

SOFTWARE REQUIREMENTS SPECIFICATION

FOR

UNIVERSITY OF RAJSHAHI RESULT PROCESSING SYSTEM

Version 1.0

April 12, 2023

Table of Contents

- 1. Introduction**
 - 1.1 Purpose**
 - 1.2 Scope**
- 2. Overview Of the Module**
 - 2.1 Users**
 - 2.2 UML Use Case Diagrams**
 - 2.3 UML Sequence Diagram**
- 3. Functional Requirements – Scopes & Use Cases**
 - 3.1 Manage Exam Committee**
 - 3.1.1 Add New Exam Committee**
 - 3.1.2 View Exam Committee Information**
 - 3.1.3 Delete Exam Committee Information**
 - 3.2 Manage Examiner**
 - 3.2.1 Add Course Wise Examiner Information**
 - 3.2.2 View Course Wise Examiner Information**
 - 3.2.3 Update Course Wise Examiner Information**
 - 3.2.4 Delete Course Wise Examiner Information**
 - 3.3 Manage Scrutiny**
 - 3.3.1 Verify/Modify Tabulation Sheet**
 - 3.4 Manage Eligible Student for Exam**
 - 3.4.1 Create Eligible Student List**
 - 3.5 Manage Course Teachers**
 - 3.5.1 Add Course Teacher**
 - 3.6 Manage the Exam Date**
 - 3.6.1 Add Exam Date**
 - 3.7 Manage Class Attendance/Class-Test Marks**
 - 3.7.1 Add New Class Attendance/Class-Test Marks Setup Information**
 - 3.8 Manage Student**
 - 3.8.1 New Form Fill Up Notification**
 - 3.8.2 View Previously Attended Exams & Published Results**
 - 3.8.3 Apply for New Form Fill Up and Pay Fees**

3.8.4 Apply for Transcript

3.9 Manage Answer Scripts

3.9.1 Add New Marks Sheet

3.9.2 Marks Sheet Completion Notification

3.10 Exam Controller

3.10.1 Create New Exam and Fix Exam Date

3.10.2 Update an Exam

3.10.3 Delete an Exam

3.10.4 Result Publication

3.10.5 Start Form Fill-up Process for an Exam

4. ER Diagram

5. Non-Functional Requirements

6. System Requirements

6.1 Hardware Requirements

6.2 Software Requirements

1. Introduction

This document covers the requirements for University of Rajshahi Result Management System. This system is designed to streamline and automate the process of managing and publishing the results of students enrolled in University of Rajshahi.

The system is built on a web-based platform that provides secure access to authorized users such as faculty members, administrators, staffs, students etc. It offers a user-friendly interface that allows users to manage and view various aspects of student results.

The University of Rajshahi Result Management System has a wide range of features that enable easy and efficient management of results. These include the ability to input and manage student data, such as personal information and academic records, as well as the ability to generate and publish result reports.

The system also provides features for managing course registrations, grading, and exam scheduling. It enables faculty members to easily input and manage grades and provides students with easy access to their grades and academic records.

An essential responsibility for a university is to provide timely and accurate results to their students. The University of Rajshahi Result Management System is an efficient, reliable, and secure way of managing and publishing student results.

1.1 Purpose

The purpose of a university result management system is to effectively manage and organize student academic records, including their grades and overall academic progress. This system allows the university to efficiently calculate and process student grades, generate reports and transcripts, and provide timely feedback to students about their academic performances.

Some specific benefits of a university result management system include:

1. **Accuracy and Consistency:** With a result management system, universities can ensure the accuracy and consistency of student grades across various courses, semesters, and programs.
2. **Efficiency:** Automating the result management process can save time and effort for both faculty and administrative staff, allowing them to focus on other important tasks.
3. **Transparency:** The system can provide transparency to both students and faculty, allowing them to access and review academic records and progress reports.
4. **Analysis and Decision-making:** With access to detailed academic data, universities can analyze trends, identify areas for improvement, and make data-driven decisions about curriculum and teaching methods.

Overall, a result management system helps a university to maintain accurate academic records, provide timely feedback to students, and improve the overall quality of education.

1.2 Scope

The scope of our system will be limited to the following:

- a. **Student Management:** The system should be able to manage student data including personal information, academic records, course enrollment, and results.
- b. **Course Management:** The system should be able to manage course data, including course descriptions, course schedules, and course offerings.
- c. **Exam Management:** The system should be able to manage exams, including date of exams.
- d. **Result Management:** The system should be able to manage student results, including entry of marks, grade calculations, and grade reports.
- e. **Automated Result Generation:** The system should be able to automatically generate results based on the data entered by the examiners and course teachers.
- f. **Reporting:** The system should provide reporting capabilities that enable faculty and administrators to access relevant data such as student results, course enrollment, and faculty workload.

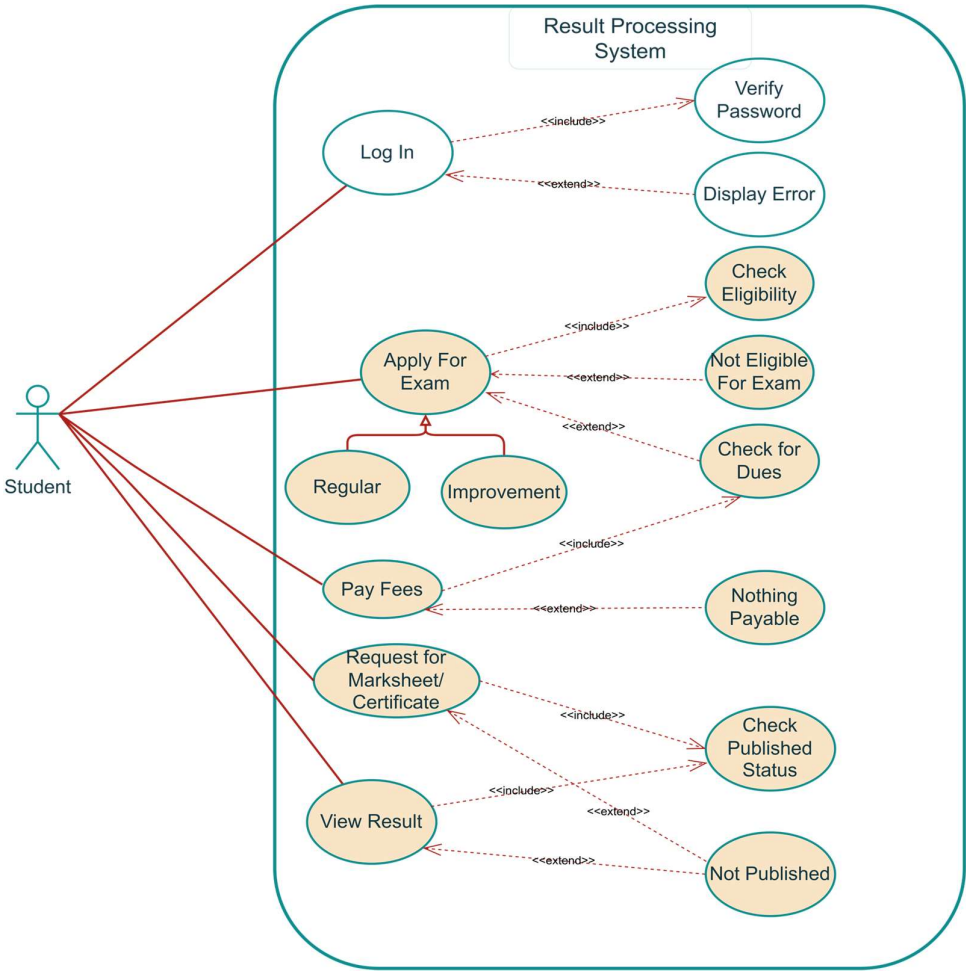
- g. Communication:** The system should enable communication between faculty, students, and administrators regarding course registration, results, and other academic information.
- h. Security:** The system should ensure the security of student data and prevent unauthorized access.

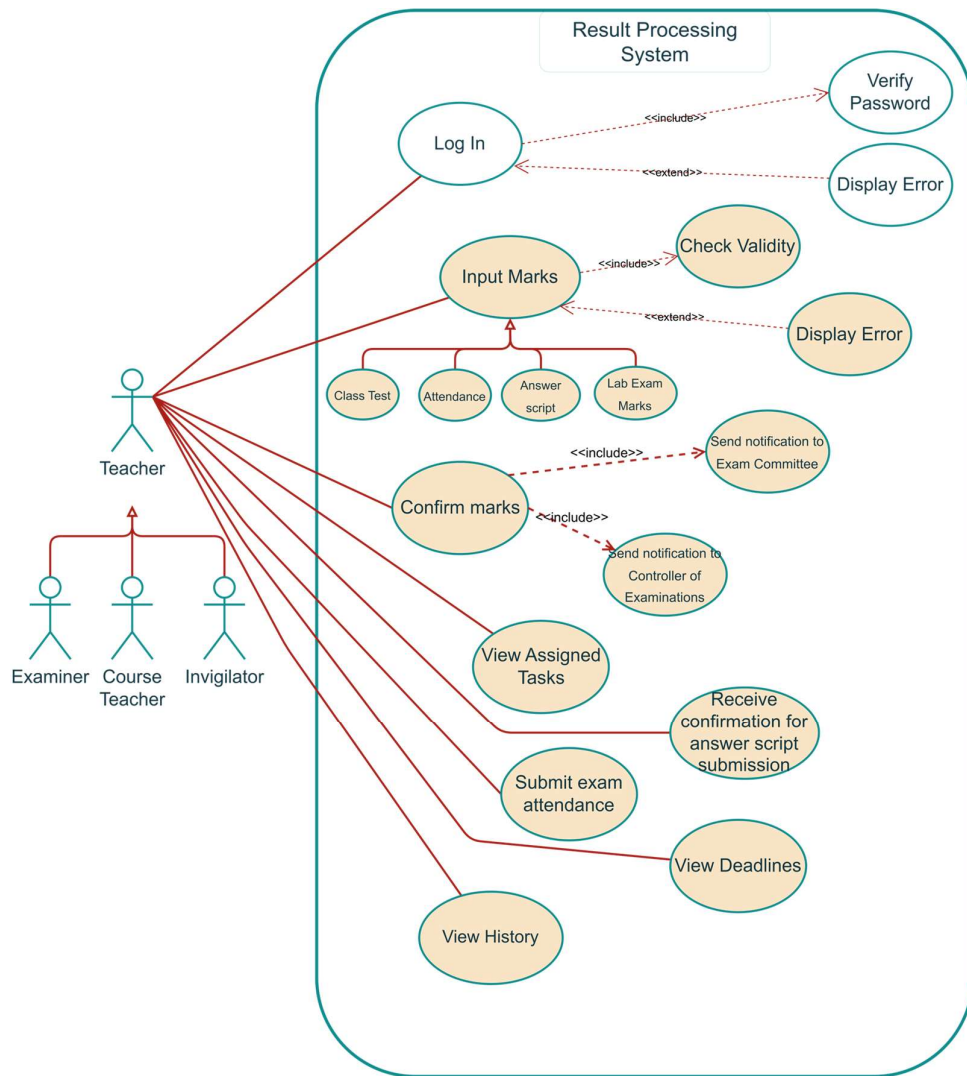
2. Overview of the Module

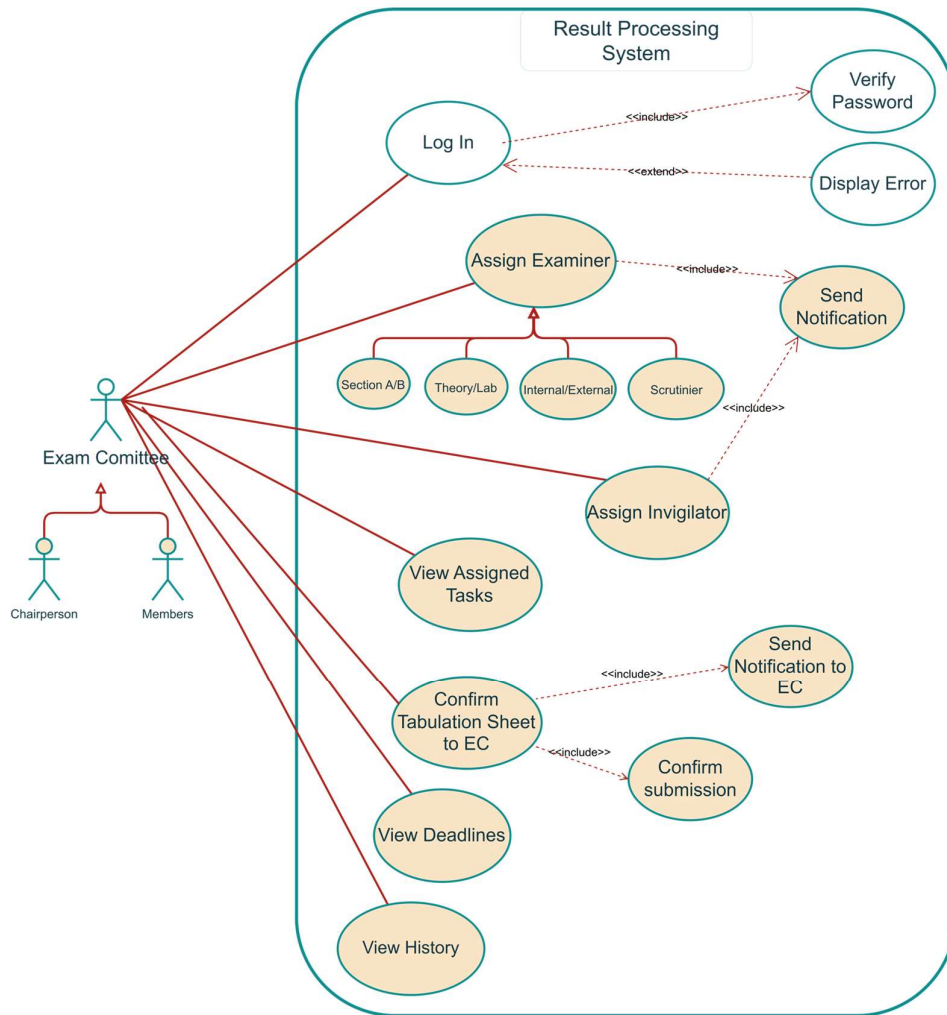
2.1 Users

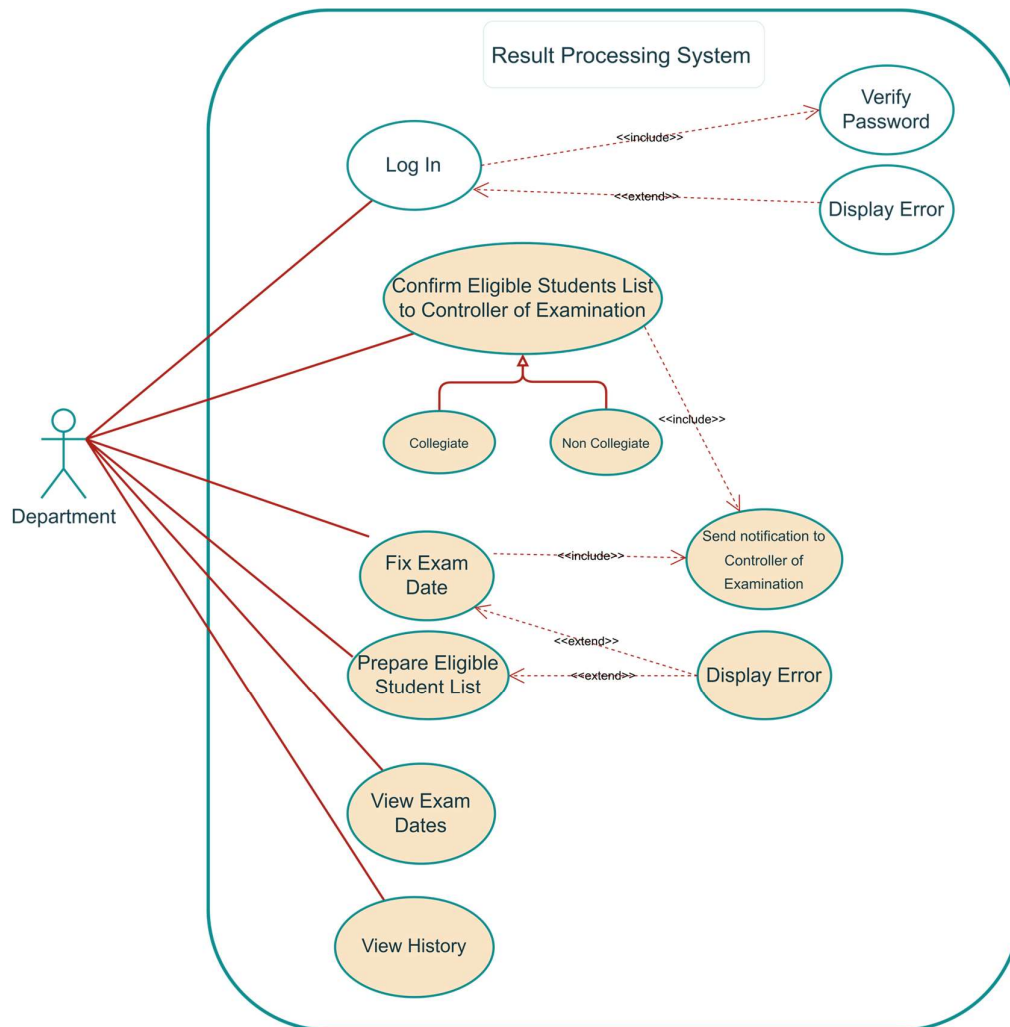
- 1. Students**
- 2. Teachers**
 - a. Chairman of Departments**
 - b. Course Teachers**
 - c. Examiners**
 - d. Tabulators**
 - e. Chairman of Exam Committees**
 - f. Exam Committee Members**
- 3. Department**
 - a. Office Staff**
- 4. The Controller of Examinations (System Administrator)**

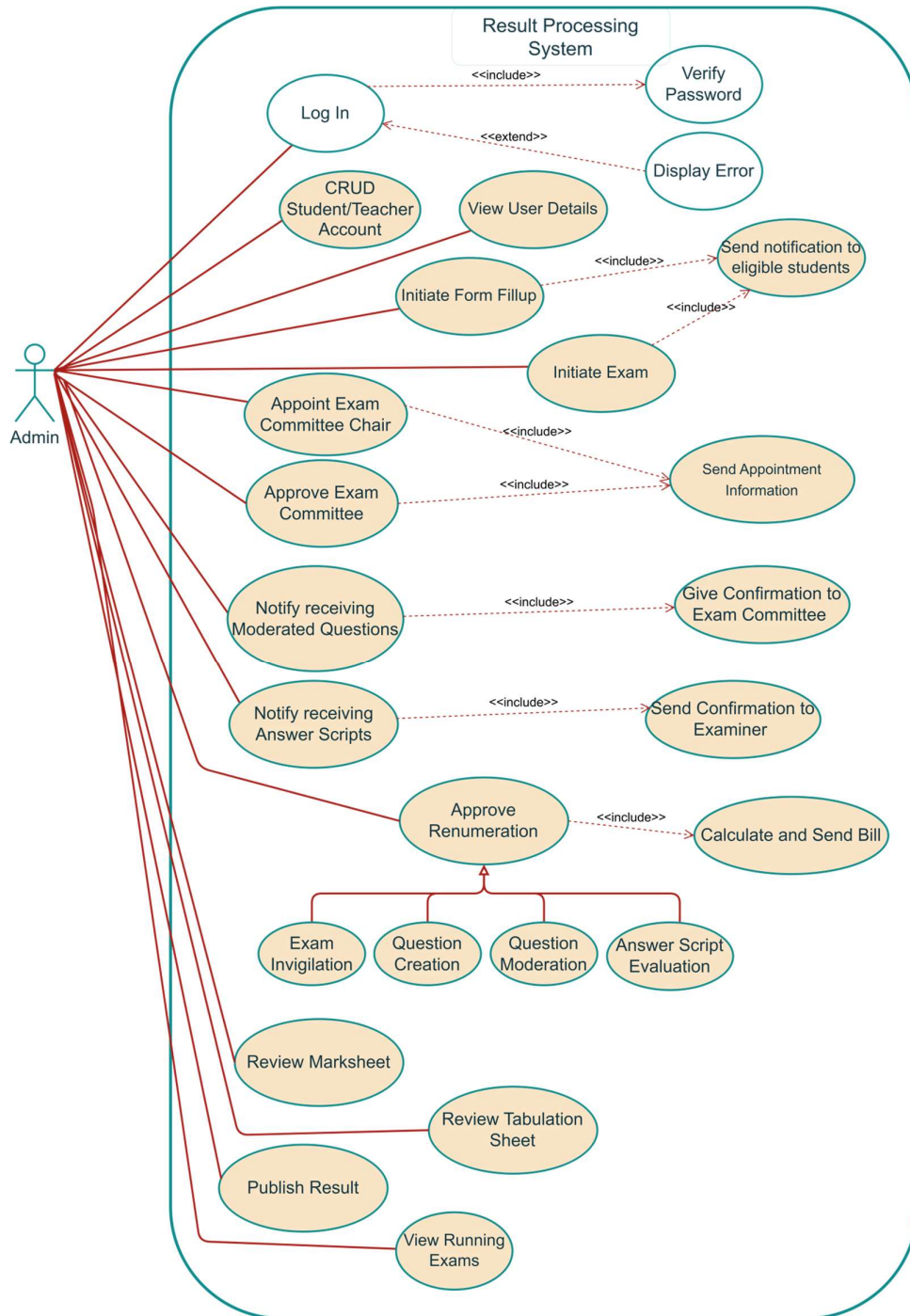
2.2 UML Use Case Diagrams



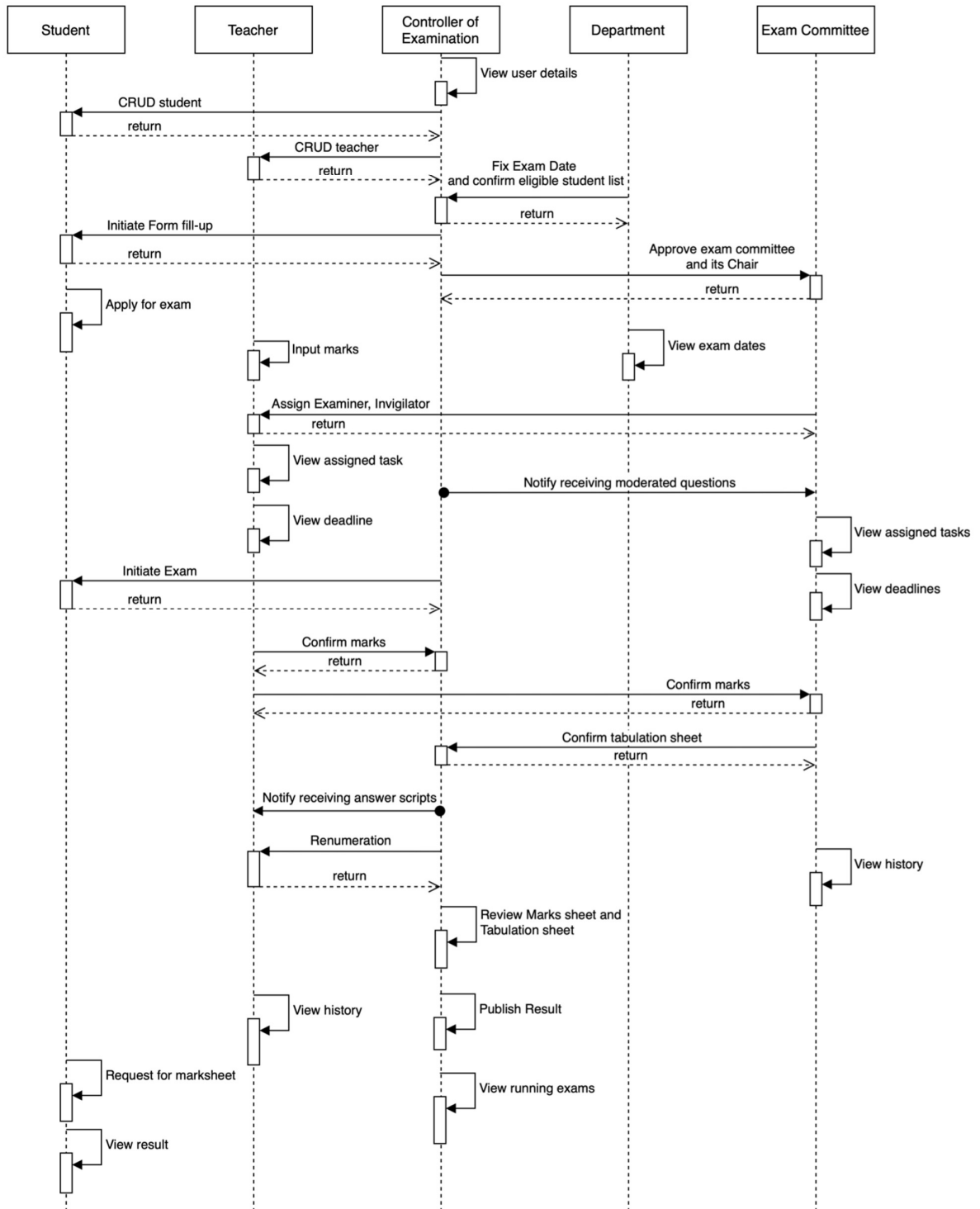








2.3 UML Sequence Diagram



3. Functional Requirements – Scopes & Use Cases

3.1 Manage Exam Committee

1	Scope ID	:	sc/1
General Description of Scope:			
<p>An examination committee will be prepared for every semester or year exam of an academic session. The examination committee will make all examination related decisions such as exam schedule, moderation of questions, evaluation of answer scripts, preparation of tabulation sheet for that particular exam.</p> <p>The Exam Committee consists of a maximum of 5 members where 4 members are internal, and one member is external (optional). Chairman of this committee is the head and holds highest authority in the exam committee.</p>			

3.1.1 Use Cases

Add New Exam Committee

Use Case ID:	sc/1-1
Description:	This use case describes the flows of creating and adding exam committee information into the system.
Actors:	Controller of Examinations
Preconditions:	<ol style="list-style-type: none">1. Controller of Examinations must be authorized user. Controller of Examinations must be logged into the system.2. Controller of Examinations must have "Add New" access privilege on exam committee information.3. Derived information must be available in the system.
Post Conditions:	<ol style="list-style-type: none">1. System will store the information with generating a confirmation message.

Normal Flows:	<ol style="list-style-type: none"> 1. Controller of Examinations: Initiates to add new exam committee information. 2. System: Will show exam committee entry page to add exam committee information. 3. Controller of Examinations: Will enter exam committee and other related information and click on save button for saving required information. 4. System: <ol style="list-style-type: none"> a. Will save the information. b. Otherwise, will generate alert message.
----------------------	---

3.1.2 Use Cases

View Exam Committee Information

Use Case ID:	sc/1-2
Description:	This use case describes the flows of viewing exam committee detail information in the system.
Actors:	Controller of Examinations, Chairman of the Department, Teachers
Preconditions:	<ol style="list-style-type: none"> 1. The actors must be authorized user. They must be logged into the system. 2. The actors must have "View" access privilege on exam committee information. 3. Exam committee information must exist in system. System shows all exam committee information.
Post Conditions:	<ol style="list-style-type: none"> 1. The actors can see detail information of selected exam committee information in the system.
Normal Flows:	<ol style="list-style-type: none"> 1. Actor: Will initiate to view the existing exam committee information. 2. System: Will display exam committee information page showing the available list of exam committee information of a department. 3. Actor: Select desirable exam committee. 4. System: Will display exam committee information based on the selection.

3.1.3 Use Cases

Delete Exam Committee

Use Case ID:	sc/1-3
Description:	This use case describes the flows of deleting of existing exam committee information from system.
Actors:	Controller of Examinations
Preconditions:	<ol style="list-style-type: none">1. Controller of Examinations must be authorized user and must be logged into the system.2. Controller of Examinations must have "Delete" access privilege on exam committee information.3. Exam committee information must exist in system. System shows all exam committee information.
Post Conditions:	<ol style="list-style-type: none">1. Exam committee information will be deleted from the system and generate a confirmation message.
Normal Flows:	<ol style="list-style-type: none">1. Controller of Examinations: Will initiate and select the desired exam committee information from the system by using the use case sc/1-1.2. System: Will generate a confirmation message showing “Yes” and “No” option.3. Controller of Examinations: Click on either “Yes” or “No” option.4. System: if clicked on “Yes”, will delete the information.

3.2 Manage Examiner

1	Scope ID	:	sc/2
General Description of Scope:			
<ul style="list-style-type: none">• The exam committee will assign examiners for each course exam, including a 1st examiner, 2nd examiner, and 3rd examiner where applicable.• Each course exam will have examiners assigned by the exam committee, including up to three examiners for certain courses in a given semester / year.• The chairman of the exam committee will assign examiners for each course exam.			

3.2.1 Use Cases

Add Course Wise Examiner Information

Use Case ID:	sc/2-1
Description:	This use case describes the flows of storing examiner information into the system.
Actors:	Exam Committee Chairman
Preconditions:	<ol style="list-style-type: none">1. Chairman of the Committee must be authorized user. Chairman of the Committee must be logged into the system.2. Chairman of the Committee must have "Add New" access privilege on examiner information.3. Derived information must be available in the system.
Post Conditions:	<ol style="list-style-type: none">1. System will store the information with generating a confirmation message.
Normal Flows:	<ol style="list-style-type: none">1. Chairman of the Committee: Initiates to add new examiner information.2. System: Will show examiner entry page to add examiner information.3. Chairman of the Committee: Will enter examiner and other related information and click on save button for saving required information.4. System:<ol style="list-style-type: none">a. Will save the information.b. Otherwise, will generate alert message.

3.2.2 Use Cases

View Course Wise Examiner Information.

Use Case ID:	sc/2-2
Description:	The focus of this use case is to describe how to navigate through the system to access details about examiners assigned to a particular course.
Actors:	Chairman of Exam Committee, Exam Committee Members, Controller of Examinations
Preconditions:	<ol style="list-style-type: none">1. To access the course-wise examiner information, the actor must be an authorized user who has logged into the system.

	<ol style="list-style-type: none"> 2. Access to the course-wise examiner information requires the "View" access privilege, which must be granted to the actors of this use case. 3. The course-wise examiner information must exist in the system, and the system should display all available information on request.
Post Conditions:	<ol style="list-style-type: none"> 1. Chairman of Exam committee can see detailed information of a selected examiner in the system.
Normal Flows:	<ol style="list-style-type: none"> 1. The actor must initiate the process of viewing the existing course-wise examiner information. 2. Once requested, the system should display a page containing a list of all available course-wise examiner. 3. The actor will be able filter examiners with the following criteria to find the desired examiner to view their information: <ol style="list-style-type: none"> a. Department Name b. Degree Name c. Academic Session d. Semester/Year Name e. Course Code 4. Based on the selected criterion, the system will display a list of all relevant course-wise examiner information. 5. Select an examiner from the list to view detailed information.

3.2.3 Use Cases

Update Course Wise Examiner Information

Use Case ID:	3/2-3
Description:	The focus of this use case is to describe how to edit and modify course-wise examiner information that is already present in the system.
Actors:	Chairman of Exam Committee, Controller of Examinations
Preconditions:	<ol style="list-style-type: none"> 1. To update existing course-wise examiner information within the system, the actor must first be authorized to access the system and logged in. 2. The actor must also have the appropriate access privilege ("Edit") to modify course-wise examiner information.

	3. The system must contain the relevant course-wise examiner information that the actor wishes to update.
Post Conditions:	1. After the actor has modified the course-wise examiner information, the system will save the updated data and provide a confirmation of the successful update.
Normal Flows:	<ol style="list-style-type: none"> 1. To update the desired course-wise examiner information, the actor will select the relevant record. 2. Once the record has been selected, the system will display the corresponding course-wise examiner information on the entry page. 3. The actor will then make the necessary updates and click the “Update” button. 4. The system will save the updated information, or it will generate an alert message if: <ol style="list-style-type: none"> a. The actor has failed to input mandatory information. b. The actor has entered duplicate information. c. Has successfully edited the record.

3.2.4 Use Cases

Delete Course Wise Examiner Information.

Use Case ID:	2/2-4
Use Case Description:	To delete existing course-wise examiner information from the system.
Actors:	Chairman of Exam Committee, Controller of Examinations
Preconditions:	<ol style="list-style-type: none"> 1. To delete course-wise examiner information from the system, the actor must be a verified user and logged in to the system. 2. The actor must have the necessary access privileges to delete course-wise examiner information. 3. The system must have the relevant course-wise examiner information that the actor wants to delete, and the system must display all course-wise examiner information.

Post Conditions:	Course wise examiner information will be deleted from the system and generate a confirmation message.
Normal Flows:	<ol style="list-style-type: none"> 1. The actor selects the desired course-wise examiner from a list of all available examiners which they have access, in order to delete from the system. 2. The system displays a confirmation message with the options "Yes" and "No." 3. The actor clicks either "Yes" or "No" to confirm or cancel the deletion, respectively. 4. If the actor clicks "Yes," the system deletes the selected course-wise examiner information from the database.

3.3 Manage Scrutiny

1	Scope ID	:	sc/3
General Description of Scope:			
An examination committee will verify and scrutinize all the marks sheet, attendance/class test/assignment marks so that possible error in marks will be minimum.			

3.3.1 Use Cases

Verify/Modify Tabulation Sheet

Use Case ID:	sc/3-1
Description:	This use case describes the flows of storing tabulation sheet information into the system.
Actors:	Exam Committee Members, Chairman of Exam Committee
Preconditions:	<ol style="list-style-type: none"> 1. The actor must be an authorized user and must be logged into the system. 2. The actor must have "Create" and "Modify" access privilege on tabulation sheet information. 3. Derived information must be available in the system.
Post Conditions:	System will store the information with generating a confirmation message to the Controller of Examinations.

Normal Flows:	<ol style="list-style-type: none"> 1. Actor: Selects a marks sheet/attendance sheet/class test/assignment marks sheet to view of a particular course submitted by an examiner or course teacher respectively. 2. System: Shows the desired marks sheet. 3. Actor: Verify the marks input in the sheet and change if needed. 4. System: Will store the information. 5. Actor: Click on “Create Tabulation Sheet”. 6. System: Prompts for confirmation. 7. Actor: Confirms submission. 8. System: <ol style="list-style-type: none"> a. Will save the information and send notification to the Controller of Examinations. b. Otherwise, will generate alert message.
----------------------	--

3.4 Manage Eligible Student for Exam

1	Scope ID	:	sc/4
General Description of Scope:			
<p>Department manages a list of students who are eligible to sit for exam. The criterion for eligibility is given below.</p> <ul style="list-style-type: none"> ● The student has sufficient attendance. ● There are no payments left due. 			

3.4.1 Use Cases

Create Eligible Student List

Use Case ID:	sc/4-1
Description:	This use case describes the flows of storing eligible student list information into the system.
Actors:	Department
Preconditions:	1. Department must be authorized user and logged into the system.

	<ol style="list-style-type: none"> 2. Department must have "Add new" access privilege on eligible student list information. 3. Derived information must be available in the system.
Post Conditions:	System will store the information with generating a confirmation message to the actor and the Controller of Examinations.
Normal Flows:	<ol style="list-style-type: none"> 1. Department: Initiates to add new eligible student list information. 2. System: Will ask for session and exam information. 3. Department: Will provide the required information 4. System: Will show a list of students for that exam with fields for due and attendance information and a field for eligibility. 5. Department: Will enter the student eligibility information and click on save button for saving required information. 6. System: <ol style="list-style-type: none"> a. Will save the information and generate a confirmation message to the actor and the Controller of Examinations. b. Otherwise, will generate alert message.

3.5 Manage Course Teachers

1	Scope ID	:	sc/5
General Description of Scope:			
Department assigns a course teacher for a course, who will have special privilege to add marks (class test, assignments, quiz etc.) for his/her course.			

3.5.1 Use Cases

Assign Course Teachers

Use Case ID:	sc/5-1
Description:	This use case describes the flows of storing course teacher information into the system.
Actors:	Department
Preconditions:	<ol style="list-style-type: none"> 1. Department must be authorized user and be logged into the system.

	<ol style="list-style-type: none"> 2. Department must have "Add new" access privilege on course teacher list information. 3. Derived information must be available in the system.
Post	<ol style="list-style-type: none"> 1. System will store the information.
Conditions:	<ol style="list-style-type: none"> 2. Generate a confirmation message and send to the course teacher.
Normal Flows:	<ol style="list-style-type: none"> 1. Department: Initiates to add new course teacher information. 2. System: Will show course teacher list entry page to add course teacher information. 3. Department: Will enter the course teacher info and click on save button for saving required information. 4. System: <ol style="list-style-type: none"> a. Will save the information. b. Otherwise, will generate alert message.

3.6 Manage the Exam Date

1	Scope ID	:	sc/6
General Description of Scope:			
Department chooses and fixes exam dates for different courses from the dates given by the Controller of Examinations.			

3.6.1 Use Cases

Fix The Exam Date

Use Case ID:	sc/6-1
Description:	This use case describes the flows of storing date of exams information into the system.
Actors:	Department
Preconditions:	<ol style="list-style-type: none"> 1. Department must be authorized user and be logged into the system. 2. Department must have "Add new" access privilege on fixing exam date information. 3. Derived information must be available in the system.

Post Conditions:	<ol style="list-style-type: none"> 1. System will store the information. 2. Generate a notification and send to all the course teachers and students of that session
Normal Flows:	<ol style="list-style-type: none"> 1. Department: Initiates to add new exam date information. 2. System: Will show date of exams list entry page to add exams date information. 3. Department: Will enter the exam date info and click on save button for saving required information. 4. System: <ol style="list-style-type: none"> a. Will save the information. b. Otherwise, will generate alert message.

3.7 Manage Class Attendance/Participation Marks

1	Scope ID	:	sc/7
General Description of Scope:			
Course teacher will define class attendance/class-test marks. Class participation mark is a fixed percentage of a course's total marks.			

3.7.1 Use Cases

Add New Class Attendance/Class-Test Marks Setup Information

Use Case ID:	sc/7-1
Description:	This use case describes the flows of storing Class Attendance/Class-test Marks setup information into the system.
Actors:	Course teacher
Preconditions:	<ol style="list-style-type: none"> 1. Course teacher must be authorized user and logged into the system. 2. Course teacher must have "Add New" access privilege on Class Attendance/Class-test Marks setup information.
Post Conditions:	<ol style="list-style-type: none"> 1. System will store the information. 2. Generate a confirmation message and send to the Course teacher and Exam Committee Members.

Normal Flows	<ol style="list-style-type: none"> 1. Course teacher: Initiates to add new Class Attendance/Class-test Marks setup information. 2. System: Will show Class Attendance/Class-test Marks setup entry page to add Class Attendance/Class-test Marks setup information. 3. Course teacher: Will enter Class Attendance/Class-test Marks setup information and click on save button for saving required information. 4. System: <ol style="list-style-type: none"> a. Will save the information. b. Otherwise, will generate alert message.
---------------------	---

3.8 Manage Student

1	Scope ID	:	sc/8
General Description of Scope:			
Student can see notifications, previously attended exams & results, can apply for new form fill-up and apply for transcript.			

3.8.1 Use Cases

New Form Fill-Up Notification

Use Case ID:	sc/8-1
Description:	This use case describes the flows of getting form fill-up notification from the system.
Actors:	Student
Preconditions:	<ol style="list-style-type: none"> 1. Student must be authorized user. Student must be logged into the system. 2. Student must have "View" access privilege on exam form fill up list.
Post Conditions:	1. Get notifications of new form fill up.
Normal Flows:	<ol style="list-style-type: none"> 1. Exam Controller: will initiate a new exam form fill-up. 2. System: Will notify eligible students about the new exam form.

3.8.2 Use Cases

View Previously Attended Exams & Published Results

Use Case ID:	sc/8-2
Description:	This use case describes the flows of viewing previously attended exams & results detail information in the system.
Actors:	Student
Preconditions:	<ol style="list-style-type: none">1. Student must be authorized user. Student must be logged into the system.2. Student must have "View" access privilege on previously attended exams & results information.3. previously attended exams & results information must be existed in system.
Post Conditions:	Student can see detail information of selected exam information in the system.
Normal Flows:	<ol style="list-style-type: none">1. Student: Will initiate to view the existing attended exams & results.2. System: Will display attended exams & results information page.3. Student: Select the desired exam to view result.4. System: Will display exam's details information & result if it is published based on the selection.

3.8.3 Use Cases

Apply For New Form Fill-up and Pay Fees

Use Case ID:	sc/8-3
Description:	This use case describes the flows of storing new form fill-up and fees information into the system.
Actors:	Student
Preconditions:	<ol style="list-style-type: none">1. Student must be authorized user and logged into the system.2. Student must have "Add New" access privilege on form fill up information.
Post Conditions:	System will store the information with generating a confirmation message.
Normal Flows	<ol style="list-style-type: none">1. Student: Initiates to add "New form fill-up" information.2. System: Will show New form fill-up entry page to add New form fill up information.

	<p>3. Student: Will enter new form fill-up information and click on save button for saving required information.</p> <p>4. System: Will show an online payment page for paying relevant fees.</p> <p>5. Student: Will pay fees through mobile banking.</p> <p>6. System:</p> <ul style="list-style-type: none"> a. Will save the information. b. Otherwise, will generate alert message.
--	--

3.8.4 Use Cases

Apply for Transcript

Use Case ID:	sc/8-5
Description:	This use case describes the flows of getting Transcript from the system.
Actors:	Student
Preconditions:	<p>1. Student must be authorized user and be logged into the system.</p> <p>2. Student must have "View" access privilege on results information.</p>
Post Conditions:	Student can download Transcript from the system.
Normal Flows	<p>1. Student: Opens the result of an exam from a list of all attended published results. Clicks on “Get Transcript”.</p> <p>2. System: Prompt to pay required fees online.</p> <p>3. Student: Pays fees with online banking.</p> <p>4. System: Will generate the transcript of the desired exam and give option to download as pdf and an option to print.</p> <p>5. Student: Can download or print the Transcript.</p>

3.9 Manage Answer Scripts

1	Scope ID	sc/9
General Description of Scope:		
Examiners can evaluate answer scripts, fill marks sheet, and notify the exam controller.		

3.9.1 Use Cases

Add New Marks Sheet

Use Case ID:	sc/9-1
Description:	This use case describes the flows of storing marks from the answer scripts into the marks sheet in the system.
Actors:	Examiner
Preconditions:	<ol style="list-style-type: none">1. Examiner must be an authorized user. Examiner must be logged into the system.2. Examiner must have "Add New" access privilege on Exam sheet Marks setup information.
Post Conditions:	System will store the information with generating a confirmation message.
Normal Flows	<ol style="list-style-type: none">1. Examiner: Initiates to add new Exam sheet Marks setup information.2. System: Will show a Marks Sheet to enter information.3. Examiner: Will enter marks from the answer scripts and click on save button.4. System:<ol style="list-style-type: none">a. Will save the information.b. Otherwise, will generate alert message.

3.9.2 Use Cases

Marks Sheet Completion Notification

Use Case ID:	sc/9-2
Description:	This use case describes the flows of getting marks sheet completion notification from the system.
Actors:	Examiner
Preconditions:	Examiner must be authorized user. Examiner must be logged into the system.
Post Conditions:	The Exam Committee Chairman and Members and the Controller of Examinations will get notifications of marks sheet completion.
Normal Flows:	<ol style="list-style-type: none">1. Examiner: will click on “Confirm Marks Sheet”.

	2. System: Will notify The Exam Committee Chairman and Members and the Controller of Examinations the about the marks sheet confirmation.
--	--

3.10 The Controller of Examinations

1	Scope ID	:	sc/10
General Description of Scope:			
The scope of the system is to provide the Controller of Examinations with the ability to manage exams, manage exam committees, initiate form fill-up for an exam, and publish exam results. The system will allow the exam controller to create, edit, and delete exams, as well as assign exams to departments. Once the exam results have been published, the system will maintain them and make them available to authorized users.			

3.10.1 Use Cases

Create New Exam and Fix Exam Date

Use Case ID:	sc/10-1
Description:	This use case describes the flows of creating a new exam
Actors:	Controller of Examinations
Preconditions:	The Exam Controller must be authenticated and authorized to create an exam
Post Conditions:	The exam is created and added to the system.
Normal Flows:	<ol style="list-style-type: none"> 1. The Controller of Examinations: Selects the option to create an exam. 2. System: Prompts the Exam Controller to enter the details such as exam name, date, time, duration, and department. 3. The Controller of Examinations: Enters the details and submits them. 4. System: <ol style="list-style-type: none"> a. Will save the information. b. Otherwise, will generate an alert message.

3.10.2 Use Cases

Update an Exam

Use Case ID:	sc/10-2
Description:	This use case describes the flows of editing an existing exam
Actors:	The Controller of Examinations
Preconditions:	<ol style="list-style-type: none">1. The Controller of Examinations must be authenticated and authorized to edit an exam.2. The exam to be edited must already exist in the system.
Post Conditions:	The exam is updated with the new information.
Normal Flows:	<ol style="list-style-type: none">1. System: Shows a list of all created exam which can be filtered with some criteria.2. The Controller of Examinations: Selects an exam from the list and clicks on the option to edit an exam.3. System: Displays the details of the exam.4. The Controller of Examinations: Makes the necessary changes to the exam details and clicks on “Save”.5. System: Saves the updated exam details in the database and generate a response.

3.10.3 Use Cases

Delete an Exam

Use Case ID:	sc/10-3
Description:	This use case describes the flows of deleting an exam
Actors:	The Controller of Examinations
Preconditions:	<ol style="list-style-type: none">1. The Controller of Examinations must be authenticated and authorized to delete an exam.2. The exam to be deleted must already exist in the system
Post Conditions:	The exam is deleted from the system.

Normal Flows:	<ol style="list-style-type: none"> 1. System: Shows a list of all created exam which can be filtered with some criteria. 2. The Controller of Examinations: Selects an exam from the list and clicks on the option to delete an exam. 3. System: Displays the details of the exam and prompts to confirm action. 4. The Controller of Examinations: Clicks “Yes” or “No”. 5. System: Removes the exam from the database if “Yes” has been clicked and generate a response.
----------------------	--

3.10.4 Use Cases

Result Publication

Use Case ID:	sc/10-4
Description:	This use case describes the flows of publishing a result
Actors:	The Controller of Examinations
Preconditions:	<ol style="list-style-type: none"> 1. The Controller of Examinations must be authenticated and authorized to assign an exam. 2. The Controller of Examinations has created an exam for a department. 3. The Exam Committee for the exam has been created/approved by the Controller of Examinations. 4. The exam has been conducted and the mark sheet has been verified by the Exam Committee.
Post Conditions:	<ol style="list-style-type: none"> 1. The Controller of Examinations publishes the result of the exam. 2. All the students that took part in the exam, the Exam Committee for that exam, the Course Teachers, Examiners and Department will get notification for the publication of the result.
Normal Flows:	<ol style="list-style-type: none"> 1. The Controller of Examinations: logs into the System and navigates to the exam dashboard. 2. System: Shows a list of exams of which the tabulation sheet has been verified by the respected Exam Committees. 3. The Controller of Examinations: Selects an exam to view its result. 4. System: Shows the result and prompts for publication. 5. The Controller of Examinations: Clicks on “Publish Result”.

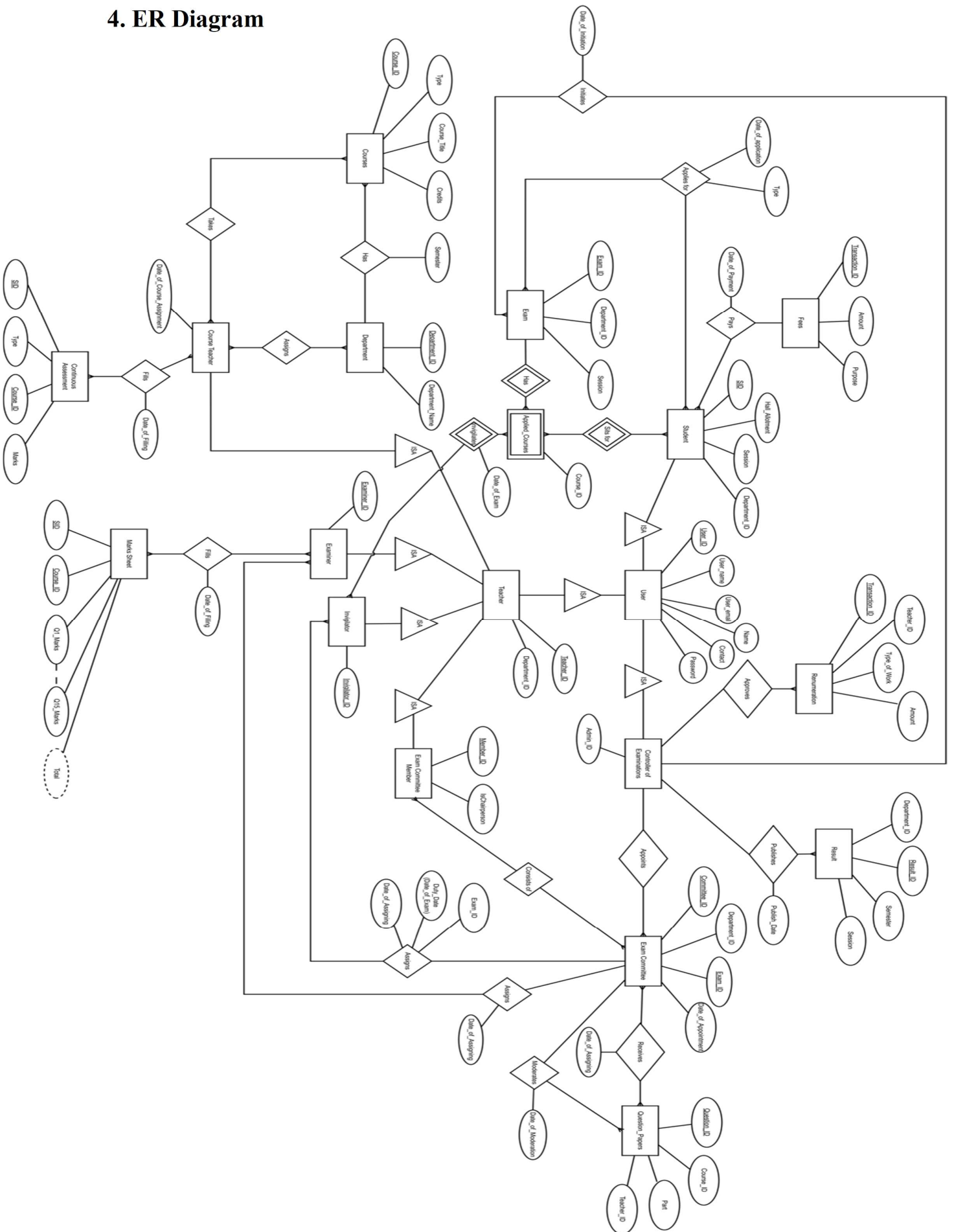
	<ol style="list-style-type: none"> 6. The system publishes the result and <ol style="list-style-type: none"> a. Will save the information. b. Otherwise, will generate an alert message
--	---

3.10.5 Use cases

Start Form Fill-up Process for an Exam

Use Case ID:	sc/10-5
Description:	This use case describes the flows of the initiation of the form fill-up process
Actors:	The Controller of Examinations
Preconditions:	<ol style="list-style-type: none"> 1. The Controller of Examinations must be authenticated and authorized to assign an exam. 2. An exam has already been created for a department.
Post Conditions:	<ol style="list-style-type: none"> 1. The Students can register for the exam. 2. The Students and the Department will get a notification of the initiation of the form fill-up process. 3. The Controller of Examinations can view and manage the registration details.
Normal Flows:	<ol style="list-style-type: none"> 1. The Controller of Examinations: Logs into the system and navigates to the exam dashboard. An exam is selected from the list of all exams for which form fill-up process is to be initiated. 2. System: Shows details about the selected exam. 3. The Controller of Examinations: Selects the option to start the form fill-up process. 4. System: Prompts for the deadline for the form fill-up process. 5. The Controller of Examinations: Inputs the deadlines and clicks on “Initiate Form Fill-up”. 6. System: Saves the changes and generates a response.

4. ER Diagram



5. Non-Functional Requirements

- The system must ensure that the data stored in the server must be encrypted.
- The system must be reliable with an uptime of almost 100%.
- The system should be fast and responsive.
- The server should be capable of handling high levels of data and load.
- The system must be simple to use and navigate, enabling users to complete their duties quickly.
- There should be a high-performance backup server.
- No user can access data beyond their access permission.

System Messages

#	Item	Message
1.	Successful Add Update	Information has been saved successfully.
2.	Unsuccessful Add Update	Cannot save the information. Please try again.
3.	Successful Delete	Information has been deleted successfully.
4.	Unsuccessful Delete	Information cannot be deleted due to dependency.
5.	Blank Mandatory Field	Please provide the following information
6.	Server Error	Cannot perform the operation.

6. System Requirements

6.1 Hardware Requirements

Minimum Requirements for client PC:

SL.	Description	Specification
1	Processor	Intel Pentium Dual Core 2.6Ghz E5300
2	Motherboard	Intel G31 Chipset Motherboard
3	LAN	On-board 10/100 MBPS
4	RAM	1 GB DDR2 1333MHz
5	Display Resolution	1280 X 1024px

Requirements for Server:

SL.	Description	Specification
1	Processor	Intel® Xeon® CPU Max 9468
2	Motherboard	Intel LGA4677 Socket Motherboard
3	LAN	Dual 10Gb/s Networking
4	RAM	128 GB DDR5 4800 MT/s ECC Memory
5	Storage	1 X 2TB PCIE Drive 6 X Western Digital Black 16TB Drive

6.2 Software Requirements

Minimum Requirements of Client side:

SL.	Type of Software	Software Description	Version
1.	Operating System (OS)	Microsoft Windows XP, Vista, 7+, Mac OS X 10.11+, Ubuntu 14.04, Android 6.0	
2.	Web Browser	Internet explorer (IE) Mozilla Firefox Safari Google Chrome	8+ 3.6+ 5.0+
3.	Word Processor	Microsoft Office	2007

Minimum Requirements of Server Side:

SL.	Type of Software	Software Description	Version
1.	Operating System (OS)	Server Independent	-
2.	Reporting Tool	JasperReports	4.7.0
3.	Database	MySQL	5.5
4.	Framework	J2EE, Spring	
5.	Web Server	Apache	
6.	Mail Transfer Protocol	Simple Mail Transfer Protocol (SMTP)	1.5+

Group Members

Student ID	Name
1910876105	Md. Nazmus Shakib
1910676110	Md. Ahanaf Arif Khan
1910976117	Md. Shoriful Islam
1912576125	Chaity Paul
1912276130	Rupa Dey
1910776135	Akif Islam
1910776142	Momen Khandoker
1912276145	Farjana Aktar
1810376119	Al Zobaer
1810976151	Md.Rahmat E Rabbi
1711076147	Whalid Mahabub

Contributions

1. Initial Discussion:

Student ID	Name
1910876105	Md. Nazmus Shakib
1910676110	Md. Ahanaf Arif Khan
1910976117	Md. Shoriful Islam
1912576125	Chaity Paul
1912276130	Rupa Dey
1910776135	Akif Islam

Student ID	Name
1910776142	Momen Khandoker
1912276145	Farjana Aktar
1810376119	Al Zobaer
1810976151	Md.Rahmat E Rabbi
1711076147	Whalid Mahabub

2. First Presentation

Student ID	Name
1910976117	Md. Shoriful Islam
1910776135	Akif Islam (Presented)
1910776142	Momen Khandoker
1912276145	Farjana Aktar

3. Analysis of Current Examination System

Student ID	Name
1910676110	Md. Ahanaf Arif Khan
1910976117	Md. Shoriful Islam
1910776135	Akif Islam

4. Second Presentation

Student ID	Name
1910676110	Md. Ahanaf Arif Khan (Presented)
1910976117	Md. Shoriful Islam
1910776135	Akif Islam
1912276145	Farjana Aktar

5. UML Sequence Diagram

Student ID	Name
1910876105	Md. Nazmus Shakib
1912576125	Chaity Paul
1912276130	Rupa Dey
1810976151	Md.Rahmat E Rabbi
1711076147	Whalid Mahabub

6. UML Use Case Diagram

Student ID	Name
1910676110	Md. Ahanaf Arif Khan
1910976117	Md. Shoriful Islam
1910776135	Akif Islam

7. ER Diagram

Student ID	Name
1910676110	Md. Ahanaf Arif Khan
1910776135	Akif Islam
1912276145	Farjana Aktar

8. SRS Document Writing

Student ID	Name
1910976117	Md. Shoriful Islam
1912276130	Rupa Dey
1910776142	Momen Khandoker
1810376119	Al Zobaer

9. SRS Correction and Formatting

Student ID	Name
1910676110	Md. Ahanaf Arif Khan
1910976117	Md. Shoriful Islam
1910776135	Akif Islam
1910776142	Momen Khandoker
1912276145	Farjana Aktar