Final Lab Report

Title: Report on OBE Based Result Management System

Course title: Web Programming Laboratory
Course code: CSE-312
3rd Year 1st Semester Examination 2021

Date of Submission: 15.09.2022

Submitted to-

Dr. Abu Sayed Md. Mostafizur Rahaman
Professor
Department of Computer Science and Engineering
Jahangirnagar University
Savar, Dhaka-1342

Submitted by

Sl	Class Roll	Name
01	344	Iffat Ara Sanzida
02	361	Nurun Nahar Fiha
03	2142	Serajum Monira

September 2022

OBE-BASED RESULT MANAGEMENT SYSTEM

Abstract

The education system is undeniably the backbone of the society; it focuses at preparing the young talents for the future. Outcome-based education (OBE) is an educational theory that bases each part of an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. Focusing on results Outcome-based education (OBE) **generates a transparent expectation of the top results**. Students can understand what they expect, and teachers can understand what they need to demonstrate throughout the course. However, currently the traditional process of students' result management and declaration is performed manually with extensive human intervention, the students' results are generated through a spreadsheet application and then printed on a paper, attached to a wall for declaration and then stored. Therefore, our current aims at creating a web based application named "OBE BASED RESULT MANAGEMENT SYSTEM" to maintain the OBE based results of the students, reducing time, effort and improving security. Also the development of a multi-user system, based on web technology with MVT (Model-View-Template) architectural pattern and developed using Python programming language with MySQL Database Management System support.

Table of Contents

List of Figures

List of Tables

CHAPTER 1

INTRODUCTION

1.1 Introduction

Every year students get admitted into universities with an aim of higher studies as well as to be well fitted for employment in the competitive world. In traditional system of education, the main aim of the course and curriculum is to score a good mark in the examination. Due to that method, the students are not knowledgeable or skilled enough at the end of the semester. The gap between industry requirements and curriculum gives rise to unemployment problem. OBE based education system is a great solution in this case. Outcome based education is a system where all the parts and aspects of education are focused on the outcomes of the course. The students take up courses with a certain goal of developing skills or gaining knowledge and they have to complete the goal by end of the course.

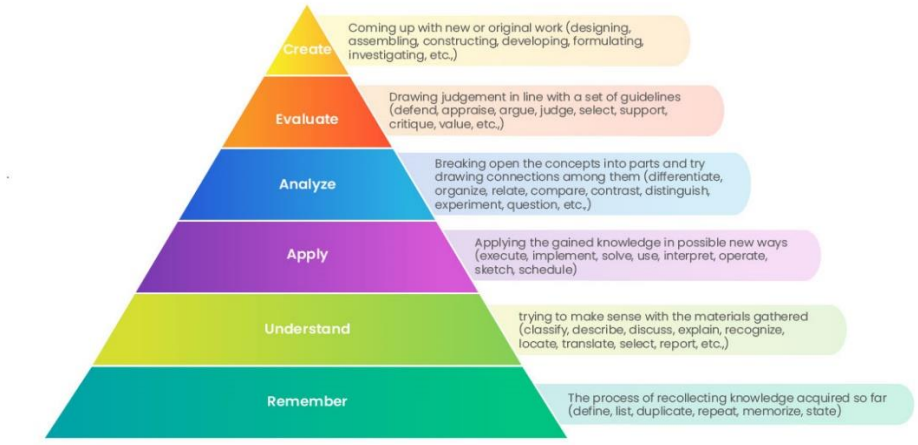


Figure 1: Bloom's Taxonomy of OBE

Outcome-based education is a model of education that rejects the traditional focus on what the institution provides to students, in favor of making students demonstrate that they "know and are able to do" whatever the required outcomes are. It evaluates the performance of students based on their qualities, skills, and knowledge as their outcomes. Mapping Learning Outcomes is nothing but aligning course-level outcomes with program outcomes. A faculty can explore the student's program-level outcomes at the course level using this mapping.

1.2 Motivation

The motivation behind working on this project is the result management system in most universities is not up to date. The worst-case scenario is manually creating results and publishing them on notice boards without preserving results on a secured database. Even if a university provides a software-based result management system, most are not OBE-oriented. The students are unaware about their strengths and lackings, particularly in any of the five categories of OBE. The teachers also cannot understand the outcomes of their courses and in what field they need to improve their teaching. An OBE-based result management system can help to clear out all of those confusions by providing a complete reflection of the OBE pattern on the published result. The students can see their marks separately on each of the 5 categories as well as the teachers can see the course outcomes and program outcomes. Furthermore, when a student competes in job hunting, an industry can decide whether to hire the student for a particular job or not. All these thoughts motivated us to work on this project, and we wish to complete it successfully.

1.3 Objectives

The key objective of our OBE-based result management system is to provide a user-friendly environment so that:

- Students can search results
- Students can get their results or the result of the whole batch.
- Teachers can prepare results for their courses.
- Teachers can analyze the course outcomes and program outcomes based on the Co-Po attainment graph prepared by our system.
- The entire result management system can run smoothly and error freely.
- The department chairman can monitor the overall condition of the result of any batch.
- The university can monitor the result condition of any of the departments.

1.4 Expected Outcome

After the end of this project, we expect a system that will give access to authentic users to particular pages based on their roles. A homepage will be shown where there will be options to see the faculties of a particular university. Anonymous users can see the faculty lists and department lists within a particular faculty. He can see the result of any batch within a department but cannot see the detailed result of an individual student. A user will be able to create an account and log in to the system. The system will give access to the teachers, students, and staff of a particular university. Teachers will have the privilege to make mark sheets of their corresponding courses, see co-PO attainment graphs with other options. The students will be able to see their results or the results of the whole batch. The system will save all the data safely on the database for further use. We expect to build the system successfully and avail it to the universities in need.

1.5 Report Layout

We are developing a web application named "OBE-based Result Management System". We expect to complete our project in time. Based on our current workflow, we have designed our project report.

- Background discussions about the Introduction, Related Works, Comparative Studies, Scope of the Problem, and Challenges are in chapter 2.
- Business Process Modeling, Requirement Collection, and Analysis, Use Case Modeling and Descriptions, Logical Data Model, and Design Requirements are discussed in chapter 3.
- Front-end Design, Back-end Design, Interaction Design, and UX and Implementation Requirements are explained in chapter 4.
- Implementation of Database, Implementation of Front-end Design, Testing Implementation, Test Results, and Reports are described in chapter 5.
- We have discussed the Future Scope, Discussion, and Conclusion of the whole project in chapter 6, named Discussion and Conclusion.

CHAPTER 2

BACKGROUND STUDY

2.1 Introduction

Outcome-Based Education helps prepare the graduates by combining hyper-specialized knowledge with dynamic and cross-sectional capabilities through revolutionizing curriculums. One of the most profound benefits of OBE is the sense of clarity it fosters. Students with their parents can pick an institution, program and course based on clearly spelled out learning objectives. The Course Outcome (PO), Program Outcome (CO), Program Specific Outcome (PSO) and Program Educational Objective (PEO) determine what students need to accomplish, post their course or program accordingly. So the public and private universities our country are planning to revise their undergraduate curricula in favor of Outcome Based Education (OBE), a system of restructuring the syllabi around contents that directly increase students' proficiency of a particular skill or knowledge. A number of public and private universities, including Dhaka University and North South University, are already working to restructure their traditional syllabi in line with the OBE system. Every university in our country is instructed to be ready for OBE system and prepare their teachers and students accordingly. So every academic institute are trying to implement this curriculum. The OBE-BASED RESULT MANAGEMENT SYSTEM will help each educational institute managing this curriculum smoothly, reducing time in result processing, observing each student closely. By this result management system, a student will not only identify his weakness and strength but also be provided with sufficient time to attain proficiency and fluency in the subject matter. This system will also help the teachers to observe the students individually easily. Teachers will also be able to identify in which part of his course the students are not performing well and will be able to take an effective measure to help the students in those regard.

2.2 Related Works

Outcome-based education is now getting very famous all over the world. It is also getting popular in our country. Many educational institutes have already started to follow this curriculum. OBE-BASED RESULT MANAGEMENT SYSTEM is already implemented in many educational institutes. But they are not the same as our project. Our motivation, idea, and thought is totally different. Our main inspiration is how we can convert the traditional result management system into OBE based result management system so that any educational institute that is new to the OBE curriculum can easily use this system in their institution.

2.3 Comparative Studies

Outcome-based education is quite new in our country. An OBE curriculum means starting with a clear picture of what is important for students, then organizing the syllabus, instruction, and assessment to ensure such learning. The Business Standard has been learned from the University Grants Commission (UGC).

Several public and private universities, including Dhaka University and North South University, are already working to restructure their traditional syllabi in line with the OBE system. To this end, the commission, in June of last year sent an OBE template to every university throughout the country, asking them to restructure their curricula as soon as possible, said sources. The UGC believes that every graduate must be creative, highly skilled, flexible, innovative, a critical thinker, and possess the entrepreneurial spirit to tackle the challenges of the 4th industrial revolution. The OBE system is crucial for producing such graduates.

As a result, every educational institute will need a system that can produce OBE-based results and maintain the standard of education in the institution. Undoubtedly, the OBE-based result management system will play a vital role in maintaining the standard of institutions and help the students to develop their skills as well as teachers can help the students to achieve their goals.

2.4 Problem Definition

Currently, the traditional process of students' result management and declaration at Jahangirnagar University is performed manually with extensive human intervention,

the students' results are generated through a spreadsheet application, printed on paper, attached to a wall for declaration, and then stored.

Despite having an application that generates Non-OBE based results, it is not very effective as the system consumes a lot of time and human resources in performing various tasks. At present, the institutions need an advanced and computerized environment that will generate both OBE and Non-OBE based results. Moreover, once implemented, it will minimize all the problems mentioned.

2.5 Scope of the problem

In the OBE-based result management system, we will design a web-based application that will provide the necessary service to produce results. There are six kinds of users of the application. The users can sign up and log in with the required information and credentials. In case of login, the login credentials will be verified. If the credentials are wrong, an error message will be shown to the user. Otherwise, the login will be successful. Different kinds of options and facilities will be available for different kinds of users. For example, the Chairman of a department can form yearly exam committees, view the student list for each session, and view the teachers' list. The staff can manage the syllabus. If the syllabus for the selected session already exists, he will copy the syllabus. Otherwise, it will be created in OBE format. Then, the staff will enter the syllabus. He can also update and delete an existing syllabus. He can promote students to the next semester. The teacher can create an account, add marks for his courses, save the added mark sheet and print it, view attainment graphs for tutorial and final exam results, and update his profile and password. The exam committee chairman can assign course teachers for each semester, view the course teacher list for each semester, approve the final result, publish and view the results of each student. Finally, a student can create an account, view the result of his own or view the result of his whole batch, download a report card and update his profile and password.

2.6 Challenges

There is no work without challenges. As an offering, wishing, reviewing, and building community is the key target, so we have to face some challenges.

- As the OBE-based Result Management System is a web-based application, users will log in and register an account with academic email and information. If a student or teacher doesn't have an edu mail or provide inappropriate information, this system will not help him.
- It is an online based web application. So the users must stay connected to the internet before browsing the application.
- We will also have to maintain the system properly so that if any error occurs, it can debug it easily and solve any problem faster.
- Another challenge is to make sure that any cyber-attack is defended. So any harmful user cannot change our system or steal any information.
- The system must be fast for any user to access their information. It must provide the information within a short time. Whenever any data is saved in the database, it will store it in the appropriate place without causing any trouble.

CHAPTER 3

Requirement Specification

3.1 Use Case Modeling

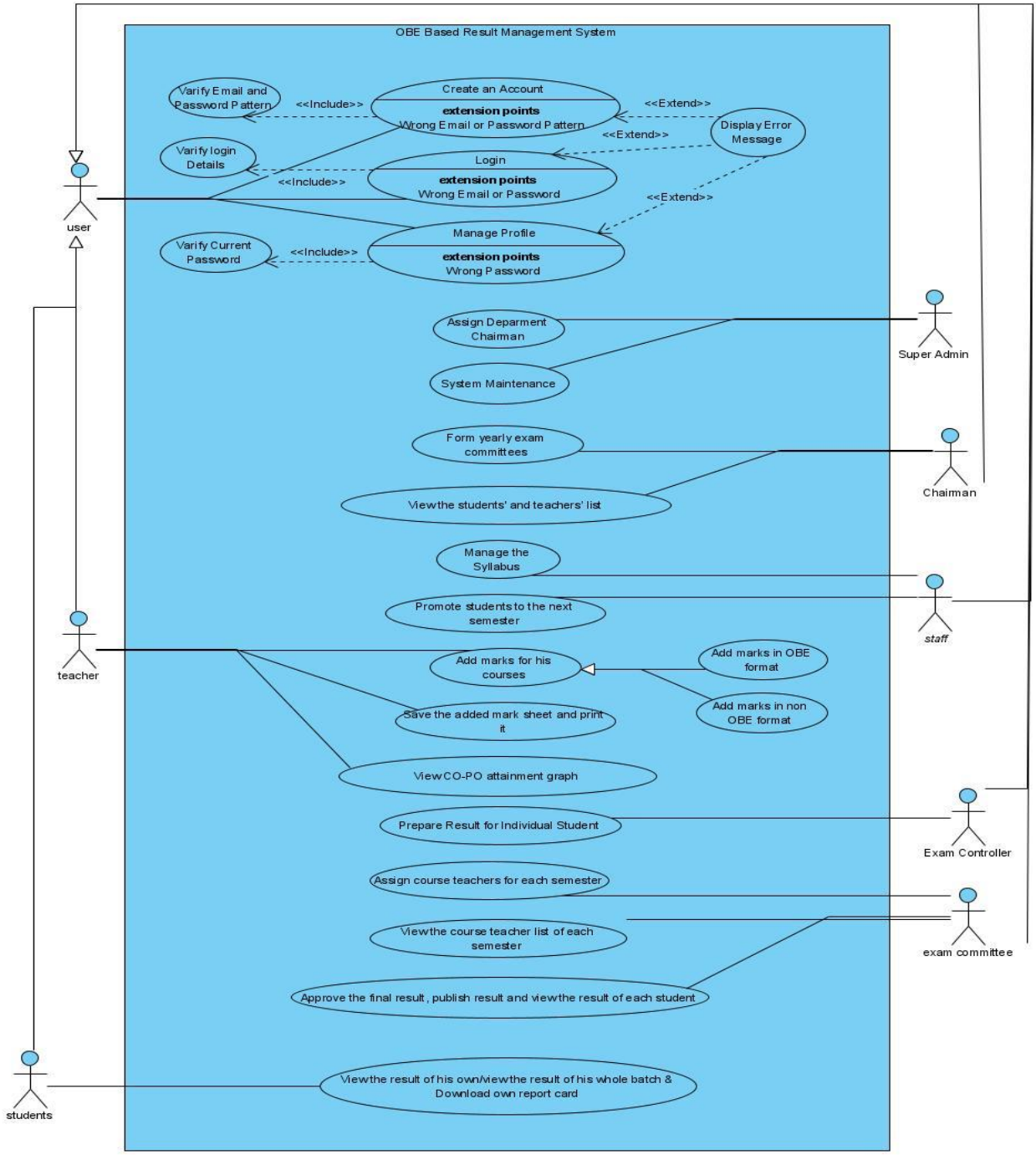


Figure 2**:** Use Case Diagram of OBE-based Result Management System

3.2 Requirement Collection and Analysis

When we started to implement our project, there was a fixed deadline to complete the project in time. For this reason, we have to work very seriously to complete this project in time and delivery the project with a solution. Our project is software to produce OBE-based results. So, we will have to maintain large databases to store and produce results accurately.

Website Requirements:

Website has to be

- User friendly
- Processing Results for student
- Time suitability
- Simply reachable
- Maintain security properly
- Maintain the database efficiently

Hardware and Software Requirements for our system:

To build OBE RESULT MANAGEMENT SYSTEM we have to use many software and tools. We select the tools and software based on availability as well as the developer can easily use those tools to implement and manage the system easily. For the development of the application, tools and software used are given below:

- Visual Paradigm
- Django
- Python
- Pycharm

3.3 Use Case Model Description

1. Create an Account

ID: UC01

The user who wants to use the OBE system must create an account. Hence they must register themselves as an authenticated user of the system. For registration, the user must provide a valid email address and system specified password as well as personal information.

Primary Actors	staff, students, teacher, user
Level	User
Complexity	Medium
Use Case Status	N/A
Implementation Status	Scheduled
Preconditions	1. The user must have a valid email id.
Post-conditions	1. The user creates an account successfully and can see his profile as logged user to the system. 2. The user will receive a successful account creation message.
Author	Group 03 (Iffat)
Assumptions	N/A

1.1. Scenarios

1.1.1. Scenario

1. The user clicks on **create an account.**

2. SYSTEM displays a form that prompts user to enter his credentials.

3. The user enters his personal information (First name, Last name, Date Of Birth, Contact Number)user name, email ID, password and selects one of the three options given (I am a Student, I am a teacher, I am a staff).

4. if The user clicks on **Submit**

4.1. SYSTEM sends a request to the admin.

4.2. The user waits for a while.

4.3. The admin checks whether the user is a teacher/ staff /student or not by checking the teachers/ staffs/students database of that department.

4.4. if the provided information and email matches with the teachers/staffs/students database,

4.4.1. The admin approves the request.

4.4.2. The user is logged to the teachers/ staffs/students database of the software with their roles.

4.4.3. SYSTEM sends a successful account creation message and sends an email verification message to the user's email to activate the account.

4.4.4. The user go to his email and click on **verification link.**

4.4.5. SYSTEM successfully activates user's account and redirect him/her to the login page.

4.5. else

4.5.1. The admin disapproves the request.

4.5.2. SYSTEM sends an **invalid information message** to the user's email and redirects him to the create account page.

end if

5. else

5.1. The user clicks on **cancel.**

5.2. SYSTEM returns the user to the Homepage.

end if

6. for each attempt from user to type password

6.1. SYSTEM verifies if the typed password matches with specified format.

end for each

Extension:

3.a. The user entered email id is invalid.

1. SYSTEM displays a suggestion **"Enter a valid email id"**.

3.b. User entered password pattern does not match the specified format.

1. SYSTEM suggests "Type a password containing at least one uppercase letter, lowercase letter, numbers and underscore".

3.c. User entered email already exists on the system database.

1. SYSTEM displays "Email already exists. Please try with a different email id".

3.d. User entered username already exists on the system database.

1. SYSTEM displays "Username already exists. Please try with a different user name".

2. Verify Email and Password Pattern

ID: UC16

Level	N/A
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	N/A
Post-conditions	N/A
Author	N/A

Assumptions	N/A

3. Login

ID: UC02

To use the privileges provided by the system, the users need to login first. Login will redirect the users to their corresponding homepages. For example, the teachers, students and staffs will be able to access their respective pages different from each other.

Primary Actors	user
Level	User
Complexity	Medium
Use Case Status	N/A
Implementation Status	Scheduled
Preconditions	1. At first the user has to create an accouint successfully.
Post-conditions	1. After logging in successfully, the user can view his profile, update profile and perform different actions (if they are given permission).
Author	Group03 (Iffat)
Assumptions	1. The user knows how to log in with password and email. 2. The user must be connected to the internet.

3.1. Scenarios

3.1.1. Scenario

1. The user clicks on **Login.**
2. SYSTEM displays a form that prompts the user to enter his username and password.
3. The user enters his username and password.
4. if The user clicks on **Enter**

4.1. SYSTEM checks the system database for the same username and password.

4.2. if The user name and password matches,

4.2.1. SYSTEM redirects the user to his corresponding homepage

4.3. else

4.3.1. SYSTEM shows a message "Invalid Username/Password. Please reenter username/password".

end if

5. else

5.1. The user clicks on back.

5.2. SYSTEM returns the user to the homepage.

end if

4. Verify login Details

ID: UC17

Level	N/A
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	N/A
Post-conditions	N/A
Author	N/A
Assumptions	N/A

5. Manage Profile

ID: UC03

The user who wants to use the OBE system want to manage his account. So they must have a valid account in they system. For update his/her profile the user must log in into the system then modify his/her account.

Primary Actors	user
Level	User
Complexity	Medium
Use Case Status	N/A
Implementation Status	Scheduled
Preconditions	1. The user must have a valid account to the system 2. The user can not change his/her email id and user name
Post-conditions	1. The user must successfully log in into the system 2. The user will receive a successful message.
Author	group03(Monira)
Assumptions	N/A

5.1. Scenarios

5.1.1. Scenario

1. The user log in into the system.
2. SYSTEM display a welcome massage to the user
3. The user clicks on manage profile.
4. SYSTEM redirects the user to a form where he can edit his information.

5. The user can change his First name, Last name, Date of Birth,Contact Number and password. But the user can not change his email id and user name

6. if the user wants to change his password.

6.1. write the current password.

6.2. write the new password.

6.3. re-write the new password.

6.4. if The current password does not match to the database

6.4.1. the system will tell the user to write the current password again.

6.5. else if The new password and the re-written new password does not match.

6.5.1. The system will tell the user to write the new password and re-write the new password again.

end if

7. else if the user wants to change his First name, Last name, Date of Birth or contact no.

7.1. the user will re-write his First name, Last name, Date of Birth, contact no , the information he wants to change in the database.

end if

8. The user will then click the submit button.

9. SYSTEM will save the updated information to the system database.

10. The user will stay logged to the system.

11. SYSTEM will send him a mail about the update he has made.

Extension:

6.2.a. User entered password pattern does not match the specified format.

1. SYSTEM suggests "Type a password containing at least one uppercase letter, lowercase letter, numbers and underscore".

6. Verify Current Password

ID: UC18

Level	N/A
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	N/A
Post-conditions	N/A
Author	N/A
Assumptions	N/A

7. Display Error Message

ID: UC19

Level	N/A
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	N/A
Post-conditions	N/A
Author	N/A
Assumptions	N/A

8. Assign Department Chairman

ID: UC04

Primary Actors	Super Admin
Level	User
Complexity	High
Use Case Status	N/A
Implementation Status	Scheduled
Preconditions	1. Each Department must have a chairman 2. Chairman must be verified by the faculty 3. The chairman must have a edu mail
Post-conditions	1. After assigning the chairman, a welcome mail must be sent to the chairman including chairman's user id and password.
Author	Group 03 (Monira)
Assumptions	N/A

8.1. Scenarios

8.1.1. Scenario

1. The super admin will enter into the system
2. The super admin will click **Assign Chairman**
3. SYSTEM will show assign chairman to the department.
4. if The super admin wants to assign the chairman
    - 4.1. SYSTEM will show select faculty.
    - 4.2. At first he will select the faculty.

4.3. SYSTEM will show select the department.

4.4. He will select the department

4.5. if There is no chairman in the department

4.5.1. Super admin will directly assign the chairman and click **ok** button

4.5.2. Super admin will sent a confirmation mail to the chairman

4.5.3. super admin will update the database

4.6. else if A chairman has already assigned in the department

4.6.1. SYSTEM will show change chairman.

4.6.2. if The chairman needs to be changed super admin will click the **Change Chairman** button

4.6.2.1. The super admin will assign new chairman to the department

4.6.2.2. Super admin will sent a confirmation mail to the newly assigned chairman

4.6.2.3. The super admin will nullify the access of the previous chairman

4.6.2.4. Super admin will sent a thank you mail to the previous chairman

4.6.2.5. super admin will update the database

4.6.2. end if

end if

end if

9. System Maintenance

ID: UC05

Primary Actors	Super Admin

Level	User
Complexity	High
Use Case Status	N/A
Implementation Status	Scheduled
Preconditions	N/A
Post-conditions	N/A
Author	Group03(Fiha)
Assumptions	N/A

9.1. Scenarios

9.1.1. Scenario

1. Super Admin enters into the system.
2. if System has server down issue
    2.1. Super Admin checks for error
    2.2. Super Admin solves the error
    2.3. System gets fixed

end if

10. Form yearly exam committees

ID: UC06

Primary Actors	Chairman
Level	User

Complexity	Medium
Use Case Status	N/A
Implementation Status	Scheduled
Preconditions	1. Each teacher must be from the same department 2. One teacher can only be a member of exactly one committee. 3. Every teacher must have a valid account in the system.
Post-conditions	1. A request mail will be sent to the members of the committee. 2. All assigned teacher must enter into the system and accept the request.
Author	Group 03 (Monira)
Assumptions	N/A

10.1. Scenarios

10.1.1. Scenario

1. The Chairman of a department will log in into the system by providing user id and password.

2. SYSTEM will show a welcome message after successful log in and will show create exam committee.

3. if chairman click **create exam committee**

    3.1. SYSTEM will show "Select session"

    3.2. chairman will select session

    3.3. SYSTEM will show "Select Year"

    3.4. chairman will select the year.

    3.5. SYSTEM will show "Select chairman for the session"

    3.6. if chairman click **select the chairman**

3.6.1. SYSTEM will show the list of the available teacher.

3.6.2. Chairman will select the teacher

3.6.3. SYSTEM will show "**OK**" button

3.6.4. chairman will click the **OK** button.

end if

3.7. SYSTEM SYSTEM will show "Select members for the session"

3.8. if chairman click members for the session

3.8.1. SYSTEM will show list of available teachers

3.8.2. chairman will select two teachers.

3.8.3. SYSTEM will show "OK" button.

3.8.4. chairman will click the **OK** button.

end if

end if

4. SYSTEM will show the "Submit" button

5. chairman will click the **submit** button.

11. View the students' and teachers' list

ID: UC07

Primary Actors	Chairman
Level	User
Complexity	Low
Use Case Status	N/A

Implementation Status	Scheduled
Preconditions	1. It will only show the teachers who are currently present in the department. 2. It will only show the list of the running students. 3. All teachers must register themselves in the system by using edu mail. 4. All students must register themselves in the system by using edu mail.
Post-conditions	N/A
Author	Group03(Monira)
Assumptions	N/A

11.1. Scenarios

11.1.1. Scenario

1. Chairman will log in into the system

2. SYSTEM will show welcome massage

3. SYSTEM will display create exam committee, view the students' and teachers' list.

4. if chairman click on view the students' and teacher

    4.1. SYSTEM will display "View teachers' list" and "View students list"

    4.2. if chairman click "**view teachers' list**"

        4.2.1. SYSTEM will show the list of teachers currently active in the department along with their designation and short information.

    4.3. else if chairman click "**view students' lis**t"

        4.3.1. SYSTEM will display "Select Session"

        4.3.2. if chairman click "Select session"

4.3.2.1. SYSTEM will display "Show all", "Show male students", "Show female students"

4.3.2.2. if chairman select "Show all

4.3.2.2.1. SYSTEM will display all students of that session along with their CGPA

4.3.2.2.2. if chairman select a specific student

4.3.2.2.2.1. SYSTEM will display all information of the student, mark sheet, yearly result, yearly CGPA, total CGPA.

4.3.2.2.2. end if

4.3.2.3. else if chairman click "**Show female students**"

4.3.2.3.1. SYSTEM will display the list of all female students along with their CGPA

4.3.2.3.2. if chairman select a specific student

4.3.2.3.2.1. SYSTEM will display all information of the student, mark sheet, yearly result, yearly CGPA, total CGPA.

4.3.2.3.2. end if

4.3.2.4. else if chairman click "**Show male students**"

4.3.2.4.1. SYSTEM will display the list of all male students along with their CGPA

4.3.2.4.2. if chairman select a specific student

4.3.2.4.2.1. SYSTEM will display all information of the student, mark sheet, yearly result, yearly CGPA, total CGPA

4.3.2.4.2. end if

4.3.2.4. end if

4.3.2. end if

end if

end if

12. Manage the Syllabus

ID: UC08

Primary Actors	staff
Level	N/A
Complexity	High
Use Case Status	Base
Implementation Status	Scheduled
Preconditions	1. The user must have access to syllabus management module. 2. The syllabus must be prepared before entering into the system.
Post-conditions	1. The syllabus must be entered/ updated successfully.
Author	group3(Iffat)
Assumptions	N/A

12.1. Scenarios

12.1.1. Scenario

1. Staff clicks on manage syllabus.

2. SYSTEM shows two options. enter syllabus, update syllabus.

3. if staff clicks on **enter syllabus**

    3.1. SYSTEM shows Select Session.

3.2. if staff selects session

3.2.1. SYSTEM shows select syllabus type **(yearly/semester)**

3.2.2. if staff selects yearly

3.2.2.1. SYSTEM shows 4 years in a row (1st,2nd,3rd,4th)

3.2.2.2. The staff selects the year where he wants to enter the syllabus.

3.2.2.3. SYSTEM asks the staff to **Enter total Courses.**

3.2.2.4. if staff enters total courses

3.2.2.4.1. for each course

3.2.2.4.1.1. SYSTEM asks the staff to give the inputs-->(Course Code, Course Title, Credit Hours, Course Type(lab/ theory))

3.2.2.4.1.2. Staff enters all the required information and press **Enter.**

3.2.2.4.1.3. SYSTEM saves the information on system database.

end for each

3.2.2.4. end if

3.2.3. else if staff selects semester

3.2.3.1. SYSTEM shows 8 semesters in a row(1-1,1-2,2-1,2-2,3-1,3-2,4-1,4-2).

3.2.3.2. The staff selects the semester where he wants to enter the syllabus.

3.2.3.3. SYSTEM asks the staff to **Enter total Courses.**

3.2.3.4. if staff enters total courses

3.2.3.4.1. for each course

3.2.3.4.1.1. SYSTEM asks the staff to give the inputs-->(Course Code, Course Title, Credit Hours, Course Type(lab/ theory))

3.2.3.4.1.2. Staff enters all the required information and press **Enter.**

3.2.3.4.1.3. SYSTEM saves the information on system database.

end for each

3.2.3.4. end if

3.2.3. end if

end if

4. else if Staff clicks on **update syllabus**

4.1. SYSTEM asks to select session.

4.2. if staff selects session

4.2.1. SYSTEM asks to select the year/semester.

4.2.2. if staff selects year/semester

4.2.2.1. SYSTEM gives access to delete a course/modify a course content/ add a new course.

4.2.2.2. staff updates the syllabus.

4.2.2. end if

end if

end if

- **13. Promote students to the next semester**

ID: UC09

Primary Actors	staff
Level	N/A
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	N/A
Post-conditions	N/A
Author	N/A
Assumptions	N/A

13.1. Scenarios

13.1.1. Scenario

1. SYSTEM notifies the staff that result of a semester has been published.

2. Staff clicks on the notification.

3. SYSTEM shows the results of all the students of that batch containing student id, exam roll, student name, batch no, gpa and remarks.

4. if the remark of a student is **FAIL**

    4.1. The staff does nothing.

5. else if the remark of a student is **PASS** in all courses

    5.1. The staff clicks the promote button.

    5.2. SYSTEM assigns the student to the next semester and saves the information in database.

end if

14. Add marks for his courses

ID: UC010

Primary Actors	teacher
Level	N/A
Complexity	High
Use Case Status	Base
Implementation Status	Scheduled
Preconditions	1. The teacher must be assigned to that course where he is adding marks for students. 2. The exam must be taken before for which he is assigning marks.
Post-conditions	1. The marks for each student is assigned successfully. 2. The marks are saved in the system database for result management process.
Author	group3 (Iffat)
Assumptions	N/A

14.1. Scenarios

14.1.1. Scenario

1. Teacher clicks on add marks.
2. SYSTEM shows the following grade system table all the time in all other sub modules.
3.

Table 1: Grading System

Grading System		
Range of Marks	*Letter Grade*	*Grade Point*
80% to 100%	A+	4.00
75% to 79%	A	3.75
70% to 74%	A-	3.50
65% to 69%	B+	3.25
60% to 64%	B	3.00
55% to 59%	B-	2.75
50% to 54%	C+	2.50
45% to 49%	C	2.25
40% to 44%	D	2.00
0 to 39%	F	0.00

4. SYSTEM shows 2 options. **OBE format, Non- OBE Format .**

5. if The teacher clicks on **OBE format**

    5.1. SYSTEM redirects the teacher to OBE based mark assignment module.

6. else if The teacher clicks on **Non-OBE format**

    6.1. SYSTEM redirects the teacher to Non-OBE based mark assignment module.

end if

15. Add marks in non OBE format

ID: UC010.2

Level	N/A
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	N/A

Post-conditions	N/A
Author	N/A
Assumptions	N/A

15.1. Scenarios

15.1.1. Scenario

1. SYSTEM shows a table containing several columns indicating class roll, exam roll, student's name, tutorial1,tutorial2,tutorial3,avg tutorial marks, attendance, final/sem marks, total marks,grade point and letter grade.

2. Each row contains record for each individual student.

3. SYSTEM fills out each row for class roll, exam roll and student's name previously when students were assigned to the course of that particular semester.

4. The teacher adds tutorial, attendance marks and final marks for each student.

Table 2**:** Result in non OBE method

Class Roll	*Exam Roll*	*Student's Name*	*Tutorial1 (30)*	*Tutorial2 (30)*	*Tutorial3 (30)*	*Avg Tutorial Marks (30)*	*Attendance (10)*	*Final/ Sem Marks (60)*	*Total Marks (100)*	*Grade Point*	*Letter Grade*
344	191326	Bella Bose	16	25	28	23	8	45	76	3.75	A
345	191327										
346	191328										
347	191329										

6. SYSTEM automatically generates the average tutorial marks, total marks.

7. SYSTEM generates the grade points and letter grade following the grading system table.

16. Add marks in OBE format

ID: UC010.1

Level	N/A

Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	N/A
Post-conditions	N/A
Author	N/A
Assumptions	N/A

16.1. Scenarios

16.1.1. Scenario

1. SYSTEM shows 5 options. Add marks for CO1,CO2,CO3,CO4,CO5.

2. The teacher selects one option.

3. for each CO

3.1. SYSTEM Shows a table containing several rows and columns. Each row represents records for individual student. Columns contain class roll, exam roll, student's name, total marks, percentage of marks and attainment of that corresponding Co.

3.2.

Table 3**:** CO attainment table

Class Roll	*Exam Roll*	*Student's name*	*Total CO1 (12)*	*%CO1*	*Attainment of CO1*
344	191326	Bella Bose	5	41.67	2
345	191327	Anika	10	83.33	3
346	191328	Tom Cruise	9	75	3
Average CO1= (2+3+3)/3 = 2.67					

3.3. SYSTEM fills out the exam roll, class roll and student's name for each row previously from the system database.

3.4. Teacher enters the corresponding CO total marks for each students.

3.5. SYSTEM automatically generates the percentage and attainment of the corresponding Co for each student following the table below.

Table 4**:** CO attainment from percentage of marks

CO-Percentage	Attainment
>50%	3 (high)
30% to 50%	2 (medium)
<30%	1 (low)

3.6.

3.7. SYSTEM calculates the average attainment of the corresponding CO by summing the attainments of all the students and dividing the sum by total number of students.

end for each

4. SYSTEM generates a CO Attainment table for as follows:

Table 5**:** CO attainment from CO1 to CO5

Assuming Attainment of CO2, CO3, CO4, CO5:

S.No	CO type	CO Attainment
1	CO1	2.71556
2	CO2	2.71556
3	CO3	2.71556
4	CO4	2.71556
5	CO5	2.71556

5.

6. SYSTEM generates CO-PO matrix as follows.

Table 6: CO-PO Attainment Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	1	2	-	-	-	1	1	-	-
CO2	2	2	3	1	2	-	-	-	1	1	-	-
CO3	2	2	3	1	2	-	-	-	1	1	-	-
CO4	2	2	3	2	2	-	-	-	1	1	-	-
CO5	1	1	2	1	1	-	-	-	1	1	-	-
PO Attainment	2.715	2.715	2.722	2.761	2.715	0.0	0.0	0.0	2.734	2.734	0.0	0.0

8. SYSTEM determines PO attainments for each PO using the following formula.

9.
For PO1,

$$Attainment = \frac{2 * 2.67 + 2 * 2.5 + 2 * 2.7 + 2 * 2.9 + 1 * 2.9}{2 + 2 + 2 + 2 + 1} = 2.715$$

$For\ each\ PO(j),\quad (Here\ i\ indicates\ each\ row\ and\ j\ indicates\ each\ column)$

$$Attainement = (\sum_{i=1}^{n} table(i,j) * CO(i))/(\sum_{i=1}^{n} table(i,j))$$

10. SYSTEM generates a table containing the total marks by summing all the CO marks for each student.

Table 7: Final/Semester marks of students in a course in OBE format

Class Roll	Exam Roll	Student's name	CO1 (12)	CO2 (12)	CO3 (12)	CO4 (12)	CO5 (12)	Total Final/Sem Marks (60)
344	191326	Bella Bose	5	8	3	9	10	35
345	191327	Anika	10	9	11	9	7	46
346	191328	Tom Cruise	9	7	4	8	6	34

11. SYSTEM saves all the above mentioned information on database.

12. SYSTEM passes this information in non OBE layer to calculate the final results combining tutorial marks, attendance marks and the final/sem total marks obtained from this OBE layer.

17. Save the added mark sheet and print it

ID: UC156

Primary Actors	teacher

Level	N/A
Complexity	Low
Use Case Status	Complete
Implementation Status	Scheduled
Preconditions	1. Marksheet should be complete and accurate.
Post-conditions	1. Marksheet is saved in the database successfully.
Author	group3 (Iffat)
Assumptions	N/A

17.1. Scenarios

17.1.1. Scenario

1. The teacher clicks on Save after assigning marks.
2. SYSTEM shows **"Mark Sheet is saved successfully"** .and saves the data on system database.

18. View CO-PO attainment graph

ID: UC10

Primary Actors	teacher
Level	User
Complexity	Medium
Use Case Status	Initial
Implementation Status	Scheduled
Preconditions	1. CO and PO table must be completed. 2. Calculation of CO and PO attainment must be completed.

Post-conditions	1. Attainment graph is shown successfully.
Author	N/A
Assumptions	N/A

18.1. Scenarios

18.1.1. Scenario

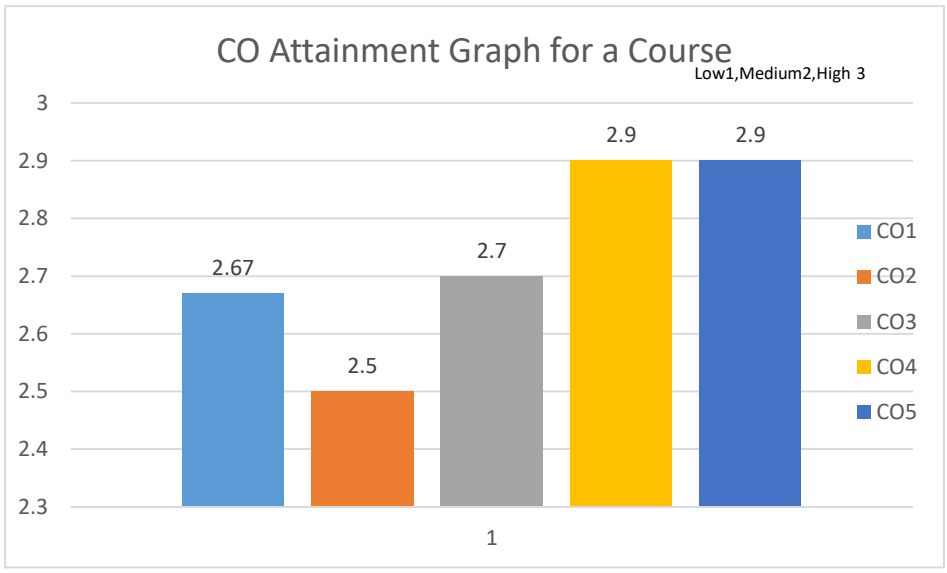
1. Teacher clicks on View Attainment Graph.
2. SYSTEM shows the CO and PO attainment graph for that particular course.
3. 

Figure 3: CO attainment graph for a course

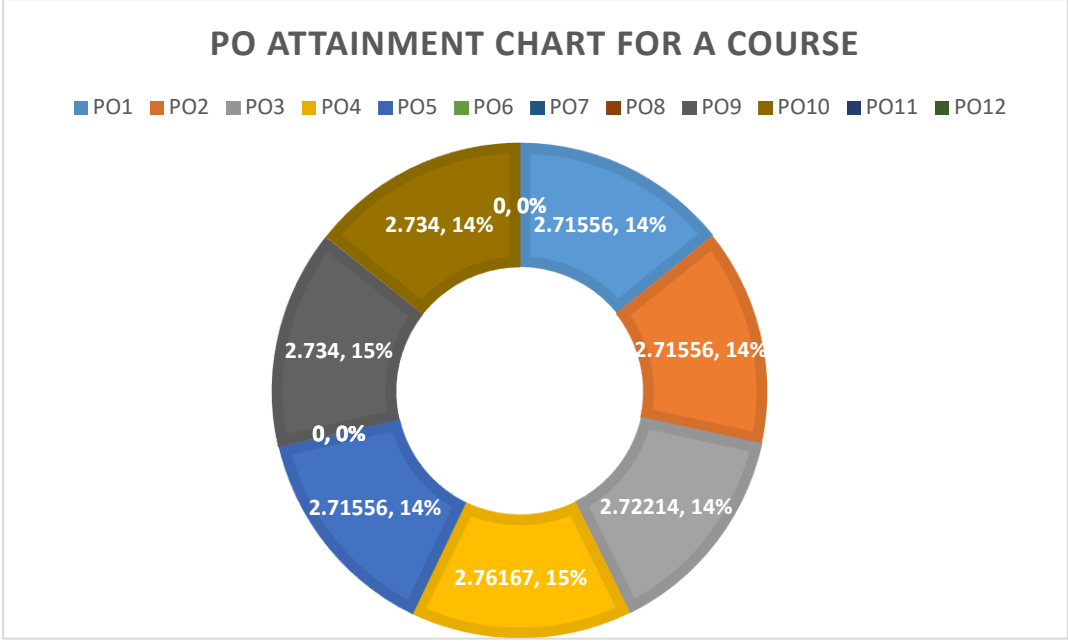


Figure 4:PO attainment graph for a course

19. Prepare Result for Individual Student

ID: UC28

Primary Actors	Exam Controller
Level	N/A
Complexity	High
Use Case Status	Base
Implementation Status	Started
Preconditions	1. Exam controller must receive the mark sheet of all the courses of a particular semester. 2. The mark sheet must be accurately calculated.
Post-conditions	1. Exam controller prepares the result card for each student successfully.
Author	N/A

Assumptions	N/A

19.1. Scenarios

19.1.1. Scenario

1. Exam controller logs in.

2. SYSTEM notifies the exam controller about the exams for which mark sheets of all the courses have been received.

3. Exam Controller clicks on the completed exams one by one.

4. if exam controller clicks an exam

    4.1. for each student

        4.1.1. SYSTEM assigns the course No, Course title, credit hour, letter grade, grade points of all the courses for that particular exam.

        4.1.2. SYSTEM calculates the gpa using the following formula.

        4.1.3. $$GPA = \frac{\sum_{i=1}^{n} Credit\ Hour(i) * Grade\ Point(i)}{total\ sum\ of\ credit\ hours}$$

        4.1.4. if the student has grade points above 0.00 for all the courses

            4.1.4.1. SYSTEM assigns Remark as Pass.

        4.1.5. else

            4.1.5.1. SYSTEM assigns Remark as Fail

        4.1.5. end if

    end for each

end if

5. SYSTEM shows the Final result card of a student as follows:

6.

Table 8**:** Final Result of an individual student

Student's Name	**Bela Bose**
Registration No	20190648604
Session	2018-2019
Class Roll	344
Exam Roll	191326

Course No.	*Course Title*	*Credit Hour*	*Letter Grade*	*Grade Point*	*GPA*	*Remarks*
MATH 101	Mathematics1	3	A+	4.00	3.97	Pass
ENG 103	English	3	A+	4.00		
CSE 105	Structured Programming	3	A+	4.00		
CSE 106	SP Lab	1	A+	4.00		
CSE 107	Electrical Circuits	3	A+	4.00		
CSE 108	EC Lab	1	A+	4.00		
PHY 109	Physics	3	A+	4.00		
URP 112	CAED Lab	1	A	3.75		
CSE 100	Viva-Voce	1	A	3.75		

7. Exam Controller approves the result card.

8. SYSTEM saves the Result card information in system database.

20. Assign course teachers for each semester

ID: UC11

Primary Actors	exam committee
Level	User
Complexity	Medium
Use Case Status	N/A
Implementation Status	Scheduled
Preconditions	1. Each teacher can be assigned for only one course in each semester.
Post-conditions	1. Name of the assigned teacher will show at the side of each course.
Author	Group03(Fiha)

Assumptions	N/A

20.1. Scenarios

20.1.1. Scenario

1. The exam committee chairman log in into the system.

2. SYSTEM redirects to the corresponding page for exam committee chairman

3. The exam committee chairman clicks on **Manage Semesters**

4. SYSTEM shows semesters list to the exam committee chairman.

5. The committee chairman clicks on a particular semester.

6. SYSTEM redirects to the corresponding semester page which has a list of courses for that semester.

7. if the committee chairman clicks on **Assign Teacher** for a particular course

    7.1. SYSTEM shows those teachers list who have not yet assigned to any courses for that semester.

    7.2. if The committee chairman clicks on a teacher name

        7.2.1. SYSTEM assigned the teacher for that particular course and remove that teacher from the list

        7.2.2. SYSTEM shows the teacher name next to the course name.

        7.2.3. SYSTEM also shows a update option beside the teacher name.

    end if

end if

21. View the course teacher list of each semester

ID: UC12

Primary Actors	exam committee
Level	User
Complexity	Low
Use Case Status	N/A
Implementation Status	Scheduled
Preconditions	1. The committee chairman must have a valid account to the system. 2. The committee chairman must login to the system.
Post-conditions	N/A
Author	Group03(Fiha)
Assumptions	N/A

21.1. Scenarios

21.1.1. Scenario

1. The exam committee chairman log in into the system.
2. SYSTEM redirects to the corresponding page for exam committee chairman
3. The exam committee chairman clicks on **Course Teachers**
4. SYSTEM shows semesters list to the exam committee chairman.
5. The committee chairman clicks on a particular semester.
6. SYSTEM redirects to the corresponding semester page which has a list of course teachers for that semester.
7. The committe chairman then can view the teachers list for that semester.

22. Approve the final result, publish result and view the result of each student

ID: UC13

Primary Actors	exam committee
Level	User
Complexity	High
Use Case Status	N/A
Implementation Status	Scheduled
Preconditions	1. The committee chairman must have a valid account to the system. 2. The committee chairman must login to the system.
Post-conditions	N/A
Author	Group03(Fiha)
Assumptions	N/A

22.1. Scenarios

22.1.1. Scenario

1. The exam committee chairman log in into the system.
2. SYSTEM redirects to the corresponding page for exam committee chairman
3. if The result is sent to the committe chairman
    - 3.1. SYSTEM notifies the committee chairman about the result.
    - 3.2. The exam committee chairman checks the result
    - 3.3. if the committe chairman wants to approve the result, he clicks on the **Approve** button
        - 3.3.1. SYSTEM shows Approved sign next to the result file.
        - 3.3.2. if The committee chairman clicks on the **Publish** button

3.3.2.1. SYSTEM publishes the result to the website.

3.3.2.2. SYSTEM shows a notification as a notice that the result of a particular semester/year has been published to the website

3.3.2.3. SYSTEM save the result to the Database.

3.3.2. end if

3.4. else if he clicks on the **Decline** button

3.4.1. SYSTEM shows Declined sign next to the result file.

3.4.2. SYSTEM notifies the exam controller that the result is declined.

end if

end if

23. View the result of his own/view the result of his whole batch & Download own report card

ID: UC14

Primary Actors	students
Level	User
Complexity	Medium
Use Case Status	N/A
Implementation Status	Scheduled
Preconditions	1. The student must successfully log in into the system. 2. The student must have a valid account to the system
Post-conditions	1. The student will receive a successful message when he/she download the result file.

Author	Group03(Fiha)
Assumptions	N/A

23.1. Scenarios

23.1.1. Scenario

1. The student log in into the system.

2. SYSTEM redirects to the corresponding page for the student

3. The student clicks on **Result**.

4. SYSTEM shows two options - 1. **Individual Result** 2. **Combine Result**

5. if the student clicks on **Individual Result**

5.1. SYSTEM displays a form that prompts the student to enter his registration number, exam roll, exam name and exam year.

5.2. The student enters his registration number, exam roll, exam name and exam year.

5.3. if The student clicks on **Enter**

5.3.1. SYSTEM checks the system database for the same registration number and exam roll

5.3.2. if The student registration number and exam roll matches,

5.3.2.1. SYSTEM redirects the student to his corresponding result page.

5.3.2.2. if the student wants to download the result card, he clicks on the **Download** button.

5.3.2.2.1. SYSTEM would just fetch the PDF file and hand it to the student.

5.3.2.2.2. student save the downloaded the PDF file to his device.

5.3.2.2. end if

5.3.3. else

5.3.3.1. SYSTEM shows a message "Invalid Registration Number/Exam Roll. Please re-enter Registration Number/Exam Roll".

5.3.3. end if

end if

6. else if the student clicks on **Combine Result**

6.1. SYSTEM displays the combite result sheet of the whole batch

end if

CHAPTER 4

Design Specification

4.1 Front-end Design

There are two parts to designing the front end. They are web designing and front-end web development. For front-end designing, we are using HTML, CSS, Bootstrap, Django, and Pycharm. These include fonts, navigation bars, top bar links, footers, drop-down menus, buttons, transitions, sliders, contact forms, etc.

4.2 Back-end Design

Currently we are on learning and planning phase of backend designing. We are using the default dbSQlite of Django as our database and creating primary databases such as students, teachers, staffs etc. for our future uses.

4.3 Implementation Requirements

The implementation requirements gave a unique thought. The main task is to make all things easy and user-pleasant. Some implementation requirements are below;

- Easier to make
- Easier to manage
- Easier to analyses
- Easier to interact
- Dynamic pages
- User-friendly

CHAPTER 5

Implementation and Testing

5.1 Implementation of Front-End

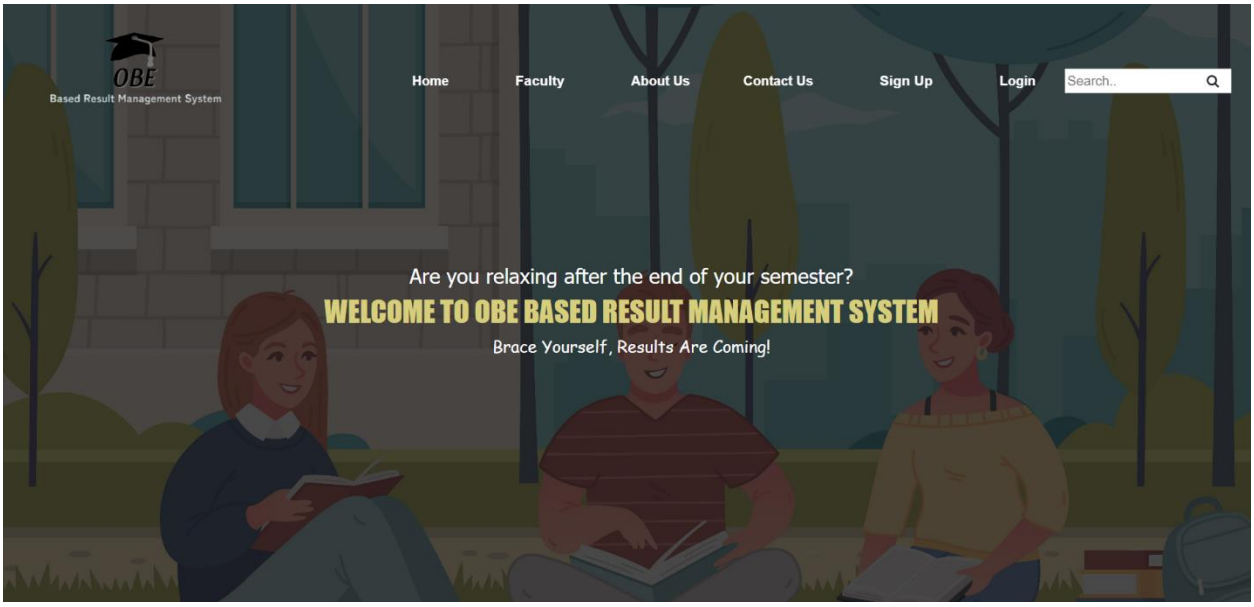


Figure 5 **:** Homepage

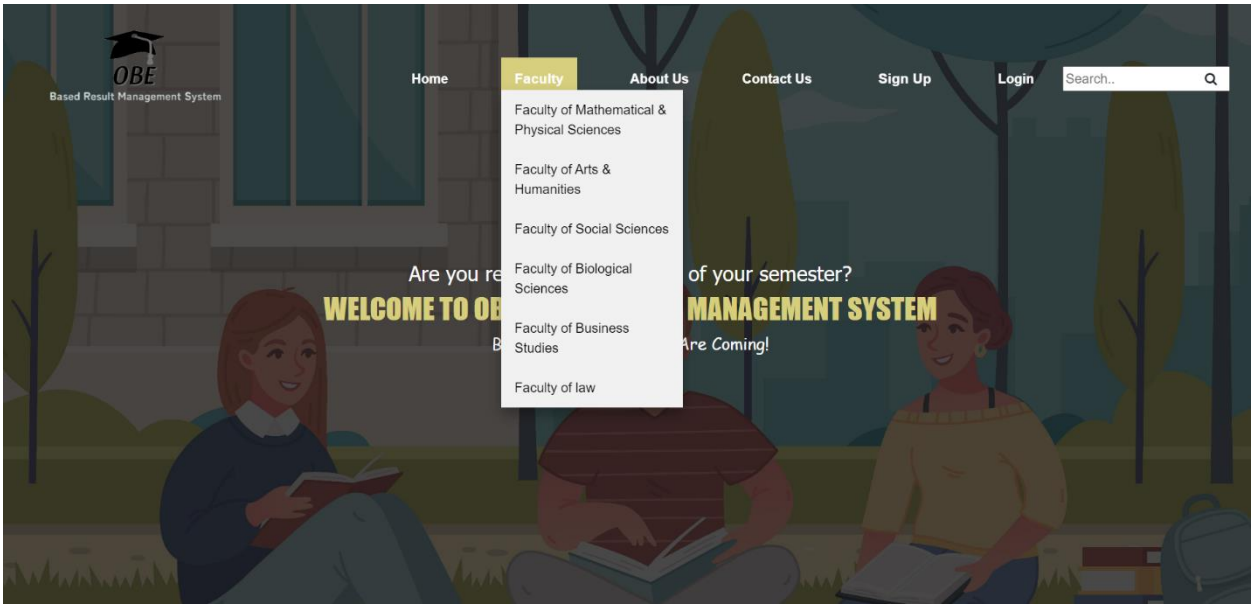


Figure 6**:** Dropdown options of Faculty

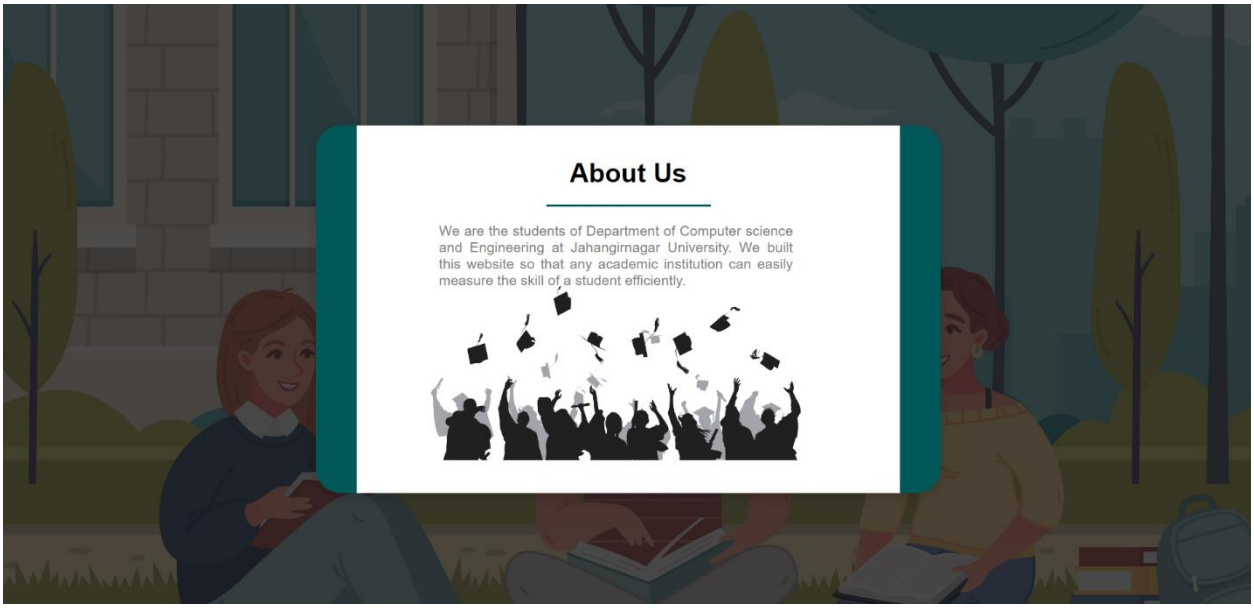


Figure 7**:** About Us

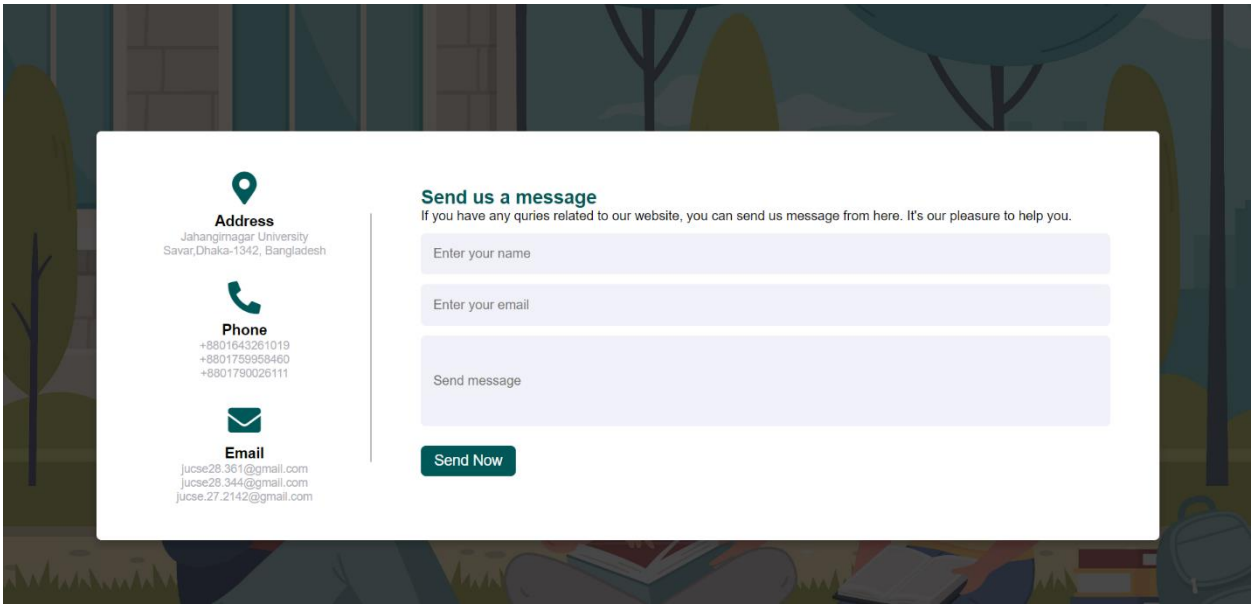


Figure 8**:** Contact Us

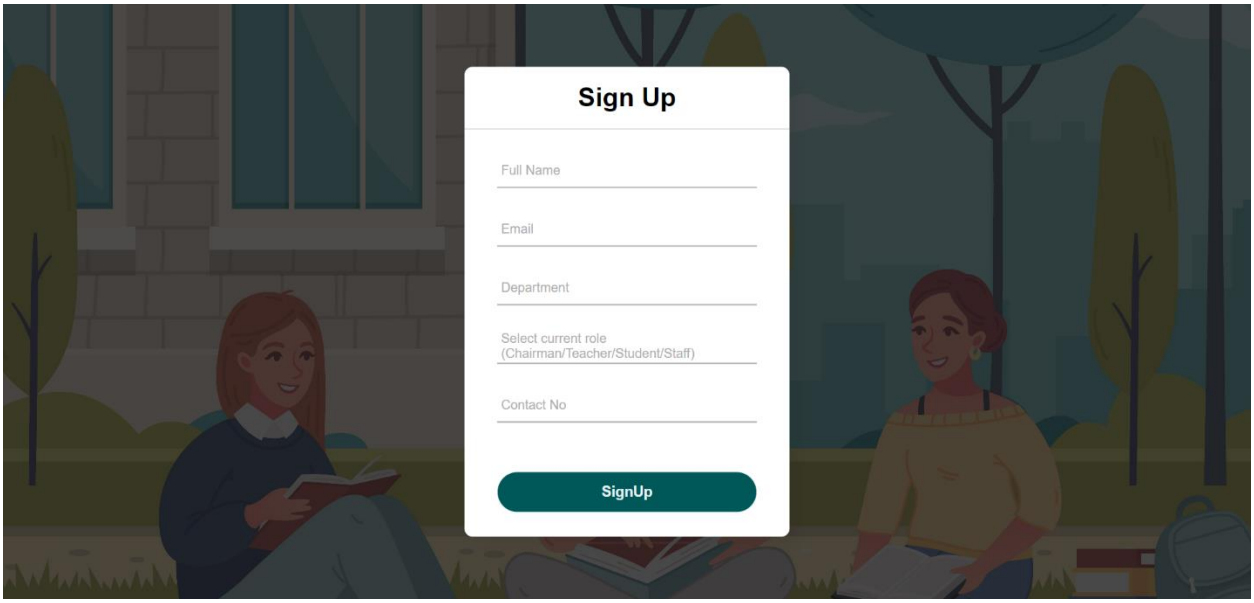


Figure 9**:** Sign Up

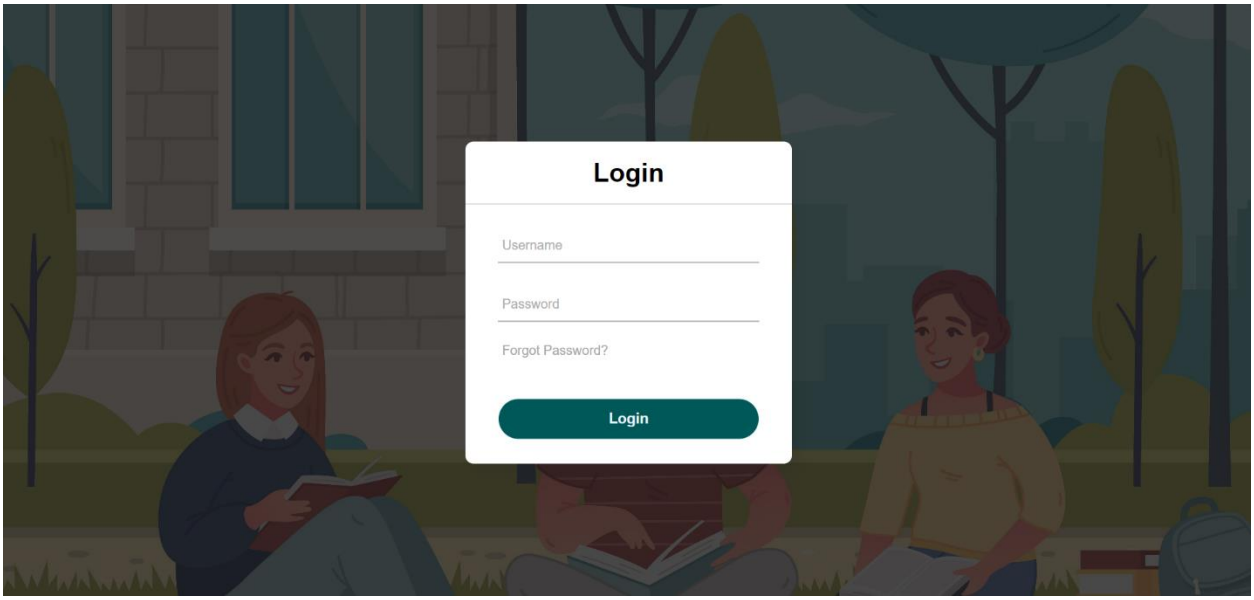


Figure 10**:** Login

5.2 Implementation of Back-End

We have just started adding teacher, students and staff list to our database. Further updates will be given in future.

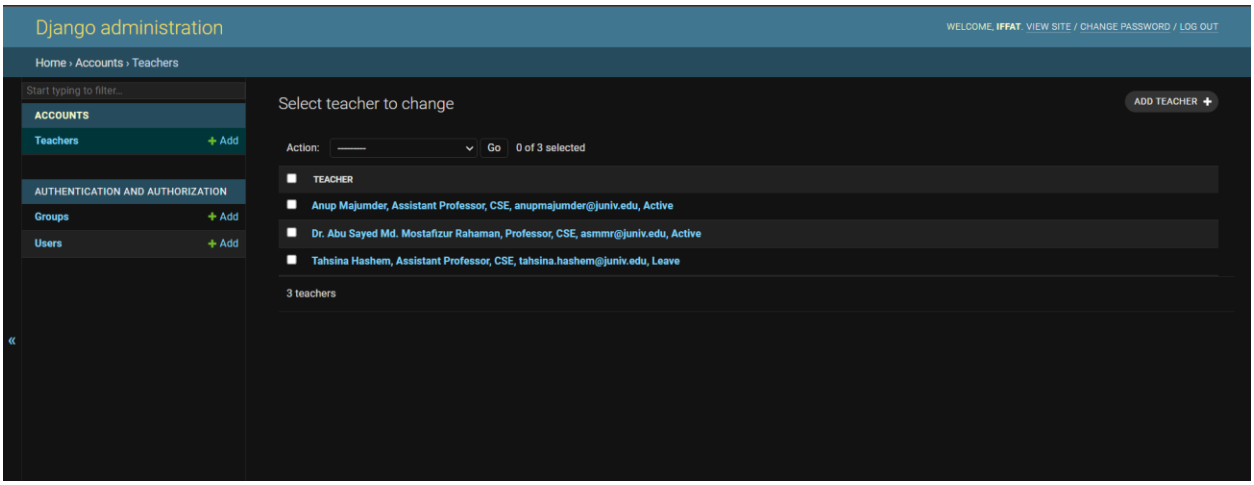


Figure 11**:** Adding teachers on database

CHAPTER 6

Conclusion and Future Scope

6.1 Discussion and Conclusion

This paper provides an overview of the key characteristics of the "OBE BASED RESULT MANAGEMENT SYSTEM" and its application in various contexts. The approach is based on sound educational principles and provides a robust framework for students to acquire the necessary fitness to practice. To successfully implement the "OBE BASED RESULT MANAGEMENT SYSTEM" the educators should understand the OBE system. Suddenly the traditional approaches should not be thrown away but should be used to implement OBE. In the future, all educational institutes will follow an Outcome-based Education curriculum. So every institution will need OBE BASED RESULT MANAGEMENT SYSTEM. Our System will help the institutions to generate and process the results, and help the students to measure their ability in a particular field. Bangladeshi universities impart knowledge through the traditional education system. Under this process, many students graduate unskilled. But the OBE system will create skilled graduates able to fulfill the demands of their respective fields.

6.2 Scope of Further Development

"OBE BASED RESULT MANAGEMENT SYSTEM" is a result processing system that needs continuous improvement. Every year new students will admit to the institute. Their information and results must be stored and saved in the database. So, we have to update this system from time to time. Currently, we are only working on the front-end part of the system. Still have to implement the Back-end part of the system. We just only did 20% on our project. So to complete the rest 80% of our project, we will use the database, and create the system dynamically. The project is now under development. To fulfill that goal, we have several ideas to do:

- We want to develop it not only for our institution but also for all other institutions. So we can expand our system to other institutions in our country.

- We want to add more exciting features like students can download their report cards and judge how to improve their skills.
- We have yet to complete creating an exam committee, form a yearly exam committee, system maintenance, manage the Syllabus, approve the final result, publish and view the results of each student, etc.
- We want to make this application more suitable, flexible, and user-friendly, and keep updating the users from time to time.