuforiaTask ()	Constructor Class	-
2	doInBackground(Void[])	Method to running the process in background	-
3	onProgressUpdate(Integer[])	Method to update the progress status	-
4	onPostExecute(Boolean)	Method to execute the progress	-

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#### 4.1.2 Web Application Class Diagram Description

##### CD-W1 Class Name: Register



Figure 4.19: CD-W1: Register

##### Entities:

ID	Name	Description	Remarks
1	username	Store the database version	Type: String
2	password	Store the database name	Type: String
3	Con_password	Store the table name	Type: String

##### Methods:

ID	Name	Description	Remarks
1	verify()	Method use to verify the user's registration	-
2	addMember()	If verification successful, this method will add new member information into Database system	-

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## **CD-W2 Class Name: Home**



**Figure 4.20:** CD-W2: Home

**Entities:**

**Methods:**

## **CD-W3 Class Name: adminHome**



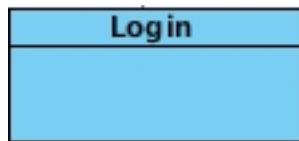
**Figure 4.21:** CD-W3: adminHome

**Entities:**

**Methods:**

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## CD-W4 Class Name: Login

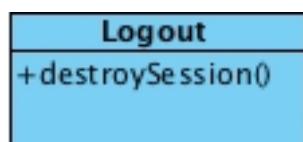


**Figure 4.22:** CD-W4: Login

**Entities:**

**Methods:**

## CD-W5 Class Name: Logout



**Figure 4.23:** CD-W5: Logout

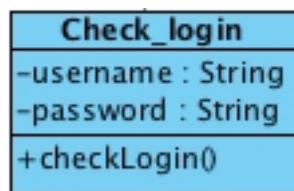
**Entities:**

**Methods:**

ID	Name	Description	Remarks
1	destroySession()	Method use to destroy the user session when the user logout	-

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## CD-W6 Class Name: Check\_login



**Figure 4.24:** CD-W6: Check\_login

### Entities:

ID	Name	Description	Remarks
1	username	Store the database version	Type: String
2	password	Store the database name	Type: String

### Methods:

ID	Name	Description	Remarks
1	checkLogin()	Method use to verify the user's username and password are match with the value that exist on the server database	-

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## CD-W7 Class Name: dbConnection



Figure 4.25: CD-W7: dbConnection

### Entities:

### Methods:

ID	Name	Description	Remarks
1	dbConnect()	Method use to create the connection between server database and the application. If any error occurred, it's will show to the user	-

## CD-W8 Class Name: uploadImage



Figure 4.26: CD-W8: uploadImage

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## Entities:

## Methods:

ID	Name	Description	Remarks
1	uploadImage()	Method use to upload the image from the user or administrator to the server	-

## CD-W9 Class Name: QuestManagement

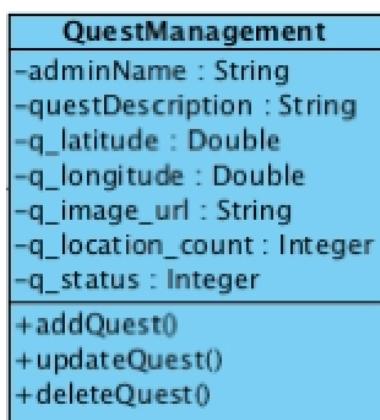


Figure 4.27: CD-W9: QuestManagement

## Entities:

ID	Name	Description	Remarks
1	adminName	Declaration the variable use to store administrator's name	Type: String
2	questDescription	Declaration the variable use to store quest description	Type: String

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3	q_latitude	Declaration the variable use to store quest's latitude	Type: Double
4	q_longitude	Declaration the variable use to store quest's longitude	Type: Double
5	q_image_url	Declaration the variable use to store quest's url	Type: String
6	q_location_count	Declaration the variable use to store quest's count	Type: Integer
7	q_status	Declaration the variable use to store quest's status	Type: Integer

## Methods:

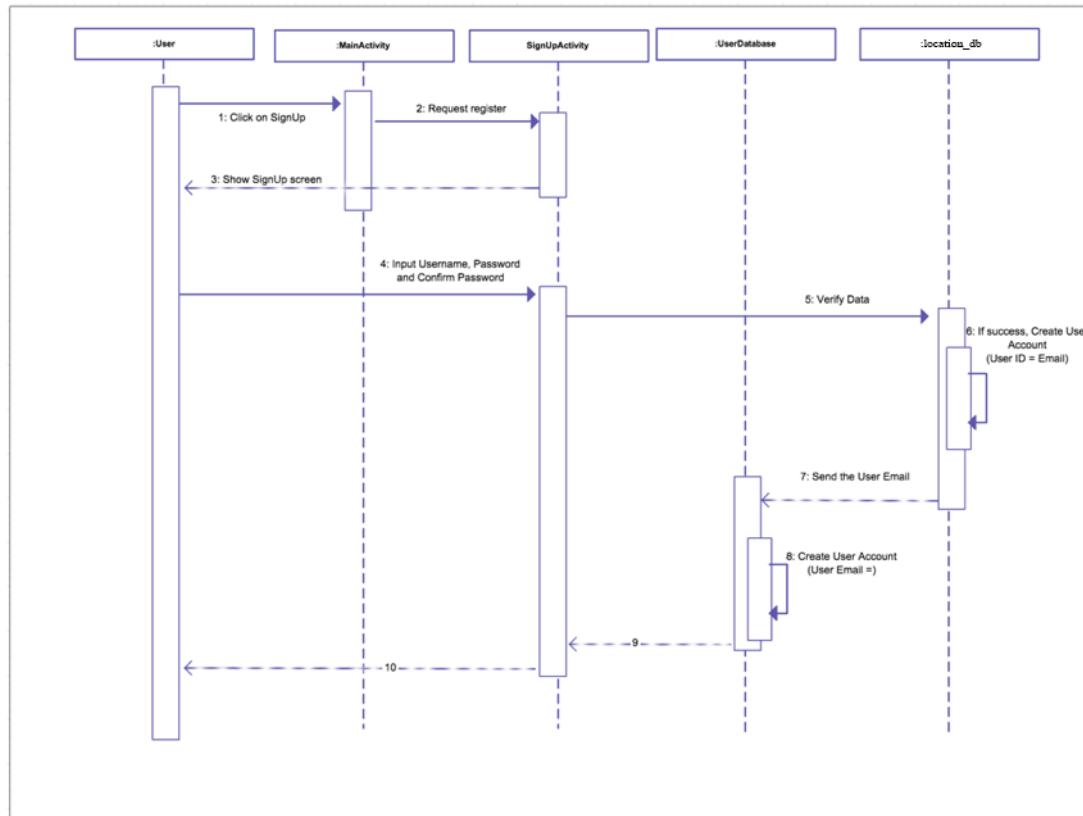
ID	Name	Description	Remarks
1	addQuest()	Method use to add a new quest into server database	-
2	updateQuest()	Method use to update quest information into server database	-
3	deleteQuest()	Method use to delete quest from server database	-

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## 3.2 Sequence Diagram

### 3.2.1 The user can register a new account Sequence Diagram (SD-001)

Sequence Diagram



**Figure 5.1:** The user can register a new account Sequence Diagram (SD-001)

The sequence diagram from the **figure 5.1** presents the registration process. The users register with the system by receive user E-mail address, password and confirm password. The system will verify that the E-mail address already existed in the server database. Then verify matching between passwords and confirm password. If the processes are success, System allows registering and creates a user account and information into the database server. Also, the application will create a user account and information in SQLite database on mobile application.

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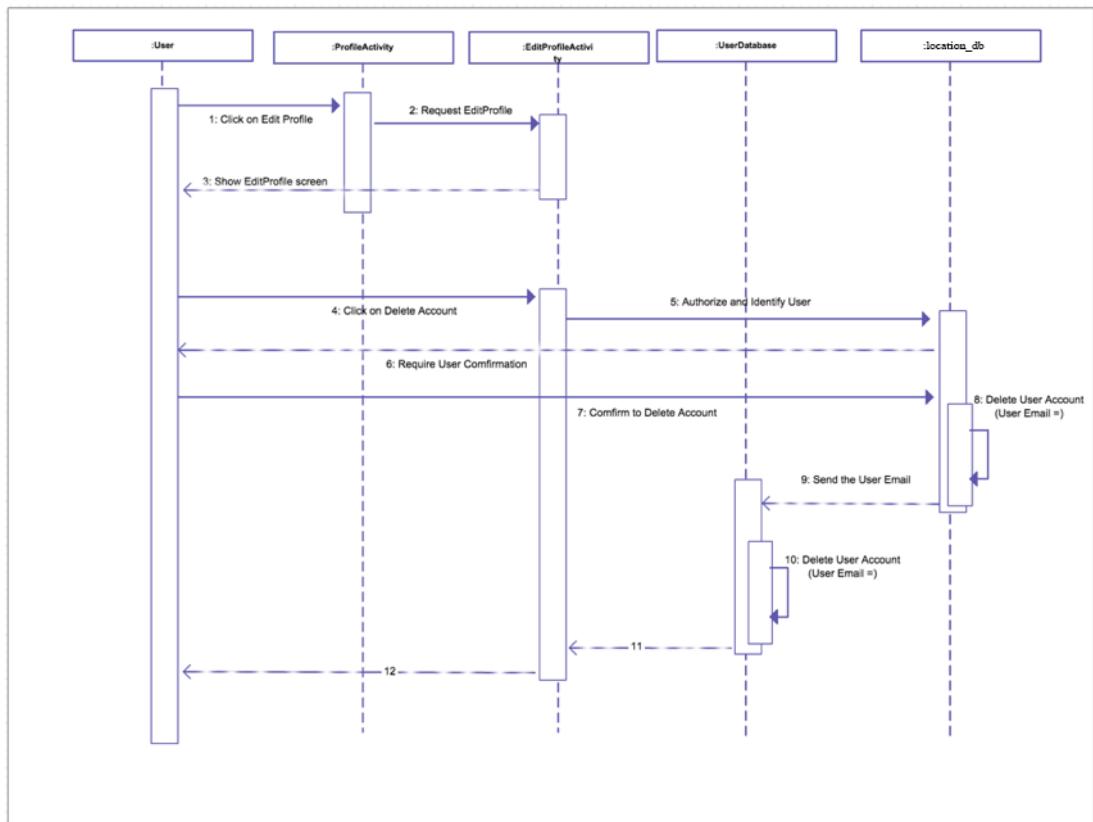
**Related Class Diagram:** The user can register a new account

CD-1 Class Name: UserDBAdapter

CD-4 Class Name: MainActivity

CD-7 Class Name: SignUpActivity

### 3.2.2 The user can delete an account Sequence Diagram (SD-002)



**Figure 5.2:** The user can delete an account Sequence Diagram (SD-002)

The sequence diagram from the **figure 5.2** presents delete user account process. User can delete the own account by click on “Delete User Account” Button. The system will ask the user to confirm to delete an account between “Accept” or “Cancel”. If user confirm to delete the account. The user account contains all of user account information will remove from both of server database and application database system. On the other hand, the action will cancel.

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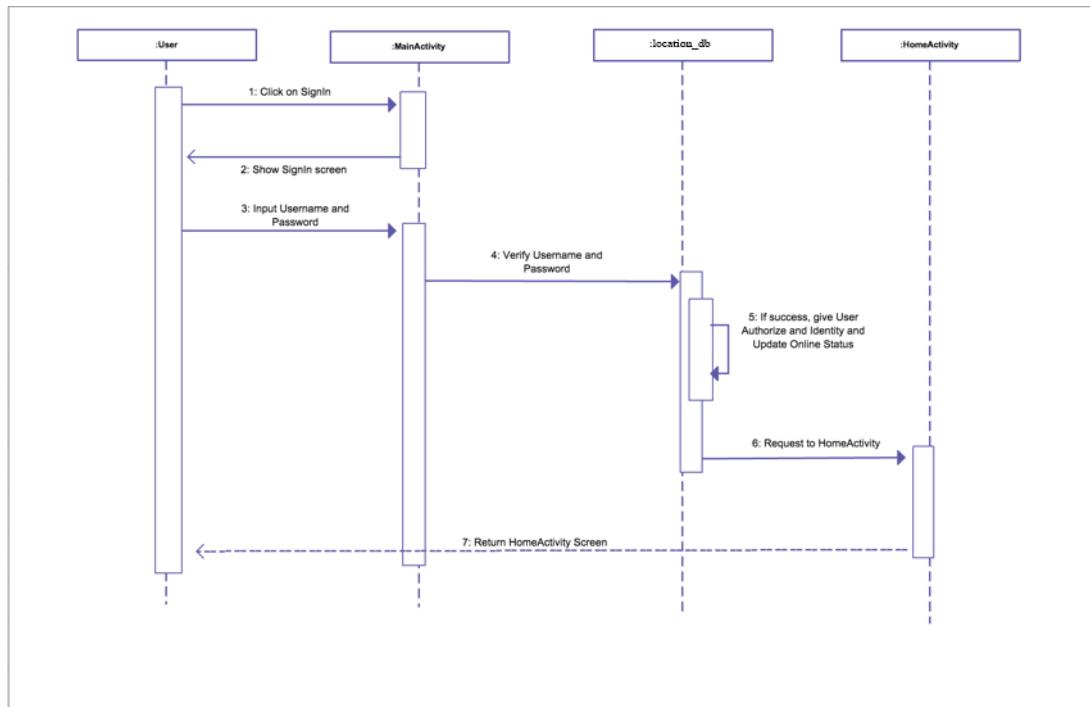
**Related Class Diagram:** The user can delete an account

CD-1 Class Name: UserDBAdapter

CD-9 Class Name: ProfileActivity

CD-15 Class Name: EditProfileActivity

### 3.2.3 The user can login to the system Sequence Diagram (SD-003)



**Figure 5.3:** The user can login to the system Sequence Diagram (SD-003)

The sequence diagram from the **figure 5.3** presents login to the system process. If success, the system will give the authorization for the user and navigates the user to the Home page. If fail, the system navigates the users to the login interface form and show error message depend on the kinds of error. If username input field are empty, system will show the error message “Please input [Username]”. If password input field are empty, system will show the error message “Please input [Password]”. If username and password are not correct, system will shows the error message “Incorrect Username and Password”.

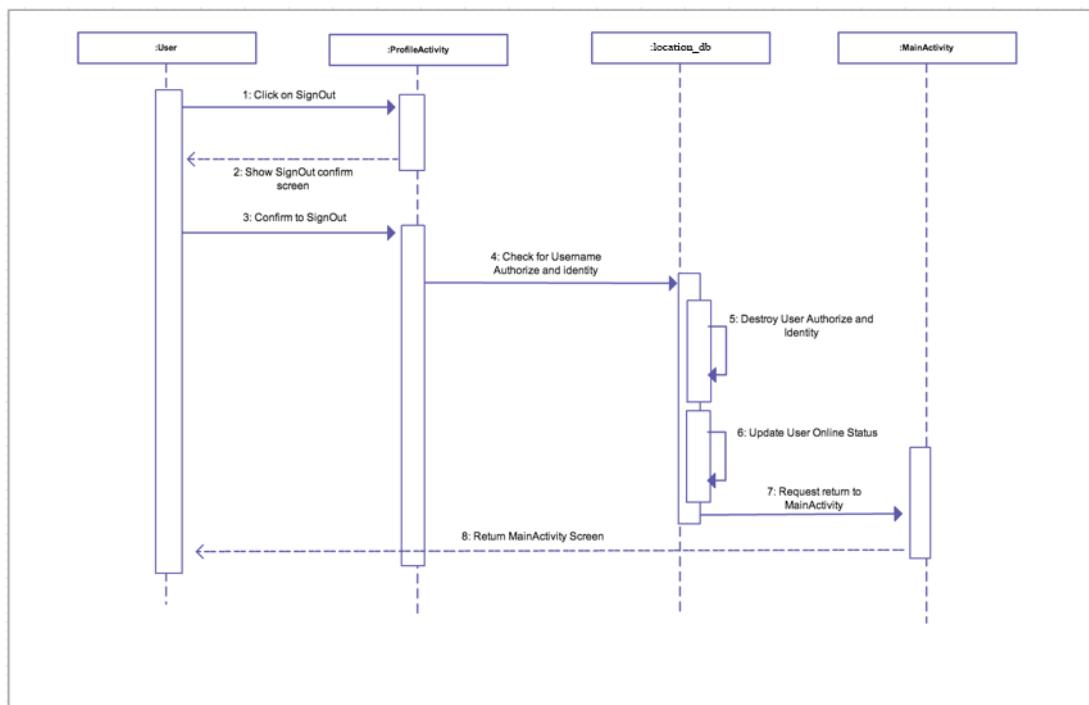
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**Related Class Diagram:** The user can login to the system

CD-4 Class Name: MainActivity

CD-5 Class Name: HomeActivity

### 3.2.4 The user can logout Sequence Diagram (SD-004)



**Figure 5.4:** The user can logout Sequence Diagram (SD-004)

The sequence diagram from the **figure 5.4** presents logout process. The users can click for logout from the system. The system will remove the user authorization and users identity.

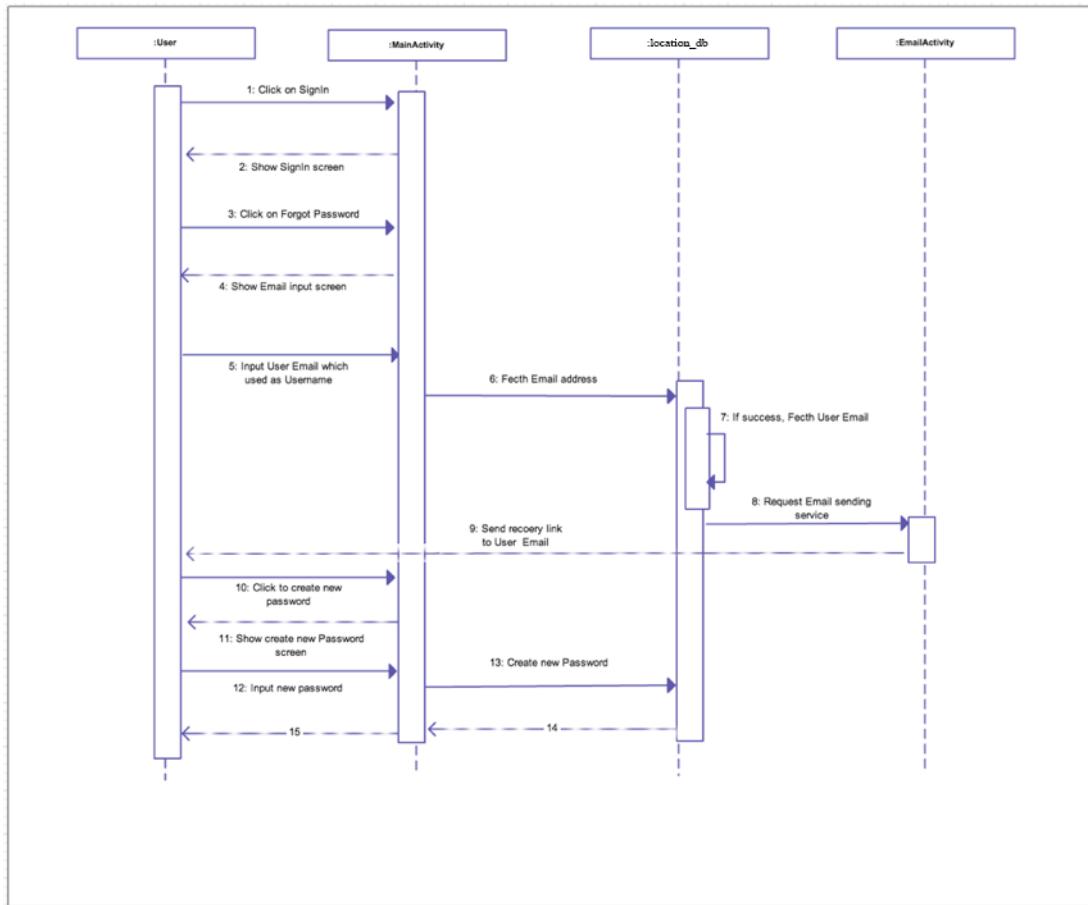
**Related Class Diagram:** The user can logout

CD-9 Class Name: ProfileActivity

CD-4 Class Name: MainActivity

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### 3.2.5 The user can recover the password Sequence Diagram (SD-005)



**Figure 5.5:** The user can recover the password Sequence Diagram (SD-005)

The sequence diagram from the **figure 5.5** presents the recover password process. The users can recover new password. The users input the E-mail account and submit to the system. The system validates the E-mail with the database. If the system found the E-mail, the system will send URL to an E-mail. The users click URL for create new password.

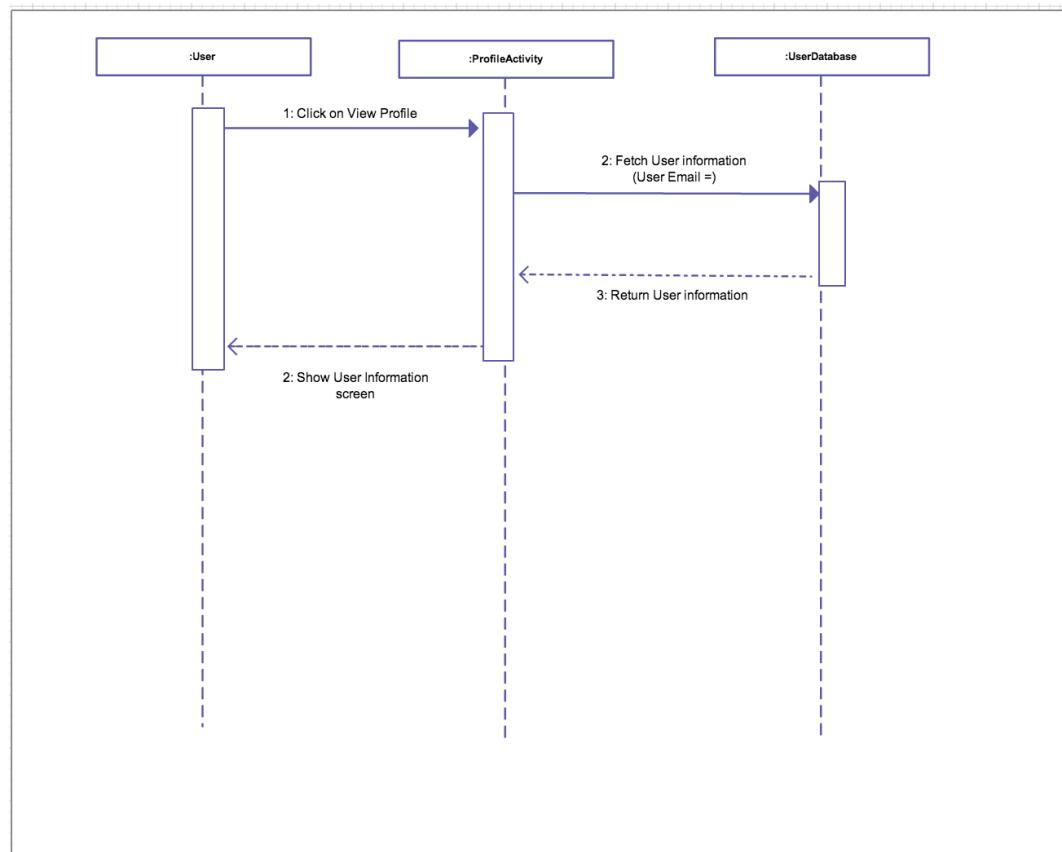
**Related Class Diagram:** The user can recover the password

CD-4 Class Name: MainActivity

CD-27 Class Name: EmailActivity

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### 3.2.6 The user can view user profile information Sequence Diagram (SD-006)



**Figure 5.6:** The user can view user profile information Sequence Diagram (SD-006)

The sequence diagram from the **figure 5.6** presents view the user profile information process. The users can view the profile by click on “View Profile” button in the profile page. The system will provide the user information in the user database and show into user profile interface.

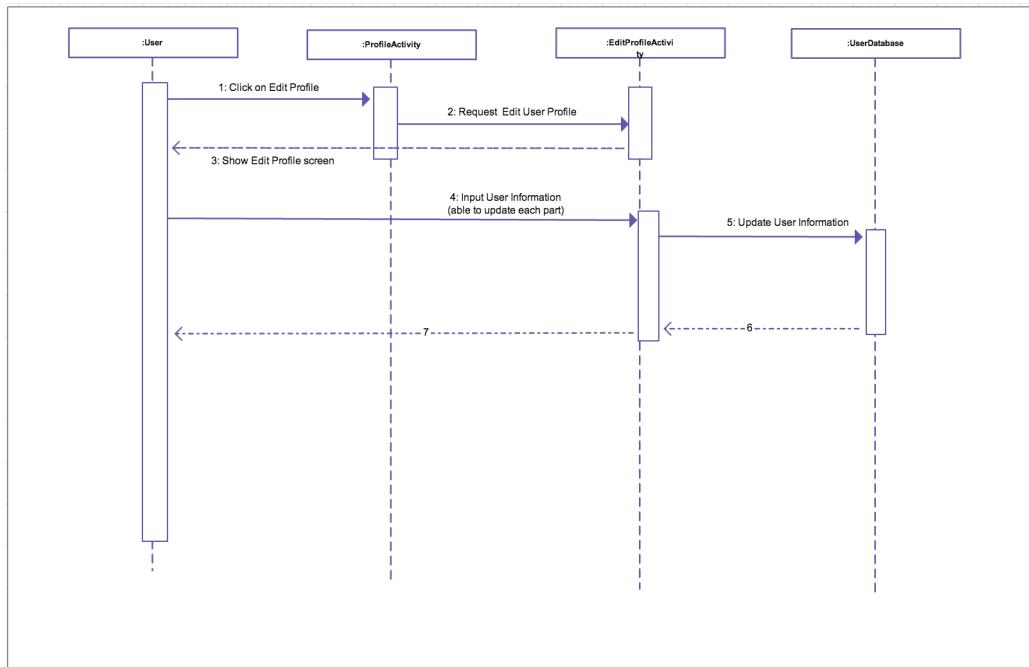
**Related Class Diagram:** The user can view user profile information

CD-1 Class Name: UserDBAdapter

CD-9 Class Name: ProfileActivity

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### 3.2.7 The user can update profile information Sequence Diagram (SD-007)



**Figure 5.7:** The user can update profile information Sequence Diagram (SD-007)

The activity diagram from the **figure 5.7** presents the update profile process. The users click for update the user's profile. The system provides the form for update the information. The users input new information and submit.

**Related Class Diagram:** The user can update profile information

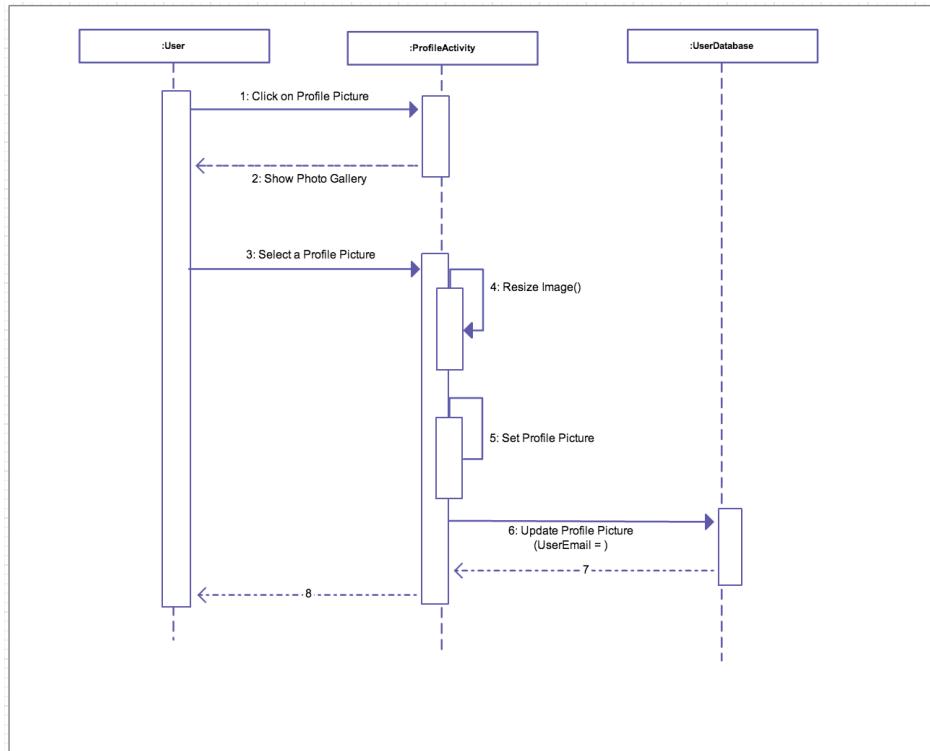
CD-1 Class Name: UserDBAdapter

CD-9 Class Name: ProfileActivity

CD-15 Class Name: EditProfileActivity

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### 3.2.8 The user can change the profile picture Sequence Diagram (SD-008)



**Figure 5.8:** The user can change user profile picture Sequence Diagram (SD-008)

The sequence diagram from the **figure 5.8** presents the change profile picture process. The users click on image view layout on the Profile page for update the user's profile picture. The system provides the interface for select photo from the form mobile library (internal storage). The users can select one of photo from the mobile gallery to update a new profile picture.

**Related Class Diagram:** The user can change user profile picture

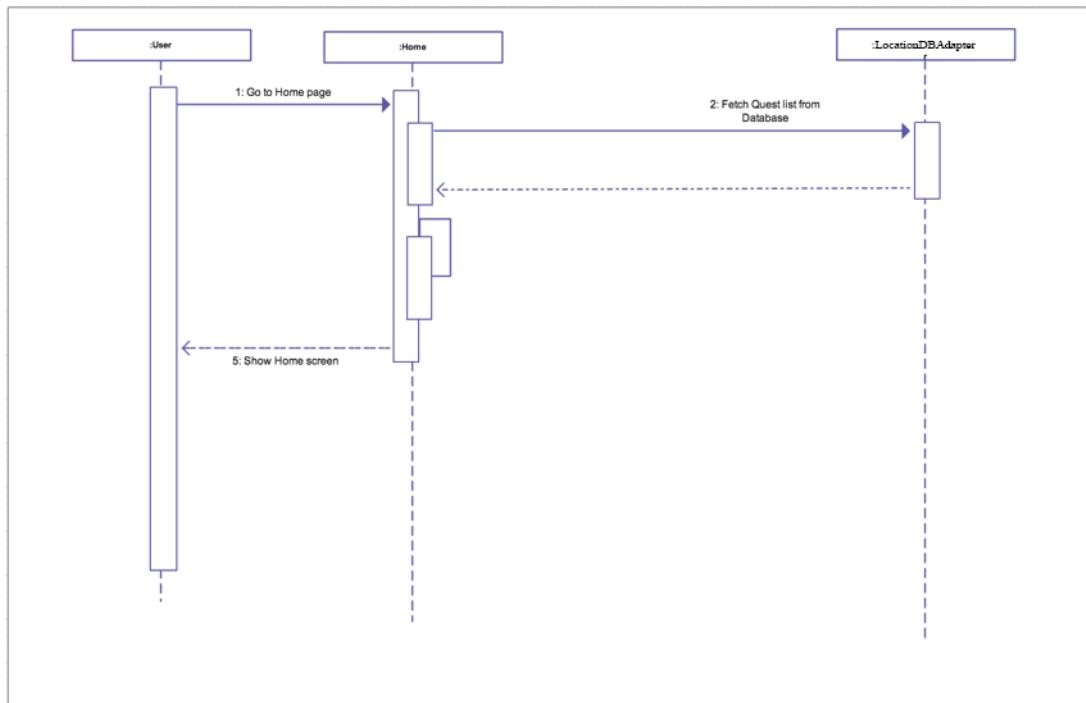
CD-1 Class Name: UserDBAdapter

CD-9 Class Name: ProfileActivity

CD-15 Class Name: EditProfileActivity

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### 3.2.9 The user can view the available location list from the server database Sequence Diagram (SD-009)



**Figure 5.9:** The user can view the available location map list Sequence Diagram (SD-009)

The sequence diagram from the **figure 5.9** presents view all of available location map list row process. The users can view all of the location map which record on the server database to see the information. The system provides the interface that presents the quest list row to user.

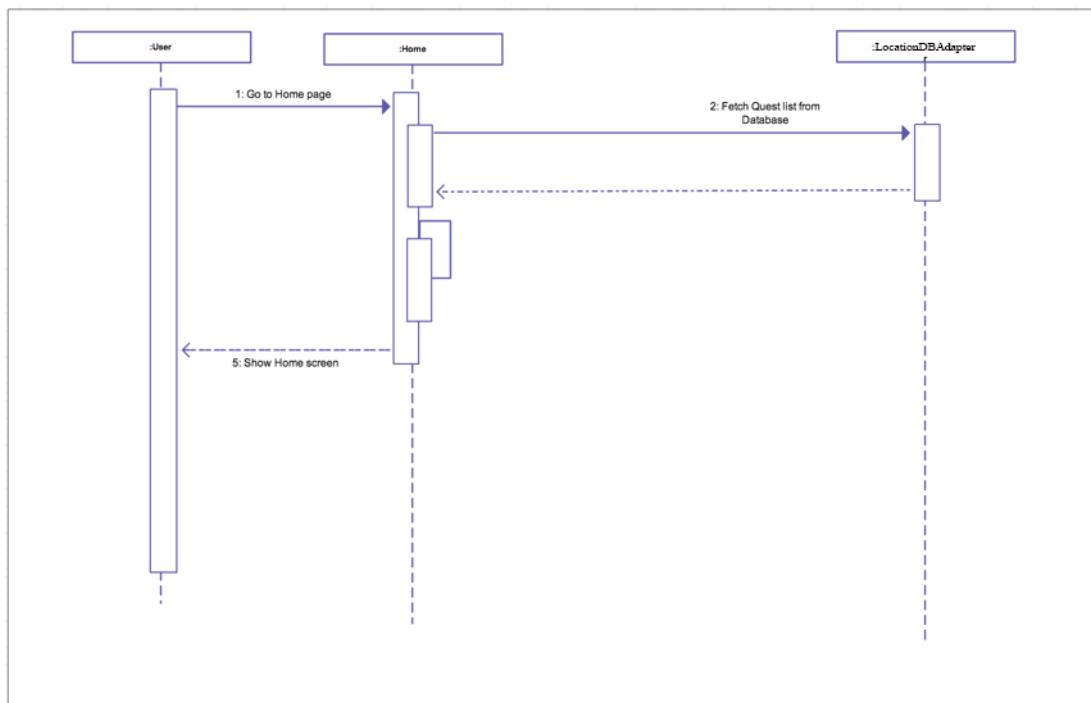
**Related Class Diagram:** The user can view the quests information

CD-5 Class Name: HomeActivity

CD-2 Class Name: LocationDBAdapter

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### 3.2.10 The user can view the available location text title list from the server database Sequence Diagram (SD-011)



**Figure 5.10:** The user can view the available location map list Sequence Diagram (SD-010)

The sequence diagram from the **figure 5.10** presents view all of available location map list row process. The users can view all of the location map which record on the server database to see the information. The system provides the interface that presents the quest list row to user.

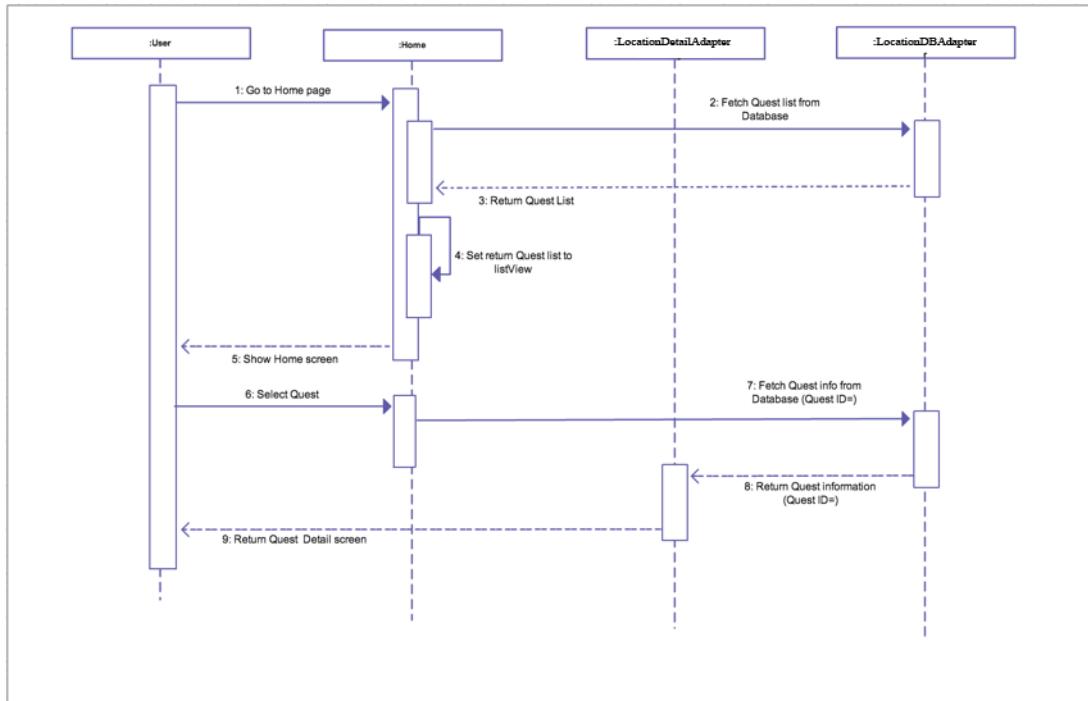
**Related Class Diagram:** The user can view the quests information

CD-5 Class Name: HomeActivity

CD-2 Class Name: LocationDBAdapter

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### 3.2.11 The user can select one of location map picture from the list to see more detail Sequence Diagram (SD-011)



**Figure 5.11:** The user can select one of location map picture from the quest list to see more detail Sequence Diagram (SD-011)

The sequence diagram from the **figure 5.11** presents the map selecting process. The users can select one of location map from the list to see more detail by click on the target in the Home page. The system will provide the interface to show the user for location map and related information.

**Related Class Diagram:** The user can select one of location map picture from the list to see more detail

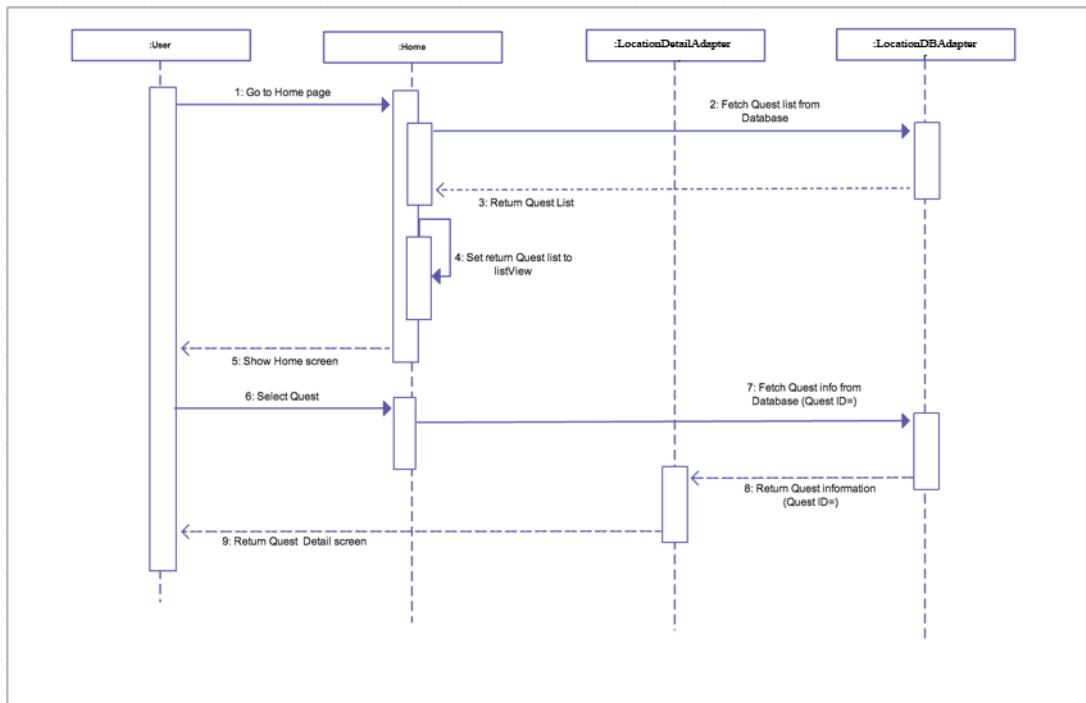
CD-5 Class Name: HomeActivity

CD-2 Class Name: LocationDBAdapter

CD-10 Class Name: LocationDetailActivity

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### 3.2.12 The user can select one of text title from the list to see more detail Sequence Diagram (SD-012)



**Figure 5.12:** The user can select one of text title from the quest list to see more detail Sequence Diagram (SD-012)

The sequence diagram from the **figure 5.12** presents the text title selecting process. The users can select one of location text title from the list to see more detail by click on the target in the Home page. The system will provide the interface to show the user for location text title are available and related information.

**Related Class Diagram:** The user can select one of text title from the list to see more detail

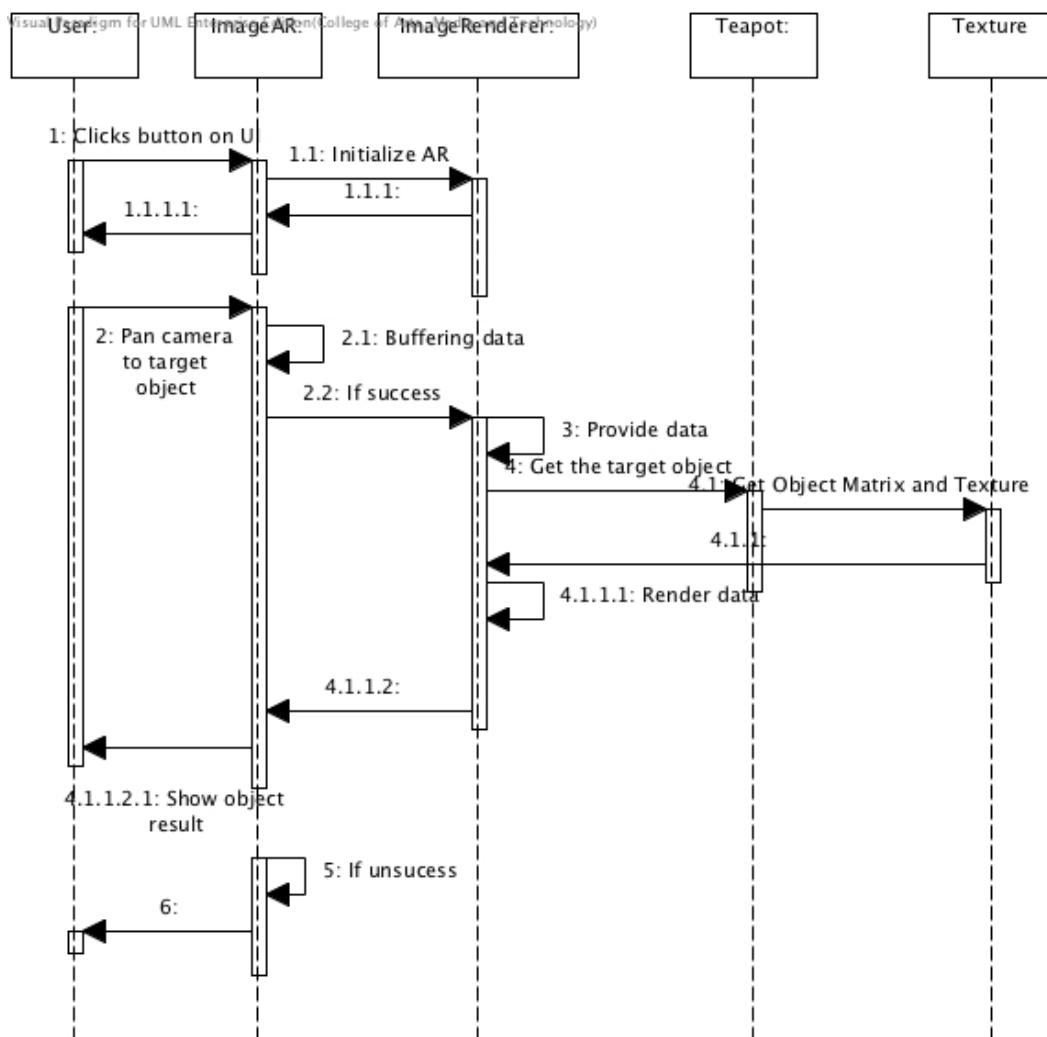
CD-5 Class Name: HomeActivity

CD-2 Class Name: LocationDBAdapter

CD-10 Class Name: LocationDetailActivity

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### 3.2.13 The user can view the 3-dimension object on the map via the camera view Sequence Diagram (SD-013)



**Figure 5.13:** The user can view the 3-dimension object on the map via the camera view Sequence Diagram (SD-013)

The activity diagram from the **figure 5.13** presents view the 3- dimension object on the map via the mobile camera view. The user clicks “Camera” button on UI menu to navigate the user to AR-View. When the user pans the camera on mobile phone to target object in the quest clue to find the hidden 3D object via camera view. If the applications verify the target data success, the application will render and represent the 3D-object to the user. If not, the user cannot see any result via camera view.

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**Related Class Diagram:** The user can view the 3-dimension object on the map via the camera view

CD-27 Class Name: ImageAR

CD-29 Class Name: ImageRanderer

CD-30 Class Name: Teapot

CD-31 Class Name: Texture

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# Chapter Four | Data Architecture

## 4.1 Database Diagram

Mobile site:

### 4.1.1 user\_database

Column Name	Data Type	Description	Key
<b>user_id</b>	INTEGER PRIMARY KEY	User ID	PK
<b>user_email</b>	VARCHAR(30) NOT NULL	E-mail	FK
user_name	VARCHAR(30)	Username	
address	TEXT(150)	Address	
mobile	VARCHAR(20)	Mobile Number	
image	BLOB	Profile Picture	

**Figure 6.1:** user\_database

### 4.1.2 regis\_locations database

Column Name	Data Type	Description	Key
<b>_id</b>	INTEGER PRIMARY KEY AUTOINCREMENT	Register ID	PK
<b>location_r_id</b>	VARCHAR(30) NOT NULL	Register Location ID	FK
location_r_name	VARCHAR(50)	Register Location Name	

**Figure 6.2:** regis\_locations database

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**Server site:**

#### 4.1.3 ar\_member database

Column Name	Data Type	Description	Key
<b>MemberID</b>	INTEGER PRIMARY KEY AUTOINCREMENT	Register ID	PK
<b>Email</b>	VARCHAR(150) NOT NULL	Register Location ID	FK
Password	VARCHAR(50) NOT NULL	Register Location Name	

**Figure 6.3:** ar\_member database

#### 4.1.4 location\_map database

Column Name	Data Type	Description	Key
<b>_id</b>	INTEGER PRIMARY KEY AUTOINCREMENT	Location ID	PK
<b>l_server_id</b>	VARCHAR(30) NOT NULL UNIQUE	Location Server ID	FK
<b>l_name</b>	VARCHAR(50)	Location Name	
<b>l_image</b>	INTEGER NOT NULL	Location Image	
<b>l_description</b>	TEXT NOT NULL	Location Description	
<b>l_total_place</b>	VARCHAR(30) NOT NULL	Total Location	
<b>l_status</b>	INTEGER NOT NULL	Location Status	
<b>l_map_id</b>	VARCHAR(30) NOT NULL	Location Mapping with Map ID	FK
<b>ar_map_id</b>	VARCHAR(30) NOT NULL	AR Mapping with Map ID	FK

**Figure 6.4:** location\_map database

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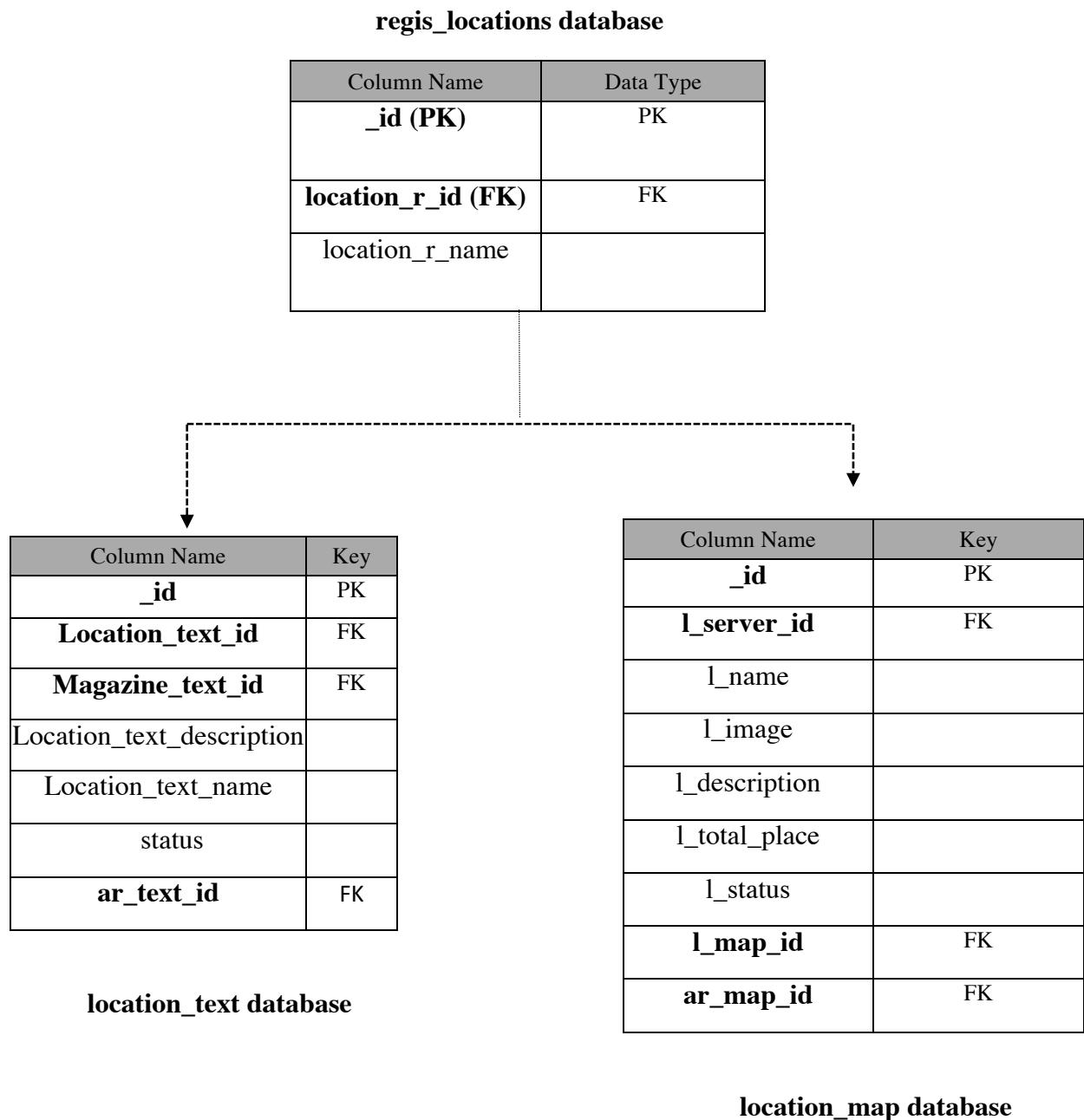
#### 4.1.5 location\_text database

Column Name	Data Type	Description	Key
<b>_id</b>	INTEGER PRIMARY KEY AUTOINCREMENT	ID	PK
<b>Location_text_id</b>	VARCHAR(30) NOT NULL	Location ID	FK
<b>Magazine_text_id</b>	VARCHAR(30) NOT NULL	Mapping magazine with text ID	FK
Location_text_description	TEXT NOT NULL	Location text Description	
Location_text_name	VARCHAR(50) NOT NULL	Location Name	
status	INTEGER NOT NULL	Location Status	
ar_text_id	VARCHAR(30) NOT NULL	AR Mapping with Text ID	FK

**Figure 6.4:** location\_text database

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## 4.2 Entity Relationship Diagram (ER)



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Column Name	Key
<b>MemberID</b>	PK
<b>Email</b>	FK
Password	

**ar\_member database**

Column Name	Key
<b>user_id</b>	PK
<b>user_email</b>	FK
user_name	
address	
mobile	
image	

**user\_database**

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# Chapter Five | User Interface Design

## 5.1 Web Application

### 5.1.1 GUI-W01: login page

The screenshot shows a dark-themed web application interface. On the left, there is a vertical sidebar with 'Login' and 'Register' buttons. Below these are social media sharing icons for Twitter, Facebook, and Email. The main content area has a light background and features a large, bold title 'PLEASE LOGIN' centered at the top. Below the title are two input fields: 'Username' and 'Password', separated by a thin vertical line. A single orange 'Login' button is positioned below the password field. The overall design is clean and modern.

**Figure 7.1** login page

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### 5.1.2 GUI-W02: register page

The screenshot shows the registration form of the AR Map 2Go! application. On the left, there is a dark sidebar with 'Login' and 'Register' buttons. The main area has a title 'REGISTRATION FORM'. It contains fields for 'Username', 'Password', 'Confirm Password', 'Name', and 'Status'. A dropdown menu for 'Status' is open, showing options 'ADMIN' (selected), 'USER', and 'SUB-ADMIN'. There is also a 'Submit' button at the bottom right.

**Figure 7.2** registration page

### 5.1.3 GUI-W03: add new location information page

The screenshot shows the 'Add Location' page of the AR Map 2Go! application. The left sidebar has 'Home' and 'Add Location' buttons. The main area has a title 'AR Map 2Go!' and 'Insert Location Information'. It includes fields for 'Location Server ID' (with a dropdown menu), 'Location Name', 'Location Status', 'Location Map ID', 'Location Count', and 'Location Province'. Below these are 'Location Description' (with a large text area and scroll bar), 'Location Text Title' (text input), 'Location Related Magazine Mapping' (checkbox), 'Location Map Picture' (file upload), 'Location 3D File' (file upload), and a 'Submit' button at the bottom right.

**Figure 7.3** add new location information page

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#### 5.1.4 GUI-W04: location information page

The screenshot shows the 'Location List Information' page of the AR Map 2Go! application. The left sidebar contains navigation links: Home, Management, Edit Profile, Location, and Add Location. Below these are social media sharing icons for Twitter, Facebook, and Email. The main content area is titled 'AR Map 2Go!' and 'Location List Information'. It features a table with columns for Location ID, Location Name, and Location Image. A large empty space below the table indicates no data is currently present.

**Figure 7.4** location information page

#### 5.1.5 GUI-W05: edit profile page

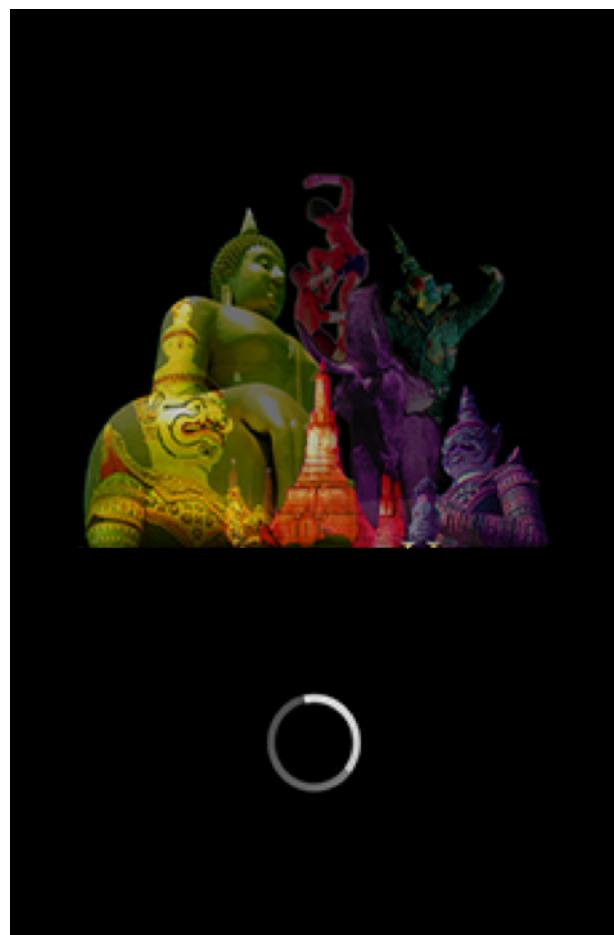
The screenshot shows the 'Edit Profile' page of the AR Map 2Go! application. The left sidebar is identical to Figure 7.4. The main content area is titled 'AR Map 2Go!' and 'Edit Profile'. It displays a form with fields for UserID, Username, Password, Confirm, Name, and Status. Each field has a corresponding input box. A 'Save' button is located at the bottom right of the form area.

**Figure 7.5** edit profile page

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## 5.2 Mobile Application

### 5.2.1 GUI-A01: Splash Screen page



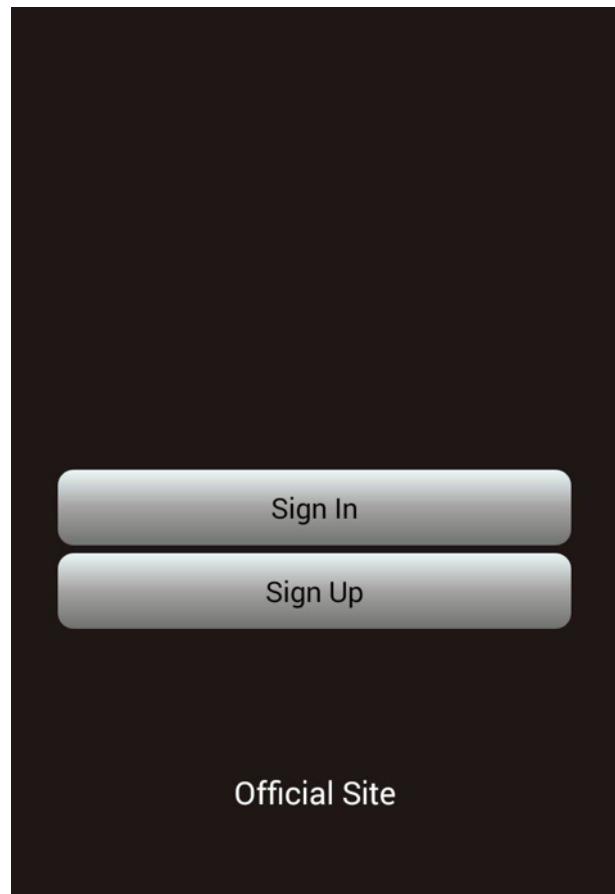
**Figure 8.1** splash screen

#### ***Description***

This is welcome screen when user runs the application. The system will provide the data to ready to start the activity.

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### 5.2.2 GUI-A02: Main page



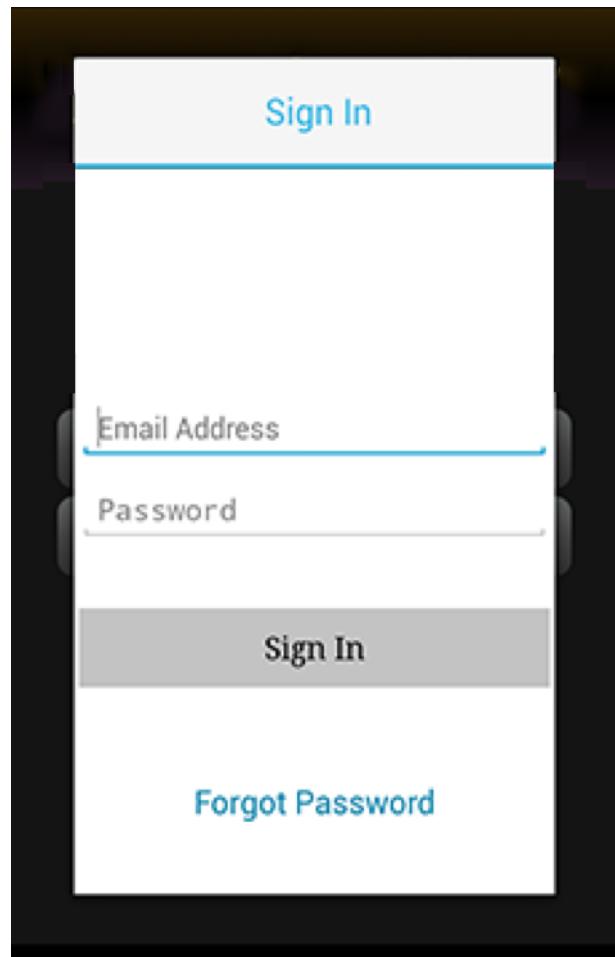
**Figure 8.2** Main screen

#### *Description*

This is main screen will show after the welcome screen runs already finish. User can select between “Sign In” to login into the application or “Sign Up” to create the new account.

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### 5.2.3 GUI-A03: Sign-In page



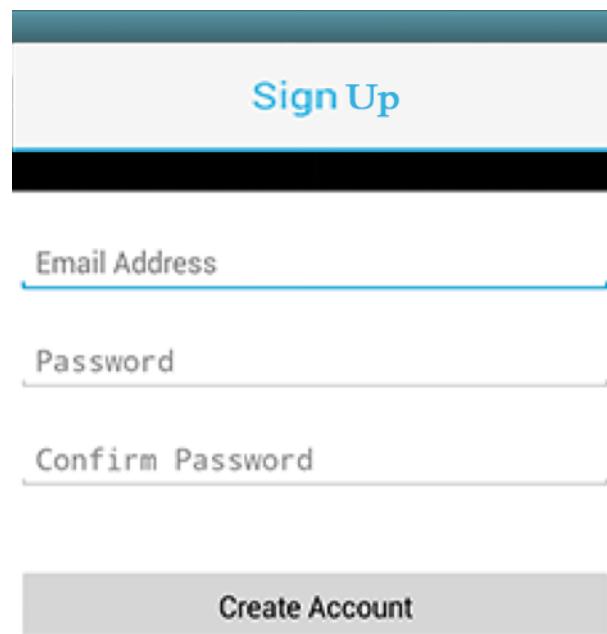
**Figure 8.3** Login screen

#### *Description*

This page will show to user after click to “Sign-In”. The system provides two fields to input the Email address and password. After user input the data, user can click “Sign-In” button to verify and login into the system. If the user forgot the password, user can click at “Forgot Password” to recover the password by email address.

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### 5.2.4 GUI-A04: Sign Up page



The image shows a user interface for a sign-up process. At the top, there is a dark blue header bar with the word "Sign Up" in white text. Below this is a light gray section containing three input fields: "Email Address", "Password", and "Confirm Password", each with a blue underline. At the bottom is a large, rounded rectangular button labeled "Create Account" in white text.

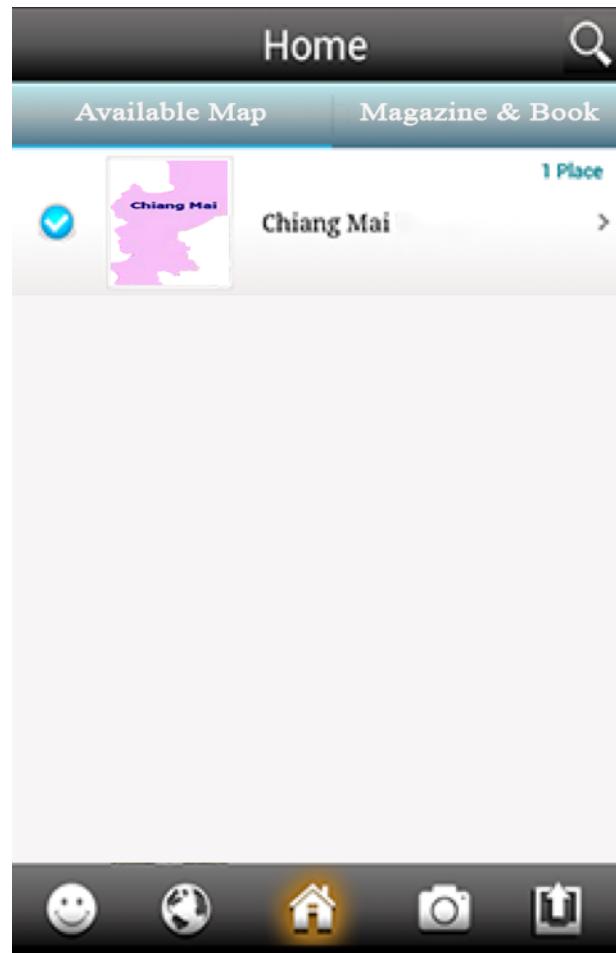
**Figure 8.4** Sign Up screen

#### *Description*

This page will show to user after click to “Sign Up”. System have three fields to input the Email address, password and confirm password. After user input the data, user can click “Create Account” button to send the data to verify on the server.

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## 5.2.5 GUI-A05: Home page



**Figure 8.5** Home screen

### Description

This is home screen will show after user login into the system. At the top of home screen will have tab of “Available Map” shows all of available map list from server database and menu tab “Magazine & Book” shows all of available map related magazine list from server database which contain available location text title list.

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## 5.2.6 GUI-A06: Profile page

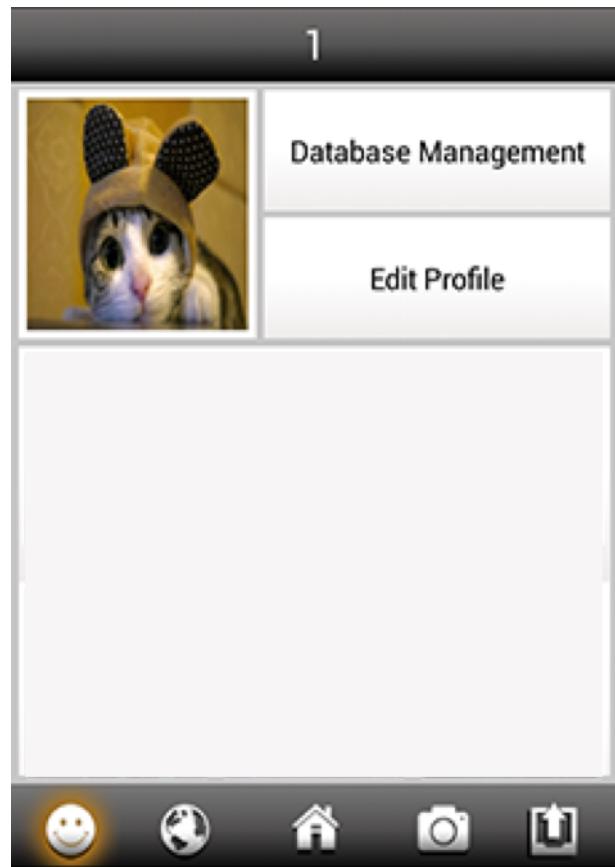


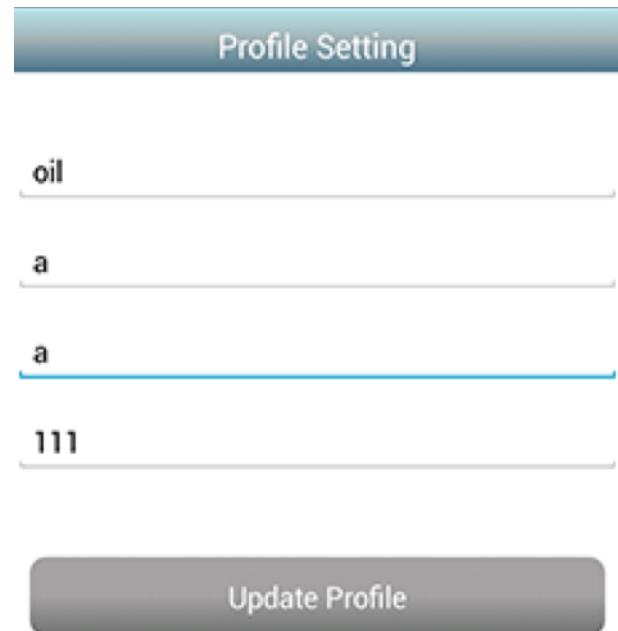
Figure 8.6 Profile screen

### Description

This is share screen will show after user click on “Profile” button at the footer menu bar. User can select “View Profile” to view the user information, “Edit Profile” to edit user information that store in SQLite database system. “Database Management” button that use for developer to manage the quest database to test the system before deployment.

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### 5.2.7 GUI-A07: Edit Profile page



**Figure 8.7** Profile Setting page.

#### **Description**

This page will show to user after click to “Edit Profile” button. System have fields to input the Name, telephone, mobile phone and address. After user input the data, user can click “Update your Profile” button to update the user information in the SQLite database.

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