DESIGN AND DEVELOPMENT OF AN EDUCATION SERVER

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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 "**DESIGN AND DEVELOPMENT OF AN EDUCATION SERVER**", submitted by **Md. Tahsin Sakib**, **ID No: 181-15-10624**, **Nahim Bin Reza**, **ID No: 181-15-10629** and **Asad Ullah Evan**, **ID No: 181-15-10909** 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 **04th January, 2022**.

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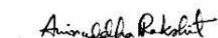Faculty of Science & Information Technology
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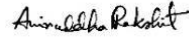Hajee Mohammad Danesh Science and Technology University

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Md. Tarek Habib, Assistant Professor, 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.
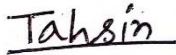
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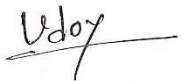Daffodil International University

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ABSTRACT

As technology advances and things improve, the educational system should be updated. As a result, the concept of physical learning will gradually fade away, with numerous initiatives taken to make education more accessible and inclusive. Education should be available to everybody regardless of location, border, or geographical limits. We can only achieve this with the aid of technology, such as the internet. In addition, the Covid-19 has taught us a lot about this need and the future of education during pandemic times. The future of education is a server-based learning center that will be shared and equipped by all educational institutions to make education more accessible and easier for everybody. The limitless universe of knowledge will enrich society to produce more efficient manpower. Different job sectors will rise faster with the ultimate power of technology, and the advanced era of education must start that way. This concept of this work might bring and enhance that opportunity by crossing various phases, and especially any country like ours, or any of our subcontinent badly need some initiative like this. This concept of ours is basically a step of willingness to take this challenge and participate in bringing this new era.

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CHAPTER 1
Introduction

1.1 Introduction

We live in the internet age, and we can't imagine a day without it. The Internet makes our lives easier and more efficient. We have noticed a significant improvement in our lives as a result of our use of the internet. However, in Bangladesh's education system, the majority of educational facilities still use analog functioning technologies. They are unable to use the internet system that is in use in other nations. However, a few private educational institutions use online education systems, despite the fact that the software they use is exceedingly expensive to develop and operate. So, the main reason we built this server with a collection of different apps and packages is that it is less expensive, and there is no need to worry about maintenance or security because we are providing a shared network for institutions who may require it. It's simple to use, so anyone can get started with it right away. Many schools, colleges, and universities are unable to implement an online-based education server system due to financial and experience constraints. As a result, we offer the same products at a fair price, with proper backups to ensure that they are always maintained, secure, and up-to-date. Our server system has many features that are beneficial to an institution, and they will receive everything in one bundle, or they can modify their package to meet their specific needs.

Also in COVID-19 situation, most of the schools, colleges, and universities were closed worldwide. In UNESCO report, most of the countries shut down their education means schools, colleges, and universities because of a massive death of COVID-19 [1]. For that, the young generation get a gap of their education. The country like America, England, Dubai, etc. were able to continue their education in online on that pandemic situation. But the country like Bangladesh, India, Pakistan, etc. which are known as development or poor country could not do that. And the reason is lack of resources and money. According to the report, 'SitAn Report: Situation Analysis on the Effects and Responses to COVID-19 on the Education Sector in Asia,' released today by UNICEF and UNESCO, the education of 37 million children in Bangladesh and about 800 million children in Asia, including South

Asia, Southeast Asia, and East Asia, has been disrupted due to school closures since the start of the COVID-19 pandemic in early 2020 [2].
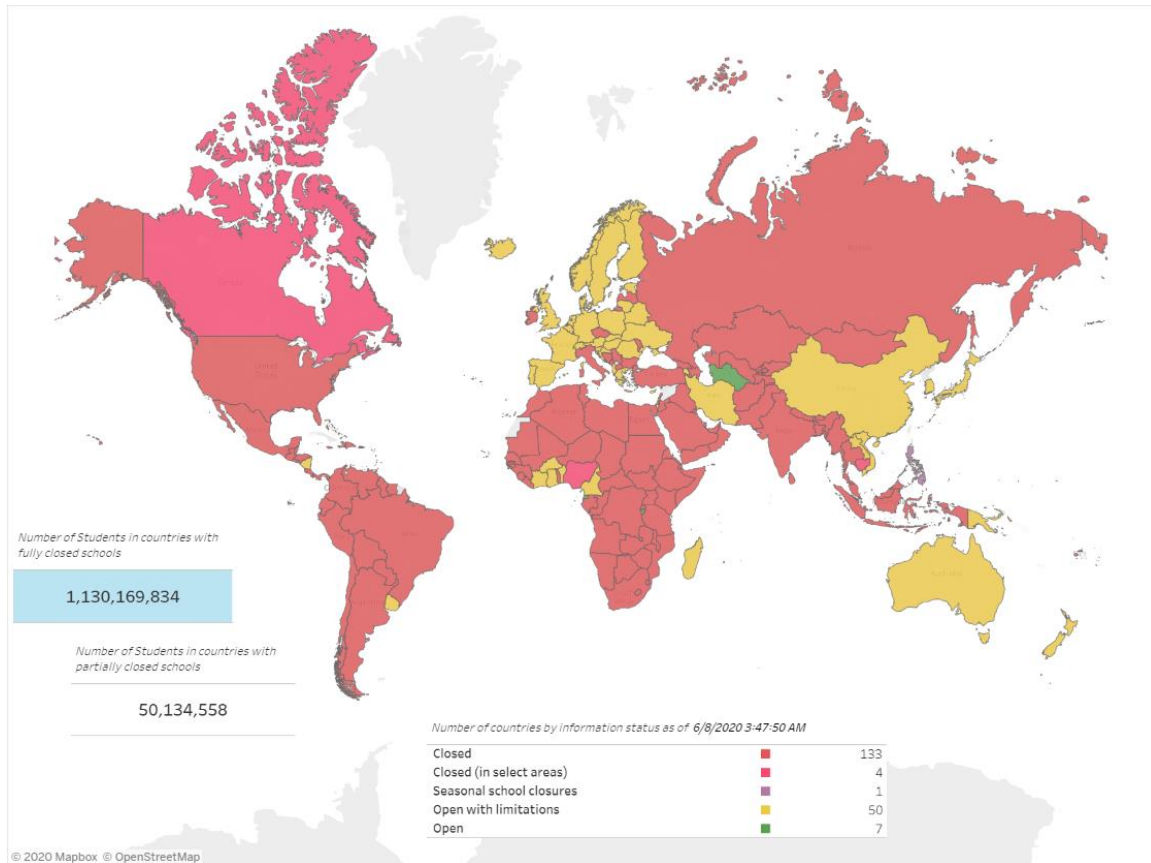

Figure 1.1: Countries that have shut down the schools in the world

As a result, we propose this sort of application to assist medium and lower level schools, colleges, and universities in maintaining their management. We also provide this application at a low cost, which will benefit organizations who cannot afford to invest in a costly application like other first-class schools, colleges, and universities.

1.2 Motivation

The primary motivation is because the school system has crumbled as a result of the COVID-19 pandemic, with physical lessons being discontinued. Bangladesh and other countries faced significant challenges because most institutions, particularly rural, small, and government schools and colleges, as well as many universities, lacked enough

preparation of internet technology to give education from home. Nowadays, getting any form of service from home isn't a big thing; even jobs are now remote, allowing people to work from one country to another while sitting at home. So, why not have a simple way to globalize our country's education system? This is the first phase, which will make the beginning steps easier for every institution, including students and teachers, who will be prepared for the revolution.

1.3 Objectives

Our main goal is to create a server that can meet all of an educational institution's needs, and because it will be a shared server, everything will be less expensive, easier to manage, compliant with security regulations, and easy to keep up-to-date.

Smaller institutions, such as schools, colleges, and even universities, cannot afford to have all of these applications because they are expensive to operate and require constant attention. For many institutions, this is difficult. And they are in a lot of trouble when they require these kinds of things to help them. That is why we intend to provide these many services to them all at once, based on their needs, for a reasonably low fee while offering all of the services they require. This is the primary benefit of a shared network, and as far as we know, this is the only and largest endeavor ever undertaken in Bangladesh.

1.4 Expected Outcomes

We are attempting to develop an online-based application to improve our educational system. The following are the anticipated outcomes:

- We will be able to put all of the schools, colleges, and universities on one online platform.
- People in remote areas will also benefit from educational services.
- Every single person will be educated.

- The educational institution will be able to function in any situation, such as natural disasters or pandemics.
- It will be able to develop a paperless education system, which will be beneficial to the environment because we all know that trees produce paper. As a result, reducing our reliance on paper will enhance our natural beauty.
- It will be simple to locate any type of resource, such as books, guides, exam papers, and so on. It will benefit disadvantaged kids who are unable to purchase books or other necessities.

1.5 Report Layout

In the First Chapter of this report we have discussed about the preliminary Introduction, main objectives, goals and expected outcome. In the second chapter we have discussed about the Background for implementing this project, We have discussed about Comparative works which has been done before, we have discussed about their limitations and which we have meet by this project. We have also show the comparative. At chapter 3 we have mainly discuss about which tools and software we have used to implementing this project and various types of diagram with explanation. In chapter 4 we have describe about the design of our website including both Frontend and Backend. In chapter 5 we have focused on the testing result of various features and options of our project. How it impact on our society and daily life have been mentioned in chapter 6. At the last chapter of this report has been discussed about the conclusions and the scopes in future.

CHAPTER 2

Background

2.1 Preliminaries/Terminologies

The Internet has become an increasingly important component of our daily lives in our modern day. It is becoming more widely available every day and has a significant influence on all aspects of life. We attempted to use the internet to discover solutions to our concerns and troubles. We now check everything online before making a decision. If we want to buy a new smartphone, television, automobile, bike, or any other form of equipment, we look at the reviews and ratings before purchasing it. However, most schools, colleges, and universities in Bangladesh do not have access to internet platforms when it comes to education. As a result, in this pandemic circumstance, they did not continue their organizations for an extended period of time, and the majority of the students were going to drop out and work, which is not a good indicator for a country because they were not properly educated.

2.2 Related Works

This type of service is provided by one or more applications. However, either they are too expensive or they do not provide all of the features. The following are some examples of comparable application names:

- BLC
- Google Meet
- Google Classroom
- Pathshala
- Educlerk
- Smart Academic System
- Dusra Soft

2.3 Comparative Analysis

We examined the other applications and discovered that several functionality were missing. All of these applications are built on a certain platform, such as schools, colleges, or universities [3], [6], [8], [9]. Some applications are able to do certain tasks, such as live classes or group discussions [4], [5]. Some programs are quite costly to use. However, in our application, we are attempting to provide every possible convenience and possibility, proving our website to be a one-of-a-kind. And those are:

- There are a variety of services available.
- Service of personalization. As a result, the institute can develop its own subject, which will be reflected in its structure.
- Obtain maintenance assistance.
- Get live classroom assistance and a group discussion section where all of a class's pupils and professors have discussed the problem and other topics.
- In addition, we will provide a server on which the institutions can keep their data. And, for their safety, we will provide as much security as feasible.

2.4 Scope of the Problem

We need a faster and more secure server system to provide a more convenient and secure service, but it may provide us with very little, and we may have to bear a significant loss in the beginning if we can't attract enough clients and investors, as we are promising, and we need to spread the word as the cheapest, but best solution. And, at this point, we must maintain our own server system in a very short period of time in order to provide the greatest possible support. This will necessitate a significant sum of money, which will be quite difficult for us to come up with. Meanwhile, because we will be reliant on others' services, people may not believe our claims, and we may lose a lot of potential clients. We need to get on top of this as soon as possible. Those that provide customized software may argue that they are in the same business as they are, but the major difference is that all of the purchased platforms will be stored and disseminated from a single server. So making any update, analyzing it, and keeping it safe and secure will be easier, and sharing these

platforms, which are a combination of several applications working as a network, will be like a shared server, allowing them to pay less than those who customize, as well as many other benefits we've mentioned previously.

2.5 Challenges

We have a lot of obstacles ahead of us as a fledgling business. Because online learning is a relatively new concept in Bangladesh, many people are hesitant to accept it. The following are the challenges we shall face:

- Accessing it there, where the internet isn't well-received.
- It will be difficult to get folks acclimated to it at first.
- Seniors may resist system change at first, and most institutions may be hesitant to install any such system before making it broadly available.
- A server's upkeep is a difficult task. A large number of failures and problems may be discovered in the beginning level.
- Getting clients is really challenging at first.
- The workflow must be maintained at all times. If we fail to preserve that, we will have a negative reputation in the business sector.
- We'll have to fight hard enough to compete with others who offer a variety of customized software.

CHAPTER 3

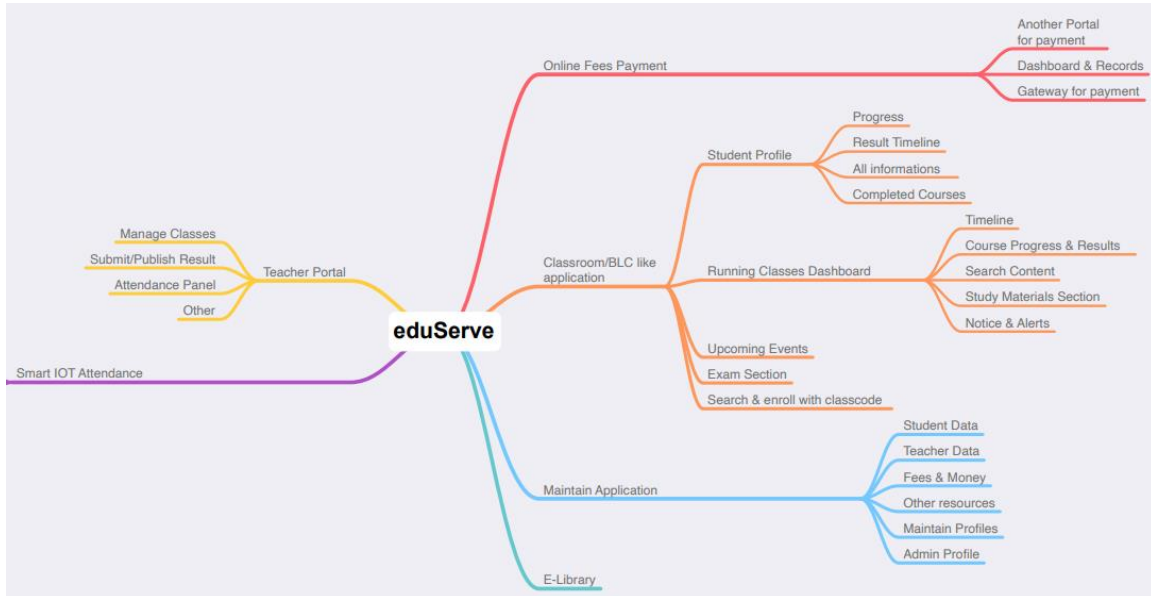# Requirement Specification

3.1 Project Workflow

Figure 3.1: Project Workflow

This is a representation of our project's workflow. The project is divided into six components, as follows:

- Digital Classroom
- Database Maintain
- Smart IOT Attendance
- Teacher Portal
- Online Fee System
- E-Library

This is a list of our project's primary features. Underneath these primary capabilities, there are some sub-functionalities. The primary goal is to accomplish the project for the least amount of money and in the most futuristic way possible.

3.2 Business Process Modeling

Business process modeling visualizes the relationship between the user and the provider, making the entire system easier to comprehend. The diagram 3.2 depicts our business process model.
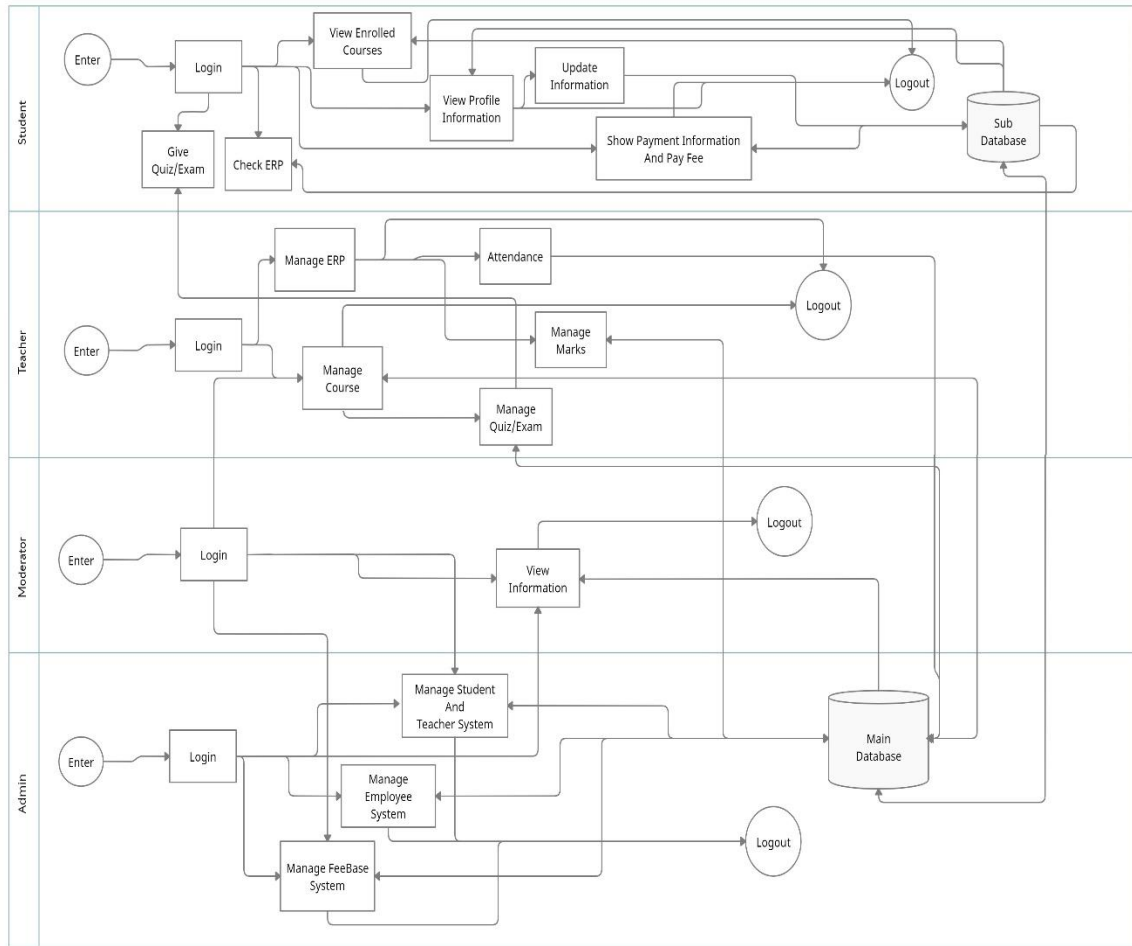
Figure 3.2: Business Process Model Representation

3.3 Requirement Collection and Analysis

We needed to gather some prerequisites before we could launch our website. We can divide our requirements into two categories: software and hardware.

3.3.1 Software

We employed the most up-to-date programming and hypertext languages to create a more user-friendly website that is accessible to end-users. We used a framework that was also created by popular languages. We concentrated on reducing run-time executions as well as defects and errors. We'll need the following Software Requirements to develop the website:

- Operating System: Any
- Development Tool: Visual Studio IDE/ Code Editor, Pixie Color Picker, XAMPP Local server
- Language: HTML5, CSS3, JavaScript, PHP, JavaScript library – jQuery
- Database: MySQL
- Framework: Bootstrap (for Front End), Laravel (for Backend).
- Browser: Google Chrome, Mozilla Firefox, Microsoft Edge, ect.

3.3.2 Hardware

We needed an internet-connected computer with the following hardware specifications to construct the application:

- Processor: Core i3
- RAM: 4 GB
- Space on plate(disk): least 512MB

3.4 Use Case Modeling and Description

The interaction between the players in any system is described by the use case model. It uses a graphical depiction to make the system easier to understand.
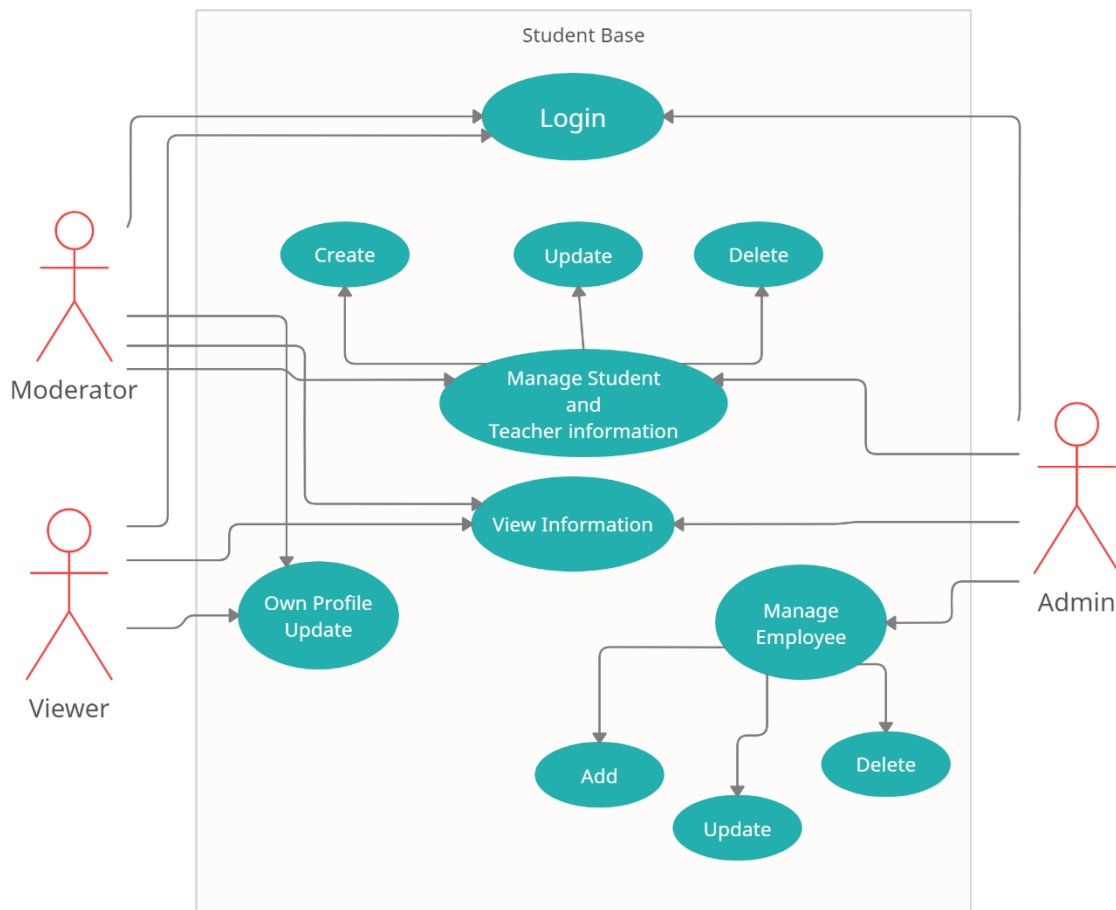
Student-Base Use Case Diagram:

Figure 3.4.1: Student-Base Use Case Diagram

This is a component of our project's Student-Base. Three actors are required in this segment, and they are:

- Admin
- Moderator
- Viewer

Admins can access information about teachers and students, as well as the employee system, through this page. The admin will be aided by the moderator. When the administrator is unavailable, the moderator fills in for him. However, the employee system is outside the moderator's control. And if any problems are discovered, the spectator actor will inspect all of the pieces and report them to the admin or moderator.

FeeBase Use Case Diagram:
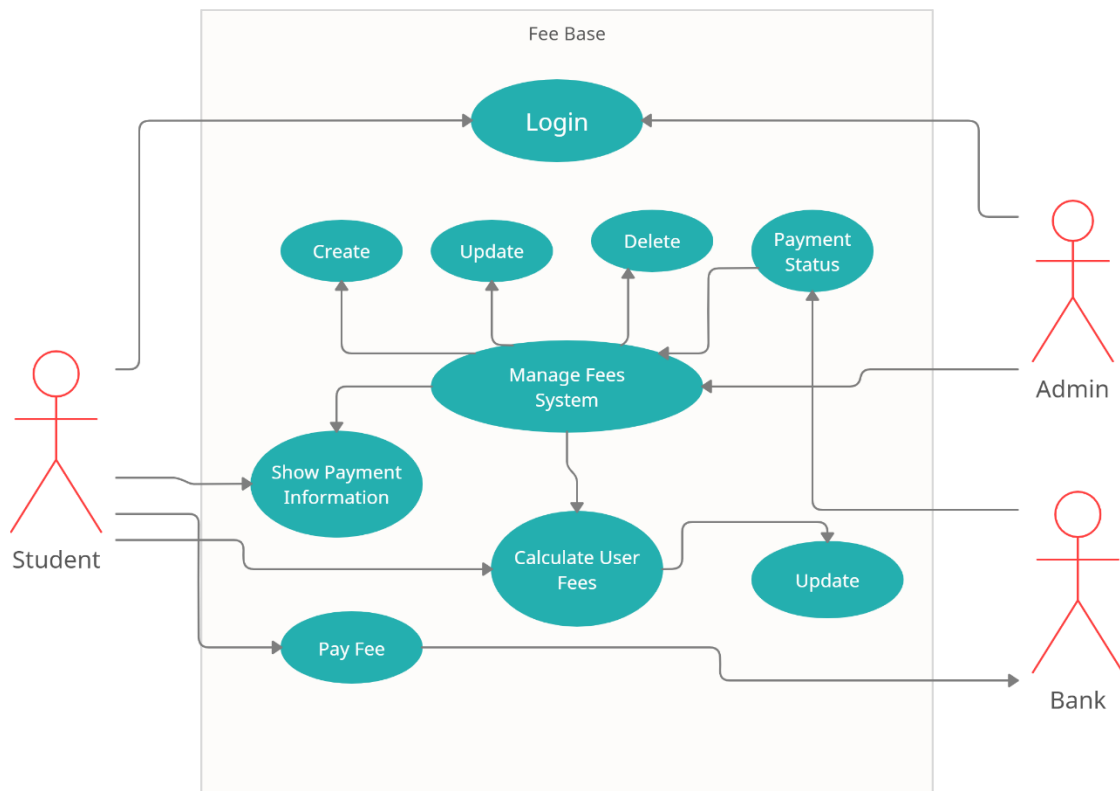
Figure 3.4.2: FeeBase Use Case Diagram

FeeBase is an element of our project that we're working on. There are three actors in this part, and they are:

- Admin
- Student
- Bank

The fee management system can be managed by the administrator here. The charge system can be created, deleted, or updated by the admin. And the student can only view payment information; he or she does not have the authority to add, cancel, or alter the fee system. The charge can be paid online, and it will be received by the bank. The bank then updates the payment information on the system directly. Students can also see the current user fee as well as its history.
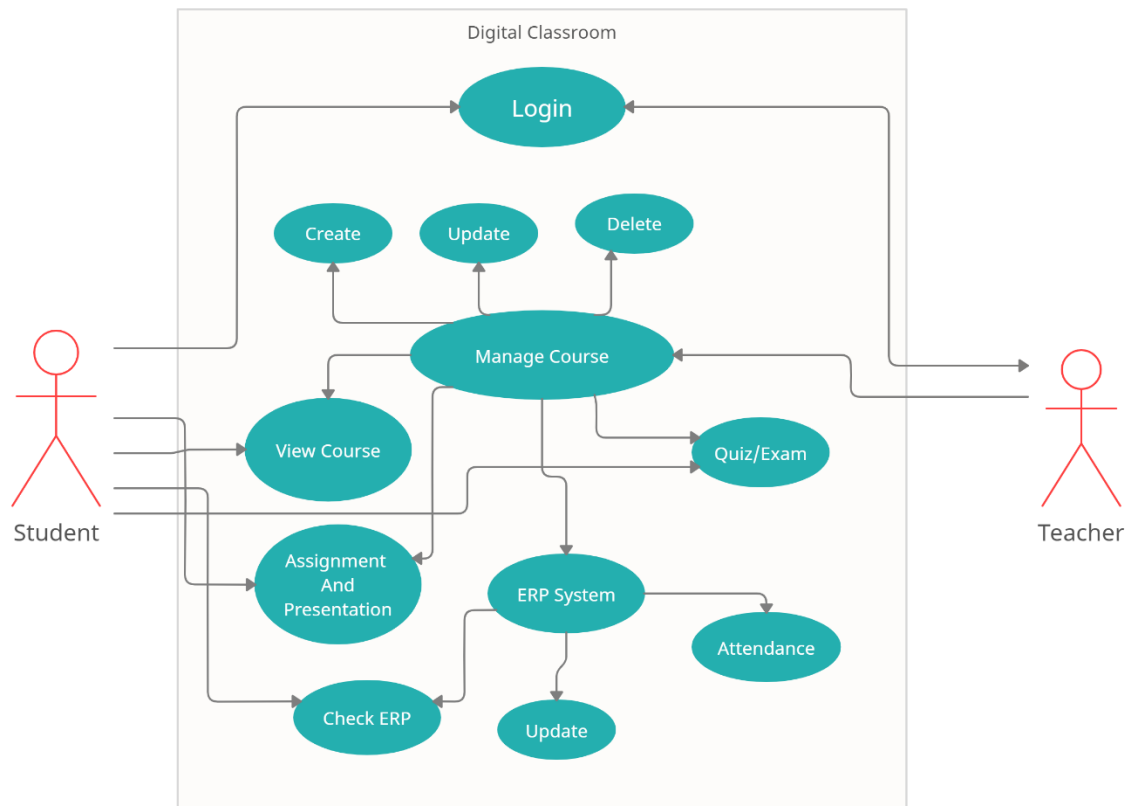
Digital Classroom Use Case Diagram:

Figure 3.4.3: Digital Classroom Use Case Diagram

In this part, there are only two actors are available. And they are:

- Teacher
- Student

Teachers will have access to alter, add, and delete the course management system in this section. They may also have the ability to produce quizzes or exams, as well as update the

ERP system. Students can only view a course after they have enrolled in it. They do not, however, have the ability to add, delete, or alter course elements. Students can take part in the quiz or exam, but they cannot change it. Students can also look up their numbers in the ERP system.

3.5 Logical Data Model

We utilize MySQL in our project to store and retrieve data from the database. The following data and information required to be entered into our database:

- For Admin: Email, Password, And Other Personal Information
- For Moderator/Employee: Email, Password, And Other Personal Information
- For Teacher: Email, Password, Teacher Initial, And Other Personal Information
- For Student: Email, Password, And Other Personal Information
- For Course: Course Title, Course Information, And Course Material
- For Quiz/Exam: Question And Answer
- For Fee: Due Fees, Current Payment, Total Pay Fees and Other Additional Information.
- For Disstudy: Title, Post, Group, Teacher, and Student

3.6 Design Requirement

Our website caters to all types of users. As a result, it's critical to make things easier and more user-friendly for both experienced and inexperienced users. It should be designed such that any user may utilize it without difficulty or complication. Every developer wants to offer his or her project to his or her user in such a way that it is easily accepted, and this is mostly dependent on its appearance. As a result, we sought to make our application's user interface as simple as possible.

CHAPTER 4

Design Specification

4.1 Features

Student-Base

This section is managed by the university/school/college authority. They have the ability to establish, update, and delete moderators and viewers in order to manage and maintain the student databases. A new student profile will be inserted with the assistance of the admission section's moderator, and this is the main database from which a student will be able to access all other applications on the same server by inputting his/her credentials once.
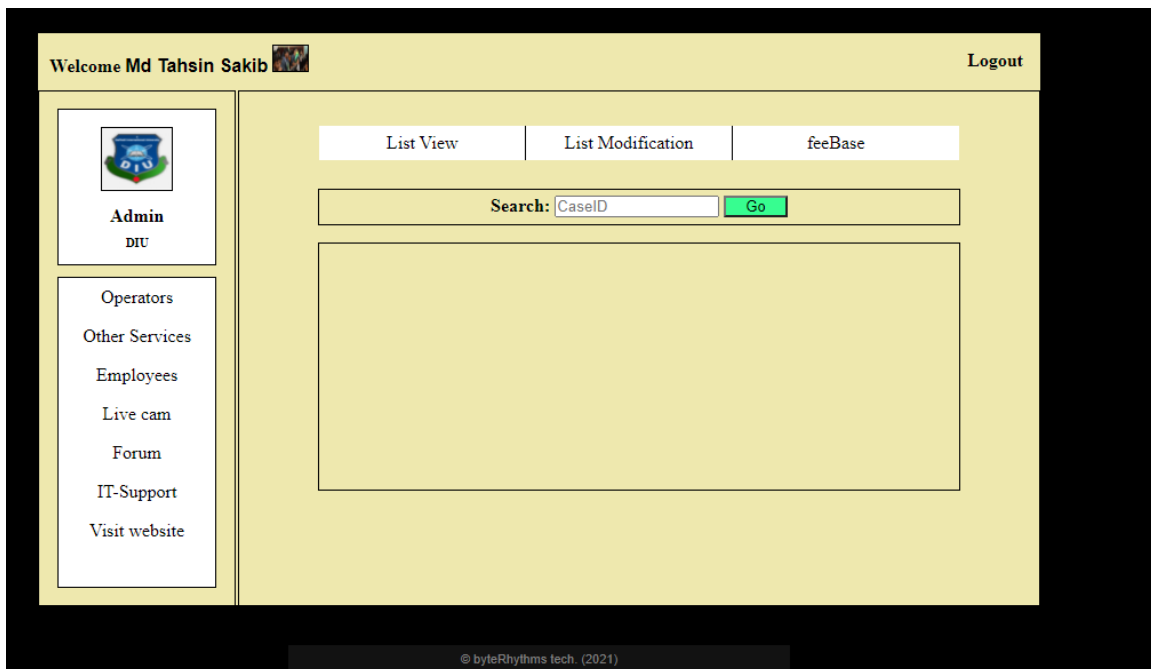
Figure 4.1.1: Student-Base

FeeBase

FeeBase is a crucial component for all students. A student can view his or her monthly charge, semester fee, or registration fee, which is issued by their university, on this website. Additionally, students can pay their registration cost, tuition fee, and other payments using

a variety of payment options such as the bank, rocket, card, bkash, and others. We ensure the security of this part and aim to provide the most secure payment method.
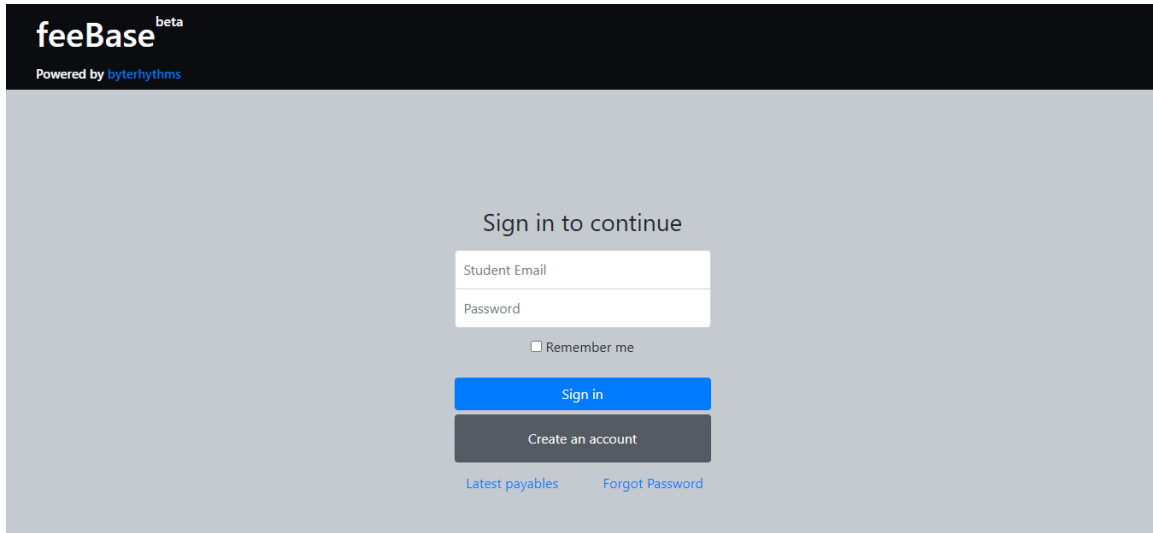
Figure 4.1.2: FeeBase Login Page
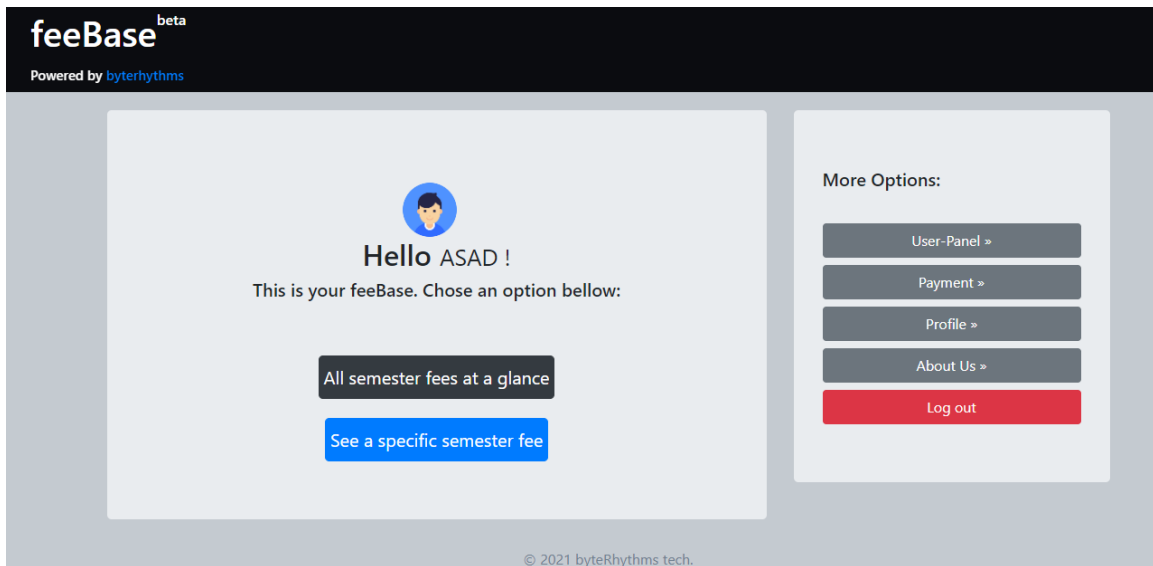
Figure 4.1.3: FeeBase Home Page

Disstudy

Students from each section might form one group and communicate vital notices with one another during discussions about the subject. We set up a library system in the disstudy section where all of the books, notes, instructions, and other materials could be located. Students have access to all of the books and other materials they need for their studies. Their teachers or institutions supply them with books, notes, and guides, among other things. This is the place where students can group study through the internet and ask other students and teachers for help with their problems and other issues.
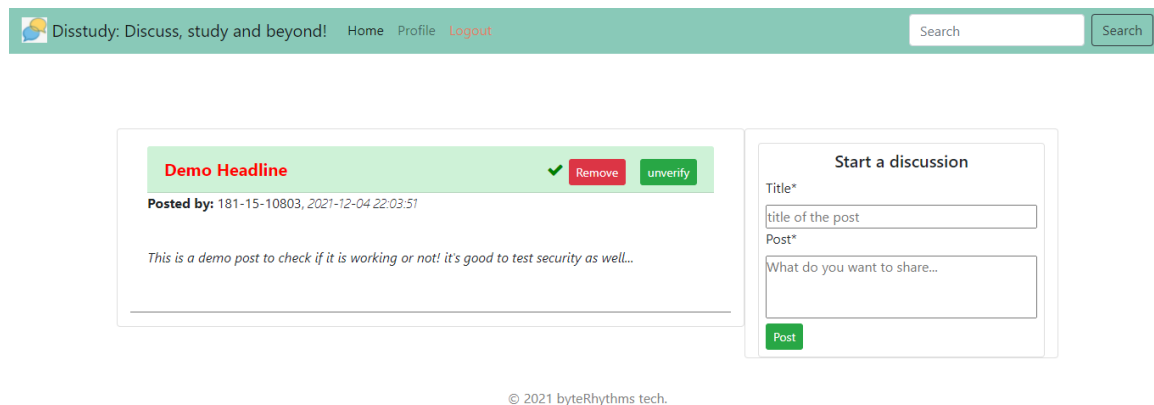
Figure 4.1.4: Disstudy Page

Digital-classroom

This is a critical component of the project. Teachers can build a virtual classroom for their students under the digital-classroom section, and share PDFs, videos, and other critical resources with students in the virtual classroom. The teacher can take their quizzes and other tests here as well. To join the virtual classroom, students will require a key, which will be issued by the teacher who created the virtual classroom. The digital classroom includes an attendance system. This software can be used by teachers to take attendance.
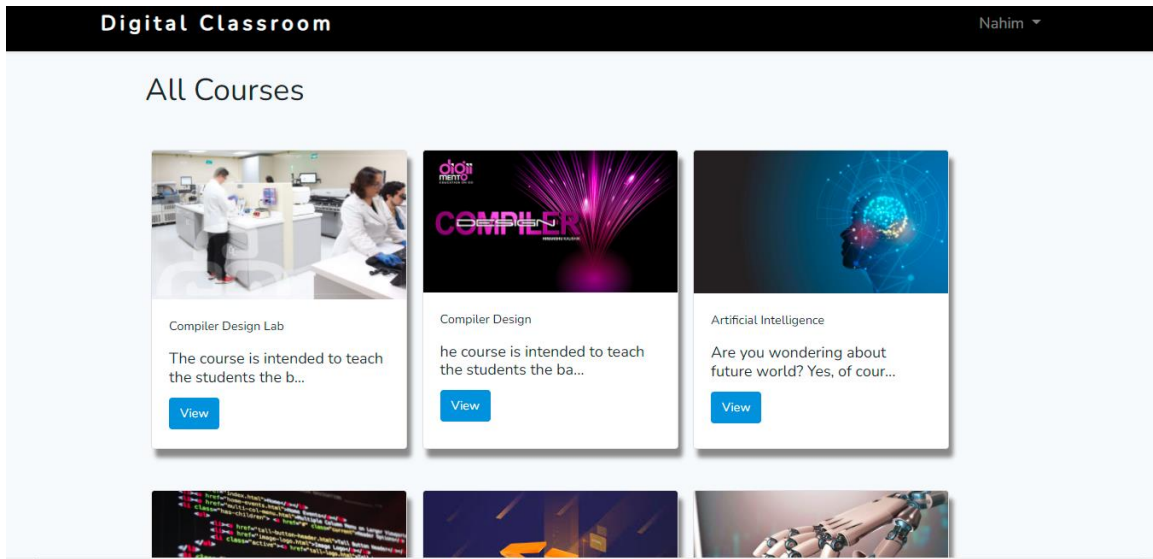
Figure 4.1.5: Course Page

Figure 4.1.6: Enrolled Course

4.2 Other Design

Home Page

It is the Homepage view of our website which showing the Logo, Navigation Bar, Contact information. It is also showing Disstudy, FeeBase, Teacher Initial and Classroom option. It has been added in front of the webpage so that user can easily find out the option and get the better experience.
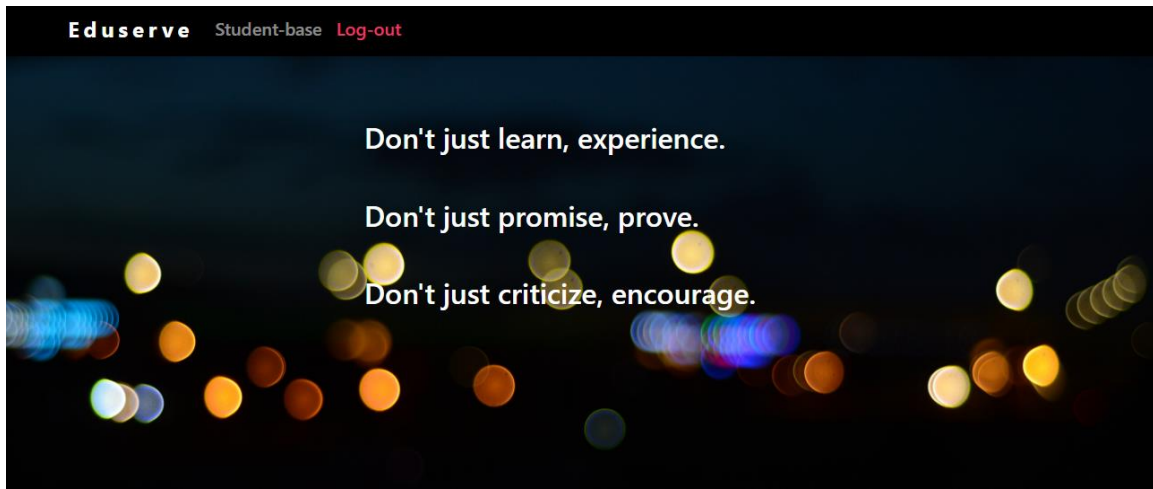
Figure 4.2.1: Admin on User Panel
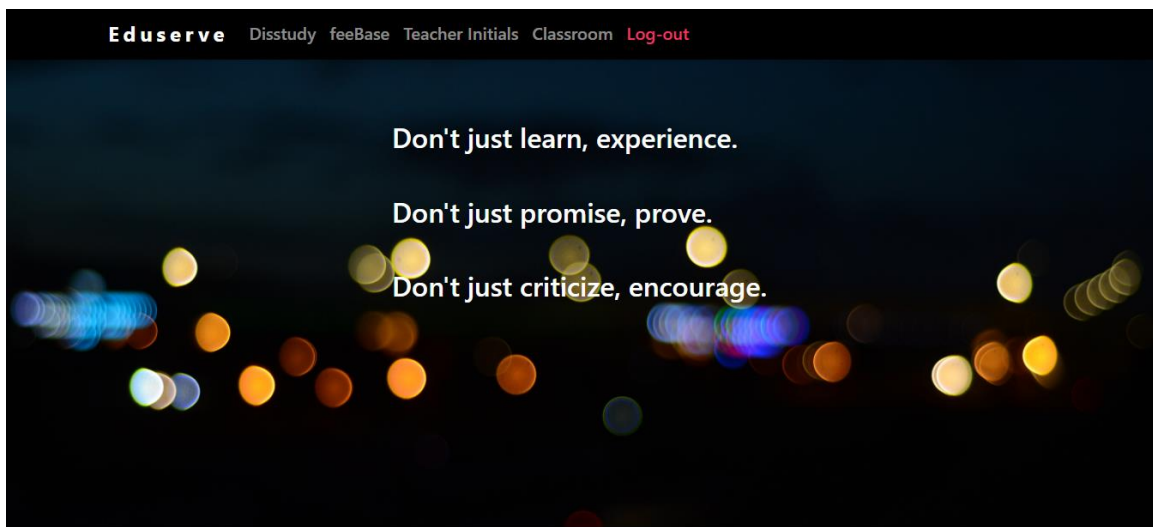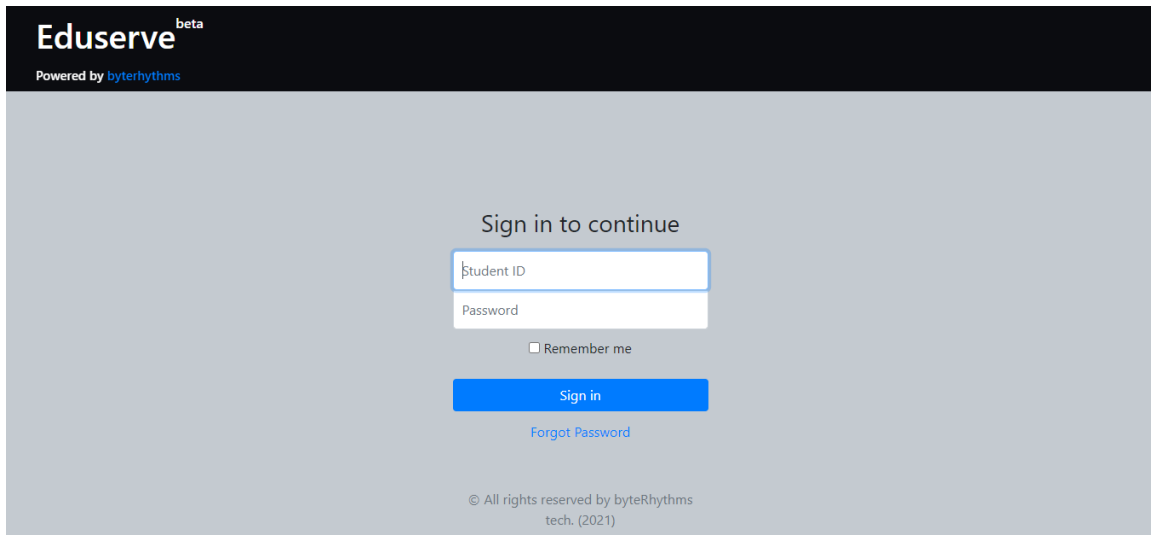
Figure 4.2.2: Student on User Panel
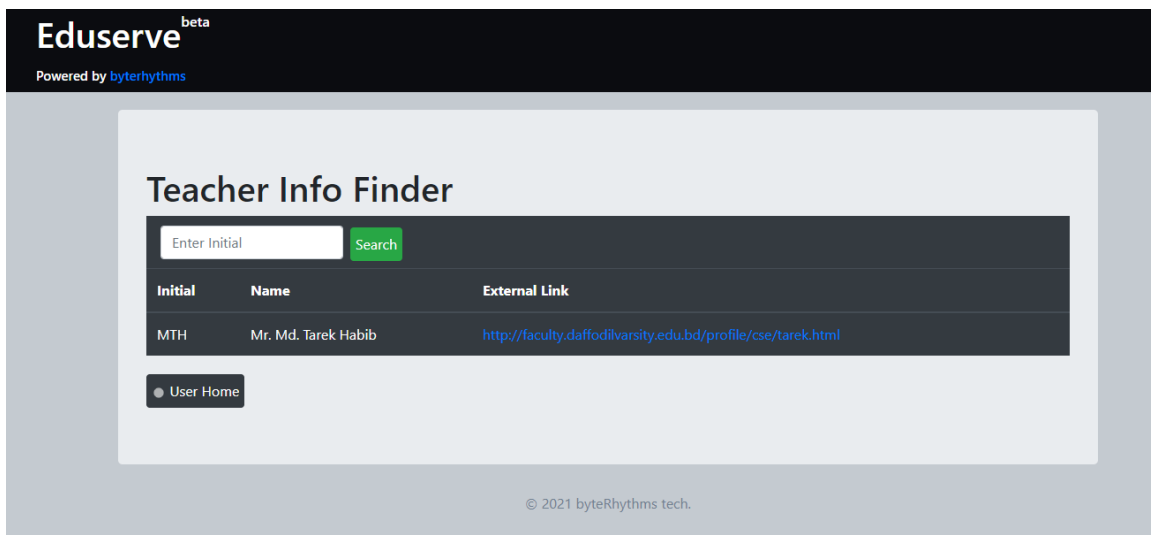
Login Page

Figure 4.2.3: Login Page

Teacher Information

Figure 4.2.4: Teacher Information Page

Profile Update

Figure 4.2.5: Profile Update Page

Employee Manage Panel

Figure 4.2.6: Employee Manage Page

Teacher Control Panel
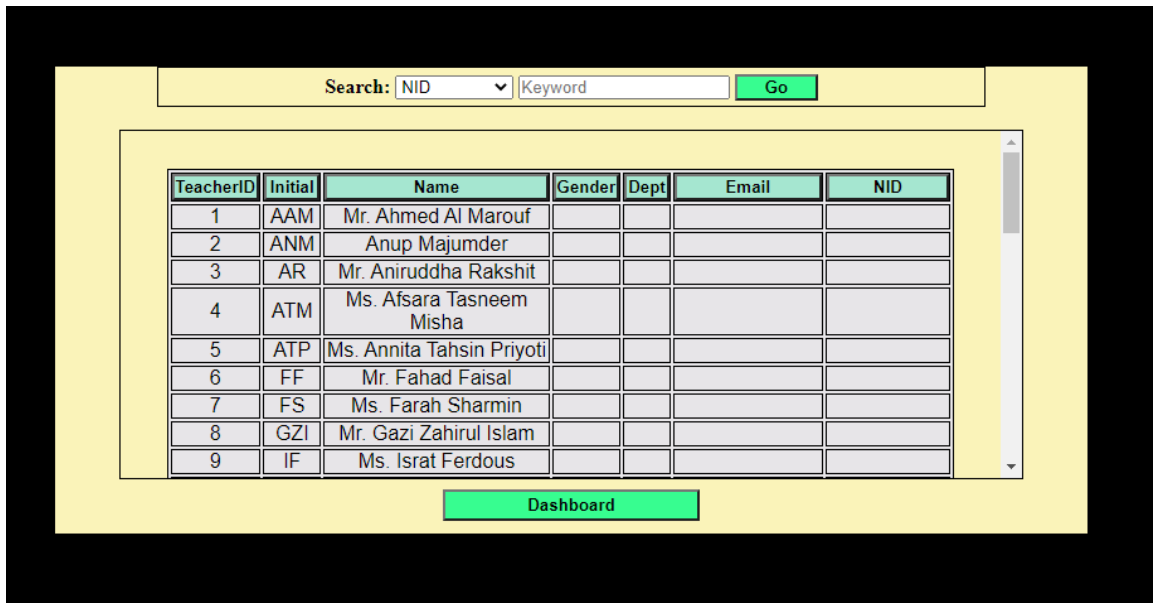
Figure 4.2.7: Teacher Control Panel Page

Student Control Panel
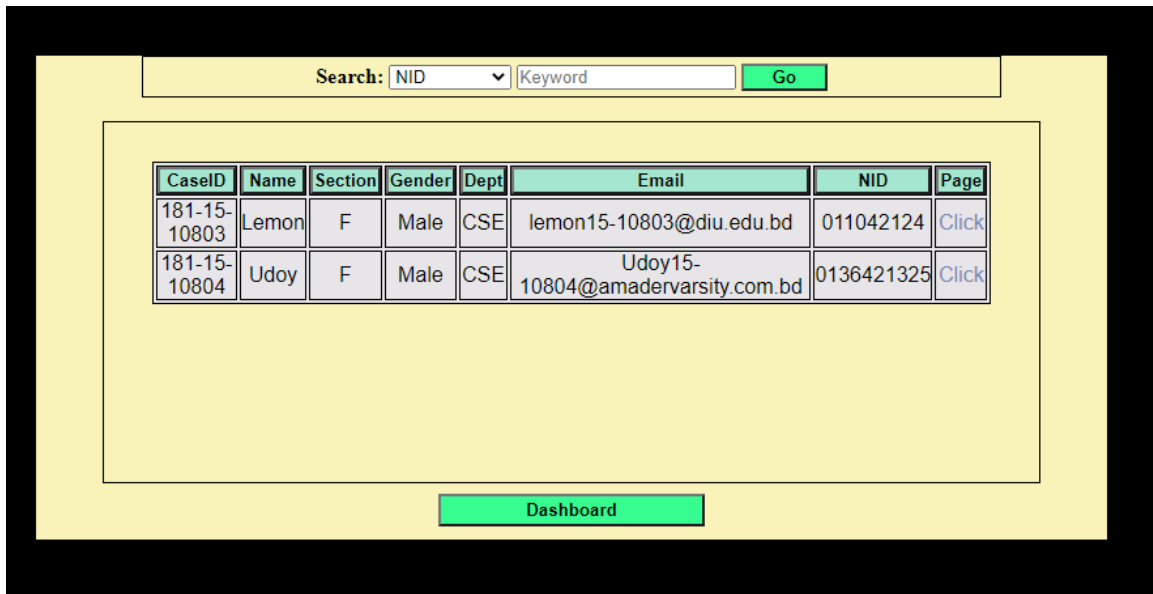
Figure 4.2.8: Student Control Panel Page

CHAPTER 5

Implementation and Testing

5.1 Implementation of Database

We used MySQL to create a database for our website. The most popular and widely used programming language in website and application development is SQL [11], [12]. It may be used to develop web applications all around the world. It has been utilized to store and retrieve information for our website.

Database implementation description:

- Moderators and administrators create, modify, and delete the student and teacher database.
- Only administrators have access to the employee database, which they create, amend, and delete.
- Teachers and students save their own personal information.
- Fees, information of the institute, Library, etc. databases are controlled by the authority. They can update, delete and create the data on the database.
- Teachers have the ability to add, delete, and change courses and ERP databases.
- If a student is just enrolled in one course, he or she can see the course module but not create, change, or remove anything.
- Students can view their fees, pay them, and check their payment statement, but they do not have the ability to change or eliminate them.

5.2 Implementation of Front-end Design

The usefulness and appearance of any website is determined by how well the frontend design is implemented. A more sophisticated frontend design is more acceptable to its users. How much the frontend design is streamlined and straightforward, the more acceptable and user friendly it will be to its users. We utilized the following languages and frameworks for the frontend design of our website:

Framework:

Bootstrap: The most recent version of the popular CSS framework Bootstrap 4 was used. Bootstrap is a CSS framework for creating responsive web apps that is completely free to use [13]. It allows you to create responsive websites without having to write a lot of code.

Library:

JQuery: To improve the aesthetic of our webpage, we used JQuery (JavaScript Library) to add some exciting animation [14].

Languages:

HTML: Hyper Text Markup Language is the abbreviation for Hyper Text Markup Language. The HTML language is used by the majority of web developers to create Web pages. HTML can describe the structure of a Web page. It explains how to arrange and show items in the browser [15].

CSS: Cascading Style Sheets (CSS) stands for Cascading Style Sheets. CSS specifies how items are organized and colors are presented. It can be used to create a variety of materials, fonts, and colors for presentation and separation [16].

5.3 Implementation of Back-end

A great-looking frontend can quickly fail if it doesn't have solid backend support. Visitors will soon leave if the functionalities of a website are undermined, no matter how appealing it appears at first glance. Poor backend support frequently leads to a website that is slow, crashes frequently, and has issues. All database interactions and calculations are handled by the backend to ensure constant performance. The majority of the coding is done on the backend, where the code is executed on the server rather than the client [17].

Framework:

Laravel: Laravel is a well-known framework that is used all around the world. It's quite simple to use and customize. The newest version of the Laravel framework is used [18].

Language:

PHP: PHP is only used for back-end development. The LAMP stack, which stands for Linux, Apache, MySQL, and PHP/Perl/Python, includes PHP. We also used raw PHP in our project.

JavaScript: It's a backend language that may also be used on the frontend. In both cases, we used JavaScript [19].

5.4 Test implementation, Status, and Reports

As we have so many functionalities to check for knowing if our system is working properly or not, we've implemented some testing methods. Here in this section, we will discuss that. We have different applications for several users. But for admin, we've got a single login section, and for students, they can use the same credentials to log in once and they will be able to access all the other applications. Teachers will only log in at Digital-classroom for conducting, managing their courses, and getting access to their ERP system.

For admins, they need to log in using their employee ID and password in the Student-base application. Here we are using a newly created user with the role of Moderator to check if everything is working well, or not. The user ID is 10713, and the password is Test_demo(decrypted).

Here we can see, the user can log in, and has access to all the functionalities, except the 'Operators' option, as we assumed. He can create a new student profile (191-15-10802), he can view all the details, update them, and then he can delete the student profile with the Student ID. He can do a similar thing with the Teacher profile as well. He can Create (00038), update, view, and delete the Teacher profile with the help of a Teacher ID.

He can update his own details, except he can delete his own profile. After logging out he can't manage to get access to any of the pages. So our test has successfully passed in this case.

Now we are Deleting this profile with the help of our Admin (Admin has fixed credentials to log in, and only Developer can update this profile). Now we are creating another operator with the role, 'Viewer' to check his available functionalities.

This time, the ID is 10894, and the password is testView(decrypted). He can manage to log in. But like previously he doesn't have access to the admin functionality, 'Operators' to create a new Admin user. This time he can only view all profiles, but can't create, update or delete any of them. So this test was also successful.

Admin can do all of the above functionalities and after trying several cases, we can declare this role can successfully manage his functionalities as well.

Now the created Users can log in with their credentials on their respective applications. The Student with ID, 191-15-10802 can get access to the eduServe platform with the default password set while creating the profile, which was "Asad-10802"(decrypted).

He can get access to all the other applications such as- feeBase, disstudy, Digital Classroom, etc. He can't manage to get in any of these unless he is logged in.

And the Teacher profile (ID: 00038) was able to enter only the Digital classroom, but none of the other applications, which is only accessible for the students. He logged in using the formed password, "Shahed-38", and was able to explore Digital Classroom with his full access. Both of the profiles were successfully deleted after testing.
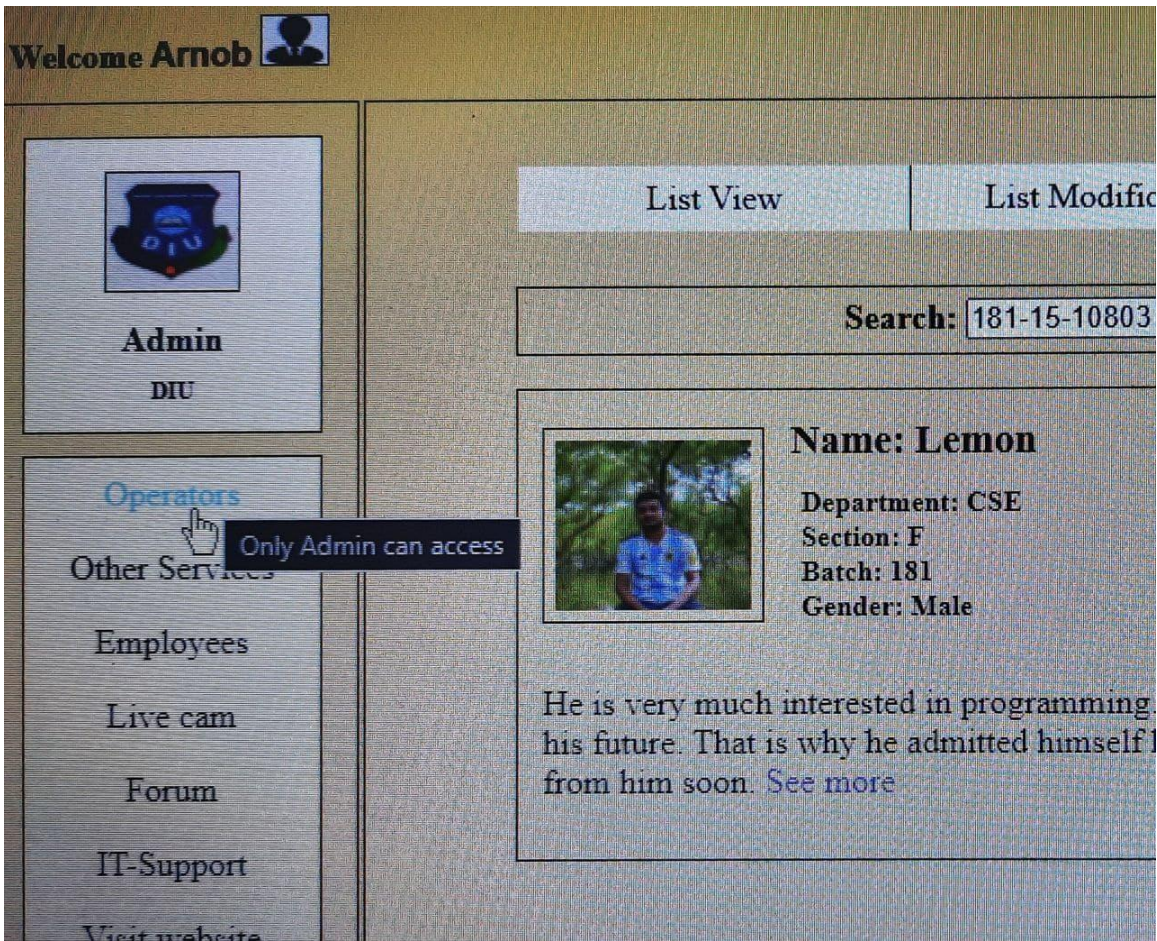
Figure 5.4.1: Viewer Access
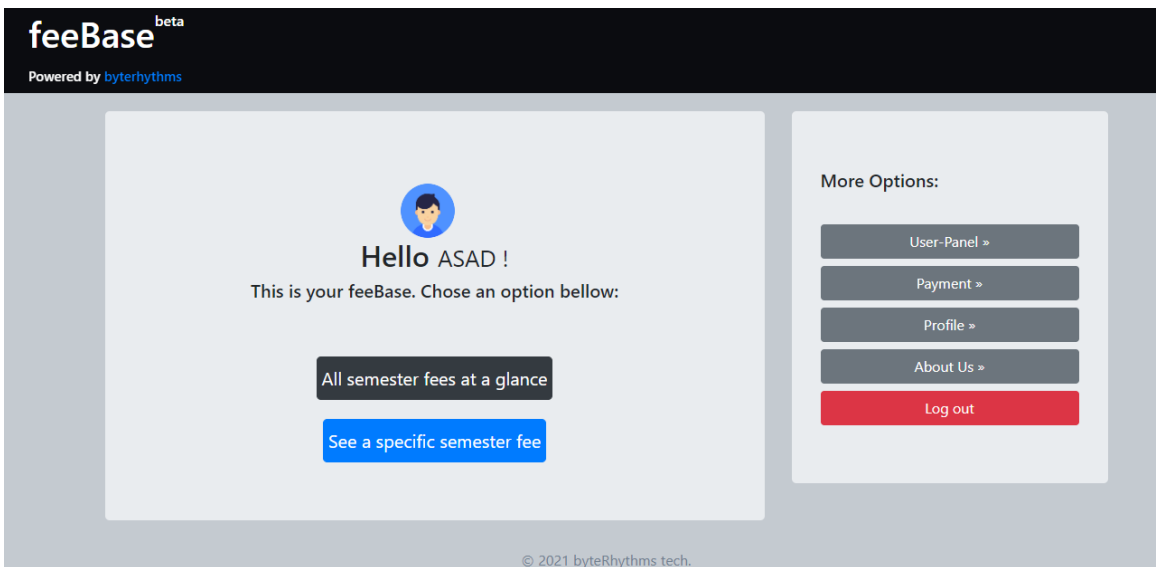
Figure 5.4.2: Student View
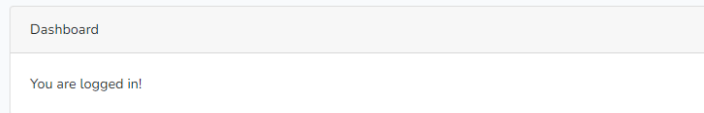
Figure 5.4.3: Teacher View

The testing report and result is shown on table 5.4:

Table 5.4: Test Cases and the Result of the Test

User-Role	User-ID	User-Password (Decrypt)	Expectation	Outcome
Moderator	10713	Test_demo	Create, Edit, Delete Student/Teacher profile. Update self-profile, but can't get access to 'Operators'.	Success
Viewer	10894	testView	Can only view Student/Teacher profile. Update self-profile, but can't get access to any Create, Edit, Delete options.	Success

Student	191-15-10802	Asad-10802	Can get access to all the applications under eduServe platform(except admin panel). Can view and update self profile, see courses, etc.	Success
Teacher	00038	Shahed-38	Get access to only the Digital Classroom application. Can manage to update profile. Create courses, and creating contents for it.	Success
Any	Any Wrong Credentials		Get alert popup of wrong credentials, and won't be able to get access to any of the applications.	Success

CHAPTER 6

Impact on Society and Targeted User

6.1 Impact on Society

Education is important for every nation. Education entails studying in order to have a better understanding and knowledge of a wide range of disciplines that may be utilized in everyday life [20]. Education has become one of the most reliable predictors of life outcomes such as employment, money, and social standing, as well as a powerful predictor of attitudes and happiness [21]. Education can indirectly boost economic growth by boosting innovation, productivity, and human capital. Education has a long history of promoting beneficial social change by encouraging political engagement, social equality, and environmental sustainability, among other things.

Our application will also assist people in becoming more educated. It is a concept of the online education system that makes things simple and comfortable. Our application will be utilized by schools, colleges, and universities. Students can study online with it, which means they can do study from home and in any situation. When schools, colleges, and universities are closed due to a natural disaster or other reason, students can continue their education by it. As a result, kids will have no difficulties with their studies and will be highly educated. Because most educational institutions were closed due to the epidemic, a large number of students were unable to finish their studies and dropped out of school. That is why we want to develop the application and give it to smaller, financially strapped educational institutions so that they can operate their functions and educate their students. As a result, we can predict that our application will have a significant impact on society.

6.2 Targeted User

Because of the cost and maintenance, many educational institutions in Bangladesh are unable to implement this type of software. That is why we offer the software at a fair cost and provide maintenance support as needed. We also provide a number of packages that

are quite beneficial to the user. We provide the user with a packing list and let them to choose whatever features they require; the price of each feature varies depending on how well it is maintained in relation to other factors.

For example, if a university does not require the disstudy component or another section, we do not give it. We are attempting to make the software as inexpensive as possible. Many organizations can use this online database software to accomplish this. We also ensure protection for the data saved on our project's central server. It is the most sensitive element of an institution since there is a lot of sensitive information and data that is vital to them, and if the data is released, the institution will be destroyed. As a result, we take the maintenance system extremely seriously, and one of our staff members will monitor it (24 hours a day, 7 days a week) to see if any strange behavior occurs. As a result, if any institution adopts our software, they will have everything in one bundle at a fair price.

6.3 Security Check

Nowadays, everyone, including businesses, and institutions, conducts their business online. So there's a gang of people that wish to blackmail, humiliate, or harm someone, a corporation, or an organization by stealing their important data from an internet platform or a server. This is the age of cyberwarfare, and cybercrime is on the rise. Our software will be web-based and will save a large amount of sensitive data or information about an institute. As a result, we must exercise extreme caution when it comes to data and its protection. Because this is a web-based application, we'll start with the basics: Cross-Site Scripting (XSS), Data Manipulation, OS Command Injection, SQL Injection, Parameter Tampering, Blind SQL, Broken Authentication, Dictionary Browsing, and so on. We'll also look at the top ten OWASP vulnerabilities. These are the most common flaws in web-based software. If we ensure that this type of vulnerability does not exist in our web-based product, then any scripted kiddo hacker will have a difficult time assessing or hacking it. There are also some advanced penetration testing tools available for web-based software, which we will examine for improved security and safety.

6.4 Ethical Aspects

To offer the intellectual foundation for justice, proper use of power and authority, and right relationships, ethics is linked to cultural meaning and social power. Overall, ethically, decisions, their correctness, repercussions, and context are all critical in the creation of a sustainable society [22]. Our project's major goal is to provide a server with an application that can hold a large amount of information and other critical/sensitive data from a school, college, or university. As a result, we must adhere to some ethical guidelines that will assist us in growing our firm. The following is a list of the ethical standards we should adhere to:

- Collecting data for personal use is never a good idea.
- Never, ever publish or sell data for monetary gain.
- Do not access private data without permission from a higher authority.
- Encryption methods should be used to secure data, and data should always be hidden from outsiders.
- By utilizing the app, users will never jeopardize someone's privacy.
- Above all, never do anything that would result in a social calamity.

CHAPTER 7

Conclusion and Future Scope

7.1 Discussion and Conclusion

So far we've discussed, the concept is to bring digitalization into the education sector. So this will help the institutions to make all their primitive approaches into advanced learning systems. That's how learning will be fun, and the next generations will be ready for the revolution in the education sector as well. The primitive education process will turn into a global updated education system, and they will be ready by having benefits to someday getting chance to join the foreign institutions easily, and continue their study comfortably. These various institutions will also be benefitted by continuing their curriculum in the standard way, and by having everything under control and easier. No tension of paying any extra costs, and not to have worry regarding maintenance. This will have a great impact on society as well. Education will be available and easy to access, and we are on aim to make the education sector more friendly, learning with fun, having smooth experience and comfortable so that parents even don't have to worry about their children's progress. Teachers and the institutes can trace the lacking and may work on it to fix and solve. That's how we can help to enter the new era of education by moving towards the digitalization phase step by step.

7.2 Scope for Further Developments

There are so many more scopes to mention rather than just those we've mentioned. We have prepared plan of our other sub applications, which will bring more advanced features. Such as- IOT Attendance system, where a student, teacher or any relatable employee will get his/her attendance via Face Recognition and Bio Matric verification system.

Currently we are on very basic phase of developing this project so we have so many lacking at the moment, but the concept we have to implement before publishing it is one of the core features of this project, and that's the reason we are calling this system as a server, and that

is to not using various applications for various institutions but to provide the same applications combined in this platform in a customized version for all the institutions willing to have this. That's how maintaining and keeping it safe, secure and up to date will be easier. For that, we'll use API system to build the user-end for different institutions on their web-server.

There will be other functionalities as well, as this is a broad planning and we've just started working on this, and we have to go more further to get the goal we want. We hope that, soon enough we will be able to achieve, perhaps within the year 2022, so that we can then start doing marketing for our product to bring in real-life.

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