SMART CAMPUS: A MOBILE APP FOR DIU STUDENTS

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled **"Project on Android Based Smart Campus: A Moblie App For Diu Students"**, submitted by Md Rakibul Hasan ID: 191-15-12606 & Arif Ahmed ID: 191-15-12301 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering (BSc) and approved as to its style and contents. The presentation has been held on date 25 January 2023.
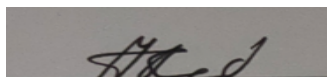
BOARD OF EXAMINERS

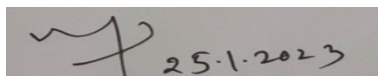**Chairman**

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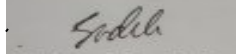Daffodil International University

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DECLARATION

I hereby declare that this project was done by me under the supervision **of Md. Sadekur Rahman, Assistant Professor in the Department of Computer Science and Engineering.** I also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree.
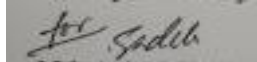
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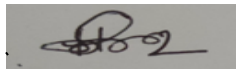Faculty of Science and Information Technology
Daffodil International University
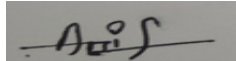
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ACKNOWLEDGEMENT

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I am grateful and wish to express my deepest gratitude to my supervisor, **Md. Sadekur Rahman, Assistant Professor** in the Department of Computer Science at Daffodil International University, Dhaka. This project required my supervisor's knowledge and a keen interest in the field of "Android Based Smart Campus Mobile Applications". His endless patience, academic advice, constant encouragement, constant and vigorous supervision, constructive criticism, invaluable advice, reading many substandard manuscripts, and proofreading at all stages made this project a success.

I want to express my heartiest gratitude to Professor **Dr. Touhid Bhuiyan, Professor & Head of the Department of CSE**, for his kind help in finishing our project. I am also grateful to other faculty members and the staff of the CSE department of Daffodil International University.

I would like to thank my entire course mates at Daffodil International University, who took part in this discussion while completing the coursework.

Finally, I must acknowledge my gratitude for the constant support and patience of our parents.

ABSTRACT

This project is titled "Android-Based Smart Campus: A mobile app for Diu students". Our goal was to create an Android app that would help users for finding daffodil international university teachers' information, recent notices, transport details, course pdf files and other helpful features for students to accomplish their activities easily. Video lectures, E-Book, Admission, Student portal, website, academic results, Admin panel, Notice, Library, Faculty, Management issue, Gallery, map, Transports, rate us, developers, About, log out, and academic progress are all available using this application. We've tried to make the user interface very user-friendly so that users can easily access this app without any hesitation. A person who has a smartphone can use this application by signing in with his name, Gmail address, and password. For the first sign-in, users need to register with a student ID. In this instance, each user must submit accurate information. If an administrator notices any action by a user that breaches the terms and conditions, the administrator has the authority to deactivate that user. All students have access to their teachers` information by selecting the custom search option on the homepage. In the end, the user admin will be responsible for controlling all notices and library information. I will make another application for admin. Administrators can enter all the data they have generated for the campus. Teachers and students can both view a notice message that administrator's issue. A high level of security has been applied so that others cannot interfere with the functionality. Everything can be adjusted and managed on a mobile device. We think that this application will make our instructors' and students' life easier. Some relational features are also developed for admins and users to perfectly govern the program. Each of them plays a unique part in managing this software. We also have plans to make even more improvements to the facilities and services.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

A smart campus is envisioned as a campus where technology helps faculty, staff, students, and guests perform their daily activities more efficiently and effectively. Video lectures, E-Book, Management Issue, Faculty Information, Student portal, website, Academic results, Admin panel, Notice, Gallery, Transport, Map, rate us, developers, About, log out, and academic progress are all available using this application. We've tried to create the computer program terribly easy so users will simply access this app with none hesitation. The goal of this project is to developers a smartphone application that facilitates finder a particular Information about teachers, finding their faculties and departments and staying up-to-date on any events or campus news that could be of interest. The main contribution of smart campus development is based on new advanced technology to make campus life more convenient. Contactless technology provides an easy way to enter data when accessing any Faculty or equipment on campus. Therefore, it is reasonable to assume that these applications readily improve the lives of the professors and students on our campus. Therefore, it is reasonable to assume that these applications readily improve the lives of the professors and students on our campus.

1.2 Motivation

This project is mainly developed for peoples and students who don't like to go in Diu website. Because for some people Diu websites seems pretty hard to handle specially for finding fast information about teachers. To get this work easier for students we developed an app which can they use easily. As part of this project, we are developing a smartphone application that can assist users may use this tool to identify specific teachers on campus, find their course related pdf files and instructors, gather information about Transport & Management Issue and facilities, and stay informed about events and news happening on campus. There is no android application system managing e-books, notices, faculty information, or management issue, and Transports, student portal, or website for the students and instructors can simply use the campus system. Our goal is to create a smartphone application that will enable the campus information system to display its apps properly. The application allows users to view the admissions system, class information, academic results, campus notices, and academic progress.

1.3 Objective

This project is about developing a smartphone application that assists users in finding a certain information on faculty teachers, information about their transportation costs and book related pdf files. The Smart Campus Project envisions a university campus where technology aids teachers, staff, students, and visitors to improve and fulfill their daily lives more efficiently. This will enable them to stay up to date on all campus news, events, and student activities. This application will have two panels, one is the admin panel and the other is the user's application.

- Developing an Android-based help application for students.

- It is important to create a platform that is user-friendly for users.

- The user will be authenticated after successfully signing up.

1.4 Expected Outcome

Will be a reliable platform for user. User will be able to see their teacher information, their course related pdf books, transport details and academic activities easily. Students can be easily seeing teacher's info, academic result, notice, video lectures, e-book, event, Student portal or transports and management issue about progress using this application. Users can also see the transportation cost in bus. They can also see about halls information and in room facilities information. We also used offline database. So even if the students aren't online, they can see information. This application is only getting started, it will require a lot more development to ensure its security once released.

1.5 Report Layout

This report consists of 7 chapters. These are:

Introduction

- Introduction
- Objectives
- Motivation
- Expected Outcome

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- Introduction
- Related Works
- Comparative Studies
- Scope of the Problem
- Challenges

Requitement Specification

- Business Process Modeling
- Requirement Collection and Analysis
- Use Case Modeling and Description
- Logical Data Model
- ER Diagram
- Data Flow Diagram
- Design Requirement

Design Specification

- 4.1 Front-End Design
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- 5.5 Testing Implementation
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- 6.1 Impact on Society
- 6.2 Ethical Aspects
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Conclusion and Future Work

- 7.1 Discussion and Conclusion
- 7.2 Opportunities for further development

CHAPTER 2

BACKGROUND

2.1 Introduction

It is the goal on the Smart Campus project of create a campus that we utilize technology to enhance and more efficiently assist the daily activities students and visitors. It intends to create a smart phone application that helps users identify a specific information about Diu teachers, course related pdf files, transport schedule and cost of different location and stay informed about campus activities. Smart Campus stores user information and all the database of teacher, images and pdf section. Students have many problems finding their e-books and teacher information. By using this app students can download pdf files and get their library book plans, go to their university's website and look through a long list in a pdf file. This is also how they may discover their campus. There is a need for a platform that is more user-friendly. The websites offer some similar applications, but those applications have a lot of bugs and poor maintenance. It is essential to realize that all of the topics we're discussing have been merged into single, user-friendly applications by other businesses. Our project will ensure we can provide the best service by solving both students' and teachers' problems and making sure that we can do a great job in delivering our project.

2.2 Related works

We circumvent the limits of the majority of these programs here. The amount of precision in determining the teacher's information lets an application stay relevant for short and medium ranges, such as teachers rank on university, his name and his Gmail, even when the usefulness essentially stays the same. We have tried to increase accuracy because doing so can only result in improved applications of searching specific information about user's input. On the Internet, there are many clever campus initiatives. However, the fact that they lack the credentials to operate on our campus is the problem. One trait precludes the existence of another. So, our campus is not a good fit for this kind of application. Additionally, there was just one project made especially for kids. But there is one issue. It is lacking several features. The Android platform is used to model and create the campus. With the use of technology, instructors, staff, students, and visitors may better and complete their everyday tasks more effectively on a university campus, as depicted by the Smart Campus initiative. Students sometimes have difficulty locating e-books, campus results, and room information. Because students access their library book plan by downloading pdf files from the university website and searching through a huge number of pdf files. It's comparable to how they navigate their way about campus. As a result, our objective is to provide complete apps that assist students and instructors.[1]

2.3 Comparative Analysis

The other project, which was created for students on our school and is similar to this one, has limited capability because it just enables displaying the app. The purpose of this is not to show the campus to the visitor. As well as students and teachers also face the same problem. In the campus app, they will only be able to see their own information. There is no option to receive an examination notice via email. The result of our application is that it is able to solve all the problems that other projects have failed to solve. Some applications do not allow all users. As a result, we developed our product using the Android platform. Android is the most popular operating system on the market today. As a result, our program is simple to use for both students and teachers. Our software is simple to use and beneficial to everyone. As a result, anyone may utilize our program.

2.4 Scope of the problem

Our major objective is to make the system better. This faculty campus app will help students and instructors on campus with the issue of updating the student portal and hall information. The project was initially designed with the engineering and academic departments in mind. Otherwise, the data are organized in the most straightforward manner possible so that it may be easily changed and made accessible to other campus apps.

2.5 Challenges work

The most challenging part of making an app is creating a design that makes the app appealing to the user. This is in such a way that the user will willingly use it. As this application is being developed, there are times when we run into bugs when the version of the application is updated. The problem with invisible errors can sometimes be that they are very difficult to locate and fix. This is because they are hidden in the code and are therefore difficult to find. It will take some time to complete.

- Any challenge in developing a smart campus application aims to offer a welcoming and secure environment to users.

- Administrators are in charge of maintaining and preventing illegal access to the whole database.

This project is being developed by two people. It is exceedingly challenging to collaboratively resolve each step of a project challenge in a pandemic condition. The success of this endeavor depends on effective communication.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Business Process Modeling

The below shown depicts the model we're employing for our project. An approach to methodically representing the workflow of a system is through the use of business process models. The data flow diagram is a graphical depiction of data tracking across an information system. Logical data flow diagrams describe the flow of data through a system to perform certain business operations. The following figure 3.1 showing the business processing model of our application. [6]
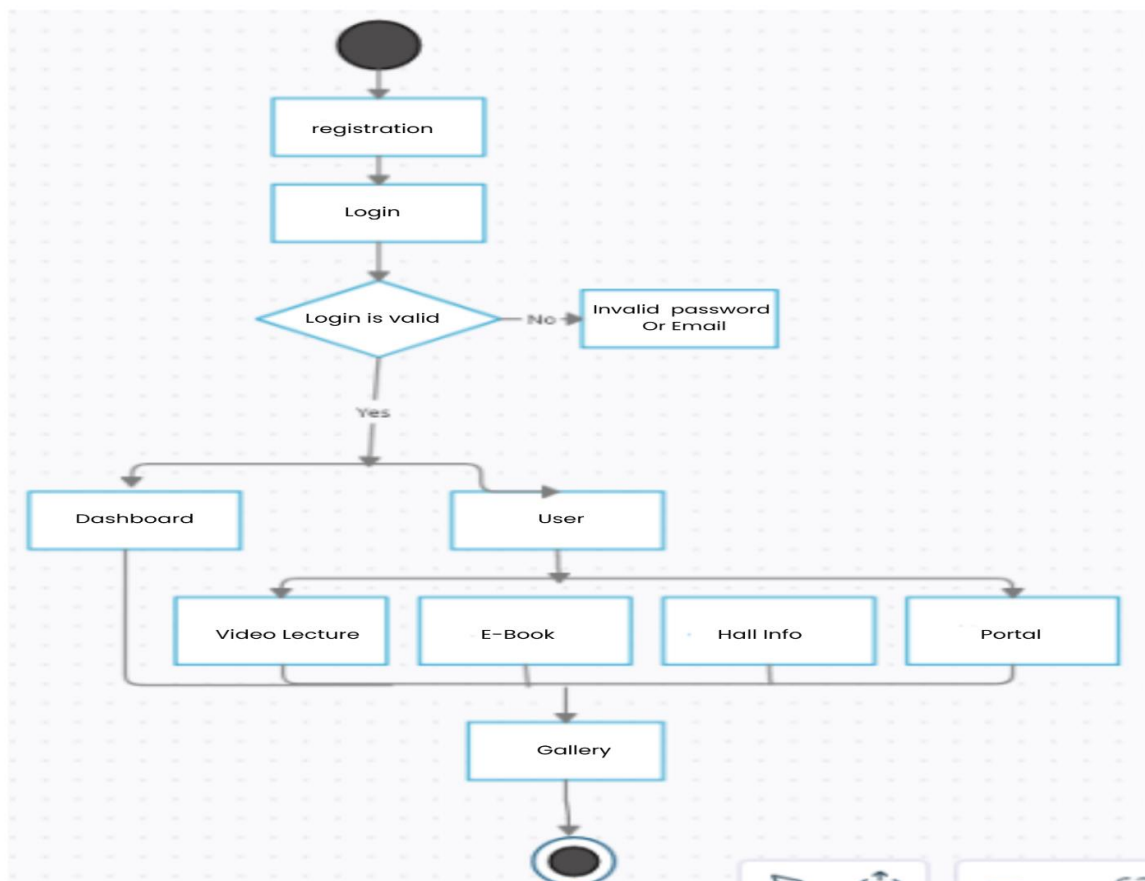

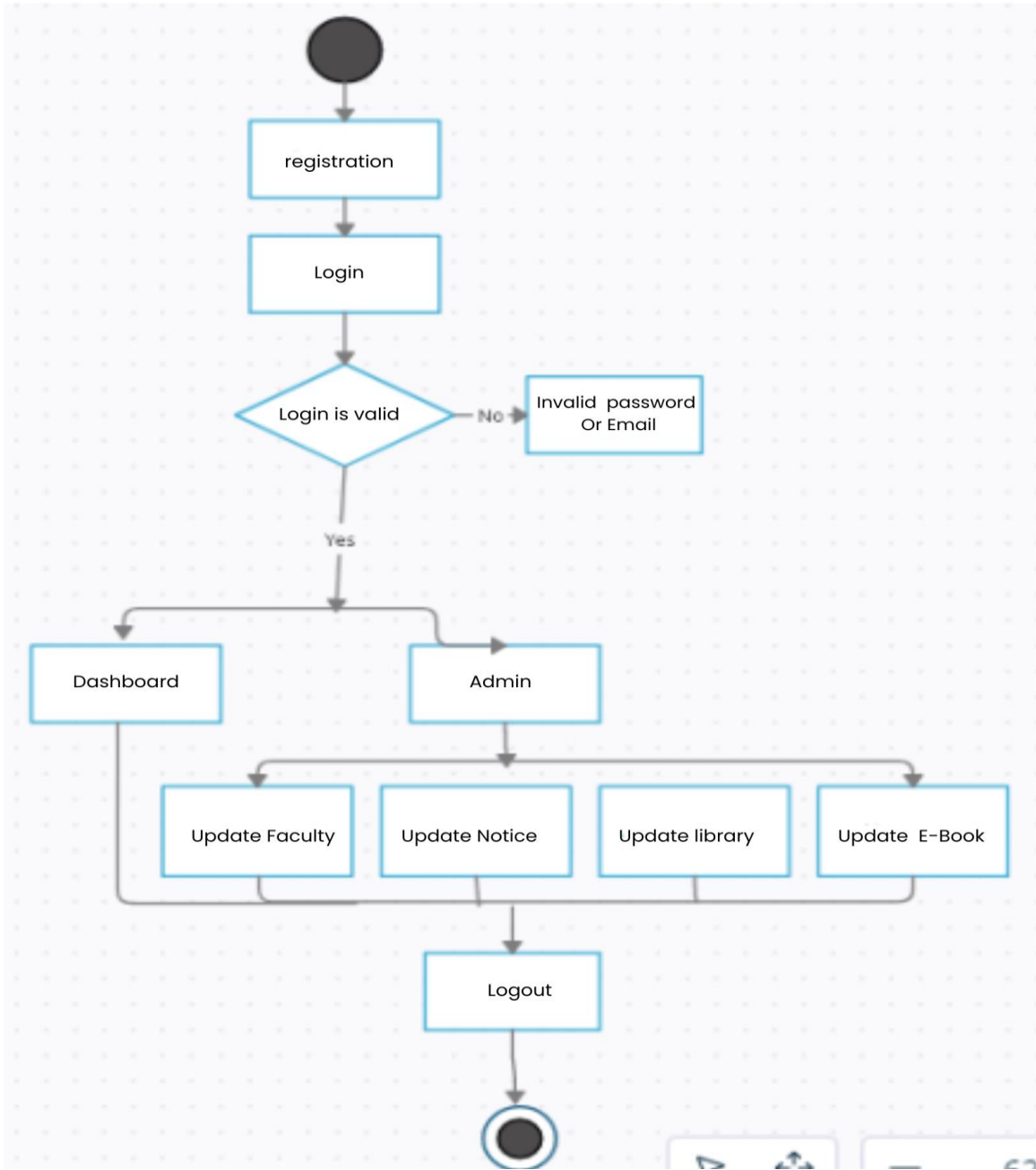Figure 3.1.1: Business processing model for Users.

Figure 3.2: Business processing model for Admins.

3.2 Requirement Collection and Analysis

The primary development conditions are requirement analysis and collecting. There are two types of development requirements. The first is a prerequisite for functionality, whereas the second is not. What software does are functional activities. In general, nonfunctional requirements define the personality of an application.

3.2.1 Functional Requirement: There are numerous functional requirements in our project. It allows authentic logins, shows transport information, gets the smart campus app, show pdf information, faculty information, recent notices, recent images of Diu, and downloads the pdf file [2].

3.2.2 Nonfunctional Requirement: Nonfunctional needs are generally determined by how much user-friendly UI is used. For a wonderful user experience, the UI should be user friendly [2].

3.3 Use Case Modeling and Description

Use case modeling is used to graphically depict the requirements for software systems. The use case modeling approach may be used to determine the various kinds of system users. In Figure 3.3 you can see how we have modeled our application's use cases [5]
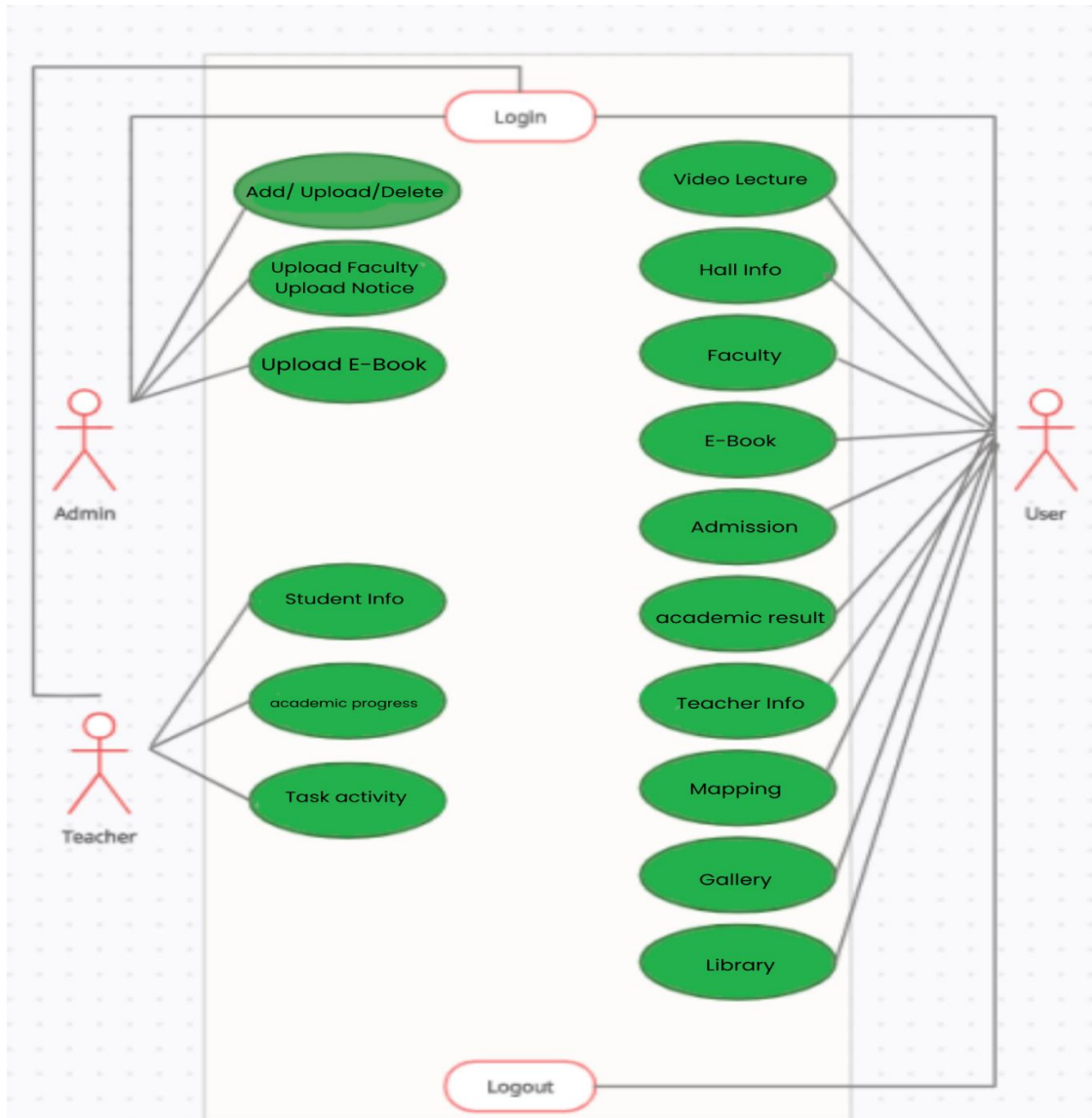

Figure 3.3: Use Case Diagram

3.4 Logical Data Model

The entity relationships diagram displays the connections between the various database entities. An object that is a component of the data and a part of a data set is referred to as an entity in that content. An assortment of entities that have similar traits are referred to as entity sets. Attributes can be used to specify an entity's properties. One of the ER diagrams is shown as an entity relationship diagram in the logical data model. This item or notion is a component of the data model, where data is stored using a model system. The system's ER diagram is displayed below.

3.5 ER Diagram:

The basics structure of an ER model defines relationships between things. In Figure 3.5 you can see how we have modeled our application's er diagram.[4]
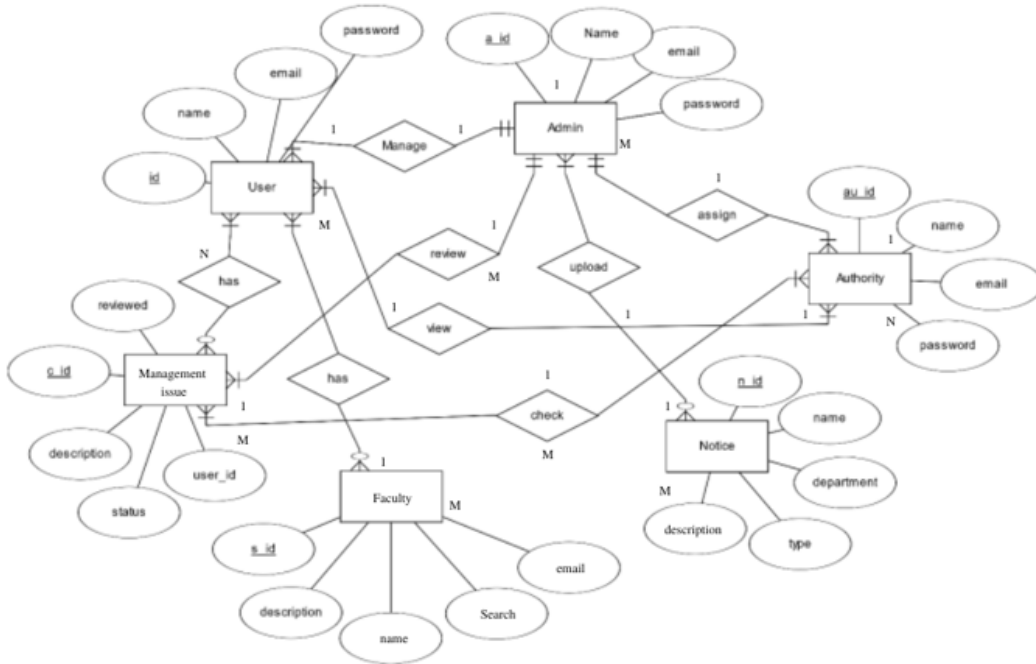

Figure 3.5. ER Diagram

3.6 Data Flow Diagram:

A data-flow diagram is a way of representing a flow of data through a process or a system. In our application DFD shows what kinds of data input in our system and what kind of data output from our system and also where the system data will be stored. In Figure 3.6 you can see how we have modeled our application's data flow diagram.[4]
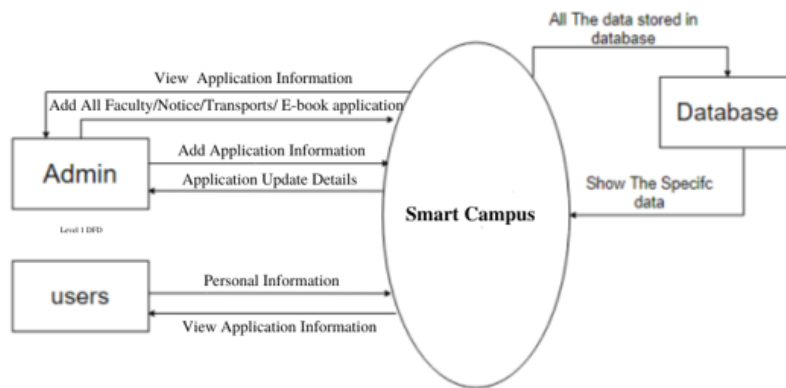

Figure 3.6 Data Flow Diagram

3.7 Design Requirement

Each system or program must consider a few issues that have repeatedly arisen when the system is constructed to attain that goal. Since the project's design may vary depending on the system, we are looking for the following points to meet our design requirements:

Efficient: The program must run as quickly as possible on any device. We improved the smoothness and bug-freeness of our application. We created a lightweight application design.[3]

User-friendly: This program is really easy to use. All of the features will be easily accessible to users. The layouts are all beautifully adorned and have a soft style.

Multiple devices are compatible: Our program is compatible with any Android smartphone that supports the SDK version 24 at the very least.

Extra Features:

- Admin and Users.
- Admin can add / update / delete lists.
- All additional account details can be supervised by Admin.
- Users will set up and maintain an account.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-End Design

The visual portion of an application is called the front end. The two components of front-end design are an XML file for the layout and structure of the user interface and a class for creating its logical functions. We employ a variety of activity layouts and labels in the XML file for our user interfaces. These include recycler view, List View, WebView, custom List View, card view, circular image view, custom toast, text input layout, edit text, image view, nested scroll view, button, text view, slider, and various animations and custom fonts. We also added some extra XML files and classes to make our program much more user-friendly and aesthetically beautiful, making it easier for people to use. As a consequence, it came out basic but appealing.[10]
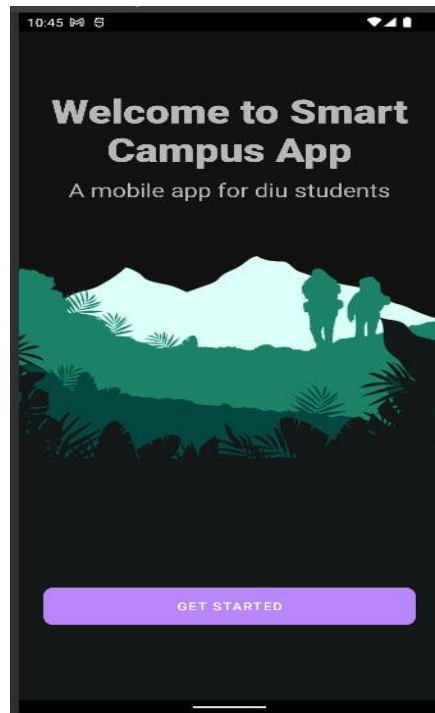

Figure 4.1: Splash Screen

Figure 4.1 Showing Splash Screen one of the exciting features in android, is referred to a welcome screen or user's first experience of an application. A professionally designed Splash Screen has a possibility of making your application look more professional.
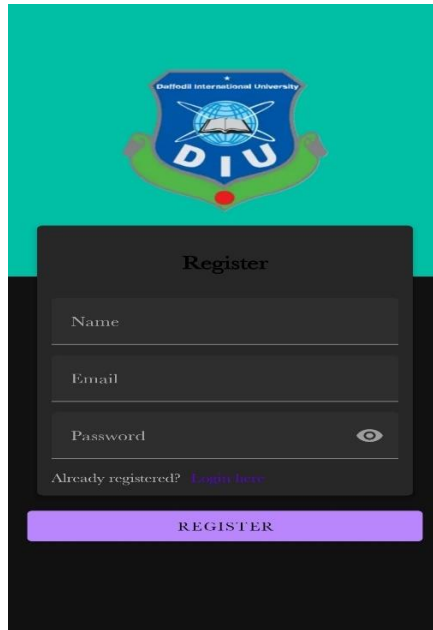
Figure 4.2: Registration details for the user

Figure 4.2 Showing the user's that's registration page. This page will appear on the device screen when the user attempts to log into his account. A new user must first register in order to access the application. Just your name, email address, and password are required. Each and every detail must be accurate.

Figure 4.3: Login Screen

Figure 4.3 Showing the user's sign-in pages. The user will be required to sign in each time he or she wants to log in with an email address and password. The user will be notified if they are using the wrong email address and password, otherwise, the sign-in process will be successful and they will be notified.
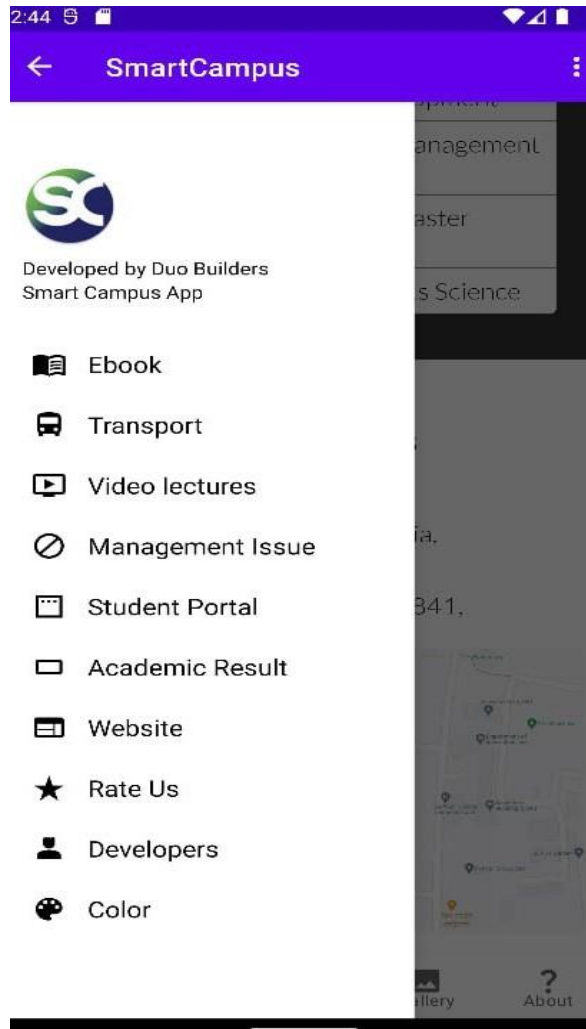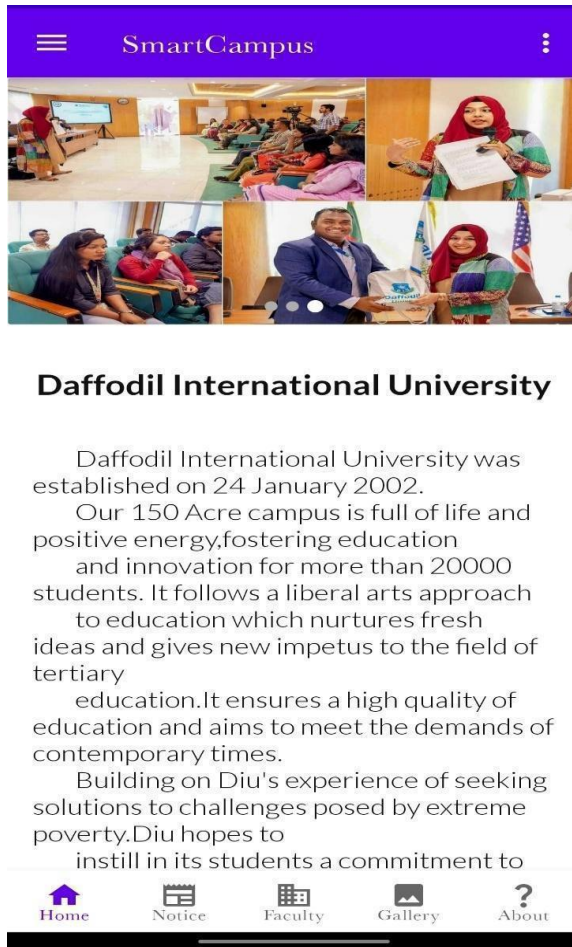
Figure 4.4: User Navigation Bar

Figure 4.4 Showing the user navigation bar A navigation bar may be found in the application's upper left corner. Click on the navigation bar to access a drawer that displays the application's many features.

Figure 4.5: Home Screen

Figure 4.5 Showing the user home pages. Home page may be found in the application's upper left corner. Click on the home page or edit profile to access a drawer that displays the application's many features.
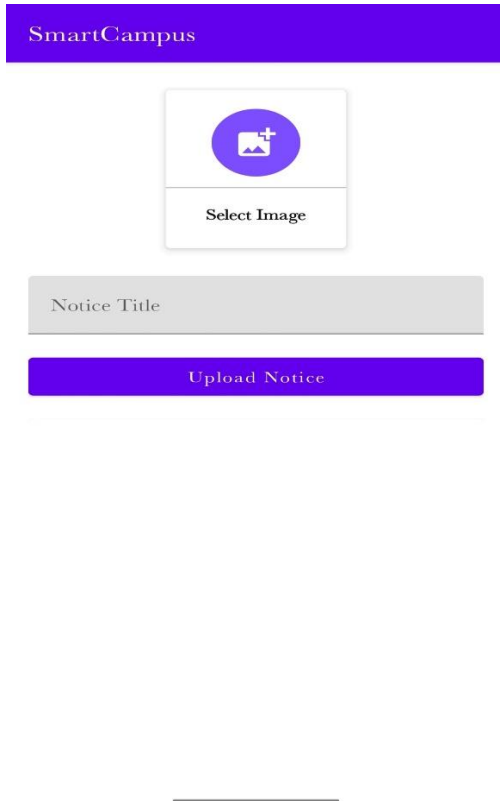
Figure 4.6: Notice Upload Screen   Figure 4.7: User Notice Screen

Figure 4.6 Showing the user Notice pages. allows students to check latest notices of different departments of our campus. Students can enable notification feature for new notices.

Figure 4.7 Showing the user Notice screen show information from their campus all information. In this section, the information of all the teachers of a campus or students' payment, event, course information can be seen very easily. allows students to check latest notices of different departments of our campus. Students can enable notification feature for new notices able to contact teachers for any information regarding their university education.

Figure 4.8: Video Lecture Screen

Figure 4.8 Showing the user video lecture screen. allows students to check latest video lecture of the class video different of our campus. Students can enable notification feature for new systems.
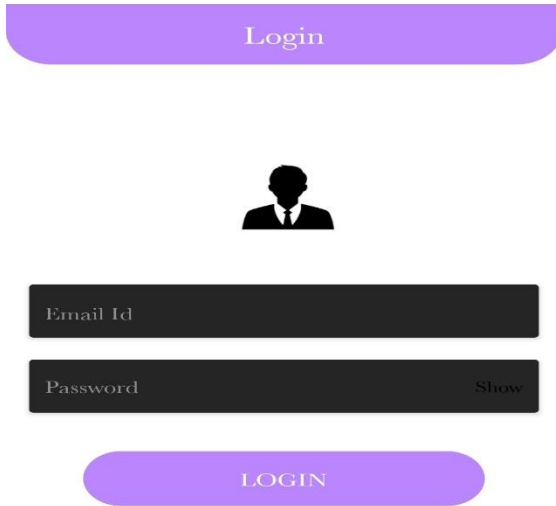
Admin App Design
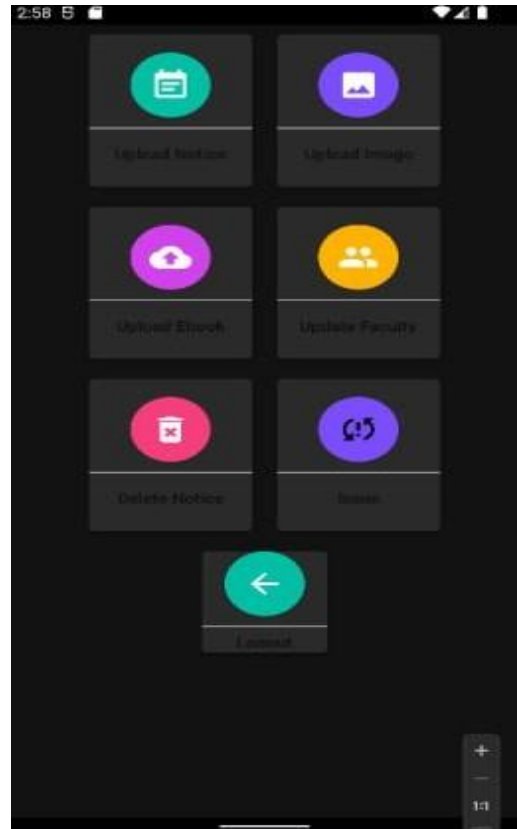

Figure 4.9: Admin Login Screen   Figure 4.10: Admin User Screen

Figure 4.9 showing the user's admin page. When the user will try to log in to his account, this page will be visible on the device screen. For a new user, he needs to register first to enter the application. Here only fill up a valid email address, and password. All details need to be correct information.

Figure 4.10 showing the user's admin screen sign in page. A user will sign in with email address and password regularly. If they try the upload notice, upload e-book, upload image, upload faculty in the information will be notified else they will successfully sign in.
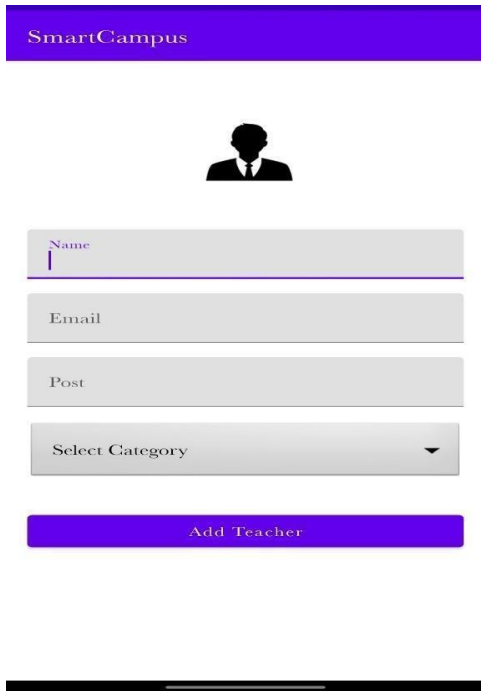
Figure 4.11: Add Teachers' Screen   Figure 4.12: Update Information Screen

Figure 4.11 in this section, add teachers screen will be able to show information from their faculty. In this section, the information of all the teachers of a university can be seen very easily. As a result, university students will be able to contact teachers for any information regarding their campus.

Figure 4.12 in this section, faculty will be able to show information from their name, position, email update information. In this section, the information of all the teachers of a varsity can be seen very easily. As a result, faculty all information students will be able to contact teachers for any information regarding their campus.
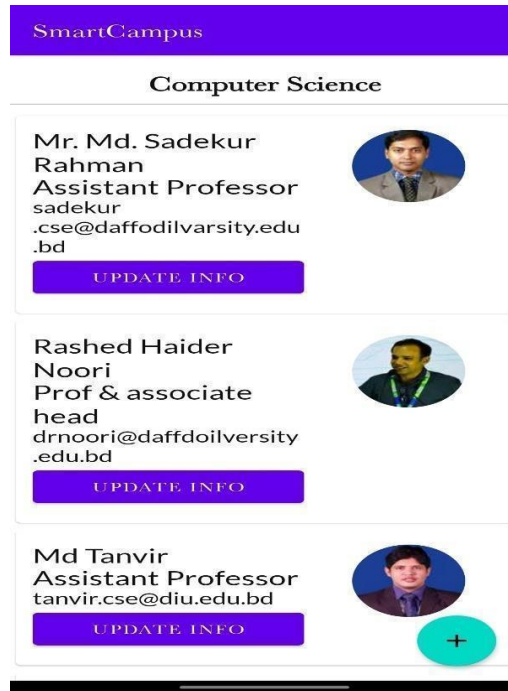
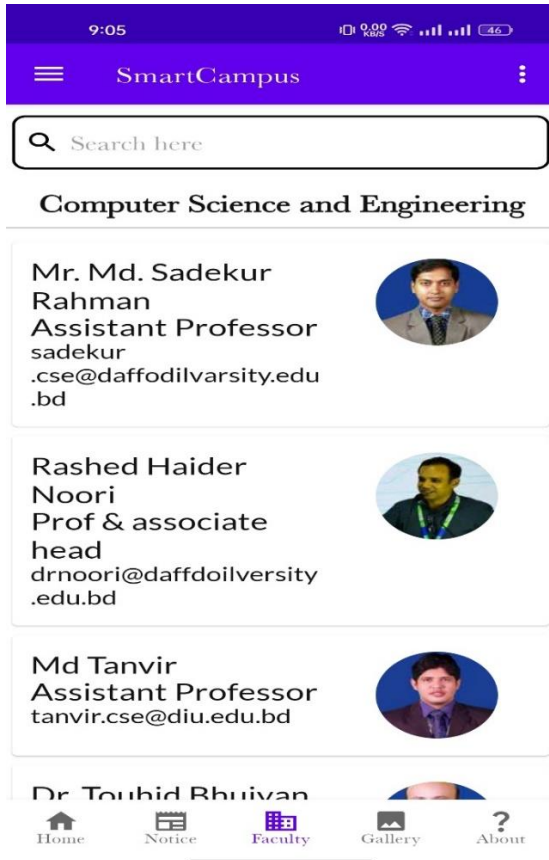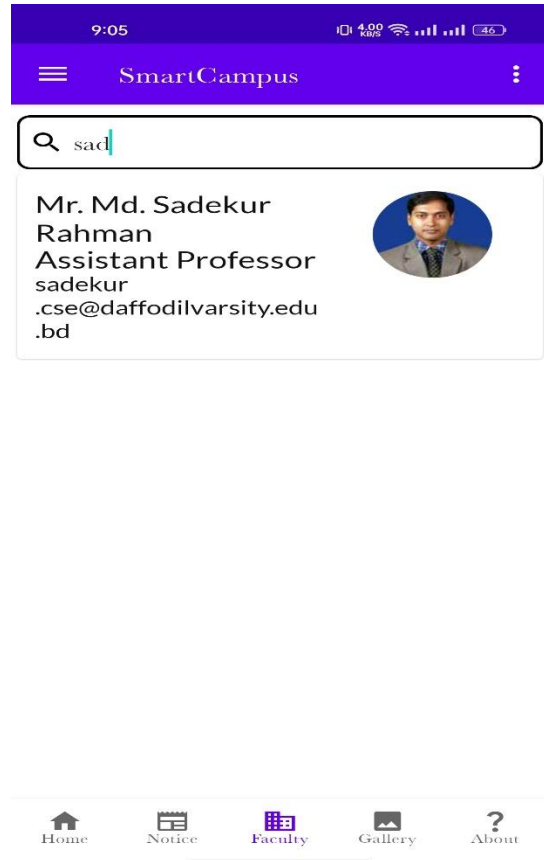Figure 4.13: User teachers' information   Figure 4.14: Teachers' Search Screen

Figure 4.13 in this section Show all faculty profiles of the courses you've taken. Profiles include important information's like full name, picture, department, email etc.

Figure 4.14 in this section Show all faculty members information search bar. We include important information's like full name, picture, department, email etc.
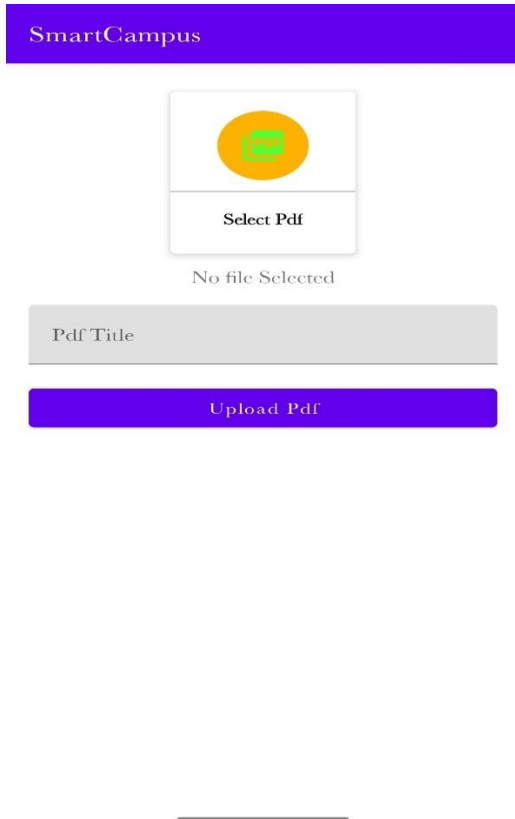
Figure:4.15: Upload E-Book Screen   Figure 4.16: User E-Book Screen
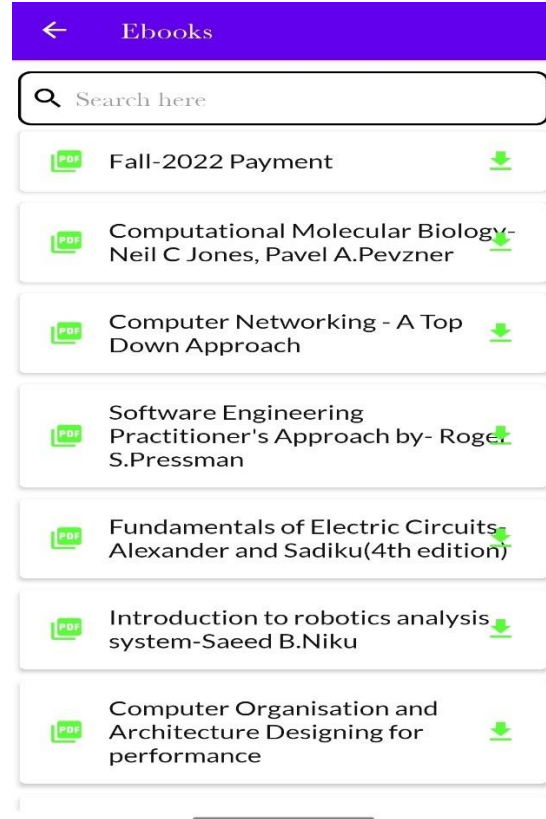
Figure 4.15 in this section Show we can upload pdf file. e-books pdf file students' reader and there will be more e book library provide various pdf files & book name searching them on the go with the help of students.

Figure 4.16 in this section E-books is usually distributed on the internet as downloadable files that can be read offline. Now the app contains thousands of free e-books and there will be more e book library.
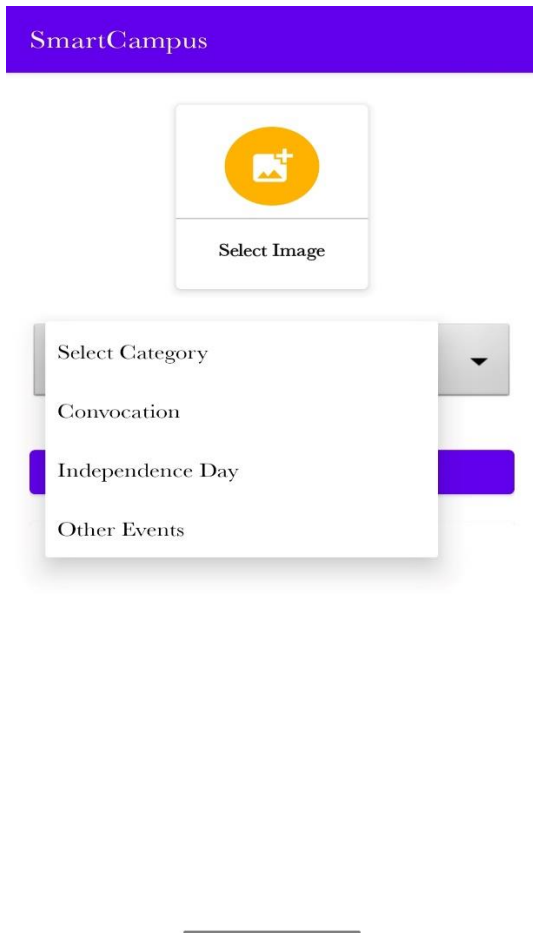
| Figure:4.17: Upload Gallery Screen | Figure 4.18: User Gallery Screen |

Figure 4.17 in this section Show Gallery can easily upload and store all your photos and without using up all your data.

Figure 4.18 in this section Show Gallery has easy to use photo editing tools, such as auto-enhance which will make your photos look their best with one-tap.

Figure 4.19 Transport Cost & Location Screen

Figure 4.19 in this section Shows this app, the valid users and drivers of the University of the buses can easily know and share the transport cost & location of the bus. Thus, the need of the students will be fulfilled and also the service will be smoother.

Figure:4.20: About Screen

Figure 4.20 shows update profile UI for campus education, mission and goal respectively. About basically information about the application University information.

Figure:4.21: Rate Us Screen

Figure 4.21: In this section rate us App is to help Institutes to provide better service quality

Figure:4.22: Theme Mode Screen

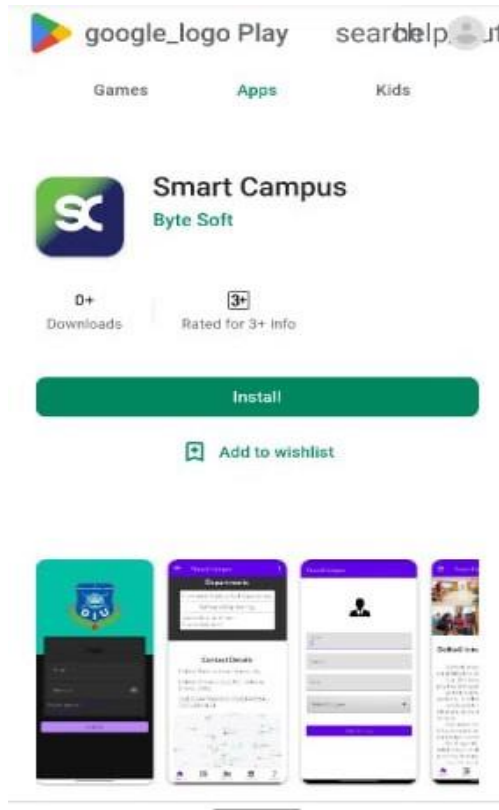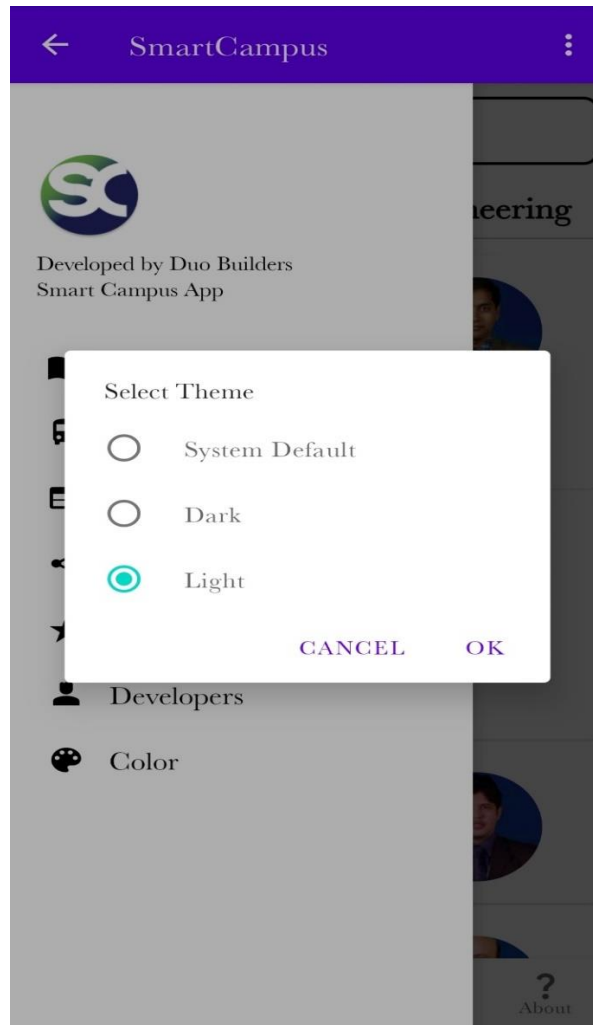Figure 4.22: In this section, this app helps to activate the Android dark mode or light mode on devices that do not provide this option in the system settings.

4.2 Back-End Operations

We use the Java programming language for back-end design. Java is one of the world's most popular programming languages. We produced many people packages of our backdrop design using the java programming language. We also use a real-time firebase database, as well as firebase authentications for email verification when people register for our application. Because we use a real-time database from Firebase, admin may alter data from the database at any moment. This project contains several features. This program is simple to use for both users and administrators.[10]

4.3 Interaction Design

These days, everyone wants interface design for their Android tablets and smartphones. Interaction design is used to the software becomes more user-friendly and appealing to users, increasing their interest in it. It is the goal of interaction design to create products that enable users to achieve their objectives in the most effective way possible in order to meet their needs. The interaction design process is the process of observing how a system interacts with its users. In contrast, user experience focuses on the whole experience and interaction design between a user and an application. The purpose of interaction design is to observe the interaction between a system and its user in the correct way and to determine how that interaction can be improved. It's helpful to remember that user experience includes all aspects of a user's engagement with an application, including the design of that interaction.

4.4 Implementation Requirements

This project will require the use of the finish the designs and development of the entire project in order for them to be realized, use Android Studio. In addition, for the backend, we needed to install a browser and a Google account on the server. We will need both the JDK and the SDK, as well as the NDK, for testing. As a result, it may be necessary to run and test the apps on a virtual device on the PC in order to be able to run them on the device. Photoshop and Illustrator are often used to create different types of icons and backgrounds of different types for different types of projects. Additionally, we needed a strong internet connection in order to update Android Studio's Gradle file as well as the build process.[9]

Software Requirements

- Java

- XML

- IDE: Android Studio

- Adobe XD

- Adobe illustrator

- Android Phone

- Realtime Database

- Fire Stored Database

- Firebase Authentication

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

The most effective and secure database management solution that we employed was a real-time Firebase database. Our database is open source, so we can quickly adjust it if necessary. The database can be easily managed using the Firebase database, a mobile application development platform from Google. Information about all of our applications will be stored here, along with user and class information. It uses the Firebase database to store data and information. Firebase is a document-based database, not a SQL database. Therefore, no SQL database-like relationships are maintained here. In this way, data from applications are synchronized in the cloud to provide real-time information. The main task is to make info and tables for loading information into Firebase. I connected the app to the info and connected it through the appliance.

I actually have done all the info reconciliation. Some information could also be updated with victimization query-based updates. I conjointly ran some queries to load information using the info. This is often the info implementation method. I actually have used queries to stores and retrieved information from the info. During these cases I uploaded all the PDF files to the hosting hold and used some queries to come up with links to the info. Therefore, you'll be able to access it simply and swimmingly. We tend to conjointly keep all the info during the period info. By victimization Firebase authentication we tend to be ready to produce distinctive identities for the role-based segregation of user.

Through Java classes, several libraries, and dependencies, we linked all of the information facilities to our program. We frequently utilize a variety of methods to send information, retrieve information, and register users using Firebase Authentication in order to run our application with the connection to the data.[11]
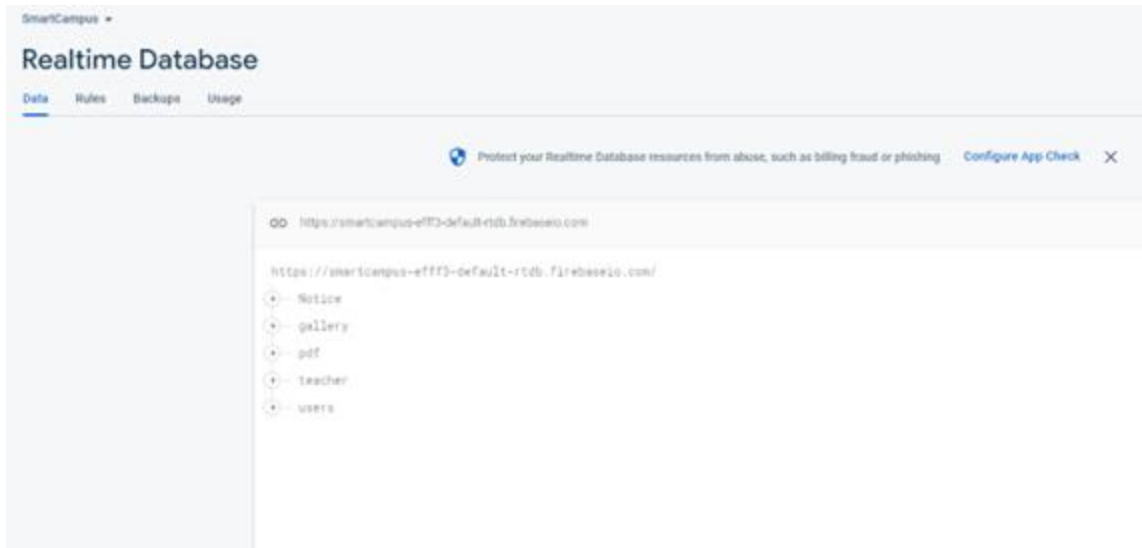
Figure 5.1 Realtime Database

Figure 5.1 shows the firebase database there is a real-time database system where data is stored in real-time and their user and admin make interaction in the real-time database system.
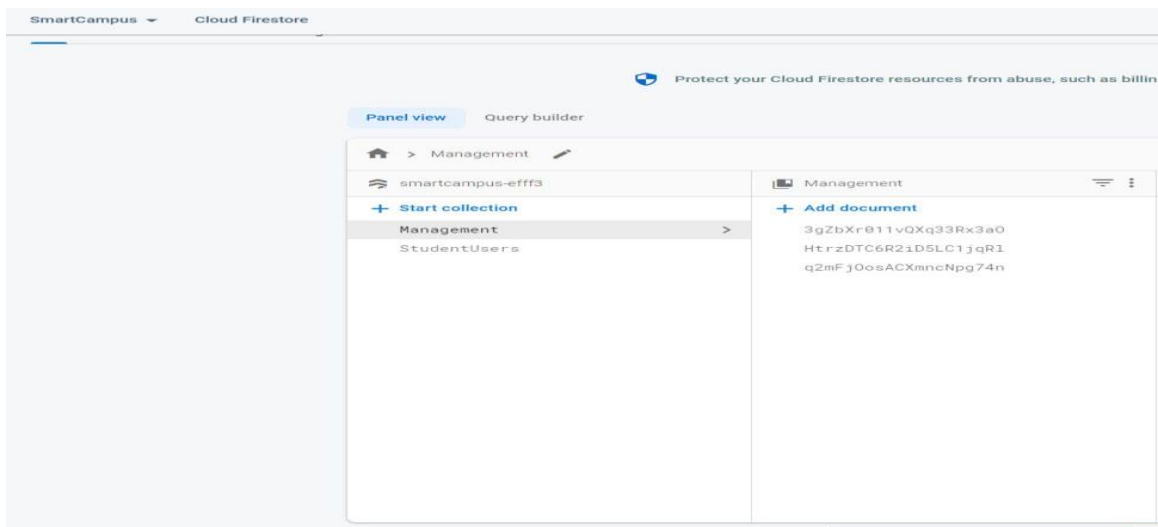

Figure 5.2 Fire Store Database

Figure 5.2 shows the fire store database system where data is stored in fire and their database system.

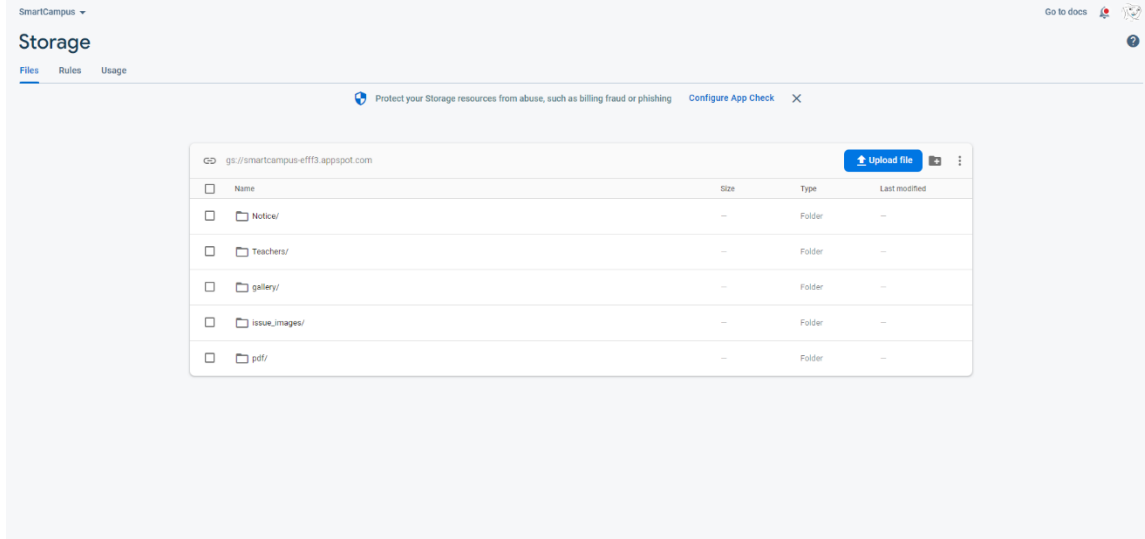Figure 5.3: Storage Database

Figure 5.3 shows the Storage database there is a real-time database system where data is stored in real-time and their user database system.
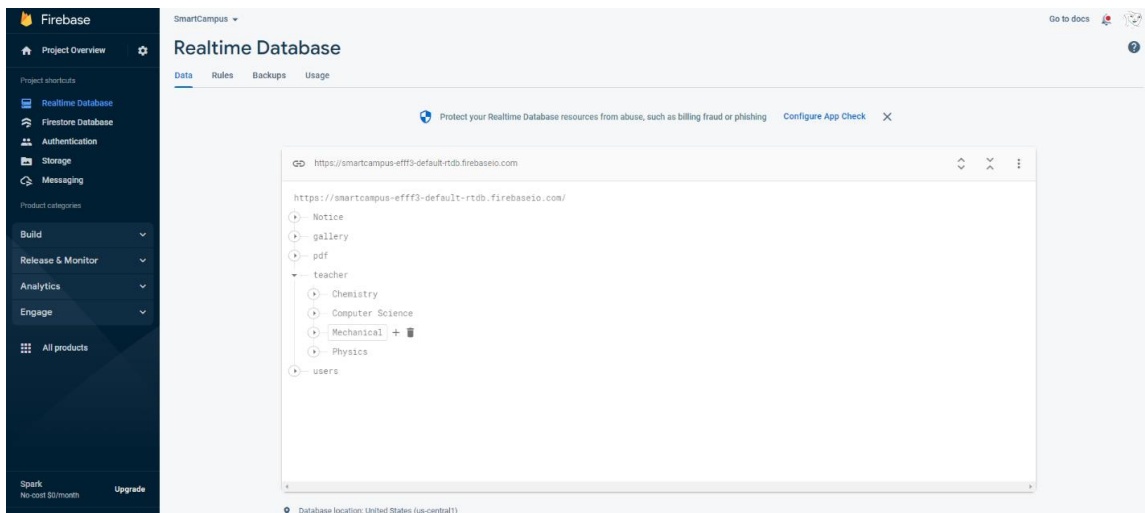
Figure 5.4: Real-time Teacher Details

Figure 5.4 shows the real time teacher details database. The system where data is stored notice, gallery, pdf, faculty etc. In this, real-time and their user making the database details system.

Figure 5.5: User Database Structure

Figure 5.5 shows the User database Structure real-time database system where data is stored in real-time and their user file make interaction in the real-time database structure.
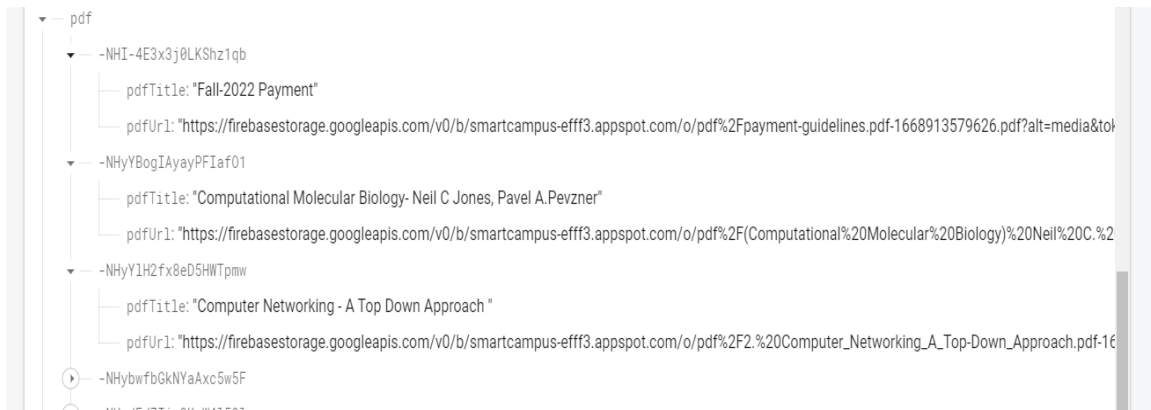
Figure 5.6: Real-time PDF Database Structure

Figure 5.6 shows the Pdf database Structure real-time database system where data is stored in real-time and their user file makes structure.

Figure 5.7: Real-time Notice Database Structure

Figure 5.7 shows the user notice database Structure real-time database system where data is stored in real-time database structure.
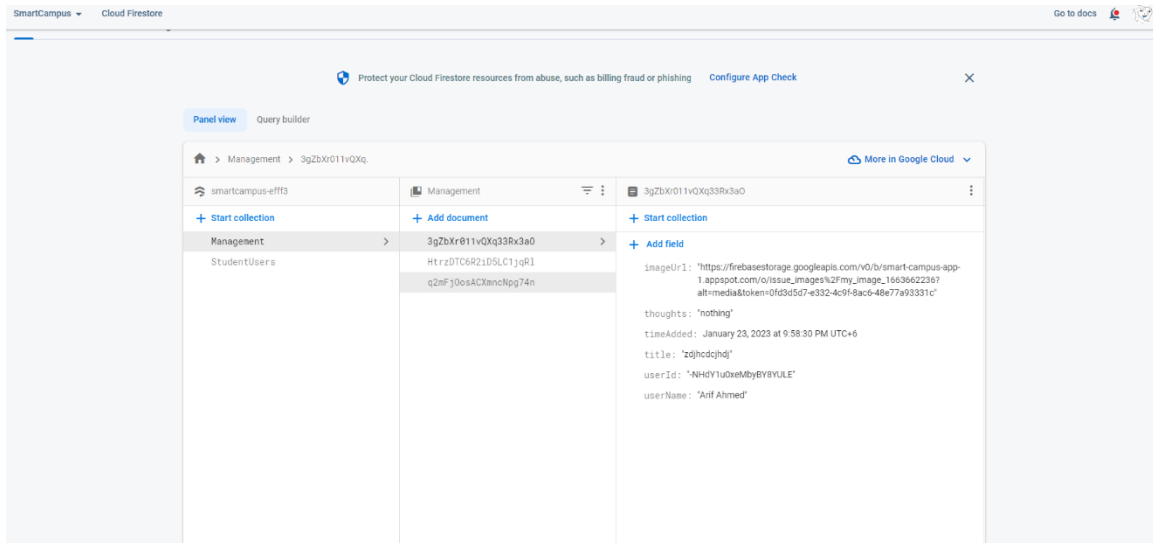
Figure 5.8: Management Issue Database Structure

Figure 5.8 shows the management issue database Structure real-time database system where data is stored in fire store database structure students' issue of the authority
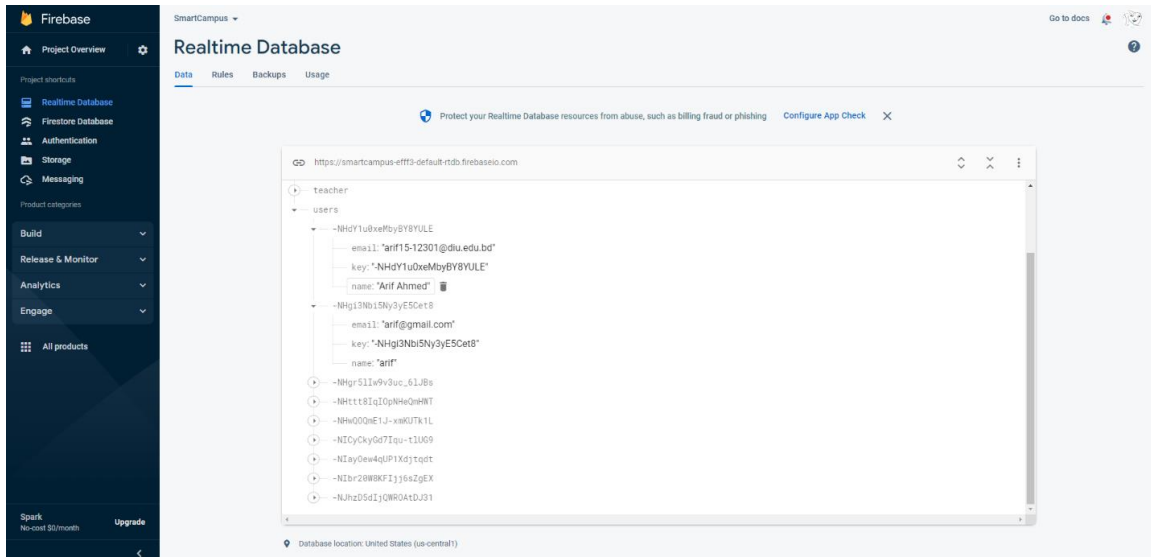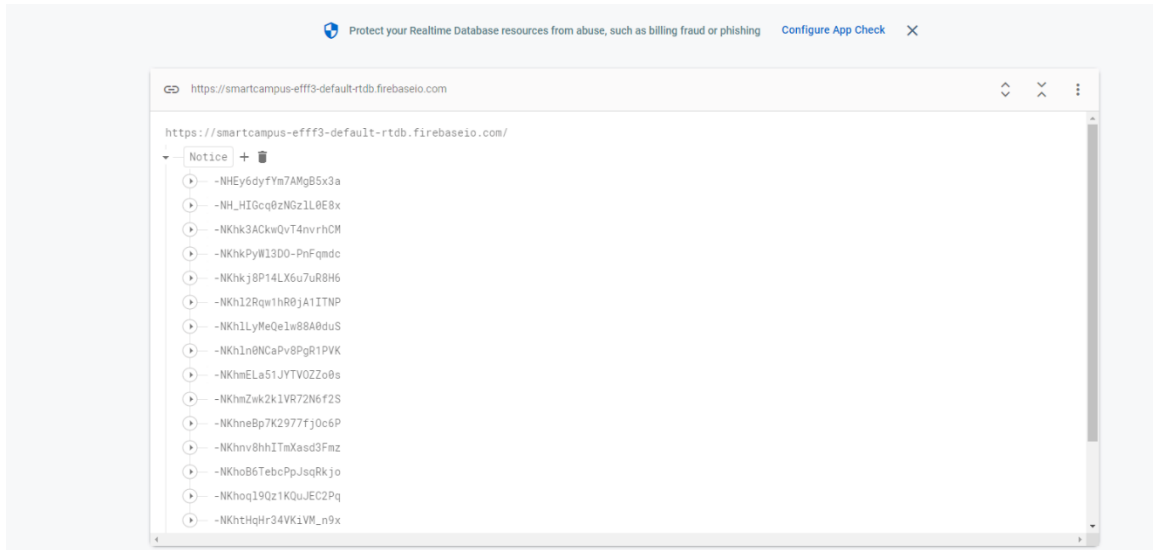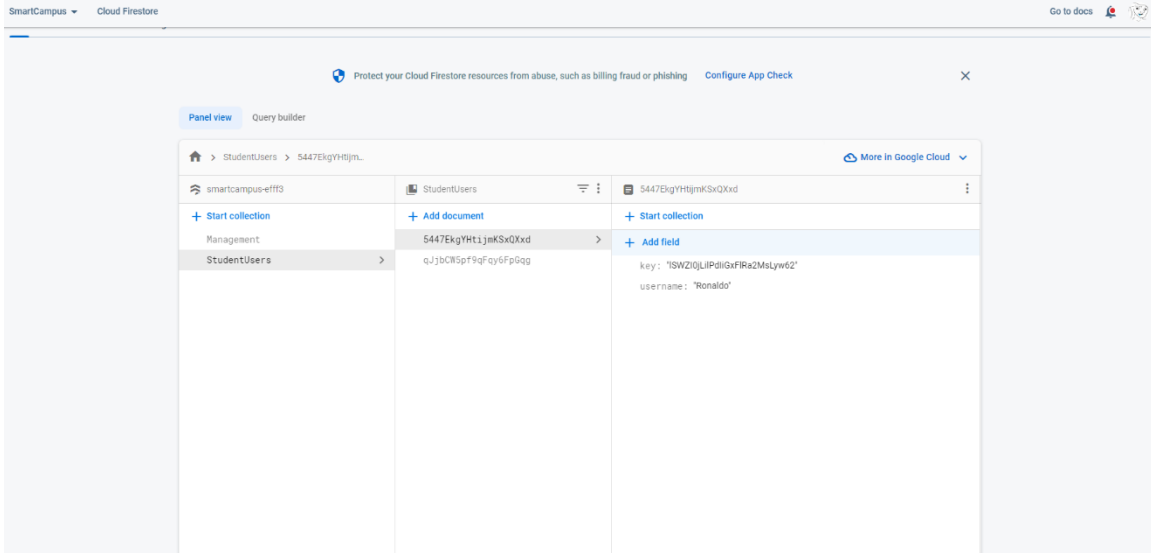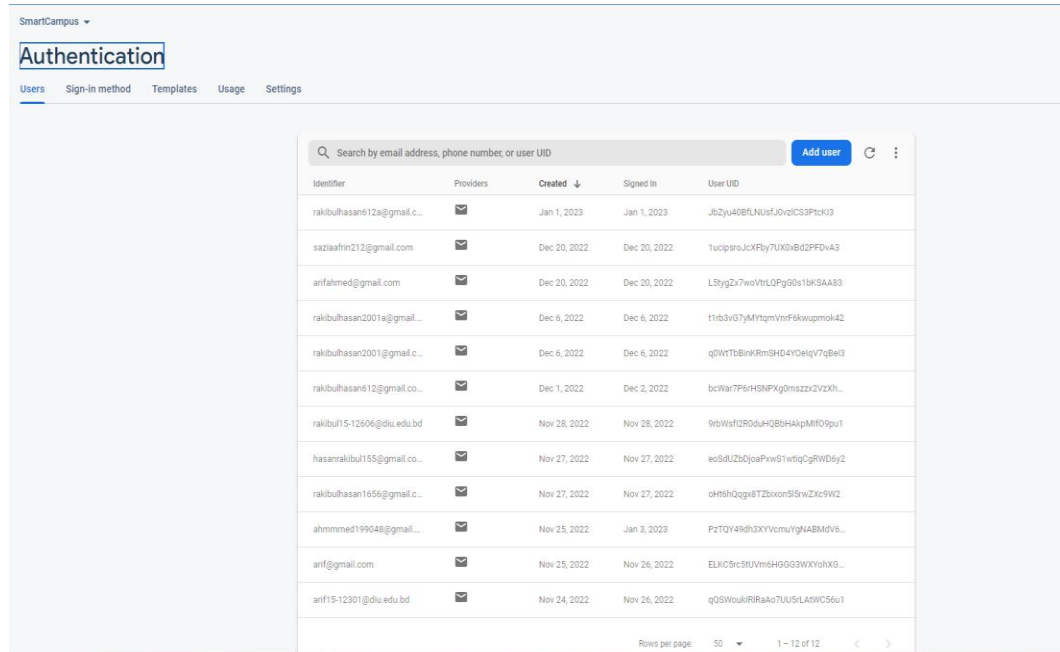
Figure 5.9: Student User Database Structure

Figure 5.9 shows the student user database Structure real-time database system where data is stored in the fire stored database structure.

5.2 Implementation of Authentication

The Firebase authentication device has been used. As a real-time authentication device, that is. In this application, we have used email sign-in authentication with the Firebase authentication device. Customers want to verify their email address for this reason.

Figure 5.2.1: User Authentication Storage.

The authentication figure is shown in 5.2.1. In the firebase authentication page, authentication will happen mail based. The system will generate mail for logging in and user have to provide mail text confirm. But for a new user, the user needs approval from the admin to use features.

5.3 Implementation of Front-End Design

Front-end design in Android Studio is associated with XML files as well as Java classes. The user interface (UI) of the program has been designed using XML files as a way to represent the user interface. We have included in the XML file the buttons for Edit Text, Relative Layout, Recycler view, Card view, Bottom navigation, and Circular image view, as well as several forms for backgrounds, icons, and backdrops. The next step was to call all the classes and connect all the objects to them. Classes carry out logical processes.[6]

- Splash Screen: Implementation of a splash screen

- Students Login: Profile, faculty, E-books, Hall, Admission, Notice, Calendar, Academic Results

- Notice: View latest Campus notice

- E-Book: E-books are usually distributed on the internet as downloadable files that can be read offline.

- Academic Results: View academic results

- Students Portal: Log in course result, certificate verify, internship process, student Application

- Video Lecture: Direct link for applying into the Campus

- Management Issue: Search management issue collections and resources in the Campus authority

- Location map: The campus map will show you where you are relative to the campus and where the campus is located

- Transports: User's transports time, location & price related information

- Gallery: Campus photo stream

- About: Basic information about the application and Campus

5.4 Implementation of Interactions

We thought it would be useful to compare our thoughts with those of our friends, supervisors, and some colleagues among our faculty members. We requested their diu on the app from them. We discussed our aspirations and plans. We adopted their recommendations and viewpoints. The project participants and our staff then discussed a user-friendly interface. Therefore, to make the design more interactive, we incorporated images and buttons that provided sufficient information. After all this effort, our aim was to improve the usability and interactivity of our programs.[7]

5.5 Testing Implementation

There are several testing methods available for the Android platform. There are several kinds of regional unit testing, it is comprised of system tests, integration tests, unit tests, and instrumented tests. Connecting the local units is done through a local computer that has Android Studio installed and database access available. Due to the fact that Java is used on computers, it runs very quickly because an emulator is not required. System tests, as we all know, test the complete system. These are the tests that are used to validate the program code. Unit tests are quite useful since software engineers frequently want to save time. Unit testing are simple and affordable. Due to this fictitious justification, during system, integration, and even application beta testing, flawed unit test patches are produced. Android unit testing is used for more comprehensive testing by integrating multiple test frameworks. In our smart campus Android application, we have different types of features. To test our project, we have checked all features and options of our application to see if it is all working or not. The results were in contrast to what we expected. As a part of testing Android, unit tests are used to integrate test frameworks for more thorough testing.[7]

5.5.1 Testing Approaches:

Discovery testing is the process of testing usefulness at this point without considering actual usage. The reverse is known as white box testing, where usefulness is tested as well as how it carried out is also looked into.

5.5.2 Unit testing:

Unit testing is that kind of testing process where every unit of a system is tested through the testing process to ensure whether the system is working well or not, whether the user of the system is getting their expected output or not, or whether the system serves its marking purpose properly or not. Unit testing assists testers and developers in understanding the foundation of code, allowing them to swiftly update defect-causing code. If any module's code is changed, check to see if the appropriate unit test is accessible or not. QA engineers also do unit testing.

5.6 Test Result and Reports

The challenge is about designing a set of examples and making them available to users and developers. Interaction is needed for the application to be dynamic and user-friendly. So, we try our best to keep this application interactive. It is imperative to perform unit tests to ensure that there are no more bugs in the application. It also helps to identify logical errors in the applications. In our application, all modules are tested individually during the development process. Primarily, the system is examined for applicability accuracy. Every software must include a test as a necessary element. Finally, the program engages in hardware and software interactions. The system is a compilation of the outcomes of system testing.

- Login System
- Registration System
- Notice Board
- Teacher's Information
- Management Issue
- Student portal
- Academic Results
- E-Book
- Video Lecture
- Transport
- Map
- Admin Panel
- About
- Rate Us
- Map

CHAPTER 6

IMPACT ON SOCIETY SUSTAINABILITY

6.1 Impact on Society

One solution to this issue is to use the Internet. For instance, utilizing the program may require using the internet in some regions. Because of this, almost everyone owns a smartphone. We are here. Regularity is advantageous. Students no longer need to keep track of their faculty and notice information on paper because they may download the program on their tablets. On the other hand, people are more technologically advanced in today's civilization. One solution to this issue is to use the Internet.

Students must utilize the internet on occasion to keep their timetable current. As a result, you must be familiar with system settings, data set purchases, and other topics. People may easily get through any early difficulties they may experience.

6.2 Impact on Environment

Our application, in my opinion, is completely environmentally friendly. However, it could have a negative impact on the climate. There are several reasons why a program like ours is limited to being used on Android devices. If a phone is thrown away improperly, it will harm our environment.

In addition, by utilizing our program, we are helping the environment. It is not necessary for students to use it to manage campus and e-books instead, they must utilize paper and pen to take notes. Paper requires the use of trees. So here it is. There is a possibility that one day the software might be able to save thousands of trees, thereby increasing the beauty of the world.

6.3 Ethical Aspects

In terms of morality, I believe there is nothing to be concerned about. There will be no unethical work related with our application because we are utilizing it for personal work for a business. Because our program is open source, I believe there is no way to engage in unethical behavior that might endanger individuals.

6.4 Sustainability Plan

Android releases a redesigned version every year. As a result, if the platform's updated API changes, Android OS applications must be updated. As a result, we are lucky enough to be following the MVVM (Model View View Model) paradigm in the design of our application. Model (View Model) (View Model). This architecture is extremely scalable. Therefore, because our software will be open source, students from our institution who work in the Android sector will be able to contribute to the app and exhibit their significant abilities. Our approach is cost-effective in the event of a back-end server. It is intended to minimize the application's dependency on the back-end server. As a consequence, we are confident that our applications will stand the test of time for a long time.

CHAPTER 7

CONCLUSION AND FUTURE SCOPE

7.1 Conclusion

Today people are using most of the applications that are Android based mobile applications. Today, everyone spends most of their time on their mobile phones. This proposed architecture can carry out students' most desirable activities in an attractive and user-friendly environment. Students are provided with features like E-Books, Video Lectures, Students portal, Management Issue Faculty Information, notices, Transport, Mapping, academic results, study materials, and more. Traditionally, the lecturer and students spend a lot of time in classrooms. Also, a significant amount of time is wasted in the manual or traditional system. Through this system, wasted time can be used for value-added tasks, helping to improve campus strategies. It shows that devices with smart campus information awareness have applications in the many another area of life, that technology bridges the gap between needs and opportunities. For this I would like to thank the Almighty ALLAH, without his mercy I won't be able to do such a project alone.

Then special thanks to my project supervisor, Md Sadekur Rahman Sir, who guided me on the right track throughout this project. Without his consultation and supervision, it would be quite difficult for me to complete this project.

Though there are some limitations in my application I can assure you that it has some pretty good and efficient features that will give inner peace to a user using it. Maybe this project is complete for this final year project, but actually, it is not ending here. I will give some improvements regarding features and updates to this project. So, it can be said that this is the first step toward my great vision of what I am working for this project.

7.2 Opportunities for further development

There is a huge opportunity for further development. In the current situation, faculty are not able to stay up to date with campus activities due to their busy schedules. Android applications for students are improving daily. The advantage of creating an iOS app is that since the server backend has already been created, the developer won't have to work on it again. We were unable to stop thinking about it. But it's evident that different people may generate original and intriguing concepts. As a consequence, in order to get input and additional features from other students at our university, we made our application open-source and widely available to everyone. Because the framework is open source, anybody with relevant ideas for extending its functionality is encouraged to contribute.

The student and instructor communities can communicate in real-time using the operational paradigm in situations such as exchanging news and establishing new acquaintances. Because there is no system for managing e-books and admissions, updating faculty and hall information, and managing the campus notice system, our main goal is to create a scalable and dynamic system for the Computer Science and Engineering department so that students and teachers can easily view their campus students and admin can manage the campus notice system.

As a result, I feel that this application will be extremely valuable to our instructors and kids. This program will save us time. This software will hopefully be used by our campus students and professors. This will save us time and simplify our lives. In the future, we'll add this project to the live server and check out to resolve a lot of major issues in order that students will get this service through apps.

7.2.1 future scope

- In the future we will try to make our application more dynamic and more user-friendly.

- Parents can make all the account payments to the using the application very easily.

- Communities are visible on the faculty portal to watch student engagement.

- Students can access a directory for quick contact with faculty members.

- Students can set up appointments to meet with faculty members

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