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An Undergraduate Internship / Project on “Mobile Application for Comilla University”

PIYAL, AKIB HAMID

Independent University, Bangladesh

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An Undergraduate Internship / Project on “Mobile Application for Comilla University”

By

AKIB HAMID PIYAL
Student ID: **1510150**
Autumn, 2022

At

Nanosoft®
Your Trusted Development Partner

Supervisor:
Sanzar Adnan Alam
Lecturer

Department of Computer Science & Engineering
Independent University, Bangladesh

January 24, 2023

Dissertation submitted in partial fulfillment for the degree of Bachelor of Science in Computer Science
Department of Computer Science & Engineering **Independent University, Bangladesh**

Attestation

In Sincerity, this is to certify that “Comilla University Application” is constructed by Akib Hamid Piyal (ID-1510150, Dept. CSE) as Undergraduate Internship in partial fulfillment of the requirement for the Degree of Computer Science & Engineering from Independent University, Bangladesh (IUB) under supervision and guidance of Sanzar Adnan Alam (Internal Supervisor) and Md. Nasimul Amin (External Supervisor). All the work under progress is completely authentic and genuine as experience of internship is one of the most highly required part of my career growth and skills. I hereby declare that none of my work is plagiarized or any malpractice was adapted during the course of my Internship.

Sincerely,

Akib Hamid Piyal

1510150



24.01.23

Signature Date

Akib Hamid Piyal

Name

Acknowledgement

I would like to thank God, Almighty, for providing me with this wonderful opportunity to work with one of the most renowned Company NanoSoft.

I would also like to express my gratitude towards my institution and my supportive internal supervisor and lecturer, Mr. Sanzar Adan Alam, for his valuable time and guidance towards the completion of a challenging project based on my internship program. I would also like to thank my external supervisor, Md. Nasimul Amin, Project Manager, and his team for enormous support, guidance and providing me with a wonderful opportunity to learn more about the company and bond well with environment and wonderful NanoSoft family.

Lastly, I would like to thank the authorities and regulatory bodies at Independent University, Bangladesh for providing me with an opportunity as the internship program which has contributed to addition of new skills and experiences in my career growth.

Akib Hamid Piyal 1510150

15/01/2023

Dhaka, Bangladesh

Letter of Transmittal

24/01/2023

Sanzar Adan Alam

Internship Supervisor & Lecturer

Department of Computer Science and Engineering

Independent University, Bangladesh

Subject: Internship report on ‘Mobile Application for Comilla University’

Dear Sir,

I am grateful to have this opportunity to submit an internship report to you on ‘Mobile Application for Comilla University’ which is a mobile application developed for NanoSoft. This report highlights the experiences I have gathered during my three months internship at NanoSoft It was a wonderful experience with NanoSoft where I was granted this wonderful opportunity to discover my true skills and unlock new potentials. It would be my honor to provide you with all the knowledges I have gathered so far and product that I have been able to engineer as per requirement through this report so that it serves its intended purpose. I am also very grateful for your time, support, knowledge and direction which has played important role in completing my internship program. I really hope and pray that you will find my report acceptable.

Thanking you for your kind cooperation and guidance throughout my internship program.

Yours Sincerely,

Akib Hamid Piyal

1510150

Evaluation Committee

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Signature 

. . . . . .

Name Sanzar Adnan Alam

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Supervisor of the intern

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Signature 

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Name Ajmiri Sabrina Khan

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Panel Member-1

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Signature 

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Name Sarwar Shahidi

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Panel Member-2

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Signature 

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Name Dr. Mahady Hasan

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Head, Department of computer science & engineering

Abstract

Comilla University Application (COU APP) is a mobile application which was built using flutter Node.js, express and MySQL. The application's user interface was made using Flutter. Flutter makes it easier to create cross-platform applications from a single codebase for Android, iOS, Linux, macOS, Windows, and the web. The backend REST API was built using Node.js, Express, and MySQL.

The application lets users to stay in touch with university faculty and staff and receive the most recent university updates. Users can download the most recent university announcement. The user can browse all departments and communicate with department faculty members directly from the application by message, phone, or email. Users can view the most recent events taking place at the university. Users can view the holidays and off days on the built-in calendar. Students at Comilla University can view the schedule for the student bus by using the application. They can determine the bus's beginning and terminating points and the times that correspond to them.

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Chapter 1

Introduction

Internships are frequently strongly related to the academic and professional objectives of each individual test taker. The internship is designed to provide candidates the chance to concentrate on their professional interests and options across the nation.

Internship Engineering Technology and Science and Independent University School offers undergraduate programs in Computer Science and Engineering as a student of CS. The program requires me to finish an internship with the respected business where I work. Training in environmental development and familiarity with the sector.

The construction of my internship was finished by me working at Nanosoft, a software business. I have gained knowledge from my time working there on how to conduct myself professionally.

In this report, I have covered my time spent working as an intern at Nanosoft, a summary of the work I have done, my experiences working for a reputable company, what I have learnt, and how it has helped me to grow and develop professionally.

1.1 Overview

While developing a production-level application utilizing the Flutter SDK is new to me, the project of producing a mobile application is not. I faced a whole new difficulty when I had to develop a Flutter Mobile application for my business. They teach me new things all the time. I read over the flutter docs every day. I'm having increasing difficulty putting things into practice. I'm learning how to utilize the company's API to access existing data. One of the criteria is that all the data in the application should be accessible even if there is no internet connection, thus I am also learning to utilize SQLite (which is SLIGHTLY different from a regular mySQL database).

1.2 Objective

The goals we have for the project are the things we want to have done by its end. The goal of a project must be clear, measurable, conform to the budget and time restrictions, and most importantly, meet the demands of the customer. The following is a description of this application's primary goals:

- This application will help the students, other staff members of the university and general people to retrieve important information about the university.

- The application will have feature to view recent and all old notices of the university.

- Everyone will be able to view upcoming events in the university using the application.
- Students will be able to see Bus routes and starting and routine using this application.

- Everyone will have access to the university's directory.
- This application shall be created for the university so that everyone has access to all the information even in offline mode.

1.3 Scope

The application will be an Informative application. A navigation bar will be present in the application. The navigation bar will have three actions on it. Six tabs on the main screen will direct you to various screens. A section for recent notices will be present. It will have a variety of symbols and pictures. On other pages of the application, there will be additional features. The project's stated goal must be achieved during the time I have left of my internship.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

Advanced studies in the field of software development are available at Independent University of Bangladesh, and they helped with the creation and implementation of this mobile application project. The following are the courses:

- **CSC 101, Introduction to computer programming:** A high level language like C++ is used to introduce computer programming and contemporary software development principles. comparison between programming languages with data visualization. First fundamentals like data types and conditional expressions, as well as topics like functions, arrays, and string manipulation, are covered. An object-oriented approach is used with a focus on building problem-solving skills and excellent programming habits.

- **CSC 303, Database Management:** A description of how to utilize database management systems and construct databases. The course covers relational algebra, SQL, the development process, database design concepts, and SQL utilizing Oracle or SQL Server in great depth. Data modeling (E-R model, relational data model, integrity constraints, data model operations, normalization, and object-oriented data modeling), database security, administration, and distributed systems are other important database subjects that are discussed.

- **CSC 305, Object-Oriented Programming:** Students who have experience with the procedural paradigm are introduced to the ideas of object-oriented programming in this course. Modularity and abstraction design ideas and patterns in object-oriented programming are covered in detail. Covered fundamental ideas include: abstract data types, composition, inheritance, polymorphism, overloading, and function chaining. Among the more complex subjects are friend and virtual functions, template functions and classes, and employing classes from the common library as the foundation of an application. C++, C#, or Java are the languages utilized.

- **CSC 305, Object-Oriented Programming:** Students who have experience with the procedural paradigm are introduced to the ideas of object-oriented

programming in this course. Modularity and abstraction design ideas and patterns in object-oriented programming are covered in detail. Covered fundamental ideas include: abstract data types, composition, inheritance, polymorphism, overloading, and function chaining. Among the more complex subjects are friend and virtual functions, template functions and classes, and employing classes from the common library as the foundation of an application. C++, C#, or Java are the languages utilized.

- **CSC 455, Web Applications and Internet:** This course provides a thorough review of web technologies and how they are used. We will cover fundamental subjects including OSI and TCP/IP architecture, Internet Routing, IP addressing, and Domain Name System. Popular browsers, HTML and CSS, HTTP, HTTPS, FTP, client and server-side scripts, scripting (JavaScript, AJAX, XML) with jQuery libraries, and web servers will all be discussed (IIS, Apache). Students will learn how to create dynamic websites utilizing PHP and My SQL as well as ASP.NET and SQL server. Web security concepts including cryptography, digital signatures, digital certificates, authentication, and firewalls will be briefly summarized.

2.2 Related works

This project **"Mobile Application for Comilla University"** is totally a new experience for me. This is because I am working with Flutter SDK for the first time. In the past I have create few android applications which was developed using JAVA, since flutter uses DART it is new for me. Although I can relate my university course outline as mentioned before. During these courses I learned how write clean and efficient programs, approaching problems as a programmer point of view.

"CSC 305, Object-Oriented Programming" from this course I have learned JAVA which is an OOP language & Flutter uses DART language which is also an OPP language. That study outline is helping my progress of work very effectively.

Thanks to "**CSE 464, Mobile Application Development**". This course has taught me how to use an OOP language (JAVA) to develop a mobile application. The most crucial tool a person uses to obtain information is a well-designed app.

Chapter 3

Methodology

Agile approach is adapted for continuous development and testing throughout the development cycle of the project to save a lot of time by optimizing the activities and avoiding errors that may occur during the planning stages in order to construct a working mobile application in a short period of time. The Agile process is a straightforward but efficient way to turn our goals into practical realities. It suggests an iterative and progressive approach to system design. Systems engineering includes breaking down models into individual components so that people may work on them quickly. Additionally, clients frequently have an early chance to review the product and recommend any necessary adjustments. Since it is a short project, it is a great beneficial way to complete the project quickly when constructing an application. Despite working alone without a team and having to manage all the duties, I was still able to do so.



Figure: 3.1 Agile Methodology

Chapter 4

Project Management & Financing

4.1 Work Breakdown Structure

The WBS (Work Breakdown Structure) can be used to break down the entire project into manageable components, highlight the necessary deliveries, and define the achievable goals. The major goal is to organize all of the project schedule and cost estimates in a hierarchical manner.

- **Requirement Analysis:** In order to focus on the prerequisites based on the system analysis and requirements, the first demands for the project will be reduced and a descriptive beginning documentation will be prepared.

- **Design:** In order to evaluate the software program, a rough mock-up of the user interface will be constructed at the System Development Life Cycle stage. During this phase, rich images, UML diagrams, and activity diagrams will be finished.

- **Development:** This stage involves writing code and turning design documentation into usable software. Although there aren't many iterations in this phase, it takes some time because it serves as the process's starting point.

- **Testing:** The program will undergo compatibility testing to make sure there are no bugs. Testing will become more thorough and encompass system integration, interoperability, and acceptance testing in addition to functional testing.

- **Deployment:** The Google Play store will host the application and make it accessible to consumers. Iterations will involve updating specific modules, including new features, and finding and resolving problems.

4.2 Process/Activity wise Time Distribution

Each agile sprint's time was divided up into its backlog tasks in the following manner:

- **Requirement Analysis:** 3 weeks
- **Design:** 1 weeks
- **Development:** 4 weeks
- **Testing:** 5 weeks
- **Deployment:** 1 week

4.3 Gantt Chart

One of the best tools for project management is the Gantt chart. It usually takes the form of a type of bar chart that shows schedules based on tasks and time intervals with an emphasis on the start and end dates for certain tasks. Monitoring the work's advancement and the lengths remaining until completion is helpful. It also displays tasks on a vertical axis with timelines that show how long they will take to complete.



Figure 4.2: Time distribution Gantt chart

Chapter 5

Body of the Project

The entire in-depth examination and study of the project and the application I am developing is contained in the project's body. The project's workflow, architecture, application requirements, design, and outlook are all thoroughly explained in this document. The project's core is what gives a clear understanding of how the system will be constructed, the procedures it will follow and the functions it will do.

5.1 Work Description

This program was primarily created for Comilla University. It is designed to give all types of user's access to the most recent information on the institute. The app includes student bus schedules, news, information about departments, forthcoming events, and general faculty information.

This application is accessible to everyone, regardless of location. All you need is an Android or iOS smart phone with either a WAN or mobile data connection to the Internet. Even without an Internet connection, the application will continue to work. The prior data that was downloaded when an Internet connection was available will be loaded.

The featured news update appears as soon as the user starts the app. The dashboard will have six tabs for users to choose from. By going to the department tab, the user can view the departments that Comilla University has to offer. The user can even identify the faculty member who leads that department and get in touch with them via phone, email, or messaging. By selecting the phone directory tab, the User can also find the general contact information for all the faculties and staff personnel. The user would need to select the news section if they wanted to see all news. They can also download a news as pdf from the application.

The app also has a tab for the bus schedule. Users can access this area to view all the routes and bus schedules. If the user is a student, it helps them avoid missing the bus.

5.2 System Analysis

We must perform a system analysis by examining the system and all of its components in order to completely comprehend a system's purpose before we can determine its goal and purpose. It is the procedure for compiling and analyzing data, determining the issues, and breaking down the system into its constituent parts. The system and its components are being studied in order to determine the system's genuine goals. It is a method of resolving issues that enhances the system and guarantees that all of its parts operate efficiently and effectively to fulfill its function.

5.2.1 Six Element Analysis

Process	HUMAN	NON-COMPUTING HARDWARE	COMPUTING HARDWARE	SOFTWARE	DATABASE	NETWORK
Browse open app	All User	N/A	Phone/Tablet	Android / iOS	MYSQL	WAN/Mobile Data
Dashboard	All User	N/A	Phone/Tablet	Android / iOS	MYSQL	WAN/Mobile Data
News page	All User	N/A	Phone/Tablet	Android / iOS	MYSQL	WAN/Mobile Data
Event page	All User	N/A	Phone/Tablet	Android / iOS	MYSQL	WAN/Mobile Data
Calendar Page	All User	N/A	Phone/Tablet	Android / iOS	MYSQL	WAN/Mobile Data
Phone Directory	All User	N/A	Phone/Tablet	Android / iOS	MYSQL	WAN/Mobile Data
Contact Page	All User	N/A	Phone/Tablet	Android / iOS	MYSQL	WAN/Mobile Data
Department Page	All User	N/A	Phone/Tablet	Android / iOS	MYSQL	WAN/Mobile Data
Detail Page	All User	N/A	Phone/Tablet	Android//iOS	MYSQL	WAN/Mobile Data

Figure 5.2.1: Six Element Analysis

5.2.2 Feasible Analysis

Feasibility study aids in assessing important project-related elements, such as the project's time period, economic, technological, and legal implications. The Feasibility Analysis's goal is to forecast the possibility that the project will succeed. It aims to logically weigh the advantages and disadvantages of a current or prospective business system, connected ventures, and resources as needed to carry out operations and compare the success rate. Additionally, it provides a clear picture of the budget involved and the potential return. In order to determine whether the anticipated software product is appropriate in terms of development, implementation, and contribution to the company, a feasibility study is conducted.

- **Technical Feasibility:** Technical Feasibility involves evaluating the project's development using already-existing resources, including hardware, software, and other technology. Along with the technical know-how and prowess of the engineering team, it gives information on the viability of resources and technologies that can be applied to the project development. However, this project is theoretically feasible because the necessary hardware and software are accessible for application development.

- **Economic Feasibility:** We examine the project's cost and benefit under Economic Feasibility. In order to determine whether the project will be advantageous for the organization, a thorough study of the project's costs is conducted, which covers the costs related to the hardware and software, design, development, and operational costs. There is no need for additional labor for this project because I will be developing the system while working on practically all of the tasks. The upkeep and operation of the system do not incur any additional costs.

- **Legal Feasibility:** In Legal Feasibility, analysis is done from a lawful perspective, emphasizing the obstacles to the organization's project's implementation being legal, such as data projection acts or social media laws, project certificates, licenses, and copyright, among other things. Simply put, the proposed project's ability to comply with legal and ethical standards depends on its legal feasibility. Access to important sales data is, however, barred for this project because it is expressly forbidden to transfer data outside of the firm.

- **Operational Feasibility:** Operational Feasibility examines how well the product will meet needs in terms of how simple it will be to use and maintain after deployment. The usefulness of the product and whether or not the solution is acceptable are determined by the scopes. Most of the functionality and scripts

are optimized for this project to make operation simpler. It is considerably easier to manage for tidiness because the codes are separated into multiple folders.

- **Schedule Feasibility:** Schedule Feasibility deals with the dates and times by which the proposed project is expected to be finished and delivered. Teams exert enormous initiative to finish the final project because it affects the organization's mission and if it is not delivered on time, it is a failure.

5.2.3 Effect and Constraints Analysis

While creating the program, there were a number of exceptions and limitations that needed to be taken into account, including timing, functionality, and design. To extract the most important data, a thorough study needs to be done, taking into account how system responsiveness and effectiveness can affect the targeted user experience.

5.3 System Design

5.3.2 UML Diagram

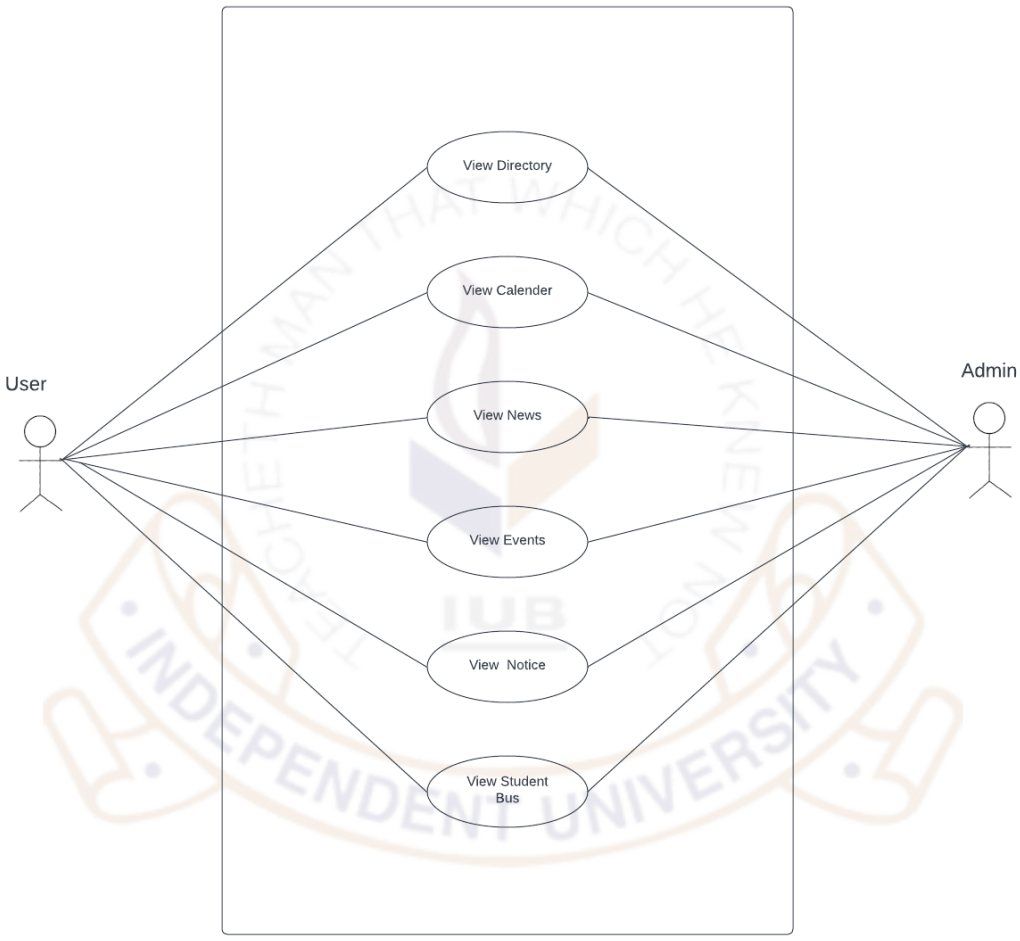


Figure 5.3.2: Use Case Diagram

5.3.3 Functional and Non-Functional Requirements

Functional:

Functional requirements are typically the features and functions of a system or software that must be implemented in order for a user to complete a task or achieve a goal. They essentially describe the system's behaviors under specific circumstances, including what it will do, its features, interfaces, and emphasis on the needs of the user. A few of the functional specifications that our system must meet in order to fulfill its objectives are as follows:

1. The user should be able to use the application even if there is no Internet connection.
2. User should be able to see all the latest news of the University.
3. User should be able to download the news in pdf format.
4. User should always get the up to date information when there is internet connection.
5. User should be able to Bus Schedules of the university,
6. Users should able to view all the departments of the university.
7. Users should be able to see the courses offered by the particular department.
8. User should be able to see general information about the faculty members.
9. User should be able to contact the faculty member using phone, email or message.
10. Upcoming events should be shown on the in-build calendar of the application.

Non-Functional:

Non-functional requirements are the fundamental characteristics of a system; they define its attributes. It explains how a system should operate in usage rather than defining the functionalities of a system. The system's functionality, attributes, and a focus on users' needs and overall system quality are all described. Among the non-functional requirements our system needs to meet in order to work properly are the following:

1. Criteria for a program to run continuously, such as 24 hours a day, a minimum idle time, etc.
2. Strategies to grow the system without negatively affecting performance.
3. how many users the system can handle at once and how quickly it responds.
4. Access control, processing of private data, and lowering the risk of an external assault are all safety considerations for how an app should be used.
5. Users can interact with the product easily thanks to its user-friendly UI.

5.4 Product Features

5.4.1 UI/UX

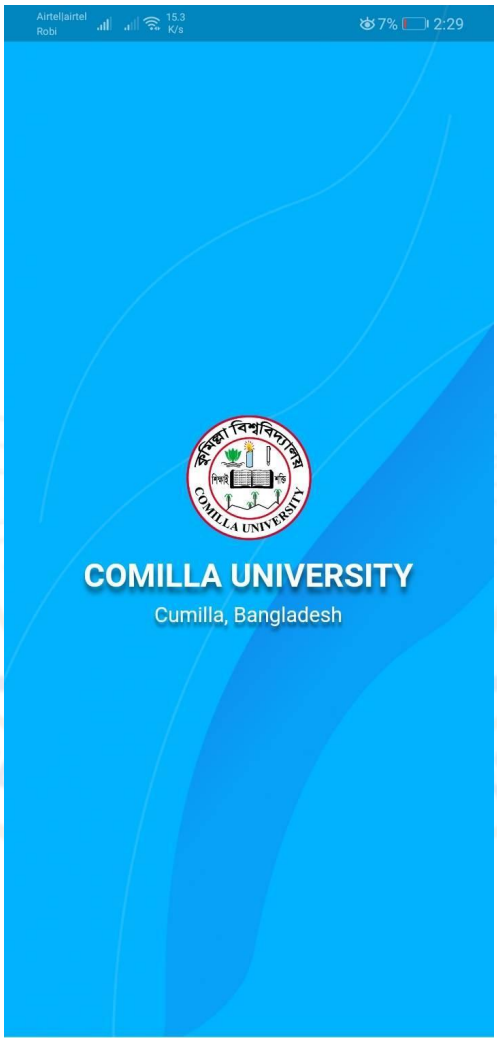


Figure 5.4.1: Splash Screen

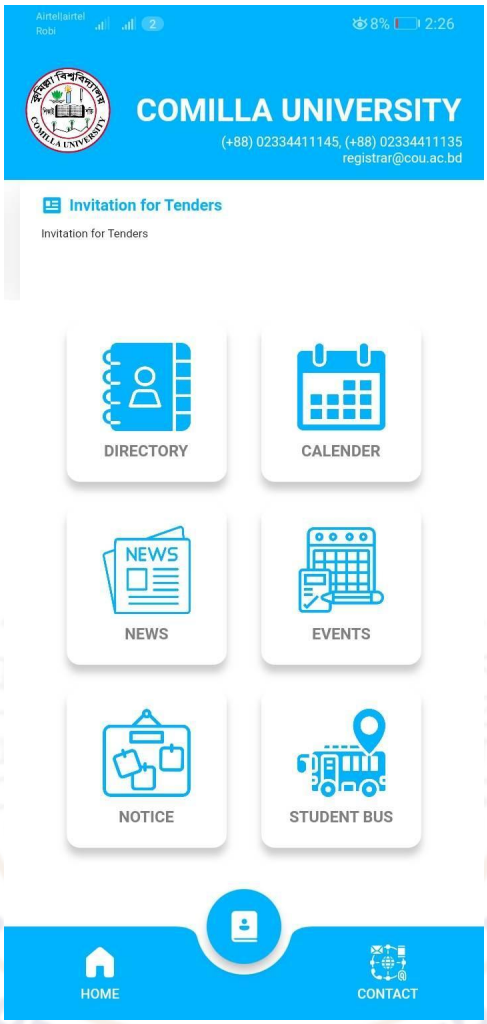


Figure 5.4.2: Home Screen

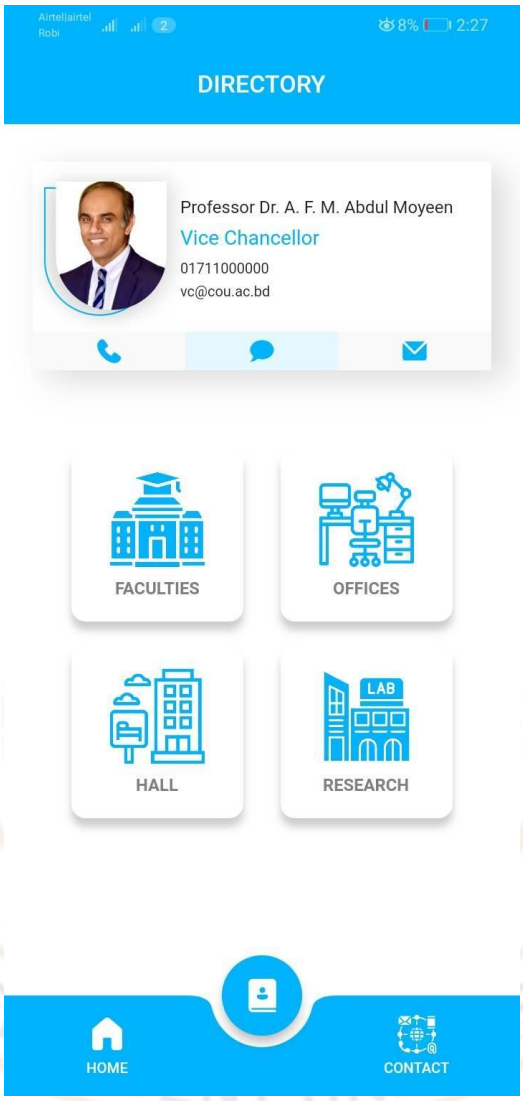


Figure 5.4.3: Directory Screen

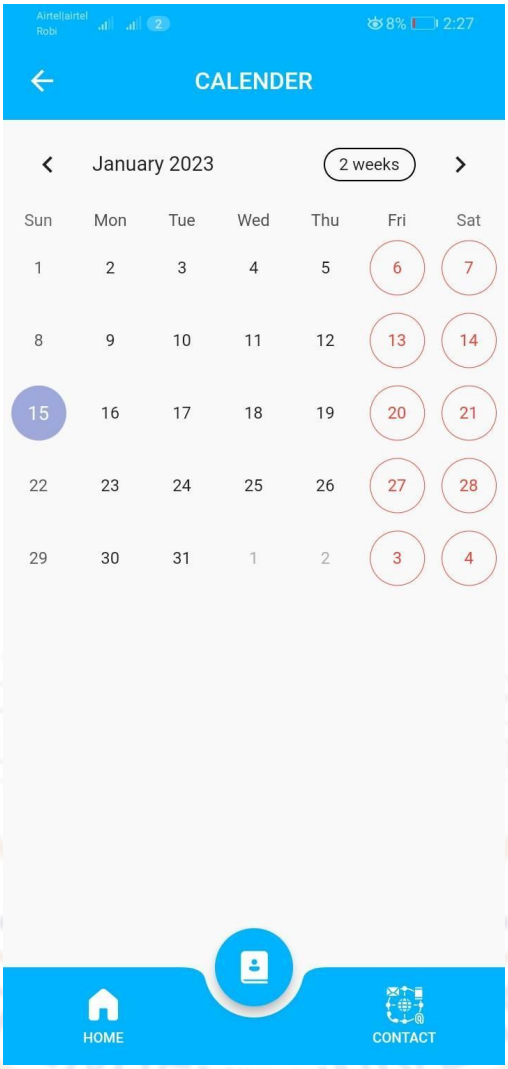


Figure 5.4.4: Calendar Screen

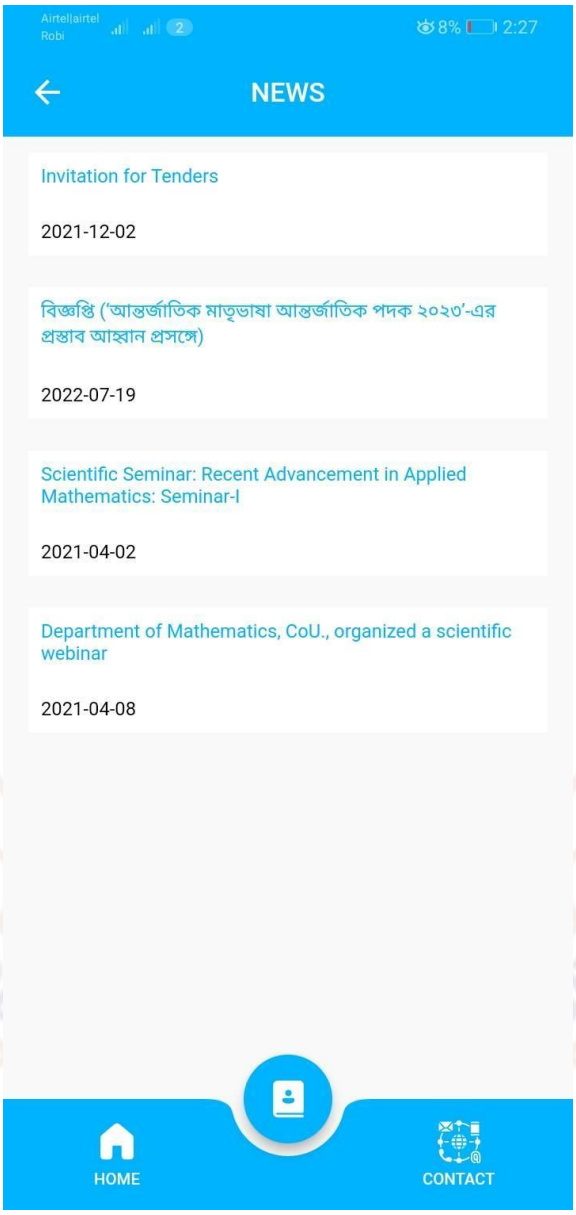


Figure 5.4.5: News Screen

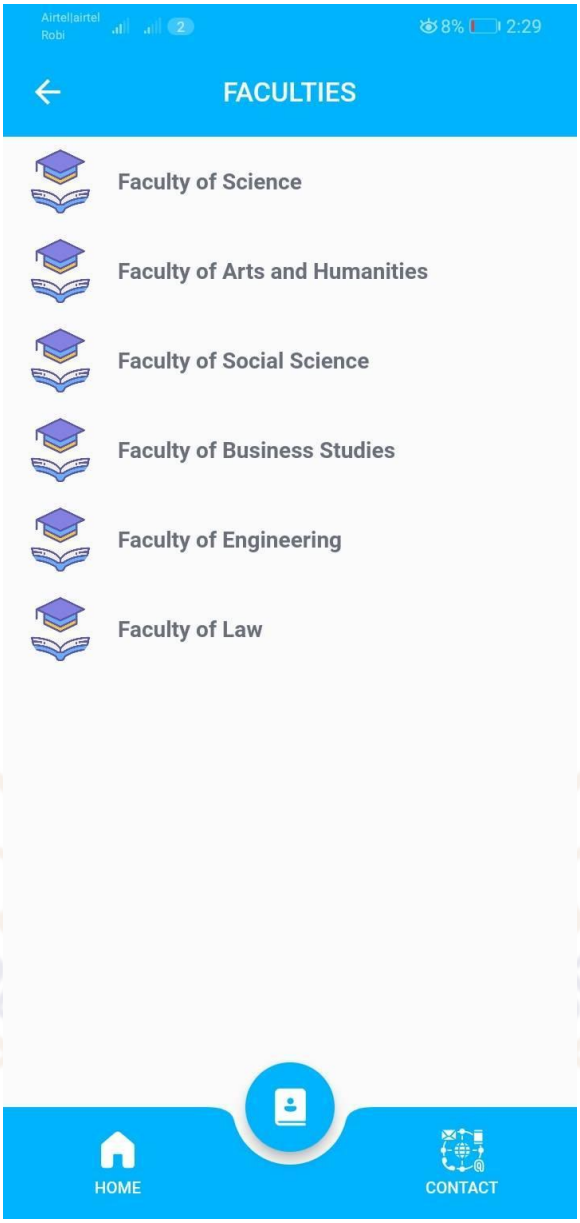


Figure 5.4.6: Faculty Screen

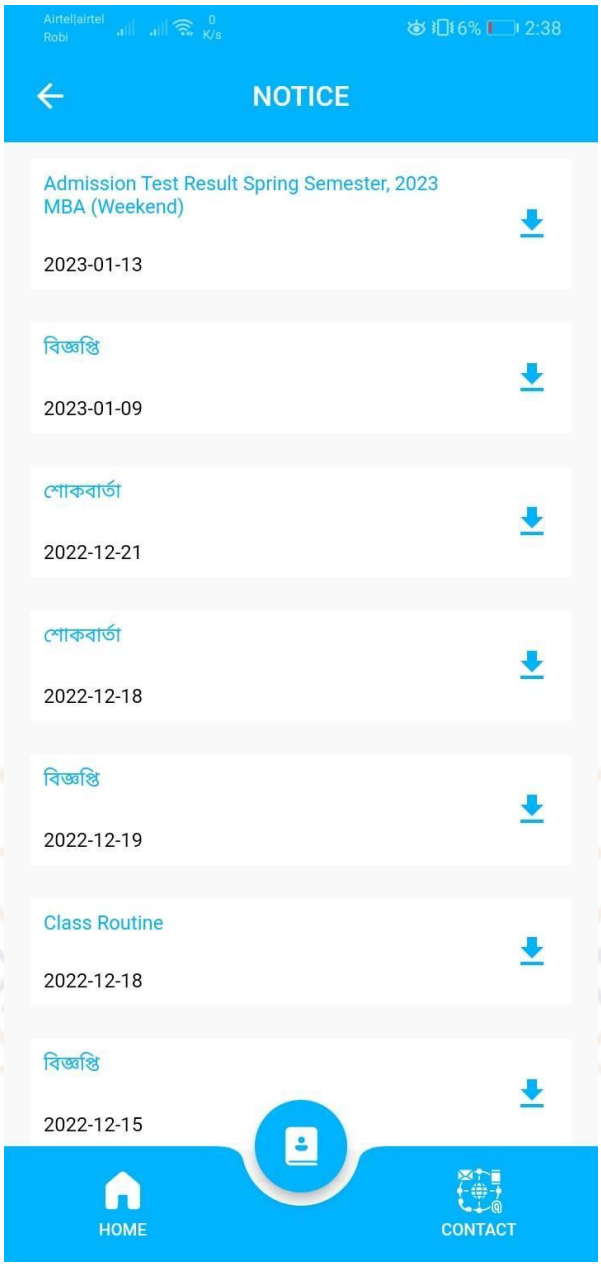


Figure 5.4.7: Notice Screen

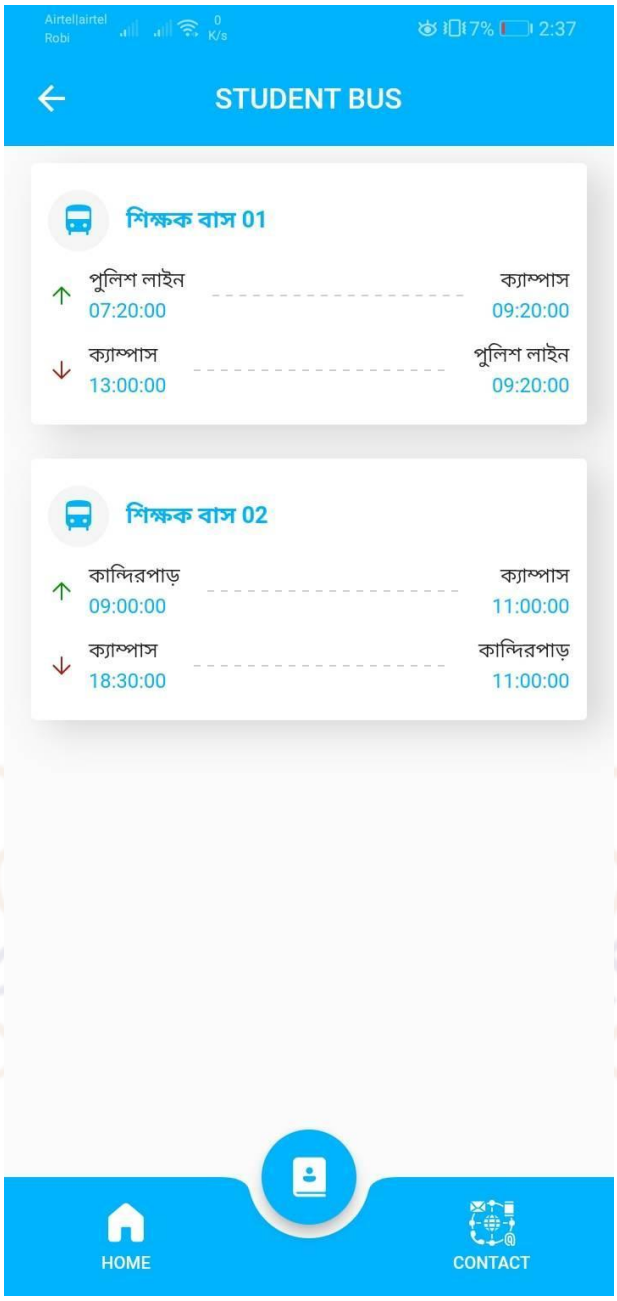


Figure 5.4.8: Student Bus Screen

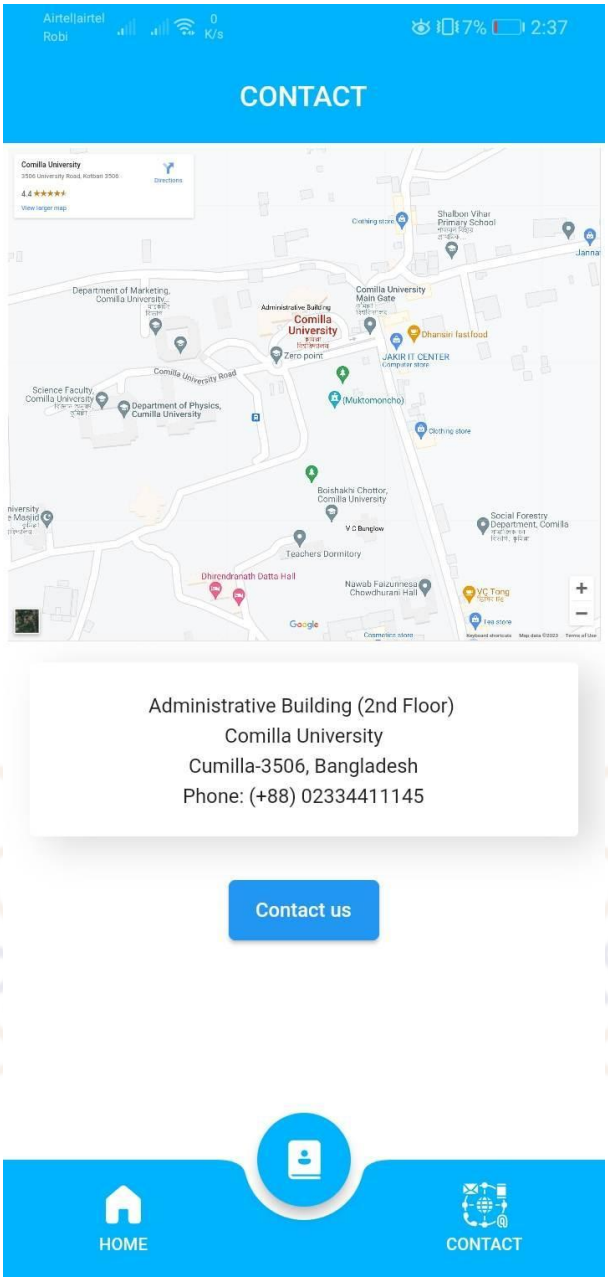
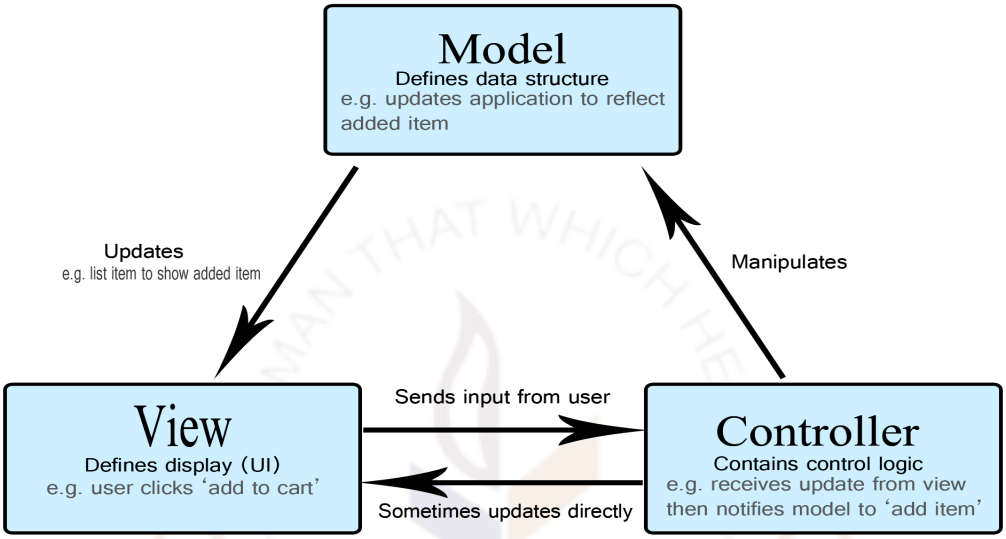


Figure 5.4.8: Contact Screen

5.4.2 Architecture



Flutter and MYSQL will be used to create the system. Model View Controller is the architecture used in its construction. By organizing the files using MVC, we have a more readable code structure. An application is divided into three primary logical components using the Model-View-Controller (MVC) architectural pattern: the model, the view, and the controller. Each of these parts is designed to handle particular application development aspects. We develop models, which are classes of data. And you can change the data in the model with the aid of the controller. All of the Widgets and Pages in the Flutter application are called views. Even while these views may include their own "view controller," this is still regarded as a component of the view application tier. This contains the entire user interface. The controller layer consists of high-level operations that carry out a certain kind of task. Typically, they pull data from services and inject it into models to update and control the state of the program.

Chapter 6

Results & Analysis

Testing new software establishes its reliability, correctness, and quality. The process of confirming that the computer software created satisfies the clients' criteria is referred to as approval. The primary objective of software testing is to identify program defects. In Black Box testing, testers don't have access to the application's source code or the finished product. Without paying too much attention to the core logic or structure, it is mostly conducted at the application's interface. Most of this is accomplished by trial and error. These tests might be functional or non-functional, however functional testing dominates in most instances.

To address different issues and flaws with the application, I carried out functional and unit testing. The results of my software testing are displayed in the table below. Numerous errors and issues were found early on; however, after several cycles of applying different test cases and running tests, some of the bugs and issues were fixed. However, there are still a few components that need to be tested in order to have a reliable and usable application. The testing of these modules and additional troubleshooting will be done at a later date. Up to this point, all testing has been done locally, and the findings have been overwhelmingly favorable and less error-prone. The tested features had a 100% success rate since they had no problems or errors. More thorough testing will be carried out after the project is finished and prepared for deployment, and adjustments and updates will be made in response to test results.

Test ID	Test Case	Steps performed	Expected Result	Actual Result	Success Rate	Pass / Fall
T1	The app is working as per the set requirements when the app starts or stops	Click the app icon to start and press the home button to close the app.	The app should work as intended.	The app works as programmed	100%	**PASS**
T2	The user receives the error prompt messages like 'Network Error' in time.	While the app is open turn off WIFI or mobile data	The app should show the error message	The app shows the message	100%	**PASS**
T3	The app installation has been done seamlessly given that the user has the required resources	Download the app and install.	No error should be prompted while installing.	No error is shown.	100%	**PASS**

T4	Check if the response time of the app is under the acceptable range.	Check on the app from app drawer, to open quickly.	The app should open quickly and load data	The app opens quickly and loads data	100%	**PASS**
T5	check if the text is clear and simple for the user to read and understand the context easily.	N/A	The text should be readable	The text is readable.	100%	**PASS**
T6	Check that the app display is adaptable and amenable to the various display mode	Install the app on various android device.	The app display should adapt.	The app display adapts	100%	**PASS**
T7	To verify if the UI is stable across various devices	Install the app on various android device.	The UI should be stable.	UI is stable.	100%	**PASS**
T8	Verify that in the play screen, the back key allows	Click on back on various screen of the app.	The app should take back to the previous screen	The app takes back to previous screen.	100%	**PASS**
T9	Check that the app goes into the background when on call.	Open the app and try to call on the device.	The app should be in background	The app goes to background	100%	**PASS**
T10	Check that the app still operates as intended, if the device resumes from inactive mode or the lock screen.	Open the app and lock the device and unlock again	The app should function normally.	The app works as intended	100%	**PASS**

Figure 6.1: Test Result

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project

The ability of the product to be updated and maintained is referred to as sustainability. Every newly published program in the modern era needs to be maintained and regularly updated for its user base.

Most individuals in Bangladesh today, from all social classes, use smartphones heavily. Internet and smartphones make life easier for people. Nowadays, people are looking for simple solutions to any problem that will lessen the hassles of daily life. People become more dependent on app-based solutions as a result.

There are three major ways that a product might be sustainable:

- **Community Sustainability:** Since the target audience for the application is very focused and brief, it is anticipated that it will have a substantial user base after deployment and formal release of the Comilla University App. We may anticipate that users will spread the word about the program to other users, expanding the user base. It may be claimed that it is sustainable in terms of community since as the user base grows, so does the community.

- **Financial Sustainability:** This refers to the method used to maintain the running cost of the program once it has been made available. The running costs of an application include expenses for servers, databases, third-party APIs, etc. The Comilla University application will be free to use when it is first released, but as its user base expands, there are plans to add new premium features that will eventually be utilized to make money.

- **Organizational Sustainability:** It has to do with how the business will carry on once the application has been made available. After an application is released, the business typically maintains the application using either its current team, an expanded team, or a brand-new team. Organizations may also switch to other projects, grow their teams, form new teams, etc. in addition to updating their project by adding additional features to it. There are many further features that will be developed and added to the Comilla University application in the future. The project will be maintained and upgraded when it is released, and premium

services will be added because the application has future goals. So, the project is organizationally sustainable, it may be concluded.

7.2 Social and Environmental Effects and Analysis

- **Social Effect:** People today are seeking for ways to reduce human effort in order to make their lives easier. Our program enables college students to stay connected and organized, allowing them to seamlessly fit obtaining their degree into their busy lives and conduct everyday business transactions and interactions in a more efficient, well-planned, and simple way. It cuts down on the time needed to look for important university news and updates. which generates additional possibilities, leads, and productivity.

- **Environment Effect:** Organizations must change with the times in order to thrive in the real world as every firm expands. There are several ways that software can impact the environment. One consequence is that as a firm expands, it must be able to support a high number of users, which necessitates that the system be effective, scalable, and quick because many users will be utilizing it at once. Additionally, since new technology is environmentally friendly and the cloud service will take care of hardware and server hosting, mobile apps use less energy and electricity overall.

Chapter 8

Lesson Learned

8.1 Problems Faced During this Period

I gained a lot of knowledge about NanoSoft's corporate culture and ideals during my internship there, which was a worthwhile experience for me. It was also a good opportunity to work for a reputable company where I could work on a real project like the Comilla University app and explore new opportunities as I studied the Flutter software development kit. But this was also one of the most challenging times for me because I had enrolled up for two major courses while continuing my internship, which was really challenging for me because the distance between my office and the university plus the traffic in Dhaka city made commuting difficult for me. I frequently missed attendance because I arrived late to class, and I also skipped a few classes because I couldn't make there on time.

As time passed, other challenges emerged, the majority of them were effectively managing time, organizing tasks, and following to deadlines. Creating the software, learning, and adjusting to the new technology like flutter all at once was not simple. To meet deadlines, balance tasks, and create an all-around strong and solid system plan, a lot of right thinking, analysis, and best judgment calls were required in addition to system planning, project management, system analysis, and system design. It might be difficult to adjust to new technologies in a short amount of time. An average of three to six months is needed to learn a new programming language (DART). Even though I already knew a lot about programming, learning the fundamentals of a new framework and practicing it require a lot of effort. The implementation of a difficult navigation system like Instagram was one of the biggest issues I encountered.

8.2 Solution of those Problems

I discussed my concerns with my supervisor in order to address these difficulties, and I am so grateful that he took them into account and gave me permission to continue with my internship. On days when I had classes at my university, I was permitted to leave an hour sooner. On the days I wasn't able to go to work, I made an effort to finish the work when I came home at night so that I wouldn't be behind schedule and halt my progress.

I made the most of any free time I had throughout the day to continue working on the app until it was complete and ready for display.

I have encountered the obstacles I have listed above as I adjusted to Flutter. It was by far the most challenging issue I encountered, and I had to solve it using good judgment, reading flutter documentation, searching for issues on Google and Stack Overflow, watching tutorial videos, and most importantly putting my knowledge into practice by trying out various solutions. Before attempting to create the Comilla University App, I had to have a thorough understanding of the new technology as well as practice using it. For the goal of learning and practicing, I had to create a number of little applications.

During my undergraduate studies, I took a variety of courses, some of which provided me with resources for my internship program and for developing my programming skills, such as Object-Oriented Programming, Database Management, System Analysis, and Web App Development. It has given me amazing resources that have sped up, eased, and increased the effectiveness of my work. Some of these materials and sources, which I continue to utilize every day to create new software, will always be of great value to me as a programmer.

The opportunity to learn and continually inspire myself to work on my internship project, however, was truly amazing. I was able to grow from my mistakes and put out my best effort in creating the entire application from scratch. These experiences will give me a leg up in the near future because I now have enough experience to qualify as a mobile application developer.

Chapter 9

Future Works & Conclusion

9.1 Future Work

The initial iteration of the system is the Comilla University application. It can be improved on a number of fronts. Among them are:

- Adding login system for students and faculties
- Adding signup system for students and faculties.
- Ability to live track bus.
- Adding Instant messaging service
- Adding push notification.
- Adding a student profile dashboard.
- Adding ability for the student to view their entire degree plan.
- Improving existing features.

9.2 Conclusion

For me, the internship has been a very worthwhile and rewarding experience. I was able to gain firsthand experience in a field that I knew nothing about. I've realized how to combine my extensive academic knowledge with my practical business experience, which has inspired me to strive for excellence in application development.

Most of the time, interns are not given the opportunity to work on active projects and support an office project that is already in progress. But the staff at NanoSoft thought I was worth a shot and gave me tasks that would help me advance in every aspect of my professional life. I received a lot of advice from the employees of the organization because I was the youngest and least experienced of the group there. I also learned how to use various tools and project development methodologies.

Finally, I would want to express my gratitude to my internal and external supervisors, whose direction and inspiration have inspired me to work hard on this project and the countless others that will come my way in the future.

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An Undergraduate Internship / Project on “Mobile Application for Comilla University”

By

Akib Hamid Piyal

Student ID: **1510150**

Autumn, 2022

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Consent from Supervisor

The student modified the internship final report as per the recommendations made by his academic supervisor and/or panel members during and/or before final viva, and the department can use this version for archiving as well as the OBE course material for CSE499.

(Signature of the Supervisor)

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