

**CAMPUS GUIDE: A MOBILE BASED ONLINE APPLICATION TO THE BETTERMENT
OF CAMPUS LIFE**

BY

**MEHEDI HASAN MAMUN
ID: 161-15-985**

**MD.MOYEJ UDDIN
ID: 161-15-957**

AND

**JEROMIO GHAGRA CALVIN
ID: 161-15-969**

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

Supervised By

Saif Mahmud Parvez

Lecturer

Department of Computer Science & Engineering
Daffodil International University

Co-Supervised By

Fatema Tuj Johora

Lecturer

Department of Computer Science & Engineering
Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

DECEMBER 2019

APPROVAL

This Project titled “**Campus Guide: a mobile based online application to the betterment of campus life**”, submitted by Mehedi Hasan Mamun, ID: 161-15-985 and Md. Moyej uddin, ID: 161-15-957 and Jeromio Ghagra Calvin, ID: 161-15-969 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 and approved as to its style and contents. The presentation has been held on 10th December 2019.

BOARD OF EXAMINERS

Dr. Syed Akhter Hossain
Professor and Head

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Chairman

Dr. S M Aminul Haque
Associate Professor & Associate Head

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner

Saif Mahmud Parvez
Lecturer

Department of Computer Science and Engineering
Daffodil International University

Internal Examiner

Dr. Mohammad Shorif Uddin
Professor

Department of Computer Science and Engineering
Jahangirnagar University

External Examiner

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Saif Mahmud Parvez, Lecturer, Department of CSE, Daffodil International University**. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:

Saif Mahmud Parvez

Lecturer

Department of Computer Science and Engineering
Daffodil International University

Co-Supervised by:

Fatema Tuj Johora

Lecturer

Department of Computer Science and Engineering
Daffodil International University

Submitted by:

Mehdi Hasan Mamun

ID: 161-15-985

Department of Computer Science and Engineering
Daffodil International University

Md. Moyej uddin

ID: 161-15-957

Department of Computer Science and Engineering
Daffodil International University

Jeromio Ghagra Calvin

ID: 161-15-969

Department of Computer Science and Engineering
Daffodil International University

ACKNOWLEDGEMENT

First, we express our heartiest thanks and gratefulness to Almighty God for His divine blessing makes us possible to complete the final year project successfully.

We really grateful and wish our profound our indebtedness to our honorable Supervisor **Saif Mahmud Parvez, Lecturer**, Department of CSE, Daffodil International University, Dhaka and co-supervisor **Fatema Tuj Johora, Lecturer**, Department of CSE, Daffodil International University. Deep Knowledge & a keen interest in the field of online mobile-based Apps development (Android/IOS) influenced us to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, sharing knowledge, reading many inferior drafts and correcting them at all stages have made it possible to complete this project.

We would like to express our heartiest gratitude to **Dr. S.M. Aminul Haque, Associate Professor and Associate Head**, Department of CSE, for his kind help to finish our project and also to other faculty members and the staff of CSE department of Daffodil International University.

We would like to thank our entire course mate at Daffodil International University, who took part in this discussion while completing the course work.

Finally, we must acknowledge with due respect the constant support and patience of our parents.

ABSTRACT

Campus guide is a smart guide that helps a student and a teacher in their daily campus life. This campus guide project is developing by combined different facilities information and functionality together. This combination of facilities makes this app an ideal guide app for both teachers and students. Necessary campus feature and facility information includes with teachers list, contact with teacher, counseling hour, campus map, transport schedule, club information, emergency service, question bank. Students can get facilities and information they are faced their activity when they need. By signing in this app, teacher and student get an account. Where they provide their information. Teacher post their valuable information and students see their followed teacher status. Student can see teachers off days, counseling hour and contact with teacher. Campus guide is a mobile based informative application where user can get different facilities information and features when they need. Provides a proper guideline for a new student or any guest and also have many features for student & teachers to make easy campus life. Provides a proper guideline for a new student or any guest and also have many features for student & teachers to make easy campus life. Provides a proper guideline for a new student or any guest and also have many features for student & teachers to make easy campus life.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

“Campus Guide” is an android and IOS base application has our every campus facility, information, and educational formalities. This apps helps newly admitted students, old students, and teachers in our university. This application use in three modes like Student, Teacher, and Guest.

Student: When new students are admitted to our university than they are facing some problems like cannot identifying their course advisor, cannot identifying our academic building, not enough knowledge about education guidelines or formalities. This application easy to solve their problems. Students easily know our campus facilities, and education guidelines, our varsities club information, transport schedule and easy to check notices board, question bank, and identify your course advisor, project/thesis supervisor and can add class routine, and easy to find academic building use in campus map.

Teacher: Teacher easy to maintain communication with their students and provide the information to create the post in this application, and also add counseling hour, class routine, off day and knows campus facilities, varsities club information, transport schedule, check notices board, etc.

Guest: Guests will see some basic information about our university like admission information, campus overview, transport information, club activities, and hostel information.

This application will provide more flexibility and easy to maintenances student campus life.

1.2 Motivation

In our daily campus activities, we face several problems according to this problem we try to solve this. This is our main motive to build in this project and also, we try to make this project to gather all the information on our campus.

1.3 Objectives

This project's main focused is to give students a proper guideline about our campus facilities and also build strong virtual communication with teachers and students. At the same time, anyone can see our university's basic information.

1.4 Expected Outcome

- Students will get a proper guideline about our campus facilities
- Students can see the club information, transport schedule, campus map
- Students search for the Teacher
- Student views post
- Students identify a course advisor, an academic building
- Students can add class routine
- Students check notices board, question bank, thesis/project
- Teachers easily share information from their students
- Teacher can add counseling hours
- Teachers create their posts
- Teachers add their off day
- Teacher can see the club information, transport schedule, campus map
- Emergency Service

1.4 Report Layout

In chapter -1, Introduce to our project application and discussed including introduction motivation, objectives, expected outcomes.

In chapter -2, Discuss about the background circumstances of our project in this chapter. We also try to describe about the related work, comparative studies, scope of problems, challenges in this project.

In chapter -3, Specified the requirement of the project and also defined the business process model, requirement collection and analysis, use case modeling and description and design requirements.

In chapter -4, Describe the front end and the back-end design and interaction design & UX of the project requirements for implementation.

In chapter -5, Discuss the full project implementation and testing implementation for every section and the test result.

In chapter-6, Describe the conclusion and also talk about the scope for further development activities in this project.

CHAPTER 2

BACKGROUND

2.1 Introduction

Campus Guide is an android and IOS base application is mainly guided to students our campus facilities, education formalities and keep the students and teachers connected through a virtual platform.

This application help to teachers and students. Teacher create to the post in the application and add to counseling hour and also there off day. Student will be able to search teacher, identify their course advisor, identify academic building, view to our varsity map, add class routine, check the notice board, question bank and also known the club information, transport schedule etc.

Provides a proper guideline for a new student or any guest and also have many features for student & teachers to make easy campus life.

2.2 Related Works

In the application, we give all features to ace in our real life problem. For example, when a student admit in an institute, he/she did not know about the institute. So, based on the problem, we give all features. This application will provide more flexibility and easy to maintenances both student teacher campus life.

After getting this project idea, we try to search for this type of project. After that we finds some project those are similar with our app.

BRACU: This app for Brac University. This app made for university own purpose. There have some features like - News Updates, Announcements, Academic calendar, Learning Management System, Library, etc.

AIUB Portal: In this app, they manage teacher like teacher's Attendance, Class schedule, Notice etc.

NSUer student Companion: In this app work for students. The main feature in the app are the main feature are Buy Sell Shop, Blood Bank, Classmates, Faculty Poll, CGPA Calculator, Food Ratings etc.

2.3 Comparative Studies

Based our real-life problem & experience, we are given all the features in app. For example, here a student admits in our university, he/she does not know anything about the varsity. He/she does not what he/she has to do now. Also, they have no idea what they have to do now and have no idea about campus geographical idea. Similarly, in every step in, they suffer in every step. From this experience, we developed this app. In our country have some app, but all of them are mainly developed for varsity's own purpose. But we added all features for teacher, student and guidance. The main goals of this project are connected teacher and student by this app and help each other by providing information and make campus life easier.

2.4 Scope of the Problem

In this app have only one problem, this is authentication problem. In the app, two actor can sign up. One is teachers and second is student. When someone sing up we cannot identify that is real teacher or student. Any student one can create account as a teacher. So in this step we face problem. To solve this problem, we need varsity database connection. So, we can solve this problem and compare which one is a real teacher and which one is a real student.

2.5 Challenges

Developed this app using dart language, flutter SDK and use firebase database. Data are stored in database in JASON format. So, when our app's user number will increase, then it faces database stored problem, we have to buy database in this time.

Also use online calling system that is Web RTC API. For this feature, we have to buy this API. And lastly, we will need to update information. For that we need maintenance the app all the time.

CHAPTER 3

SOFTWARE REQUIREMENTS SPECIFICATION

3.1 Business Process Modeling

Business process model is a graphical representation for specifying the processes in a graphical way. This model is similar to the flow chart diagram, it used for better understand about the process for the technical and non-technical users.

The process starts with a start symbol and finished with an end symbol for every activities. Data is flow left to right. At first in the process, user must have a registered account, if the user did not register, then the user must complete the registration. After registration successfully user can login into to the system and access all the activities.

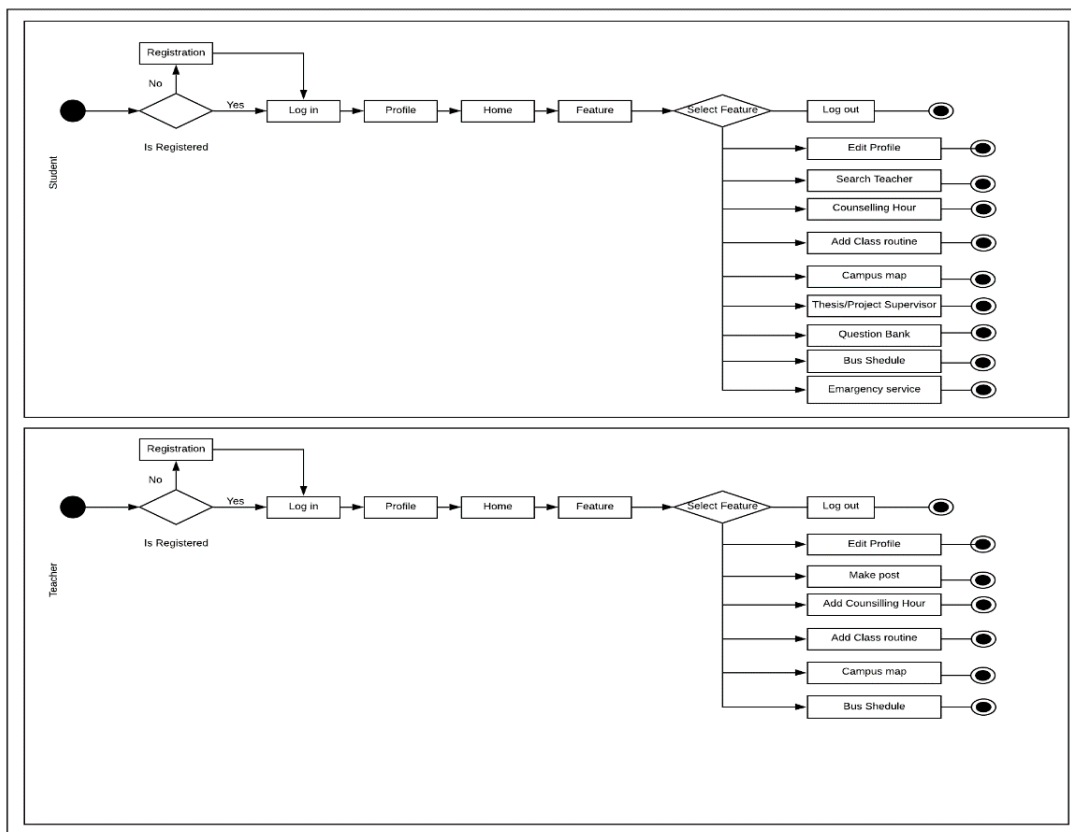


Figure 1: Business Process Model

3.2 Requirement collection and analysis

Requirement collection is the process where necessary functional and non-functional Information will be collected for the system.

For the system requirement collection process is given below:

- Get information by survey with Google forms.
- Information collection by discussion.
- Collect bus information from campus authority.
- Teacher information is collected from the authority.
- Take photos and sketching and mapping specific classroom, teacher's room and building for the campus map.
- Specific teacher information is collected for interested areas thesis project supervisor.

Tools requirements to develop the projects:

- Android Studio IDE to develop the project.
- Programming language as Kotlin.
- Firebase database.
- Android devices to testing our application.

3.3 Use Case Modeling and Description

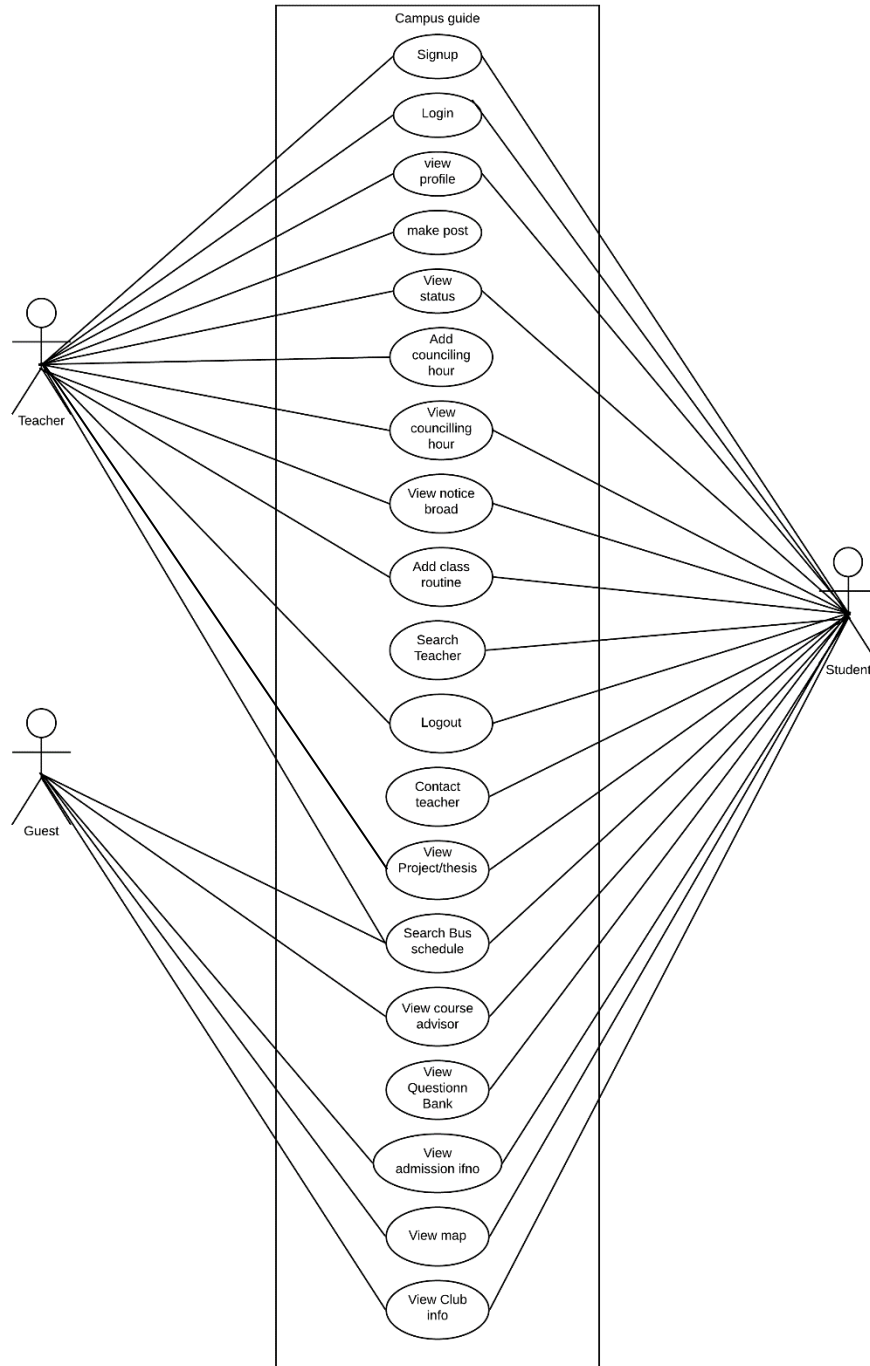


Fig 3.3.1: Use case diagram

3.3.1 Use case description

Table 3.2.1 Use case description for Sign-Up

Use_case 01	Sign-Up
Primary_Actor	Student, Teacher
Secondary_Actor	System
Pre-Condition	Provide valid Phone number or Email
Post Condition	None
Description	In this use case user can successfully Sign-up in the application.

Table 3.2.2 Use case description for Log-in

Use case 02	Log-in
Primary_Actor	User
Secondary_Actor	System
Pre-Condition	Must have Sign-up
Post Condition	None
Description	In this use case user provide there Sign-up Phone number and password.

Table 3.2.3 Use case description for Add Post

Use case 03	Add Post
Primary Actor	Teacher
Secondary Actor	System
Pre-Condition	Must have log-in and click the add post
Post Condition	None
Description	In this use case Teacher can make status or post for share information.

Table 3.2.4 Use case description for View post

Use case 04	View post
Primary_Actor	Student, Teacher
Secondary _Actor	System
Pre-Condition	Provide valid Phone number and password must have log-in
Post Condition	None
Description	In this use case user can see the status of your following teacher.

Table 3.2.5 Use case description for Add Counseling Hour

Use case 05	Add Counseling Hour
Primary_Actor	Teacher
Secondary_Actor	System
Pre-Condition	Must have Log-in your valid phone number and password.
Post Condition	None
Description	In this use case Teacher can add their counseling hour in your profile.

Table 3.2.6 Use case description for View Counselling Hour

Use case 06	View Counselling Hour
Primary_Actor	Student
Secondary_Actor	System
Pre-Condition	Must have Log-in your valid Phone number and password
Post Condition	None
Description	In this use case user can see Counselling hour and connect their flowing teacher.

Table 3.2.7 Use case description for View Notices Board

Use case 07	View Notice Board
Primary_Actor	User
Secondary_Actor	System
Pre-Condition	Provide valid Phone number and password and must have log-in
Post Condition	None
Description	In this use case user can see the notice board and add any information in this section.

Table 3.2.8 Use case description Add Class Routing

Use case 08	Add Class Routing
Primary_Actor	Student, Teacher
Secondary_Actor	System
Pre-Condition	Must have log-in
Post Condition	None
Description	In this use case student and teacher can add their class routing.

Table 3.2.9 Use case description for Search Teacher

Use case 09	Search Teacher
Primary Actor	Student,
Secondary_Actor	System
Pre-Condition	Must have log-in in your valid phone number and password
Post Condition	None
Description	In this use case student can search teacher and flowing them.

Table 3.2.10 Use case description for Log out

Use case 10	Log out
Primary_Actor	Student, Teacher
Secondary_Actor	System
Pre-Condition	Must have log-in in your valid phone number and password
Post Condition	None
Description	In this use case log out page. Student and teacher can confirm your log out.

3.4 Entity Relationship (E-R) Diagram

E-R diagram describe data model diagram display the relationship of entity. It is also help to understand logical structure of database for the project. Our project's ER diagram are given below.

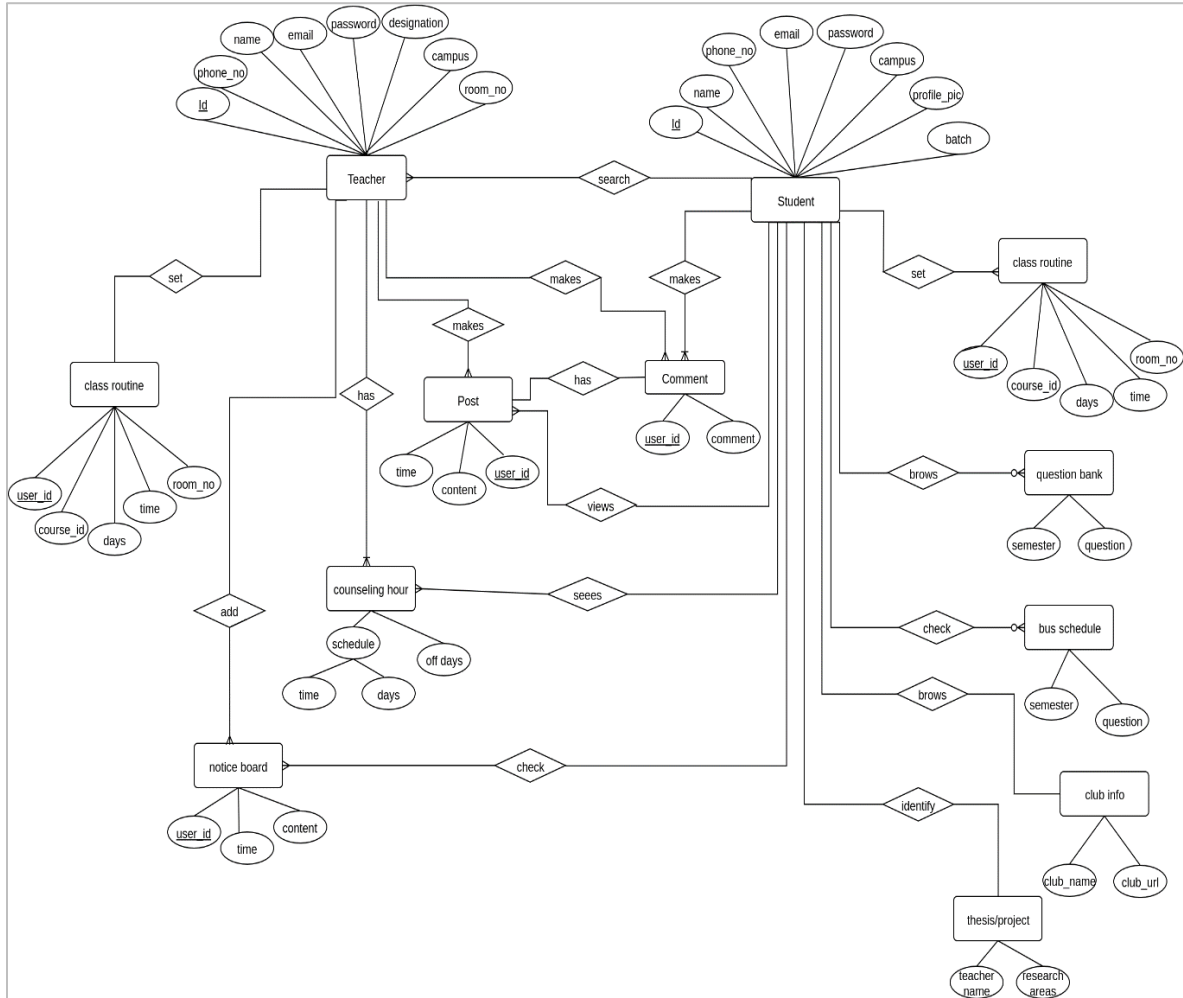


Fig 3.4.1: E-R diagram

3.5 Design Requirements

The design requirement describes the user what user does with this system. In this system there are three types of use. Guest, student and teacher.

Where guest have not to need register to use this app. Guest can access some basic features in this app. To get access full feature user must need to register. For registration user first select user type “Teacher or student”. After selecting user type then provide them a registration page, where user fill up their valid information to registration. After completing registration user can login into the system. When user successfully logged in the system they have got a profile, where they fill up their necessary information.

The user who are logged in as a student they can see home page their followed teachers status. They can search specific teacher and also all teachers list. By searching they can get information about the teacher they searched. Teachers contact number, mail and room number. And view teachers counseling hour. Student can add their class routine. Get previous semester questions paper. View campus map specific building and room for who are newly admitted. And contact with teacher through this app.

The user who are logged in as a teacher they can post for their followed students and see others teachers post in home page, Teacher add their counseling hour , their schedule their off day and which they are available in campus.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

Front -end design is the design that a user interacts to see the design in the mobile screen. It is so important that it is unsure the user good experience. If the front -end design is not good, then user cannot interact functionally in the app and that is very bad experience for a user. To design the front end, we use dart language that is both supported in android and IOS platform.

Let's see our app front end design in below

Sign up

After installation app page will be show. You will press navy blue button to choose your profession as a teacher or student.

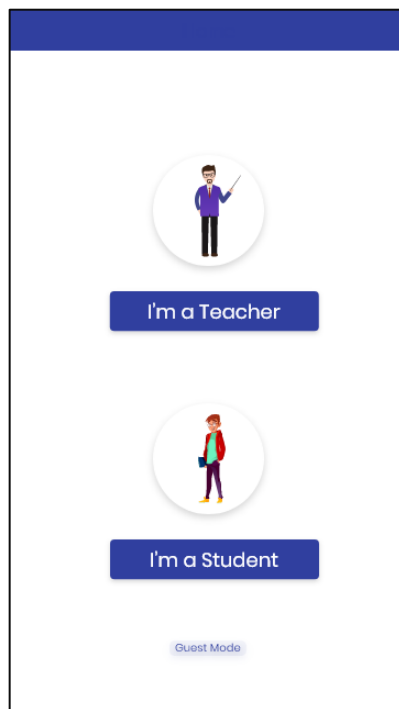


Figure 4.1.1: profession selection page

After selection your profession you will move into the login/sign up page.

Sign Up for Teacher

Name
Teacher Name

Department
CSE

Designation
Assistant Professor

Email Id
teachert30-900@diu.edu.bd

Phone Number
+88016XXXXXXXX

Gender
 Male Female

Campus
 Permanent Main Uttara

Sing Up

Figure 4.1.2: sign-up page for teacher

Sign Up

Name
Mehedi Hasan Mamun

Department
CSE

Designation
CR

Student Id
161-15-985

Email Id
hasan15-985@diu.edu.bd

Phone Number
+88016XXXXXXXX

Gender
 Male Female

Campus
 Permanent Main Uttara

Sing Up

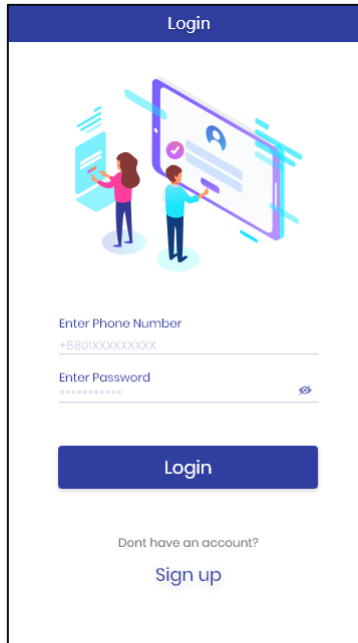
Figure 4.1.3: sign-up page for student

After clicking the sign up button, sign up page will be showed. Now you should give your valid information in all the input field and create your profile by press green signup button.

Log in

After sing up you have an account then give your phone number into the phone number box and give your password into enter password field and press the login button.

If you don't have an account then press the signup button.



The image shows a mobile application login screen. At the top, there is a dark blue header with the word "Login" in white. Below the header is an illustration of two people interacting with a large, stylized smartphone screen. The screen displays a login form with two input fields: "Enter Phone Number" with a placeholder "+8801XXXXXXXX" and "Enter Password" with a placeholder "*****" and a small eye icon to toggle visibility. Below the input fields is a large, dark blue button with the word "Login" in white. At the bottom of the screen, there is a link that says "Dont have an account?" followed by "Sign up" in blue text.

Figure 4.1.4: login page

After logged in you can access all the features.

Features

In the app, there have three actor and this actor as different kinds of features. Some features are common in then and some are different. All the features are given below in a table.

Actor	Feature
Guest	<ol style="list-style-type: none"> 1. Admission Overview 2. Prospectus 3. Campus Map 4. Teacher 5. Bus Schedule 6. Club Information 7. Facility 8. Emergency Service
Teacher	<ol style="list-style-type: none"> 1. Profile 2. Teacher 3. Class routine 4. Notice Board 5. Project / Thesis 6. Bus Schedule 7. Club Information 8. Campus map
Student	<ol style="list-style-type: none"> 1. Profile 2. Teacher 3. Class routine 4. Course Advisor 5. Notice Board 6. Project / Thesis 7. Bus Schedule 8. Club Information 9. Campus map

Admission Overview

In this page, user can see admission process. Here we design this section step by step.

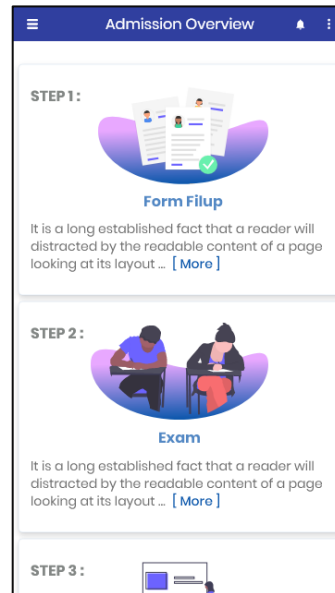


Figure 4.1.5: admission overview page

Prospectus

In this page have all department's prospectus. We just select a department, then is show all information.

The screenshot shows a mobile application interface titled "Prospectus". At the top, there is a dropdown menu currently set to "CSE". Below the menu, the page displays a list of courses organized by level and term. The courses are presented in a table format with columns for Course Title, Course, and Cr. Hrs.

Level-1 Term-1	Course Title	Course	Cr. Hrs
CSE101	Computer Fundamentals	CC	3
MAT111	Basic Mathematics	OC	3
ENG113	Basic Functional English and English Spoken	OC	3
PHI113	Basic Physics	OC	3
PHI114	Basic Physics Lab	OC	1
GEO111	History of Bangladesh and Bangla Language	OC	3
Total Credits			
14			
Level-1 Term-2	Course Title	Course	Cr. Hrs
MAT121	Mathematics: Calculus, Coordinate Geometry and Linear Algebra	OC	3
CSE122	Programming and Problem Solving	CC	2
CSE123	Problem Solving Lab	IC	2
ENG123	Writing and Comprehension	OC	3
CSE124	Business Applications Design	IC	1
GEO121	Bangladesh Studies	OC	3
Total Credits			
14			
Level-1 Term-3	Course Title	Course	Cr. Hrs
CSE131	Discrete Mathematics	CC	3
CSE132	Electrical Circuits	CC	1
CSE133	Electrical Circuits Lab	IC	2
CSE134	Data Structure	CC	2
CSE135	Data Structure Lab	IC	2
CSE136	Software Project I	IC	1
GEO131	Art of Living	OC	3
Total Credits			
14			
Level-2 Term-1	Course Title	Course	Cr. Hrs
MAT211	Engineering Mathematics	OC	3
CSE212	Basic Electronics	CC	1
CSE213	Basic Electronics Lab	IC	2
CSE214	Algorithms	CC	2
CSE215	Algorithms Lab	IC	2
CSE216	Software Project II	IC	1
ACT211	Financial and Managerial Accounting	OC	1
Total Credits			
13			

Figure 4.1.6: prospectus page

Campus Map

In this page, we can see the campus map and geographical location. Just select the campus and explore the location.



Figure 4.1.7: prospectus page

Teacher Profile

In this page we see teacher all information. Teacher also can edit, update and delete the profile information using edit option.

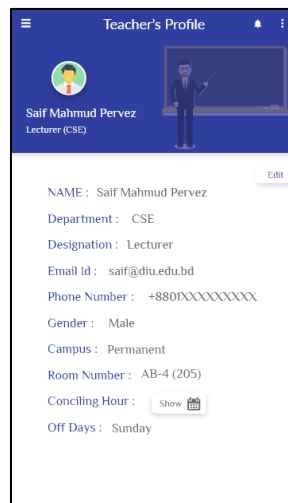
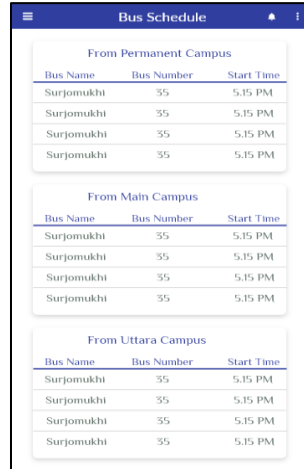


Figure 4.1.8: teacher profile

Bus Schedule

In this page we see bus schedule in a list. All the bus time are given in this feature.



The screenshot shows a mobile application interface titled "Bus Schedule". It contains three distinct sections, each representing a different campus. Each section has a title and a table with three columns: "Bus Name", "Bus Number", and "Start Time".

From Permanent Campus		
Bus Name	Bus Number	Start Time
Surjomukhi	35	5.15 PM
Surjomukhi	35	5.15 PM
Surjomukhi	35	5.15 PM
Surjomukhi	35	5.15 PM

From Main Campus		
Bus Name	Bus Number	Start Time
Surjomukhi	35	5.15 PM
Surjomukhi	35	5.15 PM
Surjomukhi	35	5.15 PM
Surjomukhi	35	5.15 PM

From Uttara Campus		
Bus Name	Bus Number	Start Time
Surjomukhi	35	5.15 PM
Surjomukhi	35	5.15 PM
Surjomukhi	35	5.15 PM
Surjomukhi	35	5.15 PM

Figure 4.1.9: bus schedule page

Club Information

We see a list of clubs. We can filter the club list based on department and also we can find any club.

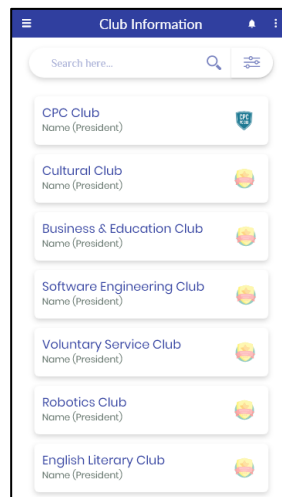


Figure 4.1.10: club information page

Facility

All the facility that provide in a list and give all the information.

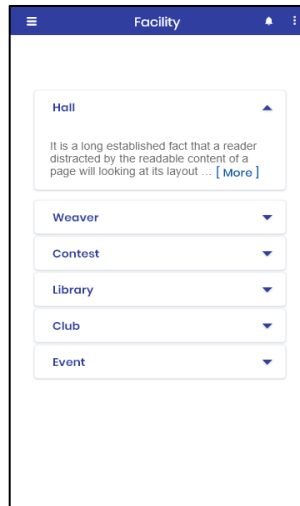


Figure 4.1.11: facility page

Emergency Service

All emergency services information is given here.

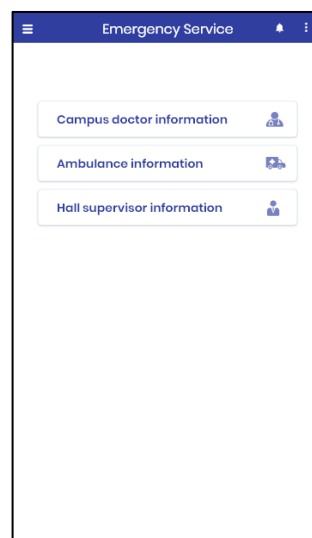


Figure 4.1.12: emergency service

Class Routine

A Seven days routine schedule can add both student and teacher.

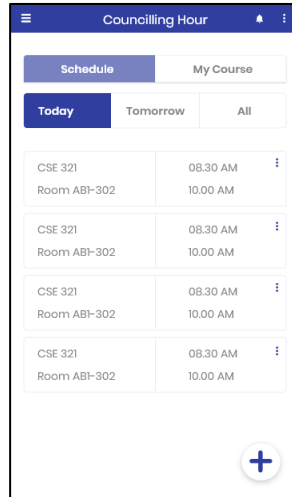


Figure 4.1.13: class routine page

Notice Board

All important information or event only teacher can post in notice board.

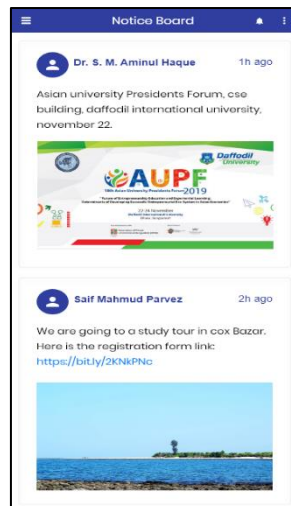


Figure 4.1.14: notice board page

Project / Thesis

Student can see teacher list based on their interested project, thesis, and research topic.

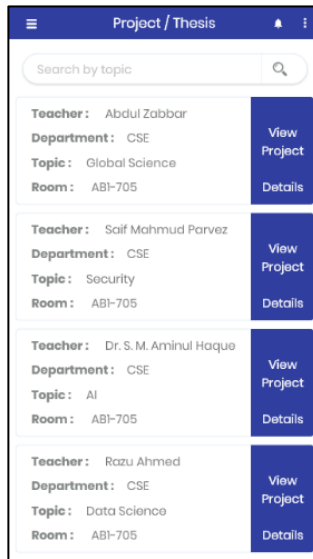


Figure 4.1.15: project/thesis page

Student Profile

We can see all information for a student.

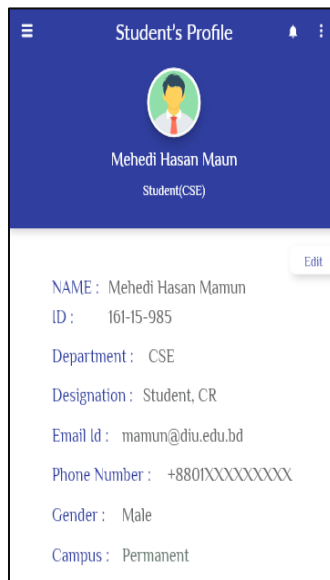


Figure 4.1.16: student profile page

4.2 Back-End Design

Back-end design is mainly server-side sector that is control this application but user cannot see this functionality. User can see the Front end part, back-end give this functionality and make user-friendly of the project. The back-end sector can see the programmer/ authorities and can edit or include the data. We need a lot of store data, so we create a database in the “firebase” because it is easy to use in our project purpose. Firebase is real-time database and saved all user’s data under the unique value for each other.

4.3 Interaction Design and User Experience

Interaction design is showing how a user interact with the system. Here user interact with our application. User will have a good experience or it will be a bad experience based on how the system will be designed and the functionality works. So, user experience design is important. In designing it will be very important that design was done that will be attractive to the user they feel comfort and influence them. This way how data will be displayed to the user. Data is displayed in this app framework to the appropriate way that was meaningful and relevant experience to the user. All they are arranged in a structural way that user can interact smoothly and shows this data that will be very conspicuous and attractive to the user. We try to our best to make out UX design standard, obvious, prominent, and glorious to best UX design for our application. We hope that will satisfy our user need.

4.4 Implementation Requirements

For developing a software or application we need various software development tools and that helps to develop an application more efficiently. For developing our application, we used different developing tools.

We using dart programming language, that is used to development flutter apps.

For development we used Android studio, it was a great integrated development environment that consist of many useful features. A source code editor that can automation build. Compile the code during running and debug the code. We can easily write our code that provide code suggestion that make coding faster.

Our application is run both device IOS and android mobile devices. We used flutter framework for developed our application. Flutter comes with a huge collection of development kits that used for develop cross-platform native devices in a same code.

For our front-end design flutter framework is used, it gives a best quality user interface for both IOS and android devices.

The android virtual emulator is used for testing and viewing when every sing fragment part is completed of our application. We also used our real devices for testing.

To store our data, we use firebase database. Firebase is online based database where user receive and send data in real time. That comes with branch of feature authentication, API login with Google mail. That's gives our app more efficiency.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of database

In this section, we will describe how we implement our database in this application. Database helps us to store data manipulate data for user interaction, this is the way where data is systematically collected.

For our application we used Firebase database. This is a real time database. User can sync and store data in real time. Data stored json format in Firebase database. We built our application for cross-platform native devices that IOS and android devices can run this application. At the same time every user of both devices can share the real-time database and when any data is changed, they get updated data automatically.

Connecting our app with Firebase, we no need to maintain database and server. Firebase provides back-end server and maintenance. That is cloud storage database system. When we update our real time data it uploads in clouds and simultaneously notifies all connected devices.

Firebase provides back-end services, we use firebase authentication services by firebase SDK to authentic our user. User can login with their Google account.

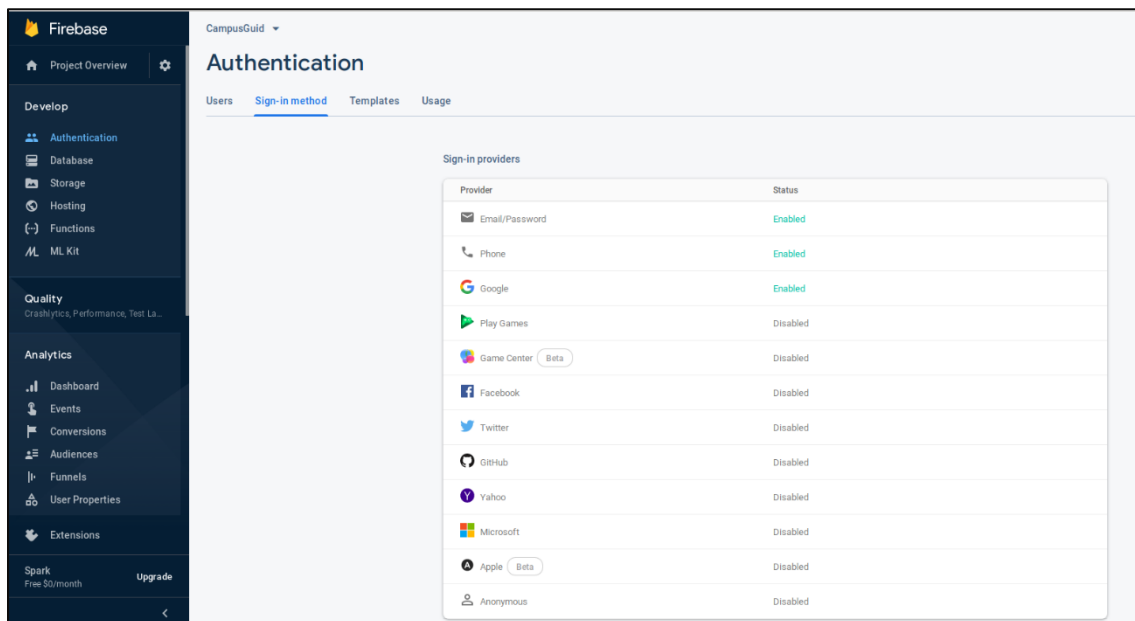


Fig 5.1.1: Firebase authentication

For each user firebase provides a unique id key. The information is sorted in a unique table through the unique id key.

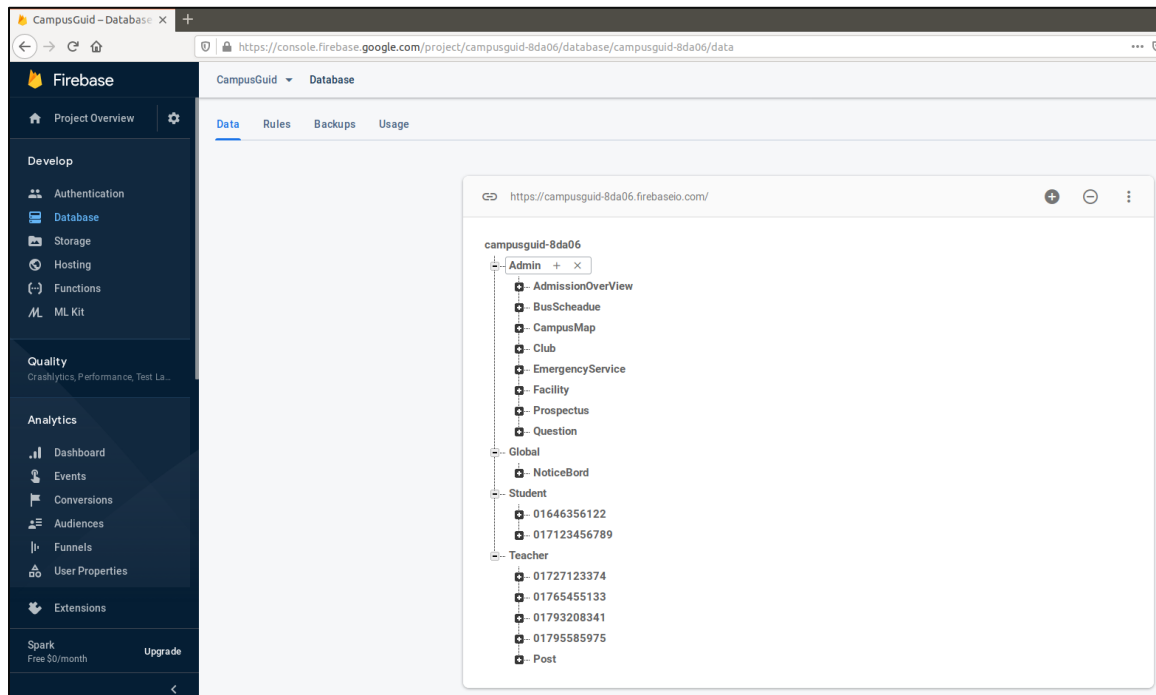


Fig 5.1.2: Firebase database

5.2 Implement front-end design

Implementation of front-end design are described here. By front-end interface user interacts with the system. So, it is important front-end design should be attractive, user-friendly and smoother.

Flutter framework we used for our application. Flutter is mobile user interface framework for native apps, that in a same code to build native apps for both IOS and android devices. Flutter is used dart programming language. That's gives fast and Flutter gives a high-quality user interface for front-end design. The simplicity of using flutter is that we can design our front-end design in coding. We not need to extra designing for front-end display. That is super-fast and responsive user interface.

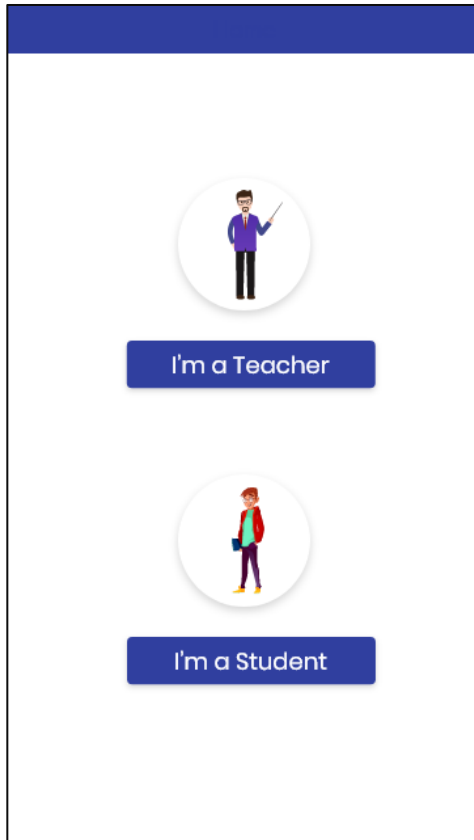


Fig 5.2.1: Front-end page

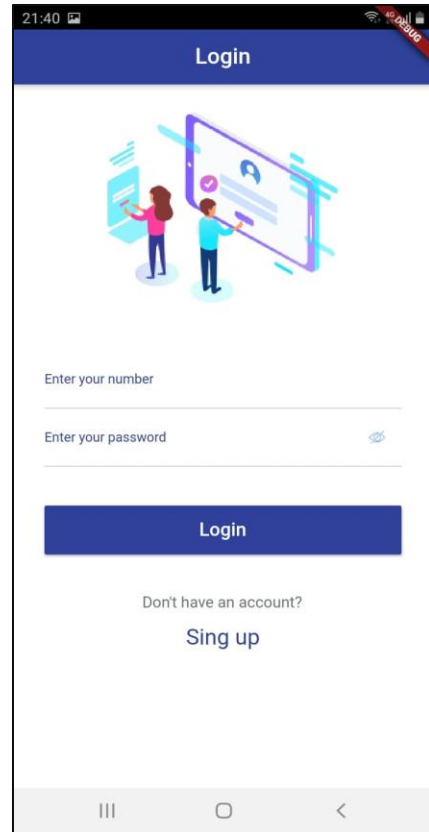


Fig 5.2.2: Front-end login page

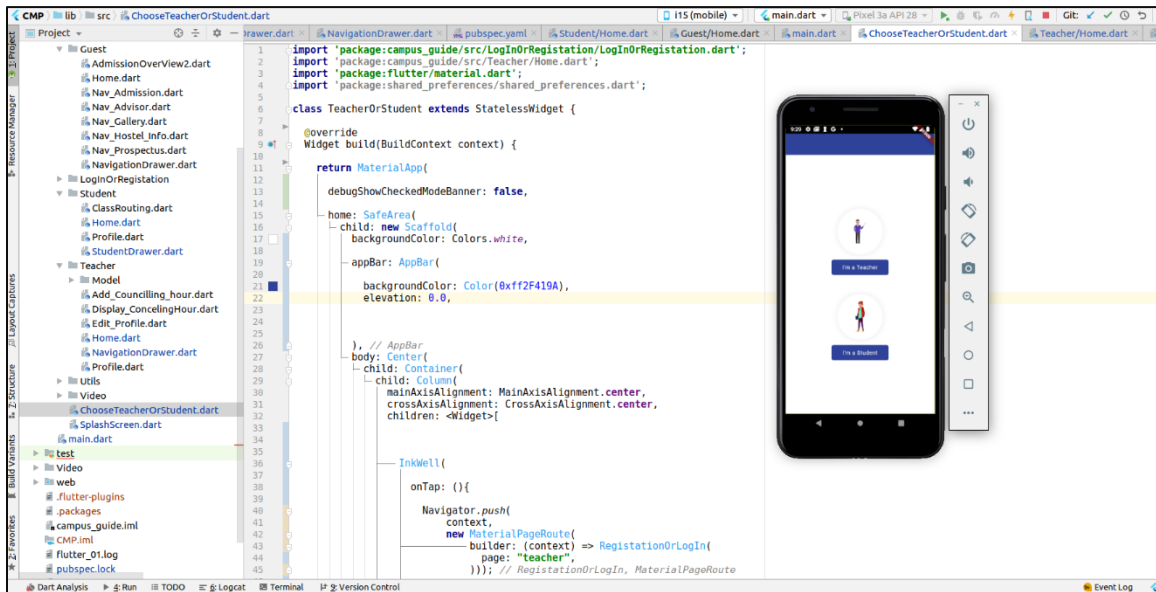


Fig 5.2.3: implementation of front-end design

5.3 Implement of interaction

implement front-end, back-end and database are properly by which user interact with the system.

Front-end design responsive and make best color combination, front and the visualization layout that will attractive to the user, because user mostly interact with the front-end interface.

User interact back-end functionality through front-end interface. All the data pass and generate by back-end system. This data stores in database. We connected our app with firebase database. That user will interact the system properly.

5.4 Testing Implementation

In the project, we try to identify the errors in our project and verify that each part is working properly. So, we are testing our project in two steps, **Sign-Up** and **Log-In**.

Sign-Up has two functionality **Student** and **Teacher**, so this part is different testing.

Table 5.4.1 test case for Teacher Sign-Up page

Name	Department	Designation	Email Id	Phone Number	Gender	Campus	Password	Actual Result	Result
Saif Mahmud Pervez	CSE	Lecturer	saif.cse@diu.edu.bd	01765455133	male	Permanent	Validate password	valid	Pass
Raju Ahmed	CSE	Lecturer	raju.cse@diu.edu.bd	01853958721	male	Permanent	Validate password	Invalid password	Fail

Table 5.4.2 Test case for Student Sign-Up page

Name	Department	Student Id	Email Id	Phone Number	Gender	Campus	Password	Actual Result	Result
Md. Moyej uddin	CSE	161-15-957	moyej15-957@diu.edu.bd	01761090083	male	Permanent	Validate password	valid	Pass
Mehedi hasan mamun	CSE	161-15-985	hasan15-985@diu.edu.bd	01795585975	male	Permanent	Validate password	Invalid password	Fail

Table 5.4.3 Test case for Log –In page

No	Test Case Id	Test Case Description	Step	Expected Result	Actual Result	Result
01	Login User	To verify the login phone number in login page	Enter the phone number and password and click the login button	Successful login or error	Successful Login	Pass
02	Password	To verify the password in password page	Enter the valid password and click the button	Password invalid must be displayed an error	Invalid password	Fail

5.5 Test Results and Reports

In this part, we get the final report for the app. To apply testing, we select 10 users. We test randomly in practically on the all features that we have in the app. Every user test to be the three actors. That means, we test app as a teacher, student and as a guest. We input wrong and correct input. The tested process and result already stored in section 5.4. At last, for all input, our app performed smoothly and user friendly.

CHAPTER 6

CONCLUSION AND FUTUTRE SCOPE

6.1 Discussion and Conclusion

“Campus Guide” is a mobile-based online application. We make this application help to Student, Teacher and Guest user. Students will get a proper guideline about our campus facilities using this application. Students can easily find their information about our campus all facilities, education formalities by using their android mobile phone and it will save their time and harassment. Students can easily communicate with their teachers. Teacher easily share information among their students and easy to knows all campus facilities. The guest user easy to know our varsity all basic information and can see the varsity overviews. This application easy to use in mobile phones and we believe that our application will be helpful for the user.

6.2 Scope for Further Developments

To make this app more proficient we can add more efficient feature in future. “Knowledge sharing option” where every semester course are categorized and any student can upload videos they are good in any particular topics that was related to the course. Any students can find this videos that they missed in class or lacking in this topic and also review this videos. Based on reviews the videos will show first. Google maps will be integrated into the app. Bus tracking system will be added, that show the real time location of the bus. Event notification system will be added that will notify every students and teachers when any event, seminar or conference will be held in campus.

REFERENCE

- [1] Yang, D.K., Lin, Y.W., Chiu, Y.I., Chung, P.C. and Huang, C.R., 2013, July. Vision based campus guide system on intelligent mobile phone. In *2013 IEEE International Conference on Multimedia and Expo Workshops (ICMEW)* (pp. 1-6). IEEE
- [2] Lucidsoftware,(2008),Lucidchart,<http://www.lucidchart.com/pages/use-case-description-example-and-template-UML> last access time and date 12-11-19 8:30 PM
- [3] JimmyWales,LarrySanger,(2001),Wikipedia,[Https://en.wikipedia.org/wiki/Activity_diagram](https://en.wikipedia.org/wiki/Activity_diagram) last accessed on 10-11-19 01:12 PM
- [4] K.K Aggarwal & Yogesh Singh,(2007), Software Engineering (3rd ed.), London, New Age International Publishers.
- [5] Firebase. Firebase Realtime Database |Store and sync data in real time <https://firebase.google.com/docs/database/> last accessed on 12-11-19 10:10 PM
- [6] Business Process Model. https://en.wikipedia.org/wiki/Business_Process_Model. last accessed on 11-11-19 12:10 PM
- [7] Software_Requirements_specification. <https://www.softwaretestingclass.com/-software-requirement-specification-srs/> last accessed on 08-11-19 10:45 PM
- [8] Mobile_app_development_process <https://thebhigroup.com/blog/mobile-appdevelopment-process>. last accessed on 09-11-19 11:07 PM
- [9] Flutter documentation. <https://flutter.dev/docs> last accessed on 20-11-19

APPENDICES

Appendix A: Project Reflection

The Appendix means to us the whole journey in this project from the being to last day. At the begin stage our project, we took some feature that we face our own face the problem in our campus life. After that we research more and more. We discuss with our friends, teachers, juniors and other peoples. After discuss them we find more problem and we try to this solve problem though our app. We give too much time in research User Experience (UX) in the project. Then we design app's User Interface (UX). We design a simple, minimalist User Interface design that is increased user usability. After that we started development. We dart language to develop this app. So that our app is run both android and IOS platforms. After developed, we tested the app and measure the accuracy and find bug of the app. Then we solve the bug and again test the by some sample user. After the successful testing part, we got our final app. We gained a new experience and learned more in this developed this.

Appendix B: Related Diagrams

In the app, we have three User and one Admin. Here, Operation diagram point that which operation can do an actor or user.

Admin, Teacher, Student have a lot of operation but Guest actor can do any operation. Guest actor only can view the feature.

For, Admin, Teacher, Student operation diagram are given below –

Admin:

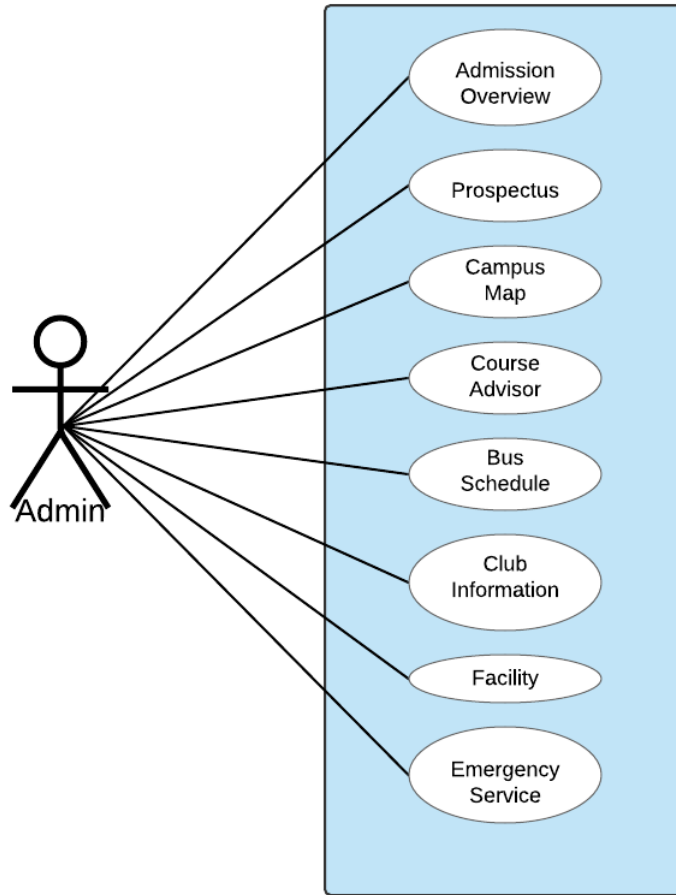


Figure B.1: Admin operation diagram

Teacher:

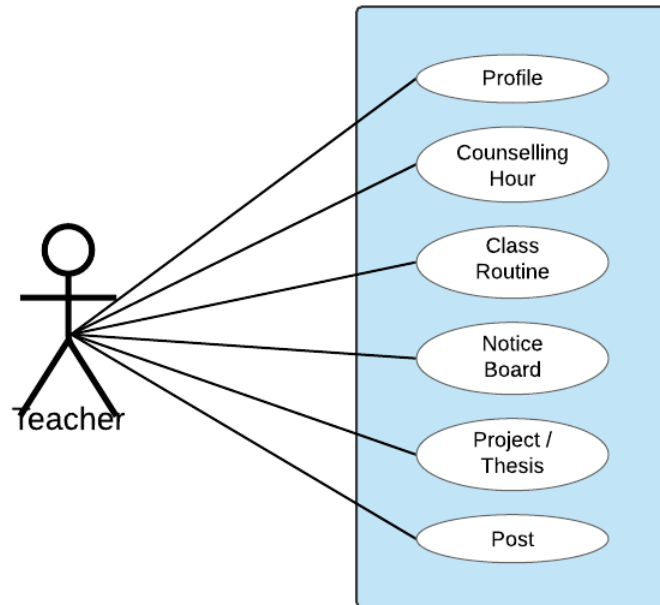


Figure B.2: Teacher operation diagram

Student:

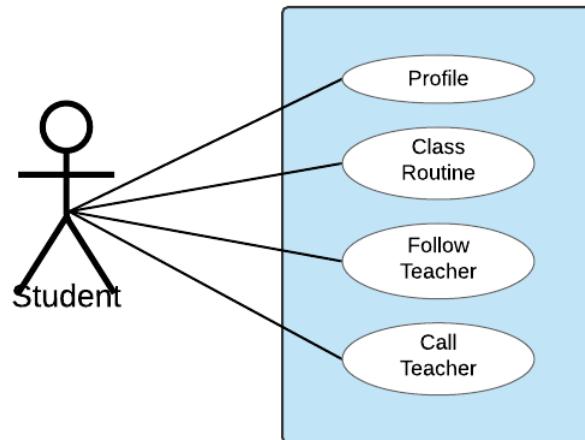


Figure B.3: Student operation diagram.