Design and Development of STLW Android App

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ABSTRACT

The main objective of this android app development is to solve the problem of communication between college and students and it even solves many problems of students. The era of mobile technology opens the windows to the android app. The websites are vanishing and mobile phones are emerging. It's time to change from conventional websites to apps which has become a part of our daily routine. We are introducing the distributed, movable android application for our college and which would be the miniature of our college website. It works not only as a website but also as a small college management software. Our multipurpose application is considering the user as either an Albertian or non- albertian,students,faculties and administration. It gives us more comfort and a better user interface. It acts as an overview about the campus (college history,workshops,library etc.,) and also a feature of application forms which can be taken print. This app is also a navigator for our college location.

In this application there are two modules:

User Module

Admin Module

User Module: In this the user experiences the frontend of the application i.e., The user(student/faculty) can visually access the details.

Admin Module: This is basically the admin view of the application, where the admin can make any changes like adding or deleting the data.

Admin can change the whole overview of the application.

To achieve all this, we are using languages like java, JavaScript and a reference software (Android Studio)

1. Introduction

1.1 About Project

The era of mobile technology opens the window to the android app. The websites are vanishing and the mobile phones are emerging. It's the time to change from a convention website to apps which has become the part of our daily routine. We are introducing 'STLW.apk' the android application software which would be a miniature of our college website .it works not only as a website, but also it can work as a small college management software. Our multipurpose program is considering the user as an Albertan or non-Albertan, student or parent, faculties or staffs individually. project gives a total solution to everyone the application becomes a mobile version of our official website it gives us more comfort and better use interface .it acts as an overview about the campus to a non-Albertan like the college history, departments, workshops, faculties and library etc. & major events conducted .it acts as a college assistant for Albertans latest news and updates about college I s got through notifications. Individual account can be created for students. Students can share ideas about college events and suggestions are provided. Department organizations can be making publicity to their events. Application forms, scholarship form can be taken print. Students can interact with faculties directly. Latest news and updates about college is got

through notifications, copy of the progress cards are mailed. The android app is also a navigator the application gathers your current location and shows the exact minimal route to the SCETW technical campus accessing GPS.

1.2 Objectives of Project

The objectives of this project are

- To collect data out events, notifications, E-books, faculties of STLW college.

- To upload the details collected into the android application.

- To provide up to date information through the android application.

- To provide authorized access to data uploaded in android app.

- To provide a user friendly environment of the application.

To provide downloading potion of the application forms used in various categories like bus pass, Co-curricular activities.

1.3 Scope of the Project

The system being designed is economically with respect to the students and teachers' point of view. The goal is to extract useful information from an unstructured data using the concept of information retrieval, filtering and secure random algorithms. To develop an enhanced student information management system that can help solve drawbacks of existing ERP system. Our basic approach attempts to develop a smart phone-based application using Android which can be used to make this process easier, secure and less error prone. More efficient information will be achieved through this system. To provide access to information related to college, departments, uploaded assignments, notes, news and events, exams, discussion forum and daily time table on the go.

- This android application will be substitute for the official website.
- This application will be designed to maximize the ease of use of the website in mobile view.
- This application will also be containing the database of the users.
- Easy to obtain contact details of faculty.
- It has a user-friendly interface.

1.4 Advantages

The advantages of this application are
- Everyone can easily connect through one platform
- Easy Accessibility

- A Move towards Paperless System
- Boosts Connectivity and Engagement
- **Keeping Information Secured**
- Information Updating
- Real-Time Report
- Parent-teacher & teacher-student communication management
- Timetable management
- Library Management

1.5 Disadvantages

The drawbacks in Student Management System software can be counted on fingers; with mostly only benefits, these systems have a few countable downsides. Often, applications face minor technical glitches and these systems are no exception but, ratification is immediate. Only, people who are accustomed to regular use of smartphones or computers can operate this software. Extensive modules and features make it difficult for a user to utilise the application. With huge flow in traffic the application is prone to performance issues.

Absence of proper internet-network.

The risk of data mishandling

 but all these drawbacks can be evaded by choosing proper, cost-efficient and best software that best benefits an organization.

1.6 Hardware and Software Requirements

Hardware requirements

1) Processor: intel core i3
2) Speed:1.11 GHz
3) RAM: 256MB
4) Hard disk:20 GB
5) KEY BOARD: Standard Windows keyboard

Software requirements

1) Operating System: windows 10
2) Android Studio
3) JAVA
4) JAVA SCRIPT
5) XML

2. LITERATURE SURVEY

2.1 Existing System

The college information and notifications are currently viewed through official website only. Existing system is not efficient because sometimes it is time consuming existing system fails in case of any emergency.

Through existing system students and parents can not get connected to faculty easily.

The existing system which we using in our college is traditional process is a complete manual process.

Now-a-days, education is playing very significant role in the society. Day-by-day, the percentage of illiterates are decreasing and the percentage of literates is increasing.

Education will change the society in all the aspects and everyone wants to study higher professional degrees.

Admissions are increasing day by day so there by ratio of establishment new colleges and schools are also increasing. Existing system is not easy for the outsiders to get a look of the college environment. There is no easy access to the latest notices published by the college or university. Students can easily get the contact information

2.2 Proposed System

The proposed system software which would be miniature of our college website.The information and notification can be easily accessed by one touch on the

Android application. The application provides the live notification to the students and to the outsiders.

Filling the communication gap. It provides a GPS based system which helps to route the location of the college. Parents can get the latest updates of thecollege. The new system will automate the whole working of college. In this project we will retrieve the information of student or update the information easily by the use of computer.

Information regarding the teachers or nonteaching staff are also in this project.

Here we will manage the library also. Proposed system is very fast, easily and efficient system. The proposed system is also less dependent on employees. It works without any help of employees.

3. PROPOSED ARCHITECTURE

We have developed STLW android app in **ANDROID STUDIO** and used **FIREBASE** as database.

ANDROID STUDIO : Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It is available for download on Windows, macOS and Linux based operating systems or as a subscription-based service in 2020. It is a replacement for the Eclipse Android Development Tools (E-ADT) as the primary IDE for native Android application development.

A specific feature of the Android Studio is an absence of the possibility to switch

❖ autosave feature off

The following features are provided in the current stable version.

Gradle-based build support

Android-specific refactoring and quick fixes

Lint tools to catch performance, usability, version compatibility and other problems

ProGuard integration and app-signing capabilities

Template-based wizards to create common Android designs and components

A rich layout editor that allows users to drag-and-drop UI components, option to preview layouts on multiple screen configurations.

Support for building Android Wear apps

Built-in support for Google Cloud Platform, enabling integration with Firebase Cloud Messaging (Earlier 'Google Cloud Messaging') and Google App Engine

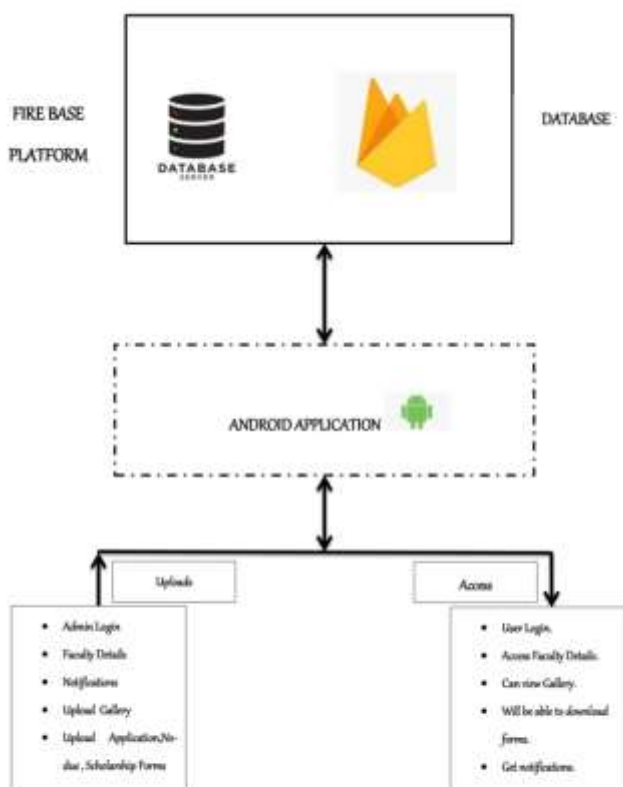Android Virtual Device to run and debug apps in the Android studio.

Android Studio supports all the same programming languages.

FIREBASE: Firebase is a platform developed by Google for creating mobile and web applications. It was originally an independent company founded in 2011. In 2014, Google acquired the platform and it is now their flagship offering for app development.

Firebase's first product was the Firebase Realtime Database, an API that synchronizes application data across iOS, Android, and Web devices, and stores it on Firebase's cloud. The product assists software developers in building real-time, collaborative application

3.1: Block Diagram

This block diagram displays the whole overview of the STLW application. It also includes the features provided by the application along with the database platform.

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3.2: E-R DIAGRAM

The E-R diagram shown below covers all the entities and the display the relationships among then along with their attribute. It also describes the access size of the entities (many to many, one to many).


3.3: USE-CASE DIAGRAM

This is the basic UML diagram which is used to sketch the basic structure of the application. It has 2 actors along with their actions.
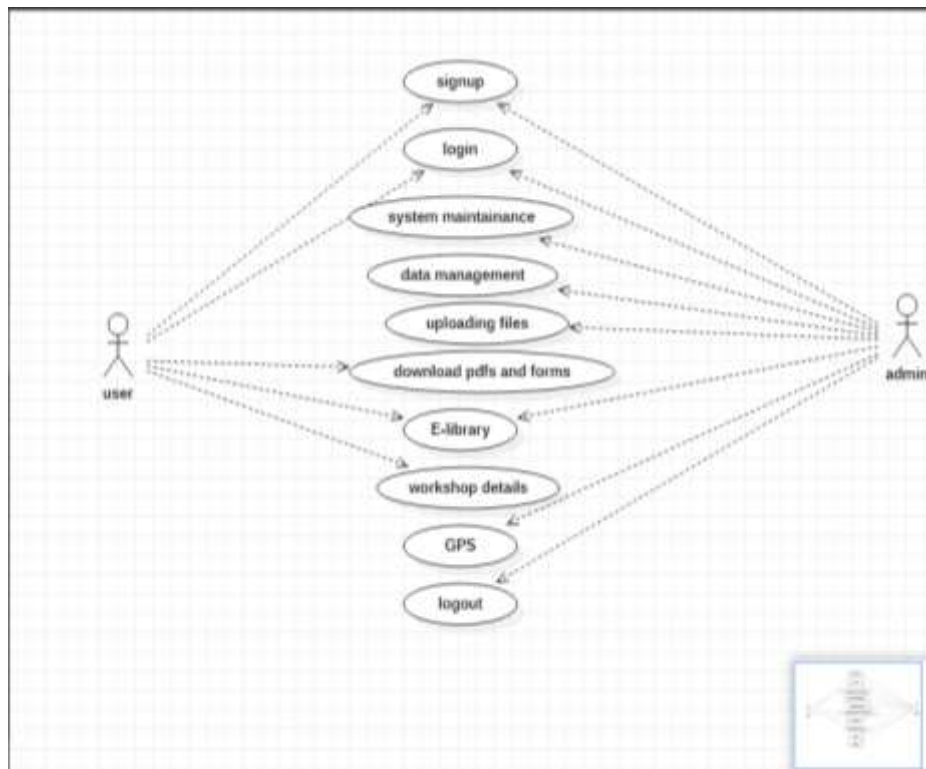
3.4: SEQUENCE DIAGRAM (ADMIN)

A sequence diagram of the admin is a type of interaction diagram because it describes how and in what order a group of objects works together. These diagrams are used by software developers and business professionals to understand requirements for a admin system or to document an existing process.
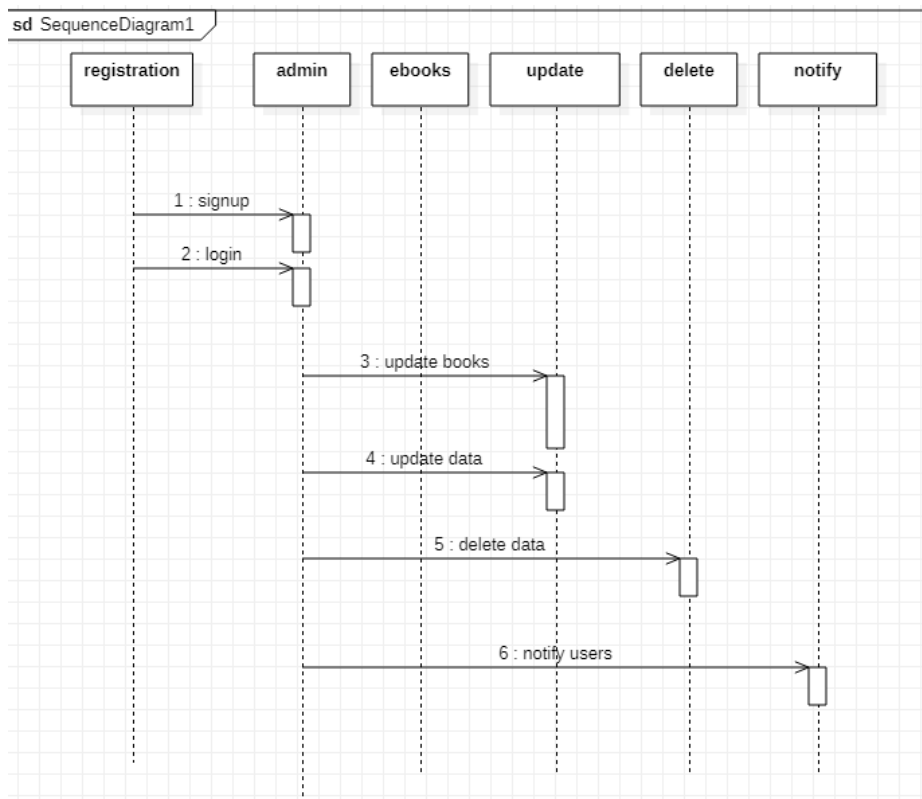
3.5: SEQUENCE DIAGRAM(USER)

A sequence diagram of the user is a type of interaction diagram because it describes how and in what order a group of objects works together. These diagrams are used by software developers and business professionals to understand requirements for a user system or to document an existing process.
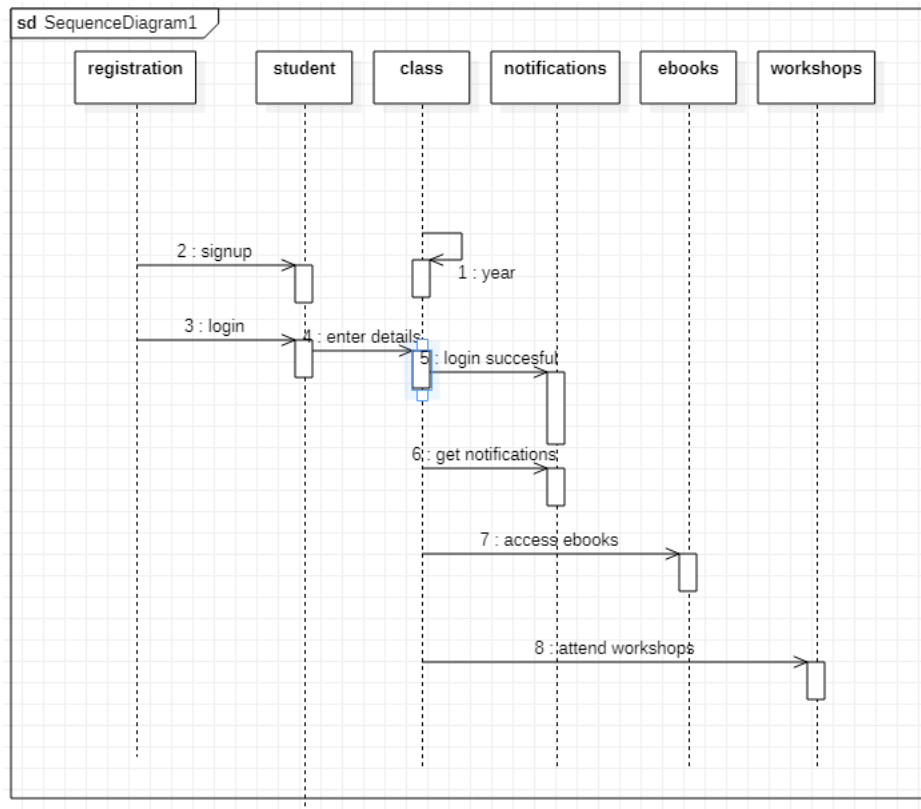
3.6: ACTIVITY DIAGRAM (ADMIN)

Activity diagram is another important diagram in UML to describe the dynamic aspects of the system. Activity diagram is basically a admin flowchart to represent the flow from one activity to another activity. The activity
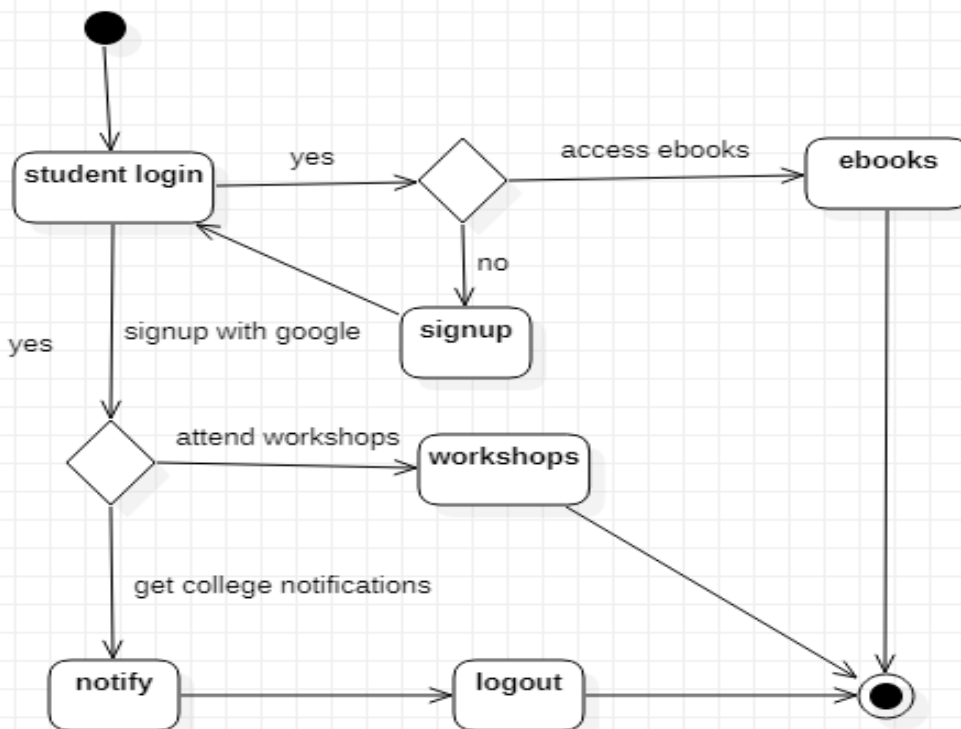
an be described as an operation of the admin system.
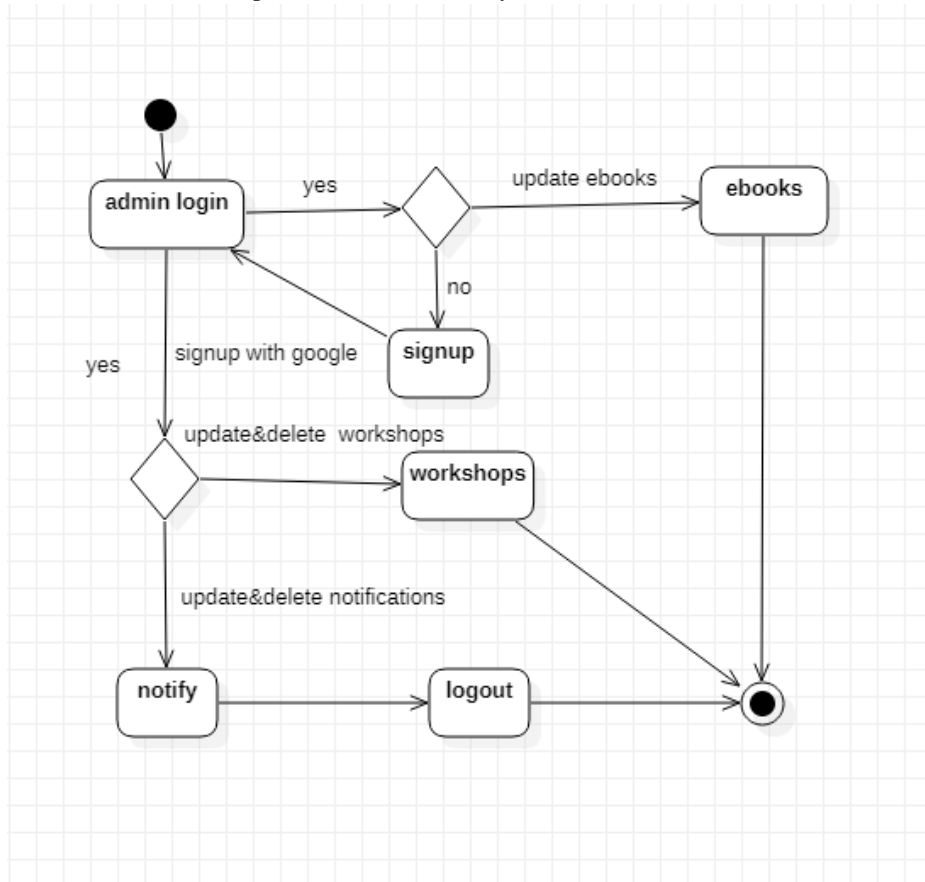
3.7: ACTIVITY DIAGRAM (USER)

Activity diagram is another important diagram in UML to describe the dynamic aspects of the system. Activity diagram is basically a user flowchart to represent the flow from one activity to another activity. The activity can

be described as an operation of the user system.

4. IMPLEMENTATION

4.1 Algorithm

The algorithm used is developing the STLW application

Step 1: On the PC and double click on the Android Studio app.

Step 2: Go to files.

Step 3: Click on new.

Step 4: Click on "new project" option

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Step 5: A new page consisting different activities appears on the screen.

Step 6: Now, click on "Empty Activity".

Step 7: Now, click on next.

Step 8: A new page appears on the screen with

    I.   Package Name
    II.   Location
    III.   Language
    IV.   Minimum SDK

Step 9: Now, Make the required changes.

    Eg: Name:STLWmain

    Package Name:Stanley.edu.STLWmain

Step 10: Click on finish.

Step 11: Now, Click on the "project" option on the left side of the screen.

Step 12: Now, Click on "Android" option

Step 13: Then, we will given 2 options of files

    I.   App
    II.   Gradle scripts

Step 14: Now, click on app

    This "app" option consists of

    I.   Manifests
    II.   Java
    III.   Java(generated)
    IV.   Res
    V.   Res(generated)

Step 15: Click on manifests(which is used to create Android manifest.xml file in

which we can used a code on Packages, User permissions. Backup, Icon of application, Label of application etc.)

Step 16: Click the next file i.e., Java

This will redirect to the 3 sub files

    I.   Stnly.edu.stlwAdmin
    II.   Stnly.edu.stlwAdmin(android test)
    III.   Stnly.edu.stlwAdmin(test)

Step 17: Now, click on Stnly.edu.stlwAdmin

This subfile is used for creating Faculty details,Logon page etc.

Step 18: Android Test and Test are used to test the application by installing in your

personal mobiles.

Step 19: The next subfile of app is >res(in this we can create buttons,change

colors,layouts,add pictures,icons etc.)

>res consist of different files like

    I.   Drawable
    II.   Layout
    III.   Min map
    IV.   Values

These all are used to design the display of the app and the icons.

Step 20: Finally, following the above steps we can creates the display of the
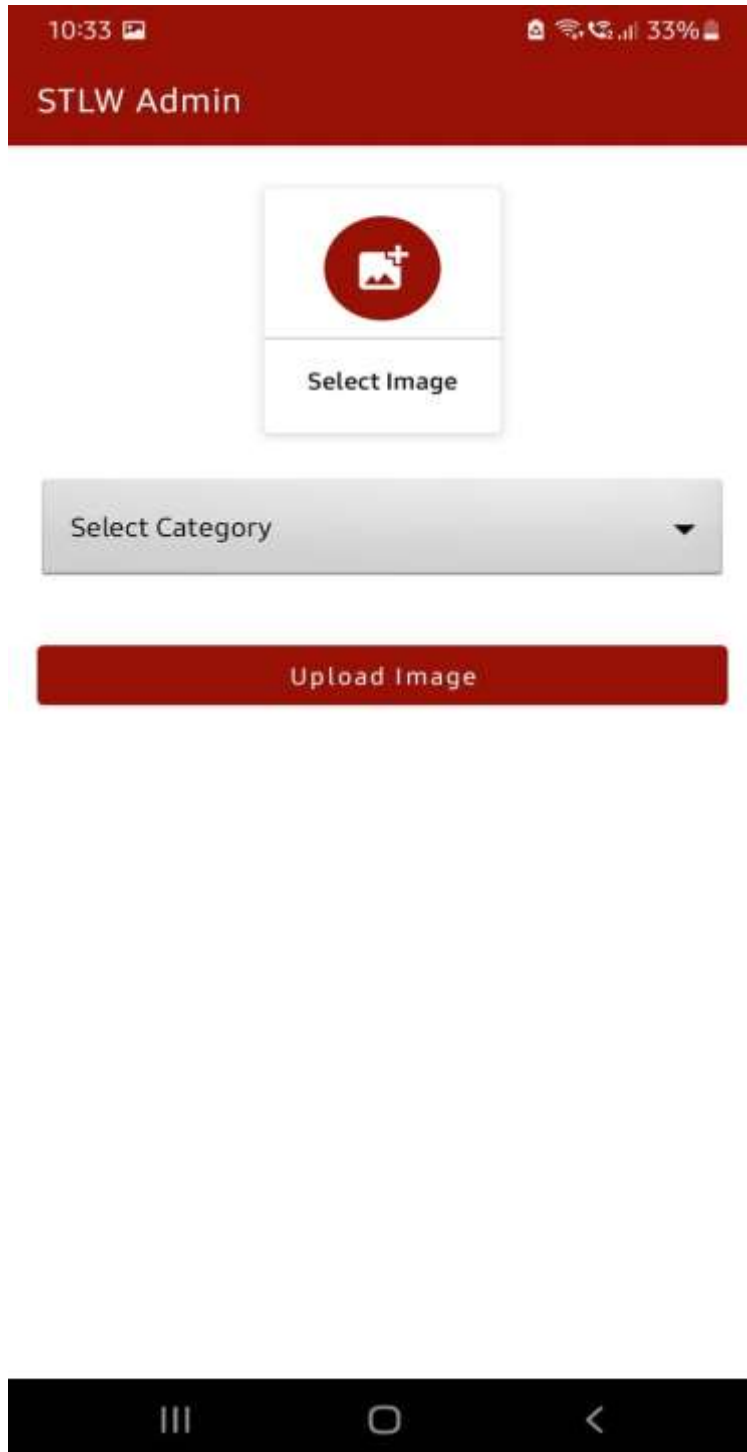
Application.

5. Results

OUTPUT SCREENS
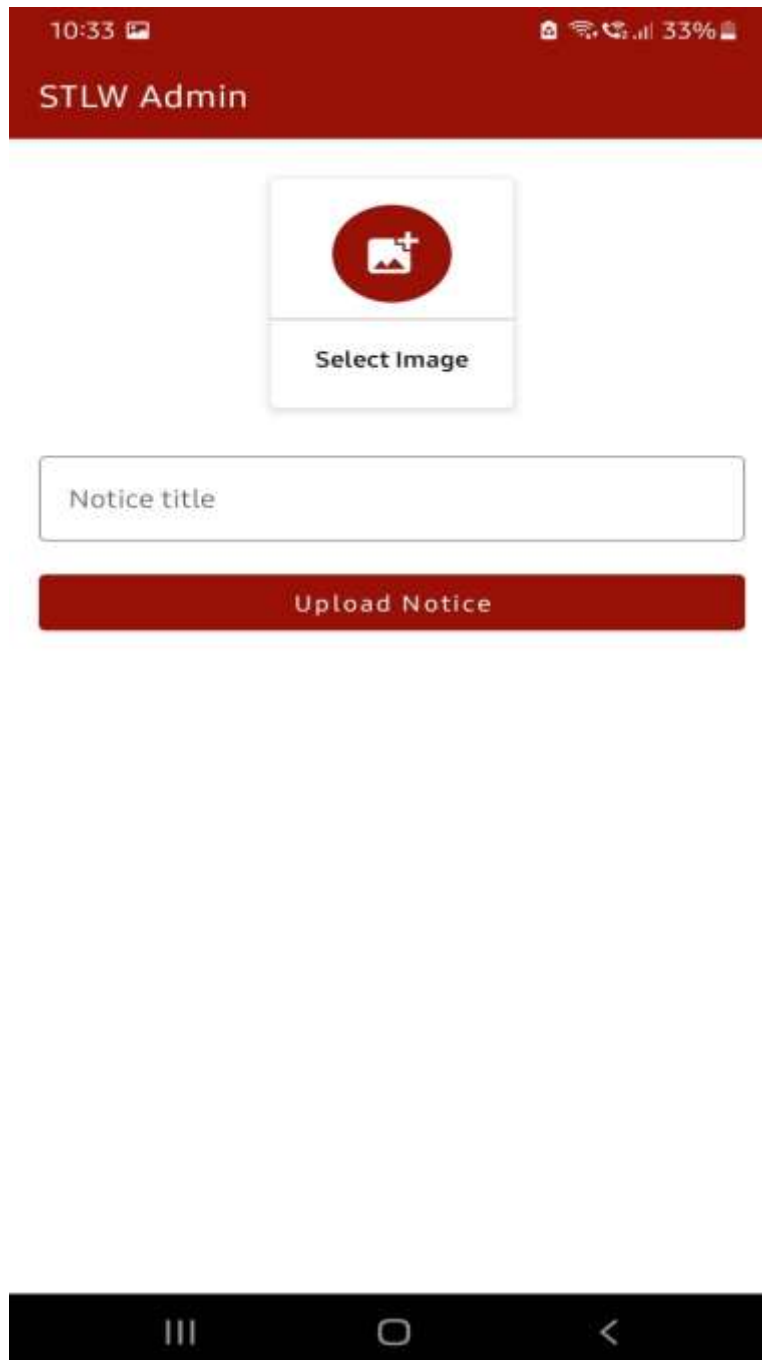
5.1:Main page of the Admin
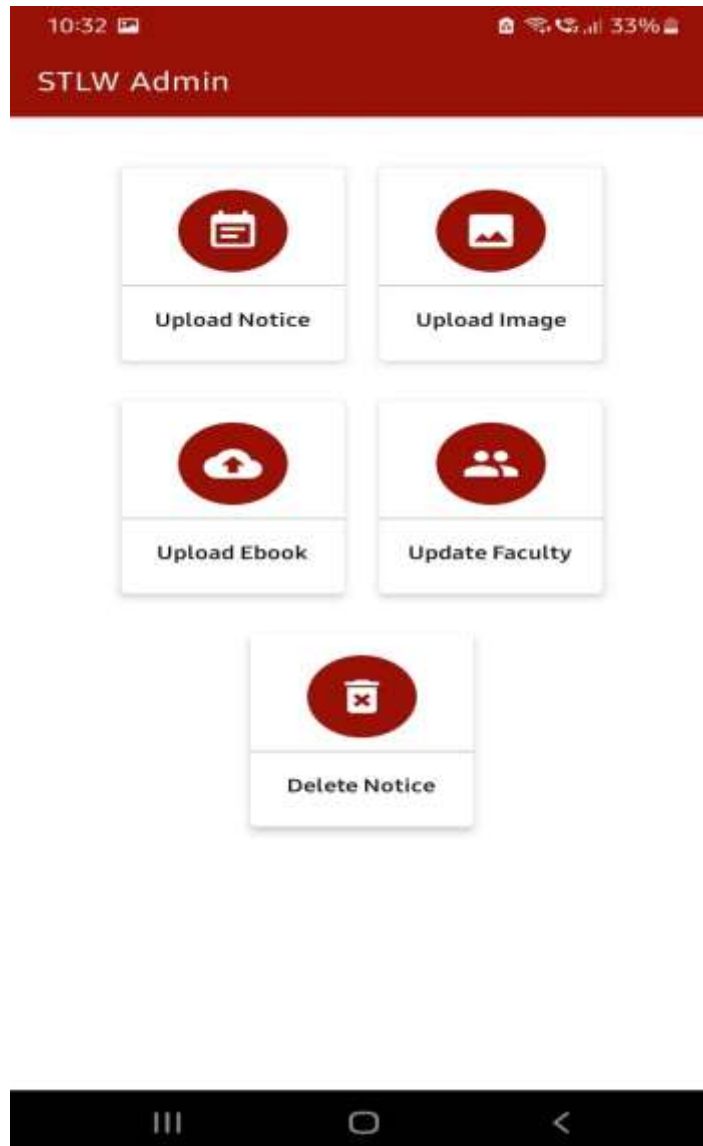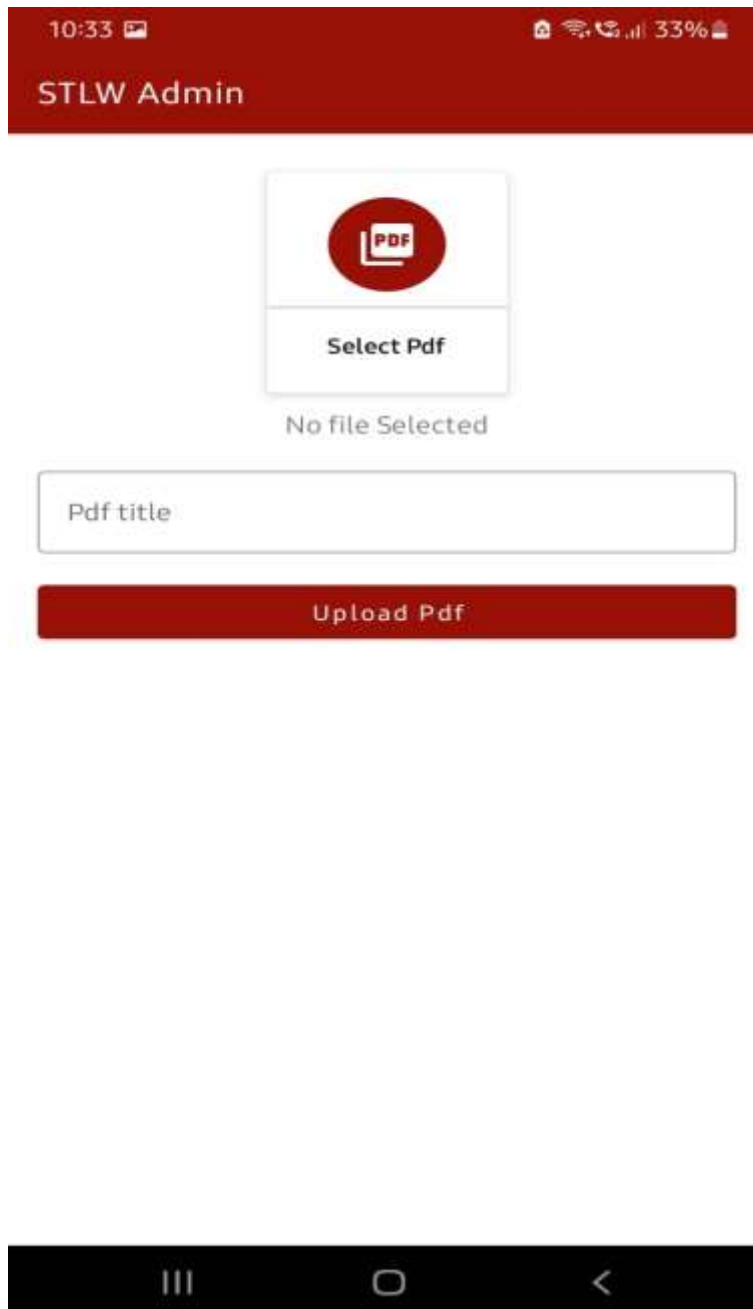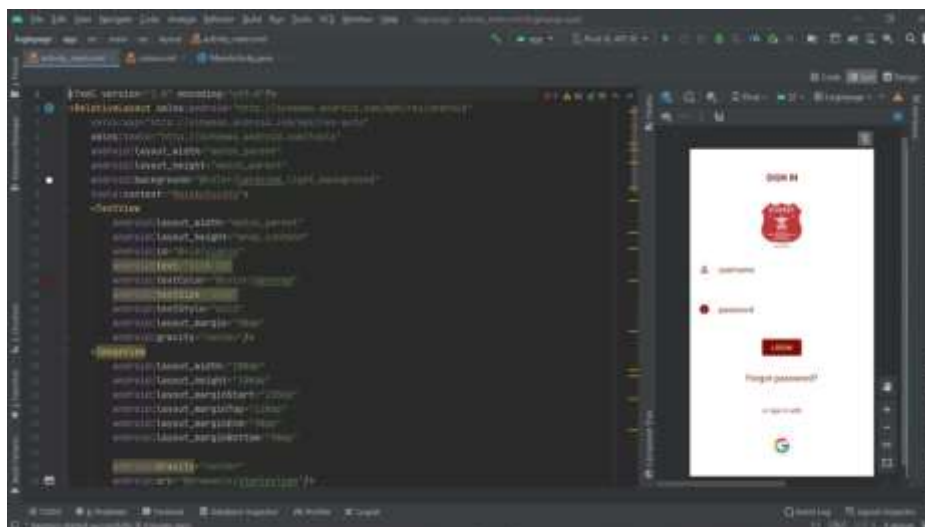

5.2: Image uploading screen
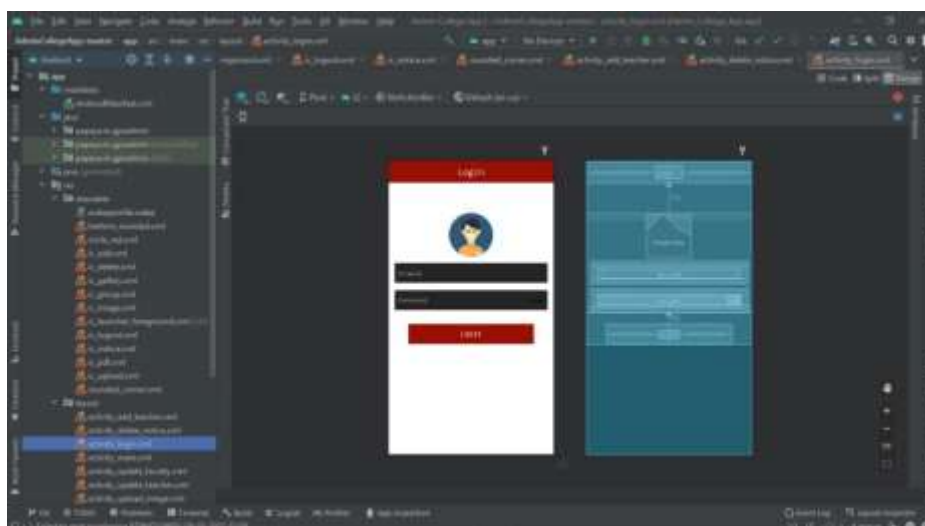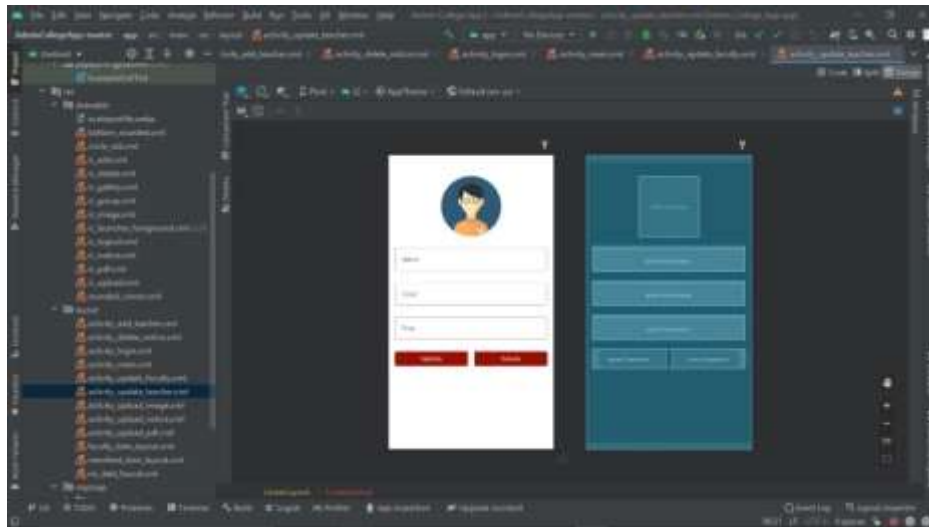
5.3: Updating notice

5.4: Uploading PDF

5.5: SIGN IN Page

5.6: Login in Page

6. CONCLUSION

Simplicity is never simple. As we have seen in this project, the process of creating a user- friendly and straightforward platform that facilitates the administrator's job is one filled with complexity. From understanding user requirements to system design and finally system prototype and finalization, every step requires in-depth understanding and commitment towards achieving the objectives of the project. Overall, efficiency has improved and work processes simplified. Although all the objectives have been met, the system still has room for improvement.

The system is robust and flexible enough for future upgrade using advanced technology and devices. This app can be used by educational institutions to maintain their records easily. Achieving this objective is difficult using the manual system as the information is scatted, can be redundant, and collecting relevant information may be very time consuming. All these problems are solved by this project.

This system helps in maintaining the information of pupils of the organization .it can be accessed by the administration office and kept safe for a long period of time without any changes. This make faculty jobs more accessible by giving them an easy place to find and sort information. This system allows teachers and student managers to follow with their student engagement.

This system helps in maintaining the information of faculty of the organization. It can be easily accessed by the students and kept safe for a long period of time without any changes.

7. FUTURE SCOPE

The future development that would be made in this STLW application are mentioned below

1. Scheduling of the staff. i.e. , time table setting of the staff.
2. Further, the faculty can upload the videos of their lectures on to this site and students who had missed those classes can view those videos.
3. Student's attendance system can be added.
4. Official Fee payment portal can be merged.
5. Uploading of assignments and grading can be one of the features.
6. Live view of the college can be added for new users.
7. Online interaction between faculty and parents can be part of the app.
8. Uploading the recorded classes for the students can be also be a feature.
9. Online live events like seminar, workshops will be added.
10. Placements official notice will be added.

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