

RIGHT CONNECT: An Android Based Application

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DHAKA, BANGLADESH

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APPROVAL

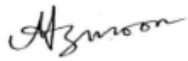
This Project titled “**RIGHT CONNECT: An Android Based Application**”, submitted by Jannatun Nayim Shoishob, ID:181-15-11322, Md Borhan Chowdhury. ID:181-15-11020 and Sree Chompok Kumar Borman ID:181-15-10802 to the Department of Computer Sciece and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 04 January, 2022.

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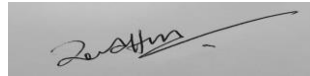
We hereby declare that this project has been done by us under the supervision of **Mr. Raja Tariqul Hasan Tusher, Lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree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

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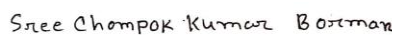
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ABSTRACT

RIGHT CONNECT is an advanced information and communication method. Where students can be wise mentors to conduct workshops on various information and communication technologies and at the same time join a virtual ICT club. Proper expansion of information and communication technology through these two sections, liaison with students of developed cities with students of Mofassal area, free training on IT project creation, motivational speech, research, and commercialization of this service through technology will make it easily accessible to the people. With the participation of all the students in the educational institutions of the backward mofassal area of Bangladesh. Various workshops will be organized. Which is related to various ICT issues. These workshops will be held online and offline. At the same time, students will be able to join the ICT club. In this case, a tech network will be created all over Bangladesh through RIGHT Connect. This network will play a significant role in the country's ICT education system and implementation activities. This initiative will play a significant role in building skilled people of the digital age advanced in building a digital Bangladesh and in achieving its goal.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

An interactive android based mobile application “RIGHT CONNECT” Will introduce modern education medium. Where a student can make his full mental development through this android application. Through this platform, a student from a developed city will be able to easily communicate with students from backward areas on any IT related topic or organize any kind of program. In this case, the students of the backward areas will be able to move forward in various time-appropriate subjects. This medium will actually help build a huge network. Through which every student from all walks of life will be able to be involved in every advanced ICT work and participate in different types of work. As a result, students who are lagging behind from a very young age are able to engage in a variety of projects and assignments. As we have seen, teachers in disadvantaged areas want to keep or teach their students only in textbooks. These teachers never support their students too much about extra-curricular activities. If a student wants to know about a robot and work with the right ideas or think about such technical work, then the students do not get any help or support from the teacher in any way. This kind of thing is preventing a huge student body of our country from doing advanced technological work. But if we think of teachers and students in a developed city, the situation is quite different. Another section of RIGHT Connect is the "IT Club". This club will be basically a virtual club. Where all the students from all over Bangladesh can be connected online. Through this IT club, backward students will be able to acquire knowledge of ICT-related work in different ways and at the same time will be able to engage in different types of work. Which would be a fatal start for these students. Finally, we can say that the RIGHT Connect project will make a huge contribution to the field of IT education. Which will play a significant role in advancing our country's

advanced technology. At the same time, it will create a huge network of students of all levels. As a result, our country will advance in the field of advanced technology.

1.2 Motivation

We want every person in this country of Bangladesh to be able to fully apply the good side of ICT in real life and no student should be left behind in this world of advanced technology. This whole thing is possible only when all the students of the country have detailed knowledge about this subject and can use it. In this case, the students of the backward areas must be associated with the students of the backward areas.

1.3 Aims and Objectives

"RIGHT CONNECT" is a complete technology-based network. Where students will be constantly acquainted with the activities of advanced technology and will be able to receive education on their own. At the same time be able to involve themselves in different types of work. In the future, it is possible to select and bring different types of teams through this platform. Those who will be able to work in different fields of technology and that will be the new beginning of our country.

1.3.1 Aims of the Project

The main aims of this project are as follows

- Proper expansion of information and communication technology.
- Link to the students of the developed city with students of the Mofassal area.

- Extension of information technology and the development of the common people of the country by expanding the knowledge of information technology.
- Free Training of IT Project and Motivation session.
- Commercialization of research and technology services.
- To create skilled manpower for technological advancement.
- Implementation of innovative activities.
- To make ICT available to the people.
- To create a technical network among students.

1.3.2 Objectives of the Project

The main objectives of this project are as follows:

- 1) Direct participation of students for the betterment of the technology sector in Bangladesh.
- 2) To create tech solutions to solve various problems of the people of the country, which will make people's life easier.
- 3) To create a working network with the participation of all students of ICT-based countries.
- 4) ICT teaching improvement of village student.
- 5) Digital Tech Seminar.

Table 1.1: Specific options for teachers and students

Mentors	Students
<ul style="list-style-type: none"> • Can create, delete, update profile. • Can Collaborate with members/student 	<ul style="list-style-type: none"> • Can create, delete, update profile. • Can join ICT club

1.4 Feasibility Study

Of course, this section can be said to be very significant. The reasons for this are that it can decide on almost any other type of connected activities with any project or similar effective environment. Which can ensure the future real success of this project including economic activities, advanced technology, various sense of justice, and time consideration.

Feasibility has four concrete volume:

- Technology
- Finance
- Time and
- Resources

The feasibility of the system "RIGHT CONNECT" is viewed with the help of these four dimensions.

Technology: The system development of RIGHT CONNECT is purposed with uses simplest & easily available technology. This system is based on android like mobile interface, which is truly easy to use. This program was developed by Kotlin. Firebase for Database and XML for design.

Finance: This dimension measures the system in respect to money or we can say funds. This dimension checks whether it's feasible to spend the required amount on the system or it will be a waste. There is no problem of finance in this project whereas it uses simple technology, which is very easy to install. This system is been developed for a standalone computer hence for this system hardware requirement is very low. For this tactic we need to be developed & installed properly we require so easily available technologies and truly basic hardware and all these requirement doesn't cost lot.

Time: This particular type of process causes an action to occur over time. As a result, the system is evaluated. This process can be said to be significant enough. This project can be set up in a very short time which will be timely. The system is not much longer, so the critical time will be less. Lastly, with the proper use of time, this system can be developed promptly.

Resources: Provides much-needed pathways for proper development of the system. This option is very common in all cases for this type of system. Subject to this dimension, we can get an idea of the future functioning of the system. Through all these activities we can get an idea that this system is effective subject to all kinds of dimensions.

1.5 Expected Outcome

1) The application of the technical education system will increase, where rural or backward students still do not have a piece of very good technical knowledge.

2) Students will be able to create different projects in real-time through various activities of the virtual club.

3) New ICT activities will be continuously implemented through the "RIGHT CONNECT" platform, through which all students in Bangladesh will be under one network and create tech solutions.

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 smart 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 “RIGHT CONNECT”.
- **Chapter 3:** Describes the Android Studio, System requirements, Firebase.
- **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, 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

In our country, various tech-related initiatives have been taken which have been done both officially and privately. But such initiatives never reach the rural areas or are fully implemented. A special reason for this is the cost of using the internet. But at present Bangladesh has an internet facility or WiFi system. So we have designed our project in such a way that all the students can get involved very quickly. The government has also ensured internet connection in every school at present. As a result, students will be able to engage in various activities such as various workshops related to ICT, work on different projects through this application and students will be able to be directly involved through virtual ICT clubs. Students or teachers or mentors do not have to worry too much about using this application. The "RIGHT CONNECT" platform will be designed in such a way that no student/user gets into trouble in any way. Also important is that this application is only for Bangladesh and such an application has never been created before. However, some questions have been raised for this project –

- 1) How will the "RIGHT CONNECT" project be used in all schools across Bangladesh?
- 2) How will students engage themselves in this virtual ICT club?
- 3) How will the students of developed areas and mofassal areas share the work of different projects among themselves and apply it?
- 4) How can students make themselves productive through "RIGHT CONNECT"?

2.2 Related works

Here we will discuss related work which relate with this area.

Robi10 Minute School:

This project's some functions similar with 'RIGHT CONNECT'. They have also academic and admission part from six to twelve class.

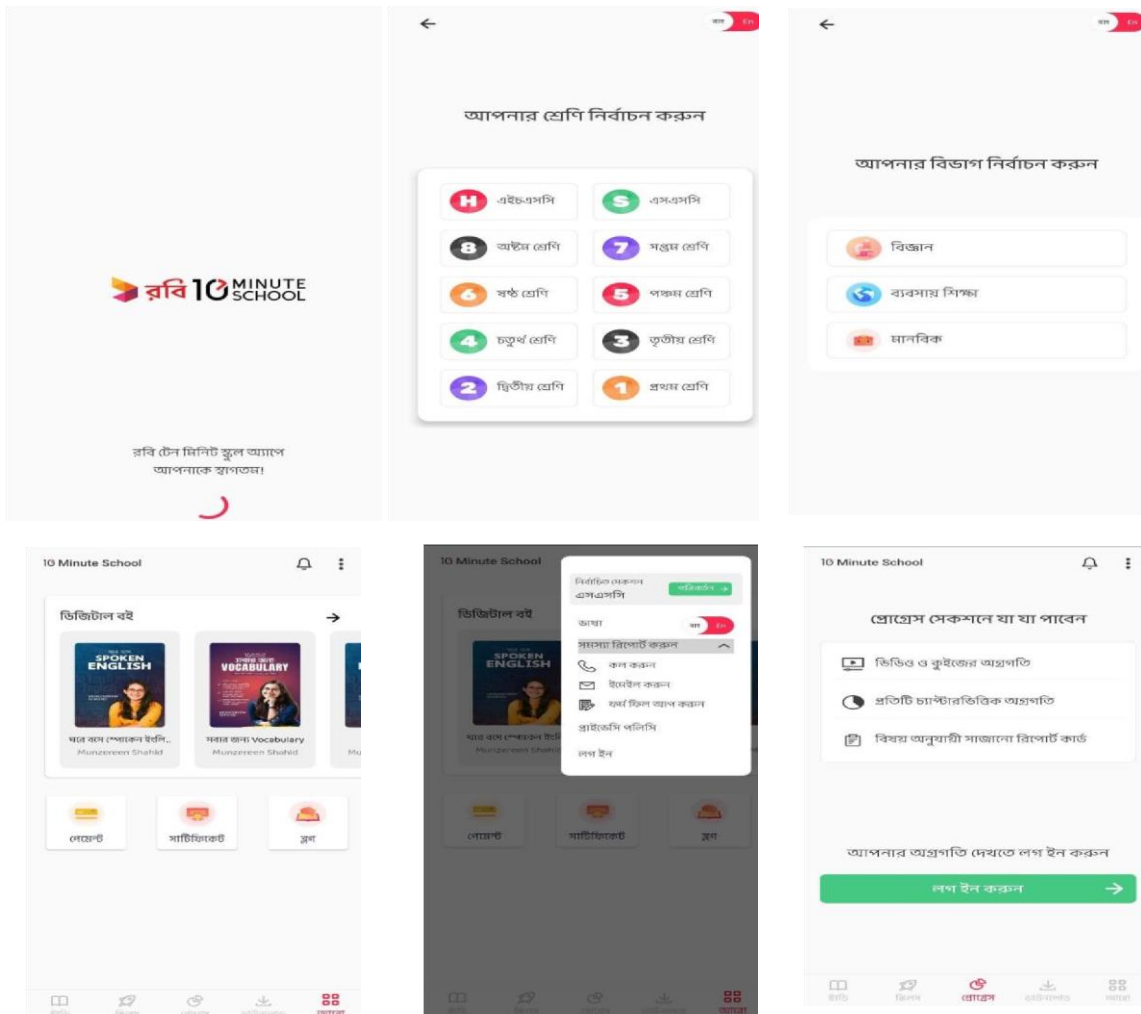


Figure 1.1: Related work

But 'RIGHT CONNECT' only for the ICT education purpose. And we have another function which named ICT Club. This is totally a new part from any other project.

2.3 Comparative Studies

Every feature and idea of "RIGHT CONNECT" is brand new. So it can be said that at present we have no competitors in Bangladesh.

2.4 Scope of the Problem

All users must have an Internet connection to run the "RIGHT CONNECT" application. Since all the activities of this application will be almost school-college centered, there will not be much of a problem as now almost all school-colleges have an internet connection.

2.5 Challenges

Connecting students to the "RIGHT CONNECT" application, usually from backward areas, will be quite difficult to perform the initial activities.

2.5.1 What are we thinking?

When we started working on the idea of this project, the most challenging thing was to connect the students from the backward areas of Bangladesh to this "RIGHT CONNECT" application. However, we have already carried out various ICT-related activities with the support of the ICT Division and Bangladesh Computer Council. At present almost every student has an Android mobile phone so they can easily register and get involved in the Virtual ICT Club by filling the form.

2.5.2 Young Researchers

From the beginning, we have faced many problems and experiences while working on this project or idea. What we have learned as three young engineers is-

- 1) The idea of how to turn an idea into a product
- 2) To think differently based on reality
- 3) Not being afraid to admit mistakes 4) Do whatever it takes to finish the job
- 5) Stick to the end.

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 time factor was our biggest challenge in this job because we are all working full time and studying side by side. Agreeing on assignation and summit was one of the most of the job, as the project itself was a very amusing proceedings. It was fun to work with and we learned a lot from this activity which is well organized and well planned.

2.6 Summary

In this chapter various affined works of virtual classroom have been stated. From the above placidity. It is explicit that Virtual education is being spread all over the world and students are being more engaged in virtual learning. Although more and more research and project are being done in this area of education, However, People are trying to find out more easy process of virtual learning.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Android Studio

Android Studio is a very powerful and applicable software for creating and developing Android applications.

The official launch of the software was announced at a 2013 I / O conference, which was hosted by Google.

This is the official IDE of Android, in a word, Android applications can be created or developed without any problem or hassle.

This application creation environment has all kinds of features including all kinds of application creation tools.

You must have a java development kit on your computer before installing this studio.

Version 0.1A starts with the initial phase, which was in 2013, and later comes version 0.8, where the beta phase was released in 2014.

The first stable build came on the market in early December 2014.

Kotlin replaces Java, which was on May 8, 2019. Java is still supported as C ++.

This software supports all similar programming languages of Intel.

For example, Java, C ++, and many more.

After creating the application in this studio, it can be easily uploaded/released in Plays-tore by following all kinds of policies.

The latest presentation includes IDT modules pre-installed and packaged on the IDE. This is the method by which the components required to view the IDE are checked.

The application programming interface (API) determines how certain product sections should interact with each other. An API is a library that, as a rule, includes specific schedules, data structures, query classes, and reasons.

The SDK (Software Development Kit or "Devkit") is usually an organization of programming, it is used in a peculiar programming stack, programming framework, equipment stage, PC framework, computer game consolation, work formation or qualified progress stage.

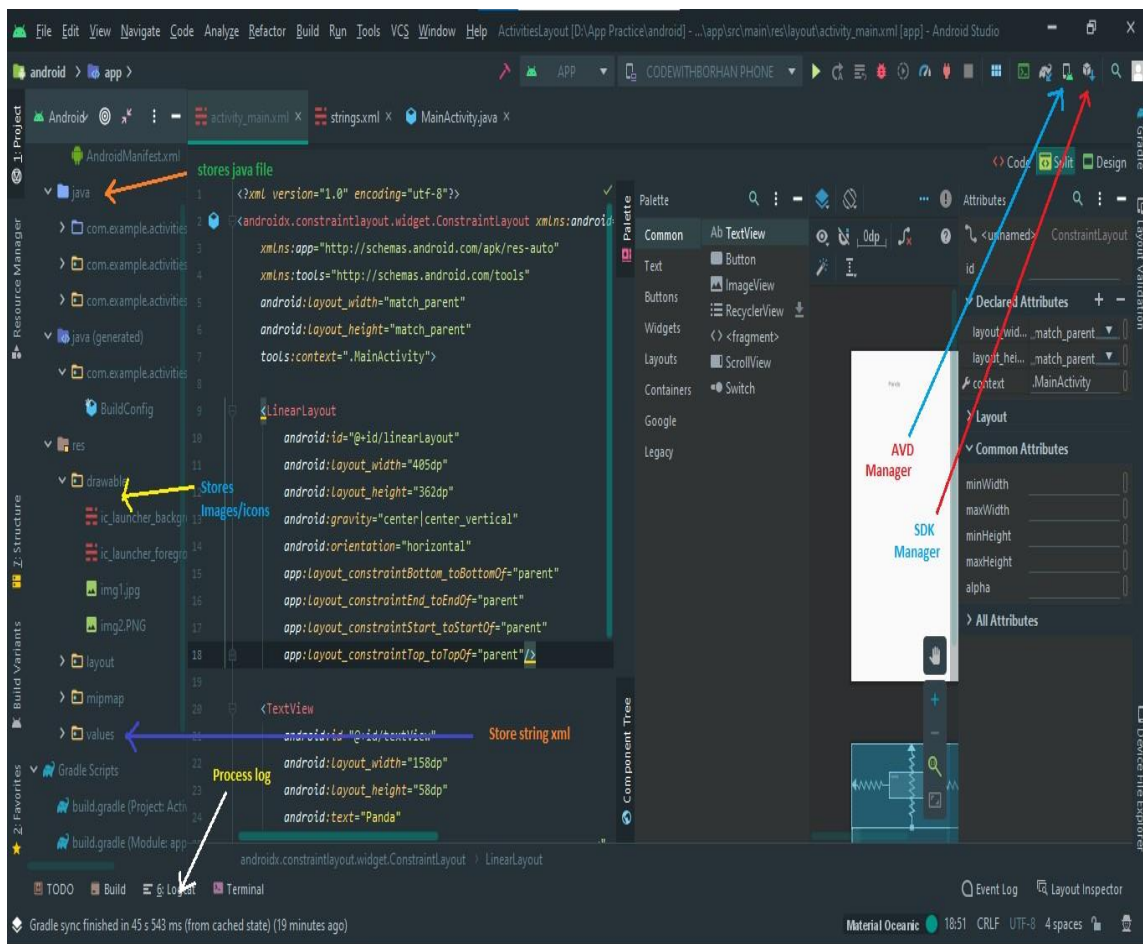


Figure 3.1: Interface of Android Studio

The latest variant of ADT includes the Android SDK resulting in IDE

When you open the IDE and stack, SDK Manager gives us the caliber to download the Google API and use them in our code.

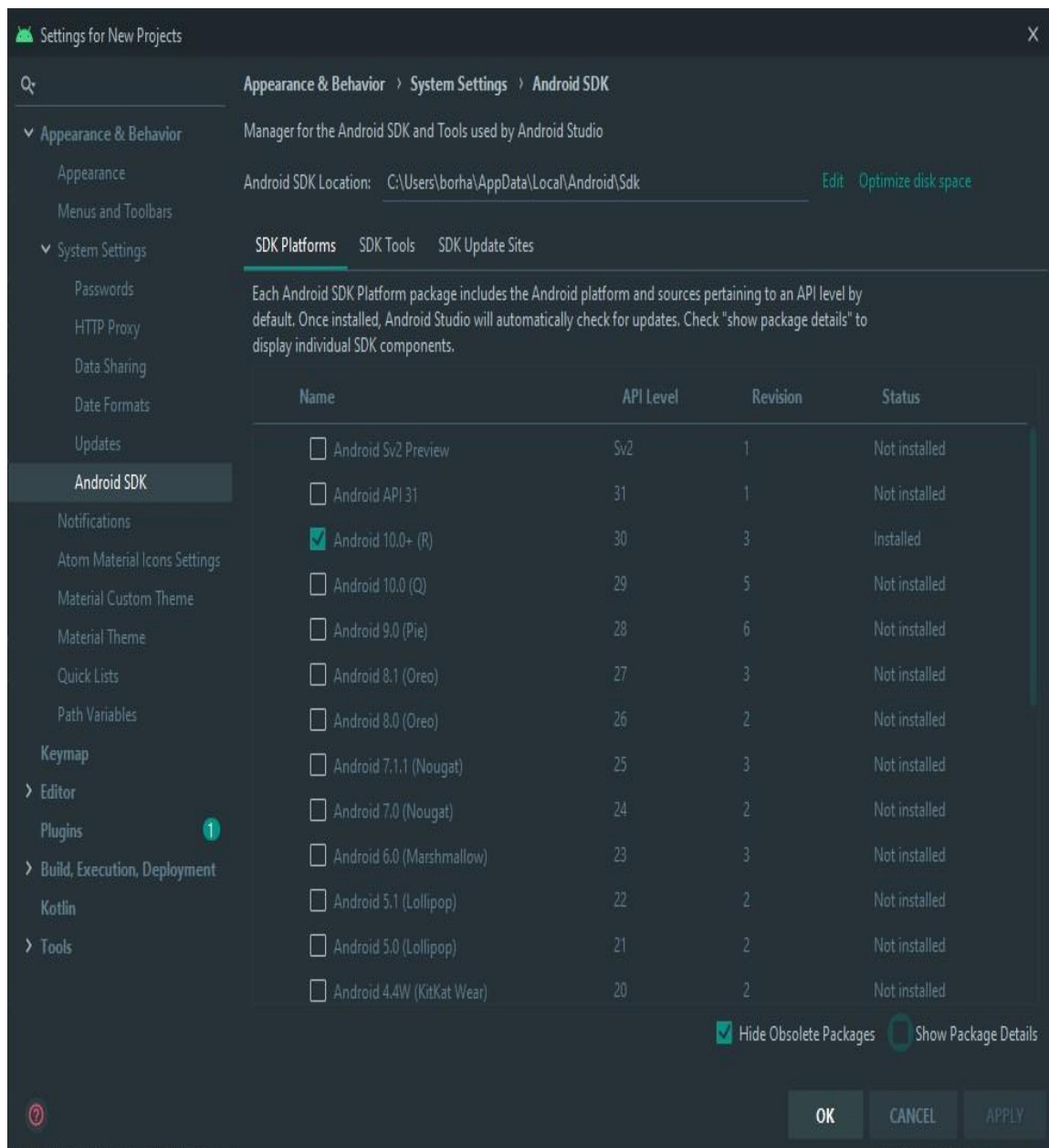


Figure 3.2: Android Studio SDK Manager

3.1.1 System Requirements

Here added the system requirements for android studio software. Which operating system need what kind of configuration noted in details-

Table 3.1: Version 4.x

Criterion	Description
OS	64-bit Microsoft Windows 8/10. x86_64 CPU architecture; 2nd gen Intel Core or newer, or AMD CPU with support. Mac OS X 10.10 (Yosemite) or higher, up to 10.13 (macOS High Sierra) GNOME or KDE desktop Tested on Linux based on Debian (4.19.67-2rodete2).
RAM	8 GB RAM; plus 1 GB for the Android Emulator
Disk space	8 GB disk space minimum (IDE + Android SDK + Android Emulator)
Java v	(JDK) 8
Screen resolution	1280 x 800 min

Table 3.1: Version 3.x

Criterion	Description
OS	Windows® 7/8/10 (32-bit or 64-bit) Mac OS X 10.10 (Yosemite) or higher, up to 10.13 (macOS High Sierra) KDE desktop Linux (64 bit capable of running 32-bit) (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 v	(JDK) 8
Screen resolution	1280×800 min

Table 3.2: Version 2.x

Criterion	Description
OS	Windows 7 or later Mac OS X 10.9.5 or later GNOME or KDE 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
Java v	(JDK) 8
Screen resolution	1280×800 min

Table 3.3: Version 1.x

Criterion	Description
OS version	Mac OS X 10.8.5 or later Ubuntu
RAM	3 GB RAM min, 4 GB RAM recommended
Disk space	500 MB disk space
SDK	At least 1 GB for Android SDK, <u>emulator</u>
JDK version	(JDK) 7 or higher
Screen resolution	1280×800 min

3.2 FIREBASE

Mobile phones and web applications are usually created through the proper operation of this technology platform. This technology platform was created by Google. This technology platform was established in 2011 and was not owned by any other company. Google later acquired ownership of the company, and now this technology platform serves as their key option.

3.2.1 Usage

Firestore can easily access its real-time database without any problems from client-side code to database. The result is an effective application. The data is always stored here so that their activities can be maintained without the internet. Which gives users a very good technical feel.

CHAPTER 4

PROPOSED MODEL AND DESIGN

4.1 Block Diagram

Block diagrams refer to the links to the basic functions of the application. So the entire diagram is noted here-

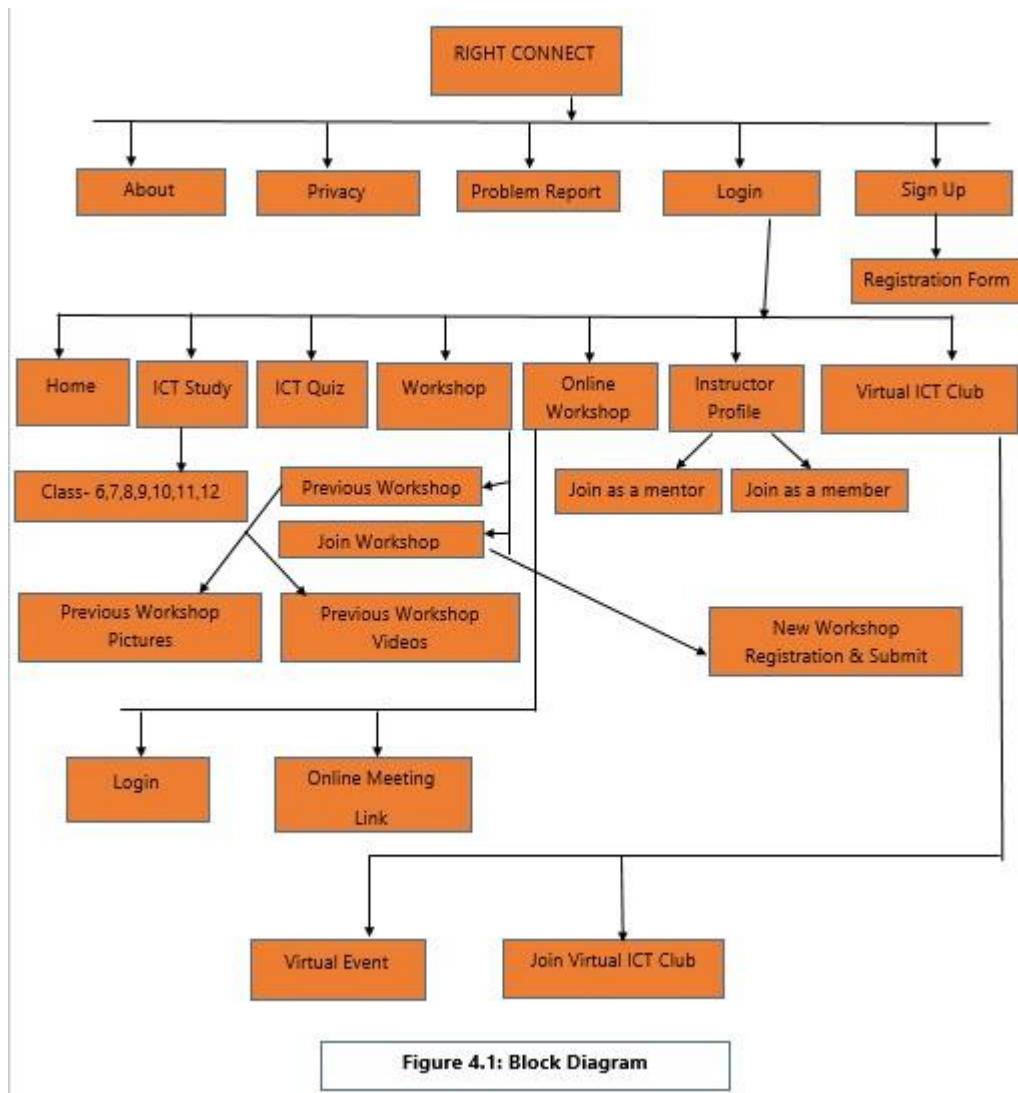


Figure 4.1: Block Diagram

4.2 Description of Application

About- A brief description of the project.

Privacy- Description of user information security.

Problem Report- If users have any problems using this application, they will be able to communicate directly by mail or phone call.

Log-In: Login allows separate users to access the application.

Sign Up: Here you have to sign up with some basic information of instructor and students, used facts will be saved.

Registration Form- Here the user will fill the form with his initial information and details. **Home-** Here will show all kinds of options.

ICT Study- There will be videos of all classes up to 6-12th class, which will be very useful for the students.

ICT Quiz- This quiz session is to test the general intelligence of the students regarding ICT.

Workshop- This is an option for students to participate in self-body ICT workshops.

Online Workshop- It is an option for students to participate in online ICT workshops.

Online Meeting Link- This is an option for participating in online ICT workshops, where students will be allowed to apply.

Instructor Profile- This is the trainer's profile. They will create this profile by filling out the form themselves and they will also be able to delete this profile.

Join as a mentor- This is the registration form for joining as a mentor in "RIGHT

CONNECT”.

Join as a member- This is the registration form for joining as a member in “RIGHT CONNECT”.

Virtual ICT Club- This “RIGHT CONNECT” is a virtual medium of the ICT Club.

Virtual Event- It is an option to participate in various ICT programs.

Join Virtual ICT Club- Students can join this virtual club after fill-up the registration form.

Class- 6,7,8,9,10,11,12- Here is all the class content.

Previous Workshop- Some content from previous workshops.

Join Workshop- This section is for joining a workshop.

New Workshop Registration & Submit- This is the registration of participants in a workshop.

Previous Workshop Pictures- This section is Previous Workshop Pictures.

Previous Workshop Videos- This section is Previous Workshop Videos.

4.3 UML Class diagram

UML class diagram is to model the static view of an application. This diagram is noted below-

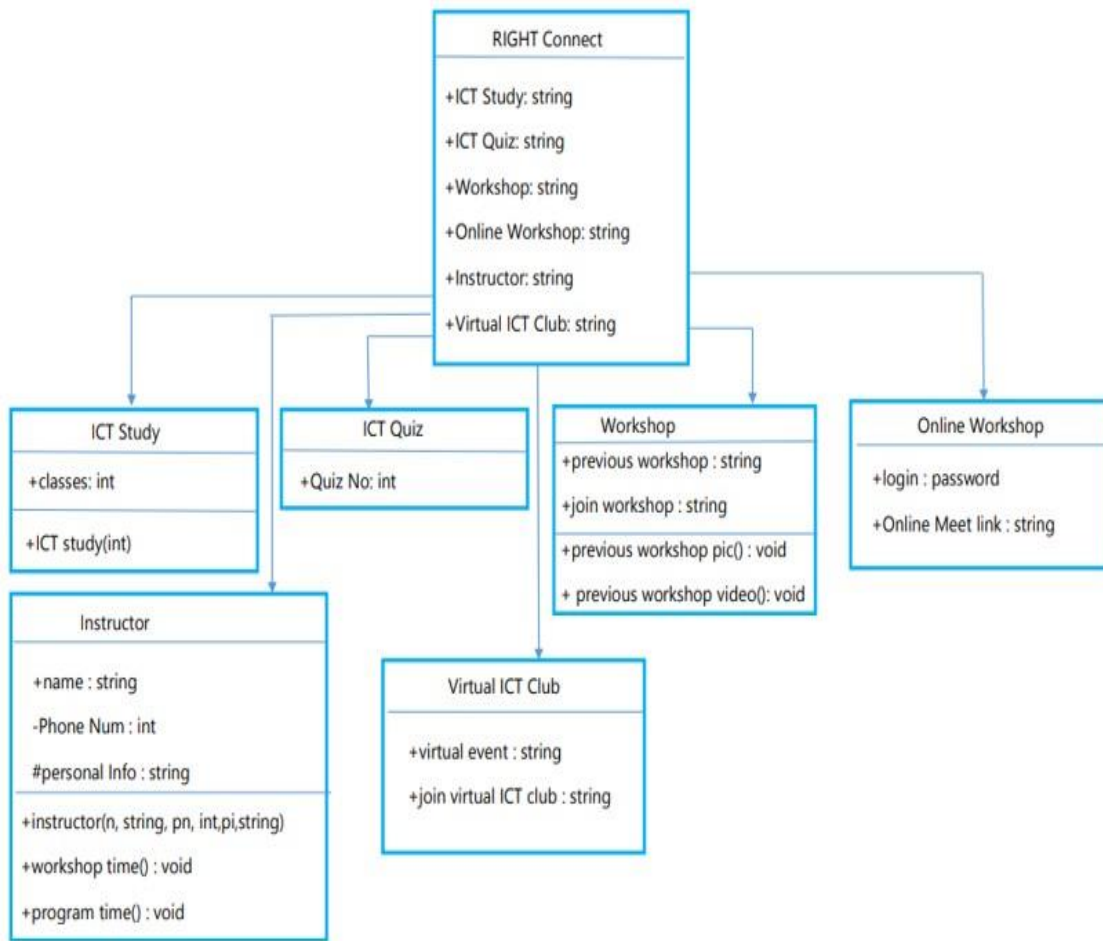


Figure 4.2: UML Class Diagram

4.4 Use Case Modeling

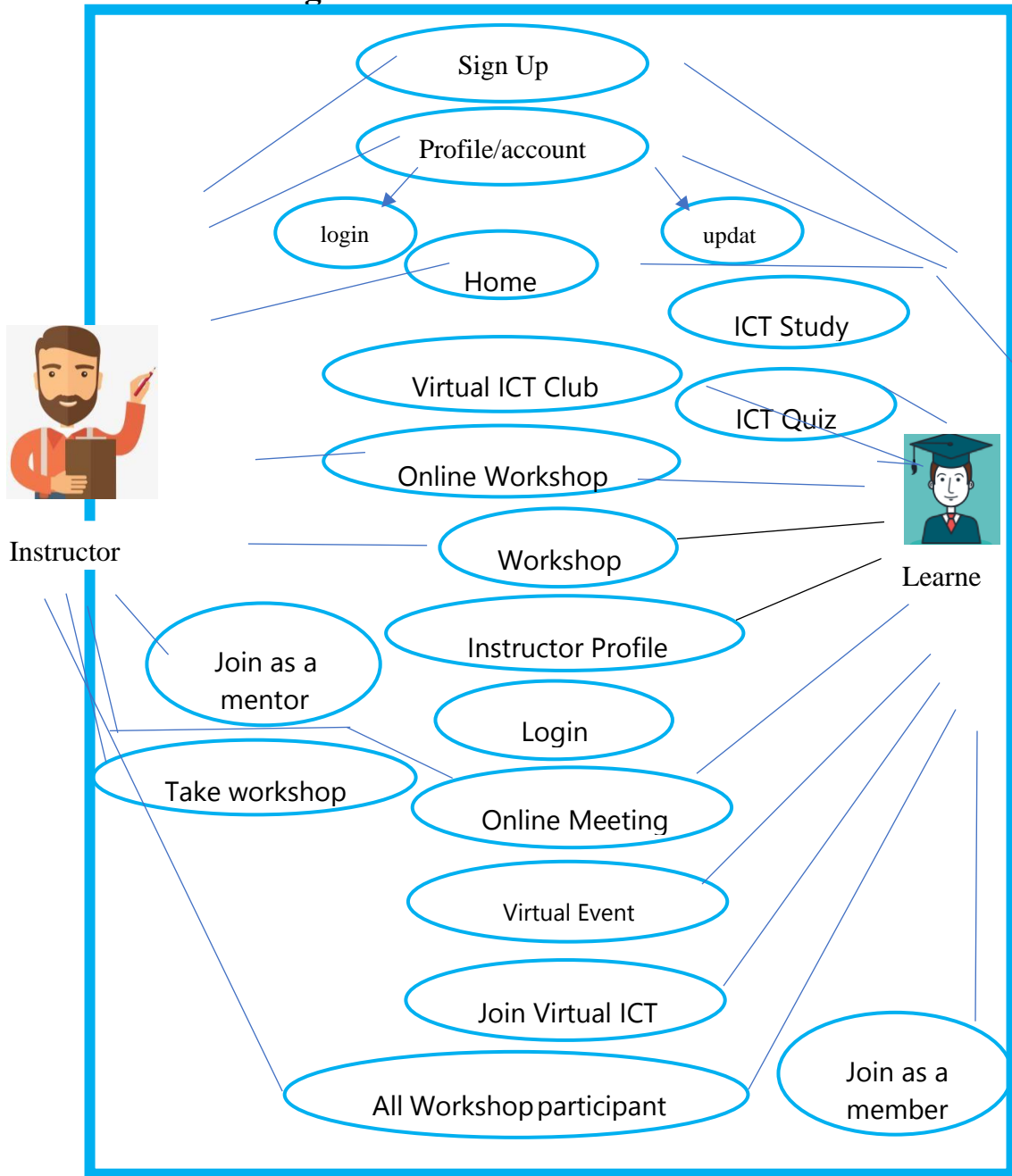


Figure 4.3: Use Case Diagram

Table 4.1 Use Case Analysis

<p>Use Case: Sign Up</p> <p>Actors: Instructor and Students</p> <p>Type: Primary</p> <p>Description: If Instructor or Students want to access this application. They must provide pertinent information to sign up.</p> <p>Uses: Log in</p> <p>Extended by: None</p> <p>Extends: None</p>
<p>Use Case: Log In</p> <p>Actors: Instructor, Students</p> <p>Type: Primary</p> <p>Description: If Instructors or students want to log in this application. They must enter valid email, password and profession to log in.</p> <p>Uses: Profile</p> <p>Extended by: None</p> <p>Extends: None</p>

<p>Description: Instructor can post any announcement.</p> <p>Uses: Students gets announcement.</p> <p>Extended by: None</p> <p>Extends: None</p>
<p>Use Case: Workshop</p> <p>Actors: The instructor can publish the Workshop date & time.</p> <p>Type: Primary</p> <p>Description: Instructor can update Workshop's date & time.</p> <p>Uses: Student gets updated information of workshop.</p> <p>Extended by: None</p> <p>Extends: Update Workshop's date & time</p>
<p>Use Case: Self ICT Test</p> <p>Actors: Students</p> <p>Type: Primary</p> <p>Description: Understand student their own knowledge of ICT.</p> <p>Extended by: None</p> <p>Extends: None</p>

<p>Use Case: Create online event</p> <p>Actors: Instructor</p> <p>Type: Primary</p> <p>Description: Help to create ICT base projects.</p> <p>Uses: Students & Instructors</p> <p>Extended by: None</p> <p>Extends: None</p>
<p>Use Case: View Online Workshop update</p> <p>Actors: Students</p>
<p>Type: Primary</p> <p>Description: Easiest way to find out future events</p> <p>Uses: For online project show/workshop with instructors</p> <p>Extended by: None</p> <p>Extends: None</p>
<p>Use Case: Update News by email/ remainder</p> <p>Actors: Instructor, Students</p> <p>Type: Primary</p> <p>Description: Easiest way to find out all events.</p> <p>Uses: Instructor, Students</p> <p>Extended by: None</p> <p>Extends: None</p>

4.5 System Architecture

The system architecture of the application is attached below-

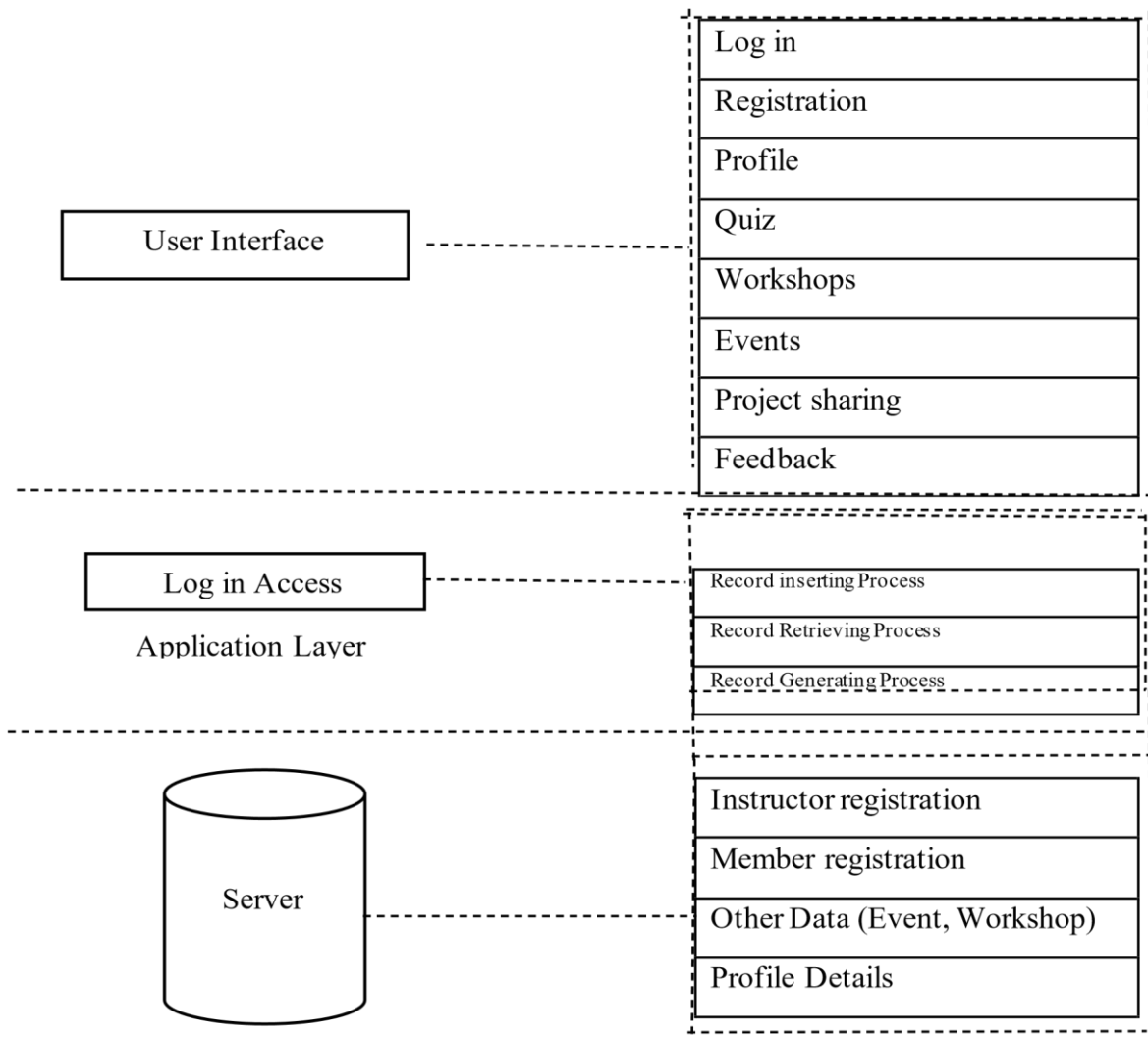


Figure 4.4: System Architecture

4.6 E-R Diagram and Description

"RIGHT CONNECT" has eight tables. Where all kinds of information are attached and which is related to which is mentioned.

Student information includes student names, gender, details of studies, own skills, passwords.

"Instructor information" includes the names of the instructors, gender, details of the study, own skills, passwords. Which students can see.

ICT study "- Free video lectures for all classes from sixth grade to twelfth grade, which students can watch.

The "ICT Quiz" will feature some general ICT-related quizzes based on all general students from class VI to class XII and some ideas about the current ICT world. Which students can see.

The "Instructor Profile -" section will contain information for all instructors. This will allow students to interact directly with the instructors in their work. Which students can see.

The "workshop" will have the registration form, the details of the workshop, the place, the schedule will be given. Where students can participate.

"online workshop" - This section will provide students with online forms, workshop topics, virtual engagement links, schedules for virtually engaging in various ICT activities. Which students can view and join.

"Virtual ICT Club" - To join this section, you need to complete the previous login, post various advanced programs, and link to join the program virtually. Which students and instructors will be able to see and join.

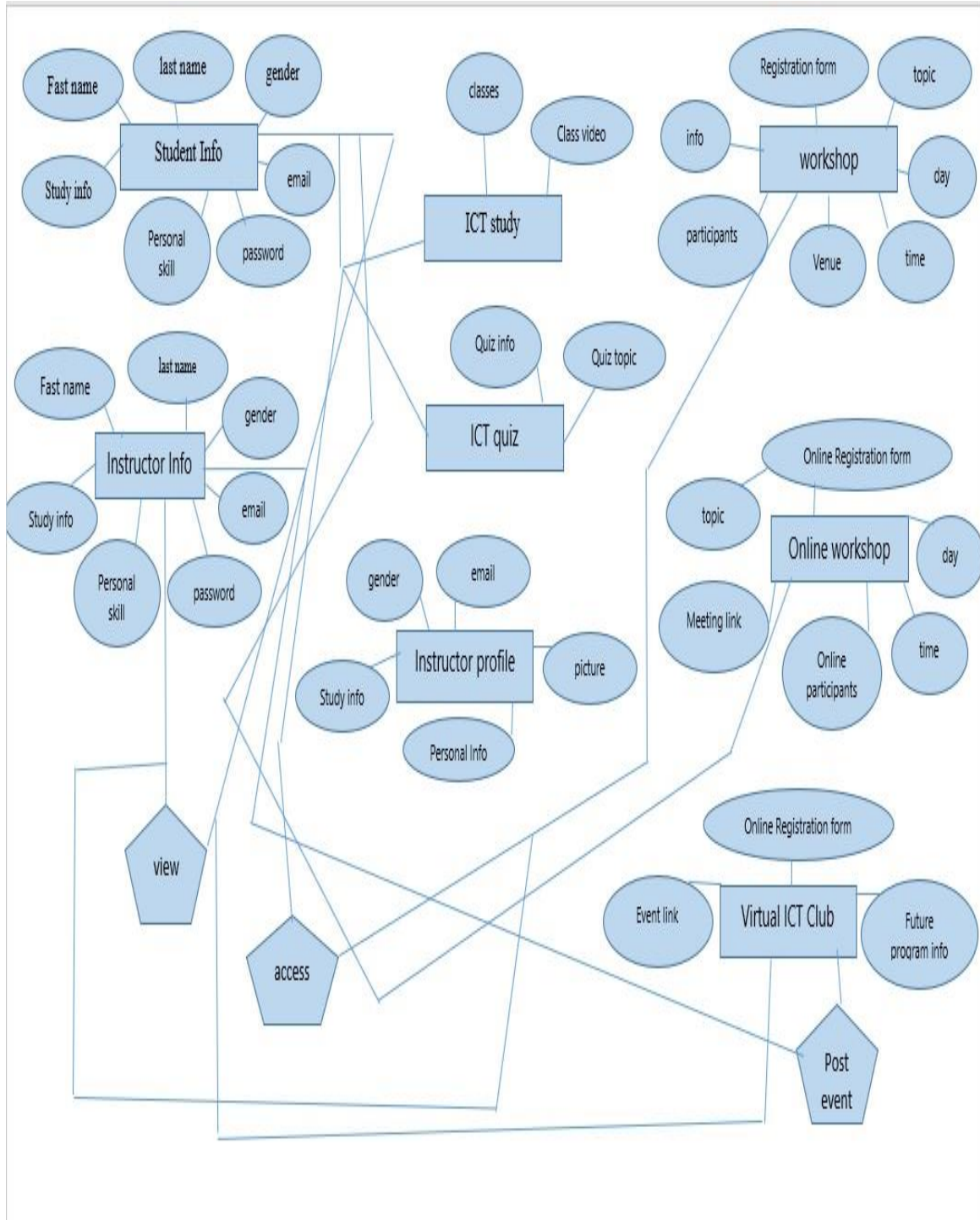


Figure 4.5: E-R Diagram

CHAPTER 5

IMPLEMENTATION AND TESTING

It is necessary to make it clear that this project was designed and developed entirely based on collecting information from existing systems, concepts and imaginary scenarios. There are many developers who are still trying to implement android-based education system with their core concept. We also developed this project which is android based education and totally it will help to the expansion of the ICT.

5.1 Implementation of Front-End Design

Views of what the projector will look like on mobile have been attached.

Home Activity: In the RIGHT CONNECT home activity there are available



১১ ডিজিটের মোবাইল নম্বর লিখুন

আপনি আপনার ফোন নম্বর প্রবেশ করে একটি যাচাইকরণ কোড পাবেন

আপনার নাম লিখুন

+88 ১১ ডিজিটের মোবাইল নম্বর

যাচাইকরণ কোড প্রেরণ করুন

Figure 5.1: RIGHT CONNECT Home Activity

Sign Up: Users need to fill up his/her name and mobile number up form to access RIGHT CONNECT.



Figure 5.2: ICT Study

After Log In: Here Some different classes of ICT academic book from 6-12. After log in learner can see some videos of their ICT books. What class they have need.



কম্পিউটার এর ধারণা

কম্পিউটার এর ধারণা যখন মানুষের হয় তখন তা ছিল হিসাব করার সুবিধার লক্ষ্যে। প্রথম যখন মানুষ যান্ত্রিক হিসাব করার কৌশল আবিষ্কার করে তা ছিল এবাকাস নামের একটি কাঠের ফ্রেম বিশেষ কম্পিউটার। আস্তে আস্তে আসতে বিভিন্ন ধাপে বিভিন্ন জেনারেশন পার হয়ে আজকের এই electronic computer. আমি এখানে কম্পিউটার এর ইতিহাস আলোচনা করব না কিন্তু কিছু জিনিস accademic examination এর প্রশ্নের উত্তর করতে প্রয়োজন সেগুলো আলোচনা করব। কম্পিউটার কি? (what is computer?): আগে কম্পিউটার বলতে গননাকারি যন্ত্রকে বোঝান হত। কিন্তু এখন computer শব্দটি ব্যাপক অর্থে ব্যবহার হয়। তাই computer বলতে আমরা বুঝি, এমন একটি electronic device যা আমাদের সমস্যা গুলোকে electronics গাণিতিক বিশ্লেষণ করে সমাধান করে দেয়। অবশ্য আমাদেরই আগে আমাদের সমস্যা গুলোকে সুসজ্জিত করে প্রদান করতে হয়। কম্পিউটার কি কাজ করে? কম্পিউটার মানুষের তৈরি একটি যন্ত্রবিশেষ। এর কোন নিজস্ব চিন্তা বুদ্ধি বিবেক কিছুই নাই। তবুও এটি মানুষের নির্দেশ অনুসারে কাজ করে দিতে পারে। আজকের কম্পিউটার কি করতে পারে না? এটি অফিস এর সমস্ত কাজ থেকে শুরু করে ডক্টর ইঞ্জিনিয়ার এমনকি মহাকাশ গভেষনায় এটি সাহায্য করে।

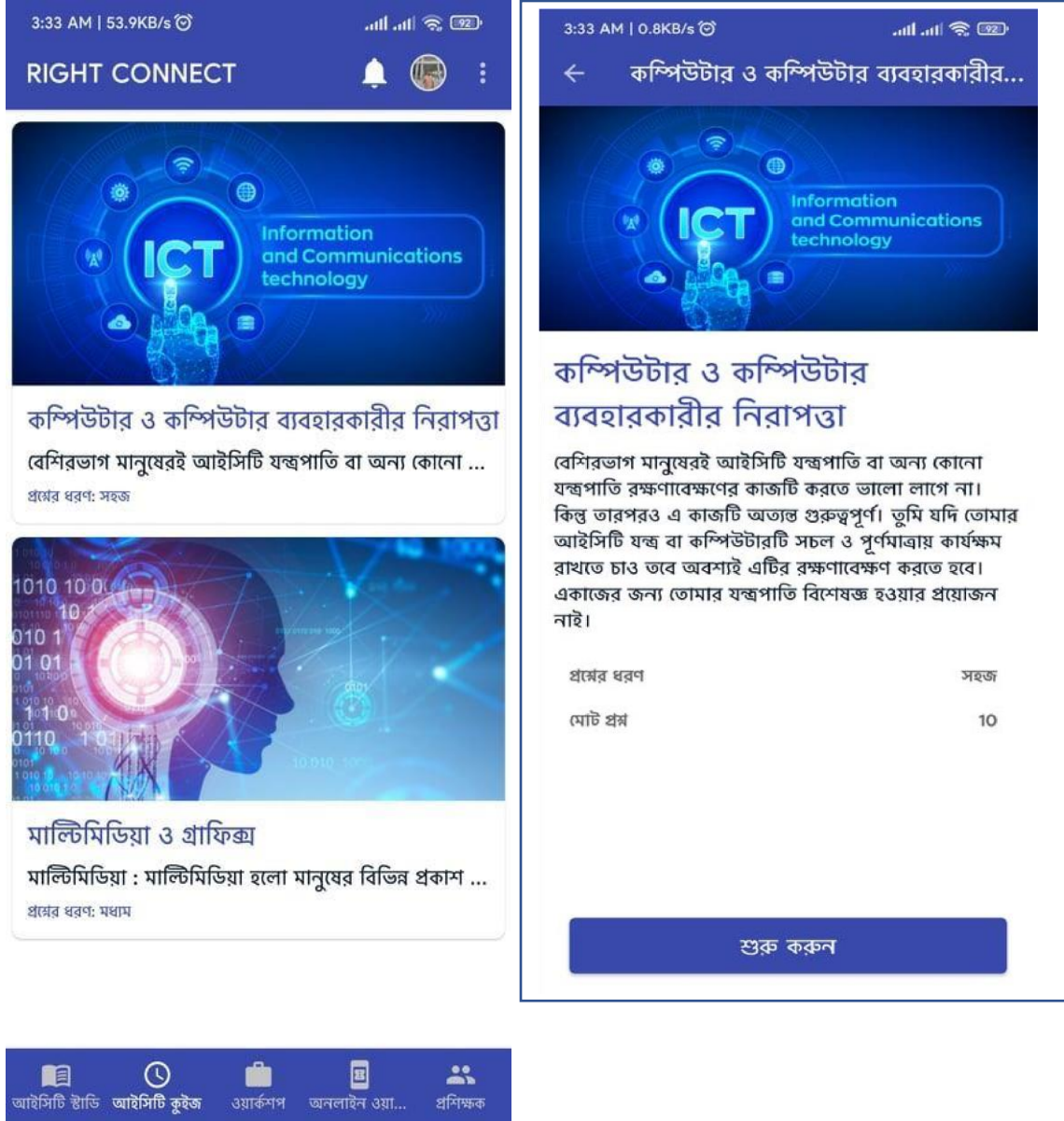


Figure 5.3: ICT Quiz

ICT Quiz Section: In this section every user can test their progress about ICT. There are some randomly some questions about ICT.

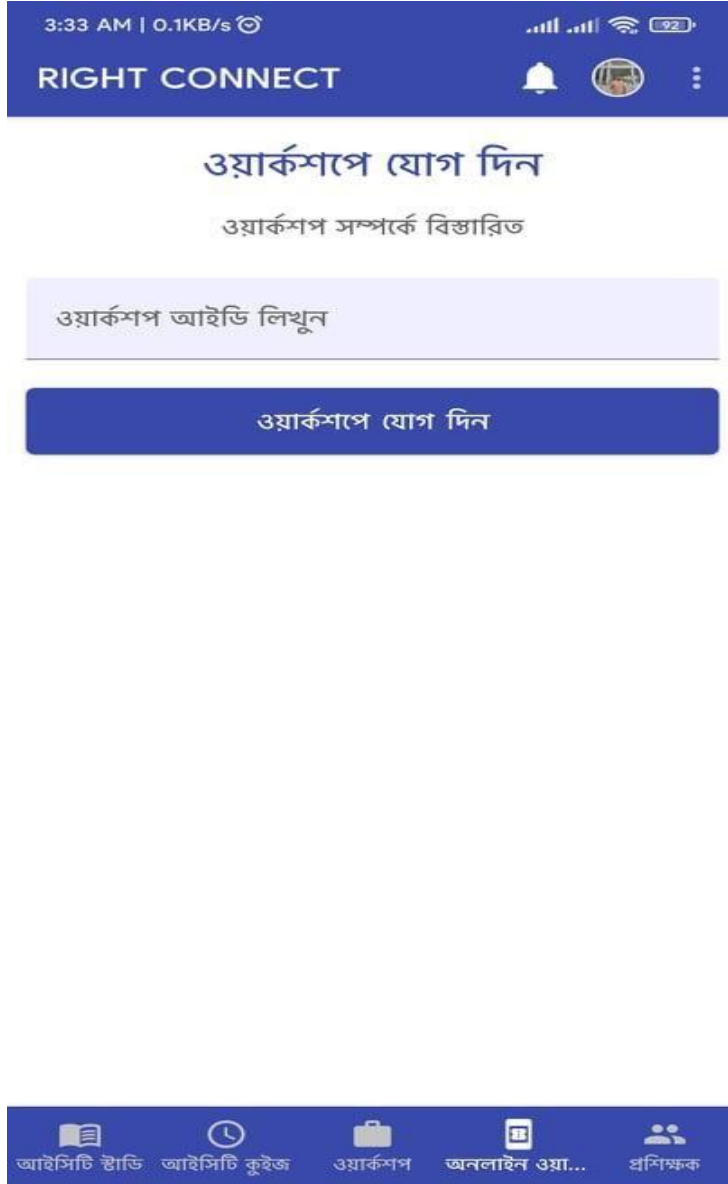


Figure 5.4: Online Workshop

Online Workshop: This is for the learners who actually want to do the life workshop.

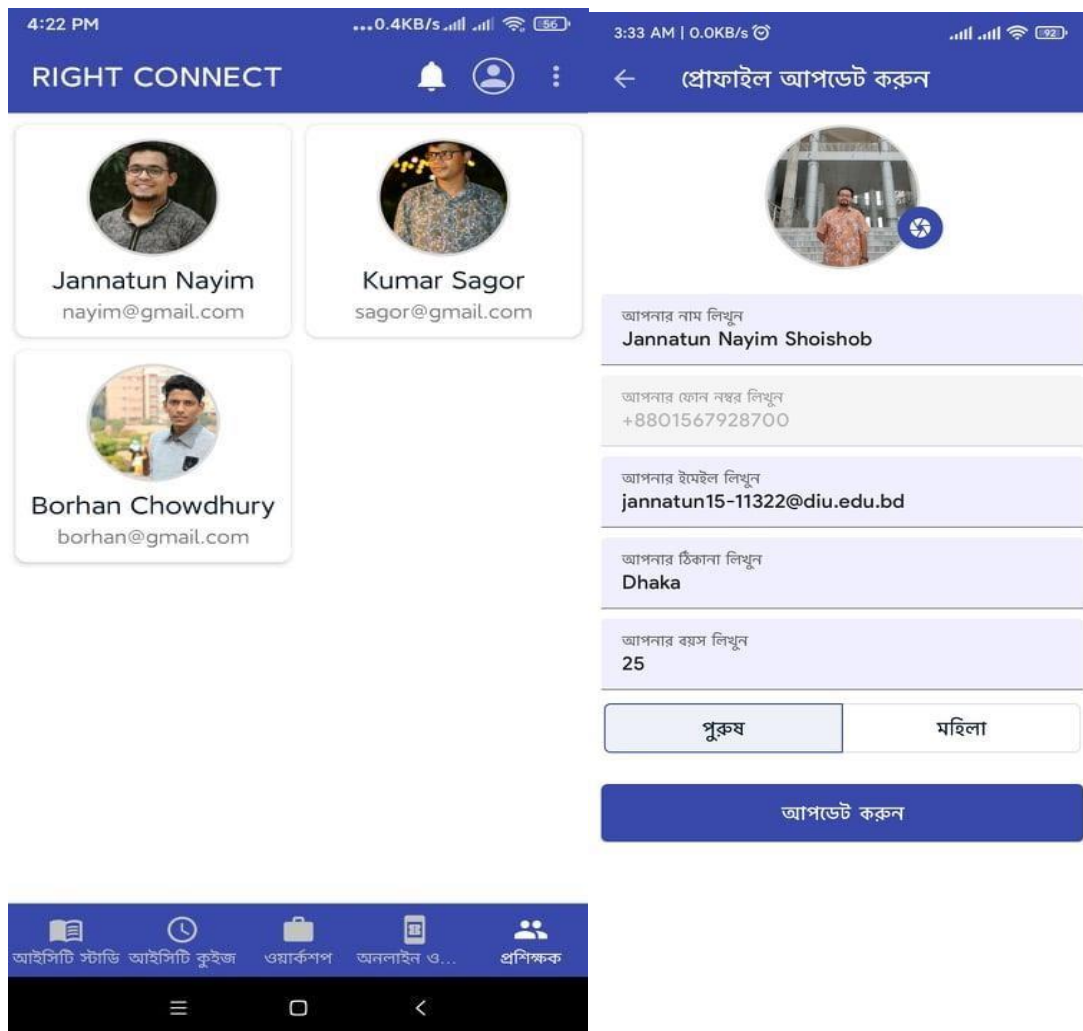


Figure 5.5: Option for the Instructor

Instructor: This option shows the Instructors profile. After users can see the details of the instructor through this functions. And instructors can update their profile also.



Figure 5.6: Others Options

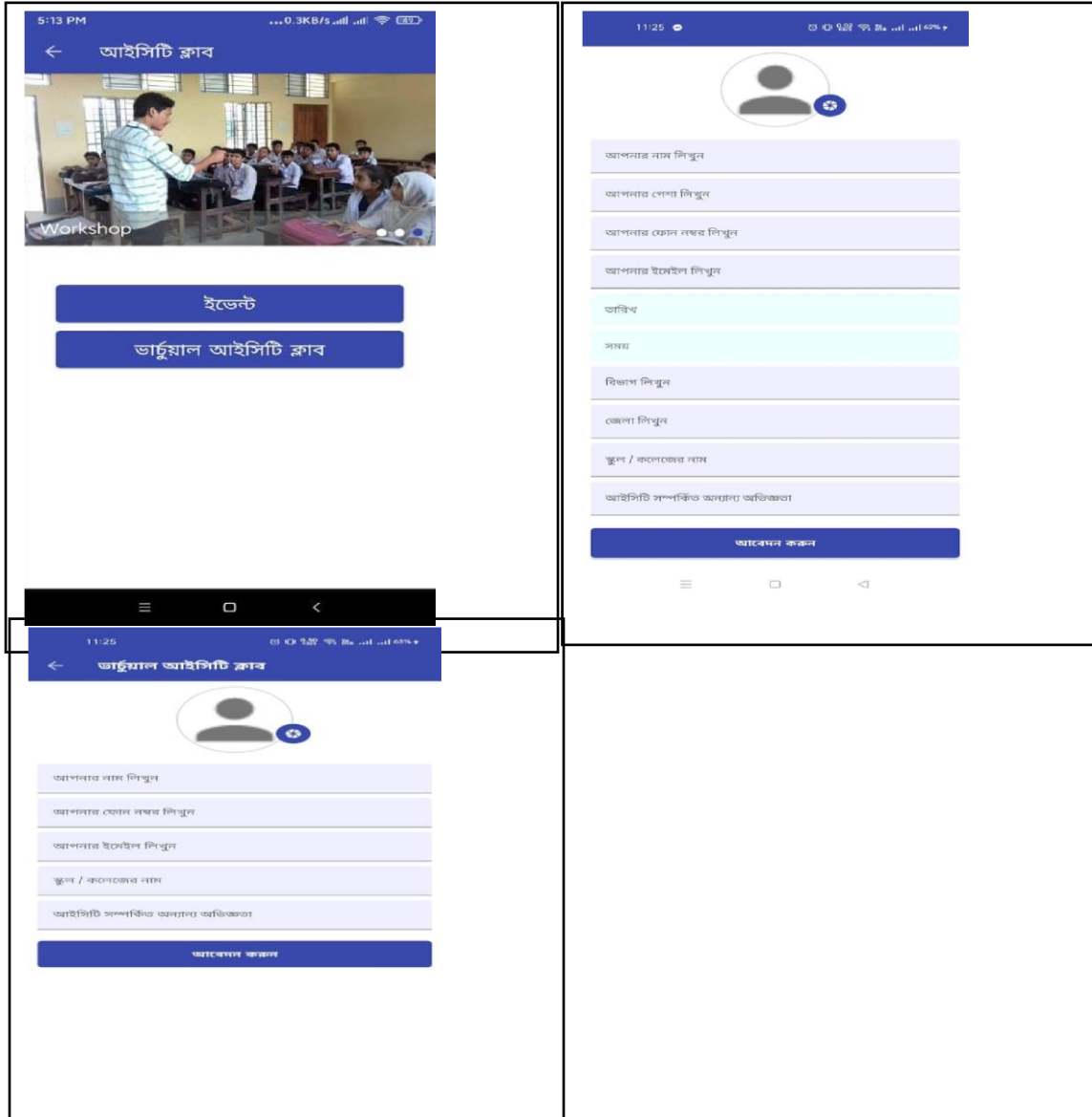


Figure 5.7: Virtual ICT Club

5.2 Implementation of Back-End Design

We used Firebase in the Backend which grew up into a next-generation app-development platform on Google Cloud Platform.

Firebase frees us to focus wonderful user experiences. No require to conduct servers & write APIs. Firebase perform as server, as API and also datastore, all written so generically that can modify it to suit most needs.

5.2.1 Firebase as Realtime Database and storage

Real-time data is the way of the future. Its non-comparable. Most databases requisite to make HTTP calls to get and sync data & give data only when ask for it. When we connect our app to Firebase, we're not connecting through normal HTTP. We're connecting through a WebSocket. Web-Sockets are much faster than HTTP. No need to make individual Web-Socket calls, because one socket connection is plenty. All of our data syncs automatically.

Firebase Storage provides a simple way to save files — most often images, but it could be anything — to Google Cloud Storage directly.

5.2.2 Firebase Authentication

Firebase Authentication provides backend services, easy-to-use SDKs, and ready-made UI libraries to authenticate users to their apps. In the present era, user authentication is one of the most important requirements for Android apps. Firebase authentication supports authentication using a password, phone numbers.

5.2.3 Data Type Architecture

The following data types for its column and parameter declarations.

- CHARACTER [CHAR [(length)]
- VARCHAR (length)
- BOOLEAN
- INTEGER or INT
- STRING
- NUMERIC
- FLOAT
- DOUBLE
- DATE
- TIME

```
data class User(  
    var name: String = "",  
    var email: String = "",  
    val phoneNumber: String = "",  
    var imageUrl: String = "",  
    var address: String = "",  
    var gender: String = "",  
    val mentorStatus: String = "none",  
    var age: Int = 0,  
    val weight: Int = 0,  
    val height: Int = 0,  
    val uId: String = "",  
    val registeredTime: Long = 0L,  
    val admin: Boolean = false  
)
```

Figure 5.7: Data Type Architecture

5.3 Testing Implementation

This project was judged on the following set of criteria:

Satisfying requirement specifications: The project is said to be successful if it satisfies all the requirements such as functional and non-functional requirements.

Correctness: It is one of the critical requirements of software development. Perfectness is the basic demand. Every part of the application should work exactly.

Compatibility and Integrity: These are two striking position to check whether or not the project is successful. Additionally, the evaluation of the system depended on how the application was implemented to the whole system or not.

Real time management: The application is about ICT expansion. So, it is imperative to sustain the real time scheme. The users of this system should have the ability to maintain this.

Reliability and security management: The security is one of the vital factors in any servicing systems. So, the evaluating conversion on the security that had been taken under account when the system was developed.

User friendliness: User friendliness is also a vital indicator. So, application should user friendly.

5.3.1 Testing Methodology

These types of software tests are usually done to sort out the problems that are in the system. The code, image, or design and execution of a project of such tests can be thoroughly verified. Such tests are usually very important and necessary. An important basic function of software engineering is to perform all these tests which improve the quality of the project. This process cannot be avoided in any way. The main standard for this type of test is ANSI / IEEE Standard 829/1983 - the standard for software

testing/information for use. Many times such tests are also done through CAST (Computer-Aided Software Testing).

5.3.2 Functional Testing

Function testing checking:

- Positive : testing the application’s functions with valid input and also verifying that the outputs are correct.
- Negative: It involves exercising application functionality using a combination of invalid inputs some unexpected operating and by some other "out-of-bounds" scenarios.

5.3.3 Unit Test

Generally used in a detailed designing and implementing phase of this project. The rationale of unit test was to find out the defects in this project.

5.3.4 Compatibility Test

Compatibility testing is part of an ineffective test conducted by software to ensure the integration of applications with the computing environment.

Table 5.1: Compatibility Test Result

Device	Display Size	Test	Result
Samsung Galaxy J7 Pro	5 inch (720p)	Yes	Okay
Realme C21	6.5 inch (720p)	Yes	Okay
Walton Primo GM	5.0 inch (480p)	Yes	Okay
Xiaomi Redmi Note 10	6.5 inch (1080p)	Yes	Okay
Samsung Galaxy A52	6.5 inch (1080p)	Yes	Okay

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Conclusion

In conclusion, "RIGHT CONNECT" is a smart network for students in Bangladesh. Where students from all parts of the country will be involved in various innovative works together and gain knowledge on various advanced technological subjects. Students of this smart network will also be able to find technical solutions to various problems. Above all, we will be able to unveil an ICT.

6.2 Goal

The "RIGHT CONNECT" project plans for the future to find a technical solution to all the problems and all these activities will be done by the students of this country.

6.3 Limitation

- The part of the system can be implemented using the current technology although some modifications had to be done at various places
- Domain hosting bandwidth only 2GB.
- Used firebase for log in authentication which limits 10k.
- For file sharing we use google API.

6.4 Scope for Further Developments

- All kinds of interface design will be updated.
- More Features and functionalities will be added.
- Reliability of the application should be increased.
- File share by using API.

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