VIRTUAL CLASSROOM

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This Report is presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering.

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APPROVAL

This Project titled "**Virtual Classroom**",submitted by Mirza Sadia Afrin Swarna, Lokman Hossain Niloy to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of BSc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 12.12.2018

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We hereby declare that, this project has been done by us under the supervision of **Mr. Raja Tariqul Hasan Tusher, Lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

Virtual classroom is an incomparable part of distant learning systems and an important direction in the online education research field. There have been done many researches in the area of smart education and many of them have been successfully implemented in the real world However, most of them are video tutorial based learning portal and video streaming classroom. In this project, a model of real-time interactive smart classroom has been proposed that provides real-time interactive classes with the collaboration of teacher and students under one roof. It allows some responsive and co-operative features that will help teachers and students to interact easily whether they are very far from each other. Smart classroom has been designed to focus on individual students and teachers so that they can improve themselves. One of the main project goals is to provide the effective teaching and learning system where the distances between teacher and students can be reduced. Moreover, this makes some analysis and discussion about the testing and effectiveness of virtual classroom.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

An intuitive android based versatile application "Virtual Classroom" can be characterized as an internet instructing and learning entrance like the earth of physical classroom. Here the word intelligent and characterizes eye to eye correspondence which is regularly found in the physical classroom. Android based virtual classroom is extremely normal to this advanced period. Many created nations are utilizing virtual classroom to give online training to the understudies. As the world is being produced with the new advancements, finding and controlling new thoughts and ideas isn't ceased. There have been various inquires about in the territory of virtual training a significant number of them have been fruitful to actualize. Presently understudies are being profited by enlisting themselves in virtual training. A portion of the virtual classrooms are getting great input for giving admirably training. Still now analysts are endeavoring to investigate the ideas to give viable virtual training

Ordinarily, if an instructor needs to make a worksheet for his/her understudies, He/she needs to make it in a gadget, print it out, make photocopies and hand it out to his/her understudies. This procedure is composed with shrewd classroom for training since instructors essentially make worksheets carefully, take care of scholastic exercises of understudies effortlessly and counsel with understudies effectively.

Shrewd classroom will be an awesome stage for the educators and the understudies. Instructors can without much of a stretch open their record, refresh their record and furthermore can erase their record. Instructors can refresh their course results. They can without much of a stretch give declaration about their courses and can see their understudy's concern audits. They can without much of a stretch offer their documents of their own courses. They can refresh their guiding hour, assess their understudy's execution, include understudies and take participation. Give input of the execution of the application.

For understudies virtual classroom will be a gigantic stage. Understudies can undoubtedly find their timetable of enlisted courses, for example, class schedule, midterm examination normal and last examination schedule. They can without much of a stretch see the

consequences of test, midterm examination and last examination. By giving self-quality test in shrewd classroom understudies can pass judgment on their own abilities. They can look however showing assessment, showing guiding hours, noticeboard, records shared by their instructors and inputs of educators and understudies.

In the present virtual condition the greater part of the students will be understudies. This implies distinctive methods for guidance are required to affect understudy learning. Distinctive modalities of learning ought to be contemplated for understudies with the goal that they are permitted to demonstrate their abilities to partake on the material in a plenty of ways. In this 21st century this framework will assist understudies with increasing their learning and fuse abilities to take cooperation in web journals, digital broadcasts, virtual world applications, and person to person communication destinations. It is vital to not just note the history and measurements of virtual schools, yet additionally end up learned of a portion of the prescribed procedures in the virtual classroom.

1.2 Motivation

We trust that keen classroom will be quickest and most effortless android base versatile application for instructors and furthermore for understudies. Here we are endeavoring to rough the common and steady condition of a genuine class. In any case, keen classroom has an immense effect in understudy inspiration and learning. Offering an online answer for understudies to get associated with educator will empower simple intelligent, productive correspondence from both end and it will build up the way toward examining. Instructor can give more reference of reports that will assist understudies with gaining more learning and new thought over the long haul. So it is a superior learning condition for instructors and understudies.

1.3 Aims and Objectives

Virtual classroom is a learning domain made in the virtual space. The targets of a brilliant classroom are to enhance progressed instructive encounters by enabling understudies and instructors to take an interest in remote learning networks by utilizing individual cell phones. To enhance the quality and viability of instruction by utilizing the portable to help a cooperative learning process. The blast of the information age has changed the setting of what is realized and how it is educated – the idea of brilliant classrooms is an indication of this learning upheaval.

1.3.1 Aims of the Project

The fundamental points of this undertaking are as per the following

- Exposure to an internet learning stage
- Make simple to utilize data innovation
- Spread your insight with everybody
- Is willing to attempt new innovation
- Is alright with his preparation aptitudes
- Engaged in the learning procedure
- Easily helds to find question bank

1.3.2 Objectives of the Project

The main objectives of this project are as follows:

Table 1.1: Specific options for teachers and students

Teachers	Students
Can create, delete, update profile	Can create, delete, update profile
Can view class routine	Class routine
Can publish results	Midterm examination routine

Announcement Can add students Attendance Can view students problems File attachment Reminder Can submit students evaluation Can update counseling hour Can give feedback	Class and Final examination routine Gets result Can view noticeboard Teaching evaluation test Can share problems File attachment Can view teaching counselling hour Can give feedback

1.4 Feasibility Study

Feasibility is the trial of the framework. It helps in picking whether it is sensible to encounter the endeavor or not. Probability consider ponders the system and encourages whether to develop the structure or not. In layman's terms it very well may be depicted as the preliminary of the system and if the structure easily finishes in the test then it is functional to develop the assignment for the most part not or we can state believability look at check's whether adventure is achievable or not.

Feasibility has four solid dimensions:

- Technology
- Finance
- Time and
- Resources

The feasibility of the system "Virtual Classroom" is viewed with the help of these four dimensions.

Technology: The framework improvement of virtual classroom is purposed with utilizations least complex and effectively accessible innovation. This framework depends on android like portable interface, which is anything but difficult to utilize. This framework created by Programming dialect Java, PHP.

MYSQL for Database and XML for plan.

Finance: The measurement estimates the framework in regard to cash or we can state reserves. This measurement checks whether it's feasible to spend the required sum on the framework or it will be a waste. There is no issue of back in this task since it utilizes basic innovation, which is anything but difficult to introduce. This framework is been produced for an independent PC thus for this framework equipment necessity is low. For this framework we should be created and introduced legitimately we require effortlessly accessible advancements and exceptionally fundamental equipment and every one of these necessities doesn't cost parcel**.**

Time: This specific measurement estimates the frameworks worth regarding the time, which is a standout amongst the most essential elements to be considered. In this task time factor is critical this framework is booked to be introduced in time. This framework isn't enormous and consequently can be finished inside the era it requires approx. Time is a pivotal factor to be considered so we can state that this framework can be produced inside the required day and age.

Resources: This measurement takes into tally the recourses required to build up the framework. For this specific framework the assets required are very ostensible which can be satisfied, the assets required for this framework are essential equipment, a working framework which is good.

With the assistance of this whole measurement we can quantify the achievability of the framework and can choose whether to go ahead with the task or not. By take in check the measurement and their job in this specific framework we can state that this framework is possible from all these measurement perspective and it is suitable to experience the task.

1.5 Expected Outcome

The fundamental result of this venture makes a superior learning condition for instructors and understudies. Educators can refresh advising hour, share any declarations, see class schedule, include understudies, take their class participation, can without much of a stretch refresh their test, midterm examination and last examination stamps and draw in with learning assets

while working in gatherings, all in an internet setting. Understudies present their task effortlessly, see showing advising hour, get result, present their concern and discover see from noticeboard. Educators and understudies can give moment input. The yield for this task is the looked after records, instructive points of interest and report produced through any android gadget. The reports will be created with the assistance of the information in the database. The medium is frequently through a video conferencing application that enables numerous clients to be associated in the meantime through the Internet, which permits clients from practically anyplace to take an interest. A virtual classroom is otherwise called a virtual learning condition (VLE).

1.6 Report Layout

Report layout describes a summary of all the chapters. A brief summary of all chapters is given below:

- **Chapter 1:** Describes an introduction of the virtual classroom, Motivation, Aims and Objectives, Feasibility study, Expected Outcome and the Report layout.
- **Chapter 2:** Describes the background, the related works, Comparative Studies and Challenges of the virtual classroom.
- **Chapter 3:** Describes the Android Studio, System requirements, XAMPP, Sublime Text.
- **Chapter 4**: Describes the Block diagram, Description of application, Use case modeling and description, System architecture, E-R diagram and description.
- **Chapter 5:** Describes the Implementation of Front-end design, Back-end design, Data table name, Data type architecture, MySQL database, Database table structure, Testing methodology, Functional testing, Unit test, Compatibility test and result.
- **Chapter 6:** Describes the conclusion where the goal, limitation and future scope have been described.

CHAPTER 2

BACKGROUND

2.1 Introduction

Though many projects have been done to explore the effective way of virtual education, but very few of them have been conducted in the context of Bangladesh. In this section a few related works of virtual classroom have been depicted. From the above substance. Unmistakably Virtual instruction is being spread everywhere throughout the world and understudies are as a rule more occupied with virtual learning. There are several organizations which are trying to research and develop the virtual education system in Bangladesh, Such as – A large publishing company of technological magazines and news (www.comjagat.com), Jago School (www.jago.com.bd) an online school. In third world countries like Bangladesh, Internet Bandwidth is still now costly. Some existing classrooms deals with tutorial based video streaming classes where high bandwidth is needed, the people of pastoral area or villagers may not afford the bandwidth enough to attend those online classes and another problem is those online classrooms are not designed in the context of Bangladesh. However, some questions have been raised for this project –

- How to explore the concept of a virtual classroom where teacher and students can play their role interactively?

- How to make it more effective mostly in the context of Bangladesh?
- How to make it effectively running in the lower bandwidth?
- How can the distance learners be benefited using this virtual classroom?
- How can the modern education spread to the each district of Bangladesh and other countries?

In this case an extensive project has been done in the area of virtual education to contribute in the context of Bangladesh.

2.2 Related works

In this section we discussed the recent project and related works evolving this area.

Google Classroom: Google Classroom is a free web benefit created by Google for schools that intends to disentangle making, conveying and reviewing assignments paperlessly. The basic role of Google Classroom is to streamline the way toward sharing documents among instructors and understudies. It was presented as a component of G Suite for Education, in the past Google Apps for Education, on May 6, 2014, trailed by its open discharge on August 12, 2014. In June 2015, Google reported a Classroom API and an offer catch for sites, permitting school overseers and engineers to additionally draw in with Google Classroom. In March 2017, Google opened Classroom to enable any close to home Google clients to join classes without the prerequisite of having a G Suite for Education account, and in April, it wound up feasible for any close to home Google client to make and show a class. Google Classroom combines Google Drive for assignment creation and distribution, Google Docs, Sheets and Slides for writing, Gmail for communication, and Google Calendar for scheduling. Students can be invited to join a class through a private code, or automatically imported from a school domain. Each class creates a separate folder in the respective user's Drive, where the student can submit work to be a graded by a teacher. Mobile apps, available for iOS and Android devices, let users take photos and attach to assignments, share files from other apps, and access information offline.

Actively Learn: Effectively Learn is an online stage that gives educators a chance to can connect with their understudies in perusing. This is accomplished in light of the fact that platform, peer learning, and evaluation meet up inside a content, precisely when understudies require help and inspiration. Its stage makes it simple for schools locale to share computerized educational programs, analyze "the why" behind understudy execution, and access proficient improvement with a quick effect.

Aladdin: Aladdin Schools is a honor winning on the web Administration Data Framework (MIS)/Understudy Data Framework (Sister) particularly intended to rearrange organization in elementary schools. It is ceaselessly and naturally refreshed so there's no compelling reason to introduce, redesign or keep up servers or programming. Their future verification secure cloud based framework is additionally open from any web association, on any gadget, (for example, PCs, PCs, advanced mobile phones, tablets and so on.). With Aladdin, if educator's and understudy's PC fizzles, Instructor's and understudy's information is never lost as they just sign in from another gadget and educator's and understudy's information is there as typical. It is additionally intended to be extremely instinctive to utilize. On the off chance that clients can utilize any essential PC program clients will have no trouble acing Aladdin. Their committed preparing and bolster group will resolve any inquiries clients may have consistently and their 100% client standard for dependability addresses the nature of their client care.

Brain POP: Brain Pop is a group of educational websites with over 1,000 short animated movies for students. Brain POP was established in 1999 by Dr. Avraham Kadar as an inventive method to disclose troublesome ideas to his young patients. Today, they're a confided in learning asset supporting center and supplemental subjects, achieving a great many students around the world. Their Endeavor is their learning instruments, and helping kids make, build, and team up as they investigate their reality.

Microsoft Classroom: Microsoft Classroom was an online mixed learning stage for schools that plans to improve evaluating assignments and understudy correspondence paperlessly. It was presented for Office 365 Instruction supporters in April 2016.On 18 May 2017 Microsoft reported the retirement of Microsoft Classroom, to be finished on 31 January 2018. A few

highlights of Microsoft Classroom will turn out to be a piece of Microsoft Groups in Office 365 Instruction.

A web based instructing and learning gateway course is a benefit instructive association established by software engineering educators Andrew Ng and Daphne Koller from Stanford College that arrangements with gigantic open online courses (MOOC). For the most part works with participation of various Colleges to make a portion of their courses accessible in online classroom additionally many building other diverse courses are accessible. As the most recent report in October 2014, Coursera has 10 million clients in 839 courses from 114 establishments. The connection among Coursera and Colleges contains a "conceptualizing" rundown of approaches to create income including confirmed ensured expenses. The application fills in as a focal Online interface of various sorted courses of various Colleges. In the wake of getting participation, the instructors of Colleges are permitted to make courses. It gives the offices of gigantic internet learning networks – Email people group, talk gatherings, course discourse region, blog and so forth. At the point when an understudy goes into the application, he will get a course seek choice that arrangements with course title and watchwords. When he will look through a particular course, he may get numerous courses of various Colleges of various instructors of the related pursuit title or watchwords. On the off chance that he is an individual from this application then he can begin classes, else he must be a part first. Instructors have some particular choices while making another course – making class plan, incorporating course points of interest with particular addresses and time span. At the point when an understudy begins classes, he can spare each address to his PC as the addresses are video gushing. Additionally he has the office to make inquiries by means of visit box and video associations with instructors or he can go course dialog territory.

Nicenet reported people in general suitability in the new Web Classroom Colleague (ICA), a successful online specialized instrument for electronic conferencing, informing, booking, and connection asset sharing to a various types of learning conditions (January 2, 1998). CIA is intended for the separation learning and finishing community oriented scholarly tasks, this web application is free for all, however who thinks that its valuable is welcome to utilize it. The completely unique site CIA is modified with two distinct levels – I) the client and ii) the

class. Anybody can set up a class inside a moment and enable others to join. The ICA was deliberately outlined as a low illustrations condition to diminish the heap time of each page. Nicenet is sorted out into classes. One individual can have a place with numerous classes yet they are gotten to exclusively. A class is made out of areas or subjects. It is inside every theme that messages are put away and can be organized by date and by posting. Choosing a point, anybody can read and post messages. It is conceivable to have composed discussions with the individuals from the virtual class and the teachers (or arbitrators). Likewise, every individual from the class will have a letter box for private messages that nobody else will have the capacity to get to. Setting up a class on the Web Classroom Aide takes around 2 minutes. It is expected to pick a username and secret phrase, at that point a name for your class, some contact data, and that is it. An extraordinary 'key' will be appointed for class that can be given to the understudies so they can make client records and access your class.

2.3 Comparative Studies

Virtual classroom is comparable with others sites and android applications (Google Classroom, Microsoft Classroom, BrainPOP, Aladdin, Effectively Learn,). Our application is comparative with sign in and log off, sign in and close down, demonstrating profiles, refreshing profiles. Brilliant classroom has some one of a kind highlights like showing assessment, self-assessment test, comments, declaration, noticeboard, participation, schedule, results, and showing guiding (Subtle elements). We trust that our framework will be useful for instructors and understudies in this advanced time. It tends to be exceptionally useful to our college framework for speaking with understudies in a cutting edge ways.

2.4 Scope of the Problem

As we consider that brilliant classroom will be quickest and most effortless android base portable application for instructors and furthermore for understudies however plausibility of the issue for understudies and educators who utilize iOS and Microsoft worked cell phones. So they are denied to utilizing this application. For being web based application a class of individuals are additionally denied to utilizing this application. Should needs web association with utilize this application. Reactions to client's blunders and undesired circumstance have

been dealt with to guarantee that the framework works without ending. Legitimate mistake taking care of codes are put with the codes.

2.5 Challenges

With new stages, changing jobs and advancing client's requests, keeping up an successful social learning over the web is never simple.

2.5.1 What are we thinking?

The principal challenge was looked subsequent to presenting the primary ponder documentation of this task with our thoughts regarding how we need to make a keen learning framework. The accepting information from database and the collaboration with database was testing. The most basic piece of this framework was the suspicions that we decide for our framework. We had guaranteed that the vast majority of understudies possess advanced cells and furthermore the asserted the larger part of understudies are android clients. There are existing many overviews that demonstrates to us the rate of advanced mobile phones and basic telephone, and furthermore some which indicates Android as the overwhelming agent framework in the PDA showcase source, however we chose to run our nearby study to have our very own scholastic outcomes .Precisely the objective gathering we center around Android clients. This brought about our gathering getting associated with both subjective and quantitative data gathering techniques, to comprehend the objective client's needs and factual information to back our suppositions.

2.5.2 Young Researchers

We believe that this process and the challenges we faced, we have become three young engineer that have learnt how to

- Have a thought
- Think about it
- Research around the idea
- Not to be afraid to confess about being wrong
- Do what it takes to finish the job

This process made us to go through android articles, discussing Mobile information systems and their development tools, and take part about the future of Application developing and opportunities. All these we have learnt so much about the mobile computing and the future of it from expert's point of view.

2.5.3 Time

The last, however not slightest which can be even called our greatest test in this work has been the factor of time as every one of us are working all day and concentrate alongside it. To concur on arrangements and get together was a standout amongst the most difficult parts of the activity, as the undertaking itself was an exceptionally fascinating subject and it was amusing to take care of business, yet we learnt a considerable amount from this procedure to be very much organized and all around arranged.

2.6 Summary

In this section a few related works of virtual classroom have been depicted. From the above substance. Unmistakably Virtual instruction is being spread everywhere throughout the world and understudies are as a rule more occupied with virtual learning. Albeit more research undertaking are being done around there of instruction, However, People are endeavoring to discover all the more simple procedure of virtual learning.

CHAPTER 3
REQUIREMENT SPECIFICATION

3.1 Android Studio

Android Studio is the official integrated development environment (IDE) for Google's Android working framework, built on JetBrainsIntelliJ IDEA software and designed specifically for Android development. It is accessible for download on Windows, macOS and Linux based working frameworks. It is a substitution for the Eclipse Android Development Tools (ADT) as essential IDE for local Android application advancement.

Android Studio was declared on May 16, 2013 at the Google I/O conference. It was in early access see organize beginning from variant 0.1 in May 2013, at that point entered beta stage beginning from adaptation 0.8 which was discharged in June 2014. The principal stable form was discharged in December 2014, beginning from rendition 1.0. The present stable rendition is 3.0 discharged in October 2017.

Android programming advancement is the methodology by which new applications are made for the Android working system. Applications are commonly made in the Java programming vernacular using the Android Software Development Kit. ADT (Android Development Tools) is the item used to make android applications. It in a general sense encases Eclipse IDE, which is a multi-vernacular Integrated headway condition (IDE) containing a base workspace and an extensible module structure for tweaking the earth.

The latest version goes with ADT module preinstalled and bundled to the IDE. This is the way by which the IDE looks like with the fundamental segments checked.

Application programming interface (API) decides how some item sections should speak with one another. In the vast majority of the cases an API is a library that when in doubt consolidates specific for calendars, data structures, question classes, and factors. An API

detail can take various structures, including an International Standard, for example, POSIX, dealer documentation, the Microsoft Windows API, the libraries of a programming lingo, Standard Template Library in C++ or Java API.

Google APIs can be downloaded from Google Code, Google's site for designer instruments, APIs and particular resources. The Google Data API empower programming specialists to make applications that read and form data from Google organizations. At the present time, these consolidate APIs for Google Apps, Google Analytics, Blogger, Google Base, Google Book Search, Google Calendar, Google Code, Search, Google Earth, Google Spreadsheets, Google Notebook, and Picasa Web Albums.

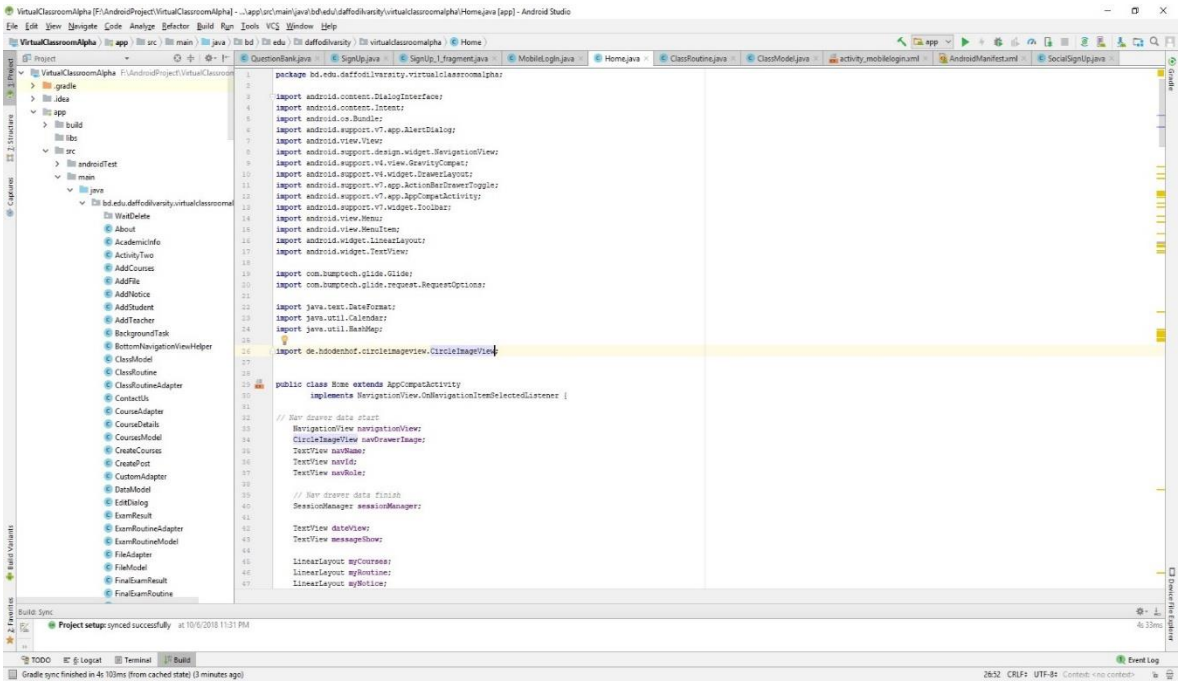


Fig 3.1: Interface of Android Studio

SDK (Software Development Kit or "Devkit") is regularly a game plan of programming change mechanical assemblies that considers the generation of employments for a particular

programming pack, programming structure, gear organize, PC system, PC diversion comfort, working structure, or equivalent progression arrange.

It may be something as straight forward as an application programming interface (API) as a couple of records to interface to a particular programming tongue or fuse present day gear to talk with a particular embedded structure. Fundamental instruments join exploring helps and diverse utilities as often as possible showed in a planned headway condition (IDE). In the most latest version of ADT, the android SDK includes to the IDE consequently when you unfasten and stack the IDE.

SDK Manager empowers us to download Google APIs and utilize them in our code.

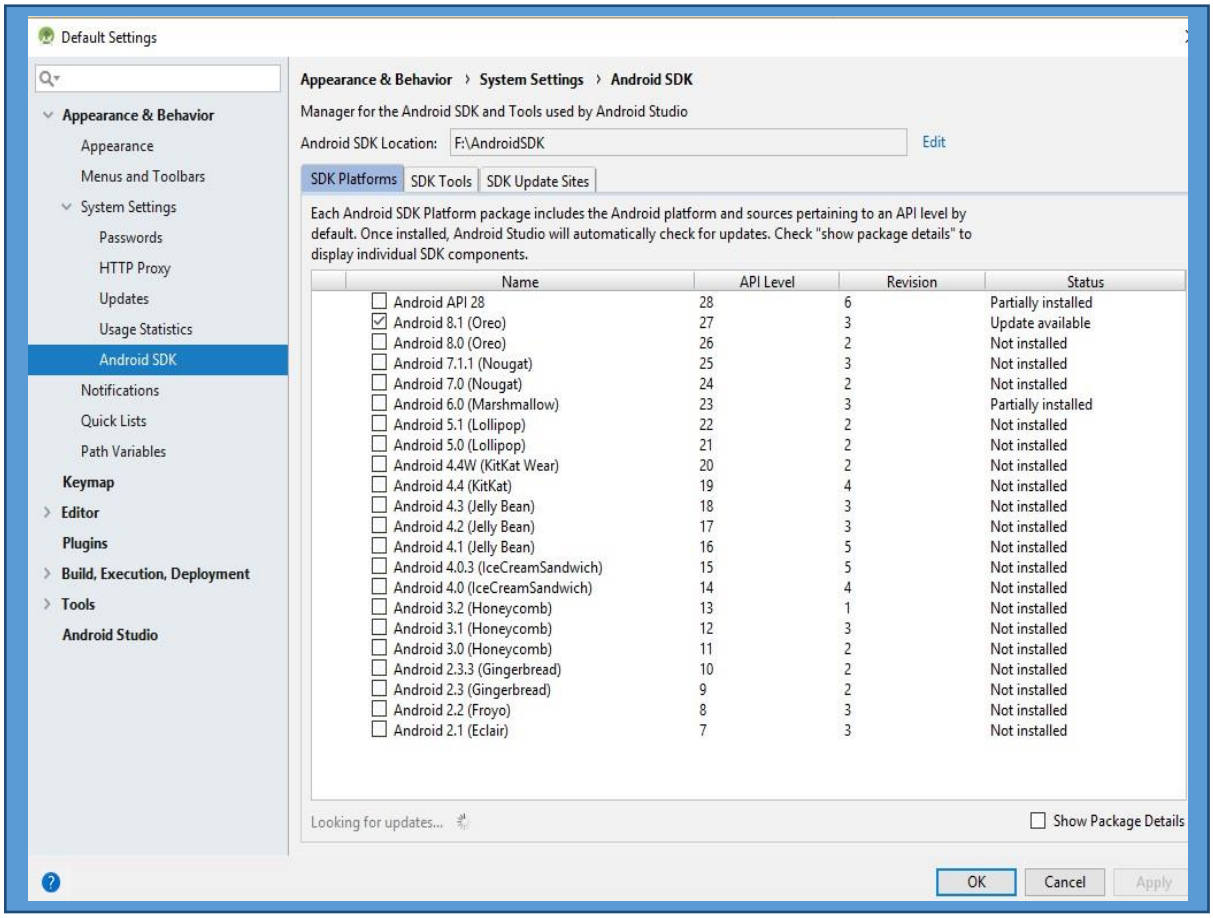


Figure 3.2 : Android Studio SDK Manager

3.1.1 System Requirements

Table 3.1: Version 3.x

Criterion	Description
OS version	Microsoft Windows 7/8/10 (32-bit or 64-bit), 64-bit required for native debugging Mac OS X 10.10 (Yosemite) or higher, up to 10.13 (macOS High Sierra) GNOME or KDE desktop Linux (64 bit capable of running 32-bit applications)(GNU C Library (glibc) 2.19+)
RAM	3 GB RAM minimum, 8 GB RAM recommended; plus 1 GB for the Android Emulator
Disk space	2 GB of available disk space minimum, 4 GB recommended (500 MB for IDE + 1.5 GB for Android SDK and emulator system image)
Java version	Java Development Kit (JDK) 8, use of bundled OpenJDK is recommended [22]
Screen resolution	1280×800 minimum screen resolution

Version 2.x

Criterion	Description

OS version	Windows 7 or later Mac OS X 10.9.5 or later GNOME or KDE desktop Linux
RAM	8 GB RAM recommended; plus 1 GB for the Android Emulator
Disk space	500 MB disk space for Android Studio, at least 1.5 GB for Android SDK, emulator system images, and caches
Java version	Java Development Kit (JDK) 8, use of bundled Open JDK (Version 2.2 and later) is recommended [22]
Screen resolution	1280×800 minimum screen resolution.

Version 1.x

Criterion	Description
OS version	Mac OS X 10.8.5 or later GNOME, KDE or Unity desktop on Ubuntu or Fedora or GNU/Linux Debian Windows XP or later
RAM	3 GB RAM minimum, 4 GB RAM recommended
Disk space	500 MB disk space

Space for Android SDK	At least 1 GB for Android SDK, emulator system images, and caches
JDK version	Java Development Kit (JDK) 7 or higher
Screen resolution	1280×800 minimum screen resolution

3.2 XAMPP

XAMPP is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database,and interpreters for scripts written in the PHP and Perl programming languages. MySQL was replaced with MariaDB on 2015-10-19 and beginning with XAMPP versions 5.5.30 and 5.6.14, effectively altering the meaning of the acronym Thusly, essentially XAMPP may be used to stay as pages for the web even without relationship with it. It can similarly be used to make and outline with databases written in MySQL and moreover SQLite. Likewise, since XAMPP is arranged as a cross-organize server package, it is open for a variety of working structures and stages like Microsoft Windows, Mac OS X, Linux, and Solaris. XAMPP is regularly updated to the latest releases of Apache, MariaDB, PHP and Perl.

3.2.1 Usage

Formally, XAMPP's fashioners expected it for use similarly as a change instrument, to allow web pros and programming architects to test their work alone PCs with no passageway to the Internet. To make this as straightforward as could be normal the situation being what it is, various basic security features are impaired as per usual. XAMPP can serve pages on the World Wide Web. An exceptional gadget is given to watchword secure the most fundamental

parts of the package.XAMPP also provides support for creating and manipulating databases in MariaDB and SQLite among others.

3.3 Sublime Text

Sublime Text is an elite cross-organize source code chief with a Python application programming interface (API). It locally supports various programming tongues and markup vernaculars, and limits can be incorporated by customers with modules, conventionally bunch amassed and kept up under free-programming licenses.

3.3.1 Features:

The following is a list of features of Sublime Text:

1. Use Goto Anything to open files with only a few keystrokes, and instantly jump to symbols, lines or words.
2. Project-specific tendencies.
3. Compatible with numerous dialect sentence structures from TextMate.
4. The Command Palette holds infrequently used functionality, like sorting, changing the syntax and changing the indentation settings.
5. Key bindings, menus, snippets, macros, completions and more - just about everything in Sublime Text is customizable with simple JSON files.
6. Auto spare, macros and rehash the last action.

CHAPTER 4

PROPOSED MODEL AND DESIGN

4.1 Block Diagram

The block diagram provides a top level listing of and basic interaction of applications.

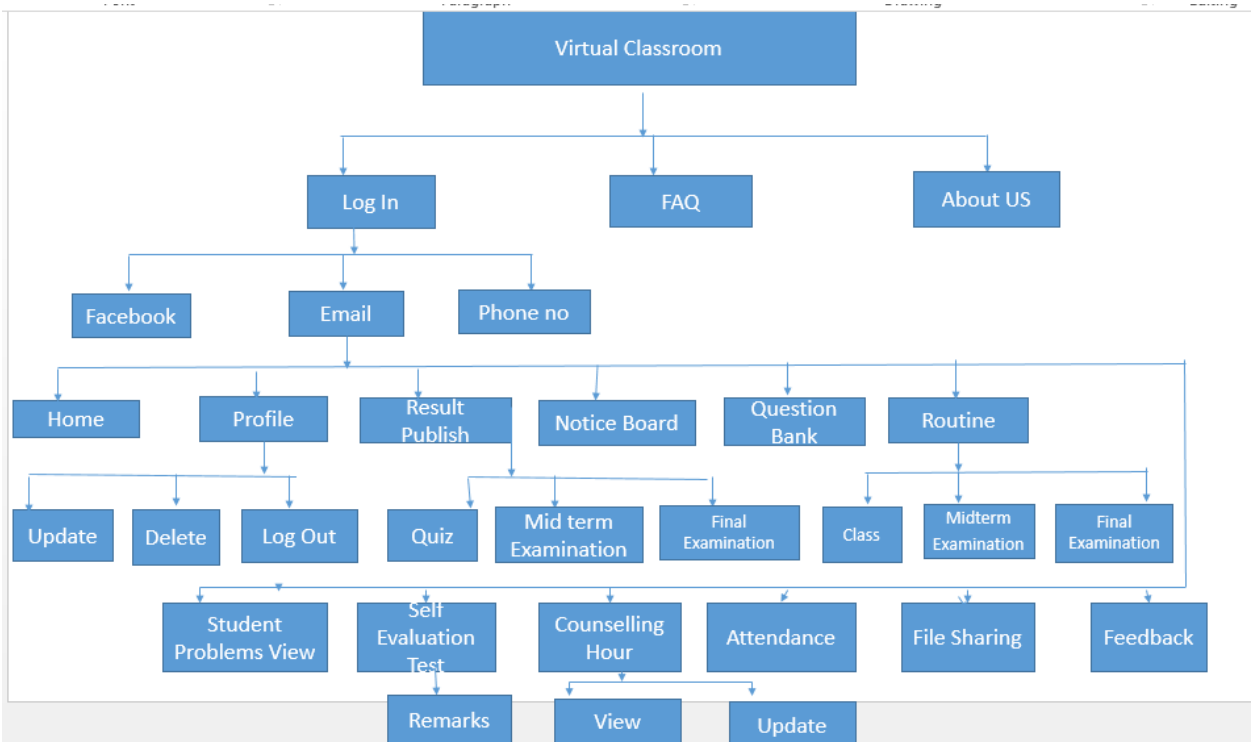


Figure 4.1 : Block Diagram

4.2 Description of the Application

Log In: Logging is the procedure by which an individual client access to our application by recognizing and validating themselves**.**

Profile: A short description of user's. They can update and delete their profile**.**

Classroom: Classroom is a learning situation made in the virtual space. It is a sign of this learning upset.

My Courses: User can add course and get information of midterm exam ,final exam and class routine, and also get previous semester questions**.**

Routine: Teachers and students can seek for class routine, midterm examination routine and final examination routine**.**

Question Bank: Student and teachers can get twelve semester question accordingly**.**

Result Publish: Teachers can update quiz, midterm and final examination marks that can students see result.

Student Attendance: Check understudies present or not.

Announcement: Teachers can update their announcement.

Notice board: Educators and understudies can get any departmental notice.

Teaching Counselling Hour: Very Simple way to find out teachers counselling hour**.**

Teacher Evaluation: Student can evaluate each teacher.

4.3 Use Case Modelling:

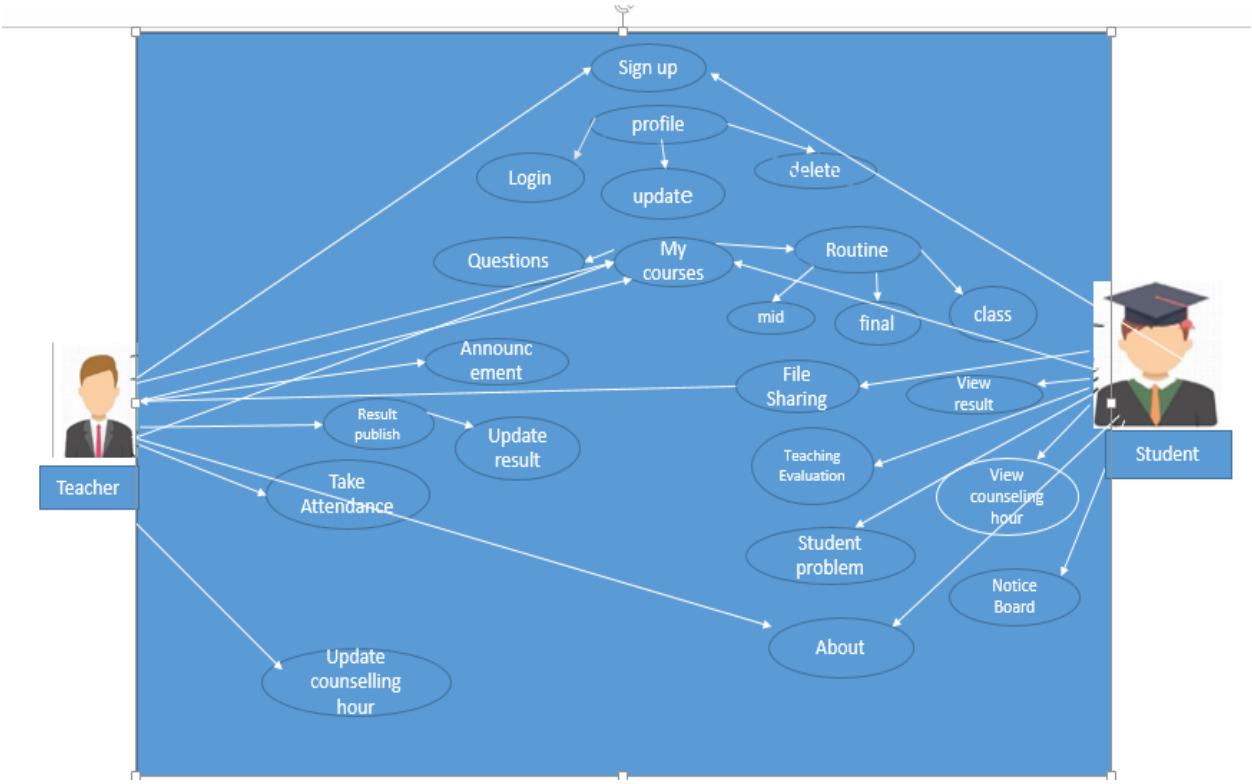


Figure 4.3: Use Case Diagram

Table 4.1 Use Case Analysis

Use Case: Sign Up **Actors**: Teachers and Students **Type**: Primary **Description**: If teachers or students want to access this application. They must provide pertinent information to sign up.
Use Case: Log In **Actors:** Teachers, Students **Uses:** Log in **Extended by**: None **Extends:** None **Type:** Primary **Description:** If teachers or students want to log in this application. They must enter valid email, password and Facebook , Contact no profession to log in.
Use Case: Profile **Actors:** Teachers, Students **Uses:** Profile **Extended by:** None **Extends:** None **Type:** Primary **Description:** Every teacher or student have their own profile. They can update and delete their profile.
Use Case: Announcement **Actors:** Teachers **Uses:** Teachers, Students **Extended by:** None **Extends:** Update, Delete and Log out **Type** : Primary **Description:** Teachers can post any announcement.
Use Case: Result **Actors:** Teachers can publish result.

Uses: Students gets announcement. **Extended by:** None **Extends:** None
Use Case: Result **Actors:** Teachers can publish result. **Type:** Primary **Description:** Teachers update students quiz, midterm and final examination results.
Use Case: My Courses **Actors:** Teachers, Students **Uses:** Student gets result. **Extended by:** None **Extends:** Update result **Type:** Primary **Description:** Student and teacher can add any course and get information class routine, midterm exam routine, final exam routine, and also get previous semester questions.
Use Case: Update Teaching Counselling Hour **Actors:** Teacher **Uses:** None **Extended by:** None **Extends:** Courses **Type:** Primary **Description:** Help to learn student who was not understanding topic in the classroom
Use Case: Update Teaching Counselling Hour **Actors:** Teacher **Uses:** None **Extended by:** None **Extends:** Courses **Type:** Primary **Description:** Help to learn student who was not understanding topic in the classroom
Use Case: View Teaching Counselling Hour **Actors:** Students **Uses**: Students **Extended by:** None

Extends: None **Use Case:** View Teaching Counselling Hour **Actors:** Students **Type:** Primary **Description:** Easiest way to find out teachers counselling hour
Use Case: Noticeboard **Actors:** Teachers, Students **Uses:** For meeting with teachers **Extended by:** None **Extends:** None **Type:** Primary **Description:** Easiest way to find out any departmental notice
Use Case: Teaching Evaluation **Actor :** Student **Uses:** Teachers, Students **Extended by:** None **Extends:** None **Type:** Primary **Description:** Including collecting feedback for teaching improvement
Use Case: Taken Attendance **Actors:** Teacher **Uses:** For students attendance **Type:** Primary **Extended by**: None **Extend**s: None **Description:** Check students present or not in the classroom

4.4 System Architecture:

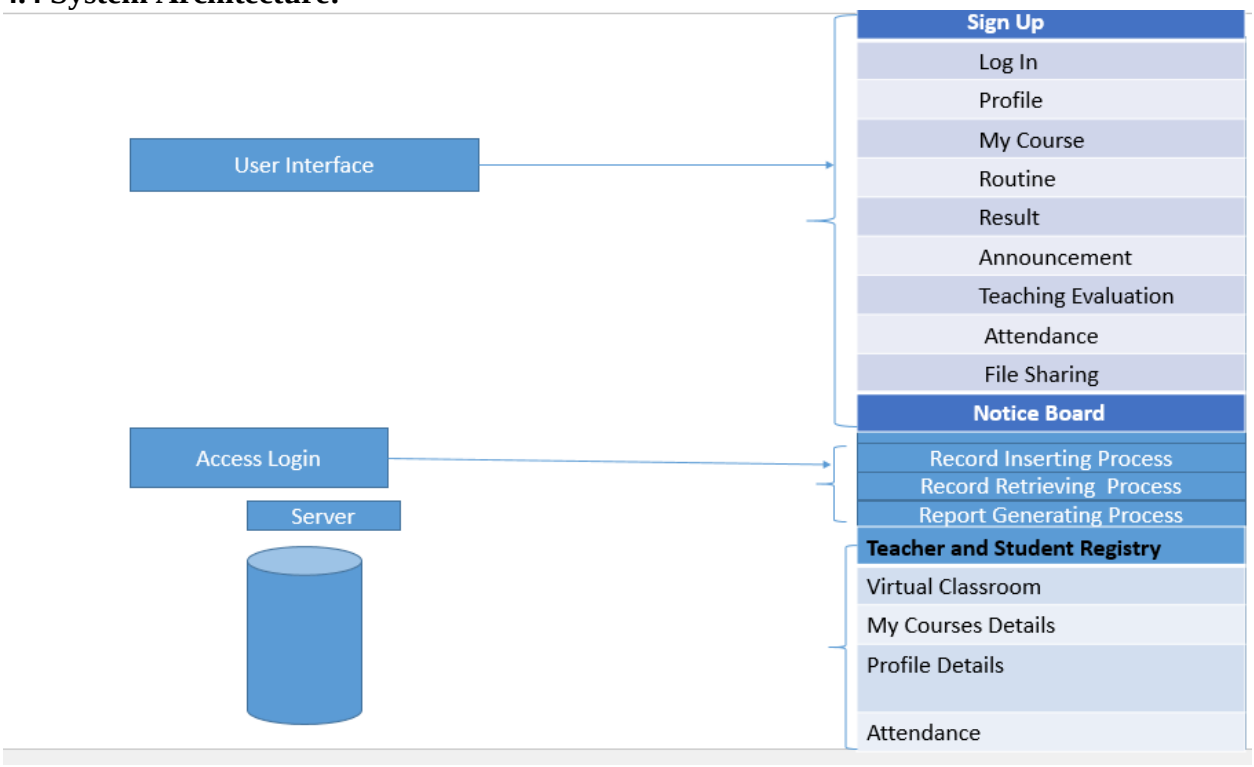


Figure 4.4: System Architecture

4.5 E-R Diagram and Description :

Virtual Classroom database has twelve tables. There are teacher_info, student_info, class_routine, midterm_exam_routine, announcement, final_exam_routine, students_problems_submit, result, student_attendance, update_teaching_evaluation ,mycourses,notice board.

In teacher_info table there are ten fields. Which are id, first_name, last_name, date_of_birth, gender, designation, email, password, faculty, university_name. id is the primary key. Shown in figure 4.4

In student_info table there are ten fields. There are id, first_name, last_name, date_of_birth, gender, semester, email, password, department, university_name. id is the primary key. Shown in figure 4.4

In student_attendance table there are eight fields. There are atten_id, tea_id, stu_id, stu_name, course_name, section, attendance, date. atten_id is the primary key. Shown in figure 4.4

announcement table has four fields. There are id, teacher_id, department, post_details. id is the primary key. Shown in figure 4.4

class_routine table has nine fields. There are id, day, time, teacher_initial, course_title, course_code, section, room_no, course_code_section. id is the primary key. Shown in figure 4.4

midterm_exam_routine table has seven fields. There are id, day, date, time, course_title, course_code, room_no. id is the primary key. Shown in figure 4.4

final_exam_routine table has seven fields. There are id, day, date, time, course_title, course_code, room_no. id is the primary key. Shown in figure 4.4

result table has ten fields. There are id, student_id, course_title, quiz1, quiz2, quiz3, midterm, improvement_mid, final, improvement_final. id is the primary key. Shown in figure 4.4

Question bank table has 5 fields.There are id,student_id,course_title,midterm,final. id is the primary key. Shown in figure 4.4

My courses table has 3 fields, there are student_id,coursecode,coursename,id is the primary key .shown in in figure 4.4

Teaching_evaluation table has four fields. There are id, teacher_id, student_id, percentage. id is the primary key. Shown in figure 4.4

students_problems_submit table has five fields. There are id, student_id, name, department, problem_details. id is the primary key. Shown in figure 4.4. update _teaching_counselling _hour table has five fields. There are id, teacher_id.

teacher_initial, day, time is the primary key. Shown in figure 4.4

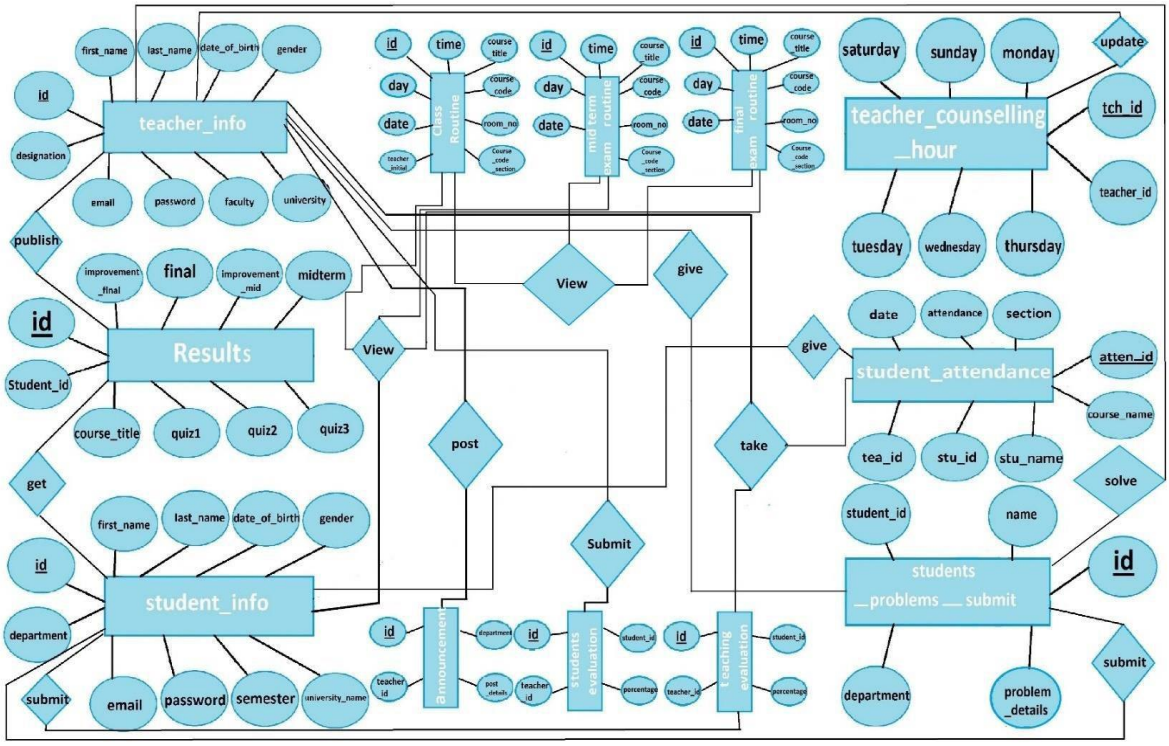


Figure 4.5: E-R Diagram

CHAPTER 5

IMPLEMENTATION AND TESTING

It is important to clarify that this task was composed and grown completely dependent on gathering data from existing frameworks, ideas and fanciful situations. To help the perusers to remember this report, there are numerous designers who are as yet contending about the center idea of various parts of the android based training framework. Their feeling is that we are endeavoring to actualize the new framework.

5.1 Implementation of Front-End Design

The screen captures underneath demonstrate the primary task see. Catch a picture of what you see on your portable screen and how utilize it.

Home Activity: In the Virtual classroom home activity there are two option available.

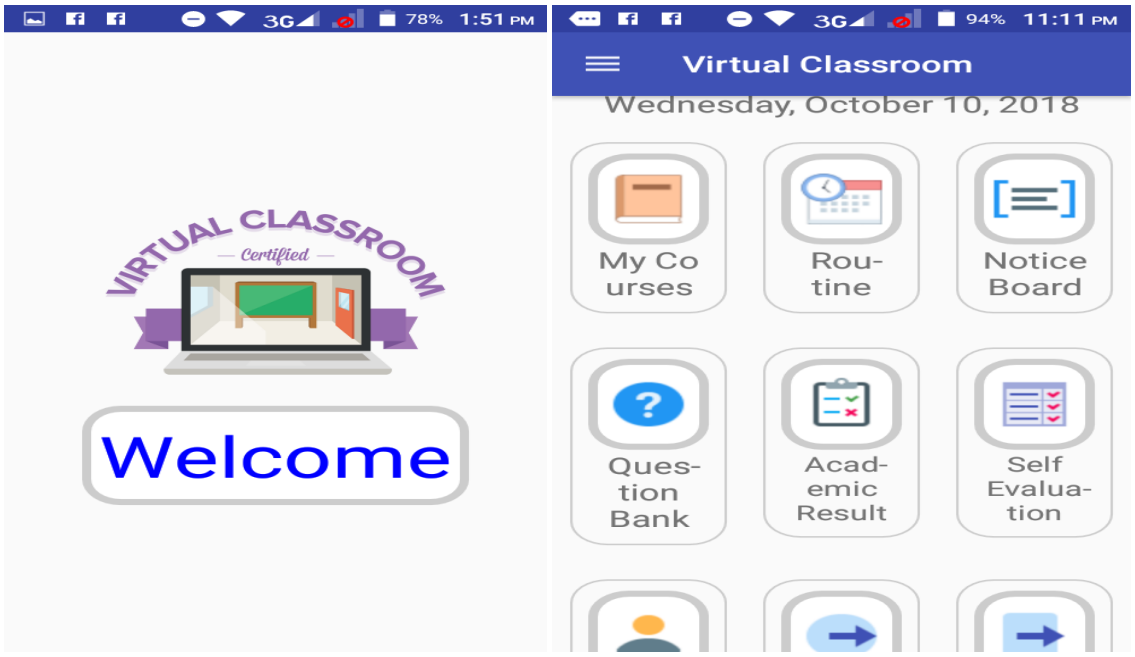


Figure 5.1**:** Virtual Classroom Home Activity

Sign Up: Users need to fill up sign up form to create an account and access smart classroom.

Sign Up Form Fields Validation: Users need to fill up sign up form with valid information.

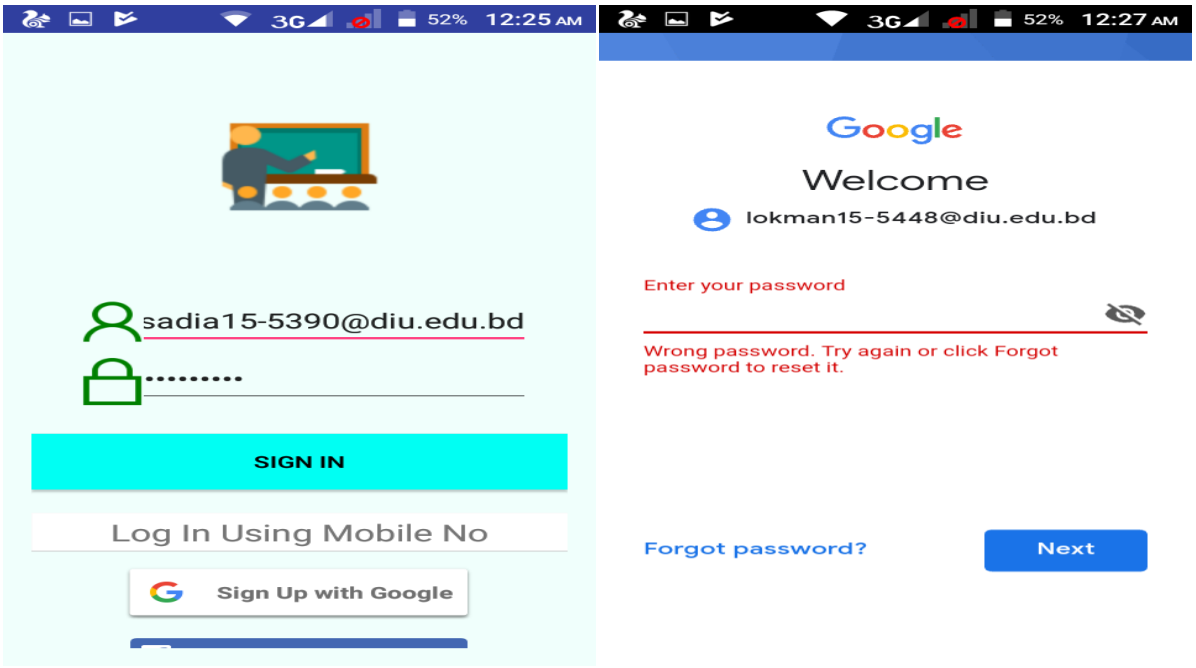


Figure 5.2: Sign Up and Sign Up Form Fields Validation

Log In and Log In Fields Validation: Use need to enter valid email address and password.

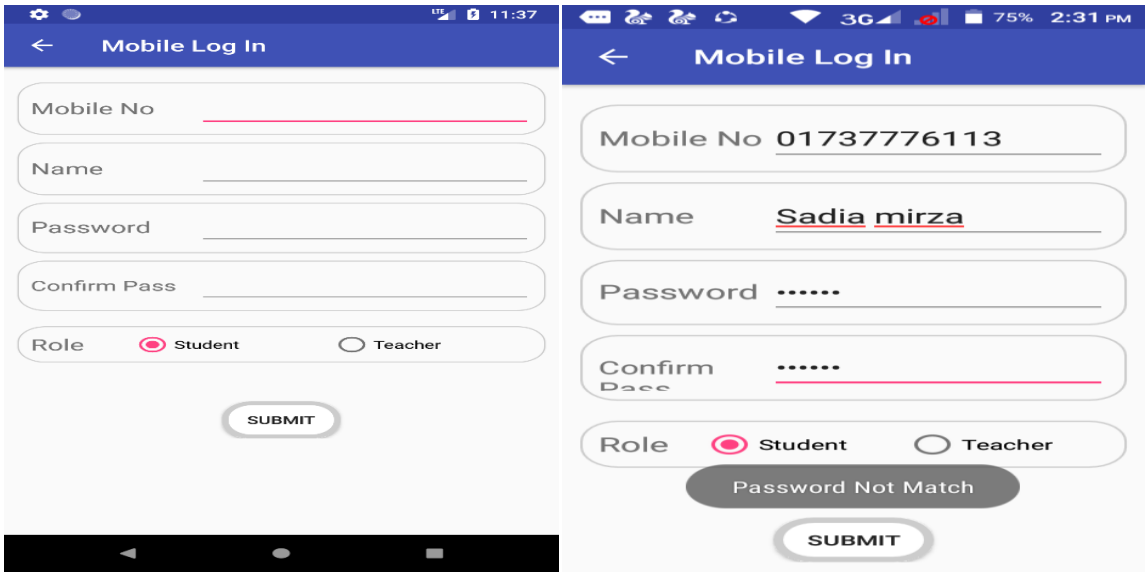


Figure 5.3: Log In and Log In Fields Validation

After Log In: After successfully login teachers and students can access all features of Virtual classroom.

Noticeboard: Where students get all kinds of notice.

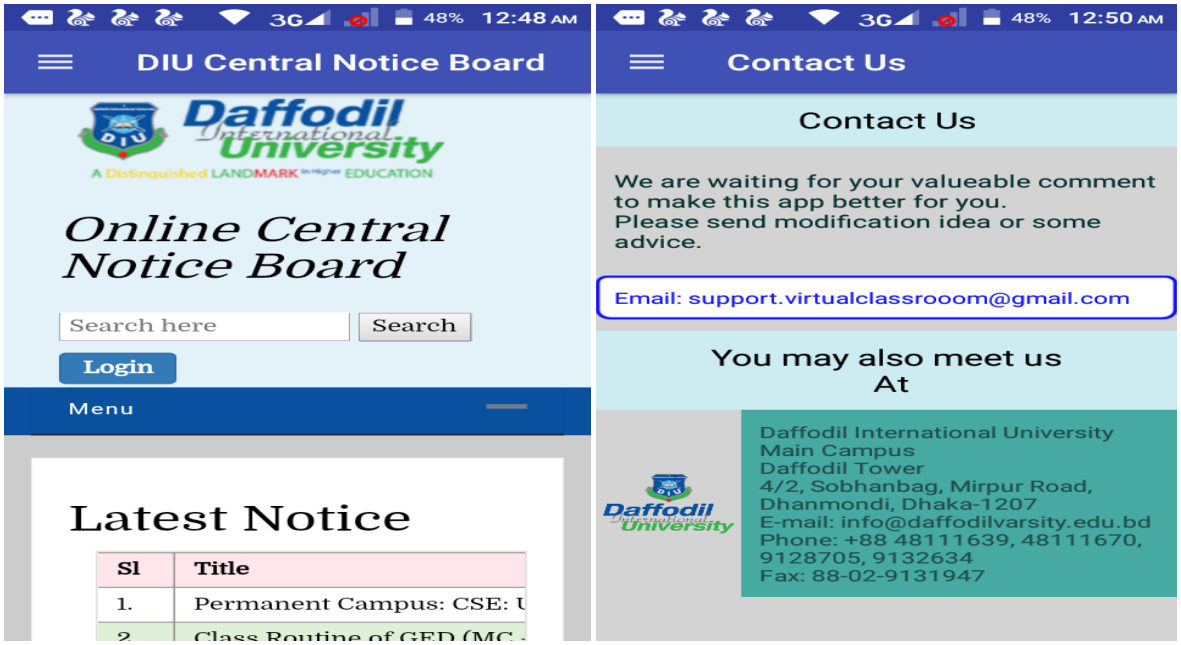


Figure 5.4: Home Activity and Noticeboard

Features: Specific features for teachers and students.

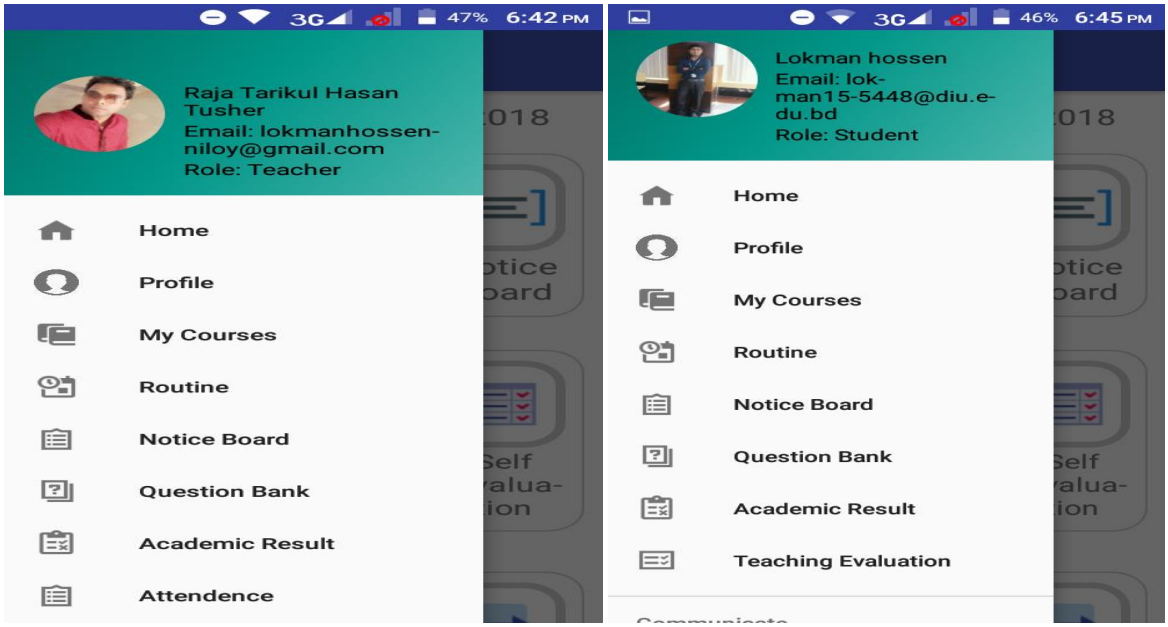


Figure 5.5: Specific Options for Teachers and Students

Attendance: Students attendance system.

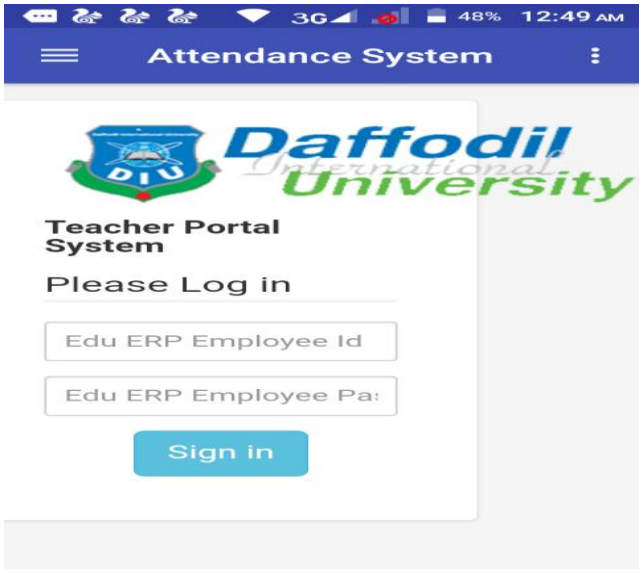
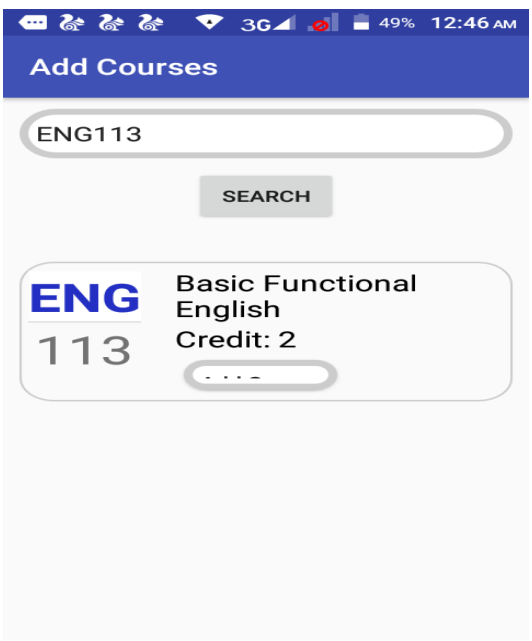


Figure 5.6: Attendance

My Courses: Students can add any subject and get information of quiz exam routine midterm exam routine, final exam routine, class routine, Question bank etc.

Add Course:



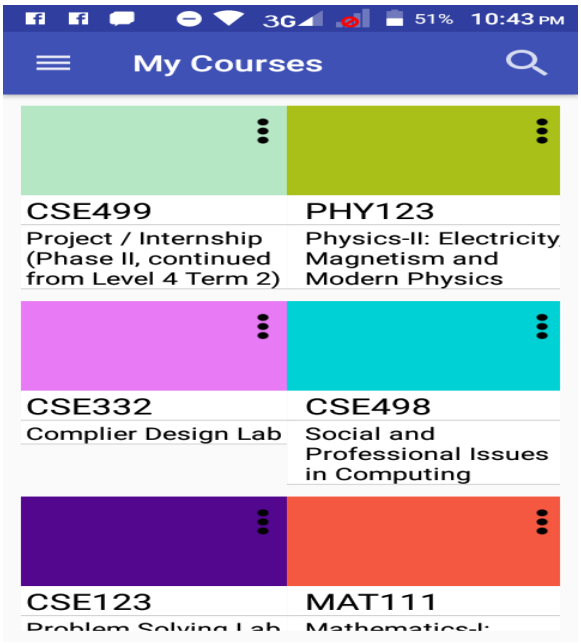


Figure 5.7: Courses

Routines: Student get class routine, mid-exam routine, final exam routine.

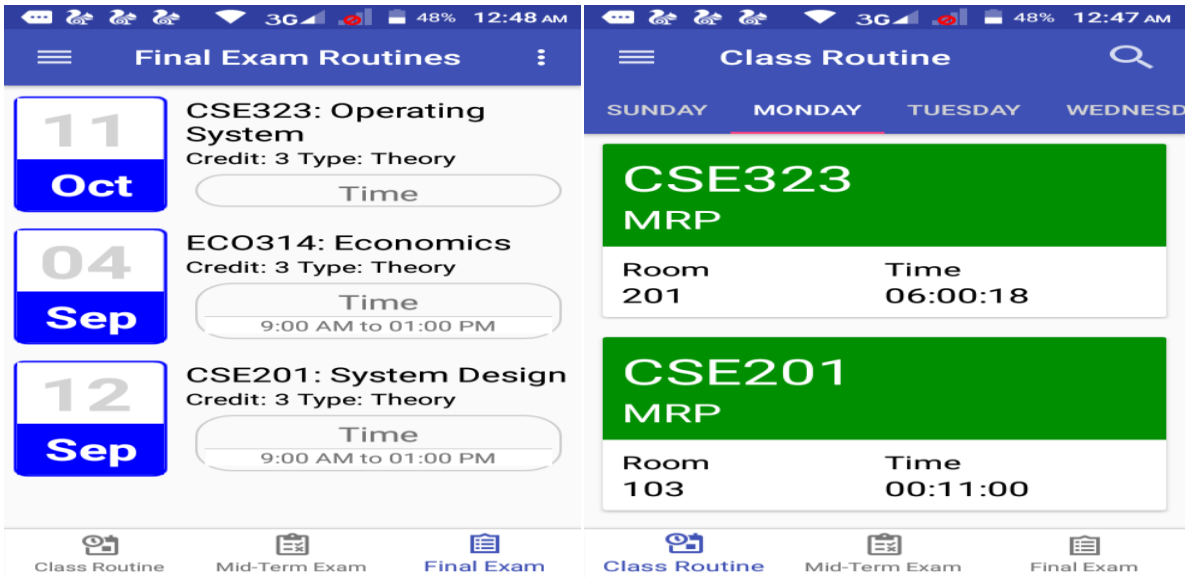


Figure 5.8: My Routine

Question Bank: Student get question in those subjects which subject added in the **My Courses**

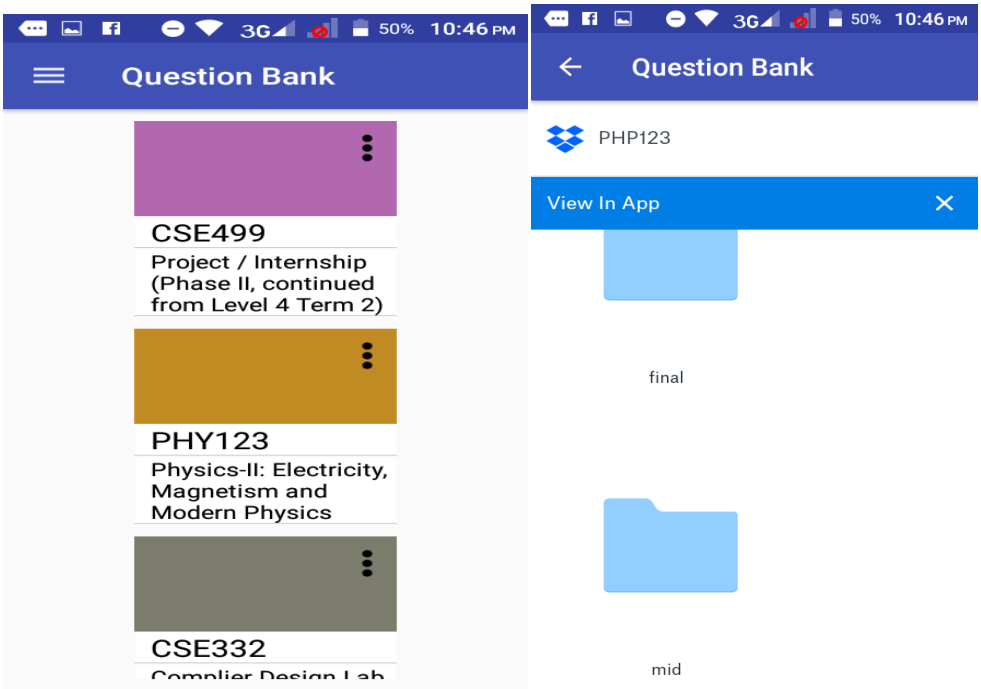


Figure 5.9: Question Bank

Teaching Evaluation:

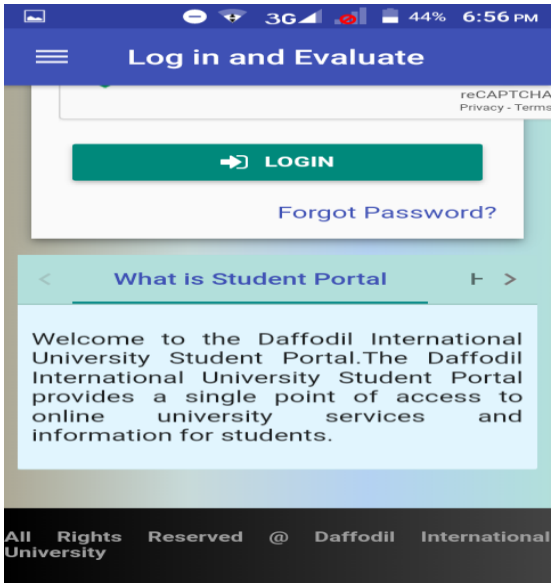


Figure 5.10: Teaching Evaluation

Result Publish: Student get their result in every subject from Student Portal.

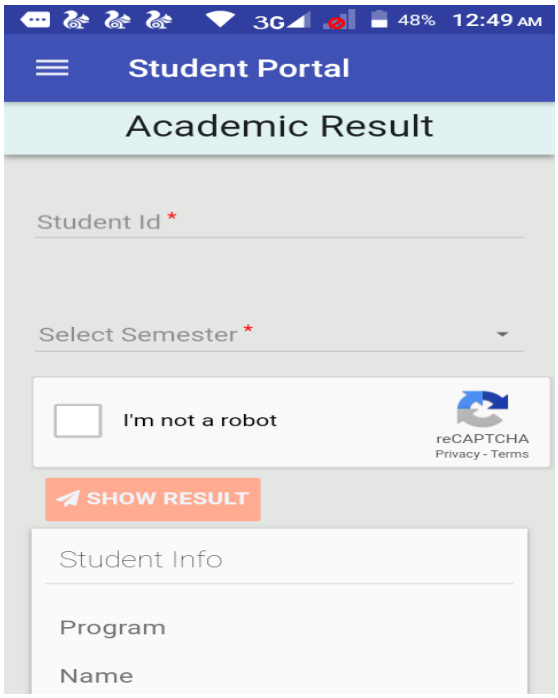


Figure 5.11: Result

About: People can see who develop the Application

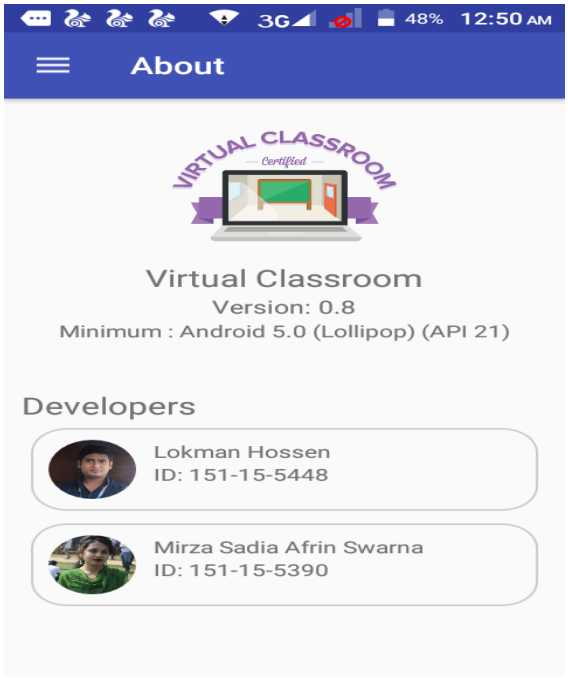


Figure 5.11: About

5.2 Implementation of Back-End Design

The accompanying plan for the virtual classroom database is chosen to framework application. Database configuration is the way toward delivering a definite information model of a database. This consistent information demonstrate contains all the required legitimate and physical outline decisions and physical stockpiling parameters expected to produce a plan in an information definition dialect, which would then be able to be utilized to make a database. A completely ascribed information display contains itemized traits for every substance. The term database configuration can be utilized to portray a wide range of parts of the plan of a general database framework. Chiefly, and most accurately, it very well may be thought of as the consistent plan of the base information structures used to store the information. In the social model these are the tables and perspectives. In any case, the term database configuration could likewise be utilized to apply to the general procedure of planning the base information structures, as well as the structures and questions utilized as a

feature of the general database application inside the database administration framework (DBMS).

5.2.1 Data Table Name

5.2.1 Data Table Name The name of the smart classroom's database is androidappsproclassroom that has twelve data tables

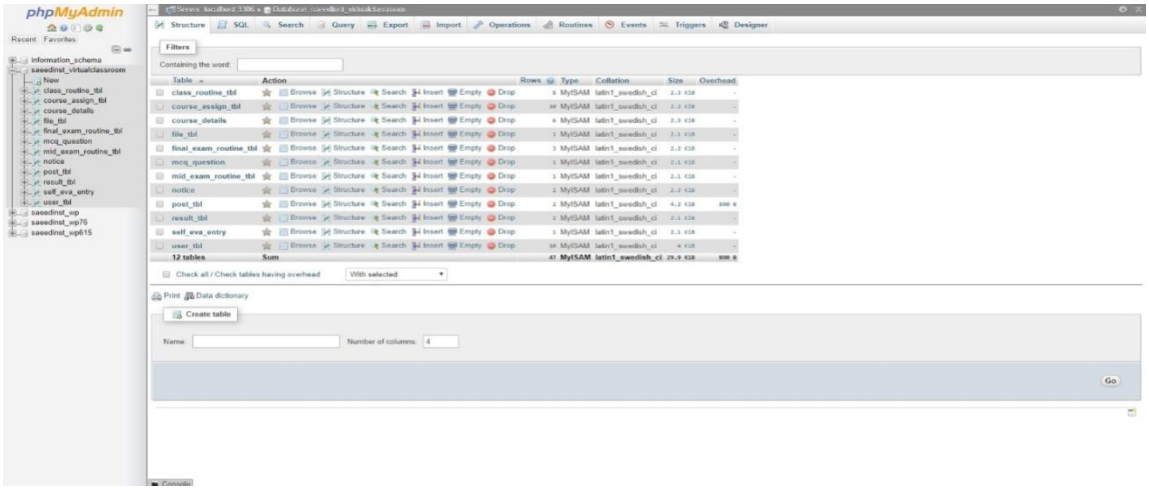


Figure 5.12: Database Table Name

5.2.2 Data Type Architecture

An information design should lack of bias set information measures for every one of its information frameworks as a dream or a model of the inevitable cooperation between those information frameworks. Information reconciliation, for instance, ought to be needy upon information engineering models since information coordination requires information connections between at least two information frameworks.

The following data types for its column and parameter declarations.

- CHARACTER [CHAR [(length)]
- VARCHAR (length)
- BOOLEAN
- SMALLINT
- INTEGER or INT

- DECIMAL
- NUMERIC
- REAL
- FLOAT
- DOUBLE PRECISION
- DATE
- TIME
- TIMESTAMP
- CLOB [CHARACTER LARGE OBJECT [(length)] or CHAR LARGE OBJECT [(length)]
- BLOB [BINARY LARGE OBJECT [(length)]

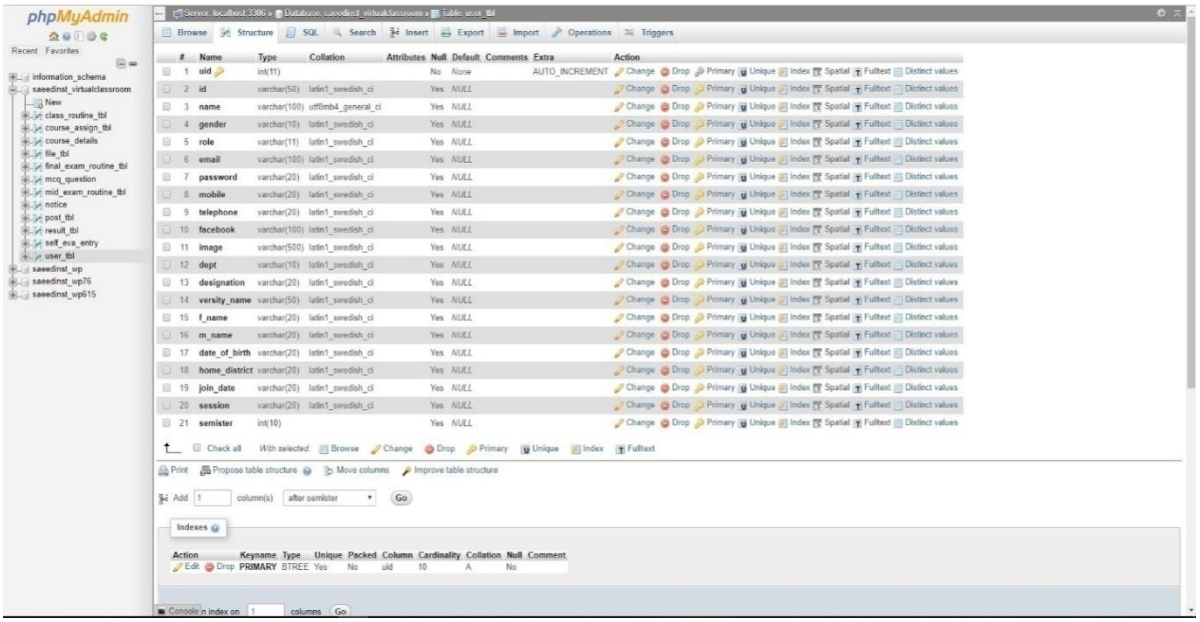


Figure 5.13: Data Type Architecture

5.2.3 MYSQL Database View

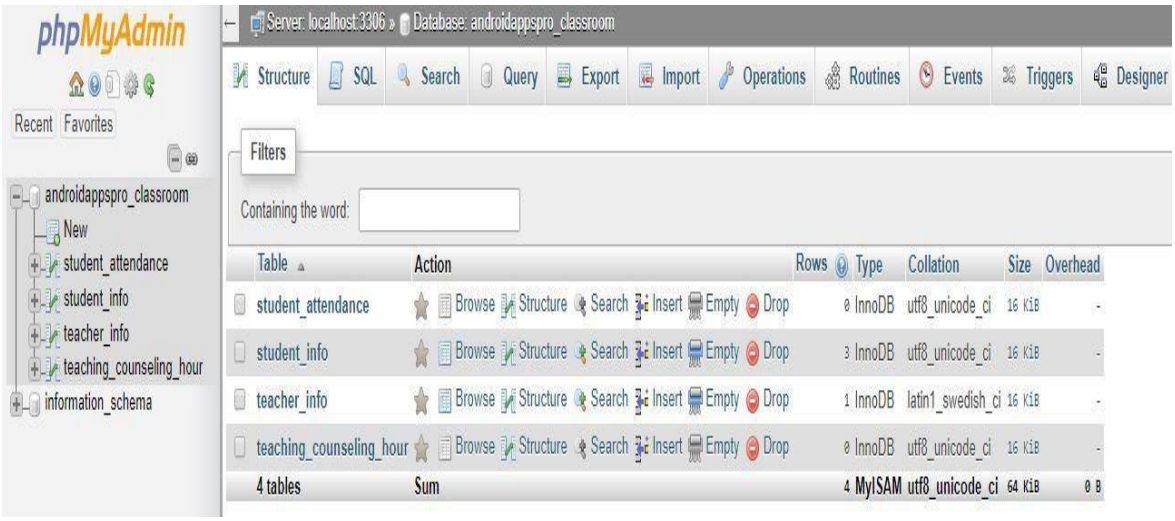


Figure 5.14: MYSQL Database View

5.2.4 Database Table Structure

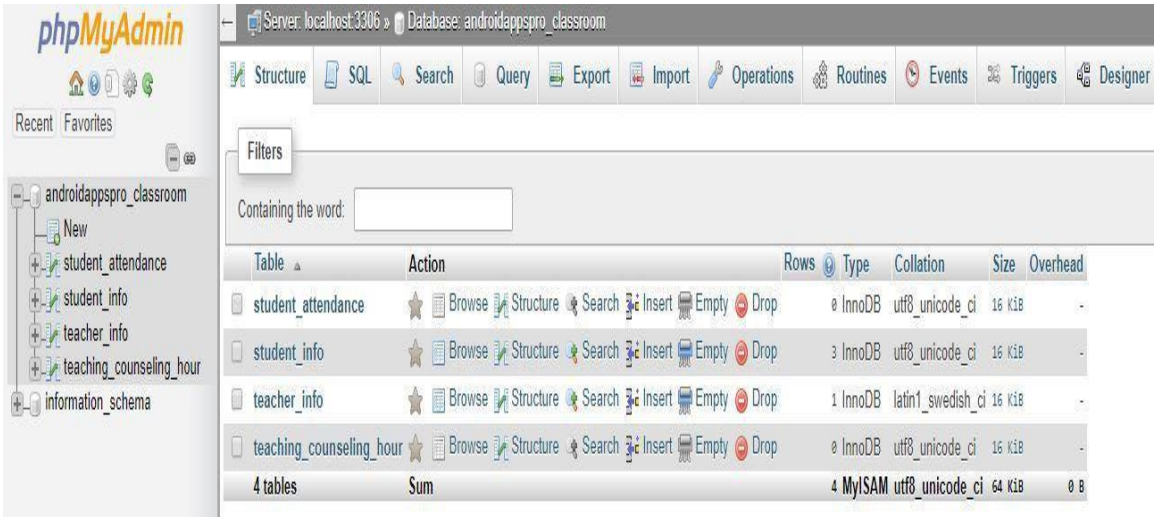


Figure 5.15: MySQL Database View

Here table (teacher_info) structure shown below:

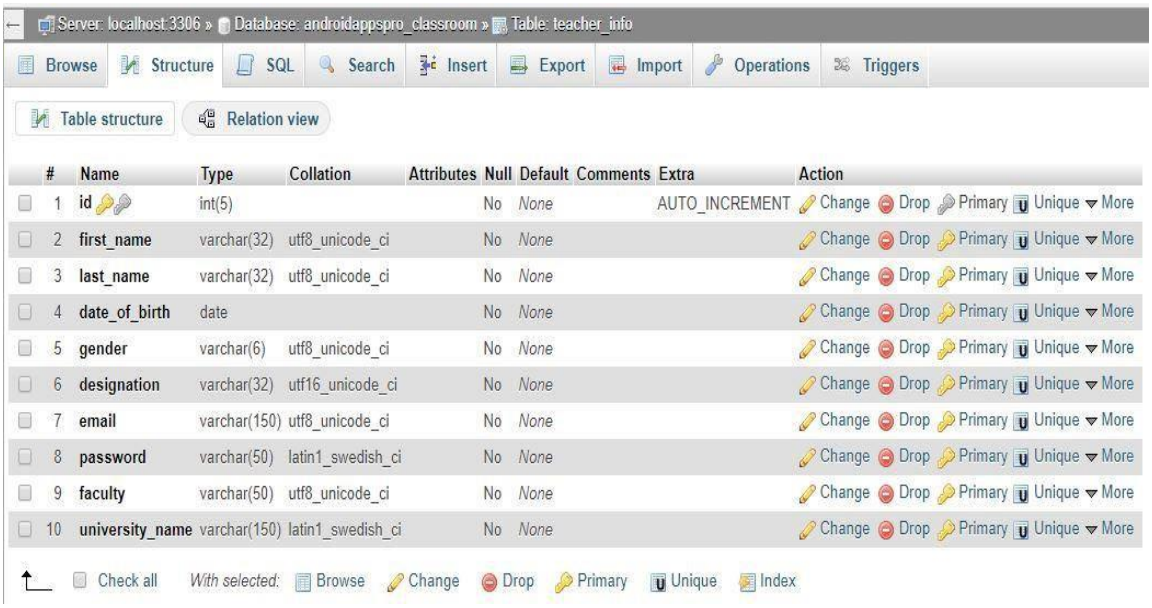


Figure 5.16: Database Table (teacher_info)

5.3 Testing Implementation

Fulfilling prerequisite particulars: The task is said to be fruitful on the off chance that it fulfills every one of the necessities, for example, useful and non-utilitarian necessities. As such, it ought to be equipped for guaranteeing the prerequisite details.

Rightness: It is one of the basic necessities of programming advancement. Immaculateness is the fundamental interest for administration situated programming. Every single piece of the application should work appropriately and precisely.

Similarity and Integrity: These are two huge conditions to check regardless of whether the venture is fruitful. The live classroom was made to be good with any area. It was likewise outlined so that it could induce the virtualization which is viewed as a vital factor. Also, the assessment of the framework relied upon how the application was actualized to the entire framework or not.

Constant administration: The application is about savvy classroom. In this way, it is important to keep up the constant situation. The clients of this framework ought to be able to look after this.

Dependability and security administration: The security is one of the critical factors in any administration situated frameworks. Therefore, the assessing criteria on the security includes that had been considered when the framework was created.

Ease of use: Friendliness in any applications is likewise an exceptional standard to pass judgment on the frameworks. For example, the clients of this arrangement should feel mollified when they are utilizing the framework. Basically, a framework ought to have the quality estimates properties, for example, effectiveness, convenientce, reusability, adaptability, attachment and free coupling among various segments of the outlined programming.

5.3.1 Testing Methodology

Testing when all is said in done, programming testing is utilized to discover framework blunders. A product test can be done by analyzing codes, plan and execution of the entire framework. Testing is unavoidable to enhance the nature of the framework. Looking into and testing code is another essential of programming designing that is regularly disregarded in task improvement. Testing is an indispensable piece of the framework improvement process. The primary Standard for programming Testing is contained in the ANSI/IEEE standard 829/1983-Standard for programming testing Documentation. Some product testing may likewise be performed by CAST (Computer Aided Software Testing).

5.3.2 Functional Testing

In practical testing analyzer needs to approve the application to see that every single determined necessity of the client's whatever we have said in supplemental restriction framework have been consolidated or not.

There are two classes of useful testings:

- Positive practical testing: testing the application's capacities with substantial information and furthermore checking that the yields are right.

- Negative utilitarian testing: IT includes practicing application usefulness utilizing a mix of invalid sources of info some surprising working conditions and by some other "beyond the field of play" situations.

5.3.3 Unit Test

Unit testing is for the most part utilized in a point by point planning and executing period of this undertaking. The reason of unit test was to discover the imperfections in this venture.

5.3.4 Compatibility Test

Similarity Testing, some portion of programming non-practical tests, is trying directed on the application to assess the application's with the processing condition. Programming similarity testing can be all the more fittingly alluded to as client encounter condition. This task is tried on various kinds of android versatile to guarantee the accompanying.

Table 5.1: Compatibility Test Result

Android Device Name	Screen Size	Test	Result
Samsung Galaxy Core Prime	4.5 inch (480p)	Yes	Okay
Samsung Galaxy S II	4.3 inch (720p)	Yes	Okay
Walton Primo GM	5.0 inch (480p)	Yes	Okay
Symphony Xplorer T8 Pro	8.0 inch (WXVGA)	Yes	Okay
Samsung Galaxy primo	5.0 inch (720p)	Yes	Okay
XiaomiRedmi Note 3 Pro	5.5 inch (720p)	Yes	Okay
ASUS	5.5 inch(720p)	Yes	Okay

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Conclusion:

The virtual classroom transcends the boundaries of location, time and space providing a flexible learning environment for all. It is an android based portable application that permits clients a successful situation of instructing and learning. The two Teachers and Students can be profited in preparing and learning by this application. Classroom condition is easy to understand as to explore effortlessly to discover the assets and class addresses. Expectation this will be a superior arrangement in the field of learning and instructing for present and future age.

6.2 Goal:

The fundamental objective is to make an android application where the two understudies and instructors can learn and educate in the meantime. To fabricate a decent network and great connection among instructors and understudies is one of the critical objectives of our application.

6.3 Limitation:

The part of the framework can be executed utilizing the present innovation albeit a few changes must be done at different spots

- Domain facilitating data transfer capacity just 3GB.
- MYSQL database stockpiling 1GB.
- For record sharing we utilize Google API.
- Limit Class Size for Optimal Interaction.
- Anticipate That LVC Classes Will Take Longer to Deliver than Traditional Classroom Courses.

• Infrastructure for the participants PC needs to be prepared Virtual classroom sessions need to be scheduled, teachers need to be invited, and participants' PCs need to be prepared.

6.4 Scope for Further Developments

- Interface configuration will be refreshed. More highlights and functionalities will be included.
- Reliability of the application ought to be expanded.
- File share by utilizing our API.

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