

DIU Smart Study- Students Learning App

BY

Farzana Afrin Badhon

ID: 172-15-9802

&

Md. Sabbir Ahmed

ID: 172-15-9856

&

Sakhaoat Hosain Lion

ID: 172-15-10171

This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

Supervised By

Shah Md. Tanvir Siddiquee

Assistant Professor

Department of CSE

Daffodil International University

Co-Supervised By

Gazi Zahirul Islam

Assistant Professor

Department of CSE

Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

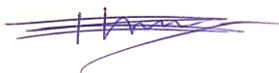
11 September, 2021

APPROVAL

This Project titled “**DIU Smart Study- Students Learning App**”, submitted by Farzana Afrin Badhon, ID No: 172-15-9802, Md. Sabbir Ahmed, ID No: 172-15-9856, Sakhaot Hosain Lion ID No: 172-15-10171 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 B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 11 September, 2021.

BOARD OF EXAMINERS

Chairman



Dr. Touhid Bhuiyan

Professor and Head

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Daffodil International University



Internal Examiner

Nazmun Nessa Moon

Assistant Professor

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Daffodil International University



Internal Examiner

Gazi Zahirul Islam

Assistant Professor

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Daffodil International University



External Examiner

Dr. Md Arshad Ali

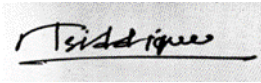
Associate Professor

Department of Computer Science and Engineering
Hajee Mohammad Danesh Science and Technology
University

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Shah Md. Tanvir Siddiquee, Assistant Professor, 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.

Supervised by:



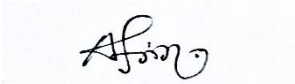
Shah Md. Tanvir Siddiquee
Assistant Professor
Department of CSE
Daffodil International University

Co-Supervised by:



Gazi Zahirul Islam
Assistant Professor
Department of CSE
Daffodil International University

Submitted by:



Farzana Afrin Badhon
ID: 172-15-9802
Department of CSE
Daffodil International University

Sabbir

Md. Sabbir Ahmed

ID: 172-15-9856

Department of CSE

Daffodil International University

Lion

Sakhaoat Hosain Lion

ID: 172-15-10171

Department of CSE

Daffodil International University

ACKNOWLEDGEMENT

First we express our heartiest thanks and gratefulness to almighty God for His divine blessing makes us possible to complete the final year project/internship successfully.

We really grateful and wish our profound our indebtedness to **Shah Md. Tanvir Siddiquee, Assistant Professor**, Department of CSE Daffodil International University, Dhaka. His endless patience, scholarly guidance ,continual encouragement, constant and energetic supervision, constructive criticism , valuable advice ,reading many inferior draft and correcting them at all stage have made it possible to complete this project.

We would like to express our heartiest gratitude to **Shah Md. Tanvir Siddiquee**, Dr. Touhid Bhuiyan, and Head, Department of CSE, for his kind help to finish our project and also to other faculty member and the staff of CSE department of Daffodil International University.

We would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

Our project is about DIU Smart Study. User will find all the books information about our courses. Our project's aim is to develop a good communication among the student and keep all the course books here so that they can enrich their knowledge. It is a kind of social media for students. The best way to gain knowledge is to read books. The knowledge that we can gain by reading books cannot be gained by watching videos tutorial or reading slide. It also very difficult to provide books for each and every user in their premise. Authority can provide only limited number of books in the library. This application helps in many instances of its maintenances. We have tried to make the books & question available to everyone so that student can easily find/read their desired books and encouraged to study with a smart way. User can also upload books, notes and share question solve. We made this project by using java, kotlin, android studio and firebase. The system has user-friendly interface and ease of installation. We hope everyone will benefit from the project.

.

TABLE OF CONTENTS

CONTENTS	PAGE
Board of examiners	i
Declaration	iii
Acknowledgements	v
Abstract	vi

CHAPTER

CHAPTER 1: INTRODUCTION	1-5
--------------------------------	------------

1.1 Introduction	1
1.2 Motivation	1
1.3 Objective	3
1.4 Expected Outcome	4
1.5 Project Management and Finance	4
1.6 Report Layout	5

CHAPTER 2: BACKGROUND	6-14
------------------------------	-------------

2.1 Preliminaries/Terminologies	6
2.2 Related Works	7
2.3 Comparative Studies	8
2.4 IDE's, Tools and Technologies	10
2.5 Database	12
2.6 Scope of the Problem	13
2.7 Challenges	14

CHAPTER 3: REQUIREMENT SPECIFICATION **15-20**

3.1 Hardware Requirements	15
3.2 Requirement Analysis and gathering	15
3.3 Use Case And Description	16
3.4 Entity Relationship Diagram and Description	19
3.5 Activity Life Cycle	20

CHAPTER 4: DESIGN SPECIFICATION **21-32**

4.1 The Front-End-Design	21
4.2 Back-End Design	31
4.3 Interaction Design and User Experience (UX)	32
4.4 Implementation Requirements	32

CHAPTER 5: IMPLEMENTATION AND TESTING **33-36**

5.1 Implementation of Database	33
5.2 Storing Process of Data	33
5.3 Project Testing Implementation	34
5.4 Test results and Reports	36

CHAPTER 6: IMPACT ON SOCIETY **37-38**

6.1 Impact on Society	37
6.2 Impact on Environment	37
6.3 Ethical Aspects	38

6.4 Sustainability Plan	38
CHAPTER 7: CONCLUTION AND TESTING	39-40
7.1 Discussion and Conclusion	39
7.2 Limitations	39
7.3 Future work and Further Development	40
REFERENCES	41

LIST OF Tables

Tables	PAGE NO
Table 3.1 Hardware	15
Table 3.2 Use case description of Sign up	17
Table 3.3 Use case description of Login	17
Table 3.4 Use case description of Home Activity	18
Table 3.5 Use case description of Admin Activity	18
Table 5.1 Test	35

LIST OF FIGURES

FIGURES	PAGE NO
Figure 1: DIU Smart Study	2
Figure 2 :Agile Model	7
Figure 3.1 Use Case Diagram	16
Figure 3.2 Er Diagram	19
Figure 3.3 Activity Life Cycle	20
Figure 4.1 Welcome Page	21
Figure 4.2 Sign up Page	22
Figure 4.3 Login Page	23
Figure 4.4 Home Page	24
Figure 4.5 Admin Page	25
Figure 4.6 Booklist Page	26
Figure 4.7 Book Reading Page	27
Figure 4.8 User Book Notes Upload Page	28
Figure 4.9 Category Page	29
Figure 4.10 Question Page	30
Figure 4.11 User Table	31
Figure 5.1 Real-time Database	33
Figure 5.2 Firebase Storage	34

CHAPTER 1

INTRODUCTION

1.1 Introduction

Knowledge is the understanding and awareness of something. Refers to information, realities, skills, and shrewdness procured through learning and encounters throughout everyday life. It is likewise the human ability to perceive and acknowledge reality. This can be utilized for positive purposes. Our app is a knowledge house. Wherever we go we can carry all our desired books in our pocket.

The fundamental target of the Diu Smart Study is arranging and managing the computer science & engineering departmental books from all semester. Beside this, the goal of our application is giving a question bank needed to students during studies. It could be known as the storage facility of information. These days generally every student has an advanced level cell phone. So our application will help the students with getting all question banks, books & notes at a single place. There will be no convincing to search for books pdf on different sites. This is an android base application and just an enlisted client can get the authorization to use this application. Diu Smart Book framework is created to mechanize the undertaking of entering the records of new books for our courses.

1.2 Motivation

Bringing technology into the classroom assembles a remarkable effect on the education system. Varsity students and teachers collectively concur upon the advantages of using online base study platforms in the education system. Most of the time we have to go to bookshops or libraries to buy books but it wastes a lot of time.

Online books pdf is not difficult to carry around. Rather than carrying a lot of books, it's quite easier to carry a smart mobile phone. Most Students these days consistently carry a

mobile-based device. We have tried to bring all the books, question banks and notes in one app. Now we can easily find any book for this. We just need a single click on our phone screen. If we pursue a difficult problem while studying then we can easily get the right solution in this application. If you have a connection to the internet, you can read your desired books, upload new books and also can share question solutions, notes/slides anytime anywhere through our application. We hope that students will benefit from our project.



Figure 1: DIU Smart Study

1.3 Objectives

It is a fascinating statistic that 72% of grown-ups read a book in some organization more than previous year. 28% say that they read both print books and online pdf books [11]. So the popularity of the online book readers are increasing day by day. Especially this world pandemic situation online reading platforms are getting worldwide. In our application, there are two sectors: user panel, admin panel. Admin has a unique id and password. Every user has to be registered with their email & password. Then fill up the user information form. After completing the registration users can access our features and also can upload books, notes/slides and question solutions.

The contents of our project can be updated or deleted at any time because we use the real-time cloud base database for our project. Admin can be able to add or delete new pdf books, question banks and also can monitor what kind of books, question solve or notes users are uploading. If the user uploaded any fake or invalid content, the admin will delete it.

The main objective of our project are:

- CSE related course books pdf.
- Previous semester Question.
- Question solved Image upload.
- Users can upload books, notes.
- Attractive user interface to navigate through the system for the user.
- Develop a database which stores all details.
- Save cost.
- Save time

1.4 Expected Outcome

Students can read the pdf books and also can enjoy the other features of our apps through their smartphone. Users only need the internet connection to run our apps. We know that online pdf books are more portable than a print book. It takes a lot of money to print a book. Users don't need to buy or print the books. The system has a user-friendly interface and ease of installation. Adopting this digital technology can make users more well-reader. This saves our valuable time which we can use for any other productive purpose. So our application will help the students with getting the question banks & departmental pdf books at a single place for a better online study. There will be no convincing to search for books pdf on different websites or libraries.

1.5 Project Management and Finance

Most of the people think that studying online is not possible and is very expensive. But after the corona pandemic, in the present era, studies are being done online. Schools, colleges, universities, all places are now being studied online. Online study and pdf books reading system is not a common figure in our country before. Studying online is a new method in our country. The vital fact is quite the alternative. Because it costs a lot of money to buy the original books in hard copy which is beyond the means of our students. That's why we think to build a study apps with the pdf books and another feature base application which solve the current situation based problem. To develop this app we don't need any type of money. So, no money is used to build our application. But if we want to expand our project for high levels of use, this time we have to switch our project to a paid-tier billing plan.

1.6 Report Layout

The project have divided into many sections or chapter to better understand. The following summaries are given:

Chapter 1 describes the Introduction, Motivation, Objective, Expected Outcomes and Report Layout.

Chapter 2 explains the project illustrates similar & the system's comparative analysis problems are also identified.

Chapter 3 comes with requirement specification which contains Requirement Specification, Requirement Analysis and gathering, Functional Requirement, Use Case Modeling and Description, Entity Relationship Diagram and Description, Activity Life Cycle.

Chapter 4 describes the design specification, The Front-end-Design, Welcome Page, RegistrationPage,HomePage,AdminPage,BookListPage,UserBook.

Chapter 5 here we discuss briefly the backend database, UX and the implementation and testing, Database Design, Storing Process of Data, Project Testing Implementation.

Chapter 6 in this chapter we discuss how to improve the apps Impact on Society.

Chapter 7 contains Discussion and Conclusion,Limitation,Future work and Further Development.

CHAPTER 2

BACKGROUND

2.1 Preliminaries/Terminologies

Traditional Waterfall Model is not very effective. So we choose the Agile Model for our development. In Agile methodologies we break our task into smaller iterations. We don't involve long term planning. After some tasks are done we check user acceptance tests. This reduces the project risk and time. The full project life cycle includes planning, design, and requirement analysis, coding and testing. Agile Model follows these phase are given below:

- Requirements are very well documented, clear and fixed.
- Design
- Iteration
- Explanation Arranging
- Coding
- Quality assurance
- Feedback

The coordination of these functions is crucial here. The surrender of one organization and the conclusion of the other's is the engagement of the other's.



Figure 2: Agile Model

2.2 Related Works

We found that there are not enough online education systems for students in our country. Our application can fill up the gap. This will increase the interaction among our students. With our app any one can develop their skill with a single click.

2.3 Comparative Studies

2.3.1 Object-Oriented: Java follows the Object Oriented concept. This course of writing computer programs is appropriately satisfactory for programs it includes for design and manufacturing as well as android applications. First OOP collects all the objects a programmer wants to manipulate .After knowing the object it is labeled with a class that defines the kind of data and logic it contains.

The main principles of OOP:

1. Encapsulation: Encapsulation is used to hide the values of a structured data object in a class. It means packaging variables and methods into a single unit.

We can protect data by declaring them as private. Private information will be stowed away from different classes. They must be gotten to through the technique (getter/setter) of their present class. It is known as information stowing away. This data hiding character provides greater program security.

2. Inheritance: Java follows an inheritance concept that acquires properties from one class to another class. A class can inherit methods and attributes from another class. Who acquires the properties is known as subclass or child class and the class from which properties are acquired.

This called superclass. We use keywords to extend inherited a class. Given an example, class C extends class D. Now this inheriting methods, attributes from class C. This class C is called child class and class D is called superclass. We can utilize similar strategies by legacy.

3. Polymorphism: Polymorphism means many forms. Here "Poly" means many and "morphs" Means form. We can use the same method in different classes. Compile Time polymorphism is "Method Overloading" and Runtime polymorphism is "Method Overriding". Overriding means the method uses the same perimeters and Overloading means different perimeters.

4. Abstraction: Abstraction concept helps developers more easily make additional changes/ additions. It hides unnecessary codes.

2.3.2 Java: Today is the age of the Internet. When we wake up in the morning, we see mobile phones which have become a kind of our wish.

We do almost all our work with this mobile phone. At one time we had to go to the store to shop, the bank to withdraw money. But now we can do all that work at home with my mobile phone .All this has been possible for Java. Java is an object oriented high level programming language [1]. Programmers can easily write and read Java code. We can run java code on multiple platforms. Java is simpler, better and more secure than other programming languages. Almost all online work has been possible for Java. With the help of Linux java develop Android Operating System which is now popular all over the world. Java helps to build both mobile and android applications. Java was first invented in 1981 by James Gosling and his company Sun Microsystems. He had a purpose to write code once and use it everywhere. Its first name was "Oak" after 1995 they changed the name and called it "Java". Now Java SE 16.0.1 is the latest version of Java which was released on April 20, 2021. Java source code files contain java extension which is turned into byte code format with the help of JVM (Java Virtual Machine).Java Virtual Machine are available for many software and hardware platforms.

Java has many features. A few of them are:

- Object-Oriented:** Java follows the Object Oriented concept.

- Platform Independent:** Software that runs on different hardware platforms/architectures. Java is a platform independent language. Java runs in different programming languages like Android, Windows, Linux, Mac .C /C++ are not platform independent, compiler generates .exe file and it is operating system dependent.

- Secure:** Java is a virus free language. Java programmed run in Java Runtime Environment. First it is tested by JVM to detect errors then it is generated into machine code.

Robust-Java utilizes strong memory management. Programs made by java work in a different environment without crashing. Type checking mechanisms and exception-handling make Java Robust.

Kotlin: Kotlin is a cross platform static programming language. Kotlin is intended to interoperate completely with Java. Google has declared kotlin as its official language. kotlin is much easier to code than java. So developers prefer the kotlin language.

Kotlin has been consolidated as an alternative as opposed to the standard Java compiler. Some of excellent encouraging highlights of kotlin incorporate smaller syntax, secure and simple to learn for the beginner's. Kotlin is a statically-composed programming language that suddenly spikes in demand for the Java Virtual Machine and furthermore can be arranged to JavaScript source code. If we previously saw google I/O 2017 feature meeting then we realize that in java there are 86 lines of code and in kotlin there is just 1 line of code to do the equivalent work, and this is extremely fascinating [2]. We can utilize kotlin and java

2.4 IDE's, Tools and Technologies

Android Studio Android Studio intends for developing Android programs. It incorporates all Android SDK devices to configure, create, check, inspect and distribute our applications. This IDE is deliberate productively which makes the designer's work easy. It likewise upholds the IntelliJ idea, the precept concept at the back of this IDE is that it therefore faculties the variable, method, class, inherent capacities or it thoroughly can be anything else when we press its essential letter.. This likewise upholds Git as a rendition manipulate framework to maintain up with the application changes and drive them into GitHub. All java documents, xml data are included right into a solitary project without any problem. After the consummation of the challenge, the entire application could be put as

an .APK file, in which we are able to run that APK file in any device and utilize the utility. Other fundamental devices incorporate SDK, ADB, and Gradle construct.

Android Software Development Kit:

This apparatus is accustomed to creating android applications. Since it incorporates a large number of the center provisions of the SDK. It tends to be utilized in the application without any problem. This assists us with building applications faster and trying not to compose a ton of code. This assists us with building programs quicker, and attempt not to compose a ton of code.

Android Debug Bridge (ADB):

Android SDK utilizes ADB tool as an affiliation device which allows us to interface the Android devices or Emulator with the gadget with the aid of USB link. within the wake of making or at the same time as developing an application, we will interface with the device to test how the application runs. After, we are able to check out and run the programs.

Gradle Build:

Gradle scripts are a new component added to Android Studio. A robotized assembly framework that is basically used to computerize various stages of application planning, including planning, improvement, testing, debugging, and publishing. All supported jar files refer to the SDK, variant name, level, compiled SDK version and build tool version, as well as the application test equipment / emulator generated by configuring the project and module. Is compatible with. Gradle is similar to Ant and Maven, which helps you follow Java projects.

AVD Manager:

It is utilized to make virtual contraptions of any API level to help more critical level SDK's incase our gadget doesn't uphold. Utilizing emulators to test the application is problematic as it might be little more slow when contrasted and veritable gadget.

2.5 Database

Firestore: Fire base is a No SQL real time database system. .Now Google own it.This is a backend database system which offers a link between mobile application and web to the backend cloud storage and backend API [7].We know Android have local database system called "SQLite" but Firestore is a remote database system. This means accessing data from anywhere through any device .In the underlying years, Firestore was effective over a considerable lot of its different other options. Yet, it began losing prevalence when it was contrasted and Mongo DB. Despite the fact that Mongo DB and Firestore offer various functionalities and have an alternate reason to serve. The past one is an information base administration framework and the last one is a model to sync, constant information on the cloud and deals with the client commitment for the customers' mobile application. However, not long after Google acquired Firestore, it restored its popularity with the assistance of expanded number of features and functionalities. As Firestore a real time database so exchange of data is easy and quick .For develop mobile apps such as live streaming, chat messaging etc. we can use firestore. It is faster than any other database. It offers integration Play Store, data Studio, Google Ads, Big Query and analytics to crashing reports are included. For this, developers can easily focused on improving the user experience. It also used for push notification and auto backup.

Major Features of Firestore are:

- **Firestore Authentication:** Firestore has a highly secure AUTH system that improves user experience while them sign-up and sign-in [7]. It allows sign-in using email & password,

phone authentication, Facebook, Google, Twitter, GitHub login etc. Its AUTH system is super secure.

- **Real-time Database:** Real-time Database is facilitated on a cloud. It allows mobile and web SDKs. It works both online and offline. For messaging, streaming, GPS we can use Firebase Real-time Database.

- **Firebase Cloud Storage:** Google made Firebase Cloud Storage remembering that when your application turns out to be profoundly famous, it is basic for the end customers to utilize it even more successfully, effectively, and precisely. Mechanized delay and resume functionalities for transferring and downloading the reports on the web and disconnected. This saves clients time and chips away at the information move limit. Like other Firebase highlights, Firebase Cloud Storage organizes with Firebase Authentication to offer a got climate for the end clients

- **Crash Reports:** Firebase has another super-brilliant component Firebase Crashlytics. Firebase Crashlytics checks the application issues or mistakes that impact the application experience and quality at Real-time. Thusly, this grants you to put less energy in finding the issues the application has and center around building new and profoundly significant application highlights

2.6 Scope of the Problem

There are currently thousands of pdf books available on the website. But it is difficult to trace authentic and varsity course related books. This finding process wastes a lot of time. At the same time books and questions both are not available in a single application. That's why users downloaded two/three applications from the play store. But in our application users can find both features in one app. We create these apps for our beloved varsity students. This app will be salutary to aid a smart study learning journey. Their learning process will be fascinating than prior.

2.7 Challenges

Every android application developer faced challenges while building an android application. We are not different from them. While building our android application we also faced some challenges. Firstly, we cannot find a proper design for our application. After finalizing the design, we don't have the pdf of our desired books. We have to collect all the books and question papers. Then we cannot understand which backend database is best for our project. Then we select a firebase real-time database for our backend system .Firebase is a remote database & also known as cloud storage system which is very popular these days to build a web or mobile application .This platform is also a great challenging matter for us. The hardware configuration to build our application was very hard to manage. We managed that problem and successfully finished our work. The most difficult part is arranging books, question, question solution adding all the feathers in the same application. Firebase database gives us a small backup free database. But if we expand our project we have to buy the package database. In the initial stage we don't need to buy the database. We need a field test to know the user experience (UX) because it is very important. If users can't use it easily then our motives may go in vain. Then we have to communicate with our friends, junior and senior batch in our university whether they accept our project feature or not. It was a field test and they accepted it .Finally we completed our project.

CHAPTER 3

Requirement Specification

3.1 Hardware Requirements

Table 3.1: Hardware

PROCESSOR	INTEL CORE I5 9 TH GEN
OPERATIONG SYSTEM	WINDOWS 10
MEMORY	16 GB RAM
HARD DISK SPACE	MINIMUM 3 GB FOR DATABSE USEAGE FOR FUTURE
DATABASE	FIREBASE

3.2 Requirement Analysis and gathering

While developing a software, we have to keep in mind that there are predominantly two sorts of prerequisites .One is utilitarian necessity and other one is nonfunctional necessity.

Functional Requirement:

It means what kinds of functions we use in our system. Functional requirement is mandatory for a project. It usually focuses on user requirements and describes the project. Testing API, integration, end to end, error caught etc. This are included in Functional tests. In our application we use a user login/registration system for access to this application.

Non Functional Requirement:

It is mainly used to measure product quality. How an application works or how efficient it is for the user are nonfunctional requirements. We try to make our project user friendly.

3.3 Use Case and Description

Use case displaying might be a valuable thingamajig for prerequisites elicitation. It is a graphical interface to address the product framework's prerequisites. The critical components in a really use case model are entertainers (outer substances), and hence the use cases themselves. Use case is likewise a unit of usefulness (a necessity), or a help, inside the framework. A utilization case isn't an interaction, or program, or capacity [4] Use case models are effortless in both idea and appearance. It's nearly simple to discuss the accuracy of a utilization case model with a non-specialized individual.

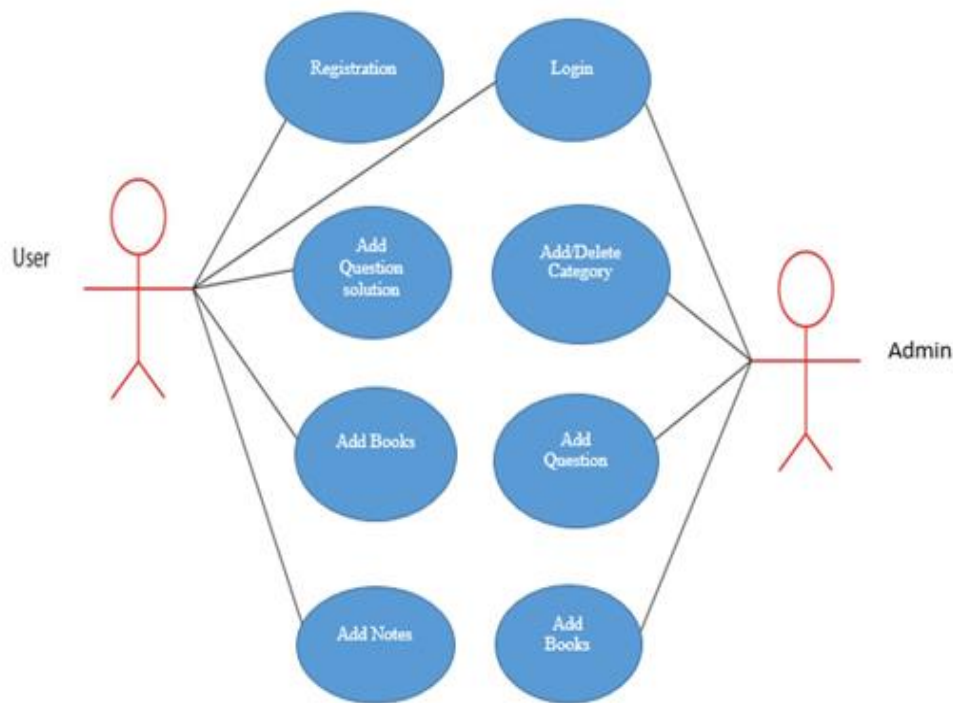


Figure 3.1 Use Case Diagram

Table 3.2: Use case description of Sign up

Use Case 1	Sign up
Primary Actor	User
Pre -condition	Null
Scenario	Email Address Password
Post-condition	Sign up successfully or failed

Table 3.3: Use case description of Login

Use Case 2	Login
Primary Actor	User
Pre-condition	Sign up
Scenario	Email address Password
Post-condition	Login Successfully of failed

Table 3.4: Use case description of Home activity

Use Case 3	Homepage
Primary Actor	User
Secondary Actor	Admin
Pre-condition	Login
Scenario	Random books founded which uploaded by the user Random notes available
Post-condition	Found desired books

Table 3.5: Use case description of Admin Activity

Use case 4	Admin Activity
Primary Actor	Admin
Pre-condition	Login
Scenario	Add category, Add books into the category, Add semester info, Add semester question
Post-condition	Upload all successfully

3.4 Entity Relationship and Description

Information base is absolutely an essential piece of programming frameworks. To completely use ER Diagram in information base designing promises you to give great data set plan to use in data set creation, the executives, and upkeep. An ER model likewise gives a technique to correspondence.

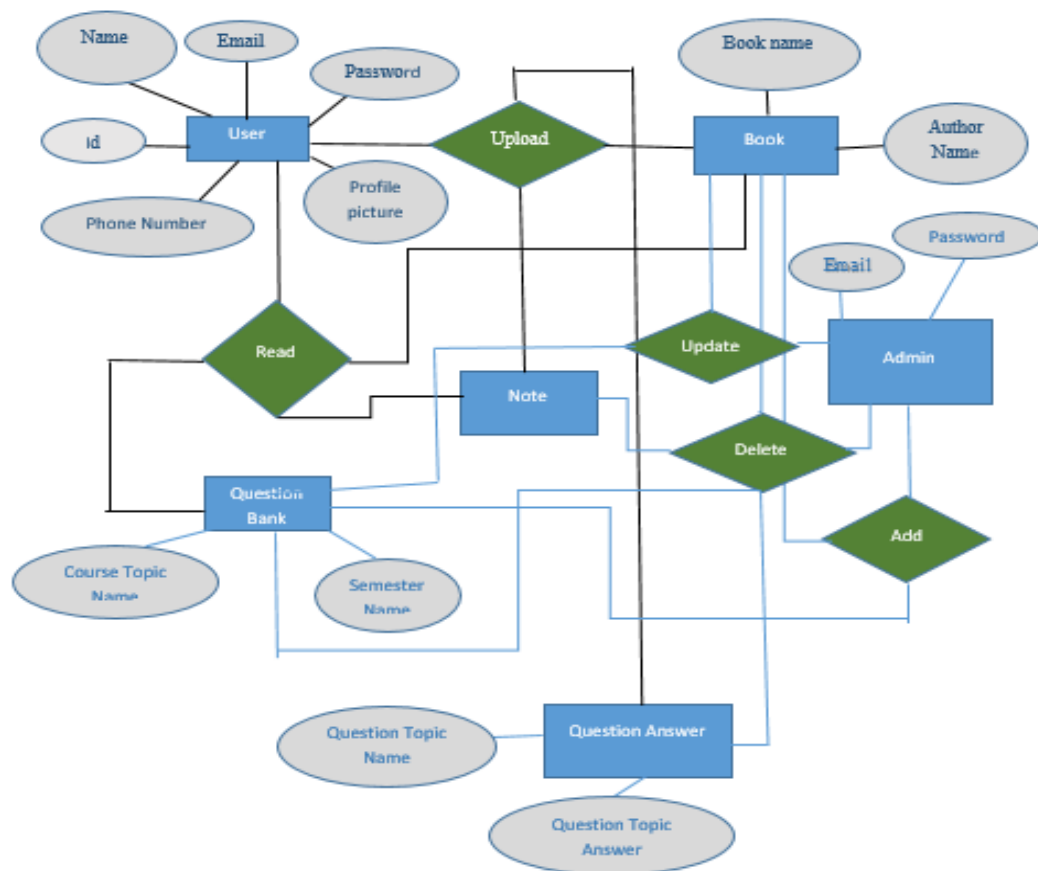


Figure 3.2 Er Diagram

3.5 Activity Life Cycle

Activity is one of the building blocks of Android OS. In simple words Activity is a screen that user interact with

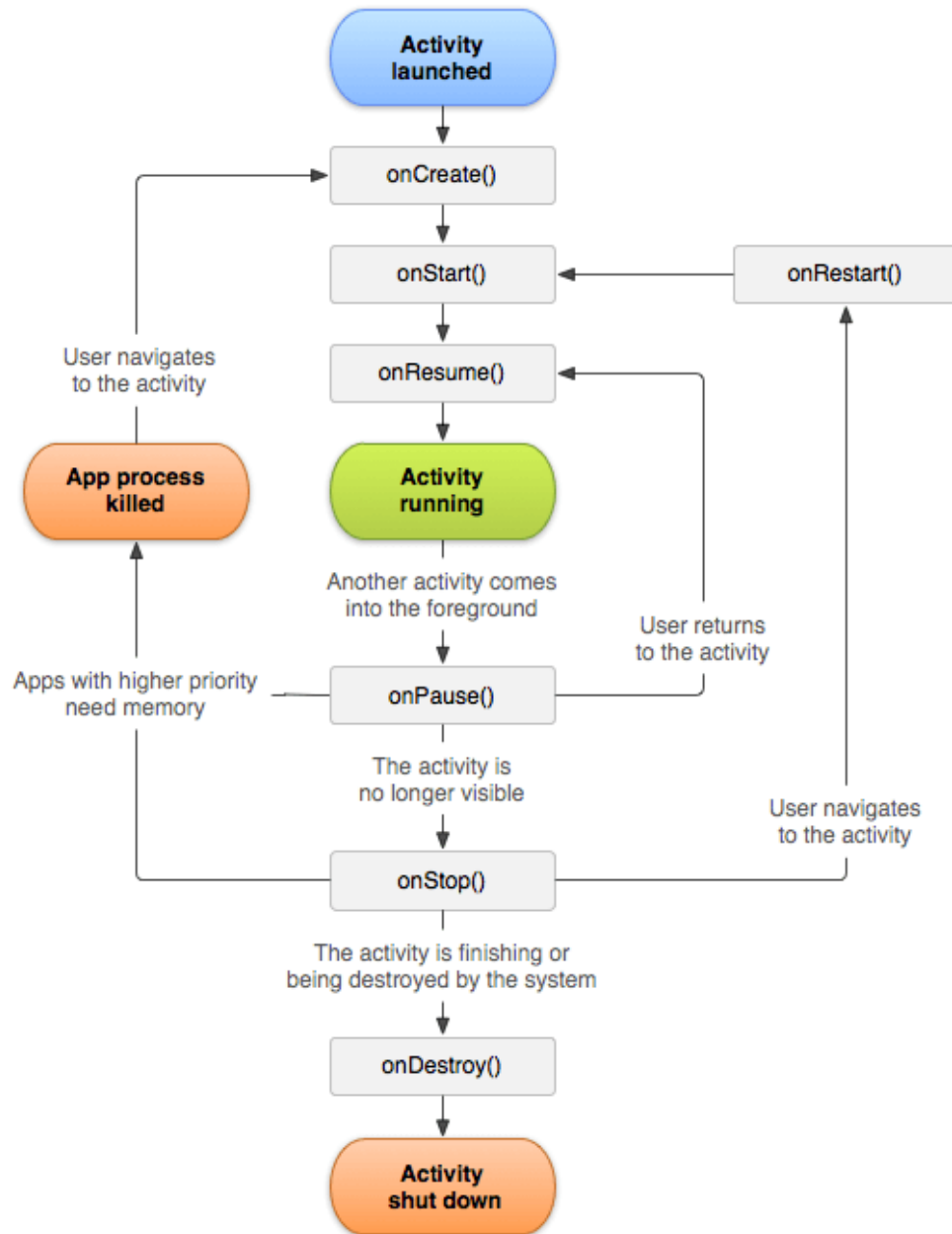


Figure 3.3 Activity Life Cycle

CHAPTER 4

Design Specification

4.1 Front-End Design

The extend points to create a proposal android application. Here we attempted our best to make a user-friendly application. The front-end is the stage that basically interact with the user. The front-end is the conspicuous part with which users are associated with. Designers change over information into a graphical interface with the help of a couple of programming vernacular where users can respond. All that we see while investigating the app interface is created with front-end programming. At the point when a front-end plan is seriously appealing and easy to understand. Design of our application is given below:

4.1.1 Welcome Page

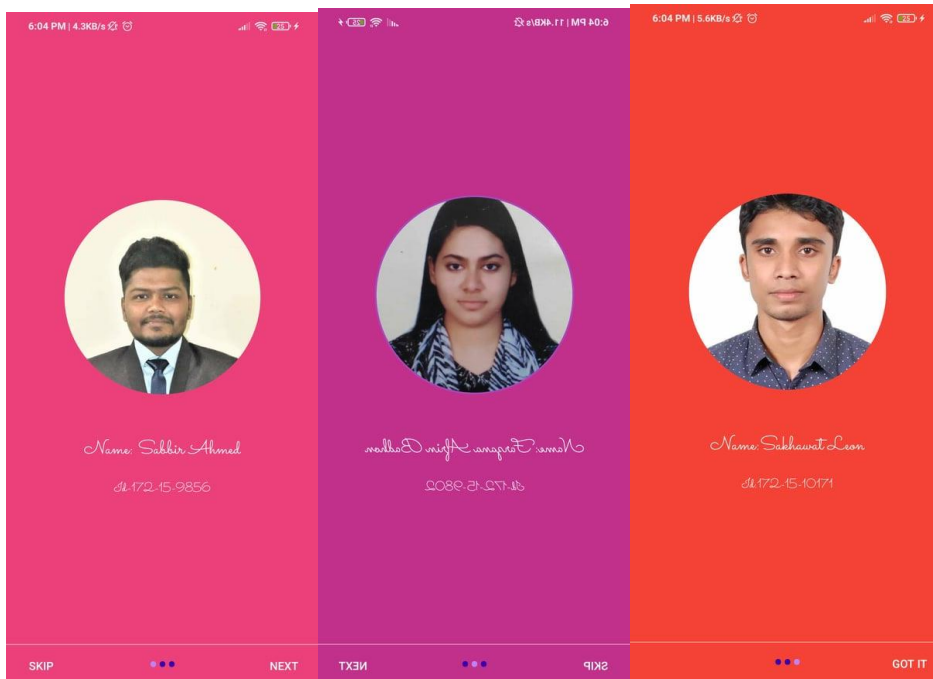


Figure 4.1 Welcome Page

There are three of us who try to contribute in this project.

4.1.2 Sign up Page

Here we try to register all the user so that no unwanted person can use it and we can know our users.

Diu Smart Study



Sign Up

User Email

Password

SIGN UP

Diu Smart Study



Add Your Profile Picture

Name :

Id :

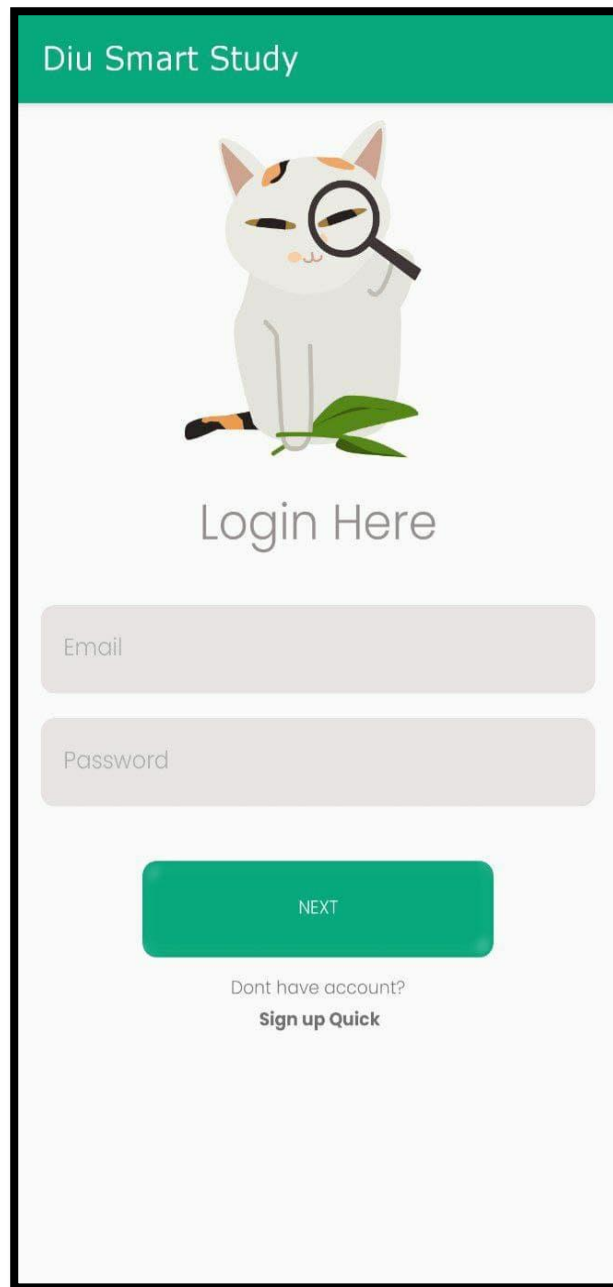
Phone No :

SAVE

Figure 4.2 Sign up Page

4.1.3 Login Page

Registered user can login here to explore our application feature.



The login page for 'Diu Smart Study' features a green header with the app name. Below the header is a cartoon illustration of a white cat with orange markings, holding a magnifying glass over its eye and sitting on a green leaf. The text 'Login Here' is centered below the illustration. There are two light gray input fields for 'Email' and 'Password'. Below these fields is a green 'NEXT' button. At the bottom, there is a link that says 'Dont have account? Sign up Quick'.

Figure 4.3 login Page

4.1.4 Home Page

In this page, user can find the books/notes which they will add themselves. We keep this feature so that user can put books/notes in it as per their need. So, they don't have to rely on the admin when needed.

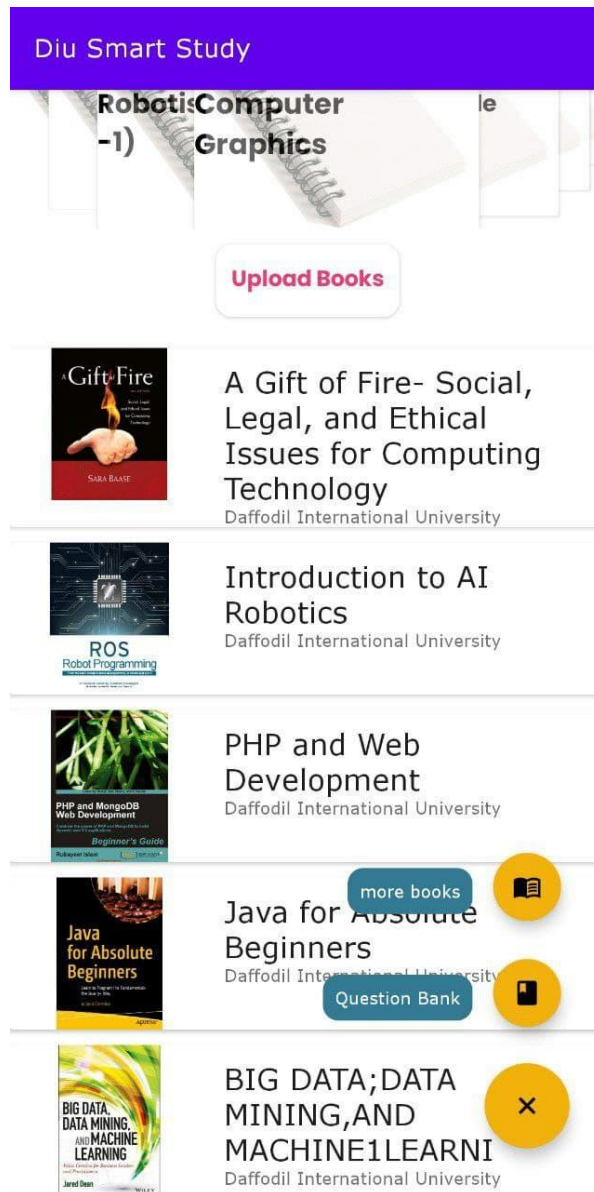
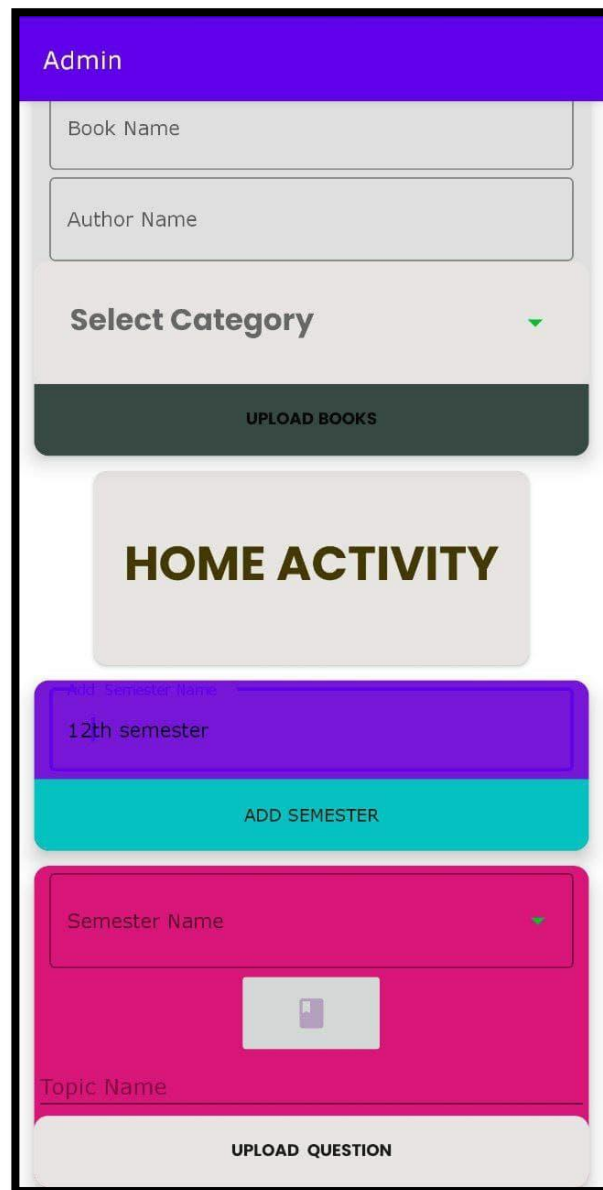


Figure 4.4 Home Page

4.1.5 Admin Page

Here admin can add and delete books, question, category and semester name. Admin has unique email .Only admin can use this feature.



The image shows a mobile application interface for an admin page. It features a purple header bar with the text "Admin". Below the header, there are three input fields: "Book Name", "Author Name", and "Select Category" (which includes a green dropdown arrow). A dark grey button labeled "UPLOAD BOOKS" is positioned below these fields. In the center of the screen is a large, light grey rounded rectangle with the text "HOME ACTIVITY" in bold, dark brown letters. Below this, there is a section for adding semesters, consisting of a purple input field with the text "12th semester" and a cyan button labeled "ADD SEMESTER". At the bottom, there is a pink section for adding questions, featuring a "Semester Name" input field with a green dropdown arrow, a small icon of a book, a "Topic Name" input field, and a light grey button labeled "UPLOAD QUESTION".

Figure 4.5 Admin Page

4.1.6 Book List Page

All books provided by admin will be shown here.

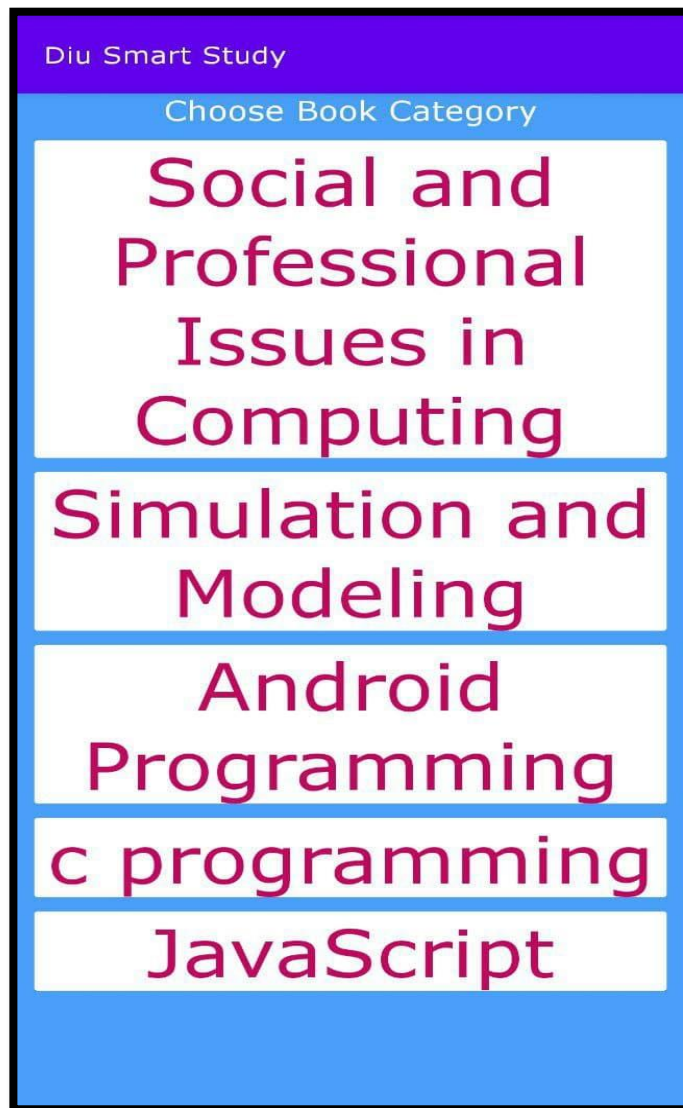


Figure 4.6 Booklist Page

4.1.7 Book Reading Page

User can read their books in this activity. It depends on internet. If internet is slow then users may have to wait for some time to read book

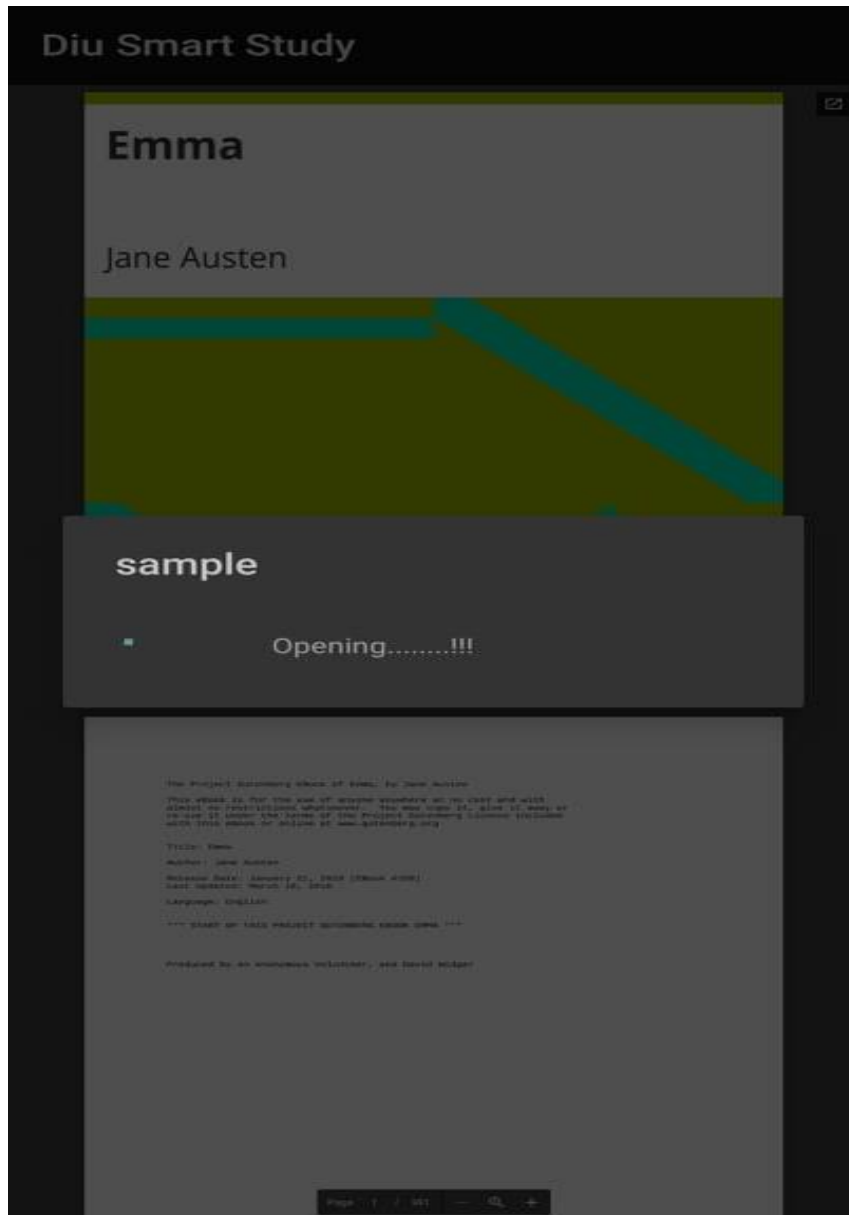
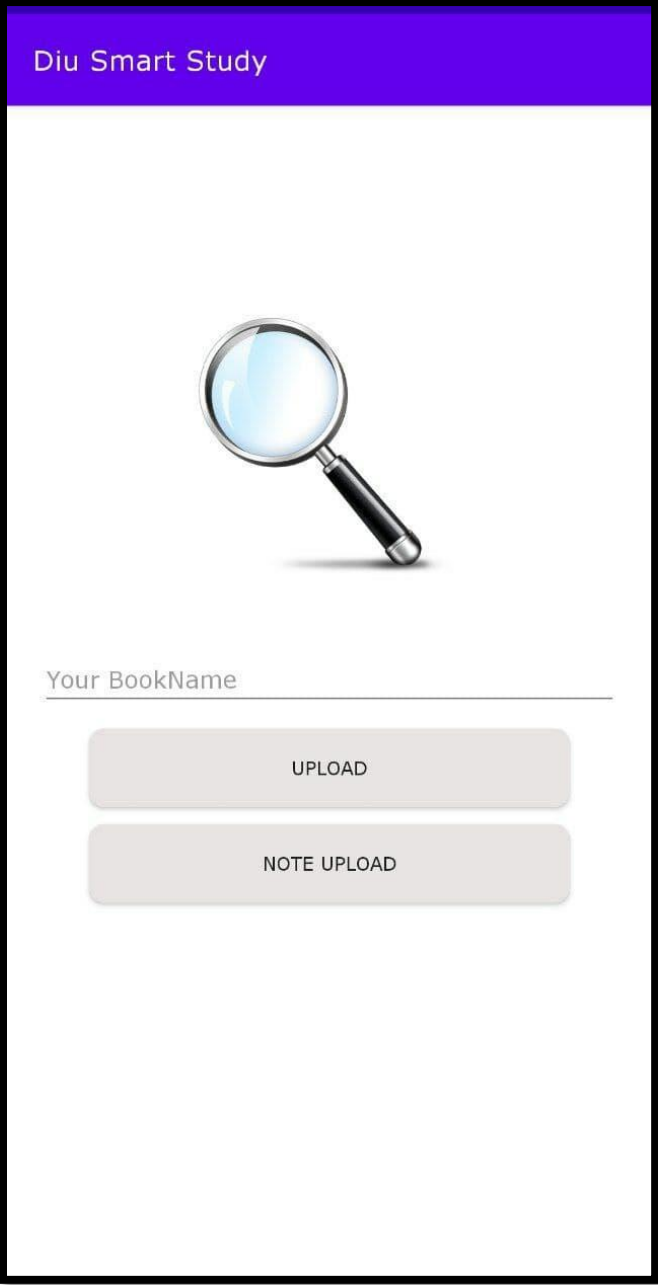


Figure 4.7 Book Reading Page

4.1.8 User Book & Notes/Slides Upload Page

Random user can easily upload books and notes here.



The image shows a mobile application interface for uploading books and notes. At the top, there is a purple header bar with the text "Diu Smart Study" in white. Below the header, the main area is white. In the center, there is a magnifying glass icon. Below the icon, there is a text input field with the placeholder text "Your BookName". Underneath the input field, there are two buttons: "UPLOAD" and "NOTE UPLOAD". Both buttons are light gray with rounded corners and black text.

Figure 4.8 User Book Notes Upload Page

4.1.9 Book and Question Category Page:

This two activity shows the semester name and books category .User can easily find their need. First they select semester name then they can find their questions

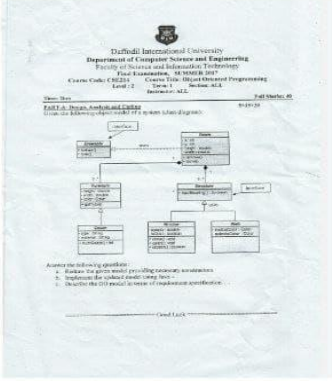


Figure 4.9 Category Page

4.1.10 Question Page

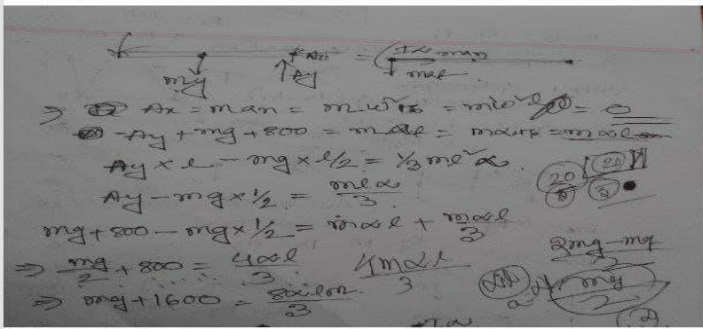
Here questions with the topic name are shown. When user click any item it will take them to the solution page.

Diu Smart Study

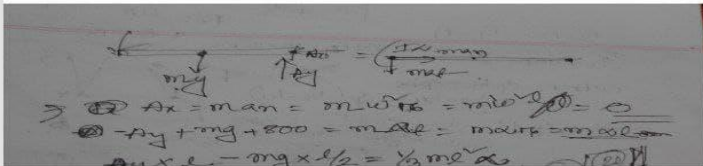



Farzana
 172-15-100000

1.b




Farzana
 172-15-100000



Your Answer Here

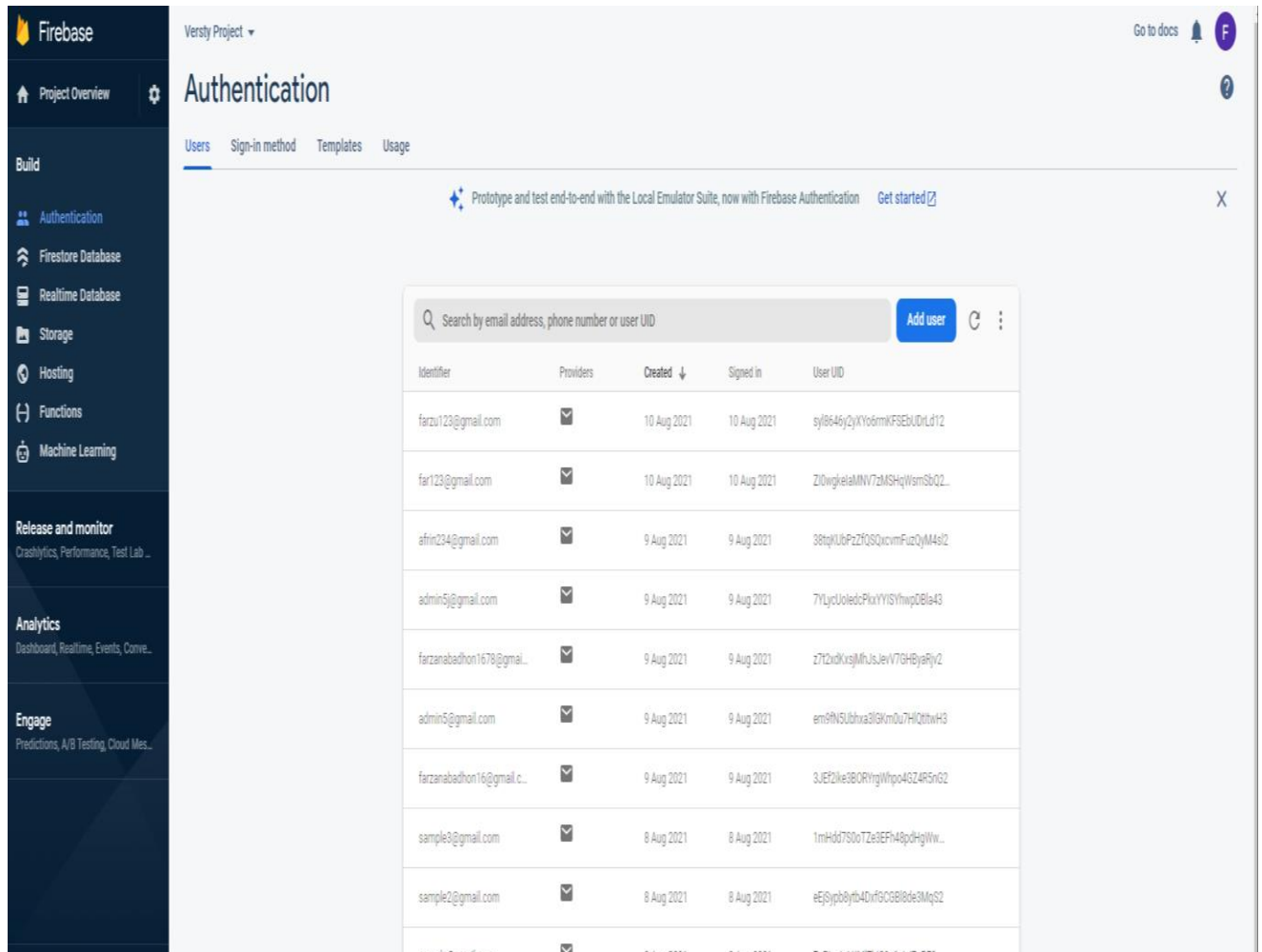



Figure 4.10 Question Page

4.2 Back-End Design

Backend of an application is a section that can't be seen by the client. User don't have any idea how a project backend is working. We use Firebase Database as a backend system because firebase is simple and easy to understand. User can interact with the backend by front end.

Here the figure shows user table of firebase database. Registered users are shown in the table



The screenshot displays the Firebase Authentication console for a project named 'Versty Project'. The left sidebar contains navigation links for Project Overview, Build (Authentication, Firestore Database, Realtime Database, Storage, Hosting, Functions, Machine Learning), Release and monitor, Analytics, and Engage. The main content area is titled 'Authentication' and includes tabs for Users, Sign-in method, Templates, and Usage. A search bar at the top of the Users tab allows searching by email address, phone number, or user UID. Below the search bar is a table listing registered users with columns for Identifier, Providers, Created, Signed in, and User UID. The table contains 10 rows of user data.

Identifier	Providers	Created ↓	Signed in	User UID
farzu123@gmail.com	📧	10 Aug 2021	10 Aug 2021	sy0646y2yKYo6mKF3E0UdLd12
far123@gmail.com	📧	10 Aug 2021	10 Aug 2021	Zl0wgjelaIMNV7dMSHqWsmSbQ2...
afriq234@gmail.com	📧	9 Aug 2021	9 Aug 2021	36tpU0PzZfQ3QxcvmFuzQyM4s02
admin5@gmail.com	📧	9 Aug 2021	9 Aug 2021	7YlYcUoedcPlkxYYSYfhw0B0a43
farzanabedhon1678@gmail...	📧	9 Aug 2021	9 Aug 2021	z712x0KxgJmJJsJevV7GHByeRy2
admin5@gmail.com	📧	9 Aug 2021	9 Aug 2021	em9N5U0hxa3l0KmdU7HlQ0twH3
farzanabedhon16@gmail c...	📧	9 Aug 2021	9 Aug 2021	3JEP2ike3B0RvYgWhpo40Z4F5nG2
sample3@gmail.com	📧	8 Aug 2021	8 Aug 2021	1mHd6750oTZse3EFh48pdHgWw...
sample2@gmail.com	📧	8 Aug 2021	8 Aug 2021	eE5jyqb8yrb4Dvrf6G5B80e3MqS2
sample1@gmail.com	📧	8 Aug 2021	8 Aug 2021	7u0H0k0U00000000000000000000

Figure 4.11 User Table

4.3 Interaction Design and User Experience (UX)

UI configuration is a vital piece of versatile application since it collaborates between the client and application. It helps to win the customer's confidence and provide them what they are looking for. In the 21st century everybody wants to experience the best technology without spending their brain and time. User Experience or UX is the system of improving the experience of the user when they interact with the project .UI focuses on wire framing and structure of an application's element appropriately to create user flow. So we are very careful about designing the UI/UX of our app.

4.4 Implementation Requirements

In order to build a project, we need many types of tools & software for design a project. To assemble a legitimate application it needs assistance with different kinds of devices for different purposes. We have additionally utilized various sorts of devices for plan, data set, front-end and back-end advancement. For front end design use the User Experience or UX. User experience or UX is the arrangement of working on the experience of the client when they collaborate with the undertaking .UI centers around wire outlining and construction of an application's component fittingly to make client stream. So we are extremely cautious with regards to planning the UI/UX of our application. For the backend system we use firebase. Firebase is a backend as an assistance stage. Firebase assist you to make internet and transportable packages without a worker aspect programming so advancement ends up being quicker and less complicated. Firebase supply engineer nearly all that they need to fabricate and end up their software, throughout the board region

CHAPTER 5

Project Implementation and Testing

5.1 Implementation of Database

Firebase is a no SQL database system for this we will not use SQL queries because its real-time database feature. Here we discuss how our database is implemented in our project.

Firebase authentication system can provide us control who can access our database. It is not relational database system. It can hold millions of requests from the user it has some rule. By using this rule we can secure our data more.

5.2 Storing Process of Data:

Firebase has several process to sign in .One can sign in by using phone, email, Facebook, twitter, GitHub, email etc. Here we found unique UID.

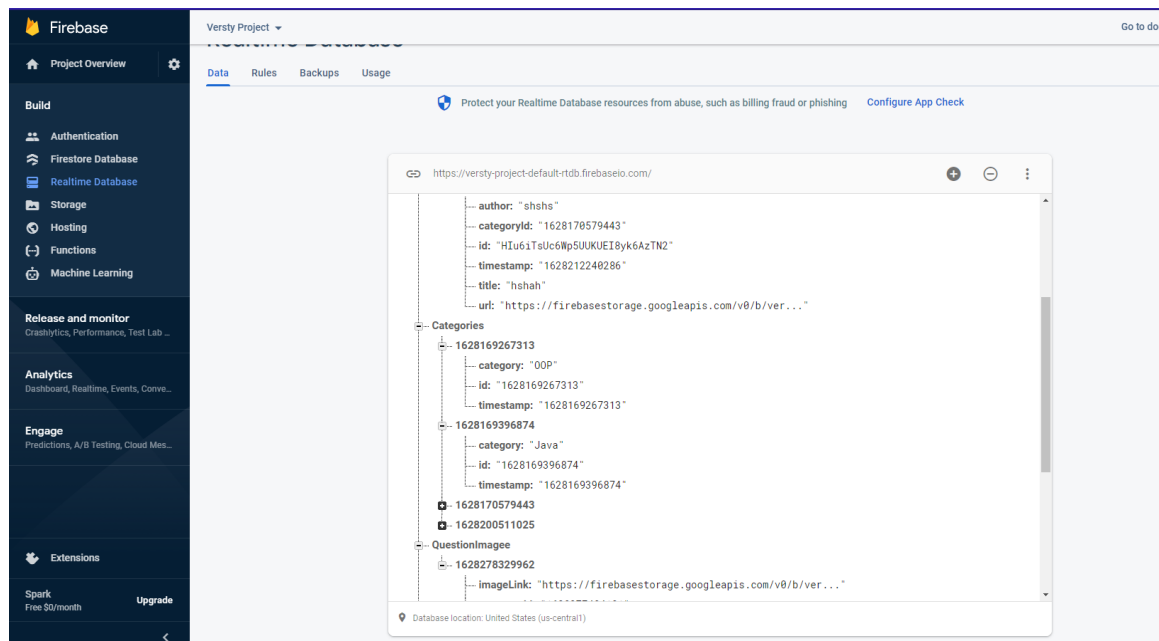


Figure 5.1 Real-time Database

We can also keep file, image in Storage. After keep file in storage we get a download URL, we can keep this link to firebase real-time database section.

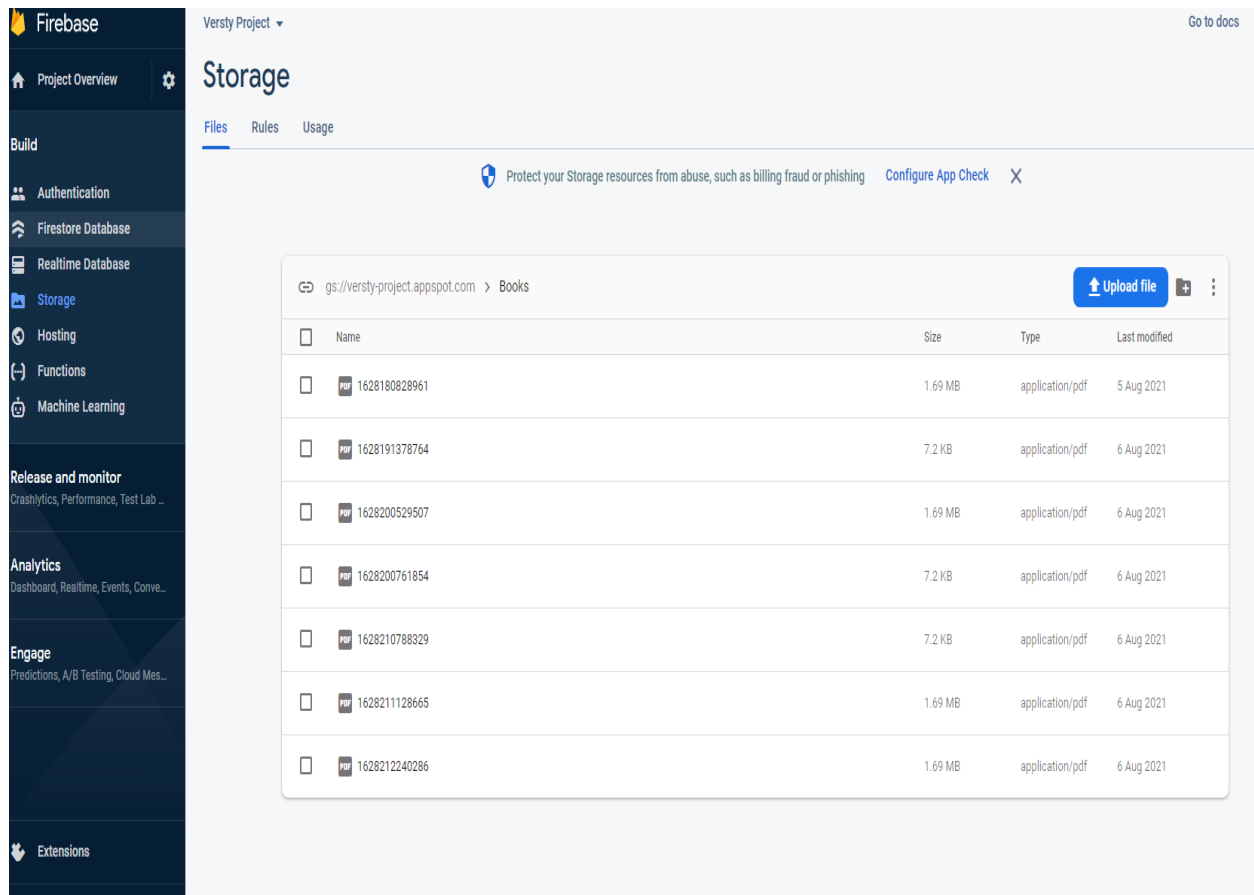


Figure 5.2 Firebase Storage

5.3 Project Testing Implementation

The primary motivation to begin Project testing is to discover deficiencies that can be fixed to build the unwavering quality of the framework under test. The flaws may cause mistakes that lead to disappointments. The test results are given below.

Table 5.1 Test

Test case	Test Input	Expected Output	Actual Output	Result	Tested On
1. Install	Install on Various android Versions Android 11.0 Android 10.0 Android 9.0,,Pie Android 8.0-8.1,Oreo	installed	Install performed	Passed	8/6/2021
2. Sign up	Not registered access	Access restricted	Restriction done	Passed	8/6/2021
3.Email/ password	Empty field	Correct email/password Must be entered	Warning shown	Passed	8/6/2021
4.Install	Installed with virus	Successfully installed	Install denied	Failed	10/6/2021
5.HomePage	Provide Username/ password	Show homepage	Homepage shown	Passed	10/6/2021
6.Admin Page	Provide Username/ password	Show Admin page	Admin Page shown	Passed	10/6/2021
7.Read Books	Click on Recycler item	Show book pages	Book pages shown	passed	10/6/2021

5.4 Test results and Reports

Android Studio is intended to simplify testing. With only a couple of snaps, you can set up a JUnit test that causes sudden spikes in demand for the nearby JVM or an instrumented test that causes sudden spikes in demand for a gadget. Obviously, you can likewise broaden your test abilities by coordinating test systems. Every application needs to be tested. Without testing we can address its mistakes. This gives the users the best results. We try to test our application, maybe there have some limitations in the application at initial stage or in next. Our project runs well on most Android phones and is very user friendly. The maximum user gave us good feedback.

Chapter 6

Impact on Society, Environment and Sustainability

6.1 Impact on Society

Book reading is a very good habit. Each of us has some responsibility towards our society. Knowledge enlightens society and pushes darkness away. Educated people are enlightened by the light of knowledge that can move the whole society forward. Who read books are better than others because they are better informed. By reading books a man can learn new things which can play a great role in our society. Ours is a development country. Most of the people in our country are backward in education. So those of us who are students have a lot of responsibilities for this society. We think this application will help them in fulfilling this great responsibility.

6.2 Impact on Environment

Online base study is increasing in a tremendous way. Especially in this world of pandemic situation of COVID-19, online base study has become more popular than ever. Our project refers to the online base study platform which is made with Android application. Our project has some environmental impact. We know that deforestation has become a great challenge for keeping the environment clean. As deforestation increase, the percentage of Oxygen in the air decreased and the percentage of Carbon increased. As a result the environment becomes polluted. The printed books paper are made with the wood of trees. It increases deforestation. In our app we try to keep all the books and previous questions. So the user of our app will be less interested towards printed books. As they will get their desired books in the app, they will try to reduce the use of printed books and printed previous questions. As a result deforestation will also reduce automatically due to less

use of papers. We try to take part to lower our Carbon emissions and increase Oxygen in the air by reducing deforestation.

6.3 Ethical Aspects

The application “DIU Smart Study-students learning app” will improve the students interaction with the modern way of study. As they can upload books and notes they will be more conscious about the appropriate books and notes upload. Because the admin can update and delete everything. The fraud students can be find out because they can be tracked by the admin as they are logged in by the valid email and they had to provide their information for signing up. This process will make students more loyal. Here the admin is also bound to update and delete the correct things because the negative impact of the project will reduce the use of this app. Overall, adopting this digital technology will make user more well reader.

6.4 Sustainability Plan

Sustainability of a project is a very important part. The project which has a great sustainability strategy can easily reach to the goals. Project with sustainable strategies can make the outcome of its every objectives. Our project will be used by the students (user) and the admin. Both students and the admin can get access to our application by login themselves in the application. The user needs to be registered by filling up the registration form. After completing registration and login user will be able to read books, read questions, upload books and notes, upload the solution of questions. The admin will be able to update and delete everything. Admin can make changes in the application

CHAPTER 7

Conclusion and Future Scope

7.1 Discussion and Conclusion

We mainly develop this project for our university students .We think we can make easier their learning system. The major feature of our applications is random uploading books and previous semester question bank feature in a single apps .Anybody can upload their book and share question solution. Most of the Varsity and organizations are moving towards online platform for training or teaching purposes because this way is better way of learning and reading. Printed books which must be requested or bought from the book shop or grounds library with time lost in hanging tight for conveyance or making a trip to the book shop. So, thinking for better study system here we have created "Diu smart study" basically an education base study platform recommendation System for providing semester wise online pdf books & question bank to the students who are interested study in online platform. Student also can easily upload books PDF and share question solve & notes anytime and anywhere through our application.

7.2 Limitations

There are some limitations in our application and we try to reduce them. Some limitations are that we cannot read or upload books which are more than 30MB. Besides this we need an internet connection to run this application. Database storage is not enough because we use the free-tier billing plan for our project. If we expand our project for high levels of use, you'll need to switch our project to a paid-tier billing plan.

7.3 Future work and Further Development

We have a lot of future plans to make this project more user friendly. We have some plans to add more options in this application. Firstly, we try to make offline versions so that we can read even if there is no internet. Also we try to add messaging features in this app so that one can easily contact each other. We plan to add soft music while someone reads books. Another future plan is to include a DT5 varsity bookstore system in these apps & make a database that contains the information about which books are available in the shop. If users want to read the books physically then we provide the contact number of the book shopper's via this app. Users can easily order their desired books. They do not need to go to the market or other shops to find course related books. Another plan is that the topper student can share their notes through the apps. Otherwise if they want we can contact the book shopper so that they can sell the note but some percentage will be given to the student. For the pocket money system students will be more interested to share the note. The weak student can benefit if the project plan will be executed in future.

REFERENCES

- [1] Learn Java from <https://www.w3schools.com/java/> last accessed on 10-7-2021 at 8.20 AM
& <https://www.javatpoint.com/java-tutorial> last accessed on 17-7-2021 at 10.10 PM
- [2]. Learn Kotlin from <https://kotlinlang.org/docs/home.html> last accessed on 17-5-2021 at 11.10 PM
- [3]. "Android Studio", available at
https://developer.android.com/studio?gclid=EAIaIQobChMIvoG12dWk8gIV0ENgCh2vlgTCEAAYASAAEgLqRfD_BwE&gclidsrc=aw.ds last accessed on 17-01-2021 at 2.10 PM
- [4]. Learn about use case from <https://www.youtube.com/watch?v=6oz8MKShCVE> last accessed on 5-10-2021 at 2.10 PM
- [5]. Learn about Er-diagram https://www.youtube.com/results?search_query=er++diagram last accessed on 5-10-2021 at 9.20 PM
- [6]. Learn about Android Programming <https://developer.android.com/guide> last accessed on 3-6-2021 at 11.00 PM
- [7]. Learn Firebase <https://firebase.google.com/docs> last accessed on 5-6-2021 at 7.40 PM
- [8]. "Importance of e Books in education", Mike Harman available at <https://kitaboo.com/importance-of-ebooks-in-education/>
- [9]. "Medium" available at <https://medium.com/>
- [10]. "Stack Overflow" available at <https://stackoverflow.com/> last accessed on 5-10-2021 at 3.40 PM
- [11] "Toner Buzz" available at <https://www.tonerbuzz.com/> last accessed on 5-10-2021 at 12.30 PM

ORIGINALITY REPORT

21%
SIMILARITY INDEX

19%
INTERNET
SOURCES

2%
PUBLICATIONS

16%
STUDENT PAPERS

PRIMARY SOURCES

1 Submitted to Daffodil International University **8%**
Student Paper

2 [dspace.daffodilvarsity.edu.bd:8080](https://dspace.daffodilvarsity.edu.bd/8080) **6%**
Internet Source

3 www.tristatetechnology.com **3%**
Internet Source

4 Submitted to Columbia High School **<1%**
Student Paper

5 Submitted to Federation University **<1%**
Student Paper

6 Submitted to Coventry University **<1%**
Student Paper

7 Submitted to Far Eastern University **<1%**
Student Paper

8 Submitted to Green University Of Bangladesh **<1%**
Student Paper

9 Submitted to University of Ulster **<1%**
Student Paper

10	Submitted to University of Northumbria at Newcastle Student Paper	<1%
11	Submitted to Oxford Brookes University Student Paper	<1%
12	practice.geeksforgeeks.org Internet Source	<1%
13	Submitted to CTI Education Group Student Paper	<1%
14	Submitted to Universiti Teknologi MARA Student Paper	<1%
15	codenuclear.com Internet Source	<1%
16	Submitted to Central Queensland University Student Paper	<1%
17	www.ukessays.com Internet Source	<1%
18	koreascience.or.kr Internet Source	<1%

Exclude quotes Off
Exclude bibliography Off

Exclude matches Off