JustQuick: Intelligent LBS using Android with GPS and Geo-Tagging Applications

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***Abstract*—JustQuick is an android based application that will provide details about the user's nearby services like ATM, bank, cafe, hospital, shops, etc. of a particular city. It will also provide a path from the user's current location to that particular services' location. Information provided by app from our own database. We also provide permission to authorized users to insert a new object to our database and able to modify a specific field at regular interval.**

Keywords—JustQuick, LBS, GPS, geo-tagging, android

I. INTRODUCTION

According to some sources there will be up to 6.1 Billion smartphones in 2020[1]. All basic phones will be replaced by smartphones. As we know marketing by internet today's hot and exponentially growing field our app and for other perspective provide the information for users so that they can utilize your resource effectively.

This Android application provides an online service to store the information about services provided by any individual person or an organization and then display it to the users who want to use it. It allows users to search the services from a categorical list. After selecting a particular category it will display the name of all organization or person that are providing that service, after selecting any individual name it will provide all useful information about it. It also provide a path from user's current location to location of that service.

We use Android Studio software to develop this project which is provided by Google Inco. Latest version of Android Platform API 23[] is used to develop this project so that it can smoothly run on Latest Android Devices. To fetch the details of a particular service we store the data in JSON format so that retrieval of information would be very fast. Google also use this method to display the services but it would not allow users to easily make any changes on it once it is available on server. It takes some time to change the information available on Google server.

II. BACKGROUND

A. Android

It is a mobile operating system (OS) which is developed by Google, It is based on Linux Kernel and design primarily for touchscreen devices such as smartphone and tablet. Android's user interface is mainly based on direct manipulation, using touch gesture that loosely correspond to real-world actions, such as tapping, swapping and pinching, to manipulate on-screen objects.

The Android Software Development Kit (Android SDK) provides all necessary tools to develop Android applications. This includes a compiler, debugger and a device emulator, as well as its own virtual machine to run Android programs. Android allows background processing, provides a rich user interface library, access to the file system and provides an embedded SQLite database.

Android applications consist of different components and can re-use components of other applications. This leads to the concept of task in Android; an application can re-use other Android components to achieve a task [1][2].

B. Global Positioning system

The Global Positioning System (GPS) is a satellite-based navigation system. It is made up of a network of 24 satellites placed into orbit such that all portion of earth cover completely. It is developed by U.S Department of Defense. In 1980 the U.S Government made the system available for civilian use [3].

The system provides critical capabilities to military, civil and commercial purposes. It becomes fully operational in late 1995.

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Figure 1. The GPS satellite system

We use mobile GPS to get user's current location if GPS is not enable then a prompt message will be displayed on user's screen that will lead to open the setting of device to enable GPS. After enabling GPS app will get user's current location then it will be displayed on Map as a current location of user [3].

C. *Google Map API*

With the Google Maps Android API, We can Add Maps based on Google Map Data to our application. The API automatically handles access to Google Map servers, data downloading, map display, and response to map gesture.

The API allows us to make a polyline on maps which are used in our application to display the path between source to destination. We Use Google Map API to display the markers on Map. Marker will tell the position of user and nearby service provider location. To use Google Map API in any project one must take key from Google. To obtain a key we first login to Google developer Console and provide the package name and SH1 fingerprint. Once we get the Key we use it Manifest file in our project [4][5].

D. *JSON*

JavaScript Object Notation is Syntax for storing and exchanging data. JSON is an easier way to replace XML.JSON is a lightweight data-interchange format. It is self-describing and very easy to understand. JSON values can be number, string, Boolean, array, object or null. JSON Number is similar to C integer but it doesn't support Hexa-Decimal or Octal-decimal. JSON String is a sequence of zero or more character it is wrapped in double quotes. A JSON Object is an unordered set of name pairs. Object of JSON begins with left brace and end with right brace, each name end with colon and name pairs separated by comma. JSON Array is ordered collection of values, it begins with left bracket and end with right bracket while values are separated by comma [7].

E. *Genymotion and Virtual Box*

Once Coding was done we use Genymotion to run and test the application for different version of devices with different screen resolution. Genymotion provides a very light android emulator with low size and high performance using virtual box. It is a free software for personal usage but it charge money if we are using it for commercial purposes. Genymotion also provides GPS facility by which we can set the latitude and longitude of that android emulator.

III. WORKING

We divide our project into two major component as follows.

- Retrieve information from server.
- Insert And Update information available on server.

F. *Retrieve information from server*

When User launches the application a home screen will be display as shown in Figure 1.

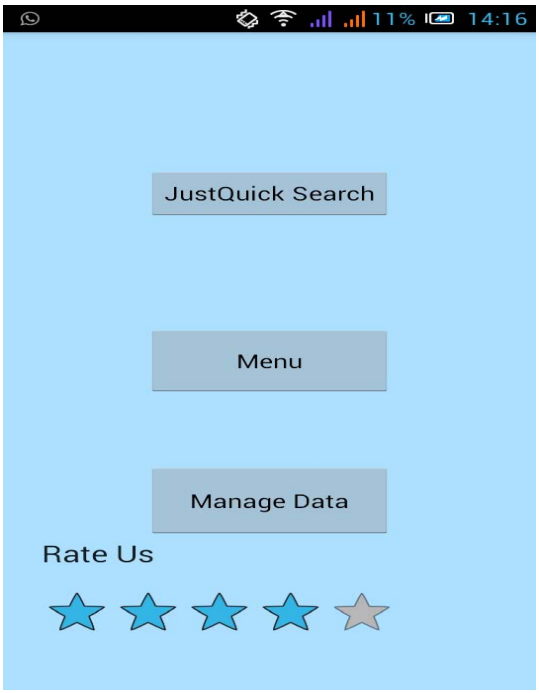

Figure 2. Home Screen

There will be a button name "Menu", when user click on it all services will be display in the form of grid list. Number of grid in a row is 3 we can increase or decrease it based on resolution or better interaction for user.

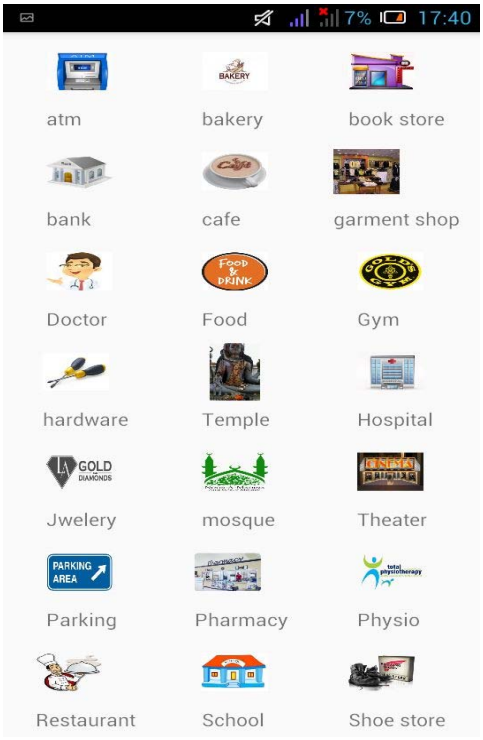

Figure 3. Menu List

When user click on a particular service let say Book Store first it establish a connection to server using "URLconnection" method once connection establish it will fetch the name of all book stores available on json file from server. Once name fetch it will display on screen as shown in Figure 4.

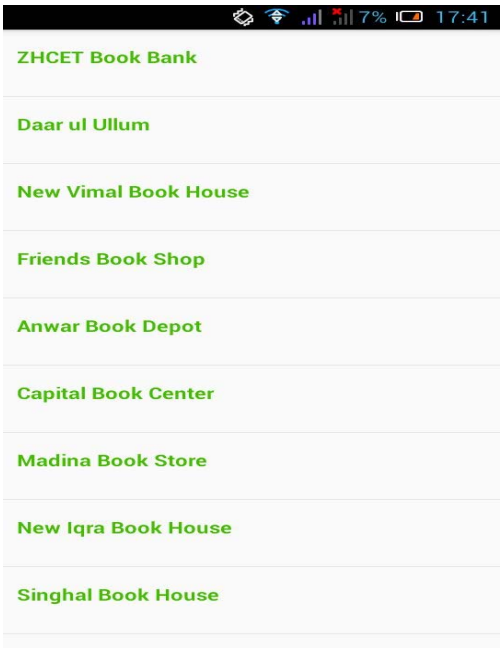

Figure 4. List of all nearby books store

From these names when a particular name is clicked a new layout will display. In this layout we provide two major information, the upper part of this layout provide the detail such as name, email, address, phone number, offer, location of that particular service provider. The bottom half of this layout will display a map on which a marker will be present on the location of service provider.

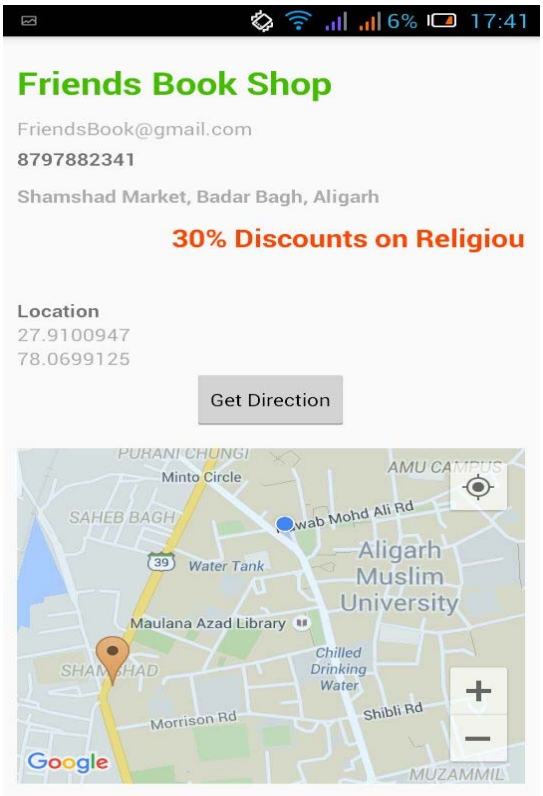

Figure 5. Details about shop

If any user want to know about his current location, a button is present on top right corner of map it will first check the GPS is on or not if it not on the ask user to switch On the GPS then it will zoom-in the map to user's current location.

We also provide another way to get user's current location which is from network provider and Wi-Fi it can use any method to get user's current location [5].

A button name "Get Direction" is also available on this layout that will fetch the path from user's current location to service provider's location. To display the path first we fetch the all latitude and longitude of user location then we will pass it to google place url along with destination latitude and longitude then google provide list of all latitude and longitude which comes between the path the we save it in an array.

We know fetch those locations one by one and make a polyline between two consecutive location repeating this step we will display the path between location as follows.

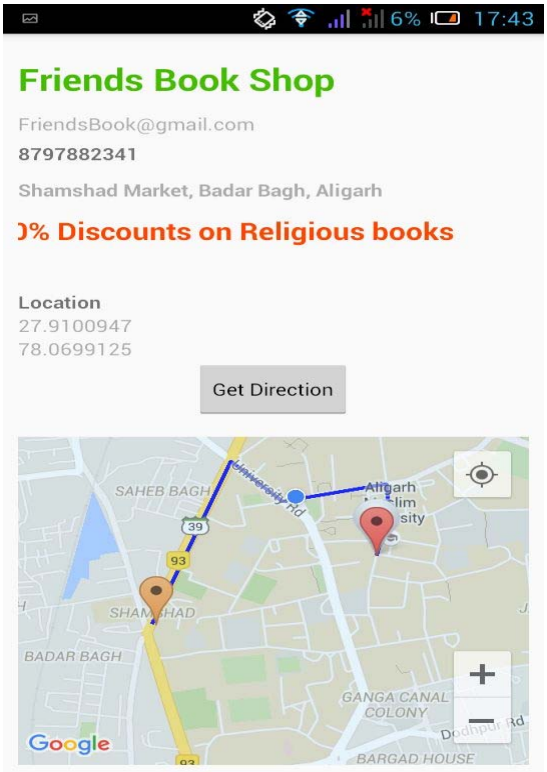

Figure 6.Direction from user to shop

G. Insert and Update Information Available on server

As in Manage Section of this App we provide a user credentials (email and password) to login and update the database for existing users.

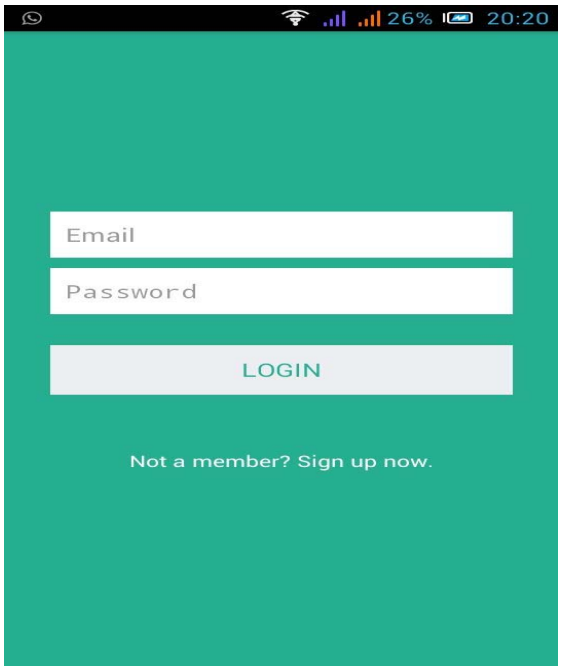

Figure 7. Login option for user

If someone does not has account then he can simply fill the form and could be registered. For example if somebody is the owner of the restaurant and he wants give information of his restaurant on this app then he will simply fill the required entries of the form as (Name of the Restaurant, Address, phone no, mobile no, email and offers) then we will provide a unique id on the email of that person as a password.

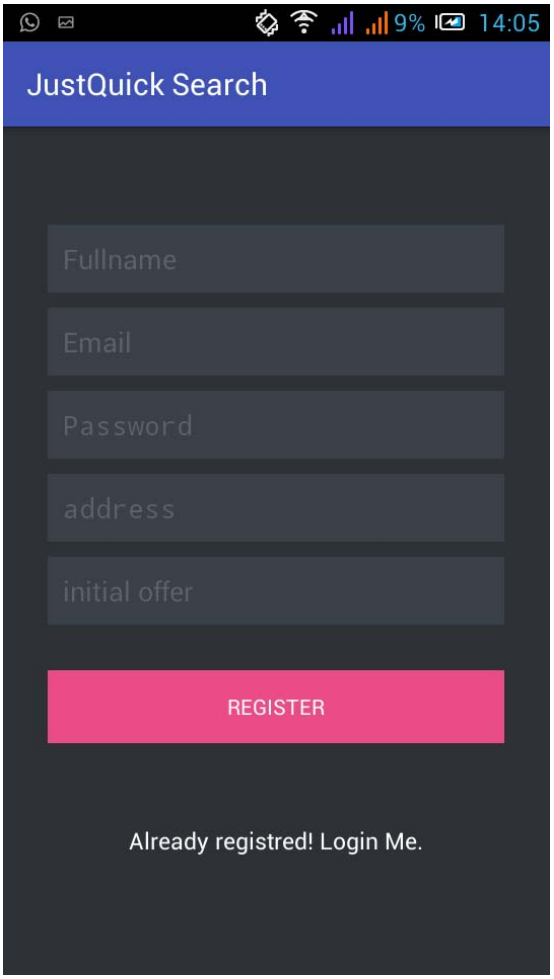

Figure 8. Registration of user

Then by using his email and this id he can simply login on this app and can update the previous offers or discount. So for this we are using MySql DBMS for storing the information of a particular place in a table. So after creating an account if existing customer wants to login by email and id then we will check this email and id in our database for authorizing the customer then we give permission to update the previous offers or discounts in respect of this id. Then these information will go from the tables to json files. And from there we will fetch the requested information. [6]

IV. COMPARISON WITH EXISTING WORK

There are many applications available on Play Store such as Justdial, Google Places, Groupon, Shopkick etc. But none of

the Apps available on Play-Store provide a way to modify the data or provide dynamic information. Now a days almost everybody have smartphones with internet connection. Most of user use their smartphone to search places when they come to new places. There are many apps which provide information with rich content but our focus is to provide information even in bad networks or slow connection that's why we use less images and make the app as simple as possible. Retrieving of data from server also uses very less amount of data. Other apps like justdial having rich interface that's cause it slow to load and give poor performance in case of slow connection.

V. FUTURE WORK

Our next focus will be providing a channel to communicate between the user and service provider so that they can negotiate and get more benefits. We will also be going to provide a feedback form for users so that they can give suggestion and problems they are facing. Then we would try to implement it and make it more user friendly. We are also thinking to implement a review option for a particular service provider so that after using a particular service user can review it. We are also adding some more options in Menu.

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