NSBM Green University

Faculty of Computing

Management Information Systems, Software Engineering,

& Computer Science

SE 303.3

Mobile Application Development

Module Lecturer: Dr. Pulasthi Gunawardane

StudyStream E-Learning Mobile App

Group Members

BAAV KARUNATHILAKE – 20895

RD MALLIKARACHCHI – 21377

DTA EDIRISINGHE – 21842

KMK CHAMIKA – 21237

WMBN WIJEKOON – 21546

MDIY GUNASEKARA – 21228

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Acknowledgment

The author and team take this opportunity to recognize the support given by course facilitators for making our project successful. Firstly, the National School of Business Management of Sri Lanka for providing with us this opportunity to design a LMS mobile application for the university.

We make this an occasion to give our heartiest gratitude to Dr. Pulasthi who guided us, supported us, encouraged us to complete this project with great satisfaction, and helped us understand the academic content of this study.

Also, the author would render his sincere appreciation to our project team for understanding, facilitating, and encouraging us throughout the academic coursework of the mobile application development module and for being a strength during the project in completing this project successfully.

Introduction

With the invention of technology and the advancement of mobile devices, people used to fulfill most of their needs through smartphones and mobile apps. Currently, over Seven million mobile apps are used all over the world. In the modern world using mobile applications for everything became a habit for a one-year-old child to a ninety-year-old person. Hence, in this report, the author and the team make a great effort to develop a Learning and Management Systems mobile application for one of the most reputed universities in Sri Lanka.

This LMS mobile application focuses on providing access and a better customer experience for students, lecturers, and administrative persons. When it comes to the university context all the interfaces, designs, and structures are designed and developed by aiming at the above-mentioned focus groups. Hence, the LMS is fulfilling all the requirements of these focus groups.

The author and the team conducted effective research on these focus groups to identify and understand their needs and the purpose of using this LMS. The observation and interviews with lecturers and the admins helped to come up with the most effective and productive mobile app for the university. The team used standard tools and programming languages to develop this application. Furthermore, the author and the team tend to discuss the scope, the fulfillment of the system requirements, and more details about the implementation of the application within this report.

Executive Summary

The main objective of our project is to create a mobile-based Learning Management System (LMS) that allows students access to lecture materials, lecture schedules, and exam/assignment results for each module. We have kept the user's demands, context, and content foremost throughout the project to provide a user-centric approach. We aim to develop a mobile app that efficiently serves lecturers and students by putting our expertise in mobile design, interface design, and information architecture to use.

The outcome of the project is an intuitive application with four pages, including the login page and simple navigation made possible by buttons that take users back to the home page or the next relevant page. To structure the app's material logically, we used an effective information architecture, distinct pages for content and navigation, original images or graphics, buttons for easy interaction, along with various design components.

By completing this project, we aspire to develop an intuitive mobile app that improves learning for students and lecturers alike. An app that fosters usability and engagement will be produced due to our attention to understanding user requirements and successfully structuring material. We aim to create an app that enables students to access lecture materials, keep up with current schedules, and successfully track their academic progress via mobile design concepts, interface design, and information architecture.

1. Introduction to the Mobile App

This mobile-based application is designed to make each module's exam/assignment grades and lecture materials easily accessible. We developed a user-centric application that benefits both lecturers and students by considering our users' requirements, context, and content.

Mobile devices have become essential to our lives in today's fast-paced world, providing convenience and accessibility. Recognizing this, we designed a mobile app that allows students to stay connected to their academic materials and progress from anywhere. We designed an intuitive and engaging user experience by emphasizing mobile design, interface design, and information architecture.

Our mobile app's major goal is to provide students with quick and easy access to lecture materials. Over are the times of carrying heavy textbooks or hunting for class notes. Students may use the app to browse and download lecture materials, allowing them to review and study course topics at their speed. Everything is simply a few taps away, whether it's lecture slides, handouts, or further resources.

Our mobile app is made up of four pages, one of which is a login page, to ensure an intuitive user interface. Users can easily browse because of the clarity and simplicity with which each page has been developed. The existence of buttons on each page makes it simple for users to go back to the home page or the next page, improving user flow overall.

The design components include creating specific pages for various content areas, adding unique graphics or images to improve the appearance, and using buttons to make navigating simple. In addition, we have developed a strong information architecture to logically arrange and facilitate user access to the app's content.

In conclusion, this mobile app is a detailed and intuitive Learning Management System (LMS) created to satisfy the requirements of nowadays students. We intend to offer a seamless learning experience by utilizing information architecture, interface design, and mobile design concepts. Our app helps students' educational journey and promotes academic achievement by giving them rapid access to lecture materials, schedules, and exam results.

StudyStream LMS Mobile APP project file

https://github.com/Ravindu15624/StudyStream_LMS_MobileApp.git

2. Project Scope

When it comes to the scope of this application, the author and team were able to identify a few narrow scopes and wide scopes. Therefore, the following processes are taking place within the university. Hence, the end users will be students, lecturers, and administrators. Moreover, the following processes are performed by mentioned actors,

1. Uploading lecture materials.
2. Downloading lecture materials.
3. Scheduling lectures and exams.
4. Keeping track of examinations and assignments
5. Keeping track of user profile

To enhance user experience and deliver the best services for the stakeholders the author and the team developed a mobile-based LMS application for this university.

The author and the team understand the participants' behaviors of this application. Therefore, this process starts with the login to the application. The lecturer and the student will direct to different home interfaces based on their credentials. Lecturers can perform updating the lecture schedule, upload lecture materials, and grade students' assignments. A student, can download lecture materials, access the lecture and exam schedule, and upload their coursework. Admins can perform some administrative work such as sharing, printing lectures, exam schedules, etc.

The application ends with logging out of the application.

The author emphasizes the fulfillment of the following requirements aligned to the scope with the examples of the LMS mobile application.

Requirements:

User Authentication - Students should be able to access their accounts through the app's secure login screen by entering their login credentials. As a result, the app's functionalities are only accessible to authorized users.

Security and Privacy - The security and privacy of the user data should be given top priority by the app. To maintain the confidentiality and integrity of user data, it should be put into place procedures including secure storage of user information, encrypted communication, and compliance with privacy regulations.

Lecture Materials Access - Students should be able to access their course materials using the app's user-friendly design. This can have any materials given by the lecturers, such as papers, digital media, or lecture slides. The resources must be conveniently available for offline use and well-organized.

Lecture Schedule Display - The app requires the user to provide an entire and current lecture schedule, complete with dates, times, and venues. To keep students informed about upcoming lectures or schedule alterations, it should also enable them to read any updates or announcements made by lecturers.

Exam/Assignment Tracking - Students should be able to check their exam and assignment grades for each module using the app. Students should be able to track their academic progress and identify areas for progress with the help of an accurate representation of their performance and progress.

Intuitive Navigation - There should be a button that takes visitors return to the home page or as the next page on every page of the app, even the login page. This guarantees a simple user interface, enabling students to move about the program with ease.

Mobile Design and Interface - The app should be mobile device optimized, taking into account elements like screen size, touch interaction, and general responsiveness. It ought to be a visually appealing and intuitive design that improves user interaction and increases engagement.

Original Graphics and Images - The app could include unique graphics or images to improve the visual appeal and establish an engaging environment. The visuals must be appropriate to the content and support the users' effective comprehension.

Information Architecture - The app's substance should be structured to make it simple for students to find what they're searching for. A well-designed information architecture ensures proper categorization and organization of lectures, materials, schedules, and grades.

Scalability and Performance - The functionality of the app should be optimized to manage a big volume of users and content. It should be flexible to support growth and upgrades in the future, delivering an intuitive interface even as the number of users increases.

3. Mobile interfaces with description

Opening Interface

The Opening interface of the mobile app. If you are a new user, you can simply click on the GET STARTED button to redirect to the Sign-up page or if you are an existing user of the study Stream mobile app you can click on the LOGIN button to redirect to the LOGIN interface.

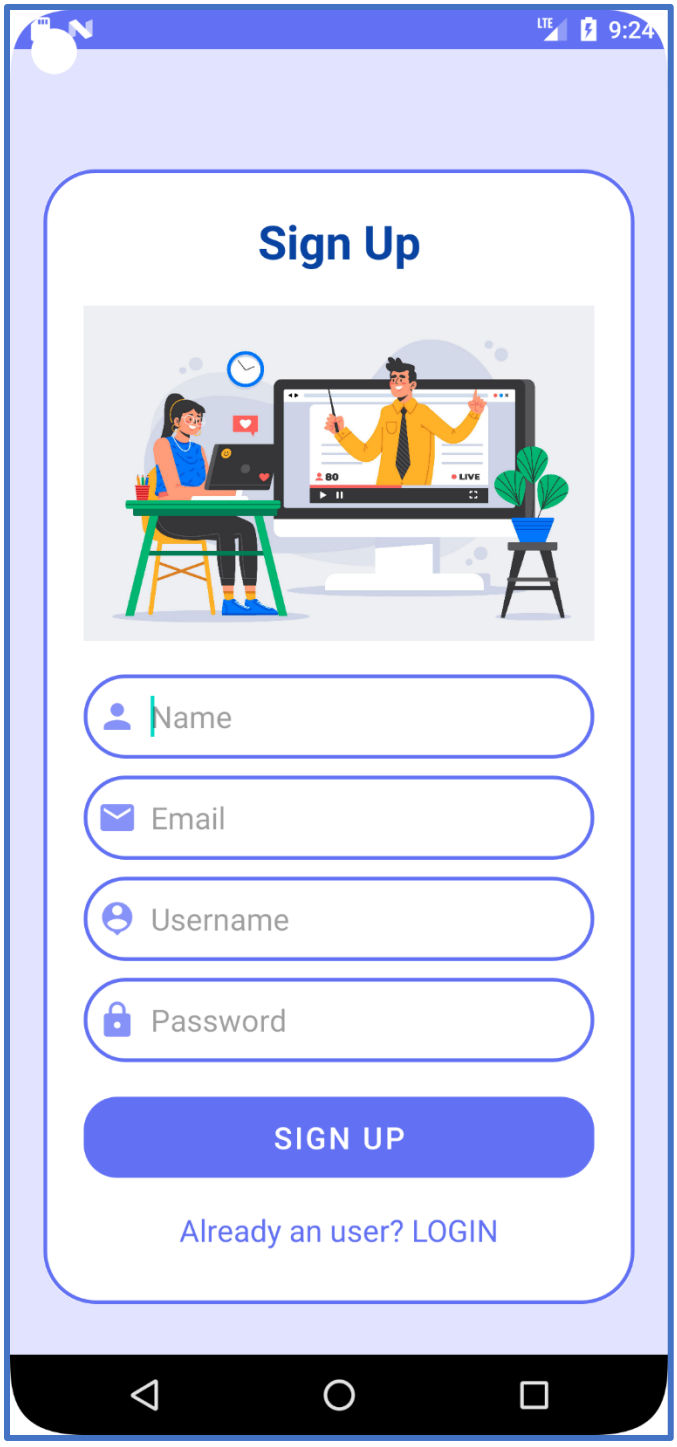
Issues:

When inserting high-resolution images, occurs an error called "Canvas trying to draw too large bitmap".

To solve this issue the author and the team enabled the large heap access in the android manifest.

android:largeHeap="true"

android:supportsRtl="true"



Sign Up Interface

This is the signup interface. If you are not an existing user, you can easily signup up by filling out this form. The form will store user details in a Realtime database through google firebase.

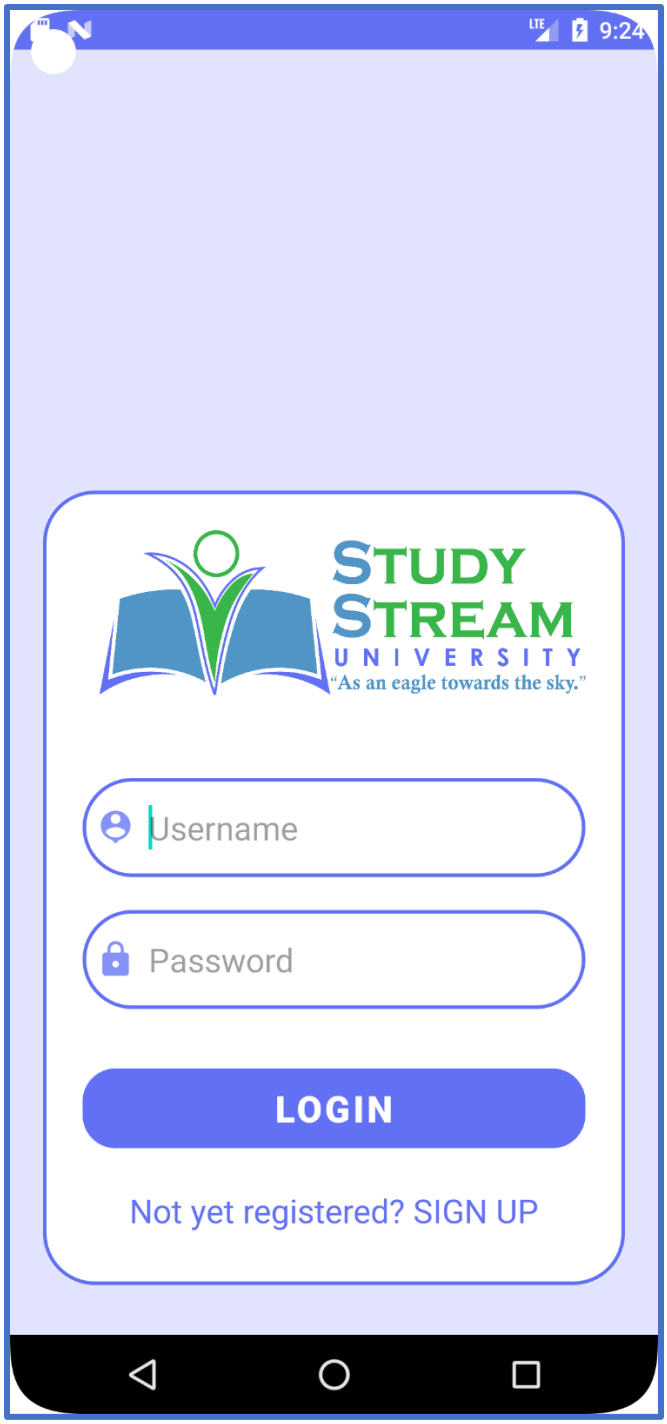
Issues:

Because of a virtual emulator bug, the signup form did not work. The user details did not store inside the real-time database of google firebase.

D/NetworkSecurityConfig: No Network Security Config specified, using platform default.

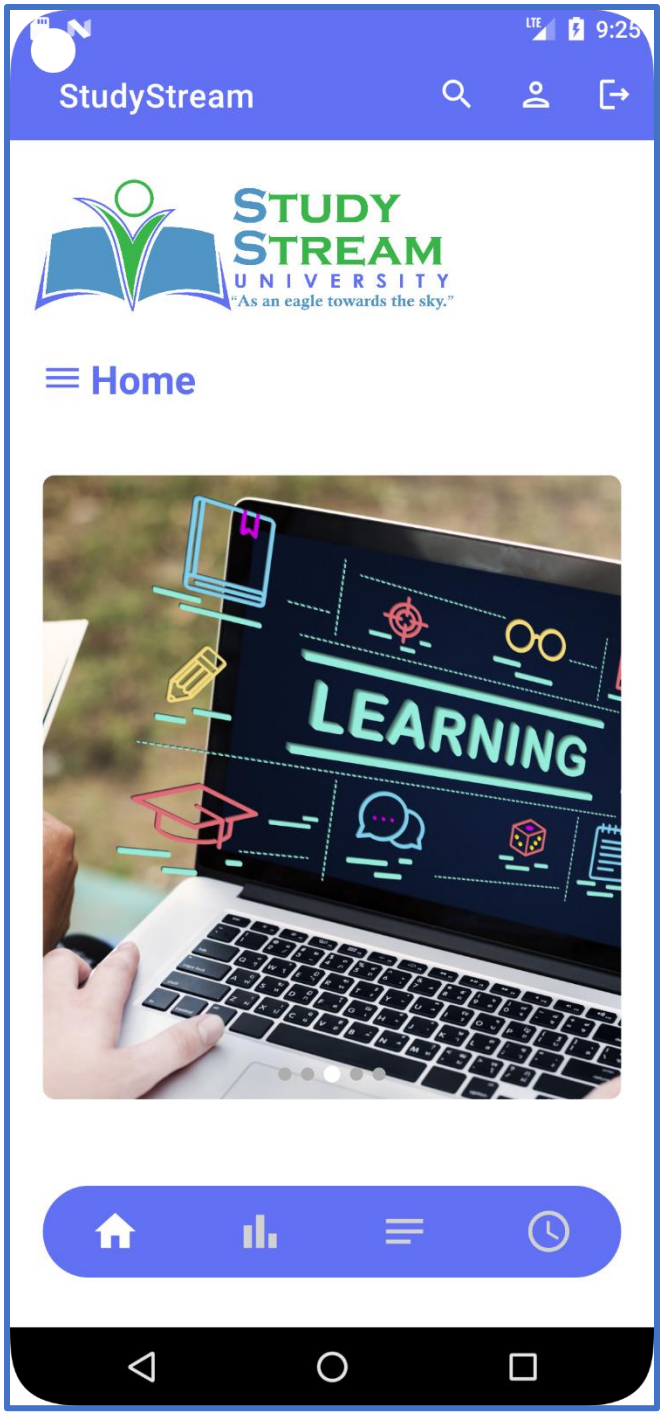
The above error occurred when signing up through the form. Because of that user could not log in to the mobile app.

By stopping AVD in the emulator and wiping data, the author and the team rebooted the device. Then the bug was fixed, and the emulator worked successfully.



Login Interface

This is the login interface of the StudyStream mobile app. When a user signed up with Studystream they can fill in their credentials through this form. The form will check the user credentials from the real-time database through google firebase. If the user credentials are correct, the user can redirect to the home interface of the mobile app, or if the credentials are incorrect or do not match the database details, the login form will inform the user whether the credentials are incorrect. Then user can check correctly and try to login again.



Home Interface

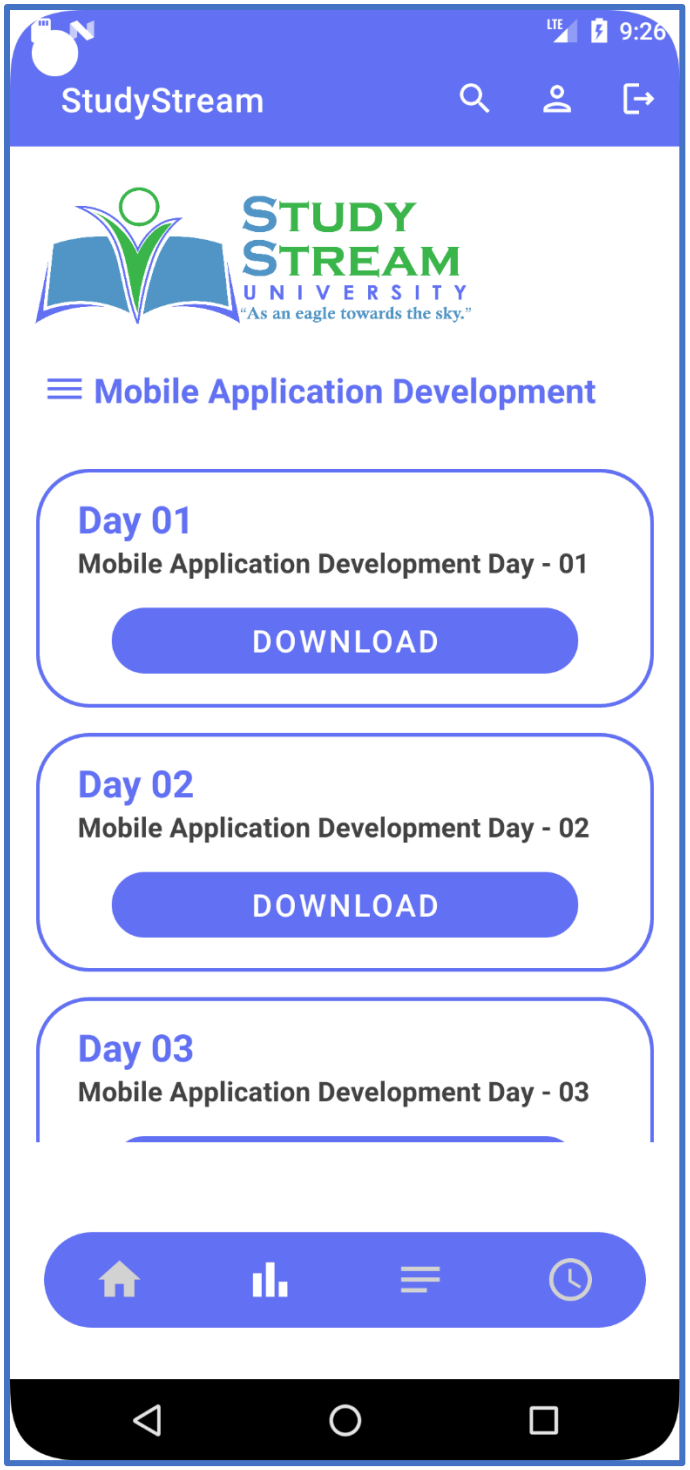
The HOME page of the mobile app. This is a simple interface when the user inserts their credentials through the login interface, and it redirects into this interface. There is an image slider with five eye-catching images related to E-learning and it will create a positive impression of E-learning platforms to the user.

On the top of the interface, there is a user-friendly toolbar. With the use of the toolbar, users can easily check their user profiles or users can easily logout from the mobile app using the buttons.

At the bottom of the interface, there is a user-friendly navigation bar that can navigate the users into different interfaces within the mobile app, such as the course overview interface, exams overview interface, and lecture schedule interface.

Course Overview Interface

This is the course overview interface of the mobile app. Users can access this interface using the bottom navigation bar. The interface is displaying all the courses. Users can access all the courses by scrolling down in the interface. The VIEW button will redirect the users into the relevant course/module.

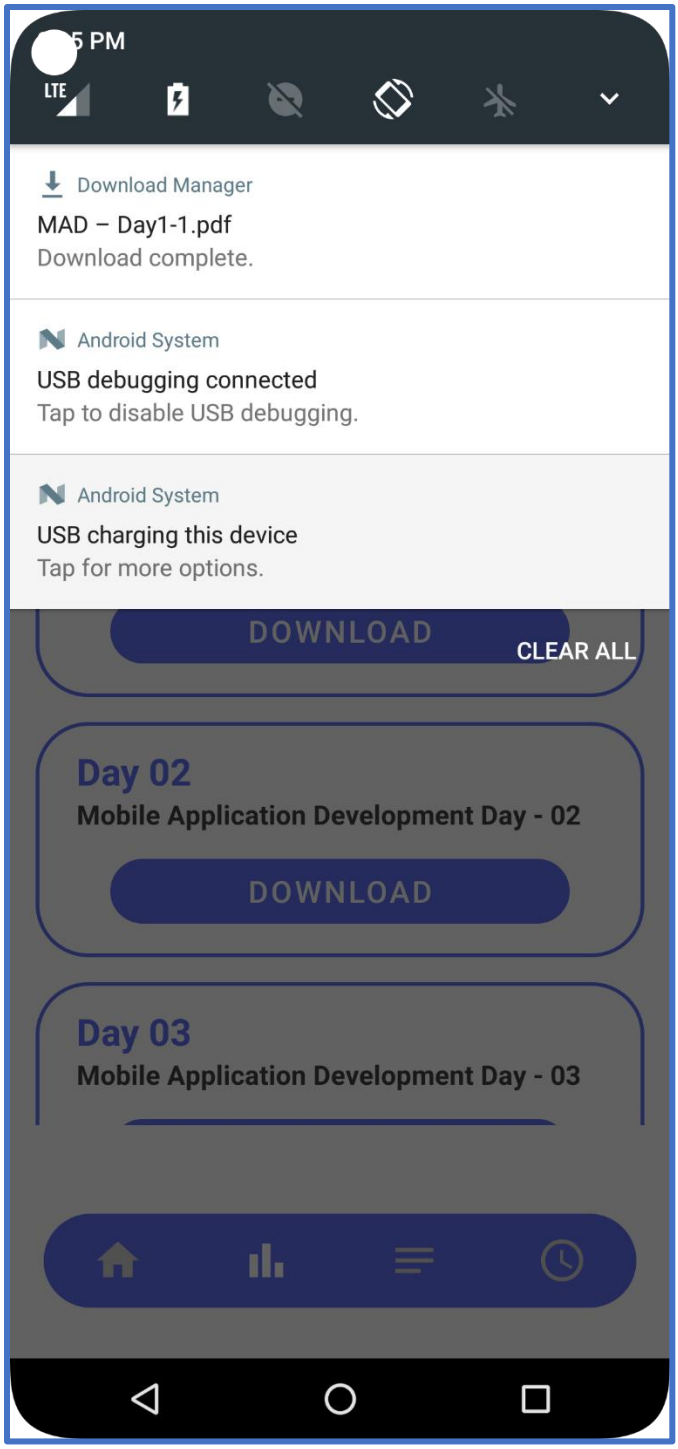


Module Interface

This is the module interface which the users can access or download all the module contents/ lecture slides using the DOWNLOAD button. Users can easily access the relevant lecture slides according to the day by scrolling down through the interface.

Lecturers need to contact with the admin, and they will upload the lecture slides to the database and then both students and lectures can access the lecture slides.

All the lecture slides will be stored in the storage of the google firebase and the download button will automatically access the firebase and download the lecture slides.

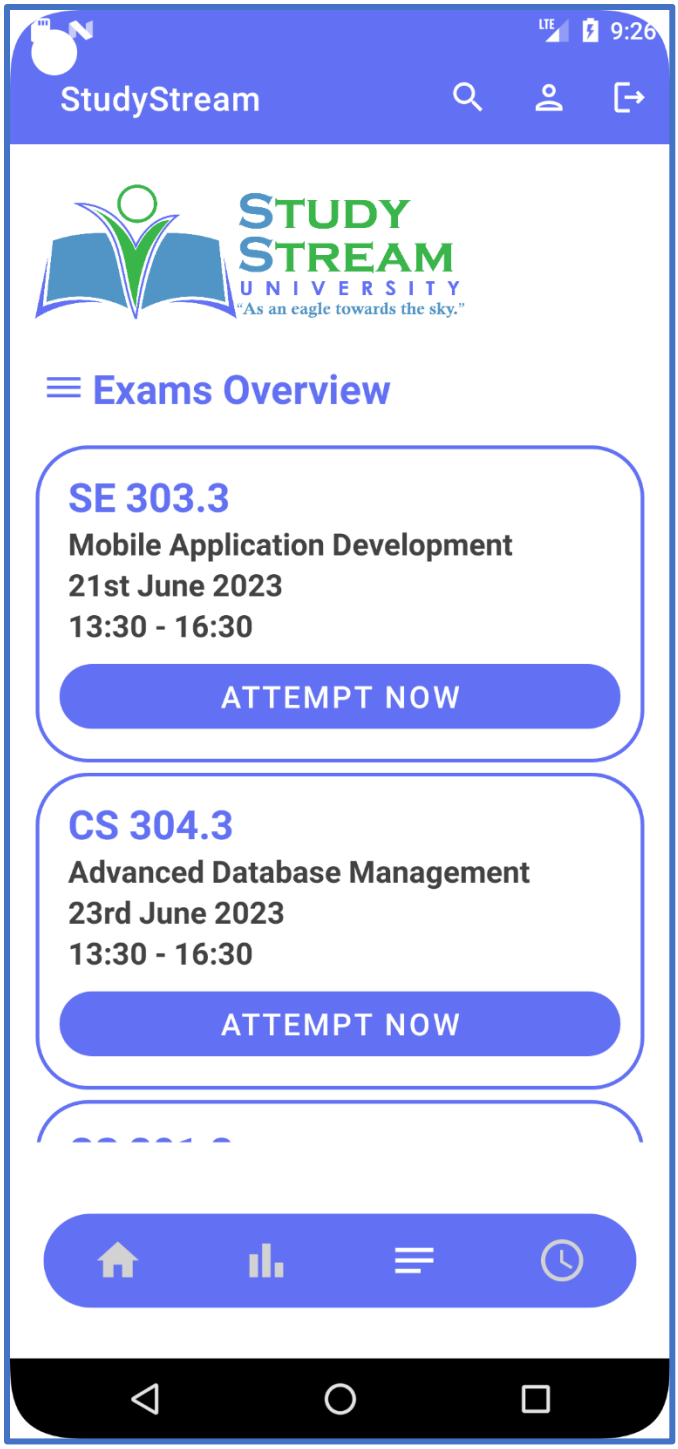


Download Notification

There are DOWNLOAD buttons for each lecture slide within the Module interface. Users can download those lecture slides by clicking the DOWNLOAD button. After clicking the DOWNLOAD button, the lecture slides will be downloaded to the device and the device will notify the user by sending the notification as here in the image.

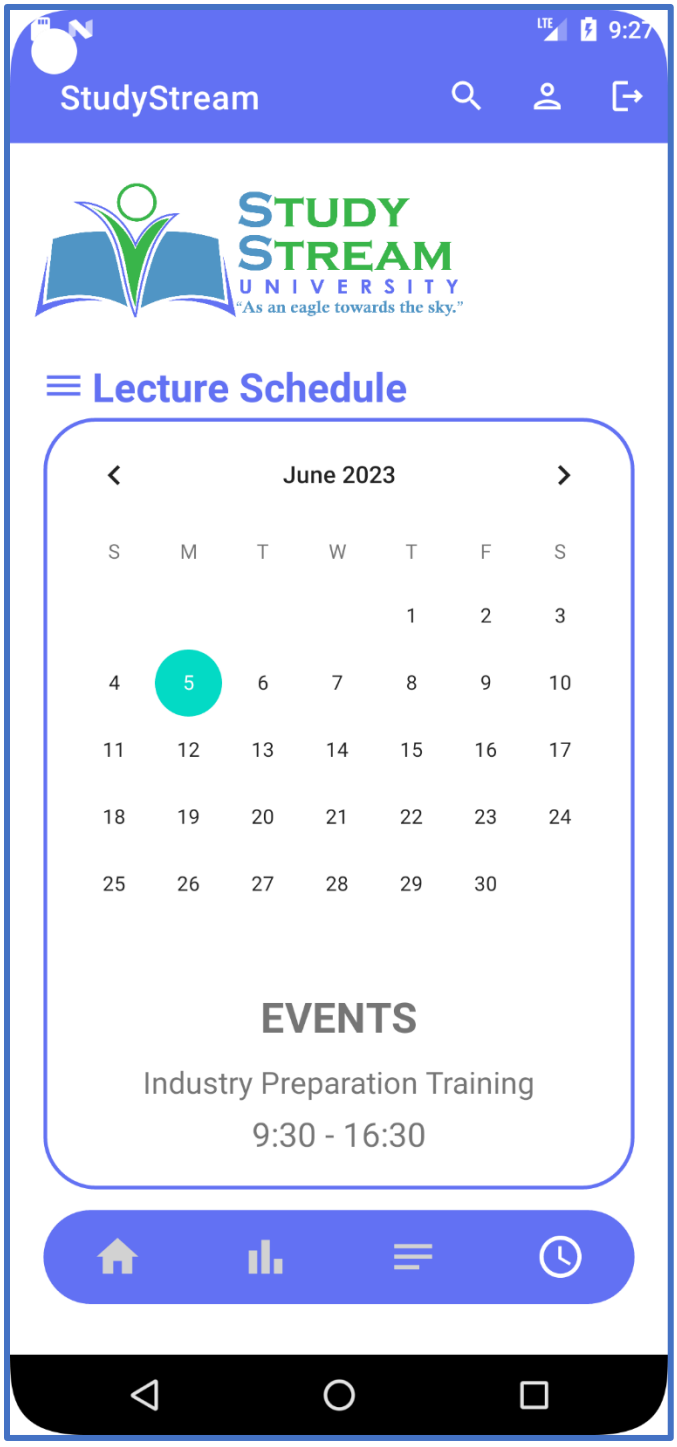
Lecture Slides

After downloading the lecture/course slides, users can easily access them using the device files or by clicking the notification when the download has finished.



Exams Overview Interface

Users can keep track of their online examinations using this interface. By using the bottom navigation bar, users can redirect to this interface.



Lecture Schedule Interface

This is the lecture schedule interface which users can use for keeping track of all the events which is conducted by StudyStream school including lectures, extra sessions, training sessions, workshops, assignments, presentations, and examinations. The admins can add new events according to the schedules. Then the users can check for the events through this interface.

Profile Interface

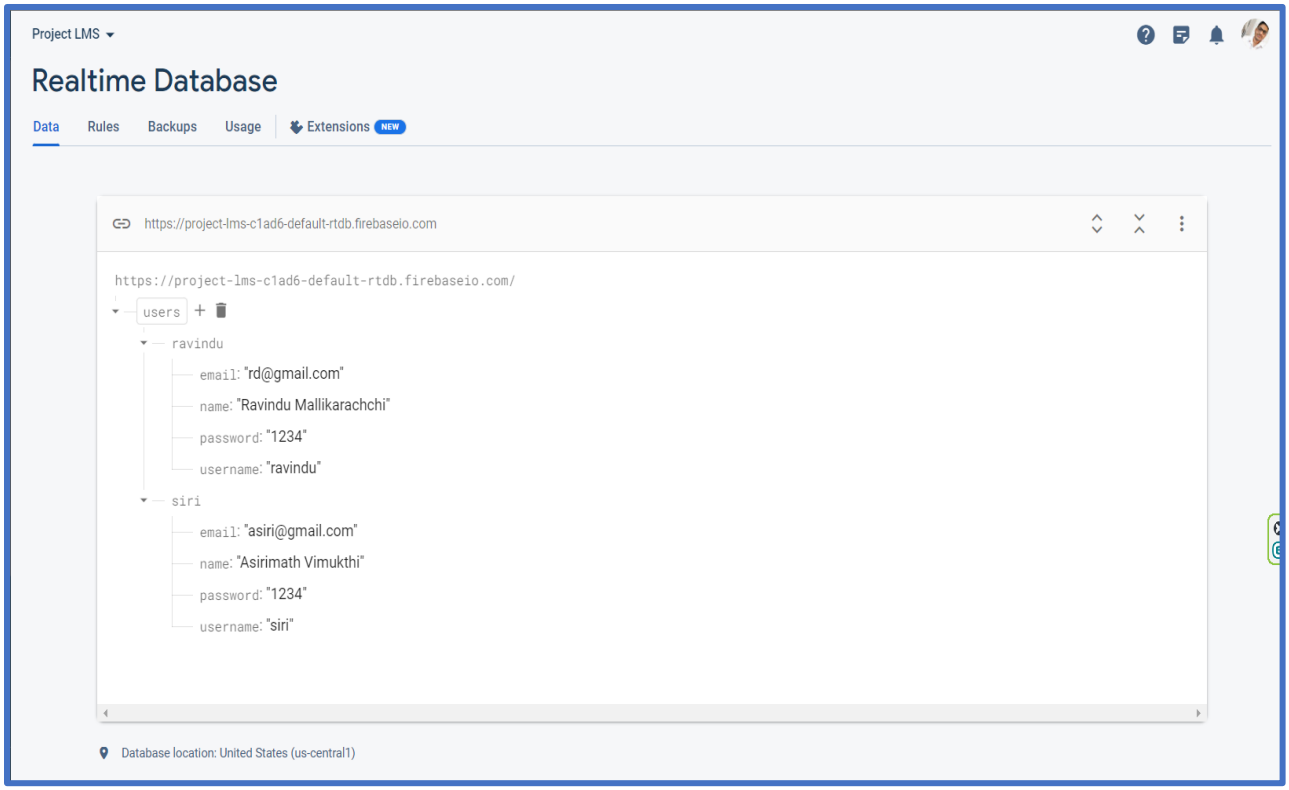
By using the top toolbar users can access the profile interface and check their user details.

Here, the mobile app will retrieve all the user details from the real-time database in google firebase and display it to the users. Users can see or check their relevant details from this.

Issues:

When retrieving user details from the real-time database it worked successfully. The LOGIN button inside the LOGIN interface retrieved all the user details from the database. But the login button redirected the user to the profile interface instead of the HOME interface and the profile interface did not retrieve the details correctly.

To solve that issue the author and the team called the same method different java classes to get user data to the profile activity.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Data
Rules
Backups
Usage
Extensions
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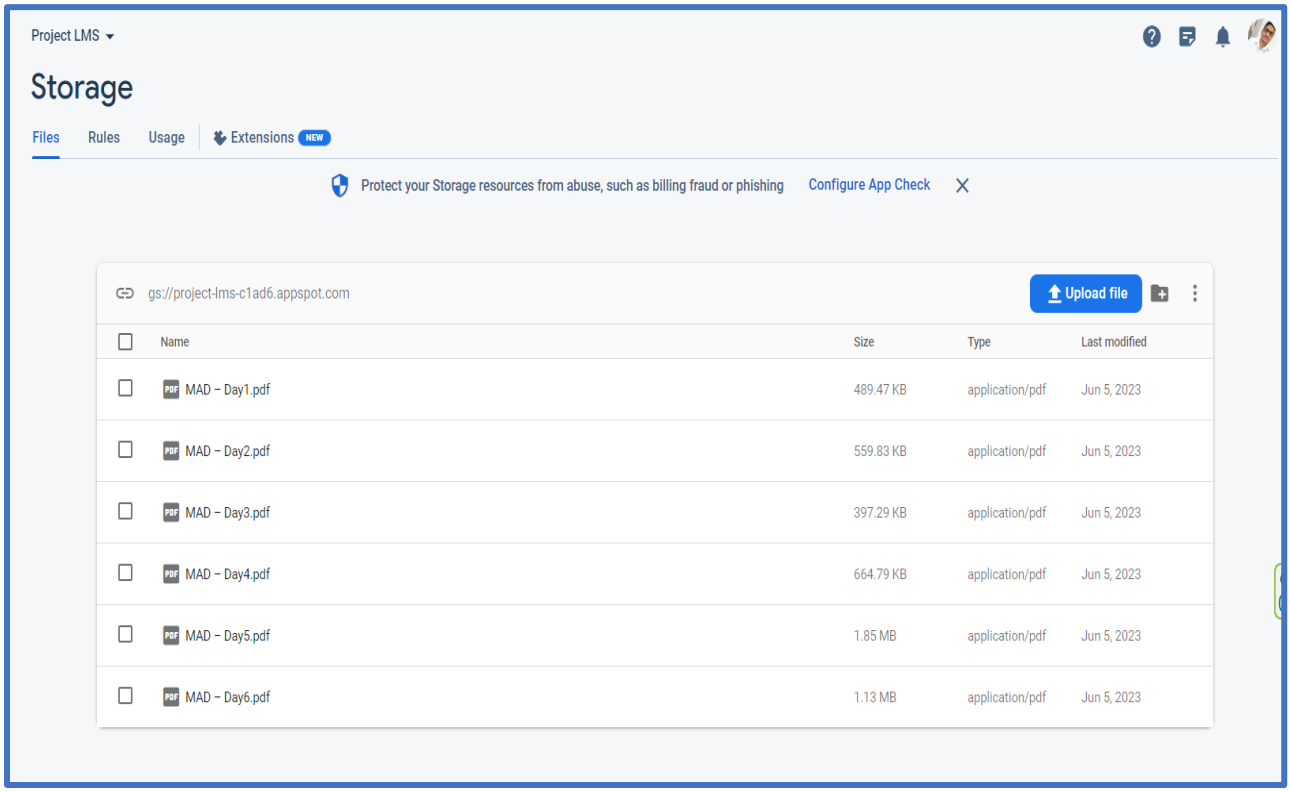
Project LMS
Storage
Files
Rules
Usage
Extensions
NEW
Protect your Storage resources from abuse, such as billing fraud or phishing
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Upload file
Name
Size
Type
Last modified
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Jun 5, 2023
MAD – Day6.pdf
1.13 MB
application/pdf
Jun 5, 2023

Individual member effort

Student Name	Contribution
BAAV KARUNATHILAKE	Back-end development
RD MALLIKARACHCHI	Firebase connecting, back-end development
DTA EDIRISINGHE	Interface Designing
KMK CHAMIKA	Documentation, Firebase connecting
WMBN WIJEKOON	Interface designing, Back-end development
MDIY GUNASEKARA	Interface Designing, Documentation

StudyStream LMS Mobile APP project file

https://github.com/Ravindu15624/StudyStream_LMS_MobileApp.git

Workload matrix

Student Name	Student ID	Workload
BAAV KARUNATHILAKE	20895	16.67%
RD MALLIKARACHCHI	21377	16.67%
DTA EDIRISINGHE	21842	16.67%
KMK CHAMIKA	21237	16.67%
WMBN WIJEKOON	21889	16.67%
MDIY GUNASEKARA	21228	16.67%