MINI PROJECT

(2021-22)

"Virtual Study Room"

Project Report

Institute of Engineering & Technology

Submitted By -

Vasu Agarwal (191500900)

Sejal Bansal (191500739)

Sanchita Srivastava (191500712)

Yashasvi Gautam (191500935)

Tanuruddh Pratap Singh (191500848)

Under the Supervision of

Mr. Akash Kumar Choudhary

Technical Trainer

Department of Computer Engineering & Applications

Department of Computer Engineering and Applications

GLA University, 17 km. Stone NH#2, Mathura-Delhi Road,

Chaumuha, Mathura – 281406 U.P (India)

Declaration

I the undersigned solemnly declare that the project report **VIRTUAL STUDY ROOM** is based on my team work carried out during the course of our study under the supervision of **Mr. Akash Kumar Choudhary, Technical Trainer, Department of Computer Science, GLA UNIVERSITY, MATHURA**. I assert the statements made and conclusions drawn are an outcome of my team research work. I further certify that the work contained in the report is original and has been done by me and my team under the general supervision of my supervisor. We have followed the guidelines provided by the university in writing the report. Whenever we have used materials like data, text from other sources, we have given due credit to them in the text of the report and giving their details in the references. The work has not been submitted to any other Institution for any other degree in this university or any other University of India or abroad. The contents of this project report, in full or in parts, have not been submittedto any other Institute or University for the award of any degree.

Sign: *SejalBansal*

Name of Candidate: Sejal Bansal

University Roll No.:191500739

Sign: *TanuruddhPratapSingh*

Name of Candidate: Tanuruddh Pratap Singh

University Roll No.:191500848

Sign: *YashasviGautam*

Name of Candidate: Yashasvi Gautam

University Roll No.:191500935

Sign: *VasuAgarwal*

Name of Candidate: Vasu Agarwal

University Roll No.: 191500900

Sign: *SanchitaSrivastava*

Name of Candidate: Sanchita Srivastava

University Roll No: 191500712

Department of Computer Engineering and Applications

GLA University, 17 km. Stone NH#2, Mathura-Delhi Road,

Chaumuha, Mathura – 281406 U.P (India)

Certificate

This is to certify that the project entitled "Virtual Study Room", carried out in Mini Project is a group work by Vasu Agarwal, Sejal Bansal, Sanchita Srivastava, Yashasvi Gautam and Tanuruddh Pratap Singh is submitted in partial fulfillment of the requirements for the award of the degree Bachelor of Technology (Computer Science & Engineering).

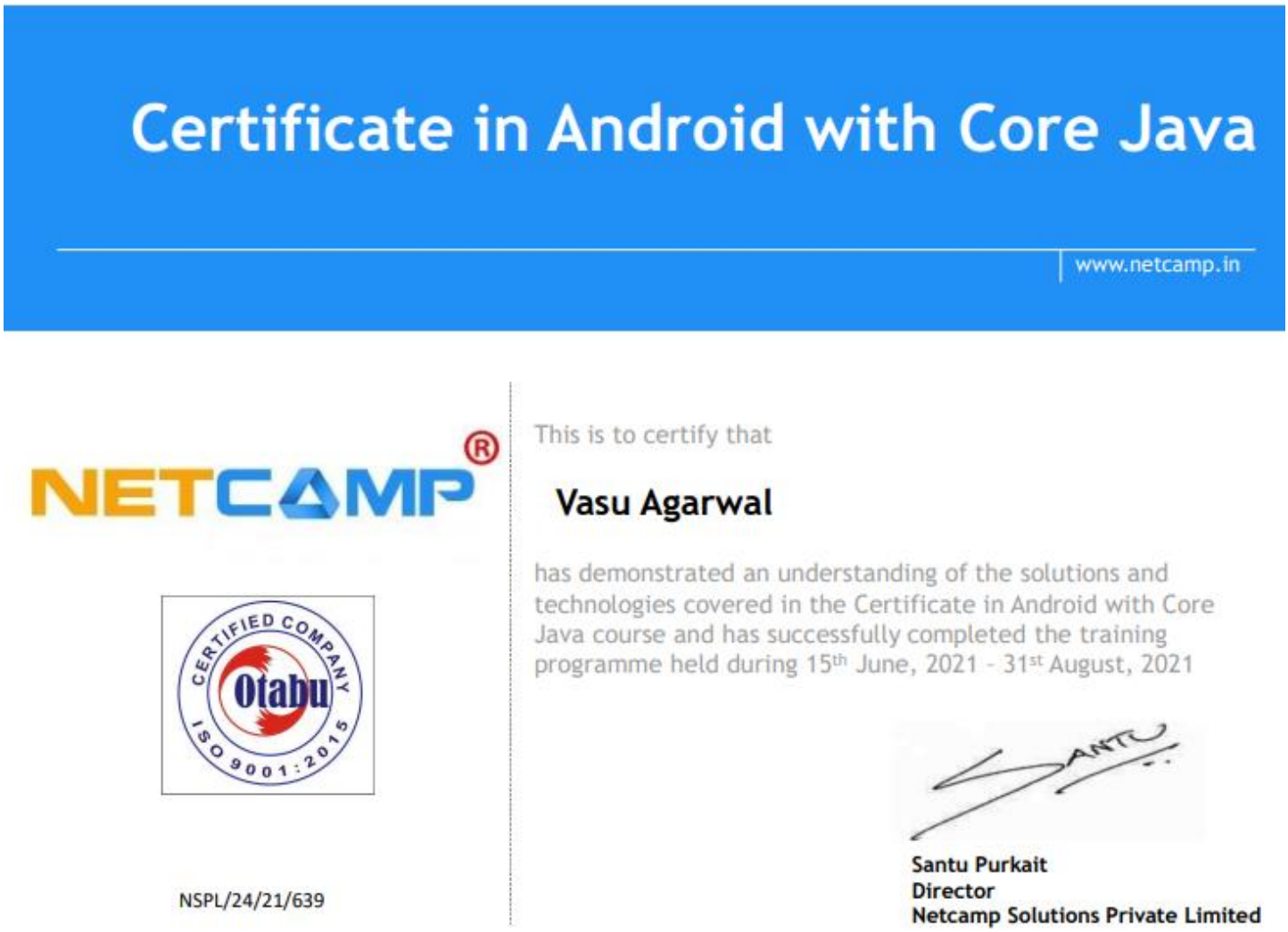
Signature of Supervisor:

Name of Supervisor: Mr. Akash Kumar Choudhary

Date:

Training Certificates

- **Vasu Agarwal**



- **Sejal Bansal**


Great Learning
CERTIFICATE OF COMPLETION
Presented to
Sejal Bansal
For successfully completing a free online course
Android Application Development
Provided by
Great Learning Academy
(On November 2021)

- **Sanchita Srivastava**

- **Yashasvi Gautam**

- **Tanuruddh Pratap Singh**


BRONZE
GLA UNIVERSITY MATHURA
Accredited with A Grade by NAAC
Job Oriented Value-Added Course
on
Hybrid Mobile App Development with React-Native
Certificate of Participation
This certificate is awarded to TANURUDDH SINGH, Roll No. 191500848 from GLA University, Mathura, for successfully completing the Job Oriented Value-Added Course on Hybrid Mobile App Development with React-Native, organized by Department of Computer Engineering & Applications (CEA) GLA University, Mathura (U.P.), India from 29th June, 2021 to 31st July, 2021.
Dr. Rohit Agarwal
Head of Department
Mr. Pankaj Kapoor
Course Coordinator

Department of Computer Engineering and Applications

GLA University, 17 km. Stone NH#2, Mathura-Delhi Road,

Chaumuha, Mathura – 281406 U.P (India)

ACKNOWLEDGEMENT

We would like to express our sincere thanks to Mr. Akash Kumar Choudhary for his valuable guidance and support in completing our project. Your valuable guidance and suggestions helped us in various phases of the completion of this project. We will always be thankful to you in this regard.

He has been helping us since Day 1 in this project. He provided us with the roadmap, the basic guidelines explaining on how to work on the project. He has been conducting regular meeting to check the progress of the project and providing us with the resources related to the project. Without his help, we wouldn't have been able to complete this project.

Finally, we would like thank our parents and friends, without them this project would not have been completed.

Thanking You

Sign: *SejalBansal*

Name of Candidate: Sejal Bansal

University Roll No.:191500739

Sign: *TanuruddhPratapSingh*

Name of Candidate: Tanuruddh Pratap Singh

University Roll No.:191500848

Sign: *YashasviGautam*

Name of Candidate: Yashasvi Gautam

University Roll No.:191500935

Sign: *VasuAgarwal*

Name of Candidate: Vasu Agarwal

University Roll No.: 191500900

Sign: *SanchitaSrivastava*

Name of Candidate: Sanchita Srivastava

University Roll No: 191500712

ABSTRACT

In this project, we are creating an android application, which we named 'Virtual Study Room' which basically provides educational courses. This application will provide us a platform to access the online courses we want to learn at the ease of our fingertips. All the users will be having their separate accounts on this app which will be connected to their email id. The user can view all the courses and can learn them by watching video lectures. The app is suitable in the present scenario as the world is being digitalized and all want to learn courses online from their home. The app also has a complete User Interface attached to the firebase a perfect login system with email id and password and new users can register also.

Android App ecosystem is diverse and is changing people's life all over the world. Android users are expected to increase because of the advance changes of the operating system and the way it deals with issues and compatibility with other mobile devices.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER-1

INTRODUCTION

1.1 CONTEXT

This Android Application "Virtual Study Room" is the name of our mini-project for the fulfilment of the degree of Bachelor of Technology in Computer Science and Engineering at GLA University, Mathura supervised by Mr. Akash Kumar Choudhary. This project has been completed in approximately two months and has been executed in modules, meetings are done in order to check progress and solve issues.

1.2 MOTIVATION

In the recent years, we have realized the importance of virtual learning and how important it is for us to have our content online. Online courses are very beneficial for students for studying from anywhere in the world and after covid-19 students are used to learn through online mode.
We are seeing world is growing rapidly in the field of technology. To move with technology is very essential in this world of digitalization and learning. We also need to have a place where all these technologies are at one place and it became easier for the user to find their favorite technology.

Moreover, this application can be used in schools, colleges by any student or learner who want to learn new technology.

1.3 OBJECTIVE

The main objective of this application is to create a E-Learning app named "Virtual Study Room" which will contain course list. User can create his/her account and can access all the courses for free.

This application can be used at various places, at education hubs and have its significance. The main purpose of this app to provide courses at one place so that he/she may not need to waste his/her time in finding that.

1.4 SOURCES

The Source Code of our mini-project will be available on the following link
https://github.com/Vasu-Agarwal-2509/Virtual-Study-Room

CHAPTER -2

SOFTWARE REQUIREMENT ANALYSIS

2.1 IMPACT OF ONLINE LEARNING ON DAILY LIFE

Students' life is not only just visiting classes - the essential parts of every student's routine is visiting their campus, seeing friends in the cafeteria, discussing your ideas in the classroom and living in dorms. This, however, has drastically changed just over a year ago, when the global pandemic has forced students to retrieve to their homes and accept the new form of studying - online learning.

It might seem that studying at home, which is a familiar and comfortable environment, should benefit the students. However, it turned out to be quite the opposite case - students have reported that their levels of anxiety have increased, leading to stress, mental disorders and even depression.
Since going to university meant adhering to a certain schedule, it is no wonder that studying from home has affected the student's productivity.

It is much easier to get up knowing you need to go to a physical class than watching the lecture while lying half-asleep in bed.

2.2 PROBLEM STATEMENT

The E-Learning App "Virtual Study Room" is an Android Application which allow the users to learn different courses they are interested in. This app is also connected to google firebase which contains all the account details of the user.

This application also provides courses that are popular. Users that are new to this application can create new profiles by signing with their account.

This app also provides user-friendly user interface which helps users to interact with application more efficiently.

2.3 HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirement

- Processor: Intel i5
- Operating System: Any Operating System
- RAM: 4 GB (or higher)
- Hard disk: 256GB

Software Requirement

- Software used: Android Studio
- Language used: Java, XML
- Database: Firebase
- User Interface Design: Android Application

2.4 MODULES AND FUNCTIONALITIES

- **Splash Screen**: It is the screen which contains the name and logo of our app. It will be displayed for 2 seconds.

- **Login Page:** It is the page where user and login with username and password.

- **Registration Page:** This is the page where new users and register their credentials. It takes input from user and the details are stored in firebase which helps them to login into app.

- **Course Description Page**: It displays courses that user learns, when the user selects the course, it will display all the details of the course.

- **Logout page**: Then at last user will be able to logout his/her account.

2.5 VIRTUAL STUDY ROOM ON ANDROID APPLICATION

Virtual Study Room is actually a store of courses. Library is the place with the collection of large number of books. Some libraries will be having a collection of millions of books so their arrangement and maintenance is also important. But it will be very difficult for people search for a particular book among millions and hence it comes up as tedious job. Even the experienced librarians may fail to find a particular book and its location so here is when an android application “Virtual Study Room” comes into picture.

This app will give users efficient ways to show their dedication towards online learning and gain knowledge.

CHAPTER-3
SOFTWARE DESIGN

DATA FLOW DIAGRAM

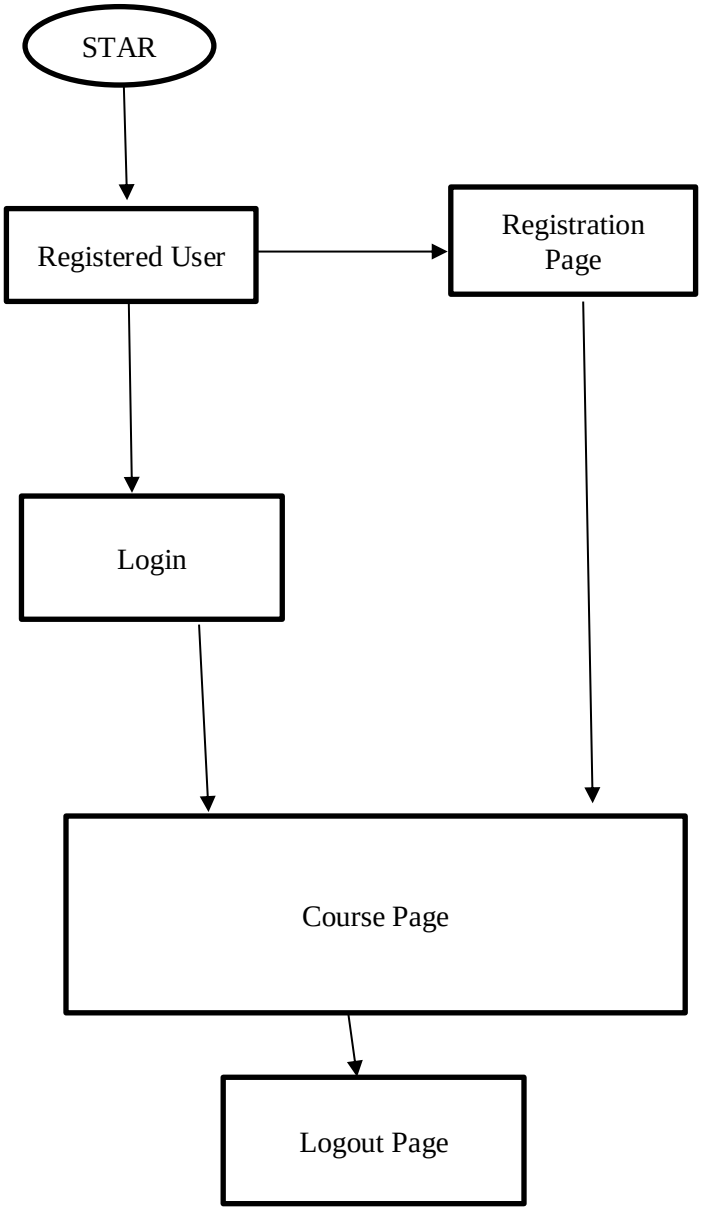


Figure-3: Data Flow Diagram

CHAPTER-4
TECHNOLOGY USED

ANDROID

Android is a Linux-based operating system designed primarily for touch screen devices such as smart phone tablets and computers. Released in 2008, is now owned by Google. So android is a operating system like Windows, Ubuntu and Mac OS and a lot number of devices use Android these days like mobile phones, watches, laptop and television. So, we also created an android application "Virtual Study Room", a store of courses. Play Store is a market place for all the Android Apps. So we need to know what basically an android app is. An Android app is software runningon a Android Platform. So this can be concluded that like all the software it is a combination of Backend and Frontend. Backend to design the logical parts of the app, for the functionality whereas Front End to develop the User Interface. And to implement the various parts of the android app, we require a number of tools and technologies which will come into picture. But first it would be great to see the three different types of Android Apps: -

4.1 VERSION OF ANDROID

Each year Android releases a new version with better features, better security and better User Interface experience and a new symbol. Here is the table of list of versions

Figure-5: Android KitKat

Code name	Version number	Initial release date
(No codename)	1.0	September 23, 2008
Petit Four	1.1	February 9, 2009
Cupcake	1.5	April 27, 2009
Donut	1.6	September 15, 2009
Eclair	2.0 - 2.1	October 26, 2009
Froyo	2.2 - 2.2.3	May 20, 2010
Gingerbread	2.3 - 2.3.7	December 6, 2010
Honeycomb	3.0 - 3.2.6	February 22, 2011
Ice Cream Sandwich	4.0 - 4.0.4	October 18, 2011
Jelly Bean	4.1 - 4.3.1	July 9, 2012
KitKat	4.4 - 4.4.4	October 31, 2013
Lollipop	5.0 - 5.1.1	November 12, 2014
Marshmallow	6.0 - 6.0.1	October 5, 2015
Nougat	7.0 - 7.1.2	August 22, 2016
Oreo	8.0 - 8.1	August 21, 2017
Pie	9.0	August 6, 2018

Table -1: Versions of Android

4.2 TOOLS AND LANGUAGES

Tools used to build the Android App are: -

- **Android Studio**: Android Studio is an environment that help us create and edit Android applications. It is the official IDE for Android App Development. It has IntelliJ's powerful code editor and developer tools and various features that enhance productivity while developing apps.

- **Software Development Kit (SDK)**: Android Studio requires a collection of libraries and data which are there SDK.

Languages used in building an Android Application are classified as per the Front End and Back End. For designing the Front End of an application, we have used XML and for the Back End we have used JAVA.

- **XML:** An XML file is an extensible markup language file, and it is used to structure data for storage and transport. In an XML file, there are both tags and text. The tags provide the structure to the data. XML is a markup language, which means it is a computer language that uses tags to describe components in a file.

- **JAVA:** Java is a programming language and a platform. Java is a high level, robust, object-oriented and secure programming language.

  Java was developed by *Sun Microsystems* (which is now the subsidiary of Oracle) in the year 1995. *James Gosling* is known as the father of Java. Before Java, its name was *Oak*. Since Oak was already a registered company, so James Gosling and his team changed the name from Oak to Java.

4.3 BASIC TERMINOLOGY

- **Layout:** Layout is the parent of view. It arranges all the views in a proper manner on the screen.

- **Activity**: An activity can be referred as your device's screen which you see. User can place UI elements in any order in the created window of user's choice.

- **View**: A view is an UI which occupies rectangular area on the screen to draw and handle user events.

- **Emulator**: An emulator is an Android virtual device through which you can select the target Android version or platform to run and test your developed application.

- **Manifest file**: Manifest file acts as a metadata for every application. This file contains all the essential information about the application like app icon, app name, launcher activity, and required permissions etc.

- **API:** Short for Application Programming Interface. APIs are functions that developers can call on to access specific features by calling upon programs, code, and services that others have written. For example, if a developer wants to draw a button on the screen, she can insert a small bit of code that says "draw this kind of button, with this color and size and style, at this location" instead of dozens of lines of code that tells the graphics processor, in detail, exactly how to draw a button. If the application wants your location, it can use the location API to "get the device's location" and let Google's code handle the rest, instead of requiring the developer to build an entire location service from scratch just for her own app. There are thousands of APIs in Android, covering everything from drawing interface elements, to the cameras, to location access, to accessing storage, to 3D graphics (see: OpenGL ES) and much more.

- **Intent:** Intents are an essential part of the Android ecosystem. They are used to express an action to be performed. Intents allow you to interact with components from the same applications as well as with components contributed by other applications. It can be classified into implicit and explicit intents.

- **Implicit intent:** It does not name a specific component, but instead declare a general action to perform, which allows a component from another app to handle it.
- **Explicit Intent:** It specifies the component to start by name. You'll typically use an explicit intent to start a component in your own app, because you know the class name of the activity or service you want to start.

- **APK**: Short for "Android application package." The extension used in Android app installation files (e.g., app.apk). Similar in nature to an EXE file on Windows.

- **SDK:** Short for "Software Development Kit." As it pertains to Android, the SDK is a set of tools such as code libraries, a debugger, and a handset emulator that can be run on Windows, Mac, or Linux to facilitate the creation of Android apps by developers. While the SDK is generally intended for use by developers, end users can install the software on their home computer to execute ADB and Fast boot commands.

- **Action Bar**: The action bar is an important design element, usually at the top of each screen in an app that provides a consistent familiar look between Android apps. It is used to provide better user interaction and experience by supporting easy navigation through tabs and drop-down lists.

- **Navigation bar**: Android Navigation Drawer is a sliding left menu that is used to display the important links in the application. Navigation drawer makes it easy to navigate to and fro between those links. It's not visible by default and it needs to opened either by sliding from left or clicking its icon in the Action Bar.

- **Fragment**: A Fragment represents a behavior or a portion of user interface in a Fragment Activity. You can combine multiple fragments in a single activity to build a multi-pane UI and reuse a fragment in multiple activities.

- **Firebase** is a Backend-as-a-Service (Baas). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. It is built on Google's infrastructure. Firebase is categorized as a NoSQL database program,

which stores data in JSON-like documents. Firebase has three core services: a real-time database, user authentication and hosting. With the Firebase iOS SDK, you can use these services to create apps without writing any server code.

JSON stands for JavaScript Object Notation. It is an independent data exchange format and is the best alternative for XML. JSON is used for data interchange (posting and retrieving) from the server. Hence knowing the syntax and its usability is important. JSON is the best alternative for XML and its more readable by human

CHAPTER -5

IMPLEMENTATION

By making an app conceptual design with functional flow diagrams is the best way to communicate your vision to the mobile app developer. Making your concept clear to the developer is probably the most important factor in successful android app development.

5.1 Implementation of the Virtual Study Room:

Implementation of Virtual Study Room is taken place in various modules. First, we have presented a login page to the user then after logging in in which the credentials are stored in google firebase.

Step to be followed to develop the app:

1. First, we have created a splash screen page using XML.
2. Then, we have created a login page which contains
    - Login Page: allows user to login into the app if the user is existing one
    - Register Page: If the user is new to our app, then firstly, he/she have to register themselves on the app.

- **For authenticating the user, we have used firebase authentication**.

3. Then we have created a course list page which shows all the courses.
4. Now when user clicks on course it shows video lectures present in that course.

CHAPTER - 6

TESTING

When source code is generated, it is necessary to test the application that we are going to present to user. Testing is an important phase of development.

The Android framework includes an integrated testing framework that helps you test all aspects of your application and the SDK tools include tools for setting up and running test applications. Whether you are working in Eclipse with ADT or working from the command line, the SDK tools help you set up and run your tests within an emulator or the device you are targeting.

CHAPTER -7

CONCLUSION

This project has brought a positive impact in the lives of students and working professionals. It has given an opportunity to take up additional courses along with their studies or job as per their convenience. It has become easy for students to refer the content as per their freedom. In the era of online education, the scope of this application increases a lot more and it will be beneficial for students as well as professionals. This project will save a lot of money of users.

REFERENCES

1. **Introduction to Android:**

   http://developer.android.com/guide/index.html.

2. ***Android API:***

   http://developer.android.com/reference/packages.html

3. ***Android User Interfaces:***

   http://developer.android.com/guide/topics/ui/index.html

4. ***Layout:***

   http://developer.android.com/guide/topics/ui/declaring-layout.html

5. ***Android Training:***

   http://developer.android.com/training/index.html.