

Final Report on EXAM PILOT

Submitted to

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1. Project Description

1.1 Introduction

In today's rapidly evolving educational landscape, the effective management of student examinations is paramount to the success of educational institutions. To meet this demand for efficiency, transparency, and collaboration, we have developed a comprehensive Student Exam Management System. This system is designed to simplify the examination process, empower both teachers and students, and foster seamless communication among faculty members.

1.1.1 Motivation

Automation: Automate the exam management process to reduce administrative burdens on teachers and students.

Transparency: Foster transparency by allowing students to monitor their academic progress in real-time.

Collaboration: Enhance collaboration among faculty members by enabling the transfer of examination questions and requests.

Digitalization: Embrace digitalization to reduce paperwork and manual record-keeping.

1.1.2 Aims and Objectives

The initial aim and objectives of our system were to provide these features,

- Automate the entire examination management process of NSTU.
- Provide students with easy access to their exam marks, attendance records, and subject information.
- Allow students to download their mark sheets as PDF files for record-keeping and reference.
- Maintain teacher confidentiality.
- Ensure accurate and timely result management for students.
- Teachers can mark Attendance.

1.2 Target Users

"ExamPilot" is a proposed system designed to modernize and automate the traditional examination management processes in educational institutions, such as universities, colleges, and schools. This system addresses various challenges, including security concerns, cost-effectiveness, and efficiency improvements. The targeted customers for "ExamPilot" include ***educational institutions, Controller of Examination (COE) staff, teachers, faculty members, students, superintendents, examination center staff, administrators, IT personnel***, and potentially government education departments. The

system aims to simplify tasks related to question paper creation, distribution, grading, and result dissemination while enhancing security and transparency in the examination process.

1.3 Requirements

We have collected these requirements from our SRS document.

Table 01 List of requirements

No.	Requirement	Completed
FR-1	Users (Admin, Teacher, Student, Exam Controller) should be able to log in using their educational email and password.	YES
FR-2	User updates their profile	YES
FR-3	Password recovery for forgot password.	YES
FR-4	Admin should be able to manage courses, assign examiners to courses, and view course credits.	YES
FR-5	Admin should be able to manage departments and their details.	YES
FR-6	Admin should be able to manage faculty members and add new faculty details	YES
FR-7	Pending Requests (Question Upload & Question Download)	YES
FR-8	Pending Requests (Question Upload & Question Download)	YES
FR-9	Enter Marks & Mark Attendance	YES
FR-10	Attendance report generation based on students' daily attendance	YES
FR-11	Teachers should be able to view the subjects assigned to them.	YES
FR-12	Students should be able to view & download marksheets.	YES
FR-13	Accept Question	YES
FR-14	Send Questions to invigilators	YES
FR-15	System Notification	NO
DR-1	Each user type (Admin, Teacher, Exam Controller, Student) should have a dashboard with relevant information and functionalities.	YES
DR-2	Teachers should be able to view and respond to pending requests from the exam controller, such as question uploads.	YES
DR-3	Teachers should receive requests to download questions as superintendents on the exam day at a specific time.	YES
DR-4	Teachers should be able to enter marks for each student, including CT1, CT2, CT3, attendance, and final marks.	YES
DR-5	Users should be able to update their profile information, including password change, and phone number.	YES
DR-6	Logout	YES

PR-1	Database Performance	
PR-2	Login Page Performance	YES
PR-3	Performance Reporting	YES
PR-4	Question Upload Speed	YES
MR-1	Develop maintainable code.	YES

For more details, please view [Appendix A](#).

1.4 Models, Tools, and Resources

1.4.1 Model

SPL-I has had a significant influence on our project. As we iteratively developed our project using the methodology we had chosen, we encountered a variety of issues. We want to implement something new this time, and after learning from the project from last year, we have decided to use the agile model to do it. Break tasks into smaller iterations using the agile model. The project risk is reduced, and the overall project delivery time requirements are reduced due to the project's breakdown into smaller components. For more details, please view [Appendix B](#).

1.4.2 Tools and Resources

Table 02 List of tools

Category	Name or Description
Text Editor	Visual Studio Code
Server	Xampp
RDBMS	MySQL
Language	HTML, CSS, JavaScript, PHP, SQL
Learning Resource	<ol style="list-style-type: none"> 1. Head First HTML and CSS: A Learner's Guide to Creating Standards-Based Web Pages 2nd Edition by Elisabeth Robson 2. Head First JavaScript Programming: A Brain-Friendly Guide 1st Edition by Eric Freeman 3. PHP & MySQL: Server-side Web Development by Jon Duckett

For more details, please view [Appendix B](#).

1.5 Project Members

Table 03 List of members

Team Members	Supervisor
Mir Mohammod Tahsin (MUH2025007M) Imtiaz Chowdhury (MUH2025027M) Irfanul Haque (ASH1925021M)	Tasniya Ahmed Assistant Professor Institute of Information Technology

2. User Guide

2.1 User end (Student, Faculty Member, Exam Controller, Admin)

Figure 1 Login

After inputting credentials, a user can log in to the site.

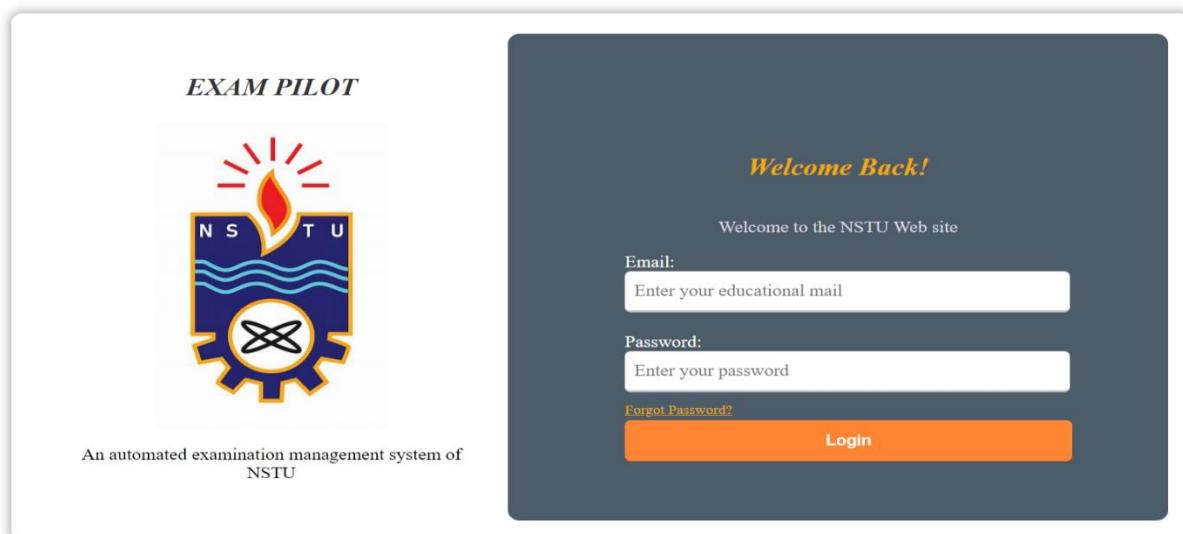


Figure 2 Forgot Password

Users can reset their password by clicking 'Forgot Password?'.

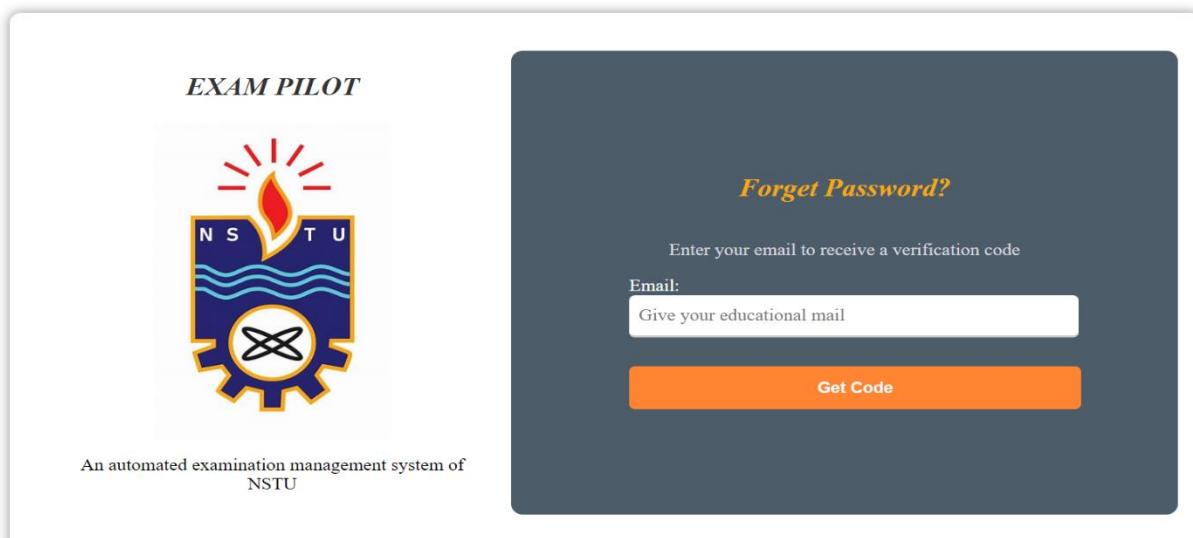


Figure 1 Student Dashboard

Every user has their own dashboard.

The screenshot shows the 'Student Panel' dashboard. On the left is a dark sidebar with white icons and text: Home, Courses, Faculties, Marksheets, Attendance Report, Update Profile, Notification, and Log Out. At the top right, it says 'Welcome Imtiaz Chowdhury' and 'Last login: 05/09/2023'. To the right are two orange-red summary cards. The first card, titled 'Total Courses' with the number 10, features a graduation cap icon. The second card, titled 'Total Semesters' with the number 8, features a person icon. In the top right corner of the dashboard area, there is a small circular profile picture of a man.

Figure 2 Download Marksheets

Students can Download their Marksheets.



Student ID: MUH2025027M

Department: Software Engineering

Date of Birth: 13/01/2001

Student Name: Imtiaz Chowdhury

Semester/Year: 5

Gender: Male

Figure 3 Notification

Student, Exam Controller & Teacher can get Notification.

The screenshot shows the 'Student Panel' interface. On the left is a vertical sidebar with icons and text links: Home, Courses, Faculties, Marksheets, Attendance Report, Update Profile, and a highlighted 'Notification' option. Below these is a 'Log Out' link. The main content area has a large orange header with the word 'Notification'. Underneath, there are two sections: 'Result' and 'Attendance'. The 'Result' section contains the message: 'Your first semester result is just updated now. Check your Marksheets section to download the full result.' The 'Attendance' section contains the message: 'Your 1st semester attendance sheet is updated recently. Check the Attendance Report section.'

Figure 4 Log Out

Every user can log out from 'Log Out' side-bar.

The screenshot shows the 'Student Panel' interface. The sidebar includes 'Home', 'Courses', 'Faculties', 'Marksheets', 'Attendance Report', 'Update Profile', 'Notification', and a highlighted 'Log Out' link. The main content area has an orange header with the word 'Log Out'. A red banner at the top displays the message 'Log Out Successful!!'. A central modal dialog box is titled 'Confirm Logout' with the sub-instruction 'Are you sure you want to log out?'. A single button labeled 'Log Out' is visible within the modal.

Figure 5 Teacher Dashboard

This is Teacher Panel Dashboard.

The screenshot shows the Teacher Panel Dashboard. On the left is a sidebar with various options: Home, Pending Request, Send Question, Enter Marks, Mark Attendance, Attendance Report, Assigned Subjects, Marksheets Report, Notifications, Update Profile, and Log Out. The main area has a header "Welcome Tasniya Ahmed" and "Last login: 05/09/2023". It features two cards: "Students Assigned" (15) with a person icon and "Courses Assigned" (5) with a book icon.

Teachers can send Question.

The screenshot shows the "Send Question" form. The sidebar on the left is identical to Figure 5. The main form has a title "Send Question". It includes fields for "Select Department" (IIT), "Select Semester" (Semester 1), "Select Course" (Introduction to Software Engineering), "Course Code" (input field placeholder "Please Enter Course Code"), and "Question" (input field placeholder "Choose File No file chosen"). At the bottom are "Send Question" and "Cancel" buttons.

Figure 6 Send Question

Figure 7 Enter Marks

Teacher can Enter Marks of students.

Student ID	Course Code	CT1 Marks	CT2 Marks	CT3 Marks	Attendance Marks	Total Marks	Grade	Actions

Teachers can mark attendance of student by date.

Student ID	Student Name	Course Code	Dept name	Semester	Attendance

Figure 8 Mark Attendance

Figure 9 Attendance Report

Teachers can download student attendance reports.

The screenshot shows the Teacher Panel interface. On the left, a sidebar menu lists various options: Home, Pending Request, Send Question, Enter Marks, Mark Attendance, Attendance Report (which is highlighted in orange), Assigned Subjects, Marksheet Report, Notifications, Update Profile, and Log Out. The main content area has a header "Attendance Report". It contains input fields for Dept Name, Semester, and Course Name (set to "C programming"), and a "Fetch Details" button. Below this is a table with columns: Student ID, Student Name, Dept Name, Course Name, Total Attendance, and Percentage. The table currently has no data rows.

Teachers can see which courses/subjects are assigned to them.

The screenshot shows the Teacher Panel interface. The sidebar menu is identical to Figure 9. The main content area has a header "Assigned Subjects". It contains a table with columns: Faculty ID, Faculty Name, Dept Name, Course Name, Semester, and Total Credit. A "Download" button is located below the table. The table currently has no data rows.

Figure 10 See Assigned Subject

Figure 11 Generate Marksheets Report

Teachers can download student marksheets by student's ID.

Marksheets Report

Student ID	Student Name	Dept Name	Course Name	Course Code	Total Grade
Download					

Teachers can see notifications.

Notification

Result

Your first semester result is just updated now. Check your Marksheets section to download the full result.

Attendance

Your 1st semester attendance sheet is updated recently. Check the Attendance Report section.

Question Approval

You have received a request to Accept question from the moderation committee with question set.

[Expand]

Figure 12 Teacher Notification

Figure 13 Update Profile

All users can update their profile.

Edit Profile & Credentials

First Name:
Enter First Name

Last Name:
Enter Last Name

Email:
Enter Email

Password:
Enter Password

Phone:
Enter Phone

Cancel

This is the Exam Controller Panel Dashboard.

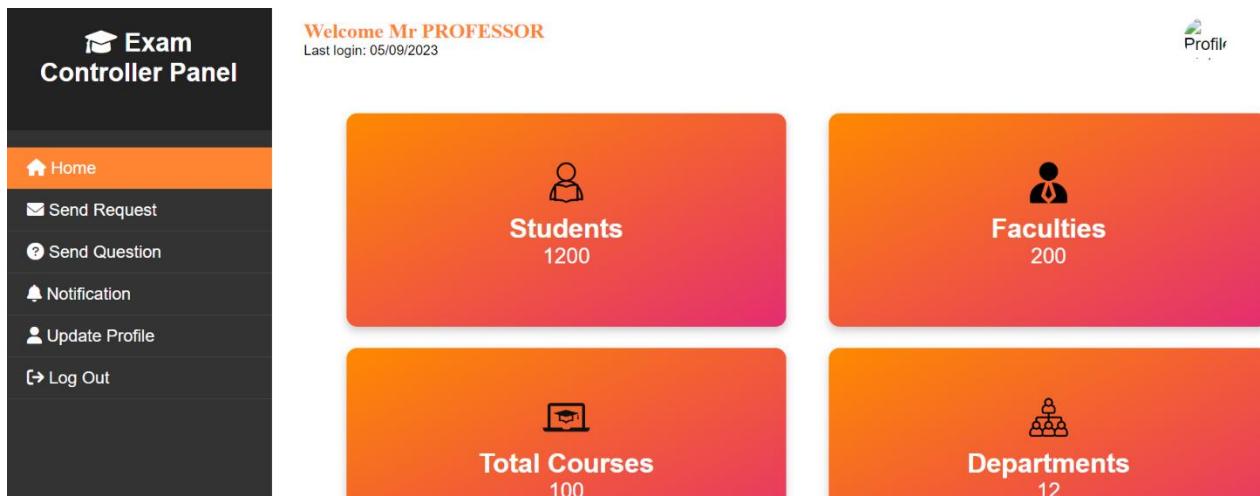
**Figure 14 Exam Controller Panel Dashboard**

Figure 15 Send request.

The Exam Controller can send request to the teachers to make Question set for upcoming Exam.

The Exam Controller can send finalized Question to superintendent who bring this to the exam hall.

Figure 16 Send finalized Question.

Figure 17 Admin Panel Dashboard

This is Admin Panel Dashboard.

The screenshot shows the Admin Panel Dashboard with a dark header bar and a sidebar on the left. The sidebar contains the following navigation links:

- Home
- Students
- Faculties
- Courses
- Departments
- Notification
- Update Profile
- Log Out

The main content area displays four cards with orange-to-red gradients:

- Students**: 1200
- Faculties**: 200
- Total Courses**: 100
- Departments**: 12

The admin can create student accounts by student information which can help students to log in to the site.

The screenshot shows the 'All Students' page with a dark header bar and a sidebar on the left. The sidebar contains the following navigation links:

- Home
- Students**
- Faculties
- Courses
- Departments
- Notification
- Update Profile
- Log Out

The main content area has a title 'All Students' and a form for creating a new student account:

Student ID:	Student Name:	Email ID:
<input type="text"/>	<input type="text"/>	<input type="text"/>
Contact:	Dept. Name:	Password:
<input type="text"/>	<input type="text"/>	<input type="text"/>
Semester:		
<input type="text"/>		

At the bottom are two buttons: 'Submit' (orange) and 'Cancel' (red).

Figure 18 Make student accounts.

Figure 19 Make Faculties account.

The admin can create teachers accounts by teacher information which can help teachers to log in to the site.

The screenshot shows the 'Admin Panel' interface. On the left sidebar, under the 'Courses' section, the 'Faculties' option is highlighted. The main area is titled 'Faculties'. It contains fields for Teacher ID, Teacher Name, Email ID, Contact, Dept. Name, and Password. Below these fields are two buttons: 'Submit' (orange) and 'Cancel' (red). At the bottom, there is a table header with columns: Teacher ID, Teacher Name, Email ID, Contact, Dept. Name, Password, and Actions.

Teacher ID	Teacher Name	Email ID	Contact	Dept. Name	Password	Actions
------------	--------------	----------	---------	------------	----------	---------

The admin can add Courses with ID and total student who are enrolled in that course to a department.

The screenshot shows the 'Admin Panel' interface. On the left sidebar, under the 'Courses' section, the 'Courses' option is highlighted. The main area is titled 'Courses'. It contains fields for Department Name, Select Semester, Course Code, Course Name, Total Credit, and Total Students. Below these fields are two buttons: 'Submit' (orange) and 'Cancel' (red). At the bottom, there is a table header with columns: Dept Name, Semester, Course Code, Course Name, Course Credit, Total Students, and Actions.

Dept Name	Semester	Course Code	Course Name	Course Credit	Total Students	Actions
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Figure 20 Manage Courses

Figure 21 Manage Departments

The admin can add total courses with credits, total semester & total students of a department(admin have to input that dept ID and Name).

Dept Code	Dept Name	Total Courses	Total Semester	Total Students	Total Credit	Actions

Source Code Documentation

2.2 Project Structure

2.2.1 index.php

This file contains our homepage content, that is, the text and images that people see when they first go to our site.

2.2.2 images folder

This folder contains all basic images required for our project. Like header, footer.

2.2.3 css and js folder

This folder contains all the necessary .css and .js files.

2.2.4 File naming convention

In this project all files are named by

Syntax = [functionality] like login.php, updateProfile.php

3. SRS & Development Mapping

Table 04 List of use cases

Use Case No	Use Case	Implementation
UC 01	Login	Login.php
UC 02	Change Password	fogotPassword.php
UC 03	Update Profile	UpdateProfile.php
UC 04	Send Request	sendRequest.php
UC 05	Send Question	sendQuestion.php
UC 06	Receive Request	PendingRequest.php (shows as a list with Request)
UC 07	Receive Question	PendingRequest.php (can download question for the request)
UC 08	Authenticate User	db.php
UC 09	Enter Marks	enterMarks.php
UC 10	Logout	Logout.php
UC 11	Enter Attendance	enterAttendance.php
UC 12	Generate Marksheets	MarksheetReport.php
UC 13	Generate Attendance Report	attendanceReport.php
UC 14	Manage Faculty	Faculties.php
UC 15	Manage Student	Student.php
UC 16	Manage Department	Department.php
UC 17	Manage Courses	Courses.php
UC 18	View Faculties	Faculties.php(in student panel)
UC 19	View Attendance Report	attendanceReport.php(in student panel)
UC 20	View Courses	courses.php(in student panel)
UC 21	Download Marksheets	marksheets.php(in student panel)

4. Challenges and Future Work

The main challenges we faced during developing this system are,

1. Integrating the "ExamPilot" system with existing NSTU systems, such as student databases and academic records, while ensuring data consistency and accuracy.
2. Designing the system to handle a growing number of students, courses, and examinations as NSTU expands.
3. Ensuring that the system produces accurate exam results and minimizes errors in data entry and processing.
4. Creating an intuitive and user-friendly interface for all stakeholders, including teachers, students, and administrators.
5. Testing of the system to identify and resolve any issues before it goes live.
6. Designing the system to be customizable to NSTU's specific requirements while allowing for potential customization by other educational institutions.

The future work we are proposing,

1. Implementing Block chain in large scale.
2. Implementing this for all universities.
3. Make this fully automated.

Appendix A: SRS Document

Functional Requirement

User login

FR-1	User accessed account		
Description	Users (Admin, Teacher, Student, Exam Controller) should be able to log in using their educational email and password.		
Stakeholders	Teacher, Student, Exam Controller, Admin	Priority	High

Update Profile

FR-2	User updates their profile		
Description	This functional requirement describes the process of allowing users to update their profile information. The feature allows users to edit their profile details such as name, email address, profile picture, password, and any other relevant information. To use the profile update feature, users must be authenticated, and access should be limited to authorized users only. The system should handle errors and display confirmation messages after the update is successful. The user interface should be intuitive and easy to use, and the system should maintain an audit trail of all profile updates. Overall, this feature should be implemented effectively to provide users with a seamless and secure experience while updating their profile.		
Stakeholders	Teacher, Student, Exam Controller, Admin	Priority	Medium

Password Recovery

FR-3	Password recovery for forgot password.		
Description	This functional requirement describes the process of password recovery for forgotten passwords in an online product purchasing system. The feature allows users to reset their password by providing a verification mechanism, such as an email or SMS, to ensure the user's identity. The system should enforce password strength requirements, display appropriate error messages, and provide a confirmation message to the user after they have successfully reset their password. The system should maintain an audit trail of all password recovery activities and ensure secure communication between the user's browser and the server. After resetting their password, users should be authenticated to the system and redirected to the appropriate page.		
Stakeholders	Teacher, Student, Exam Controller, Admin	Priority	Medium

Courses Management

FR-4	Courses Management		
Description	Admin should be able to manage courses, assign examiners to courses, and view course credits.		
Stakeholders	Admin	Priority	High

Department Management

FR-5	Department Management		
Description	Admin should be able to manage departments and their details.		
Stakeholders	Admin	Priority	High

Faculties Management

FR-6	Faculties Management.		
Description	Admin should be able to manage faculty members and add new faculty details		
Stakeholders	Admin	Priority	High

Student Management

FR-7	Manage students.		
Description	The student management module of the proposed automated examination management system aims to streamline various processes related to student information, course enrollment, marksheets generation, result publication, attendance tracking, and profile management.		
Stakeholders	Admin	Priority	High

Pending Requests

FR-9	Pending Requests (Question Upload & Question Download)		
Description	Teachers should receive requests from the exam committee for question upload. They can accept the request, submit the question paper, or reject the request. Also, as an invigilator they can download question paper received from Exam Controller.		
Stakeholders	Teachers, Exam Committee	Priority	High

Enter Marks

FR-10	Enter Marks
--------------	-------------

Description	Teachers (1st examiner and 2nd examiner) should be able to enter marks for answer scripts of a course. If the difference between their marks is more than 14, a 3rd examiner should be notified to review and provide marks. The final marks should be averaged based on the closest marks from the examiners.		
Stakeholders	Teachers	Priority	High

Mark Attendance

FR-11	Mark Attendance		
Description	Teachers should be able to mark attendance for students by selecting the date, course name, and semester. Attendance reports may be generated optionally.		
Stakeholders	Teachers	Priority	Medium

Generate Attendance Report

FR-12	Attendance report generation based on students' daily attendance		
Description	Teachers should be able to view & download final attendance report.		
Stakeholders	Teacher	Priority	High

Assigned Subjects

FR-13	Teachers should be able to view the subjects assigned to them.
Description	Teachers should be able to view the subjects assigned to them.

Stakeholders	Teacher	Priority	Low
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Marksheet Report Generation

FR-14	Marksheet Report		
Description	Teachers should be able to generate automated marksheets for each student. The marksheets should be sent to the exam controller via the department head for approval before it can be downloaded.		
Stakeholders	Teachers, Exam Controller, Department Head (Teacher)	Priority	High

System Notifications

FR-15	System Notification		
Description	User should receive notifications related to their assigned tasks and system updates.		
Stakeholders	Teacher, Exam Controller, Student	Priority	Medium

View Courses

FR-16	View Courses.		
Description	Students should be able to view their assigned courses.		
Stakeholders	Students	Priority	High

View faculties

FR-17	Students should be able to view information about their faculty members.		
Description	Students should be able to view information about their faculty members.		
Stakeholders	Students	Priority	Medium

View Marksheets

FR-18	View & Download marksheets.		
Description	Students should be able to view and download their result/marksheets for each semester. They can also download previous year results if available.		
Stakeholders	Students	Priority	High

View Attendance Report

FR-19	View Attendance Report		
Description	Students should be able to view and download their attendance report for each course.		
Stakeholders	Students	Priority	Medium

Accept Question

FR-20	Accept Question		
Description	Exam Committee will receive questions from teachers. Also, Exam Controller should be able to accept questions from the teacher, along with the question set.		
Stakeholders	Exam Controller, Teacher	Priority	High

Send Question

FR-21	Send Questions to invigilators		
Description	Teachers will send questions to the exam committee and then the exam committee will send it(finalized question) to the superintendent. Also, the Exam Controller should send the final question set to the invigilators (teachers) on the exam day. Invigilators should be able to download the question paper only after a specific time.		
Stakeholders	Exam Controller, Invigilator (Teacher)	Priority	High

User logout

FR-23	User logout from their account.
Description	The user will be able to log out of his account at the end of his need. Users will need to login again for later use.

Stakeholders	Admin, Teacher, Exam Controller, Student	Priority	Medium
---------------------	------------------------------------------	-----------------	--------

Data Requirement

Based on the description of your project, it seems that your system would require several types of data to function effectively. Here are some potential data requirements for each of the three main services you are providing:

Requirement Name	Requirement Description	Stakeholders	Priority
DR-1: User Authentication	Users should be able to log in to the system using their Edu mail and password.	Admin, Teacher, Exam Controller, Student	High
DR-2: Forgot Password	Users should be able to reset their password through OTP verification or confirmation URL.	Admin, Teacher, Exam Controller, Student	High
DR-3: Dashboard	Each user type (Admin, Teacher, Exam Controller, Student) should have a dashboard with relevant information and functionalities.	Admin, Teacher, Exam Controller, Student	High
DR-4: Course Management	Admin should be able to manage courses, assign examiners, and view course details, including credits and department.	Admin	High
DR-5: Student Management	Admin should be able to manage student information, add new students, and view student details.	Admin	High
DR-6: Subject Management	Admin should be able to manage subject details such as subject names (e.g., IIT, CSE).	Admin	Medium
DR-7: Faculty Management	Admin should be able to manage faculty members, add new faculty, and view faculty details.	Admin	Medium
DR-8: Admin Profile	Admin should have a profile page to update their personal information and settings.	Admin	Medium

Requirement Name	Requirement Description	Stakeholders	Priority
DR-9: Teacher Home	Teachers should have a home page with information about assigned courses and students.	Teacher	High
DR-10: Pending Requests	Teachers should be able to view and respond to pending requests from the exam controller, such as question uploads.	Teacher	High
DR-11: Question Download	Teachers should receive requests to download questions as superintendents on the exam day at a specific time.	Teacher	High
DR-12: Enter Marks	Teachers should be able to enter marks for each student, including CT1, CT2, CT3, attendance, and final marks.	Teacher	High
DR-13: Mark Attendance	Teachers should be able to mark attendance by selecting the date, course, semester, and student data.	Teacher	Medium
DR-14: Attendance Report	Teachers should be able to generate attendance reports, optionally, and download them in PDF format.	Teacher	Medium
DR-15: Assigned Subjects	Teachers should be able to view the subjects assigned to them.	Teacher	Medium
DR-16: Marksheets Report	Teachers should be able to generate automated marksheets and optionally send them to the exam controller.	Teacher	High
DR-17: Student Marksheets	Students should be able to view their marksheets for previous years and semesters and download them in PDF format.	Student	High
DR-18: Update Profile	Students should be able to update their profile information, including photo upload, password change, and phone number.	Student	High
DR-19: Notifications	Users should receive notifications through email, such as marksheets availability or important updates.	Teacher, Exam Controller, Student	Medium
DR-20: Logout	All users should have the ability to log out of the system.	Admin, Teacher, Student, Exam Controller	High

Requirement Name	Requirement Description	Stakeholders	Priority
DR-21: Request Management	Exam committee should be able to send requests to 1st and 2nd examiners for question set	Exam Controller	High

In addition to the above, your system would also require data on the usage of the platform, such as the number of users, active sessions, and engagement metrics, to help you understand how the system is being used and to make improvements over time. It's important to ensure that all the data is collected ethically, stored securely, and used in compliance with privacy regulations.

Performance Requirement

It is important to maintain the performance of the software system. To ensure performance we maintain these steps:

Requirement Name	Requirement Description	Stakeholders	Priority
PR-1: Login Page Performance	The login page should load quickly and handle concurrent user logins efficiently.	Admin, Teacher, Student, Exam Controller	High
PR-2: Dashboard Performance	The dashboard should load swiftly and display relevant information without significant delays.	Admin, Teacher, Exam Controller, Student	High
PR-3: Question Upload Speed	The system should allow teachers to upload question papers quickly and efficiently, ensuring minimal waiting times.	Teacher, Exam Controller	High
PR-4: Question Download Speed	Superintendents should be able to download question papers swiftly on the exam day, preventing delays in distributing papers to examination centers.	Superintendent, Exam Controller	High
PR-5: Mark Entry Efficiency	Teachers should be able to enter marks efficiently, with the system responding promptly and without any significant delays.	Teacher	High
PR-6: Marksheets Generation	The automated marksheets generation process should be fast and handle large volumes of data effectively, ensuring minimal processing time to generate marksheets reports for students.	Teacher, Exam Controller	High
PR-7: Result Publication Speed	The system should publish results promptly and handle the distribution of result notifications	Teacher, Exam Controller, Student	High

Requirement Name	Requirement Description	Stakeholders	Priority
	efficiently, ensuring timely access to results for students and stakeholders.		
PR-8: Attendance Marking	The process of marking attendance should be fast and responsive, allowing teachers to record attendance efficiently and without significant delays.	Teacher	Medium
PR-9: Performance Reporting	The system should be capable of generating performance reports, such as attendance reports or marksheets, in a timely manner, ensuring that stakeholders have access to up-to-date information.	Teacher, Exam Controller	Medium
PR-10: Notifications Delivery	The system should deliver notifications promptly, whether through email or within the user interface, to keep stakeholders informed about important updates, results, or other relevant information.	Admin, Teacher, Student	Medium
PR-11: Database Performance	The underlying database system should be optimized to handle concurrent access and large datasets efficiently, ensuring fast retrieval and manipulation of data.	System Administrators	High



Figure 22 Use case Diagram.

Use Case Descriptions

Table 4 Access Control

User Case	Access Control	
Goal	Control access to the system for different user roles	
Preconditions	The user is registered in the system and has valid login credentials	
Postconditions		
Success End Condition	User successfully logs into the system and gains appropriate access	
Failed End Condition	User fails to log in or does not have the required access permissions	
Primary Actors:	User	
Secondary Actors:	System	
Trigger	Users click on log in.	
Main Success Flows	Step	Action
	1	User navigates to the login page of the system.
	2	User enters their Edu mail and password.
	3	System verifies the credentials.
	4	System checks the user's role (Admin, Teacher, Exam Controller or Student).
	5	System grants access to the appropriate dashboard and functionality based on the user's role.
	6	User gains access to the system.
Alternative Flows	Step	Branching Action
	1	User forgets the password and initiates the password reset process.
	2	System will ask email for verification
	3	Users give email and receive a code
	4	Users submit the code and enter new password
Quality Requirements	Step	Requirement
	1	The login process should be completed within 5 seconds.
	2	The system should securely store and validate user passwords.
	3	The system should securely store and validate user passwords.

Table 5 Change Password

User Case	Change Password
Goal	To change the password for the user

Preconditions	User is logged in and wants to change their password	
Postconditions		
Success End Condition	User's password is successfully changed	
Failed End Condition	User's password change request is unsuccessful	
Primary Actors:	User (Admin, Teacher, Exam Controller, Student)	
Secondary Actors:	System	
Trigger	User selects the "Update Profile" option	
Main Success Flows	Step	Action
	1	User navigates to their profile settings or account settings page.
	2	User selects the option to change their password.
	3	User enters their current password, new password, and confirms the new password.
	4	User submits the password change request.
	5	System validates the entered information.
	6	System updates the user's password in the database.
	7	System confirms the successful password change to the user.
	8	User's session remains active, and they can continue using the system with the new password.
Alternative Flows	Step	Branching Action
	3a	If the user forgets their current password: <ul style="list-style-type: none"> • User clicks on the "Forgot Password" link. • User is redirected to the password recovery page. • User verifies their identity through email or other means. • User receives a temporary password, or a password reset link. • User sets a new password using the temporary password or password reset link.
Quality Requirements	Step	Requirement
	1	Password change process should be secure and protect user's confidentiality.
	2	Password change request should be processed within a reasonable timeframe (e.g., less than 10 seconds).
	3	System should enforce password complexity requirements to ensure password strength.
	4	User should receive clear feedback and confirmation upon successful password change.
	5	In case of failed password change, appropriate error messages should be displayed to the user.

Table 6 Update Profile

User Case	Update Profile	
Goal	Update user profile information	
Preconditions	User is logged into the system and has access to their profile page	
Postconditions		
Success End Condition	User's profile information is successfully updated	
Failed End Condition	Profile update is unsuccessful or encounters errors	
Primary Actors:	User (Teacher, Student, or Admin)	
Secondary Actors:	None	
Trigger	User clicks on <i>save</i> button from Profile Update panel.	
Main Success Flows	Step	Action
	1	User navigates to their profile page.
	2	User selects the option to edit their profile.
	3	User updates the desired profile information (e.g., photo, password, phone number).
	4	User saves the changes.
	5	System validates and updates the user's profile information in the database.
	6	Profile update is recorded successfully.
Alternative Flows	Step	Branching Action
	4a	User encounters an error while updating their profile.
	5	User enters invalid or incorrect information.
	6	System displays an error message or validation prompts.
	7	System displays an error message or validation prompts.
Quality Requirements	Step	Requirement
	1	The profile update process should be completed within 10 seconds.
	2	The system should validate the updated information for accuracy and integrity.
	3	The system should validate the updated information for accuracy and integrity.

Table 7 Send Request

User Case	Send Request
Goal	Send question request to a teacher for making question.
Preconditions	

Postconditions		
Success End Condition	Question request is successfully sent to the teacher	
Failed End Condition	Question request is not sent to the teacher	
Primary Actors:	Exam Committee	
Secondary Actors:	Teacher	
Trigger	The Exam Controller should click on Send request (from side bar) to start this process.	
Main Success Flows	Step	Action
	1	Exam Controller logs into the system.
	2	Exam Contr. navigates to send request
	3	Exam Contr. selects the specific teacher
	4	Exam Contr. provides the necessary details of the question paper.
	5	Exam Contr. submits the question request.
	6	Teacher receives a notification or request
Alternative Flows	Step	Branching Action
	5a	Teacher is unavailable or unable to access the system at that moment.
	6	Technical issues prevent the successful transmission of the request.
Quality Requirements	Step	Requirement
	1	The system should allow the Exam Committee to select and send the request within 1 minute.
	2	The system should deliver the notification or request to the teacher within 5 minutes

Table 8 Send Question

User Case	Send Question	
Goal	Send question paper to the exam committee	
Preconditions	Teacher is logged into the system and has the question paper ready	
Postconditions		
Success End Condition	Question paper is successfully sent to the exam committee	
Failed End Condition	Sending the question paper fails or encounters errors	
Primary Actors:	Teacher	
Secondary Actors:	None	
Trigger	Teacher clicks on <i>submit</i> button from Pending request panel.	
Main Success Flows	Step	Action
	1	Teacher navigates to the "Pending Request" section.

	2	Teacher selects the option to upload the question paper.
	3	Teacher selects the appropriate course/exam and uploads the question paper file.
	4	System validates the file format and size.
	5	Teacher submits the question paper.
	6	System notifies the exam committee about the new question paper.
	7	Question paper is stored securely.
Alternative Flows	Step	Branching Action
	3a	Teacher encounters an error while uploading the question paper.
	4a	Teacher uploads an invalid or incorrect file format.
	5	System displays an error message or validation prompts.
	6	Teacher corrects the file and uploads again
Quality Requirements	Step	Requirement
	1	The upload process should be completed within 10 seconds.
	2	The upload process should be completed within 10 seconds.
	3	The system should provide appropriate error messages or prompts for incorrect or invalid file uploads.

Table 9 Receive Request

User Case	Receive Request	
Goal	Receive a request from the Exam Committee to create a question paper	
Preconditions	Teacher is logged in and assigned as an examiner	
Postconditions		
Success End Condition	Teacher receives the request for making the question paper	
Failed End Condition	Teacher does not receive the request	
Primary Actors:	Teacher	
Secondary Actors:	Exam Committee	
Trigger	Teacher selects the "Pending Request" option	
Main Success Flows	Step	Action
	1	Teacher logs into the system using their credentials.
	2	Teacher navigates to the dashboard.
	3	Teacher checks for pending requests or notifications.
	4	Teacher receives a request from the Exam Committee to create a question paper.
	5	Teacher views the details of the request, including the course, exam details, and any specific instructions.
	6	Teacher accepts the request.

	7	Teacher starts working on creating the question paper.
	8	Teacher completes the question paper creation.
	9	Teacher uploads the question paper to the system.
	10	Teacher submits the question paper to the Exam Committee.
	11	Teacher receives a confirmation of successful submission.
	12	Teacher's task of creating the question paper is completed.
Alternative Flows	Step	Branching Action
	5a	If there are no pending requests or notifications: <ul style="list-style-type: none"> • Teacher manually checks for new requests from the Exam Committee. • Teacher navigates to the request section. • Teacher finds and selects the request for creating a question paper.
Quality Requirements	Step	Requirement
	1	The request notification should be delivered to the teacher promptly (within a few seconds).
	2	The system should display clear and comprehensive details of the request to the teacher.
	3	The system should display clear and comprehensive details of the request to the teacher.
	4	The system should provide a secure and reliable platform for uploading and submitting the question paper.
	5	The teacher should receive a confirmation of successful submission to ensure the request is fulfilled.

Table 10 Receive Question

User Case	Receive Question
Goal	Receive question
Preconditions	Teacher is logged
Postconditions	
Success End Condition	Teacher receives the question
Failed End Condition	Teacher does not receive the question
Primary Actors:	Teacher
Secondary Actors:	Exam Committee
Trigger	Teacher selects the "Pending Request" option

Main Success Flows	Step	Action
	1	Teacher receives a notification or request to set a question paper.
	2	Teacher logs into the system.
	3	Teacher checks for pending requests or notifications.
	4	Teacher receives a request from the Exam Committee
	5	Teacher accepts the pending request.
	6	Teacher downloads the question paper & reviews the question paper
	7	Teacher provides necessary modifications or feedback.
	8	Teacher submits the question paper.
	9	Teacher receives confirmation of successful submission.
Alternative Flows	Step	Branching Action
	5a	The teacher rejects the request
	6	Teacher encounters technical issues during the review or submission process.
Quality Requirements	Step	Requirement
	1	The system should deliver the notification within 1 minute.
	2	The system should allow the teacher to access and review the question paper smoothly.
	3	The system should provide a user-friendly interface for submitting the question paper.
	4	The system should provide a user-friendly interface for submitting the question paper.

Table 11 Authenticate User

User Case	Authenticate User	
Goal	Authenticate user by Admin	
Preconditions	Admin has valid credentials to access the system	
Postconditions		
Success End Condition	User is successfully authenticated by the admin	
Failed End Condition	User authentication fails	
Primary Actors:	Admin	
Secondary Actors:	User	
Trigger	User clicks on the login button.	
Main Success Flows	Step	Action

	1	User accesses the login page of the system.
	2	User enters their credentials (Edu mail and password).
	3	User clicks on the login button.
	4	System validates the entered credentials against the stored data.
	5	System verifies the credentials with the admin's authentication.
	6	System grants access to the user if the authentication is successful.
	7	System grants access to the user if the authentication is successful.
Alternative Flows	Step	Branching Action
	2a	User enters invalid credentials.
	3	User exceeds the maximum number of login attempts.
	4	Technical issues prevent the successful authentication process.
Quality Requirements	Step	Requirement
	1	Technical issues prevent the successful authentication process.
	2	The system should enforce password complexity requirements to enhance security.
	3	The system should enforce password complexity requirements to enhance security.

Table 12 Enter Marks

User Case	Enter Marks
Goal	Enter and submit marks for student's answer script
Preconditions	Teacher is logged into the system and has the necessary course information
Postconditions	
Success End Condition	Marks for the student's answer script are successfully recorded
Failed End Condition	Marks entry is unsuccessful or encounters errors
Primary Actors:	Teacher
Secondary Actors:	None
Trigger	Teacher clicks on <i>submit</i> marks from Enter marks panel.

Main Success Flows	Step	Action
	1	Teacher navigates to the "Enter Marks" section.
	2	Teacher selects the appropriate session, course, and student.
	3	Teacher enters the marks for CT1, CT2, CT3, attendance, and final marks.
	4	Teacher submits the entered marks.
	5	System validates the marks and saves them in the database.
	6	Marks entry is recorded successfully.
Alternative Flows	Step	Branching Action
	5a	Teacher clicks cancel button
	5b	All the data will be vanished
Quality Requirements	Step	Requirement
	1	The marks entry process should be completed within 10 seconds per student.
	2	The system should validate the entered marks for accuracy and integrity.
	3	The system should provide appropriate error messages or prompts for incorrect or invalid entries.

Table 13 Enter Attendance

User Case	Enter Attendance	
Goal	Enter daily attendance of students	
Preconditions	Teacher is logged into the system and must have access to the specific course and class for which attendance needs to be recorded.	
Postconditions		
Success End Condition	Attendance data is successfully recorded and stored in the system.	
Failed End Condition	Attendance data is not recorded or there is an error in the process.	
Primary Actors:	Teacher	
Secondary Actors:	None	
Trigger	The teacher selects the "Mark Attendance" option from the dashboard.	
Main Success Flows	Step	Action

	1	The system presents the teacher with a list of courses or classes assigned to them.
	2	The teacher selects the desired course or class for which attendance needs to be recorded.
	3	The system displays the list of students enrolled in the selected course or class.
	4	The teacher marks the attendance for each student (e.g., present, absent, late) by selecting the appropriate option or entering the data.
	5	The teacher submits the attendance data to the system.
	6	The system validates and stores the attendance data in the database.
	7	The system confirms successful submission of attendance.
Alternative Flows	Step	Branching Action
	1a	If there are no courses or classes assigned to the teacher, the system displays a message indicating that no courses or classes are available for attendance entry. The use case ends.
	4a	If the teacher encounters an issue while marking attendance for a student (e.g., student name missing, system error), the teacher notifies the system administrator or appropriate personnel for assistance. The use case ends.
	6a	If there is a data validation error or database issue, the system displays an error message indicating the issue. The teacher can retry or contact the system administrator for resolution.
	7a	If the attendance submission fails, the system notifies the teacher about the failure and provides guidance on possible causes or actions to resolve the issue. The teacher can retry the submission or contact the system administrator for assistance.
Quality Requirements	Step	Requirement
	1	User interface should be intuitive and easy to use, allowing the teacher to efficiently record attendance.
	2	Attendance data should be accurately captured and stored without loss or corruption.
	3	The system should provide appropriate validation checks to ensure the correctness of the entered data.
	4	Attendance submission process should be reliable and robust, handling potential errors or exceptions gracefully.

	5	The system should provide timely feedback to the teacher regarding successful submission or any encountered errors.
	6	The attendance entry process should be performant, allowing the teacher to record attendance efficiently without significant delays.

Table 14 Generate Marksheets

User Case	Generate marksheets	
Goal	Generate marksheets for each student	
Preconditions	Teacher has uploaded all student's course marks to the database	
Postconditions		
Success End Condition	Marksheet is successfully generated for each student	
Failed End Condition	Marksheet generation fails or encounters errors	
Primary Actors:	System	
Secondary Actors:	None	
Trigger	Teacher completes uploading all course marks	
Main Success Flows	Step	Action
	1	Teacher completes uploading all course marks
	2	System validates the marks data.
	3	System calculates the final marks for each student based on the uploaded data.
	4	System generates a marksheets for each student.
	5	Marksheets include student details, course names, individual marks, and results.
	6	Marksheets include student details, course names, individual marks, and results.
	7	System sends the marksheets to each student's email address.
Alternative Flows	Step	Branching Action
	1a	Teacher encounters errors while uploading course marks.
	2	System detects invalid or inconsistent data in the uploaded marks.
	3	System displays an error message or validation prompts.
	4	Teacher corrects the data and uploads again.
Quality Requirements	Step	Requirement

	1	The marksheet generation process should be completed within 30 seconds for a batch of 100 students.
	2	The system should accurately calculate the final marks based on the uploaded data.
	3	The marksheet should include all necessary information and be presented in a clear and organized format.
	4	The marksheet should be securely saved and sent to each student's email address.

Table 15 Generate Attendance Report

User Case	Send Request	
Goal	Generate attendance report by the system	
Preconditions	Teacher has submitted attendance for all students in the specified course and semester	
Postconditions		
Success End Condition	Attendance report is successfully generated by the system	
Failed End Condition	Attendance report is not generated	
Primary Actors:	System	
Secondary Actors:	None	
Trigger	Teacher selects the "Attend" option to enter the specific day's attendance from 'Mark Attendance' panel.	
Main Success Flows	Step	Action
	1	Teacher logs into the system.
	2	Teacher navigates to the Attendance section.
	3	Teacher selects the specific course and semester.
	4	Teacher enters the attendance for each student in the course.
	5	Teacher submits the attendance.
	6	System receives the attendance data for the selected course and semester.
	7	System generates the attendance report based on the submitted data.
	8	System presents the attendance report to the Teacher.
Alternative Flows	Step	Branching Action
	5a	Teacher fails to submit attendance for all students
	6	Teacher fails to submit attendance for all students
Quality Requirements	Step	Requirement
	1	The system should process the attendance data and generate the report within 10 seconds.

	2	The system should process the attendance data and generate the report within 10 seconds.
	3	The system should present the attendance report to the Teacher within 5 seconds.

Table 16 Manage Faculty

User Case	Manage Faculty	
Goal	Add faculties to the system	
Preconditions	Admin has valid credentials and access to the system	
Postconditions		
Success End Condition	Admin has valid credentials and access to the system	
Failed End Condition	Addition of faculties fails	
Primary Actors:	Admin	
Secondary Actors:	User	
Trigger	Admin clicks on add new button from Faculties panel.	
Main Success Flows	Step	Action
	1	Admin accesses the admin dashboard of the system.
	2	Admin selects the "Faculties" module.
	3	Admin enters the teacher ID, teacher's name, email ID, password, department name, etc.
	4	Admin clicks on the "Add New" button.
	5	System enters the teacher's data in the database.
	6	Success message is displayed to the admin indicating the addition of faculty.
Alternative Flows	Step	Branching Action
	1	System encounters technical issues while adding the faculty.
Quality Requirements	Step	Requirement
	1	The faculty addition process should be completed within 10 seconds.
	2	The system should enforce strong password requirements to enhance security.

Table 17 Manage Student

User Case	Manage Student	
Goal	Add students to the system	
Preconditions	Admin has valid credentials and access to the system	
Postconditions		
Success End Condition	Admin has valid credentials and access to the system	
Failed End Condition	Addition of students fails	
Primary Actors:	Admin	
Secondary Actors:	None	
Trigger	Admin clicks on add new button from Students panel.	
Main Success Flows	Step	Action
	1	Admin accesses the admin dashboard of the system.
	2	Admin selects the "Students" module.
	3	Admin enters the student ID, student's name, email ID, password, department name, etc.
	4	Admin clicks on the "Add New" button.
	5	System enters the student's data in the database.
	6	Success message is displayed to the admin indicating the addition of student.
Alternative Flows	Step	Branching Action
	4a	Admin click on the cancel button
	4b	Student addition will be canceled
Quality Requirements	Step	Requirement
	1	The student addition process should be completed within 10 seconds.
	2	The system should enforce strong password requirements to enhance security.

Table 18 Manage Department

User Case	Manage Department
Goal	Add departments to the system
Preconditions	Admin has valid credentials and access to the system
Postconditions	
Success End Condition	Admin has valid credentials and access to the system
Failed End Condition	Addition of departments fails
Primary Actors:	Admin

Secondary Actors:	None	
Trigger	Admin clicks on add new button from Department panel.	
Main Success Flows	Step	Action
	1	Admin accesses the admin dashboard of the system.
	2	Admin selects the "Department" module.
	3	Admin enters the Dept Code, Dept Name, Total Semester, Total Courses, Total Credit, etc.
	4	Admin clicks on the "Add New" button.
	5	System enters the Department's data in the database.
	6	Success message is displayed to the admin indicating the addition of department.
Alternative Flows	Step	Branching Action
	1	System encounters technical issues while adding the department.
Quality Requirements	Step	Requirement
	1	The department addition process should be completed within 10 seconds.
	2	The system should enforce strong password requirements to enhance security.

Table 19 Manage Courses

User Case	Manage Courses	
Goal	Add courses to the system	
Preconditions	Admin has valid credentials and access to the system	
Postconditions		
Success End Condition	Admin has valid credentials and access to the system	
Failed End Condition	Addition of courses fails	
Primary Actors:	Admin	
Secondary Actors:	None	
Trigger	Admin clicks on add new button from Courses panel.	
Main Success Flows	Step	Action
	1	Admin accesses the admin dashboard of the system.
	2	Admin selects the "Courses" module.
	3	Admin selects Department, Select Semester, and enters Course Code, Course Name.
	4	Admin clicks on the "Add New" button.

	5	System enters the course's data in the database.
	6	Success message is displayed to the admin indicating the addition of courses.
Alternative Flows	Step	Branching Action
	1	System encounters technical issues while adding the courses.
Quality Requirements	Step	Requirement
	1	The courses addition process should be completed within 10 seconds.
	2	The system should enforce strong password requirements to enhance security.

Table 20 View Faculties

User Case	View Faculties	
Goal	To view the list of faculties	
Preconditions	Student is logged in	
Postconditions		
Success End Condition	The list of faculties is displayed successfully	
Failed End Condition	Failed to retrieve the list of faculties	
Primary Actors:	Student	
Secondary Actors:	None	
Trigger	Student selects the "View Faculties" option	
Main Success Flows	Step	Action
	1	Student selects the "View Faculties" option from the dashboard.
	2	System retrieves the list of all faculties.
	3	System displays the list of faculties, including their names and relevant details.
	4	Student can scroll through the list and view all the faculties.
	5	System notifies the student about the successful retrieval and display of faculties.
Alternative Flows	Step	Branching Action
	1	
	2	
	3	
	4	
	5	

	6	
Quality Requirements	Step	Requirement
	1	Retrieval time for the list of faculties: Within 3 seconds.
	2	Accurate and up-to-date information of faculties.
	3	User-friendly interface for easy navigation and readability.
	4	System availability: 99.9% uptime.

Table 21 View Attendance Report

User Case	View Attendance Report	
Goal	To view the attendance report	
Preconditions	Student is logged in	
Postconditions		
Success End Condition	The attendance report is displayed successfully	
Failed End Condition	Failed to retrieve the attendance report	
Primary Actors:	Student	
Secondary Actors:	None	
Trigger	Student selects the "Attendance Report" option	
Main Success Flows	Step	Action
	1	Student selects the "Attendance Report" option from the dashboard.
	2	System retrieves the attendance data for the student.
	3	System calculates the attendance percentage based on the available data.
	4	System displays the attendance report, including the total number of classes, attended classes, absent classes, and the attendance percentage.
	5	Student can view the report and see their attendance status.
	6	System notifies the student about the successful retrieval and display of the attendance report.
Alternative Flows	Step	Branching Action
	1	
	2	
	3	
	4	
	5	
	6	
Quality Requirements	Step	Requirement

1	Retrieval time for the list of faculties: Within 3 seconds.
2	Accurate and up-to-date attendance data.
3	User-friendly interface for easy navigation and readability.
4	System availability: 99.9% uptime.

Table 22 View Courses

User Case	View Courses	
Goal	To view the list of courses	
Preconditions	Student is logged in	
Postconditions		
Success End Condition	To view the list of courses	
Failed End Condition	Failed to retrieve the list of courses	
Primary Actors:	Student	
Secondary Actors:	None	
Trigger	Student selects the "Courses" option	
Main Success Flows	Step	Action
	1	Student selects the "Courses" option from the dashboard.
	2	System retrieves the list of courses
	3	System displays the list of courses, including the course names, course codes, and credit hours.
	4	System notifies the student about the successful retrieval and display of the course list.
Alternative Flows	Step	Branching Action
	1	
	2	
	3	
	4	
	5	
	6	
Quality Requirements	Step	Requirement
	1	Retrieval time for the course list: Within 2 seconds.
	2	Accurate and up-to-date course data.
	3	User-friendly interface for easy navigation and readability.
	4	System availability: 99.9% uptime.

Table 23 Download Marksheets

User Case	Download Marksheets	
Goal	To download the marksheets	
Preconditions	Student is logged in and has access to their marksheets	
Postconditions		
Success End Condition	The marksheets are successfully downloaded by the student	
Failed End Condition	Failed to download the marksheets	
Primary Actors:	Student	
Secondary Actors:	None	
Trigger	Student selects the "Marksheets" option	
Main Success Flows	Step	Action
	1	Student selects the "Marksheets" option
	2	System retrieves the marksheets for the student, including their course grades, total marks, and any other relevant information.
	3	System generates the marksheets in a downloadable format, such as PDF.
	4	Student initiates the download of the marksheets.
	5	The marksheets are successfully downloaded to the student's device.
	6	System notifies the student about the successful download of the marksheets.
Alternative Flows	Step	Branching Action
	1	
	2	
	3	
	4	
	5	
	6	
Quality Requirements	Step	Requirement
	1	Generation time for the marksheets: Within 5 seconds.
	2	Accuracy of the marksheets data, ensuring correct grading and calculation of totals.
	3	Compatibility of the downloadable format (e.g., PDF) for easy viewing and printing.
	4	Secure and restricted access to marksheets download functionality to authorized students only.
	5	User-friendly interface for easy navigation and readability.
	6	System availability: 99.9% uptime.

Activity Diagram

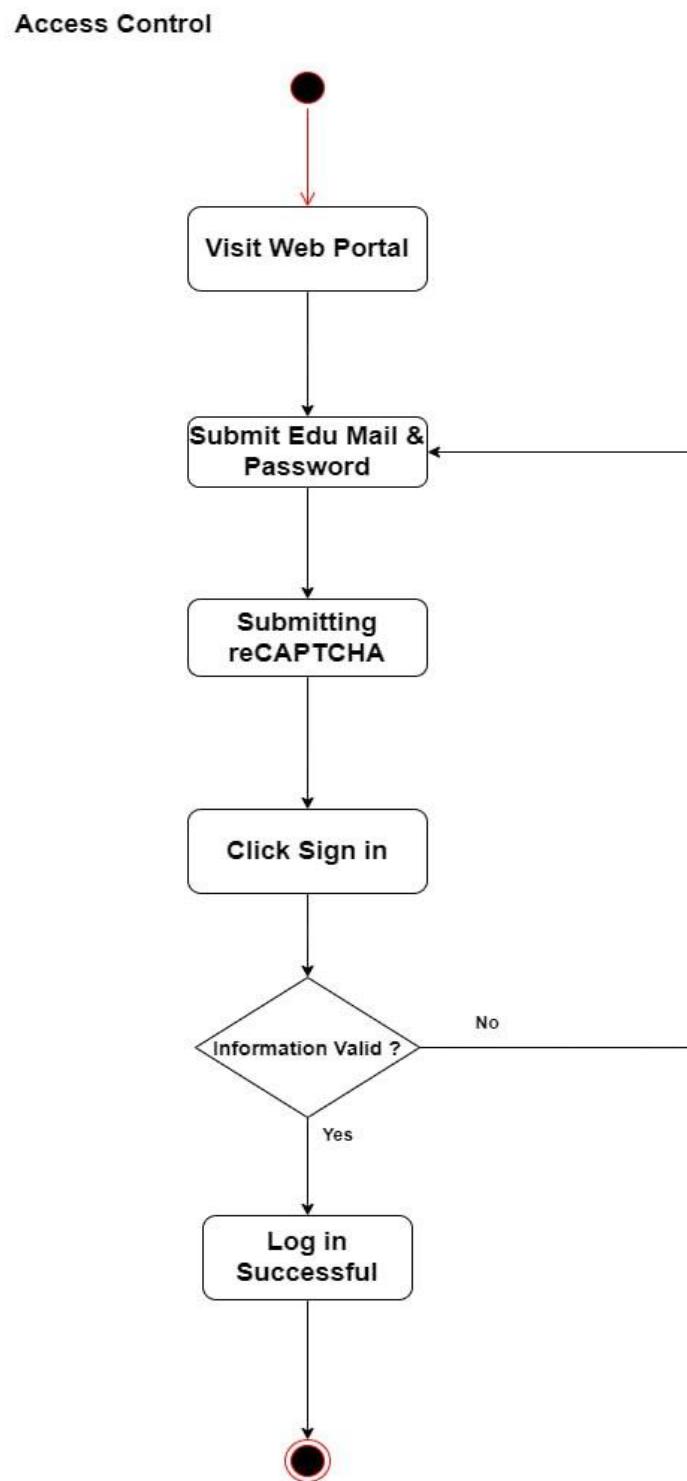


Figure 23 Access Control

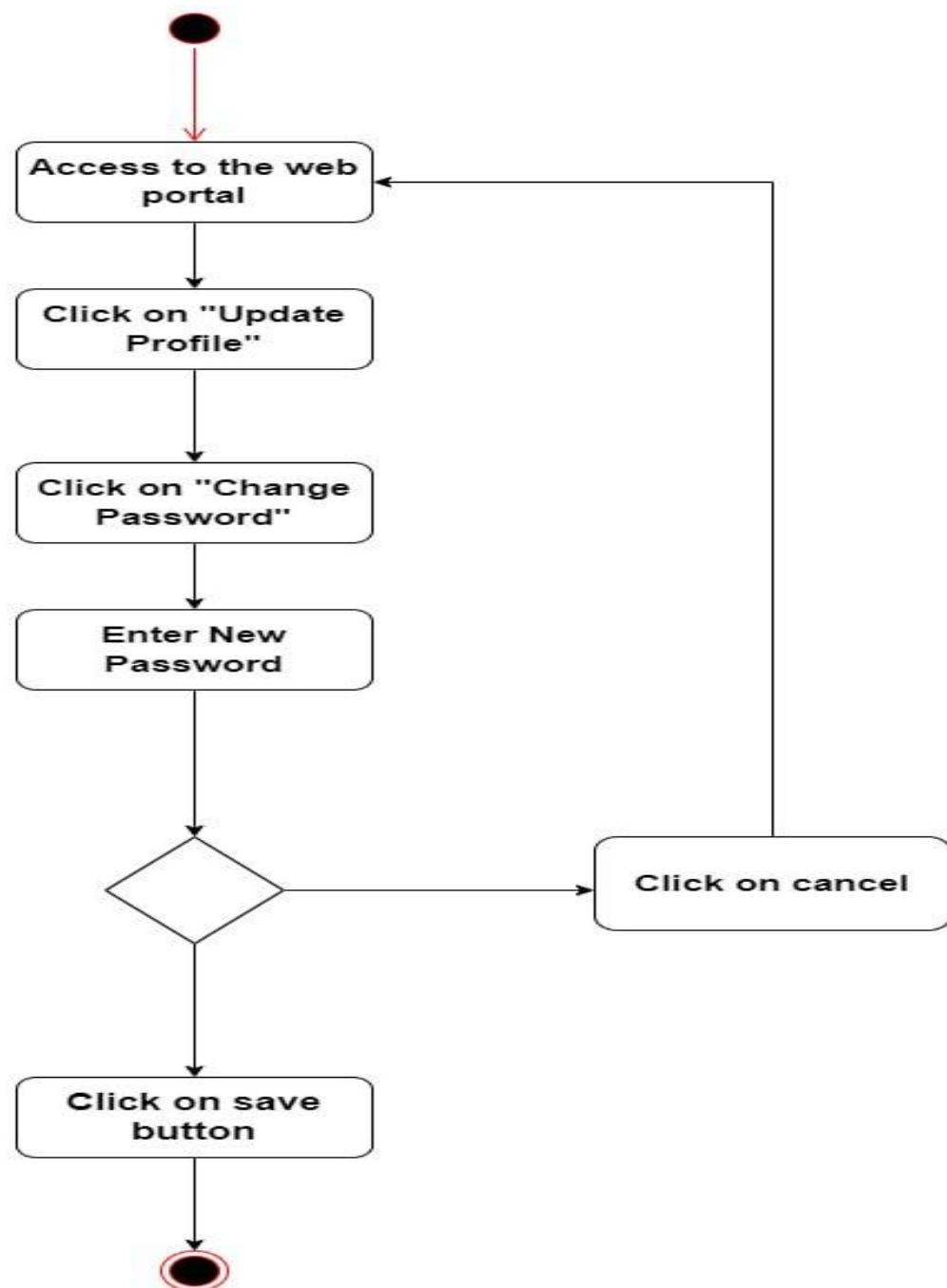
Change Password

Figure 24 Change Password

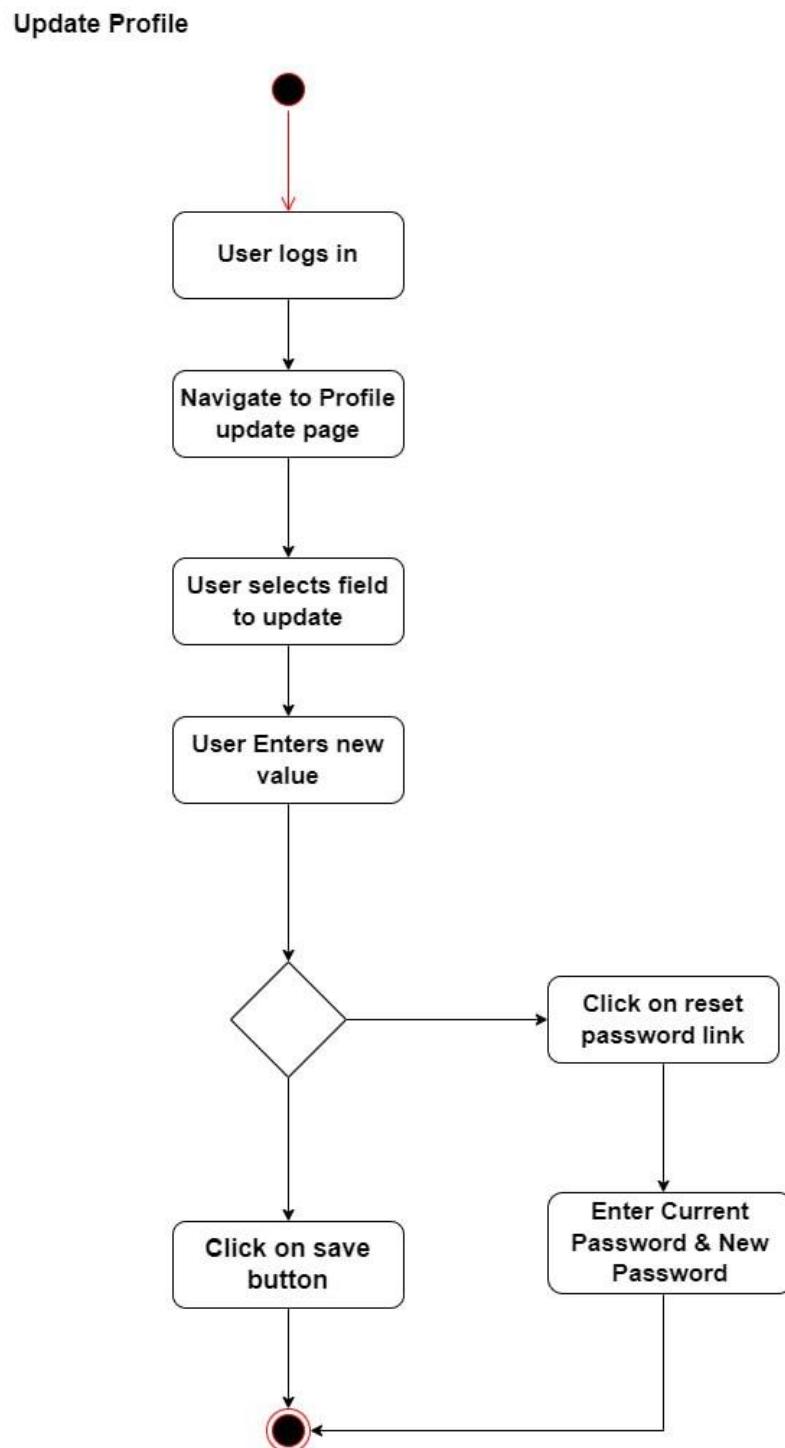


Figure 25 Update Profile

Send Question

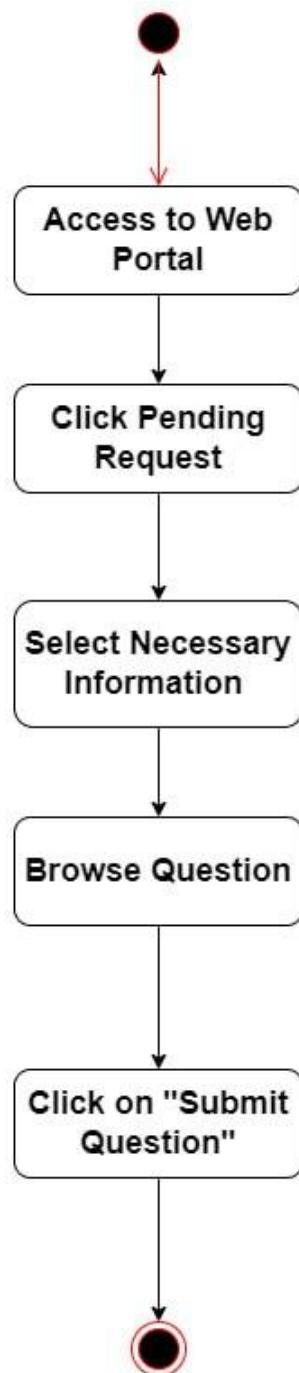
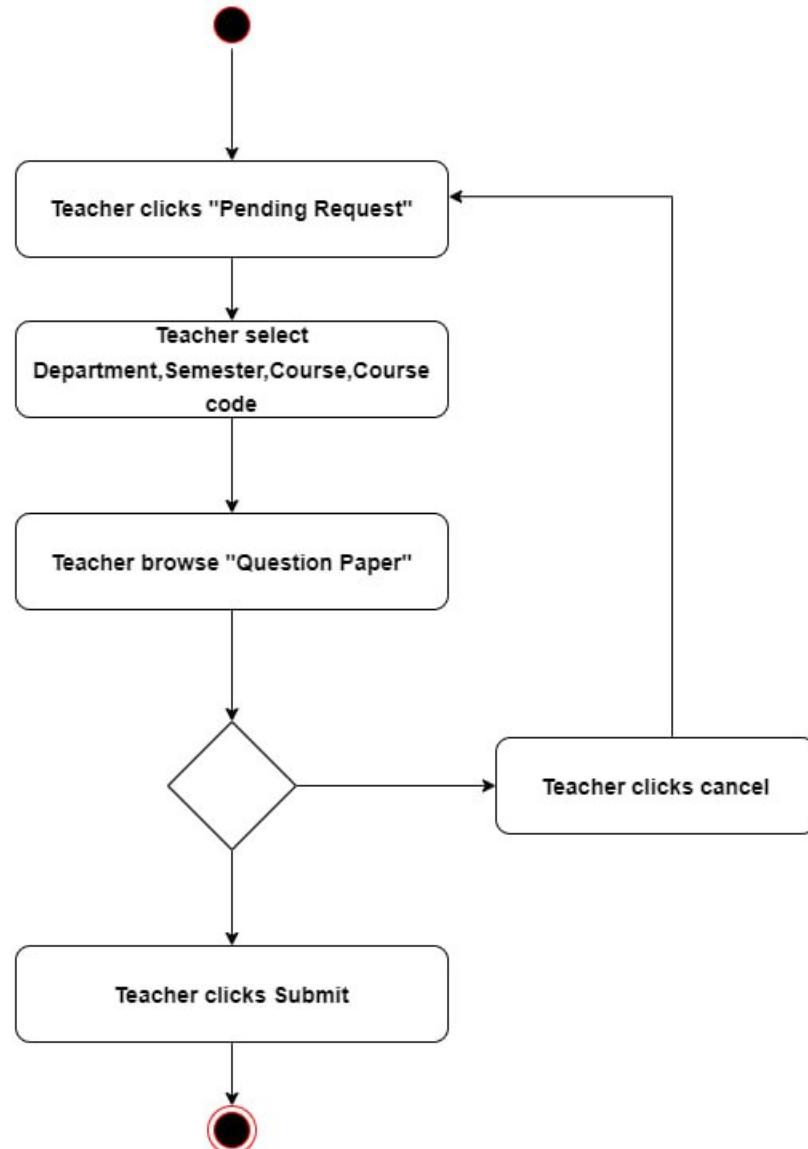
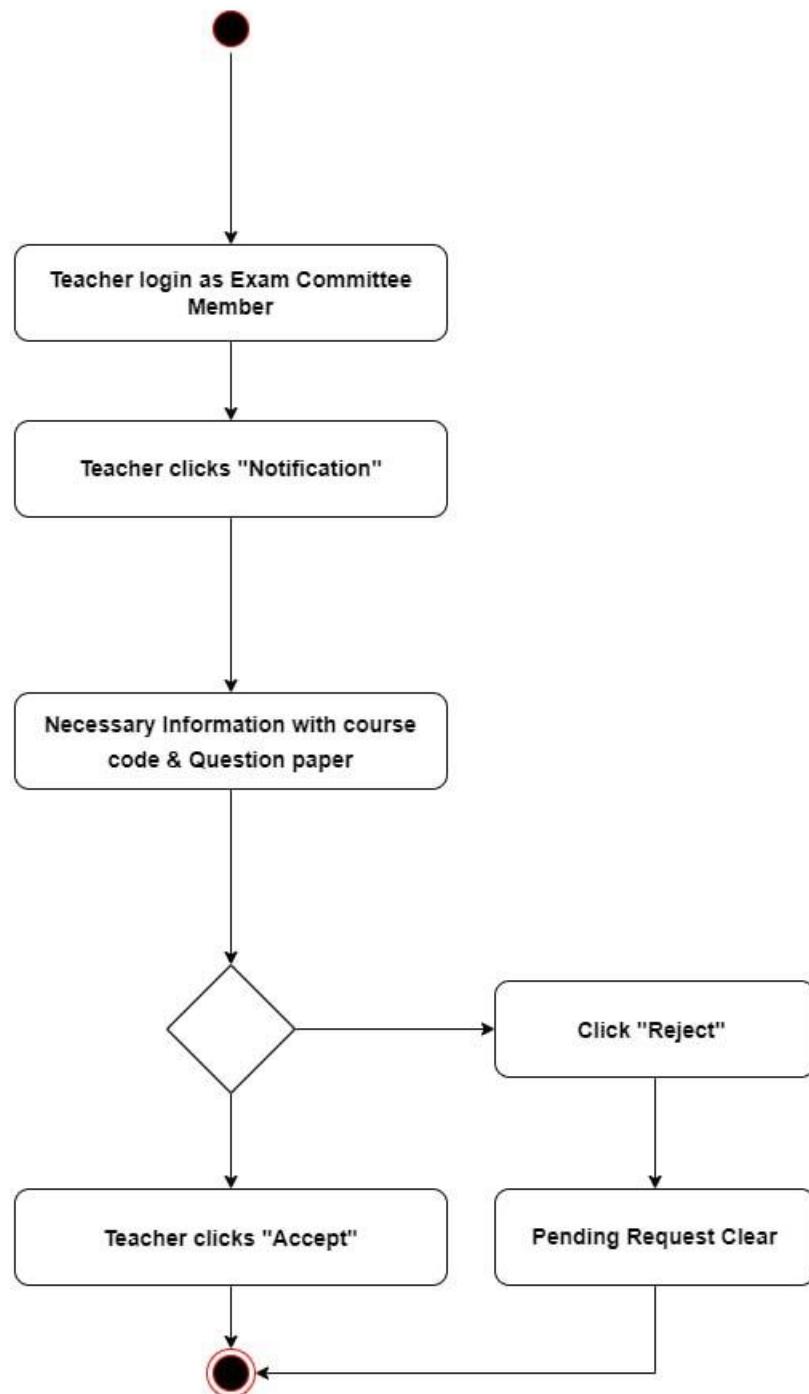
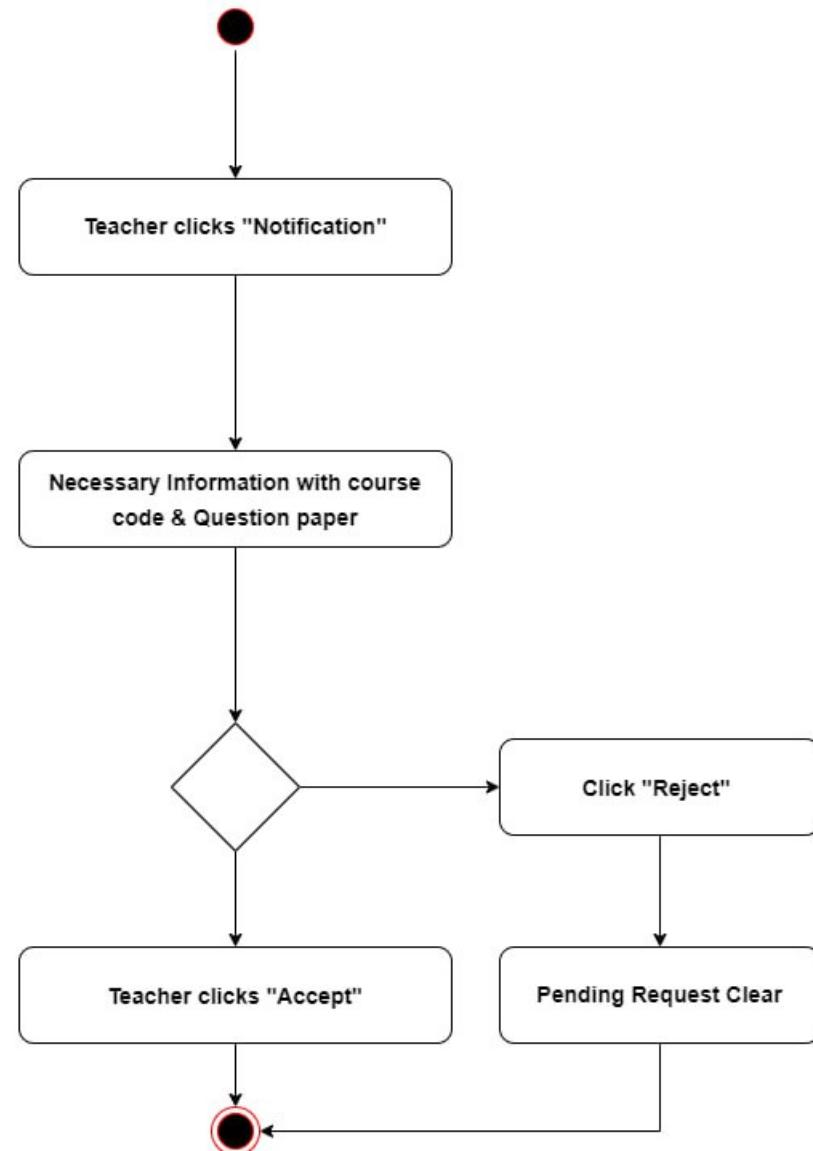
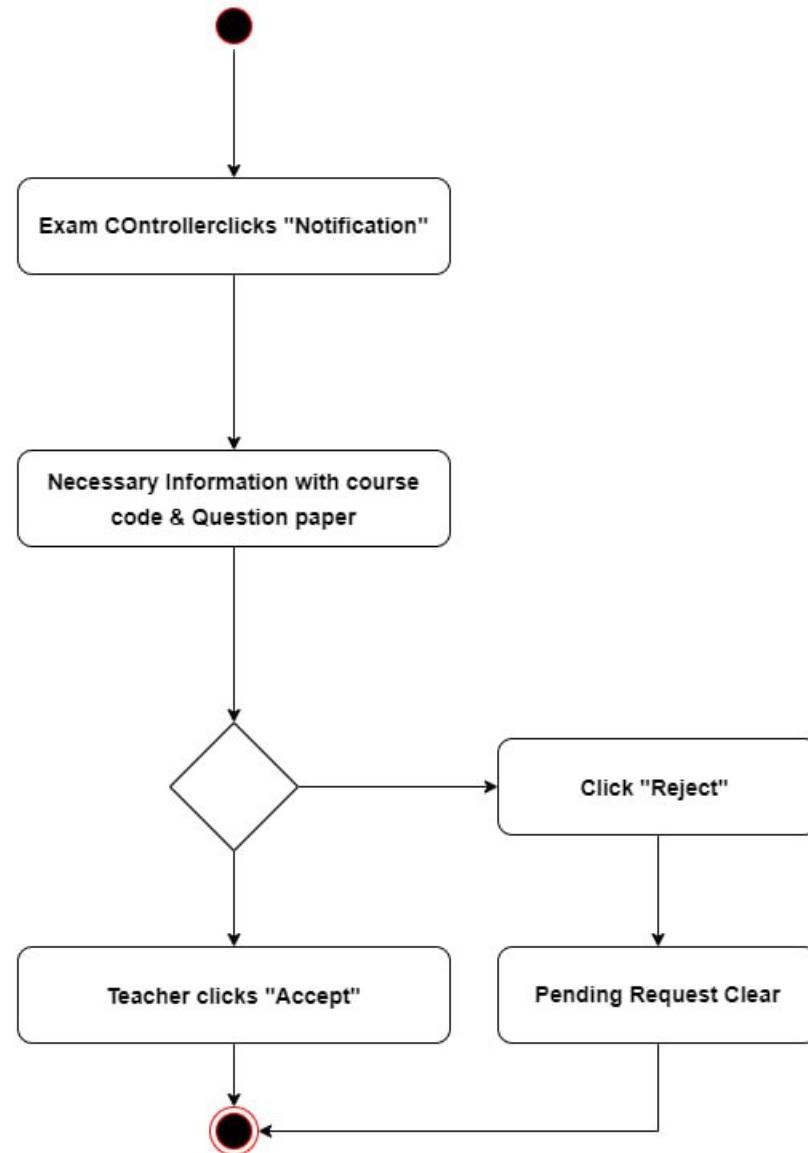


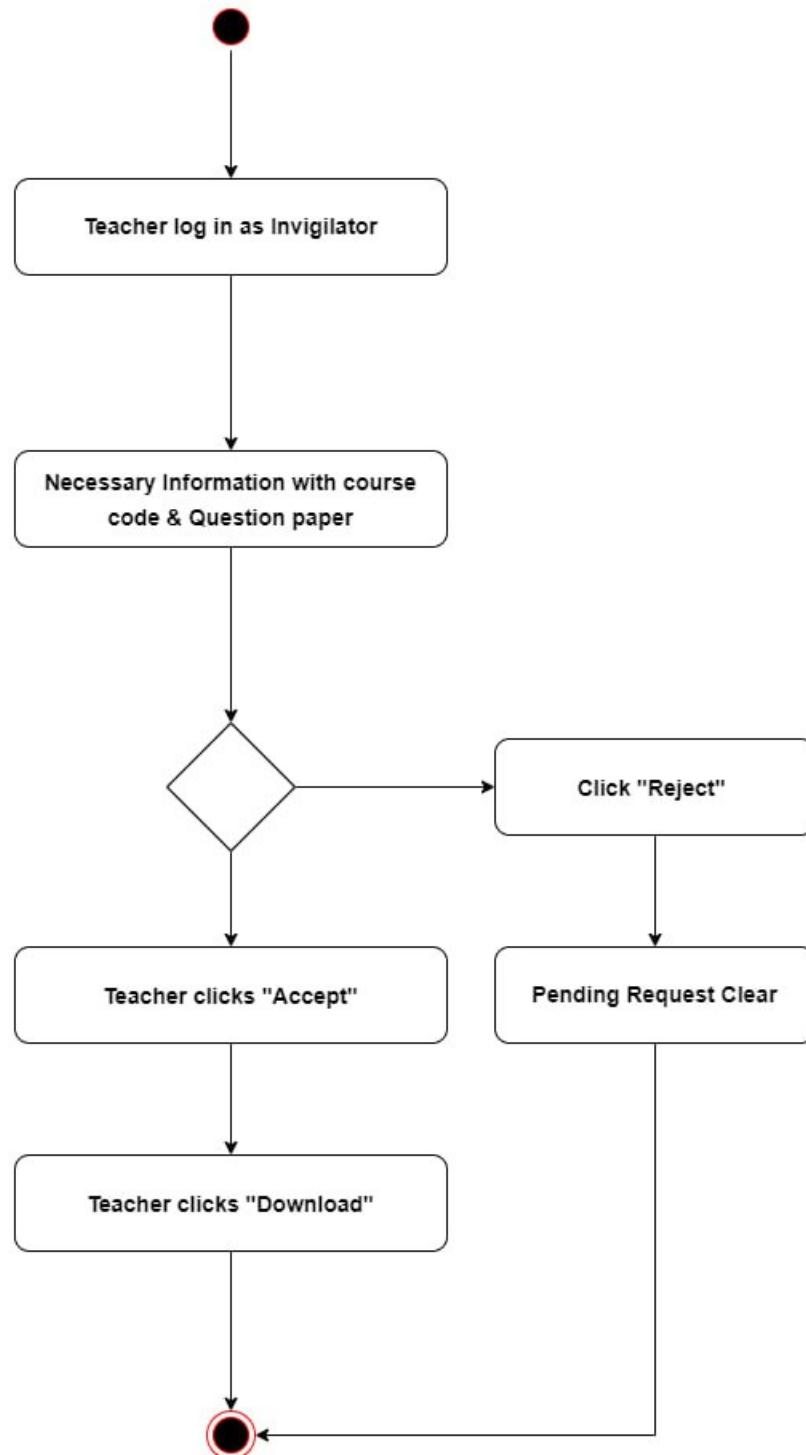
Figure 26 Send Question

Receive Request**Figure 27 Receive Request**

Receive Question(Exam Committee)**Figure 28 Receive Question**

Receive Question(Exam Committee)**Figure 29 Receive Question 2**

Receive Question(Exam Controller)**Figure 30 Receive Question Exam Controller**

Receive Question(Invigilator)

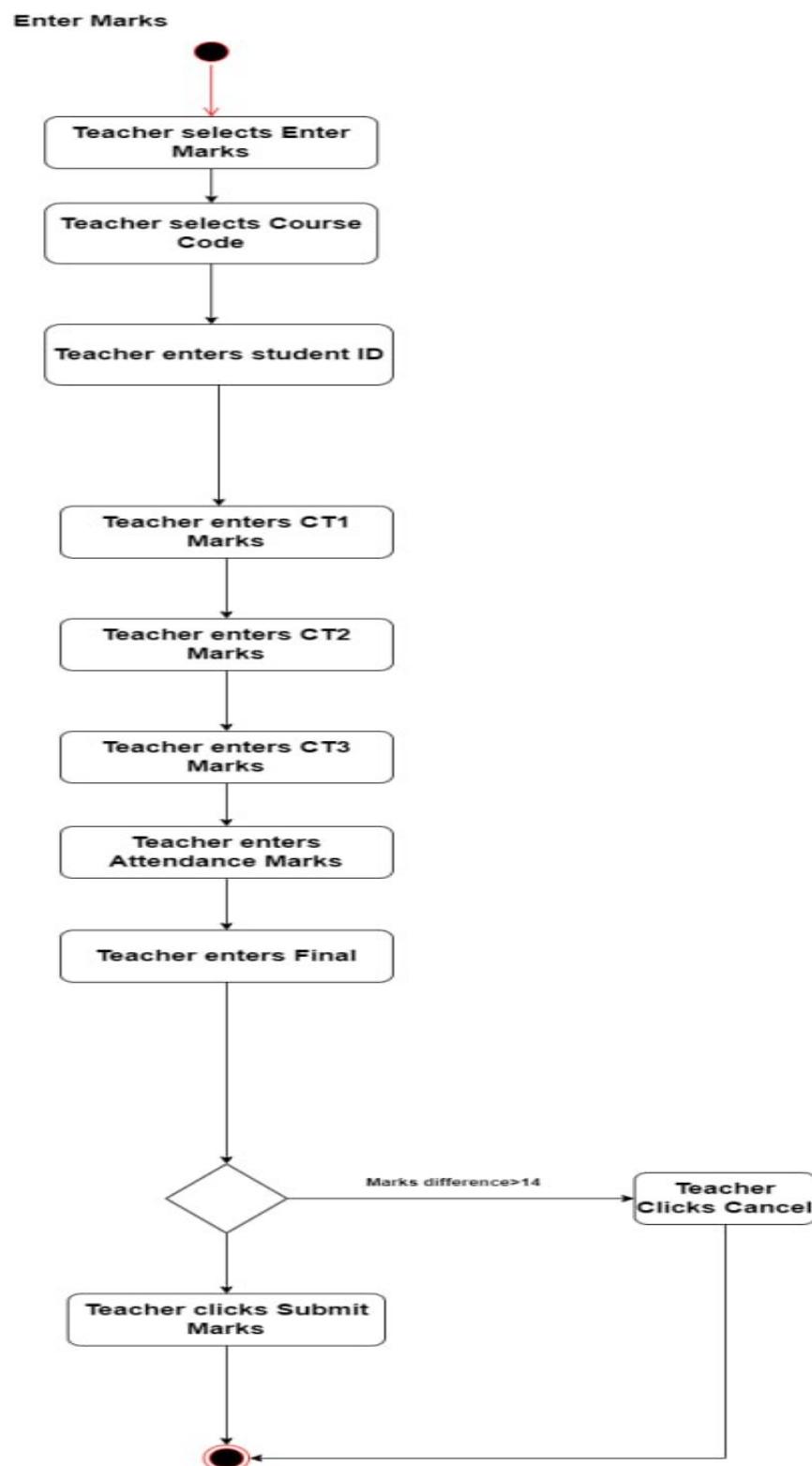


Figure 31 Enter Marks

Enter Attendance

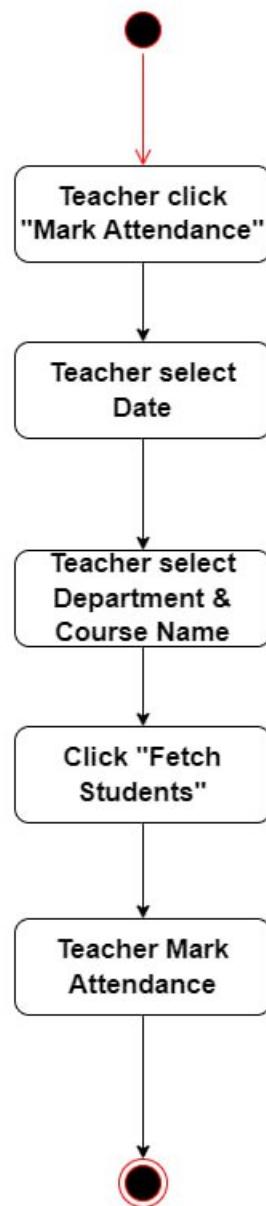
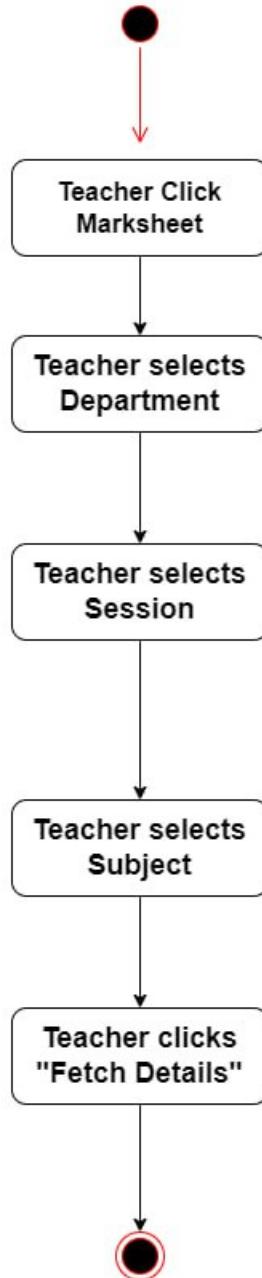


Figure 32 Enter Attendance

Generate Marksheets**Figure 33 Generate Marksheet**

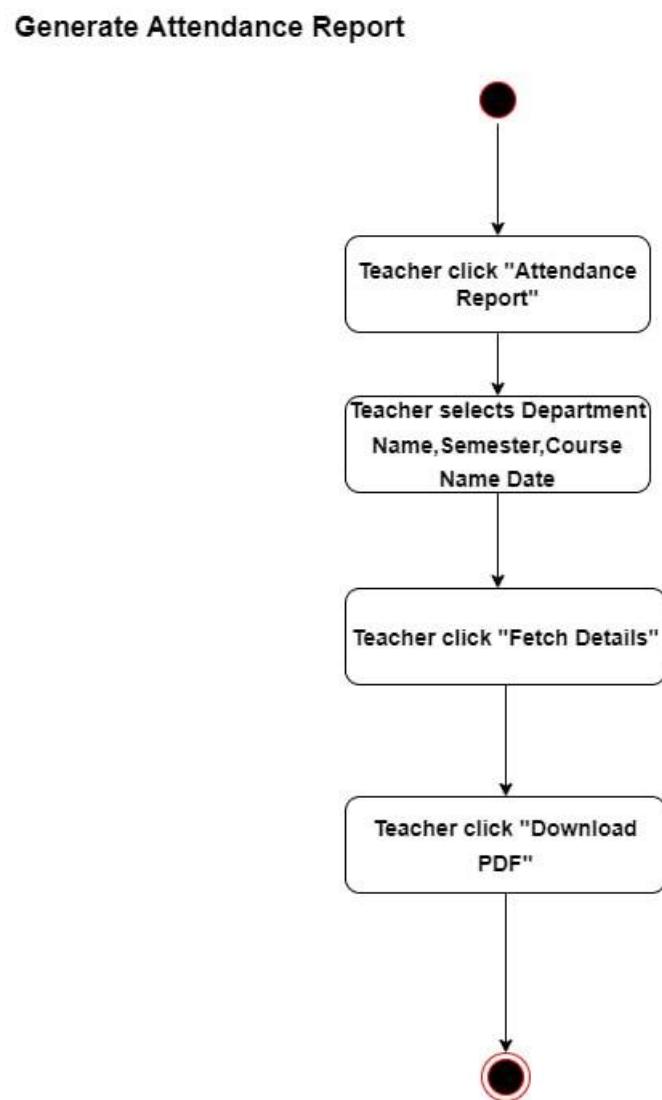


Figure 34 Generate Attendance Report

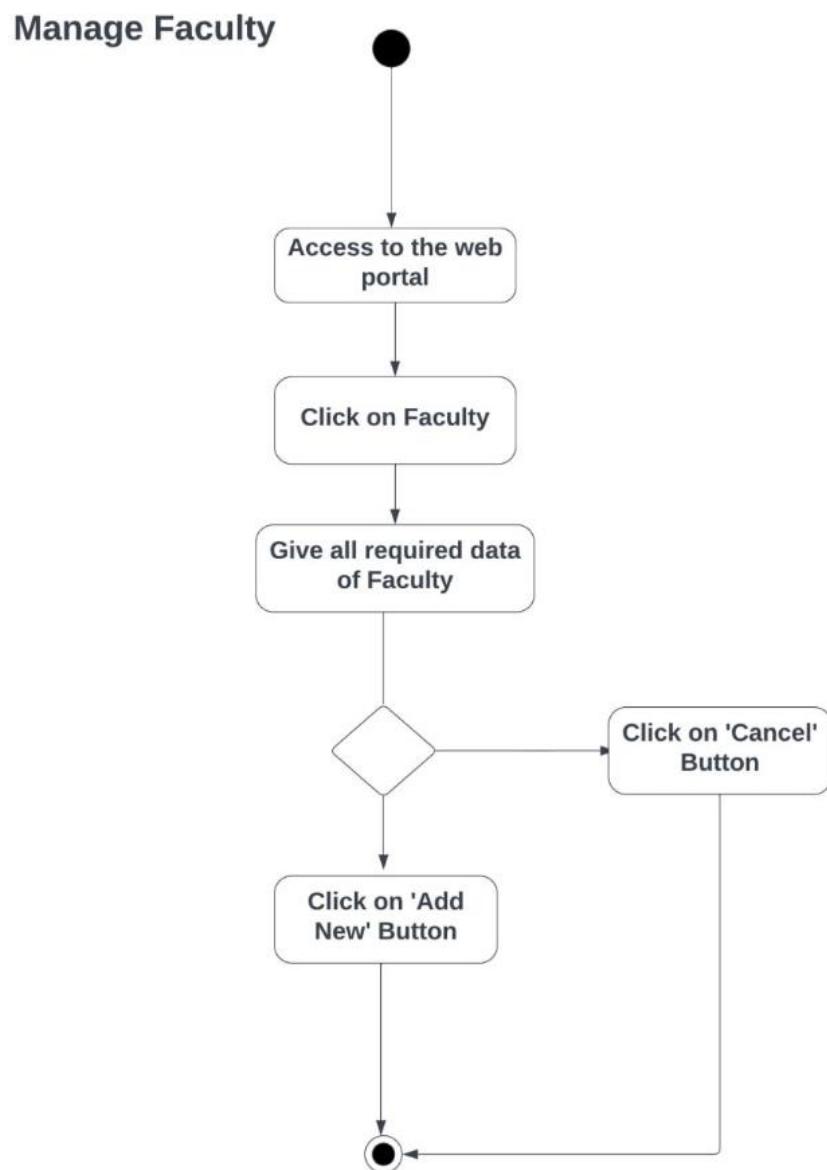


Figure 35 Manage Faculties

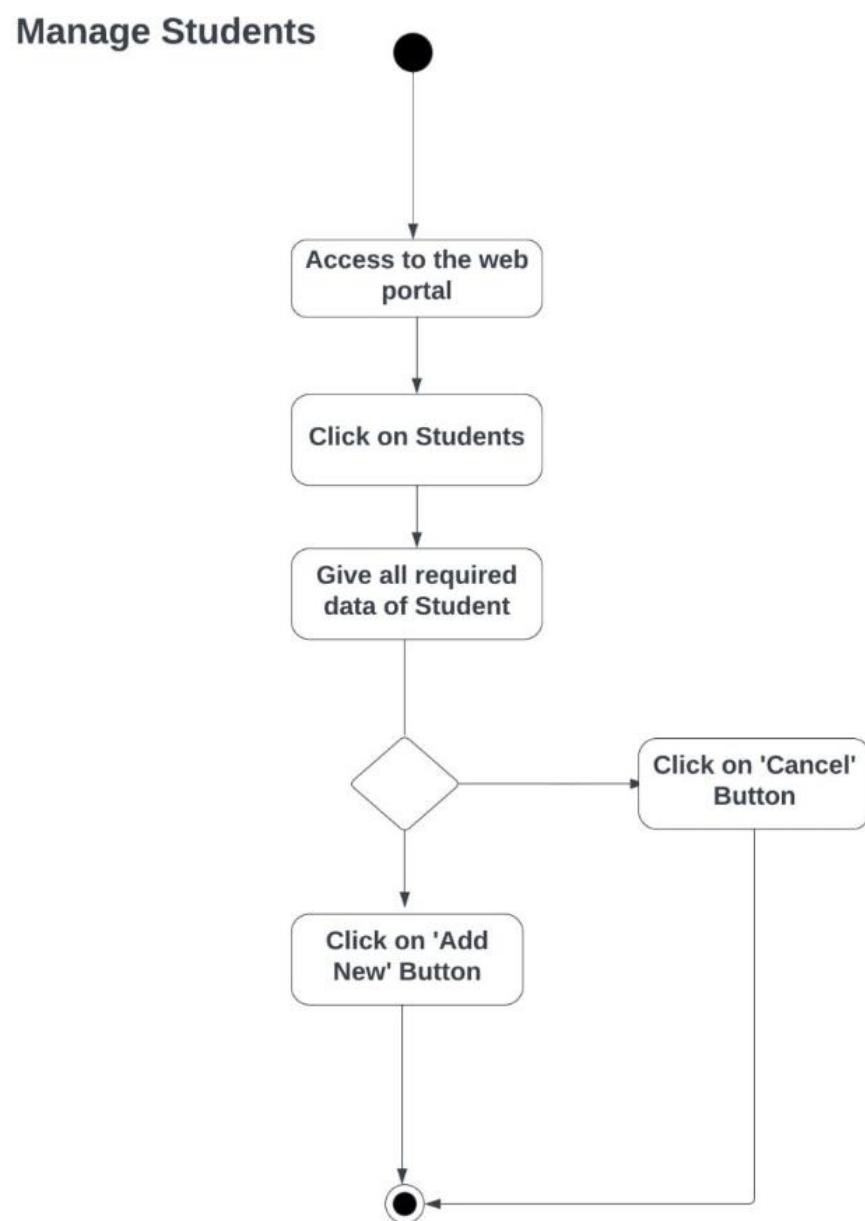


Figure 36 Manage student.

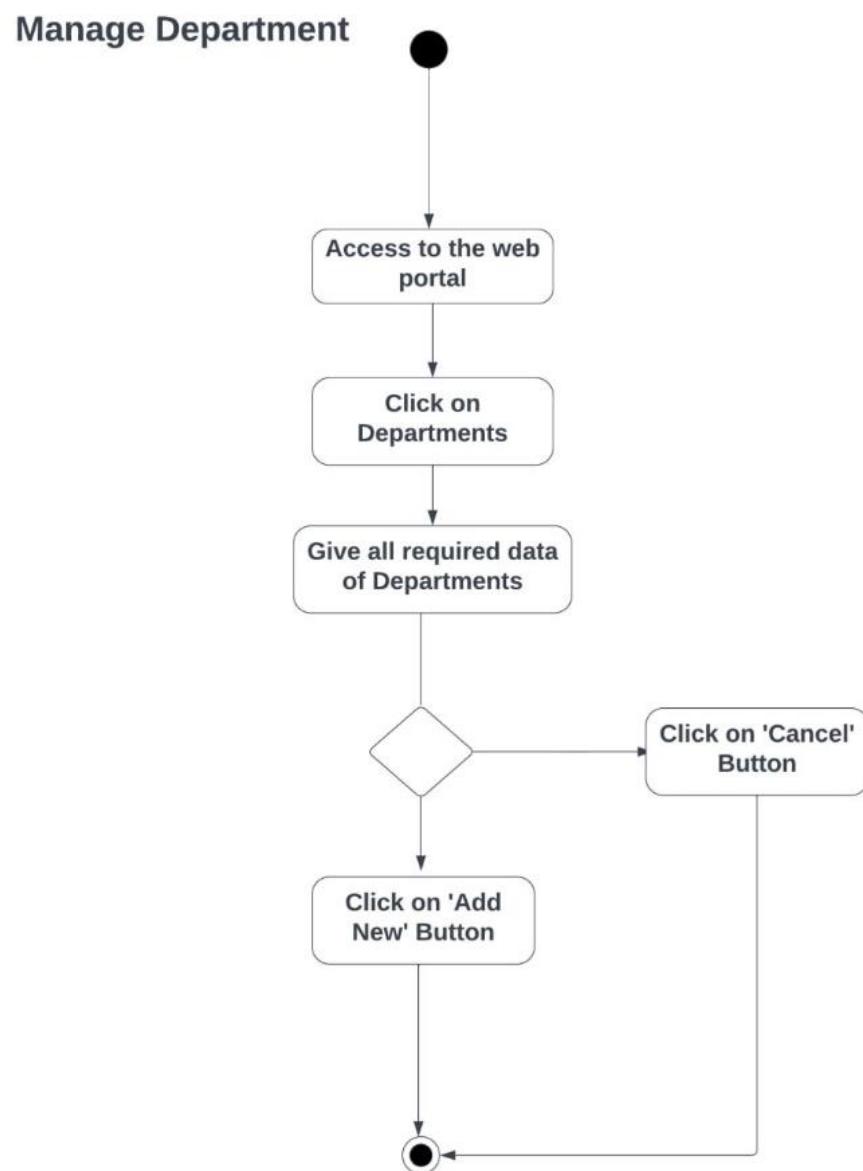


Figure 37 Manage Department

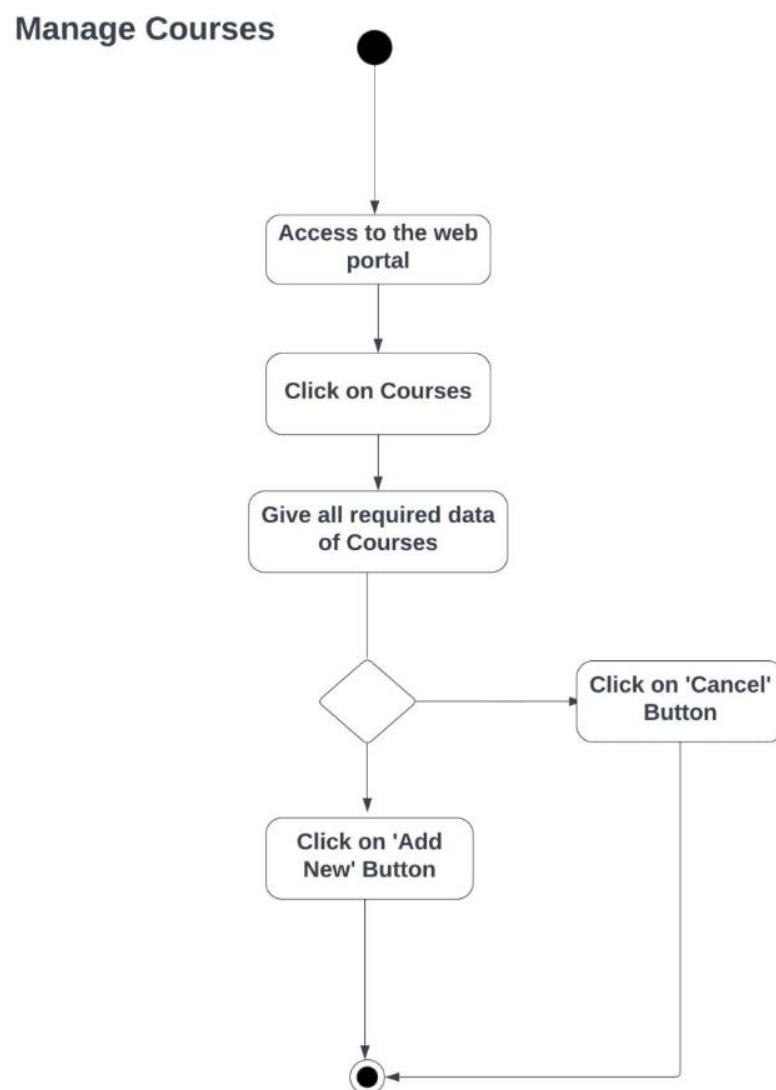


Figure 38 Manage Courses

View Faculties

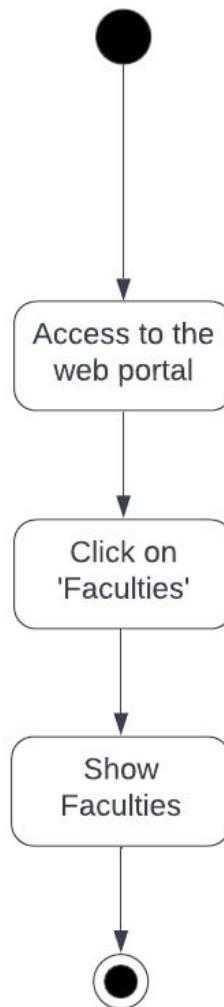


Figure 39 View Faculties

View Attendance Report

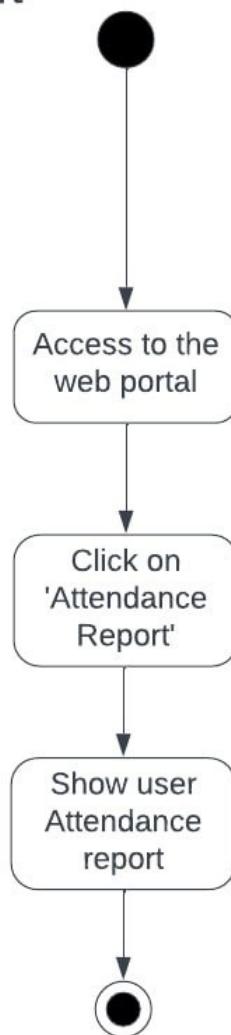


Figure 40 View Attendance

View Courses

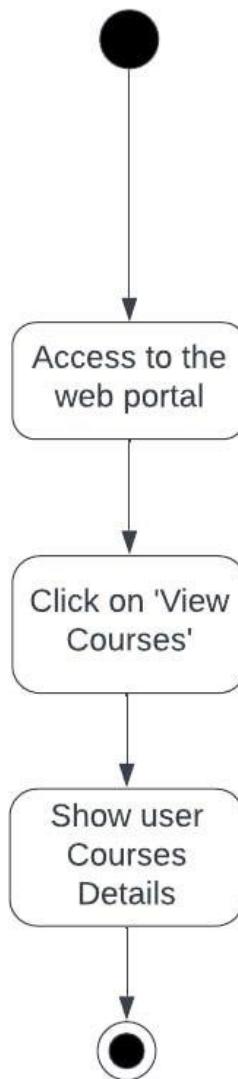


Figure 41 View Courses

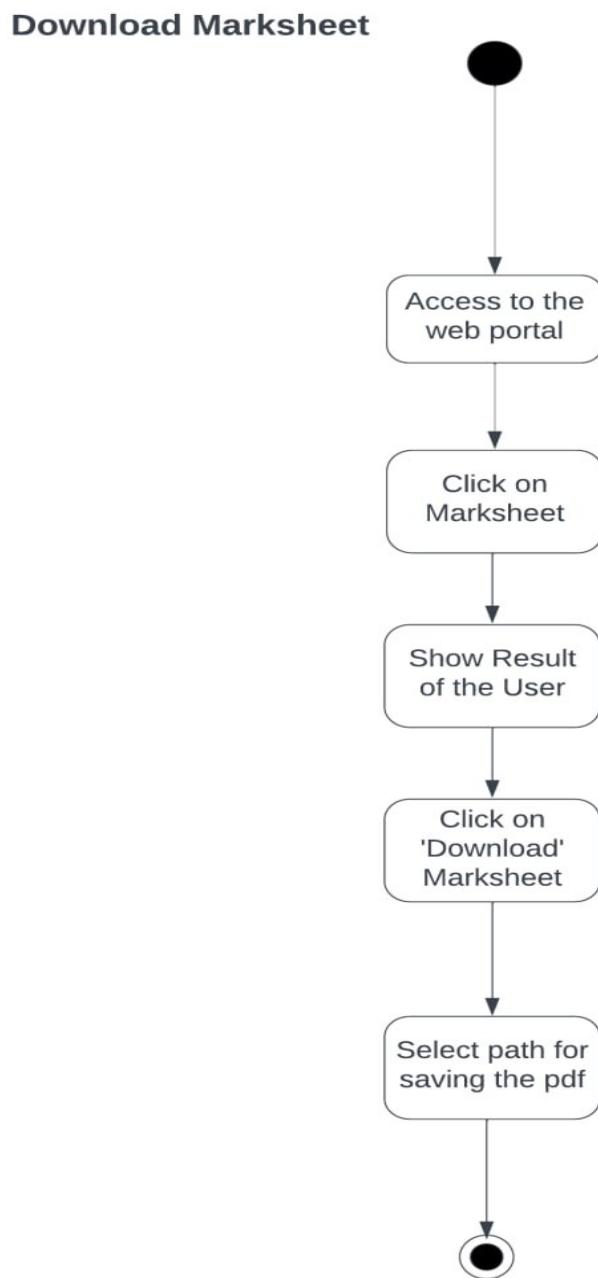


Figure 42 Download Marksheets

Appendix B: Project Proposal

Introduction

This is a proposal report for Software Project Lab II. This project will be developed during the 5th semester of BSSE, Institute of Information Technology, Noakhali Science and Technology University from 07 April 2023 by the proposal presentation, and the final project will be delivered on 07 September 2023. Our team will work along with our regular academic courses.

Motivation

Traditional manual examination management systems of NSTU are vulnerable to security, economic and financial concerns, and are time-consuming and prone to errors. To address these issues, an automated examination management system is proposed to ensure automated result management for students.

Objectives

Our system will fulfill the following objectives to provide a hassle-free system.

1. Automate the entire examination management process of NSTU.
2. Result management with automated generation of mark sheets
3. Real-time access to results for students via student portal
4. Allow students to download their mark sheets as PDF files for record-keeping and reference.
5. Teachers can mark Attendance.

Target Customers

"ExamPilot" is a proposed system designed to modernize and automate the traditional examination management processes in educational institutions, such as universities, colleges, and schools. This system addresses various challenges, including security concerns, cost-effectiveness, and efficiency improvements. The targeted customers for "ExamPilot" include ***educational institutions, Controller of Examination (COE) staff, teachers, faculty members, students, superintendents, examination center staff, administrators, IT personnel***, and potentially government education departments. The system aims to simplify tasks related to question paper creation, distribution, grading, and result dissemination while enhancing security and transparency in the examination process.

Model

Our project is highly inspired by SPL I. We faced different problems with our selected model to develop our project which was an iterative process. This time, taking experience from the previous year's project, we want to implement something new, and after learning from the project from last year, we have decided to use the agile model to do it. Break tasks into smaller iterations using the agile model. The project risk is reduced, and the overall project delivery time requirements are reduced due to the project's breakdown into smaller components.

Tools and Resources

Category	Name or Description
Text Editor	Visual Studio Code
Server	Xampp
RDBMS	MySQL
Language	HTML, CSS, JavaScript, PHP, SQL
Learning Resource	<ol style="list-style-type: none"> 1. Head First HTML and CSS: A Learner's Guide to Creating Standards-Based Web Pages 2nd Edition by Elisabeth Robson 2. Head First JavaScript Programming: A Brain-Friendly Guide 1st Edition by Eric Freeman 3. PHP & MySQL: Server-side Web Development by Jon Duckett

Table 24 Tools and Resources

Challenges

1. The main challenges to face during developing this system are,
2. **Identifying all stakeholders:** It may be challenging to identify and involve all relevant stakeholders, including teachers, students, examiners, and administrative personnel.
3. **Understanding requirements:** Gathering and understanding the requirements of all stakeholders can be a complex task.
4. **Integrating with existing systems:** If there are any existing systems in place, integrating the new system with them may be challenging and require careful planning.
5. **User adoption:** Ensuring user adoption and acceptance of the new system can be challenging, especially if there is resistance to change or unfamiliarity with technology.

Appendix C: Database Design

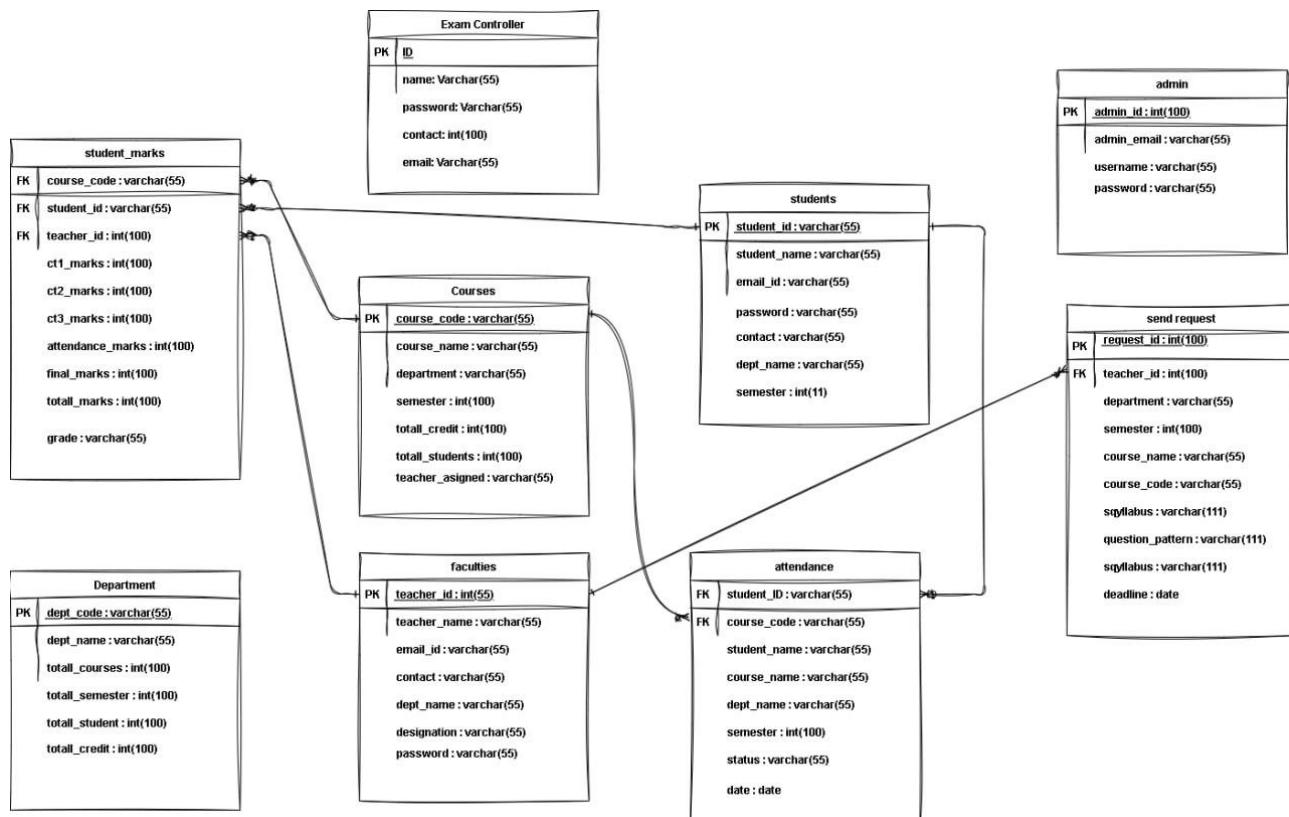


Figure 43 Schema Diagram of EXAM PILOT

ER Diagram

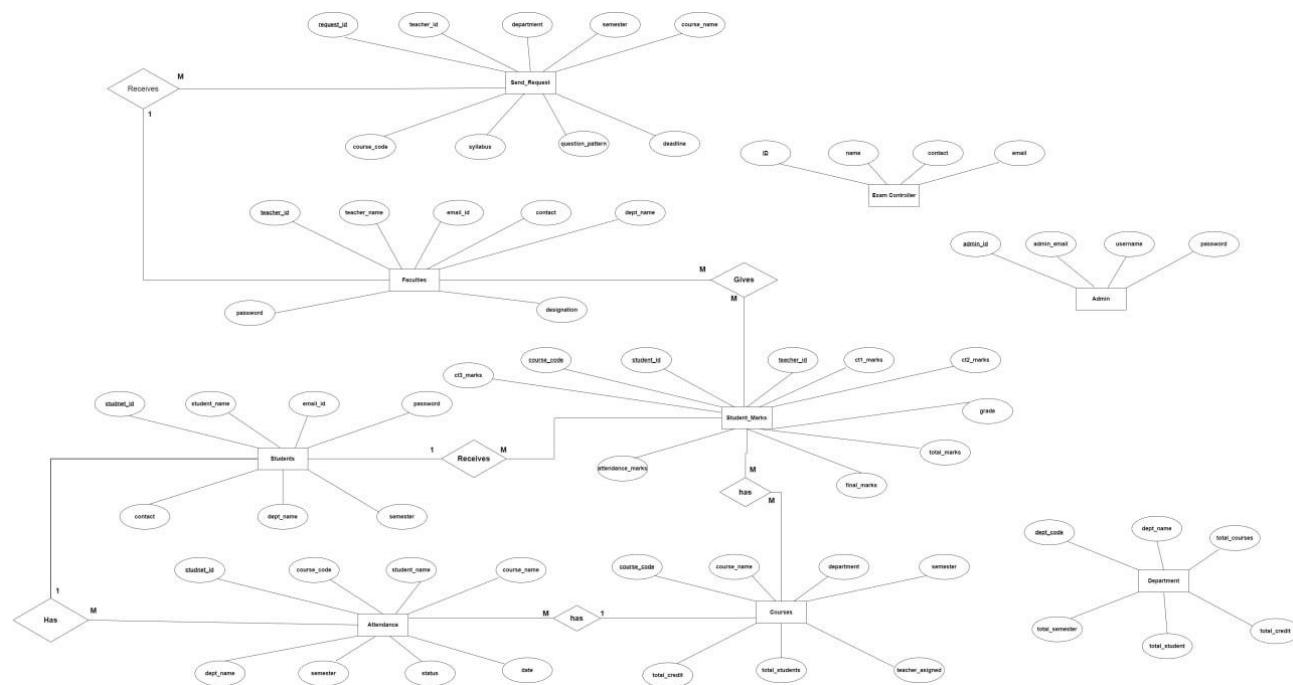


Figure 44 ER Diagram