ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANIZATION OF ISLAMIC
COOPERATION (OIC)
Gazipur-1704, Dhaka, Bangladesh

# CSE Automation System

(E-Learning Web Application)

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# CERTIFICATION

This is to certify that "**CSE Automation System**" is the outcome of hard work of **Abdel Karim Mounkambou** and **Hayatou Amadou** as their final year project of Bachelor of Science in Technical Education (BScTE) in computer science and engineering at the Islamic university of technology (IUT) Dhaka, Bangladesh.

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We would like to convey our deep gratitude and appreciation to our friends and family members who supported us morally, financially, by prayer or by providing us constant feedback which helped towards the successful completion of our project.

# Abstract

The COVID-19 pandemic has affected educational systems worldwide, leading to the near-total closures of schools, universities and colleges.
Most governments decided to temporarily close educational institutions in an attempt to reduce the spread of COVID-19. As of 12 January 2021, approximately 825 million learners are currently affected due to school closures in response to the pandemic. According to UNICEF monitoring, 23 countries are currently implementing nationwide closures and 40 are implementing local closures, impacting about 47% of the world's student population. Based on these facts we intended to provide a web platform on which teachers and students can interact without a risk to attract COVID-19.
We used a model view controller (MVC) architecture and various web technologies such as html, CSS and JavaScript for front-end, and php for back-end using Laravel framework. The use of this platform can make significant contribution in helping, students to engage, to plan, execute, and assess a specific learning process.

# DEDICATION

This project is wholeheartedly dedicated to our beloved parents, who have spared effort to ensure our success, and have been continually providing us their moral, spiritual and financial support.

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# Chapter 1 – Introduction

## 1-1 Overview

A learning management system is a software application for the administration, documentation, tracking, reporting, automation and delivery of educational courses, training programs, or learning and development programs. The learning management system concept emerged directly from e-Learning. The main objective of the LMS is to host and track online learning. Providing a virtual hub where learners can access training resources, an LMS aims to make training accessible for remote learners and provide a central location for training across an institution or organization. CSE Automation System consists of different modules such as student, faculty, admin etc. Where our main purpose is to create a software, which will manage the working of these different modules.

In the following lines we will try to explain the architectures, various components, and various features of this system.

## 1-2 Problem Definition

Using manual system to manage the students which are records all information and, in the book, or paper was causing the job of the teachers becomes more troublesome. The CSE management has to handle records for many numbers of teachers and students and maintenance was difficult. Though it has used an information system, it was totally manual. Hence there is a need to upgrade the system with a computer-based information system.

## 1-3 Main objectives

- ❖ To reduce the paper work
- ❖ Eliminate manual processes
- ❖ Save significant staff time
- ❖ To reduce errors

# 1-4 System descriptions

We have three users in system:

- Admin: Can manage teachers and students, assign courses, manage access.
- Teacher: Can take attendance, enter marks, view statistic, upload material etc.
- Student: Can register to the courses, view marks, view attendance, view result etc.

# 1-5 Requirements

- The system should be user friendly and intuitive such that it can be understood and use by any student or teacher.
- Users should have full control on their accounts.
- The system should be responsive.
- The system should be secured and protect against attacks such as cross site request forgery and SQL injection.

# Chapter 2 – Diagrams

## 2-1 Architectural Diagram

The system is based on Model view controller.

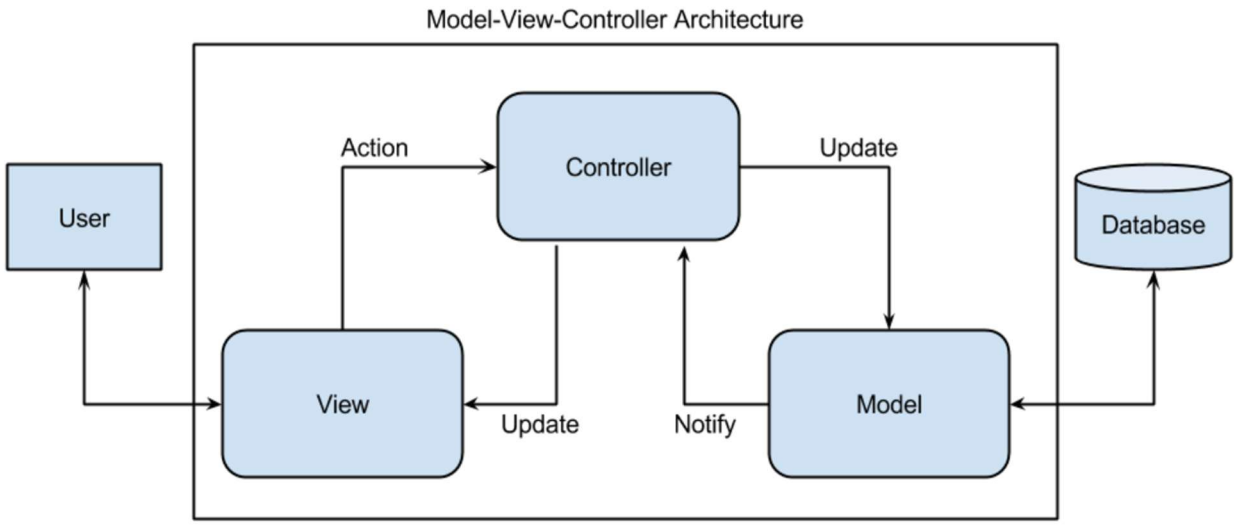



*Figure 1: Architectural Diagram*

### 2-1-1 The Model

Implemented using php, it interacts with all the system related data and entities. It connects to the database to provide data to the controller and the view.

### 2-1-2 The Controller

Implemented using php it represents all the business logic of the system and act as an intermediary between the model and the view.

### 2-1-3 The View

Implemented using HTML, CSS and JavaScript it is responsible for presentation and formatting of data sent to and from the controller or the model.

# 2-2 Modeling Diagram

## 2-2-1 Context Diagram

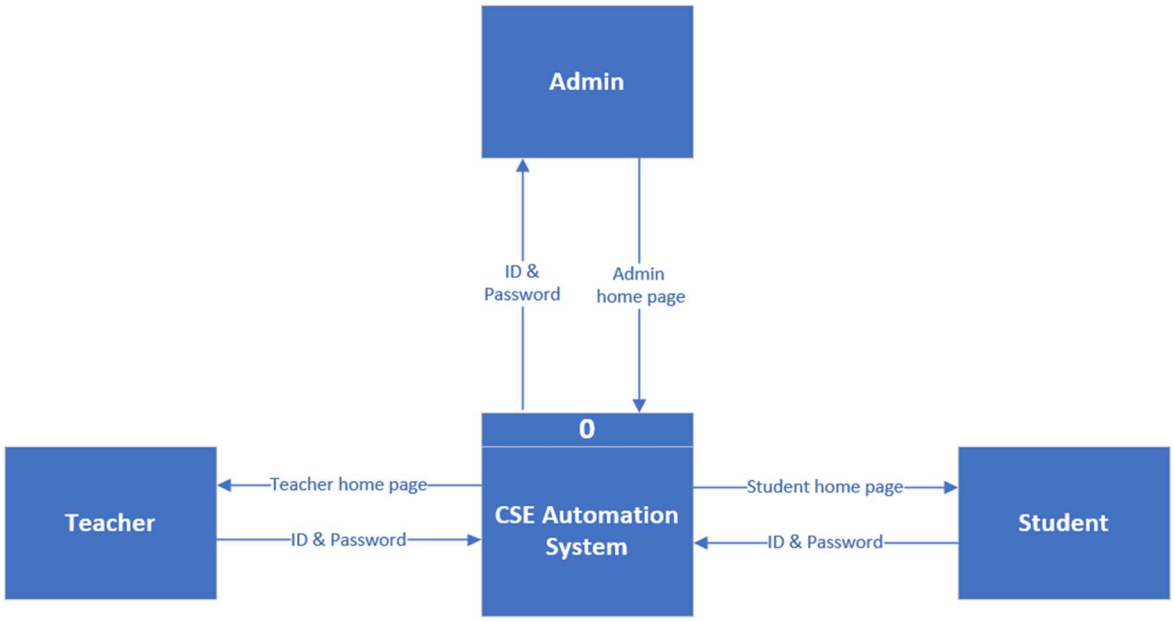



*Figure 2: Context Diagram*

## Description

The context diagram contains:

- ❖ The main process which is the system name (CSE Automation System).
- ❖ And three entities:
  - Administrator who monitor and manage the activity of the system.
  - Teacher who browse and do almost anything within a course, including adding or changing the activities and grading students.
  - Student will who browse and takes responsibility for what is learned and be accountable for the results of the learning process.

# 2-2-2 Diagram Zero

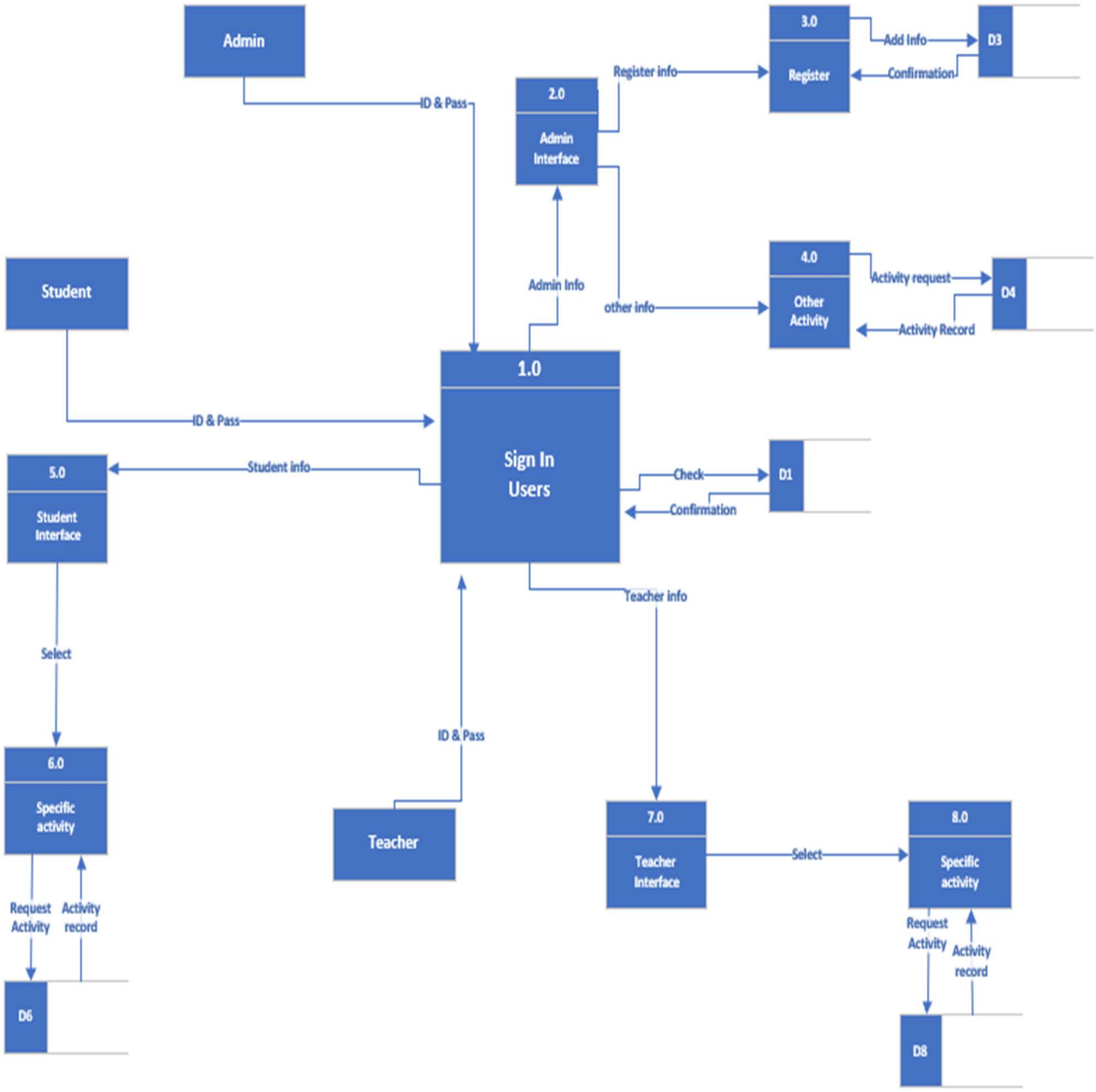



*Figure 3: Diagram 0*

# Description:

The diagram 0 is the expansion of the context diagram showing main process of the system:

❖ Eight (8) process:

- 1. Sign in user
- 2. Admin Interface
- 3. Register
- 4. Admin Other Activity
- 5. Student Interface
- 6. Student's Specific Activity
- 7. Teacher Interface
- 8. Teacher's Specific Activity

❖ Five (5) data store:

- D1- Authentication master
- D3- Student and Teacher master
- D4- Admin master
- D6- Student master
- D8- Teacher master

❖ Three (3) entities:

- Admin
- Student
- Teacher

# 2-2-3 Activity Diagram

In this diagram we show the flow of data when a user login into the system and make a change of an activity.

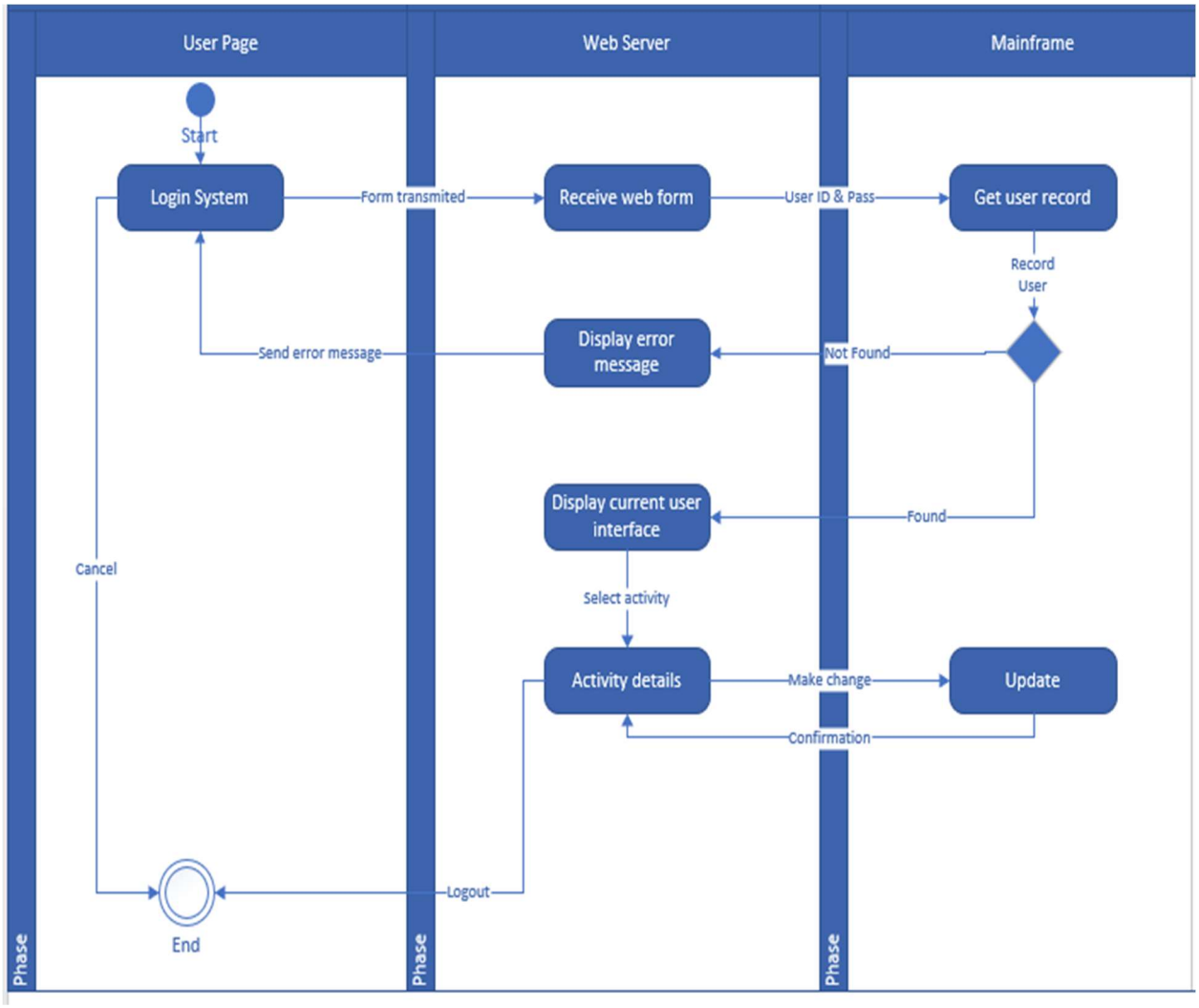



*Figure 4: Activity Diagram*

# 2-2-4 Entity Relationship Diagram (ER)

*Figure 5: ER Diagram*

# 2-2-5 Sequence Diagram

In this diagram we show the flow of data when a Student login into the system to see his result.

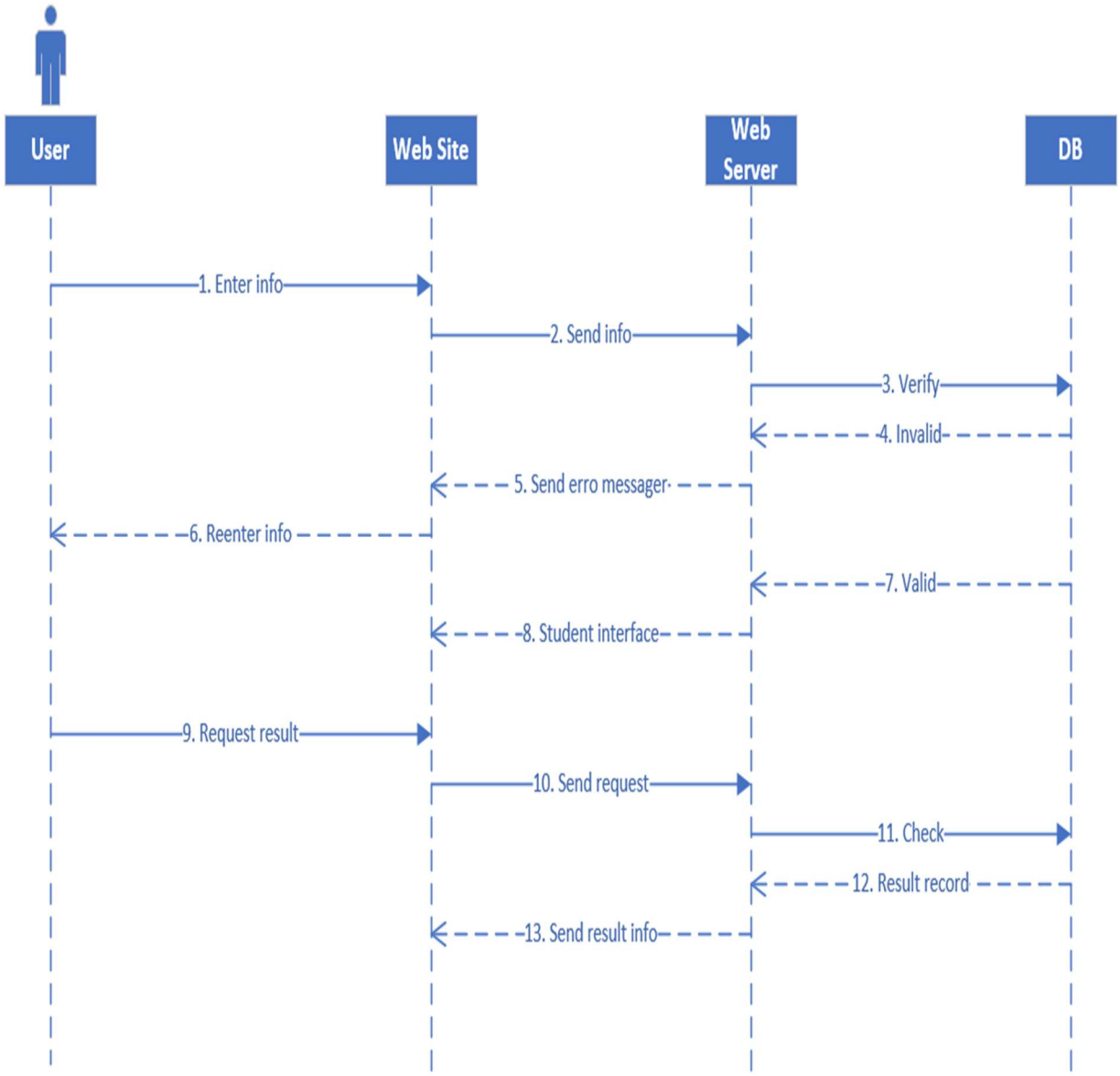



*Figure 6: Sequence Diagram*

# Chapter 3 Features

## 3-1 Admin Features

The administrator of the system can:

- ❖ Add and manage teacher
- ❖ Add and manage student
- ❖ Add and manage courses
- ❖ Manage access to some courses and results
- ❖ See attendances according to the percentages
- ❖ See the results according to the semester

## 3-2 Teacher's Features

- ❖ Upload materials
- ❖ Give attendance
- ❖ Give marks to students
- ❖ See the statistic of his specific course
- ❖ Post and comment on the Forum
- ❖ Send a message to a specific student or to all the students
- ❖ Manage his personal information

## 3-3 Student's Features

- ❖ Download materials
- ❖ See his attendance
- ❖ See his marks
- ❖ See his result
- ❖ Post and comment on the Forum
- ❖ Manage his personal information

## 3-4 Guest Features

- ❖ See all the information about CSE and all the courses available

# Chapter 4 -Technologies and Tools

## 4-1 Programming Languages

- Php 8.0.2 use to represent logic.

## 4-2 Scripting Languages

- Html 5, CSS3 and JavaScript used in front-end development to represent views.

## 4-3 Libraries

- Bootstrap 4.5.0 as CSS library
- jQuery 3.5.1 as JavaScript library

## 4-4 Framework

- Laravel 6.20.2: Laravel is a server-side PHP framework using the model view controller (MVC) architecture.

## 4-5 Web Server

- Xampp 7.6.2

## 4-6 Database Server

- MySQL

# Chapter 5 - User Interface Design

## 5-1 Home Page

From the home page a user can have all the information about the department and the achievements.

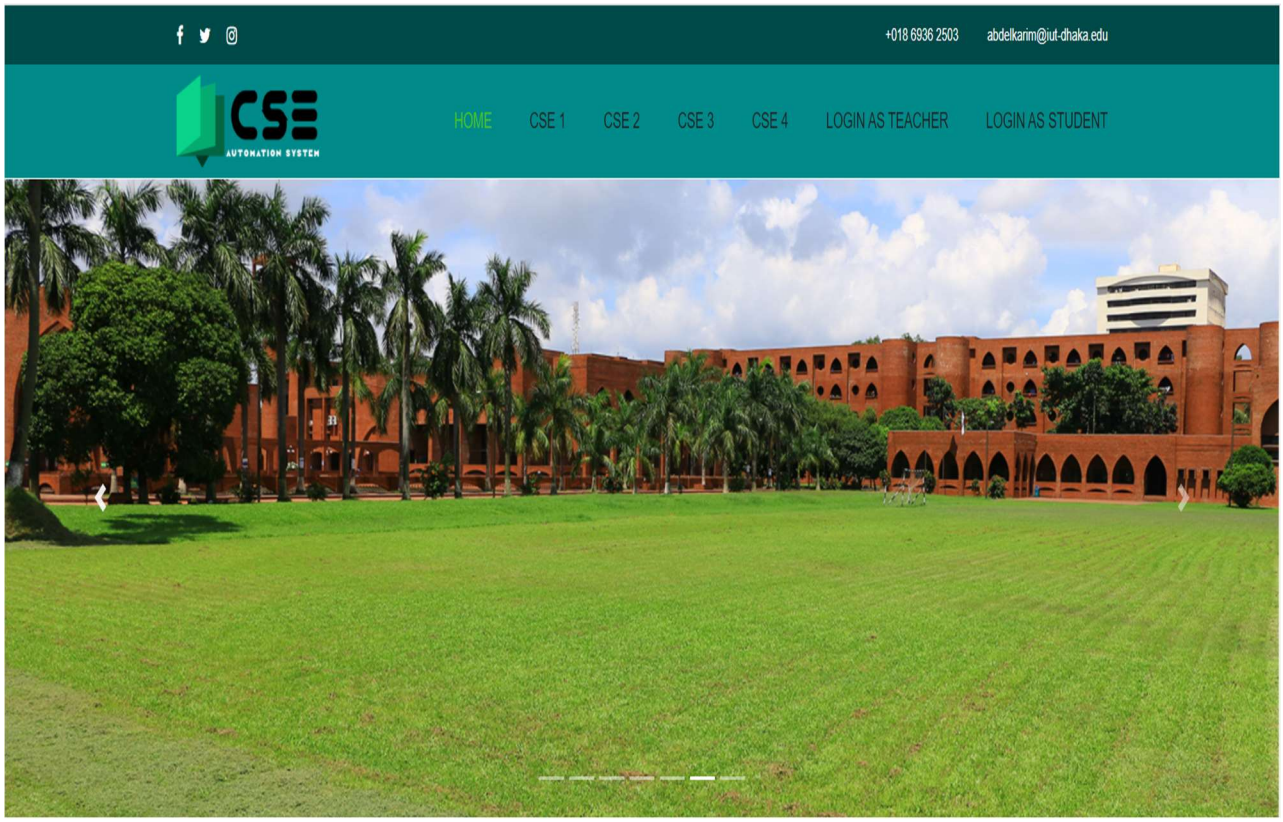



*Figure 7: Home Page Background image*

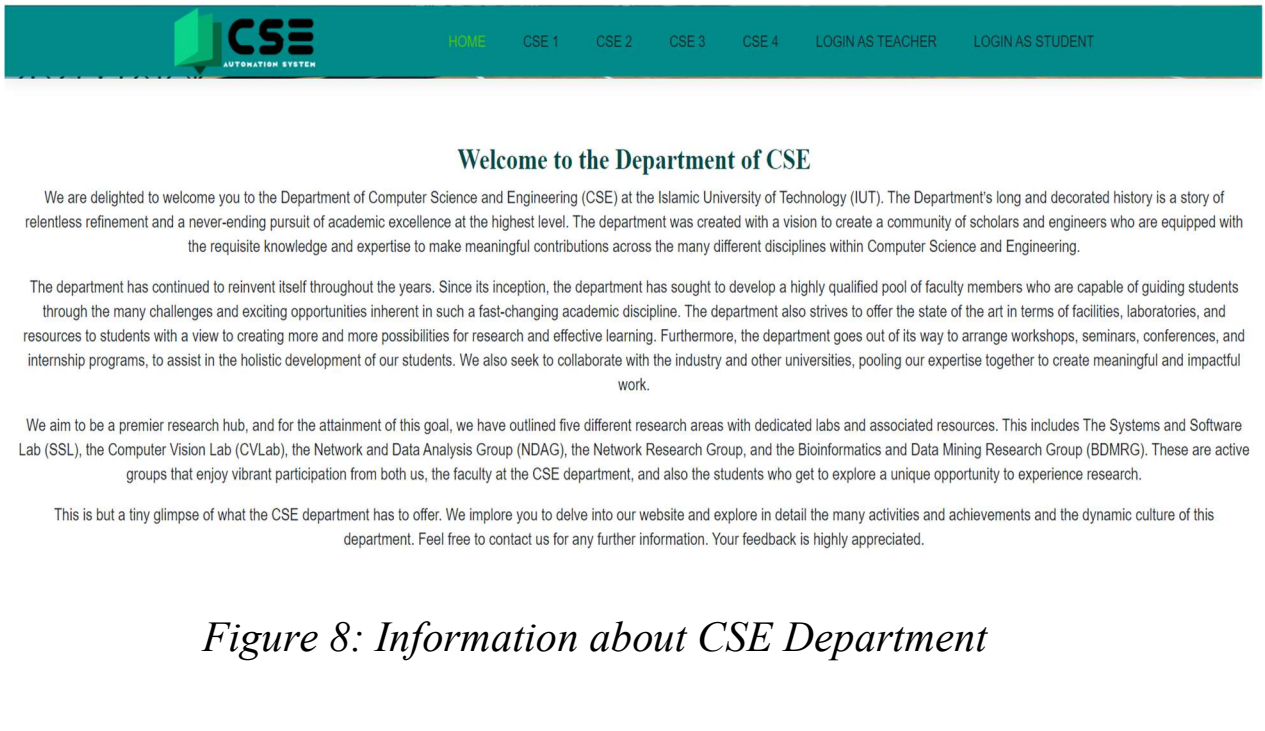



*Figure 8: Information about CSE Department*

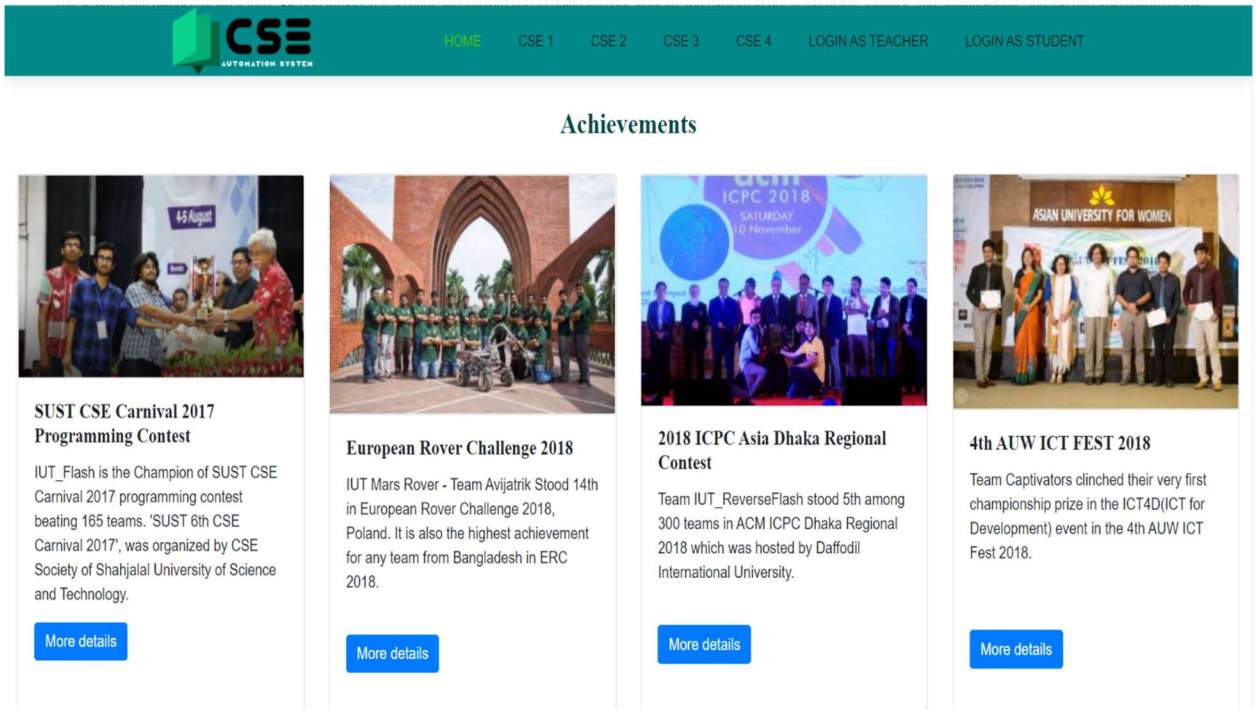
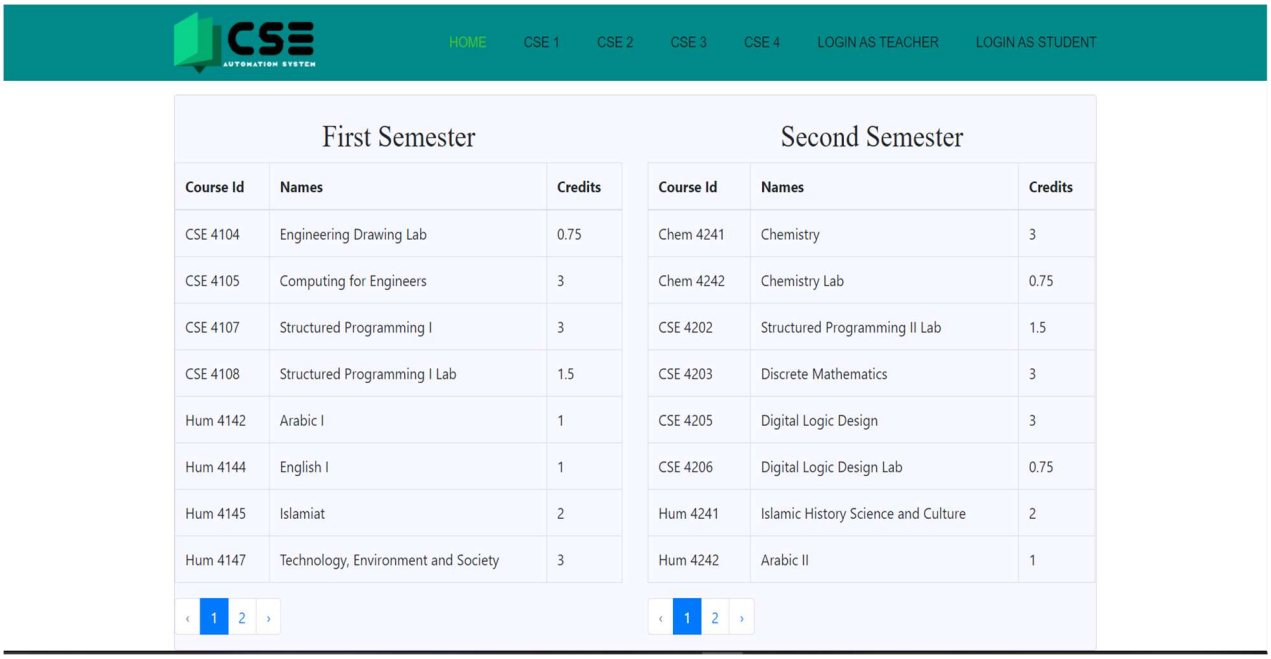



*Figure 9: Information about the Achievements*

# 5-2 Course Details




First Semester

| Course Id | Names | Credits |
|---|---|---|
| CSE 4104 | Engineering Drawing Lab | 0.75 |
| CSE 4105 | Computing for Engineers | 3 |
| CSE 4107 | Structured Programming I | 3 |
| CSE 4108 | Structured Programming I Lab | 1.5 |
| Hum 4142 | Arabic I | 1 |
| Hum 4144 | English I | 1 |
| Hum 4145 | Islamiat | 2 |
| Hum 4147 | Technology, Environment and Society | 3 |

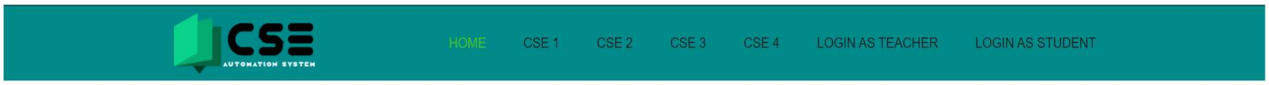
‹ 1 2 ›

Second Semester

| Course Id | Names | Credits |
|---|---|---|
| Chem 4241 | Chemistry | 3 |
| Chem 4242 | Chemistry Lab | 0.75 |
| CSE 4202 | Structured Programming II Lab | 1.5 |
| CSE 4203 | Discrete Mathematics | 3 |
| CSE 4205 | Digital Logic Design | 3 |
| CSE 4206 | Digital Logic Design Lab | 0.75 |
| Hum 4241 | Islamic History Science and Culture | 2 |
| Hum 4242 | Arabic II | 1 |

‹ 1 2 ›

*Figure 10: First and Second Semester Courses details*




Third Semester

| Course Id | Names | Credits |
|---|---|---|
| CSE 4301 | Object Oriented Programming | 3 |
| CSE 4302 | Object Oriented Programming Lab | 1.5 |
| CSE 4303 | Data Structures | 3 |
| CSE 4304 | Data Structures Lab | 1.5 |
| CSE 4305 | Computer Organization and Architecture | 3 |
| CSE 4307 | Database Management Systems | 3 |
| CSE 4308 | Database Management Systems Lab | 1.5 |
| EEE 4383 | Electronic Devices and Circuits | 3 |

‹ 1 2 ›

Fourth Semester

| Course Id | Names | Credits |
|---|---|---|
| CSE 4402 | Visual Programming Lab | 1.5 |
| CSE 4403 | Algorithms | 3 |
| CSE 4404 | Algorithms Lab | 1 |
| CSE 4405 | Data and Telecommunications | 4 |
| CSE 4407 | System Analysis and Design | 2 |
| CSE 4408 | System Analysis and Design Lab | 1 |
| EEE 4483 | Digital Electronics and Pulse Techniques | 3 |
| EEE 4484 | Digital Electronics and Pulse Techniques Lab | 0.75 |

‹ 1 2 ›

*Figure 11: Third and Fourth Semester Course details*

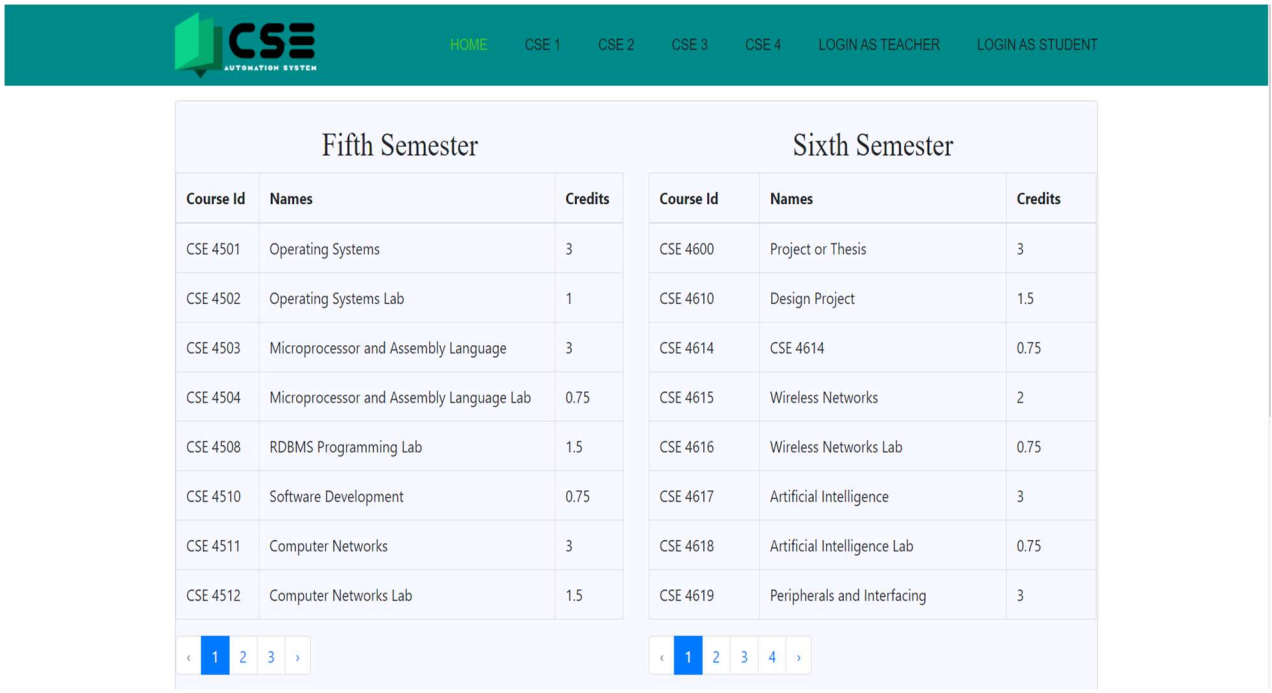



*Figure 12: Fifth and Sixth Semester Course details*

*Figure 13: Seventh and Eighth Semester Course details*

# 5-3 Admin Panel

## 5-3-1 Admin Login

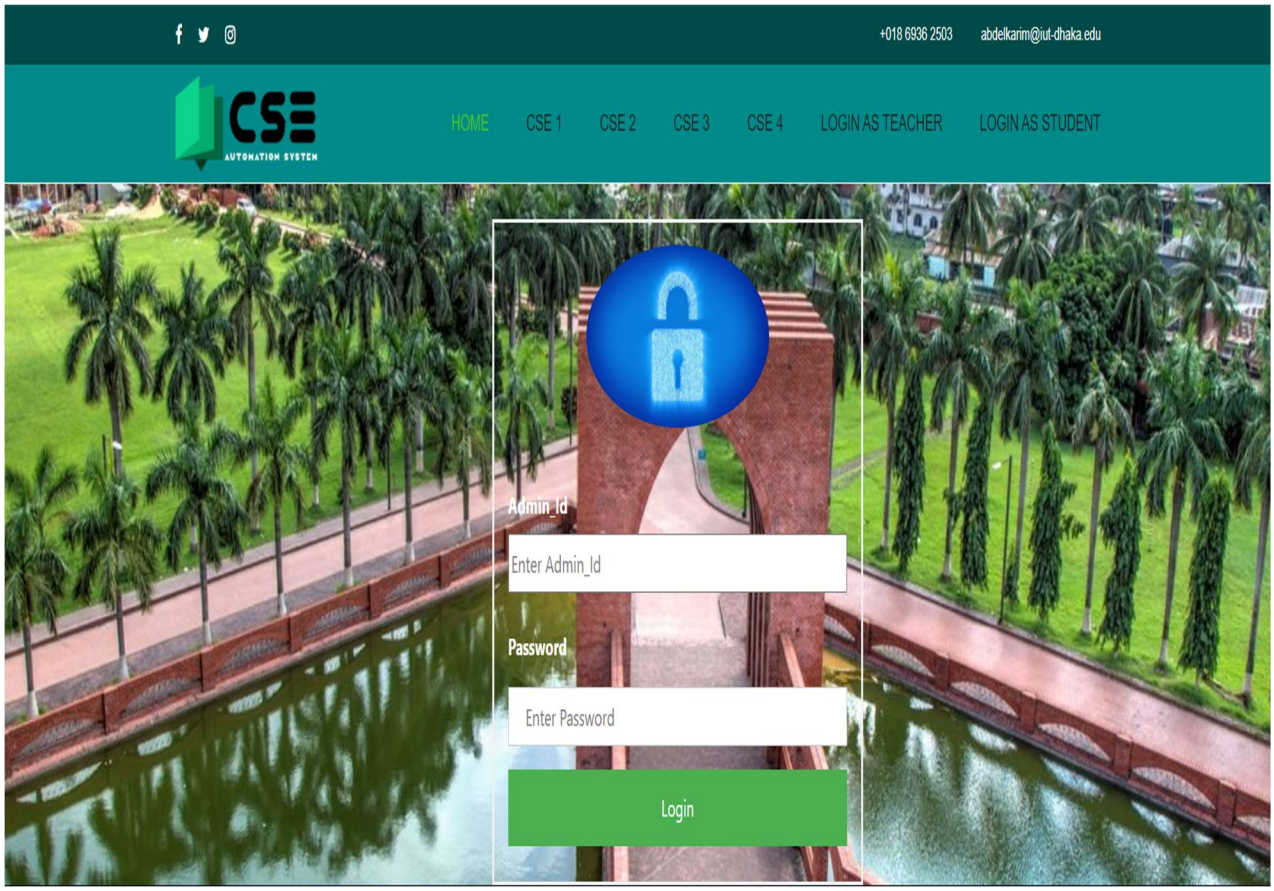



*Figure 14: Admin Login Page*

# 5-3-2 Add and Manage Student

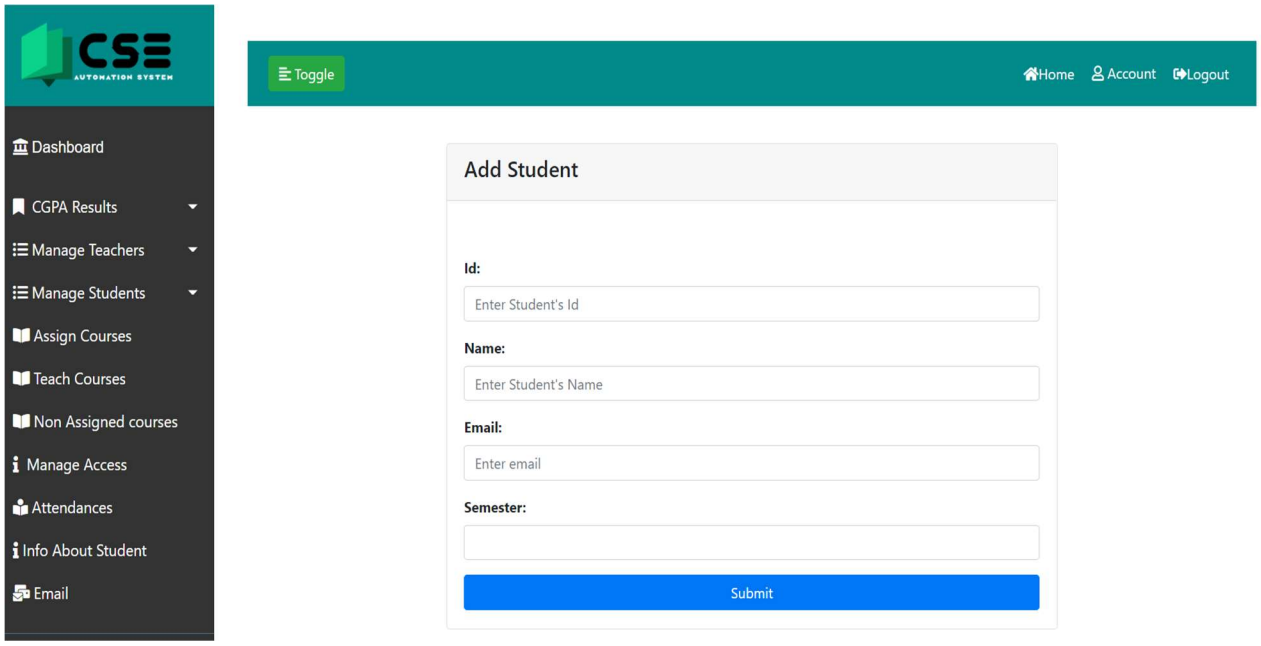



*Figure 15: Add new Student*

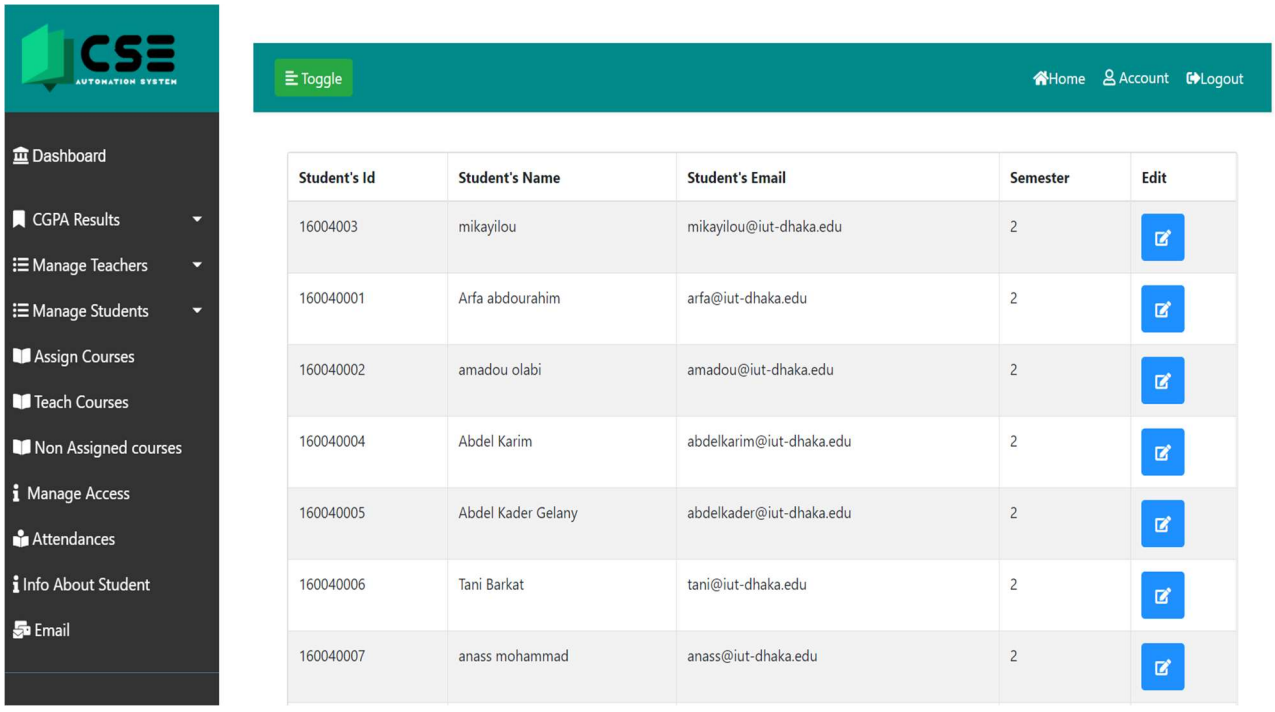



*Figure 16: Manage student*

# 5-3-3 Assign course to the teacher

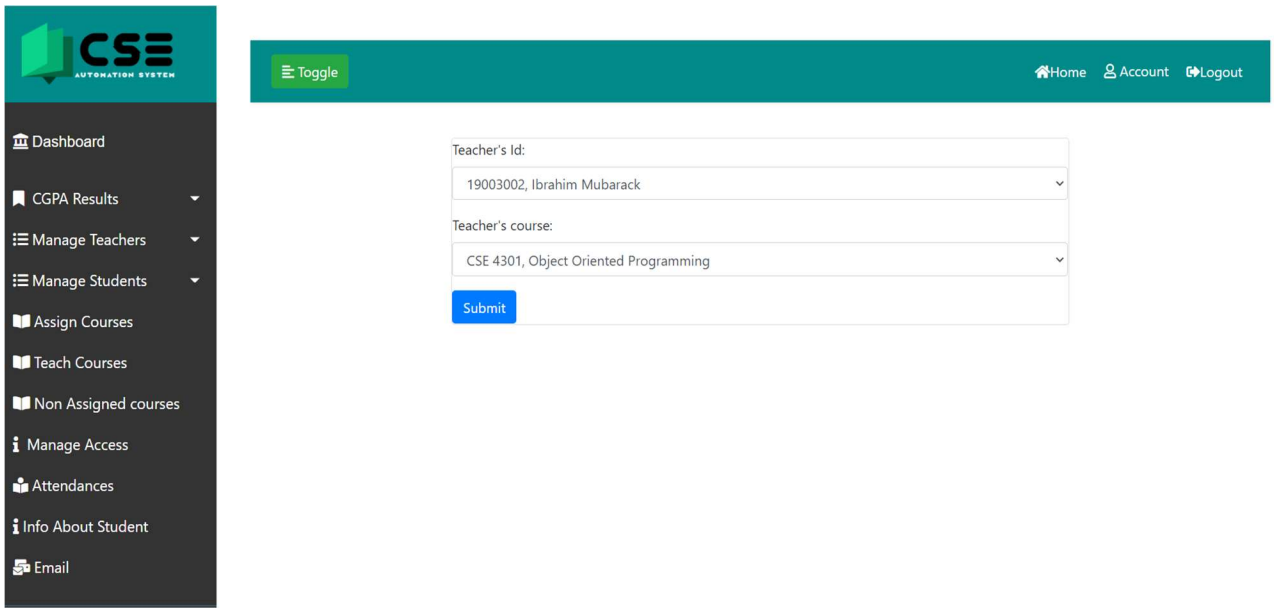



*Figure 17: Assign course Page*

# 5-3-4 Teacher's course

The Admin can manage teacher's course by removing a course to a specific teacher.

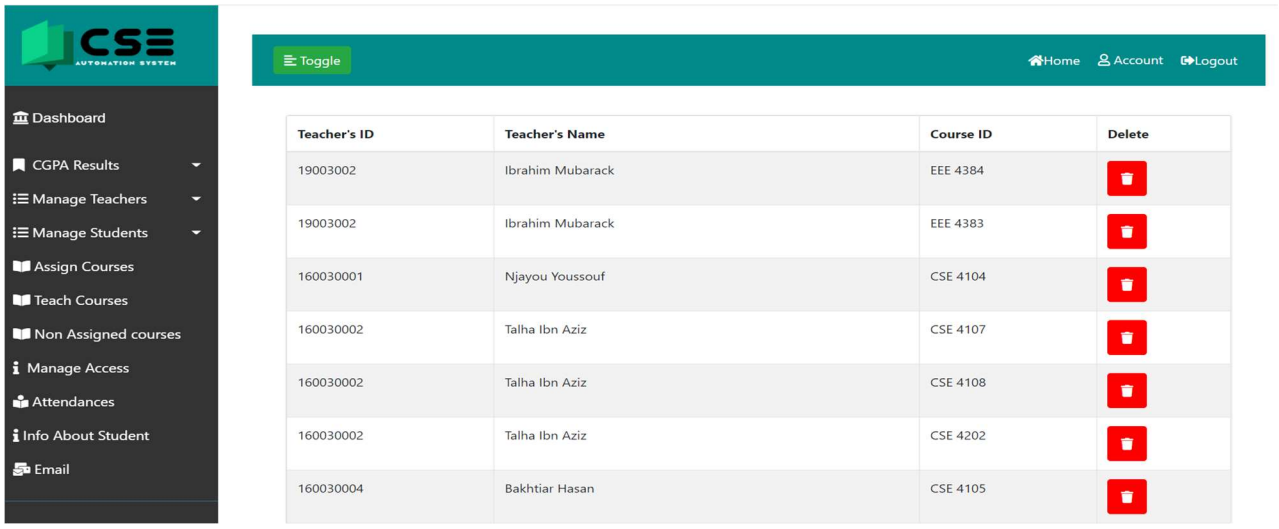



*Figure 18: Teacher's Curse Page*

# 5-3-5 Manage access

Admin can manage course by blocking the access to the attendance, the result, or to a teacher to give marks.

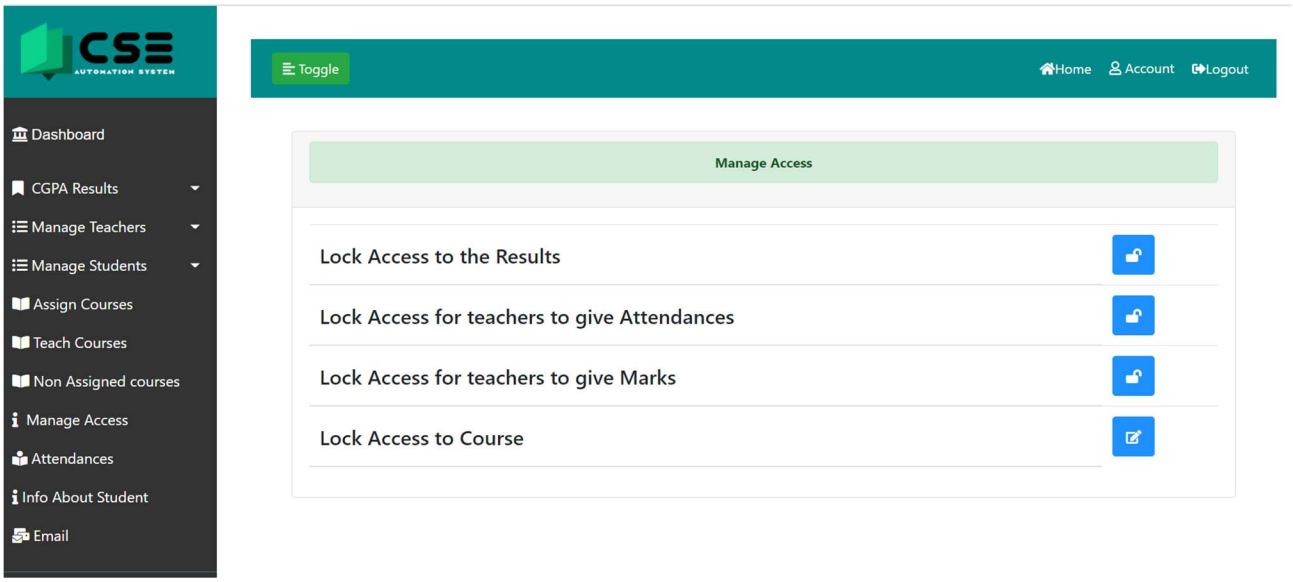



*Figure 19: Manage access Page*

# 5-3-6 Manage access to course

Admin can manage course by blocking access to it.

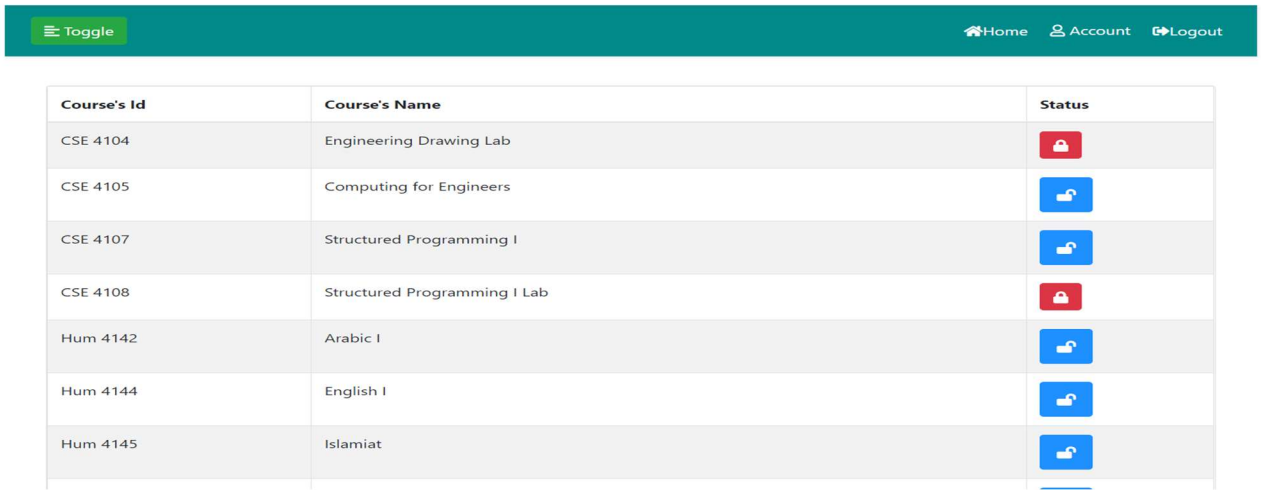



*Figure 20: Manage access to course Page*

# 5-3-7 Attendance Page

Admin can see the attendance of all the student according to their percentage of presence.

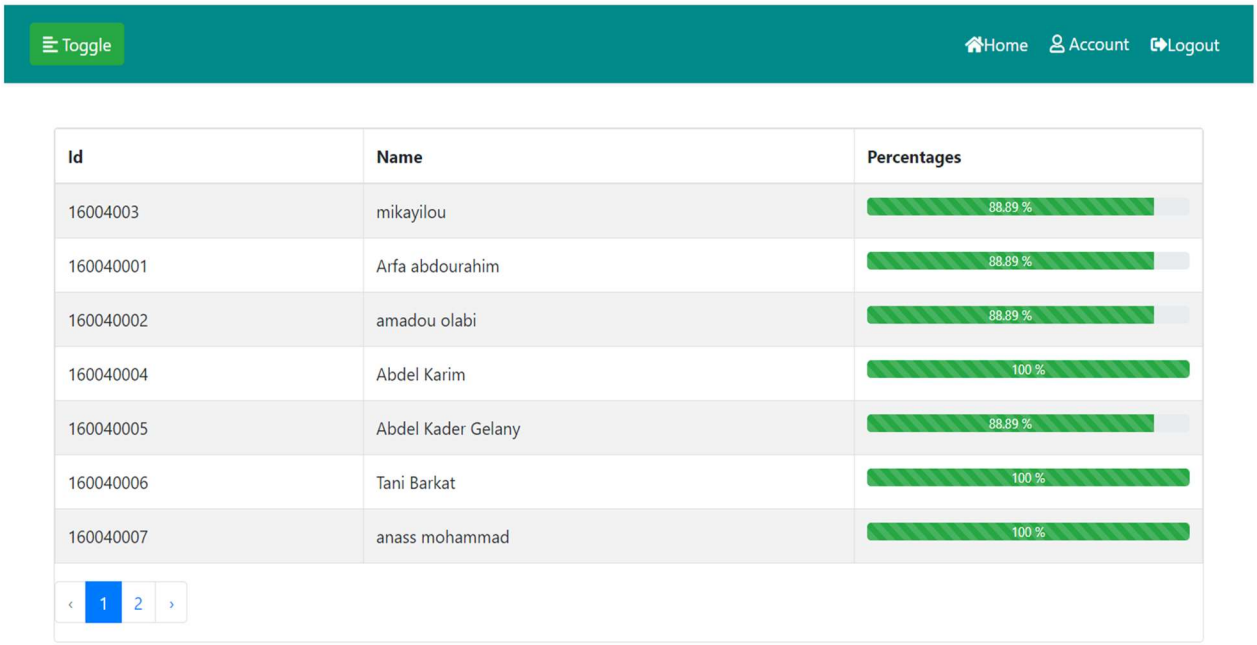



*Figure 21: Attendance Details*

# 5-3-8 Result Page

Admin can see the results of all the student according to the semester.

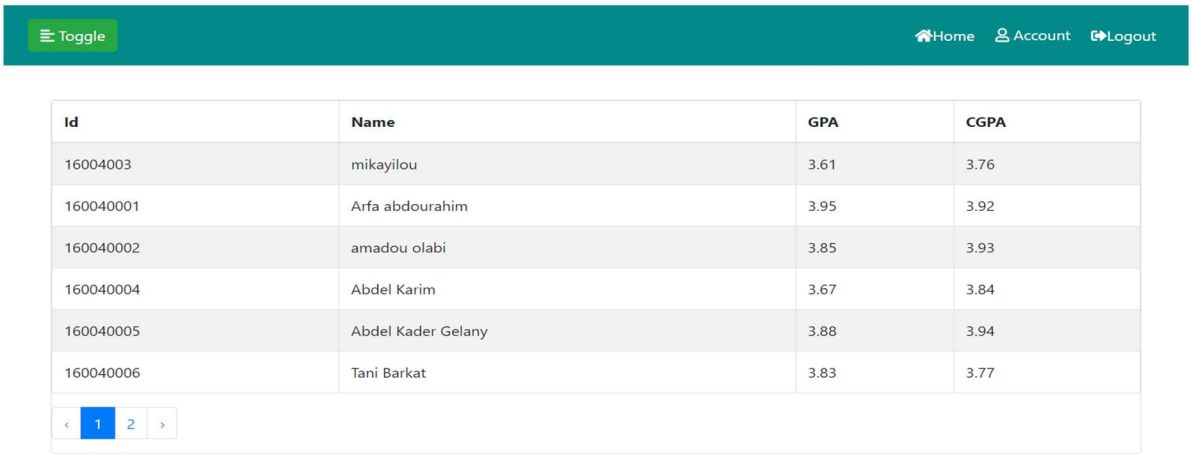



*Figure 22: Result Page*

# 5-4 Teacher Panel

## 5-4-1 Teacher attendance

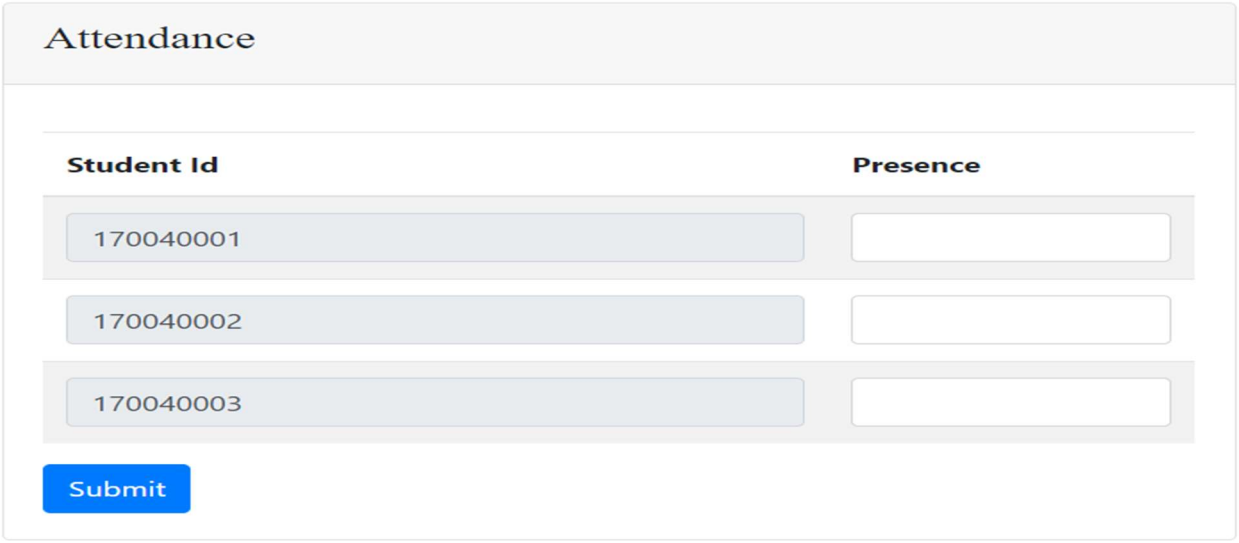



*Figure 23: Teacher attendance Page*

## 5-4-2 Teacher attendance detail

A Teacher can see the attendance details of a specific student in his course.

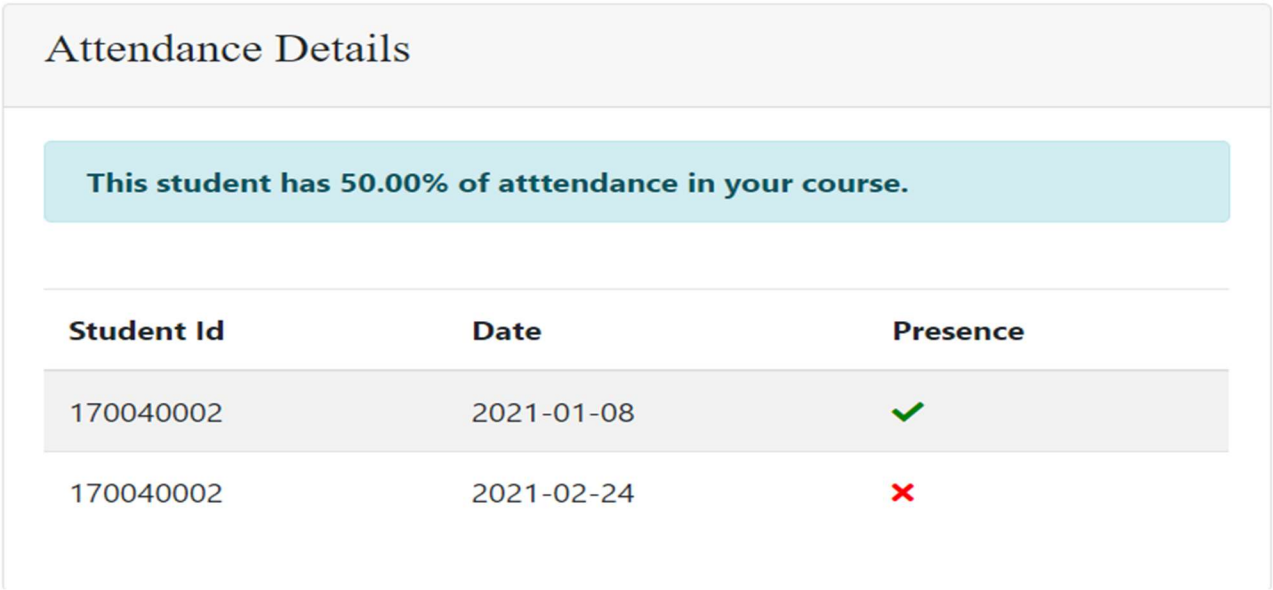



*Figure 24: Attendance details of a specific student Page*

# 5-4-3 Teacher marks

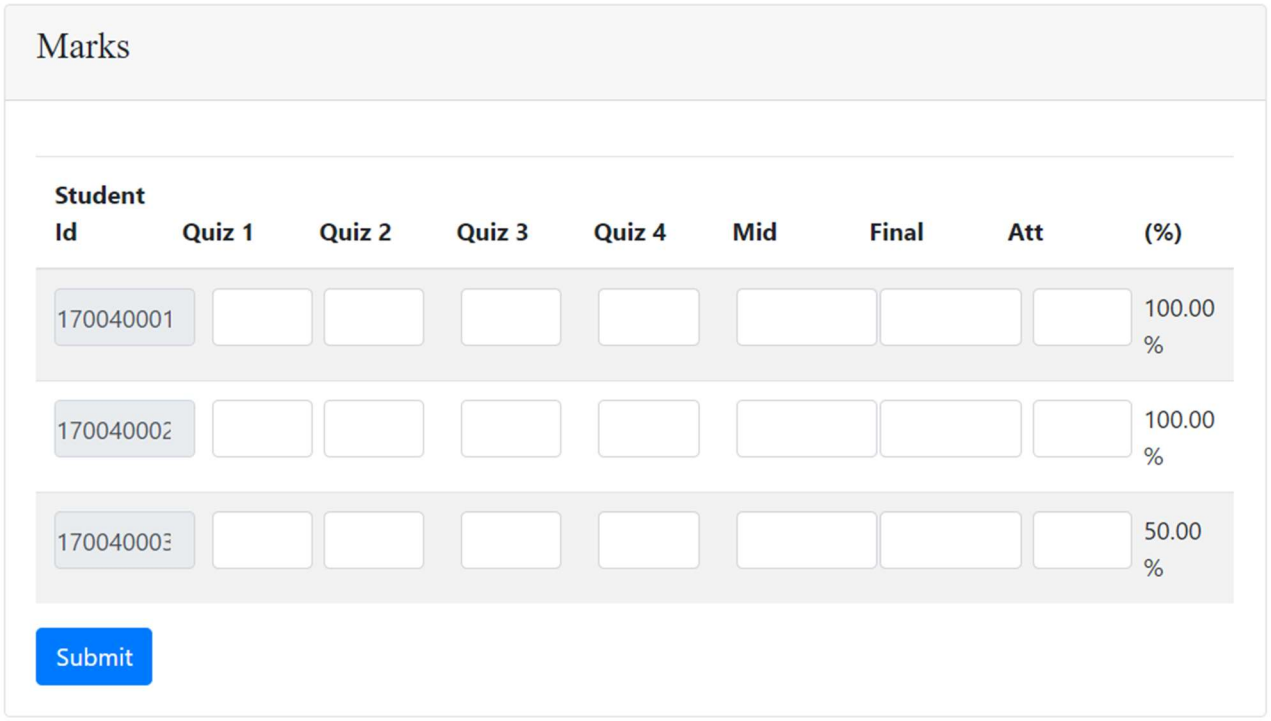



*Figure 25: Teacher marks Page*

# 5-4-4 Course statistics

Teacher can see how student performed in his course.

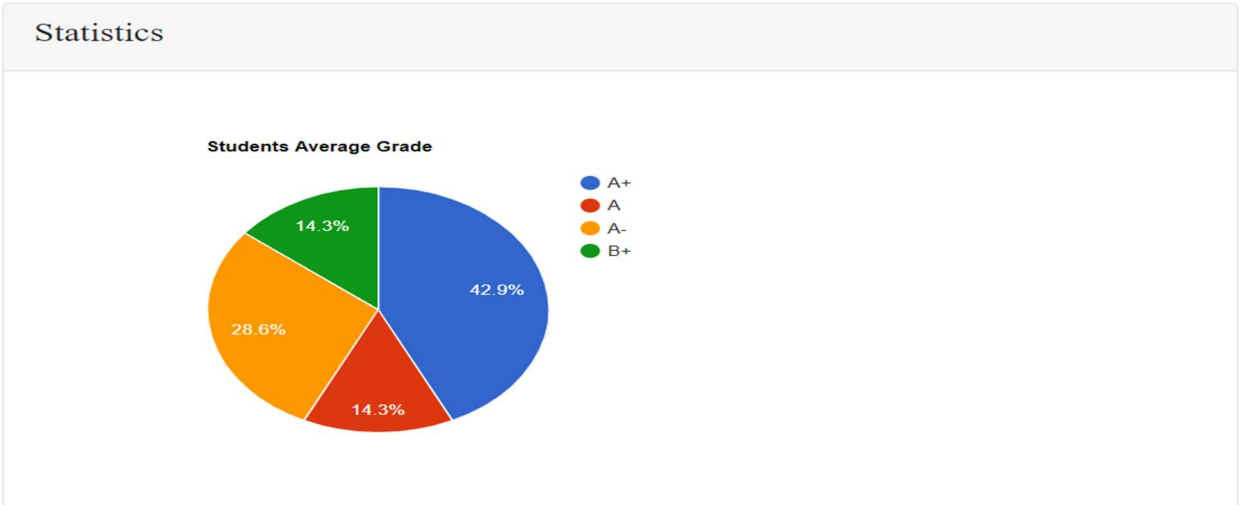



*Figure 26: Course statistics Page*

# 5-4-5 Forum

Teacher can post and make a comment on the forum and can also see the other post related to his course.

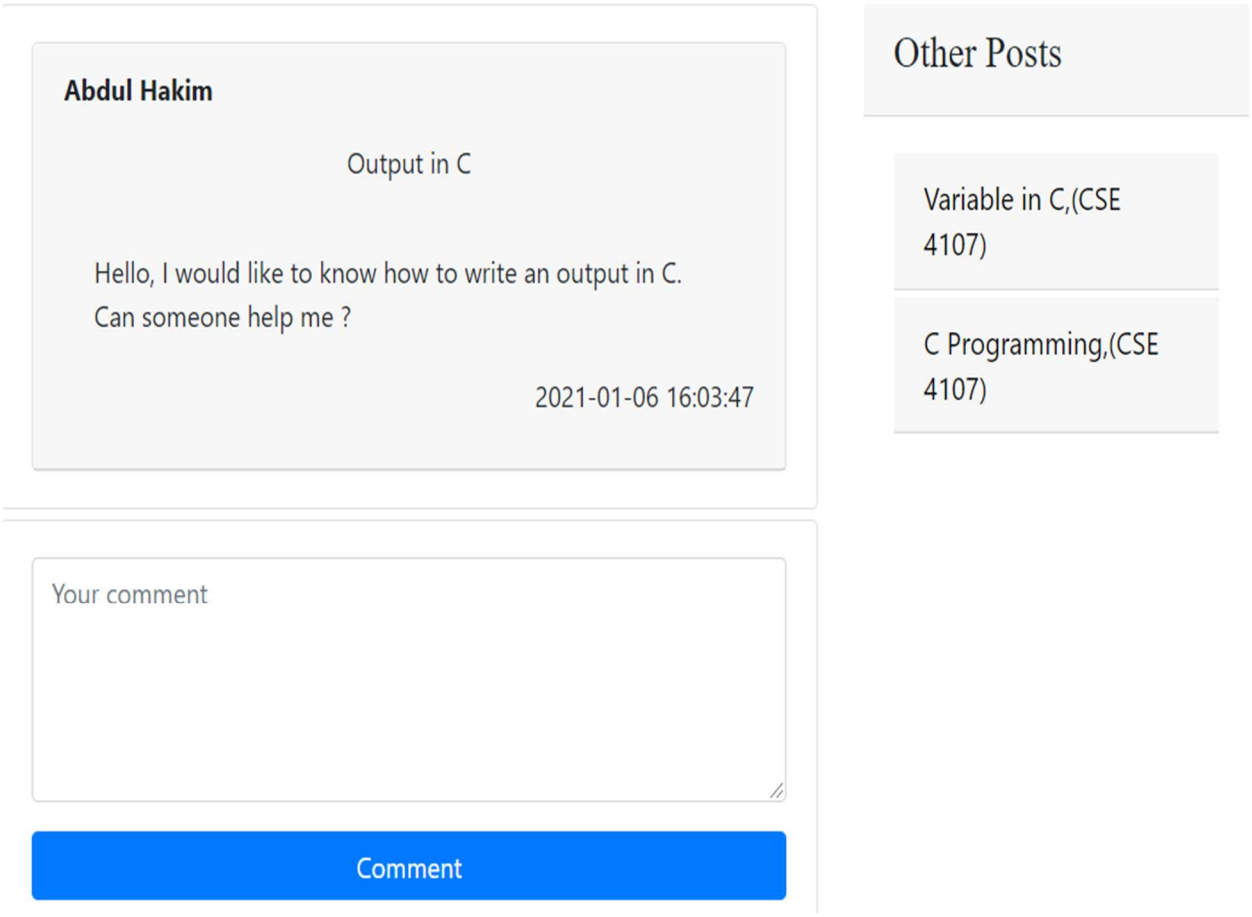



*Figure 27: Forum Page*

# 5-4-6 Teacher Notification

Teacher can send a message to all student or to a specific student.

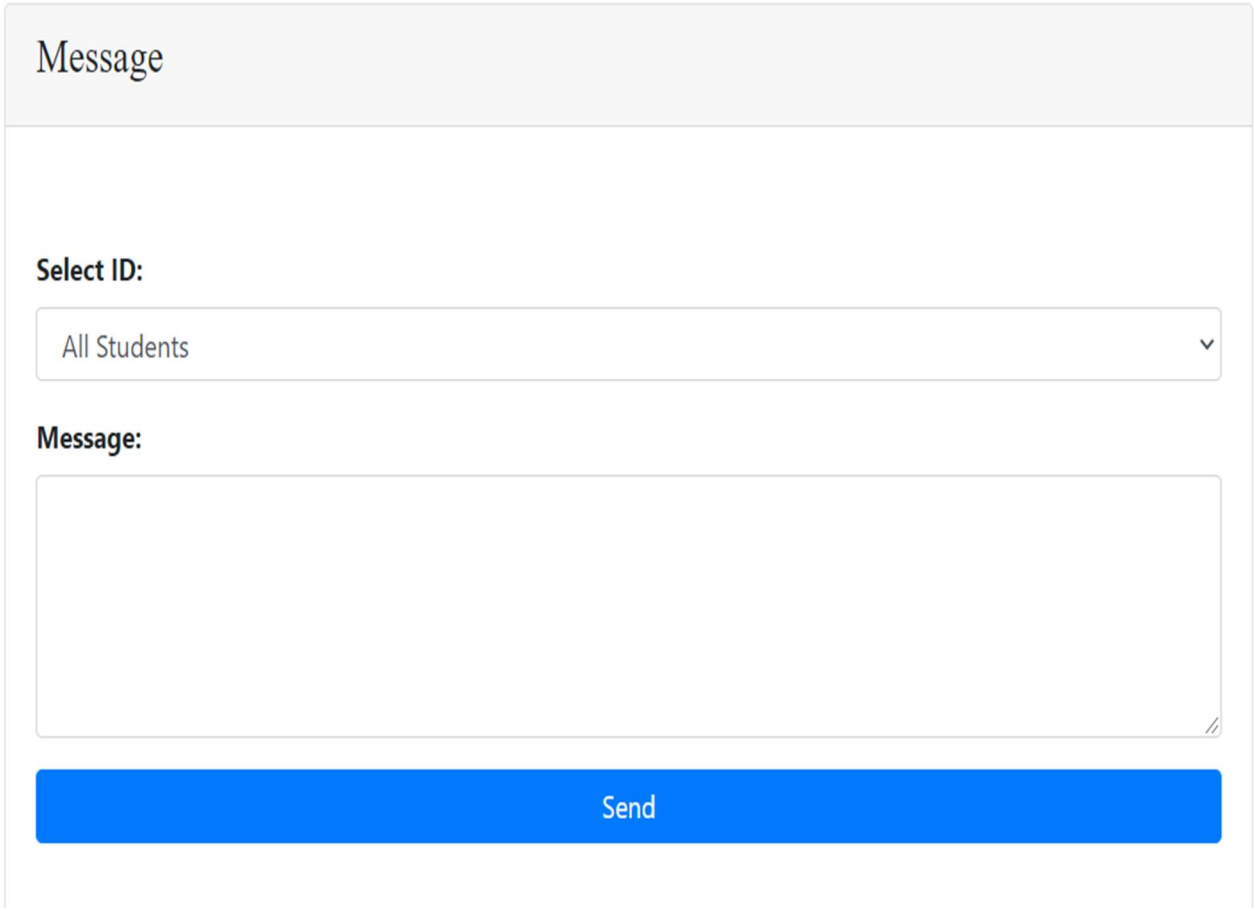



*Figure 28: Teacher's message Page*

# 5-5 Student Panel

## 5-5-1 Student Login

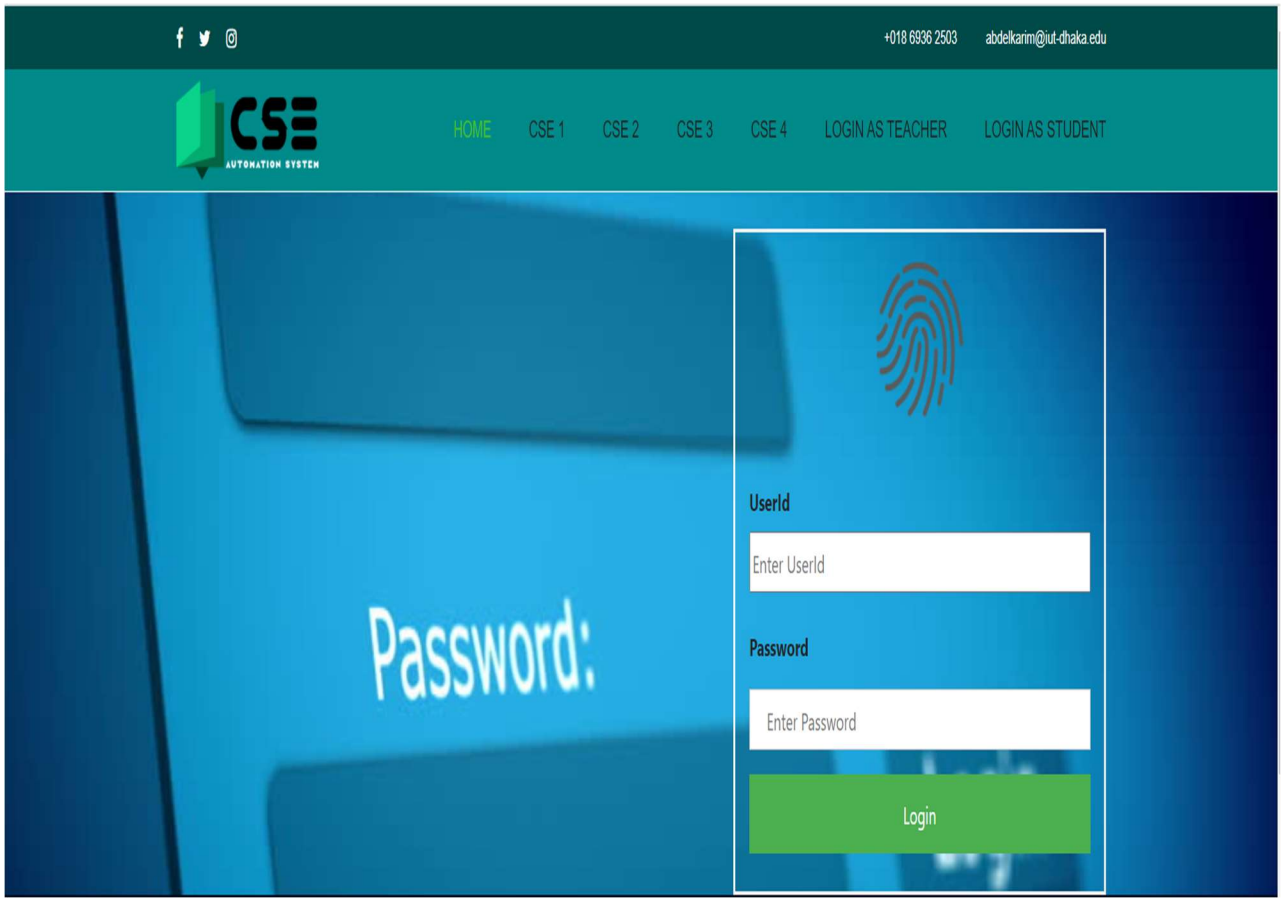



*Figure 29: Student Login Page*

# 5-5-2 Students' marks

A Student can see his mark details according to all courses.

Marks

| Courses | CT-1 | CT-2 | CT-3 | CT-4 | 3 Highest | Mid | Final | Att |
|---|---|---|---|---|---|---|---|---|
| Chem 4241 | 12 | 12 | 12 | 12 | 36 | 66 | 111 | 30 |
| Chem 4242 | 3 | 3 | 3 | 3 | 9 | 12 | 23 | 7 |
| CSE 4202 | 5 | 6 | 7 | 7 | 20 | 32 | 68 | 15 |
| CSE 4203 | 11 | 11 | 11 | 11 | 33 | 66 | 124 | 30 |
| CSE 4205 | 12 | 11 | 11 | 10 | 34 | 56 | 134 | 30 |
| CSE 4206 | 2 | 2 | 2 | 2 | 6 | 17 | 34 | 7 |

‹ 1 2 ›

*Figure 30: Student's marks Page*

# 5-5-3 Student results

A student can see his result according to the semester and can be able to print it.

| Course No | Course Title | Credit | Grade |
|---|---|---|---|
| Chem 4241 | Chemistry | 3 | A |
| Chem 4242 | Chemistry Lab | 0.75 | A- |
| CSE 4202 | Structured Programming II Lab | 1.5 | A+ |
| CSE 4203 | Discrete Mathematics | 3 | A+ |
| CSE 4205 | Digital Logic Design | 3 | A+ |
| CSE 4206 | Digital Logic Design Lab | 0.75 | A+ |
| Hum 4241 | Islamic History Science and Culture | 2 | A+ |
| Math 4241 | Integral Calculus and Differential Equations | 4 | A+ |
| Phy 4241 | Physics II | 3 | A+ |
| Phy 4242 | Physics II Lab | 0.75 | A+ |
| Hum 4244 | English II | 1 | A+ |

Grade Point Average (GPA) For This Semester : **3.95**

Cumulative Grade Point Average (CGPA) : **3.92**

print

*Figure 31: Student result Page*

# 5-5-4 Student's Forum

A student can be able to post, comment on a forum post.

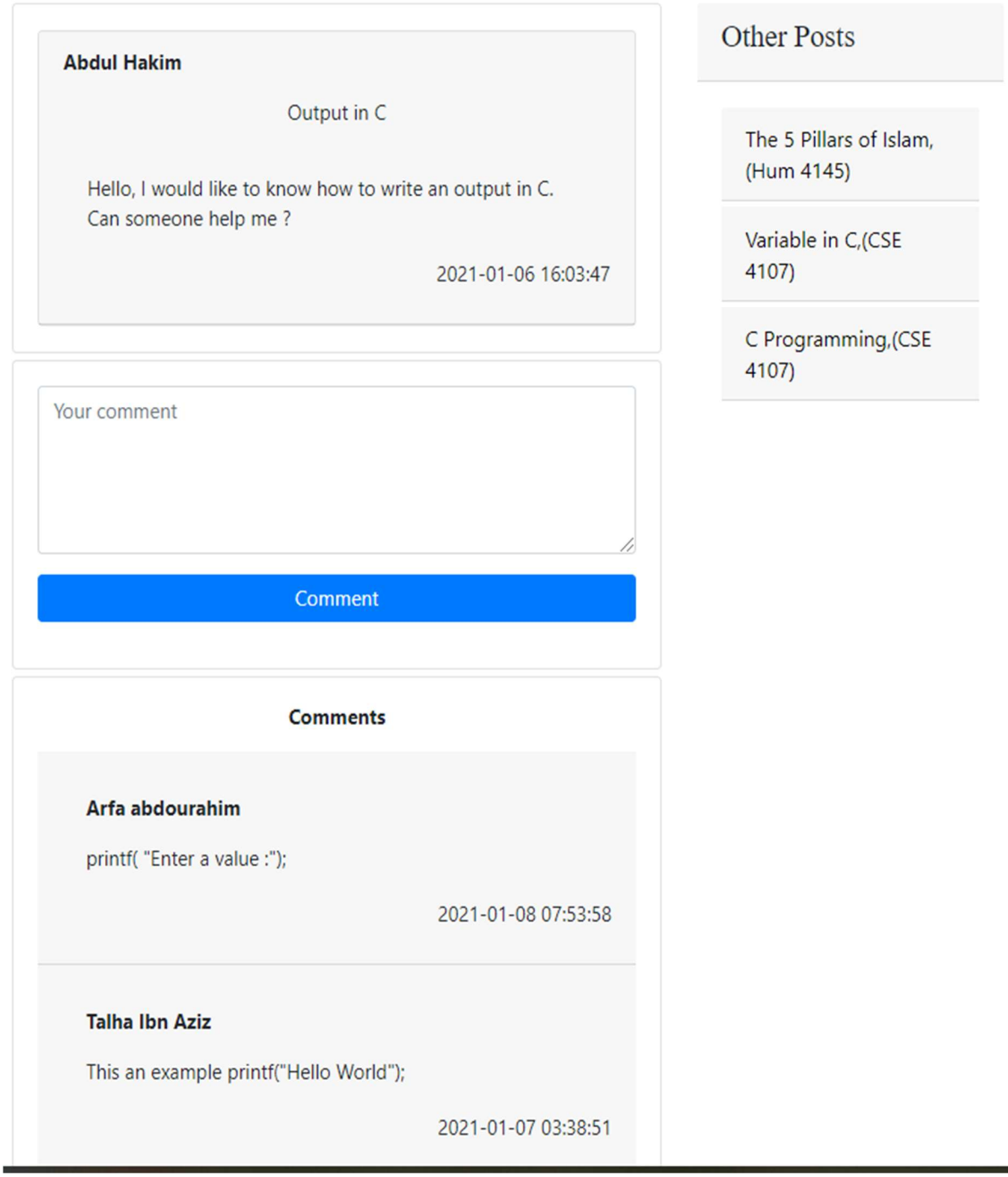



*Figure 32: Student Forum Page*

## 5-5-5 Student notification

Student can see all the notifications he has received.

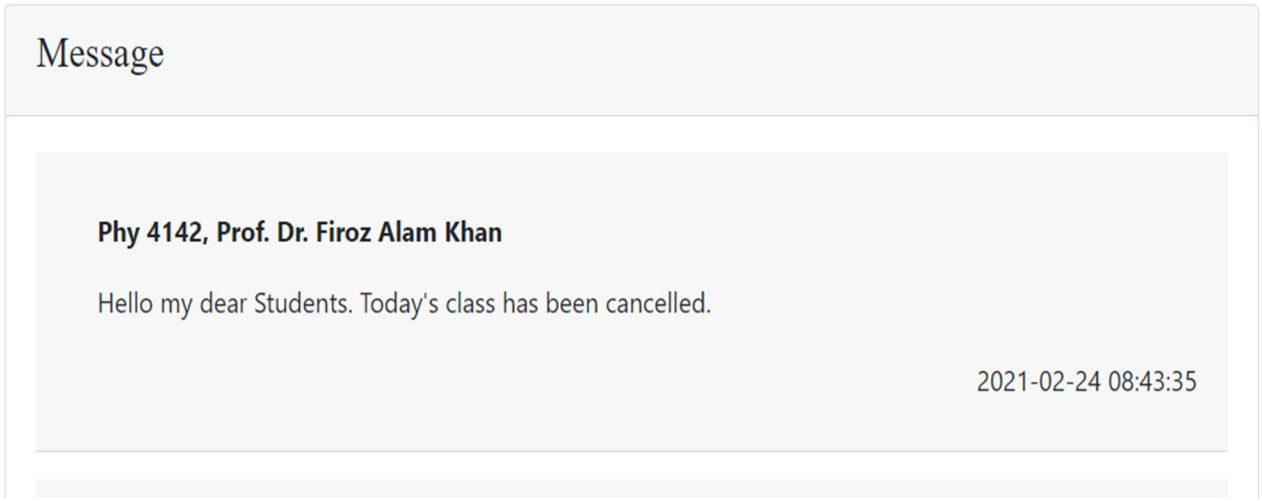



*Figure 33: Student notification Page*

## 5-5-6 Student password

A student can decide to change his password.

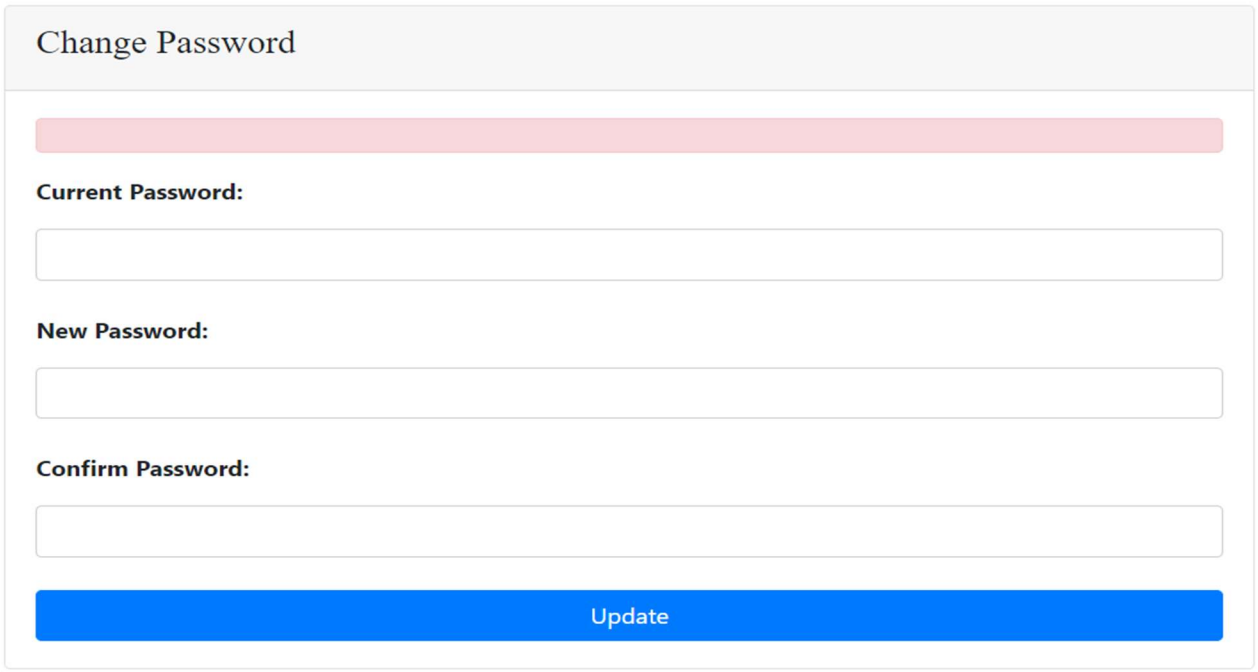



*Figure 34: Student password Page*

# Chapter 6 – Conclusion and feature works

## 6-1 Feature Works

In the future we will like to include a life chat, Skills/Certification tracking and Video conferencing.

## 6-2 Conclusion

The Internet has become a major resource in modern world. students can carry on with their education without a risk to have COVID-19.