INFORMATION TECHNOLOGY PROGRAMME

SOFT708 MOBILE APPLICATIONS DEVELOPMENT

Assignment 1

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Introduction

In a borderless, connectivity is important for keeping people connected and updated. This project aims to provide AIS students with a modern application to centralise news feeds, assignments, and test results.

The application also englobes lecturers, who can create posts and, most importantly, publish the student's grades throughout the course. The Student-Teacher Integration App application aims to close the gap between its users, allowing students and teachers to access their results from anywhere and a news feed with eventual notices or updates about the institution.

Therefore, developing a new mobile app will enhance the experience of AIS students, creating an immersive and borderless environment on an individual level. As for teachers, it will bring them agility and usability to their daily tasks.

Application Functions

Accounts type

- Administrator
- Lecturer
- Student

Admin Functions

- Add, edit and remove users (students, lecturers and admin)
- Add, edit and remove classes
- Posting notifications on the main feed

Lecturer Functions

- Add, edit and remove grades
- Visualize lecturer classes
- Notify students when grades are posted

Students Functions

- Access to their account for results and updates
- Access to student classes
- Application Functions

Information

- Contact Us page: phone, email and location
- About us: Dev information

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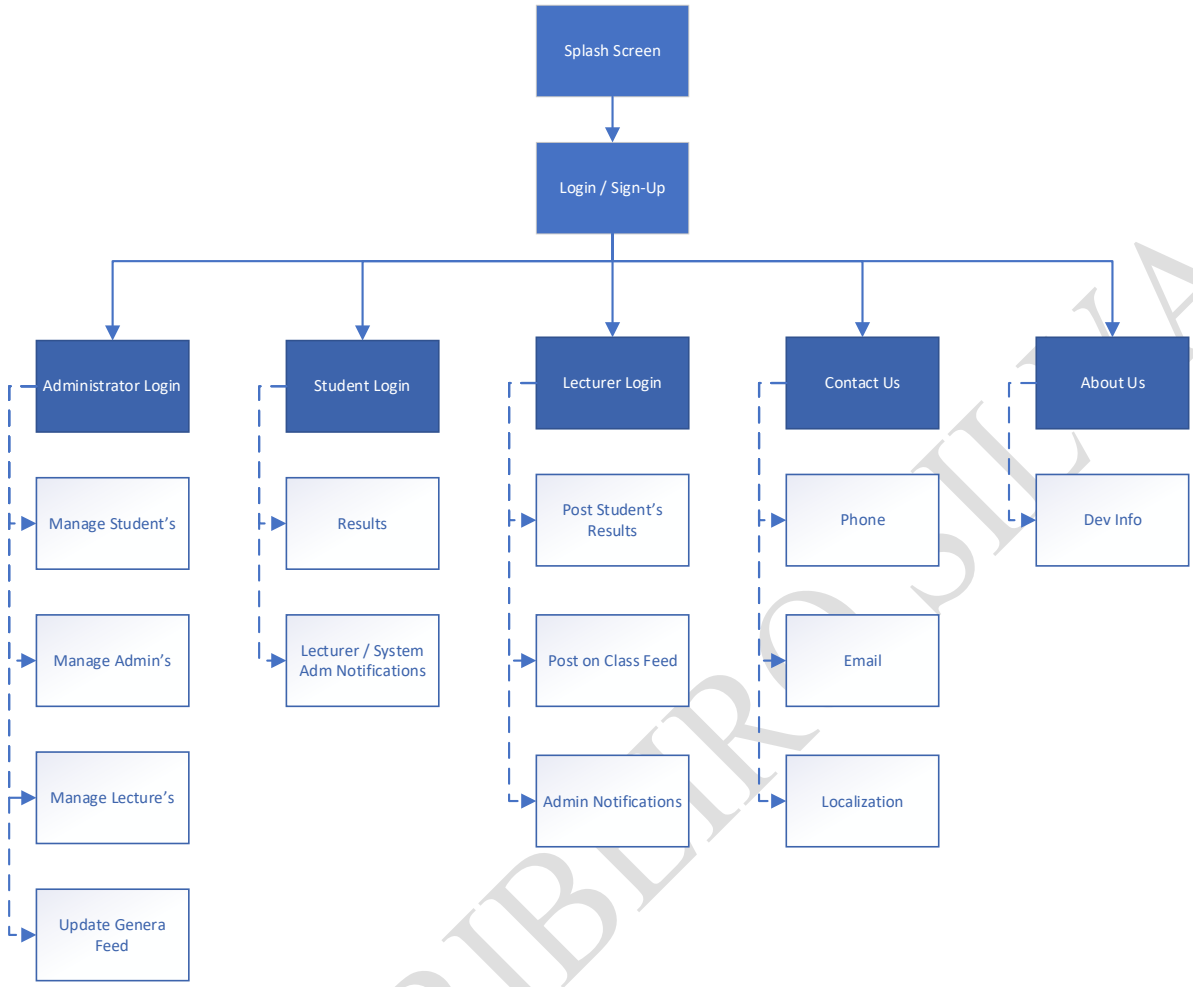
Site Map



Above: Site Map of the application. Retrieved from Microsoft Visio

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Activity Diagram

Login

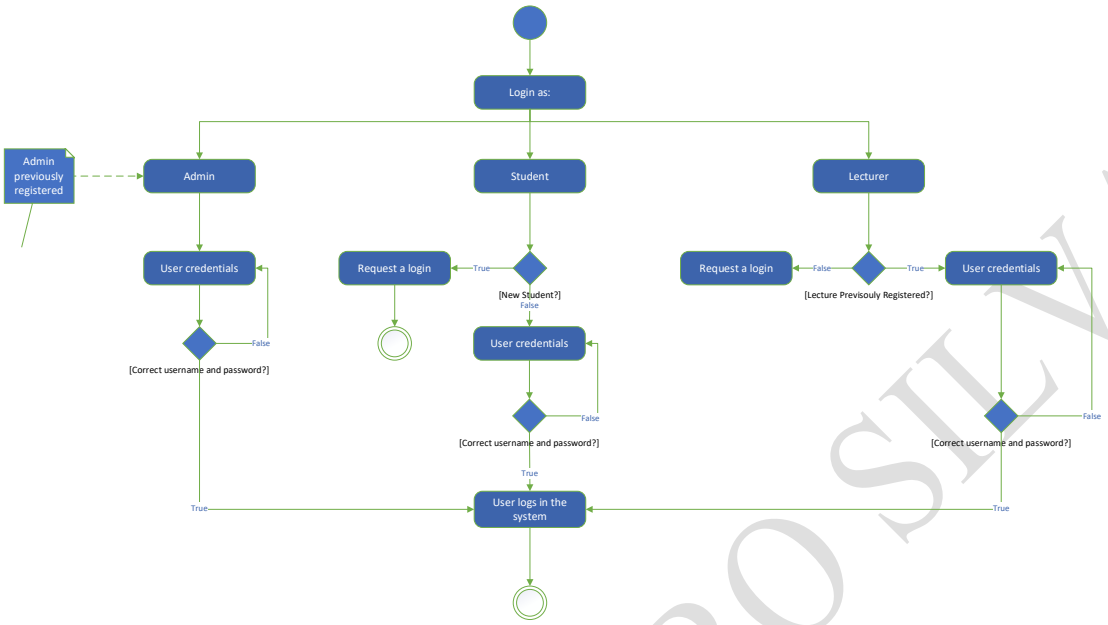

Image: Main login Screen. Retrieved from Microsoft Visio

Admin Functions

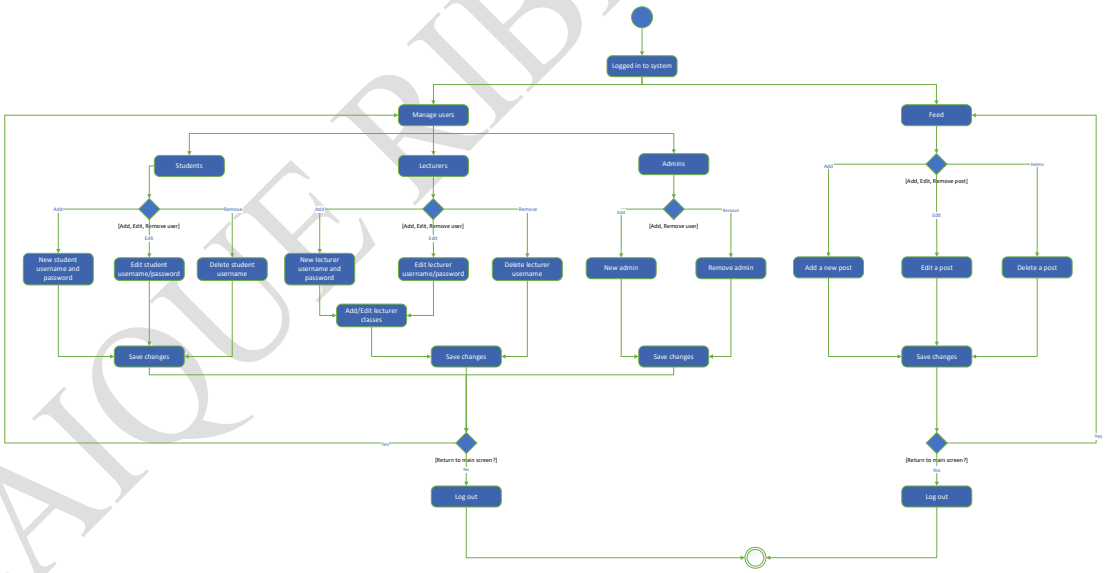

Image: Admin Home Page. Retrieved from Microsoft Visio

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Student Functions

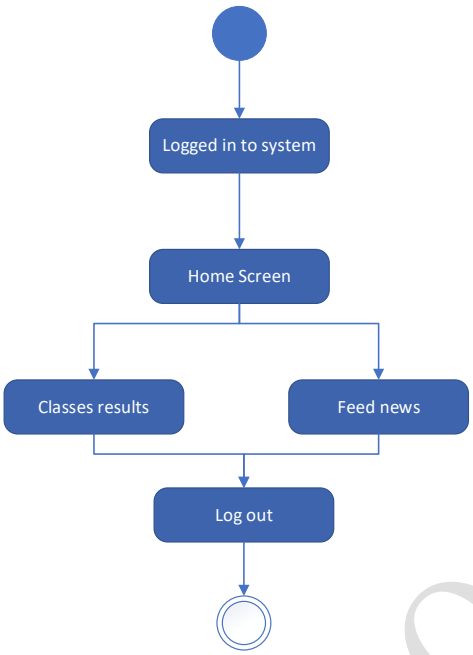
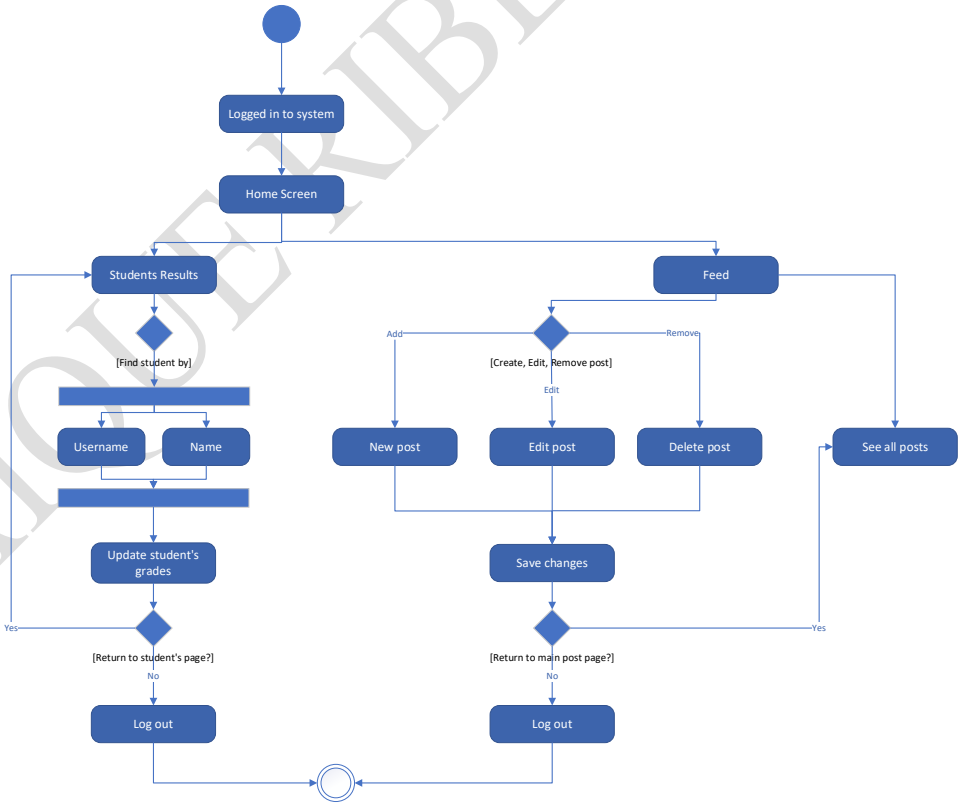


Image: Student Home Page. Retrieved from Microsoft Visio

Lecturer Functions



Above: Lecturer Home Page. Retrieved from Microsoft Visio

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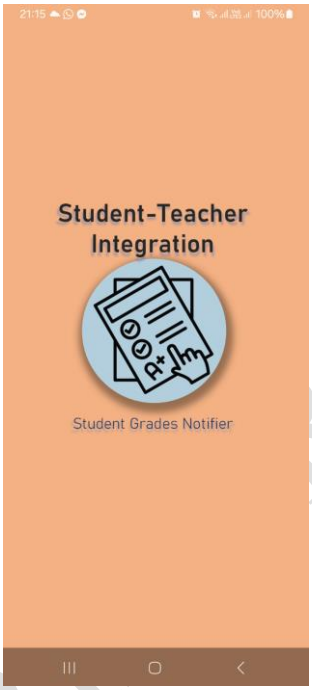
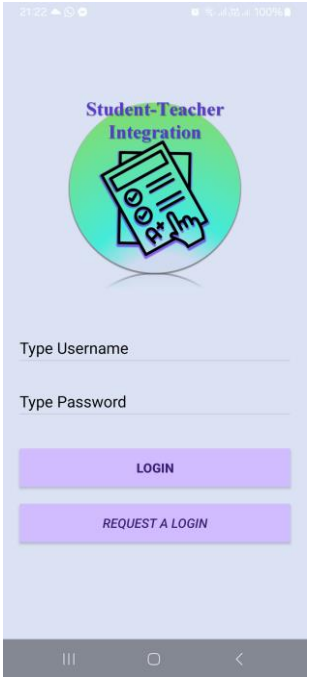
System User Design Interface (UX)

A crucial point for developing a great application is considering the user experience and their expectations towards using the app. Student-Teacher Integration App has been built to mix usability and effectiveness and, on top of that, display a good layout for its users.

Splash-Screen



Login Screen



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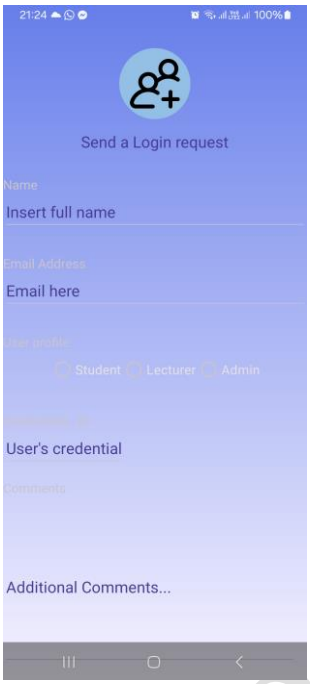
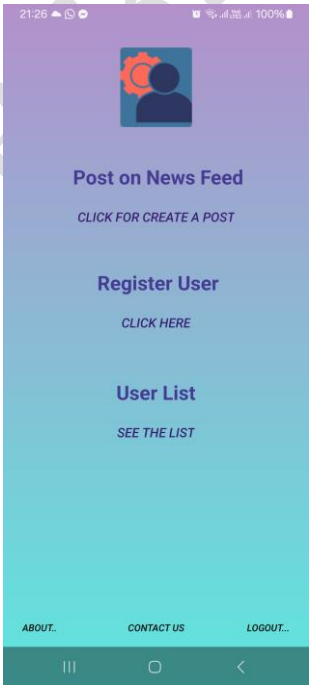
Request a login



Administrator Interface

Main Page



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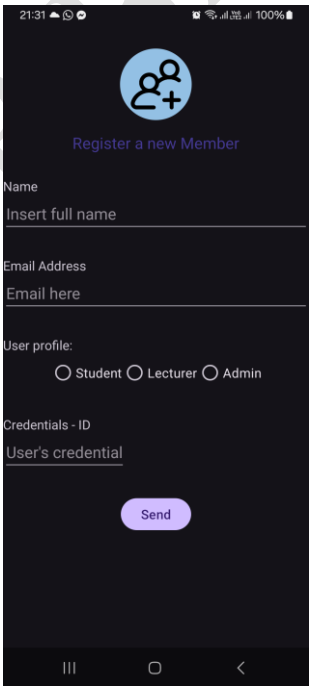
Post Page

Register a New Member



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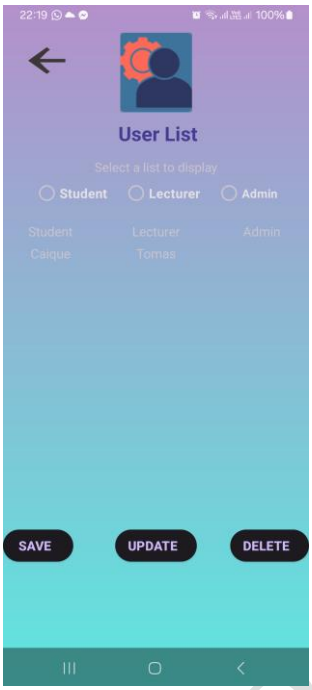
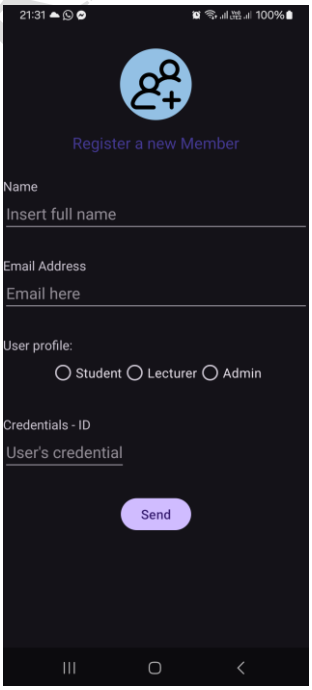
User List



Student Interface

Main Page



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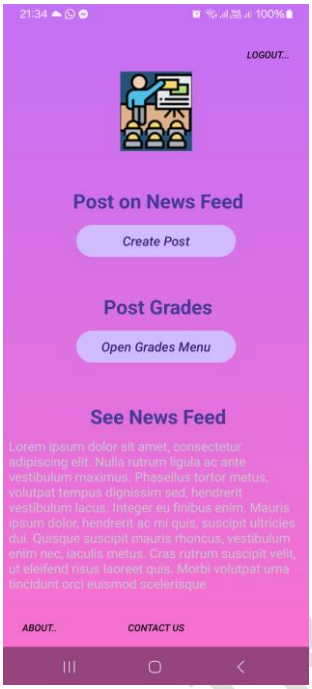
Lecturer Interface

Main Page



Create a Post

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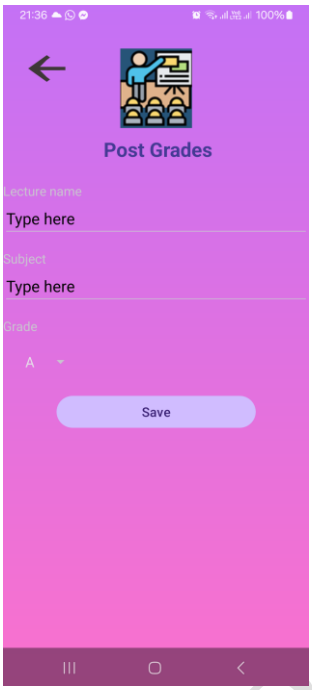
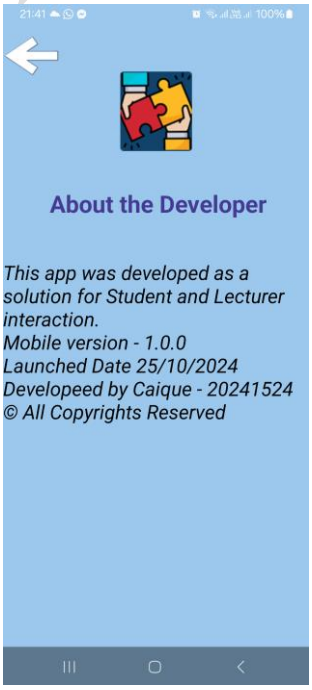
Post Grades



Information Page

About Us



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Contact Us 1

Contact Us 2

Screenshot retrieved from Teacher-Student Integration application

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User Interface Requirements

Android Widgets

TextView

TextViews are interface elements that display text to the users (Google Developers, 2024).

EditText

EditText is a user interface element that allows users to enter or alter a text (Google Developers, 2024).

ImageView

ImageViews display an image to the user (Google Developers, 2024).

ImageButton

ImageButton is an interface that displays an image as a button that includes actions such as clicks and long clicks (Google Developers, 2024).

Button

Buttons are used to interact with the user, to click and send requests (Google Developers, 2024).

Radio Group / Radio Button

Radio groups and radio buttons are tools for selecting and unselecting options. It only allows users to select one option (Google Developers, 2024).

CheckBox

Checkboxes is a two-state button that can be either checked or unchecked. Multiple boxes can be checked simultaneously (Google Developers, 2024).

List View

It displays a collection of vertically exhibited views for the user (Google Developers, 2024).

Table Layout / Table Row

Exhibit data to the user in a table layout (Google Developers, 2024).

Android Event Handling

2 main event handlings are operating in the application, onClickListener and onFocusChangeListener; the former is responsible for handling items that are clicked and expected to return action, and the latter is responsible for focusing on the screen. For instance, when an EditText field is selected, it displays a message, and when it is not in focus, another one.

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Android Activities and Layout Files

There are 13 activities on the mobile; those pages are split into activities that can be accessed by intent requests made on click functions. The activities are

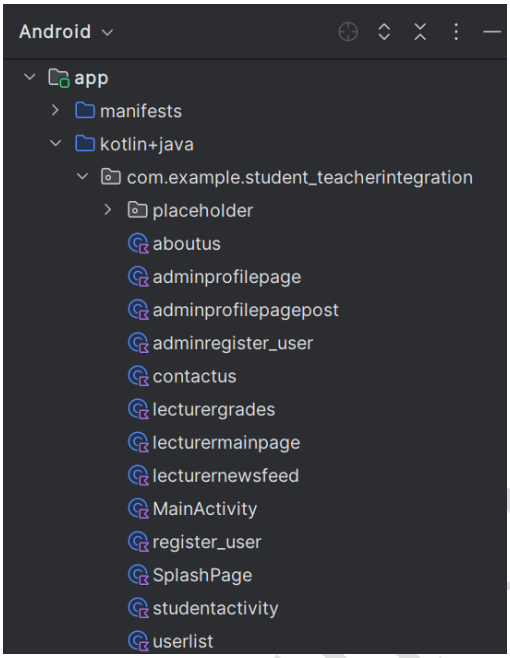

Image: Activity files. Retrieved from Android Studio

User Interface Files

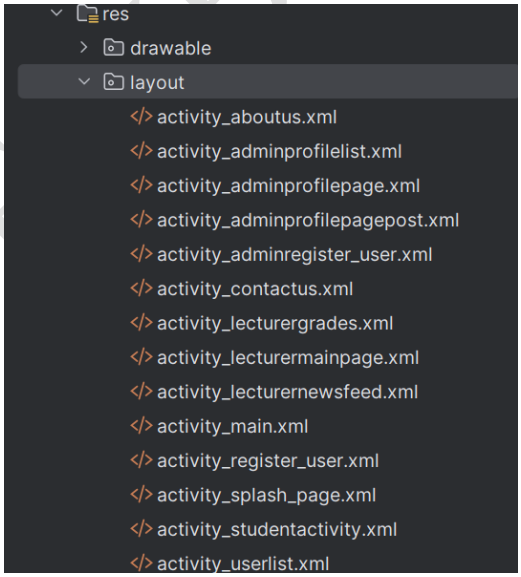

Image: Activity Layout Files. Retrieved from Android Studio

Android Features and Functional Requirements

The Teacher-Student Integration application includes features such as access to the image gallery and an add-on for using the Google Map script.

The Google Map can be found in the contact page, scrolling down the activity

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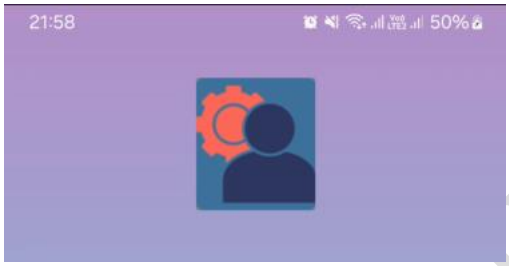
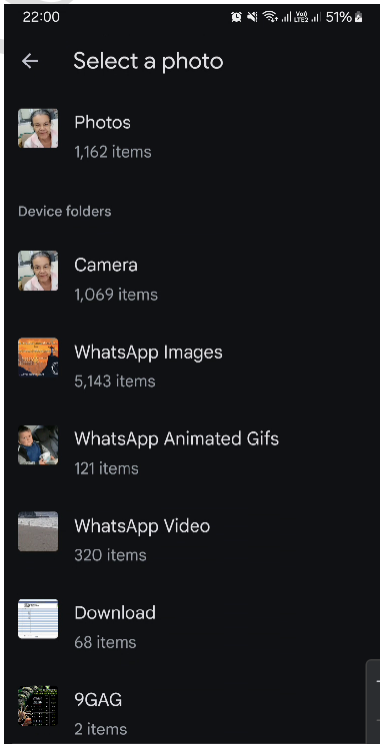
Image: Google Maps. Retrieved from Android Studio, contact us page.

The gallery can be accessed by clicking on the profile picture on all the initial user's page





Images: Click to access the gallery. Retrieved from Android Studio, admin profile page.

In addition, the application includes command lines for calling the institution number and sending text messages.

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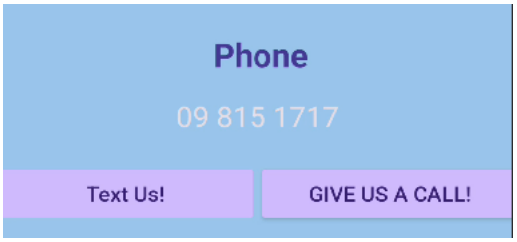

Image: Text and Call functions. Retrieved from Android Studio, admin profile page.

Application x Client Requirements

The client has required an app where the institution's members can access their results from different places; the aim is to provide connectivity and mobility. Moreover, the application counts with a Mural, where lecturers and administrators can post text related to news, updates and warnings for other lecturers or students. However, the application's main goal is to provide the student and the lecturer a great integration. The tools of Post Grades are crucial for users to maintain a connection at any moment.

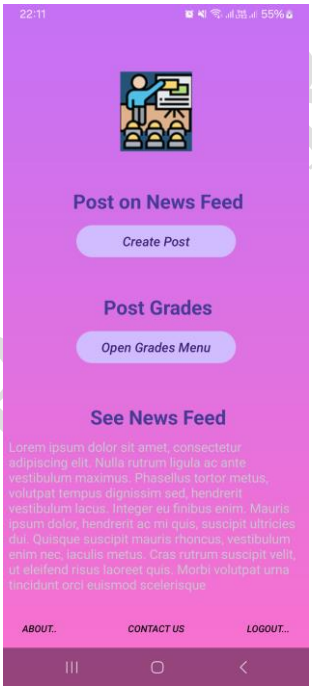

Image: Lecturer post page. Retrieved from Android Studio, lecturer main page.

Security

To keep the user's content safe, the application counts with a login screen that authenticates its users. The Application will deny the request if the username and password are wrong, or the fields are empty.

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Users that were registered previously in the system:

Type	Username	Password
Administrator	admin	123
Lecturer	tomas	123
Student	caique	123

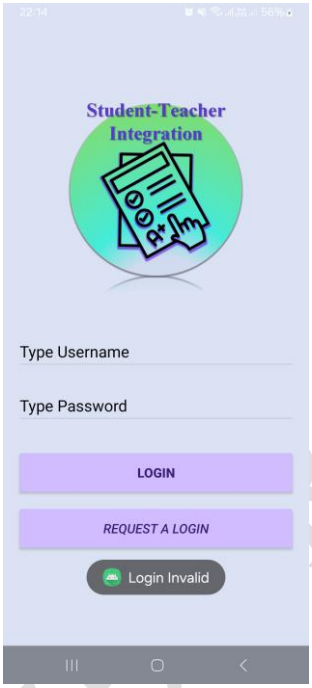

Image: Login without a username/password. Retrieved from Android Studio, lecturer main page.

Introduction to Android Applications and Integrate Development Environment

Android Studio

The Teacher-Student Integration application is developed using the Integrated Development Environment (IDE), namely Android Studio, a code editor based on developer tools from IntelliJ. The software includes resources like libraries, android applications and Google application modules (Google Developer, 2019).

The current version of the code editor is Ladybug using the 2024.2.1 patch 1). However, the application Teacher-Student Integration was developed utilising the version Android Studio Koala 2024.1.1, retrieved from Google Developer (2019).

JetBrains and Intellij

IntelliJ IDEA is an integrated development environment created by JetBrains. The company aims to bring solutions for Kotlin and Java programming. The software counts with a Java Virtual Machine, although it also accepts the installation of plug-ins for using other languages, such as Python, PHP and XML (JetBrains, 2024).

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Kotlin

Kotlin is a multiplatform language that relies on safety and interoperability. It has been released in 2016. One of its highlight features is its compatibility with Java; the language has received great prestige since it was officially supported for Android applications, and since then, its popularity has been increasing daily (Sedunov, 2022).

Android Studio – Specifications

Android Studio can be installed for Windows, Mac and Linux operational systems (OS). There are minimum and recommended requirements for each one of the OS:

Windows

Requirement	Minimum	Recommended
OS	64-bit Microsoft Windows 8	Latest 64-bit version of Windows
RAM	8 GB RAM	16 GB RAM or more
CPU	x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD CPU with support for a Windows Hypervisor Framework.	Latest Intel Core processor
Disk space	8 GB (IDE and Android SDK and Emulator)	Solid state drive with 16 GB or more
Screen resolution	1280 x 800	1920 x 1080

Image: Requirements for Windows for Android Studio Installation. Retrieved from https://developer.android.com/studio/install.

Mac

Requirement	Minimum	Recommended
OS	64-bit Microsoft Windows 8	Latest 64-bit version of Windows
RAM	8 GB RAM	16 GB RAM or more
CPU	x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD CPU with support for a Windows Hypervisor Framework.	Latest Intel Core processor
Disk space	8 GB (IDE and Android SDK and Emulator)	Solid state drive with 16 GB or more
Screen resolution	1280 x 800	1920 x 1080

Image: Requirements for Mac for Android Studio Installation. Retrieved from https://developer.android.com/studio/install.

Linux

Requirement	Minimum	Recommended
OS	Any 64-bit Linux distribution that supports Gnome, KDE, or Unity DE; GNU C Library (glibc) 2.31 or later.	Latest 64-bit version of Linux
RAM	8 GB RAM	16 GB RAM or more
CPU	x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD processor with support for AMD Virtualization (AMD-V) and SSSE3.	Latest Intel Core processor
Disk space	8 GB (IDE and Android SDK and Emulator)	Solid state drive with 16 GB or more
Screen resolution	1280 x 800	1920 x 1080

Image: Requirements for Linux for Android Studio Installation. Retrieved from https://developer.android.com/studio/install

Download Android Studio

The IDE is available for free download at https://developer.android.com/studio. It is the official development tool for Android applications. The software englobes many features. For instance, Gemini, the AI-empowered assistant from Google and an extension for coding directly from the web browser. Moreover, it also contains core features like design tools with Jetpack Compose for animations and layout and a smart code editor, a mechanism that auto-fills keywords to facilitate development (Google Developers, 2019).

Where to download

Android Studio can be downloaded from Google Developers website: https://developer.android.com/

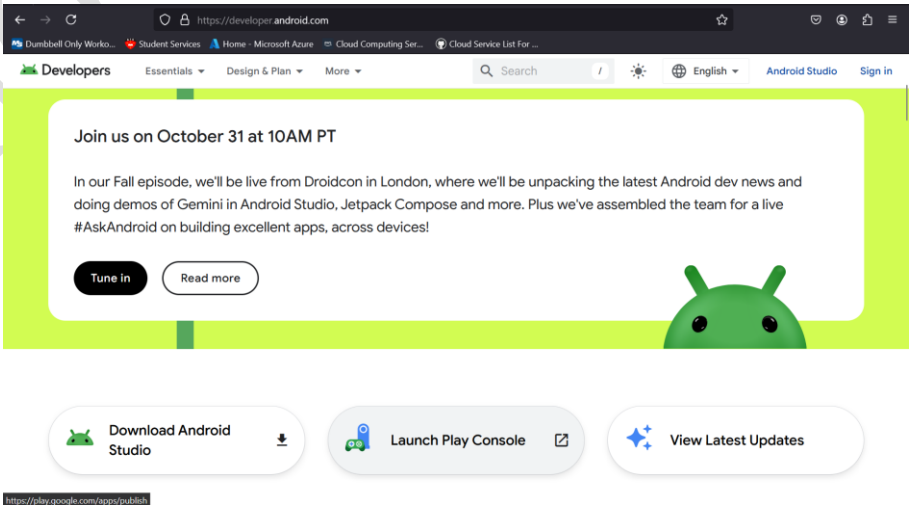

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Image: Download Android Studio Page. Retrieved from https://developer.android.com/studio/install

Click on Download Android Studio

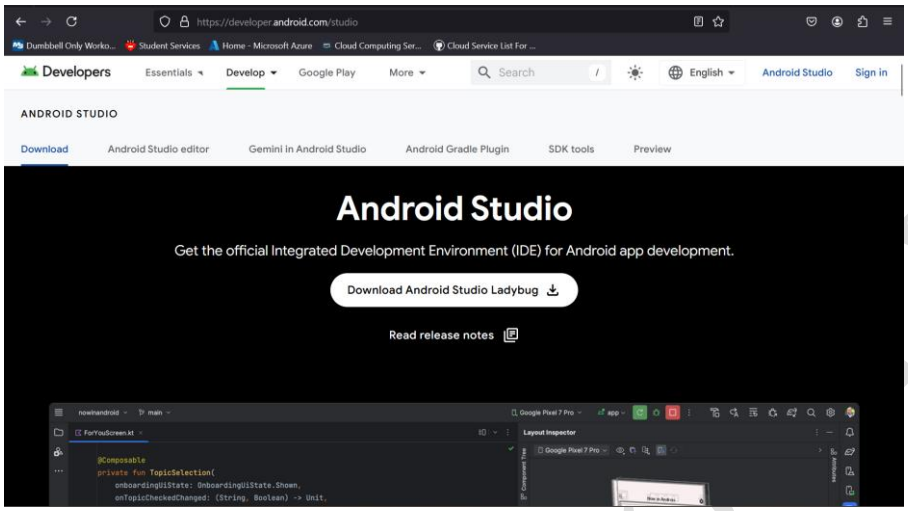

Image: Download Android Studio Page. Retrieved from https://developer.android.com/studio/install

Once clicked on download. Agreeing with the Terms and Conditions is necessary to proceed to the file download.

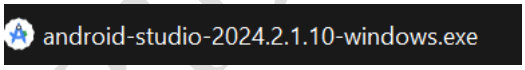

Image: Android-Studio.exe. Retrieved from Windows Explorer.

Double-click for installation (for Windows).

For the following step, choose the root path where the software will be installed and click on next.

Select the components that should be installed with Visual Studio.

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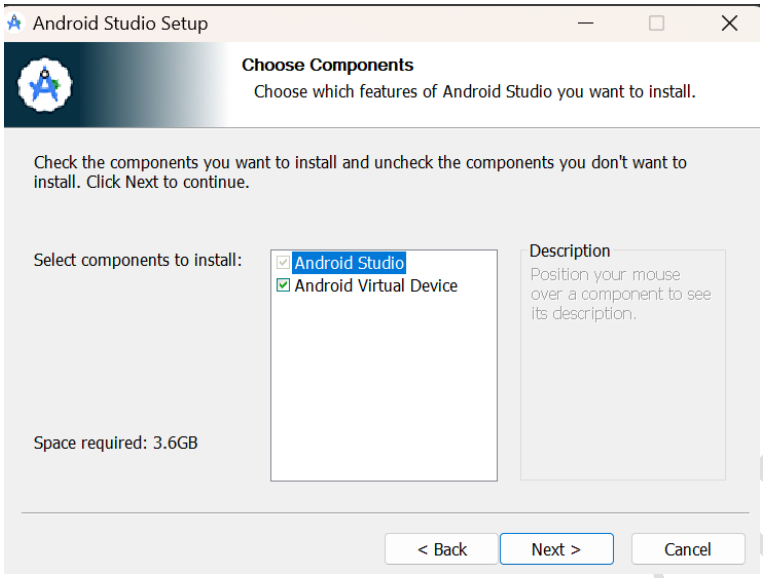

Image: Android-Studio.exe. Retrieved from Android Studio Setup.

After selecting the component, click on Install.

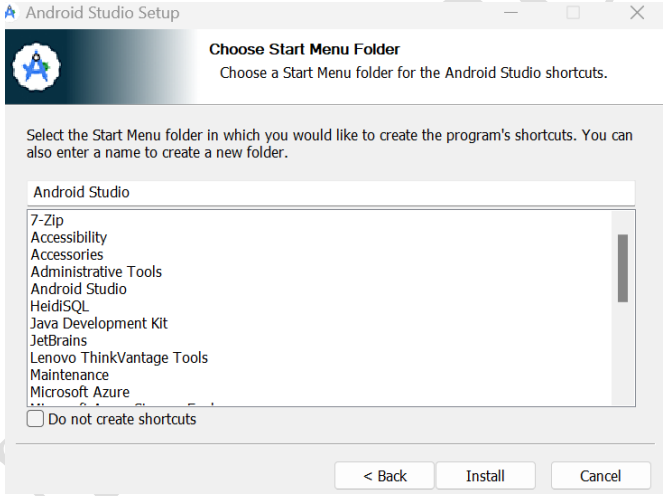

Image: Android-Studio.exe. Retrieved from Android Studio Setup.

The software has been installed successfully.

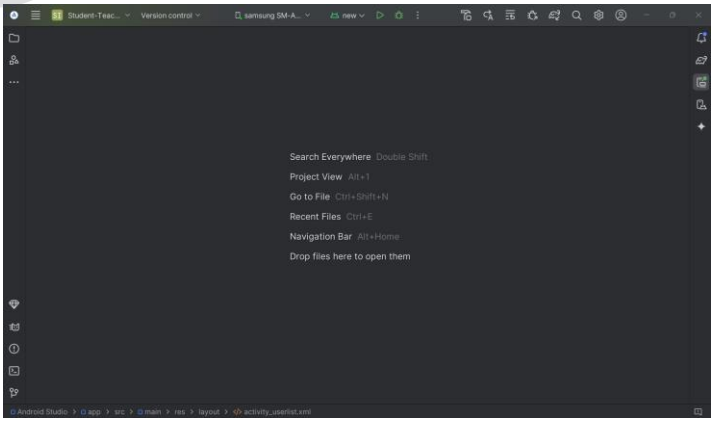

Image: Android-Studio. Retrieved from Android Studio Setup.

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Conclusion

In conclusion, Android Studio has shown to be a versatile IDE tool, where inside the same environment, it is possible to debug and emulate a code in either a physical or virtual device. Additionally, the Kotlin language is flexible and easy to adapt to. It offers new functions and structures modified from its ancestor, the Java language. Moreover, Student-Teacher Integration has introduced an application where the students, lecturers and staff have a familiar interface to facilitate communication and information. Therefore, the program is made available for the public and awaits user feedback to enhance what is needed.

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