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Local Navigation Application

Ayush Sudhakar Kohade
ayush.kohade19@vit.edu

Vishwakarma Institute of Technology,
Pune, Maharashtra

Akshay Khubchandani
akshay.khubchandani19@vit.edu

Vishwakarma Institute of Technology, Pune, Maharashtra

Neeraja Ravindra Khire
neeraja.khire19@vit.edu

Vishwakarma Institute of Technology, Pune,
Maharashtra

Khushi Ajay Bhartiya
khushi.bhartiya19@vit.edu

Vishwakarma Institute of Technology, Pune,
Maharashtra

Pavankumar Bharat Khot
pavankumar.khot19@vit.edu

Vishwakarma Institute of Technology, Pune, Maharashtra

ABSTRACT

This paper is aimed towards providing an easy access to locations around the college area especially useful to students moving to the city from elsewhere. Taking into consideration, the wide- spread use of cell-phones the project has been designed in the form of an application. The application created is designed with taking into consideration the immediate needs of the students. The application works in co-ordination with Google Maps and provides location access. The application also provides useful information regarding the locations. This paper provides the summary of the process of creation of this project.

Keywords: Android OS, API key, JAVA, Location, Navigation, SDK.

1. INTRODUCTION

Nowadays, mobile applications have become a trend with new emerging technologies. There are many applications available. From young to old, everyone uses one or another mobile application for the daily needs. There are various applications available to aid us in our lives right from banking, shopping to gaming, etc. This project is based on application, designed according to the needs of students who are new in area. The application used is Android Studio, which has access to Google Maps.

A wide study was done on effectiveness and use of Android Studio (SDK) tools for Android Developers [1]. Android studio is a new IDE (Integrated Development Environment) made available for free Google to Android Developers. It includes many tools to develop the application. Akshay Singh [2] reported on the development of apps using Android Studio based on Android Application Development using Android Studio and PHP Framework.

Android Applications using Google Maps access to get current location and navigate with the help of GPS have been studied by

Bagrecha Komal S [3]. Shivkumar Goel [4] reported a paper on Review on Unified Payment Interface [UPI] which elaborates about Access to Google maps using API key.

This Android application is written by using JAVA, as a programming language which provides information and location of particular places, which will be useful to the students, near and around the campus of VIT College, Pune. The hostilities and students living on rent are supposed to be benefitted from this project and information like contactnumbers of clinics, banks, mess, ratings and images of hostels, locations of stationary shops, restaurants etc. will be provided in this application.

2. LITERATURE REVIEW

Various methods have been adopted in developing Android applications.

Harshal Kolhe. et al [5] reported a paper on android development using the ECLIPSE JUNO IDE (Integrated Development Environment) to develop the entire source code while using XML (Extensible Markup Language) for the UI designing.

Ing-Chau Chang. et al [6] reported the use of Eclipse IDE and ADT (Android Development Tools) supporting JAVA 1.7 along with a VANET based route planning algorithm to develop their route- planning application.

Lokhande. et al [7] reported use of Android Studio platform and XML format for database for Smart Shopping through location. Avinash Kumar Sharma [8] developed a model for virtual machine placement for task of planning the optimal map of virtual machines to physical machines.

The user interface is the important element of a computer-based system. If the interface is not well designed; the user might not turn up towards the application or may be severely hindered. S.Sridevi [9] reported on the User Interphase Design which

provides the interphase designing system.

3. METHODOLOGY/EXPERIMENTAL

3.1 Theory

Android application is written in the Java programming language. The Android SDK tools compile the code along with any data and resource files into an Android package, an archive file with an .apk suffix. All the code in a single .apk file is considered to be one application and is the file that Android-powered devices use to install the application.

Software and information required for project:

1. Android Studio
2. Access to Google Maps through API key
3. Locations, names and contact information of shops, clinics, etc.
4. Code in the templates to build common application features

3.2 Design and Method



Fig. 1: Methodology

Figure 1 shows the process involved in building any successful android application. This shows the rough methodology adopted by us while creating this app.

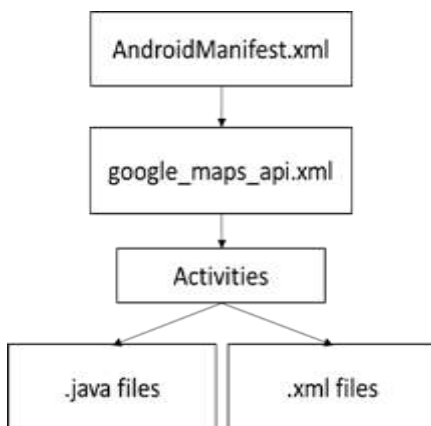


Fig. 2: Structure of the application

Figure 2 depicts the summary of the internal structure of the application and how it is built.

The first block shows the name of the main file: AndroidManifest.xml. It contains the names of all the activities and contains the code to determine which one is to be run first when the application is opened.

The google_maps_api.xml file is the most important file of any

google map’s location or navigation app. It contains the API key which allows our app to access Google Maps.

The next block represents all the activities in the app. An activity is the file which contains the code for a single window or screen of the app. An app consists of multiple activities.

A single activity has many parts of which 2 are the most important: the .java file and the .xml file as displayed by the last two blocks. The .java file contains all the backend code of the window while the .xml file contains the code about the display of various objects on the screen.

3.3 Pseudo Code

```

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.myapplication">

    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="true"
        android:theme="@style/AppTheme">
        <activity
            android:name=".MainActivity"
            android:label="@string/app_name"
            android:theme="@style/AppTheme.NoActionBar"/></activity>
    </application>
    
```

Fig. 3: Source code

Figure 3 represents the source code which is written in Android studios using Java language. Java and Kotlin are available for app developers using Android Studio.

The different components of the application were also present for layouts, activities, data, mapping, etc. which were responsible for the working of modules.

3.3 Testing

Simulated system was decided to be tested for certain conditions on Emulator which is used for a quick launch bar for Google.

Test 1: On selecting the option of ‘Stationery shops’ in the main menu, a list of stationeries nearby will be displayed. On clicking on one of the options, the application is supposed to display the name, contact information and (if chosen to) the location of the selected choice of place.

Test 2: On selecting the option of ‘Clinics’ in the main menu, a list of clinics nearby will be displayed. On clicking on one of the options, the application is supposed to display the name, contact information and (if chosen to) the location of the selected choice of place.

Test 3: On selecting the option of ‘Banks and ATM’s’ in the main menu, a list of banks and ATMs nearby will be shown. On clicking on one of the options, the application is supposed to display the name, contact information and (if chosen to) the location of the selected choice of place.

Test 4: On selecting the option of ‘Mess and Restaurants’ in the main menu, a list of mess and restaurants nearby will be depicted. On clicking on one of the options, the application is supposed to display the name, contact information and (if chosen to) the location of the selected choice of place.

Test 5: On selecting the option of 'Hostels' in the main menu, a list of hostels nearby will be displayed. On clicking on one of the options, the application is supposed to display the name, contact information and (if chosen to) the location of the selected choice of place.

Test 6: The user will be able to view his/her current location whenever required.

4. RESULTS AND DISCUSSIONS

As per the planned tests the system was simulated under various cases.

Figure 4 depicts the first interphase of the application while figure 5 shows the menu of application.

On tapping 'Stationary shops', it shows the list of nearby shops which shows the name and the contact information which is depicted in Figure 6. After selecting any one, it shows the location shown in figure 7.

On tapping 'Clinics', it shows the list of nearby clinics which shows the name and the contact information which is depicted in Figure 8. After selecting any one, it shows the location in the same way as shown in figure 7.

On tapping 'Banks and ATM's', it shows the list of nearby banks which shows the name and the contact information which is depicted in Figure 9. After selecting any one, it shows the location in the same way as shown in figure 7.

On tapping 'Mess and Restaurants', it shows the list of nearby Mess which shows the name and the contact information which is depicted in Figure 10. After selecting any one, it shows the location in the same way as shown in figure 7.

On tapping 'Hostels', it shows the list of nearby hostels and PG's available which shows the name and the contact information which is depicted in Figure 11. After selecting any one, it shows the location and vacancies available in the same way as shown in figure 7.

Figure 12 depicts that user will be able to find his/her current location through the app.



Fig. 5: Main Menu



Fig. 6: Menu: Stationary Shops



Fig. 7: Location for stationary shop



Fig. 4: First Interphase



Fig. 8: Menu: Clinics



Fig. 9: Menu: Mess and Restaurants



Fig. 10: Menu: Banks and ATM's



Fig. 11: Menu: Hostels



Fig. 12: Current Location

After pressing menu, the user will be navigated back to the Main Menu as depicted in Figure 5.

All the test cases have been successfully implemented. It can hence be concluded that the application is working as per expectations. It has been successfully tested and found to work on various virtual Android devices (Android emulators emulating different android devices). It is displaying the names and contact information of good, recommended locations nearby and advanced information for selected menu. It has been able to access the user's current location and also display the location chosen by the user.

5. LIMITATIONS

This application gives location access for limited area only. Thus, it may only be useful for the students studying in VIT College or living in Upper Indira Nagar, Pune. This application requires active internet connection. Moreover, even though the application can display the location of the destination and the current location, it does not display a route to reach there. The emulator is not a device and it only simulates general handset behavior. Hence, the app has not been tested on real devices. Since the app has been specially designed for mobile devices and tablets, it cannot run on laptops or desktops.

6. FUTURE SCOPE

The scope of this project can be expanded by adding to it the information about the areas around other colleges and their hostels. A map of the college campus can also be provided. At this point, the app only provides the location of the chosen place with their contact numbers and vacancies for Hostels. A convenient route to the chosen places can also be displayed. Also, while we are testing this on an emulator, it can be tried on various android devices (mobile phones, only).

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8. CONCLUSIONS

The project "Local Navigation Application" is successfully tested with test conditions and implemented which is one of the best solutions for navigation purpose. All the locations to nearby selected areas are successfully seen and displayed on app and also the location of user is seen on screen.

9. REFERENCES

- [1] Hana R. Esmaeel, "Apply Android Studio (SDK) tools" in International Journal of Advanced Research in Computer Science and Software Engineering, volume 5, issue 5, May 2015, pp. 88-93.
- [2] Akshay Singh, Sakshi Sharma, Shashwat Singh, "Android Application Development using Android Studio and PHP Framework", International Journal of Computer Applications (0975 – 8887), Recent Trends in future prospective in Engineering & Management technology, 2016.
- [3] Bagrecha Komal S., Bramhecha Amit R., Chhajed Sneha S., Khivsara B. A., "Android Application using GPS Navigation", Special issue of International Journal of Electronics, Communication & Soft Computing Science & Engineering, 1st International Conference on Recent Trends

- In Engineering & Technology, March 2012, pp. 84-89.
- [4] Shivkumar Goel, Deepak Kailash Gupta “A Review on Unified Payment Interface [UPI]” in International Journal for Scientific Research & Development, Vol. 5, Issue 04, 2017, pp1469 -1472.
- [5] Harshal Kolhe, “Navigation Application Using Android” in International Journal of Scientific and Research Publications, Volume 4, Issue 2, February 2014.
- [6] Ing-Chau Chang, “A VANET-Based A* Route Planning Algorithm for Travelling Time and Energy Efficient GPS Navigation app”, Sage Journals, July 18, 2013.
- [7] Lokhande Priyanka Vitthalrao, Abhale Priyanka Mahendra, Kumkar Monali Madhav, Mundhe Sandhya Bhausheb, “Smart Shopping: Location-based Android Application”, Imperial Journal of Interdisciplinary Research (IJIR), Vol-2, Issue-4, 2016.
- [8] Avinash Kumar Sharma, “A Multi-Objective Genetic Algorithm for Virtual Machine Placement in Cloud Computing” in International Journal of Innovative Technology and Exploring Engineering (IJITEE), Volume-8 Issue-8 June, 2019, pp. 231-23.
- [9] S.Sridevi “User interphase design” in Department of Computer Science & Engineering, Saveetha School Of Engineering Saveetha University, Chennai, Vol. 2, Issue 2, April-June 2014, pp: 415-426.