

Dormitory Management System

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A project report submitted to the Institute of Information Technology
in partial fulfilment of the requirements for the degree of
Bachelor of Science in Information Technology

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DECLARATION

This industrial tour report is submitted to the Institute of Information Technology, Jahangirnagar University, Savar, Dhaka in partial fulfillment of the requirements for having the B.Sc. (Hons.) degree in ICT. This is also needed to certify that the project work is under the 3rd Year 2nd Semester course of the IIT “ICT-3200: Project Work and Course Viva”. So, we are here declaring that this project report has not been submitted elsewhere for the requirement of any kind of degree, diploma or publication.

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DEDICATION

We dedicate this Dormitory Management System project to all the students who strive for a comfortable and efficient living experience in their college dormitories. Our goal was to develop a system that streamlines the management of dormitories, ensuring that students have easy access to essential services and facilities.

We also dedicate this project to the dormitory managers and administrators who work tirelessly to meet the needs of their residents. We hope that this system will help them to manage their duties more effectively, allowing them to provide a better quality of life for their students.

Finally, we would like to dedicate this project to our families and loved ones who have supported us throughout this endeavor. Their encouragement and belief in us have been instrumental in our success.

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Finally, we convey our regards to our honourable teacher **Professor Fahima Tabassum** Mam for giving us the opportunity to learn the subject particularly practically.

ABSTRACT

The student hall/dormitory of a university is a main place to student's daily life, so a hall/dormitory management is a vital part of the university management. But it's a matter of regret that we have no digitalized management system available right now. Here everything controlled manually. That's why authorities and students face a lot of problems. We don't get enough information to allocate a seat of a student in the hall and manage room distribution. We have no digital record of payments of the student. In our current system, we solve our problems manually but we have no strong record, that's why some problem is not solved in time. In this case, we want to propose an online hall/dormitory management system, which may help the student and authority to some extent.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

A Dormitory Management System (DMS) is a software application designed to manage and automate the operations of dormitories or hostels. It's a centralized system that simplifies the management tasks of student boarding facilities, making it easier for administrators to manage students, rooms, inventory, and other aspects of running a dormitory.

The DMS typically consists of several modules that cater to different aspects of dormitory management, such as admissions, accommodation, meal plans, payments, maintenance, and security. The system may also include features such as online booking, room assignment, student profiles, attendance tracking, and communication tools, among others.

The primary objective of the Dormitory Management System is to simplify the management of a dormitory and streamline its operations. By automating routine tasks, reducing paperwork, and providing real-time information, the system helps administrators to save time, reduce errors, and enhance the overall experience of students living in the dormitory.

Dormitory Management Systems are used by educational institutions, such as universities, colleges, boarding schools, and hostels, as well as private organizations that provide student housing. With the growing demand for student housing and the increasing complexity of managing dormitories, DMS has become an essential tool for effective dormitory management.

1.2 Objectives

The objectives of the “Dormitory Management System” are:

- To provide a digital management system for JU hall.
- To reduce time for solving a problem.
- To increase collaboration of student and authority.
- To digitalize the problem gathering and solving system.
- To digitalize the seat distribution system for JU hall.

1.3 Expected Outcome

The expected outcomes of the “Dormitory Management System” are:

- A complete digital management system for JU Hall.
- Digital means of storing student information.
- Digitalized and Secure communication with authority and student.
- Reduction of human resource and additional cost of JU Hall.

CHAPTER 2

BACKGROUND

2.1 Introduction

To completely digitalize a university hall and providing online-based management system.

In this project, every single things will be automated (digital) and total activities will be complete using new technology. In our country, there are several universities. Our university is developing day by day, increasing with a number of students and hall rooms every semester. Our hall management authority faced troubles to share out room for student. Whereas, this was an lengthy procedure, so this spoiling a lot of time, diligent is not always capable to do the better used of the source. While we are living in the moment of technology, we need to apply for solve this problem.

We endeavor to solve the matter by execute a digital system and successfully we have done this. This project will help Hall authorities and students to locate rooms for students.

2.2 Related Work

2.2.1 Dhaka University Hall

Digital world is being digital by using information technology like many web-based automation system. A Web-based Computer Experiment Management System is designed and implemented by Dhaka University.

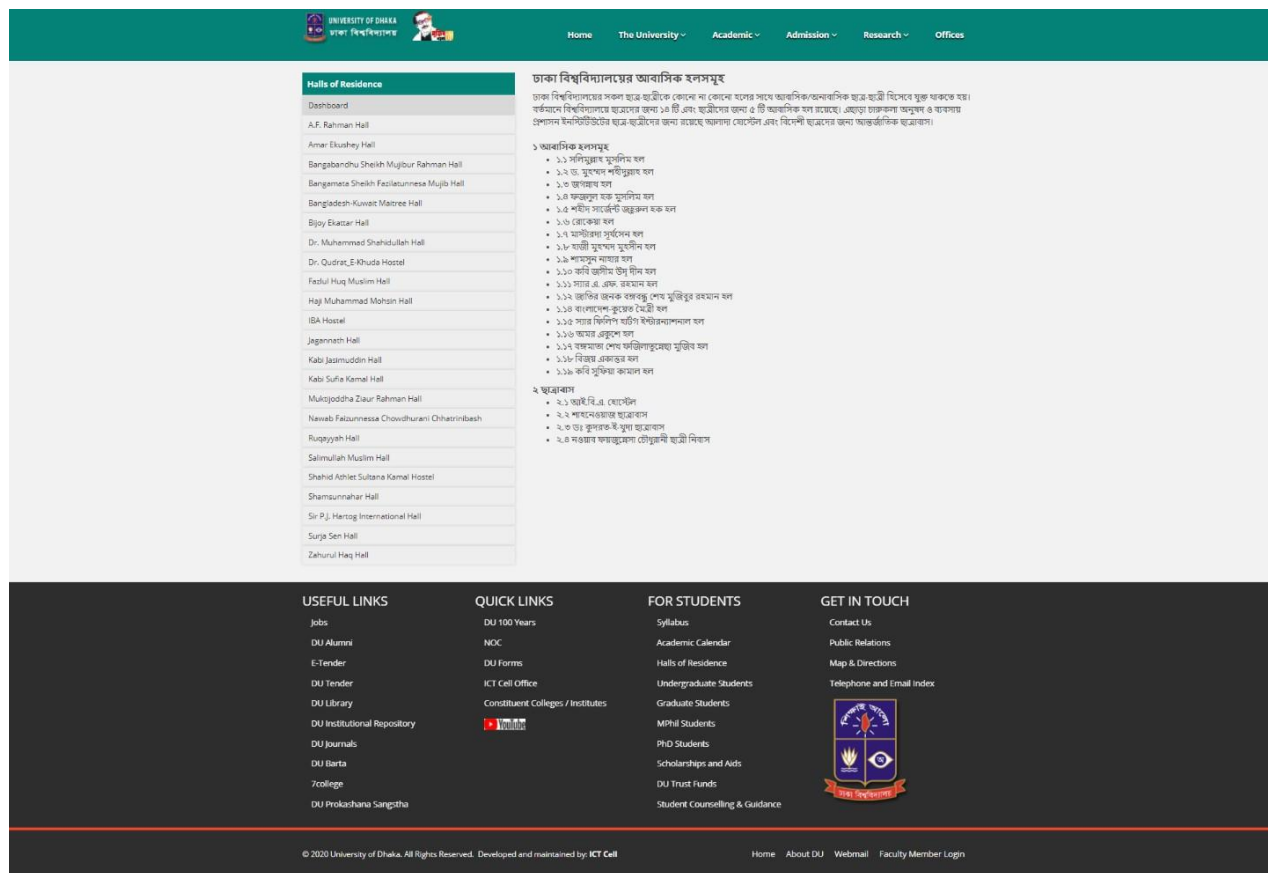


Figure 2.2.1 Home Page of Dhaka University

2.2.2 Shahjalal University Hall

Digital World is being digital by using information technology like many web-based automation system. A Web-based Computer Experimental Management System is designed and implemented by Shahjalal University.

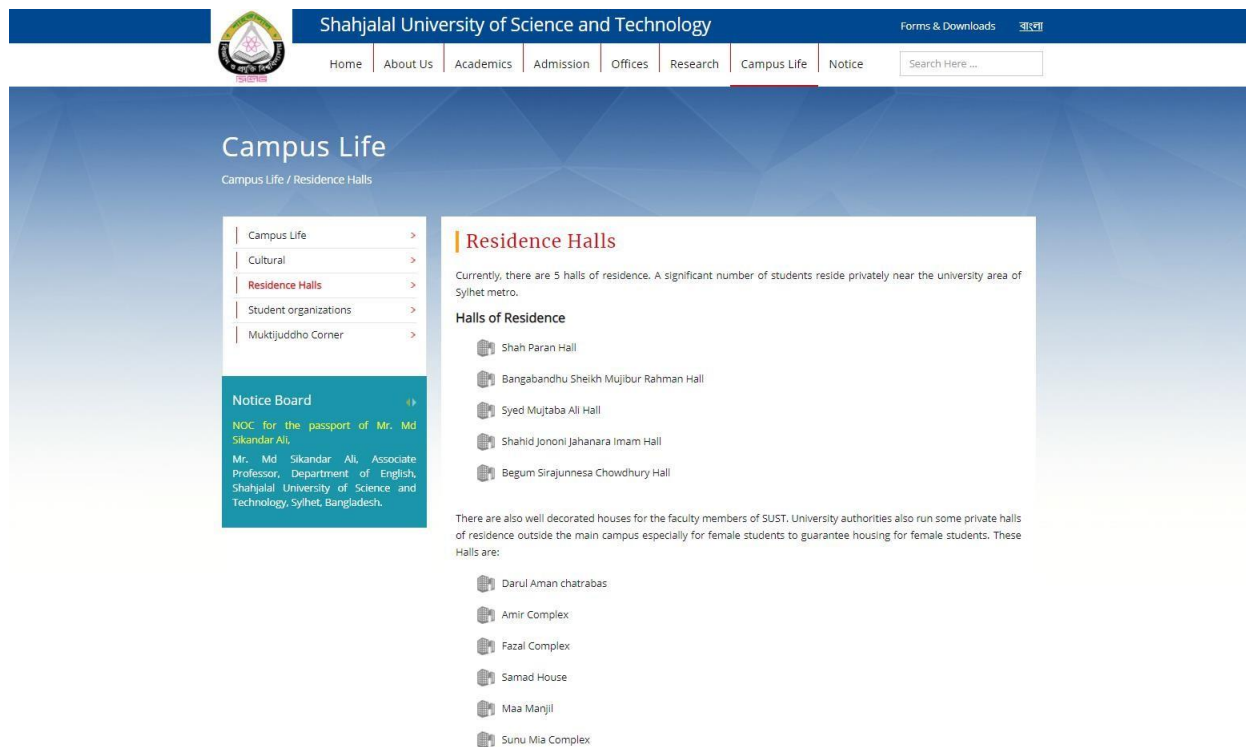


Figure 2.2.2 Home Page of Shahjalal University of Science and Technology

2.2.3 Khulna University of Engineering Technology

Digital world being digital by using information technology like many web-based automation system. A Web-based Computer Experiment Management System is designed and implemented by Khulna University of Information and Technology.



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FAZLUL HAQUE HALL

Fazlul Haque Hall is the most oldest and historical hall of Khulna University of Engineering and Technology. The name goes after the famous patriot Sher-e-Bangla A.K Fazlul Haque. The residential life of this hall offers a wide variety of services designed to support students in their academic and personal success.



The hall is organized around the vital theme of students' engagement-think volunteering, social entrepreneurship, civic spirit, and the like. In this hall, there are forty one residential rooms and few other common rooms. One of the attractions of this hall is its library cum study room named Sejuti where it has a collection of around 2000 local and foreign books. The library is enriched with novel, story, poetry, autobiography and other types of books.

The hall has also got a common room where students can play many indoor games such as table tennis, chess, carom etc. Besides, indoor games competition on various events is also held in every year which imparts entertainment and refreshment among the students. There is also an arrangement for the students to participate in outdoor games. Last year the hall won a fair play trophy in football tournament showing adequate performance. A beautiful garden with numerous types of flowers resides in front of the hall. Students of this hall are very much enthusiastic and energetic.

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- » Tender Notice
- » University Grants Commission
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- » RTI Act-2009

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Figure 2.2.3 Home Page of Khulna University of Engineering and Technology

CHAPTER 3

SOFTWARE REQUIREMENTS SPECIFICATION

3.1 Requirement Collection and Analysis

3.1.1 Functional System Requirement:

This section gives a functional requirement that applicable to the “Dormitory Management System for JU Hall”.

These are sub modules in this phase.

- Administrator module
- User Module
- Hostile Module
- Registration Module

3.1.2 Non-Functional System Requirements:

- Performance Requirements
- Security Requirements

3.2 Use Case Modeling

3.2.1 Use Case Diagram

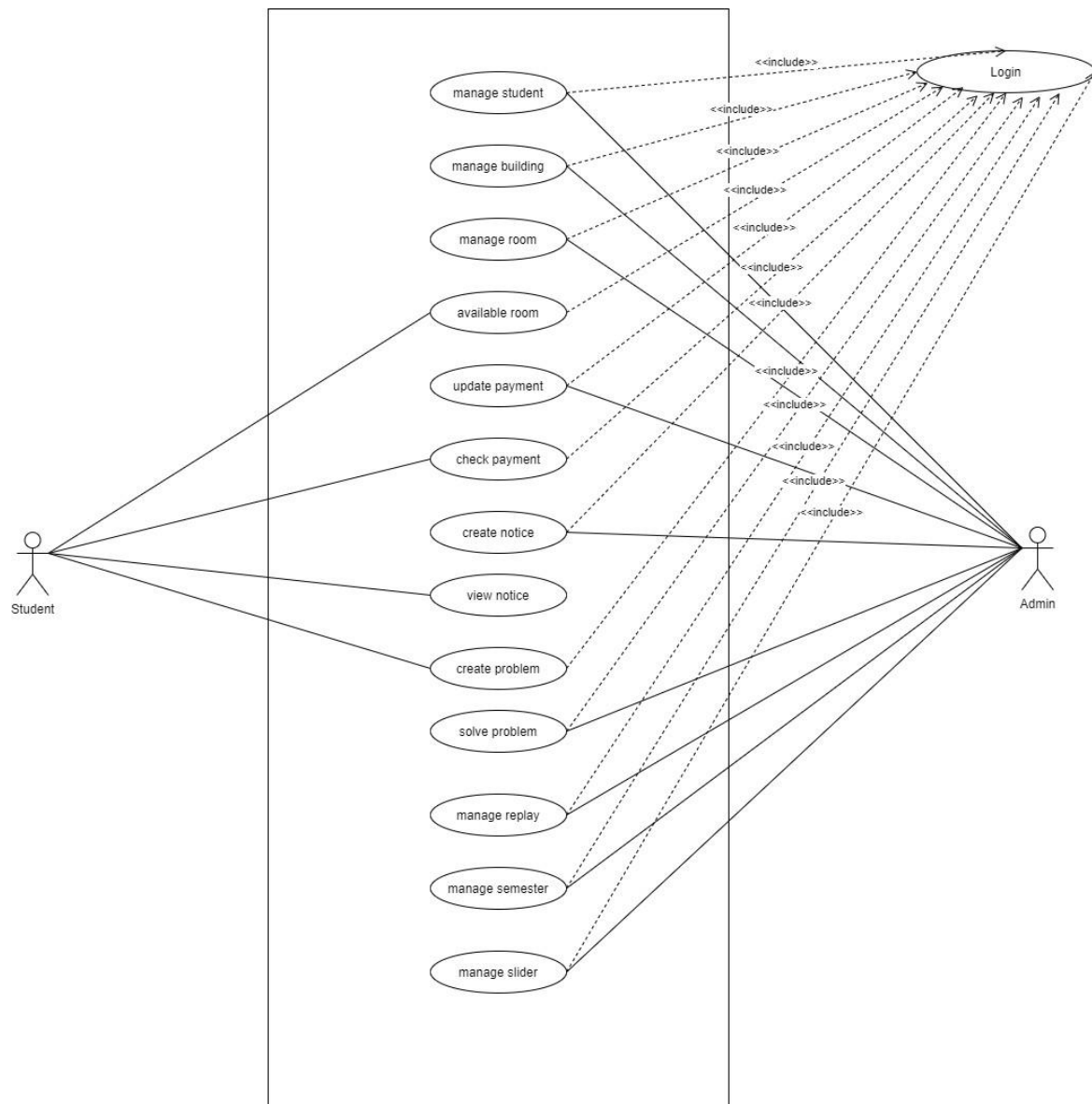


Figure 3.2.1 Use Case Diagram

3.3 Use Case Description

TABLE 3.3.1 Student Manage

Use Case Term	Student Manage
Actors	Admin
Flow of Events	1. Affix to Student 2. Remove Student 3.View Student Details
Substitute Flows	1.No student found 2.Do not add new student 3.Invalid Information
Pre-Condition	Login
Post Condition	Confirm Student, Delete Student

TABLE 3.3.2 Building Manage

Use Case Term	Building Manage
Actors	Admin
Flow of Events	1. Affix to Building 2. Upgrade Building 3. Remove Building
Substitute Flows	1.Chosen the wrong building 2.Building not found
Pre-Condition	Login
Post Condition	Chosen right building

TABLE 3.3.3 Room Manage

Use Case Term	Room Manage
Actors	Admin
Flow of Events	1. Affix on Room 2. Upgrade Room 3.Remove Room
Substitute Flows	1.Chosen false room 2.Delete incorrect room 3.Invalid Input
Pre-Condition	Login
Post Condition	Select the right room

TABLE 3.3.4 Available Room

Use Case Term	Available Room
Actors	Admin, Student
Flow of Events	1.Check Available Room 2.Upgrade Room
Substitute Flows	1.Chosen false room 2.Don't updated available room 3.Invalid Input's
Pre-Condition	Login
Post Condition	Select Building, Select Room

TABLE 3.3.5 Update Payment

Use Case Term	Update Payment
Actors	Admin
Flow of Events	1.Affix to Payment 2.Upgrade Payment 3.Remove Payment
Substitute Flows	1.Update wrong student payment 2.Don't delete running student payment 3.Invalid Input's
Pre-Condition	Login
Post Condition	Select correct student

TABLE 3.3.6 Check Payment

Use Case Term	Check Payment
Actors	Student
Flow of Events	1. Check current payment 2. Check payment list
Substitute Flows	1.Incorrect student id 2.Invalid Input's
Pre-Condition	Login
Post Condition	Enter Login Information

TABLE 3.3.7 Create Notice

Use Case Term	Create Notice
Actors	Admin
Flow of Events	1.Affix to Notice 2.Remove Notice
Substitute Flows	1. Affix wrong notice 2. Invalid Information
Pre-Condition	Login
Post Condition	Enter notice title and description

TABLE 3.3.8 View Notice

Use Case Term	View Notice
Actors	Student
Flow of Events	1.View current Notice 2.View previous Notice
Substitute Flows	1.Select invalid notice 2.Can't view future notice
Pre-Condition	Login
Post Condition	View notice panel

TABLE 3.3.9 Create Problem

Use Case Term	Create Problem
Actors	Student
Flow of Events	1.Affix to Problem 2.Upgrade Problem 3.Remove Problem
Substitute Flow	1.Incorrect student id 2.Invalid Information
Pre-Condition	Login
Post Condition	View problem list, view reply of admin

TABLE 3.3.10 Solve Problem

Use Case Term	Solve Problem
Actors	Admin
Flow of Events	1.Reply
Substitute of Flow	1.Can't ignore problem 2.Invalid reply
Pre-Condition	Login
Post Condition	View problem solving list

TABLE 3.3.11 Apply Manage

Use Case Term	Apply Manage
Actors	Admin
Flow of Events	1.Confirm Apply
Substitute Flows	1.Don't update previous apply information 2.Invalid Information Input
Pre-Condition	Login
Post-Condition	View Apply list

TABLE 3.3.12 Semester Manage

Use Case Term	Semester Manage
Actors	Admin
Flow of Events	1.Affix to Semester 2.Remove Semester 3.Upgrade Semester
Substitute of Flows	1.Affix false semester 2.search wrong semester 3.Invalid Information
Pre-Condition	Login, Create a new semester
Post Condition	View All Semester

3.4 Database Schema

Admin (A_ID, Password)

Provost (P_ID, Name, Email, Phone)

Staff (St_ID, Name, Phone, Email, Post, Salary, Address)

Student (S_ID, Name, Phone, Email, Registration, Batch, Department)

Room (R_ID, Block, Floor, No of Bed, S_ID)

Dinning (D_ID, Meal Type, Meal Rate, Menu, S_ID, St_ID)

Hall Charge (H_ID, Charge, A_ID, S_ID)

Facility (F_ID, PR_ID, ER_ID, RR_ID, S_ID)

Prayer Room (S_ID, PR_ID)

Entertainment Room (ER_ID, S_ID, TV, Table Tennis)

Reading Room (RR_ID, S_ID)

3.5 Diagram of Entity Relationship

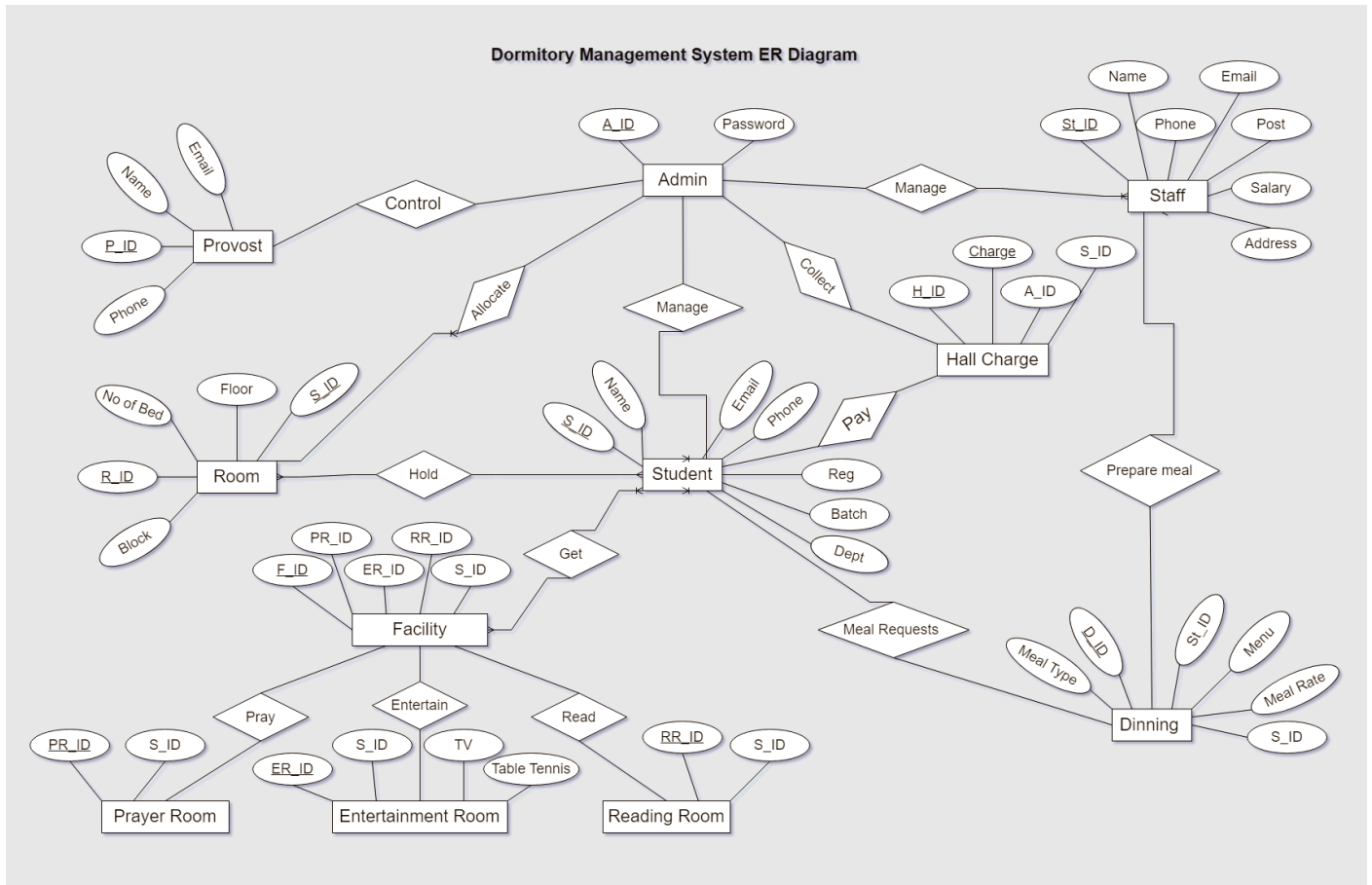


Figure 3.5 Entity Relationship

3.6 Diagram of DFD

3.6.1 Context Level



Figure 3.6.1 DFD Context Level

3.6.2 0 Level Diagram

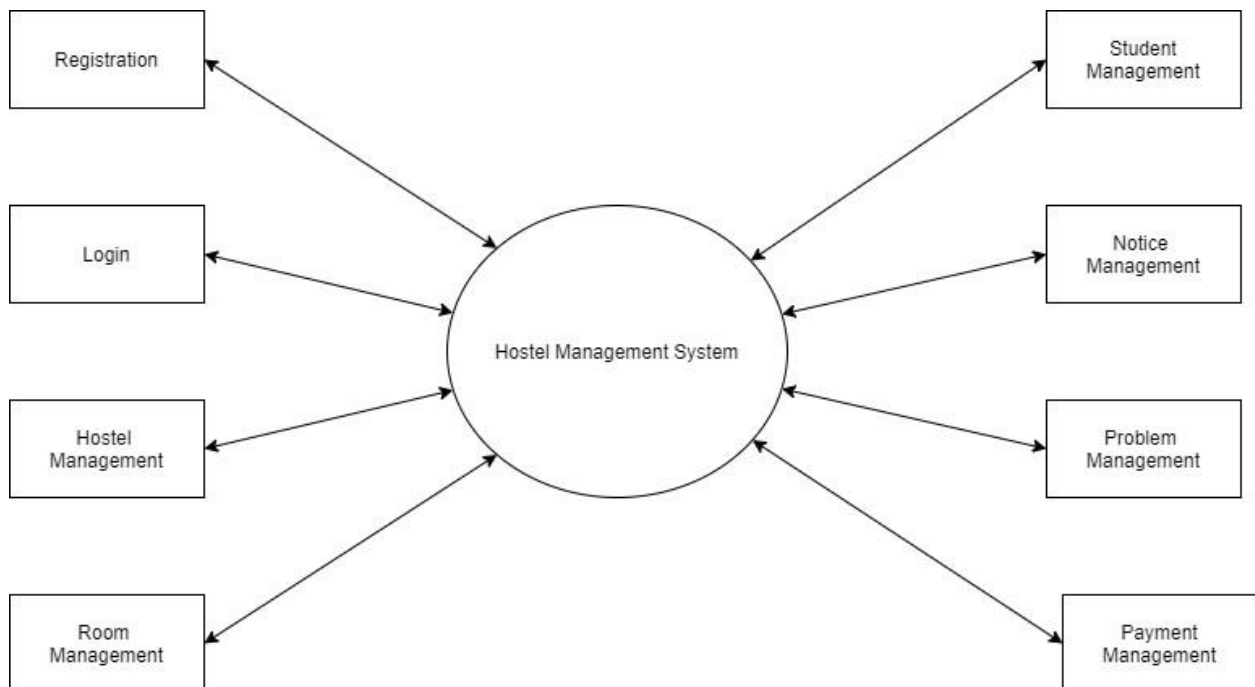


Figure 3.6.2 DFD 0 Level

3.6.3 1 Level Diagram

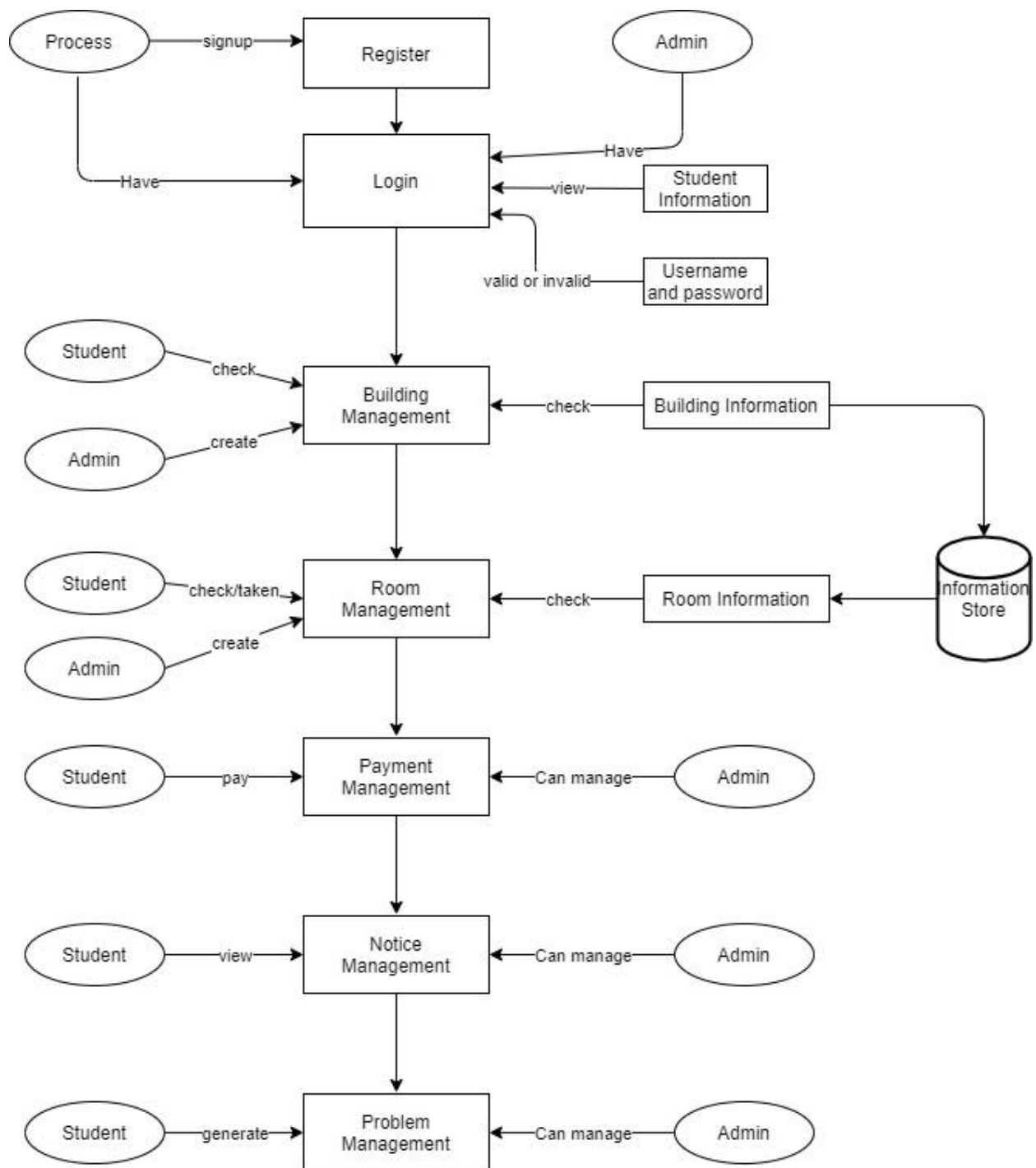


Figure 3.6.3 DFD 1 Level

CHAPTER 4

SYSTEM DESIGN

4.1 Diagram of Activity

4.1.1 Student

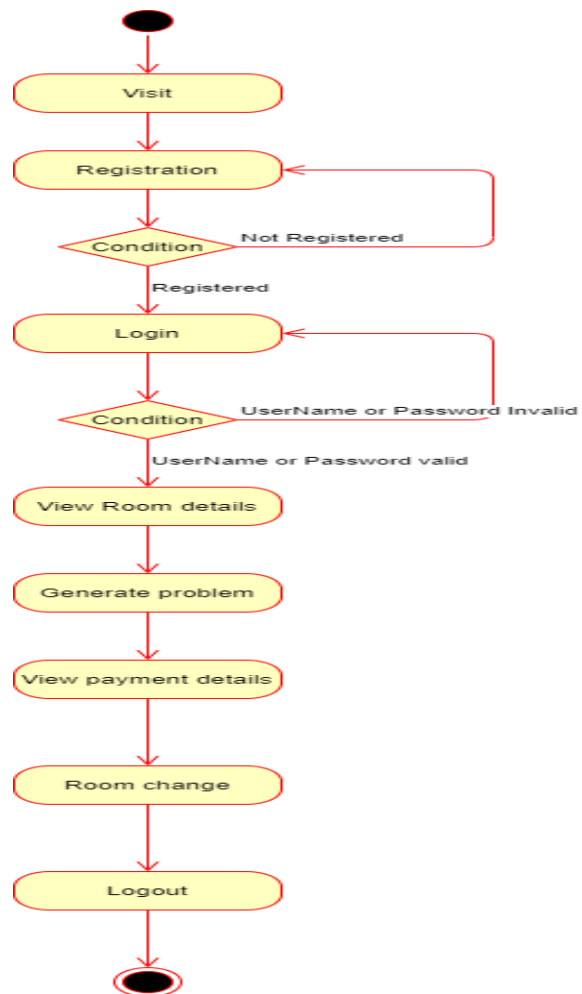


Figure 4.1.1 Student Activity Diagram

4.1.2 Admin

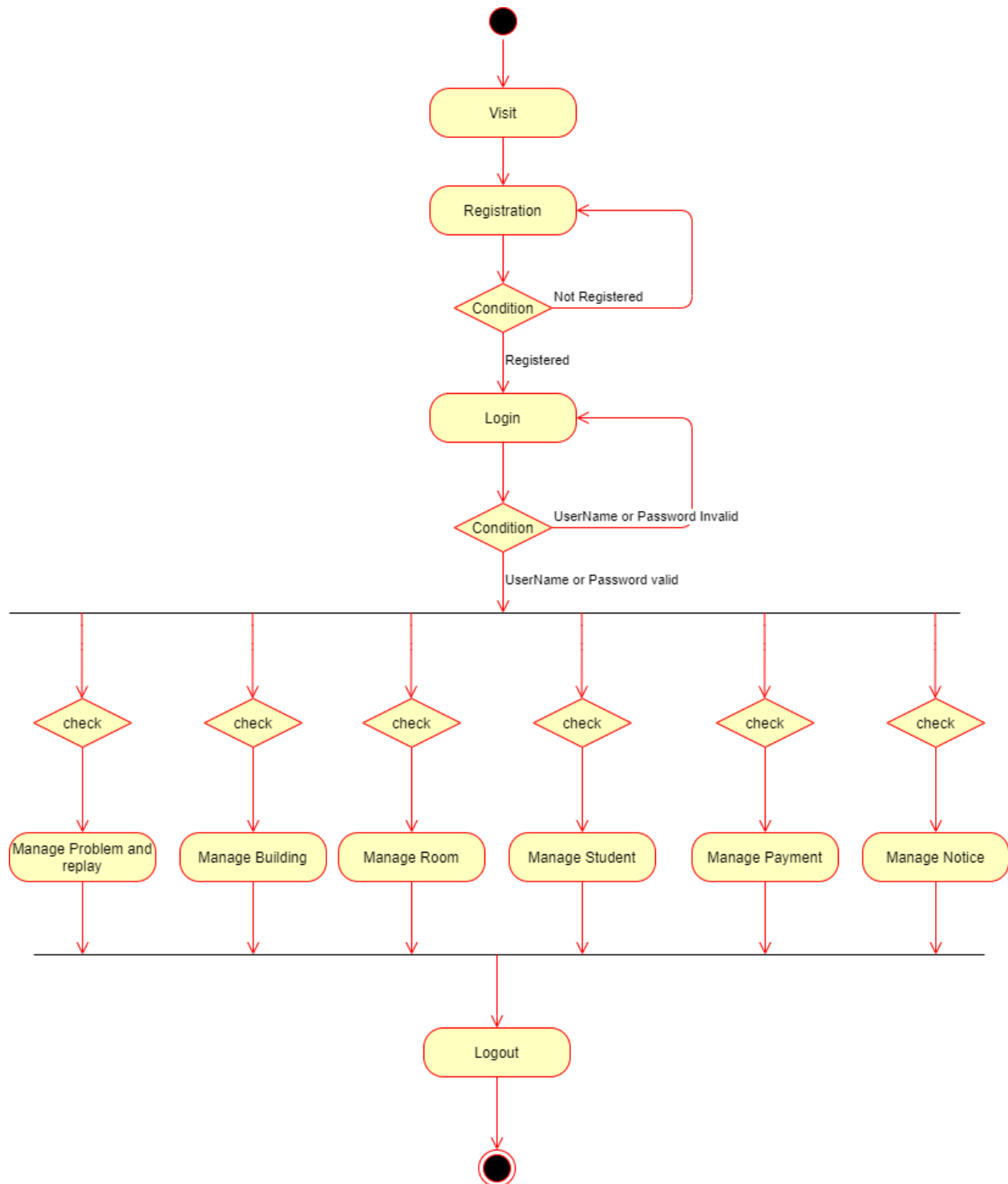


Figure 4.1.2 Admin Activity Diagram

4.2 Sequence Diagram

4.2.1 Login Operation of Admin

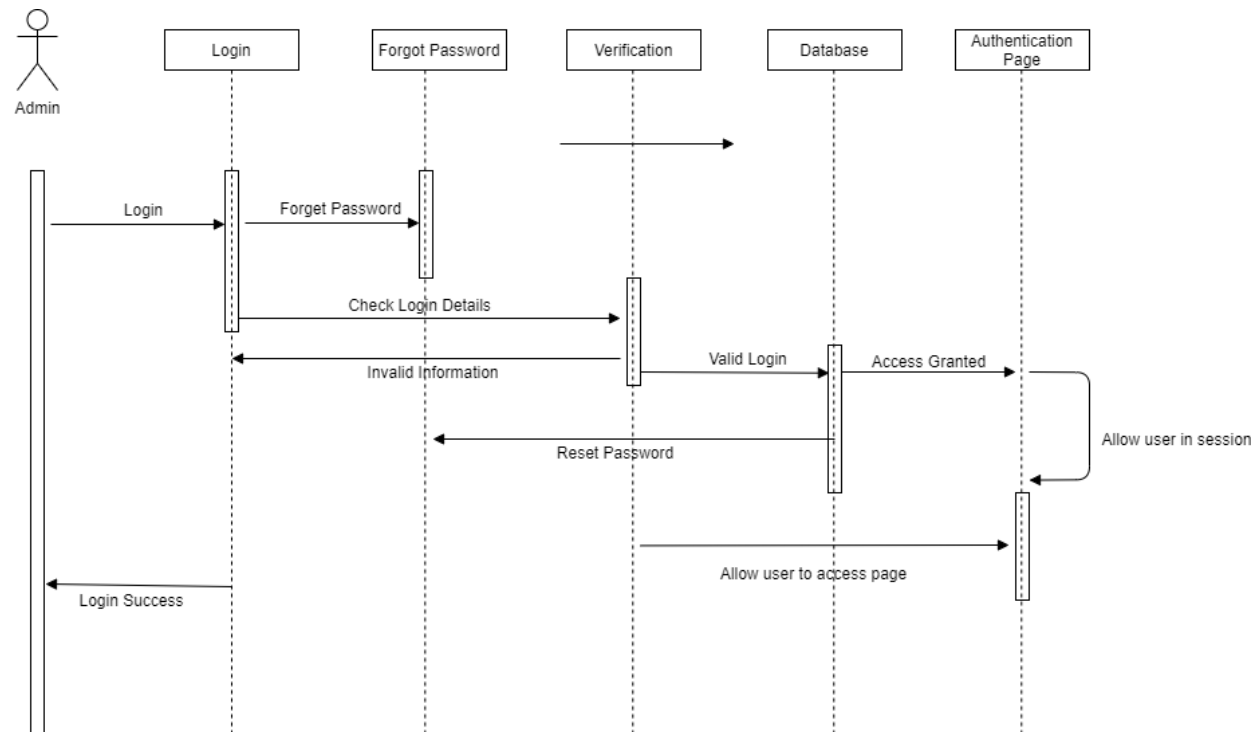


Figure 4.2.1 Login Operation of Admin

4.2.2 Admin Operation Process

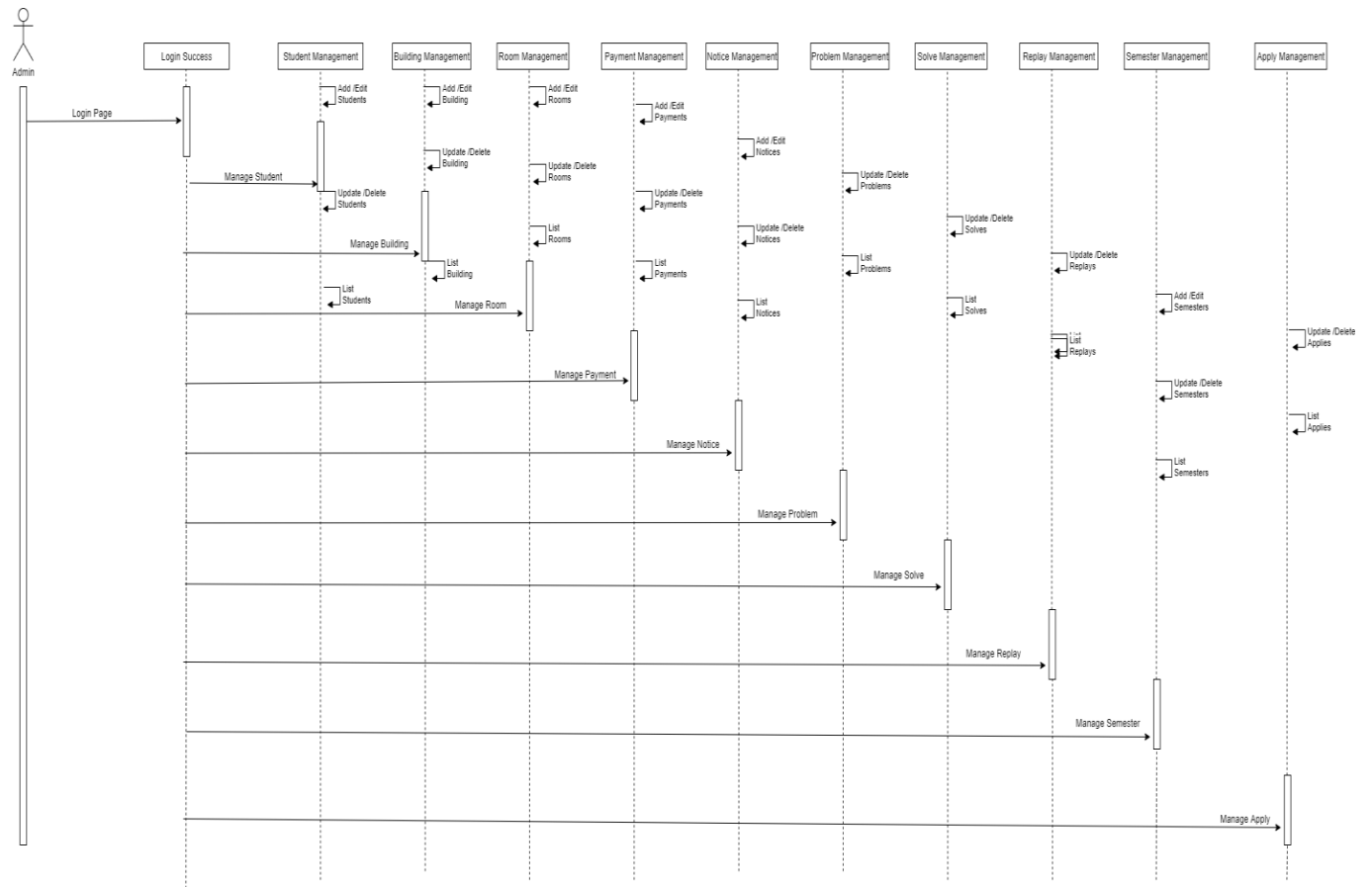


Figure 4.2.2 Admin Operation Process

4.2.3 Student Operation Process

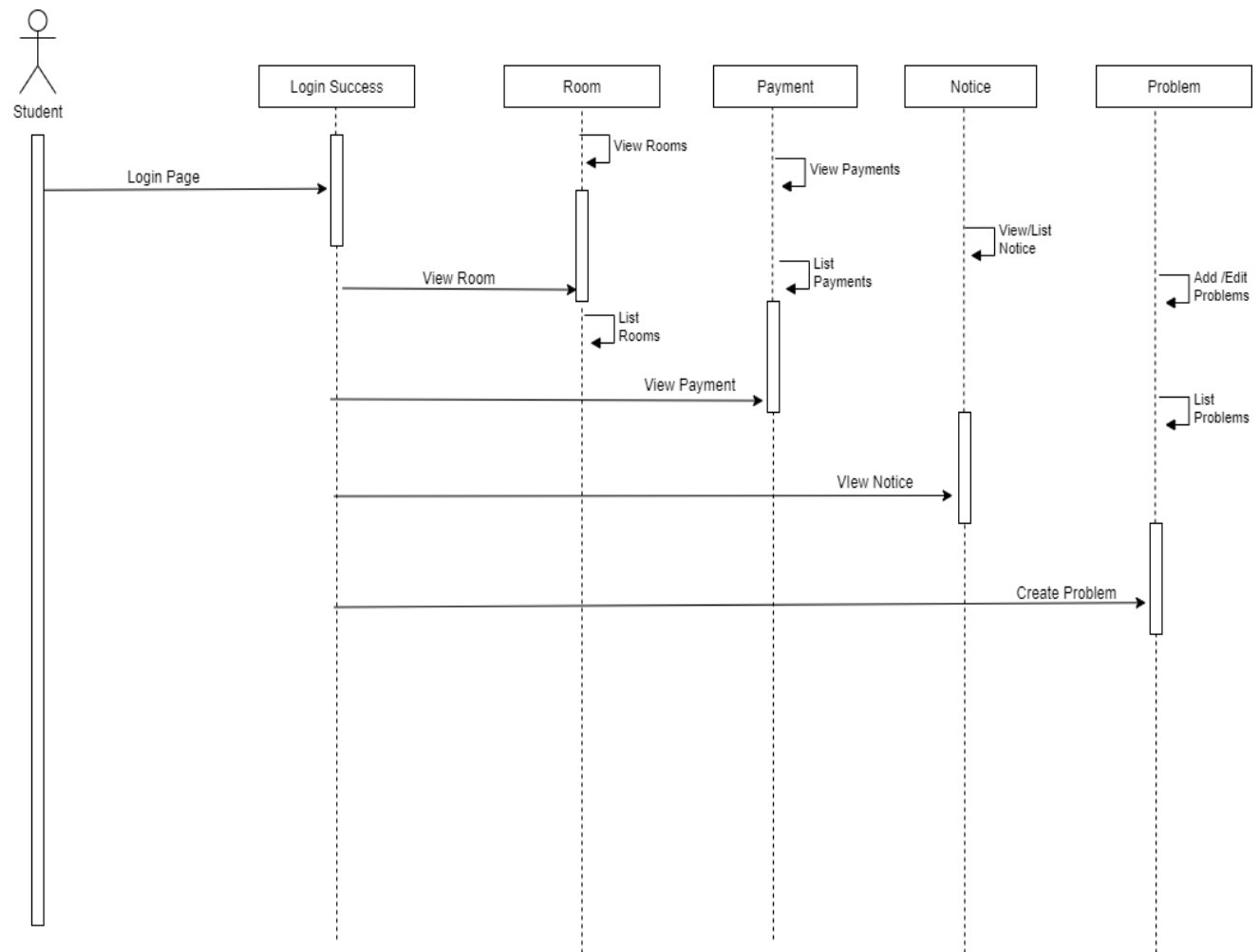


Figure 4.2.3 Student Operation Process

4.3 Front End Design

I use different type of markup language, style sheet, Programming language and some libraries for both front-end and backend.

- HTML 5
- CSS
- Bootstrap4
- JavaScript

Figure 4.3.5 Home Page

Figure 4.3.6 Our Hall Faculty

Figure 4.3.7 Notice Area

Figure 4.3.8 All Notice

Figure 4.3.9 Developer Team

Figure 4.3.10 Contact

4.4 Back End Design

I used some programming languages and frameworks to complete the back-end design of this website.

- PHP
- Laravel Framework
- MySQL

Figure 4.4.4 Login Page

Figure 4.4.5 Admin Dashboard

Figure 4.4.6 Add Faculty Members

Figure 4.4.7 Faculty Member List

Figure 4.4.8 Update Faculty Member Information

Figure 4.4.9 New Admin Request

Figure 4.4.10 All Admin List

Figure 4.4.11 All Student List

Figure 4.4.12 Update Student Information

Figure 4.4.13 Add Student Part-1

Figure 4.4.14 Add Student Part-2

Figure 4.4.15 Admin Profile

Figure 4.4.16 Update Admin Information

Figure 4.4.17 Student Payment List

Figure 4.4.18 Add Student Payment

Figure 4.4.19 Add Building

Figure 4.4.20 All Building List

Figure 4.4.21 All Room List

Figure 4.4.22 Add Room

Figure 4.4.23 All Semester List

Figure 4.4.24 Add Semester

Figure 4.4.25 Add Notice

Figure 4.4.26 Student Dashboard

Figure 4.4.27 All Rooms

Figure 4.4.28 Room Change Application

Figure 4.4.29 Room Change Request

Figure 4.4.30 Student Payment List

Figure 4.4.31 Problem Request

Figure 4.4.32 All Replies

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Database Implementation

TABLE 5.1.1 Database Details of Admin

Chart Name		Admin				
Chart Statement		This is chart container of Admin records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	Int	30	√	√		Container contain supreme id (Self Increase)
F_name	Varchar	250	√			Container contain first name of admin
L_name	Varchar	250				Container contain last name of admin
Email	Varchar	250				Container contain email of admin
Contact	Varchar	250				Container contain Contact of admin
Email_verified_at	Timestamp					Container contain email verification date of the admin
Password	Varchar	250				Container contain password of admin
Is_active	Int	1				Container contain active status of admin
Remember_token	varchar	250				Container contain remember token of admin

TABLE 5.1.2 Database Details of Applies

Chart Name		Applies				
Chart Statement		This is chart container of Applies records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	Int	30	√	√		Container contain supreme id (Self Increase)
St_application	Varchar	250	√			Container contain student application
St_id	Int	30			√	Container contain student id of apply

TABLE 5.1.3 Database Details of Building

Chart Name		Building				
Chart Statement		This is chart container of Buildings records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	Int	30	√	√		Container contain supreme id (Self Increase)
Buiding_name	Varchar	250	√			Container contain building name of building

TABLE 5.1.4 Database Details of Members

Chart Name		Members				
Chart Statement		This is chart container of members record				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	Int	30	√	√		Container contain supreme id (Self Increment)
Name	Varchar	250	√			Container contain name of member
Email	Varchar	250	√			Container contain email of member
Position	Varchar	250	√			Container contain position of member
Contact	Int	30	√			Container contain contact of member
Image	Varchar	250	√			Container contain image of member

TABLE 5.1.5 Database Details of Notice

Chart Name		Notice				
Chart Statement		This is chart container of notice records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	Int	30	√	√		Container contain id (Self Increase)
Title	Varchar	250	√			Container contain notice title of notice
File	Varchar	250	√			Container contain file of notice

TABLE 5.1.6 Database Information Details of Reset

Chart Name		Password Reset				
Chart Statement		This is chart container of password reset records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Email	VARCHAR	250	√			Container contain email of password reset
Token	VARCHAR	250	√			Container contain token of password reset

TABLE 5.1.7 Database Details of Payments

Chart Name		Payments				
Chart Statement		This is chart container of payments records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	Int	30	√	√		Container contain supreme id (Self Increase)
St_id	Int	30	√		√	Container contain student id of payments
St_semester	Varchar	250	√			Container contain student semester of payments
Hall_fee	Int	30	√			Container contain hall fee of payments

TABLE 5.1.8 Database Details of Problems

Chart Name		Problems				
Chart Statement		This is chart container of problems record				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	Int	30	√	√		Container contain supreme id (Self Increase)
P_description	Varchar	250	√			Container contain problem description of problems
St_id	Int	30	√		√	Container contain student id of problems

TABLE 5.1.9 Database Details of Replies

Chart Name		Replies				
Chart Statement		This is chart container of replies records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	Int	30	√	√		Container contain supreme id (Self Increase)
St_reply	Varchar	250	√			Container contain student reply of replies
Problem_id	Int	30				Container contain problem id of replies

TABLE 5.1.10 Database Details of Rooms

Chart Name		Rooms				
Chart Statement		This is chart container of rooms records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	Int	30	√	√		Container contain supreme id (Self Increase)
Room_num	Varchar	250	√			Container contain room name of rooms
Quantity	Int	30	√			Container contain quantity of rooms
Booked	Int	30	√			Container contain booked status of rooms
Building_id	Int	30	√		√	Container contain building id of rooms

TABLE 5.1.11 Database Details of Semester

Chart Name		Semester				
Chart Statement		This is chart container of semester records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	Int	30	√	√		Container contain supreme id (Self Increase)
Semester_name	Varchar	250	√			Container contain semester name of semester

TABLE 5.1.12 Database Details of Slider

Chart Name		Slider				
Chart Statement		This is chart container of slider records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
Id	BIG (INT)	30	√	√		Container contain supreme id (Self Increase)
Image	VARCHAR	250	√			Container contain image of slider

TABLE 5.1.13 Database Details of Student

Chart Name		Student				
Chart Statement		This is chart container of student records				
Area Name	Value Type	Volume	Not Null	PK	FK	Statement
St_id	Int	250	√	√		Container supreme id (Self Increase)
St_name	Varchar	250	√			Container contain student name of student
Email	Varchar	250	√			Container contain email of student
Password	Varchar	250	√			Container contain password of student
St_dept	Varchar	250	√			Container contain student department of student
Image	Varchar	250	√			Container contain mage of student
Room_id	Int	30	√		√	Container contain room id of student
Semester_id	Int	30	√		√	Container contain semester id of student

St_contact	Varchar	250	√			Container contain student contact of student
Remember_token	Varchar	250	√			Container contain remember token of student

TABLE 5.1.14 Database Details of User

Chart Name		User				
Chart Statement		This is chart container of user records				
Area Name	Value type	Volume	Not Null	PK	FK	Statement
Id	int	30	√	√		Container supreme id (Self Increase)
F_name	varchar	250	√			Container contain fast name of user
L_name	varchar	250	√			Container contain last name of user
Email	varchar	250	√			Container contain email of user
Contact	varchar	250	√			Container contain contact of user
Address	varchar	250	√			Container contain address of user
Email_verified_at	Timestamp					Container contain email verified time of user
Password	varchar	250	√			Container contain password of user
Remember_token	varchar	250	√			Container contain remember token of user

5.2 Test Case

TABLE 5.2.1 Login Page of Test Case Description

Serial No	Input/Action	Desired Value	Indeed Value	Comment
1	Permit the field empty	The field email and password required	Message “Email and password is required”	Granted
2	Taken ineffective Password	Password is incorrect	Message “Password is incorrect”	Granted
3	Taken ineffective email format	Please enter a valid email	Message “Please enter a valid email”	Granted
4	Taken acceptable user name or email	Accepted Value	Value accepted	Granted

TABLE 5.2.2 Registration Page of Test Case Description

Serial No	Activity	Desired Value	Indeed Value	Comment
1	Permit any field empty	This field is empty	Message “This field is empty”	Granted
2	Taken an ineffective email or already used	This email is invalid or try with another	Message “Enter a valid email or try with another”	Granted
3	Taken an ineffective phone number	Phone number is invalid	Message “Phone number is invalid”	Granted
4	Taken valid data	Accepted Value	Value accepted	Granted

CHAPTER 6

CONCLUSION AND FUTURE WORK

6.1 Future Works

We just want that our system will have been used in our university campus. Then in future if it is convenient to use by the users, we will try to make it as a versatile system. And the problems we have faced, in future we have planned to solve this problem. We have a well-planned idea about it. Cause it's so important to build a JU Hall for educational system in our country. Most importantly we want to add payment gateway using API method in our project.

For the payment gateway, we will use:

- Bikash
- DBBL Rocket
- Nagad
- One Card and more payment gateway

6.2 Conclusion

Dormitory management systems are software tools that streamline the management of dormitories and student housing facilities. These systems typically include features such as room assignment and scheduling, facility maintenance and repairs, rent payment tracking, and communication tools for residents and staff.

Overall, dormitory management systems can greatly benefit both students and staff by increasing efficiency and reducing administrative workload. By automating many of the tasks associated with managing a dormitory, staff members can devote more time to providing support and resources to students.

Additionally, these systems often provide valuable data and analytics that can inform decision-making around facility management and student programming. For example, usage patterns and

feedback from residents can help staff optimize resource allocation and improve the overall living experience for students.

In summary, dormitory management systems offer a variety of benefits for both students and staff, including improved efficiency, better communication, and data-driven decision-making. As such, they are increasingly becoming a standard tool for managing student housing facilities.

REFERENCES

- [1] http://www.du.ac.bd/home/hall_admin/hall (*Dhaka University Hall Management Web Portal*)
- [2] <http://www.sust.edu/campus-life/residence-hall> (*Shahjalal University of Science and Technology Hall*)
- [3] <http://www.kuet.ac.bd/index.php/welcome/khajahalldetails> (*Khulna University of Engineering and Technology*)