



EDUCATION BASED APP's
Internship Project Report
(Submitted in Partial Fulfillment of the Requirements for the award of the degree)
Of
Bachelor of Technology
In
Computer Science Engineering
Submitted By
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
Dr. AKHILESH DAS GUPTA INSTITUTE OF TECHNOLOGY & MANAGEMENT
(AFFILIATED TO GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI)
NEW DELHI – 110053
MAY 2020

**Dr. AKHILESH DAS GUPTA INSTITUTE OF TECHNOLOGY & MANAGEMENT
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NEW DELHI - 110053

MAY 2020

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Candidate's Declaration

It is hereby certified that the work which is being presented in the B.Tech Training Report entitled "**SMART EDUACTION BASED MOBILE APPLICATIONS USING FLUTTER APP DEVELOPMENT**" in partial fulfillment of the requirements for the award of the degree of **BACHELOR OF TECHNOLOGY** and submitted in the Department of Computer Science & Engineering of Dr. Akhilesh Das Gupta Institute of Technology and Management, New Delhi (Affiliated to Guru Gobind Singh Indraprastha University, Delhi) is an authentic record of my own work under the guidance of The matter presented in the B.Tech Training Project Progress Report has not been submitted by me for the award of any other degree of this or any other Institute.

**Shlok Kaushik
40515602718
CSE T2**

This is to certify that the above statement made by the candidate is correct to the best of my knowledge. They are permitted to appear in the External Examination

MRS ANGELA YU
Training Cordinator

Prof. (Dr.) SAURABH GUPTA
H.O.D CSE Department

(Signature of External Examiner)

Acknowledgement

I would like to express my special thanks of gratitude to **Prof. (Dr.) SAURABH GUPTA, H.O.D of Computer science Engineering Department, Dr. Akhilesh Das Gupta Institute of Technology & Management, New Delhi** who provided me with the golden opportunity to attend the summer internship for Full Stack Flutter App Developer under the guidance of **Mrs Angela Yu of LONDON APP BREWERY**, which also helped me in doing a lot of Research and I came to know about so many new things I am really thankful to them.

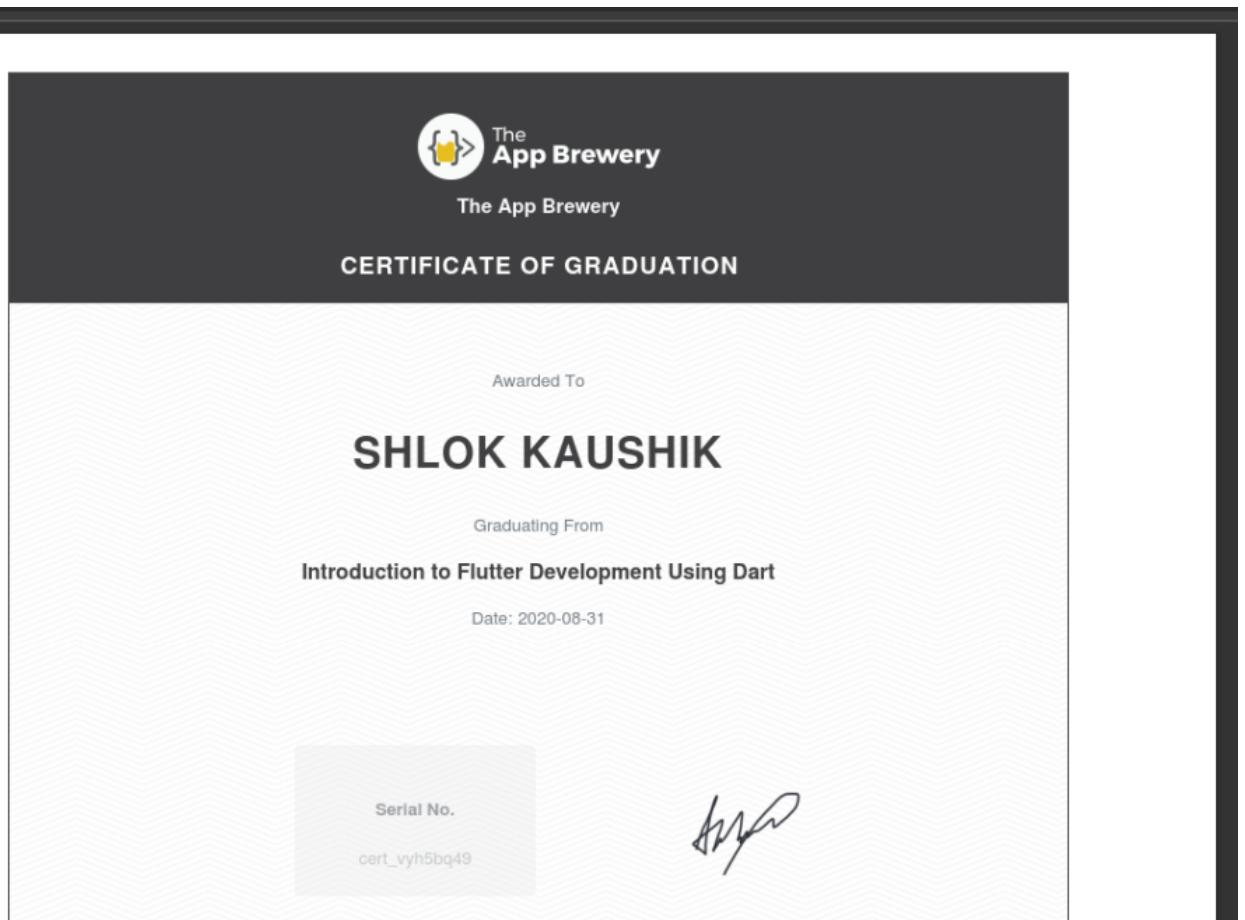
Although it is not possible to name individually, I shall ever remain indebted to the faculty members of **Dr. Akhilesh Das Gupta Institute of Technology & Management, New Delhi** for their persistent support and cooperation extended during this work.

Secondly, I would also like to thank my parents and friends who helped me a lot in finalizing this project within the limited time frame.

**Shlok Kaushik
40515602718
CSE T2**

Certificate Issued by Training Institute

I hereby declare that the work presented in this report entitled "**Smart Education based Mobile Applications**", in fulfillment of the requirement for the award of the degree **Bachelor of Technology in Computer Science Engineering submitted in CSE Department, ADGITM** affiliated to **Guru Gobind Singh Indraprastha University, New Delhi**, is an authentic record of my own work carried out during my degree under the guidance of London App Brewery.



CHAPTER 1

INTRODUCTION

1.1 Introduction About the Company

The **London App Brewery** makes learning to program fun and accessible. We design programming courses that teach programming through doing. This is why we are the fastest way to learn to code and make native iOS and Android apps.

Through our hands on approach, students learn the structure of a mobile app and its components, key programming design patterns, as well as debugging techniques so that they can easily expand on their knowledge and start working on own apps with confidence.

WEBSITE : <https://www.londonappbrewery.com>

SPECIALITIES : Android App Development, App Marketing, iOS App Development, Mobile UI & UX Design, Web Development, and Mobile Development

INDUSTRY : Professional Training & Coaching

FOUNDED : 2015

1.2 Problem Statement

To build a Software or Application that can be helpful for Educational Institutes or School to provide Smart Education that can reduce the efforts of Teachers and Students , enhance the Teaching Quality and ease the sharing of Assignments, Files, Exam Paper and much more.

1.3 Proposed Solution

Build Mobile Based Applications for both Teachers and Students that are connected with each other in which Data such as PDFs, Images, PPTs, Video and Audio can be shared easily within particular Classes so that Students can solve their Tests ,Assignments sharing of notes, study material and much more. And, teacher can get the data of particular class in a defined way and well defined manner.

1.4 Project objectives

The main objective of the Project is to ease the way of teaching so that students can learn better and teachers can easily share Assignments, Notes, PDFs in a set of collection to the whole class in few steps. And, Students can solve their Tests, Assignments in a defined interval of Time .

CHAPTER 2

PROJECT

DESCRIPTION

2.1 System Interfaces

Following are the interfaces :

FRONTEND INTERFACE :

- Admin App
- Users App

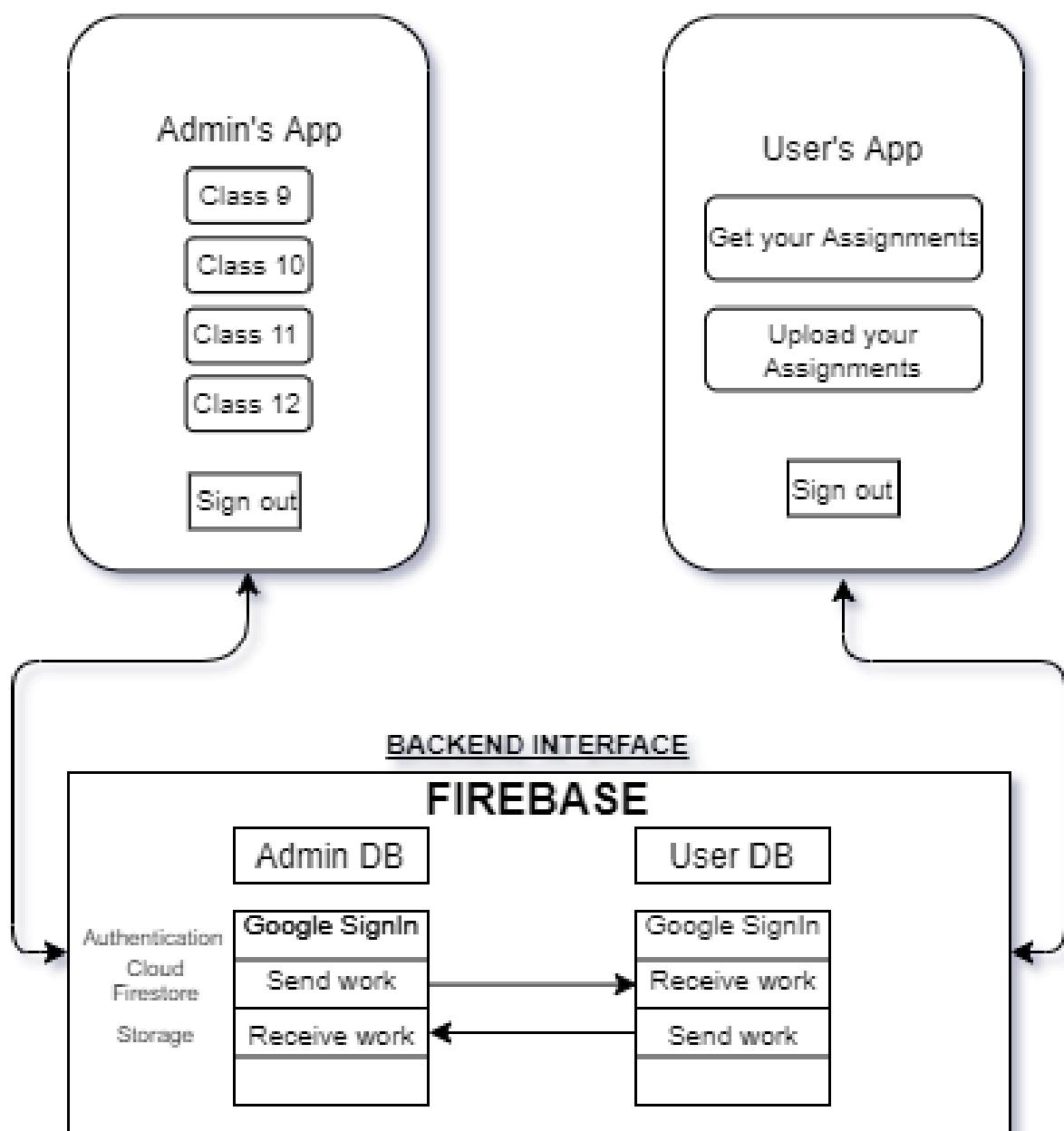
Both applications are developed and designed on the Andoid Studio IDE through Google Flutter UI kit .
Flutter is an open-source mobile SDK developer can use to build native-looking Android and iOS applications from the same code base

BACKEND INTERFACE :

- Firebase

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

FRONTEND INTERFACE



2.1.1 Users on Internet

The project is still under Testing and surveillance. But the Beta version is tested by 900 - 1000 users over the Internet.

2.1.2 Tools and Platforms

Following are the tools and platforms required to build the project :

- Android Studio IDE
- Flutter SDK
- Firebase

Android Studio IDE:



Android Studio is the official **integrated development environment (IDE)** for Android application development. It is based on the **IntelliJ IDEA**, a Java integrated development environment for software, and incorporates its code editing and developer tools

To support application development within the Android operating system, Android Studio uses a Gradle-based build system, **emulator**, code templates, and **Github integration**. Every project in Android Studio has one or more modalities with source code and resource files. These modalities include **Android app modules**, **Library modules**, and **Google App Engine modules**.

FLUTTER SDK :

Flutter is an open-source mobile SDK developer can use to build native-looking Android and iOS applications from the same code base. Flutter has been around since 2015 when Google introduced it and remained in the beta stage before its official launch in December 2018. Since then, the buzz around Flutter has been growing stronger.

LANGUAGE : Dart programming language



One of the most interesting features of Flutter is the language it uses: Dart. Like other systems that use reactive views, Flutter refreshes the view tree for every new frame. To accomplish that, it creates many objects that may live for no more than one frame. Dart uses generational garbage collection that has proven to be very efficient for this type of systems.

Benefits of Flutter :

- It saves you time and money
- Excellent performance
- Quick development thanks to hot reload
- Compatibility
- Open-source

FIREBASE :

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

It provides services such as realtime database, cloud storage, authentication, crash reporting, machine learning, remote configuration, and hosting for your static files.

Some of the Firebase Services :

- Firebase Auth
- Cloud Firestore
- Firebase Storage
- Firebase Database
- Firebase Analytics
- Firebase Crashlytics

Firebase Auth :

Firebase Authentication provides backend service and easy-to-use SDKs to authenticate users to your app. It supports authentication using passwords, phone numbers, popular federated identity providers like Google, Facebook and Twitter and more.



Firebase Authentication

Cloud Firestore :

Firestore is a flexible, scalable NoSQL cloud database to store and sync data.

It keeps your data in sync across client apps through realtime listeners and offers offline support.



Cloud Firestore

So you can build responsive apps that work regardless of network latency or internet connectivity

Firebase Storage :

Cloud Storage is designed to help you quickly and easily store and serve user-generated content, such as photos and videos

It is currently supported in Mobile and MacOs.



Firebase Database :

The Firebase Realtime Database is a cloud-hosted database.

Data is stored as JSON and synchronized in realtime to every connected client.



Firebase Realtime Database

When you build cross-platform apps Flutter and Firebase ,all of your clients can share one Realtime Database Instance and automatically receive updates with the newest data.

2.2 System Specifications

2.2.1 H/W Requirements

Not Applicable

2.2.2 S/W Requirements

Following are the software required to build the Applications :

- Android Studio
- Flutter SDK
- JAVA JDK
- Firebase
- Emulator

CHAPTER 3

FUNCTIONALITY

3.1 About the Mobile Applications

Two Mobile based applications (Mobile Apps) named 'Guru Skool' (Teacher's App) and 'Scholar App' (Student's App) that are connect with each other with same Database which is "Firebase".

As shown in the Section Below :



(Teacher's App)



(Student's App)



Identifier	Providers	Created	Signed In	User UID
shlokkaushik23@gmail.com	G	Aug 11, 2020	Aug 15, 2020	UVOpQQN9OPaWJn0Mj9JXFkZt...
kaushikneha1609@gmail.com	G	Aug 11, 2020	Aug 11, 2020	WRUvy4k7MEP4l49i2eZohZJ2ka62
ashishrawat98@gmail.com	G	Aug 11, 2020	Aug 15, 2020	z2rYNpJcfkZlq88MFQQSGZvzMm...

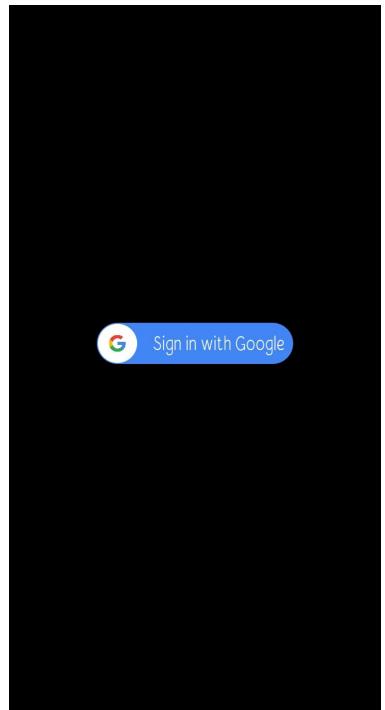
(Connected to the FIREBASE ie Database of the Project)

3.2 Functionality of the Teacher App (ADMIN)



(Screen 1)

LOADING SCREEN : It shows the logo of the Teacher App (ADMIN's) in which a working loader is shown which takes 3 secs to move to the next screen.

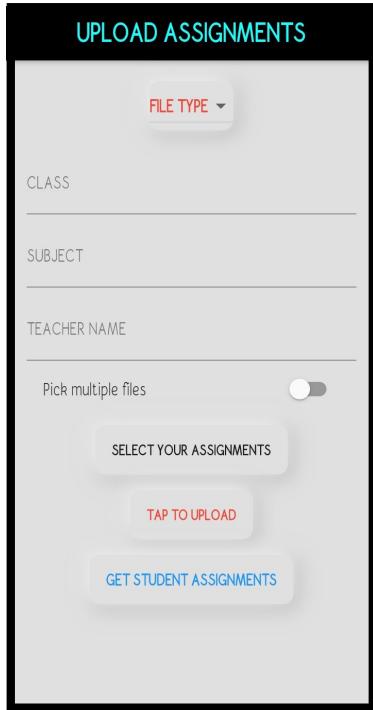


(Screen 2)



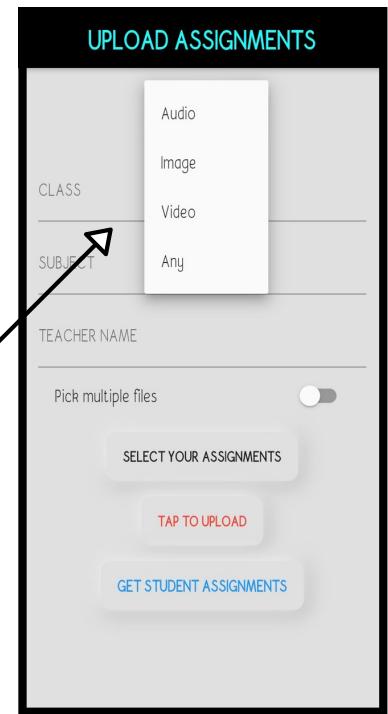
(Screen 3)

HOMEPAGE SCREEN : This is the main screen of the entire Mobile App which show the Classes from **8 to 12** (changes can be done as per requirement) and a **Sign Out** button. On tapping over any Class it will move to the next Screen.

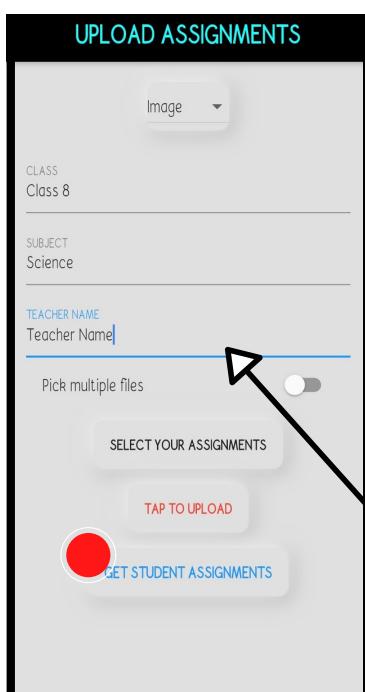


(Screen 4)

UPLOADING SCREEN : Here teacher can upload **Question Paper, assignments, notes ,videos, audio** and much more and can upload multiple file at the same time. **Class, Subject** and **Teacher Name** are mandatory to be filled.



DROPDOWN MENU : On the top of the Uploading Screen there is a button "File Type" which shows the dropdown menu in which user can select the type of file they want to upload such as **Image, Video, Audio** and other type.



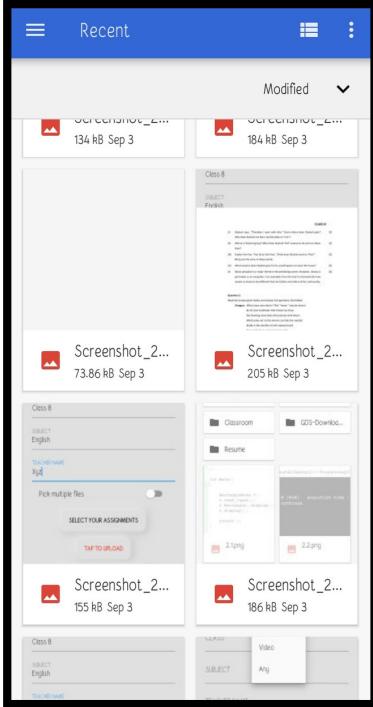
(Screen 4.2)

DETAILS BY USER : Three sections Class ,Subject and Teacher Name are mandatory to be filled by the User (Teacher) so that student get to know who is giving them the work.

Class : 8

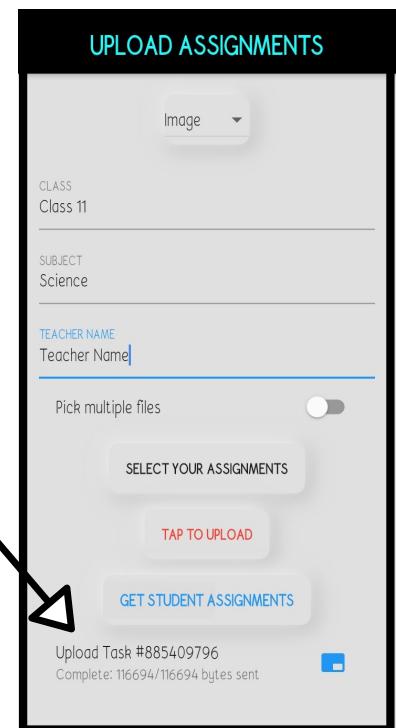
Subject : Science

Teacher Name : Teacher Name

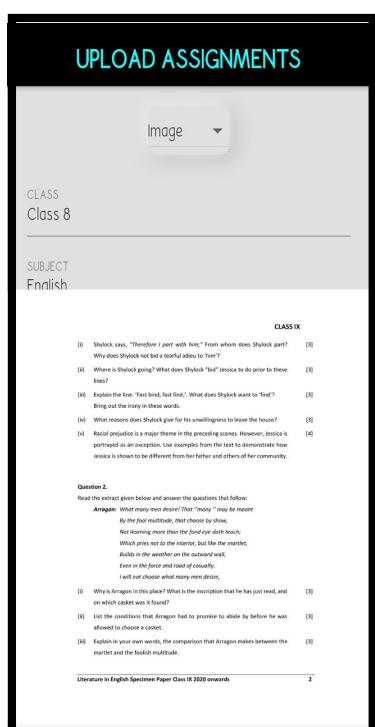


(Screen 4.3)

SELECT ASSIGNMENTS : This Button will redirect the user to their Drive so that they can select the type of file they want to upload such as Image, **PDF**, **Audio**, **Video** etc.

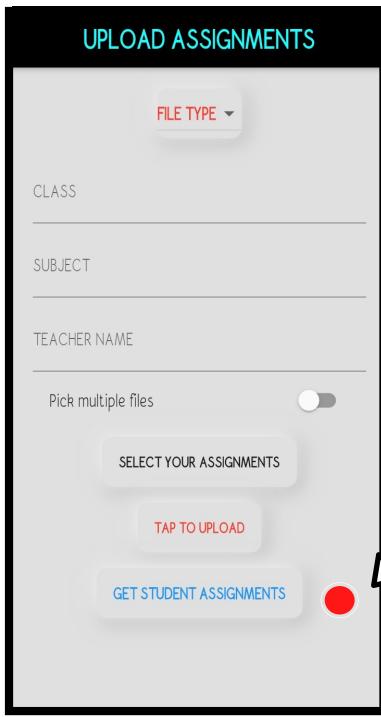


(Screen 4.4)



(Screen 4.6)

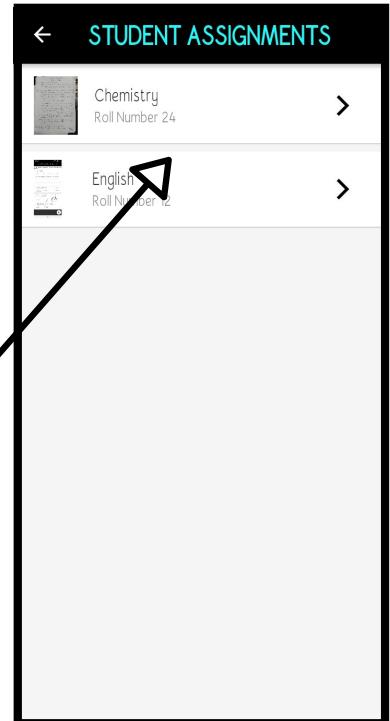
PREVIEW BUTTON : On tapping the the Preview Button (●) it will show the file that has been uploaded by the User So that they can confirm what they have uploaded.



(Screen 4.7)

GET STUDENTS ASSIGNMENT

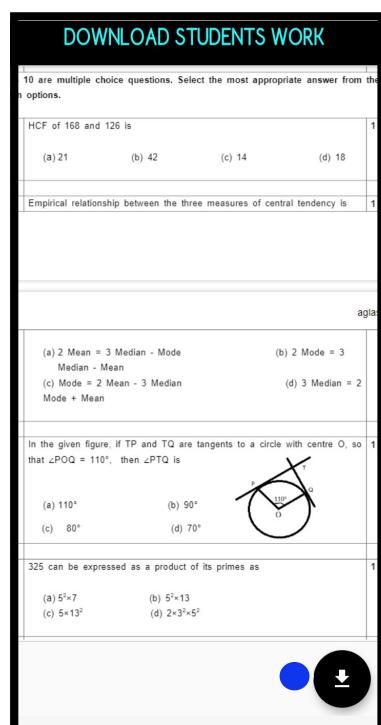
BUTTON (●) : In order to check the work done by the Students of any class, User(Teacher) can Click on the Get Student's Assignment Button (●) which will redirect to the Next Screen.



(Screen 5)

STUDENT ASSIGNMENTS SCREEN :

This screen will show the list of all the Students in a particular class with their Name, Roll Number and Subject in a list view. On clicking over any student Name it will redirect to the next screen.



(Screen.6)

DOWNLOAD STUDENT WORK

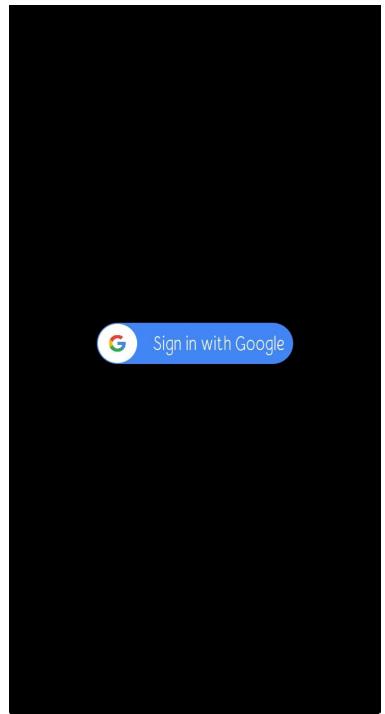
SCREEN : This screen will show the work that has been done and uploaded by the student through Student App. On the Right Corner , there is a **Download Button (●)** through which Teacher can View or Download student work or Queries.

3.3 Functionality of the Student App (User)



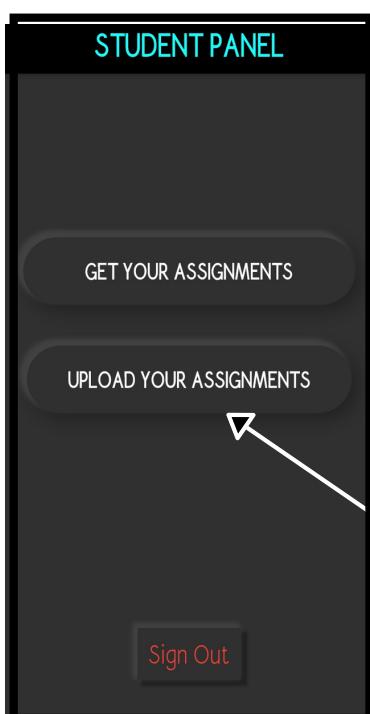
(Screen S.1)

LOADING SCREEN : It shows the logo of the Student App (USER's) in which a working loader is shown which takes 3 secs to move to the next screen.



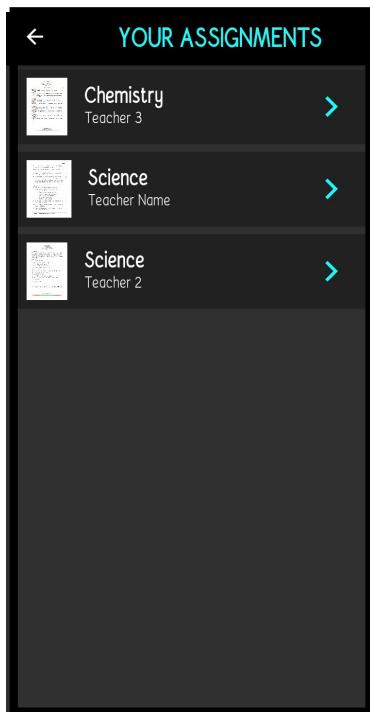
(Screen S.2)

SIGN IN SCREEN: This Screen shows the Google SignIn button. On tap, it will add the User Gmail to the Firebase which insures that new user is using the app.



(Screen S.3)

Homepage SCREEN : This is the main screen of the Student App (User's) in which Two button are shown i.e **Get your Assignments** and **Upload your Assignments Buttons** through which student can get their work and as well as Upload their solutions and doubts. At the button Sign out button is available. This app is in **Dark Theme** to reduce eye strains and better visibility.



(Screen S.4)

YOUR ASSIGNMENT SCREEN : This screen will show all the assignments given by all the Teachers in a particular Class in a list view with Subject, Class and Teacher Name. On tapping over the any subject it will redirect to the view or download screen,

10 are multiple choice questions. Select the most appropriate answer from the options.

HCF of 168 and 126 is

(a) 21 (b) 42 (c) 14 (d) 18

Empirical relationship between the three measures of central tendency is

(a) $2 \text{ Mean} = 3 \text{ Median} - \text{Mode}$ (b) $2 \text{ Mode} = 3 \text{ Median} - \text{Mean}$
(c) $\text{Mode} = 2 \text{ Mean} - 3 \text{ Median}$ (d) $3 \text{ Median} = 2 \text{ Mode} + \text{Mean}$

In the given figure, if TP and TQ are tangents to a circle with centre O, so that $\angle POQ = 110^\circ$, then $\angle PTQ$ is

(a) 110° (b) 90° (c) 80° (d) 70°

325 can be expressed as a product of its primes as

(a) $5^2 \times 7$ (b) $5^2 \times 13$
(c) 5×13^2 (d) $2 \times 3^2 \times 5^2$

(Screen S.5)

UPLOAD YOUR ASSIGNMENTS

FILE TYPE ▾

CLASS _____

SUBJECT _____

ROLL NUMBER _____

Pick multiple files

SELECT YOUR ASSIGNMENTS

TAP TO UPLOAD

(Screen S.5)

UPLOAD YOUR ASSIGNMENTS

SCREEN : Here Students can upload their Answer sheets, doubts, queries and solutions to the Teachers. Class, Subject, Roll Number are mandatory to be filled by the students.

UPLOAD YOUR ASSIGNMENTS

CLASS _____

SUBJECT _____

ROLL NUMBER _____

Pick multiple files

SELECT YOUR ASSIGNMENTS

TAP TO UPLOAD

Audio
Image
Video
Any

(Screen S.5.1)

DROPODOWN MENU : On the top of the Uploading Screen there is a button "File Type" which shows the dropdown menu in which student (User) can select the type of file they want to upload such as **Image**, **Video**, **Audio** and other type.

UPLOAD YOUR ASSIGNMENTS

FILE TYPE ▾

CLASS
Class 8

SUBJECT
English

ROLL NUMBER
Roll Number 23

Pick multiple files

SELECT YOUR ASSIGNMENTS

TAP TO UPLOAD

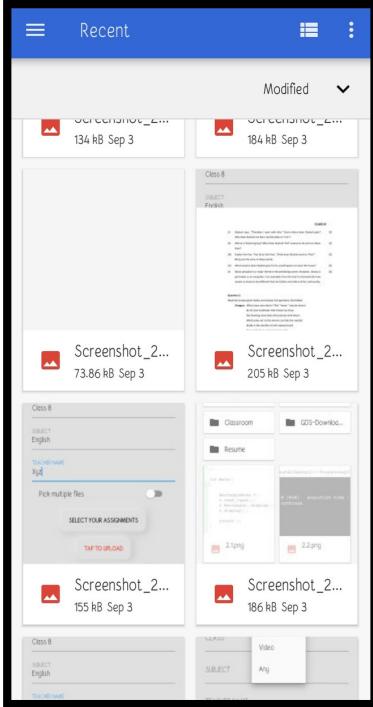
(Screen S.5.2)

DETAILS BY STUDENT : Three sections Class , Subject and Roll Number are mandatory to be filled by the students (User's). So that teacher get to know how many students have completed the work.

Class : 8

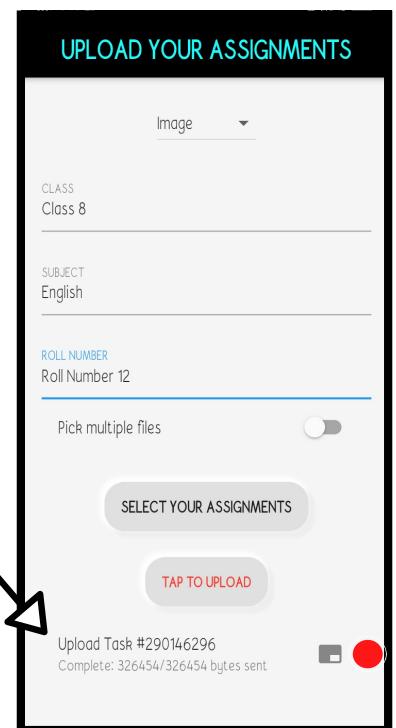
Subject : Science

Roll Number : 23

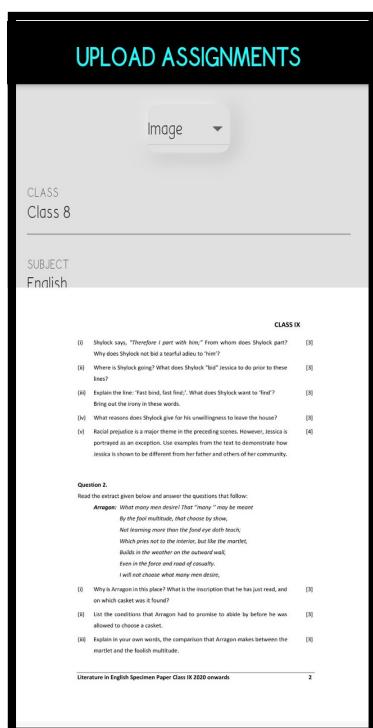


(Screen S 5.3)

SELECT YOUR ASSIGNMENTS : This Button wil redirect the Students (User's) to their Drive so that they can select the file they want to upload such as PDFs, PPTs, Images etc.



(Screen S 5.4)

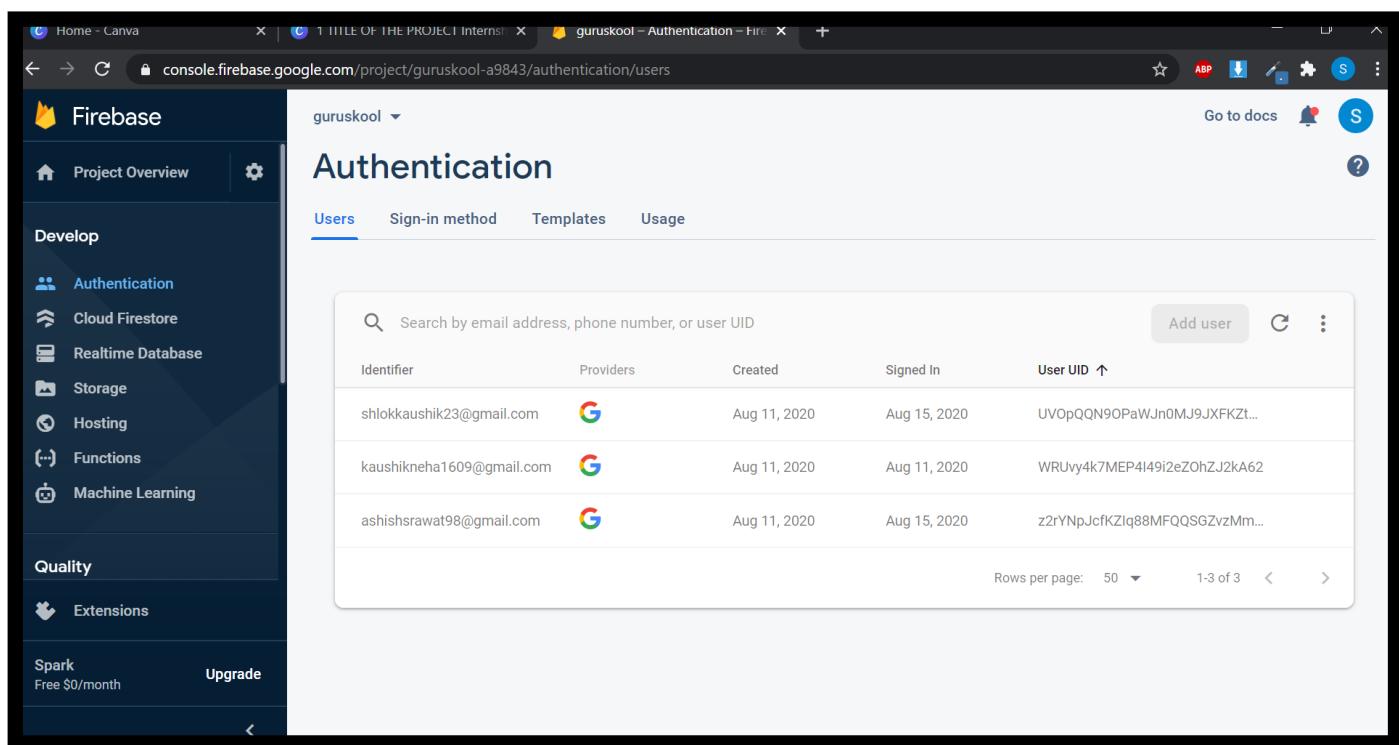


(Screen S 6)

PREVIEW BUTTON : On tapping the the Preview Button (●) it will show the file that has been uploaded by the User So that they can confirm what they have uploaded and then Click on Tap to Upload Button.

3.3 About the Database (FIREBASE)

USER AUTHENTICATION : This will store the email of the every users whether it will be Teacher or Student in a list form for security purpose.



The screenshot shows the Firebase Authentication interface in the Google Cloud Platform console. The left sidebar lists various services: Project Overview, Authentication (selected), Cloud Firestore, Realtime Database, Storage, Hosting, Functions, Machine Learning, Extensions, and Spark (Free \$0/month). The main content area is titled 'Authentication' and shows the 'Users' tab selected. It displays a table of user information with columns: Identifier, Providers, Created, Signed In, and User UID. The table contains three rows of data:

Identifier	Providers	Created	Signed In	User UID
shlokkaushik23@gmail.com	G	Aug 11, 2020	Aug 15, 2020	UVOpQQN9OPaWJn0MJ9JXFKZt...
kaushikneha1609@gmail.com	G	Aug 11, 2020	Aug 11, 2020	WRUyy4k7MEP4i49i2eZOhZJ2kA62
ashishsrawat98@gmail.com	G	Aug 11, 2020	Aug 15, 2020	z2rYNpJcfKZlq88MFQQSGZvzMm...

At the bottom right of the table, there are buttons for 'Rows per page: 50', '1-3 of 3', and navigation arrows. The top right of the interface includes links for 'Go to docs', a notification bell, and a user profile icon.

CLOUD STORAGE : It will store the data such as Images, PDF's, PPT's and much more in two different section one for the Admin App and Other for the User App. So that the data can be retrieve or secured easily. As well as the Teacher and Student Information such as Teacher Name, Classes, Subjects etc.

The screenshot shows the Firebase Cloud Firestore interface. On the left, a sidebar lists various services: Authentication, Cloud Firestore (selected), Realtime Database, Storage, Hosting, Functions, and Machine Learning. The main area shows a document structure under 'guruskool-a9843'. The 'teacher' collection contains three sub-collections: 'student', 'teacher', and 'users'. The 'student' collection has one document, 'Class 10', which in turn contains two sub-collections: 'Class 8' and 'Class 9'. On the right side of the interface, there is a detailed view of the 'Class 10' document, showing its fields: an image URL, a subject ('Chemistry'), and a teacher name ('Teacher 3').

STORAGE : It will store all the videos and Images that has been shared between the Apps so that data can be retrieved and modified from the Database as well. And a set of data can be maintained.

The screenshot shows the Firebase Storage interface. On the left, a sidebar lists various services: Authentication, Cloud Firestore, Realtime Database, Storage (selected), Hosting, Functions, and Machine Learning. The main area shows a list of files in the 'student' bucket. There are four files listed: 'IMG_20160914_230009 (1).jpg' (72.41 KB, FileType.image/jpg, uploaded on Aug 15, 2020), 'IMG_20200808_063826.jpg' (1.13 MB, FileType.image/jpg, uploaded on Aug 11, 2020), 'Learn Command Line and Git for free.jpg' (109.39 KB, FileType.image/jpg, uploaded on Aug 11, 2020), and 'downloadfile.png' (29.49 KB, FileType.image/png, uploaded on Aug 15, 2020).

CHAPTER 4

CONCLUSIONS

AND REFERENCES

4.1 Conclusion

The problem has been successfully solved by building Two Mobile based Applications on the latest technologies that are Flutter and Firebase.

4.2 Limitations of the System

Following are the few limitations of the System :

- Maximum upto 10000 Users can use the app at the same time.
- After a certain Threshold level , Firebase services needs to be purchased.
- Requirement of Server is mandatory if any organisation/ institute need the app.
- Time to time updates and monitoring is required.

4.3 Future Scope of the Project

Following are the Future scopes of the project :

- Live Streaming of the Online lectures will be possible.
- Time Table of the Classes can be setup as per the requirements.
- Conduction of Online Quiz and Extra- curricular activities can be organized.
- Completed Details of the students can be deployed over the Server or Database.
- Online Competitions such as Olympiad , Rank tests, Academic activites can be conducted.
- Online declaration of Results.

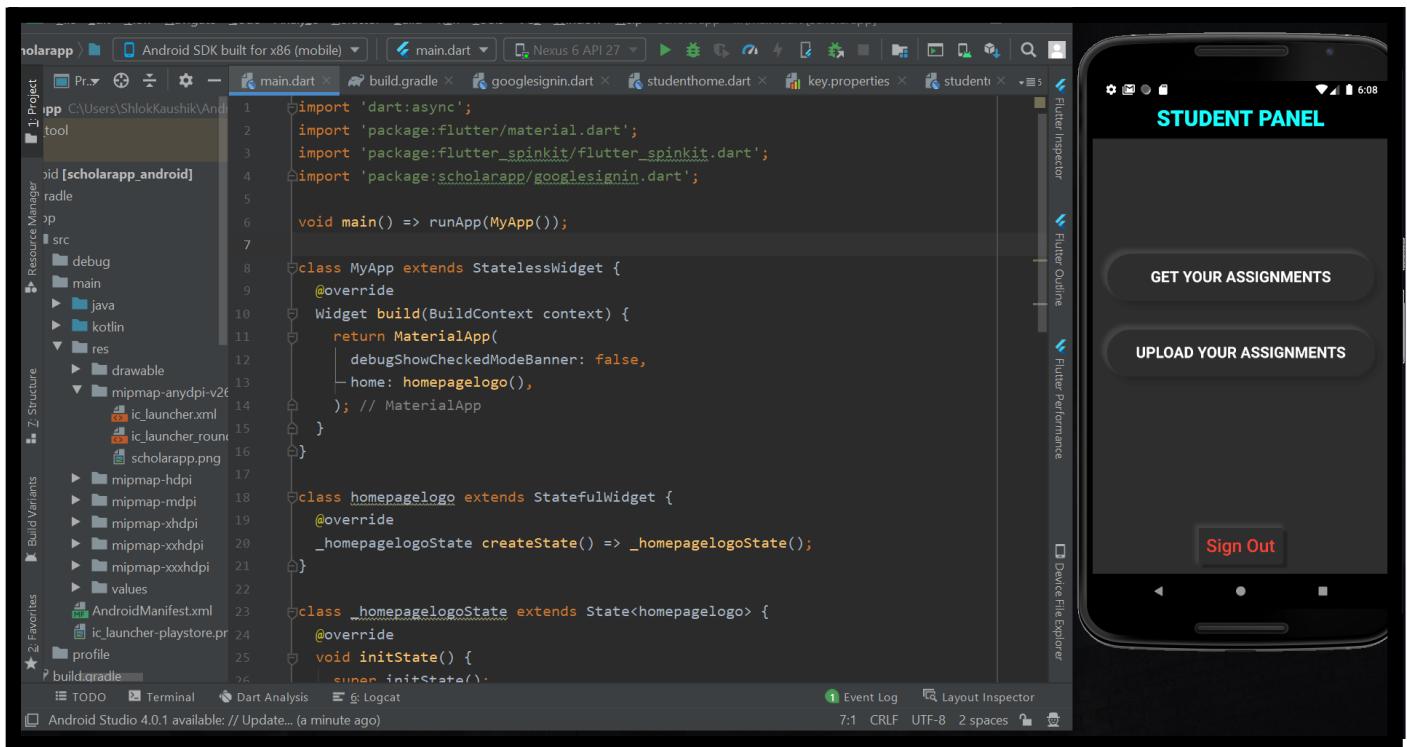
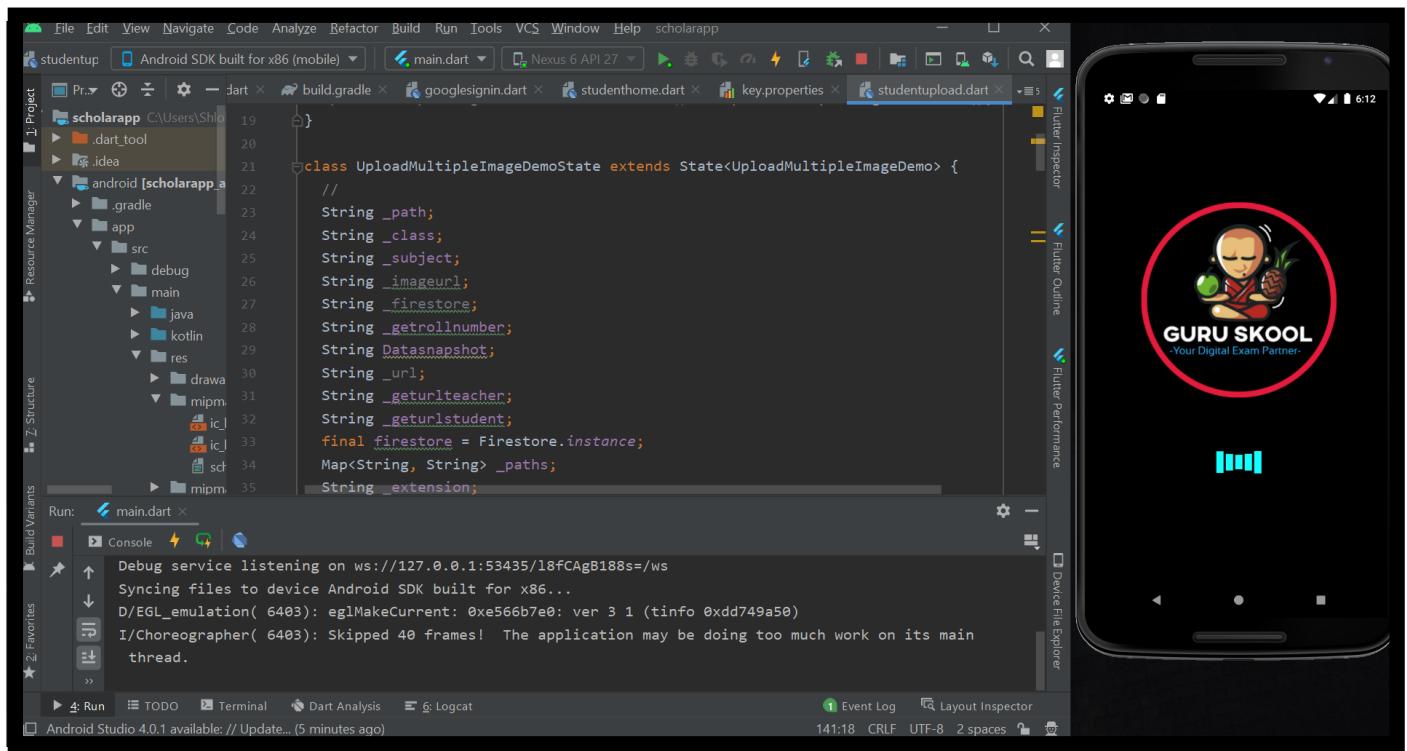
4.4 References

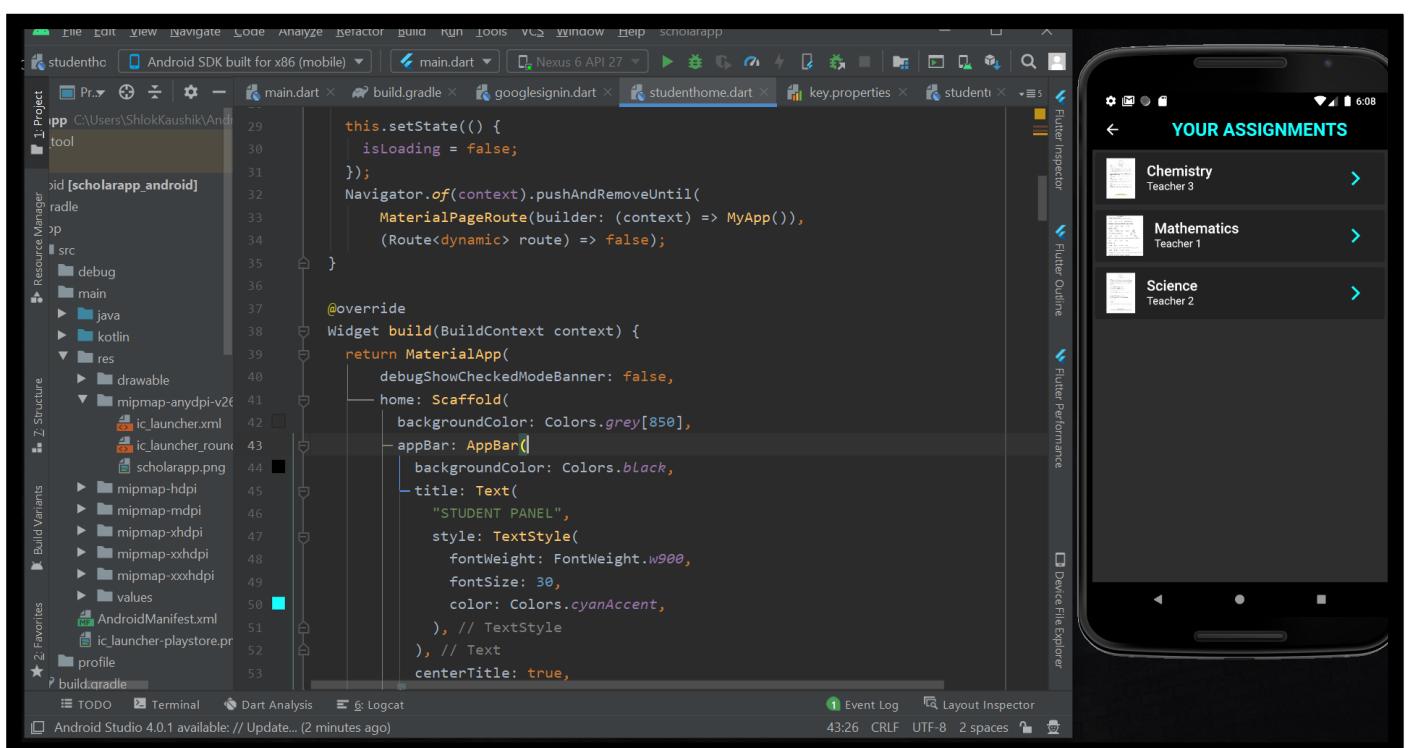
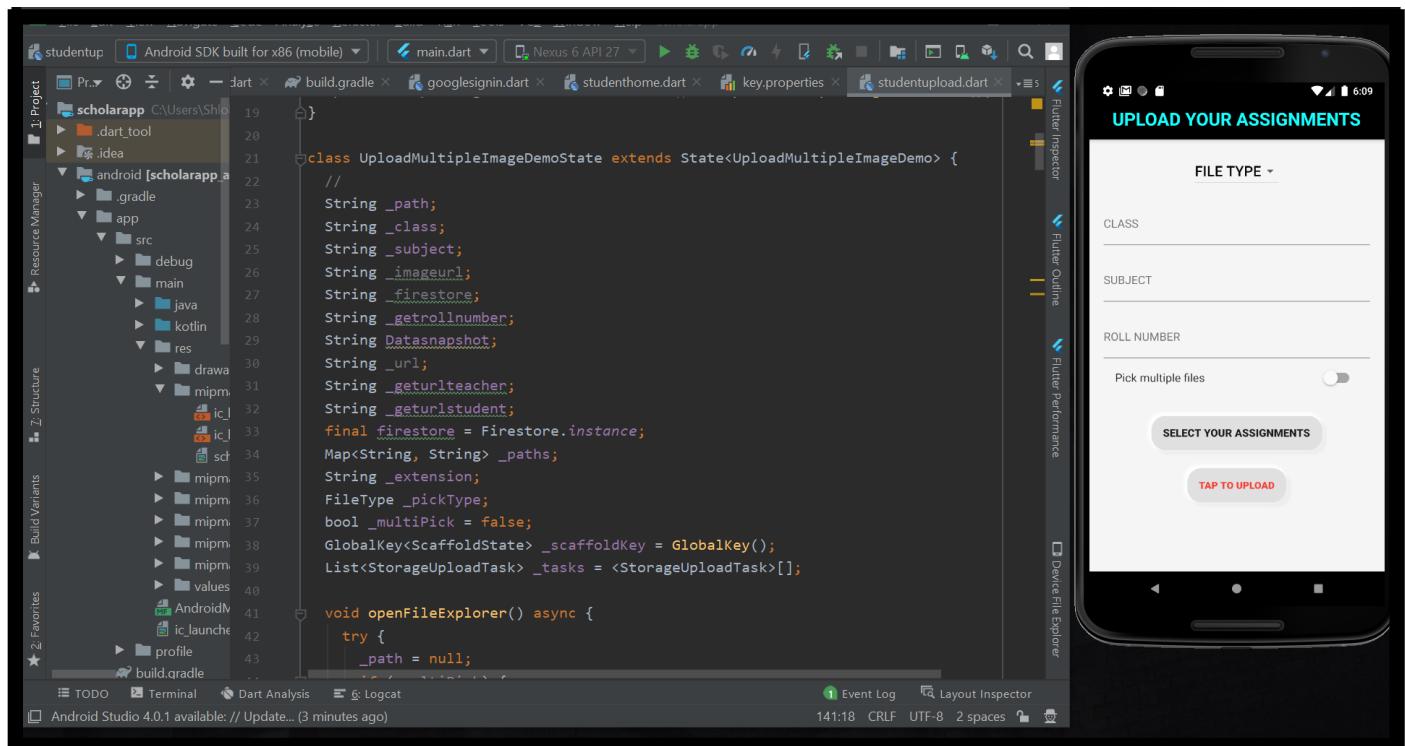
- <https://flutter.dev/docs>
- <https://firebase.google.com/>
- <https://github.com/flutter/flutter>
- <https://medium.com/flutter>
- <https://material.io/develop/flutter>

CHAPTER 5

ANNEXURE

5.1 Screenshots





The screenshot shows the Firebase Authentication console for the project "guruskool". The left sidebar includes links for Project Overview, Authentication (selected), Cloud Firestore, Realtime Database, Storage, Hosting, Functions, and Machine Learning. The main content area is titled "Authentication" and shows a table of users. The table has columns for Identifier, Providers, Created, Signed In, and User UID. Three users are listed:

Identifier	Providers	Created	Signed In	User UID
shlokkaushik23@gmail.com	G	Aug 11, 2020	Aug 15, 2020	UVOpQQN9OPaWJn0MJ9JXFkZt...
kaushikneha1609@gmail.com	G	Aug 11, 2020	Aug 11, 2020	WRUvy4k7MEP4I49i2eZohZJ2kA62
ashishsrawat98@gmail.com	G	Aug 11, 2020	Aug 15, 2020	z2rYNpJcfKZlq88MFQQSGZvzMm...

At the bottom right of the table, there are buttons for "Rows per page: 50", "1-3 of 3", and navigation arrows.

The screenshot shows the Cloud Firestore console for the project "guruskool". The left sidebar includes links for Project Overview, Authentication, Cloud Firestore (selected), Realtime Database, Storage, Hosting, Functions, and Machine Learning. The main content area is titled "Cloud Firestore" and shows a hierarchical view of data under the "student" collection. The "student" collection contains "teacher" and "users" documents. The "Class 10" collection is currently selected. On the right side, detailed information for the "Class 10" document is shown, including:

- Image URL: https://firebasestorage.googleapis.com/v0/b/guruskool-a9843.appspot.com/o/student%2FIMG_20160914_2300469e-43e1-811f-385764d3d3
- Roll Number: "Roll Number 24"
- Subject: "Chemistry"

The screenshot shows the Firebase Cloud Firestore interface. The left sidebar has 'Cloud Firestore' selected under 'Develop'. The main area shows a document structure under 'teacher':

- teacher / Class 10
 - student / Class 10
 - teacher / Class 8
 - users / Class 9

A detailed view of the 'teacher' document is shown on the right:

- Image: <https://firebasestorage.googleapis.com/v0/b/guruskool-a9843.appspot.com/o/teacher%2FScience-NcertSolutions-Chapter-8-Intext-page-107-1-1.jpg?alt=media&token=1e99edbc-6fb8-488e-8adc-d2ed64543bb8>
- Subject: "Chemistry"
- Teacher Name: "Teacher 3"

The screenshot shows the Firebase Storage interface. The left sidebar has 'Storage' selected under 'Develop'. The main area shows a list of files:

Name	Size	Type	Last modified
gs://guruskool-a9843.appspot.com			
student/	—	Folder	—
teacher/	—	Folder	—