MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Project Report

on

Internship Information Android App

Submitted By:

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0901CS191115

Faculty Mentor:

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE
GWALIOR - 474005 (MP) est. 1957

MAY-JUNE 2022

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A project report submitted in partial fulfilment of the requirement for the degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

Submitted by:

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CERTIFICATE

This is certified that **Shivam Sharma**(0901CS191115) has submitted the project report titled **Internship Information Android App** under the mentorship **Mr. Mir Shahnawaz Ahmad**, in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering from Madhav Institute of Technology and Science, Gwalior.

09/05/22

Mr. Mir Shahnawaz Ahmad
Faculty Mentor
Computer Science and Engineering

09/05/2022

Dr. Manish Dixit
Professor and Head
Computer Science and Engineering

Dr. Manish Dixit
Professor & HOD
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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

DECLARATION

I hereby declare that the work being presented in this project report, for the partial fulfilment of requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering at Madhav Institute of Technology & Science, Gwalior is an authenticated and original record of my work under the mentorship of **Mr. Mir Shahnawaz Ahmad** (Computer Science and Engineering).

I declare that I have not submitted the matter embodied in this report for the award of any degree or diploma anywhere else.

Shivam Sharma
0901CS191115
3rd Year
Computer Science and engineering

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

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I would sincerely like to thank my department, **Department of Computer Science and Engineering, for allowing** me to explore this project. I humbly thank **Dr. Manish Dixit**, Professor and Head, Department of Computer Science and Engineering, for his continued support during the course of this engagement, which eased the process and formalities involved.

I am sincerely thankful to my faculty mentors. I am grateful to the guidance of **Mr. Mir Shahnawaz Ahmad**, Computer Science and Engineering, for his continued support and guidance throughout the project. I am also very thankful to the faculty and staff of the department.

Shivam Sharma
0901CS191115
3rd Year
Computer Science and engineering

Abstract

The aim of this project is to circulate information regarding internship and college events. This application will be used to share information, without sharing personal details among students, or as a college notice board, and if further developed it has a potential to replace Moodle. This app deals with the problems of using "THIRD PARTY SOCIAL PLATFORMS", this application can create profiles, store media, share information at current level, but can be scaled to a very large level and used for college institution. Java is widely used language and is used in different applications across many systems, and as it is Object oriented it is close to real world, and hence it gives a very easy approach to solve real world problems in a proper way, which it did in the application. The user interface is easy to work with and is made like general social media platforms and can be understood easily. This application contains many features and many more can be added easily.

सार

इस परियोजना का उद्देश्य इंटर्नशिप और कॉलेज की घटनाओं के बारे में जानकारी प्रसारित करना है। इस एप्लिकेशन का उपयोग छात्रों के बीच व्यक्तिगत विवरण साझा किए बिना, या कॉलेज नोटिस बोर्ड के रूप में जानकारी साझा करने के लिए किया जाएगा, और यदि इसे और विकसित किया जाता है तो इसमें मूडल को बदलने की क्षमता होती है। यह ऐप "थर्ड पार्टी सोशल प्लेटफॉर्म" का उपयोग करने की समस्याओं से संबंधित है, यह एप्लिकेशन प्रोफाइल बना सकता है, मीडिया स्टोर कर सकता है, वर्तमान स्तर पर जानकारी साझा कर सकता है, लेकिन इसे बहुत बड़े स्तर तक बढ़ाया जा सकता है और कॉलेज संस्थान के लिए उपयोग किया जा सकता है। जावा व्यापक रूप से उपयोग की जाने वाली भाषा है और इसका उपयोग कई प्रणालियों में विभिन्न अनुप्रयोगों में किया जाता है, और चूंकि यह वस्तु उन्मुख है, यह वास्तविक दुनिया के करीब है, और इसलिए यह वास्तविक दुनिया की समस्याओं को उचित तरीके से हल करने के लिए एक बहुत ही आसान दृष्टिकोण देता है, जो उसने किया आवेदन पत्र। यूजर इंटरफेस के साथ काम करना आसान है और इसे सामान्य सोशल मीडिया प्लेटफॉर्म की तरह बनाया गया है और इसे आसानी से समझा जा सकता है। इस एप्लिकेशन में कई विशेषताएं हैं और कई और आसानी से जोड़े जा सकते हैं।

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CHAPTER 1: PROJECT OVERVIEW

1.1 Technology Used

Software-_ Android Studio BumbleBee.

Lnaguage used – Java , Xml ,JSON.

DataBase used –FireBase database (Real time database , Storage).

1.2 Android Studio BumbleBee

Android Studio is Android's official IDE. It is purpose-built for Android to accelerate your development and help you build the highest-quality apps for every Android device.

Features

1. **Layout Editor -**When working with XML layout files, Android Studio provides a drag-and-drop visual editor that makes it easier than ever to create a new layout. The Layout Editor was built in unison with the ConstraintLayout API, so you can quickly build a layout that adapts to different screen sizes by dragging views into place and then adding layout constraints with just a few clicks.

2. **APK Analyzer -**You can use the APK Analyzer to easily inspect the contents of your APK. It reveals the size of each component so you can identify ways to reduce the overall APK size. It also allows you to preview packaged assets, inspect the DEX files to troubleshoot multidex issues, and compare the differences between two APKs.

3. **Vector Asset Studio-_**Android Studio makes it easy to create a new image asset for every density size. With Vector Asset Studio, you can select from Google-provided material design icons or import an SVG or PSD file. Vector Asset Studio can also generate bitmap files for each screen density to support older versions of Android that don't support the Android vector drawable format.

4. **Translations Editor -** The Translations Editor gives you a single view of all of your translated resources, making it easy to change or add translations, and to find missing translations without opening each version of the strings.xml file. It even provides a link to order translation services.

1.3 Java

In this project java is used for Backend.

What is Java technology and why do I need it?

Java is a programming language and computing platform first released by Sun Microsystems in 1995. It has evolved from humble beginnings to power a large share of today's digital world, by providing the reliable platform upon which many services and applications are built. New, innovative products and digital services designed for the future continue to rely on Java, as well.

There are many applications and even some websites that will not function unless you have Java installed. Java.com, this website, is intended for consumers who require Java for their desktop applications – specifically applications targeting Java 8. Developers as well as users that would like to learn Java programming should visit the dev.java website instead and business users should visit oracle.com/java for more information.

Is Java free to download?

Yes, Java is free to download for personal use. Get the latest version at java.com.
Java is also free for development: developers can find all the development kits and other useful tools at https://www.oracle.com/javadownload/.

Why should I upgrade to the latest Java patch each quarter when prompted?

The latest Java patches contain important enhancements to improve performance, stability and security of the Java applications that run on your machine. Installing these updates will ensure that your Java applications continue to run with the most up-to-date version.

1.4 XML (Extensible Markup Language)

Used for front end of project.

XML (Extensible Markup Language) is a markup language similar to HTML, but without predefined tags to use. Instead, you define your own tags designed specifically for your needs. This is a powerful way to store data in a format that can be stored, searched, and shared. Most importantly, since the fundamental format of XML is standardized, if you share or transmit XML across systems or platforms, either locally or over the internet, the recipient can still parse the data due to the standardized XML syntax.

Basics of User Interface (UI)

Basically, in Android XML is used to implement the UI-related data. So understanding the core part of the UI interface with respect to XML is important. The User Interface for an Android App is built as the hierarchy of main layouts, widgets. The layouts are View Group objects or containers that control how the child view should be positioned on the screen. Widgets here are view objects, such as Buttons and text boxes. Considering the following simple example of the activity_main.xml file.

1.5 JSON

JSON (JavaScript Object Notation) is a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate. It is based on a subset of the JavaScript Programming Language Standard ECMA-262 3rd Edition - December 1999. JSON is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, Python, and many others. These properties make JSON an ideal data-interchange language.

JSON is built on two structures:

A collection of name/value pairs. In various languages, this is realized as an object, record, struct, dictionary, hash table, keyed list, or associative array.
An ordered list of values. In most languages, this is realized as an array, vector, list, or sequence.

1.6 FireBase Database

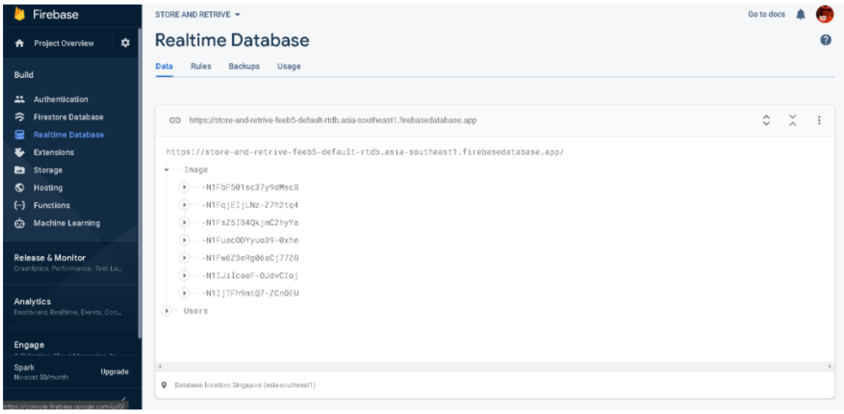
The Firebase Realtime Database is a cloud-hosted database. Data is stored as JSON and synchronized in Realtime to every connected client. When you build cross-platform apps with our Apple platforms, Android, and JavaScript SDKs, all of your clients share one Realtime Database instance and automatically receive updates with the newest data.

How does it work?

The Firebase Realtime Database lets you build rich, collaborative applications by allowing secure access to the database directly from client-side code. Data is persisted locally, and even while offline, Realtime events continue to fire, giving the end user a responsive experience. When the device regains connection, the Realtime Database synchronizes the local data changes with the remote updates that occurred while the client was offline, merging any conflicts automatically.

The Realtime Database provides a flexible, expression-based rules language, called Firebase Realtime Database Security Rules, to define how your data should be structured and when data can be read from or written to. When integrated with Firebase Authentication, developers can define who has access to what data, and how they can access it.

The Realtime Database is a NoSQL database and as such has different optimizations and functionality compared to a relational database. The Realtime Database API is designed to only allow operations that can be executed quickly. This enables you to build a great Realtime experience that can serve millions of users without compromising on responsiveness. Because of this, it is important to think about how users need to access your data and then structure it accordingly.



https://store-and-retrive-feeb5-default-rtdb.asia-southeast1.firebasedatabase.app

```
https://store-and-retrive-feeb5-default-rtdb.asia-southeast1.firebasedatabase.app/
 - Image
    -N1FbF501sc37y9dMscB
    -N1FqjEIjLNz-Z7h2tq4
    -N1FsZ5IB4QkjmC2hyYa
    -N1FuacODYyuo39-0xhe
    -N1Fw6Z3eRg06aCj77ZG
    -N1IJilcaeF-OJdvCIoj
    -N1IjTFh9mtQ7-ZCnOEU
 Users
```

Database location: Singapore (asia-southeast1)

Fig 1.6.1 Realtime DataBase

CHAPTER 2: LITERATURE REVIEW

Generally, we don't have proper vigilance about internship so we miss out on opportunities, hence this application can help in circulation of information.

Android App - This app has 3 Main Activities, and 3 main Fragments.

2.1 What are Activities?

If you have worked with C, C++ or Java programming language then you must have seen that your program starts from main() function. Very similar way, Android system initiates its program with in an Activity starting with a call on onCreate() callback method. There is a sequence of callback methods that start up an activity and a sequence of callback methods that tear down an activity as shown in the below Activity life cycle diagram: (image courtesy : android.com).

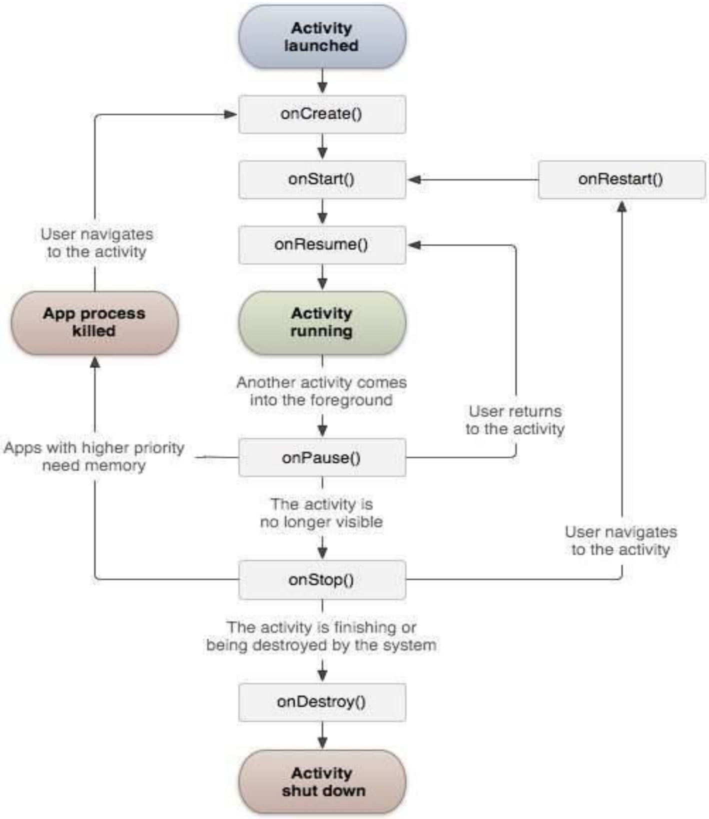

Activity launched
onCreate()
onStart()
onRestart()
User navigates to the activity
onResume()
App process killed
Activity running
Another activity comes into the foreground
User returns to the activity
Apps with higher priority need memory
onPause()
The activity is no longer visible
User navigates to the activity
onStop()
The activity is finishing or being destroyed by the system
onDestroy()
Activity shut down

Fig 2.1.1 Activity Cycle

2.2 What are Fragments?

A **Fragment** is a piece of an activity which enable more modular activity design. It will not be wrong if we say, a fragment is a kind of **sub-activity**.

Fragment Life Cycle

Android fragments have their own life cycle very similar to an android activity. This section briefs different stages of its life cycle.

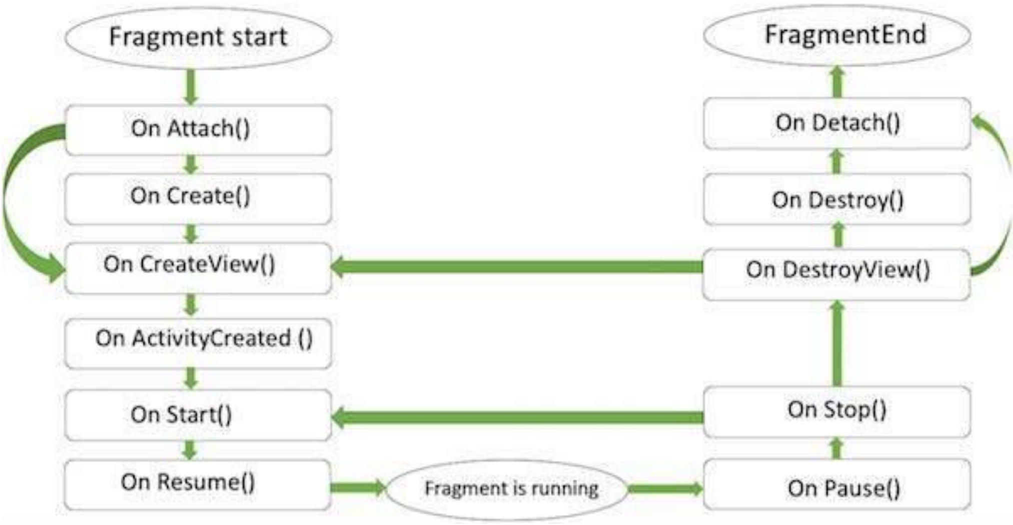


Fig 2.2.1 Fragment Life Cycle

<u>Following are important points about fragment −</u>

A fragment has its own layout and its own behaviour with its own life cycle callbacks.

You can add or remove fragments in an activity while the activity is running.

You can combine multiple fragments in a single activity to build a multi-pane UI.

A fragment can be used in multiple activities.

Fragment life cycle is closely related to the life cycle of its host activity which means when the activity is paused, all the fragments available in the activity will also be stopped.

2.3 Emulator

The Android emulator is an Android Virtual Device (AVD), which represents a specific Android device. We can use the Android emulator as a target device to execute and test our Android application on our PC. The Android emulator provides almost all the functionality of a real device. We can get the incoming phone calls and text messages. It also gives the location of the device and simulates different network speeds.

CHAPTER 3: PRELIMINARY DESIGN

In this project emulator used is Pixel 5 API 30.

3.1 First Activity(Login)

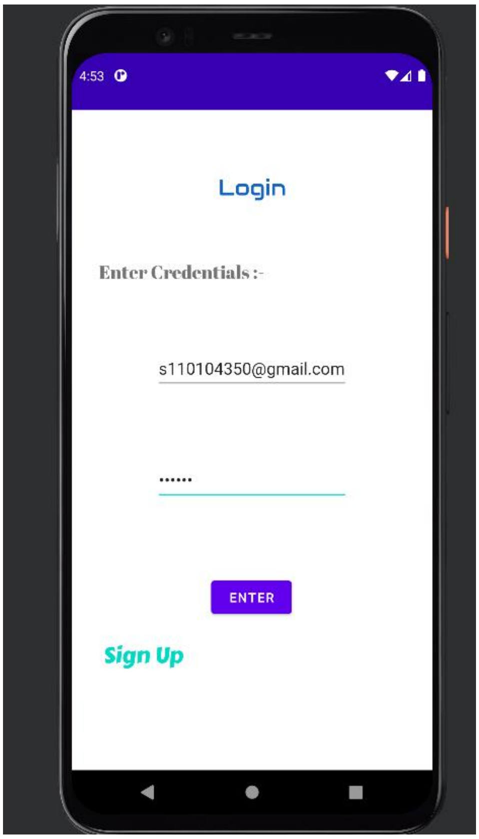


Fig 3.1.1 Login Fragment

When you open the app you land on this page, this is the first activity. You can use your login credentials to login in this activity after logging in , you move to another activity in this activity you can also sign up by using the sign up button .Once you press the sign up button you will move to another activity which lets you sign up to this app. If you are already registered in this application you just enter your authenticated credentials and you will enter to the next activity.

Some features of this activity are

1. Only authenticated email IDs are allowed which are already registered so no fake IDs will be entered into the main activity enhance ensures privacy in security

2. Another feature is it matches the password with authenticated user so only the person with correct email ID and password can login into the main activity it uses firebase database to retrieve the saved path password and it is encrypted so password cannot be seen by the coder so you can ensure that no one is looking into your passwords.

3. Once you login the progress circle starts revolving so it gives you an impression that the process has started and after you successfully login there will be a toast message mentioning that You have been successfully logged in or login successful.

3.2 Second Activity (Sign up)

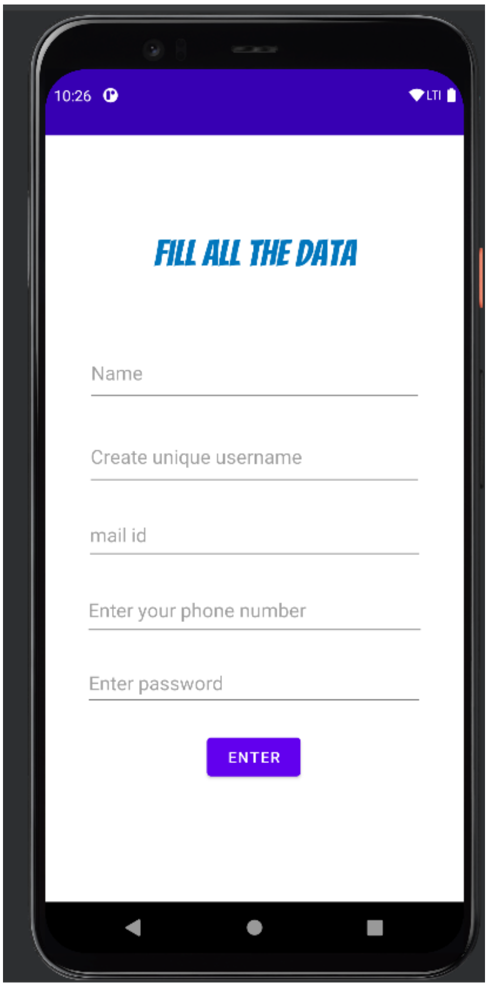
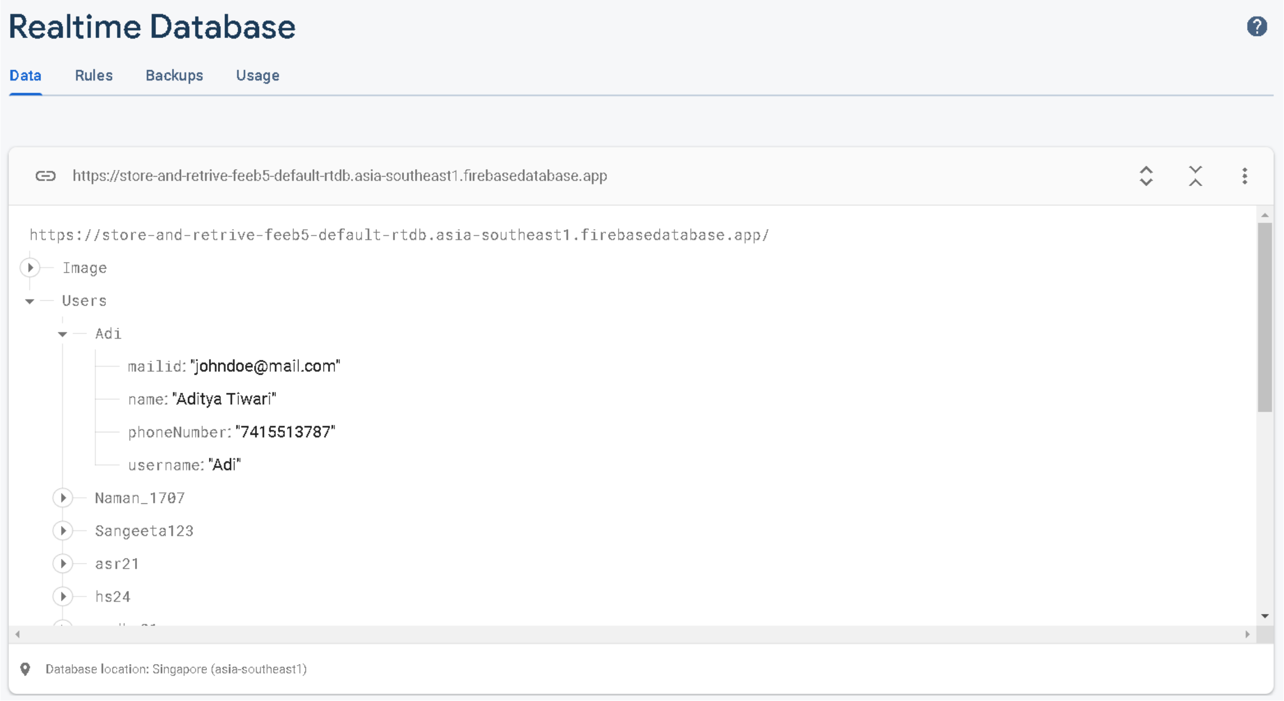


Fig 3.2.1 SignUp Fragment

This is the second activity, in this activity you can fill your data to create an account in this application. The required field Sir name which takes a string value, unique username that will represent your account when you post something, your mail ID which can be authenticated leader but this is not done in this application, your phone number and this can also be used for authentication which is not used in this application but can be implemented, and a strong password which is longer than 6 characters and it is checked when you enter your password so it helps the user to choose a strong password which cannot be cracked or hacked easily.

In this activity after you press enter your account will be created in the firebase database in the Json format in which your unique username will be used as the node. Interest information will also be saved in the form of child nodes in username.

The format of Jason is shown below: -



https://store-and-retrive-feeb5-default-rtdb.asia-southeast1.firebasedatabase.app

```
https://store-and-retrive-feeb5-default-rtdb.asia-southeast1.firebasedatabase.app/
  Image
  Users
    Adi
      mailid: "johndoe@mail.com"
      name: "Aditya Tiwari"
      phoneNumber: "7415513787"
      username: "Adi"
    Naman_1707
    Sangeeta123
    asr21
    hs24
```

Database location: Singapore (asia-southeast1)

Fig 3.2.2 Users Data

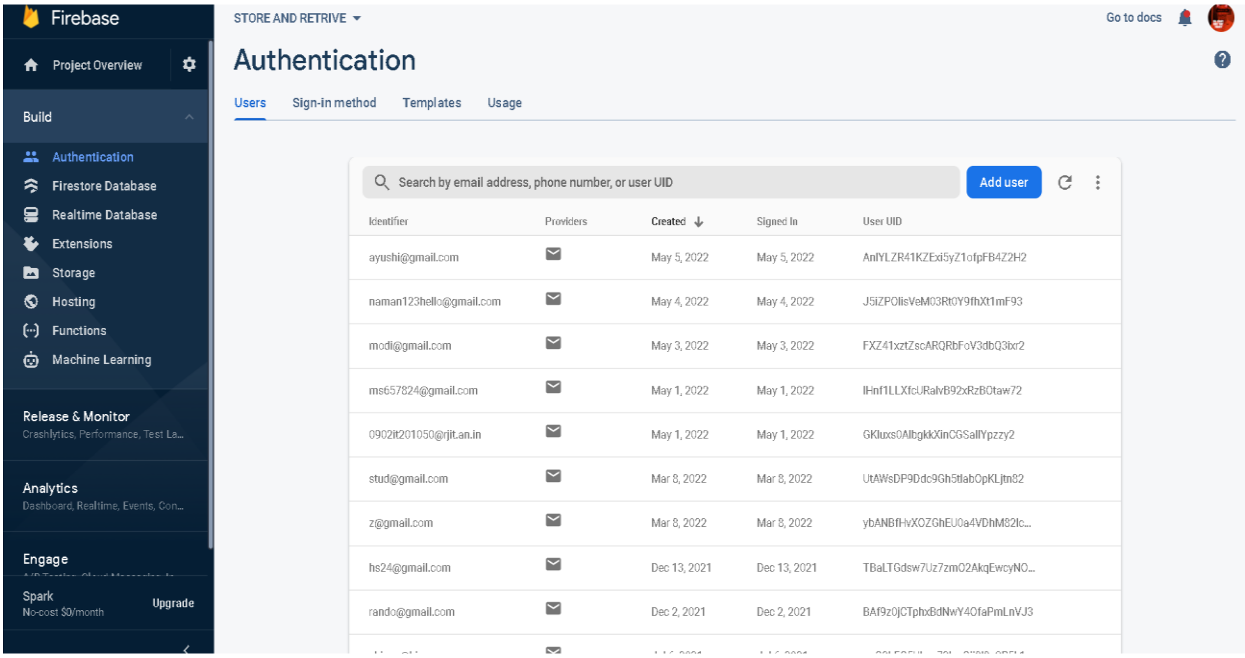
This is the real time database, which uses usernames as nodes send name phone number mail ID as child nodes.

It also stores the authenticated email addresses and user ID of the people who registered on this app and only authenticated users are administered in the following app so that they can login again with their credentials.

This is the place where the registered user’s passwords are safe and cannot be seen by the coder.

This helps in account fragment when a user is logged in we can identify that it is a authenticated user by using the user ID.

Below is the image of how the user ID stored in the database: -



Authentication

Identifier	Providers	Created	Signed In	User UID
ayushi@gmail.com	✉	May 5, 2022	May 5, 2022	AnIYLZR41KZExi5yZ1ofpFB4Z2H2
naman123hello@gmail.com	✉	May 4, 2022	May 4, 2022	J5iZPOlisVeM03Rt0Y9fhXt1mF93
modi@gmail.com	✉	May 3, 2022	May 3, 2022	FXZ41xztZscARQRbFoV3dbQ3ixr2
ms657824@gmail.com	✉	May 1, 2022	May 1, 2022	IHnf1LLXfcURalvB92xRzBOtaw72
0902it201050@rjit.an.in	✉	May 1, 2022	May 1, 2022	GKluxs0AlbgkkXinCGSallYpzzy2
stud@gmail.com	✉	Mar 8, 2022	Mar 8, 2022	UtAWsDP9Ddc9Gh5tlabOpKLjtn82
z@gmail.com	✉	Mar 8, 2022	Mar 8, 2022	ybANBfHvXOZGhEU0a4VDhM82lc...
hs24@gmail.com	✉	Dec 13, 2021	Dec 13, 2021	TBaLTGdsw7Uz7zmO2AkqEwcyNO...
rando@gmail.com	✉	Dec 2, 2021	Dec 2, 2021	BAf9z0jCTphxBdNwY4OfaPmLnVJ3

Fig 3.2.3 Users Authentication Data

It also stores the date on which user created account and signed in.
It uses a function called firebase authentication which will be further used in account fragment to check authenticated user.

Once you press the enter button you will be forward it to the main activity login activity and there you can login with your credentials you just entered.

3.3 3rd Activity (with 3 fragments)

The main activity 3 contains 3 fragments which are

1. Home fragment
2. Add fragment
3. Account fragment

3.3.1 fragment

When you log in you end up on this page this page contains all the previous posts and the new post which you will upload through your mobile in a recycler view all the authenticated users will able to see public posts with description text (Not added because of time crunch).

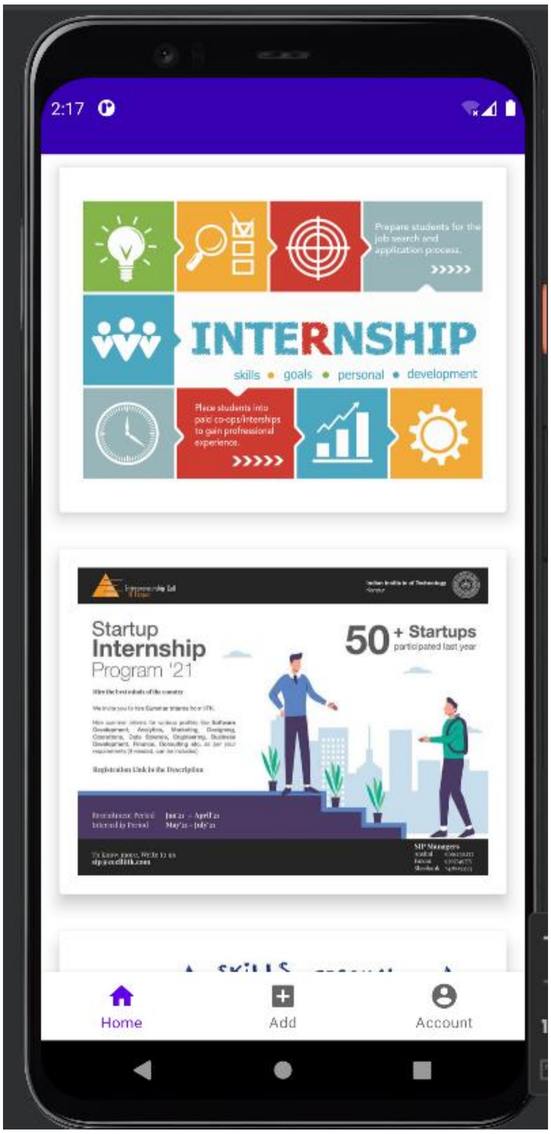

2:17
Prepare students for the job search and application process.
INTERNSHIP
skills • goals • personal • development
Place students into paid co-ops/internships to gain professional experience.
Startup Internship Program '21
50+ Startups participated last year
Home
Add
Account

Fig 3.3.1.1 Home Fragment

The bottom 3 buttons are given for navigation for different fragments.

3.3.2 Add fragment

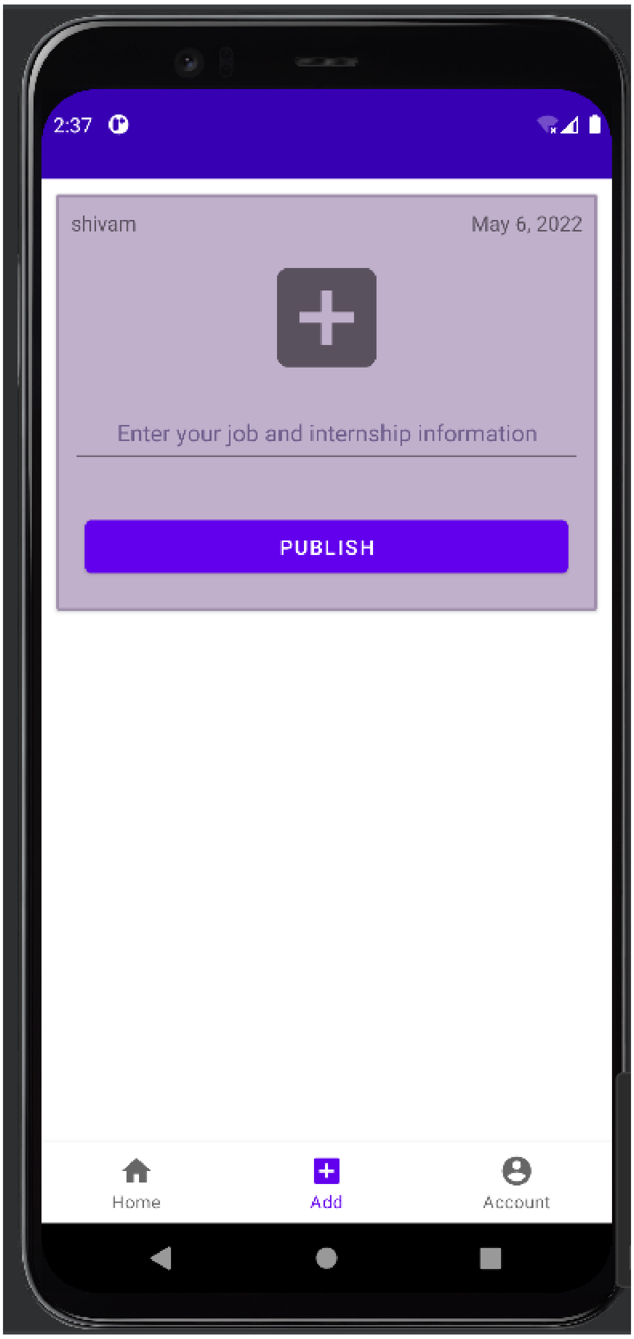
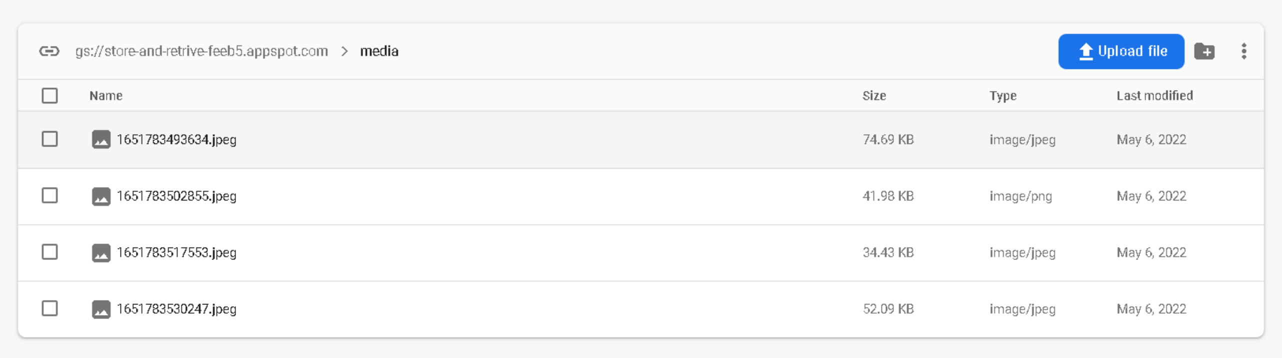


Fig 3.3.2.1 Add Fragment

This fragment shows the name of the user and the date on which you are uploading the post on clicking the plus symbol it will open your file management system and you can select an image from your mobile phone which you want to upload with your text description. Once you are happy with your image and your text you can click on publish and it will upload the image to the fire base storage. A user can upload multiple images, but one at a time. As soon as you publish your post it will automatically be added to home fragment where all the authenticated users can access your post and grab the information they require.

The images are stored in the fire base storage in the media folder with the profile images folder with access key and accessed by glide library to retrieve images.

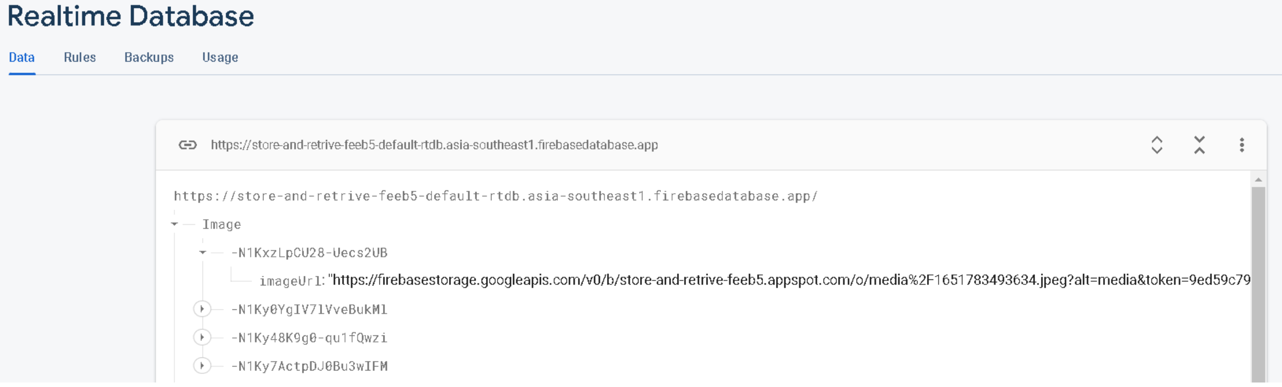


gs://store-and-retrive-feeb5.appspot.com > media

□	Name	Size	Type	Last modified
□	1651783493634.jpeg	74.69 KB	image/jpeg	May 6, 2022
□	1651783502855.jpeg	41.98 KB	image/png	May 6, 2022
□	1651783517553.jpeg	34.43 KB	image/jpeg	May 6, 2022
□	1651783530247.jpeg	52.09 KB	image/jpeg	May 6, 2022

Fig 3.3.2.1 Media Database

The published posts links are stored in this way in real time database which are then fetched by home fragment (to retrieve) and show to the user.

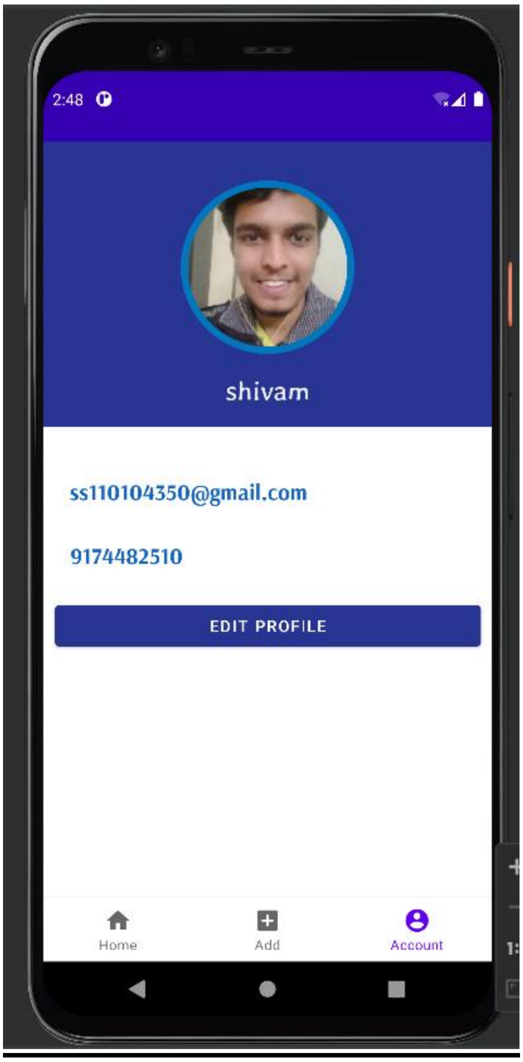


https://store-and-retrive-feeb5-default-rtdb.asia-southeast1.firebasedatabase.app

```
https://store-and-retrive-feeb5-default-rtdb.asia-southeast1.firebasedatabase.app/
Image
    -N1KxzLpCU28-Uecs2UB
        imageUrl: "https://firebasestorage.googleapis.com/v0/b/store-and-retrive-feeb5.appspot.com/o/media%2F1651783493634.jpeg?alt=media&token=9ed59c79
    -N1Ky0YgIV7lVveBukMl
    -N1Ky48K9g0-qu1fQwzi
    -N1Ky7ActpDJ0Bu3wIFM
```

Fig 3.3.2.1 Realtime Database Image URL

3.3.3 Account Fragment



2:48

shivam

ss110104350@gmail.com

9174482510

Fig 3.3.3.1 Account Fragment

This is account fragment and it shows the information of your account that you created for instance it will show a user’s email ID and phone number and it also provides with edit profile option (which is not added due to time crunch). You can click on the profile icon and choose to take a photo for your profile picture and set it as your profile picture only you can see that picture. The image is saved in the firebase database with the user ID and every time a user enters his account his profile image will be present there. A feature that was to be added here is whenever someone post something their profile picture may appear with their post but that was not added.

CHAPTER 4: FINAL ANALYSIS AND DESIGN

4.1 Result

Information can be shared easily, safely and quickly with native mobile applications like this. Software like this can be used as information spreader among college students so that they don’t miss out on important opportunities which are present in college. And get notified time to time about new happenings in college through a single application in their phone.

4.2 Application

1.Replacement of Moodle, that is, as a college level application.

2.Social platform for college students.

3.Information sharing app for sharing information about internships, placements and job related stuff and all the alumini can register and post stuff for junior students .

4. Sharing Class notes and online notice board for individual classes.

4.3 Problems faced:-

1. Many errors in fragments, it’s a very complex system and a good knowledge of java and android studio in general is required.

2. Long time for writing a code and simple features in java need very long hours of time to implement.

3. Sometimes a new feature can cause the whole application to stop working, and its very time consuming.

4. Continuous internet is required and a good system (computer) is required to build the project faster. Which are costly.

5. Long hours for coding and debugging is required for projects like this.

6. Demotivation hits every time compilation error persists for long. And those errors are not shown by system.

4.4 Limitation

1. The free database provided by google has limited storage so we have to buy some storage if more active users are presents.

2. Due to lack of knowledge and source material in this field implementing of small features require a lot time.

3. Storage effectiveness is very hard to achieve because most of the libraries import a lot of things which are not required.

4. To make application faster is difficult.

5. A lot of man power is required for building a complete application.

CHAPTER 5: CONCLUSION

5.1 Conclusion: - A native java application can provide more features for implementation of the program. Like for this application, internship and college event information can be shared very easily and effectively by an android application. Giving access to authenticated users can help us to share information to selected people better, faster. This project is very scalable and with more time and effort this can be helpful to many colleges which do not have funds to afford systems like Moodle system.

5.2 Hidden features

1. The profile pictures which are uploaded are compressed before uploading and are hence faster to load.
2. The pictures uploaded by users are stored in original quality with glide library and hence their quality is not reduced.
3. Unique username for every new user.

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