Development of Exam Routine Application for DIU

BY

Saleh Ahammed Noor
ID: 153-15-586

MD. Al Hasan Mahmud
ID: 161-15-873

Kamrul Hasan Shemul
ID: 161-15-7260

This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science Computer Science and Engineering

Supervised By

Md. Tanvir Rahman
Senior Lecturer
Department of CSE
Daffodil International University

Co-Supervised By

Mr. Md. Mahfujur Rahman
Lecturer
Department of CSE
Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY
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DECLARATION

We hereby declare that this project has been done by us under the supervision of **MD Tanvir Rahman, Lecturer (Senior Scale),** Department of CSE, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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____

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Submitted By:

____

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Department of CSE
Daffodil International University

____

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ID: 161-15-873
Department of CSE
Daffodil International University

____

Kamrul Hasan Shemul
ID: 161-15-7260
Department of CSE

Acknowledgment

First, we express our heartiest thanks and gratefulness to Almighty Allah for His divine blessing made us possible to complete the final year project successfully.

We really grateful and wish we profound indebtedness to **MD. Tanvir Rahman, Senior Lecturer**, Department of CSE Daffodil International University, Dhaka. Deep knowledge & keen interest of our supervisor in the field of "*Web development*" helped to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stages have made it possible to complete this project.

We would like to express our heartiest gratitude to the program **Associate Professor and Associate Head**, **Dr. S.M. Aminul Haque,** Department of CSE, for his kind help to finish our project and also to other faculty members and the staff of CSE department of Daffodil International University.

We would like to thank our entire coursemate at Daffodil International University, who took part in this discussion while completing the course work.

Finally, we must acknowledge with due respect the constant support and patience of our parents.

Abstract

We developed a web-based application that will help our exam committee to create an exam routine timely. Exam routine making is a long-term process. Sometimes the exam committee can’t align the exam rooms in a short time and face a lot of hassle. So, our system mainly helps the exam committee to utilize most of the rooms properly and save a lot of types. At the beginning of each semester, the committee will insert data (total students, sections) into our system. Our system algorithm will use the data and distribute rooms to all sections. Our application is efficient and consumes less time than other processes. It will help the exam committee reduce the time to make the seating plan.

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CHAPTER 1

Introduction

1.1 Introduction:

The project “Routine Management Application” is an online web-based management system that provides a simple, easy and beautiful interface for distribution rooms.

Manually maintaining the works is quite difficult and time-consuming. The “Routine Management Application” project is the solution to these difficulties and time-consuming.

1.2 Objectives:

The objectives of the “Routine Management Application” are

- To provide a digital means to make exam routine.
- To reduce time to make seat plan.
- To use all the rooms properly.
- To reduce routine making complexity.
- Publishing routine fast and instant.

1.3 Expected Outcome:

- Properly use all seats in most of the rooms.
- Users can easily update, edit, delete in without any kind of wasting time.
- Easy to find empty rooms.
- Teachers can easily find duty rooms.
- Easily distribute of all students to departments wise rooms.
- Students know the exam rooms, date, time.
- Users can fix the problem and instantly publish routine.
- Students will get notices instantly after publishing routine

CHAPTER 2

BACKGROUND

2.1 Introduction:

To fully digitalize a university and provide technology-based education.

Everything should be digital and all activities should be done using technology. Our university is a growing university, with a growing number of students and classrooms per semester. Our Examination Committee had difficulty allocating space for examination. Since it was an analog process so it wastes a lot of time, hard work is not always able to make the best use of the source. So since we are living in the age of technology, we should use technology to solve this problem.

We have tried to solve this problem by creating such a system and have succeeded. This will help the students to allocate space for examination.

2.2 Related Work:

For improving the University Management and assure to handle all operations digitally with the help of technology, there are already developed and developing applications like " Class Organizer for DIU (CSE)" which generate class routine automatically. from the pdf file which provides by department routine committee

There is also an application named " Examination Hall and Seating Arrangement Application" which simplifies the allocation of halls and issuing hall tickets to students during exams

2.3 Comparative Studies:

While assigning rooms to different sections for examination before the exam, there could be different problems, but as this system automatically assigns sections to different rooms according to the number of the students and room size it will have come quite easier.

To make sure the securities are not compromised every time a new admin gets registered the super admin gets notified via email. The new admin must be verified by the super admin before accessing the admin privileges and use the software.

Regular admin can only add examination to their particular department.

2.4 Scope of the Problem:

2.4.1 Assigning faculty members as an inspector automatically:

This application generates an exam routine, but it is unable to set inspectors of the exam room automatically.

2.4.2 Splitting section for room to utilize size:

As there was vary in section size and room capacity. So to utilize most of the capacity section need to split according to room capacity and order. But in our application it is absent.

2.5 Challenges:

2.5.1 Instant Routines:

In university, there are lots of activities. The exam is the most important and sensitive work. So the exam committee gets in trouble to fit the section and student to assign a room for the student. In our project, this problem is solved. The exam committee can generate routine with the low hassle and instantly with our application advanced algorithm.

2.5.2 Version wise control:

In the university current system, version wise exam routine control quite difficult to handle, generate and make a copy of the routine. In our system this problem solved also, the exam committee can control the version wise routine according to the semester.

2.5.3 Committee wise control:

In the university, there are lots of faculty under faculty there is the department, so it was a problem to generate all routine in one, so in our application. The committee can create and generate and handle routine and control routine committee.

CHAPTER 3

Software Requirements Specification

3.1 Requirement Collection and Analysis

Functional requirements describe what the software has to do. And these are called features products [8].

User requirement is written for the users and includes functional and nonfunctional requirement [9].

Since there is much competition of the same management system so user requirement analysis is an important step. User will choose those products that are most preferable, acceptable easy and matches their personal or business requirements.

Various user types and with their approval and requirements are compared in this user requirement analysis studies. In user requirements, there are mostly acceptable options and requirements were getting priorities. I find the following user choice and requirements on their described specifications.

1. A user wants the user interface easy and easy grouping of sub-menus or sub-options for finding the required option easily.
2. Nowadays the user wants to do everything on mobile/tab devices as they spent much time on these devices, so their main requirement is the system should be responsive in both mobile and tablet devices.
3. Clear, easy, Nice and attractive graphical user interfaces look.
4. Informative graph charts and bar charts. Comparing between two or multiple keys in charts.
5. The user wants printable options to print out documents like invoices, accounts summary. Moreover, a user also requires a file export option in different formats like Excel, CSV, pdf.
6. If any upgrade needs any time, that should be done easily and quickly. And any kind of loss should not be created any time for the up-gradation. So the system should be developed in such a way that up-gradation is possible at any time.

The most important thing is security issues. Any kind of privacy leak and data loss is not acceptable to any school or users. So the system should be secured enough.

3.2 Use Case Modeling and Description:

3.2.1 Use case diagram

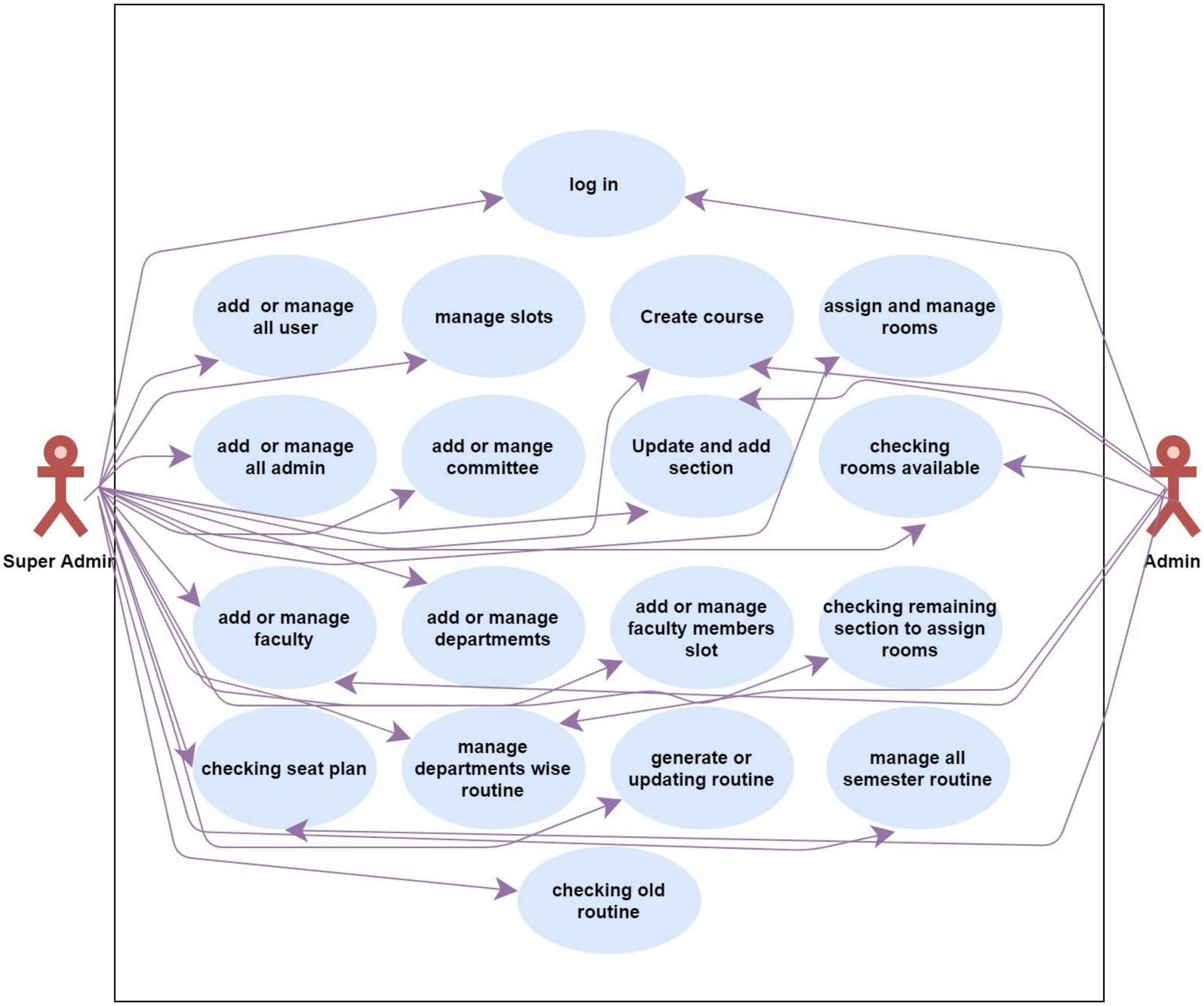


Figure 3.2.1 shows the use cases of different actors of the system.

TABLE 3.2.2.1: Use case description of Add/ manage all user

Use Case Name	Add or manage all user
Actors	Super admin.
Flow of Events	1. Add user 2.Promoted user 3.Delete user 4. Show user details
Alternative Flows	1. No user found 2. Don’t approve new user 3. Don’t choose the right user to promote super admin 4. Input values contain validation errors
Pre-condition	Login & proper authentication
Post Condition	Approve user, promoted as super admin, delete user

TABLE 3.2.2.2: Use case description of Add/ manage faculty

Use Case Name	Add or manage faculty
Actors	Super admin, admin
Flow of Events	1. Select faculty title 2.Select committee 3.Update faculty 4. Delete faculty
Alternative Flows	1. Select the wrong faculty title 2. Select the wrong committee 3. Delete correct faculty 4. Input values contain validation errors
Pre-condition	Login & proper authentication
Post Condition	Select the right faculty title, select the right committee name

TABLE 3.3.2.3: Use case description of checking seat plan

Use Case Name	Checking Seat Plan
Actors	Super admin, admin
Flow of Events	1. Select Committee 2. Generate routine
Alternative Flows	1. Select incorrect committee 2. Delete incorrect faculty
Pre-condition	Generate routine
Post Condition	Select the right committee, download, and print

TABLE 3.2.2.4: Use case description of manage slot

Use Case Name	Manage slots
Actors	Super admin
Flow of Events	1. Add Slots 2. Update slots 3. Delete slots
Alternative Flows	1. Incorrect time to adding slot 2. Don’t update the right slot 3. Delete correct slot 4. Inputs invalid
Pre-condition	Login & proper authentication
Post Condition	Adding new slots, update incorrect slots, delete incorrect slots

TABLE 3.2.2.5: Use case description of Add/ manage committee

Use Case Name	Add or manage committee
Actors	Super admin
Flow of Events	1. Add committee 2. Update committee 3. Delete committee
Alternative Flows	1. Select the wrong committee 2. Don’t update the right description 3. Delete right information of committee 4. Inputs invalid
Pre-condition	Login & proper authentication
Post Condition	Select committee name, write a description of every committee.

TABLE 3.2.2.6: Use case description of Add/ Manage departments

Use Case Name	Add or manage departments
Actors	Super admin
Flow of Events	1. Add departments 2. Update departments 3. Delete departments
Alternative Flows	1. Add incorrect faculties 2. Don’t update the right department's information 3. Delete correct departments information 4. Inputs invalid
Pre-condition	Login & proper authentication
Post Condition	Enter department name, select right faculty

TABLE 3.2.2.7: Use case description of Manage department wise routine

Use Case Name	Manage department wise routine
Actors	Super admin, admin
Flow of Events	1. Select faculty 2. Select date 3. Select slots 4. Generate routine 5. Generate PDF
Alternative Flows	1. Select incorrect faculty 2. Select the wrong date. 3. Don’t select slots 4. Inputs invalid
Pre-condition	Login & proper authentication
Post Condition	Select the right faculty, Select right date, Select correct slots, Download, and print

TABLE 3.2.2.8: Use case description of Create Course

Use Case Name	Create a Course
Actors	Super admin, admin
Flow of Events	1. Add course
Alternative Flows	1. Add incorrect course code 2. Add wrong course title 3. Incorrect course teacher name 4. Don’t right actual credit 6. Inputs invalid
Pre-condition	The code field is required, the title field is required. Program field is required
Post Condition	Create a new course

TABLE 3.2.2.9: Use case description of Update and add a section

Use Case Name	Update and add a section
Actors	Super admin, admin
Flow of Events	1. Add section 2. Update section 3. Delete section 4. Search course
Alternative Flows	1. Add incorrect section 2. Don’t update right course information 3. Delete correct c course 4. search wrong code 5. Inputs invalid
Pre-condition	Create a course
Post Condition	Add section, Update right information, of course, Delete wrong information

TABLE 3.2.2.10: Use case description of Add/Manage faculty members slots

Use Case Name	Add or manage faculty members slots
Actors	Super admin, admin
Flow of Events	1. Add section 2. Update section 3. Delete section 4. Search course
Alternative Flows	1. Add incorrect section 2. Don’t update right course information 3. Delete correct c course 4. search wrong code 5. Inputs invalid
Pre-condition	Create a course
Post Condition	Add section, Update right information, of course, Delete wrong information

3.3 Database Schema

3.3.1 Database Schema

room_statuses (id, room_number, remainigSize,examDate, Slot,created_at,Updated_at**)**

rooms (id,number,capacity,building,**committe_id**, created_at,updated_at**)**

faculty_members(id,name,**email**,contact,**initial**,designation,join_date,**dept_id**,
created_at,updated_at**)**

exams (id,**course_id**,examDate,slot,created_at,updated_at**)**

exam_rooms (id,**room_num**,**exam_id**,**section_id**,created_at,updated_at**)**

committees (id, title, description, created_at, updated_at**)**

courses (id, course_code, **dept_id**, program, title, credit, created_at, updated_at**)**

sections (id, **course_id**, size, section, course_teacher, created_at, updated_at**)**

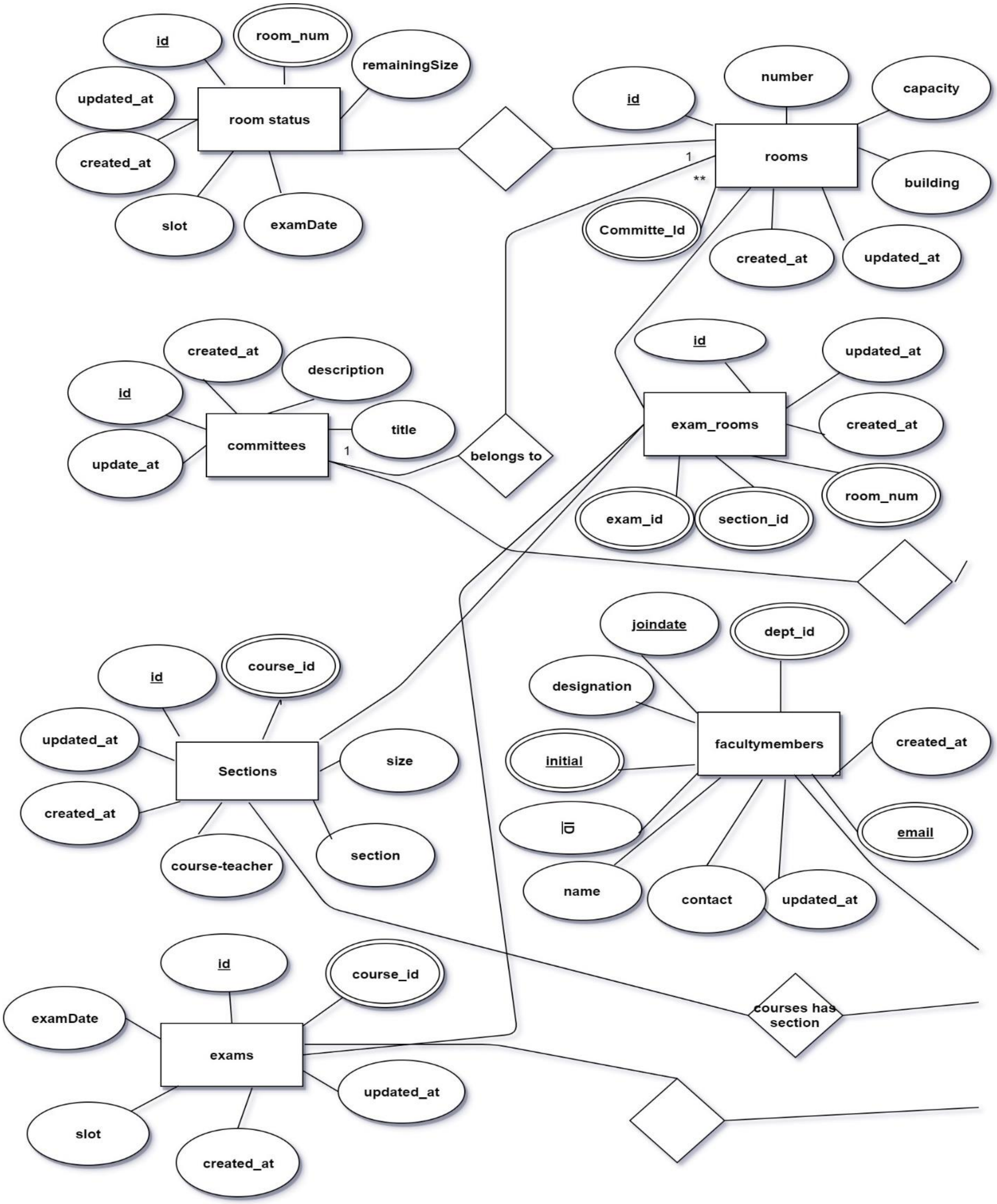
faculties (id, **title**, **committee_id**, updated_at, created_at**)**

departments (id, title, totalStudent, **faculty_id**, created_at, updated_at**)**

user (id, name, **employee_id**, admin, **email**, emailVarified_at, password, **dept_id**,
remember_token, phone_number, created_at, updated_at**)**

3.4 Entity Relationship Diagram

3.4.1 Shows the figure of ER diagram



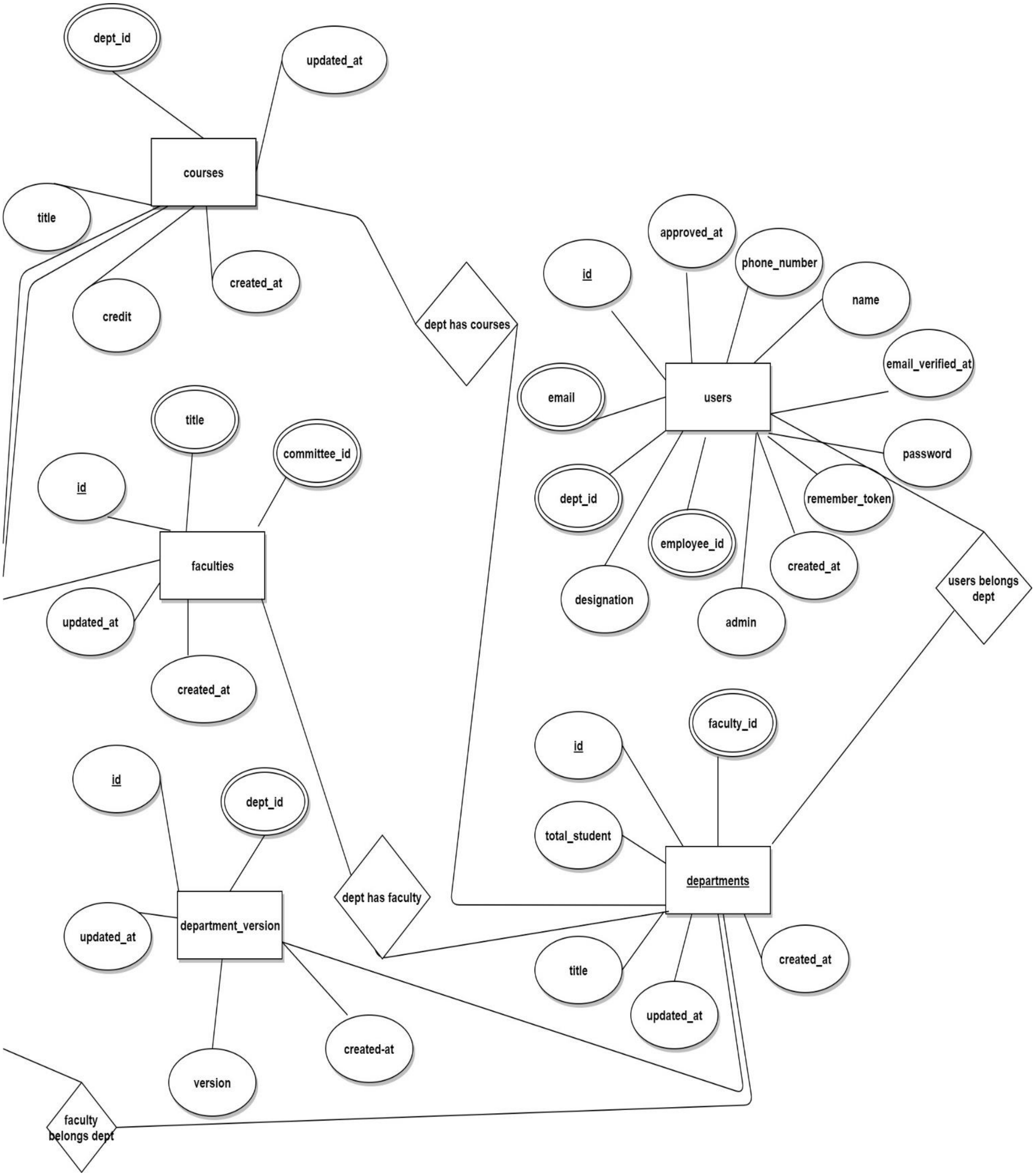


Figure 3.4.1 Entity Relationship

3.5 Design Requirements:

Design requirements have a great deal with the look of the system and user interfaces.

Basically, it defines some key requirements to have the required design.

Got help with finding design requirements from an article by *Paul Sancandi* [12].

The design requirements may come from the users or clients' side, design management plan and engaged design consultants.

In the project there arises many design requirements that are needed to be fulfilled.

I. Overflows in the elements will be disabled.

II. We need to have all elements and options of the sidebar to be shown clearly in the mobile or tablet view.

III. All the columns of the tables showing in desktop view also have to show on mobile & tablet view.

IV. For mobile and tablet browsing Sidebar should be toggle-able by a button and the in-default sidebar will be hidden.

V. All options should be grouped as sub-menu and keep under a menu giving a related name so that users don’t face any time wastage finding the required option for a process or operation.

VI. We need to have a clear option for users to choose to remember the password for keeping the user logged in for 30 days.

VII. Have a dashboard that will be designed having some quick actions or summaries of information depending on the user types and each user type's most needed options.

CHAPTER 4
System Design

4.1 Activity diagrams:

Activity diagrams are used typically for business process modeling. Graphical representations of workflows of stepwise activities and actions are activity diagrams.

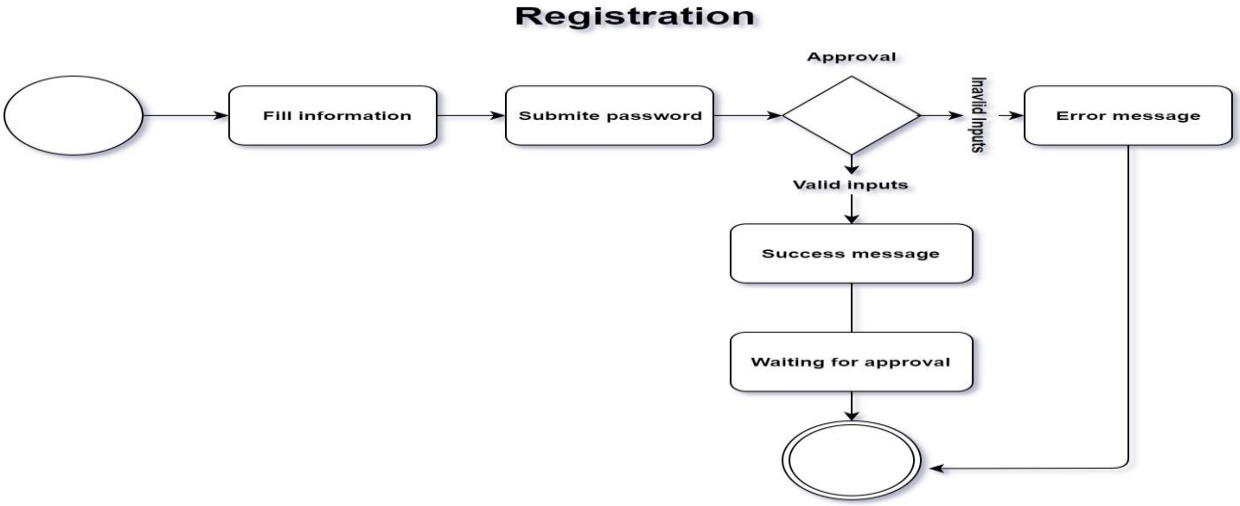


Figure 4.1.1: Activity diagram of Registration

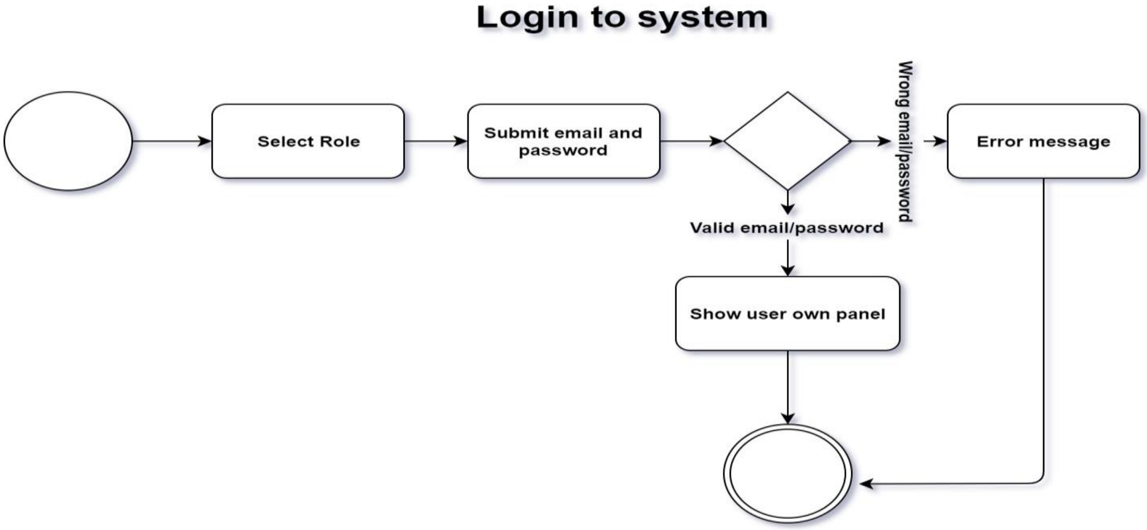


Figure 4.1.2: Activity diagram of Login Process

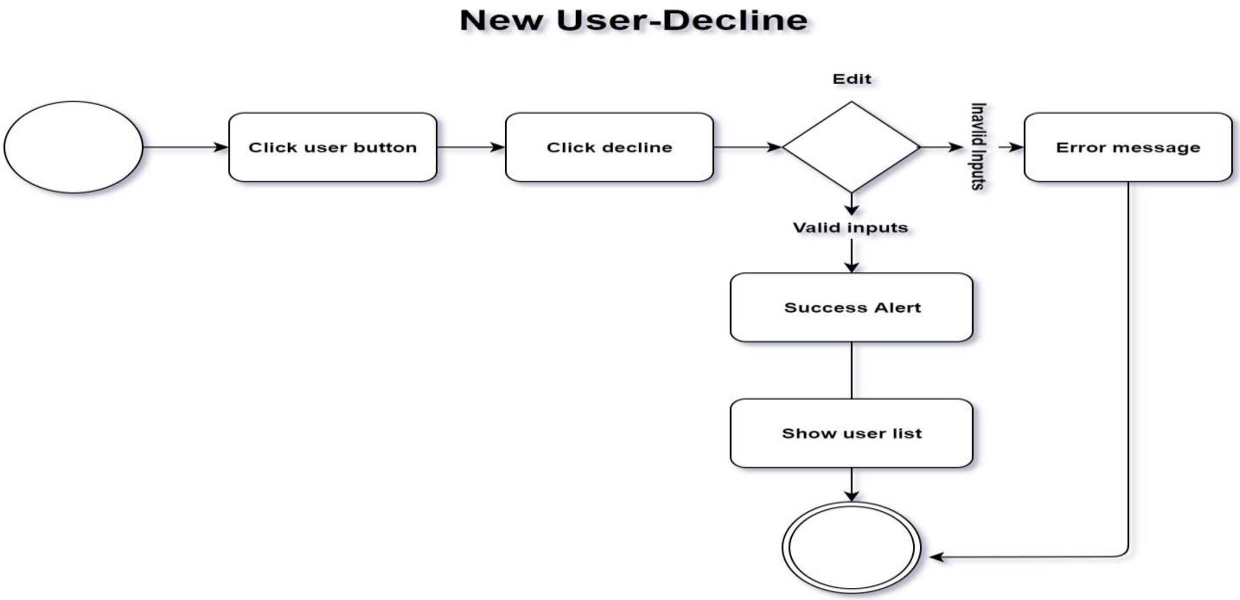


Figure 4.1.3: Activity diagram of Decline Process

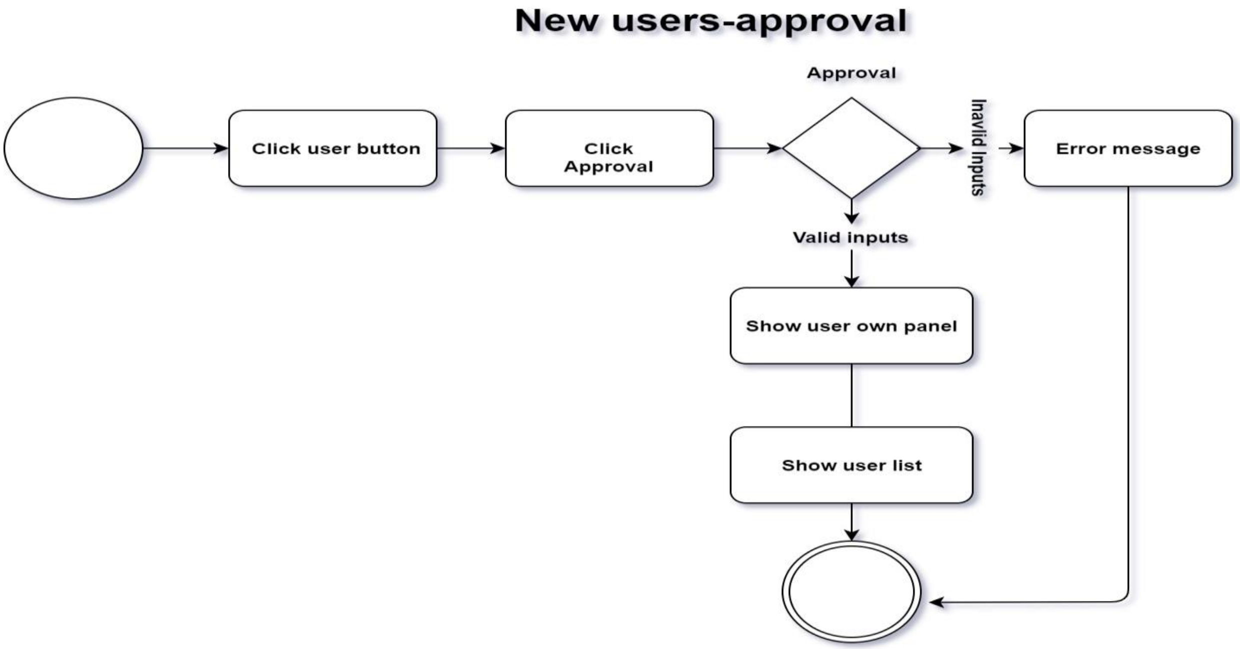


Figure 4.1.4: Activity diagram of New users Approval

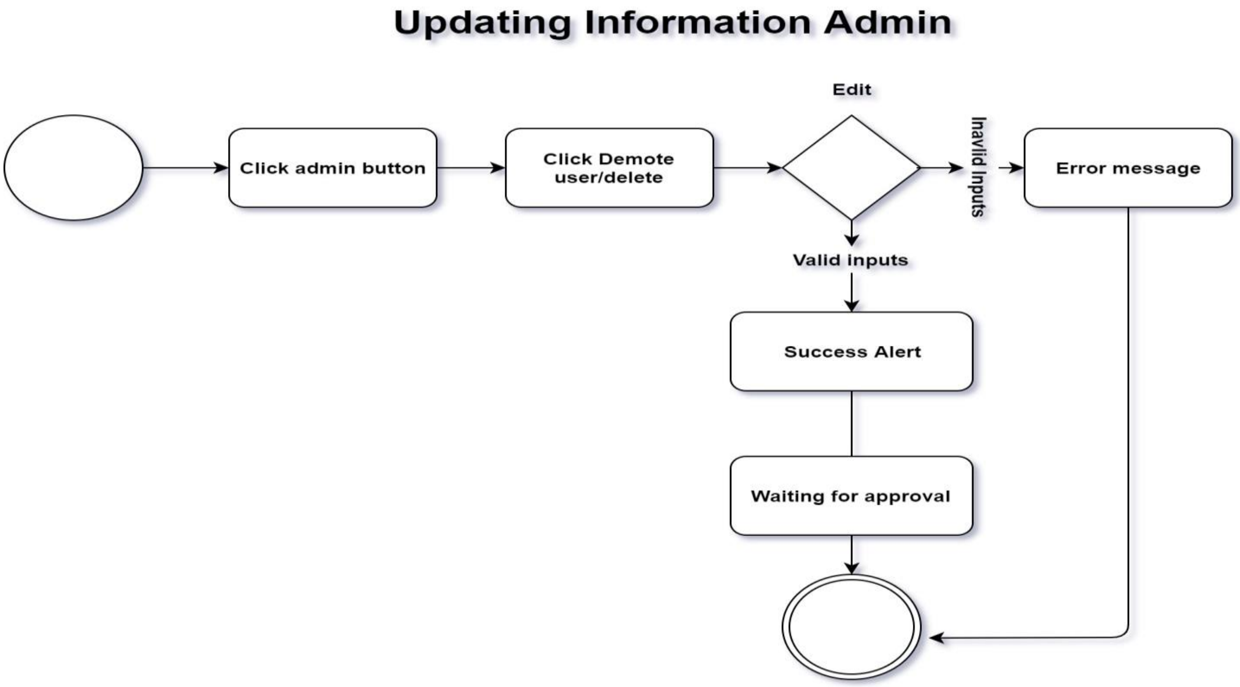


Figure 4.1.5: Activity diagram of Updating Admin

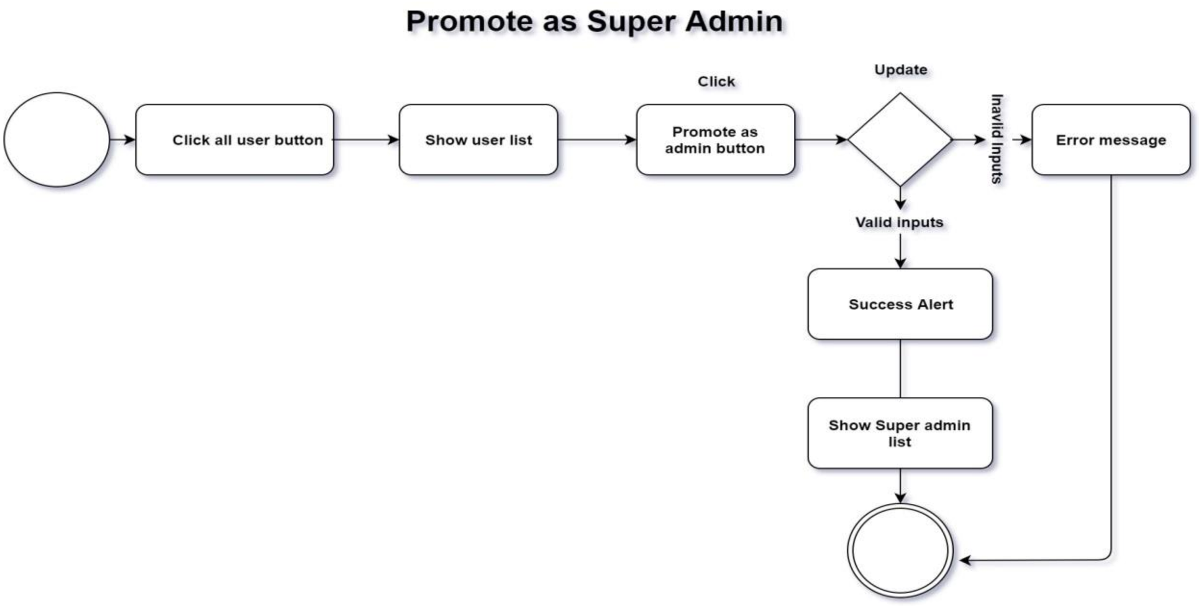


Figure 4.1.6: Activity diagram of Promote Super Admin

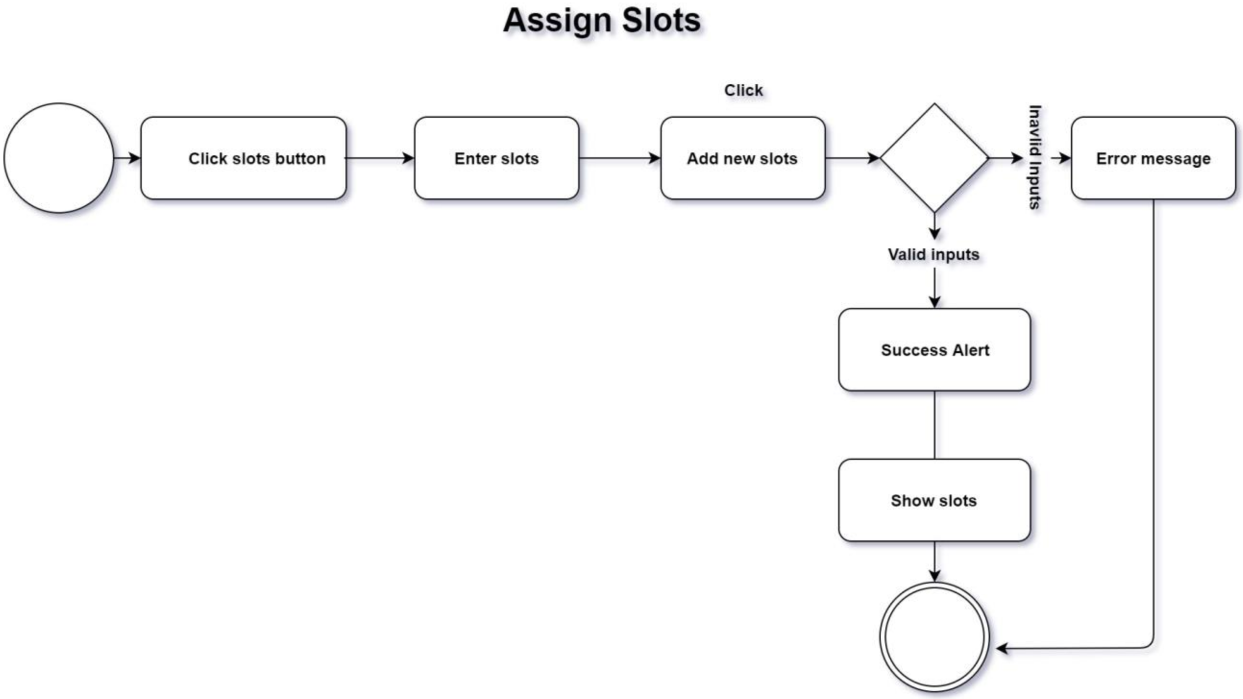


Figure 4.1.7: Activity diagram of Adding slot

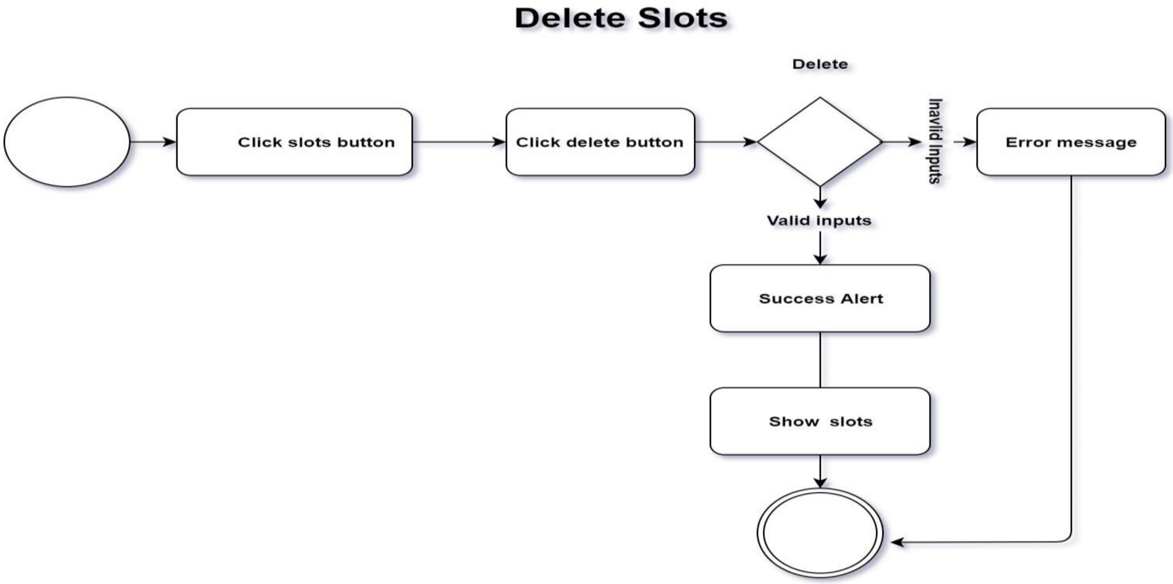


Figure 4.1.8: Activity diagram of Delete slots

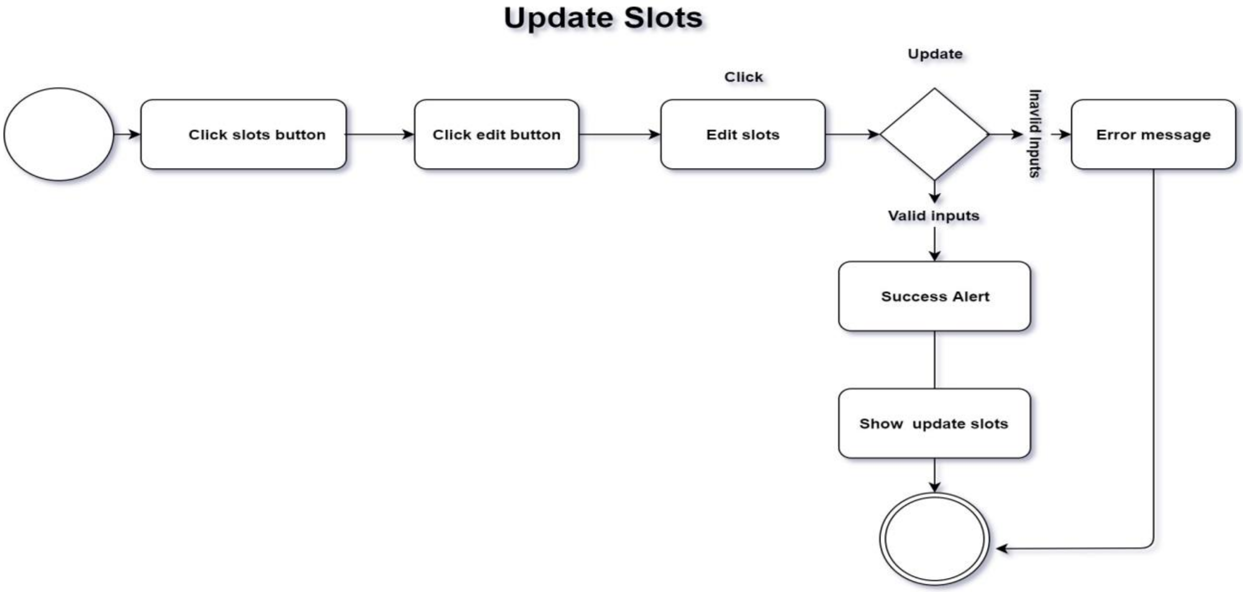


Figure 4.1.9: Activity diagram of Updating Slots

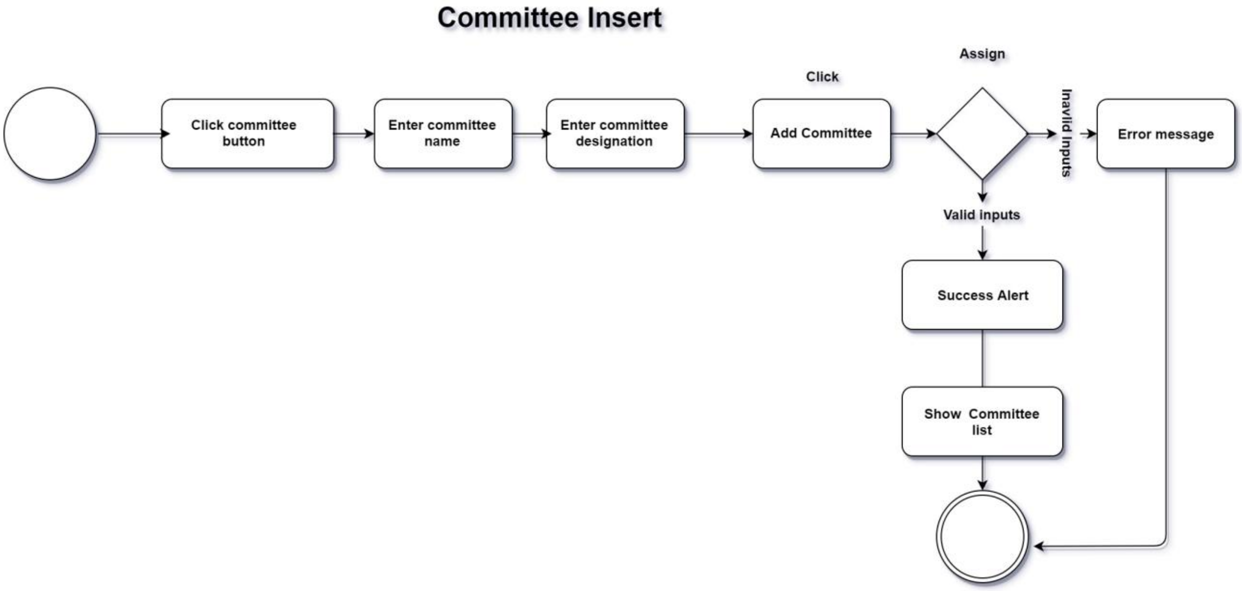


Figure 4.1.10: Activity diagram of Committee inserting

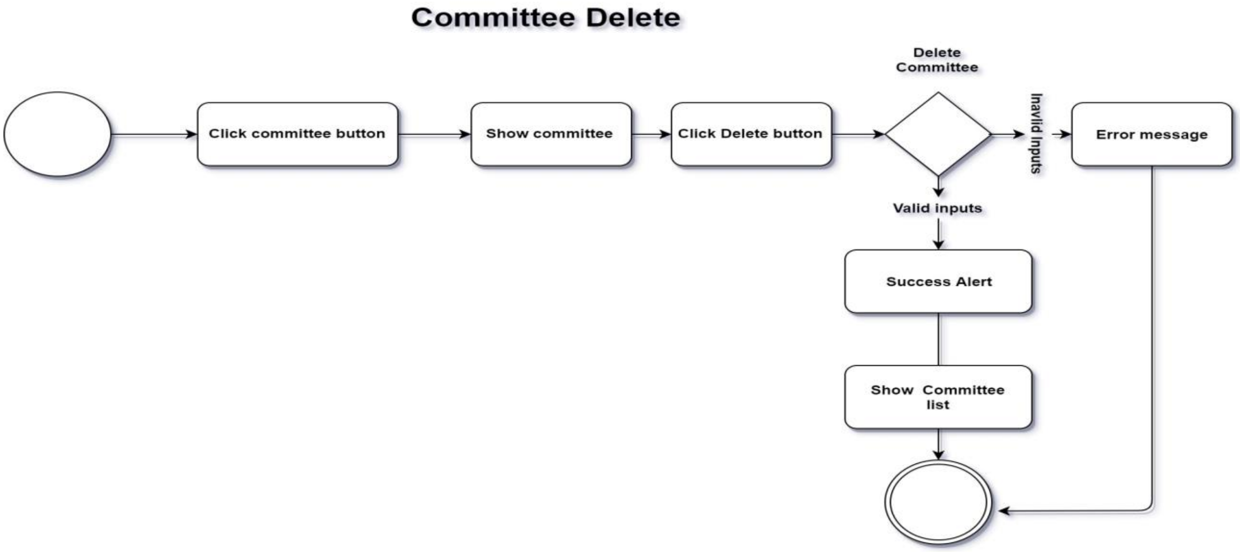


Figure 4.1.11: Activity diagram of Committee deleting

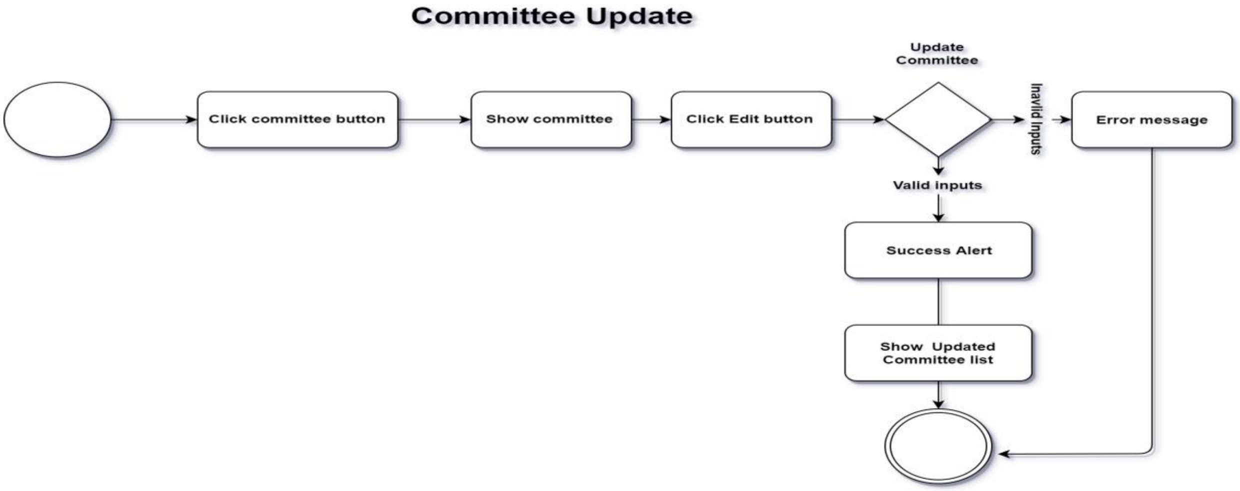


Figure 4.1.12: Activity diagram of Committee updating

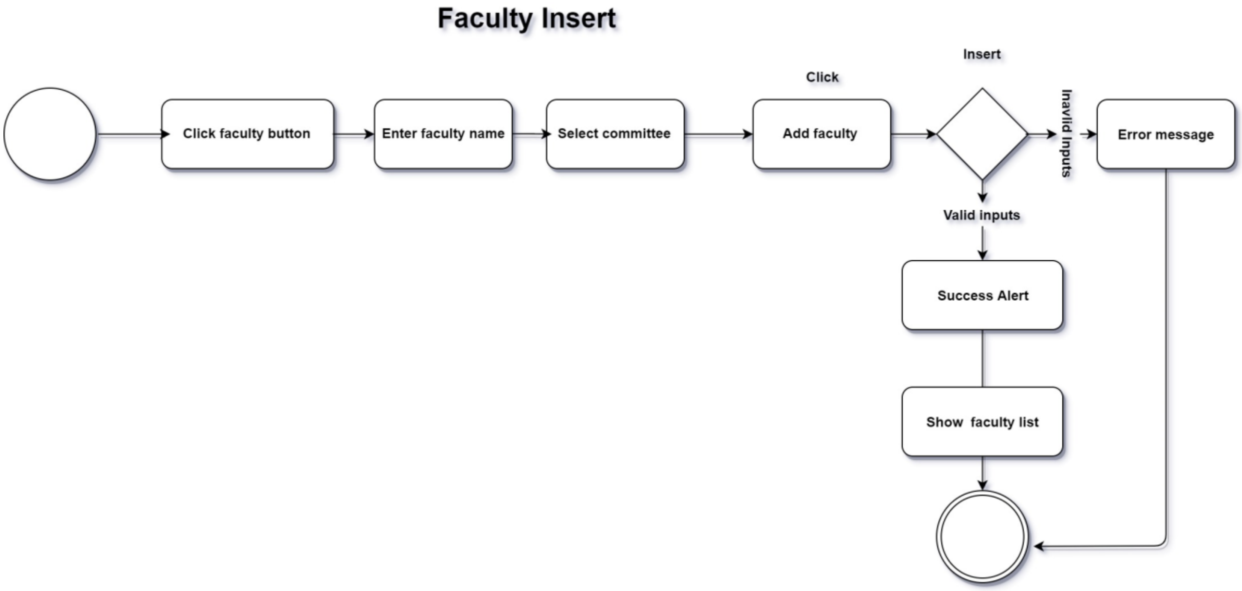


Figure 4.1.13: Activity diagram of Faculty inserting

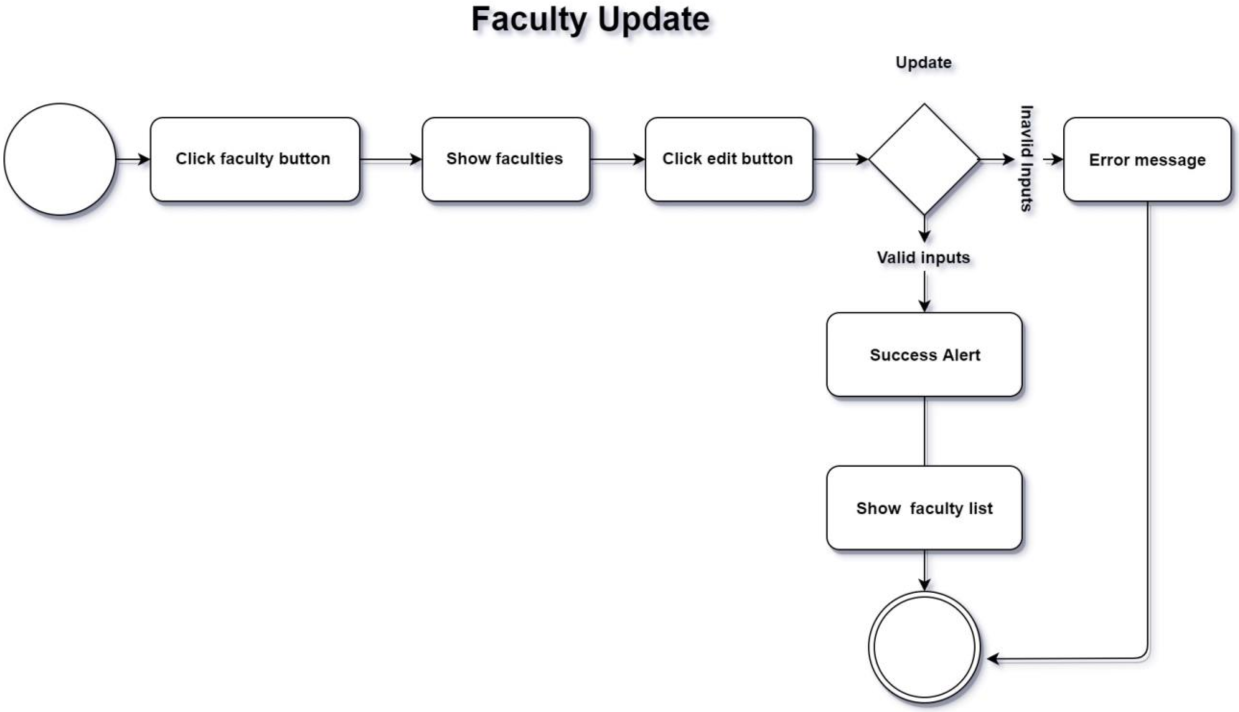


Figure 4.1.14: Activity diagram of Faculty updating

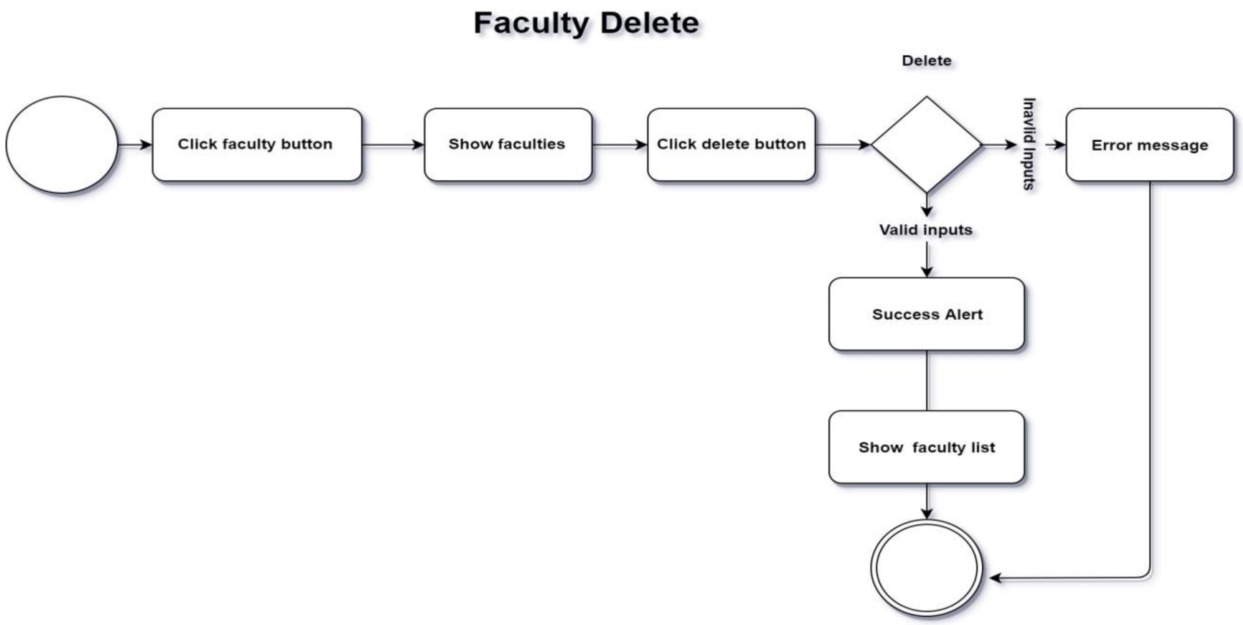


Figure 4.1.15: Activity diagram of Faculty deleting

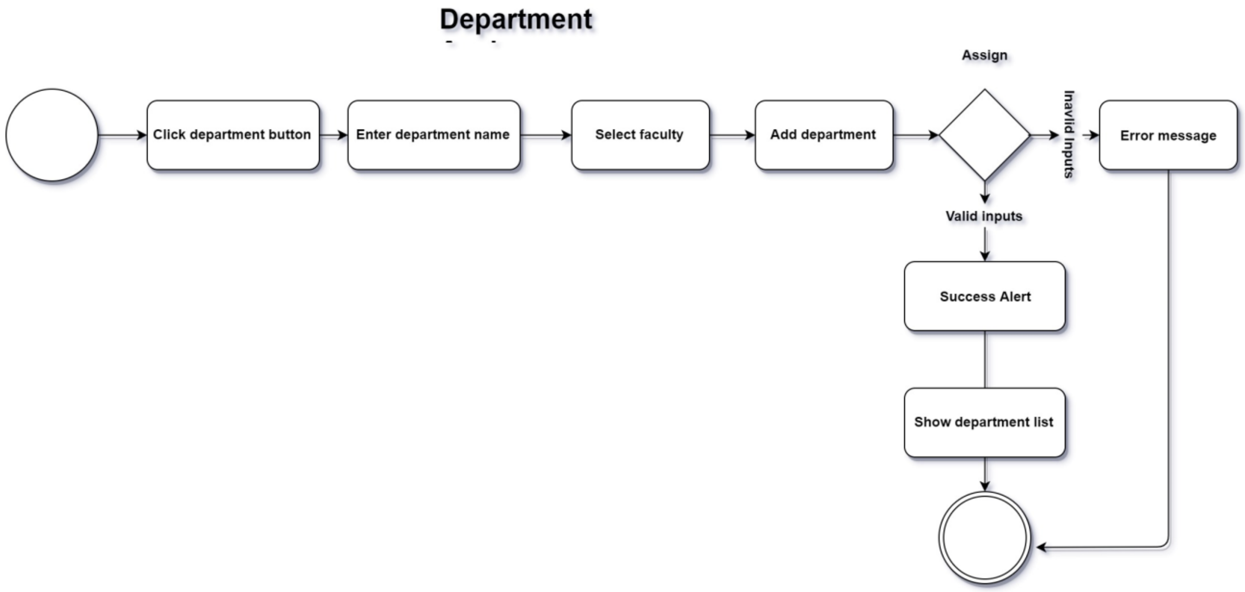


Figure 4.1.16: Activity diagram of Department Assigning

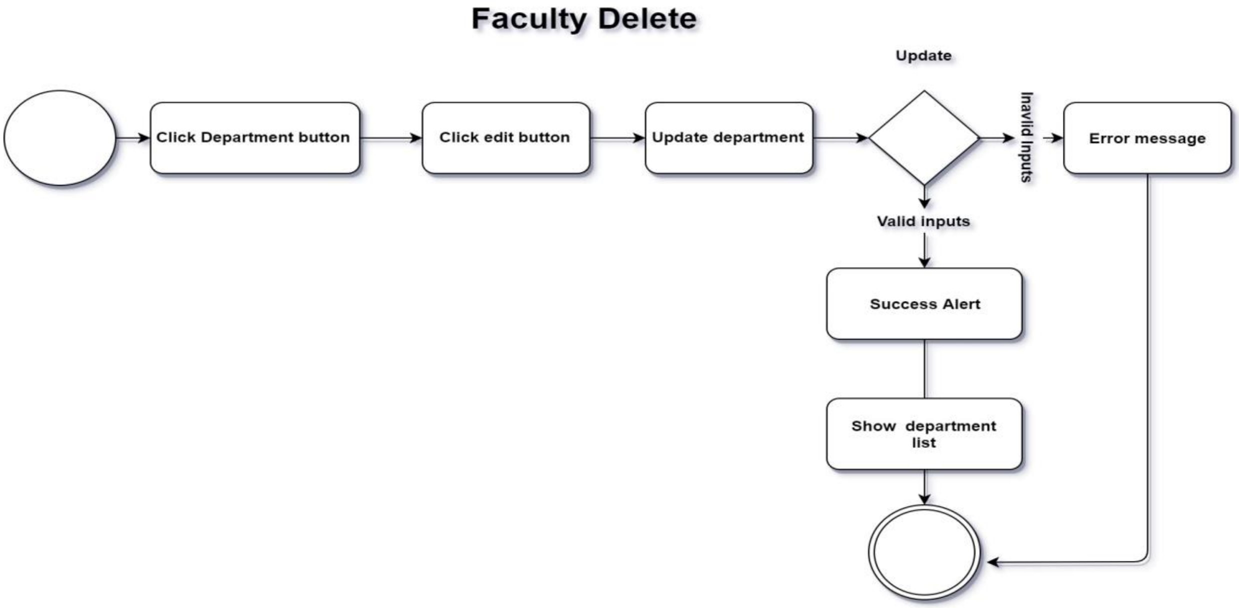


Figure 4.1.17: Activity diagram of Department Add

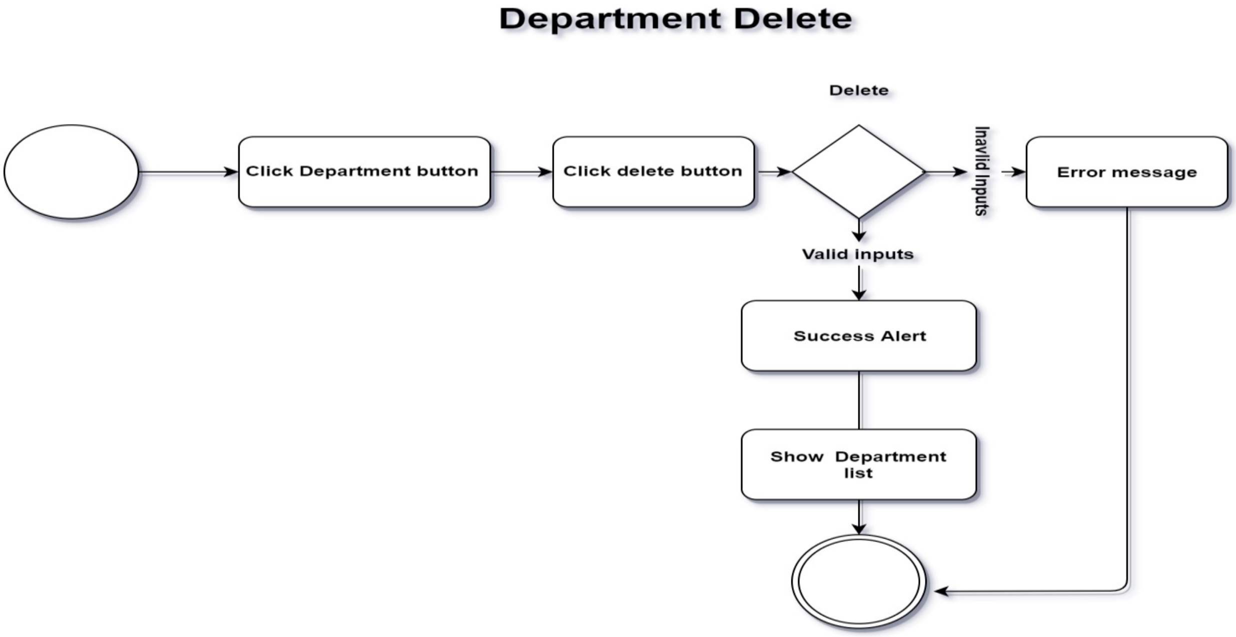


Figure 4.1.18: Activity diagram of Department Deleting

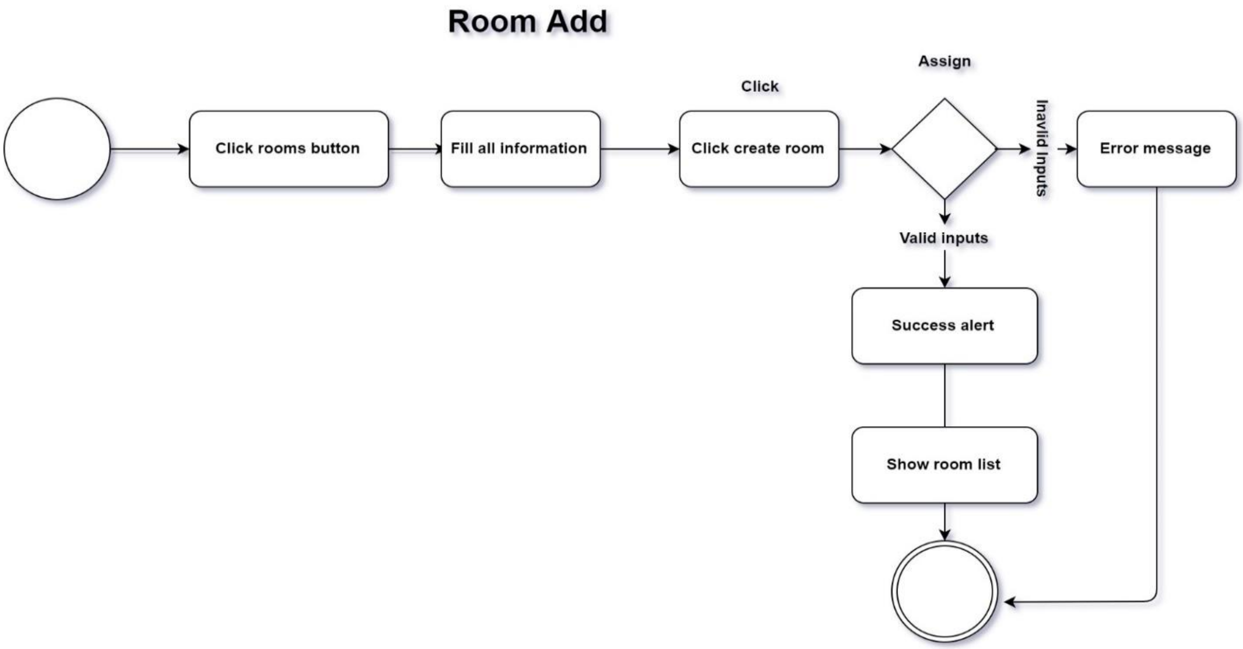


Figure 4.1.19: Activity diagram of Room Adding

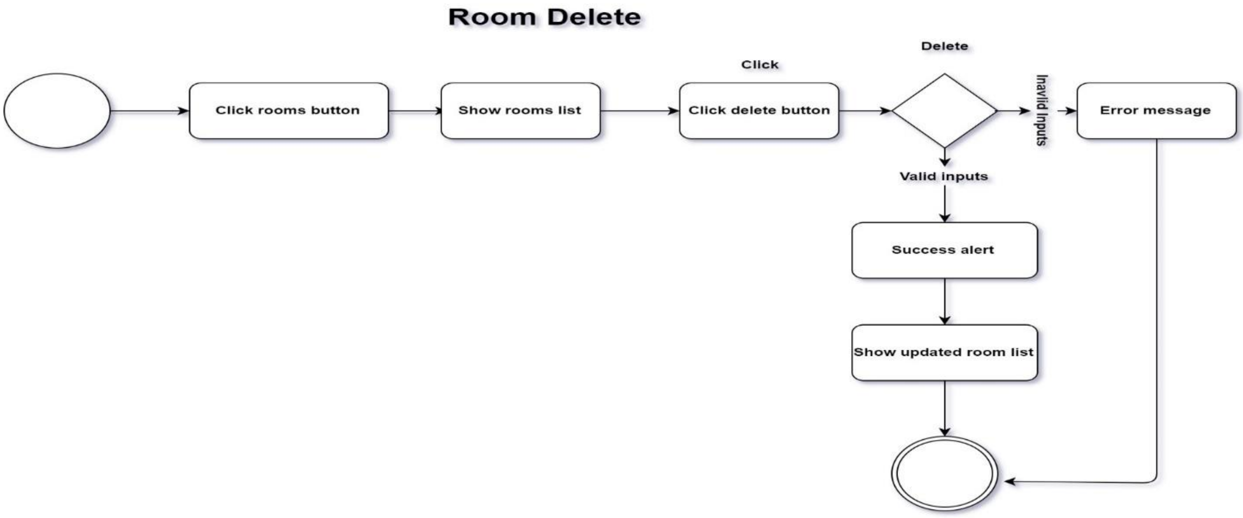


Figure 4.1.20: Activity diagram of Room Deleting

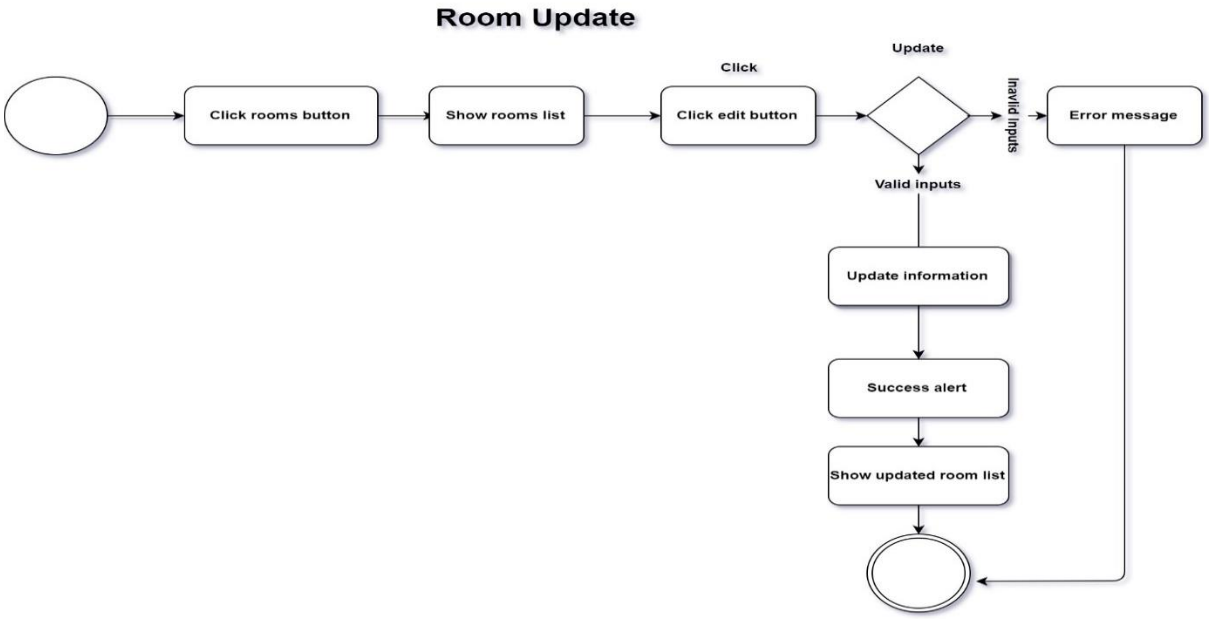


Figure 4.1.21: Activity diagram of Room Updating

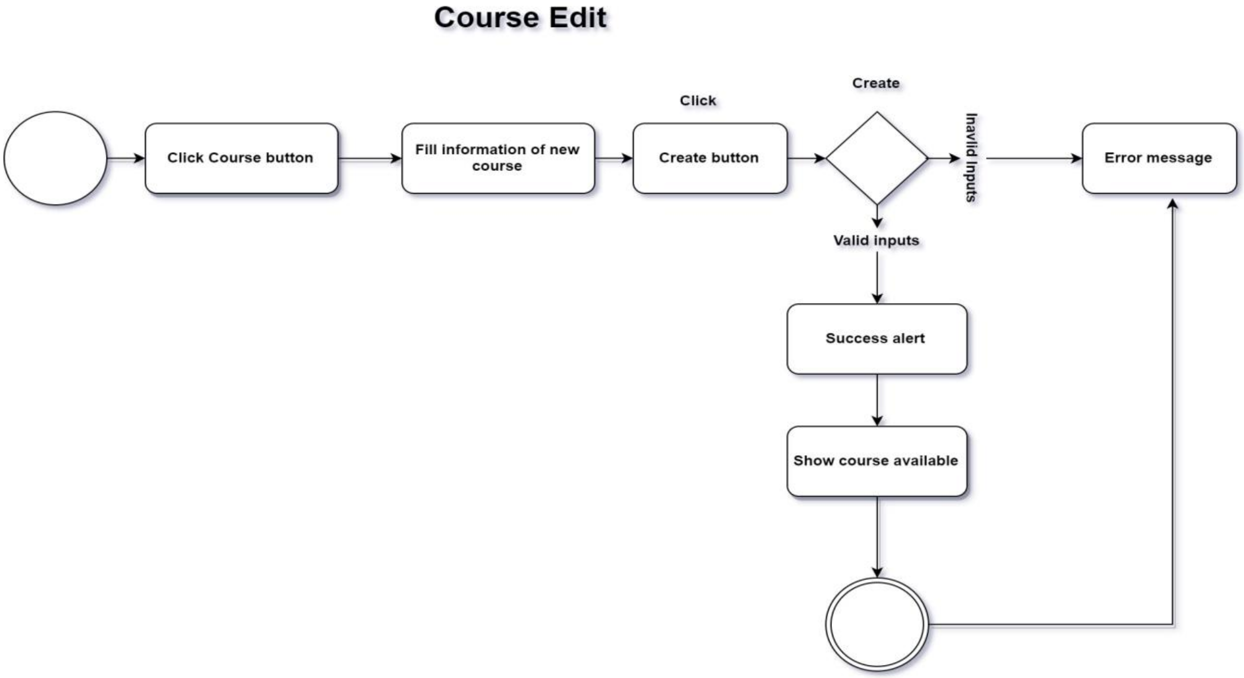


Figure 4.1.22: Activity diagram of Course Adding

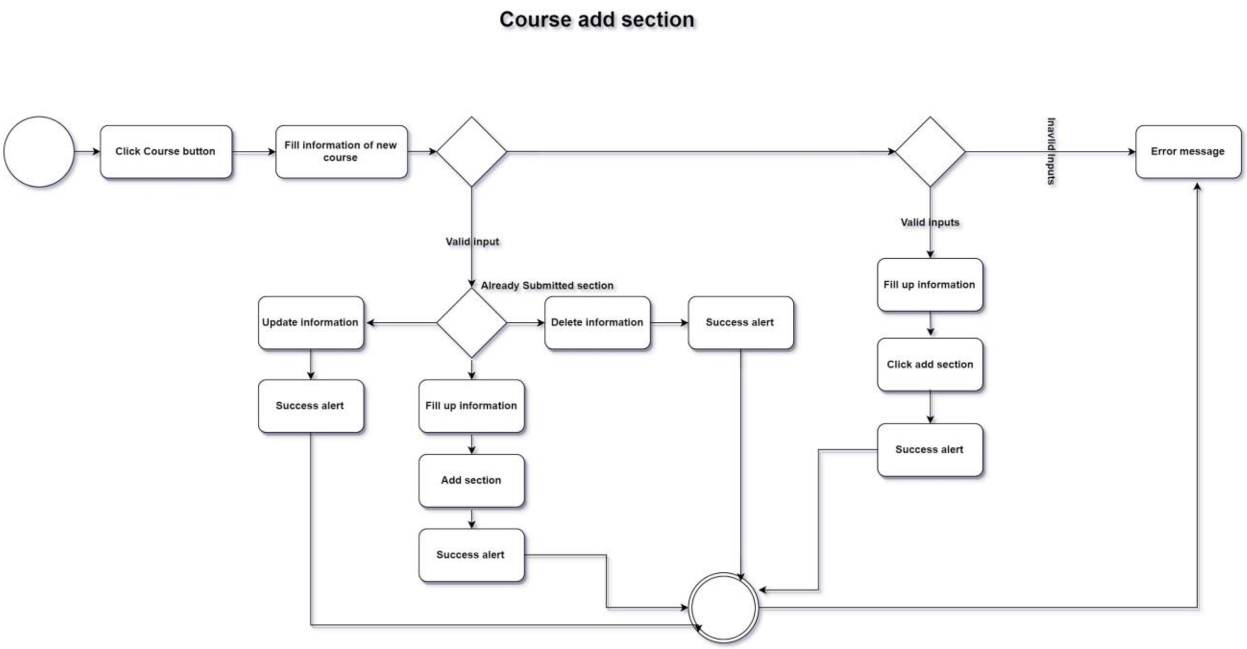


Figure 4.1.23: Activity diagram of Adding Section

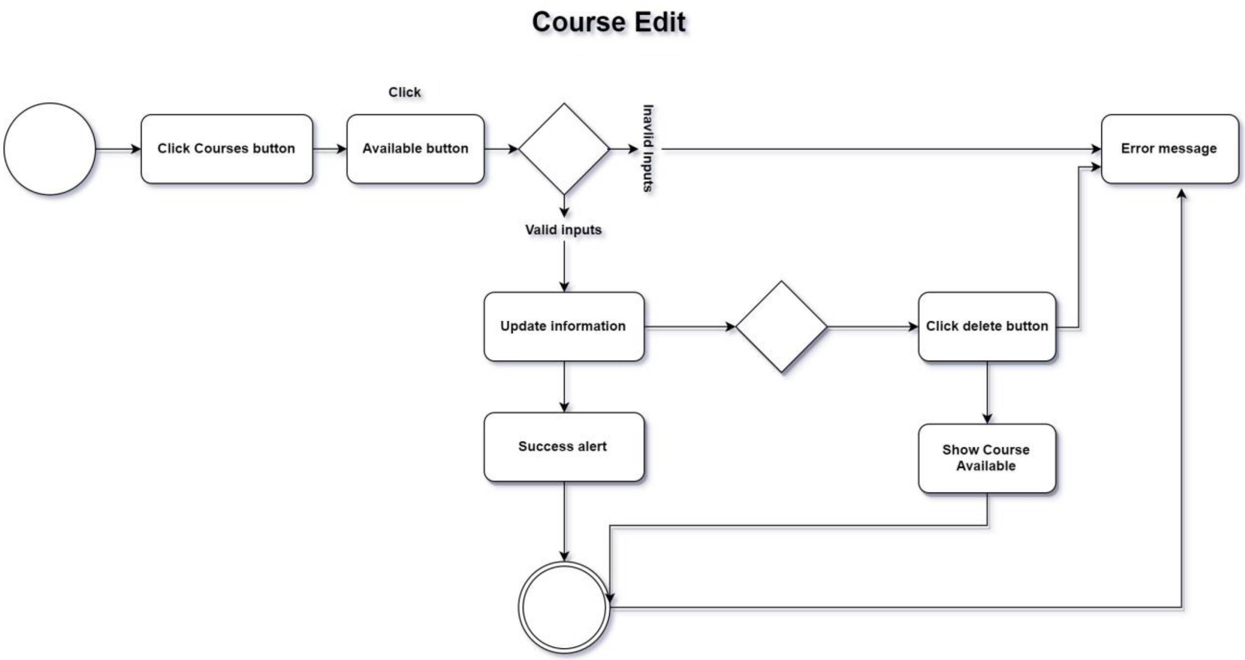


Figure 4.1.24: Activity diagram of Course Updating

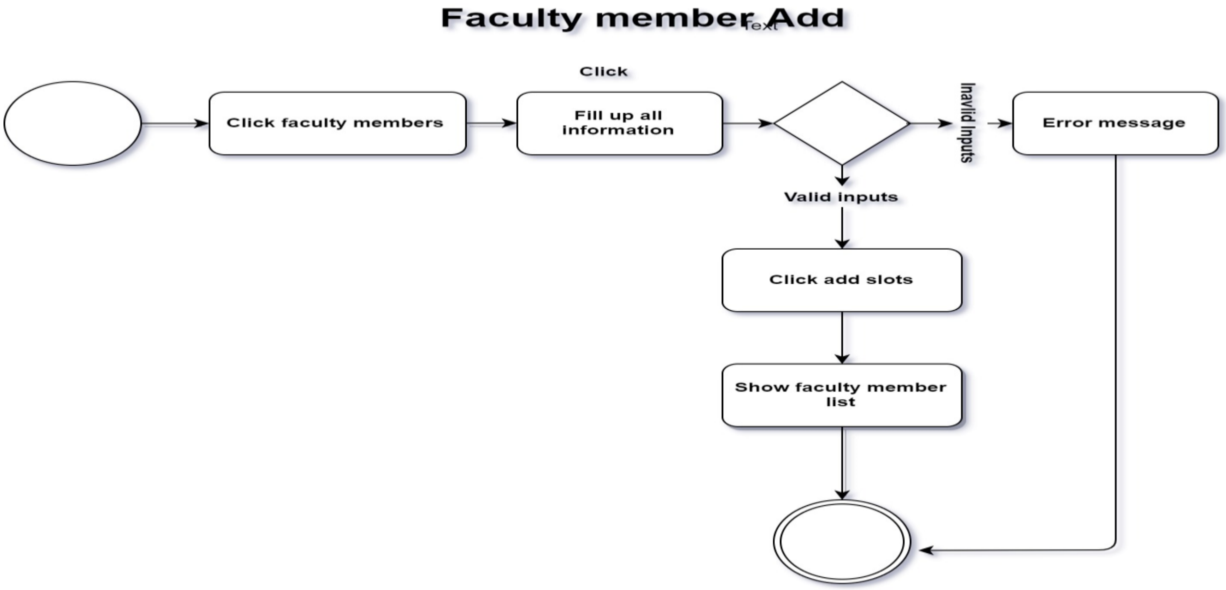


Figure 4.1.25: Activity diagram of Faculty member adding

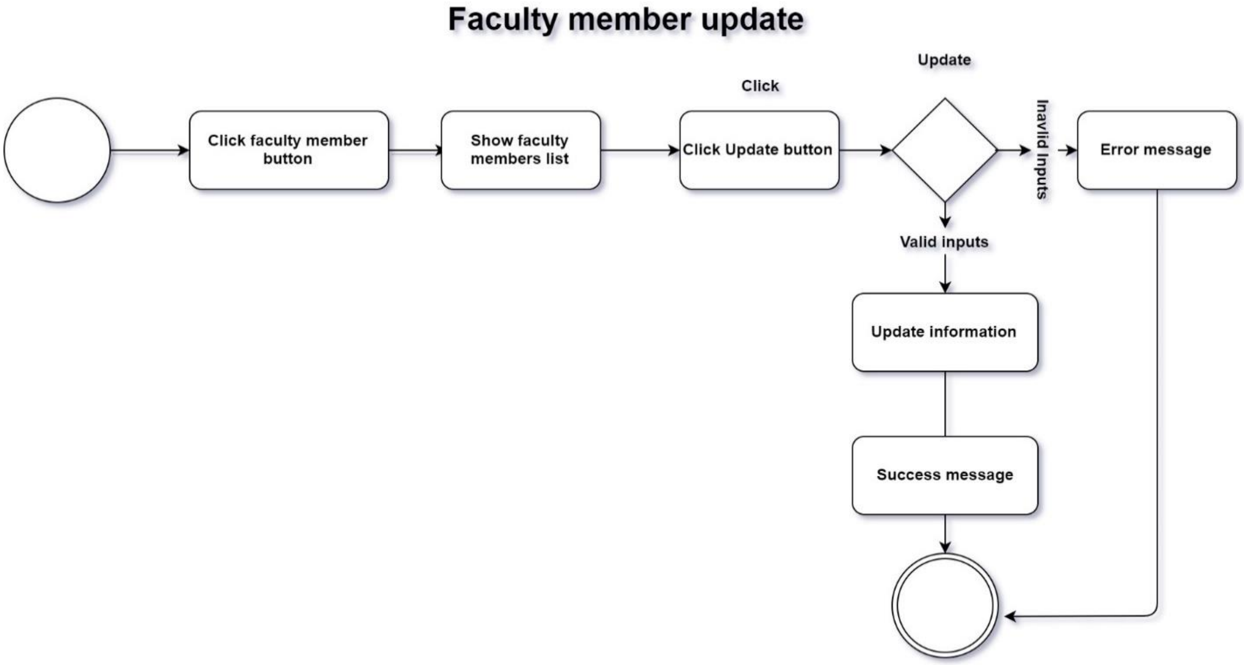


Figure 4.1.26: Activity diagram of Faculty member updating

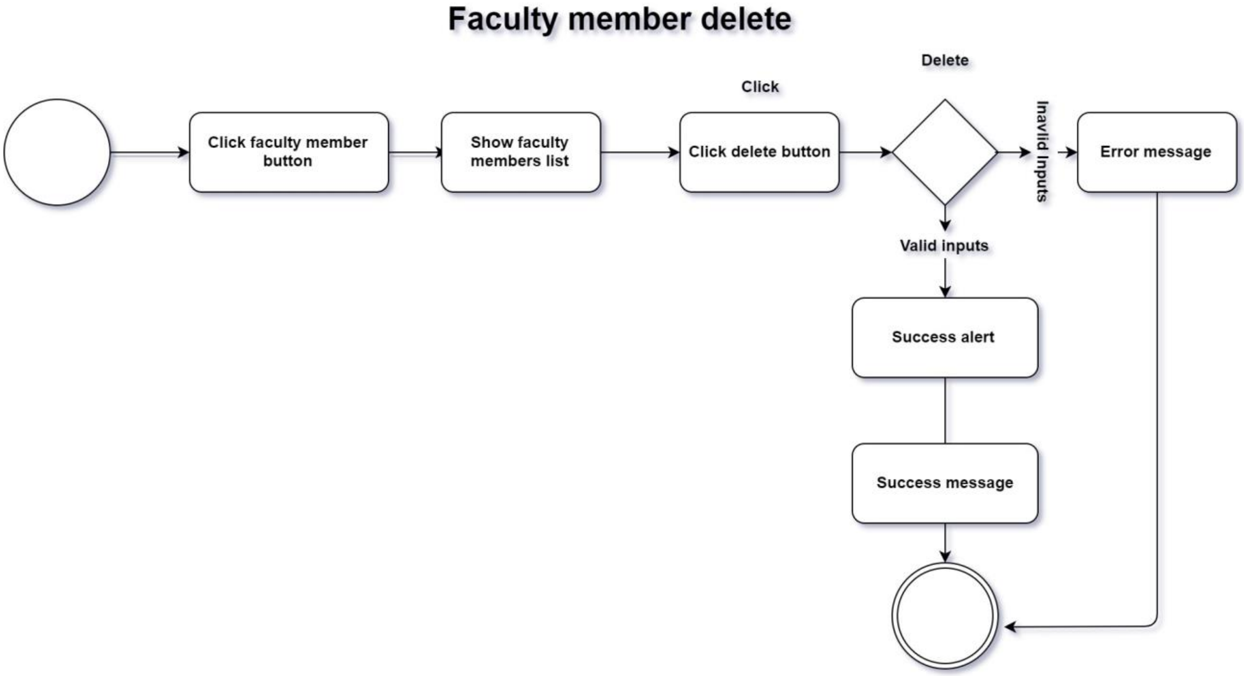


Figure 4.1.27: Activity diagram of Faculty member deleting

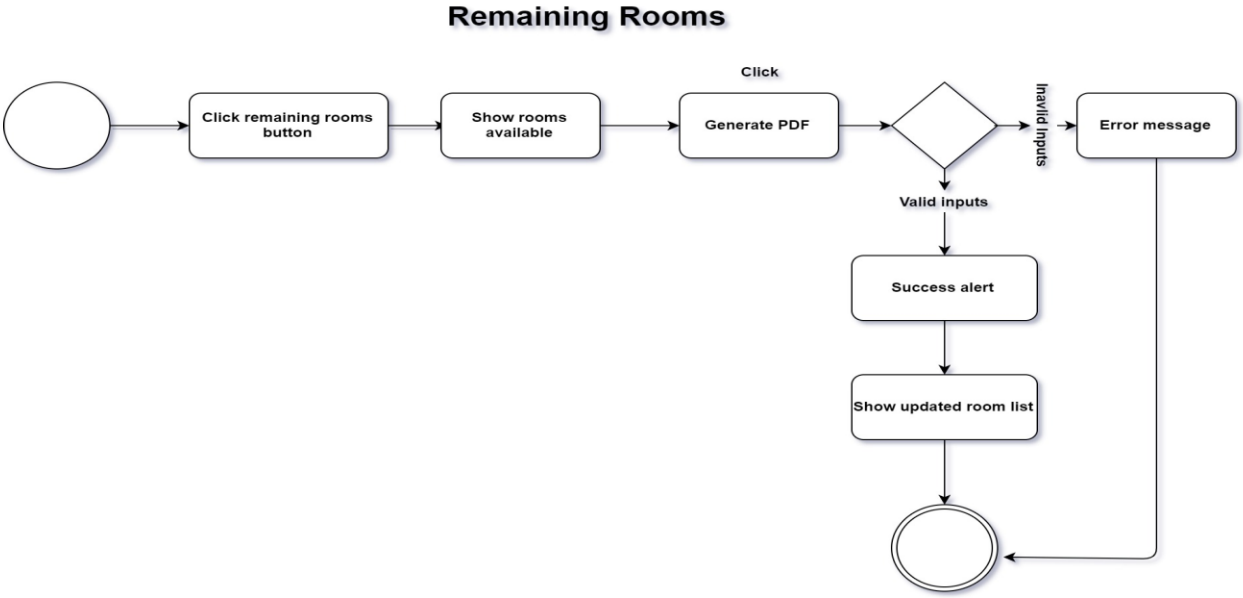


Figure 4.1.28: Activity diagram of Remaining

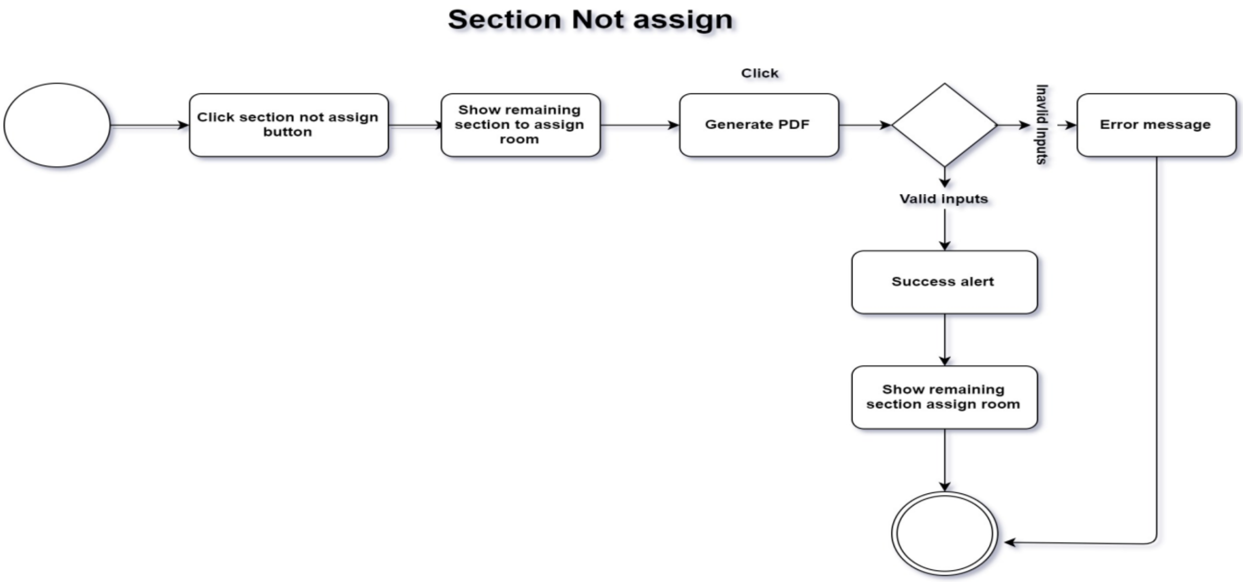

Section Not assign
Click section not assign button
Show remaining section to assign room
Click
Generate PDF
Inavlid inputs
Error message
Valid inputs
Success alert
Show remaining section assign room

Figure 4.1.29: Activity diagram of Section not assign

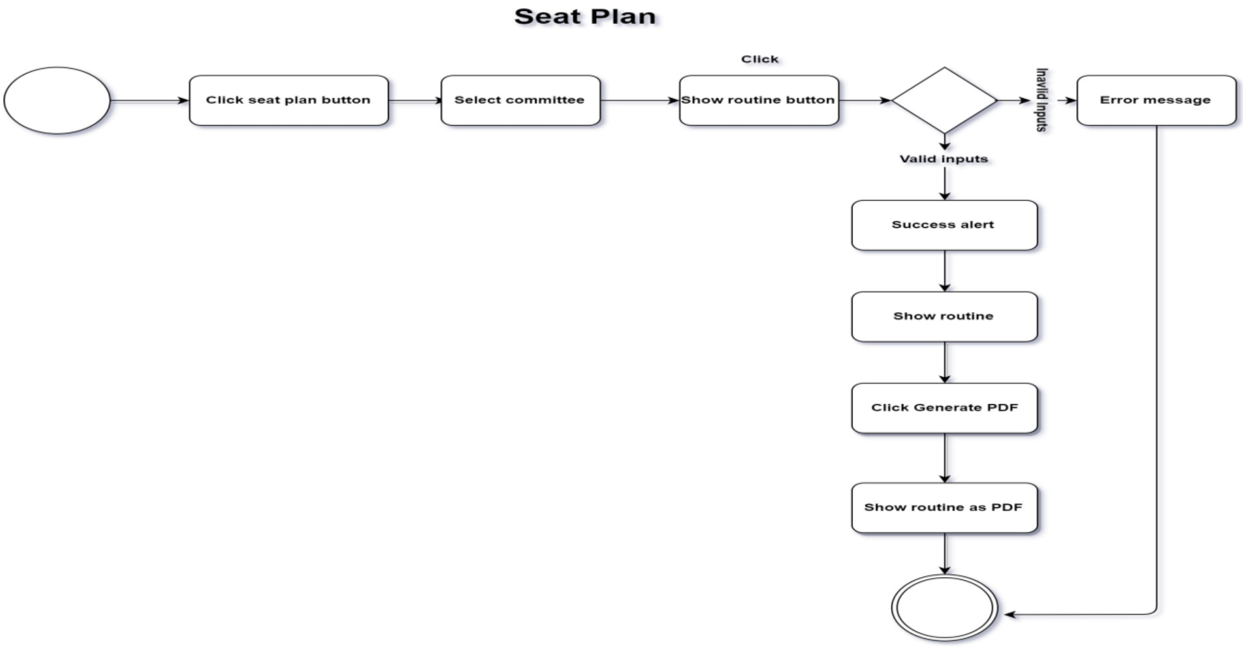


Figure 4.1.30: Activity diagram of Faculty Seat Planing

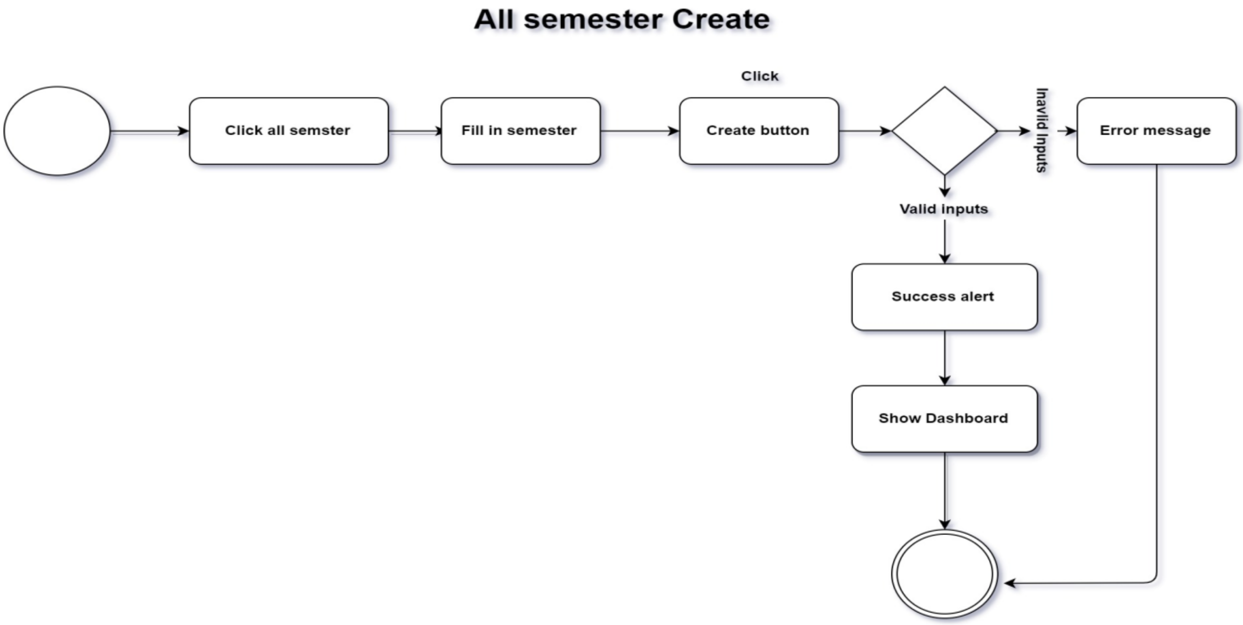


Figure 4.1.31: Activity diagram of All Semester Creating

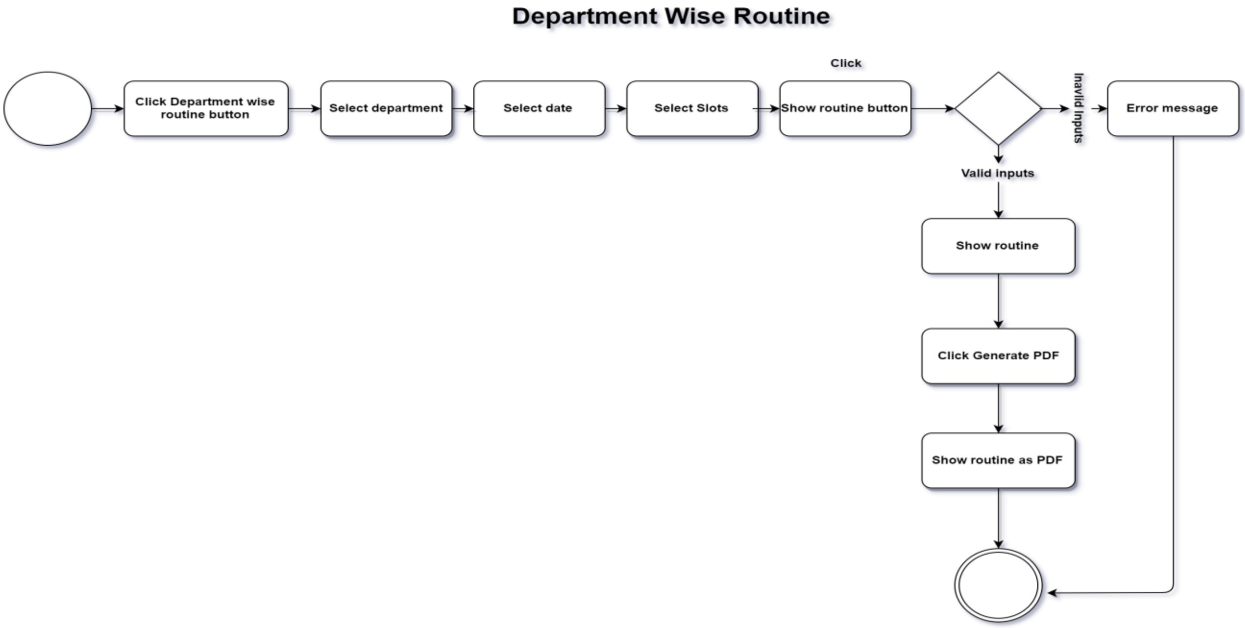


Figure 4.1.32: Activity diagram of Department Wise Routine

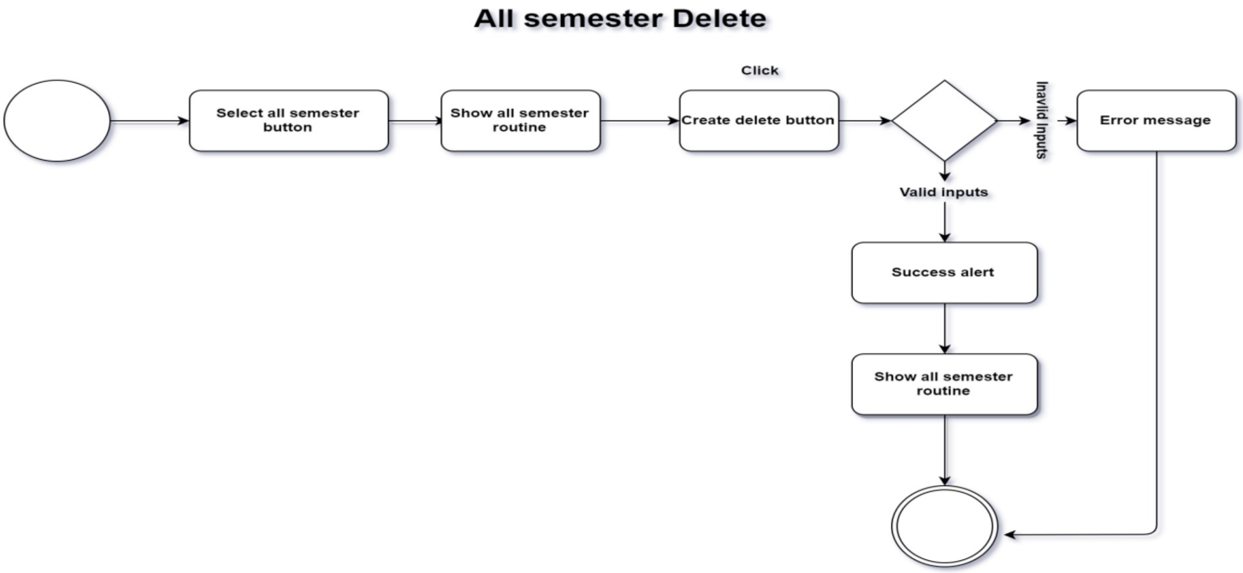


Figure 4.1.33: Activity diagram of All Semester Deleting

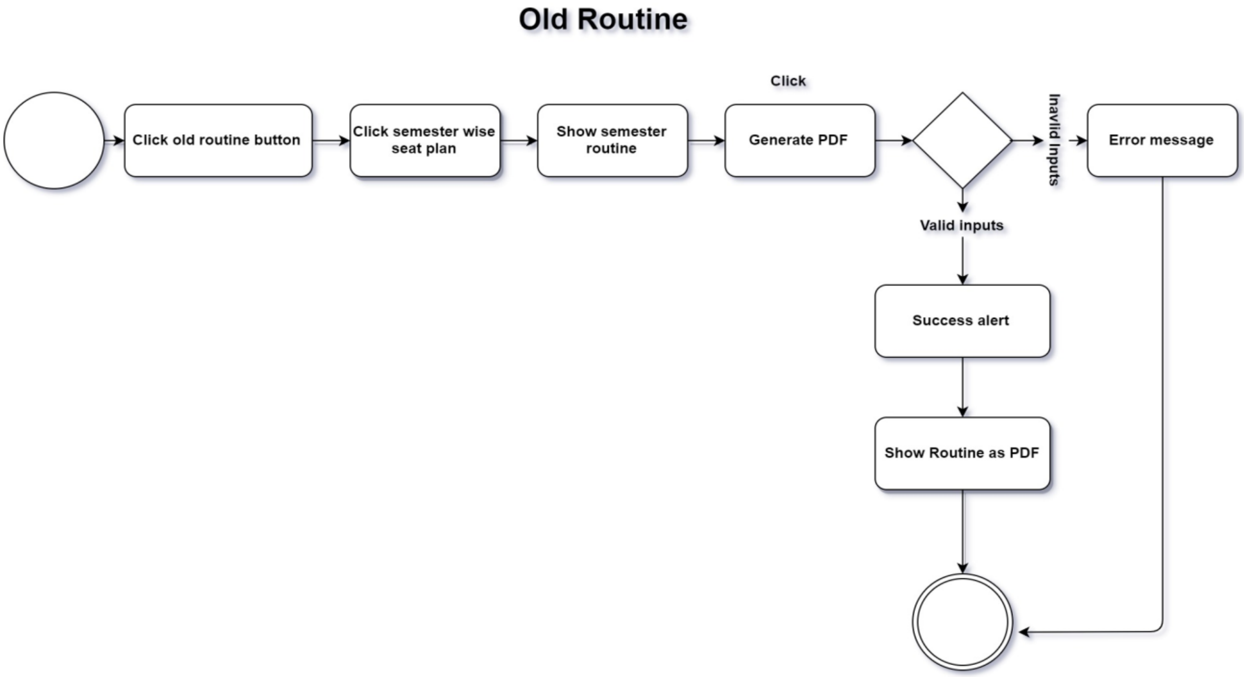


Figure 4.1.34: Activity diagram of Old Routine

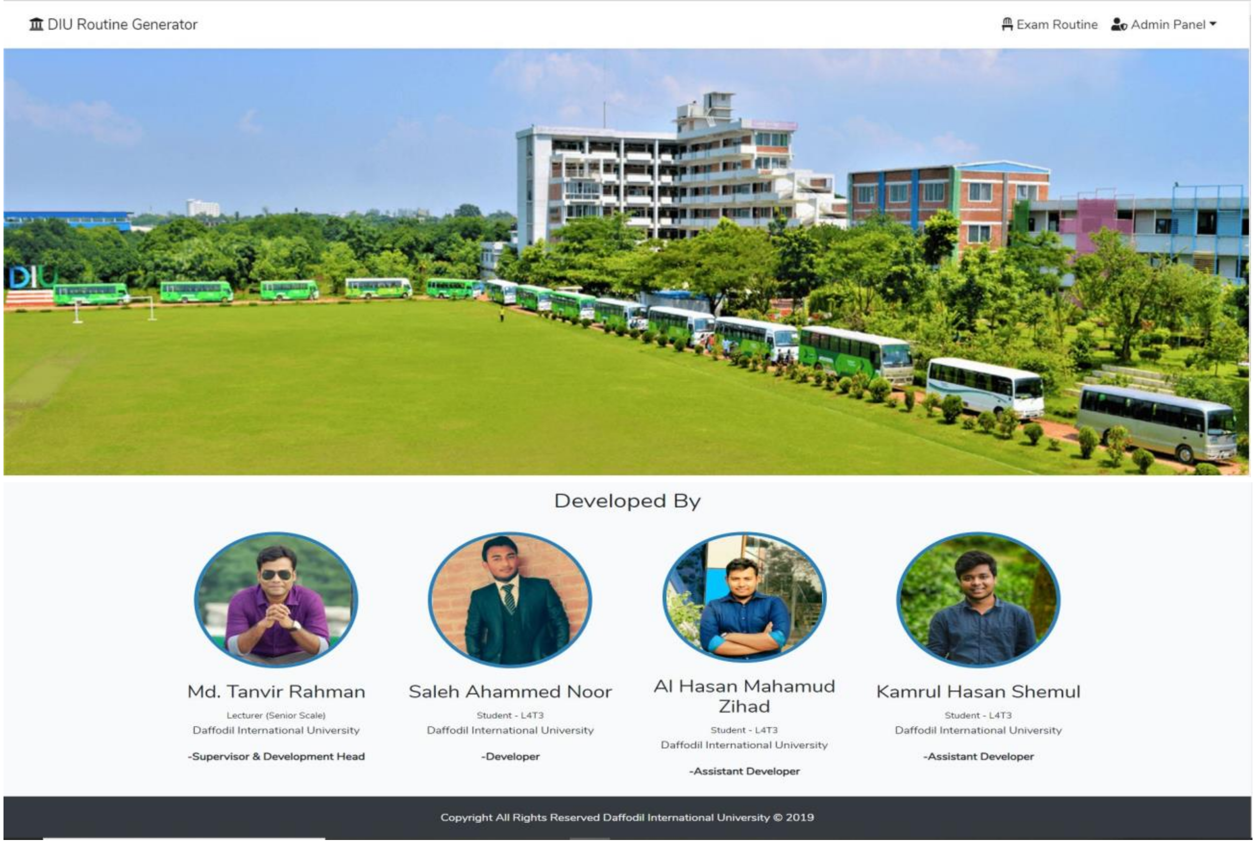
4.2Front End Design:

The project has many good featured and attractive user interfaces. A user of the system will be happy to see easy and good clear user interfaces.

Basically in the project technology used for designing purposes are html5, css3, JavaScript. Different plugins also used to enrich the design and interface, for example bootstrap, font awesome, monthly, data table, date picker, and more plugins.

The system has too many user interfaces to add on the report but that will be lengthy so here given some screenshot of those interfaces.

The figure 4.2.1 shows the Home page of the system



Developed By

Md. Tanvir Rahman
Lecturer (Senior Scale)
Daffodil International University
-Supervisor & Development Head

Saleh Ahammed Noor
Student - L4T3
Daffodil International University
-Developer

Al Hasan Mahamud Zihad
Student - L4T3
Daffodil International University
-Assistant Developer

Kamrul Hasan Shemul
Student - L4T3
Daffodil International University
-Assistant Developer

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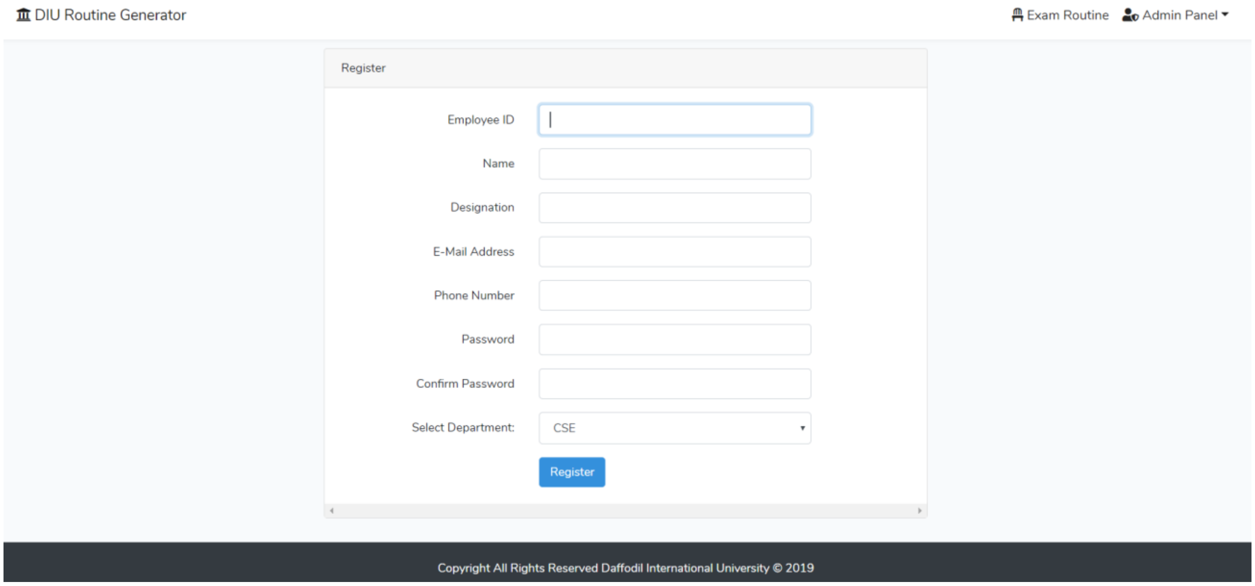
The figure 4.2.2 shows the login registration of the system



DIU Routine Generator

Exam Routine

Admin Panel

Register

Employee ID

Name

Designation

E-Mail Address

Phone Number

Password

Confirm Password

Select Department: CSE

Register

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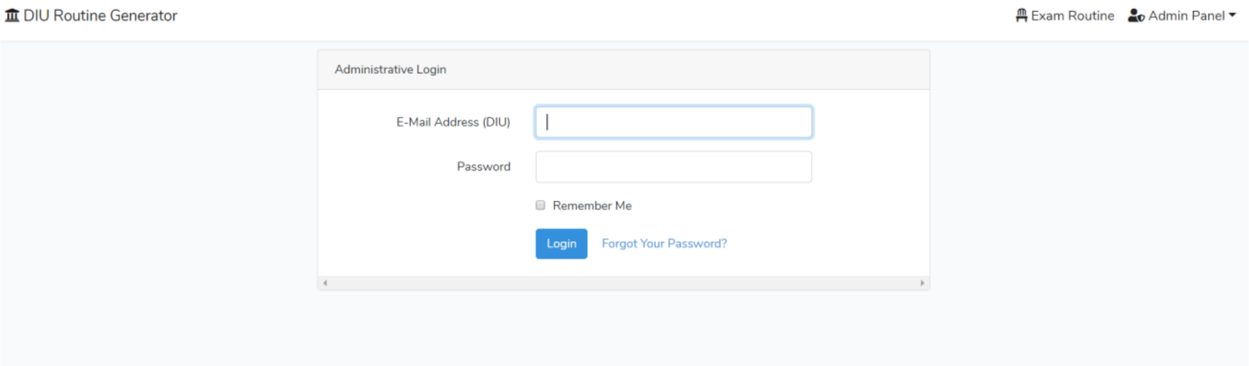
The figure 4.2.3 shows the login page of the system



DIU Routine Generator

Exam Routine

Admin Panel

Administrative Login

E-Mail Address (DIU)

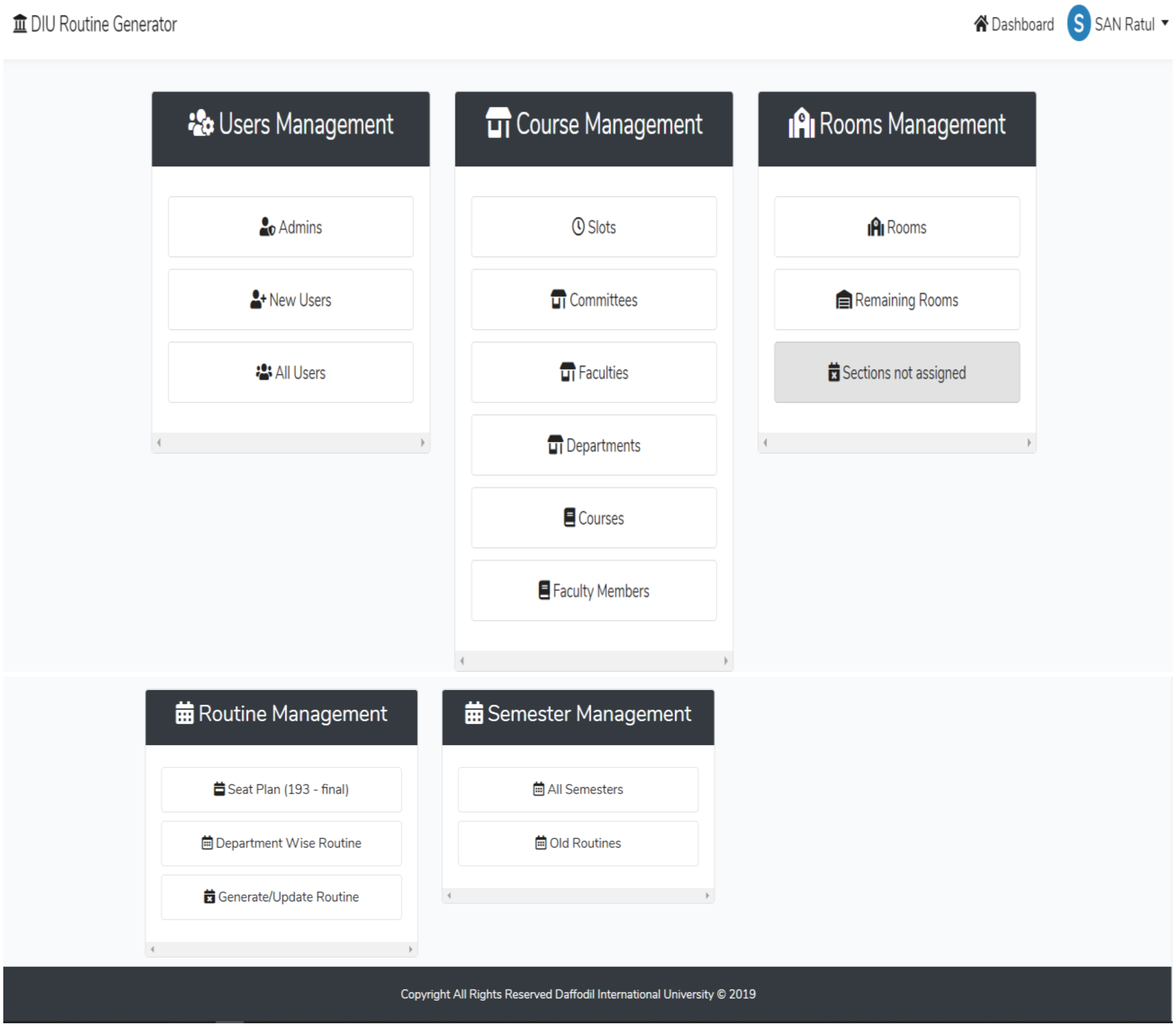
Password

□ Remember Me

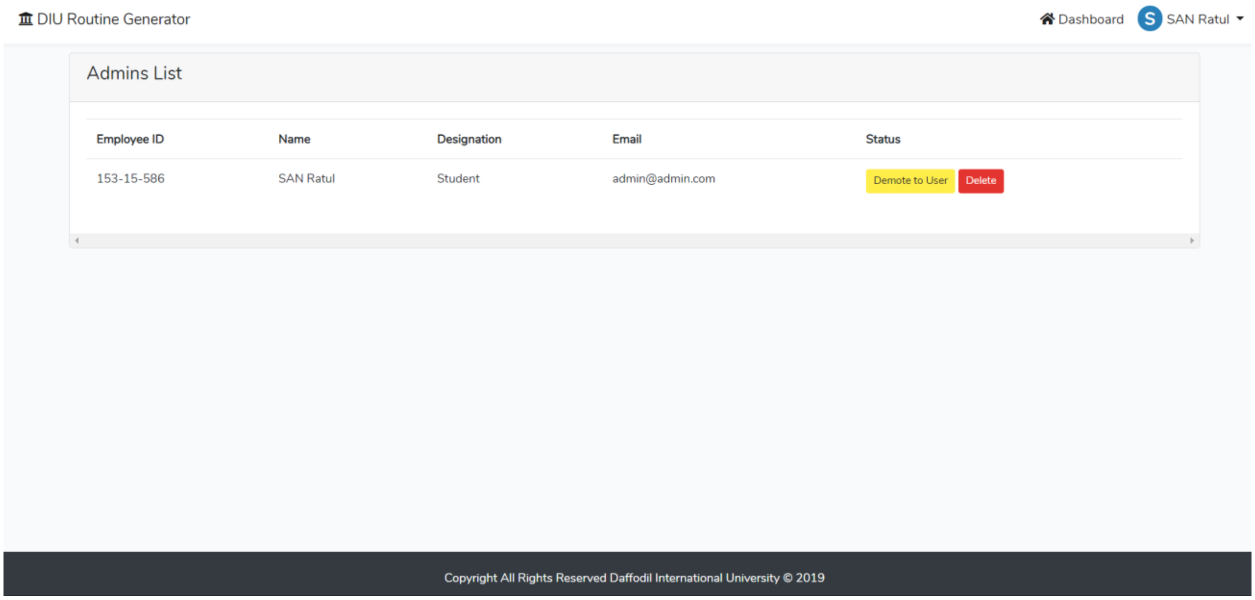
Login

Forgot Your Password?

Figure 4.2.4 shows the Dashboard of the system



The figure 4.2.5 shows the Super admin page of the system



Admins List

Employee ID	Name	Designation	Email	Status
153-15-586	SAN Ratul	Student	admin@admin.com	Demote to User Delete

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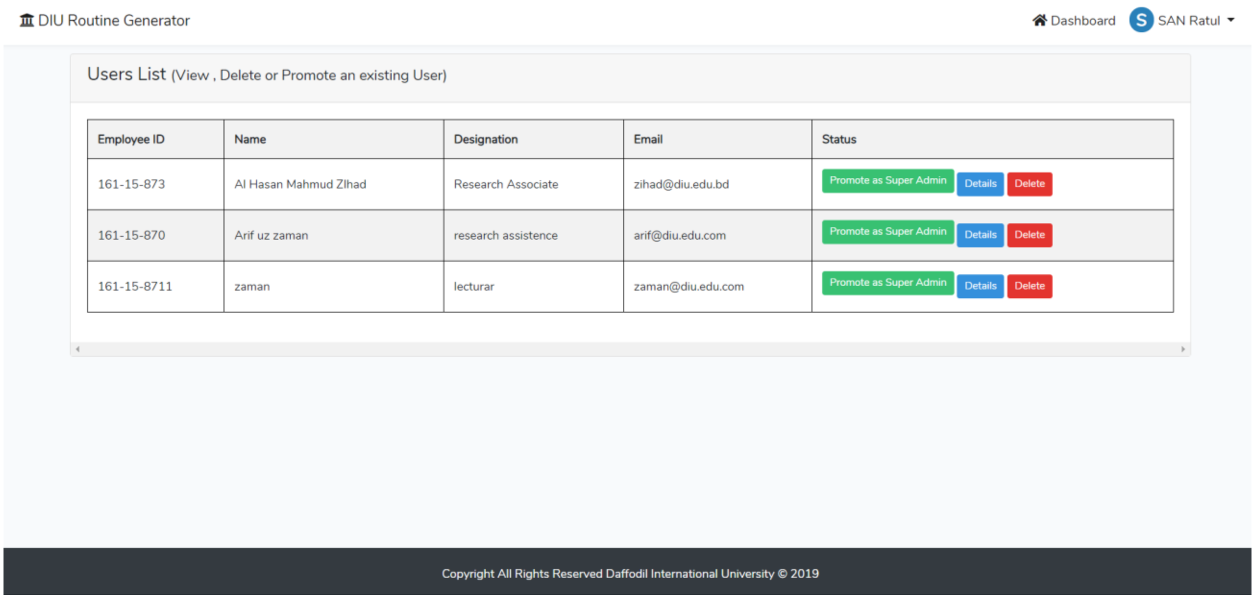
The figure 4.2.6 shows the All user page of the system



Users List (View , Delete or Promote an existing User)

Employee ID	Name	Designation	Email	Status
161-15-873	Al Hasan Mahmud Zlhad	Research Associate	zihad@diu.edu.bd	Promote as Super Admin Details Delete
161-15-870	Arif uz zaman	research assistence	arif@diu.edu.com	Promote as Super Admin Details Delete
161-15-8711	zaman	lecturar	zaman@diu.edu.com	Promote as Super Admin Details Delete

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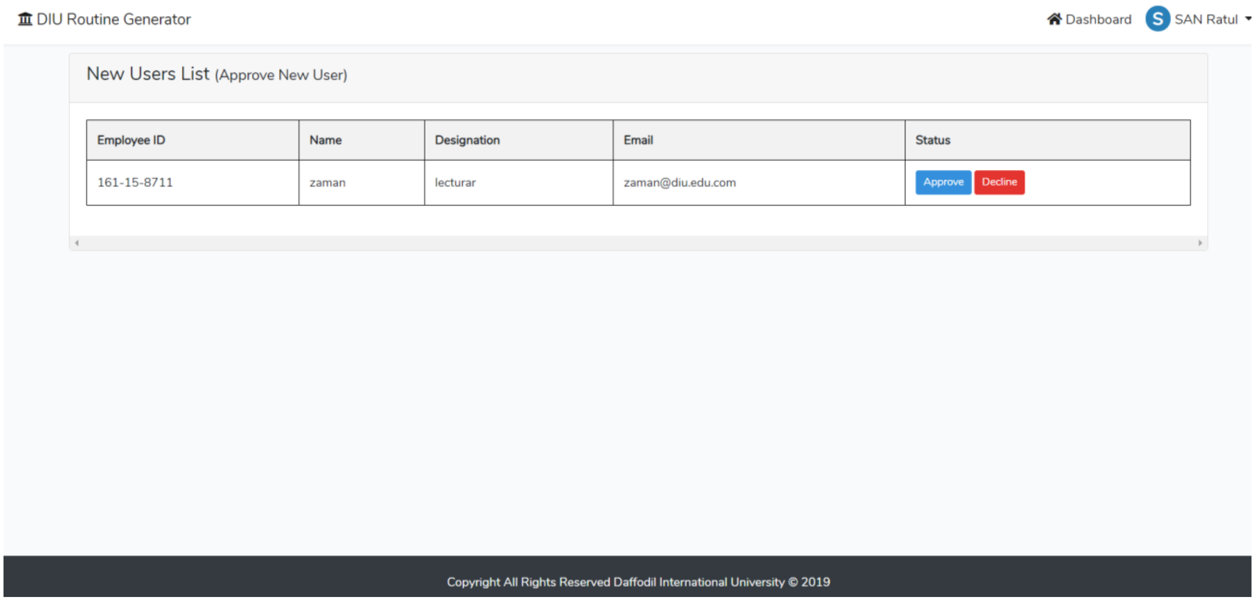
The figure 4.2.7 shows New User Page of the system



New Users List (Approve New User)

Employee ID	Name	Designation	Email	Status
161-15-8711	zaman	lecturar	zaman@diu.edu.com	Approve Decline

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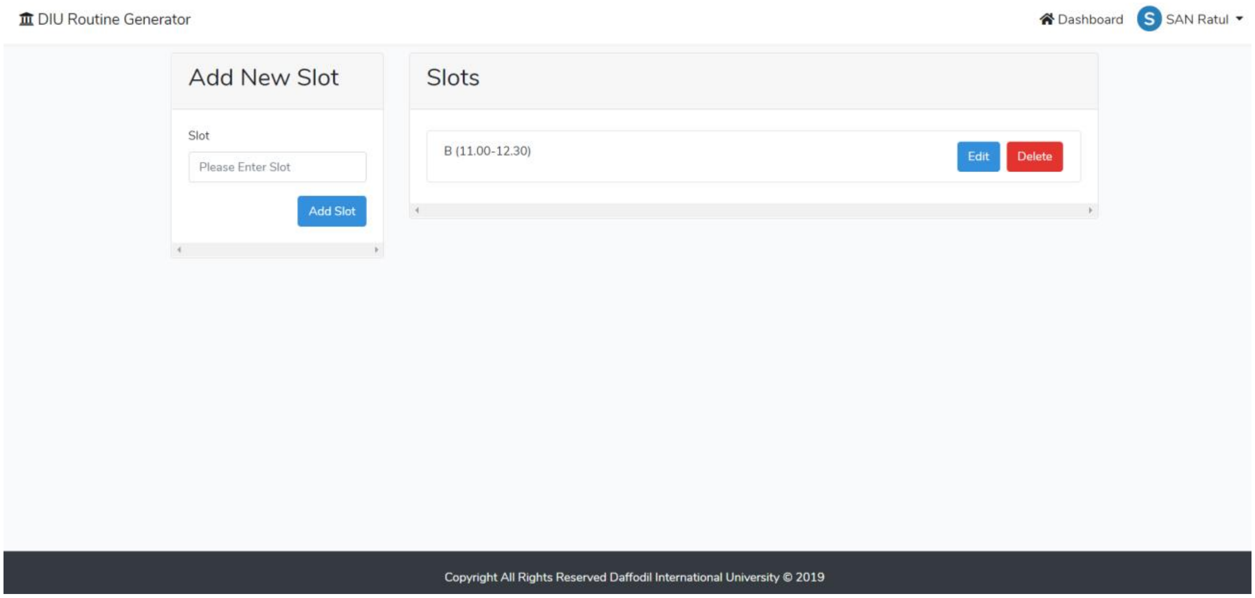
The figure 4.2.8 shows the Add slot page of the system



Add New Slot

Slot

Please Enter Slot

Slots

B (11.00-12.30)

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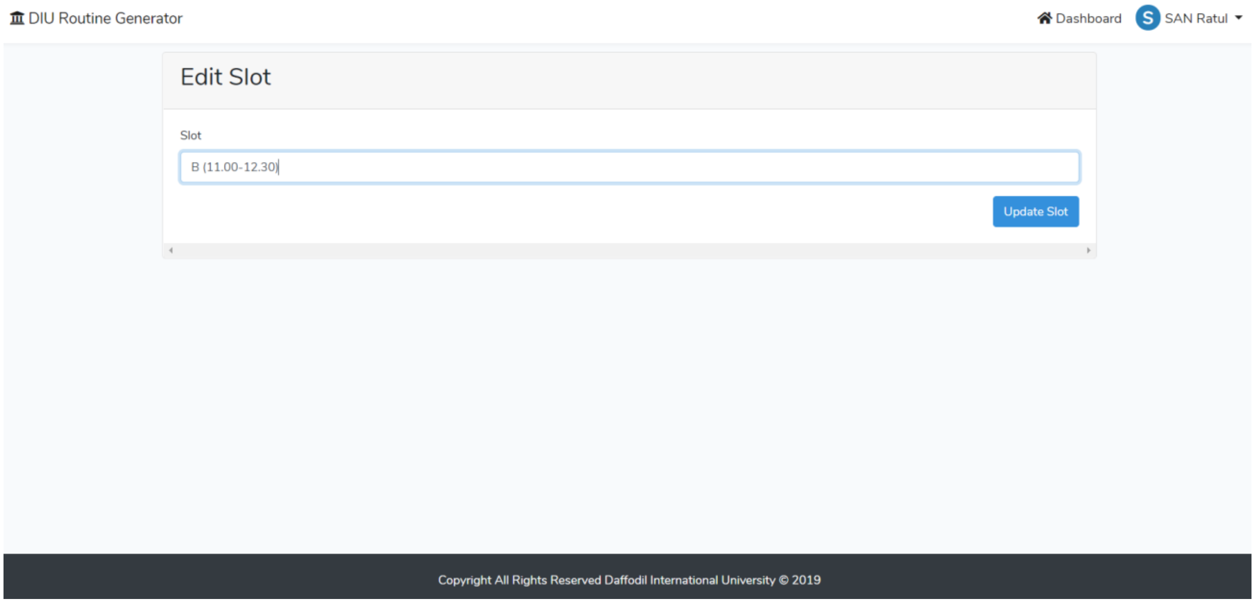
The figure 4.2.9 shows the update slot page of the system



Slot: B (11.00-12.30

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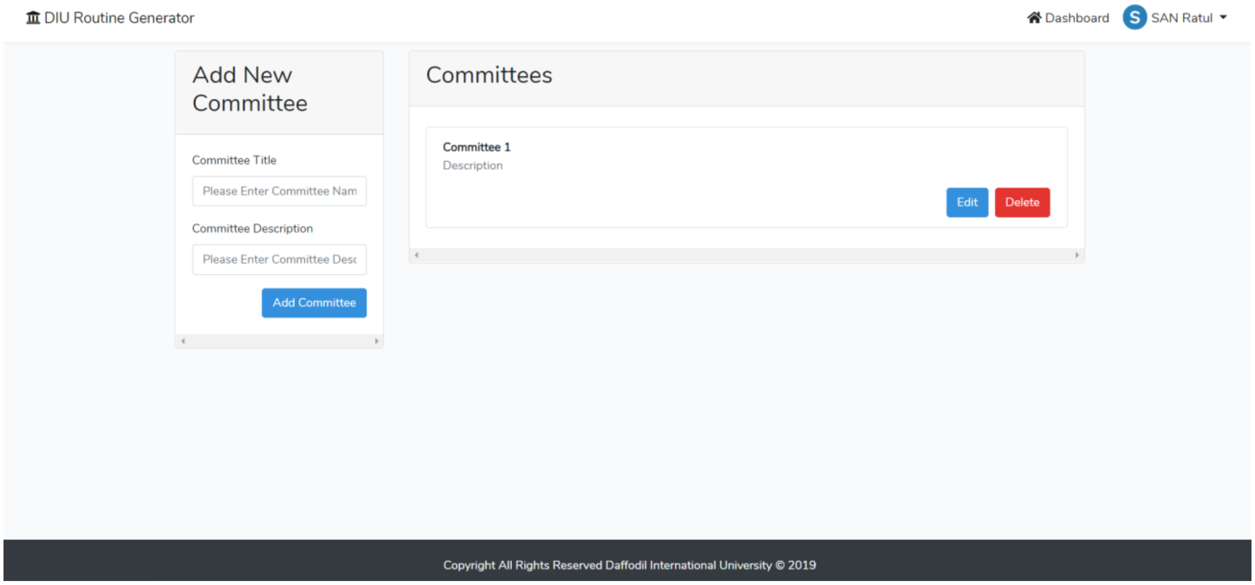
The figure 4.2.10 shows the Add New Committee page of the system



Committee Title: Please Enter Committee Nam

Committee Description: Please Enter Committee Desc

Committee 1

Description

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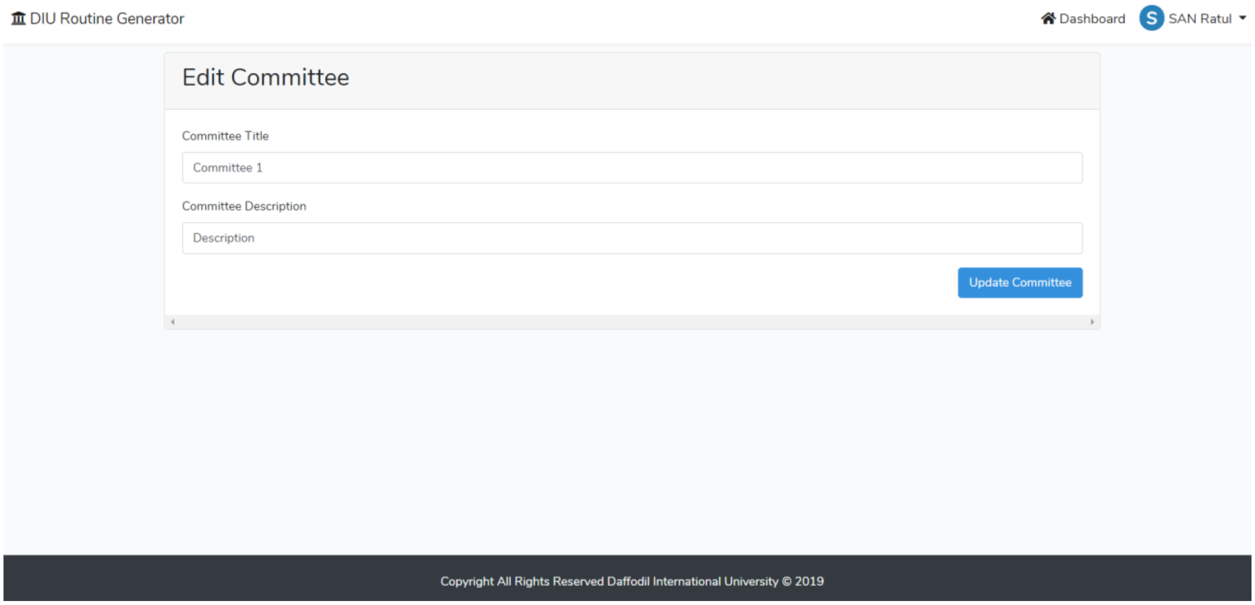
The figure 4.2.11 shows the Updating Committee page of the system



Edit Committee

Committee Title

Committee 1

Committee Description

Description

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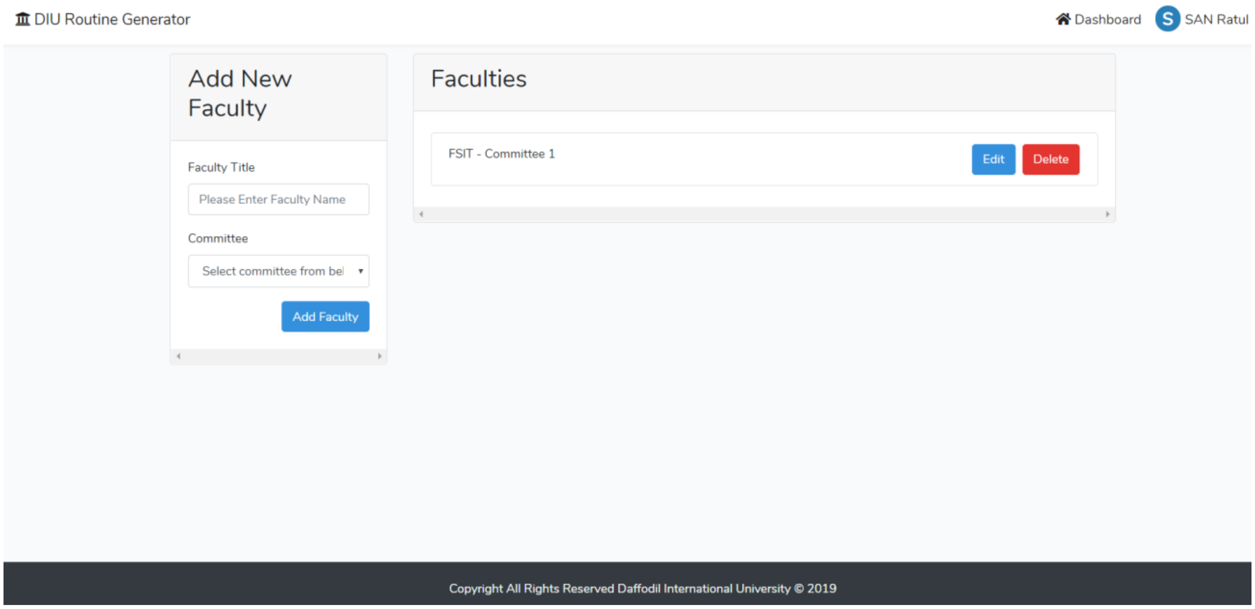
The figure 4.2.12 shows the Add New Faculty page of the system



Add New Faculty

Faculty Title

Please Enter Faculty Name

Committee

Select committee from bel

Faculties

FSIT - Committee 1

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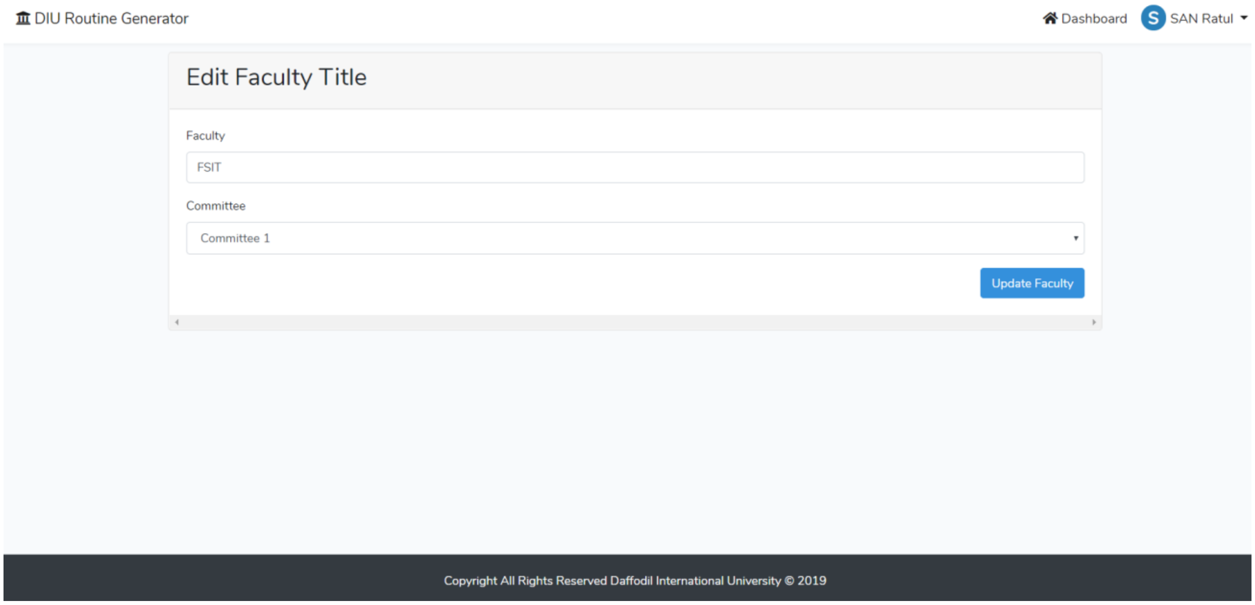
The figure 4.2.13 shows the Update Faculty page of the system



Edit Faculty Title

Faculty: FSIT

Committee: Committee 1

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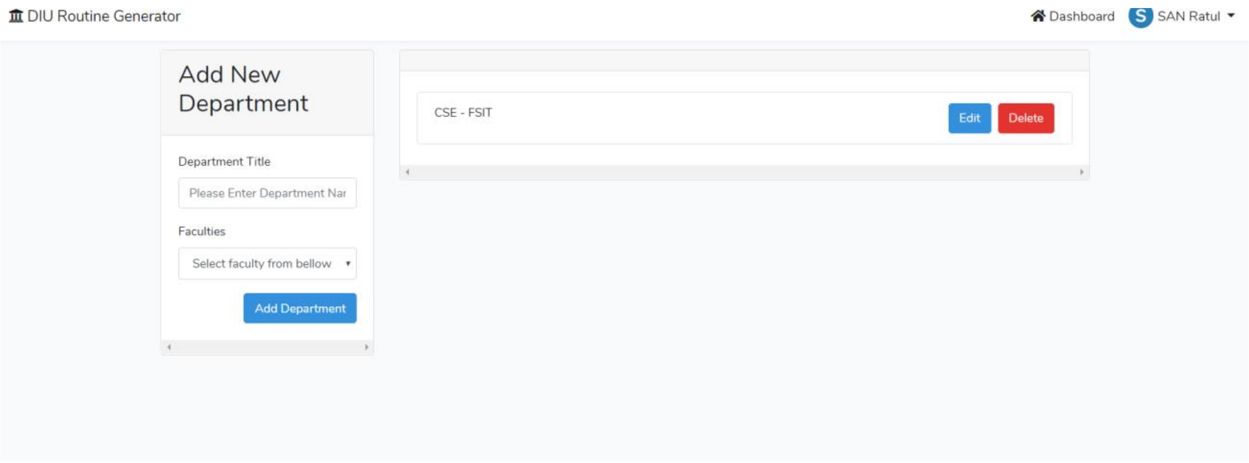
The figure 4.2.14 shows the Add New Department page of the system



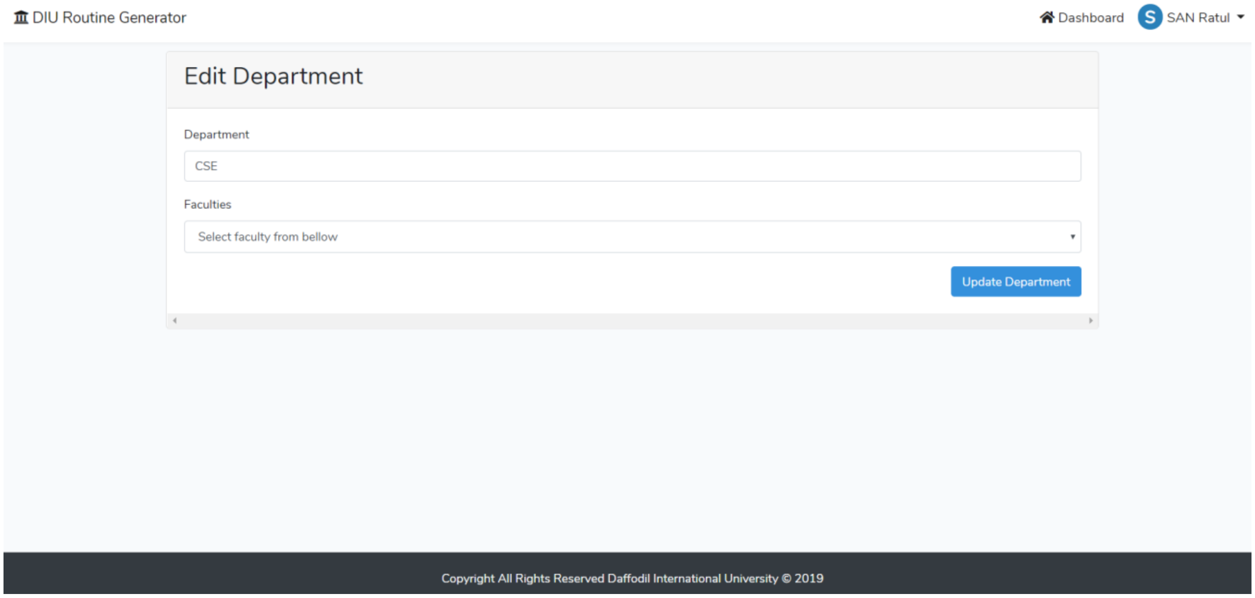
Add New Department

Department Title: Please Enter Department Nar

Faculties: Select faculty from bellow

CSE - FSIT

The figure 4.2.15 shows the Add Update Department page of the system

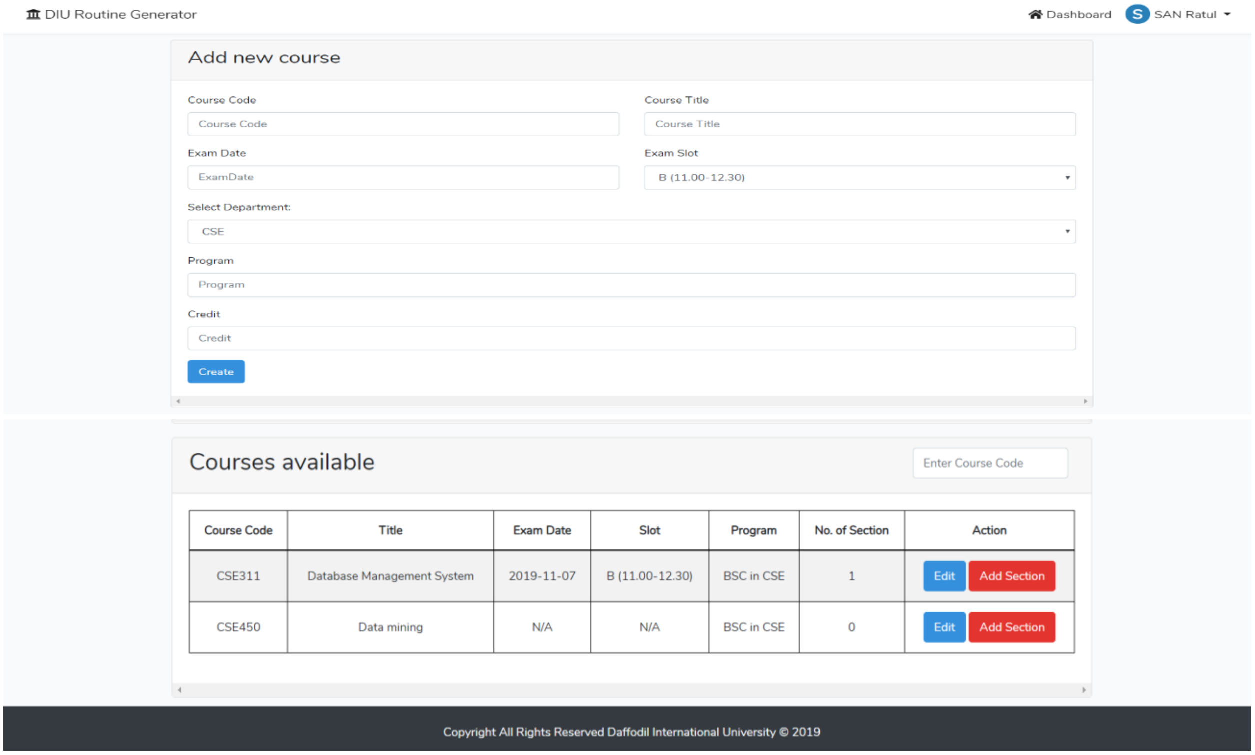

DIU Routine Generator
Dashboard
S SAN Ratul
Update Department
Copyright All Rights Reserved Daffodil International University © 2019

Edit Department

Department: CSE

Faculties: Select faculty from bellow

The figure 4.2.16 shows the Add New Course and Add Section page of the system


DIU Routine Generator
Dashboard
S SAN Ratul
Create
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Add new course

Course Code: Course Code

Course Title: Course Title

Exam Date: ExamDate

Exam Slot: B (11.00-12.30)

Select Department: CSE

Program: Program

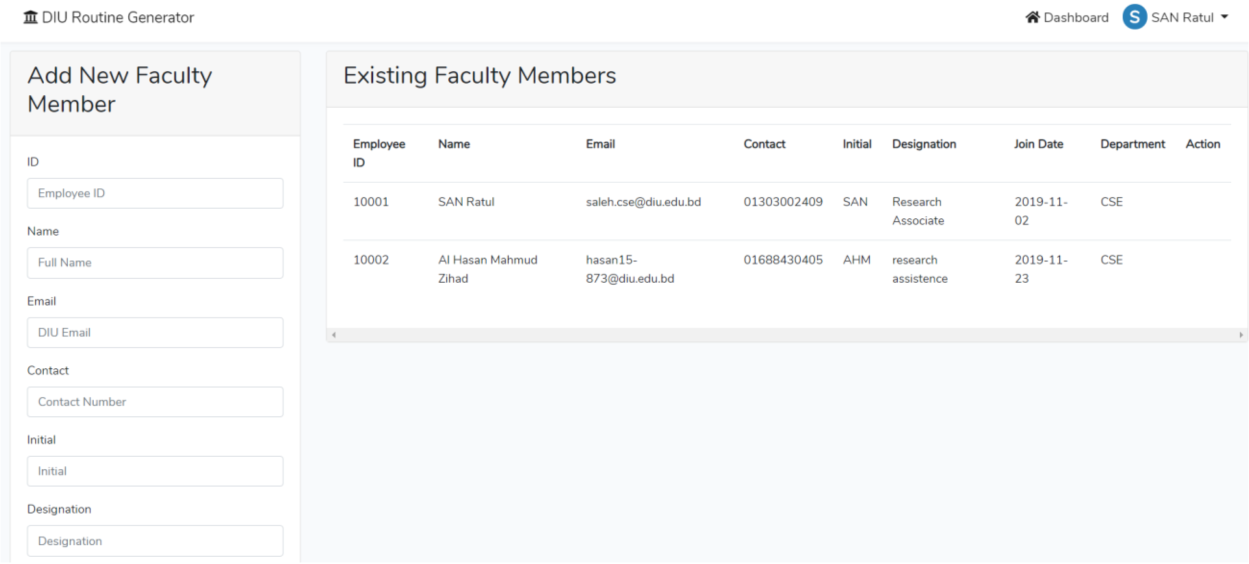
Credit: Credit

Courses available

Enter Course Code

Course Code	Title	Exam Date	Slot	Program	No. of Section	Action
CSE311	Database Management System	2019-11-07	B (11.00-12.30)	BSC in CSE	1	Edit Add Section
CSE450	Data mining	N/A	N/A	BSC in CSE	0	Edit Add Section

The figure 4.2.17 shows the Add New Faculty Members page of the system



Add New Faculty Member

ID
Employee ID

Name
Full Name

Email
DIU Email

Contact
Contact Number

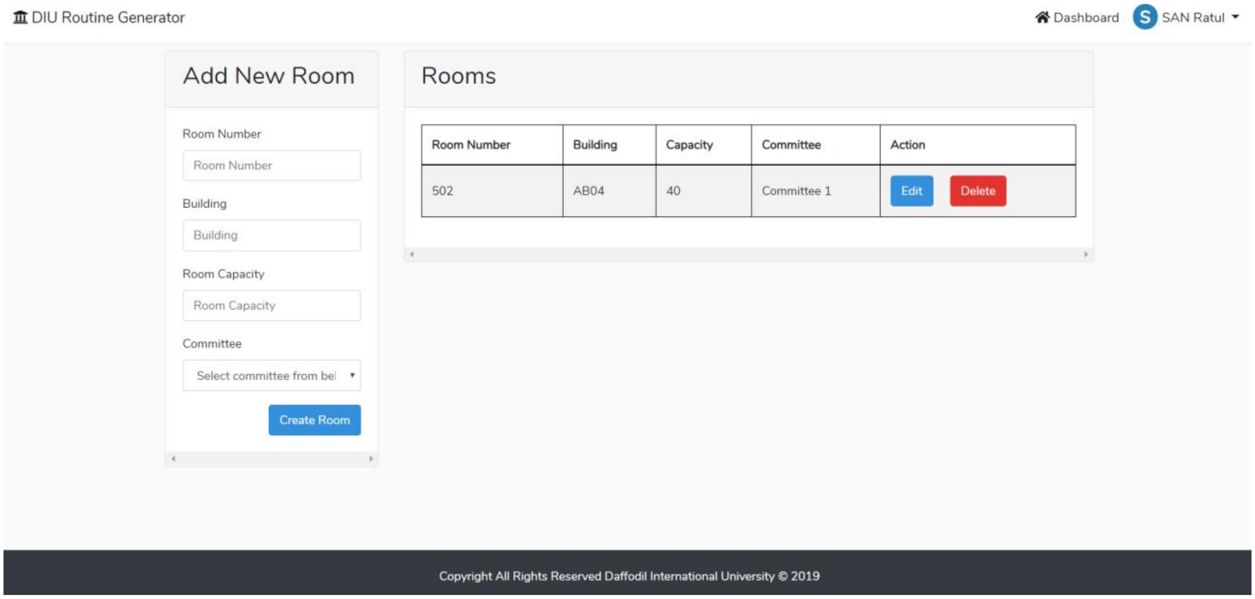
Initial
Initial

Designation
Designation

Existing Faculty Members

Employee ID	Name	Email	Contact	Initial	Designation	Join Date	Department	Action
10001	SAN Ratul	saleh.cse@diu.edu.bd	01303002409	SAN	Research Associate	2019-11-02	CSE	
10002	Al Hasan Mahmud Zihad	hasan15-873@diu.edu.bd	01688430405	AHM	research assistence	2019-11-23	CSE	

The figure 4.2.18 shows the Add New Room page of the system



Add New Room

Room Number
Room Number

Building
Building

Room Capacity
Room Capacity

Committee
Select committee from bel

Rooms

Room Number	Building	Capacity	Committee	Action
502	AB04	40	Committee 1	Edit Delete

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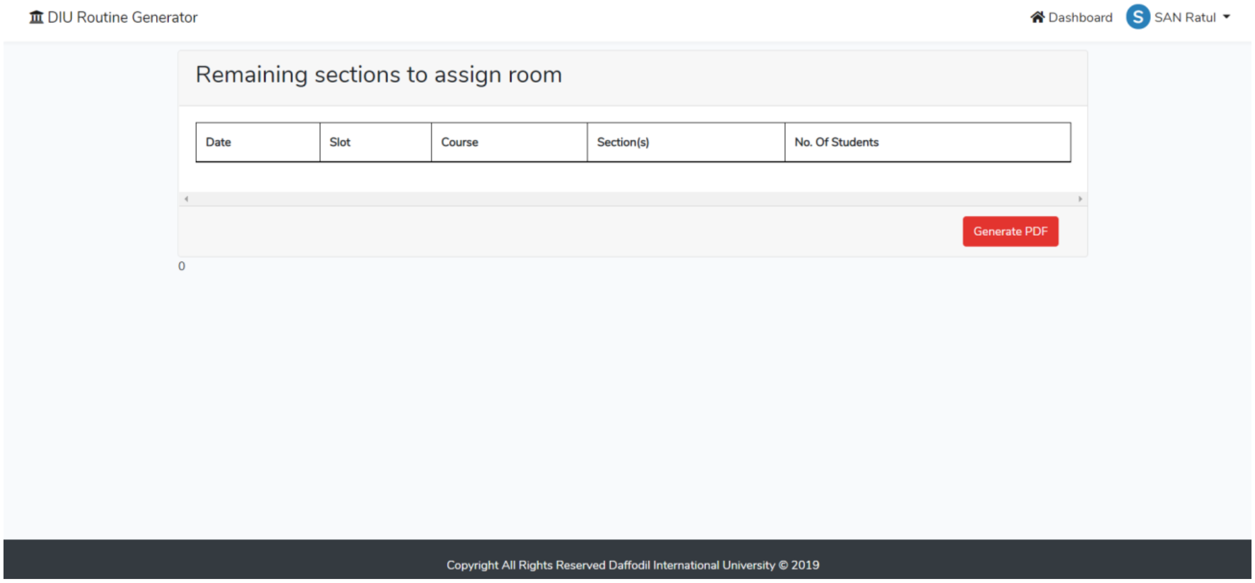
The figure 4.2.19 shows the Remaining Section to assign room page of the system



Remaining sections to assign room

Date	Slot	Course	Section(s)	No. Of Students

0

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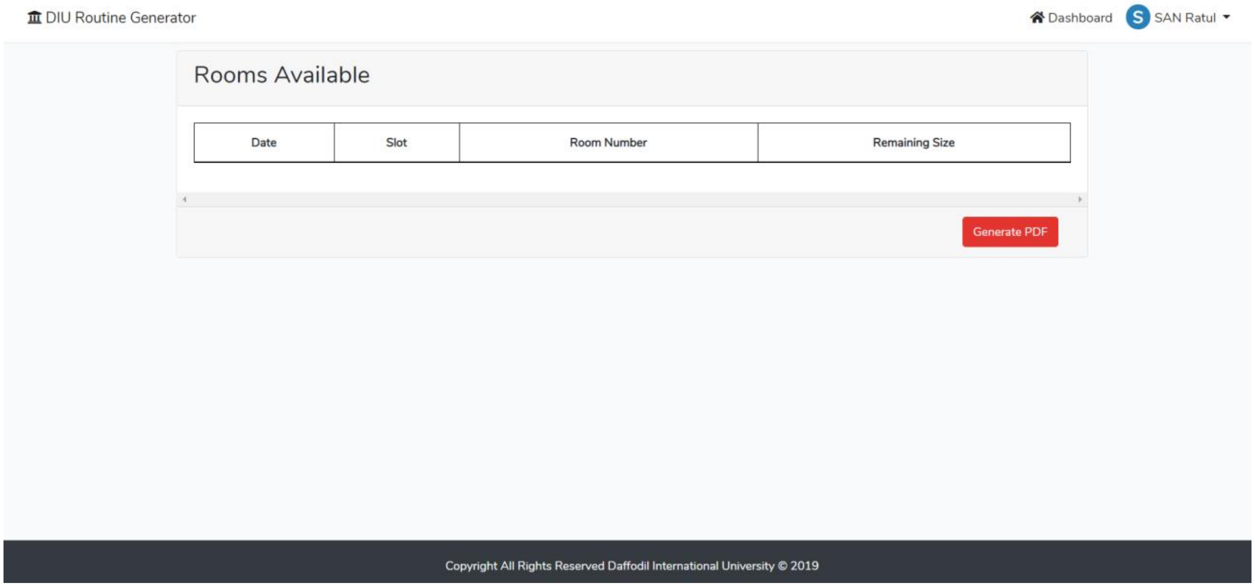
The figure 4.2.20 shows the Rooms Available page of the system



Rooms Available

Date	Slot	Room Number	Remaining Size

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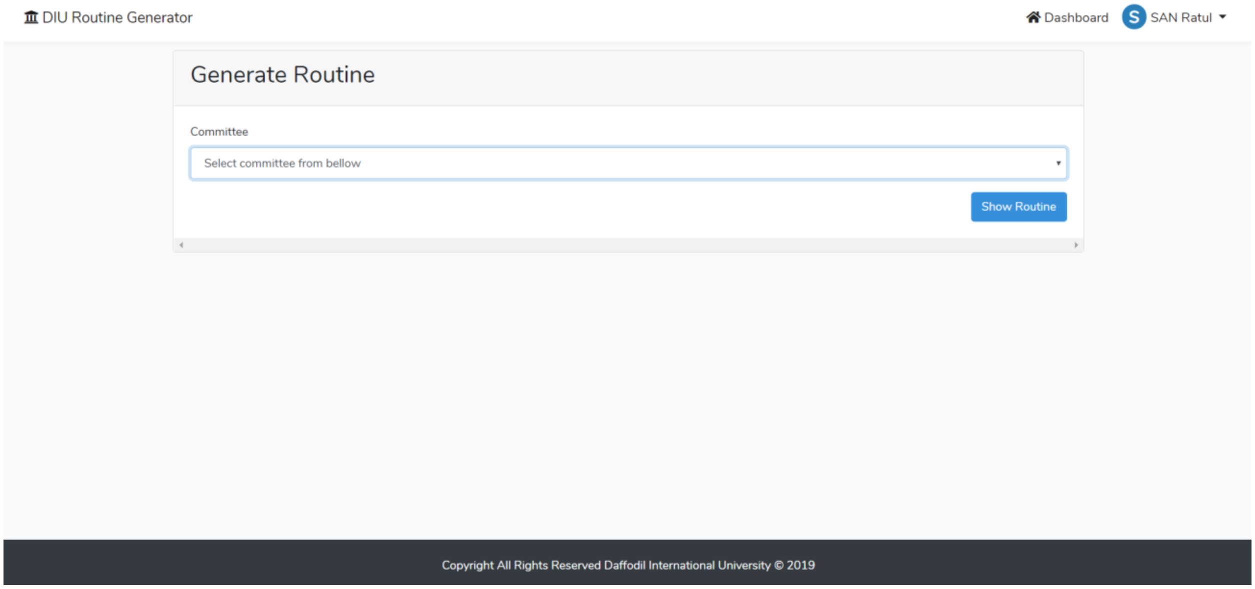
Figure 4.2.21 shows the Seat Plan page of the system



Generate Routine

Committee

Select committee from bellow

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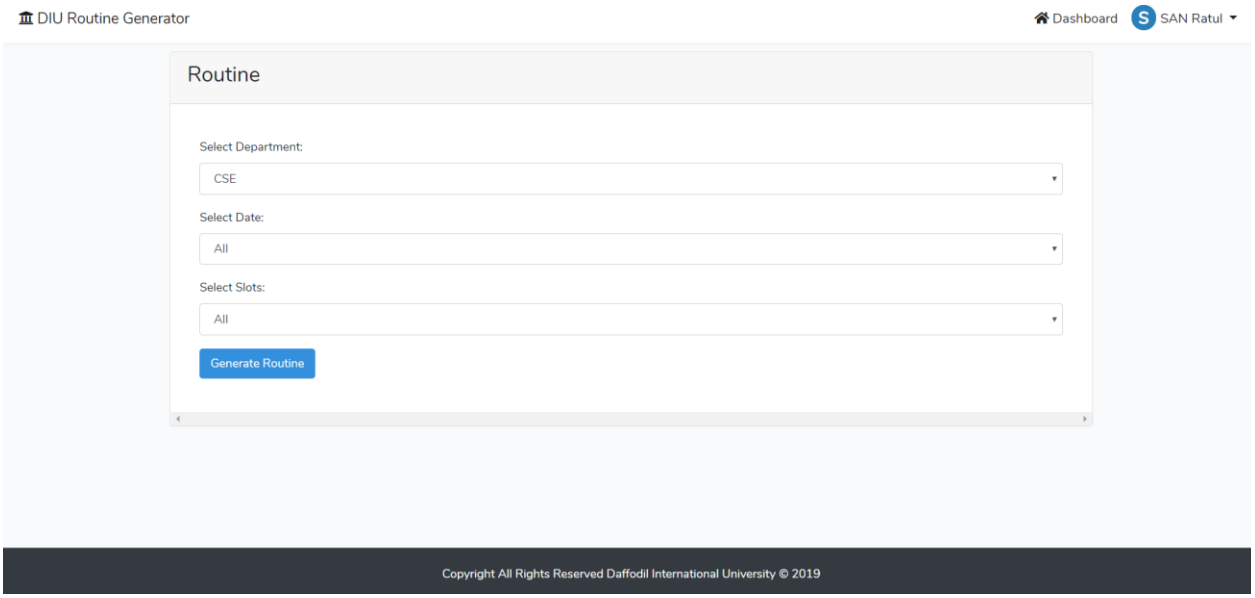
The figure 4.2.22 shows the Department wise routine page of the system



Routine

Select Department: CSE

Select Date: All

Select Slots: All

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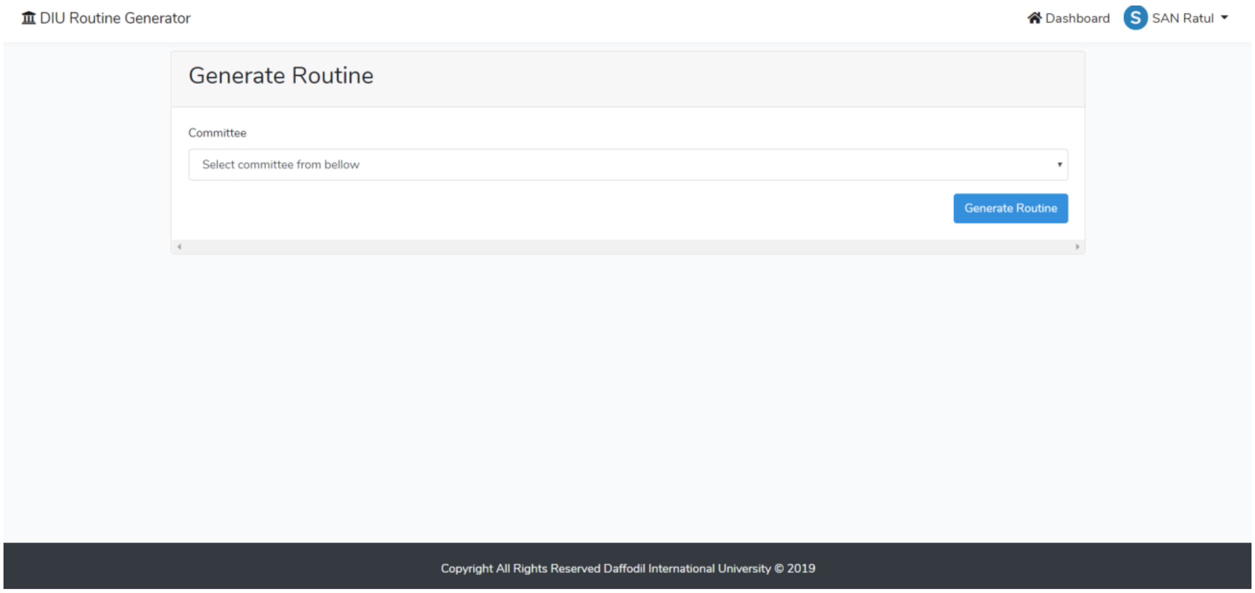
Figure 4.2.23 shows the Generate routine page of the system



Committee: Select committee from bellow

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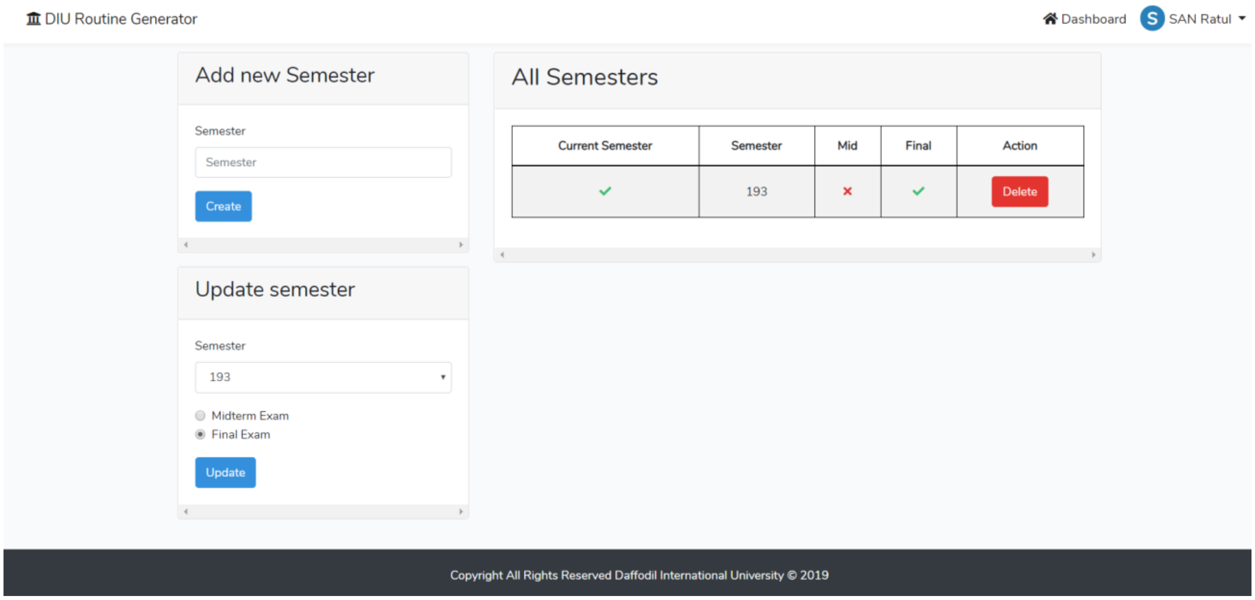
The figure 4.2.24 shows the All semester page of the system



Semester: Semester

Semester: 193

○ Midterm Exam

● Final Exam

Current Semester	Semester	Mid	Final	Action
✓	193	✗	✓	Delete

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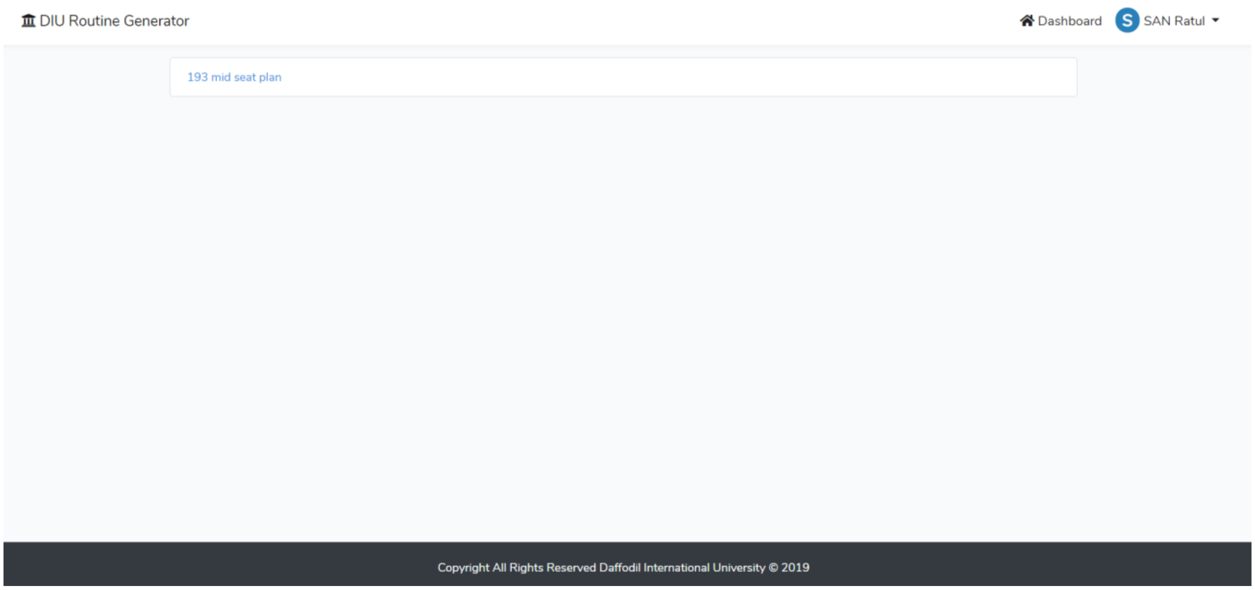
Figure 4.2.25 shows the Old routine page of the system



193 mid seat plan

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4.3 Backend Design:

4. 3. 1 Backend technology:

The backend of a web-based system is generally a server, database and programming language, scripting language used on the system to work perfectly.

The system designing is done by HTML and CSS3 and for interaction design here used JavaScript and some plugins of JavaScript and CSS3.

Some plugins are bootstrap, jquery, monthly, date-picker, data tables.

For the responsive view in mobile and tablet device bootstrap used mostly.

Showing the right design at the right time and controlling the preview of required information and data to the right user in their own panel PHP programming language is used and data retrieved from the MySQLi database.

Here the main framework is “Laravel” which is a PHP framework.

The figure Fig 4.3.1 shows the backend communication of frontend response and request.

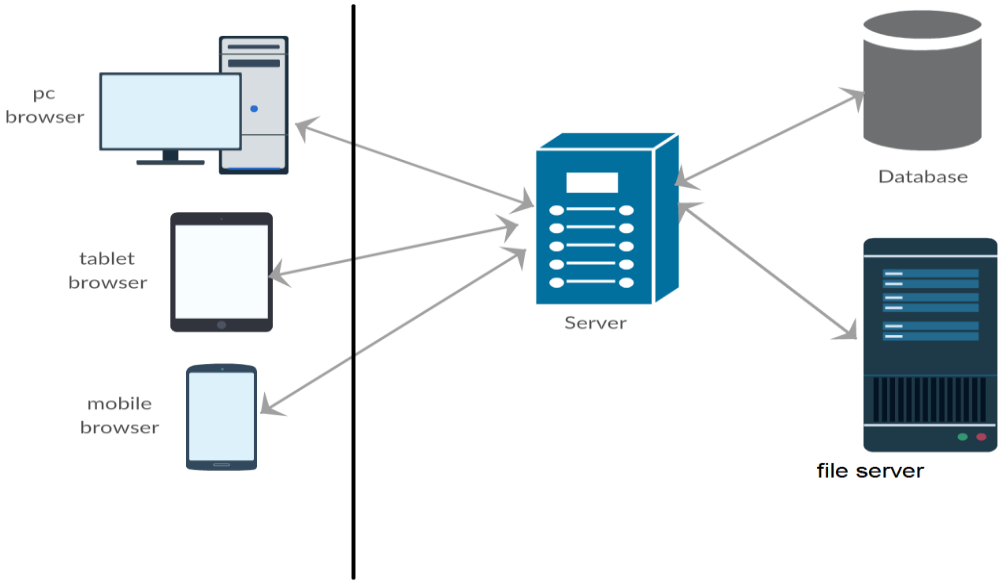

Figure 4.3.1 Backend connection with front end

4.3.2 Backend process & front-end:

Frontend design has a close connection with the backend. The front end hides the complexity of the process to the users and clients. The front end realizes clients and users that they are using an easy and nice system.
A single front end activity may contain many backend processes and complex operation.

The figure 4.3.2.1, 4.3.2.2 and 4.3.2.3 shows the sequence diagram between web browsers, web server, and database whenever insert, update and view/select operation are done from the front end of the system.

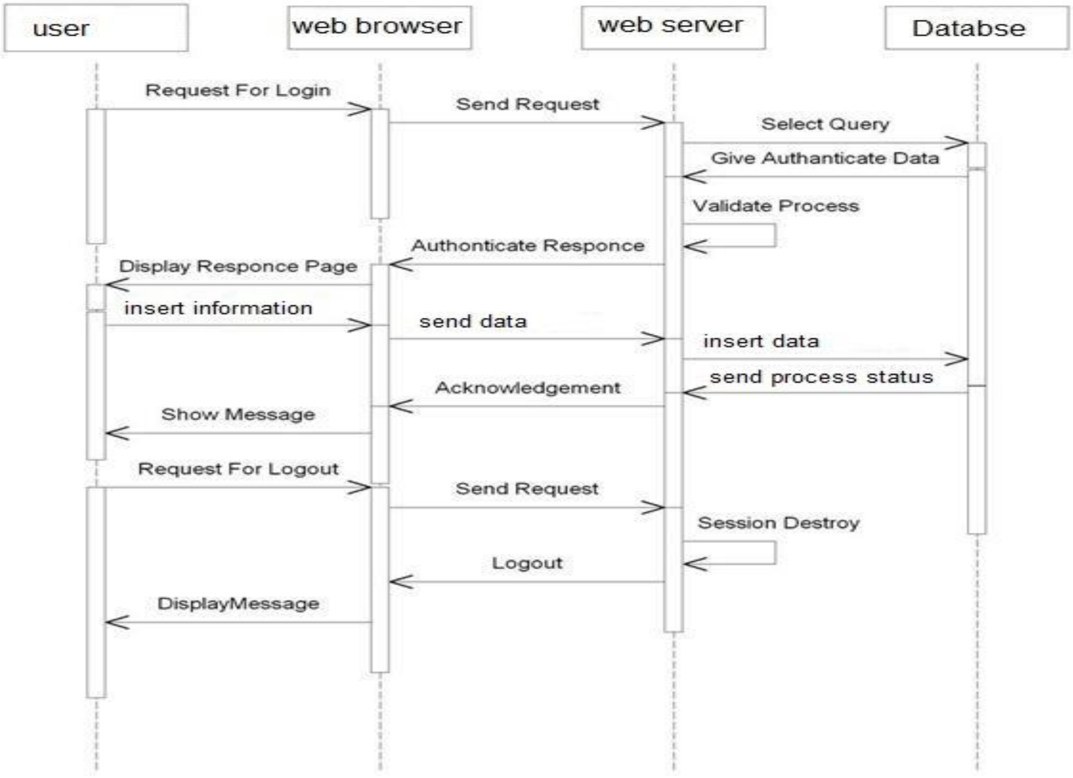

Fig 4.3.2.1 backend process on front end activity (insert)

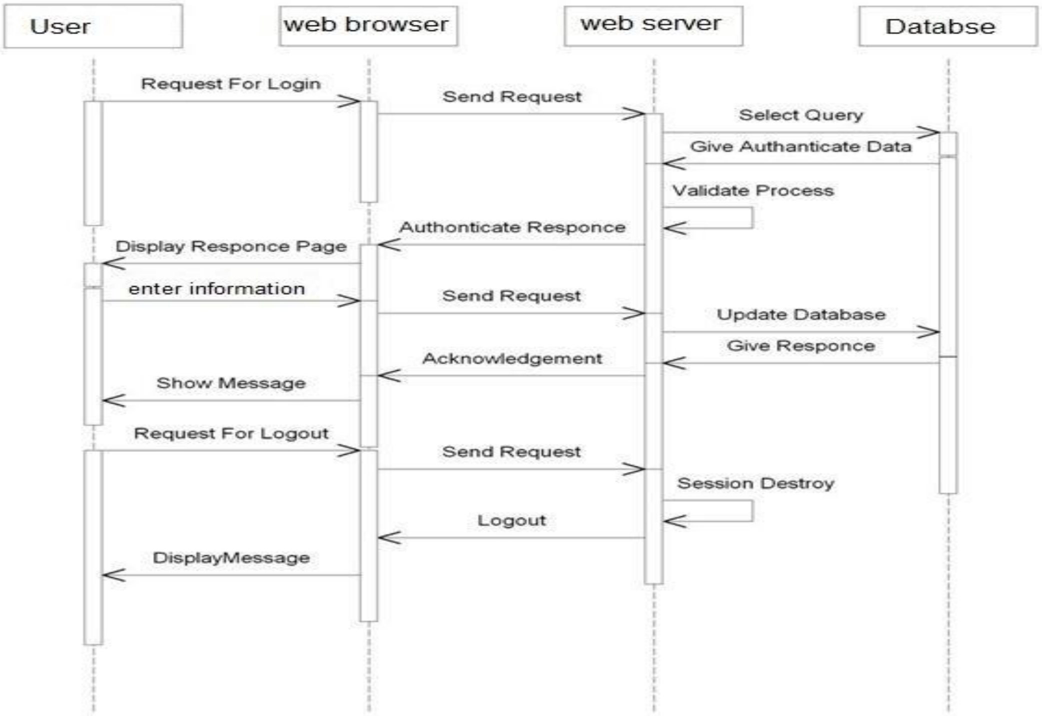

Figure 4.3.2.2: Backend process on front end activity (update)

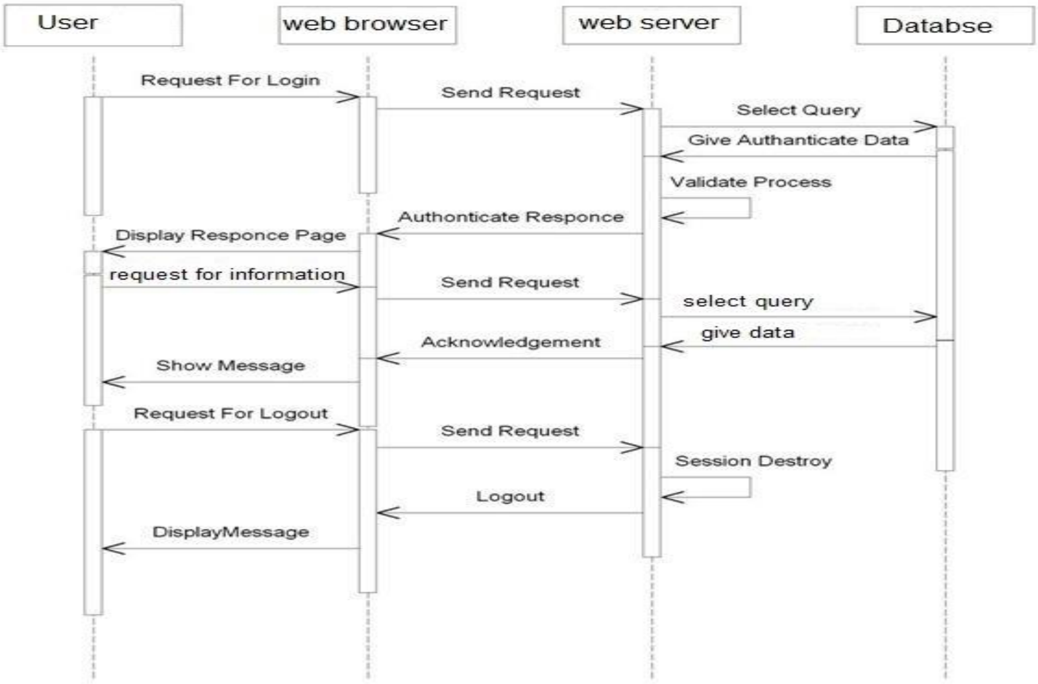

Figure 4.3.2.3: Backend process on front end activity (view)

CHAPTER 5

Implementation and Testing

5.1 Implementation of Database:

The database used in the system is MySQL. The database query is prepared by the query builder class of the “Laravel” framework.

The database contains some tables with are connected to each other with foreign key and information purposes.

TABLE 5.1.1: Committee table information of database

Table Name		Committees				
Table Description		This table stores Committees records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id (Auto increment)
Title	VARCHAR	191	√			Store Title of Committee
Description	VARCHAR	191				Store Description of Committee
Created_at	Timestamp					Store Created date of the committee
Updated_at	Timestamp					Store Updated date of the committee

TABLE 5.1.2: Courses table information of database

Table Name		Courses				
Table Description		This table stores Courses records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id (Auto increment)
Code	VARCHAR	191	√			Store Course Code
Dept_id	BIG(INT)	20			√	Store Department id of course
Program	VARCHAR	191	√			Store Name of the program
Title	VARCHAR	191	√			Store Title of the Courses
Credit	Double	8,2	√			Store credit of the courses
Created_at	Timestamp					Store Created date of Courses
Updated_at	Timestamp					Store Updated date of Courses

TABLE 5.1.3: Departments table information of database

Table Name		Departments				
Table Description		This table stores Departments records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Title	VARCHAR	191	√			Store title of the Department
TotalStudent	INT	11	√			Store number of student
Faculty_id	BIG(INT)	191	√		√	Store faculty id of department
Created_at	Timestamp					Store Created date of the department
Updated_at	Timestamp					Store Updated date of the department

TABLE 5.1.4: Dept_versions table information of database

Table Name		Dept_versions				
Table Description		This table stores Dept_versions records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Dept_id	BIG(INT)	20			√	Store department id
Version	Double	8,2	√			Store Department version
Created_at	Timestamp					Store Created date of department version
Updated_at	Timestamp					Store Updated date of department version

TABLE 5.1.5: Exam table information of database

Table Name		Exam				
Table Description		This table stores Exam records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
course_id	BIG(INT)	20			√	Store Course id
examDate	Date	8,2	√			Store exam date
Slot	VARCHAR	191	√			Store exam time slot
Created_at	Timestamp					Store Created date of exam
Updated_at	Timestamp					Store Updated date of exam

TABLE 5.1.6: Exam_rooms table information of database

Table Name		Exam_rooms				
Table Description		This table stores Exam_rooms records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id (Auto increment)
Room_num	BIG(INT)	20	√		√	Store exam room number
Exam_id	BIG(INT)	20	√		√	Store exam id
section_id	BIG(INT)	20	√		√	Store section id
Created_at	Timestamp					Store Created date of the exam room
Updated_at	Timestamp					Store Updated date of the exam room

TABLE 5.1.7: faculties table information of database

Table Name		Faculties				
Table Description		This table stores faculties records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Title	VARCHAR	191	√		√	Store title of faculty
Committee_id	BIG(INT)	20			√	Store committee id of faculty
Created_at	Timestamp					Store Created date of faculties
Updated_at	Timestamp					Store Updated date of faculties

TABLE 5.1.8: faculty_members table information of database

Table Name		faculty_members				
Table Description		This table stores faculty_members records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Name	VARCHAR	191	√			Store name of faculty members
Email	VARCHAR	191	√		√	Store email of faculty members
Contact	VARCHAR	191	√			Store contact of faculty members
Initial	VARCHAR	191	√		√	Store initial of faculty members
Designation	VARCHAR	191	√			Store designation of faculty members
Join_date	Date		√			Store join date of faculty members
Dept_id	BIG(INT)	20			√	Store department id of faculty members
Created_at	Timestamp					Store Created date of faculty members
Updated_at	Timestamp					Store Updated date of faculty members

TABLE 5.1.9: migrations table information of database

Table Name		Migrations				
Table Description		This table stores migrations records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Migrations	VARCHAR	191	√			Store migration data
Batch	INT	11				Store batch

TABLE 5.1.10: old_routines table information of database

Table Name		old_routines				
Table Description		This table stores old_routines records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Name	VARCHAR	191	√			Store name of old routines
tbl_prefix	VARCHAR	191	√			Store table prefix
Batch	INT	11				Store number of batch
Created_at	Timestamp					Store Created date of old routines
Updated_at	Timestamp					Store Updated date of old routines

TABLE 5.1.11: faculties table information of database

Table Name		Password_resets				
Table Description		This table stores password_resets records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Email	VARCHAR	191	√		√	Stores unique id(Auto increment)
Token	VARCHAR	191	√			Store token of the password reset
Created_at	Timestamp					Store Created date of the password reset

TABLE 5.1.12: rooms table information of database

Table Name		Rooms				
Table Description		This table stores old_routines records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Num	VARCHAR	191	√			Store number of rooms
Capacity	INT	11	√			Store capacity of rooms
Building	VARCHAR	191	√			Store name of the building of a room
Committee_id	BIG(INT)	20			√	Store committee id of faculty
Created_at	Timestamp					Store Created date of Courses
Updated_at	Timestamp					Store Updated date of Courses

TABLE 5.1.13: room_statuses table information of database

Table Name		room_statuses				
Table Description		This table stores room_statuses records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Room_num	BIG(INT)	20			√	Store number of rooms
remainingSize	INT	11	√			Store remaining size of room capacity
examDate	Date		√			Store exam date
Slot	VARCHAR	191	√			Store exam time slot
Created_at	Timestamp					Store Created date of room status
Updated_at	Timestamp					Store Updated date of room status

TABLE 5.1.14: sections table information of database

Table Name		Sections				
Table Description		This table stores sections records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Course_id	BIG(INT)	20			√	Store course id of the section
Section	VARCHAR	191	√			Store section name
Course_teacher	VARCHAR	191	√			Store course teacher of section
Size	INT	11	√			Store section student size
Created_at	Timestamp					Store Created date of section
Updated_at	Timestamp					Store Updated date of section

TABLE 5.1.15: semester table information of database

Table Name		Semester				
Table Description		This table stores semester records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Semester	INT	11	√			Store number of semester
Mid	Tinyint	1	√			Store name of the exam
Final	Tinyint	1	√			Store name of the exam
Current_semester	Tinyint	1	√			Store current semester
Created_at	Timestamp					Store Created date of the semester
Updated_at	Timestamp					Store Updated date of the semester

TABLE 5.1.16: slots table information of database

Table Name		Slots				
Table Description		This table slots records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Slot	VARCHAR	191	√			Store slot of exam time
Created_at	Timestamp					Store Created date of slot
Updated_at	Timestamp					Store Updated date of slot

TABLE 5.1.17: users table information of database

Table Name		Users				
Table Description		This table users records				
Field Name	Data Type	Size	Not Null	PK	FK	Description
Id	BIG(INT)	20	√	√		Stores unique id(Auto increment)
Name	VARCHAR	191	√			Store name of users
Email	VARCHAR	191				Store email of users
Email_verified_at	Timestamp					Store time of email verification
Password	VARCHAR	191				Store password of users
Dept_id	BIG(INT)					Store department of users
Remember_token	VARCHAR	100				Store remember token of users
Created_at	Timestamp					Store Created date of users
Updated_at	Timestamp					Store Updated date of users
Employee_id	VARCHAR	191				Store employee id of users
Admin	Tinyint	1				Store admin status or not
Approved_at	Timestamp					Approval time of users to access
Phone_number	VARCHAR	191				Store phone number of users
Designation	VARCHAR	191				Store designation of users

5.2 Implementation access to Modules:

The figure 5.2.1 shows the super admin’s access to modules

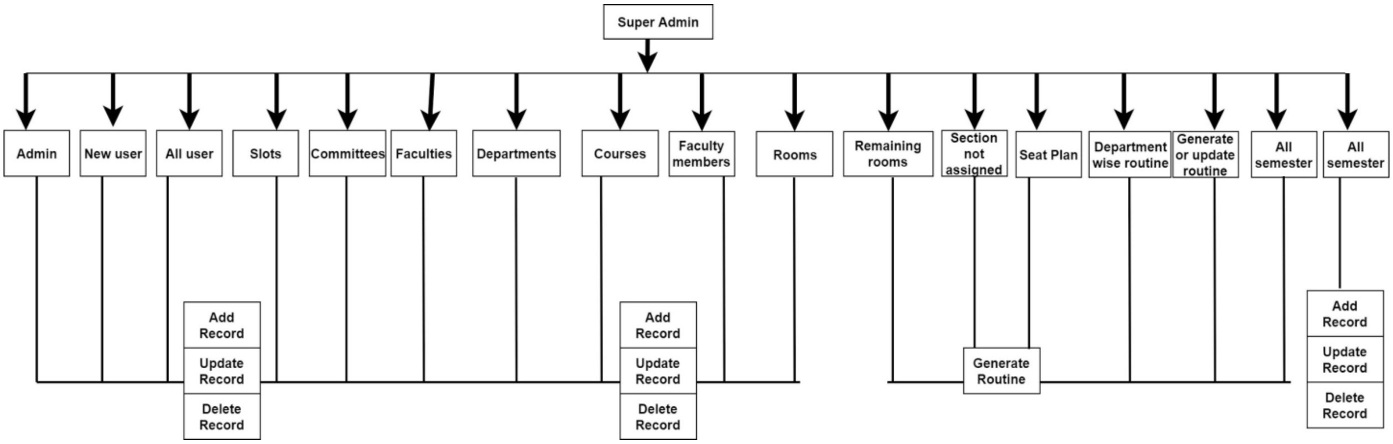

Figure 5.2.1: Super Admin module

The figure 5.2.2 shows the admin’s access to modules

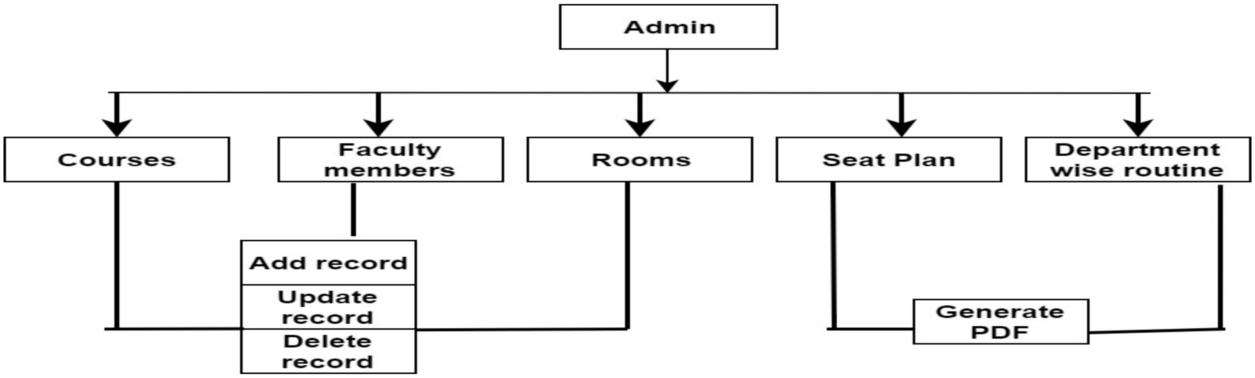

Figure 5.2.2: Admin access model

5.3 Test case:

TABLE 5.3.1: a Test case of Login Page

Sr No	Input/Action	Expected Result	Actual Result	Remark
1	Leave the field empty.	Will show error message “The field email and password is required”	Error message “The field email and password is required”	Pass
2	Entered invalid Password	Will show error message “email or password is incorrect”	Error message “email or password is incorrect”	Pass
3	Entered Invalid email format	Will show error message “ Please enter a valid email ”	Error message “ Please enter a valid email ”	pass
4	Entered Invalid email id.	Will show error message “email or password is incorrect”	Error message “email or password is incorrect”	Pass
5	Entered Valid user name.	Will accept the data.	Data accepted	Pass

TABLE 5.3.2: a Test case for Registration Page

Sr. No	Input/Action	Expected Result	Actual Result	Remark
1	Leave any field empty.	Will show error message “The field is required”	Error message “The field is required”	Pass
2	Entered invalid Email format	Will show error message “Please enter a valid email”	Error message “Please enter a valid email”	Pass
3	Entered password length less than 8	Will show error message “Password must be at least 8 in length ”	Error message “Password must be at least 8 in length ”	Pass
4	Entered email already registered	Will show error message “This email is registered with another account”	Error message “This email is registered with another account”	Pass
5	Entered an invalid guardian phone number	Will show error message” Phone number is invalid”	Error Message ” Phone number is invalid”	Pass
6	Entered phone number less than 11 more than 15	Will show error message “Phone number is maxed 15 and min 8 characters”	Error message “Phone number is maxed 15 and min 8 characters”	Pass
7	Entered Valid data	Will accept the data.	Data accepted	Pass

TABLE 5.3.3: a Test case for course add Page

Sr. No	Input/Action	Expected Result	Actual Result	Remark
1	Leave any field empty.	Will show error message “The field is required”	Error message “The field is required”	Pass
2	Entered credit string instead of float or integer	Will show error message “Credit must be float or integer ”	Error message “Credit must be float or integer”	Pass

CHAPTER 6

Conclusion and Future Work

6.1 Conclusion:

“Exam Routine Application for DIU” has fulfilled the necessary requirements of the Exam management committee of DIU. We have designed this application in a user friendly manner. We tried our best to make proper documentation so that, users can easily understand the operations and can properly execute them. We developed this system in ‘PHP laravel’ to improve security and application performance. The system has achieved the objective of allocating rooms for exams and properly utilizing the room spaces. We implemented and tested our project.

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