Smart-DIU: Routine Scrapper with Some more features Website for Teachers and Students

BY

Sanjita Israt Tura
ID: 201-15-3701

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

Supervised By

Mayen Uddin Mojumdar
Senior Lecturer
Department of CSE
Daffodil International University

Co-Supervised By

Md Assaduzzaman
Senior Lecturer
Department of CSE
Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

JANUARY 22, 2024

APPROVAL

The title of this project "**Routine Scrapper with Some more features Website for Teachers and Students**", submitted by **Sanjita Israt Tura** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted in terms of style and content as a partial fulfillment of the criteria for the B.Sc. in Computer Science and Engineering degree. The presentation has been held on January 22, 2024.

<u>BOARD OF EXAMINERS</u>

Dr. Md. Fokhray Hossain
Professor
Department of Computer Science & Engineering
Daffodil International University

Chairman

Amit Chakraborty Chhoton
Assistant Professor
Department of Computer Science & Engineering
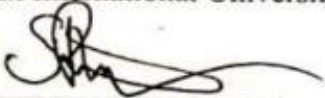Daffodil International University

Internal Examiner

Md. Assaduzzaman
Senior Lecturer
Department of Computer Science & Engineering
Daffodil International University

Internal Examiner

Dr. Mohammad Shahidur Rahman
Professor
Department of Computer Science & Engineering
Shahjalal University of Science and Technology

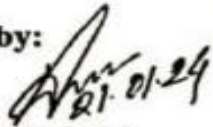External Examiner

DECLARATION

I now certify that I completed this assignment on my own initiative, working under the guidance of **Mayen Uddin Mojumdar**, Senior Lecturer at Daffodil International University's CSE Department. I further declare that neither this project nor any part of it has ever been submitted somewhere else for credit toward a degree or certification.

Supervised by:

Mayen Uddin Mojumdar
Senior Lecturer
Department of CSE
Daffodil International University

Co-Supervised by:

Md. Assaduzzaman
Senior Lecturer
Department of CSE
Daffodil International University

Submitted by:

Sanjita Israt Tura
ID: 201-15-3701
Department of CSE
Daffodil International University

ACKNOWLEDGEMENT

Firstly, I would want to thank Almighty God from the bottom of my heart for His glorious grace, which has enabled me to finish well the final year project.

Mayen Uddin Mojumdar, Senior Lecturer, has my sincere gratitude and responsibility. To finish my task, my supervisor's in-depth understanding and passion for the "web application" are crucial. Without his tremendous patience, intellectual guidance, ongoing inspiration, encouragement, proactive supervision, honest feedback, perceptive advice, and reading of countless poor drafts and modifications at every turn, this undertaking would not have been feasible.

I want to thank my friends, and Head**,** Department of CSE, "**Sheak Rashed Haider Noori**" from the bottom of my heart. , as well as other faculty members, for their gracious assistance in helping me complete my project.

I am very grateful to all of my Daffodil International University classmates who participated in this discussion while completing their academic tasks. And lastly, I have to be grateful for my parent's constant patience and support.

ABSTRACT

Many times students have to face trouble to find a teacher. Again I know that the routine which is sent to us through email from the department contains all the sections of all the batches together. It becomes very difficult for students to find their own section from such a large routine. So my website plays an important role to get rid of this trouble. In this website a student can see section wise routine, academic information of all teachers. Besides, Pupils have access to a wide variety of academic resources. A teacher will know the daily schedule. Many times students feel hesitation to call the teacher because the teacher may be in class, may be in a meeting, may be busy with some urgent work. They hesitate to make the call. From this I think the student himself can check it through a web site. Also can check the counseling hours of the teacher. They can see the previous questions. On the other hand, a teacher can view his daily routine as well as provide educational status for the student. A teacher no longer needs to make additional calls to students to view all academic related teacher information. The name of my project is "Smart-DIU": (Routine Scrapper with Some more features Website for Teachers and Students). Teachers and students can get their daily class schedule by logging in to this website through my project.

TABLE OF CONTENTS

CONTENTS	PAGE

CHAPTER

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1
INTRODUCTION

1.1 Introduction

In the data-driven environment of today where information is abundant yet dispersed across digital platforms, my project takes center stage in the pursuit of simplifying data collection and analysis within my academic community. In the dynamic academic environment, staying updated with daily happenings is paramount for students, and faculty alike.

My project endeavors to simplify this process by developing a sophisticated scraper designed to capture and consolidate daily routine information within our university ecosystem. My university-focused scraper project isn't solely about collecting data; it's about empowering students, and faculty with a tool that enhances their day-to-day experiences. By harnessing the power of automation and technology, I aim to provide a reliable platform that consolidates vital university-related information in one central repository.

I am dedicated to crafting a tool that not only efficiently gathers information but also respects user privacy, adheres to all relevant policies, and upholds ethical standards in data extraction.

By creating a user-friendly interface and employing cutting-edge technology, my goal is to empower every student and teacher of my university community to effortlessly access and utilize daily routine information.

My project name is "Smart-DIU". The website helps all kinds of students. My project aim of this system is to track the teacher's location on campus using a website. This will be very helpful in reducing the time spent searching for teachers and reducing physical stress. Besides, there will be some other helpful features for students. This simplifies routine information access and enriches the lives of all within our academic environment.

This project is essential for us. Because in a word it is effective to avoid physical stress and reduce the time of looking for a teacher. Then routine, counseling hours, and previous questions can be seen in one spot. It is a benefit. Not only the student will benefit but also the teacher will be benefited. So, I believe that this project is crucial for us.

1.2 Motivation

It's time-consuming to look for teachers across the entire campus. So I decided to make a website-based project to overcome this problem. Students can easily track the location of a teacher through the site. This site is beneficial for everyone, especially for large institutions.

As there are two different kinds of users for the site, there are two different forms of importance.

For students: A student will know where the teacher can be at that moment of need. If they go to the desk at that moment, they will know whether they will get it without calling the teacher. Despite coming to the university with difficulty, no news is being taken. There is no need to live in uncertainty. Many times it is seen as not even available on call. Besides, routine, the teacher's counseling hour, and the previous questions can be checked in one place. It is a benefit.

Now we have to go to the desk to find for all these things. I feel that, if there is a site, the whole thing can be done more smartly. I think it is better for the student himself to inquire through the phone in his hand.

For teachers: A teacher doesn't have to face extra calls. Instructors don't have to deal with dissatisfaction. In general, many times teachers are disturbed by calls. Maybe in class. Maybe at the meeting. Or maybe busy with some urgent work.

1.3 Objective:

The primary goal of my project is to follow the teacher's location on campus using a website. This will be very helpful in reducing the time spent looking for teachers and reducing physical stress. Besides, there will be routine scrapper , question bank and some other useful features for students.

1.4 Expected outcome:

1. The dashboard contains a navigation bar, a packages , a search bar, and daily routine. And the rest is shown as a cart for teacher information. The package contains Question Bank, , Profile Settings, BLC, Student Portal and DIU Official Site. The rest of the teachers have a cart of each teacher on it there is a search bar through which they can search by the name of the teacher in an easy way.

2. Pupils will be able to learn about modern globalization and technological advancements.

3. On this website, I have a forum named where teachers can post their creative work.

4. Students will be able to know all the academic-related data of a teacher without physically going to the varsity.

5. Students will be able to visit all the status/post of a teacher.

6. Both time, physical stress and moneys are consuming.

1.5 Project Management and Finance

1. Project Timeline: As a solo developer, the "Smart-DIU" project's timeline was structured. I have hand sketched for software development plan.

2. Team Structure: Myself **Sanjita Israt Tura** served as the sole project manager, web developer, and database administrator for the "Smart-DIU" project, utilizing the MERN stack in order to develop an extensive online application.

3. Resource Allocation: As a solo developer using the MERN stack:

        a. Web Development Tools: Utilized the MERN stack.

        b. Cloud Hosting: The project was hosted on MongoDB.

4. Risk Management: Risk identification and mitigation fell entirely under my purview. To protect user data, strong security mechanisms were put in place, such as authorization and authentication via the MERN stack. To guarantee data security, regular vulnerability assessments were carried out.

The apparent visible, and touchable parts of a computer system are referred to as hardware. It is necessary for the correct operation of numerous electrical devices and is a crucial component of computing infrastructure. The following are the main hardware requirements:

Table 1.1: Requirement of Hardware

Configuration	Limitation
Processor	This software can be run on any kind of processor.
Ram	Allow free utilization of a minimum of 256 MB of storage.
Motherboard	No limitation of motherboard.

Hard Disk	There is no limitation.
Monitor	Monitors of any sort can observe.
Graphics Card	Monitors of any sort can access it.

1.6 Report Layout

Chapter 1: Introduction

This chapter provides a summary of the project's main features and acts as its introduction. It explores the reasons for the initiative, describes its particular goals, and emphasizes the anticipated results. It also discusses project management and budgetary factors and provides an overview of the report's general format.

Chapter 2: Background

This section provides the essential context by defining important terms and summarizing any relevant initiatives or works. A comparison study clarifies the project's place in the larger scheme of things. The chapter describes possible obstacles that might be faced as well as the extent of the issue being addressed.

Chapter 3: Requirement Specification

This chapter covers business process modeling, requirement collecting and analysis, use case diagram, and logical data model building, with an emphasis on the project's functional components. This part also takes design criteria into account.

Chapter 4: Design Specification

This article goes into great detail about the design process, including interface design, user experience, front-end and back-end design. It provides a roadmap for the development phase by emphasizing specific execution demands.

Chapter 5: Implementation and Testing

This section explores how the project was actually carried out in practice. It includes front-end design, database implementation, and the ensuing testing processes. An analysis of test findings and pertinent reports wraps off the chapter.

Chapter 6: Impact on Society, Environment and Sustainability

This chapter assesses the broader implications of the site, exploring its societal impact, environmental considerations, ethical aspects, and plans for ensuring sustainability.

Chapter 7: Conclusion and Future Scope

The report is concluded in the last part with a review of the project's results and conclusions. It also raises possible future directions, offering a link to more research outside the purview of this project.

CHAPTER 2
BACKGROUND

2.1 Preliminaries

"Smart-DIU" website contains routine scrapper of all departments as well as question bank, teacher's information, BLC, student portal and DIU official site. What is special is the updated counseling hours of the teacher which they will know through the teacher status.

Basically, Main preliminaries goal in working on this project is to gather all of the university's information and reduce the pain that students face. My website has a ton of options that I have made. As a result, the website provides students with all the information they want.

2.2 Related Work

Our varsity does not have any such website but has some android apps. But one of them has only routine scraper of two departments, another one has some other features besides routine but not all the academic information of teachers, question bank etc.

The "DIU Question Bank" is specifically designed for the users of Daffodil International University (DIU). The app serves as a repository of academic questions related to various courses offered at DIU. students or individuals associated with Daffodil International University who may use it to access a collection of questions, possibly for study or exam preparation purposes [5].

The "DIU Routine Scrapper" is a mobile application, designed to cater to the needs of users affiliated with Daffodil International University (DIU). The app aims to streamline and enhance the user experience related to academic routines and schedules. This app consists of key functionalities such as routine Management, customization, notifications, and reminders Integration with DIU Systems [3].

The "DIU Student" app is a comprehensive mobile application designed to enhance the academic and campus experience for students at Daffodil International University (DIU). This app consists of key features such as academic Information, results, and progress tracking, a communication platform, an event and activities calendar, a resource repository, notifications, a user-friendly Interface, integration with Campus Systems, and feedback and ratings [4].

The "IB Questionbank" is an online resource. This platform is associated with the International Baccalaureate (IB) program and serves as a comprehensive question database for educators and students. Key aspects of the "IB Questionbank" may include: subject coverage, question types, curriculum alignment, educational levels, customization features, and accessibility [6].

The faculty page of Daffodil International University (DIU) serves as a comprehensive resource providing information about the academic staff associated with the institution [7].

2.3 Comparative Analysis:

Comparative analysis involves examining similarities and differences between two or more entities, be it products, theories, processes, or any other subject. It aims to highlight strengths, weaknesses, opportunities, and threats by evaluating variables, features, or characteristics, leading to a comprehensive understanding or judgment.

Table 2.1: Comparative analysis

Our Project (smart-DIU)	Other Project
1. Fantastic User Interface (UI)	1. Intricate User Interface (UI).
2. User Friendly.	2. Not user friendly.
3. I have routine scrapper for all departments.	3. Others don't have routine scrappers for all departments.
4. I have question bank.	4. Don't have question bank.
5. Can be check counselling hour of teachers.	5. Can't be check counselling hour of teacher.
6. All kinds of academic related information of a teacher can be known through my website.	6. Others don't have all the information of a teacher.

2.4 Scope Problem

I faced numerous difficulties while completing this job. Many of these issues have been resolved by me.

1. One or more shortcomings with the design.

2. The amalgamation of several users.

2.5 Challenges

1. My site has a user login & logout system.

2. My project has all the details of the faculty members, information about academic contribution, research area & training experience of the faculty members.

3. Student can change his/her profile information

4. Various department participants will have access to past exams as well as the daily schedule in their particular area.

CHAPTER 3
REQUIREMENT OF SPECIFICATION

3.1 Business Process Modeling

A flowchart, a helpful visual aid that makes the entire procedure easier to follow, is now a part of my online application.
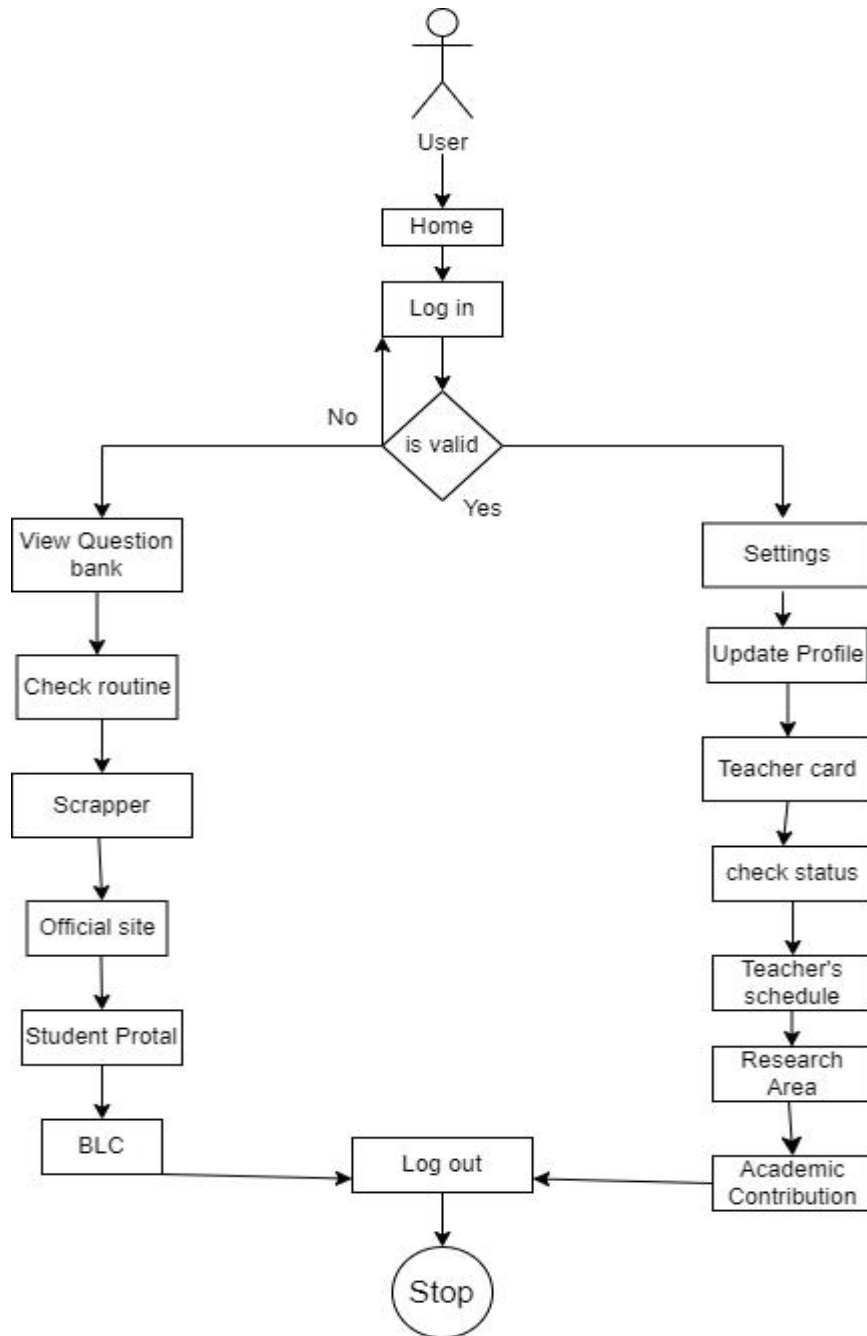
Fig 3.1: Business Process Model

3.2 Requirement Collection and Analysis

The needs for my system must be gathered and assessed, and some prerequisites must be met for it to be used effectively: Smart devices also include laptops, desktop computer, and other similar technology, in addition to smartphones.

Stable and powerful Internet connection: A reliable and robust Internet connection is necessary for optimal system functioning.

3.3 Use Case Modeling and Description

The use case diagram displays how a student, teacher, and administrator interact on a site, acting as a visual project road-map.

3.3.1 Admin: Login, logout, maintenance user profile, create admin, create teacher, create student, create question, create routine, student's registration, and include the course instructor.

3.3.2 Student: Login, Logout, read teacher's post, watch teacher's information, visit teacher's publications, watch both routine.

3.3.3 Teacher: Login, Logout, post status/writing something, manually add their new publication and manage and update profile.
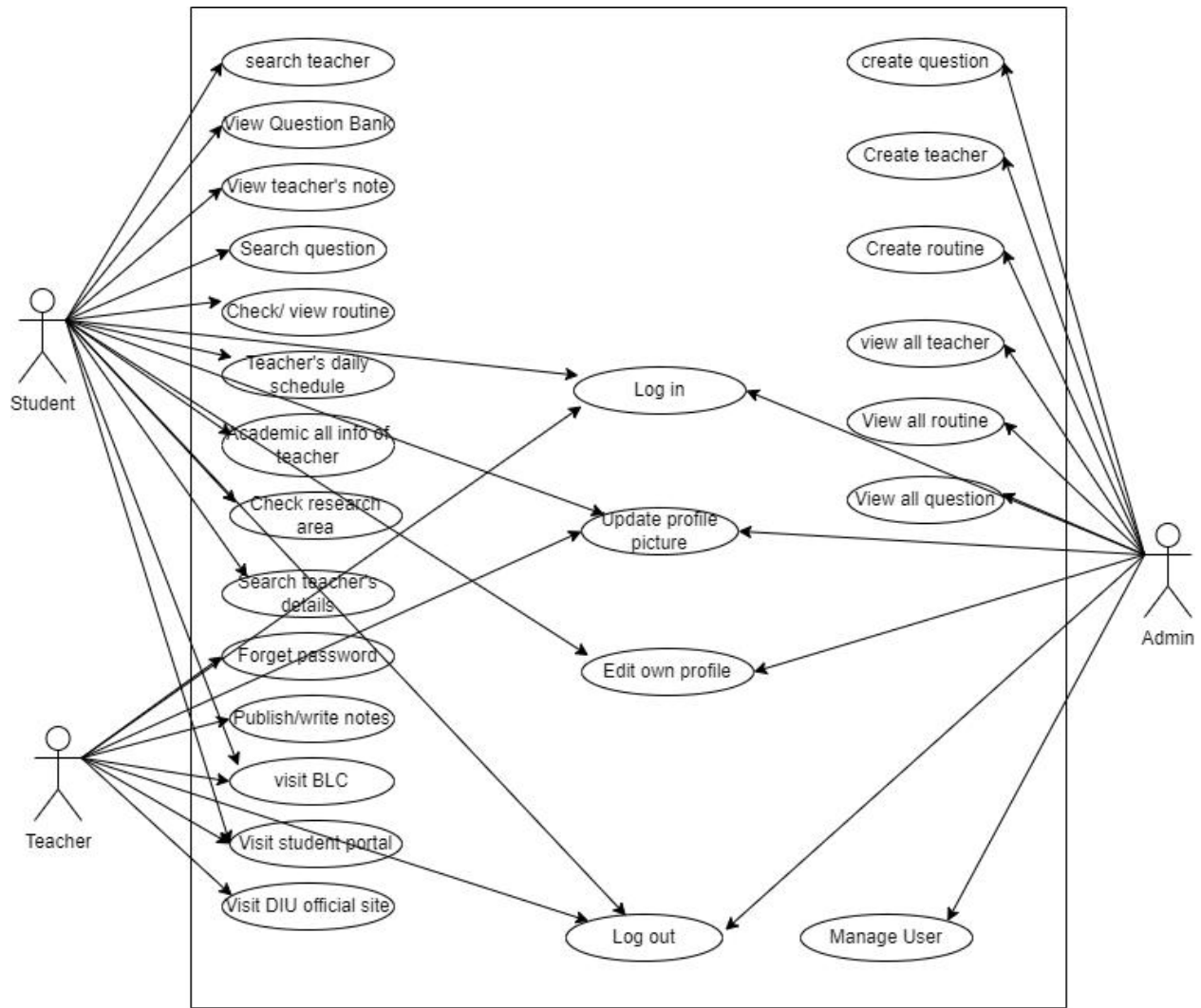
Fig 3.2: Use case Diagram

3.4 Logical Data Model

This model simplifies the method of characterizing the structural relationships between data components using tested logical models. The organized data model that is produced helps with well-informed decision-making.
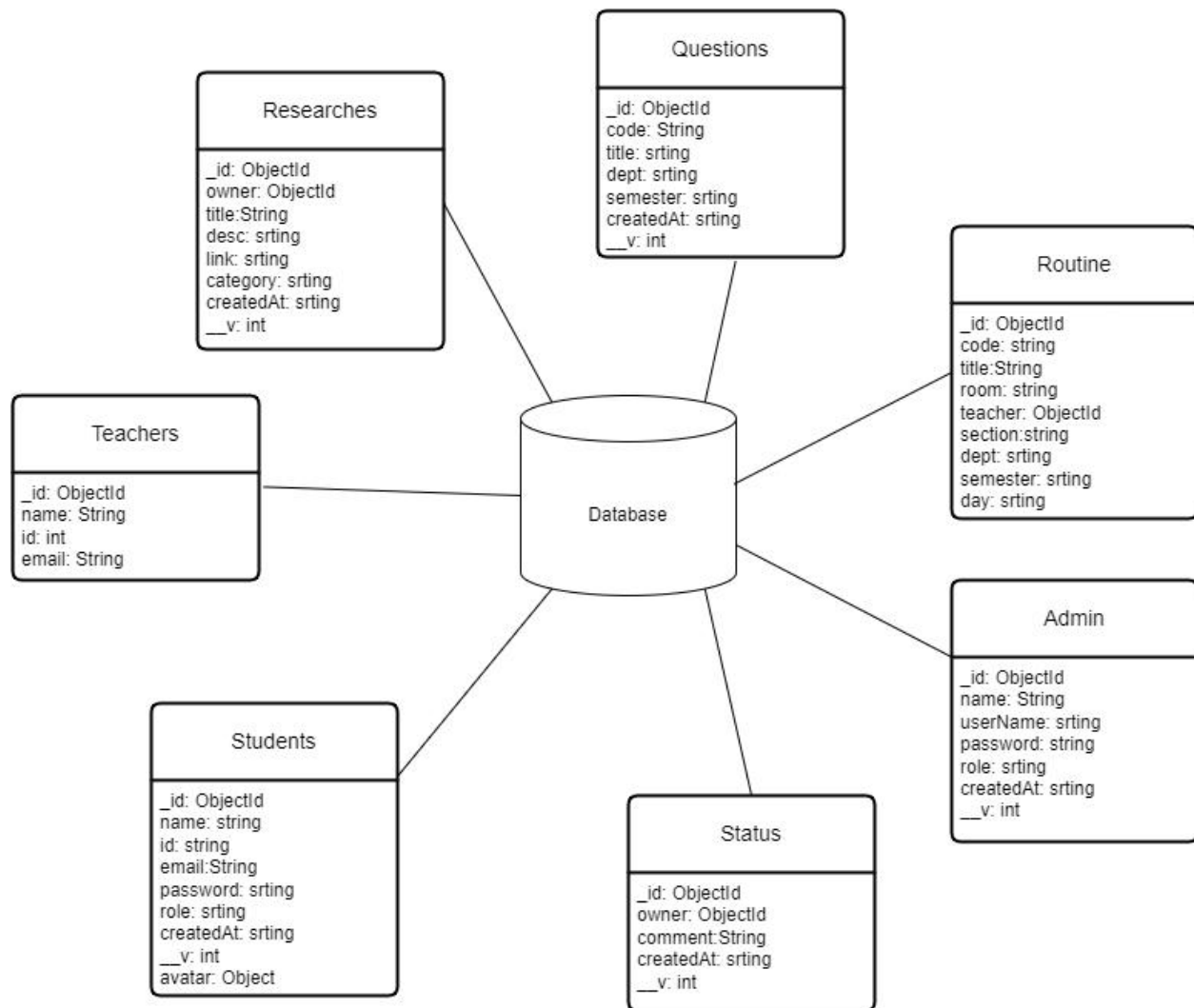
Fig 3.3: Logical Data Model

3.5 Design Requirement

My website is a resource for finding all of a teacher's academic data. I want to talk about the software development process, the architecture, and JavaScript, Tailwind, and React make up the front end of my website, which also includes Use Case Diagrams, Logical Data Model, and Flow Chart Diagrams. ExpressJS and MongoDB have also been used as a back-end.

3.5.1 React:

I have used 'ReactJS'. The most declarative, effective, and versatile library for creating user interfaces is called ReactJS. The library is built using components. For this, I can use either a class or a functional component. In most cases, I have used functional components. One

intriguing problem is that reactJS does not allow us to create HTML code. In this case, the JSX format is required.

A free and open-source front-end JavaScript library called ReactJS is used to create component-based user interfaces. Meta and a group of independent builders and companies manage it. Frameworks such as React can be used to create single-page, mobile, or server-rendered applications. React apps frequently rely on libraries for routing and other client-side functionality because React is primarily focused on the user experience and rendering components to the DOM. React's ability to render only the portions of the page that have changed—avoid rendering unmodified DOM elements twice—is one of its main advantages.

3.5.2 JavaScript:

JavaScript is a commonly used. This is the most popular and powerful scripting language available right now. JavaScript is the only way to add dynamic content to a web-page. All it takes is a button click to acquire the information. JavaScript is what makes this possible. A frequent feature of a web page is hover, which is powered by JavaScript on the back-end. JavaScript is often responsible for making this happen, particularly when we zoom in and out of an image. Carousal and drop-down menus are two types of pictures that occasionally move on numerous homepages and each one has an animation. JavaScript has a wide range of functions.

3.5.3 Tailwind:

It's a CSS framework designed to create dynamic websites. It is free and open source CSS framework. The main feature of this library is that, unlike other CSS frameworks like Bootstrap, it does not provide a series of predefined classes for elements such as buttons or tables. Instead, it creates a list of "utility" CSS classes that can be used to style each element by mixing and matching.

3.5.4 Redux.js:

Redux.js offers a centralized store, actions, and reducers for controlled state changes, hence it is advised for usage in JavaScript applications for predictable state management. It supports middleware, is scalable, easy to test, and readily interacts with React to offer efficient state management in projects.

3.5.5 React- toast:

React-toast is a popular solution for providing customization and non intrusive alerts in React apps.

3.5.6 React-spinner:

React spinners are used by React apps to show graphical input while the program loads or carries out asynchronous tasks.

3.5.7 Node.js:

Node.js non-blocking makes it fitting for big, real time applications. Development is made easier because it just requires JavaScript, one programming language. Its vast ecosystem of packages makes it easier to introduce new features as well.

3.5.8 Express.js:

Express.js is a popular framework because of its robust routing design, powerful middleware support, and ease of use. It facilitates the development of Node.js web apps and REST APIs.

3.5.9 MongoDB:

We know that, MongoDB is most famous document-oriented database program. MongoDB is a source-available, and cross-platform. I will use MongoDB in the back-end of my application. Classified as a NoSQL database product, MongoDB utilizes JSON-like documents with optional schemes.

CHAPTER 4
DESIGN SPECIFICATION

4.1 Front-end design

Online applications generated client-side are known as front-end applications. It works directly with programs such as Tailwind and ReactJS. A website's front-end design is the most crucial component, an intuitive and attractive user interface.

I also study how to display different web page elements using ReactJS. The front end of my project system has been made to be straightforward to use. All types of students find it easier to visit with ease.

User interface:- This project consists of an online application. This app is designed for administrators, teachers, and students. I therefore made this program to be user-friendly. Websites for education should, in my opinion, be easy to use. The majority of the websites I visit are a bit difficult.

Nevertheless, my website is really easy to use, making it simple for students to discover their absolute materials independently of the semester.

4.1.1 User selection System:

A user selection system for a website is a crucial component that enhances user experience and engagement. It involves implementing intuitive and user-friendly interfaces to allow visitors to make choices, navigate content, and personalize their interaction with the site. There are three types of users on my website.

1. Student,
2. Teacher, and
3. Admin.
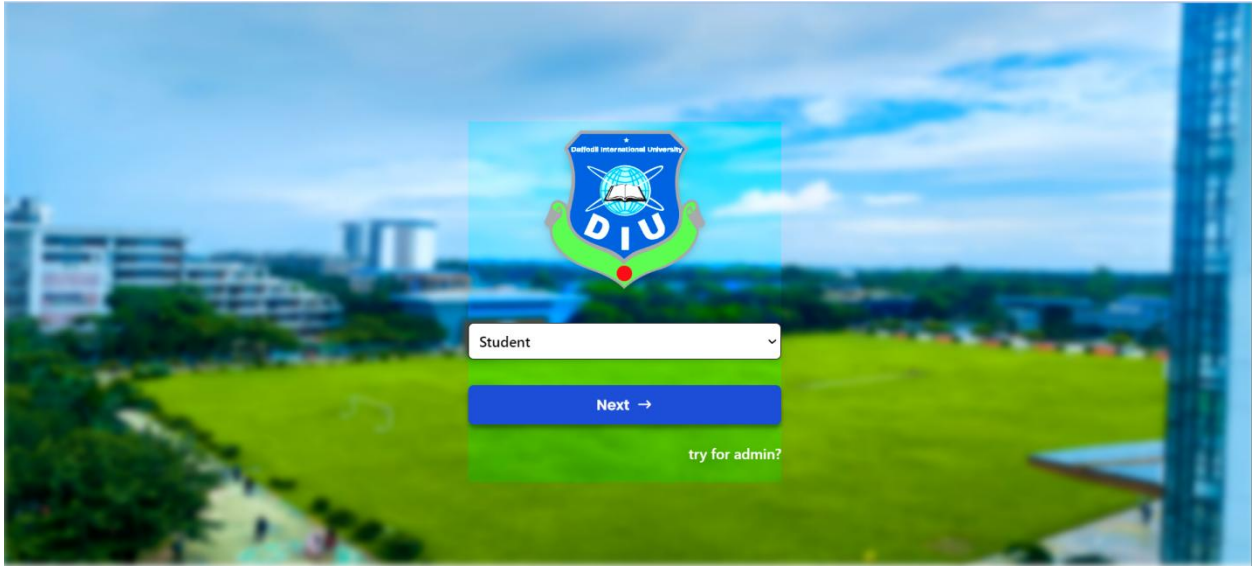
Figure 4.1: User Selection System

4.1.2 Log-in, Log-Out System:

With an individual user ID and password, students, teachers, and administrators may log in with ease.
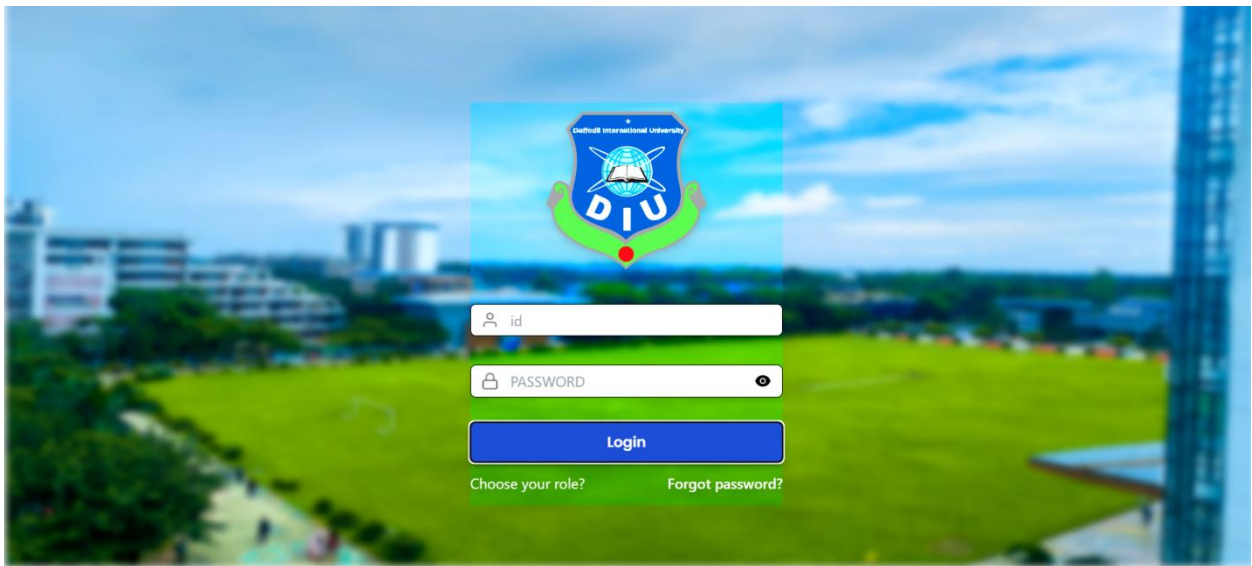
Figure 4.2: Login system

4.1.3 Navigation Bar:

A navigation bar is a portion of the UI of a website that has links to other portions of the site. In general, the primary website template includes a menu bar.

Fig 4.3: Navigation bar

Student Interface:-

4.1.4 Student's Dashboard: Presenting the user dashboard page, the central command center for a flawless interaction. They can update user's profile, password, check routine, and visit all features easily.
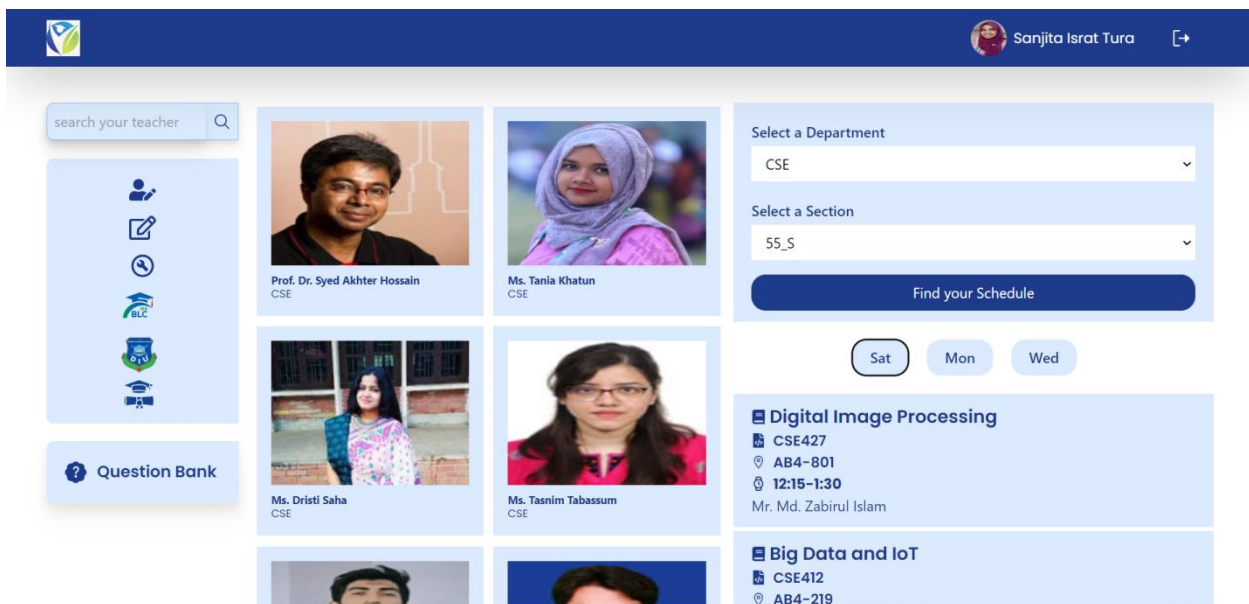
Fig 4.4: Student's Dashboard

4.1.5 Search-Bar:

A search bar within my project is a powerful tool, providing users with a quick and efficient way to find specific teacher. It serves as a navigational aid, allowing users to input keywords, or phrases related to their queries, enabling rapid access to relevant content or resources. A well-designed search bar enhances user experience by offering convenience, saving time, and improving accessibility to a wide array of information available within the platform.
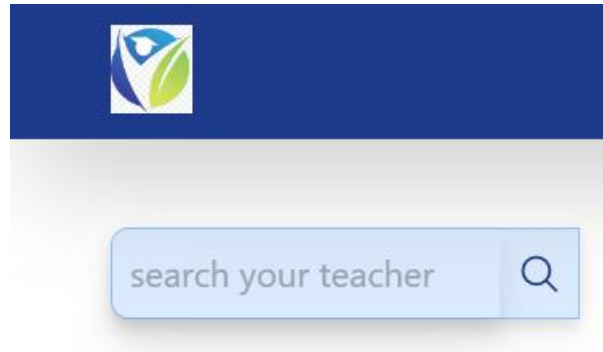
Fig 4.5: Search Bar

4.1.6 Teacher cart: Students can discover pictures of the teachers as well as information about them here. Students will find information about teachers in this section. Teacher will have his profile on the site. Teacher can include anything in the profile that will inspire a student. He'll provide details about his daily schedule. It should be set as usual once. But if any day is an exception then just update that day.
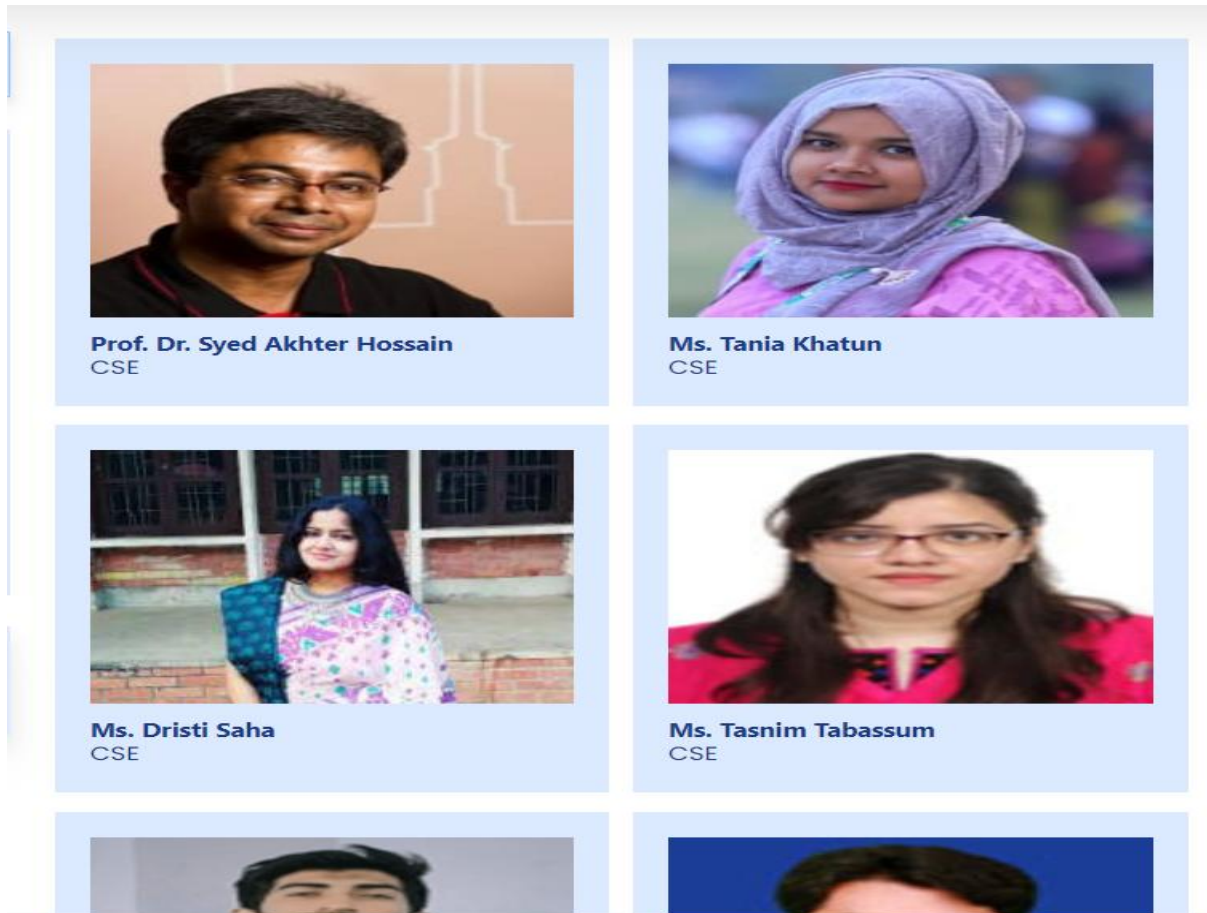
Fig 4.6: Teacher's Cart

4.1.7 Check Teacher's Status:
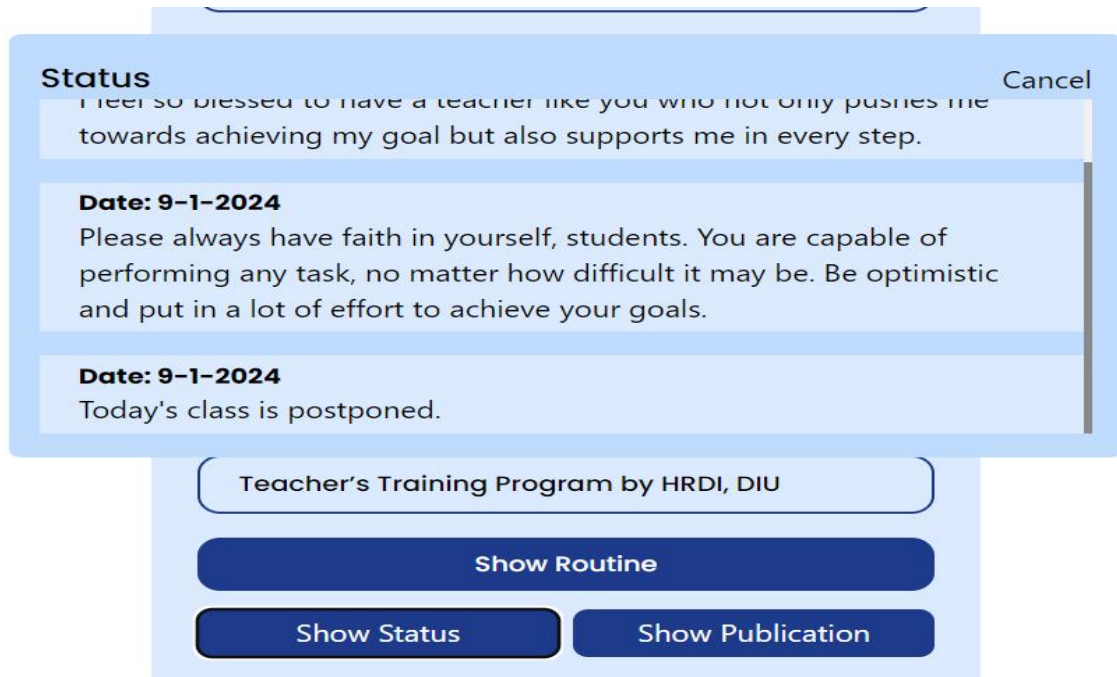
Fig 4.7: View Teacher's status

4.1.8 Student's Daily Routine:
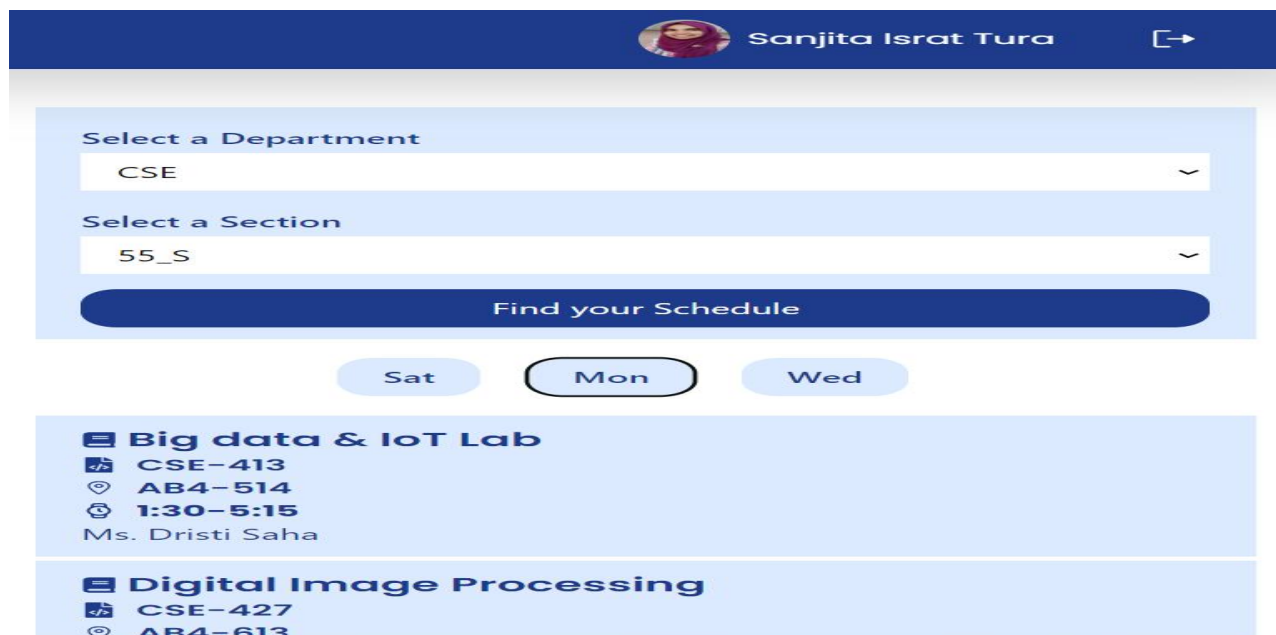
Fig 4.8: View Own Routine

4.1.8 Teacher's Routine:

Fig 4.9: View Teacher's Routine

4.1.8 Teacher's Publications:
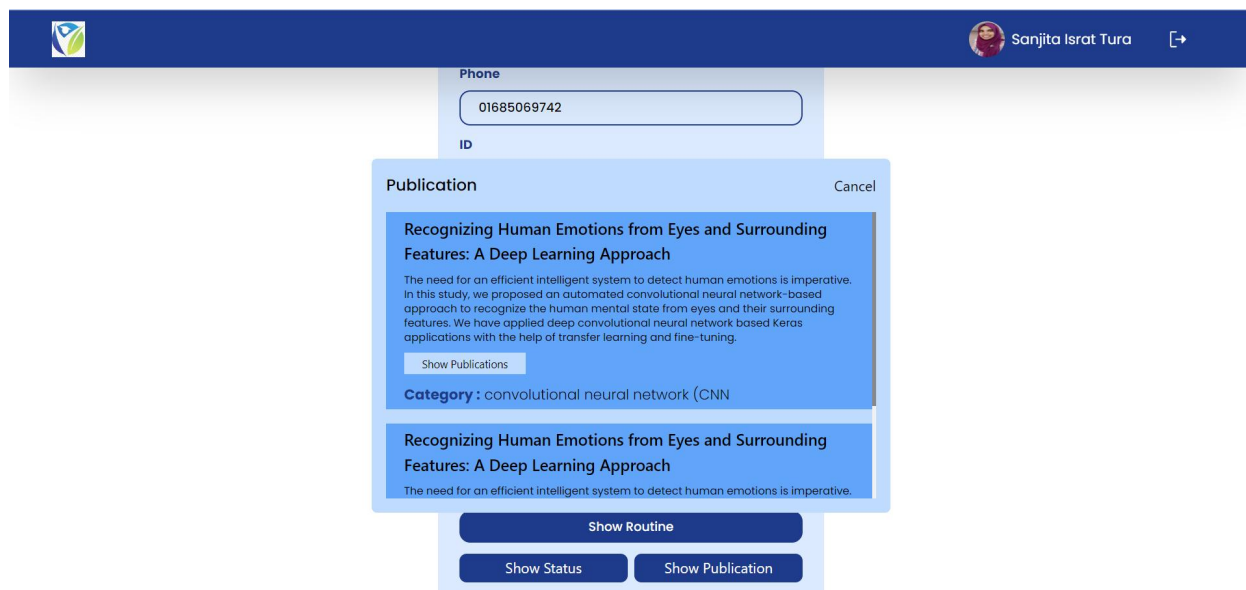
Fig 4.10: View Teacher's Publication

4.1.8 View Teacher's Status:
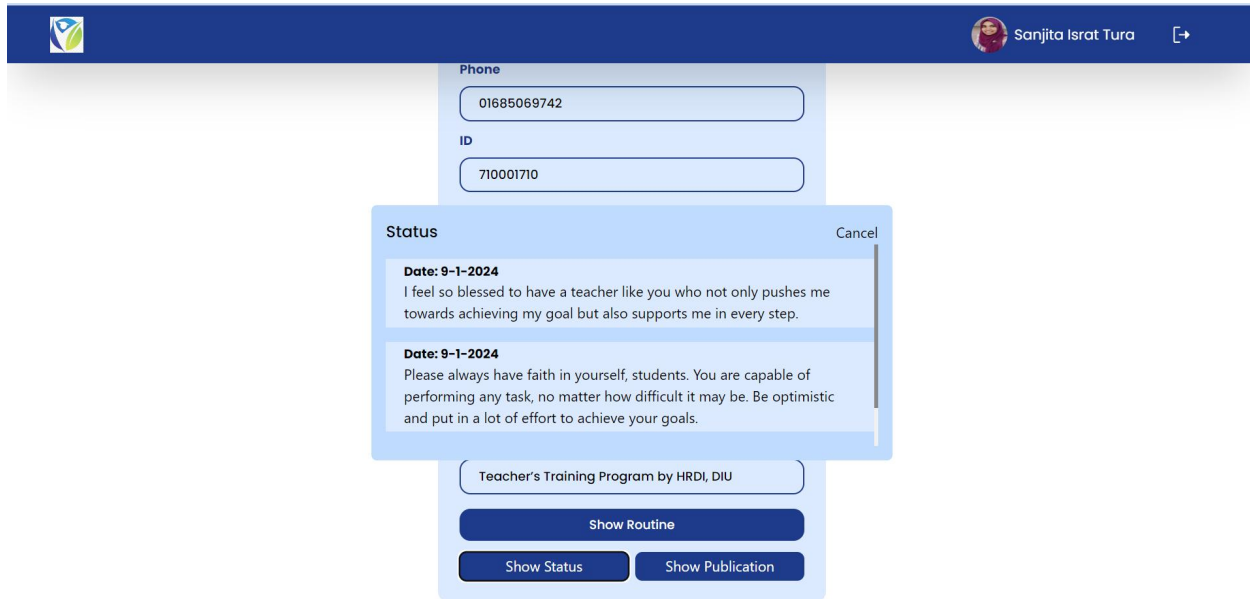
Fig 4.11: View Teacher's Status

Teacher's Interface:-

4.1.7 Teacher's Dashboard:
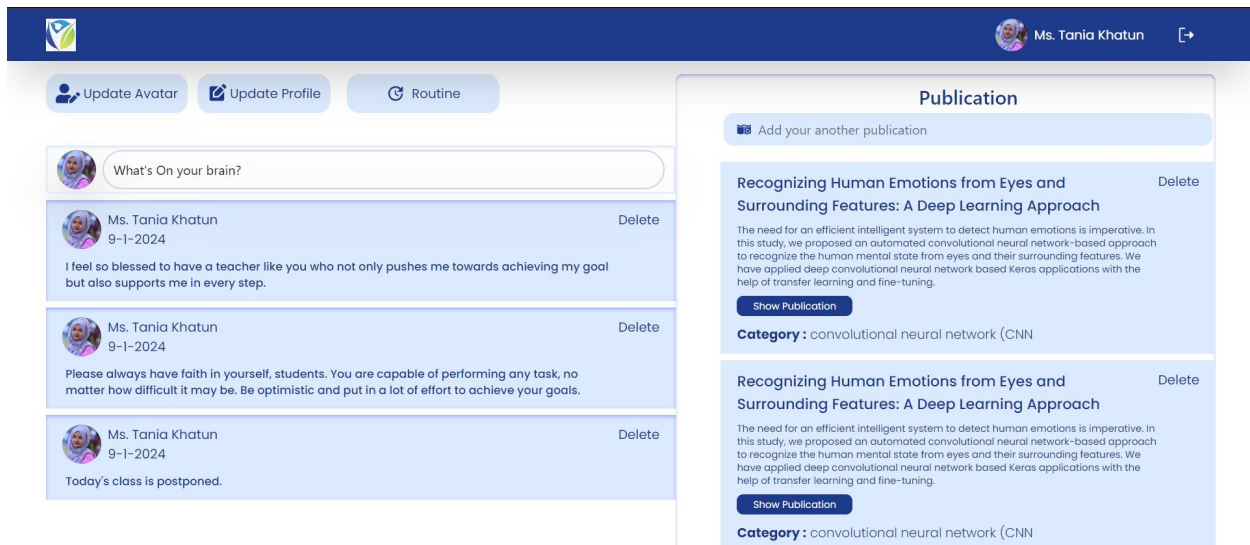
Fig 4.12: Teacher's Dashboard

4.1.8 writing/Post publish: Only educators can create a wide range of writing on this forum, including announcements, short stories, and ideas that can motivate pupils. They will get the opportunity to showcase their hidden abilities globally.
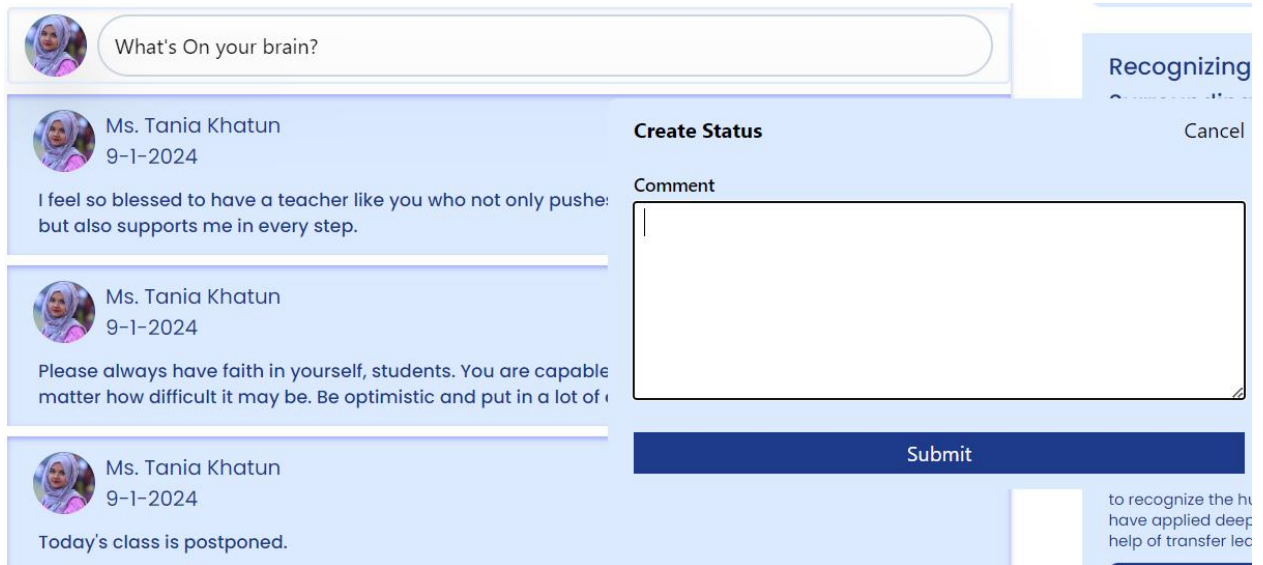
Fig 4.13: Create Status Interface

Interface of Admin-

4.1.9 Dashboard of Admin:

Fig 4.14: Dashboard of Admin

4.1.10 Create Routine:

Fig 4.15: Create Routine

4.1.11 Set Previous Question:

Fig 4.16: Set Previous Question

4.1.12 Add student's Data:

Fig 4.17: Add Student's data

4.1.13 Add Teacher's Data:

Fig 4.18: Add Teacher's Information

4.1.15 Add Teacher's Routine:
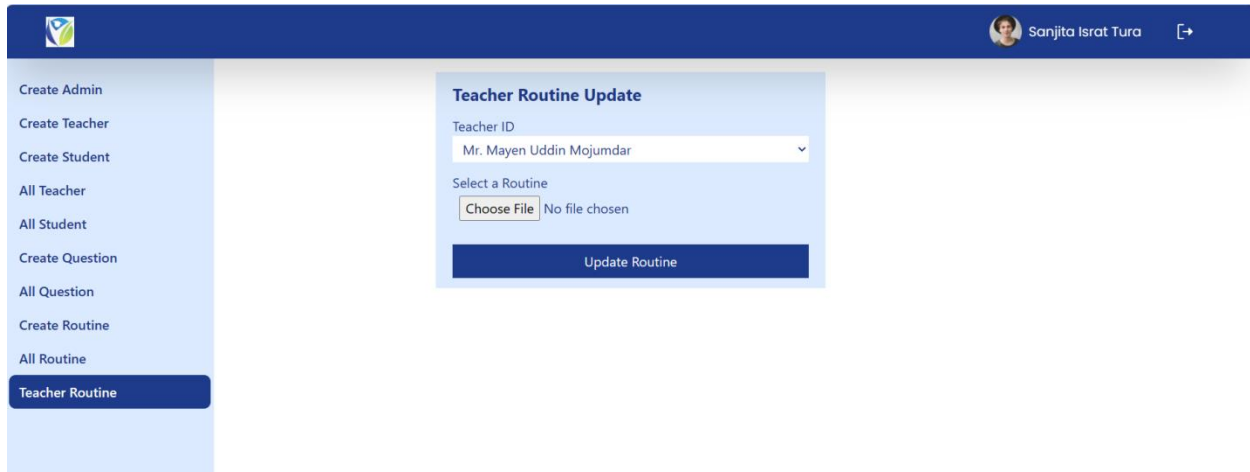
Fig 4.19: Update Teacher's Routine

4.1.18 View all Student's Routine:

Fig 4.20: View All Student's Routine

4.2 Back-end Design

The components of the back-end are a database, an application, and a server. After data entry, the application stores the data in a server-based database.

```
JS teacherRoutes.js          JS studentRoutes.js ●        JS adminRoutes.js

backend > routes > JS studentRoutes.js > ...
    1    const express = require("express");
    2    const router = express.Router();
    3    const { isAuthenticatedUser, authorizeRoles } = require("../middleware/auth");
    4    const {
    5      getAllTeacher,
    6      getAllQuestion,
    7      getAllRoutine,
    8      updateProfile,
    9      updatePassword,
   10      updateAvatar,
   11      getSingleTeacher,
   12      getStudentStatus,
   13    } = require("../controllers/studentControllers");
   14
   15    router
   16      .route("/get/teachers")
   17      .get(isAuthenticatedUser, authorizeRoles("Student"), getAllTeacher);
   18
   19    router
   20    .route("/get/teacher/:id")
   21    .get(isAuthenticatedUser, authorizeRoles("Student"), getSingleTeacher);
   22
   23    router
   24      .route("/get/questions")
   25      .get(isAuthenticatedUser, authorizeRoles("Student"), getAllQuestion);
   26
   27    router
   28      .route("/get/student/status")
   29      .get(isAuthenticatedUser, authorizeRoles("Student"), getStudentStatus);
   30
   31    router.route("/get/routines").get(getAllRoutine);
   32    router.route("/student/profile/update").put(isAuthenticatedUser, authorizeRoles("Student"), updateProfile);
   33    router.route("/student/password/update").put(isAuthenticatedUser, authorizeRoles("Student"), updatePassword);
   34    router.route("/student/avatar/update").put(isAuthenticatedUser, authorizeRoles("Student"), updateAvatar);
   35
   36    |
   37    module.exports = router;
```

Fig: 4.21 Student Panel

```
JS teacherRoutes.js ✕        JS studentRoutes.js ●        JS adminRoutes.js

backend > routes > JS teacherRoutes.js > ...
    1    const express = require("express");
    2    const router = express.Router();
    3    const { isAuthenticatedUser, authorizeRoles } = require("../middleware/auth");
    4    const { createStatus, createResearch, deleteStatus, deleteResearch, updateAvatar, updatePassword, updateProfile } = require("../controll
    5
    6    router
    7      .route("/create/status")
    8      .post(isAuthenticatedUser, authorizeRoles("Teacher"), createStatus);
    9
   10    router
   11      .route("/create/research")
   12      .post(isAuthenticatedUser, authorizeRoles("Teacher"), createResearch);
   13    router
   14      .route("/delete/status/:id")
   15      .delete(isAuthenticatedUser, authorizeRoles("Teacher"), deleteStatus);
   16    router
   17      .route("/delete/research/:id")
   18      .delete(isAuthenticatedUser, authorizeRoles("Teacher"), deleteResearch);
   19
   20    router.route("/teacher/profile/update").put(isAuthenticatedUser, authorizeRoles("Teacher"), updateProfile);
   21    router.route("/teacher/password/update").put(isAuthenticatedUser, authorizeRoles("Teacher"), updatePassword);
   22    router.route("/teacher/avatar/update").put(isAuthenticatedUser, authorizeRoles("Teacher"), updateAvatar);
   23    module.exports = router;
   24
```
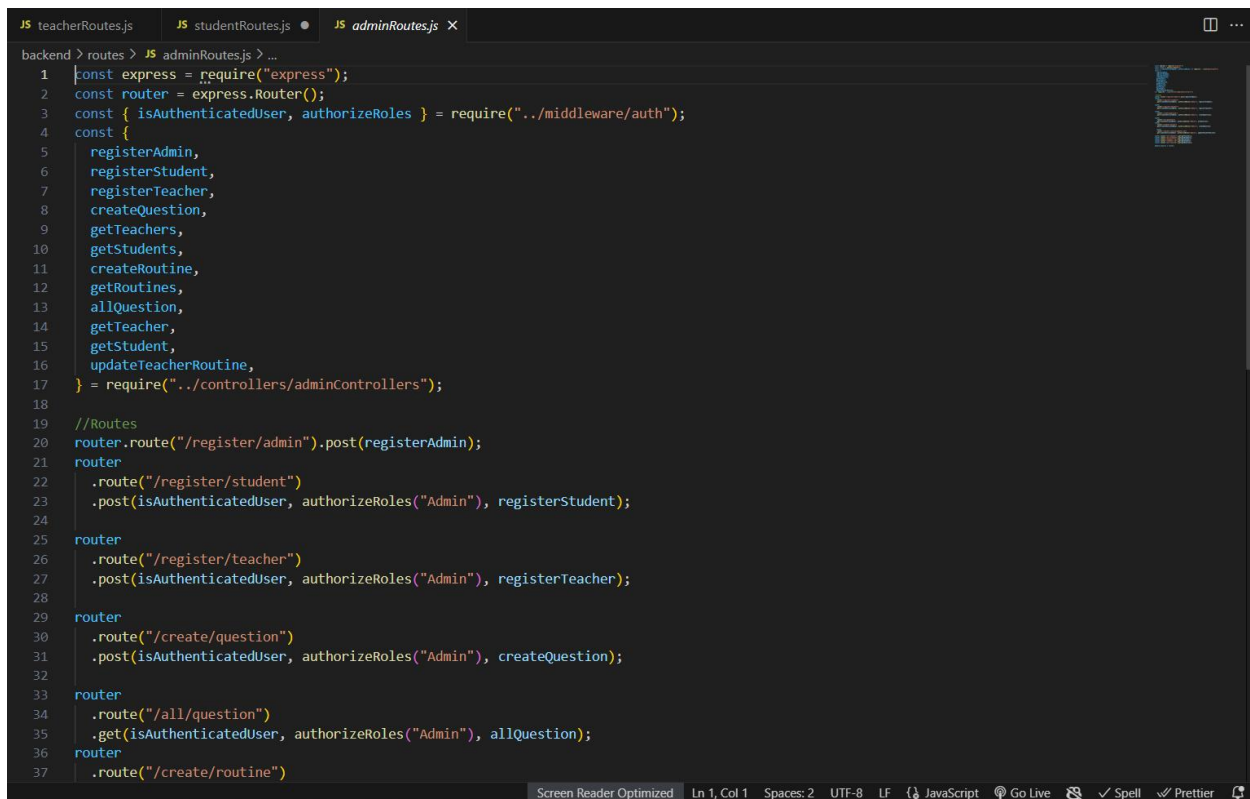
Fig 4.22: Teacher Panel

```
JS teacherRoutes.js        JS studentRoutes.js ●    JS adminRoutes.js ×

backend > routes > JS adminRoutes.js > ...
   1  const express = require("express");
   2  const router = express.Router();
   3  const { isAuthenticatedUser, authorizeRoles } = require("../middleware/auth");
   4  const {
   5    registerAdmin,
   6    registerStudent,
   7    registerTeacher,
   8    createQuestion,
   9    getTeachers,
  10    getStudents,
  11    createRoutine,
  12    getRoutines,
  13    allQuestion,
  14    getTeacher,
  15    getStudent,
  16    updateTeacherRoutine,
  17  } = require("../controllers/adminControllers");
  18
  19  //Routes
  20  router.route("/register/admin").post(registerAdmin);
  21  router
  22    .route("/register/student")
  23    .post(isAuthenticatedUser, authorizeRoles("Admin"), registerStudent);
  24
  25  router
  26    .route("/register/teacher")
  27    .post(isAuthenticatedUser, authorizeRoles("Admin"), registerTeacher);
  28
  29  router
  30    .route("/create/question")
  31    .post(isAuthenticatedUser, authorizeRoles("Admin"), createQuestion);
  32
  33  router
  34    .route("/all/question")
  35    .get(isAuthenticatedUser, authorizeRoles("Admin"), allQuestion);
  36  router
  37    .route("/create/routine")
```

Fig 4.23: Admin Panel

4.3 Interaction Design and User Experience (UX)

I work carefully to make my program user interfaces (UI) as simple to use as possible so that any user can follow the full procedure. Navigating is now remarkably simple and quick, with a navigation drawer available for every job. By increasing interaction efficiency and intuitiveness, the streamlined user interface improves the user experience overall.

4.4 Implementation Requirement

1. Secure authentication solutions enhance system security by authorizing and verifying users.

2. To guarantee that the data entered into the system is accurate and consistent.

3. Use logging tools to keep an eye on system activities. This will improve security procedures and help with troubleshooting.

4. When transmitting and storing sensitive information, such user passwords, utilize the proper encryption techniques.

5. To find and fix any possible problems with the system, use thorough testing methods such as unit and integration testing.

6. Make plans for them to guarantee that the back-end architecture is scalable when user traffic and data volume rise in the future.

7. More re-usability and it considerably speeds up the development process.
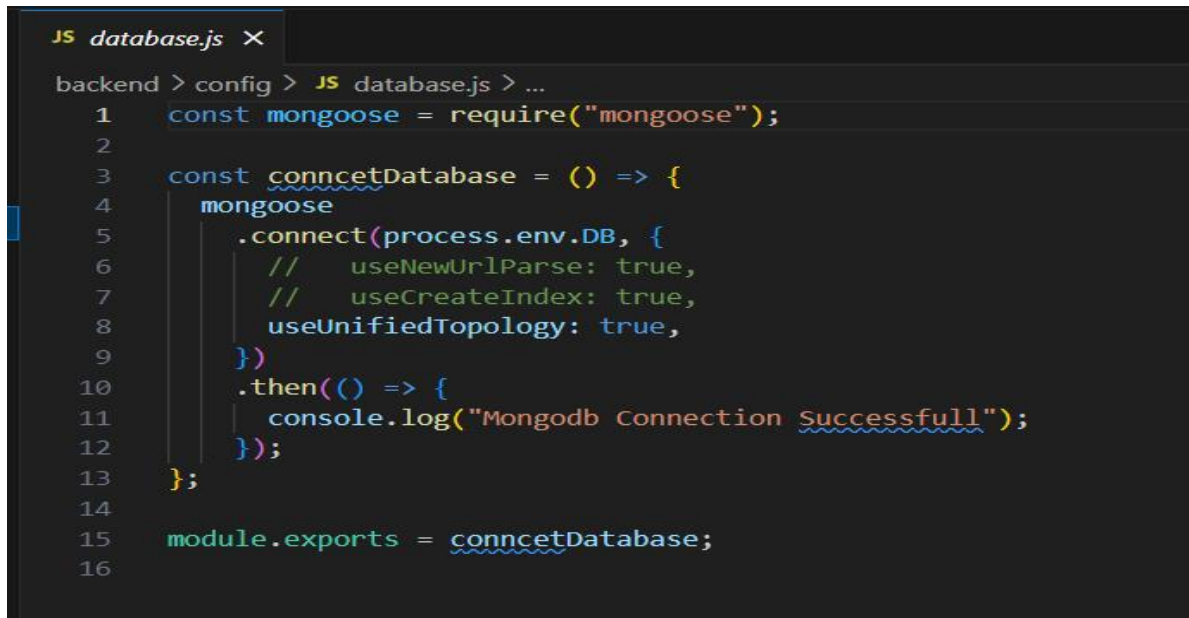
CHAPTER 5
TESTING AND IMPLEMENTATION

5.1 Implementation of Database

Data is one of the greatest important components of any endeavor. Making a database model especially for each unique category is my aim. I used MongoDB and Mongoose to construct a database management system in order to solve this. The open-source Mongoose graphical user interface for MongoDB NoSQL databases has a document-oriented data architecture. It is open on MongoDB local host server. With the help of this technique, I can efficiently handle data and support the numerous categories in my project.

Additionally, I generated the database name first, then the administrators, login for student/teacher/admin, student_info, teacher_info, routine, question, and publications. Then I create routine info, post_ info. After that, create every table name has also some attributes.

```
JS database.js  ✕
backend > config > JS database.js > ...
  1    const mongoose = require("mongoose");
  2
  3    const conncetDatabase = () => {
  4      mongoose
  5        .connect(process.env.DB, {
  6          //    useNewUrlParse: true,
  7          //    useCreateIndex: true,
  8          useUnifiedTopology: true,
  9        })
 10        .then(() => {
 11          console.log("Mongodb Connection Successfull");
 12        });
 13    };
 14
 15    module.exports = conncetDatabase;
 16
```
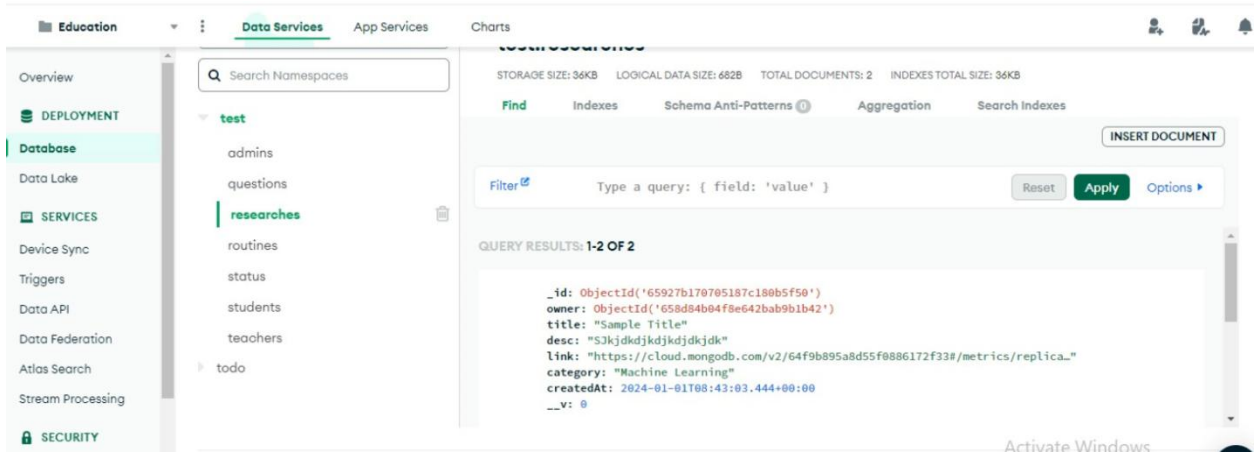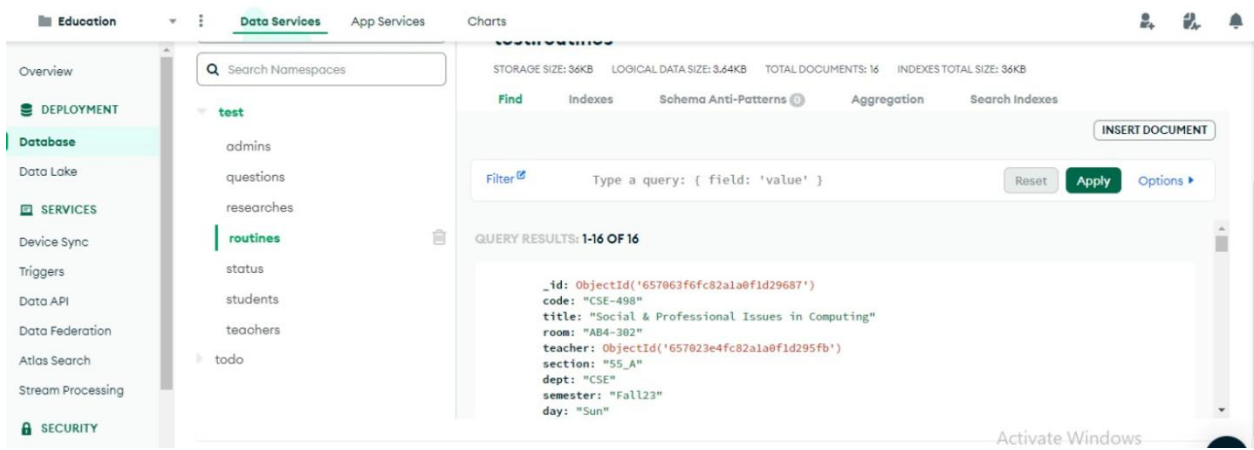
Fig 5.1: database.js

Fig 5.2: Researches

Fig 5.3: Routines
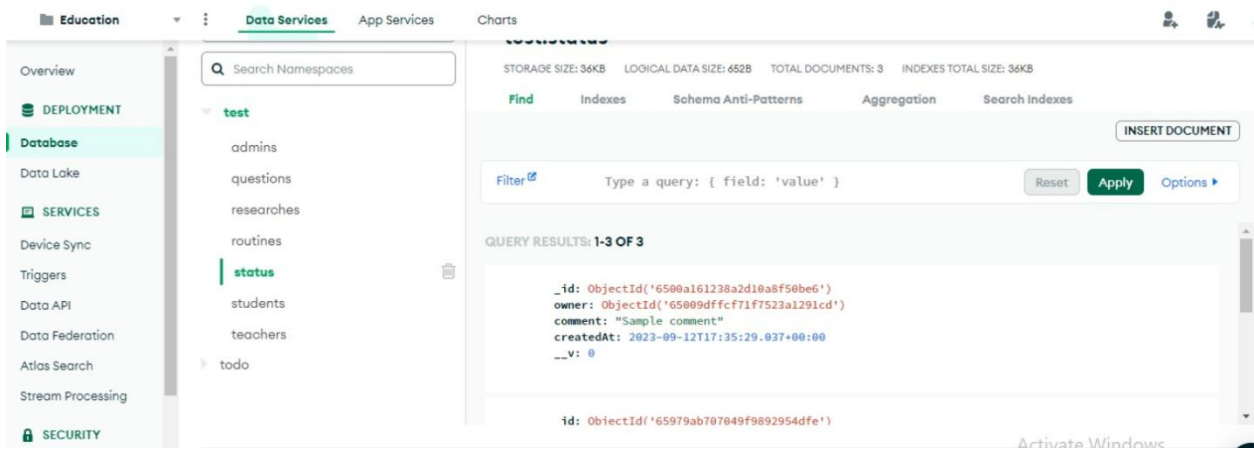
Fig 5.4: Status
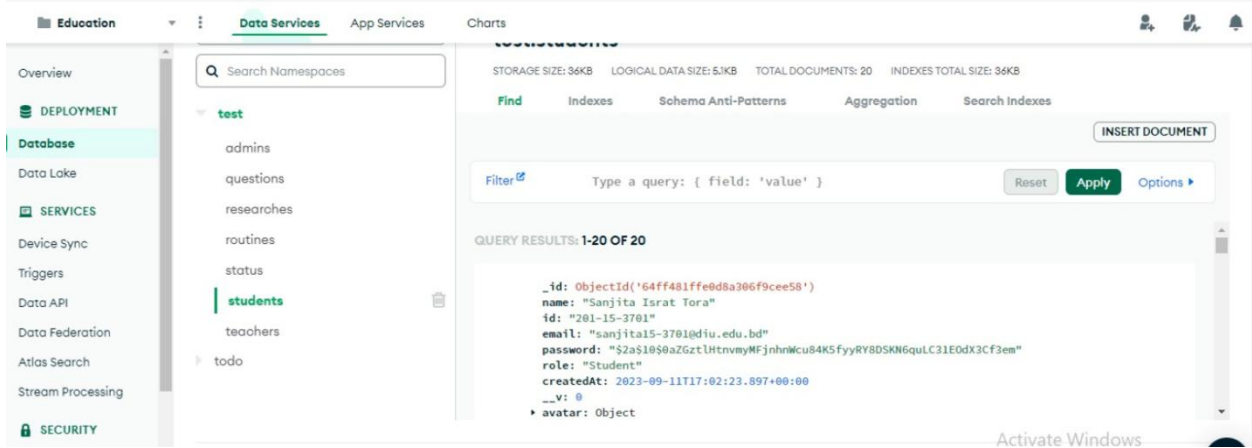
Fig 5.5: Students
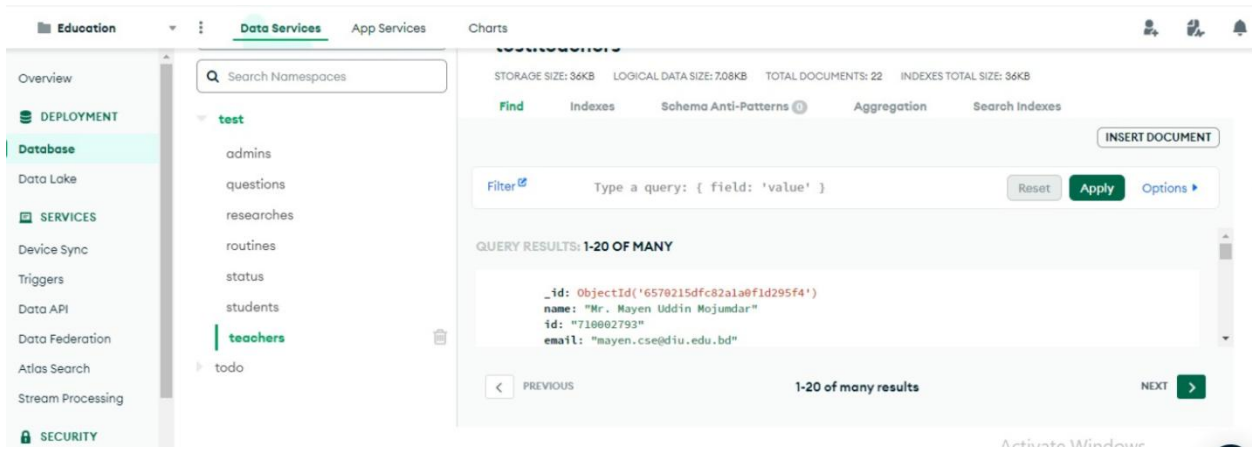
Fig 5.6: Teachers
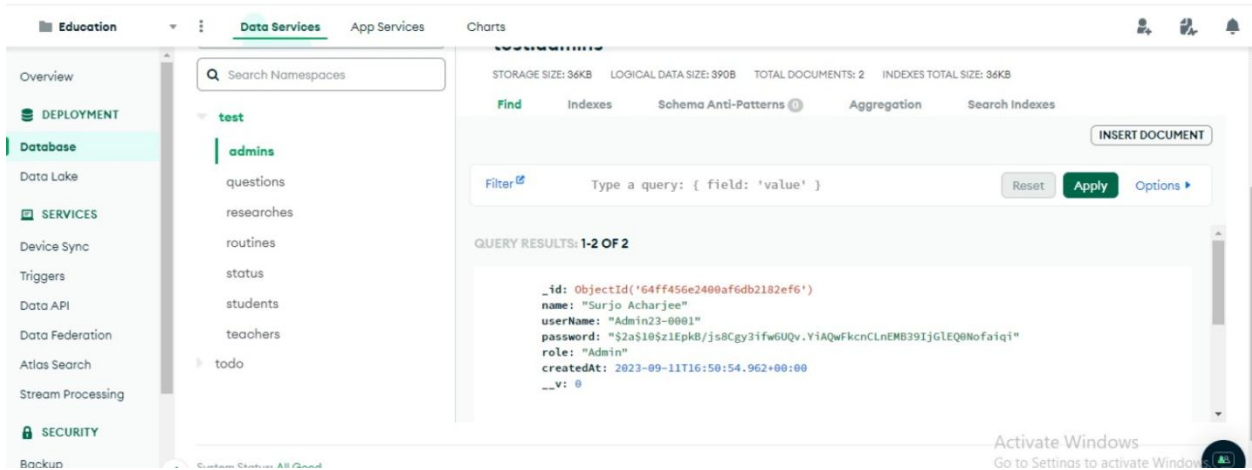
Fig 5.7: Admins
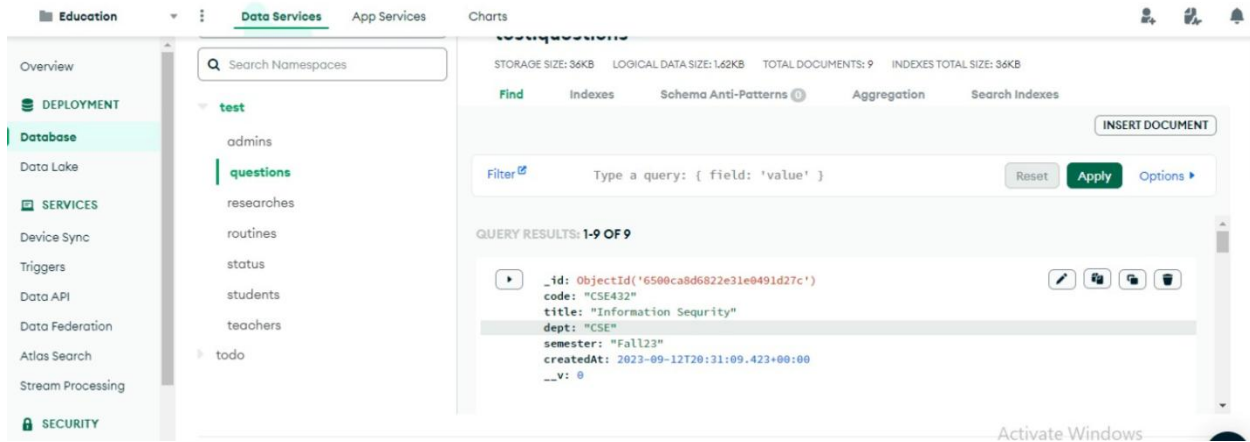
Fig 5.8: Questions

5.2 Implementation of Front-end Design

I use basic technologies like React, JavaScript, and Tailwind to develop websites that are easy to navigate and aesthetically pleasing. It should be intuitive to use and visually appealing to all visitors.

5.3 Testing Implementation

I'm testing the project to make sure everything works as it should. My goal is to ensure that users can use my website without any issues and that there are no problems or errors to report.

5.4 Result of Testing and Reports

Testing a website is similar to inspecting each component to ensure that it functions as it should. Functional testing looks at a number of components, including the user interface, database, API, and fundamental functionalities. Users can test it by using automated tools or by browsing around, giving the impression that it is easy to use.

CHAPTER 6

IMPACT ON SOCIETY, ENVIRONMENT, AND SUSTAINABILITY

6.1 Impact on Society

The impact of this website project on society could be quite substantial, influencing various aspects of education and communication within the academic community:

Improved Accessibility: The platform facilitates easy access to crucial information for both teachers and students, reducing the need for physical visits and saving time.

Efficient Communication: Minimizing unnecessary calls and interruptions enhances the quality of communication between teachers and students, fostering a more productive learning environment.

Streamlined Academic Processes: Access to department-wise routines and previous exam questions streamlines academic processes, aiding in better preparation and organization for students.

Time and Resource Efficiency: Students and teachers save time and resources by accessing information remotely, reducing the need for physical interactions and improving overall efficiency.

Reduced Uncertainty: Students experience less uncertainty regarding schedules, counseling hours, and academic materials, contributing to better planning and reduced stress.

Improved Teacher-Student Relations: Minimizing disruptive calls and providing transparent information about teachers' availability cultivates better teacher-student relationships based on mutual respect for each other's time and responsibilities.

Empowerment: Students feel empowered with easy access to information, promoting a sense of independence and responsibility for their education.

It sets a foundation for embracing technology to improve educational experiences, benefiting both students and educators while fostering a more technologically adept and efficient society.

6.2 Impact on Environment

The website project can have various impacts on the environment, both directly and indirectly:

Reduced Paper Consumption: By providing digital access to routines, schedules, and academic materials, the website reduces the necessity for printing physical copies, thereby conserving paper and decreasing the demand for paper resources.

Energy Efficiency Consideration: Hosting and maintaining a website require server infrastructure. Ensuring these servers operate on energy-efficient principles or utilizing renewable energy sources can directly impact energy consumption and carbon footprint.

Minimized Commuting: Students and faculty often need to travel to access information or interact with the institution. A website that reduces the need for physical visits can lead to decreased transportation-related emissions.

Long-Term Impact: While immediate effects might seem minimal, the long-term implications of reduced paper consumption, minimized commuting, and energy-efficient digital infrastructure can cumulatively contribute to environmental conservation.

In summary, the website project's environmental impact lies in its ability to reduce paper usage, minimize transportation-related emissions, and indirectly promote the adoption of sustainable digital practices within educational institutions and potentially influence broader societal approaches towards sustainability.

6.3 Ethical Aspects

The ethical aspects associated with a website project in an educational context involve various considerations:

Data Protection: Ensuring stringent measures to safeguard the personal information of students and faculty is crucial. Implementing robust data encryption, secure login procedures, and permission-based access to information upholds ethical standards.

Consent and Transparency: Clearly articulating data usage policies, obtaining consent for data collection, and providing transparent information about how data is utilized on the platform are vital ethical considerations.

Equal Access to Information: Ensuring equal access to educational resources, irrespective of socioeconomic backgrounds or technological capabilities, aligns with ethical principles of fairness and equity.

Reliable Content in Accuracy and Integrity of Information: Providing accurate and updated information maintains the integrity of the educational platform and upholds ethical standards by preventing the dissemination of false or misleading data.

Respect for Privacy in Respectful Communication: Respecting the privacy of individuals, including students and teachers, by not sharing sensitive information without consent, demonstrates ethical communication practices.

Professional Conduct: Encouraging respectful and professional interactions among users-teachers, students, and administrators fosters a positive and ethical online environment.

User Control in User Empowerment: Providing users with control over their data, including the ability to manage privacy settings and delete personal information, aligns with ethical principles of user empowerment and autonomy.

6.4 Sustainability Plan

The impact of a website project on sustainability encompasses several aspects:

Reduced Paper Consumption in Resource Efficiency: By offering digital access to schedules, routines, and academic materials, the project decreases the reliance on paper resources, contributing to conservation efforts.

Energy Conservation in Operational Efficiency: Utilizing energy-efficient servers and systems for hosting the website can reduce energy consumption, aligning with sustainability goals by minimizing the project's carbon footprint.

Remote Accessibility: Enabling remote access to educational resources diminishes the need for physical travel, supporting sustainability by reducing commuting-related environmental impact.

Scalability and Adaptability in Long-Term Viability: A well-designed website can evolve and scale efficiently, accommodating growth without significant additional resource demands, and promoting long-term sustainability in managing educational resources.

Promotion of Sustainable Practices: By showcasing the benefits of digital tools for education, the project sets an example for the adoption of sustainable practices in educational institutions, potentially influencing broader societal shifts towards sustainability.

Embracing Technological Solutions in Educational Impact: Promoting technology as a tool for education fosters a mindset of innovation and adaptability, encouraging future endeavors to integrate sustainable technological solutions.

Encouraging Digital Literacy: By advocating digital access to educational resources, the project indirectly fosters digital literacy.

Indirect Environmental Benefits in Environmental Consciousness: While the direct impact might not seem substantial, the reduction in paper consumption, minimized commuting, and energy-efficient practices contribute positively to environmental conservation efforts.

Cultural Shift towards Sustainability: By integrating sustainable digital practices into educational norms, the project contributes to a cultural shift towards embracing sustainable technologies and methodologies.

CHAPTER 7
CONCLUSION AND FUTURE SCOPE

7.1 Conclusion

To sum up, the implementation of a regular scraper on a website provides significant advantages. It improves accuracy, guarantees current content, and expedites information collection by automating the retrieval of routine data. Including extra features also improves user experience and engagement. Personalized suggestions, real-time updates, and user-generated content sections are examples of interactive features that can improve the usability and attractiveness of a website. By embracing innovation and user-centered design, the website can maintain its audience's relevance and value, which promotes long-term success and growth.

7.2 Scope for Further Developments

I plan to enhance all of features and incorporate a few new ones in the future. I desire this website to be easy to use –

    Availability and quality of the data used for analysis
    Implement a Android application
    AI-powered recommendations.

This project is absolutely essential for us. Because in a word it is effective to avoid physical stress and reduce the time of looking for a teacher. Then routine, counseling hours, and previous questions can be seen in one spot. It is a benefit. Not only the student will benefit but also the teacher will benefit. So, I believe that this project is crucial for us.

REFERENCES:

[1] A. Nehal, M. Afsara, T. Misha, and Dhaka, "DESIGNE AND DEVELOPMENT OF A WEBSITE BASED APPLICATION FOR TOURIST AREA," 2022.

[2] Chung, Chih-Hung, Laura A. Pasquini, and Chang E. Koh. "Web-based learning management system considerations for higher education." *Learning and Performance Quarterly* 1, no. 4 (2013): 24-37.

[3] "DIU Routine Scrapper - Apps on Google Play," play.google.com, Jan. 2024.

[4] "DIU Student - Apps on Google Play," play.google.com, Nov. 2023.

[5] "DIU Question Bank - Apps on Google Play," play.google.com, Sep. 2023.

[6] "IB Questionbank," questionbank.ibo.org, 2022.

[7] "DIU - Daffodil International University," faculty.daffodilvarsity.edu.bd.

P. Brusilovsky, J. Eklund, and E. Schwarz, "Web-based education for all: a tool for development adaptive courseware," Computer Networks and ISDN Systems, vol. 30, no. 1–7, pp. 291–300, Apr. 1998.

[8] Devedzic, Vladan B. "Key issues in next-generation web-based education." *IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews)* 33, no. 3 (2003): 339-349.

[9] Anido-Rifon, Luis, M. J. Fernández-Iglesias, M. Llamas-Nistal, M. Caeiro-Rodriguez, J. Santos-Gago, and J. S. Rodríguez-Estévez. "A component model for standardized web-based education." *Journal on Educational Resources in Computing (JERIC)* 1, no. 2es (2001): 1-es.

[11] Devedzic, Vladan. "Education and the semantic web." *International Journal of Artificial Intelligence in Education* 14, no. 2 (2004): 165-191.

[12] Chen, Hsi-mei, Cris Yu, and Cheng-sian Chang. "E-Homebook System: A web-based interactive education interface." *Computers & Education* 49, no. 2 (2007): 160-175.

Moreno-Ger, Pablo, Javier Torrente, Julián Bustamante, Carmen Fernández-Galaz, Baltasar Fernández-Manjón, and María Dolores Comas-Rengifo. "Application of a low-cost web-based simulation to improve students' practical skills in medical education." *International journal of medical informatics* 79, no. 6 (2010): 459-467.

[13] Brusilovsky, Peter. "Adaptive and intelligent technologies for web-based education." *technology* 2 (1999): 1.

[14] Zajaczek, J. E. W., F. Götz, T. Kupka, M. Behrends, B. Haubitz, F. Donnerstag, T. Rodt, G. F. Walter, H. K. Matthies, and H. Becker. "eLearning in education and advanced training in neuroradiology: introduction of a web-based teaching and learning application." *Neuroradiology* 48 (2006): 640-646.

[15] M. Ali and Dhaka, " CO-SUPERVISED BY," 2022.

[16] M. J. Islam and Hossan, Md. Amzad, "Online System for Food Order and Delivery," *Daffodilvarsity.edu.bd*, 2022.

[17] H. Kabir, F. Ahmed, M. By, Afrin, and Dhaka, "A web application for Local job, Freelancing & outsourcing marketplace," 2021.

[18] Hadjerrouit, Said. "Developing web-based learning resources in school education: A user-centered approach." *Interdisciplinary Journal of E-Learning and Learning Objects* 6, no. 1 (2010): 115-135.

[19] I. Hasan, "Flutter Mobile Apps Development at Excel IT AI," *Daffodilvarsity.edu.bd*, 2022.

[20] J.-Y. Ahn, K.-S. Han, and B.-S. Han, "Web-based education: characteristics, problems, and some solutions," *International Journal of Innovation and Learning*, vol. 2, no. 3, p. 274, 2005, doi: https://doi.org/10.1504/ijil.2005.006370.

[21] L. Anido-Rifón, M. J. Fernández-Iglesias, M. Llamas-Nistal, M. Caeiro-Rodriguez, J. Santos-Gago, and J. S. Rodríguez-Estévez, "A component model for standardized web-based education," *Journal of Educational Resources in Computing*, vol. 1, no. 2es, pp. 1-es, Aug. 2001, doi: https://doi.org/10.1145/384055.384056.

Tura

Reality in Electrical Engineering Education: A
Review", IEEE Access, 2023
Publication

18	Submitted to University of Glamorgan Student Paper	<1%
19	Submitted to University of Greenwich Student Paper	<1%
20	Submitted to NCC Education Student Paper	<1%
21	Submitted to University of Huddersfield Student Paper	<1%
22	Submitted to National Institute of Education Student Paper	<1%
23	Submitted to University of Liberal Arts Bangladesh Student Paper	<1%
24	booksite.elsevier.com Internet Source	<1%
25	www2.stetson.edu Internet Source	<1%
26	Enrico Maria Aldorasi, Remo Pareschi, Francesco Salzano. "Chapter 30 CreatiChain: From Creation toMarket", Springer Science and Business Media LLC, 2024 Publication	<1%