Android Portal between Students and Teachers

Project report submitted in partial fulfillment of the requirement for the degree of Bachelor of Technology

in

Computer Science and Engineering/Information Technology

By

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Under the supervision of

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to

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Candidate's Declaration

I hereby declare that the work presented in this report entitled " Android App for student information system" in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Computer Science and Engineering/Information Technology submitted in the department of Computer Science & Engineering and Information Technology**,** Jaypee University of Information Technology Waknaghat is an authentic record of my own work carried out over a period from January 2017 to April 2017 under the supervision of **Prof. Suman Saha** (Assistant Professor, Computer Science and Engineering).
The matter embodied in the report has not been submitted for the award of any other degree or diploma.

Vishal Garg (131283)

This is to certify that the above statement made by the candidate is true to the best of my knowledge.

Prof. Suman Saha
Computer Science and Engineering

Dated:

ACKNOWLEDGEMENT

It is my proud privilege to epitomize my deepest sense of gratitude and indebtedness to our guide, Prof. Suman Saha, for his valuable instructions, guidance and support throughout our project work. His inspiring assistance and affectionate care enabled us to complete our work smoothly and successfully. This report is a dedicated contribution towards that greater goal.

Date:

Vishal Garg (131283)

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ABSTRACT

Android portal between students and academics plays an important role in student's life. Every time student is not able to get to notice board to check any new updates from university and sometimes when class is rescheduled, he/she is not able to get that information. So to avoid that our app will help them to know every important updates from academy as well as teacher can send notifications to his\her class about the rescheduling of class. Plus a student can set his time table which will be linked to his alarm which will notify him 15 min before his class.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Developer created android from ground up so that they can full advantage of all the devices or smartphones which can provide a great platform to install applications and use it to our full potential.

In the last few years android is rapidly evolving. Android being an open source, anyone has an easy access to it. It was build on an open Linux kernel. It was designed in such a way that it utilizes custom virtual machine in order to increase memory and hardware resources in a device environment. The good thing about studying android is that you don't have to find specific device for testing you application, you can use any device to install your apps. Working on android is much easier than any other application developing language as it uses java which common programming language and is easily understandable to anyone. There are no barriers or limitations in android for building innovative applications.

Android is most widely used operating system and powerful operating system. It has made lives of common people much easier by providing on click information or getting different services without travelling and just by using an application which provide that related services.

In android there are many different libraries and tools which can be used in different way to develop a rich application. There are countless inbuilt features which can be taken and build an application as per the requirements of an individual or group. For example android helps to send notifications or feed any individuals information, track location etc.

1.2 Problem Statement

App which will notify students about important updates from college, also they can upload set their time table in this app which will be linked to alarm.

1.3 Objectives

1) Propose a simple and effective approach for word ranking
2) An approach to rank sentences
3) Customizing it based on user requirement of shrinkage

1.4 Methodology

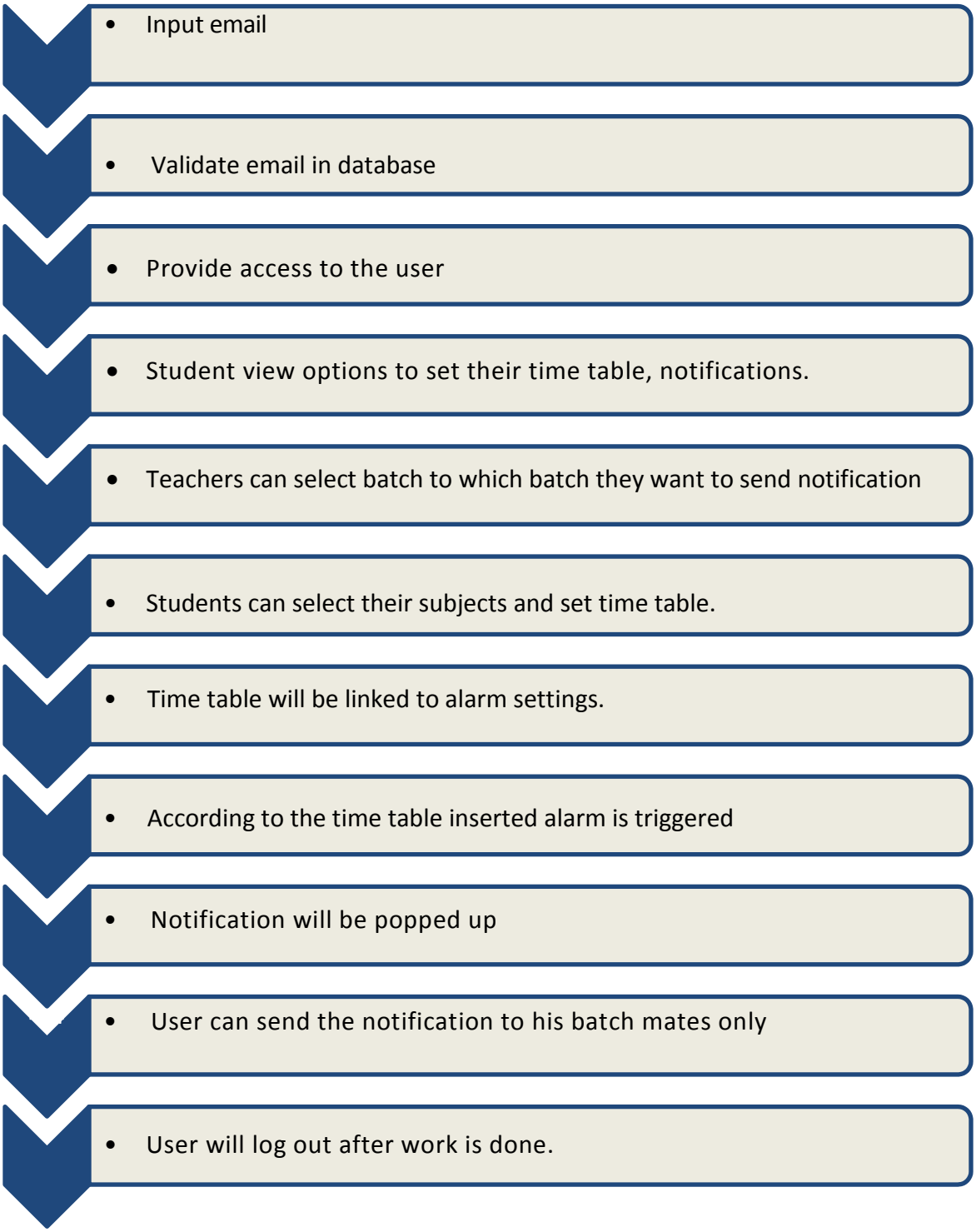


Fig 1 Flowchart

1.5 Modules

1.5.1 Preprocessing

The first step of the project is getting layout which could be as simple as possible avoiding any complex activities which can be difficult for a user to understand. Keeping in mind small details and prioritizing important features first.

1.5.2 Description and Priority

This feature will give the user a secure and simple login screen. The login is enabled for the students with their own access rights. Person outside the college cannot access the college notifications and cannot login to the app and access the database.

1.5.3 Stimulus/Response sequences

It will consist of fields that will make user enter their details to login into the server and choose the options available by the system. It consists of a button to submit the details of the user which will be compared with the database and according to that the user will access the functionalities of the application.

1.5.4 Functional Requirements

The most important function of the login page is to provide access to the registered college administrators. The college must provide the users for the post of administrators and those who will be modifying the routine.

1.6 Notifications

1.6.1 Description and Priority

This feature will give the user real time update notification. Any student can get updated notifications as they are the obsolete users of the application.

1.6.2 Stimulus/Response sequences

Only the students of the particular college will get the notifications about the updates and about the new information about the college.

1.6.3 Functional Requirements

The most important function of the notification is to provide important events and special occasions that are coming later

1.7 Time Table

This application provides facility like student can upload their time table which will be linked to alarm so when the class is about to start alarm will start before 2 min to remind students of their classes.

CHAPTER 2

LITERATURE SURVEY

2.1 Summary of papers

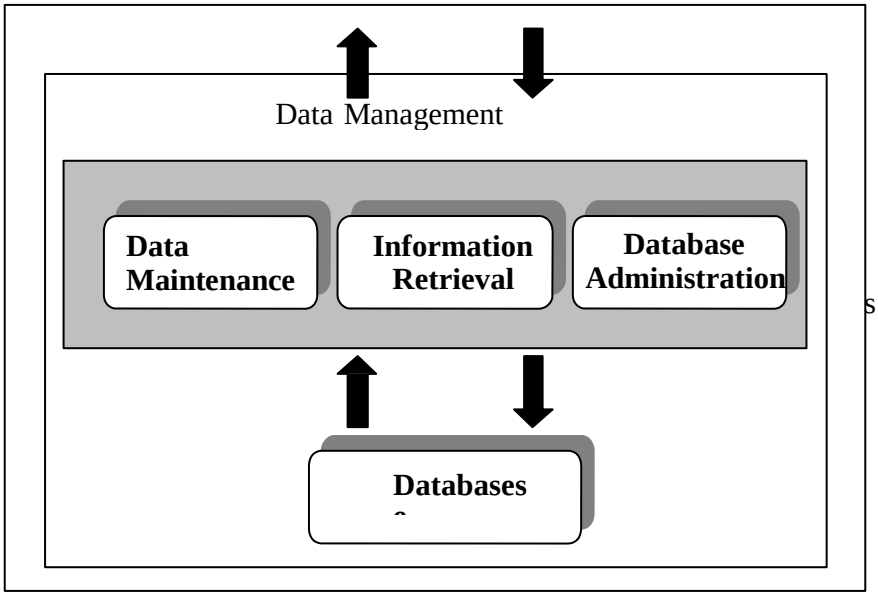
Title of Paper	Building Management System Alarms
Author	M V Uttam Tej, Dhanaraj Cheelu and P Venkata Krishna
Year of Publication	2011
Summary	A computer based system aiming to develop the control and management system in a building management system software. Creating a system which could help people to set their timings as per the time table which will be linked to alarm system. The Service Provider owns the service. In this platform hosts has access to the service from architectural orientation. It is the responsibility of this for publishing, providing and creating service. Blogs or chat are a new form of media that, like email, share characteristics of both text and speech. There can be multiple responses to the same posting. Searching entries of the data entered alarm will starting beeping when it found entries.
Web link	http://www.svpublishers.co.uk/download/i/mark_dl/u/4008228453/4544969505/Paper-9.pdf

Title of Paper	Android college management system
Author	Li Ma, Lei Gu, Jin Wang
Year of Publication	2014
Summary	This paper gives detailed instruction about what should be there in an application that can satisfy every college student needs. Separate login feature for both student and faculty. Features this paper is talking about are first registration that is students will register with all the details for example email id, password, and confirm password. Another feature is notification that in case of emergency or any other important updates that students should know about can be spread via notification system which will allow students to know what is going on in the college and what rules has been modified so that they can prepare themselves according to that. The paper's main focus was also on representing the application in the most simplest format so that any new user find application easy to use. According to this paper there should be an admin which will monitor all the files that are being shared among students or anyone who has registered on an application so that any unwanted files don't get shared to other people.

	This paper is also associated with authenticating details of a person who has registered on an application and also creating a simple interface which will allow user to choose options like mess feedback, notice board where all the information can be shared by academics so that students don't miss any activity or any rules which has been modified and time table where students can upload their academics time table which will be linked to the alarm which will be activated 2 minutes before the time of class which is set by the student. In mess feedback student can give feedback about the food given in mess.
Web link	http://www.sersc.org/journals/IJMUE/vol9_no4_2014/20.pdf

Title of Paper	Android based notification system
Author	Mahind R.N.
Year of Publication	2016
Summary	Developing Android based College Notification system to provide college related notices directly on your android device, In this way Staff meeting related notices and student get experiment, tutorial online. In this project in next modules we can implement following idea: To eliminate or reduce the human interaction so as to avoid mistakes in the database. It is now implement notification system for students as well as teachers. Student can get notice on its own android device and teacher can get their meetings and extra additional notices from HOD to Principal on its android device. Teachers can send notifications to their respective batches informing about their rescheduling or cancelling of class. Notication system helps person to know about the details without opening the app and if the notification is of interest then he\she can open the app to know the full information.
Web link	https://www.irjet.net/archives/V3/i3/IRJET-V3I3371.pdf

Title of Paper	Student database management system
Author	Nihaal Mehta, Sudarshan Shinde and Nishi Tiku
Year of Publication	2015
Summary	According to this paper there is a separate data for android which allows user to upload files in offline mode and when user gets online the file that is supposed to be uploaded should get uploaded and get stored in the database which after will be reviewed by the admin and will forward it to other people allowing the sharing of files in a proper way. A mechanism is being developed which will synchronize local database to the online database and vice versa. It's importance has been increasing as storing of details is of much more concern. Any user don't want to register again and again to access the features of an application so database should be properly linked to the app. User login details should be saved persistently and when user tries to login to the application his or her details should be compared with the details that are used while registering to the application. On proper authentication user should be allowed to access the features of application and if the details don't match with the database details the error message should be displayed to the user about the issue which is being entered wrong in the text or password fields.

	There are different ways of creating a database that is you can create a local database or firebase database which allows to store files which are uploaded by users for sharing. Now-a-days cloud storage is being used to store data as local database cannot be accessed by everyone.  s
WEB LINK	http://projectabstracts.com/6933/student-database-management-system.html

Title of Paper	Location Tracking Through Web Server
Author	Salman, Waheed Ahmed, Riaz Ali, Salman Saleem
Year of Publication	2015
Summary	This paper aim was to develop an application for android operating system (OS) platform that will perform functions like automatically send the current address location of the user to the server database and can also be sent periodically through SMS (short message services) to store mobile numbers by the user. Smartphone's application changed the way of lives more than nothing especially android mobile applications. In more than 190 countries around the globe millions of Android mobile devices are founded and these numbers are growing day by day. The main reason is the powerful mobile platform which helps the user to create different useful application from games to android field. To conclude, this work aims to develop an android application for GPS enable smart phones which provide the current location address to the user and also update periodically to the online web server as far the user is connected otherwise the last updated location address will be store. In case of any emergency the user need one click and alert message will be send.

	With the help of this feature we can track the location of a student and also students can be notified about the events that are about to happen as per their time table by alarming them or notifying them with the message “events are about to happen don’t go far”.
Web link	http://vfast.org/journals/index.php/VTSE/article/download/369/379

Title of Paper	Security on Android application
Author	Kirandeep, Anu Garg
Year of Publication	2014
Summary	This paper discusses about the fields where it provides all over security to call logs, contacts and location or phone identity. Each user who registers on an application will be given a unique id so that there can be no intermixing of any information that is information of user should not get shared with another user. Therefore enforcing an application at process level which will disable interaction between one another. So by doing this there is a restriction on a user to the full access of an application. Security on database so that no one should get the restricted information. Generally android is considered as a secure platform so a user can protect its information by either putting a pin or password. Applications available at the play store are allowed by google only because they are safe and there are no malicious activities in them. There are many tests which can prevent this for example APN modification, unsafe use of shared preferences.
Web link	www.theijes.com/papers/v2-i3/Part.Vol.%202.3%20(2)/I0232056059.pdf

Title of Paper	Location Alarm : The Real Time Location Alarm System
Author	Fatema Rashid Al Jhawari, T.Sheeba
Year of Publication	2015
Summary	Objective of this paper is to develop a GPS (global positioning system) based application which will handle features like it will alert users by alarming them about the off conditions which are not suitable for users. User can set their location and any changes occurs from that location notification will be there indicating about events which are going to be there. When user gets out of a set location then this will alarm the user about the timings of an event which can be missed if he get away from that current location which is set by the user. With this user can know that he or she has a class and will do further work by keeping that in mind. Implementing this with this application will take care of things which user might worries user about the events which is sometimes not retain in mind.
WEBLINK	https://www.google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwiD6N682L3TAh

2.2 Website Referred

https://www.tutorialspoint.com/android/

https://www.tutorialspoint.com/google_maps/index.htm

Now a days information storing and working things out using android applications has been increasing rapidly among people. There are many apps on the app store that can be used to satisfy everyone requirements. Now android is getting so common that anyone who wants particular feature in an application can implement in his own way. Just like our proposed model where we are taking into account features like feedback where we will take feedback from students about mess's food, notice board where all the important details or files will be displayed, check notification where student can share files to the admin and he can distribute that file if necessary to every student, time table where student can upload their own time table which will be linked to the alarm so whenever there is any class there will be a notification about an event. Output of each feature and their performances is measured on the basis of their score of extract information.

Overview of Android System

The proposed automatic model for alarm system with location efficiency. Three basics are involved to generate alarm timing which are preprocessing, validation and location generation.

CHAPTER 3

SYSTEM DEVELOPMENT

3.1 TECHNOLOGIES USED

3.1.1 JAVA

Java is a high level programming language which is now a days commonly used by developers for android application or any other development. Java language was developed by Sun Microsystems. At first Java was known by the name OAK and was used for set-top boxes and handheld devices. Later it was renamed to Java in 1995 by Sun as Oak was unsuccessful and modified the language to take advantage of the burgeoning World Wide Web.

Java is another object oriented language almost similar to C++ but more advance eliminating language features that will lead to common errors in programming. Format in which source code files of java are compiled is a byte code which is interpreted by java compiler. Compiled code of Java can run on almost every computer. Java virtual machines which acts as a java interpreters and runtime environments exist for most operating systems which includes UNIX, Macintosh OS and windows. Work of Just in time (JIT) compiler is to convert byte code into machine language instructions. Under General Public License GPL Java technologies were released in 2007.

Java is a general purpose programming language with countless features that make this language well suited for use on the World Wide Web. Java applets are small Java applications which can be downloaded from any Web server and can be run on your computer by a Java-compatible Web browser.

Java should be installed on the devices in order to access the websites and application which supports Java. “When you download Java, the software contains the Java Runtime Environment (JRE) which is needed to run in a Web browser”. The Java Plug-in software, a component of the JRE, allows applets of Java to run inside various different browsers.

Why Java

First of all java is an open source programming language created by Sun Microsoft which was later overtook by oracle .Its source code of Java is available for free inside every Java Development Kit (JDK).

Java is a stage Independent: – Platform free means java can keep running on any PC regardless to the equipment and programming reliance. Implies Java does not rely on upon equipment implies what sort of processor, RAM and so forth. Java will keep running on a machine which will fulfil its essential needs.

The Byte Code Concept isolates java from all other dialect. As we probably am aware Byte Code is set of images made by sun Microsoft which are created after the assemblage of Program. This byte code is really encoded source code that human can't comprehend and that Byte code is changed over to machine code by Java Runtime Environment. This Byte code is executed by java runtime condition which comprise of Byte code loader which stacks the byte code into memory and after that Byte code verifies which confirms the Byte code and search for any additional images and code which does not takes after to the benchmarks and tosses sudden code way and makes java byte code blunder free and secure.

Java is quick a result of JIT compiler. Without a moment to spare compiler stores the rehashed code in its reserve memory and in byte code where rehashed code is utilized, rather than stacking that code again from memory JIT utilize it from its reserve memory and safe time and space and make execution quick

" Compile Once and Run Forever " is the well known slogan of java and it is genuine that it is conceivable due to byte of code generated is created you can utilize that code and can implement the working of program in a suitable framework , each working framework's java runtime condition will change over that Byte Code which is then converted into machine code and will give you your require yield .

Error Reporting on Runtime

When you're learning something for the first time, you're inevitably going to make mistakes. Java makes it easy to identify and fix these mistakes immediately. That's because Java displays errors at run time, instead of simply failing to compile the program.

Practicality

James Gosling has described Java as a "blue collar" programming language. "It was designed to allow developers to get their job done with the minimum of fuss, whilst still enabling developers to pick up someone else's (or even their own) code at a later date and understand what it's supposed to do. Sure, you can write unreadable code in Java, just as you can in any language, but with good coding conventions it is more readable than many other languages."

Backwards Compatibility

Sun and therefore Oracle have endeavored gigantic endeavors to guarantee that code composed for one form of Java will keep on running unaltered on more up to date forms. In spite of the fact that this has not generally be the situation (affirmations in Java SE 1.4, identifications in Java SE 5) and it has once in a while prompted usage that could have been exceptional without similarity (generics) it is an extremely convincing element for designers.

Scalability/Performance/Reliability

With over twenty years and thousands of man-years of development, Java is a rock-solid platform that performs on a level that can match or even exceed that of native code (thanks to some of the optimizations made by the JVM using dynamic rather than static code analysis). When it comes to scalability, just look at some of the large enterprises using Java: Twitter (who moved off Ruby-on-Rails to the JVM because RoR wouldn't scale), Spotify, Facebook, Salesforce, eBay and, of course, Oracle. Hadoop, Cassandra and Spark, the basis of most big data projects, are either written in Java or Scala and run on the JVM. If you want scalability and performance, Java and the JVM is an obvious choice.

Freshness

There is a huge rise in Java prominence since October 2014, which is not long after the dispatch of JDK 8. JDK 8 was a major change for engineers utilizing Java in view of the presentation of Lambda expressions and the streams API. All of a sudden Java engineers could get things done in a more useful manner without learning a radical new dialect like Scalar. These elements likewise make it conceivably substantially less complex to exploit multi-center/multi-processor machines without writing heaps of complex and possibly mistake inclined multi-strung code. With venture Jigsaw planned for conveyance in JDK 9 we'll see particularity make huge endeavor applications substantially simpler to fabricate, send and keep up. There are as of now gets ready for new dialect highlights, similar to esteem sorts, in JDK 10.

3.1.2 ANDROID STUDIO

Android Studio is an official Integrated Development Environment (IDE) for Android application advancement, in view of IntelliJ IDEA. All the tools used in an Android Studio are open source and can be used to build applications as per the requirements. Android studio provides easy interface to work on the development of an app. Android Studio offers impressively more segments that enhance your productivity when building Android applications, for instance

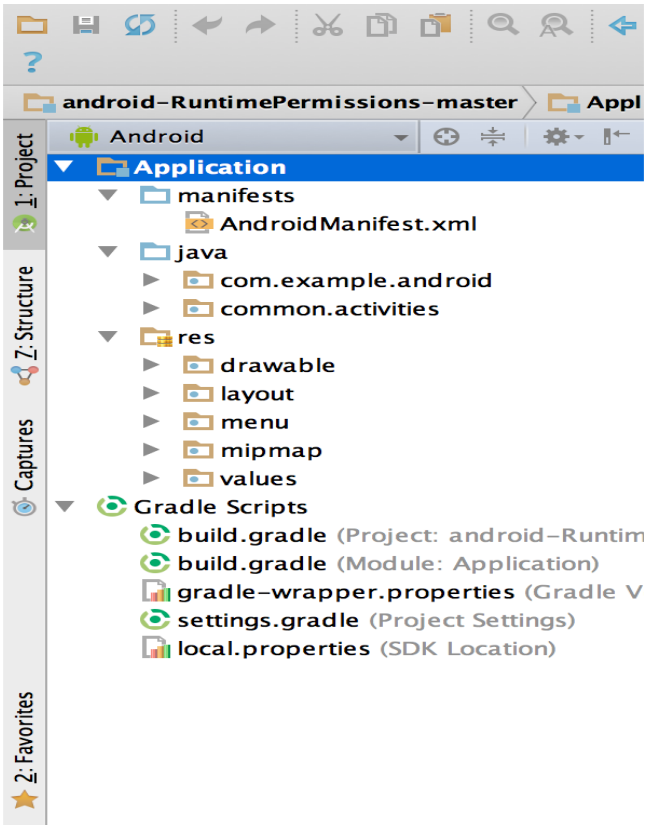
- A flexible Gradle - based build system
- A feature rich emulator with fast working
- A bound together environment where you can develop for all Android devices
- Instant Run to push changes to your running app without building a new APK
- Code templates and Git Hub integration to help you build common app features and import sample code
- Extensive testing tools and frameworks
- Lint tools to catch performance, usability, version compatibility, and other problems
- Built-in support for Google Cloud Platform, making it easy to integrate Google Cloud Messaging and App Engine

PROJECT STRUCTURE

Each venture in Android Studio contains at least one modules with source code documents and asset records. Sorts of modules incorporate:

- Google App Engine modules
- Library modules
- Modules of android app

Android studio shows all the working of a project under project part in android option where u can track all your files and work by selecting a particular desired file as shown-



All the files that are build are visible at the top level under Gradle Scripts and each app module contains the following folders:

- Manifests: Contains the AndroidManifest.xml file
- Java: Contains the Java source code files, including JUnit test code.
- res: Contains all non-code resources, such as XML layouts, UI strings, and bitmap images.

Instead of using preset viewpoints, Android Studio follows your context and automatically brings up relevant tool windows as you work. By default, the most commonly used tool windows are pinned to the tool window bar at the edges of the application window.

3.1.3 GENYMOTION

Genymotion is a moderately quick Android emulator which accompanies pre-arranged Android (x86 with OpenGL equipment speeding up) pictures, appropriate for application testing. The venture has developed from the old Android VM and accompanies another player plan and installer.

Genymotion features:

- Easily download and run pre-configured virtual images: covering a range of Android versions from 2.x onwards, and various phone and tablet screen sizes.
- Display: OpenGL hardware acceleration, multiscreen, full screen display
- Genymotion shell which allows you to interact with your VM using a command line
- ADB support
- Eclipse and Android Studio plugins
- Supports Linux, Windows and Mac.
- "Drag & Drop" APK installs

3.2 SYSTEM REQUIREMENTS SPECIFICATIONS

FUNCTIONAL

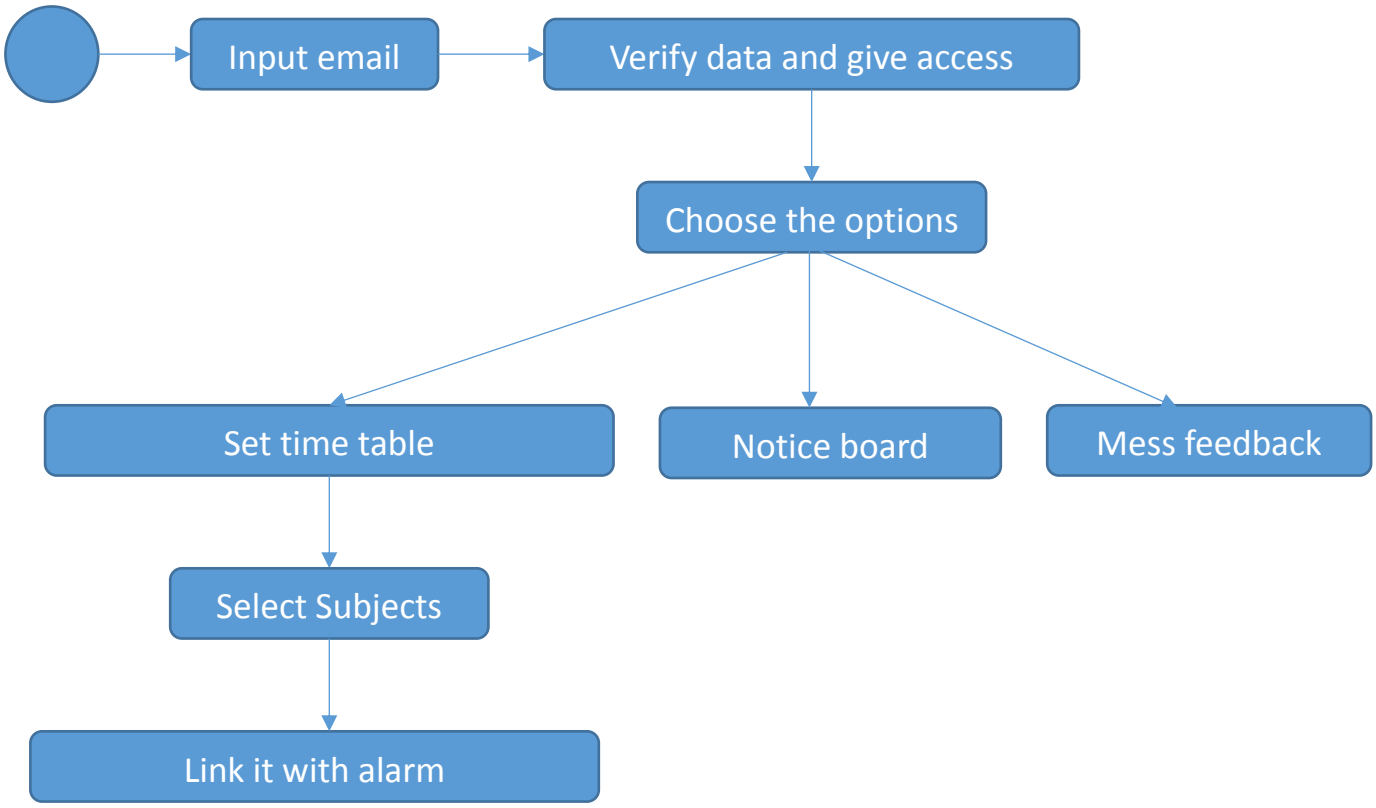
- The system should take email as input from the user
- The system should take only relevant courses to time table
- The system should be able to take as many subjects as mentioned by user
- The system should be able to display notifications.
- The interface of the application should be user friendly
- The system must undergo thorough testing for the output
- The system should show other features on app
- The system should be able to take feedback.

NON FUNCTIONAL

- The system must perform the comparing inputs task efficiently
- The system must be low on memory usage so that it does not lag while using
- The system must be reliable and robust.
- The error rate of the system's output should be as minimum as possible

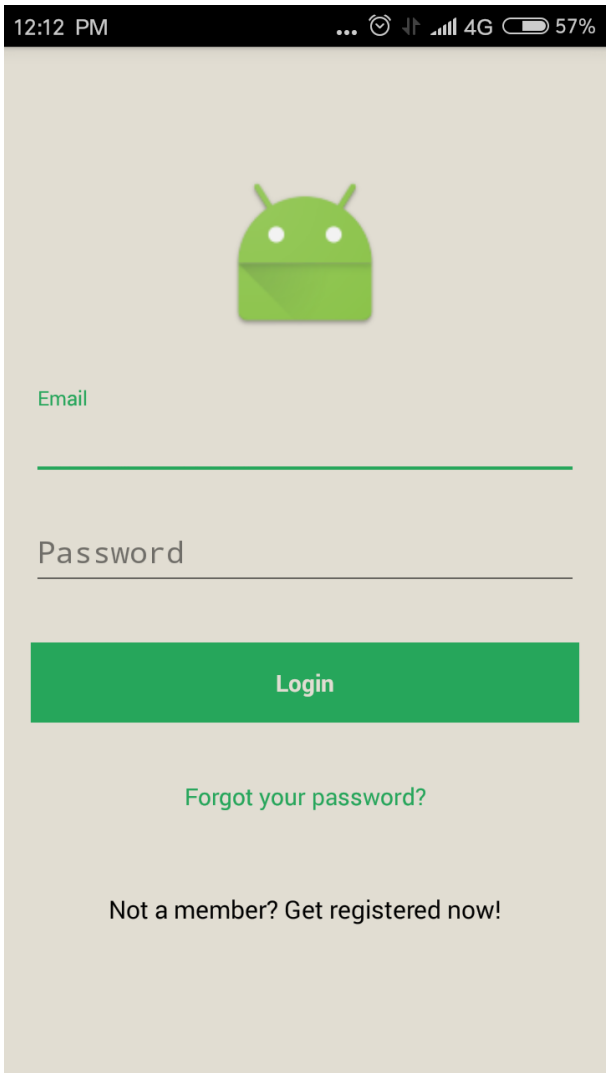
PERFORMANCE ANALYSIS

The algorithm to develop this model is composed of ten major steps or modules which are also shown in the activity diagram below. We pass the input inside the code as of now which is sent to various modules of the software. These modules process the input stream and pass the processed data to the following module which is passed back to the end user at last

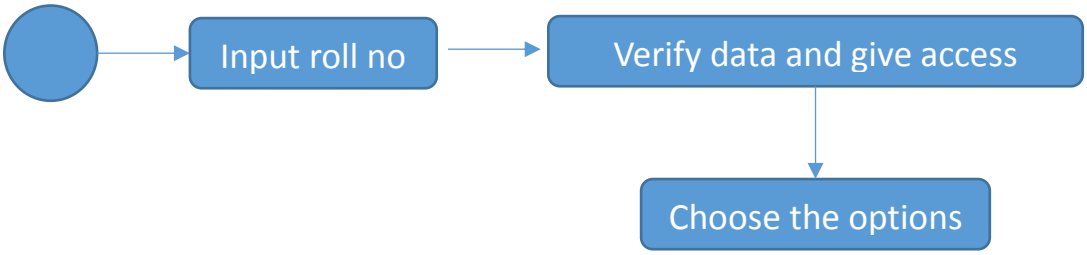


Input Text and Input Percentage

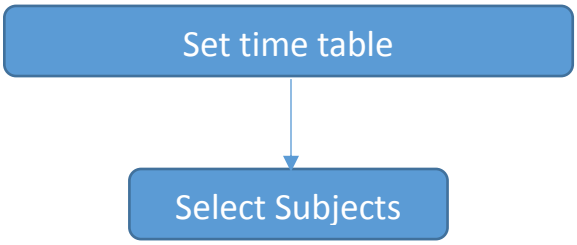
The first step of the project is getting the input from the user.



After getting the input from the user system will verify the input data with the predefined data in the database and according to that, user will see the interface of the system.



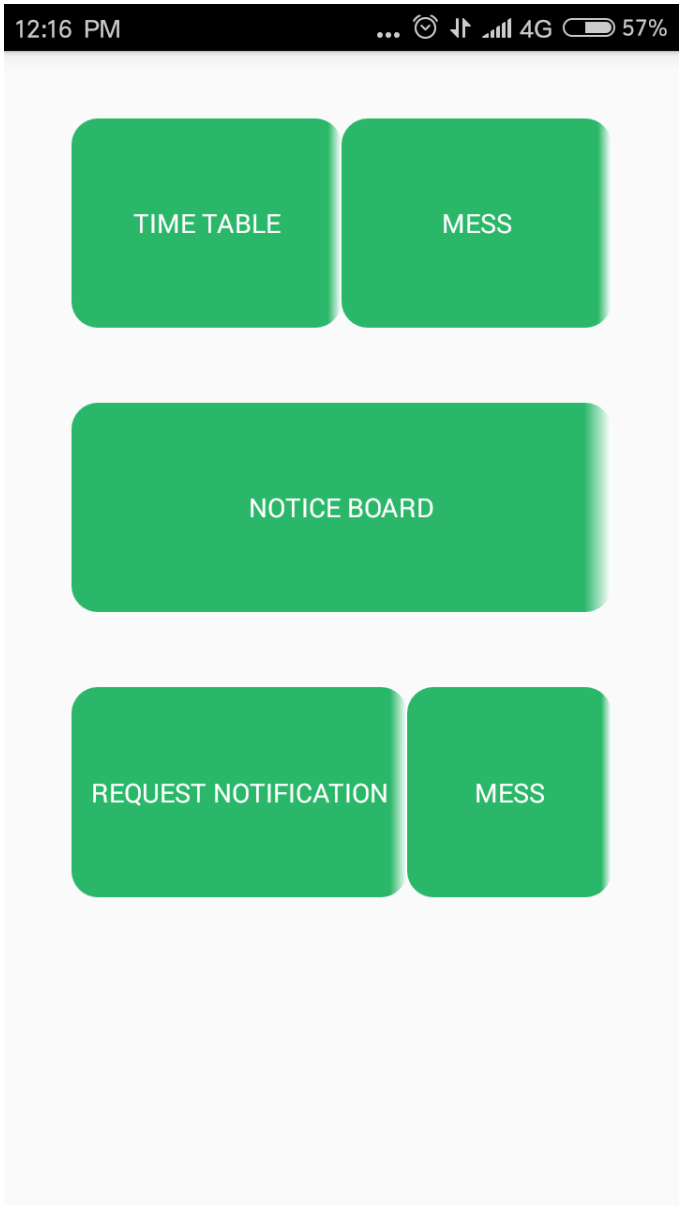
The user will now select options to which he can choose according to his wish. The options provided are set time table, check notifications, send notifications.



In set time table students will choose their subjects and will set their time table according to that. In this we an array is take for each day and the time at which there is a class will be stored in the array and the array will return the value which will trigger the alarm before class timings.

```
Button subject1 = (Button)findViewById(R.id.subject1);
        Button subject2 = (Button)findViewById(R.id.subject2);
        Button subject3 = (Button)findViewById(R.id.subject3);
        Button subject4 = (Button)findViewById(R.id.subject4);
        Button subject5 = (Button)findViewById(R.id.subject5);

        subject1.setOnClickListener(
                new Button.OnClickListener(){
                    public void onClick(View v){
                        v.setSelected(true);
                    }
                }
        );

        subject2.setOnClickListener(
                new Button.OnClickListener(){
                    public void onClick(View v){
                        v.setSelected(true);
                    }
                }
        );

        subject3.setOnClickListener(
                new Button.OnClickListener(){
                    public void onClick(View v){
                        v.setSelected(true);
                    }
                }
        );

        subject4.setOnClickListener(
                new Button.OnClickListener(){
Button)findViewById(R.id.subject5);

        subject1.setOnClickListener(
                new Button.OnClickListener(){
                    public void onClick(View v){
                        v.setSelected(true);
                    }
                }
        );
```

After Successful login Student will see their interface in the form



4.5 Limitations of Solution

- The output produced by the project might not be 100% accurate. This is because we are dealing with unstructured data.
- Result expected for a query may vary from user to user. A certain solution might be satisfactory for a user but might not satisfy the requirement of another user.
- It might take time for the user to login into the server.
- Features might not be sufficient for a certain application.

- Java drawbacks
    - **Slow performance**: The first and foremost drawback everyone accepts is Java's slow speed of execution
    - **No support for low-level programming:** With Java, low-level programming cannot be done as it is intended to be portable across platforms.
    - **Poor features in GUI:** Java supports GUI controls but with less features. For example, an image cannot be placed on a button.

- With the advent of more and more data big data analytics support would be needed.

CHAPTER 5

CONCLUSIONS

5.1 Findings

- Based on literature survey and books read, we can conclude that there are various ways to go by this approach to build android portal.
- There are various techniques to run android app without using AVD.
- We also discovered the significance of various layouts and implementation plan.
- We learnt about various tools which are to be used while making a Android App.
- From the analysis we can deduce that the project is successfully building an App which can be used as a portal.
- The send and check notifications is used by students and teachers is used to notify others about the notices.
- This achieves the easily understandable and user-friendly app.

5.2 Conclusions

- We can conclude that this project provides the user with a android portal.
- The Genymotion is the best emulator software which can be used to run android apps on PC.
- In comparison to Python, we concluded that Java is a better language for the development of the mobile applications.
- The send and check notifications is used by students and teachers is used to notify others about the notices.

- We can see that the send notifications feature sends notifications to all those who have the app installed and enrolled in same batch.
- We could also conclude that this android portal is not enough for all the colleges as this app is only compatible with our college.

5.3 Future Work

- The project can be scaled to provide for multi-college portal. At present only the users looking from JUIT can make use of the tool.
- We can include support for other languages. By including other languages this tool could become the one place that be looked up for any language and everbody can access with ease.
- A better GUI with more customized options like URL of pages as input can be provided.
- The present manner of displaying results i.e. as a text box is not very easy to go through.
- The Android portal can be improved by adding more features .

5.4 Applications

- Location Tracking
- Alarm system
- Send Notifications
- Check Notifications
- Attendance
- Subject change
- Time-Table updates

REFERENCE

[1] Priyanka Kadam. "Location Alarm" *Paper supported by the Indian Government under the project IJRISE* (2012).

[2] Riaz Ali. "Mobile application for location tracking through web server."*Proceedings of the sixth conference on transition on software engineering*. Association for Computational Linguistics, 2015.

[3] Kirandeep, Julie B. *Security on Android Portal*. IJES Processing Group, Electronic Systems Laboratory, 2013.

[4] M V Uttam Tej. "Building management system alarm." *International Journal of Computer Applications* 107.12 (2011).

[5] Jadhav Komal. "College notification system" *International research journal of engineering and technology(2016)*.

[6] Jagadeesh, J., Prasad Pingali, and Vasudeva Varma. "Inputting Based Single Document notification." *International Institute of Information Technology, Hyderabad, India* 5 (2005).

[7] Ajay Shankar Bidyarthy "Student database management system." *Proceedings of the sixteenth ACM conference on Conference on information and knowledge management*. ACM, 2007.

[8] Gayathri, P., and N. Jaisankar. "A Framework for Efficient Android Document Summarization using Sentence Feature Extraction and Ranking."*Indian Journal of Science and Technology* 8.33 (2015).

[9] "Text Summarization". *Summarization.com*. N.p., 2015. Web. 28 Dec 2015.

[10] "Hello Android". Nltk.org. N.p. , 2015. Web, 15 Nov 2015.

[11] "Genymotion Tutorial". genymotion.com. N.p., 2016. Web. 02 May 2016

[12] Moore, Tim. "Sample Essay". Monash.edu.au. N.p., 2016. Web. 28 May 2016.

[13] Rautray, Rasmita, Rakesh Chandra Balabantaray, and Anisha Bhardwaj. "Document Summarization Using Sentence Features". International Journal of Information Retrieval Research 5.1 (2015): 36-47. Web. 28 May 2016.

[14] "Java Tutorial". www.tutorialspoint.com. N.p., 2015. Web. 13 oct 2015.