



Daffodil
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Research Coordination System

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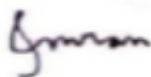
Daffodil International University

This Project report has been submitted in fulfillment of the requirements for the Degree of Bachelor of Science in Software Engineering.

Approval

This thesis titled on “**Research Coordination System**”, submitted by Sabbir Ahammed (ID:171-35-1979) to the Department of Software Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Software Engineering and approval as to its style and contents.

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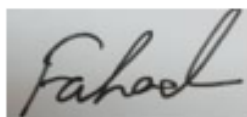
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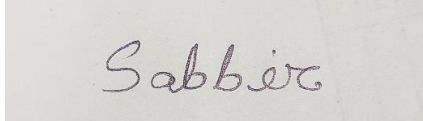


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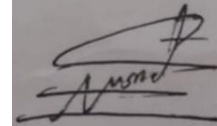
The project entitled “**Research Coordination System**” is done under the supervision **Ms. Nusrat Jahan** Senior Lecturer, Department of Software Engineering, Daffodil International University. I declare that this project is my original work for the degree of B.Sc. in Software Engineering and that neither the whole work nor any part has been submitted for another degree in this or any other university.



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Chapter 1: Introduction

1.1 Project Overview

Research Coordinating System is a web-based application, which will help the faculty members to manage the working schedule for publishing process. Only the faculty members are allowed to use the system. For this, they need to be registered by an admin or a coordinator type user of this system. After successfully registered, a faculty member can submit their research paper details. System will check if the paper title is already submitted or not. If not, the system will accept the submission. The coordinator can check the paper details submitted by the faculty members and can make an overall report. Then he/she can send the report to the system admin. The admin can check the report, can assign tasks regarding the report to the coordinator. The coordinator will receive the tasks assign by the admin with due dates. Then he/she will pass those tasks to the faculty members according to their research papers. The admin can also promote a user as a coordinator and demote a coordinator to a faculty member.

1.2 Project Purpose

This “Research Coordinating System” will help the faculty members of a department to easily manage their research paper publishing process and keep track of their work schedule. So, the main purposes of this system could be:

- Managing research paper publishing process
- Keeping track of work schedule
- Working remotely
- Distributing tasks easily

1.2.1 Background

Many new things are discovered or being improved day to day. Universities are playing a vital role in this race. As a result, it’s getting harder for the faculty members to cope with their research and publishing processes at a time. A lot of students want to complete their research and publish their paper during their graduation. So, every faculty member needs to go through more than one or two research papers of their students. Besides they have to keep track of publishing processes of their department.

Keeping all those difficulties in mind, the “Research Coordinating System” web-based application have been developed. It will automate many processes and will help the faculty members to keep track of their work. They will also have the benefit of working remotely.

1.2.2 Benefits & Beneficiaries

The project is all about to create a hub and repository of academic research papers and publications. There had the system before where all these tasks which are described below had to be maintained manually and therefore the reason it was very difficult to keep the track up to date and stockholder had to suffer very much.

Admin and coordinator as well as all the stockholders will be the beneficiaries by using the system actually. Faculties don't need to submit papers through email or post and it's redundant to wait for the confirmation from the coordinators and these things were nothing but uncertainty. Admin and coordinator will not have to wait and overcome the unnecessary delay to maintain the typical procedure. Every stockholder has their role and activity well defined and easy to use and I hope all these above circumstances help to make you understand the benefits.

1.3 Stakeholders

There are three stakeholders in the "Research Coordinating System". They are-

- **Admin:** Admin is assigned automatically when the project start. Admin can assign user types and tasks to other users.
- **Coordinator:** Coordinator can register new users as faculty members and can assign tasks for them.
- **Faculty:** When an admin or coordinator register a new user to the system, he/she is considered as faculty member. A faculty member can submit paper details and tasks assigned by the coordinator. Tasks for him\her appear in his\her task menu.

1.4 Proposed System Model

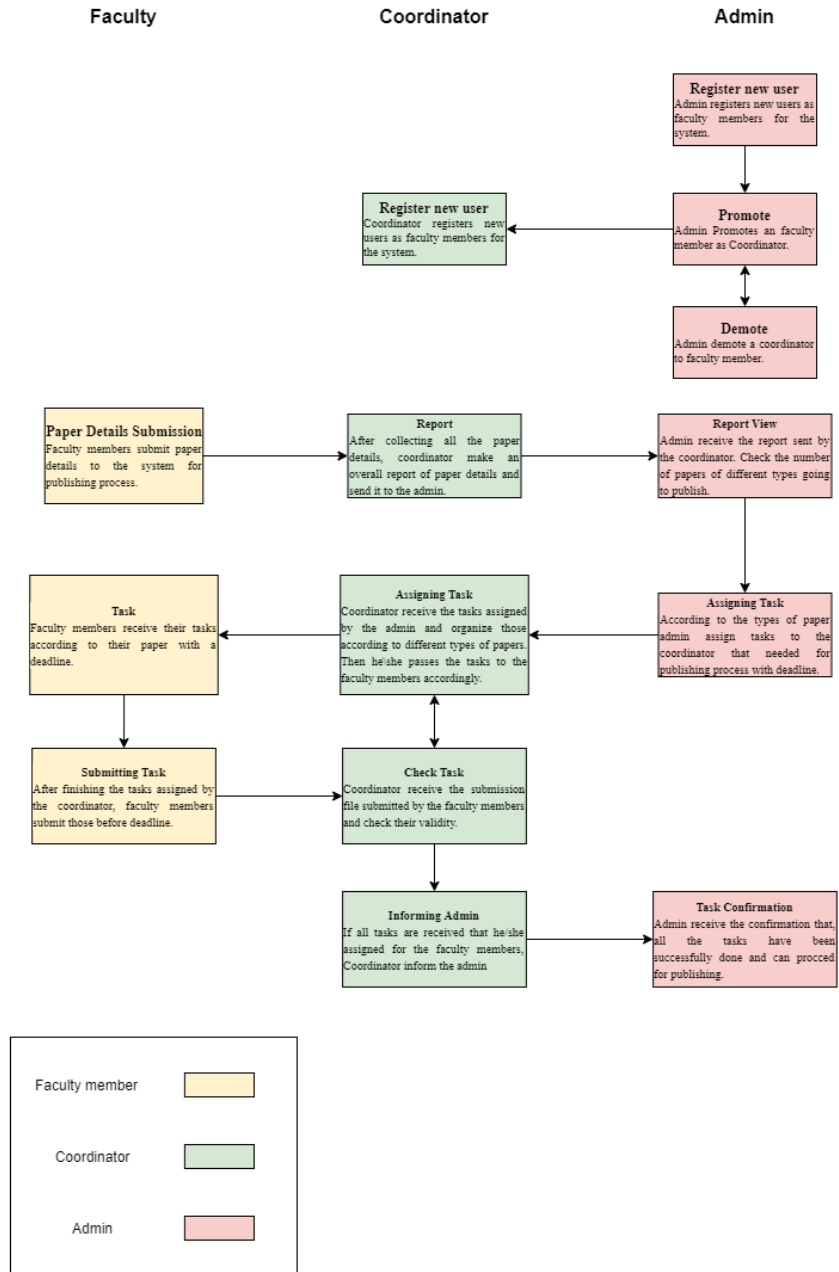


Figure 1.1: Block Diagram

1.5 Project Schedule

1.5.1 Gantt Chart

Table 1.1: Gantt Chart

Task Name	October 1-15	October 15-31	November 1-15	November 15-30	December 1-15
Planning	█				
Research		█			
Design		█	█	█	
Implementation			█	█	█
Testing					█

1.5.2 Release Plane/Milestone

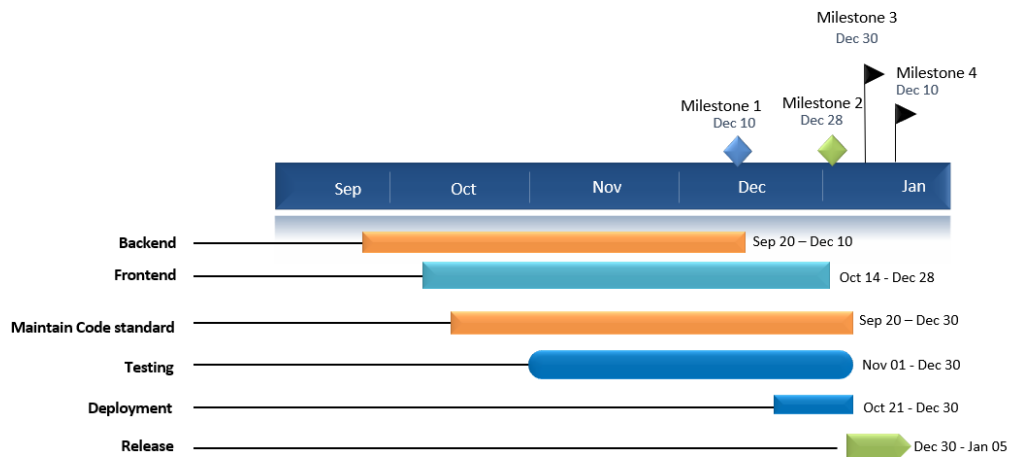


Figure 1.2: Milestone

Chapter 2: Software Requirement Specification

2.1 Functional Requirements

Functionality requirements refers to the functions included in the system to understand the functionality requirements application. If an application is created, then of course functional requirements are required. Here I am going to discuss the functional requirements of the “Research Coordinating System”.

2.1.1 Log In

Table 2.1: Log In

FR-1	Log In		
Description	Admin can log in to this system with his/her login credentials. After registered and promoted by the admin coordinator and faculty can also log in to this system with credentials.		
Stakeholders	Admin, Coordinator, Faculty	Priority	High

2.1.2 Update Profile

Table 2.2: Update Profile

FR-2	Update Profile		
Description	Users of this system can update his/her profile after he/she is logged in.		
Stakeholders	Admin, Coordinator, Faculty	Priority	Low

2.1.3 Register New User

Table 2.3: Register New User

FR-3	Register New User		
Description	Admin and Coordinator can register a new user for this system with necessary information.		
Stakeholders	Admin, Coordinator	Priority	High

2.1.4 Assign Coordinator

Table 2.4: Assign Coordinator

FR-4	Assign Coordinator		
Description	Admin can promote a faculty member as a coordinator. He/she can also demote a coordinator to faculty member.		
Stakeholders	Admin	Priority	High

2.1.5 Assign Task

Table 2.5: Assign Task

FR-5	Assign Task		
Description	Admin can assign tasks for coordinator and coordinator can assign task for faculty members.		
Stakeholders	Admin, Coordinator	Priority	Medium

2.1.6 Submit Paper Details

Table 2.6: Submit Paper Details

FR-6	Submit Paper Details		
Description	Faculty members can submit paper details about their research in the system they want to publish.		
Stakeholders	Faculty	Priority	Medium

2.1.7 Report writing

Table 2.7: Report Writing

FR-7	Report Writing		
Description	Coordinator can make a report of overall paper details based on category after all the faculty members submitted their paper details.		
Stakeholders	Coordinator	Priority	Medium

2.1.8 Log Out

Table 2.8: Log Out

FR-8	Log out		
Description	Users of this system can log out from the system. All the session records will be destroyed from the browser immediately. Users need to log in again in order to do something in the system.		
Stakeholders	Admin, Coordinator, Faculty	Priority	High

2.2 Performance Requirements

Performance requirements determine how effective the system is in a given situation. Examples include software response speed, throughput, execution time and storage capacity. Service levels with performance requirements often support end-user tasks.

2.2.1 Speed and Latency Requirements

System's response time during working schedule is a major fact that specify an application's quality. Overall response time of this system is good. Speed of a web application also depends on its host. It can be said that, with a good hosting facility the "Research Coordinating System" will work perfectly smooth and quick.

2.2.2 Precision or Accuracy Requirements

Accuracy of data provide by a system is mandatory for a good quality of system. This system provides 100% accurate data with the right authorization. In this system, I used unit of work for the surety of providing 100% accurate data. In this case if something goes wrong during collecting data from a user, the system will role back the whole process and the collecting process will start again for accuracy.

2.2.3 Capacity Requirements

Advanced systems must be able to manage user data, provide accurate information, manage databases, manage http requests.

Table 2.9: Capacity Requirements

CR-1	The system will handle more than thousands of data		
Description	The system needs to handle thousands of data every moment		
Stakeholders	Admin, Coordinator, Faculty	Priority	High

2.3 Dependability Requirements

Dependability is measured on the basis of four dimensions. Like:

2.3.1 Reliability Requirements

Table 2.10: Reliability Requirement

RR-1	The system will available 24*7		
Description	This system will give service to its user all day long, will be malware free and will be updated when needed.		
Stakeholders	Admin, Coordinator, Faculty	Priority	Medium

2.3.2 Availability Requirements

It is important to ensure a Zero percent crash to ensure error tolerance benefits for end users. It's also mandatory to shows accurate results.

Table 2.11: Availability Requirement

AR-1	The system handles every user access without errors		
Description	It's possible that all the user tries to log in or doing something in the system at a time. In this situation system must handle their request without system errors.		
Stakeholders	N/A	Priority	Medium

2.3.3 Robustness or Fault-Tolerance Requirements

Providing after service and support to the end user is very important.

2.3.4 Safety-Critical Requirements

Scalability requirements define specific scalability requirements for stakeholders. This system is designed for maintenance, avoiding single points of failure and supplying as much as necessary data.

2.4 Security Requirements

Software security requirements should be its functional requirement. Software protection implements the protection of an application. Software security related functionality can be either directly tested or monitored. Below are some safety requirements:

- A proper way of sign in.
- Sign in credentials shouldn't be disclosed to anyone in any situation.
- Gaining access according to the user type.
- Proper control swapping in the time of promote and demote
- Denying unauthorized registration
- Clearing session properly as a user log out

When users access the system, each and every module must be supplied from the central authentication process.

2.4.1 Access Requirements

Table 2.12: Access Requirement

ACR-1	Application Provides Secure Log In System		
Description	Each and every step of the system designed in such a way that it only allows the authorized users.		
Stakeholders	N/A	Priority	High

2.4.2 Integrity Requirements

Integrity requirements refer to a security system that ensures data quality expectations. It also ensures that all data on the system is never exposed to malicious changes or unexpected destruction.

2.4.3 Privacy Requirements

Ensuring the privacy of system users is very important. To ensure privacy, the central database is protected by anonymity. Users are allowed access to the data they are authorized to use.

2.5 Usability and Human-Interaction Requirements

Systems may fail for usability. That's why I build this application very user friendly, easy to understand and easy to manage.

2.5.1 Personalization and Internationalization Requirements

There is no personalization and internationalization requirements.

2.5.2 Understandability and Politeness Requirements

This system is built for organizational use. The interface is designed in a way that is very easy to understand. There are diagrams to fully understand the systems main working mechanism.

2.5.3 Accessibility Requirements

This system is built for organizational use only. So, I prefer that only the registered users have the accessibility for the system. And no one can register himself. Only the admin and coordinator can register a user. Then the user will be a valid user for the system.

2.5.4 User Documentation Requirements

There is no user documentation required in the system.

2.5.5 Training Requirements

No training requirements needed for this system.

2.6 Look and Feel Requirements

If a system does not look structured, users feel annoyed and does not want to go further. There are requirements to see and feel what the system will look like and how the system's user interface or graphical user interface will be displayed to users.

2.6.1 Appearance Requirements

The system is built in an understandable way that the users can easily use. For an example if admin added a task for coordinator, then the coordinator will be notified about his/her task. Accordingly, faculty members will be notified if coordinator add any task for them. Also, they can check if the task is completed by the users they appointed for. Users will understand the system very easily after they started working in it.

2.6.2 Style Requirements

Table 2.13: Style Requirement

SR-1	All content must be appearing within a format		
Description	Input field and other view result show a specific format		
Stakeholders	Admin, Coordinator, Faculty	Priority	Medium

2.7 Operational and Environmental Requirements

There are no operational and environmental requirements in this system.

2.8 Legal Requirements

There are no legal requirements in this system.

Chapter 3: System Analysis

3.1 Use Case Diagram

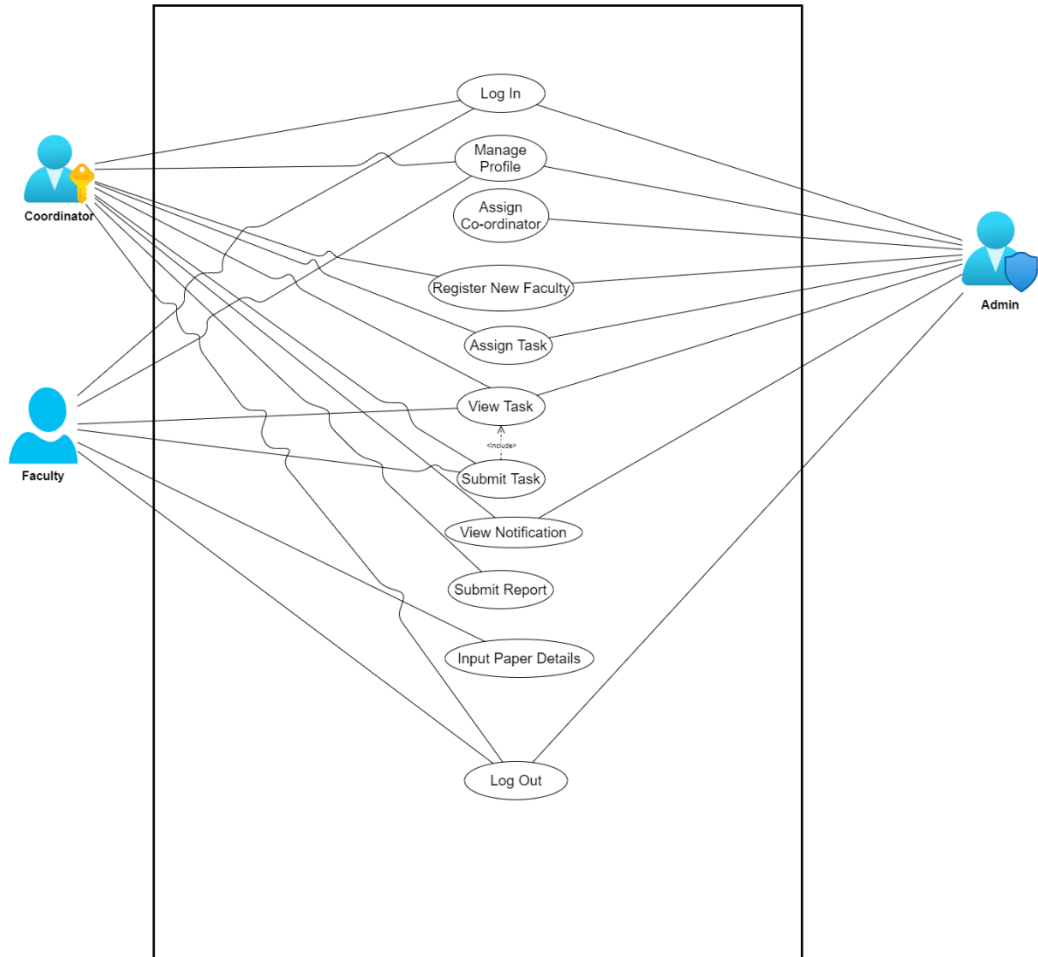


Figure 3.1: Use Case Diagram for “Research Coordinating System”

3.2 Use Case Description

3.2.1 Log In

Table 3.1: Log In

Use Case Title	Log In	
Goal	Entering the dashboard according to user type	
Preconditions	Must be a registered user	
Success End Condition	Successfully logged in to dashboard	
Failure End Condition	Incorrect Email or Password	
Primary Actor: Secondary Actor:	User System	
Trigger	Log in button	
Description Main Success Scenario	Step	Action
	1	User Input log in credentials
	2	Log in successful to dashboard
	3	User can use his/her dedicated work flows
Alternative flows	Step	Branching Action
	1	Input incorrect or unregistered data
	2	Log in failed due to incorrect credentials
Quality Requirements	Step	Requirements
		N/A

3.2.2 Manage Profile

Table 3.2: Manage Profile

Use Case Title	Manage Profile	
Goal	Updating Name or adding phone number	
Preconditions	Must be a logged in	
Success End Condition	Well formatted data for required field	
Failure End Condition	Using bad formatted data for required field	
Primary Actor: Secondary Actor:	User System	
Trigger	Edit Profile Menu	
Description	Step	Action
Main Success Scenario	1	User click edit profile
	2	User serve needed information
	3	Profile updated
Alternative flows	Step	Branching Action
	1	Input incorrect information
	2	Update failed
Quality Requirements	Step	Requirements
		N/A

3.2.3 Assign Coordinator

Table 3.3: Coordinator Assign

Use Case Title	Assign Coordinator	
Goal	Promoting a Faculty member as a Coordinator	
Preconditions	Must be logged in as an admin	
Success End Condition	The targeted user must be a registered faculty member	
Failure End Condition	The targeted user is already a Coordinator or an Admin or is not registered yet	
Primary Actor: Secondary Actor:	Admin Faculty	
Trigger	Assign Coordinator Menu	
Description Main Success Scenario	Step	Action
	1	User must be an Admin
	2	Target the user needed to assign as Coordinator
	3	Click on Edit role and select Coordinator
Alternative flows	Step	Branching Action
	1	Selecting Faculty again instead of Coordinator
	2	Targeting a Coordinator for assigning as coordinator
Quality Requirements	Step	Requirements
		N/A

3.2.4 Register New Faculty

Table 3.4: Register New Faculty

Use Case Title	Register New Faculty	
Goal	Adding a user as faculty member in the system	
Preconditions	Must be logged in as Coordinator or Admin	
Success End Condition	Serving valid information to the system	
Failure End Condition	Serving invalid information to the system	
Primary Actor: Secondary Actor:	Admin, Coordinator Faculty	
Trigger	Register New Faculty from Menu	
Description Main Success Scenario	Step	Action
	1	Logged in as Coordinator or Admin
	2	Supplying valid information
	3	Registered user successfully
Alternative flows	Step	Branching Action
	1	Supplying invalid information
	2	Incorrect information causes registration failure
Quality Requirements	Step	Requirements
		N/A

3.2.5 Assign Task

Table 3.5: Assig Task

Use Case Title	Assign Task	
Goal	Assigning task for the coordinator and faculty to progressing the publishing process	
Preconditions	Logged in as Admin or Coordinator	
Success End Condition	Providing valid information about task	
Failure End Condition	Providing invalid information about task	
Primary Actor: Secondary Actor:	Admin, Coordinator Faculty	
Trigger	Task from the side menu	
Description Main Success Scenario	Step	Action
	1	Providing task including needed information
	2	Selecting candidate for this task
	3	Select deadline for the task
Alternative flows	Step	Branching Action
	1	Incomplete information about task
	2	Task couldn't be assigned
Quality Requirements	Step	Requirements
		N/A

3.2.6 View Task

Table 3.6: View Task

Use Case Title	View Task	
Goal	View tasks that assigned by the user and for the user	
Preconditions	Must be a registered user	
Success End Condition	Tasks must be assigned	
Failure End Condition	No tasks assigned	
Primary Actor: Secondary Actor:	Coordinator, Faculty Admin, Coordinator	
Trigger	Task from side menu	
Description	Step	Action
Main Success Scenario	1	Click task menu from side menu bar
	2	View tasks assigned for me and assigned by me
	3	Click on the specific one to view details
Alternative flows	Step	Branching Action
	1	Request for view tasks
	2	No task assigned
Quality Requirements	Step	Requirements
		N/A

3.2.7 Submit Task

Table 3.7: Submit Task

Use Case Title	Submit Task	
Goal	Submit the assigned task before deadline	
Preconditions	Logged in and tasks must be assigned	
Success End Condition	Tasks submitted successfully	
Failure End Condition	Tasks is not submitted	
Primary Actor: Secondary Actor:	Coordinator, Faculty Admin, Coordinator	
Trigger	Task from side menu bar	
Description	Step	Action
Main Success Scenario	1	Select the task that need to be submitted
	2	Upload the file that contains submission content
	3	Assigner receive the file successfully
Alternative flows	Step	Branching Action
	1	Submitting without content file
	2	Submitting file without any content
Quality Requirements	Step	Requirements
		N/A

3.2.8 View Notification

Table 3.8: View Notification

Use Case Title	View Notification	
Goal	Alert about deadlines and tasks assigned	
Preconditions	Must be logged in	
Success End Condition	Nearby deadline or new task assigned for the user	
Failure End Condition	No tasks available for the user	
Primary Actor: Secondary Actor:	Users System	
Trigger	Notification from side menu bar	
Description	Step	Action
Main Success Scenario	1	User check the notification menu
	2	Notification menu shows the nearby deadlines and new tasks assigned for the user
	3	Select specific notification to complete it
Alternative flows	Step	Branching Action
	1	No tasks available for the user
	2	Notification window contain nothing
Quality Requirements	Step	Requirements
		N/A

3.2.9 Submit Report

Table 3.9: Submit Report

Use Case Title	Submit Report	
Goal	Informing admin about research papers going to publish according to category	
Preconditions	Must be logged in as Coordinator	
Success End Condition	All the paper details must be submitted before making report	
Failure End Condition	Making report before submitting paper details	
Primary Actor: Secondary Actor:	Coordinator Admin	
Trigger	Report writing from side menu bar	
Description	Step	Action
Main Success Scenario	1	Coordinator request for report
	2	System categorify all paper details
	3	Coordinator passes the report to the admin
Alternative flows	Step	Branching Action
	1	Coordinator request for report before all paper details have been submitted
	2	Invalid informational report created
Quality Requirements	Step	Requirements
		N/A

3.2.10 Input Paper Details

Table 3.10: Input Paper Details

Use Case Title	Input Paper Details	
Goal	Providing information about the research papers going to publish	
Preconditions	Logged in as faculty members	
Success End Condition	Providing valid information in the required fields	
Failure End Condition	Providing invalid information or Existing information	
Primary Actor: Secondary Actor:	Faculty Coordinator	
Trigger	Paper Details from the side menu bar	
Description Main Success Scenario	Step	Action
	1	Faculty input a paper detail
	2	Submit the details for review
	3	Coordinator receive the details
Alternative flows	Step	Branching Action
	1	Faculty input an existing detail
	2	System reject the submission
Quality Requirements	Step	Requirements
		N/A

3.2.11 Log Out

Table 3.11: Log Out

Use Case Title	Log Out	
Goal	Exit the system	
Preconditions	Must be logged in	
Success End Condition	User is logged in	
Failure End Condition	User is already logged out	
Primary Actor: Secondary Actor:	User System	
Trigger	Log out button	
Description Main Success Scenario	Step	Action
	1	User completed his/her work on system
	2	User clicked log out button
	3	System logged out the user and clear his/her session records
Alternative flows	Step	Branching Action
	1	User close the browser instead of log out
	2	System will catch his/her session record for a defined time for that browser. Then it will be cleaned also.
Quality Requirements	Step	Requirements
		N/A

3.3 Activity Diagram

3.3.1 Activity Diagram (Log In)

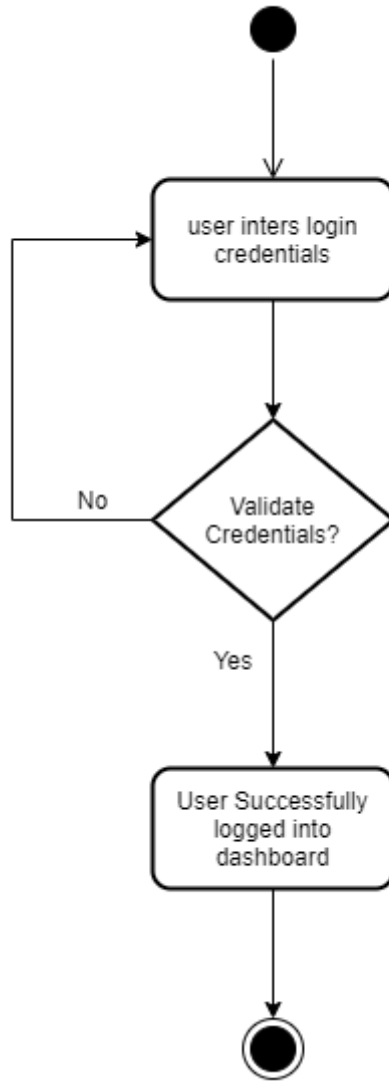


Figure 3.2: Activity Diagram for Log in

3.3.2 Activity Diagram (Manage Profile)

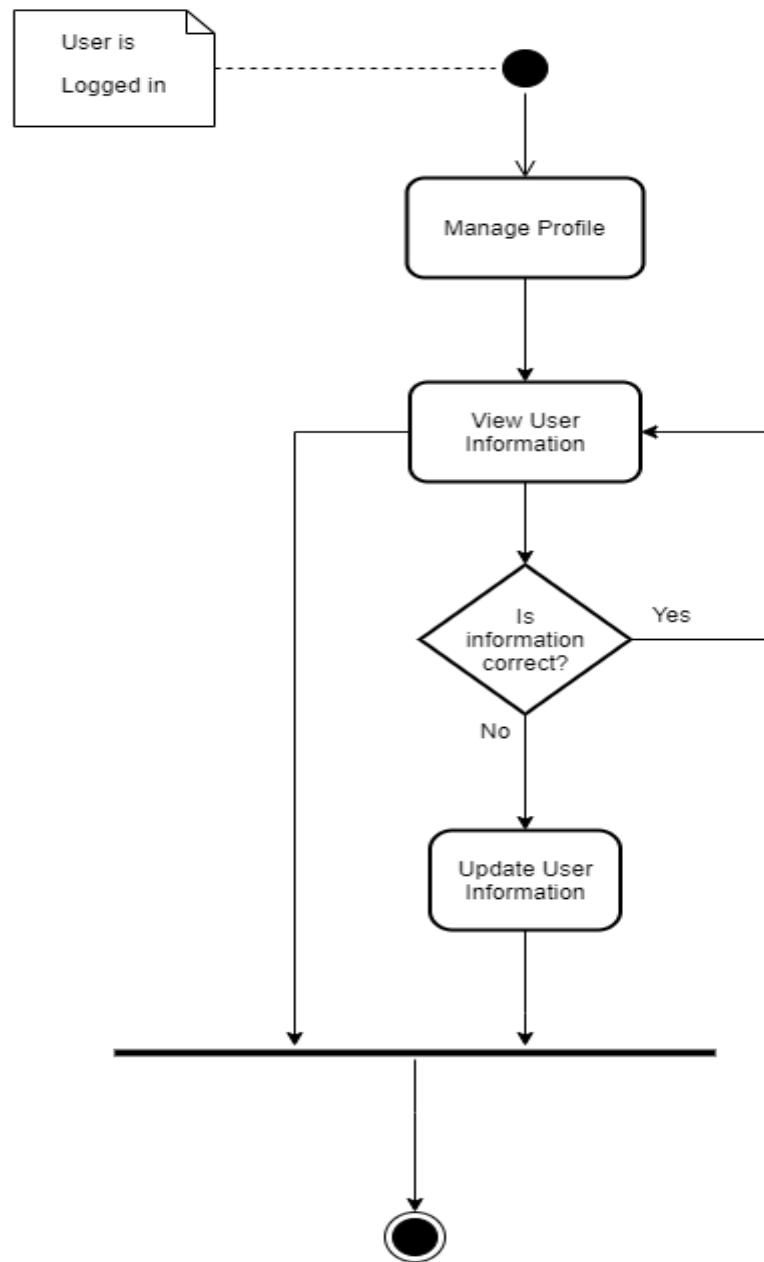


Figure 3.3: Activity diagram for Manage Profile

3.3.3 Activity Diagram (Assign Coordinator)

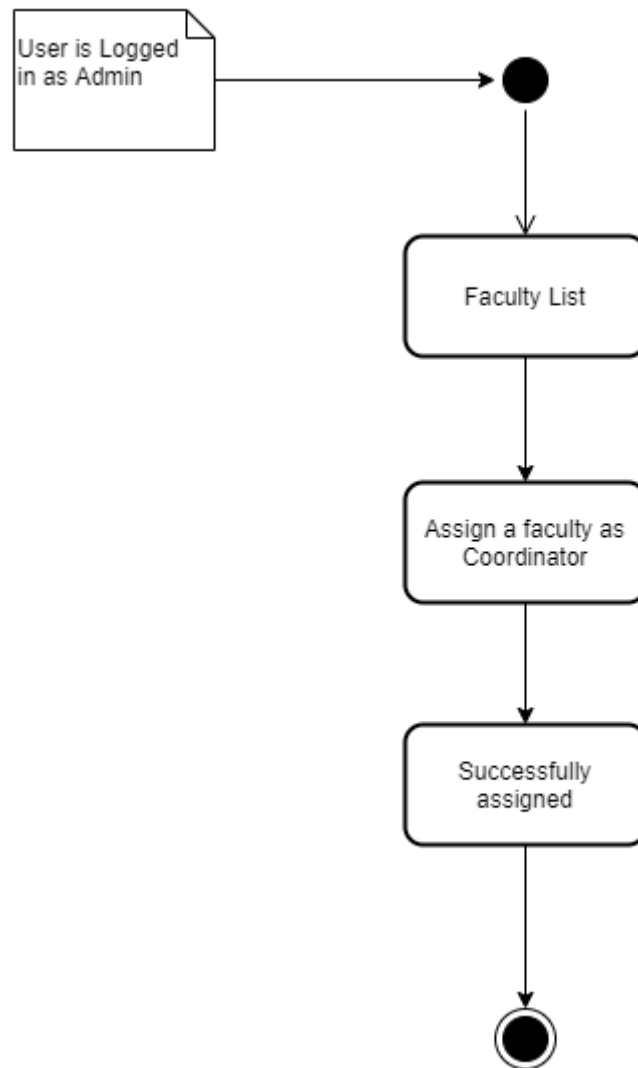


Figure 3.4: Activity diagram for Assign Coordinator

3.3.4 Activity Diagram (Register New Faculty)

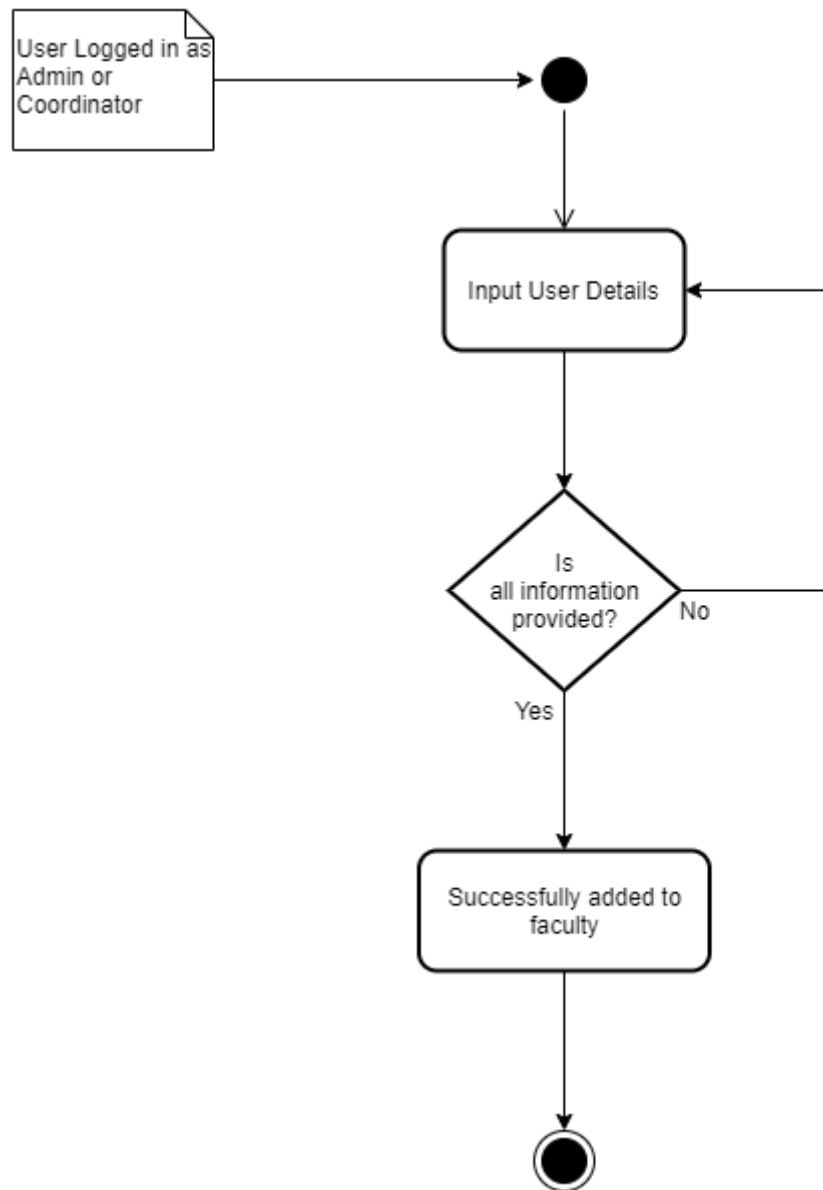


Figure 3.5: Activity diagram for Register New Faculty

3.3.5 Activity Diagram (Assign Task)

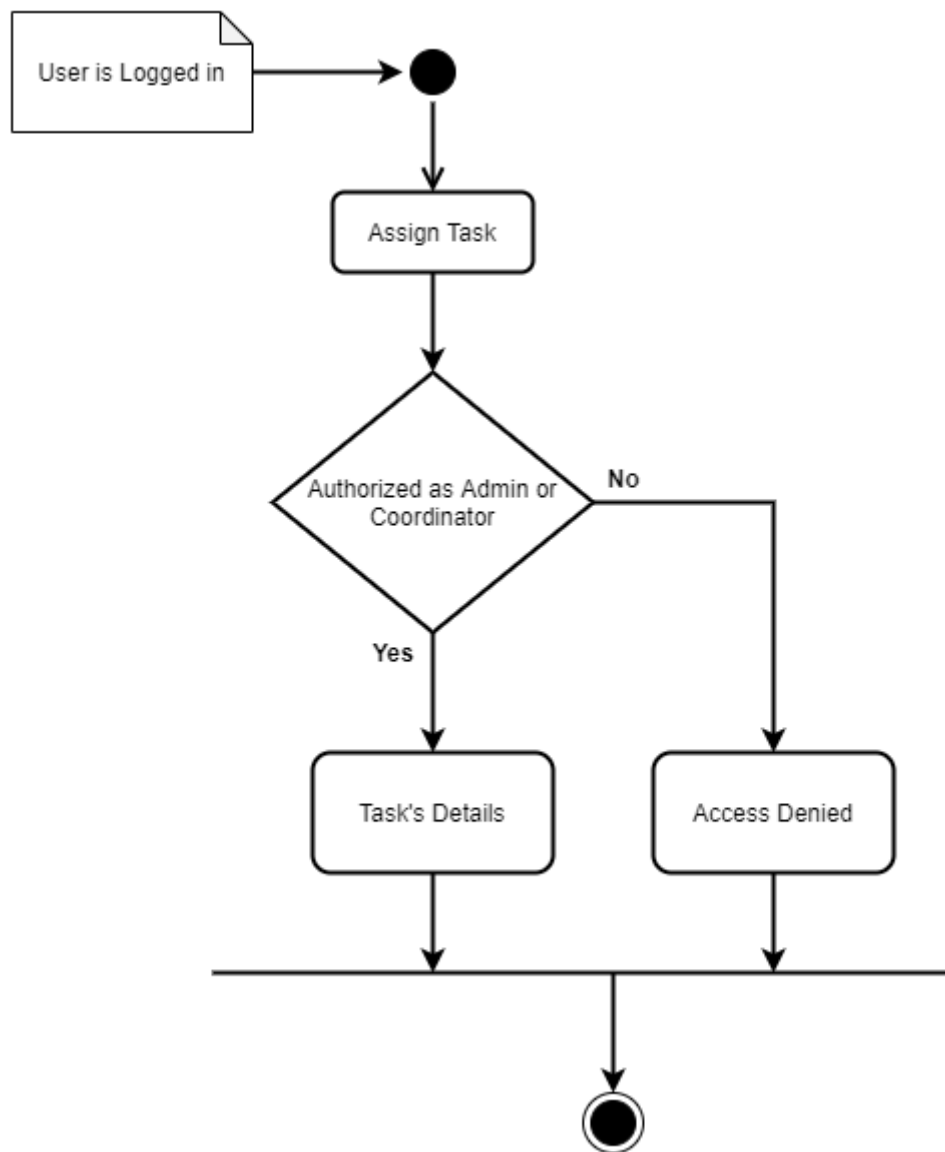


Figure 3.6: Activity diagram for Assign Task

3.3.6 Activity Diagram (view Task)

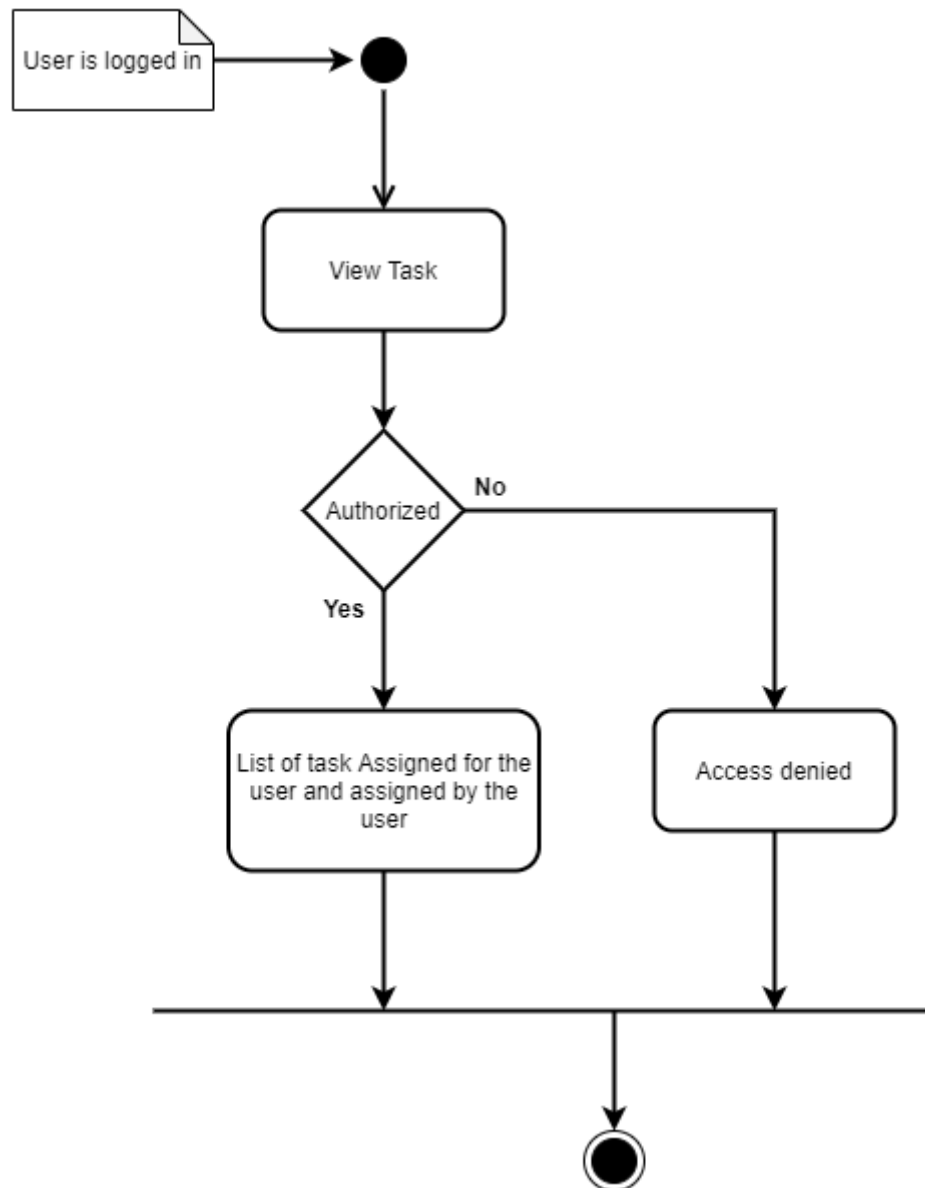


Figure 3.7: Activity diagram for View Task

3.3.7 Activity Diagram (Submit Task)

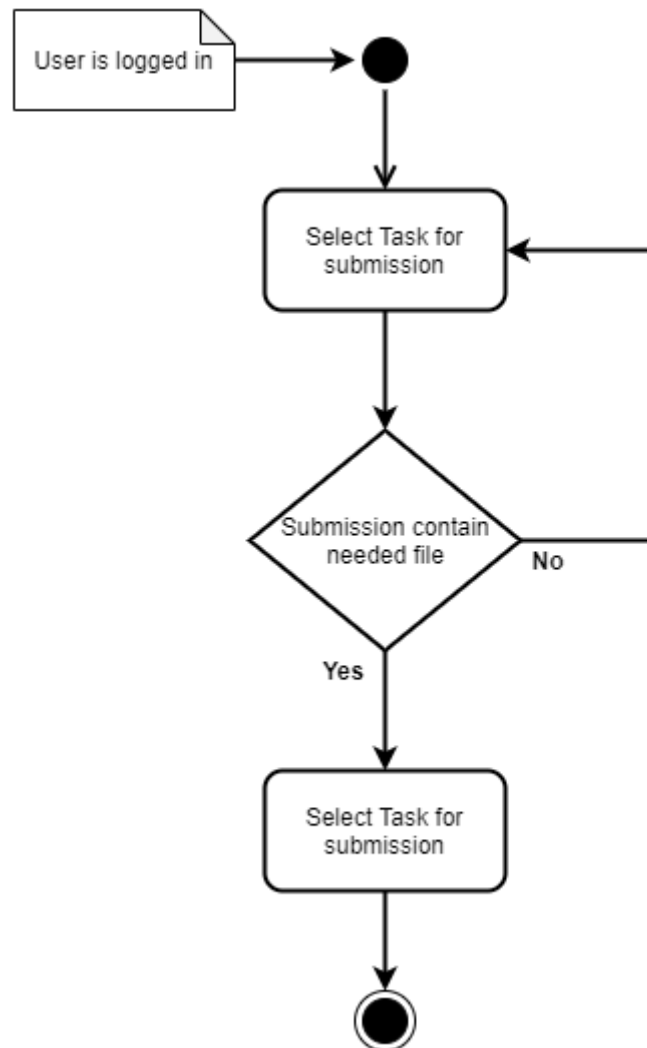


Figure 3.8: Activity diagram for Submit Task

3.3.8 Activity Diagram (View Notification)

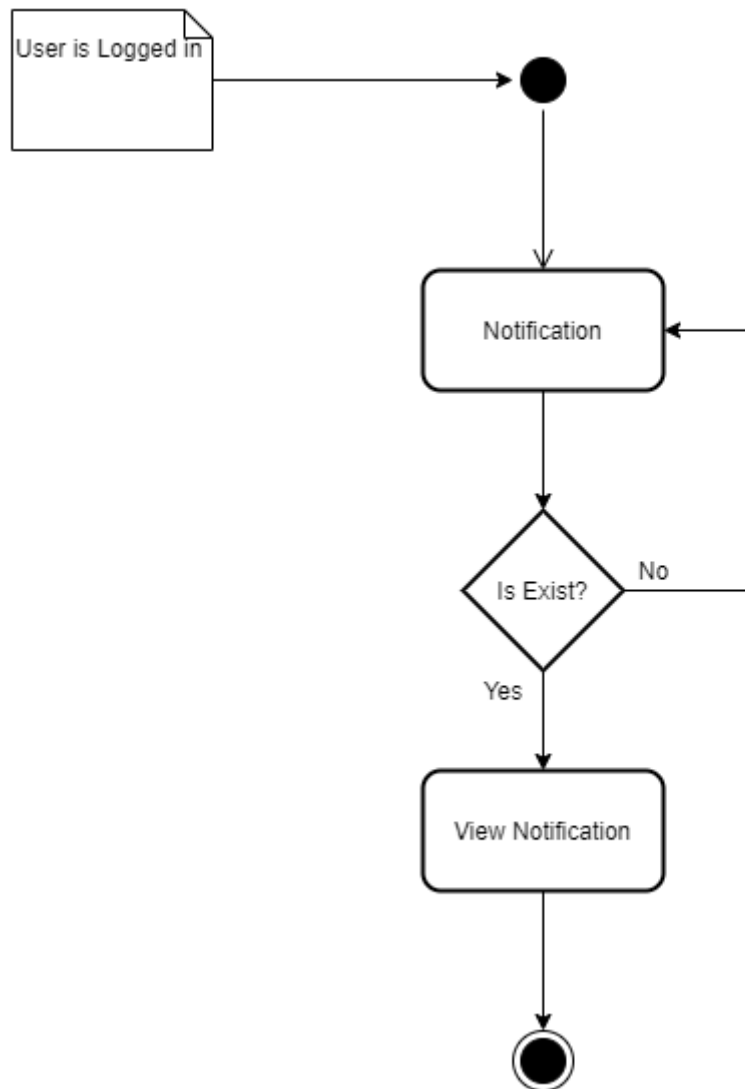


Figure 3.9: Activity diagram for Notification

3.3.9 Activity Diagram (Report Writing)

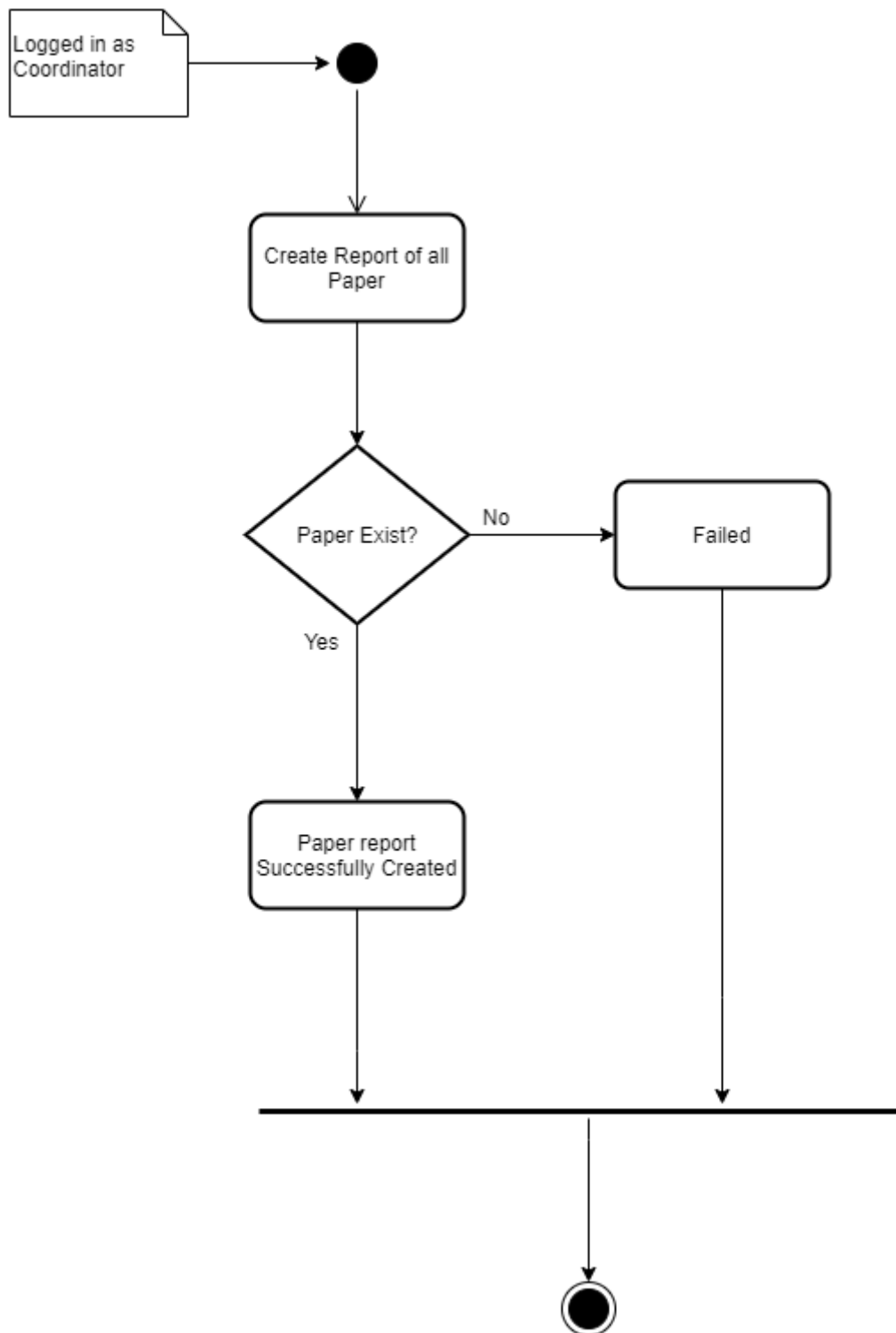


Figure 3.10: Activity diagram for Report Writing

3.3.10 Activity Diagram (Input Paper Details)

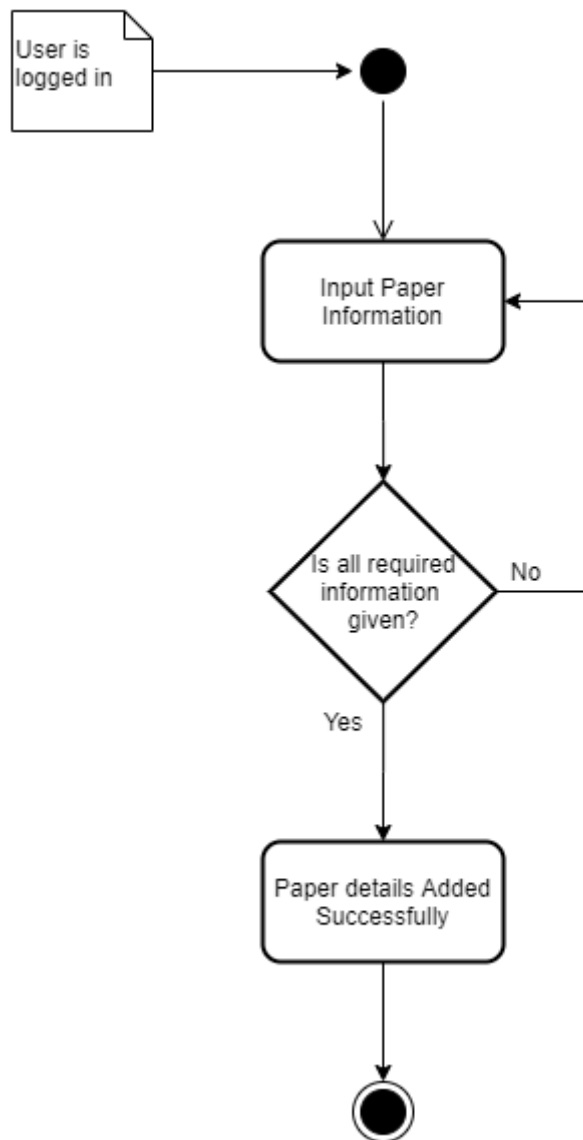


Figure 3.11: Activity diagram for Paper Details

3.3.11 Activity Diagram (Log Out)

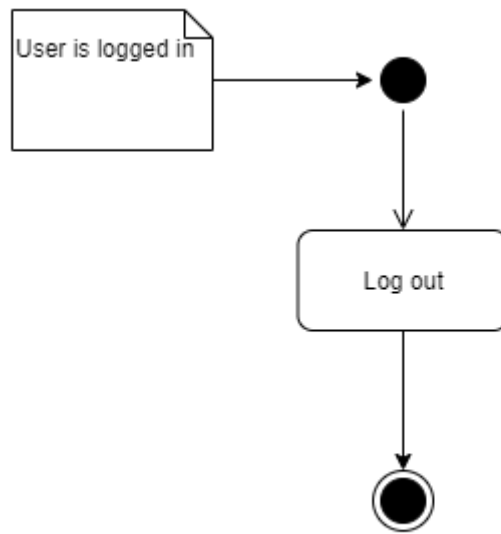


Figure 3.12: Activity diagram for Log Out

3.4 System Sequence Diagram

3.4.1 Sequence Diagram (Log In)

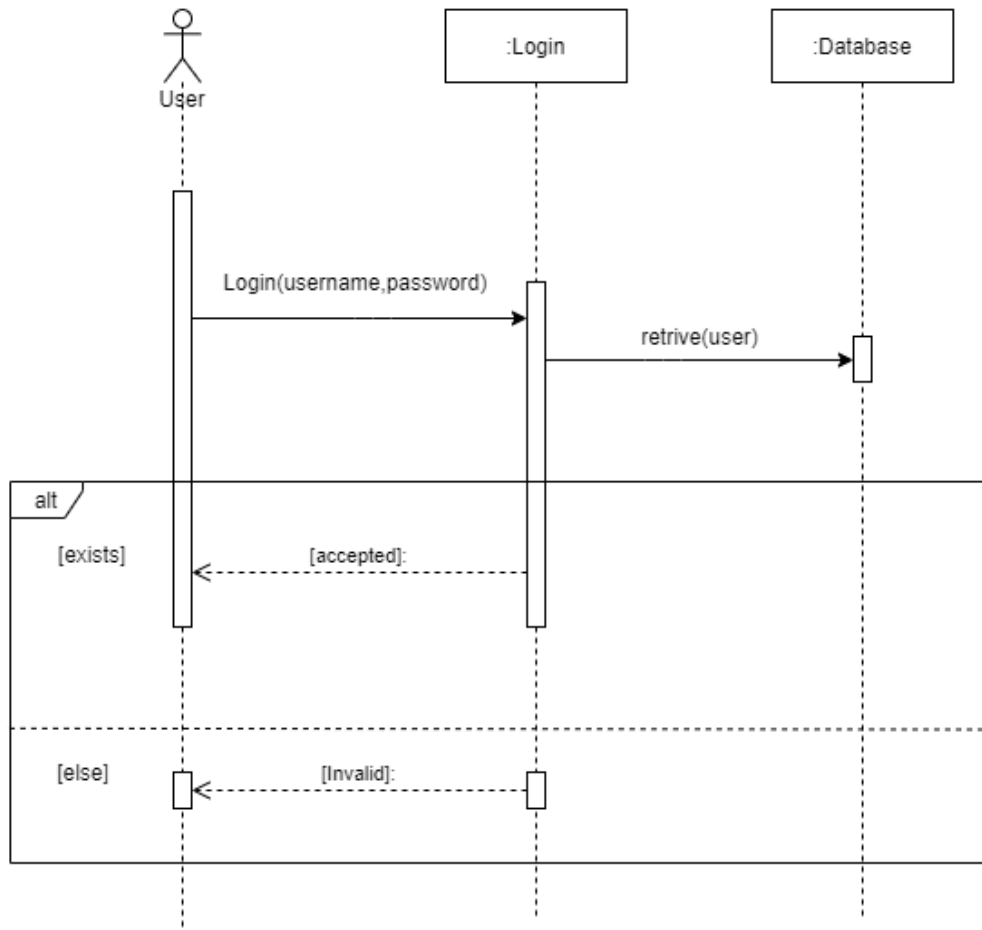


Figure 3.13: Sequence diagram for Log in

3.4.2 Sequence Diagram (Manage Profile)

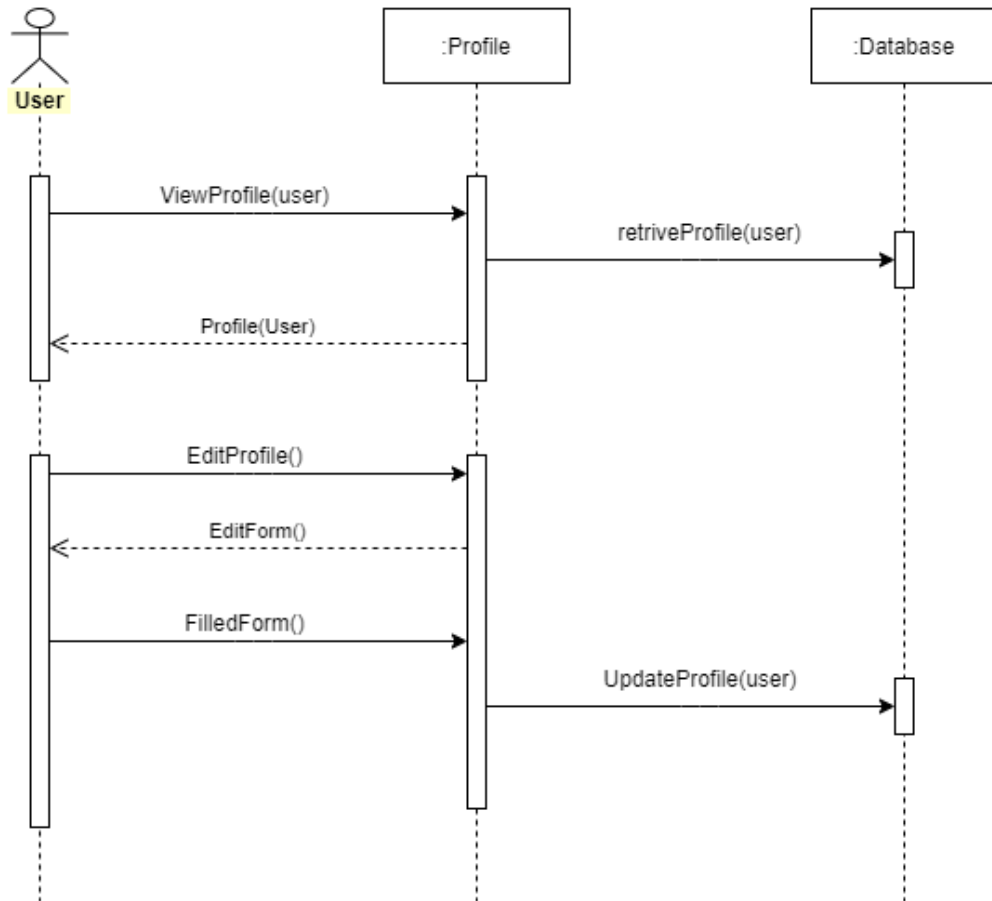


Figure 3.14: Sequence diagram for Manage Profile

3.4.3 Sequence Diagram (Assign Coordinator)

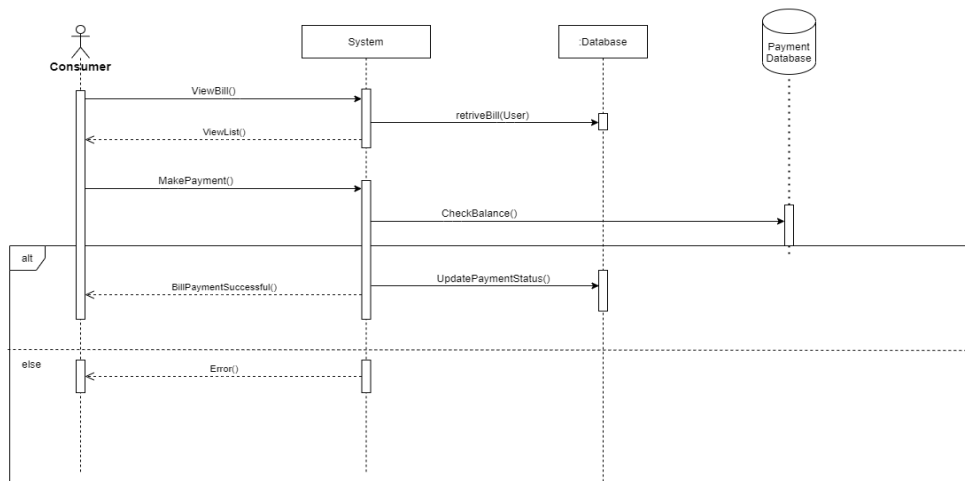


Figure 3.15: Sequence diagram for Assign Coordinator

3.4.4 Sequence Diagram (Register New Faculty)

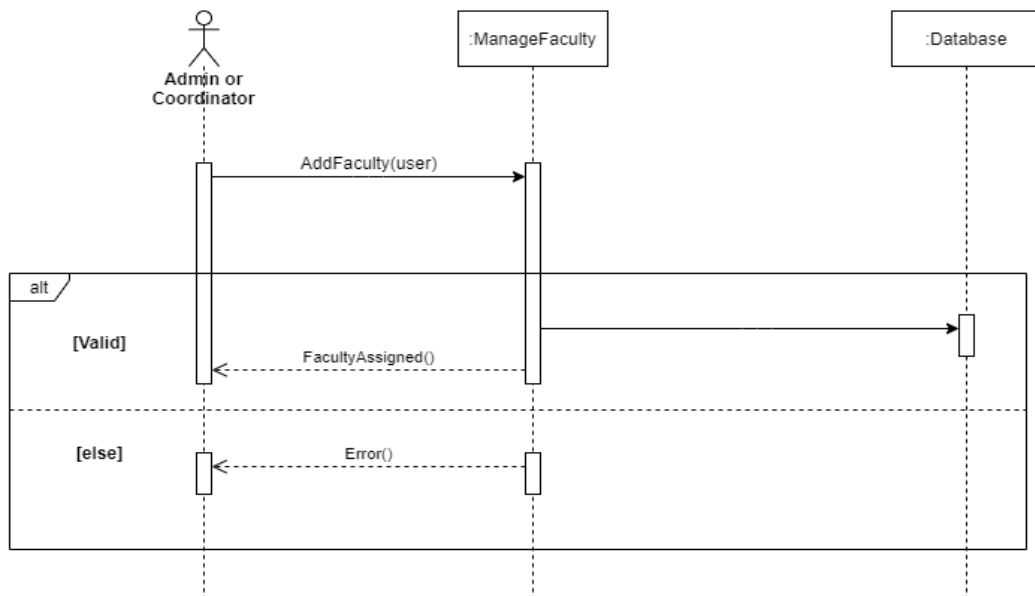


Figure 3.16: Sequence diagram for Register New User

3.4.5 Sequence Diagram (Assign Task)

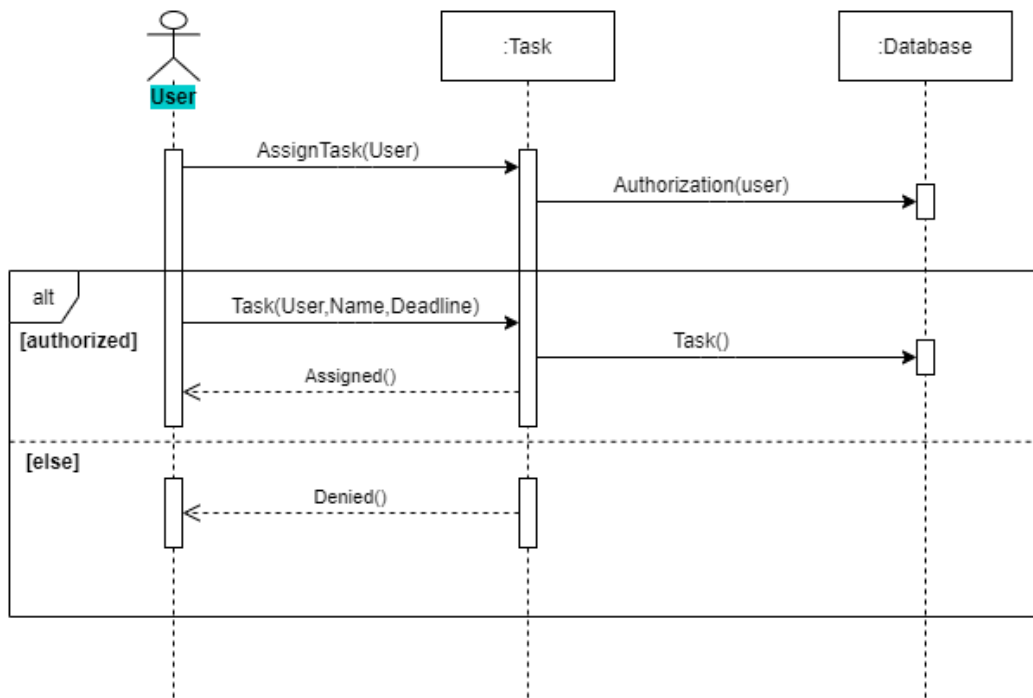


Figure 3.17: Sequence diagram for Assign Task

3.4.6 Sequence Diagram (View Task)

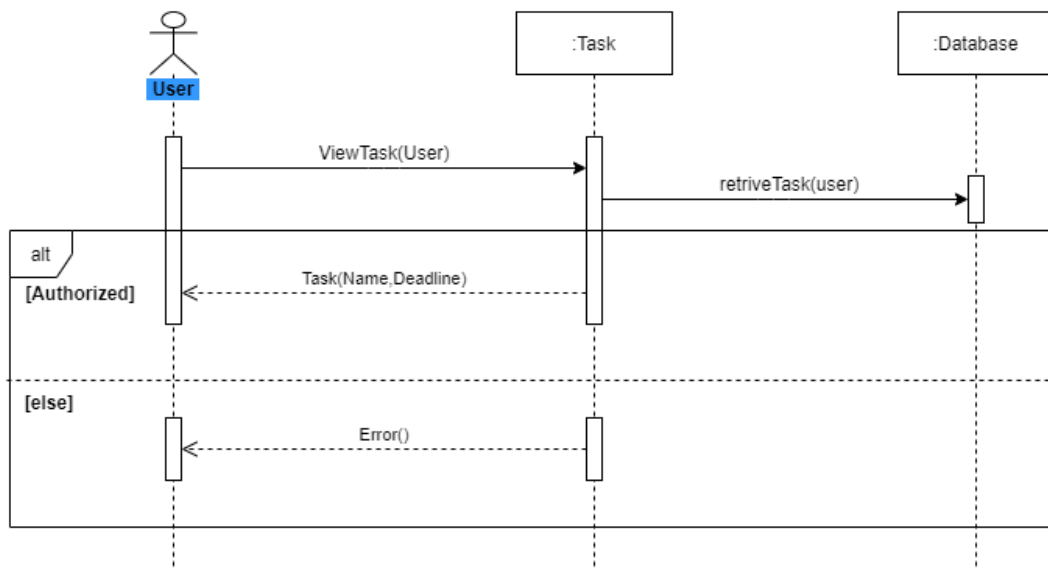


Figure 3.18: Sequence diagram for View Task

3.4.7 Sequence Diagram (Submit Task)

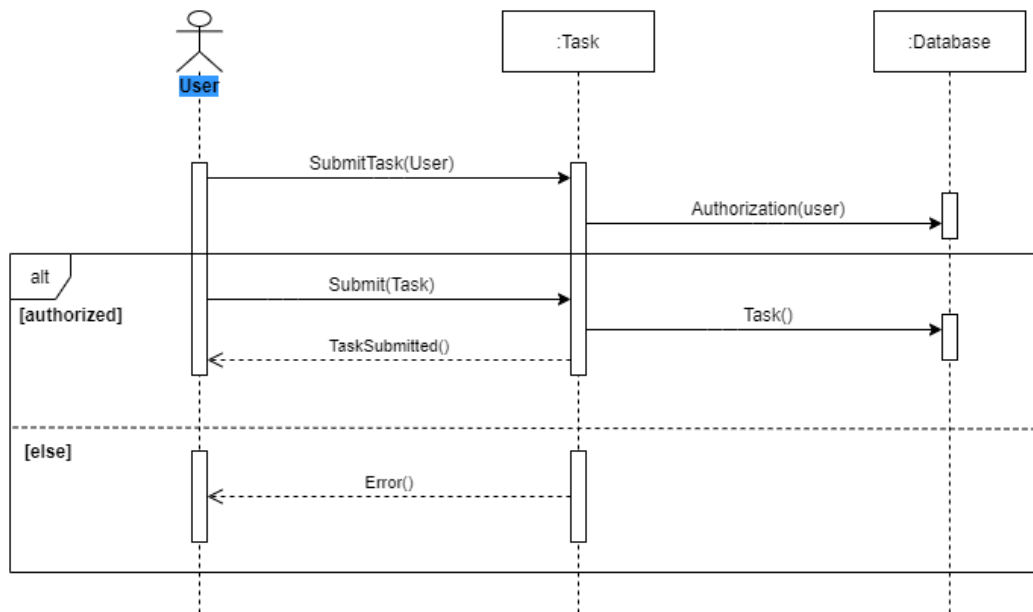


Figure 3.19: Sequence diagram for Submit Task

3.4.8 Sequence Diagram (View Notification)

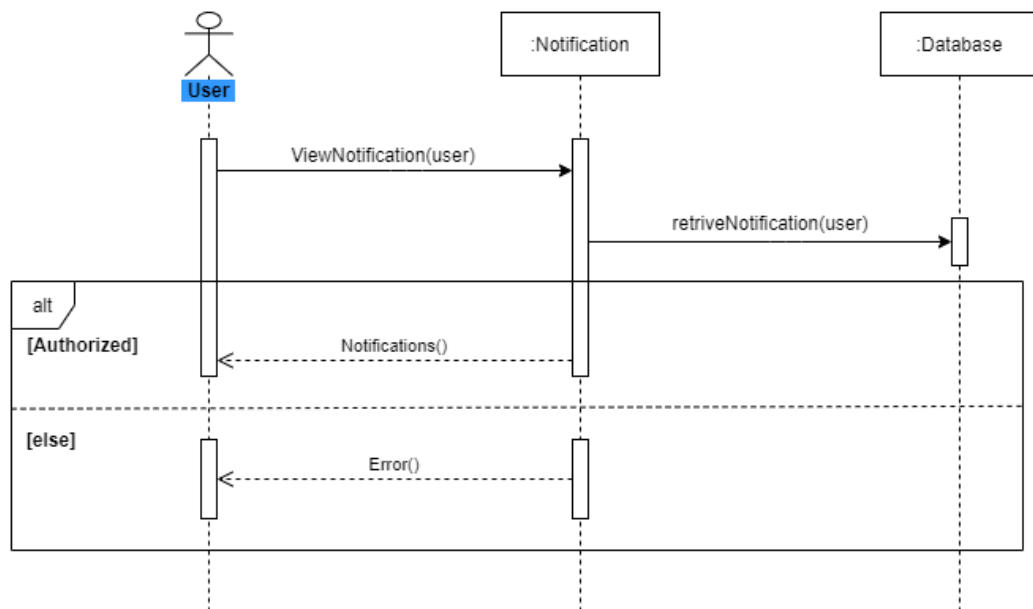


Figure 3.20: Sequence diagram for View Notification

3.4.9 Sequence Diagram (Report Writing)

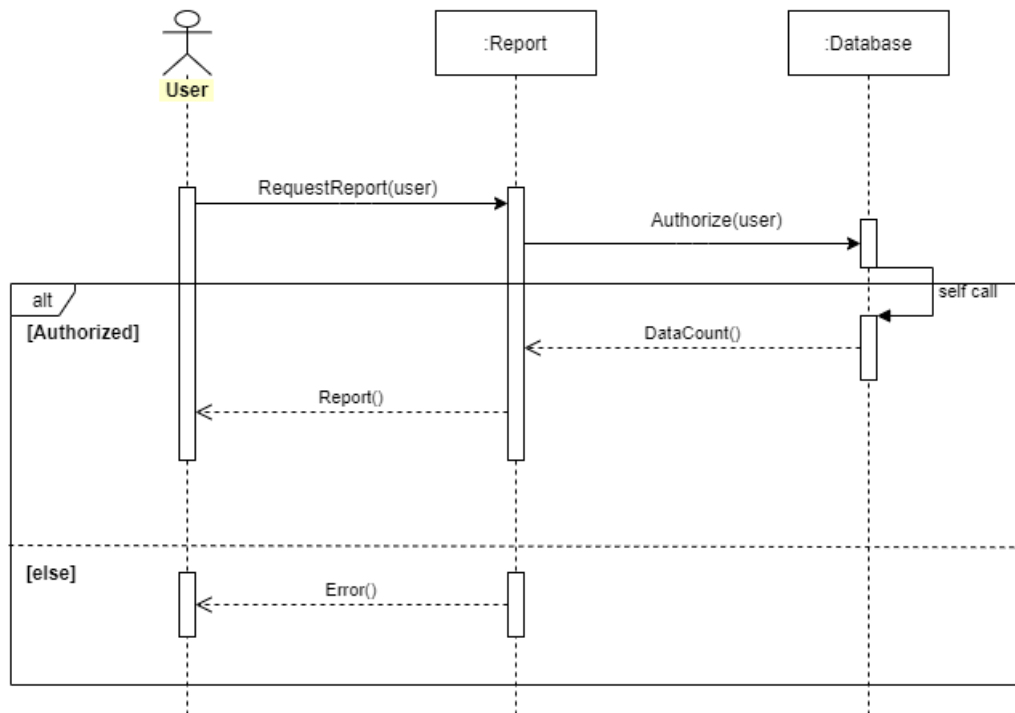


Figure 3.21: Sequence diagram for Report Writing

3.4.10 Sequence Diagram (Input Paper Details)

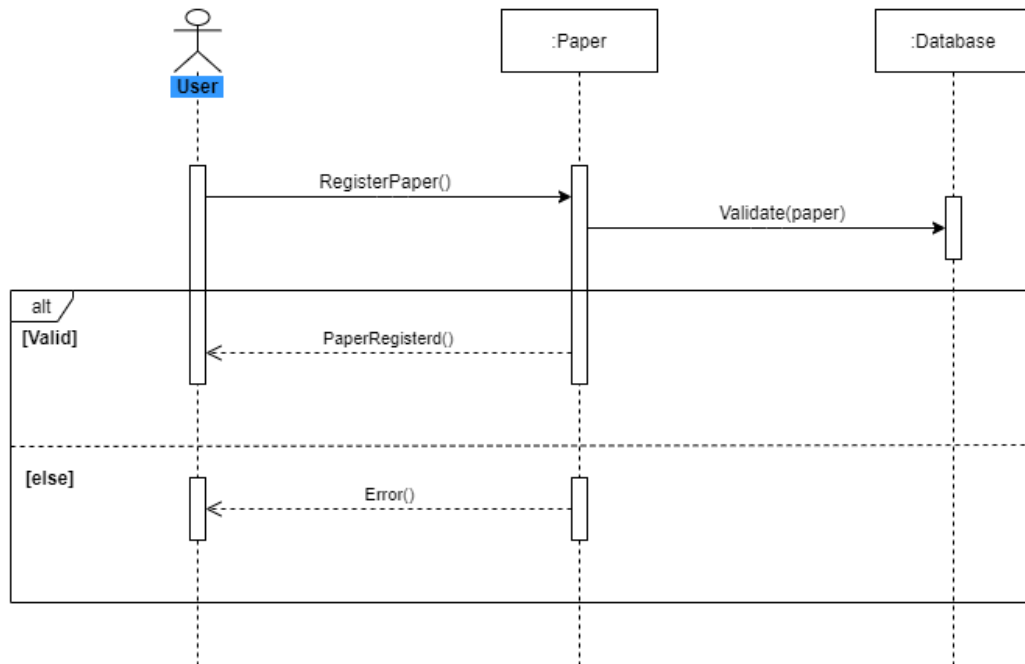


Figure 3.22: Sequence diagram for Input Paper Details

3.4.11 Sequence Diagram (Log Out)

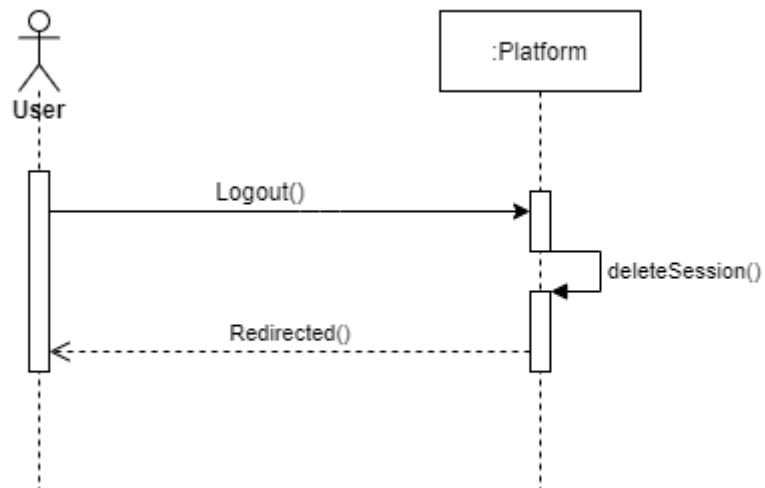


Figure 3.23: Sequence diagram for Log Out

Chapter 4: System Design Specification

4.1 Class Responsibilities Collaboration (CRC) Cards

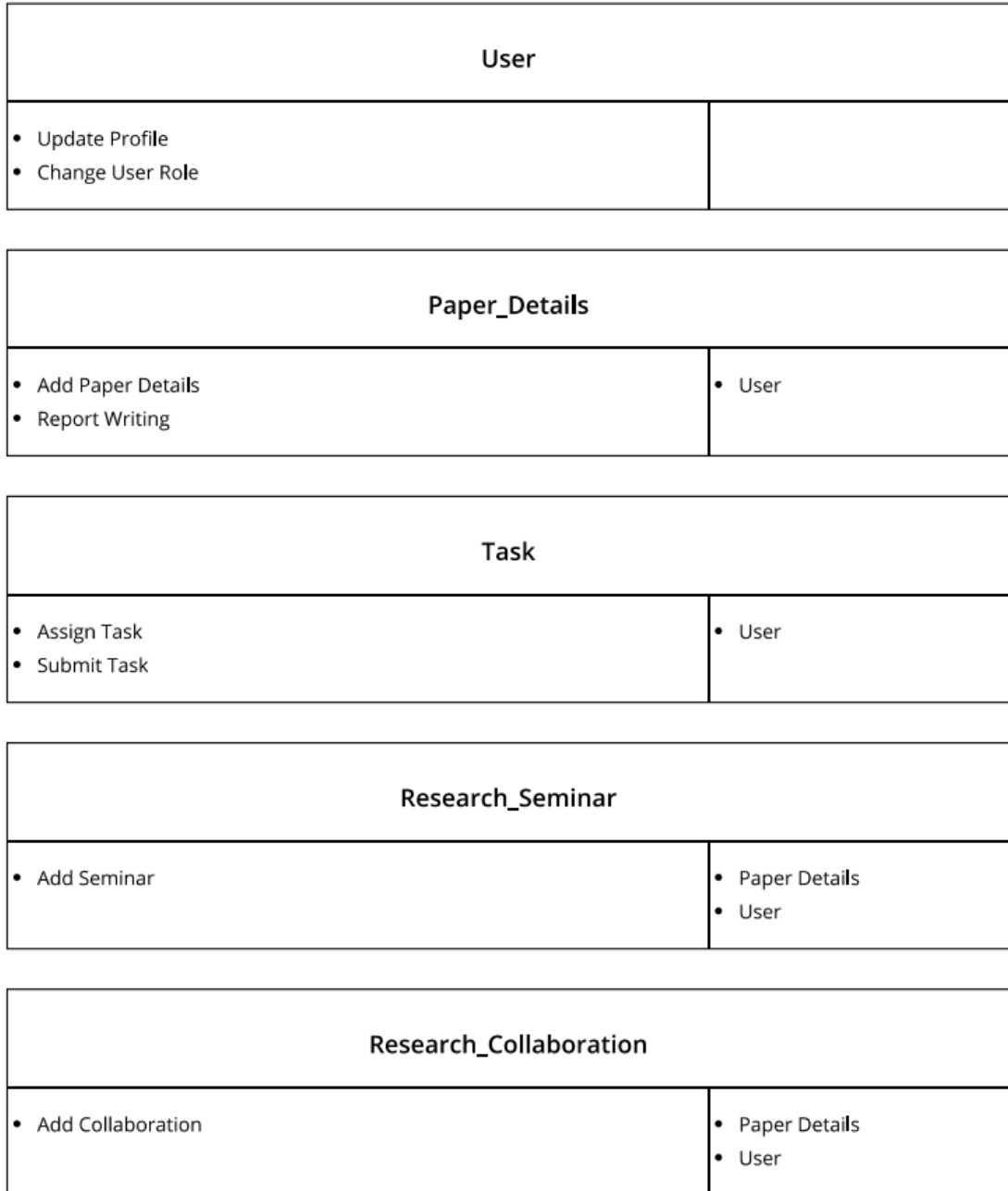


Figure 4.1: CRC cards for "Research Coordinating System"

4.2 Class Diagram

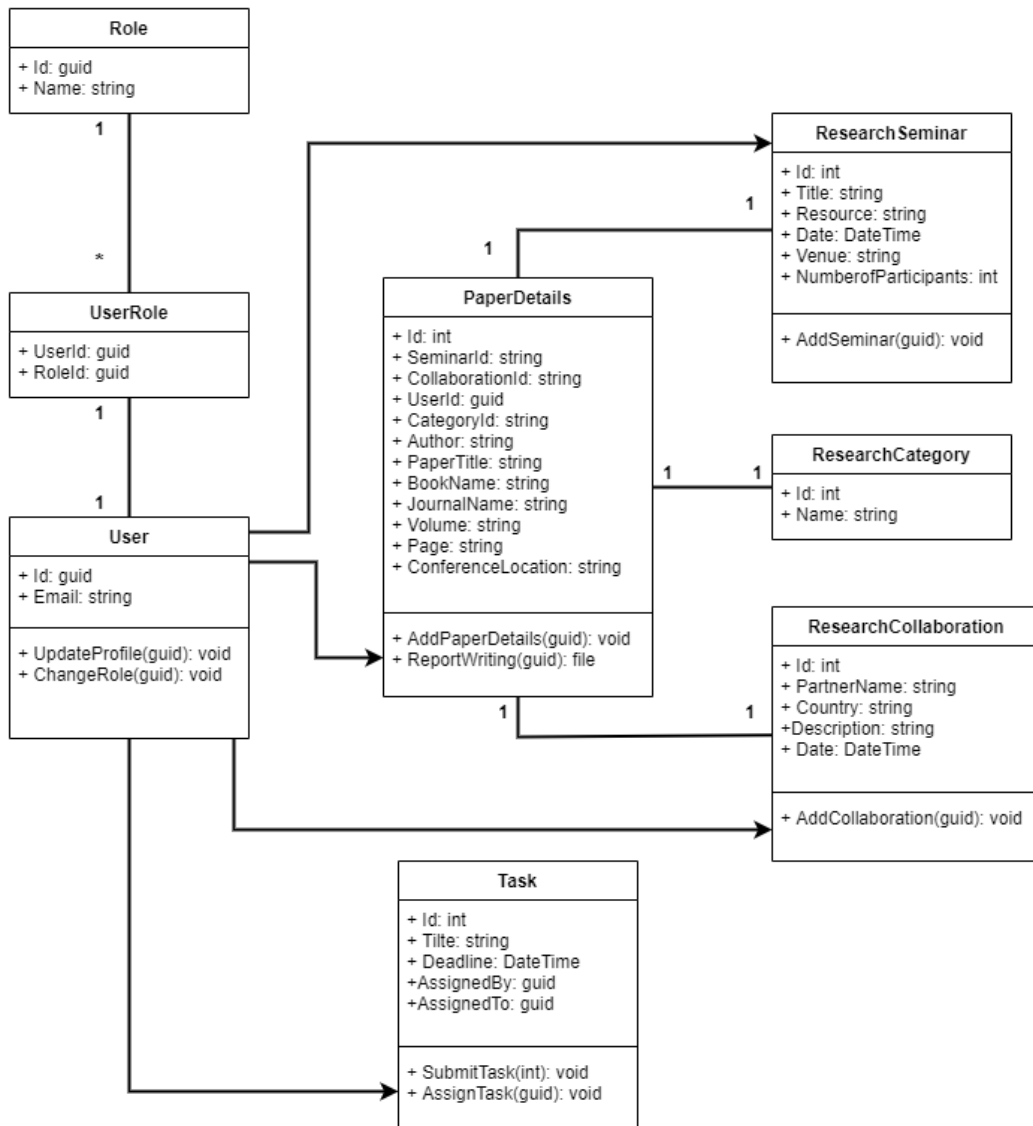


Figure 4.2: Class Diagram for “Research Coordinating System”

4.3 Database Design Diagram

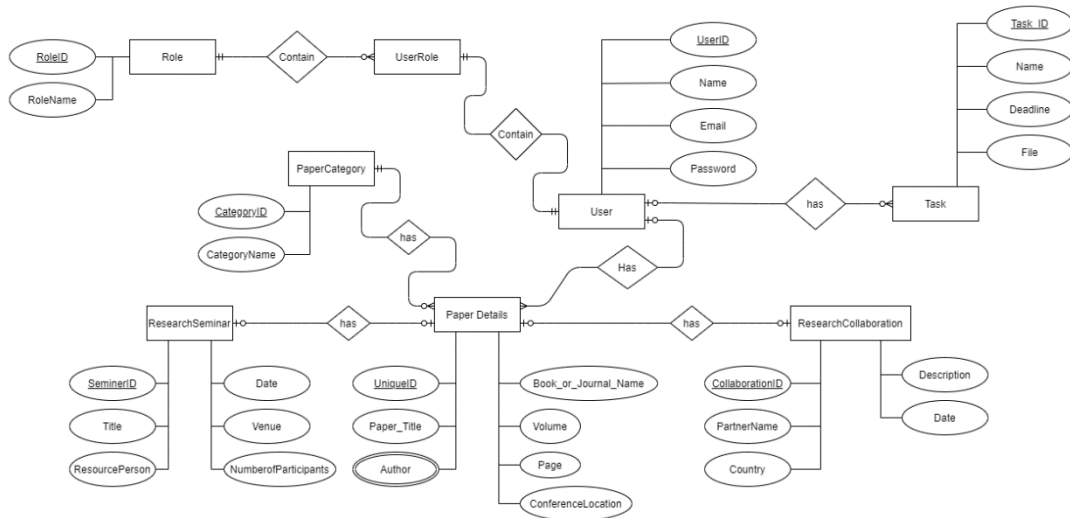


Figure 4.3: Database Design Diagram

4.4 Development Tools & Technology

For developing a quality software, development tools are used. Various development tools like programming tools, debugging tools, testing tools and so on are used to develop different types of applications. For the “Research Coordinating System” web application I also use those types of tools and technologies. They are:

4.4.1 User Interface Technology

The user interface means the visual part of a software. This interface has been created following the needs of the users so that they can easily interact with the system. The ultimate goal of the user interface is to deploy the user to the system. A good user interface makes an application effective, reliable and efficient.

4.4.1.1 ASP.NET MVC Framework

For the “Research Coordinating System” web-based application, the ASP.NET MVC framework is used. Security is a valuable part of web-based applications. ASP.NET offers more secure than many other frameworks. MVC (Model View Controller) is also a good architecture for web-based systems.

4.4.1.2 jQuery

In this system, ajax jQuery is used to retrieve data from dB context to datatables in user interface. It makes the data more effective and usable. It also decreases the retrieve time.

4.4.1.3 CSS Framework and Bootstrap

CSS means “Cascading Style Sheets”. It helps the html elements to appear in a good-looking way. Bootstrap makes our web-application responsive. It’s a free and open-source framework. Bootstrap is also used in the “Research Coordinating System” application so that the layout matches the variety screen size easily.

4.4.2 Implementation Tools & Platforms

Selecting the tools and platforms applied is also an important factor in getting the application done properly. Anyone who wants to apply must analyze which equipment and platform is appropriate with the system. So, another challenge for the developer is to find the best tools to optimize his/her application.

4.4.2.1 Microsoft Visual Studio 2019

A code editor or IDE is required to develop an application system. An IDE is used to edit the source code of applications. My used IDE for this project is Microsoft Visual Studio 2019. The community version is free and it has many great features to standardized source code for any application.

4.4.2.2 MSSQL Server 2018

MSSQL server is used in this application as database server. Database server refers to the back-end system of a database application. MSSQL server is free, easy to use and it also maintain security angles.

4.4.2.3 .NET Runtime

CLR (Common Language Runtime) is an application virtual machine that provides services like protection, memory management and exception handling. .NET runtime is free CLR by Microsoft. The latest version is cross platform.

Chapter 5: System Testing

5.1 Testing Features

5.1.1 Features to be tested

- Log in
- Register new faculty
- Assigning Coordinator
- Adding paper details
- Assigning task

5.1.2 Features not to be tested

5.2 Testing Strategies

5.2.1 Unit Testing

Unit is the smallest testable part of an application like function, classes, procedures, interfaces. Unit testing is created and executed by software developer during the development process.

- **Log in**

Table 5.1: Log in

Test case: TC001	Test designed by: Sabbir
Test priority: High	Test design date: 01-12-2020
Model name: Log in	Test executed by: Sabbir
Description: User can log in to the system with valid credentials.	Test execute date: 01-12-2020

- **Register New Faculty**

Table 5.2: Register New Faculty

Test case: TC002	Test designed by: Sabbir
Test priority: High	Test design date: 01-12-2020
Model name: Register new faculty	Test executed by: Sabbir
Description: Registration process done by the admin or coordinator.	Test execute date: 01-12-2020

- **Assigning Coordinator**

Table 5.3: Assigning Coordinator

Test case: TC003	Test designed by: Sabbir
Test priority: High	Test design date: 01-12-2020
Model name: Assign coordinator	Test executed by: Sabbir
Description: Admin assign a faculty member as coordinator.	Test execute date: 01-12-2020

- **Adding Paper details**

Table 5.4: Adding Paper Details

Test case: TC004	Test designed by: Sabbir
Test priority: Medium	Test design date: 01-12-2020
Model name: Add paper details	Test executed by: Sabbir
Description: Faculty members add paper details they want to publish.	Test execute date: 01-12-2020

- **Assigning Task**

Table 5.5: Assign Task

Test case: TC005	Test designed by: Sabbir
Test priority: Medium	Test design date: 01-12-2020
Model name: Task	Test executed by: Sabbir
Description: Admin and Coordinator assign task for the progress.	Test execute date: 01-12-2020

Chapter 6: User Manual

6.1 User Manual (Admin)

6.1.1 Admin Dashboard

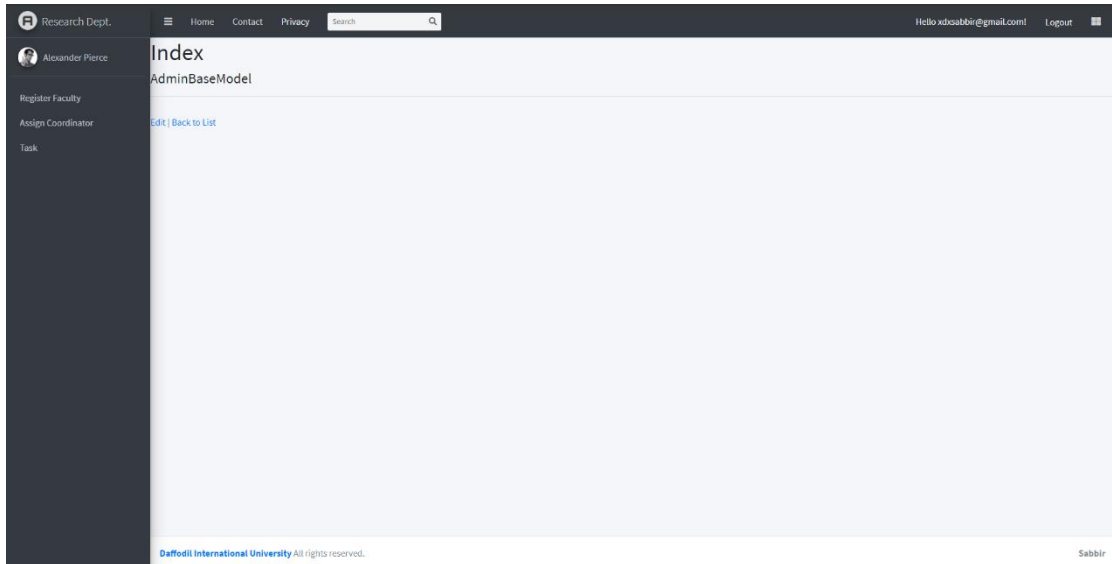


Figure 6.1: Admin Dashboard

6.1.2 Register New User

Register

Create a new account.

Email

Password

Confirm password

Register

Figure 6.2: Register new faculty

6.1.3 Assign Coordinator

6.2 User Manual (Coordinator)

6.2.1 Dashboard

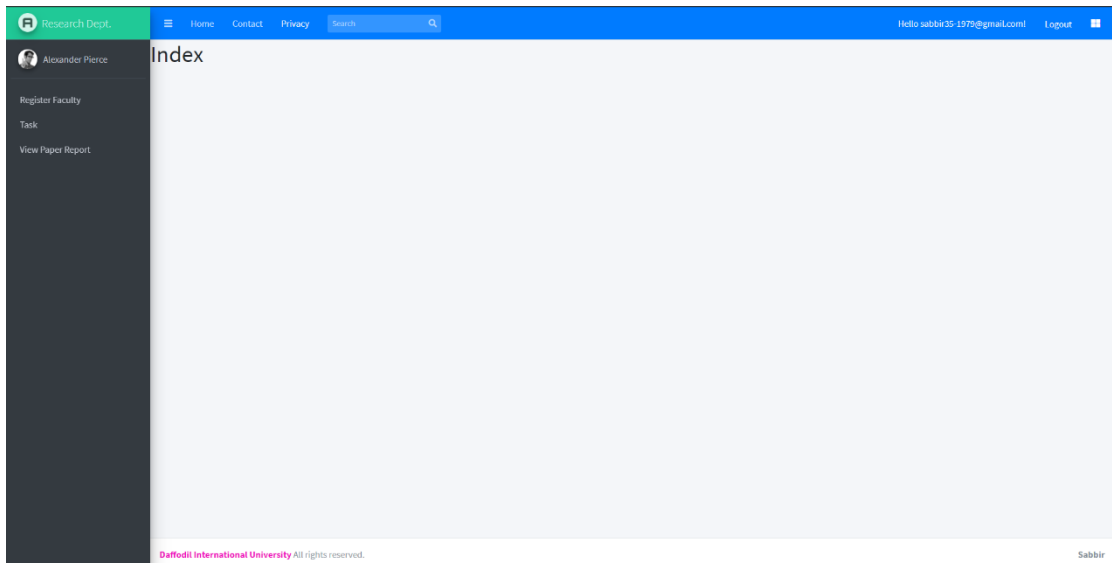


Figure 6.4: Coordinator Dashboard

6.2.2 Register New Faculty

Register

Create a new account.

Email

Password

Confirm password

Register

Figure 6.5: Register New Faculty

6.2.3 Report Writing

The screenshot shows a web interface for reporting. At the top, there is a navigation bar with 'Research Dept.', 'Home', 'Contact', 'Privacy', and a search bar. The user is logged in as 'Hello sabbir35-1979@gmail.com!'. The main content area is titled 'DAFFODIL INTERNATIONAL UNIVERSITY DIVISION OF RESEARCH'. It contains a form with the following fields: 'Department' (text input with 'SWE'), 'Date' (text input with '09/01/2021'), 'Quarter' (dropdown menu with 'Please select'), and 'Name & Designation of Coordinator' (text input). A blue 'Submit' button is located below the form. The footer includes 'Daffodil International University All rights reserved.' and 'Sabbir'.

Figure 6.6: Report writing

6.3 User Manual (Faculty)

6.3.1 Dashboard

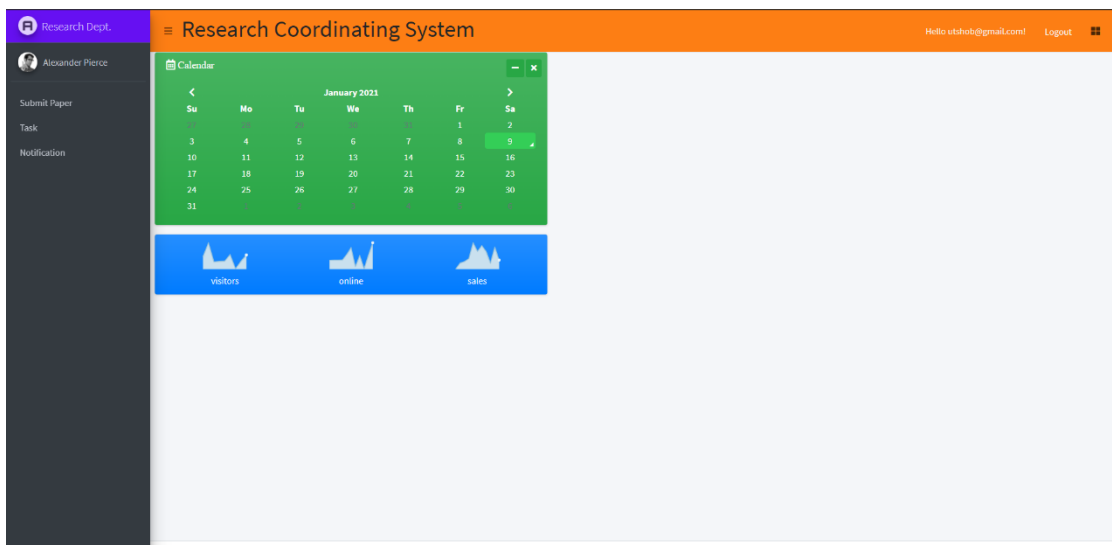


Figure 6.7: Faculty Dashboard

6.3.2 Paper Details Submission

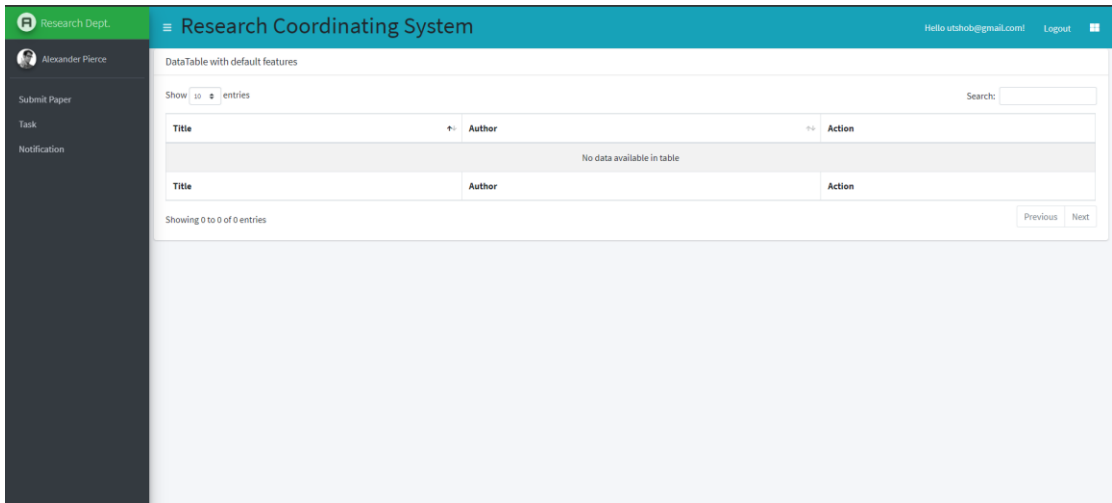


Figure 6.8: Paper Details Submission and submitted

6.3.3 Tasks assigned

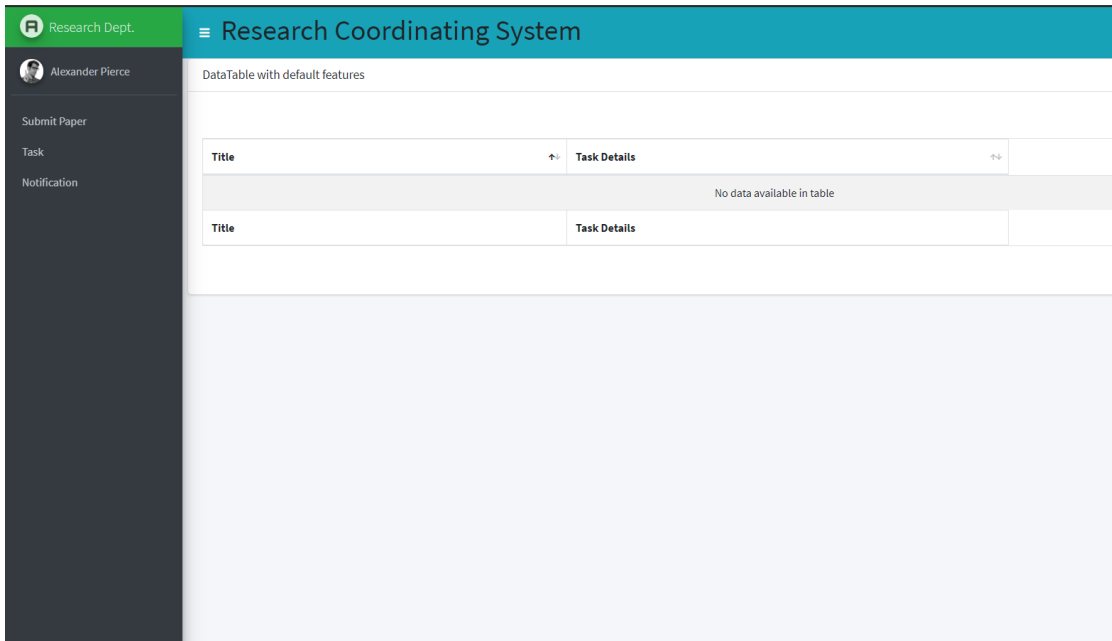


Figure 6.9: Tasks

Chapter 7: Project Summary

7.1 GitHub Link

https://github.com/I-am-Sabbir/Research_Coordinating_System

7.2 Limitations

Every application has some limitations as does this application.

- Notification alert can't see at real time.
- Editing profile is limited.
- Mobile verification hasn't set yet.

7.3 Future Scope

- More user-friendly frontend design.
- Overcome the limitations
- Connect worldwide departments with dynamic design

Chapter 8: References

8.1 Documentation Idea:

Thomas T. Barker, (1998). *Writing Software Documentation*. Retrieved from <https://cutt.ly/djMAyO3>

8.2 System Requirement Specification:

Andreas Rüping, ISBN: 978-0-470-85617-8, (September 11, 2003). *Agile Documentation: A Pattern Guide to Producing Lightweight Documents for Software Projects* (1st Chapter, Topic-19, P-(26-28)). Retrieved from <https://cutt.ly/ajMSGj2>

8.3 Structure and Architecture:

Luke Hohmann, (2003). *Beyond Software Architecture*. Retrieved from <https://cutt.ly/2jMDe8U>

8.4 Unified Modeling Language:

Luke Hohmann, (2003). *Beyond Software Architecture*. Retrieved from <https://cutt.ly/2jMDe8U>

8.5 Testing:

Paul C. Jorgensen, ISBN: 9781138628076, (November 28, 2013- by Auerbach Publications). *Software Testing: A Craftsman's Approach, Fourth Edition 4th Edition* (Part-3, Beyond Unit Testing, P-(207-219)). Retrieved from <https://cutt.ly/JjMDAXS>

8.6 Tools and Technologies:

Diagrams and Design: <https://app.diagrams.net/>

Articles: <https://cutt.ly/CjMD2c7>

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<https://text-id.123dok.com/document/wg21kdey-ta-rancang-bangun-sistem-pemesanan-makanan-berbasis-12me-pujasera-online.html>

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<http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/3545/P13643%20%2816%25%29.pdf?isAllowed=y&sequence=1>

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[Submitted to Institute of Research & Postgraduate Studies, Universiti Kuala Lumpur on 2020-11-10](#)

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https://docbox.etsi.org/STF/Archive/STF285_HF_MobileServices/STF285%20Work%20Area/Setup/DraftEGs/Setup%20DEG202416_Version2_99_1

1% match (Internet from 06-Jan-2020)

<http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/3547/P13646%20%2824%25%29.pdf?isAllowed=y&sequence=1>

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< 1% match (Internet from 13-Nov-2020)

<https://widuri.rabarja.info/index.php?title=511322476493>

< 1% match (Internet from 29-Aug-2016)

<https://www.safaribooksonline.com/library/view/official-isc2-guide/9781439826058/cover.xhtml>

< 1% match (Internet from 02-Jun-2017)

<http://zetcode.com/lang/csharp/csharp/>

< 1% match (student papers from 19-Nov-2015)

[Submitted to University of Ulster on 2015-11-19](#)

< 1% match (student papers from 31-Aug-2016)

[Submitted to Macquarie University on 2016-08-31](#)

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[Submitted to University of Sunderland on 2013-01-04](#)

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<https://navigatorssystem.com/author/nspl2017/>

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[Submitted to University of Bradford on 2011-03-11](#)

unnecessary delay to maintain the typical procedure. Every stockholder has their role and activity well defined and easy to use and I hope all these above circumstances help to make you understand the benefits. 1.3 Stakeholders There are three stakeholders in the "Research Coordinating System". They are- • Admin: Admin is assigned automatically when the project start. Admin can assign user types and tasks to other users. • Coordinator: Coordinator can register new users as faculty members and can assign tasks for them. • Faculty: When an admin or coordinator register a new user to the system, he/she is considered as faculty member. A faculty member can submit paper details and tasks assigned by the coordinator. Tasks for him/her appear in his/her task menu. 1.4 Proposed System Model Figure 1.1: [Block Diagram](#) 1.5 [Project Schedule](#) 1.5 [Gantt Chart](#) Table 1.1: [Gantt Chart](#) 1.5 [Release Plane/Milestone](#) Figure 1.2: [Milestone](#) Chapter 2: [Software Requirement Specification](#) 2.1 [Functional Requirements](#) Functionality requirements refers to the functions included in the system to understand the functionality requirements application. If an application is created, then of course functional requirements are required. Here I am going to discuss the functional requirements of the "Research Coordinating System". 2.1.1 Log In Table 2.1: Log In FR-1 Log In Description Admin can log in to this system with his/her login credentials. After registered and promoted by the admin coordinator and faculty can also log in to this system with credentials. [Stakeholders Admin, Coordinator, Faculty](#) Priority High [2.1.2 Update Profile](#) Table 2.2: Update Profile FR-2 Update Profile Description Users of this system can update his/her profile after he/she is logged in. Stakeholders Admin, Coordinator, Faculty Priority Low 2.1.3 Register New User Table 2.3: Register New User FR-3 Register New User Description Admin and Coordinator can register a new user for this system with necessary information. Stakeholders Admin, Coordinator Priority High 2.1.4 Assign Coordinator Table 2.4: Assign Coordinator FR-4 Assign Coordinator Description Admin can promote a faculty member as a coordinator. He/she can also demote a coordinator to faculty member. Stakeholders Admin Priority High 2.1.5 Assign Task Table 2.5: Assign Task FR-5 Assign Task Description Admin can assign tasks for coordinator and coordinator can assign task for faculty members. Stakeholders Admin, Coordinator Priority Medium 2.1.6 Submit Paper Details Table 2.6: Submit Paper Details FR-6 Submit Paper Details Description Faculty members can submit paper details about their research in the system they want to publish. Stakeholders Faculty Priority Medium 2.1.7 Report writing Table 2.7: Report Writing FR-7 Report Writing Description Coordinator can make a report of overall paper details based on category after all the faculty members submitted their paper details. Stakeholders Coordinator Priority Medium 2.1.8 Log Out Table 2.8: Log Out FR-8 Log out Description Users of this system can log out from the system. All the session records will be destroyed from the browser immediately. Users need to log in again in order to do something in the system. Stakeholders Admin, Coordinator, Faculty Priority High 2.2 Performance Requirements Performance requirements determine how effective the system is in a given situation. Examples include software response speed, throughput, execution time and storage capacity. Service levels with performance requirements often support end-user tasks. 2.2.1 Speed and Latency Requirements System's response time during working schedule is a major fact that specify an application's quality. Overall response time of this system is good. Speed of a web application also depends on its host. It can be said that, with a good hosting facility the "Research Coordinating System" will work perfectly smooth and quick. 2.2.2 Precision or Accuracy Requirements Accuracy of data provide by a system is mandatory for a good quality of system. This system provides 100% accurate data with the right authorization. In this system, I used unit of work for the surety of providing 100% accurate data. In this case if something goes wrong during collecting data from a user, the system will role back the whole process and the collecting process will start again for accuracy. 2.2.3 Capacity Requirements Advanced systems must be able to manage user data, provide accurate information, manage databases, manage http requests. Table 2.9: Capacity Requirements CR-1 [The system will handle](#) more than thousands of data Description [The system needs to handle](#) thousands of data every moment Stakeholders Admin, Coordinator, Faculty Priority High 2.3 [Dependability Requirements](#) [Dependability is measured on](#) the basis of [four dimensions](#). Like: 2.3.1 Reliability Requirements Table 2.10: Reliability Requirement RR-1 The system will available 24*7 Description This system will give service to its user all day long, will be malware free and will be updated when needed. Stakeholders Admin, Coordinator, Faculty Priority Medium 2.3.2 Availability Requirements It is important to ensure a Zero percent crash to ensure error tolerance benefits for end users. It's also mandatory to shows accurate results. Table 2.11: Availability Requirement AR-1 The system handles every user access without errors Description It's possible that all the user tries to log in or doing something in the system at a time. In this situation system must handle their request without system errors. Stakeholders N/A Priority Medium 2.3.3 Robustness or Fault-Tolerance Requirements Providing after service and support to the end user is very important. 2.3.4 Safety-Critical Requirements Scalability requirements define specific scalability requirements for stakeholders. This system is designed for maintenance, avoiding single points of failure and supplying as much as necessary data. 2.4 [Security Requirements](#) [Software security requirements should be its functional requirement](#). [Software](#) protection implements the protection of an application. Software security related functionality can be either directly tested or monitored. Below are some safety requirements: • A proper way of sign in. • Sign in credentials shouldn't be disclosed to anyone in any situation. • Gaining access according to the user type. • Proper control swapping in the time of promote and demote • Denying unauthorized registration • Clearing session properly as a user log out When users access the system, each and every module must be supplied from the central authentication process. 2.4.1 Access Requirements Table 2.12: Access Requirement ACR-1 Application Provides Secure Log In System Description Each and every step of the system designed in such a way that it only allows the authorized users. Stakeholders N/A Priority High 2.4.2 Integrity Requirements Integrity requirements refer to a security system that ensures data quality expectations. It also ensures that all data on the system is never exposed to malicious changes or unexpected destruction. 2.4.3 Privacy Requirements Ensuring the privacy of system users is very important. To ensure privacy, the central database is protected by anonymity. Users are allowed access to the data they are authorized to use. 2.5 Usability and Human-Interaction Requirements Systems may fail for usability. That's why I build this application very user friendly, [easy to understand and easy to manage](#). 2.5.1 [Personalization and Internationalization Requirements](#) There is [no personalization and internationalization requirements](#). 2.5.2 [Understandability and Politeness Requirements](#) This system is built for organizational use. The interface is designed in a way that is very easy to understand. There are diagrams to fully understand the systems main working mechanism. 2.5.3 Accessibility Requirements This system is built for organizational use only. So, I prefer that only the registered users have the accessibility for the system. And no one can register himself. Only the admin and coordinator can register a user. Then the user will be a valid user for the system. 2.5.4 User Documentation Requirements There is no user documentation required in the system. 2.5.5 Training Requirements No training requirements needed for this system. 2.6 Look and Feel Requirements If a system does not look structured, users feel annoyed and does not want to go further. There are requirements to see and feel what [the system will look like](#) and [how the system's user interface](#) or graphical user interface will be displayed to users. 2.6.1 Appearance Requirements The system is built in an understandable way that the users can easily use. For an example if admin added a task for coordinator, then the coordinator will be notified about his/her task. Accordingly, faculty members will be notified if coordinator add any task for them. Also, they can check if the task is completed by the users they appointed for. Users will understand the system very easily after they started working in it. 2.6.2 Style Requirements Table 2.13: Style Requirement SR-1 All content must be appearing within a format Description Input field and other view result show a specific format Stakeholders Admin, Coordinator, Faculty Priority Medium 2.7 Operational and Environmental Requirements There are no operational and environmental requirements in this system. 2.8 [Legal Requirements](#) There are no legal requirements in this system. Chapter 3: [System Analysis](#) 3.1 [Use Case Diagram](#) Figure 3.1: [Use Case Diagram](#) for "Research Coordinating System" 3.2 [Use Case Description](#) 3.2.1 Log In Table 3.1: Log In Use Case Title Log In Goal Entering the dashboard according to user type Preconditions Must be a registered user Success End Condition Successfully logged in to dashboard Failure End Condition Incorrect Email or Password Primary Actor: User Secondary Actor: System Trigger Log In [button](#) Description Main Success Scenario Step Action 1 User Input [log in](#) credentials 2 Log in successful to dashboard 3 User can use his/her dedicated work flows Alternative flows Step Branching Action 1 Input incorrect or unregistered data 2 Log in failed due to incorrect credentials [Quality Requirements](#) Step Requirements N/A 3.2.2 [Manage Profile](#) Table 3.2: Manage Profile Use Case Title Manage Profile Goal Updating Name or adding phone number Preconditions Must be a logged in Success

End Condition Well formatted data for required field Failure End Condition Using bad formatted data for required field Primary Actor: User Secondary Actor: System Trigger Edit Profile Menu [Description Main Success Scenario Step Action 1 User click edit profile](#) 2 User serve needed Information 3 Profile updated Alternative flows Step Branching Action 1 Input incorrect information 2 Update failed Quality Requirements Step Requirements N/A 3.2.3 Assign Coordinator Table 3.3: Coordinator Assign Use Case Title Assign Coordinator Goal Promoting a Faculty member as a Coordinator Preconditions Must be logged in as an admin Success End Condition The targeted user must be a registered faculty member Failure End Condition The targeted user is already a Coordinator or an Admin or is not registered yet Primary Actor: Admin Secondary Actor: Faculty Trigger Assign Coordinator Menu [Description Step Action Main Success Scenario 1 User](#) must be an Admin 2 Target the user needed to assign as Coordinator 3 Click on Edit role and select Coordinator Alternative flows Step Branching Action 1 Selecting Faculty again instead of Coordinator 2 Targeting a Coordinator for assigning as coordinator [Quality Requirements Step Requirements N/A 3, 2, 4](#) Register New Faculty Table 3.4: Register New Faculty Use Case Title Register New Faculty Goal Adding a user as faculty member in the system Preconditions Must be logged in as Coordinator or Admin Success End Condition Serving valid information to the system Failure End Condition Serving invalid information to the system Primary Actor: Admin, Coordinator Secondary Actor: Faculty Trigger Register New Faculty from Menu [Description Step Action Main Success Scenario 1](#) Logged in as Coordinator or Admin 2 Supplying valid information 3 Registered user successfully Alternative flows Step Branching Action 1 Supplying invalid information 2 Incorrect information causes registration failure Quality Requirements Step Requirements N/A 3.2.5 Assign Task Table 3.5: Assign Task Use Case Title Assign Task Goal Assigning task for the coordinator and faculty to progressing the publishing process Preconditions Logged in as Admin or Coordinator Success End Condition Providing valid information about task Failure End Condition Providing invalid information about task Primary Actor: Admin, Coordinator Secondary Actor: Faculty Trigger Task from the side menu Description Step Action Main Success Scenario 1 Providing task including needed information 2 Selecting candidate for this task 3 Select deadline for the task Alternative flows Step Branching Action 1 Incomplete information about task 2 Task couldn't be assigned [Quality Requirements Step Requirements N/A 3, 2, 6](#) View Task Table 3.6: View Task Use Case Title View Task Goal View tasks that assigned by the user and for the user Preconditions Must be a registered user Success End Condition Tasks must be assigned Failure End Condition No tasks assigned Primary Actor: Coordinator, Faculty Secondary Actor: Admin, Coordinator Trigger Task from side menu Description Step Action Main Success Scenario 1 Click task menu from side menu bar 2 View tasks assigned for me and assigned by me 3 Click on the specific one to view details Alternative flows Step Branching Action 1 Request for view tasks 2 No task assigned [Quality Requirements Step Requirements N/A 3, 2, 7](#) Submit Task Table 3.7: Submit Task Use Case Title Submit Task Goal Submit the assigned task before deadline Preconditions Logged in and tasks must be assigned Success End Condition Tasks submitted successfully Failure End Condition Tasks is not submitted Primary Actor: Coordinator, Faculty Secondary Actor: Admin, Coordinator Trigger Task from side menu bar [Description Step Action Main Success Scenario 1](#) Select [the](#) task that need to be submitted 2 Upload the file that contains submission content 3 Assigner receive the file successfully Alternative flows Step Branching Action 1 Submitting without content file 2 Submitting file without any content [Quality Requirements Step Requirements N/A 3, 2, 8](#) View Notification Table 3.8: View Notification Use Case Title View Notification Goal Alert about deadlines and tasks assigned Preconditions Must be logged in Success End Condition Nearby deadline or new task assigned for the user Failure End Condition No tasks available for the user Primary Actor: Users Secondary Actor: System Trigger Notification from side menu bar [Description Step Action Main Success Scenario 1 User](#) check [the](#) notification menu 2 Notification menu shows [the](#) nearby deadlines and new tasks assigned for the user 3 Select specific notification to complete it Alternative flows Step Branching Action 1 No tasks available for the user 2 Notification window contain nothing [Quality Requirements Step Requirements N/A 3, 2, 9](#) Submit Report Table 3.9: Submit Report Use Case Title Submit Report Goal Informing admin about research papers going to publish according to category Preconditions Must be logged in as Coordinator Success End Condition All the paper details must be submitted before making report Failure End Condition Making report before submitting paper details Primary Actor: Coordinator Secondary Actor: Admin Trigger Report writing from side menu bar Description Step Action Main Success Scenario 1 Coordinator request for report 2 System categorify all paper details 3 Coordinator passes the report to the admin Alternative flows Step Branching Action 1 Coordinator request for report before all paper details have been submitted 2 Invalid informational report created [Quality Requirements Step Requirements N/A 3, 2, 10](#) Input Paper Details Table 3.10: Input Paper Details Use Case Title Input Paper Details Goal Providing information about the research papers going to publish Preconditions Logged in as faculty members Success End Condition Providing valid information in the required fields Failure End Condition Providing invalid information or Existing information Primary Actor: Faculty Secondary Actor: Coordinator Trigger Paper Details from the side menu bar Description Step Action Main Success Scenario 1 Faculty input a paper detail 2 Submit the details for review 3 Coordinator receive the details Alternative flows Step Branching Action 1 Faculty input an existing detail 2 System reject the submission Quality Requirements Step Requirements N/A 3.2.11 Log Out Table 3.11: Log Out Use Case Title Log Out Goal Exit the system Preconditions [Must be logged in Success End Condition User is logged in Failure End Condition User is already logged out Primary Actor: User](#) Secondary Actor: System Trigger Log out button Description Step Action Main Success Scenario 1 User completed his/her work on system 2 User clicked log out button 3 System logged out the user and clear his/her session records Alternative flows Step Branching Action 1 User close the browser instead of log out 2 System will catch his/her session record for a defined time for that browser. Then it will be cleaned also. Quality Requirements Step Requirements N/A [3.3 Activity Diagram 3.3.1 Activity Diagram](#) (Log In) Figure [3, 2: Activity Diagram](#) for Log In [3, 3.2 Activity Diagram \(Manage Profile\)](#) Figure [3, 3: Activity diagram for Manage Profile](#) [3, 3.3 Activity Diagram](#) (Assign Coordinator) Figure [3, 4: Activity diagram for Assign Coordinator](#) [3, 3.4 Activity Diagram](#) (Register New Faculty) Figure 3.5: Activity diagram for Register New Faculty [3, 3.5 Activity Diagram](#) (Assign Task) Figure [3.6: Activity diagram for Assign Task](#) [3, 3.6 Activity Diagram](#) (view Task) Figure [3, 7: Activity diagram for View Task](#) [3, 7 Activity Diagram](#) (Submit Task) Figure [3, 8: Activity diagram for Submit Task](#) [3, 8 Activity Diagram](#) (View Notification) Figure [3.9: Activity diagram for Notification](#) [3, 9 Activity Diagram](#) (Report Writing) Figure [3.10: Activity diagram for Report Writing](#) [3.3.10 Activity Diagram](#) (Input Paper Details) Figure [3.11: Activity diagram for Paper Details](#) [3.3, 11 Activity Diagram](#) (Log Out) Figure [3.12: Activity diagram for Log Out](#) [3.4 System Sequence Diagram 3.4.1 Sequence Diagram](#) (Log In) Figure [3.13: Sequence diagram for Log In](#) [3.4.2 Sequence Diagram](#) (Manage Profile) Figure [3.14: Sequence diagram for Manage Profile](#) [3.4.3 Sequence Diagram](#) (Assign Coordinator) Figure [3.15: Sequence diagram for Assign Coordinator](#) [3.4.4 Sequence Diagram](#) (Register New Faculty) Figure [3.16: Sequence diagram for Register New User](#) [3.4.5 Sequence Diagram](#) (Assign Task) Figure [3.17: Sequence diagram for Assign Task](#) [3.4.6 Sequence Diagram](#) (View Task) Figure [3.18: Sequence diagram for View Task](#) [3.4.7 Sequence Diagram](#) (Submit Task) Figure [3.19: Sequence diagram for Submit Task](#) [3.4.8 Sequence Diagram](#) (View Notification) Figure [3.20: Sequence diagram for View Notification](#) [3.4.9 Sequence Diagram](#) (Report Writing) Figure [3.21: Sequence diagram for Report Writing](#) [3.4.10 Sequence Diagram](#) (Input Paper Details) Figure [3.22: Sequence diagram for Input Paper Details](#) [3.4.11 Sequence Diagram](#) (Log Out) Figure [3.23: Sequence diagram for Log Out](#) Chapter 4: System Design Specification 4.1 Class Responsibilities Collaboration (CRC) Cards Figure 4.1: CRC cards for "Research Coordinating System" 4.2 Class Diagram Figure 4.2: Class Diagram for "Research Coordinating System" 4.3 Database Design Diagram Figure 4.3: Database Design Diagram 4.4 Development Tools & Technology For developing a quality software, development tools are used. Various development tools like programming tools, debugging tools, testing tools and so on are used to develop different types of applications. For the "Research Coordinating System" web application I also use those types of tools and technologies. They are: 4.4.1 User Interface Technology The user interface means the visual part of a software. This interface has been created following the needs of the users so that they can easily interact with the system. The ultimate goal of the user interface is to deploy the user to the system. A good user interface makes an application effective, reliable and efficient. 4.4.1.1 ASP.NET MVC Framework For the "Research Coordinating System" web-based application, the ASP.NET MVC framework is used. Security is a valuable part of web-based applications. ASP.NET offers more secure than many other frameworks. MVC (Model View Controller) is also a good architecture for web-based systems. 4.4.1.2

