

# **Location Based Advertising Using Android Application**

Submitted in partial fulfillment of the requirements of the degree of  
**Bachelor of Engineering**

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## Project Report Approval for B. E.

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# Declaration

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## **Abstract**

Tablet phone and smart phones are replacing bulky desktops for computational purposes. All the information must be available in the mobile device and in user customized format. Marketing campaigns always aimed to reach better results from advertisements by adopting available technologies. Personalization, interactivity and ubiquity are the main features of mobile devices that attract marketers. To have high-personalized advertising, marketers benefit from mobile locating technologies to locate customers and personalize advertisements based on the location. Main purpose of this service is to extend the reach of small to medium businesses towards its customers in their locality as well as other distant customers. The purpose of every location based information system is to assist with the exact information, at right place in real time with personalized setup and location sensitiveness. This service tries to attract customer through offers, discounts and sales events provided by the businesses using location of the user.

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# Chapter 1

## Introduction

This project is not just a plain software, it can be new marketing model that would be helpful in boosting the reach of small business owners towards its customers in their locality as well as other distant customers. Big business invest huge chunk of money in marketing department, where as the result of marketing on sales around 30% (assumed). Whereas small business owners who invest a small amount of money in marketing such as Newspaper advertising, local cable network advertising, hoardings, banners, posters, etc. The effectiveness of this type of marketing maybe around 10%.

There is one way to attract customers not only from locality but distant customer is to provide them with offers, discounts, and sale. However to publicize this offers and discounts again you have to approach traditional marketing methods. To do this effectively business owner need a platform to broadcast their offers and information.

Many Customers have smartphones in their hands, today's generation want everything handy. They want their smartphone to do all the work for them, so why not it should find restaurants, hotels, Amusement/Water Park, parties, events around them.

Here we introduce **Offers Only** android application. This application will provide users information about various offers, sales, discounts provided by various businesses, shops, brands, etc. with respect to user's location as well as user defined location.



## **1.1 Problem Statement**

Businesses use various marketing strategies to expand their reach towards customer. Hence they use traditional marketing strategies such as putting up advertisement on TV, Radio, Internet, Hoardings, Newspapers, etc. However these advertising strategies may not be that effective.

Traditional way of marketing is inefficient in terms of providing particular location to user. There are few marketing applications available but there are some drawbacks associated with them

- Improper/Inefficient categorization of data while displaying.
- Inaccurate display of data with respect to location of user.

Popular & big brands can afford big marketing strategies to efficiently deliver their product information and offers to their customer but for small business cannot do the same.

## **1.2 Aim**

To develop service which provide platform for businesses to promote their product and service to the customer effectively and efficiently.

## **1.3 Project Scope**

Our project provides platform for small to medium business to promote their products and services which would boost their business generating more revenue. It help the user (customers) to easily search offers, sale and discount nearby them using location based service of the system. Also it would provide user friendly interface with appropriate categorization for easy interaction of users with the system. The system would be able to display the deals nearby user's present location. The user would be able to adjust settings of mobile application system such as range and location etc.

## **1.4 Report Organization**

The rest of this report proceeds in the following manner.

In Chapter 1, briefly introduces the proposed system its aims and objectives. Also scope of this system is described in short. Chapter 2 describes in short the existing ERP systems. An exact scheduling of the project is contained in Chapter 3. Chapter 3 also contains the analysis and design of the proposed system. Chapter 4 describes implementation and testing of the software. Finally in Chapter 5 conclusions are drawn.

## **Chapter 2**

### **Review of Literature**

#### **2.1 Existing Systems**

##### **Groupon**

Groupon is a deal-of-the-day website that features discounted gift certificates usable at local or national companies. Groupon was launched in November 2008, and the first market for Groupon was Chicago, followed soon thereafter by Boston, New York City, and Toronto. By October 2010 Groupon served more than 150 markets in North America and 100 markets in Europe, Asia and South America and had 35 million registered users.

Front End: AJAX/JavaScript/HTML/CSS along with client-side JavaScript frameworks like jQuery, Backbone.js, Objective C, Java etc.

Back End: NoSQL MongoDB for database along with coding languages such as Ruby/JRuby, Rails, Java, MySQL, Redis, Resque and other web technologies.

##### **SaveZippy**

SaveZippy makes it easy for the Indian users, to view offers across all the stores in the mall starting from shopping offers to dining offers. Just install the SaveZippy application and you will automatically be notified about the offers present in the mall when you reach one. That's right, you heard it correct, you need not check for offers, SaveZippy detects if you are in a mall and gives you the alerts.

Back End: NoSQL/ MongoDB for database along with coding languages such as Python/Java/Ruby/PHP for backend

Front End: AJAX/JavaScript/HTML/CSS along with client-side JavaScript frameworks like jQuery, Backbone.js, etc.

## **Hike**

Hike Messenger (stylized as hike messenger) is a cross-platform instant messaging for smartphones. Hike is supported on Wi-Fi, 2G and 3G data networks. As of September 2014, Hike has over 35 million users globally and is among top 6 apps on Android, iOS and Windows Store in India. Hike was developed by Atul Singh, Lucknow.

Hike Messenger provides offers in form of rewards. It provides discount coupons on various big brands such as McDonalds, KFC, Pizza Hut, Café Coffee Day, etc. But this coupons are only unlocked when the user uses this mobile application daily.

## **FreeCharge**

FreeCharge.in is an e-commerce website headquartered in Mumbai, Maharashtra. It provides online facility to recharge any prepaid mobile phone, post-paid mobile, DTH & Data Cards in India.

**Table 2.1 Comparative study of existing system.**

<b>Parameters</b>	<b>Traditional Marketing</b>	<b>Groupon</b>	<b>SaveZippy</b>	<b>Other Services (Hike/Freecharge)</b>
Marketing Medium	Radio, TV, Newspapers, Hoardings, Posters, SMS, Fliers etc	Website, Mobile Application	Website, Mobile Application	Website, Mobile Application
Location Based Service (LBS)	No LBS	Not Available in India	Yes but offers are not accurate to user's location	No LBS
Map View	No map view	Available in India but on individual offers	No map view	No map view
Clients	Any Business	Popular Brands and Franchises.	Popular Brands, Franchises, very few Medium Scale Businesses	Popular Brands, Mostly Franchises.
Interface	Static Advertisement	User Friendly interface with minimal navigation	Clumsy interface.	Hidden interface for offers. Simple Navigation
Categorization	No categorization	Less specific categorization	Good Categorization	No categorization in Freecharge. Simple categorization in Hike (3)

## Chapter 3

### Report on Present Investigation

#### 3.1 Project Scheduling

##### 3.1.1 Project Organization

We will have a small team; hence we use a flat team structure of peers, with one person having an additional role of project manager. Following table gives the organization:

**Table 3.1 Project Organization**

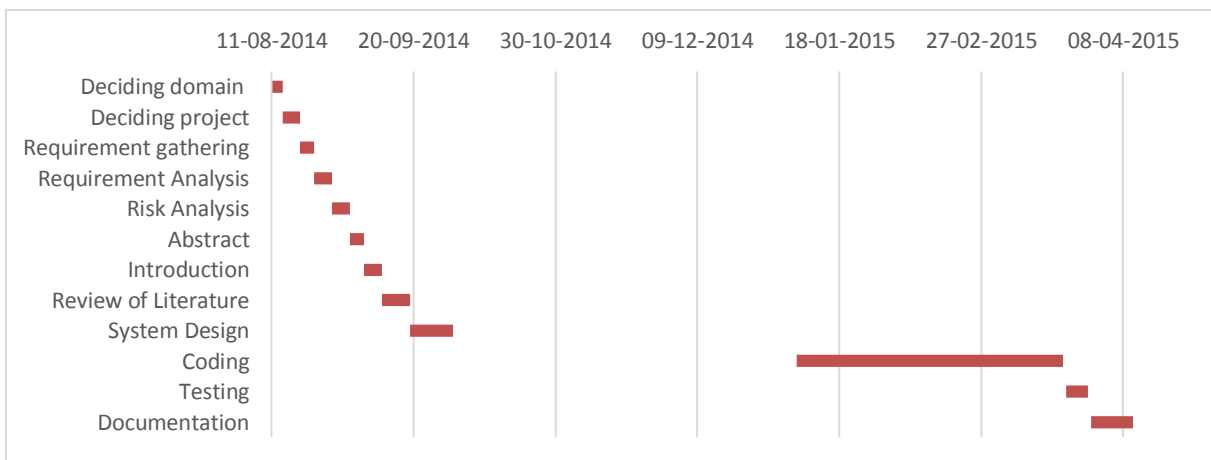
Name	Role
Varad Tupe	Member
Seema Ubhare	Member
Akshaya Patil	Member

##### 3.1.2 Gantt Chart

A Gantt chart is a type of bar chart, which illustrates a project schedule. Gantt charts illustrate the start and finish dates of the terminal elements and summary elements of a project. Terminal elements and summary elements comprise the work breakdown structure of the project. A Gantt chart is helpful when monitoring a project's progress.

**Table 3.2 Project Schedule**

<b>Sr. No</b>	<b>Task</b>	<b>Start Date</b>	<b>Duration (days)</b>	<b>Finish Date</b>
1	Deciding domain	11/8/2014	3	13/8/2014
2	Deciding project	14/08/2014	5	18/08/2014
3	Requirement gathering	19/08/2014	4	22/08/2014
4	Requirement Analysis	23/08/2014	5	27/08/2014
5	Risk Analysis	28/08/2014	5	1/9/2014
6	Abstract	2/9/2014	4	5/9/2014
7	Introduction	6/9/2014	5	10/9/2014
8	Review of Literature	11/9/2014	8	18/9/2014
9	System Design	19/9/2014	12	30/9/2014
10	Coding	6/1/2015	75	21/3/2015
11	Testing	23/3/2015	6	28/3/2015
12	Documentation	30/3/2015	12	10/4/2015

**Fig 3.1 Gantt chart**

## **3.2 System Analysis**

### **3.2.1 Requirement Analysis**

#### **Functional Requirement**

- Access the location data  
The application should be able to access the location data from Google API's efficiently and send it to server for processing.
- Accurately fetch data  
The data sent by the server should be accurate according to location provided by application and category selected by the user.
- Modify Range  
The application should allow users to modify the range of search of the offers.
- Manually enter the location  
The application should allow users to enter the city name manually and fetch the latitude and longitude data using reverse geocoding.
- Displaying current location address  
The application should display the address of user's current location.
- Displaying number of views of offers.  
The application should be able to count the total views of individual offers for analysis purpose.

#### **Non-functional Requirement**

- Ease of use:  
The proposed system has to be designed in a way that the user will not face any difficulties in operating the Location Based Marketing Mobile Application
- Efficiency  
The system must not require too much complex additional structures or computational resources. The data should be lightweight so that the records fetched from the database server utilizes minimum bandwidth as well as data usage of the user.
- Reusability:  
The system should be able to use again and again to add new functionalities with slight or no modification.



- **Reliability:**  
The system should be able to perform or maintain its functions in routine circumstances as well as unexpected circumstances such as heavy weight requests to the server.
- **Availability**  
User can access the application ubiquitously.

### **Software Requirement**

1. Android Studio
2. Java 7 JRE/JDK
3. Microsoft Windows OS
4. Android SDK

### **Hardware Requirement**

1. Processor: 2.00 GHz or higher
2. RAM: 4 GB or higher

### **Mobile Device Requirement**

1. Processor: 800 MHz or higher
2. RAM: 512 MB
3. Android OS v4 (Ice-cream Sandwich)
4. 3G Network internet connectivity.
5. GPS (GLONASS GPS preferable)

## **3.2.2 Risk Analysis:**

### **Operational Risk:**

- The application cannot be used without internet connection:  
The application requires internet to access the service. If there is no internet access, the location can be traced using GPS, but the application would not be update new offer data.
- Battery consumption would be high:  
Though the Android OS is built for application running on internet, we cannot rule out the condition that the application requires internet access for a long duration of time thereby consuming more battery power of the device.

- Freezing of application

Multitasking utilizes high amount of Processor power and RAM. Thus there is less processor power and RAM available for opening a new process ie. New application, which can freeze the application while interacting with it.

### **Technical Risk:**

- GPS Failure

Problem with GPS in old devices is that they take long time to lock the location which would delay further processing that would result in delayed output to the user.

- Platform fragmentation:

There have been lot of upgrades in android platform. But the problem is that these upgrades have been within short intervals. As each platform introduces new set of APIs, it creates problems for the programmers.

### **Business Risk**

- High competition among programmers and companies

Android devices being favourite and affordable these days, many programmers are learning android and developing application for android devices. Therefore there might be a chance of some other developer or company coming up with same idea.

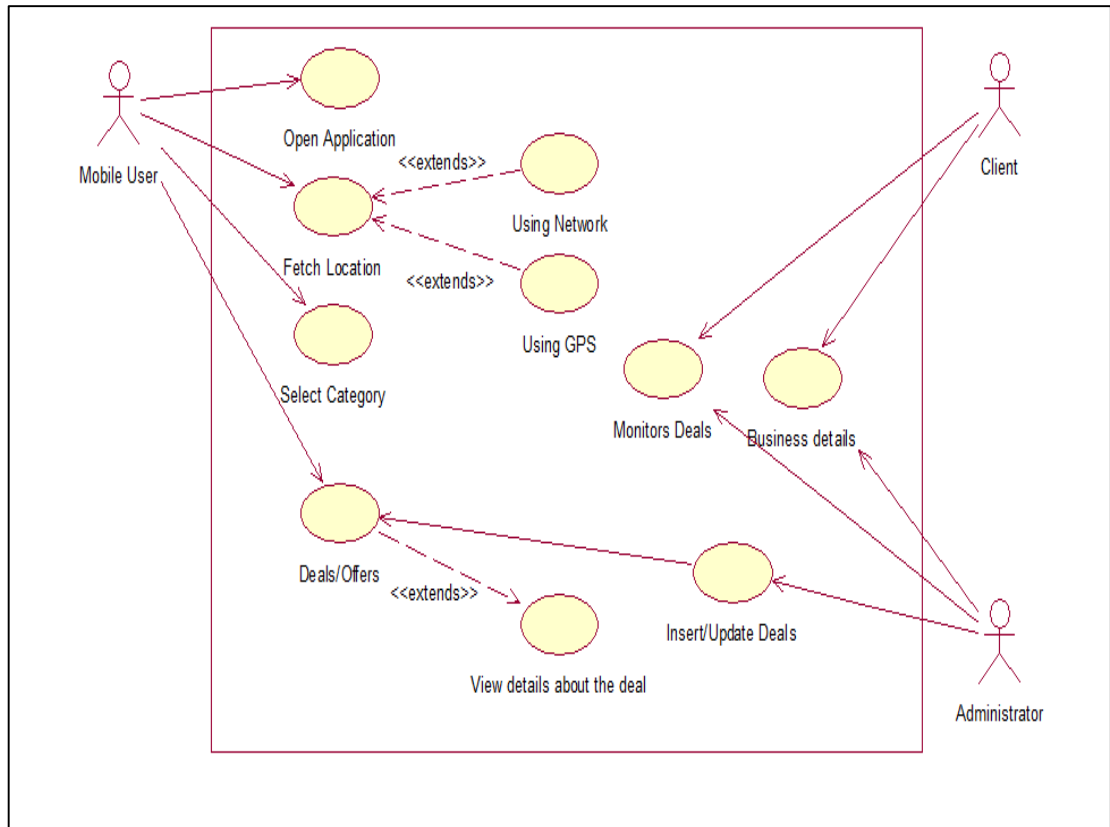
- Manipulating Clients

As there is a chance of some other developer or company coming up with same idea, the other developer can manipulate the owner's client hence decreasing the revenue for the owner's company.

### **3.2.3 Use Cases and Use-Case Diagram**

The Use Case diagram has 3 major actors that are Mobile User, Administrator and Client. The Location Based Marketing Application has 10 use cases.

As shown in diagram the User interacts with Mobile application and the Mobile Application interacts with server in the background.



**Fig 3.2 Use Case Diagram**

**Table 3.3 Actors**

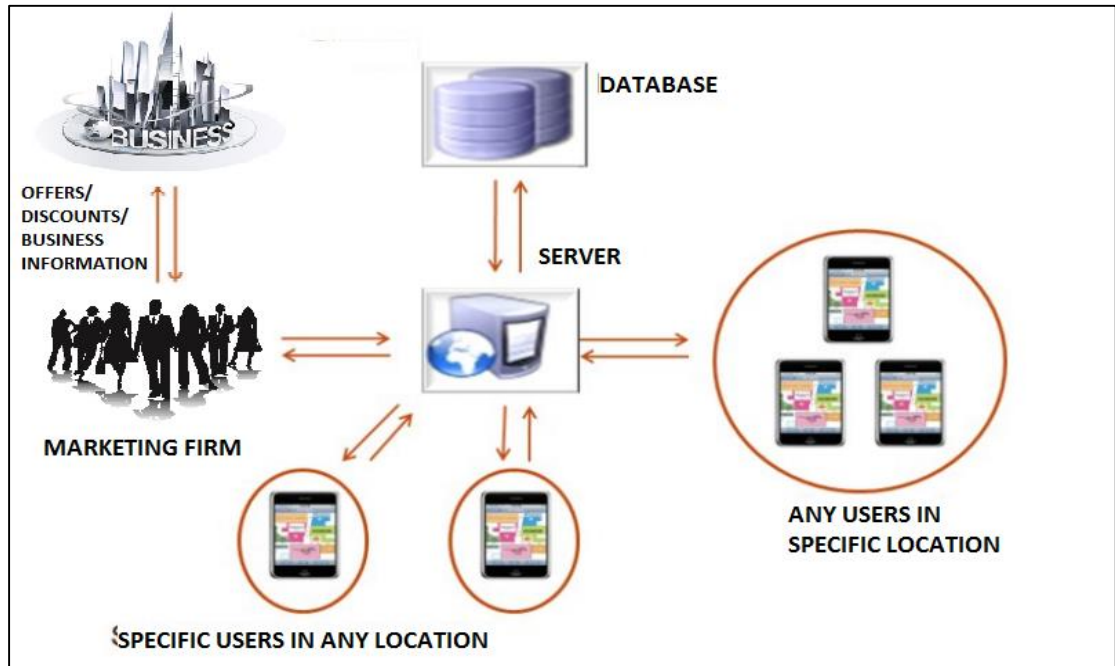
Actors	Description
Mobile User	Responsible for accessing the facilities provided by the system.
Administrator	Responsible for data entry and data management on the server.
Client	Responsible for providing the promotional as well as business details to the Administrator.

**Table 3.4 Use Cases**

<b>Use-Case</b>	<b>Description</b>
Open Application	The user has to open the application on his android smartphone.
Fetch Location	The application will automatically fetch location of the user in background.
Using Network	It is the primary method for fetching location if the GPS is disabled on the user's mobile phone.
Using GPS	For accurate tracing of the user's location GPS is used.
Select Category	The user has to select a specific category for refined results.
Deals/Offer	The user views the list of results returned from server.
View details about the deal	The user view the detailed information about the deal selected by the user.
Insert/Update Deals	Administrator insert and updates the information on the server.
Monitor Deals	Both the Client and Administrator can monitors the deals ie. Whether the correct information is displayed in the mobile application.
Business Detail	The client provide the information to the Administrator.

### 3.3 System Design

#### 3.3.1 Architectural diagram



**Fig. 3.3 The architecture of Location Based Marketing service**

The architecture of Location Based Advertising for Mobile Application consists of following entities:

- Business firm
- Marketing firm
- Server
- Database
- Mobile application (User)

**Business firm:**

Business firm is the client of this service whose product or service is to be marketed. The business firm is responsible for providing business information along with necessary promotional information to the marketing firm.

**Marketing Firm:**

Marketing firm is the owner of the service (system). It is responsible for analyzing the information given by the client. It organizes the information received according to the specific format for the service and upload the information in the database through the server.

**Server:**

Server acts as an intermediate for communication between the database and the user. It is responsible for generating appropriate query to retrieve information from the database. It also consist code which processes the location data received from the mobile application and provides relevant list of deals near to the location received.

WAMP server is used to host this service

**Database:**

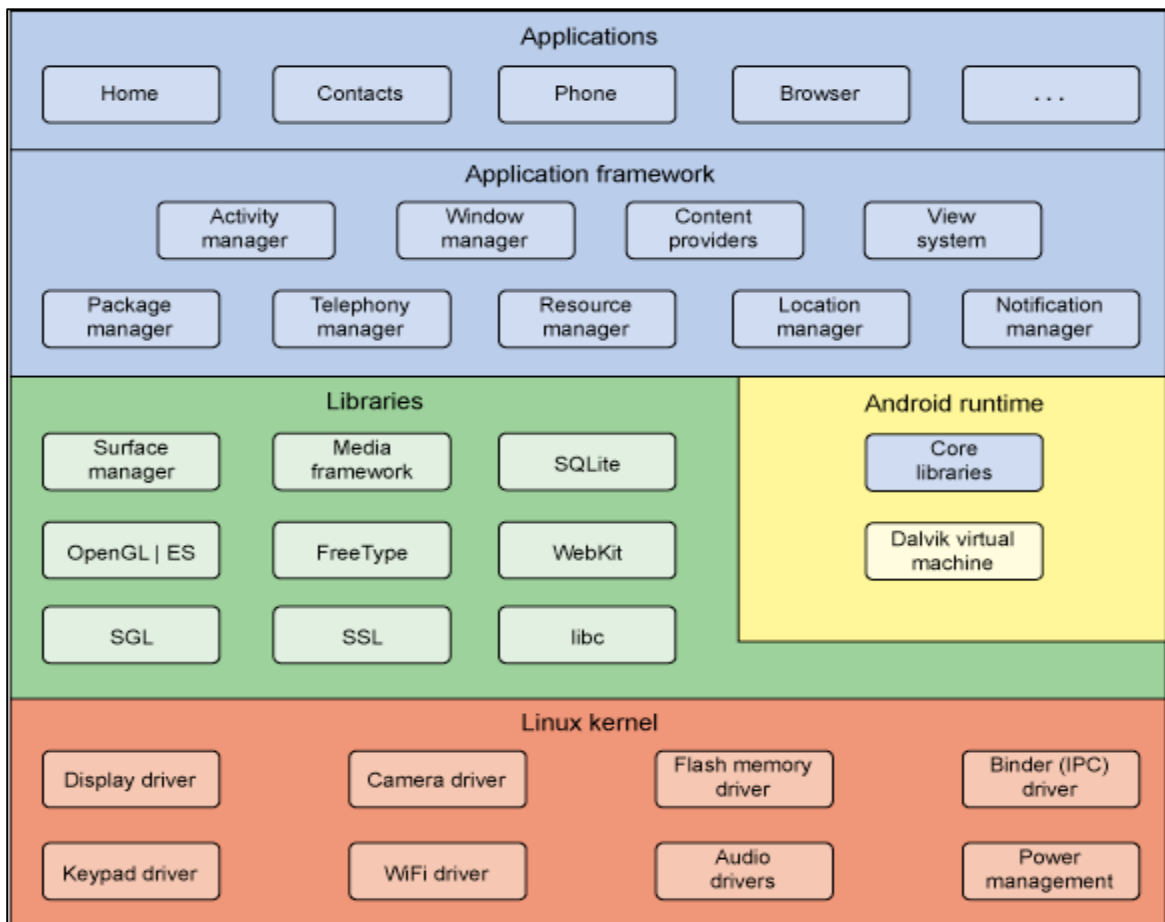
Database stores all the data related to client and their offers in an organized format. The Database Management System used for this service for storing main data is MySQL.

**Mobile Application:**

Mobile application represents the user of service. It provides GUI and fetches the location in background. The mobile application is developed using Android Studio with coding in Java for backend functionality, XML for GUI of the application.

For fetching location, primarily location is fetched Network Based. Using this method we would get approximate location of the user. If the GPS is enabled by user; the exact location of the user would be fetched. Hence the data returned from server would be accurate with respect to the user's location. However if user wants to search for deals in other area not nearby his locality, he/she can enter location manually. This string location input would be passed to the server for searching into the database and return the data respective of category and location specified by the user.

## Android Architecture



**Fig. 3.4 Android Architecture**

### Linux kernel

At the bottom of the layers is Linux - Linux 2.6 with approximately 115 patches. This provides basic system functionality like process management, memory management, device management like camera, keypad, display etc. Also, the kernel handles all the things that Linux is really good at such as networking and a vast array of device drivers, which take the pain out of interfacing to peripheral hardware.

### Libraries

On top of Linux kernel there is a set of libraries including open-source Web browser engine WebKit, well known library libc, SQLite database which is a useful repository for storage and sharing of application data, libraries to play and record audio and video, SSL libraries responsible for Internet security etc.

## **Android Runtime**

This is the third section of the architecture and available on the second layer from the bottom. This section provides a key component called **Dalvik Virtual Machine** which is a kind of Java Virtual Machine specially designed and optimized for Android.

The Dalvik VM makes use of Linux core features like memory management and multi-threading, which is intrinsic in the Java language. The Dalvik VM enables every Android application to run in its own process, with its own instance of the Dalvik virtual machine.

The Android runtime also provides a set of core libraries which enable Android application developers to write Android applications using standard Java programming language.

## **Application Framework**

The Application Framework layer provides many higher-level services to applications in the form of Java classes. Application developers are allowed to make use of these services in their applications.

## **Applications**

You will find all the Android application at the top layer. You will write your application to be installed on this layer only. Examples of such applications are Contacts Books, Browser, and Games etc.



### 3.3.2 Class Diagram

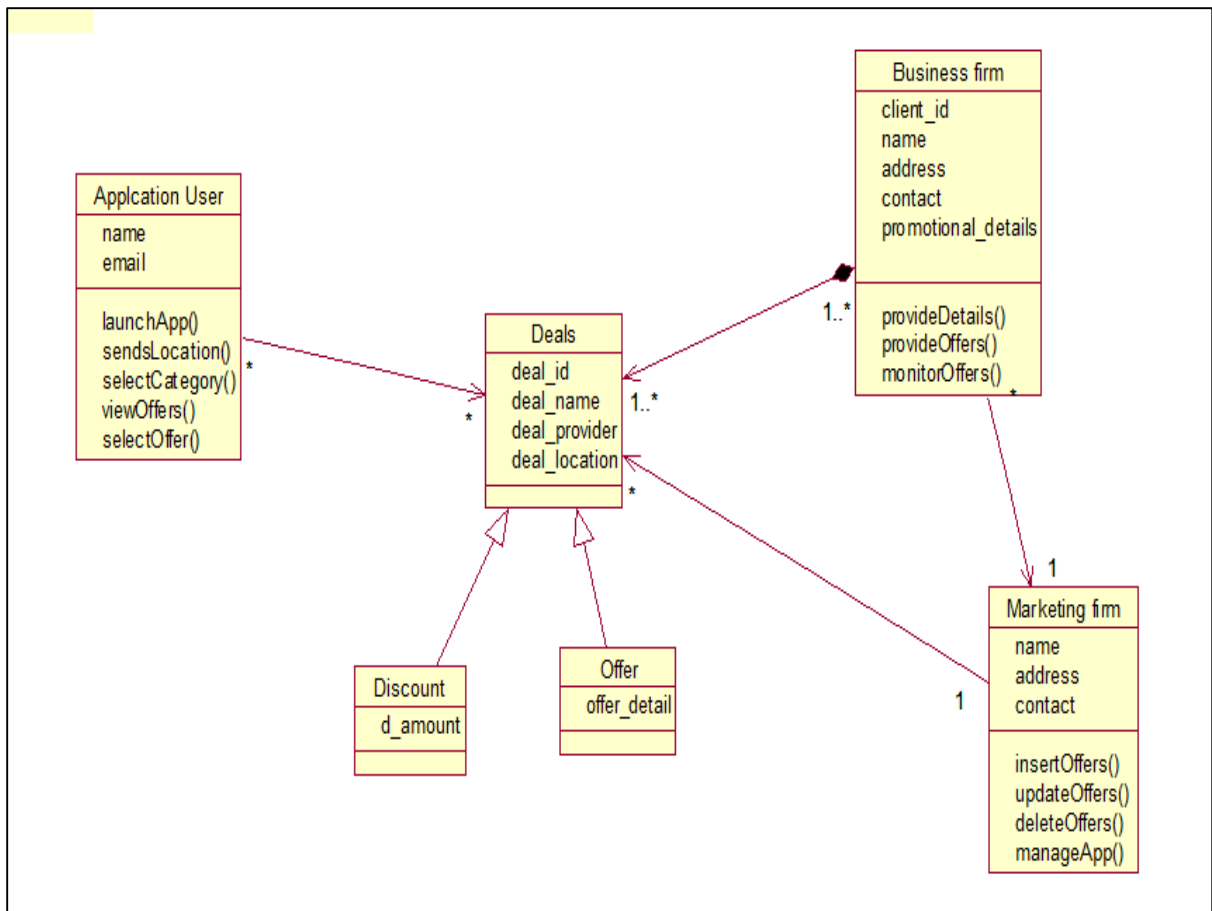


Fig 3.5 Class Diagram

### 3.3.3 Sequence Diagram

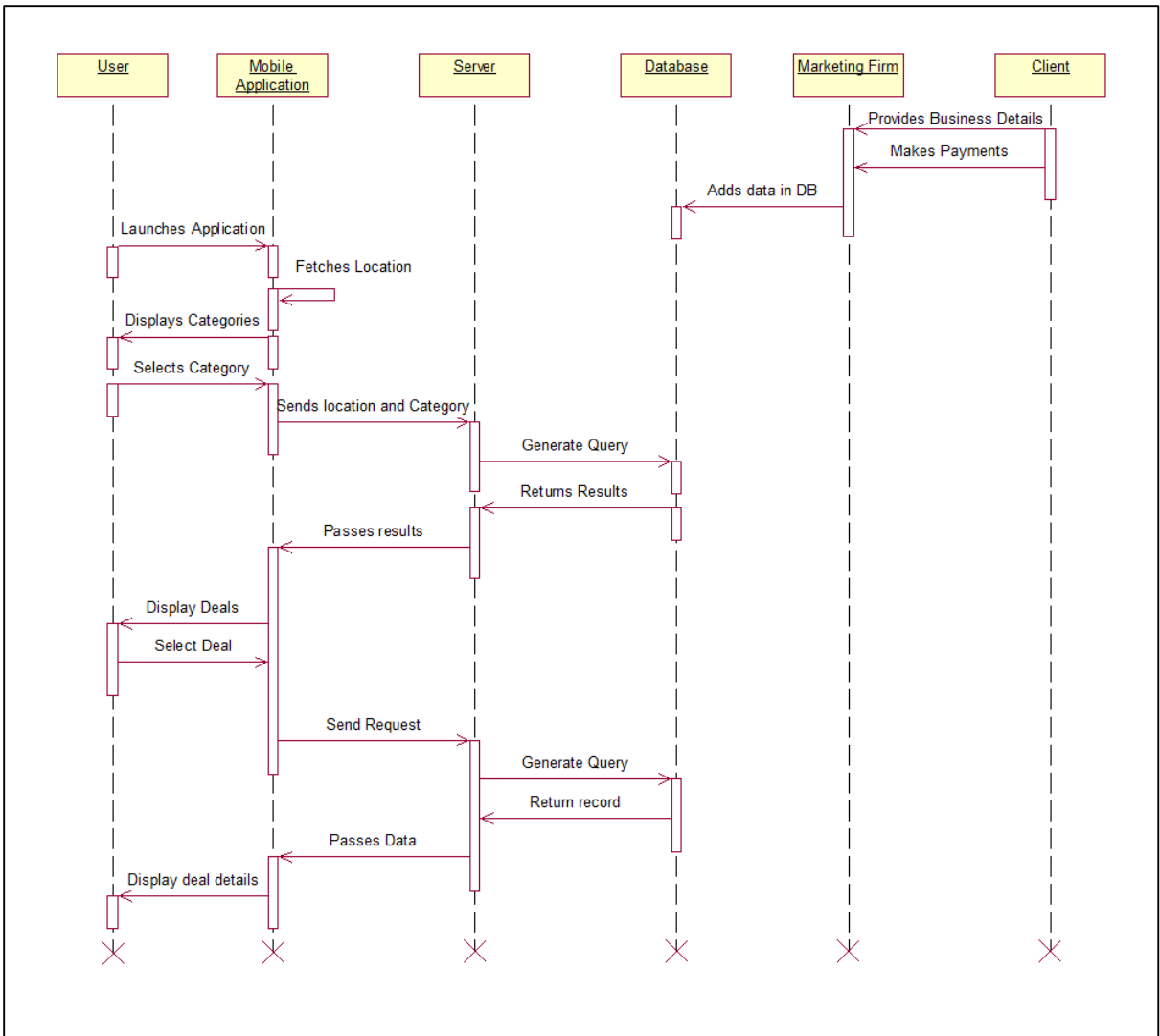


Fig. 3.6 Sequence Diagram

## Chapter 4

### Implementation and Result

#### 4.1 Implementation

1. To setup this service, we needed a backbone that stores all the data and host it. We hosted a server on localhost using WAMP server.
2. PHPmyAdmin allows to create database for storing all service related data on MySQL database server. We created tables for administrators login and offers data.
3. To enter the data into the database we created a small website. This websites allows user to enter the details about the offer into the 'offers' table in the database.
4. A Google Map Plugin has been used to take exact co-ordinates of the location of the offers, improving the accuracy of the service.
5. On opening the application by default user's location is detected, user can change location settings by clicking on the location button on the home screen.
6. The android application sends data in form of key value pair containing the 'Category', 'Latitude', 'Longitude', 'Range' to a PHP Script hosted on website. This PHP script execute a search query in offer's table. The data retrieved from the query is encoded into JSON format and sent to android application.
7. Virtual Box

The query processing of this service is based on the Latitude, Longitude, Category and Range that the PHP Script receives from the android application.

To convert Kilometers into Degrees we have to multiply the Range (in Km) value by 0.009.

1 Km = 0.009 Degree (In terms of Latitude and Longitude)

The Processing of Query can be explained using graphics

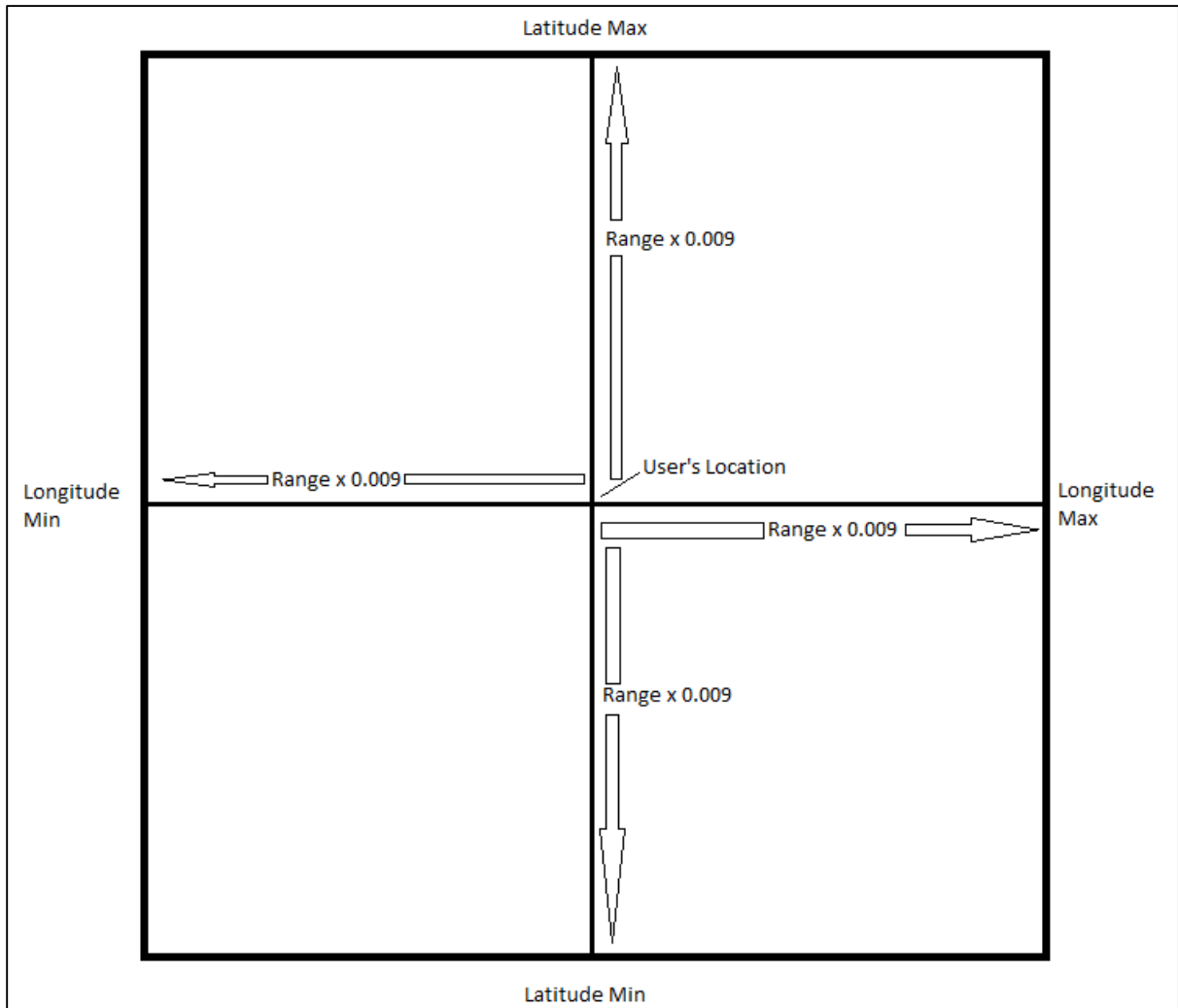


Fig 4.1 Virtual Box

This Virtual Box set area of search of offers with respective of user's location and range. Only the offers inside this area will be displayed. This area can be increased or decreased by changing the range.

8. The result is received in JSON format and is parsed by a function and added to an array list. View Holder class populate data from that array list in a custom list view format.
9. On appropriate selection of offer from the offer list displayed the ID of that offer is passed to server in a key value pair to a PHP script. This PHP script execute a search query in offer's table. The data retrieved from the query is encoded into JSON format and sent to android application.

10. The result is received in JSON format and is parsed by a function and added to an array list. Another View Holder class populate data from that array list in a custom detailed list view format.
11. On viewing the offer in detail a counter that records total view of that particular offer is increased and displayed accordingly in the Detail Activity.

## **Technologies Used:**

### **Android SDK**

Android software development is the process by which new applications are created for the Android operating system. Applications are usually developed in Java programming language using the Android Software Development Kit (SDK), but other development environments are also available.

The Android software development kit (SDK) includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and tutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X 10.5.8 or later, and Windows XP or later.

### **Android Studio**

The Android software development kit (SDK) includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and tutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X 10.5.8 or later, and Windows XP or later. As of March 2015, the SDK is not available on Android itself, but the software development is possible by using specialized Android applications.

Until around the end of 2014, the officially supported integrated development environment (IDE) was Eclipse using the Android Development Tools (ADT) Plugin, though IntelliJ IDEA IDE (all editions) fully supports Android development out of the box, and NetBeans IDE also supports Android development via a plugin. As of 2015, Android Studio, made by Google and powered by IntelliJ, is the official IDE; however, developers are free to use others. Additionally, developers may use any text editor to edit Java and XML files, then use command line tools (Java Development Kit and Apache Ant are required) to create,

build and debug Android applications as well as control attached Android devices (e.g., triggering a reboot, installing software package(s) remotely).

Enhancements to Android's SDK go hand in hand with the overall Android platform development. The SDK also supports older versions of the Android platform in case developers wish to target their applications at older devices. Development tools are downloadable components, so after one has downloaded the latest version and platform, older platforms and tools can also be downloaded for compatibility testing.

Android applications are packaged in .apk format and stored under `/data/app` folder on the Android OS (the folder is accessible only to the root user for security reasons). APK package contains .dex files (compiled byte code files called Dalvik executables), resource files, etc.

## **WAMP**

WAMP is an acronym for an archetypal model of web service solution stacks, originally consisting of four largely interchangeable components that gave the acronym: Windows, the Apache HTTP Server, the MySQL relational database management system, and the PHP programming language. As a solution stack, WAMP is suitable for building dynamic web sites and web applications

## 4.2 Testing

The testing of software is an important means of assessing the software to determine its quality. Since testing typically consumes 40-50% of development efforts and consumes more effort for systems that require development of Fourth Generation Languages (4GL), which speeds up the implementation process, the proportion of time devoted to testing is increased.

### Test Cases:

Table 4.1: Test Cases

Test Case ID	Test Case Name	Type of Testing	Precondition	Test Steps	Expected Result	Actual Result	Pass/Fail
1	Validation for application installation	Software Testing	APK file should be installed on android mobile	Accept all permissions require to application	1) APK file supported by android phone. 2) Application installed Successfully.	1) APK file supported by android phone. 2) Application installed Successfully.	Pass
2	Validation of User Interface	GUI Testing	App should start on mobile	Check all the section one after another	All activities are displayed after clicking on controls	All activities are displayed after clicking on controls	Pass
3	Fetching of User's Location	Unit testing	App should be running on mobile	1)Click on Auto Detect radio button then on 2)Check Location button	Latitude and Longitude will be displayed on bottom text view	Latitude and Longitude will be displayed on bottom text view	Pass

4	Display of User's location address	Unit Testing	Location Activity should be opened	1)Click on Auto Detect or manual location radio button 2)Check Location button	Addressed will be displayed in the text view situated at bottom of activity	Addressed will be displayed in the text view situated at bottom of activity	Pass
5	Validation of Manual entry of location	Unit Testing	Location Activity should be opened	1)Click on manual location radio button 2)Enter the City name 3)Click on Check Location Button	1)Latitude and Longitude will be displayed on bottom text view 2) Addressed will be displayed in the text view situated at bottom of activity	1)Latitude and Longitude will be displayed on bottom text view 2) Addressed will be displayed in the text view situated at bottom of activity	Pass
6	Validation of results displayed according to category	Functional Testing	Location of user is fetched, range is set and category is to be selected	Click on the image button representing the category as shown on the image button	List of the offers with respect to User's location, range and category selected will be displayed	List of the offers with respect to User's location, range and category selected will be displayed	Pass
7	Validation of details about the offer displayed	Functional Testing	List of the offers is displayed	Click on any offer which you want to see in detail	Details of offer displayed.	Details of offer displayed.	Pass



## 4.3 Result

The Location Based Advertising service is Implemented as per the Screenshot described .

### Administrator Section:

For the Location Based Advertising Service a Website has been made for administrators/owners of the service to enter the offer details.

The website has been hosted on 000webhost.com with domain name "savlbaserice.host22.com".

### Website Home/Login Page:

Snapshot for of the website home login page where the administrators enter user name and password to enter the admin panel of the service.

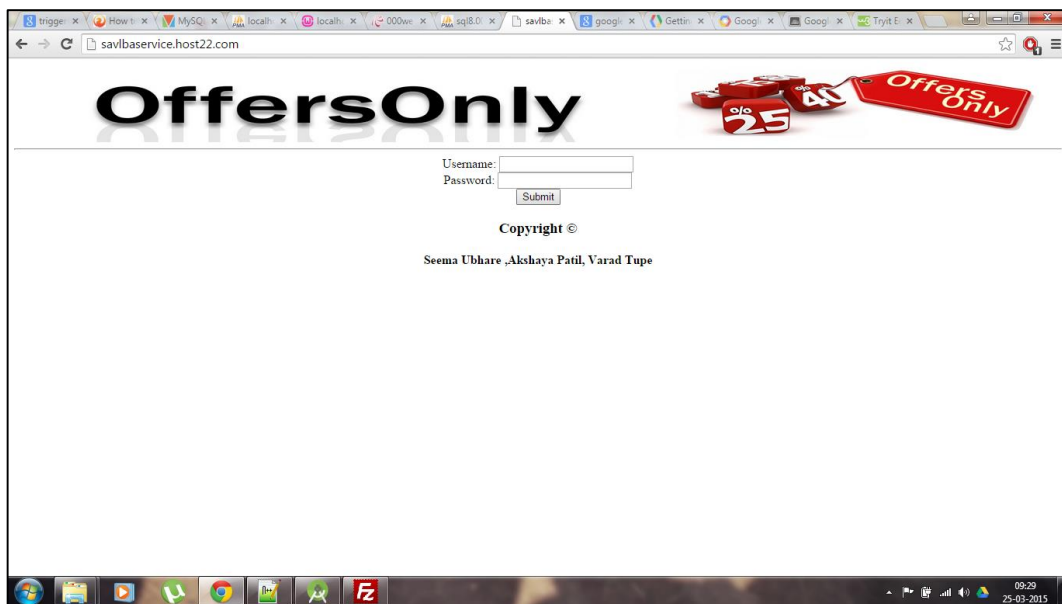


Fig 4.2 Home/Login Page

## Admin Panel:

After authentication the administrator the admin panel page is displayed which allows administrators to enter new offers, view all offers & search offers.

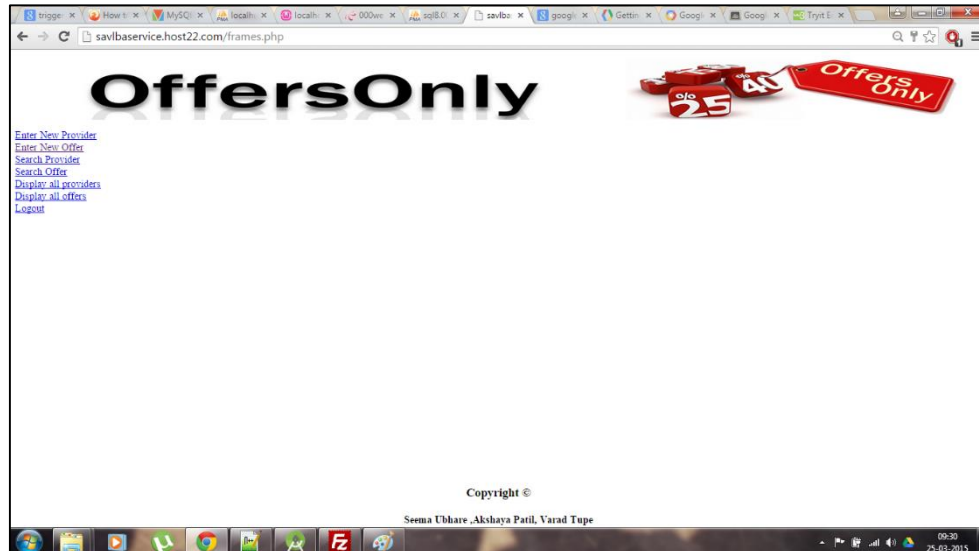


Fig 4.3 Admin Panel

## Offer Entry Form:

Administrators have to enter the details about the offers. A Google Map API had been used to pin point the exact location of the offer. As soon as the administrator click on the map a marker is dropped the Latitude and Longitude text boxes are filled with latitude and longitude received from marker placed on map.

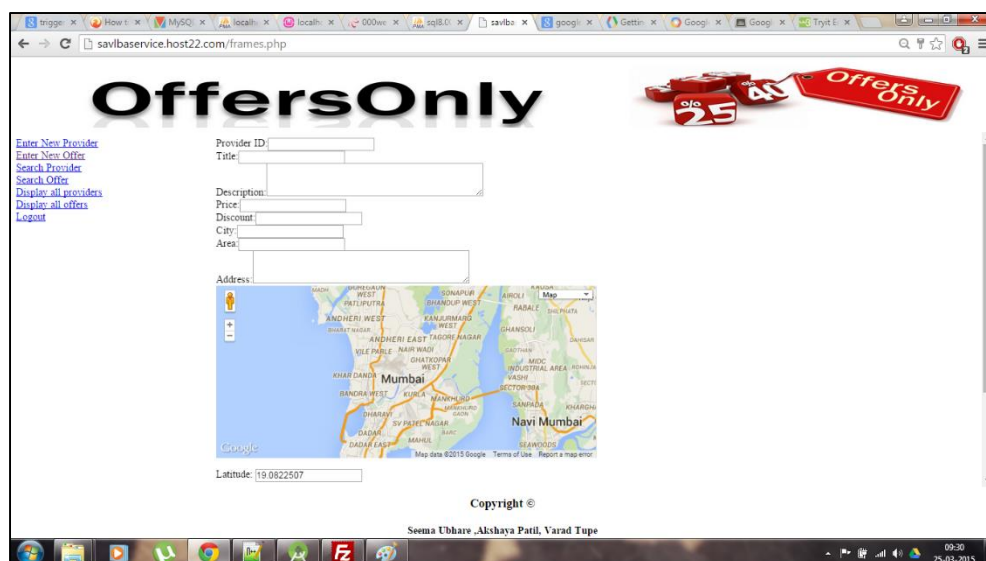


Fig 4.4 Offer Entry Form

## On Submitting The Offer Details:

After clicking on submit button the data is stored in the database and the data entered is displayed again.

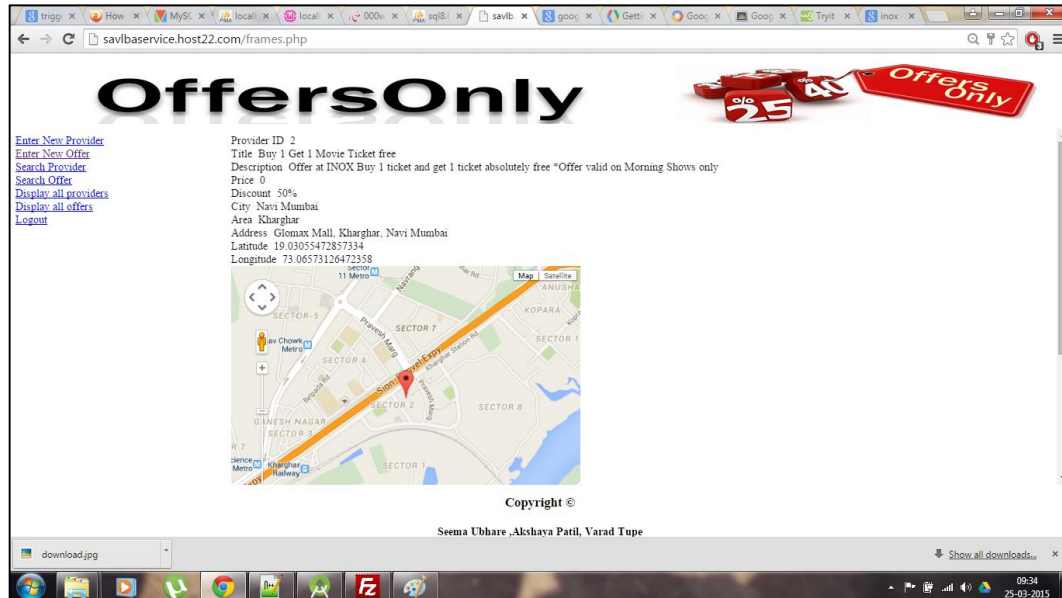


Fig 4.5 On submitting the offer details.

## Display All Offers:

On clicking 'Display all offers' link, all the offer data in the database is displayed in a tabular format.



Fig 4.7 Display of All offers

## Android Application:

### Splash Activity:

The splash activity is the starting activity initially displayed for 3 seconds.



Fig 4.6 Splash Activity

### Home Screen Activity:

The Home Screen Activity is displayed after the splash activity. The Home Activity have a location button which lets the users to modify location settings for the android application. Image Buttons have been used to represent various categories of offers such as Food, Electronics, Clothing, Events, Movies, Travel, Hotels, and Services. The first Image Button “Offers” will display all the offers present in the service’s database regardless of the user’s location.

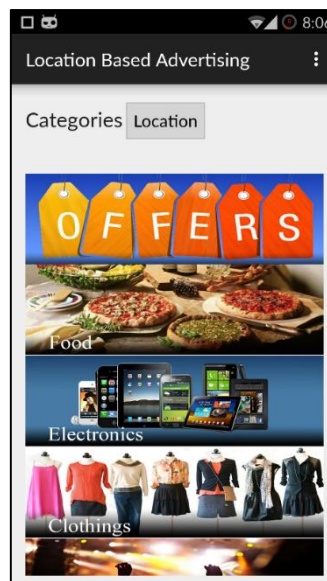


Fig 4.8 Home Screen Activity

### Location Activity:

The location button will open the Location Activity. Here two options are provided i.e. Auto Detect Location or Enter Manually.

Auto Detect Location will automatically trace the user's location and display the Latitude and Longitude as well as the Address using the Google Geocoding.

Enter manually option allows user to enter the City Name, then the city name is sent for Geocoding which returns the latitude and longitude of city entered. Currently the service is optimized for Mumbai City displaying all the sub-cities and areas in Mumbai.

User is able to customize the range of search of offers. The default range is 20 km.

Check Location fetches the user's location or City entered by the user. Submit Location send the back to Home Screen Activity.

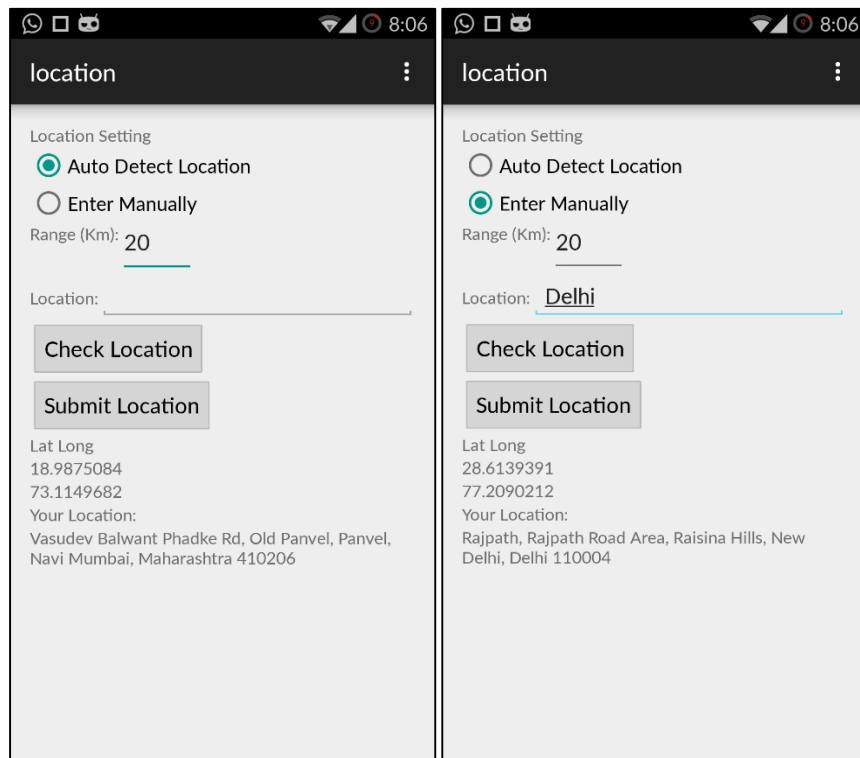


Fig 4.9 Location Activity

## Formatted JSON Data:



Fig 4.10 JSON Data

### All Result Activity:

On clicking All Offers button on Home Screen Activity the application will fetch all the offers from the database & displayed in the custom List View as displayed in figure below.

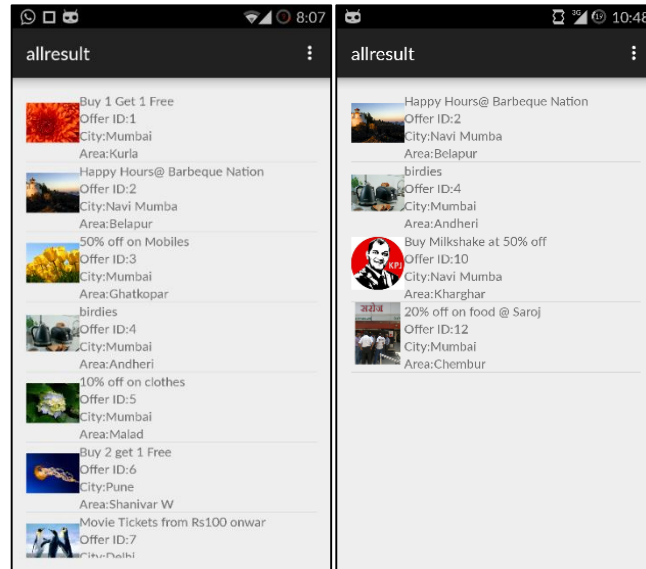


Fig 4.11 Offers in Offer Result Activity

On clicking on Food Button, the application will fetch the food category records from the database and displayed in the custom List View Layout as displayed in figure above on right.

### Offer Detail Activity:

On clicking on a particular offer, the detailed view of that particular offer such as the Offer Image, Offer ID, City, Area, Discount/Price, Detail description, Address, Website Link, Expiry Date, Total Views are displayed.

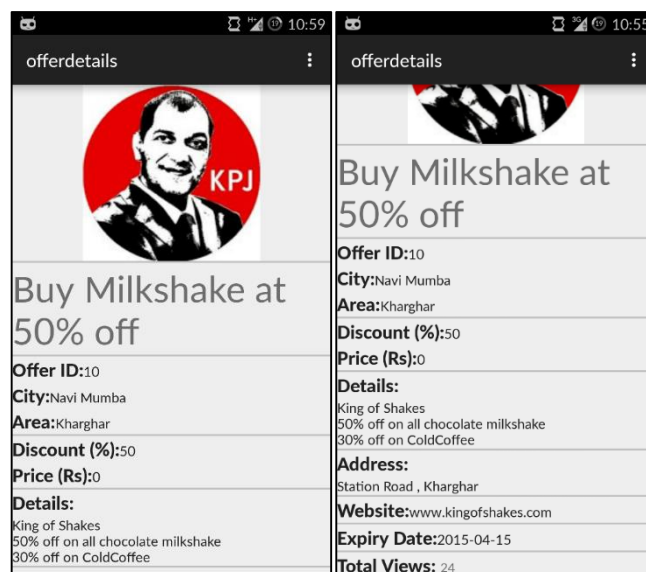


Fig 4.12 Offer Detail Activity

## **Chapter 5**

### **Conclusion**

The proposed system acts as platform for small to medium business to extend their reach towards customers. This system overcomes the drawbacks of traditional marketing as well as existing system. It also provides personalized advertisement to the users with respect to location and easy search of offers This system provides efficient way for business to market the products and services as advertises are delivered directly to the user's mobile phone and also the cost to set up infrastructure is much less as compared to other marketing strategies.



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### Websites and Android Applications:

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- [3] Freecharge: [www.freecharge.com](http://www.freecharge.com) and FreeCharge mobile application.
- [4] Hike Messenger mobile application.

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