# CHAPTER ONE

# INTRODUCTION

This chapter goes through the project description as well as some background information. Furthermore, this chapter follows the problem description of the project to offer a clear knowledge of the project's scope and objectives. This chapter will act as a guideline for all later stages of development.

## 1.1    Background of The Study

In today's world, the growth of smartphones has radically altered everyone's life. The world is at our fingertips with the press of a button. The mobile era has made our lives easier by putting the world in our palms. Applications are at the core of these smartphones. There are several free applications at our disposal. We can order food, pay bills, check our health, and even have our own personal assistant, the list is endless. Sachin et al. (2018)

A Notice Board is a public message board where anyone can leave messages. For example, posters, memos, and corporate newsletters can be used to advertise items to purchase or sell, a job opportunity, an upcoming event, or a service. Notice boards are frequently made of cork or other soft materials that allow pins to be inserted to facilitate the addition and removal of paper messages, or they can be placed on digital devices such as computers, phones, and other accessories where people can leave or erase messages for others to view. Kingsley et al. (2021)

The progress and evolution of information technology has transformed the way we live, communicate, learn, and conduct business. The announcement system that is often used in many departments or polytechnics is rather ineffectual when the message does not reach the intended student. Kingsley et al. (2021)

Online notice boards, also known as virtual notice boards or electronic bulletin boards, are digital platforms (web-based applications) where users can post and view notices and other information. These notice boards can be used for a variety of purposes, such as sharing information about upcoming events, posting job opportunities, or sharing news and updates within a community or organization. Online notice boards are commonly used by schools, universities, businesses, and other organizations as a way to easily share information with a large number of people. Some

online notice boards are public and can be accessed by anyone, while others may require a login or other form of authentication to access the information. Salisu (2019)

With the introduction of internet technology, one may now access information from any location once connected. Electronic notice boards have mostly replaced conventional notice boards. While conventional notice boards are constructed of materials such as hardwood, metal, and other hard-surfaced media that allow written things to be pasted or mounted on them, electronic notice boards are built of energy-powered devices such as Global System for Mobile (GSM) or Liquid-Crystal Display (LCD). Wireless or non-wireless electronic notice boards are also possible. Kingsley et al. (2021)

The concept of an online notice board is a relatively new one. It provides a platform for people to share information quickly and efficiently without the need for physical paper notices. Online notice boards originated in the late 1990s as a way to provide users with an online platform to post announcements. These online notice boards provide a space for users to post information about events, jobs, services, or any other type of announcement that they would like to share with a large group of people. With the advent of social media, online notice boards have become even more popular, as they provide a way for users to quickly share information with their friends and followers. Online notice boards are now used by many organizations and businesses to spread the word about their services, products, and events. Kingsley et al. (2021)

The identification of the shortcomings of the present manual notice board system leads to the creation of the proposed system, which should greatly simplify information distribution and enhance the administrative work of the department.

## 1.2    Statement of the Problem

In spite of the importance of information on notice boards, it has come under a severe threat from the manual system of information broadcast. This is very much applicable in most educational institutions. The manual system involves placing letters coming from inside and outside of the departments on notice boards located in the department. Students come once in a while to check for available or pending Notices/Letters placed on the notice board. Sometimes these Notices/Letters are not checked out for a period of time and hence the information contained is not functional if students are not present, all Notices/Letters are unread and as such, Notices/Letters

which require urgent attention are neglected. Also, a major setback of this system is insecurity as Notices/Letters are kept without proper safety measures and can be accessed by unguaranteed persons.

In the case of the computer science department at Kaduna Polytechnic, there is still the manual method of passing information around as they are pinned on the notice board as they are placed in strategic positions around the department. Notice boards are located in all the respective faculty buildings, departments, hostels, etc.

## 1.3    Aim and Objectives of the Study

To develop a mobile-based online student notice board for the department of computer science at Kaduna Polytechnic.

**Objectives**

The objectives of this research work are as follows:

i.    To design a normalized system that supports the creation, retrieval, deletion, and updating of notices during the process.

ii.    To implement a system where students can easily get and view notices from the department.

iii.    To evaluate how efficiently the system manages the information stored in it.

## 1.4    Scope of the Study

This research work is centered on the development of a mobile-based online student notice board for the department of computer science at Kaduna Polytechnic it will cover the dissemination of information within the computer science department and information from departmental administration to staff and to students. It will not cover the dissemination of information across the entire departments in Kaduna polytechnic.

## 1.5    Limitations of the Study

This study's scope has been constrained by several core issues, including:

**Time** - The researcher's everyday busy academic pursuits limited the time allotted for research for this study.

**Access to literature** – Access to some material was restricted, although the available material was optimized.

**1.6     Significance of Study**

This study will have a potential impact on the department as it would create a platform for computerized information dissemination at the departmental level, other importance of this study is discussed below

   i.    Effective update of notice/letter intake; once notice/letters arrive, the computer updates it within seconds of notification.

  ii.    Time management; this method reduces the time spent manually managing notices/letters.

 iii.    Fraud reduction by making the notice unavailable to all unauthorized users.

**1.7     Project Organization**

The project is divided into five chapters. The outlines are presented below:

**Chapter One: Introduction**

Chapter one introduces this project work, the study's background, the problem statement, the purpose and objectives, the scope of the study, the constraints of the study, the relevance of the study, the project organization, and the definition of terms.

**Chapter Two: Literature review**

This chapter focuses on the literature review, and the contributions of other scholars on the subject matter being discussed.

**Chapter Three: Methodology and Design**

This chapter is concerned with the presentation of the results of system analysis and design. It presents the research methodology used in the development of the system to facilitate an understanding and effective future implementation of the system.

**Chapter Four: System Implementation Evaluation**

This chapter describes the system implementation and documentation, analysis of modules, and system requirements for implementation.

**Chapter Five: Summary, Conclusion, and Recommendation**

The chapter provides a summary of major findings, conclusions, and recommendations based on the study conducted.

**1.8    Definition of Terms**

i.    **E-Notice Board:** This refers to an electronic notice board, which is a digital platform or website that allows users to post and view notices, announcements, or other information. It may be used in a variety of settings, such as a school, workplace, community organization, or other groups.

ii.    **Moderator:** This refers to an individual who is responsible for managing and maintaining the online notice board.

iii.    **Notice:** This refers to a piece of information that is posted on the online notice board. Notices may include announcements, events, updates, or other types of information that are relevant to the users of the board.

iv.    **User interface (UI)**: The part of a software application that the user interacts with, including the layout, buttons, and other elements

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1    Introduction

The purpose of this chapter is to show how the problem under consideration relates to prior research, current practice, or other fields of knowledge by citing relevant works by other researchers who have dealt with a similar issue. Furthermore, this chapter will include a synthesis of current research on the issue, highlighting areas of agreement, disagreement, and gaps in the literature, to establish the significance of the project topic in the field and to recommend opportunities for future study.

## 2.2    Literature Review

Kingsley et al. (2021). E-Notice Board (ENB) for the Faculty Community. There are several wall notice boards put in various positions across any faculty where persons with announcements typed or written on a sheet of paper can place it on the notice boards for other people to see when passing by those spots. As a result of the irresponsibility of those who deposit them, there is a large collection of littered papers, and no one is responsible for removing or cleaning them. Furthermore, the announcement may not reach the intended recipient since others may not pass via the notice boards. Weather conditions can often disrupt people's movements; some people may not reside on school grounds, making it difficult for them to view the announcements on time. As a result, persons who want to make announcements are under a lot of pressure to publish them everywhere to reach the intended audience. All of this occurs because the ENB isn't employed in this situation.

Furthermore, the study was designed with Object Oriented Analysis and Design Methodology (OOADM) and developed with Hypertext Pre-Processor (PHP), Hypertext Markup Language (HTML), Bootstrap, Cascading Style Sheet (CSS) as the front-end, and My Structural Query Language (MYSQL) database as the back-end.

In conclusion, the implementation of our ENB online application provides an enhanced method of disseminating notices among the University faculties. In comparison to the conventional paper-based wooden noticeboard method, it has the potential to transmit notices in a simple, efficient,

and well-organized manner. The usage of the ENB reduces human traffic at the notice board location since information on the notice boards can be accessed electronically on the ENB.

Sachin et al. (2018). Mobile-Based Notice Board & College Management System Using Firebase Implementation. In today's world, most universities have websites that display college information. On these websites, students may find timetables, exam schedules, and event schedules. However, to access this information, students must first log in to the website. Students can access the website if they have an internet connection, and these websites can also be seen on mobile phones. There is one issue with the websites in that they cannot be accessed if there is no internet connection. As a result, the website's main problem is its lack of offline connection. College administration entails the execution of several actions, and using various software for various reasons is a time-consuming task.

In conclusion, the software provides institutional activities with mobility and automation. This software is secure and will not drain your battery. The information may be promptly obtained from the backend server while being user pleasant. Because most paperwork is done online, this program saves money on printing and paper. As a result, this software aids in staying up in this mobile era. The android application is designed to assist the institution's workers in their advancement and academic growth. It is simple for parents to obtain information on their children.

Gourav et al. (2022). IoT-Based Digital Wireless Notice Board. At the moment, the notice/advertisement boards are administered manually. Putting up notices on the notice board is a time-consuming operation. This wastes a lot of resources such as paper, printer ink, and manpower, as well as time. n. A person is hired to manage this notice board, where the scenario is replaced by the concept that deals with sophisticated wireless notice boards.

Moreso, the proposed system is to create a digital notice board that displays messages sent by the user via the website and to design a simple, user-friendly system that can receive and display messages/information in a specific manner concerning date and time, allowing the user to easily keep track of the notice board every day and each time he uses the system. The system is divided into two parts: transmitter and receiver. The transmitter is in charge of sending essential information over the Website.

When a person clicks on a website link, he or she can input a message and receive room for more information. The essential operating mechanism here is embedded C language and Wi-Fi Module.

In conclusion, to the best of our knowledge, the system has been successfully tested with troubleshooting. Every block in it has been reasoned and justified. The project is both cost-effective and marketable, and the components employed are basic and readily available in the market.

Istiono and Sampurna (2021). Notification information system android-based for spreading school information. Some schools still use manual letters or Short Message Service (SMS) or phones to transmit information to their members, therefore with such a manual approach, the institution or school incurs additional expenses and takes more time to spread information to a large number of people or members in their group. The goal of this research is to solve the problem of information spreading by developing an android-based information system with push messaging notifications, where the information sent by the sender will appear on the recipient's main notification page. With this method, it is hoped that spreading information will increase information reception by parents or students while decreasing information spreading costs.

Furthermore, the following are the steps in this research methodology: problem identification, literature study, system design, application development, testing, and assessment. Testing and evaluation take place in a private school in Tangerang, Indonesia. This system development is separated into two parts: the first is the design of a content management system (CMS) for the school as an information provider, and the second is the development of mobile applications for parents and students. The process of providing information notifications begins with a school administrator sending a text message or an image, then the data is sent to the database server for data storage and, at the same time, the data is sent to Google push messaging to be forwarded to members, either in groups or individually.

It can be concluded that employing the information notification system may facilitate and assist school administration in conveying information to parents or students, as evidenced by the 84.67% user acceptance of this system. Furthermore, the information notification system may reduce the cost of distributing information from the school to parents or students, and the school no longer has to pay to send information to parents or students.

Srisha et al. (2019). College Notification System. Traditional notice boards need a lot of pen effort, paper labour, and paper waste. Generally, colleges use traditional paper-based notice boards, so to overcome the drawbacks of this traditional notice board, we created an Android-based application through which students can receive notifications about any information, activities, or events related to their colleagues from anywhere, at any time.

Moreso, the project is divided into four major components, which are the admin module that serves as application authorization, and the notification management module where teachers and students are added. He delivers messages on scholarships, admissions, holidays, events, timetables, student accomplishments, tests, and other matters. Module for faculty which is where faculty can view their associated alerts. Finally, scholarships, admission, holidays, events, timetable, student accomplishments, examinations, and other notifications are displayed in the student module.

In conclusion, computers and mobile phones are getting increasingly popular in today's environment. As a result, we must transition from traditional notice boards to electronic notice boards. We created an Android software called a college notification system to provide college-related notifications straight to your Android devices. This program provides a simple, convenient, and effective online notification system, reducing the work required by students and instructors. This college notification system solves all of the challenges associated with traditional paper-based announcements.

## 2.3    Summary of Related Literature Reviews

| Author & Year | Title & Description | Merit and Demerits |
|---|---|---|
| Kingsley et al. (2021). | E-Notice Board (ENB) for the Faculty Community.<br><br>This project, aimed at creating an online Electronic Notice Board (ENB) for the faculty community. | Location constraints in the dissemination of information were eliminated.<br><br>The system is limited only to the web. |
| Sachin et al. (2018). | Mobile-Based Notice Board & College Management System Using Firebase Implementation.<br><br>The article designed an android application to assist the institution's personnel in their advancement and academic growth. | This system simplified the process with an Android application, which sends immediate messages to students or concerned staff.<br><br>Some android operating systems are not supported. |
| Gourav et al. (2022). | IoT-Based Digital Wireless Notice Board.<br><br>This paper aims to present a technology-based online notice board using the Internet of Things (IoT) for the dissemination of information that is cost-effective. | completely capable of sending pertinent information and announcements and keeping users up to date regularly<br><br>Components are not easily accessible |

| | | |
|---|---|---|
| Istiono and Sampurna (2021). | Notification information system android-based for spreading school information.<br><br>The research created an Android-based information notification application with push messaging services to distribute information from the school to students or parents via push notification, and after tapping the notice, the specifics of this information may be viewed. | Reduction in the cost of distributing information from the school to parents or students.<br><br>The system is limited to just android users. |
| Srisha et al. (2019). | College Notification System.<br><br>This paper implements the E-Notice Board application, which may operate on any computer system through a local area network, a wired network, or a wireless network. | It even reveals the availability of the book before searching, which saves a significant amount of time.<br><br>The system has a deficiency in user experience. |

**2.4     Analysis of the Current System**

The existing approach relies on manual means of physically transmitting information throughout the department. Among the procedures are the following: Notice boards are created and posted in strategic locations around the department, the material is provided by designated persons or groups within the department, Messages are manually posted on the department's notice board, and students physically go to the notice boards to read notices.

**2.4.1  Problem Inherent in the Current System**

There are several problems inherent in the current system of information dissemination in the department which include:

i.    The entire procedure of removing the old message and pasting the new notice on the notice board takes time.

ii.   It takes a lot of energy to walk back and forth to read the departmental notice board daily.

iii.  It is not available all of the time.

iv.   People mutilate, destroy, or pull out notices from notice boards, leaving others in the dark.

v.    The presentation of information is unrestricted.

vi.   This results in paper fragments cluttering the department premises.

vii.  Storage is difficult, and there is no effective way to refer to previously provided pertinent material.

viii. There is no official supervisor in charge of the board because everyone is allowed to paste materials at their leisure.

**2.5     Analysis of the New Proposed System**

This study's proposed system is a mobile-based online student notice board. This system is a mobile application that provides current articles, notifications, and other information to all users linked with the department community. The department notice board system will address the issues mentioned in the current system. The administrator does all updates such as add, remove, and view so that the user receives the most recent messages. Because the notice board application operates on mobile phones, information transmission is efficient.

# CHAPTER THREE

# METHODOLOGY AND DESIGN

## 3.1    Introduction

A methodology is a rigorous study or inquiry, particularly to unearth new facts or information; thus, research methodology should be good enough to enable the achievement of the specified objectives, which are achievable using specific components, such as data collection and design procedures, and system modeling (use case, activity, and class diagrams). This chapter provides the input/output specifications as well as the system requirements for developing an online furniture auction system.

## 3.2    Methods of Data Collection

Before constructing any system, it is necessary to collect data and facts about the existing system to comprehend what is going on. Two approaches were used in this study.

    i.   Primary Source

   ii.   Secondary Source

### 3.2.1    Primary Source of Information

This includes data gathered directly or indirectly from target users, with no edits or suggestions from other writers. This main source's material is considered more accurate and credible. As a result, the goal is to incorporate the knowledge gleaned from this source into the project in order to satisfy the criteria. Interviews and observations were used as primary source data collection strategies.

### 3.2.2    Secondary Source of Information

This essentially includes all of the information that someone can receive from existing sources such as books, the internet, case studies, articles, newsletters, and other relevant publications. The resources obtained from the internet in particular were quite relevant; various search engines, particularly Google, made it very easy to find information.

### 3.3　System Modeling

A system model is a conceptual model of a system that explains and depicts it. A system is any interaction between a group of components that work together to achieve a common purpose. A collection of visual notation techniques inherent in the Unified Modeling Language, which was used to design this current system, may be used to construct visual models of object-oriented software-intensive systems. UML diagrams utilized in this new design include use case diagrams, class diagrams, and activity diagrams.

### 3.3.1　Use Case Diagrams

Use cases are groups of interactions between a system and a user. Use case diagrams are used to graphically portray the functioning of a system in terms of its actors, goals (expressed as use cases), and dependencies between those use cases.
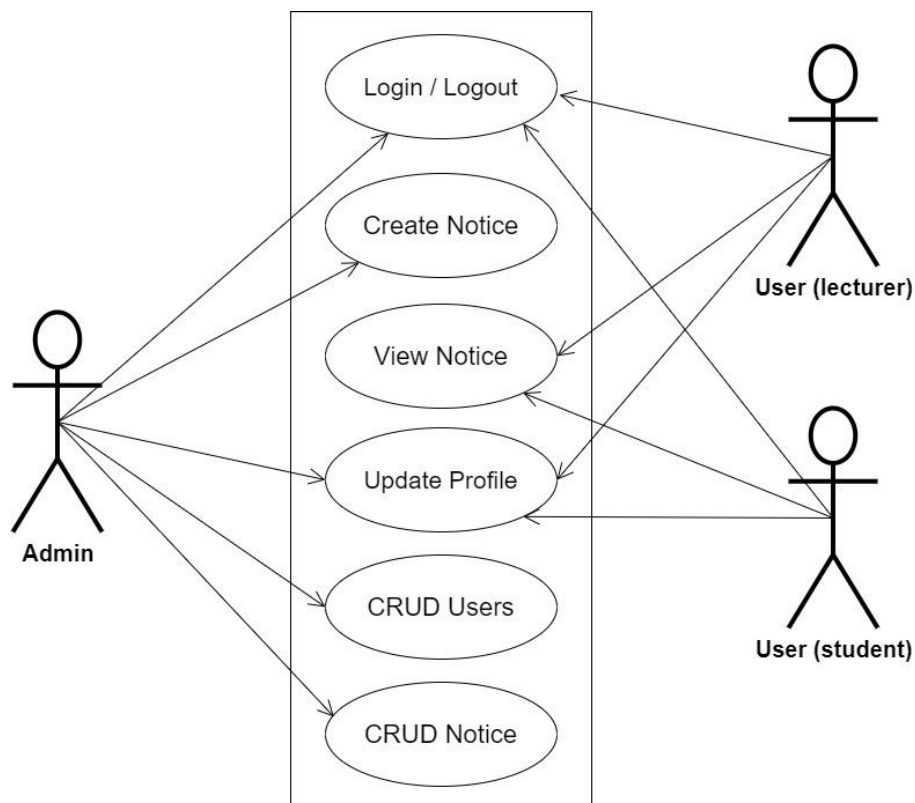


**Fig 3.1 System Use Case Diagram**

### 3.3.2 Class Diagrams

The Unified Modeling Language (UML) class diagram is an implementation of an independent view of how the system interface might appear, with each class having its own set of properties and displaying how they interact with one another. Class diagrams use the Unified Modeling Language standards to visually depict the static structure and composition of a given system (UML).
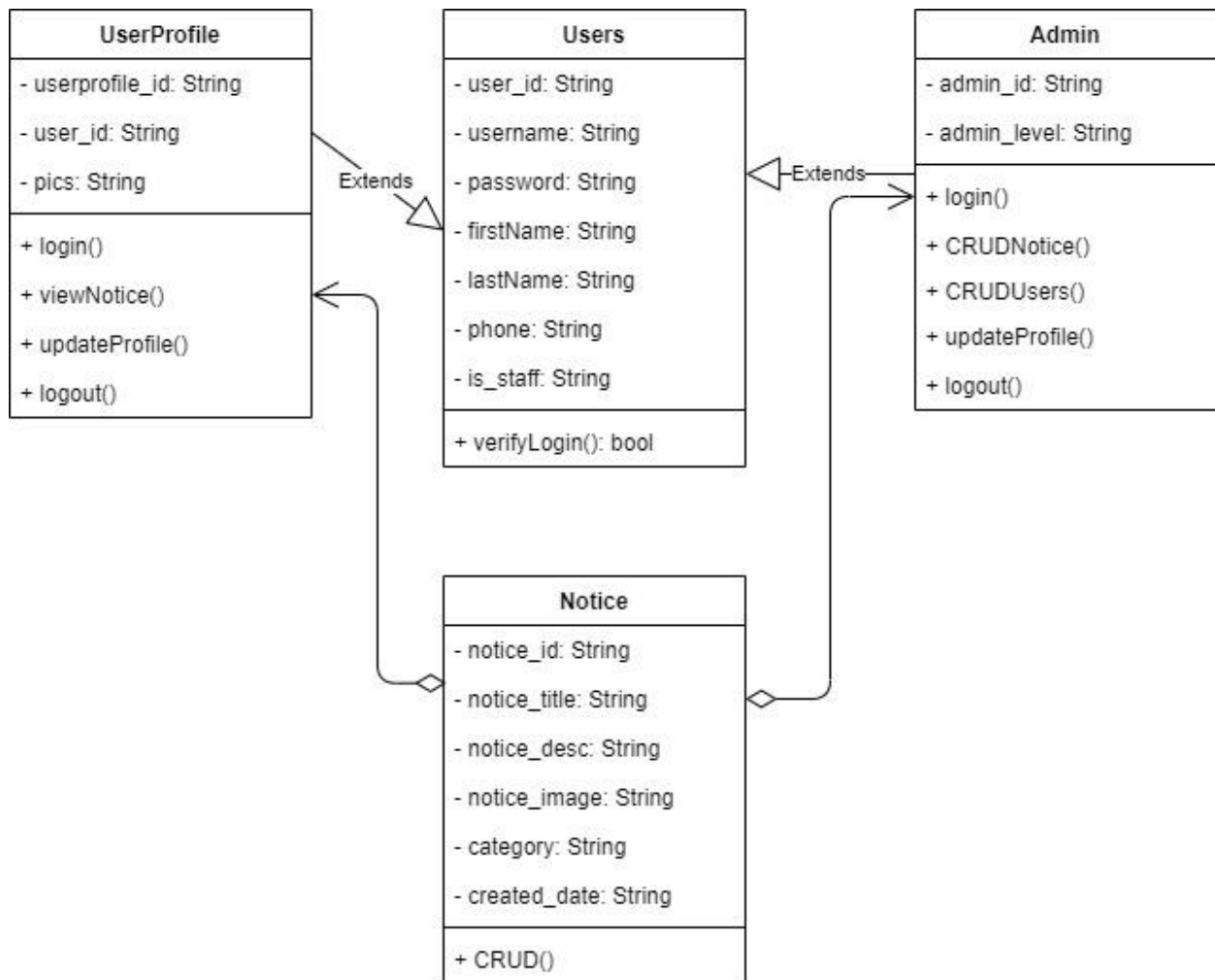


**UserProfile**
- userprofile_id: String
- user_id: String
- pics: String

+ login()
+ viewNotice()
+ updateProfile()
+ logout()

**Users**
- user_id: String
- username: String
- password: String
- firstName: String
- lastName: String
- phone: String
- is_staff: String

+ verifyLogin(): bool

**Admin**
- admin_id: String
- admin_level: String

+ login()
+ CRUDNotice()
+ CRUDUsers()
+ updateProfile()
+ logout()

Extends

Extends

**Notice**
- notice_id: String
- notice_title: String
- notice_desc: String
- notice_image: String
- category: String
- created_date: String

+ CRUD()

**Fig 3.2 System Class Diagram**

### 3.3.3 Activity Diagrams

An activity diagram, like a flowchart or a data flow diagram, visually illustrates a series of events or the flow of control in a system, but it acts more like an enhanced version of both.

**Login**

The process for gaining access to the system is depicted in the diagram below; the username and password must be accurate to gain access.
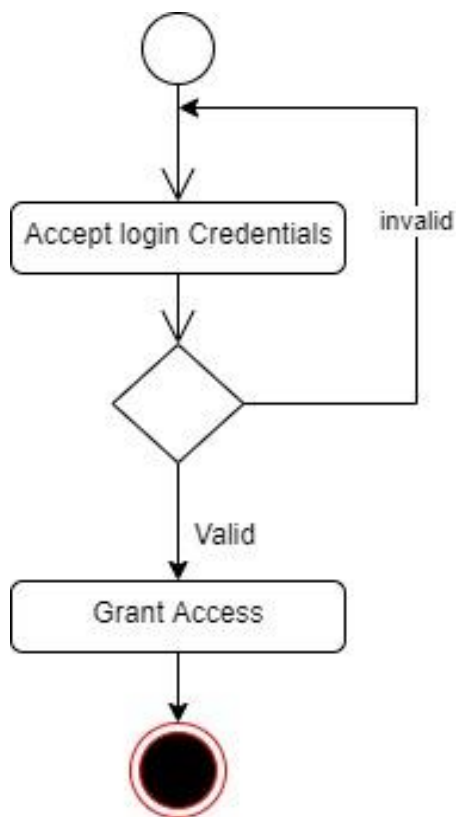


**Fig 3.3.1 Login Activity Diagram**

**Creating Notice**

The process for creating a notice for other users to view is depicted below, to create a notice one has to be authenticated and must have proper authorization.
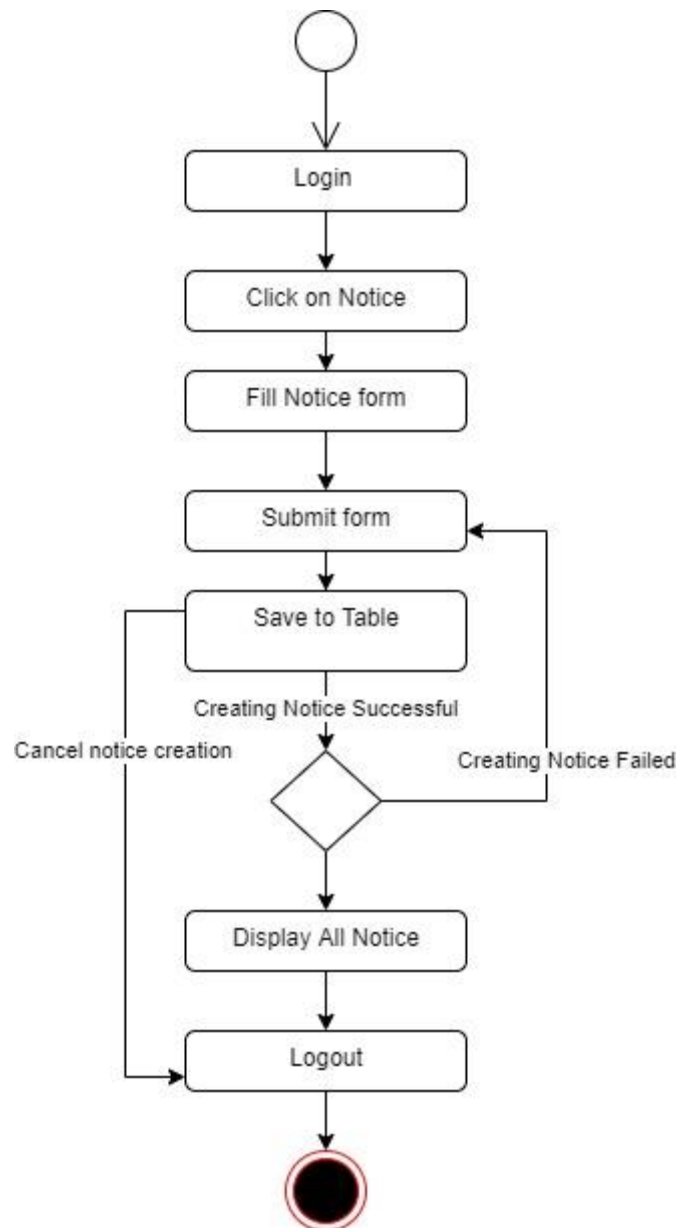


**Fig 3.3.2 Creating Notice Activity Diagram**

## 3.4    Database Design

Input specification is the logical explanation of how data is stored in the computer's memory. SQL standards are vital for guaranteeing that structured data is uniform and independent of applications due to the flexibility experienced when using the system, as well as the simplicity of accessing and reading the data and ensuring applicability throughout the internet. The following are some of the input specifications used in this project effort.

  i.    Users Table: contains basic information about all system users.
 ii.    Notice Table: contains every system-saved notice information.

**Table 3.1        Users Input Specification Table**

| Field Name | Data Type | Null | Key | Length | Description |
|---|---|---|---|---|---|
| user_id | Varchar | No | PK | 32 | Unique string for identifying users |
| username | Varchar | No | | 100 | Username |
| password | Varchar | No | | 128 | User Password |
| firstName | Varchar | No | | 60 | User first name |
| lastName | Varchar | No | | 60 | User last name |
| phone | Varchar | No | | 20 | User phone number |
| is_staff | Bool | No | | 100 | To check of user is a staff |

**Table 3.2        Notice Input Specification Table**

| Field Name | Data Type | Null | Key | Length | Description |
|---|---|---|---|---|---|
| notice_id | Varchar | No | PK | 32 | Unique string identifying notice |
| notice_title | Varchar | No | | 60 | Title of the notice |
| notice_desc | Varchar | No | | 100 | Notice Description |
| notice_image | Varchar | No | | 100 | Notice image |
| category | Double | No | | 128 | Category of the notice |
| created_date | Date | No | | 20 | Creation date |

## 3.5     Output Design

This declares and displays the outcome of the given input. This automated system's output is dependent on its input. The output specification is listed below.

**Table 3.3        Users output design table**

| User_id | Username | Password | FirstName | LastName | Phone | Is_staff |
|---|---|---|---|---|---|---|
| XXXX | XXXX | XXXX | XXXX | XXXX | XXXX | XXXX |
| XXXX | XXXX | XXXX | XXXX | XXXX | XXXX | XXXX |
| XXXX | XXXX | XXXX | XXXX | XXXX | XXXX | XXXX |
| XXXX | XXXX | XXXX | XXXX | XXXX | XXXX | XXXX |

**Table 3.4          Notice output design table**

| Notice_id | Notice_title | Notice_desc | Notice_image | Category | Created_date |
|-----------|--------------|-------------|--------------|----------|--------------|
| XXXX | XXXX | XXXX | XXXX | XXXX | XXXX |
| XXXX | XXXX | XXXX | XXXX | XXXX | XXXX |
| XXXX | XXXX | XXXX | XXXX | XXXX | XXXX |
| XXXX | XXXX | XXXX | XXXX |  | XXXX |

## 3.6 Input & User Interface Design

This is a graphic depiction of the system interface; it will be designed to be user-friendly, responsive, and visually beautiful. Furthermore, it will be fully secured, thus authentication will be required to see various levels of the information. To help with the designs, a mid-fidelity wireframing program called Draw.io is employed.
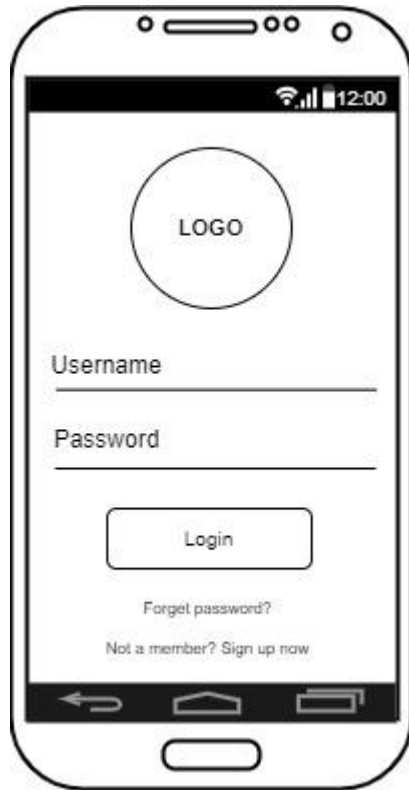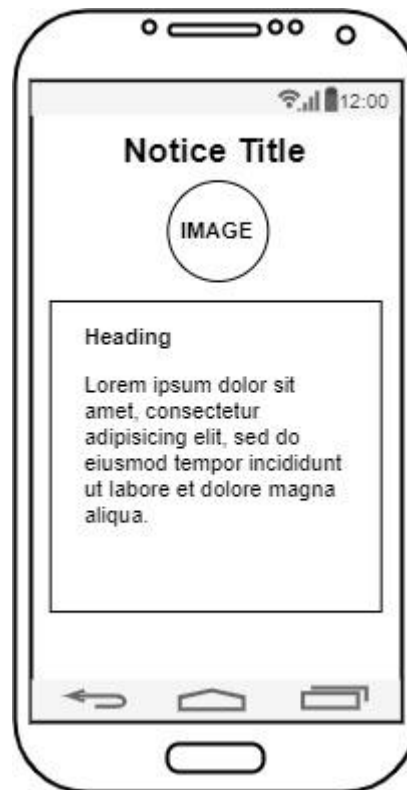


**Fig 3.6.1 Login Page**          **Fig 3.6.2 Notice Display Screen**

**3.7      System Requirement**

Every piece of software-generated has predefined system requirements that it must fulfill to function properly. The system requirements, on the other hand, are the bare minimum of hardware and software required for the system's intended operation.

**3.7.1   Hardware Requirement**

System Hardware Requirement Include:

a. Minimum of 8 GB of RAM (Random Access Memory) installed.
b. Minimum of intel core i5 required.
c. Minimum of 250GB HDD (Hard Disk Drive).

**3.7.2   Software Requirement**

The software requirements include:

a. At least Windows 10 OS (Operating System).
b. Flutter Installation.
c. Vs. Code / Android studio installation.
d. Emulator installation.

**3.8      Choice of Programming Language**

This research work will be a mobile-based application and will be implemented on a relational database system (SQLite). Flutter will be employed in the front end while Django(python) will be employed for the backend programming and APIs. The above are the modern languages used in implementing this system.

# CHAPTER FOUR

# SYSTEM IMPLEMENTATION EVALUATION

## 4.1    Introduction

This section describes in detail how the new system will be implemented in order to assure its efficacy. It illustrates instances of functional (new) systems as well as how the system will be implemented.

## 4.2    System Testing and Evaluation

The developed system should be tested for a variety of reasons. For example, only via testing will we be able to detect and address any problems in the new system. Unit and integration testing were used in this project to confirm the design's efficacy and efficiency, as well as to ensure the new system satisfies its functional requirements and is error-free.

**Unit Testing**

specific units or single components of the system are examined individually in this part to confirm that specific phases function properly and without problems.

**Integration Testing**

The program was tested via integration testing, in which all of the components were integrated and worked as one. The connection between the different components was examined to ensure that they are correctly integrated and that the units can function as a unit.

## 4.3    System Installation

In order to use the proposed application on any computer system, the following steps need to be taken:

i.    Make sure, android studio, JDK, and Android emulator are installed on the system.

ii.   Copy your project folder to any location of your choice.

iii.  Open the project folder in Visual Studio Code

iv.   In the terminal run "`flutter pub get`" to get all the dependencies in the pubspec.yaml file

v.    Select the Android emulator as the device to be used.

vi.      Locate the main.dart file and run the file in debug mode.

## 4.4    Security Measures

Since the scope of the application is public, literally all the information is made available to any user (students and admin), but some functionalities are restricted to the admin, functionalities that have to do with creating the student accounts, creating the candidates, managing the voting periods etc are restricted from the general student. The restriction is carried out by using passwords when the application is accessed.

## 4.5    Sample Outputs

These describe and give the pictorial representation of the program or software; it shows and gives clear understanding of the design, and displays all the interfaces.
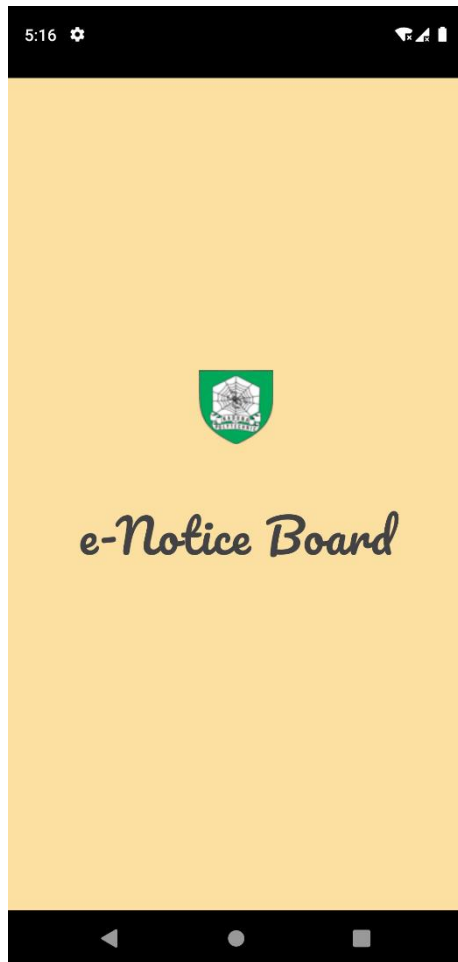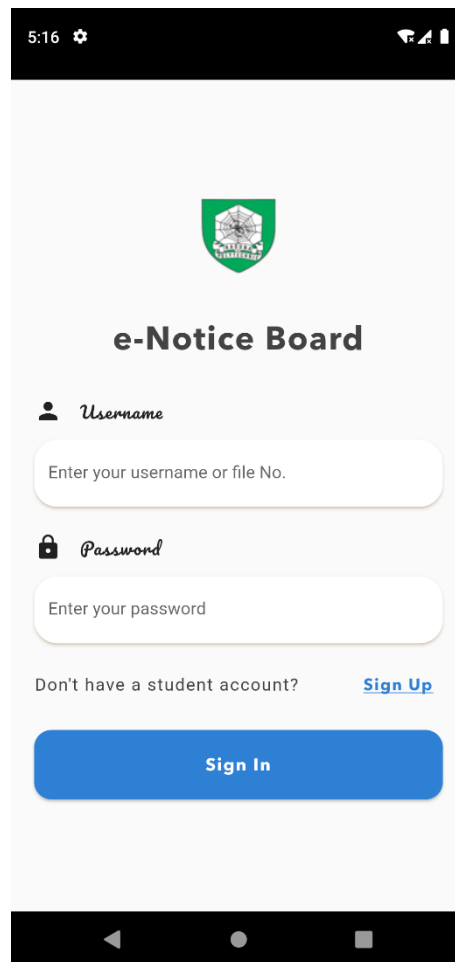


Fig 4.5.1: Splash Screen        Fig 4.5.2: Login Screen

**Fig 4.5.1**     **Splash Screen**: This is the first screen displayed to every user that wishes to make use of the application.

**Fig 4.5.2**     **Login Screen**: The screen grants users access (students, lecturers) to the application only if the correct credentials are provided.
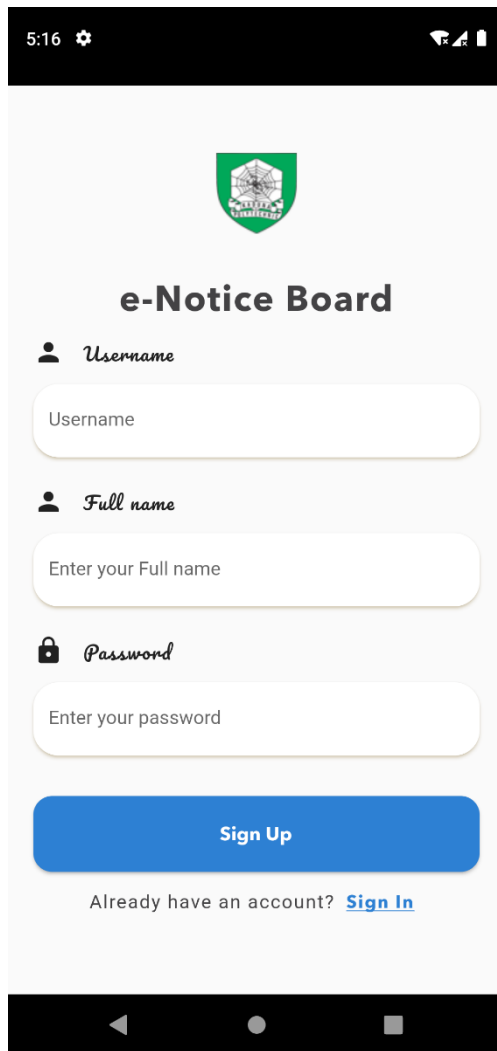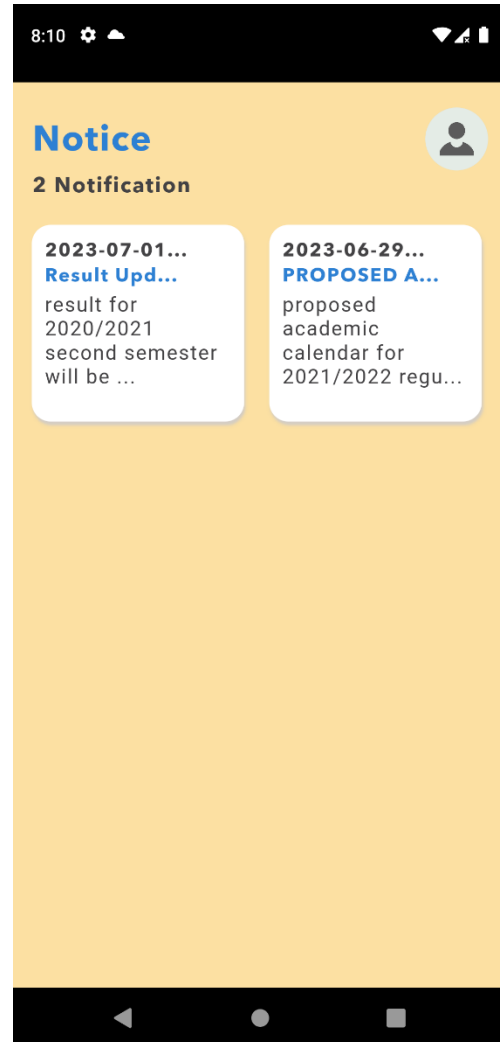


Fig 4.5.3: Signup Screen                    Fig 4.5.4: Notice Board Screen

**Fig 4.5.3**     **Signup Screen**: The application ensures that only registered users can have access to the system, there the screen enables the creation of accounts for new users (students), and lecturer's accounts are created by the admin to ensure data confidentiality.

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**Fig 4.5.4** **Notice Board Screen**: The screen stacks up a preview of each notice, and the details can be viewed with the click of the notice. Depending on the logged in user the notice is filtered
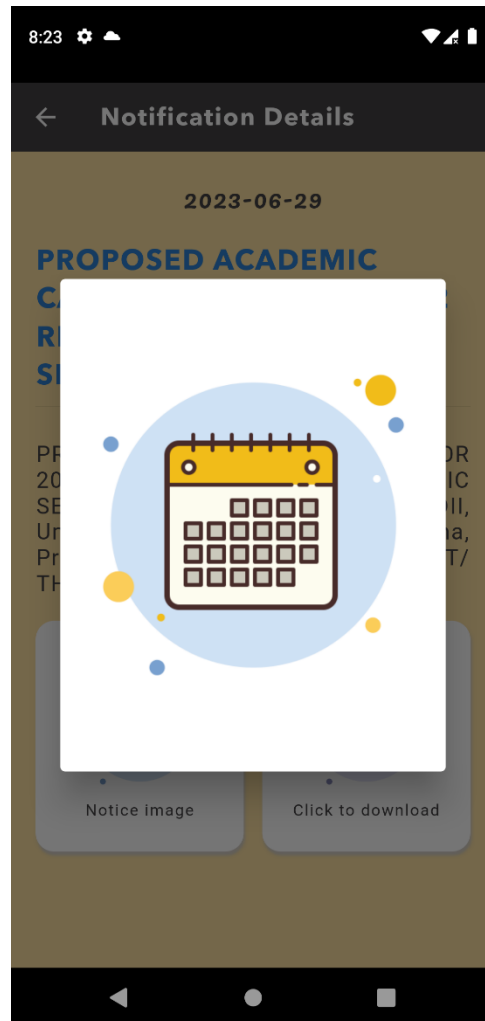


Fig 4.5.5: Notice Detail                        Fig 4.5.6: Notice Image

**Fig 4.5.5** **Notice Detail**: The application provides a user-friendly aesthetic interface to display the details of each notice, the notice might contain a title, date created, description of the notice, attached image and attached file which can be downloaded to the device storage

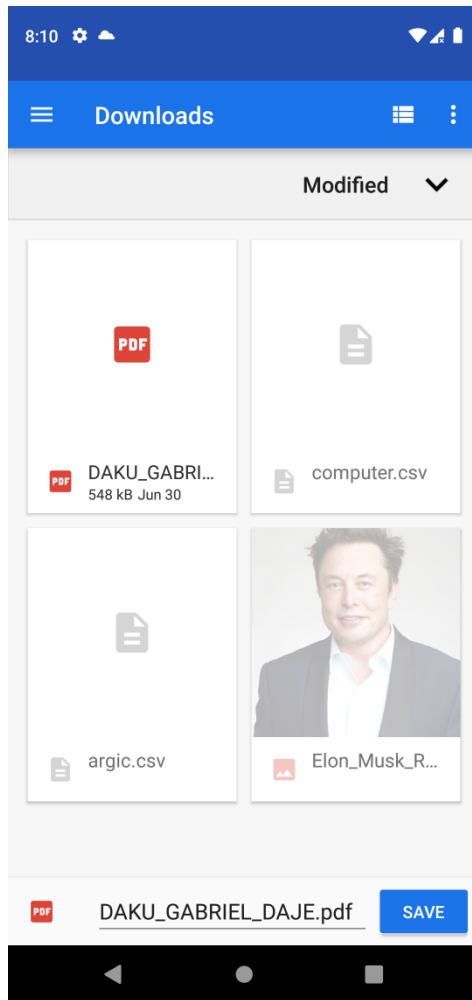**Fig 4.5.6** **Notice Image**: On click of the attached notice image, a modal pops up and displays the content of the image.
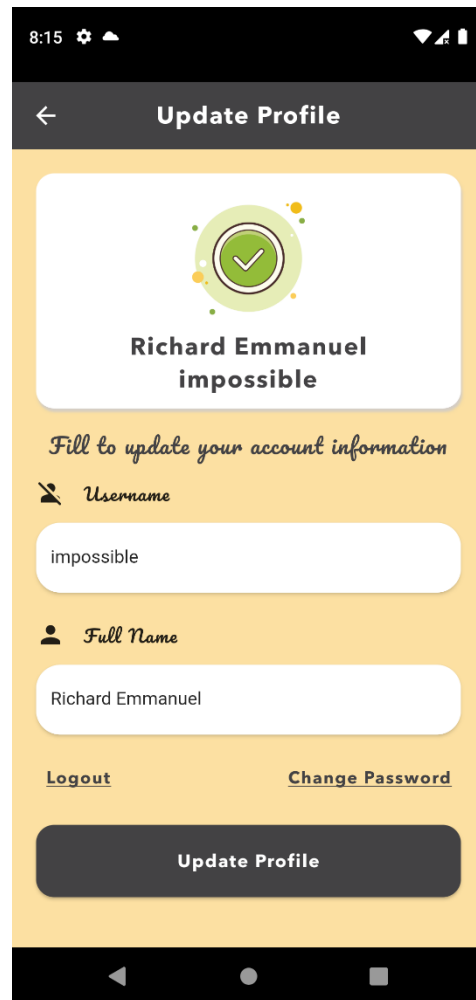
Fig 4.5.7: Download File          Fig 4.5.8: Update Profile

**Fig 4.5.7**          **Download File**: Clicking on the attached file, the function opens up the internal storage asking where to save the attached file.

**Fig 4.5.8**          **Update Profile**: This screen enables users to update their account information such as their username and fullname.
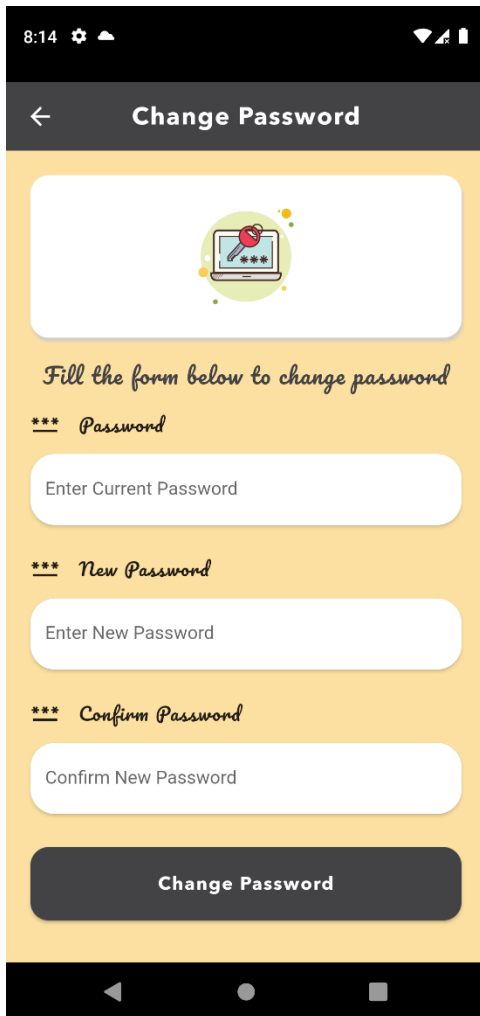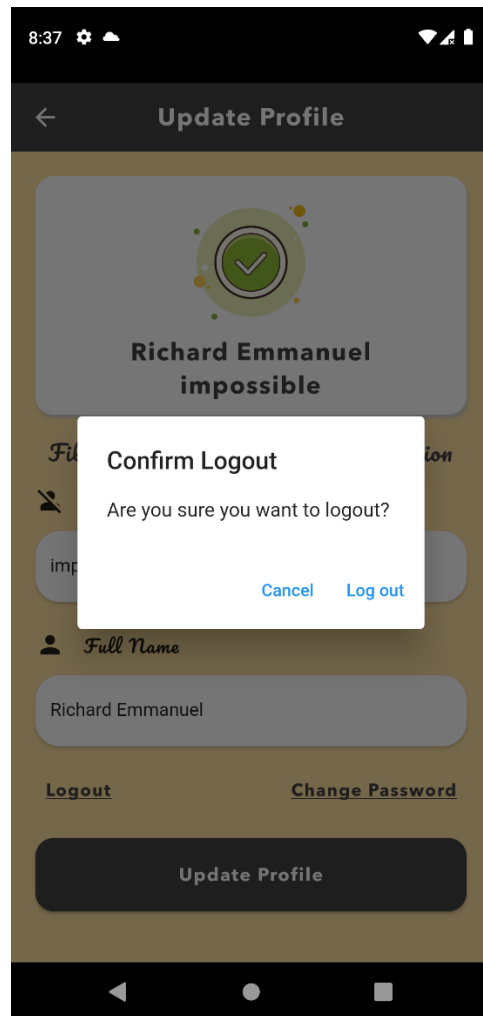
Fig 4.5.9: Change Password        Fig 4.5.9.1: Logout Option

**Fig 4.5.9**        **Change Password**: This screen enables users to update their account password

**Fig 4.5.9.1**        **Logout Option**: This option logs out the user from the application, user has to reauthenticate again in order to gain access to the system

# CHAPTER FIVE

# SUMMARY CONCLUSION AND RECOMMENDATION

## 5.1    Summary

This study focuses on developing a mobile-based online student notice board for the Department of Computer Science at Kaduna Polytechnic. The research aims to improve the existing manual system of information dissemination through physical notice boards. By implementing a digital platform, students will have convenient access to notices and updates from the department. The study also evaluates the efficiency of the system in managing information. The scope of the research is limited to the computer science department while acknowledging time constraints and restricted access to literature. The study is significant as it offers an effective and time-saving approach to managing notices, enhancing communication within the department, and reducing the risk of unauthorized access.

## 5.2    Conclusion

In conclusion, this research project highlights the need for a mobile-based online notice board to overcome the limitations of the current manual system. By developing a digital platform, the Department of Computer Science at Kaduna Polytechnic can enhance information dissemination and improve administrative processes. This study holds significance in streamlining the distribution of information, saving time, and enhancing security. By embracing technology, the department can create a more effective and user-friendly noticeboard system.

## 5.2    Recommendation

Based on the findings of this research, the following recommendations are proposed:

i.   Implement the Mobile-Based Online Student Notice Board: The department should actively pursue the implementation of a mobile-based online notice board system.

ii.  Ensure Information Accuracy and Timeliness: Regular monitoring and prompt removal of outdated or irrelevant notices will help maintain the accuracy and relevance of the information displayed.

iii. Implement Security Measures: To address concerns regarding unauthorized access and tampering, the online notice board system should incorporate robust security measures.

User authentication protocols, access controls, and data encryption techniques should be employed to safeguard the integrity and confidentiality of the notices.

iv.    Conduct User Training and Support: To ensure the successful adoption and utilization of the online notice board system, comprehensive training programs should be provided to students and staff. Additionally, a dedicated support team should be established to address any technical issues or user inquiries.

By implementing these recommendations, the department can establish an efficient and reliable mobile-based online notice board that enhances communication, information dissemination, and administrative processes within the Department of Computer Science at Kaduna Polytechnic.

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**APPENDIX**

**Views.py**

```python
from django.shortcuts import render

from rest_framework import generics

from rest_framework.generics import GenericAPIView

from rest_framework import status

from rest_framework import permissions

from rest_framework.response import Response

from rest_framework.views import APIView

from django.views import View


from eBoard_auth.serializer import *


# Create your views here.


class RegisterView(generics.CreateAPIView):

    """This View create an account for the user"""
    serializer_class = RegisterSerializer
    permission_classes = [permissions.AllowAny]


    def create(self, request, *args, **kwargs):
        """Creates a user"""
        super().create(request, *args, **kwargs)
        return Response(status=status.HTTP_201_CREATED)


class UserView(generics.RetrieveAPIView):
    """This view returns a user"""
    serializer_class = UserSerializer
    permission_classes = (permissions.IsAuthenticated,)
```

```python
    def get_object(self):
        return self.request.user


    def get(self, request, note_id):
        try:
            note = Notification.objects.get(id=note_id)
            serializers = NoticeDetailSerializers(note)
            return Response(serializers.data)
        except Notification.DoesNotExist:
            return Response(status = status.HTTP_400_BAD_REQUEST)



class UpdateUserView(generics.UpdateAPIView):
    """This view returns a user"""
    serializer_class = UserSerializer
    queryset = User.objects.all()
    permission_classes = (permissions.IsAuthenticated,)


class ChangePasswordView(generics.UpdateAPIView):
    """This view updates the user password"""
    serializer_class = ChangePassSerializer
    queryset = User.objects.all()
    permission_classes = (permissions.IsAuthenticated,)
```

**Serializer.py**
```python
# Django Imports
from rest_framework import serializers
from rest_framework.validators import UniqueValidator
from django.contrib.auth.password_validation import validate_password
from django.core.files.storage import default_storage
```

```python
import base64

# My App Import
from eBoard_auth.models import *


class RegisterSerializer(serializers.ModelSerializer):

    """Serializes the User model"""

    username = serializers.CharField(
        required=True,
        validators=[UniqueValidator(
            queryset=User.objects.all(), message='Username Already Exist')]
    )

    class Meta:
        """Meta for the UserSerializer"""
        model = User
        fields = ['user_id', 'username', 'name', 'is_lec', 'password']

    def create(self, validated_data):

        user = User.objects.create_user(
            validated_data['username'],
            validated_data['name'],
            validated_data['is_lec'],
            validated_data['password']
        )

        user.save()
```

```python
        return user


class UserSerializer(serializers.ModelSerializer):

    """Serializes the User model"""

    class Meta:
        """Meta for the UserSerializer"""
        model = User
        fields = ['user_id', 'username', 'name', 'is_lec']


class AllNoticeSerializers(serializers.ModelSerializer):
    """_AllNoticeSerializers_

    Args:
        serializers (_type_): _Serializing the User model to for API calls_
    """

    class Meta:
        """Meta for the AllMecSerializer"""
        model = Notification
        fields = ['id', 'title', 'description', 'date_created']


class NoticeDetailSerializers(serializers.ModelSerializer):
    """_AllNoticeSerializers_

    Args:
        serializers (_type_): _Serializing the User model to for API calls_
    """
```

```python
img = serializers.SerializerMethodField("get_image")
docs = serializers.SerializerMethodField("get_file")


class Meta:
    """Meta for the AllMecSerializer"""
    model = Notification
    fields = ['id', 'title', 'description',
              'date_created', 'img', 'docs', 'created_by', 'file']


def get_image(self, user: Notification):
    """IMAGE"""
    if user.image and user.image.path:
        try:
            file = default_storage.open(user.image.name, 'rb')
            data = file.read()
            file.close()
            return base64.b64encode(data)
        except FileNotFoundError:
            return None
    else:
        return None


def get_file(self, user: Notification):
    """IMAGE"""
    if user.file and user.file.path:
        try:
            file = default_storage.open(user.file.path, 'rb')
            data = file.read()
            file.close()
            return base64.b64encode(data).decode('utf-8')
        except FileNotFoundError:
```

```python
            return None
        else:
            return None
class ChangePassSerializer(serializers.ModelSerializer):

    """Changes the User Password"""

    password0 = serializers.CharField(
        required=True,
        write_only=True,
    )
    password1 = serializers.CharField(
        required=True,
        write_only=True,
    )
    password2 = serializers.CharField(
        required=True,
        write_only=True,
    )

    def validate(self, attrs):
        if attrs['password1'] != attrs['password2']:
            raise serializers.ValidationError(
                ({"password": "Password fields didn't match!"}))

        return attrs

    def validate_password0(self, value):
        user = self.context['request'].user
        if not user.check_password(value):
            raise serializers.ValidationError(
```

```python
                {"password0": "Old password is incorrect!"})
        return value


    def update(self, instance, validated_data):
        instance.set_password(validated_data['password1'])
        instance.save()
        return instance


    class Meta:
        """Meta for the UserSerializer"""
        model = User
        fields = ['password0', 'password1', 'password2']
```

**Main.dart**

```dart
import 'package:flutter/material.dart';

import 'package:fluttertoast/fluttertoast.dart';

import 'package:get/get.dart';

import 'package:nacos_eboard/components/delegatedText.dart';

import 'package:nacos_eboard/controllers/get_notice_controller.dart';

import 'package:nacos_eboard/controllers/note_detail_controller.dart';

import 'package:nacos_eboard/models/all_notice.dart';

import 'package:nacos_eboard/routes/routes.dart';

import 'package:nacos_eboard/services/constants.dart';


class Home extends StatefulWidget {
  const Home({super.key});


  @override
  State<Home> createState() => _HomeState();
}
```

```
class _HomeState extends State<Home> {
 GetNoticeController getNoticeController = Get.put(GetNoticeController());
 NoteDetailController noteDetailController = Get.put(NoteDetailController());
 DateTime timeBackPressed = DateTime.now();


 Future<List<AllNotice>?>? allNotice;


 Future<List<AllNotice>?> getNotice() async {
  setState(() {
   allNotice = getNoticeController.getAllNotice();
  });
  return null;
 }


 @override
 Widget build(BuildContext context) {
  final size = MediaQuery.of(context).size;
  return SafeArea(
   child: WillPopScope(
    onWillPop: () async {
     final difference = DateTime.now().difference(timeBackPressed);
     final isExitWarning = difference >= const Duration(seconds: 2);
     timeBackPressed = DateTime.now();


            ),
           ),
          ),
         ],
        ),
        SizedBox(
         height: size.height * .8,
```

```dart
        width: size.width,
        child: SingleChildScrollView(
         child: FutureBuilder<List<AllNotice>?>(
            future: (allNotice == null)
                ? getNoticeController.getAllNotice()
                : allNotice,
            builder: (context, snapshot) {
             if (snapshot.connectionState ==
                 ConnectionState.waiting) {
               // While the future is loading
               return const Center(
                child: CircularProgressIndicator(),
               );
             } else if (snapshot.hasError) {
               // If an error occurred
               return Center(
                child: Padding(
                 padding: EdgeInsets.symmetric(
                    vertical: size.height * .5 / 2.5),
                  child: Column(
                   children: [
                     Image.asset(
                       "assets/error.png",
                       width: 200,
                       height: 200,
                     ),
                     DelegatedText(
                       text: '${snapshot.error}',
                       fontSize: 25,
                       color: Constants.tertiaryColor,
                     )
```

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```dart
          ],
        ),
      ),
    );
  } else if (snapshot.hasData) {
    List<AllNotice> allNotice = snapshot.data!;
    // If the data is available
    return Column(
      crossAxisAlignment: CrossAxisAlignment.start,
      children: [
        Padding(
          padding:
              const EdgeInsets.only(bottom: 20.0),
          child: DelegatedText(
            fontSize: 17,
            text:
                '${allNotice.length} Notification',
            color: Constants.tertiaryColor,
            fontName: 'Main',
          ),
        ),
            );
          },
        ),
      ),
    ],
  );
  } else {
    // If there is no data available
    return Center(
      child: Padding(
```

```dart
                  padding: EdgeInsets.symmetric(
                    vertical: size.height * .5 / 2.5),
                child: Column(
                 children: [
                  Image.asset(
                    "assets/notice.png",
                    width: 200,
                    height: 200,
                  ),
                  DelegatedText(
                    text: 'No notice available',
                    fontSize: 25,
                    color: Constants.tertiaryColor,
                  )
                 ],
                ),
               ),
             );
            }
          }),
        ),
       ),
      ],
     ),
    ),
   ),
  ),
 );
}
```