# Hostel Management System



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| **Submitted by** | **Haiqa Ajaz Khan**<br>**Hala Tahir** |
| **Roll. No** | **125-BSCS-17**<br>**137-BSCS-17** |
| **Session** | **2017 - 2021** |
| **Supervised by** | **Dr Muhammad Safyan Tiwana**<br>**Assistant Professor** |


**BS(HONS)**
**IN**
**COMPUTER SCIENCE**

# DEPARTMENT OF COMPUTER SCIENCE

# GC UNIVERSITY LAHORE

# Hostel Management System

**Submitted to GC University Lahore in partial fulfillment of the requirements for the award of degree of**

## BS(HONS)
## IN
## COMPUTER SCIENCE


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# Declaration

I, Haiqa Ajaz Khan, Hala Tahir student of **BS(Hons)** in the subject of **Computer Science** session **2017-2021**, hereby declare that the matter printed in this thesis titled, **R**FID based Hostel Management System is my own work and has not been printed, published and submitted as research work, thesis or publication in any form in any University, Research Institution etc in Pakistan or abroad.

**Date:** _____ **Signatures of Deponent**

# Research Completion Certificate

It is certified that the research work contained in this thesis titled **R**FID based hostel management system has been carried out by **H**aiqa Ajaz Khan Roll. No 0125-BSCS-17 **H**ala Tahir Roll. No 0137-BSCS-17 under my supervision.

**Dr Muhammad Safyan Tiwana**
**Assistant Professor**

**Date:** _____

**Submitted Through**

**Prof Dr. Syed Asad Raza Kazmi**
**Chairperson**
**Department of Computer Science**
**GC University Lahore**

**Controller of Examination**
**GC University Lahore**

# Acknowledgements

I am grateful to the Almighty **Allah**, Who blessed me with health, wisdom, knowledge, thoughts and opportunity to make some contribution in the form of present effort. I offer my humblest thanks from the deepest core of my heart to the **Holy Prophet Muhammad (Peace be upon him)**, the most perfect and excelled among and ever born on the surface of earth.

The research work embodied in this dissertation was accomplished under the able guidance and affectionate supervision of **Dr. Muhammad Safyan Tiwana**, Assistant Professor, GC University, Lahore. I will always remember his moral encouragement, skillful guidance, positive criticism and valuable advice throughout the course of my study.

I also express my feelings of love and respect for my beloved parents that are the real asset of my life and gave me confidence and my best friend also deserve my thanks for their loving encouragement and prayers for my success.

# *Dedication*

*My research work is dedicated to my family and my honorable teacher prof Dr. Syed Asad Raza Kazmi who encouraged and helped me to complete my research in the area of formal modeling and formal verification related to computer science.*

# *Abstract*

**"BarCode Based Hostel Management System" is Software intended to support both users and administrators in executing different hostel management tasks. When the number of educational establishments increases over time, so does the number of hostels available to serve the bulk of students. Hostels are manually operated, with records stored on registers and archives, placing a lot of burden on the administrative staff, who run the hostels. The software is designed to address the challenges of running a hostel while still avoiding the issues that can arise when tasks are completed manually. The identification of the current system's shortcomings leads to the creation of a computerised system that is consistent with the existing system while being more user friendly and GUI oriented. We will maximise the system's performance and thereby solve the limitations of the new system.**

# Contents

# List of Tables

# List of Figures

# Chapter 1

# Introduction

## 1.1 Introduction

With time, the world is changing. Every industry wants rapid, precise, and automated procurement processes. As a result, numerous programs have been created to satisfy the needs of various sorts of users in every sector may it be schools, hospitals or any other place of work. Data was kept manually in the past but with passing time preference is changing. So, upon seeing and realising that GC university Girls hostel is still manually keeping the records we finally decided to switch it online .The " Fatima Jinnah Hostel Management System" has been developed to overcome the problems of the existing manual hostel management systems in Government College University, Lahore.This system facilitates both student and administrator.Our main focus is to ensure barcode reader based attendance system moreover this system will help the user to carry out different set of operation in effective and smooth manner.Our system is designed to support hostel managers by helping them to save student information,student attendance, rooms information and perform many other functions that will relieve them of manual labour, since it is exceedingly difficult to identify student papers, mess bills, student attendance and room information manually. This system is using computerised equipment and software in order to ensure simple data and information collection, retrieval,

and manipulation. Manual supervision is common but time taking thereby it is not needed. An automatic machine can eliminate a large number of repetitions which is indeed preferred.

## 1.2 Project Overview

The hostel management system is a web-based software that allows students to more easily access the university hostel. This initiative also keeps track of the hostellers and students who have applied. Warden is in charge of it. This paper aims to minimise human effort and make hostel assignment easier for students and hostel officials by including an online forum,where student can easily apply.Automatic selection of students from the waiting list and giving them separate portal that keeps their records and information is another feature of this system. Moreover this work is primarily focused on the marking and record keeping of students entry/exit and mess attendance. Aside from this ,it also overlooks billing detail of each student,room management ,complaint filing, viewing and uploading news on notice boards, and many other functions.

## 1.3 Problem Statement

A manual input system is now in place to maintain student data, track entry/exit timings, and mess attendance for students staying in the GCU girls hostel. The current hostel system administration takes time since hostel employees must walk from room to room to mark mess attendance also a specific person is required to mark entry/exit attendance and each every student needs to go to the admin office for every little issue. Our system resolves these issues by making it automatic.. Student can get their challan on the website, they can register online too.They can mark attendance by swiping their card on the scanner. Not only student but admin can also perform his/her duty on the webste from viewing attendance to keeping records.

## 1.4 Objectives

- To make data processing, retrieval, and referencing more dependable.
- To allow student to view their details as well.
- To make the process of student registration and selection easier.
- To manage rooms, students and billing records
- To make marking and reviewing attendance easier through scanner.

## 1.5 Study Limitations

The key reasons that hampered the progress of this analysis were time and money constraints. The study came with a slew of financial responsibilities, including stationery, printing, photocopying,scanning device and transportation. Furthermore, juggling fieldwork and seminars in order to complete a concise research study within the time frame was exhausting.Nonetheless, the study's accuracy was not jeopardised. We tried our hardest to make it as our hostel wanted it to be.

# Chapter 2

# Requirement Specification

## 2.1 Functional Requirements

Function and features that derives to the end user of the system are following

### 2.1.1 User Module

This allows the administrator and user to access the homepage.

### 2.1.2 Registration

Applicant will register themselves by filling the available form and submitting it.

### 2.1.3 List Upload

Only admin can upload the list for applicants to view. Link of the Lists will be given in the news column.

### 2.1.4 Login

Admin will assign login and password to students that got selected. Admin will send it on their official emails mentioned in registration form.

### 2.1.5 Student Module

This module is used to store student information such as personal information, educational information and so on. Moreover student is also allowed to update details or view previous details. Student can view and upload fee challan as well.

### 2.1.6 Update Password

Update password function is allowed for the user. he/she can reset their account's password anytime.

### 2.1.7 Mess no Allotment Module

This includes a method of allotting a mess no to a student.

### 2.1.8 Room Allotment Module

This includes a method of allocating a room to a student based on their education detail, department. A room will be assigned to a student, . It would show all of the students who are staying in the room in detail.This module will allow admin to view room capacity, status and free space as well. Admin can add, remove student and add rooms too.

### 2.1.9 Fees Module

This demonstrates the fee record and the status of student dues. Each student's mess fee and others bill are presented.

### 2.1.10 Settings Module

Only the administrator have access. This module helps you to create, edit, and delete student records, as well as rooms detail building blocks.

### 2.1.11 Attendance

This module will keep attendance record of students both of mess and entry/exit via scanner.

### 2.1.12 late Notification

Notify the administrator if there are any late commers.

### 2.1.13 scan copy

A scan copy of the student's fee slip can be included when a student will pay her dues.She will upload the scanned copy of paid fee challan and admin will be notified.

### 2.1.14 News Section

This sections contains all the news that admin wishes to share, lists link will be shared here too.

### 2.1.15 Add Complaint

Student can send their complaint to admin.

### 2.1.16 Admin

Admin will overlook all the above mentioned modules. Admin will have access to his/her profile after adding login and password. Admin can manage rooms, students, bills, attendance, news, complaints etc.

### 2.1.17 Logout

The system will allow the user to log out at any point.

## 2.2 Non-functional Requirements

Performance Requirements, The following are some of the noted performance requirements:

A thousand records would be able to be stored in the database.

Multiple users should be able to use the software at the same time.

There are no additional performance criteria that can have an effect on productivity.

No other special performance criteria would have an impact on growth.

## 2.3 Safety Requirement

Due to a virus or an operating system failure, the database will crash at any time. As a result, a backup of the database is requested. Security Prerequisites The

following are some of the considerations that have been found to protect software from unintentional or malicious access, use, alteration, destruction, or disclosure. Keep a special log or set of historical data.

Assign specific functions to various modules

Communication between certain parts of the program should be restricted.

For key variables, check the data integrity.

Encryption methods can be used in the user/license authentication process in future versions of the software.

## 2.4 Design Description

### 2.4.1 Uses Cases

This section will deals up with all the uses cases along with their detailed description of this particular application.

#### 2.4.1.1 Login

| Number | 1 |
|---|---|
| Name | Login |
| Pre Condition | User must be given login ids by Admin.<br>The user Internet connection must be enabled<br>The user must enter correct login id and password |
| Post Condition | System will respond correctly, according to the provided back end functionalities to users. |
| Primary Actor(s) | Student, Admin |
| Secondary Actor(s) | System Databases |
| Description | This feature will lead different users to their respective profile. |

#### 2.4.1.2 User Registration

| Number | 2 |
|---|---|
| Name | User Registration |
| Pre Condition | User will come across a form, They will have to fill it . |
| Post Condition | After filling the forrm user will get registered. |
| Primary Actor(s) | Applicant |
| Secondary Actor(s) | System Databases |
| Description | user get theves msel . height |

#### 2.4.1.3 Upload Lists

| Number | 3 |
|---|---|
| Name | Upload Lists |
| Pre Condition | Students wait for the above mentioned lists. |
| Post Condition | Wait is over. lists are uploaded.. |
| Primary Actor(s) | Admin |
| Secondary Actor(s) | System Databases |
| Description | Upload the merit , Interview and Selection Lists. |

#### 2.4.1.4 Generate Fee Invoice

| Number | 4 |
|---|---|
| Name | Generate Fee Invoice |
| Pre Condition | User must visit website to get challan To clear the pending dues |
| Post Condition | All payments are clear. |
| Primary Actor(s) | Admin |
| Secondary Actor(s) | System Databases |
| Description | Generate fee slip regarding dues . |

#### 2.4.1.5 Submit Dues

| Number | 5 |
|---|---|
| Name | Submit Dues |
| Pre Condition | No fee is paid.Student must pay the fees and upload scanned copy |
| Post Condition | All payments are clear. |
| Primary Actor(s) | Student |
| Secondary Actor(s) | Admin,System Databases |
| Description | In order to clear the dues fee should be submitted. |

#### 2.4.1.6 Update Profile

| Number | 6 |
|---|---|
| Name | Update Profile |
| Pre Condition | The user must have a profile. |
| Post Condition | Profile is updated.. |
| Primary Actor(s) | Student |
| Secondary Actor(s) | System Database, Admin |
| Description | Admin and student can view students profile and make changes. . |

#### 2.4.1.7 Forgot Password

| Number | 7 |
|---|---|
| Name | Forgot Password |
| Pre Condition | The user should be connected to the internet and they should forget their password. |
| Post Condition | The user will get the new password. |
| Primary Actor(s) | Student, Admin |
| Secondary Actor(s) | System Databases |
| Description | user get the new password of its ID. |

#### 2.4.1.8 View Bill Details and Status

| Number | 8 |
|---|---|
| Name | View Bill Details and Status |
| Pre Condition | Challan is issued. |
| Post Condition | Students have uploaded scanned copy<br>of their challan.<br>fee is submitted. |
| Primary Actor(s) | Admin |
| Secondary Actor(s) | Student,System Databases |
| Description | Student can view their bills<br>Admin can see student bill details and status.. |

#### 2.4.1.9 Mark Attendance

| Number | 9 |
|---|---|
| Name | Mark Attendance |
| Pre Condition | the scanner should be connected to the system.<br>Internet is necessary and<br>student shouldscan the card on leaving or entering hostel<br>also at night for next day mess attendance. |
| Post Condition | After marking the attendance the Admin will get the notification.<br>On late attendance mark admin will get late notification. |
| Primary Actor(s) | Student |
| Secondary Actor(s) | Admin,System Databases |
| Description | user mark its attendance . |

#### 2.4.1.10 Assign Rooms

| Number | 10 |
|---|---|
| Name | Assign Rooms |
| Pre Condition | Student did not have room assigned.. |
| Post Condition | Students are giving their room-no and asked to join hostel soon. |
| Primary Actor(s) | Admin |
| Secondary Actor(s) | Student |
| Description | Assign every student a room . |

#### 2.4.1.11 Assign Mess no

| Number | 11 |
|---|---|
| Name | Assign Mess no |
| Pre Condition | Student did not have any mess no assigned to them. |
| Post Condition | Student are assigned messno.. |
| Primary Actor(s) | Admin |
| Secondary Actor(s) | Student |
| Description | Each student is assigned a unique mess no . |

#### 2.4.1.12 Late Notification

| Number | 12 |
|---|---|
| Name | Late Notification |
| Pre Condition | Student is late after curfew. |
| Post Condition | Notice issued. |
| Primary Actor(s) | Admin |
| Secondary Actor(s) | Student |
| Description | Late notification is issued to students when fee is submitted late they are out of hostel past curfew time. |

#### 2.4.1.13 News/Ad

| Number | 12 |
|---|---|
| Name | News/Ad |
| Pre Condition | Internet connection should be available.News column should be upto date. |
| Post Condition | Notice is issued. |
| Primary Actor(s) | Admin |
| Secondary Actor(s) | - |
| Description | Admin will upload latest news about hostel here. |

#### 2.4.1.14 Add Complaint

| Number | 13 |
|---|---|
| Name | Add Complaint |
| Pre Condition | Internet connection should be available. Student will go to the portal and click on complaint button. Write and submit complaint. |
| Post Condition | Admin will be able to view the submitted complains. |
| Primary Actor(s) | Student |
| Secondary Actor(s) | Admin |
| Description | Student can add their complaint available in the portal. |

#### 2.4.1.15 Contact Us

| Number | 13 |
|---|---|
| Name | Contact Us |
| Pre Condition | User need help to contact the administration. |
| Post Condition | User gets in contact with Administration. |
| Primary Actor(s) | Student |
| Secondary Actor(s) | Admin |
| Description | Contacting Admin to get information. |

### 2.4.2 Uses Cases Model

### 2.4.3 Entity Relationship Diagram

### 2.4.4 DataFlow Diagram

### 2.4.5 Class Diagram

### 2.4.6 Applicant Sequence Diagram

### 2.4.7 Admin Sequence Diagram

### 2.4.8 Student Sequence Diagram

### 2.4.9 Deployment Diagram

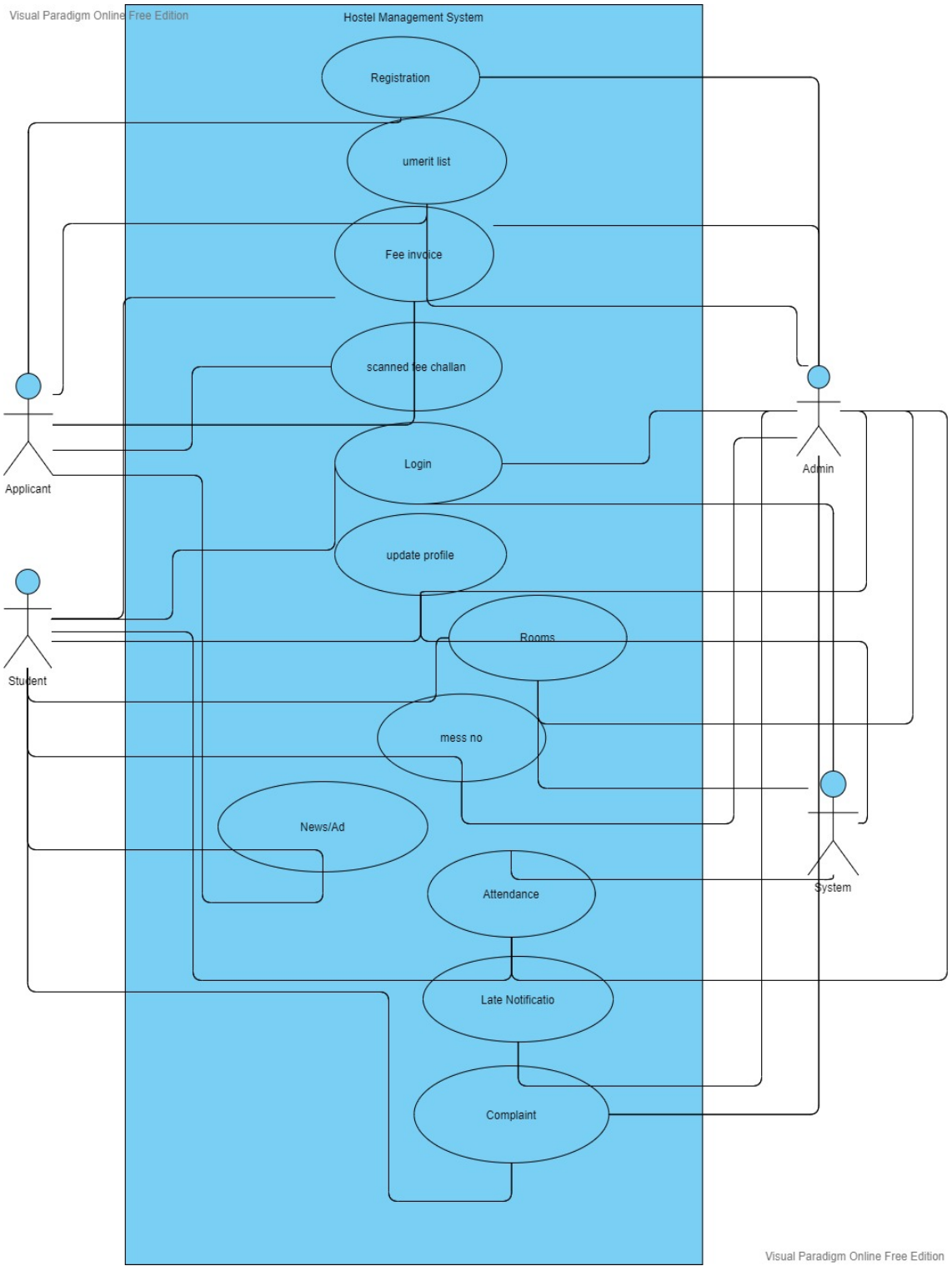



FIGURE 2.1: Use Case Model

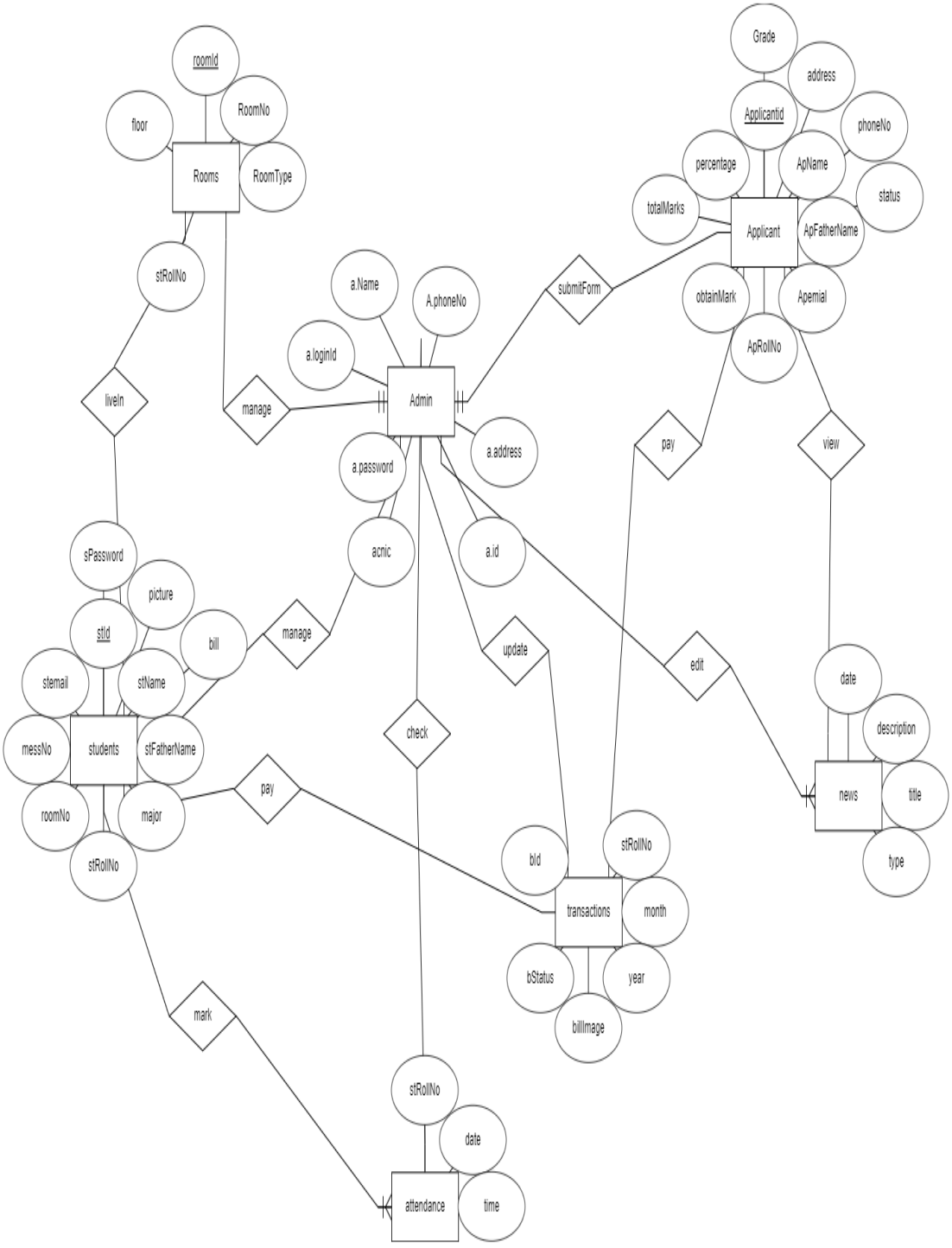



FIGURE 2.2: Entity Relationship Diagram

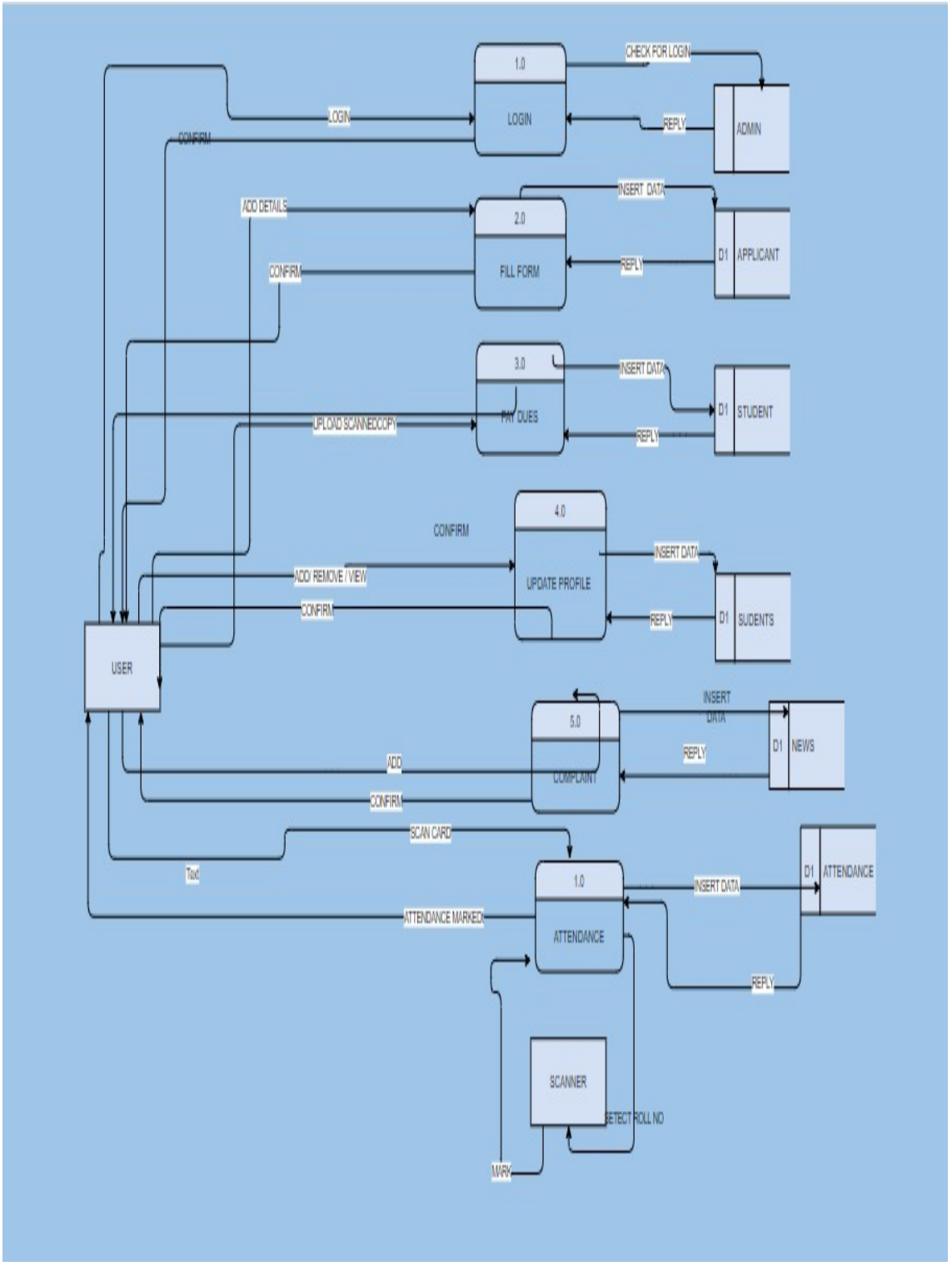



Figure 2.3: User DataFlow Diagram

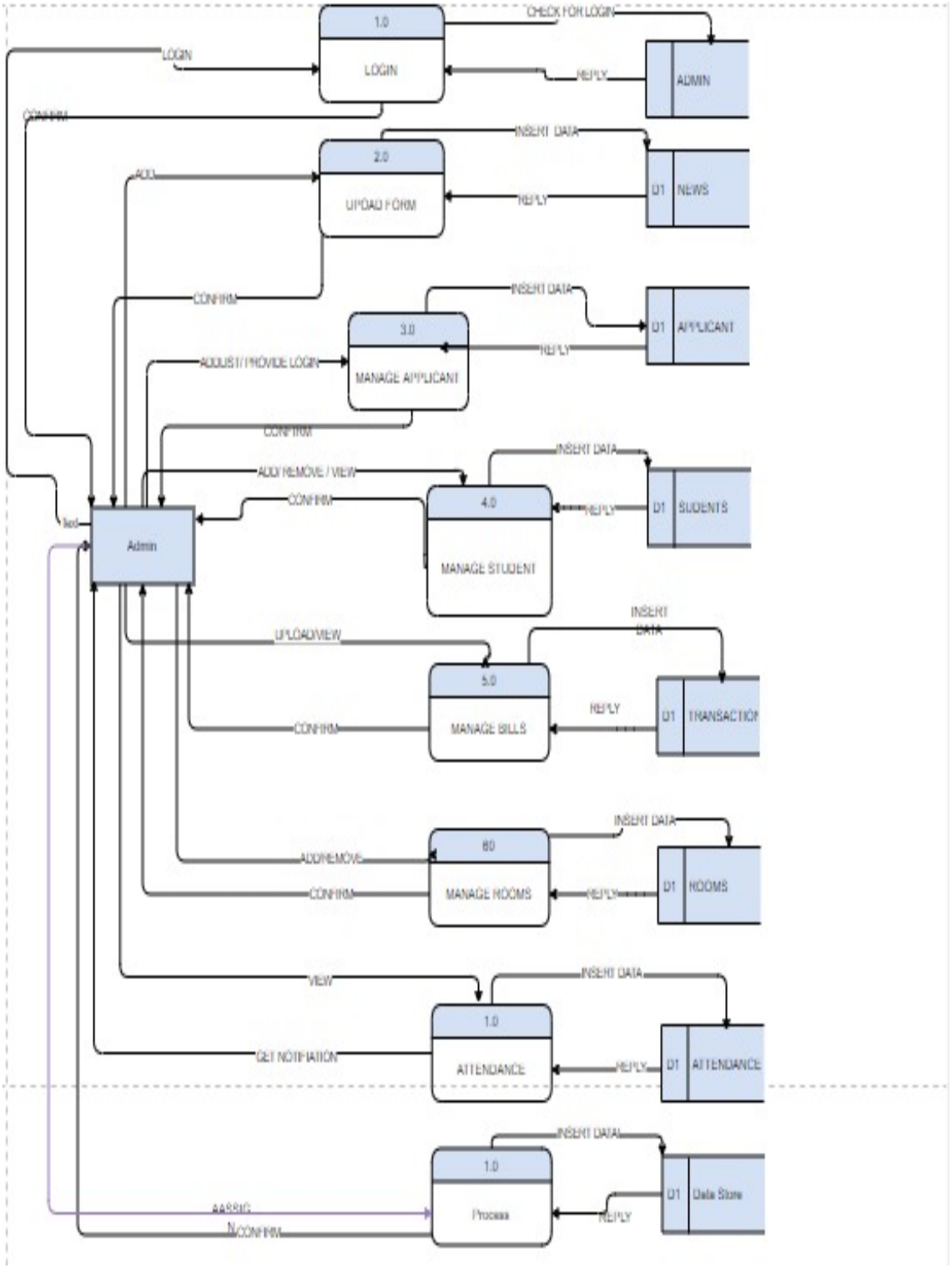



Figure 2.4: Admin DataFlow Diagram

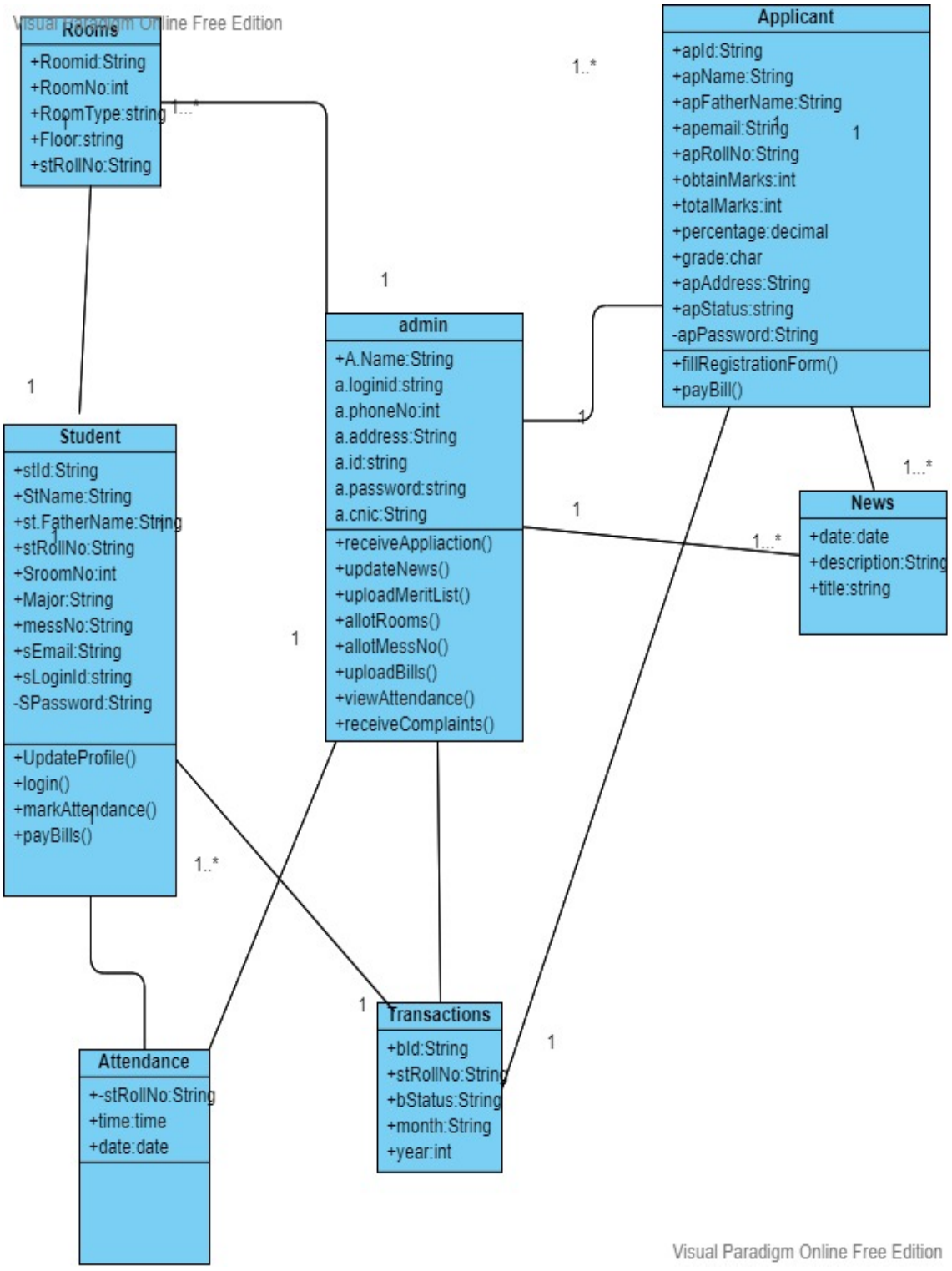



FIGURE 2.5: Class Diagram

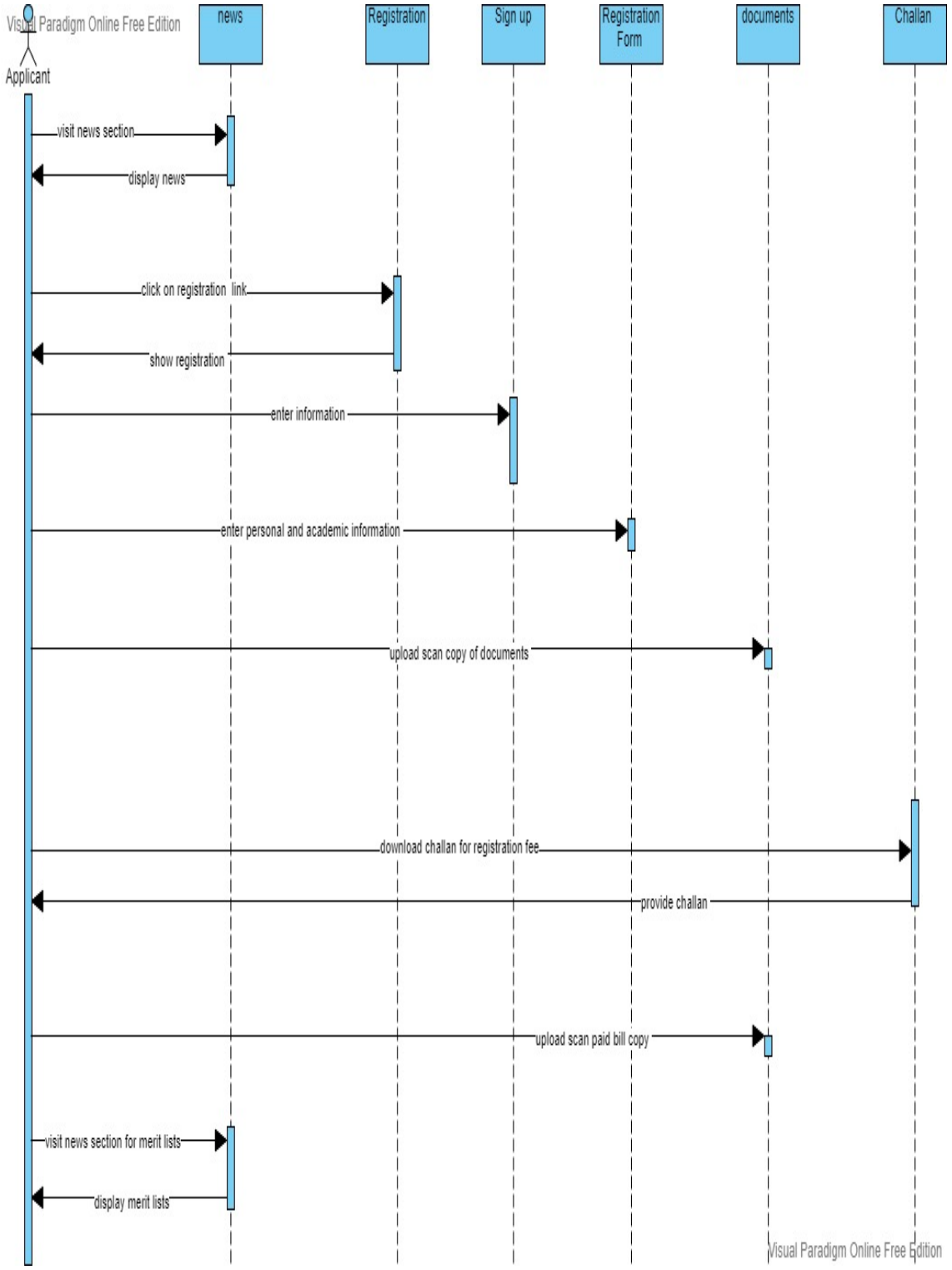



FIGURE 2.6: Applicants Sequence Diagram

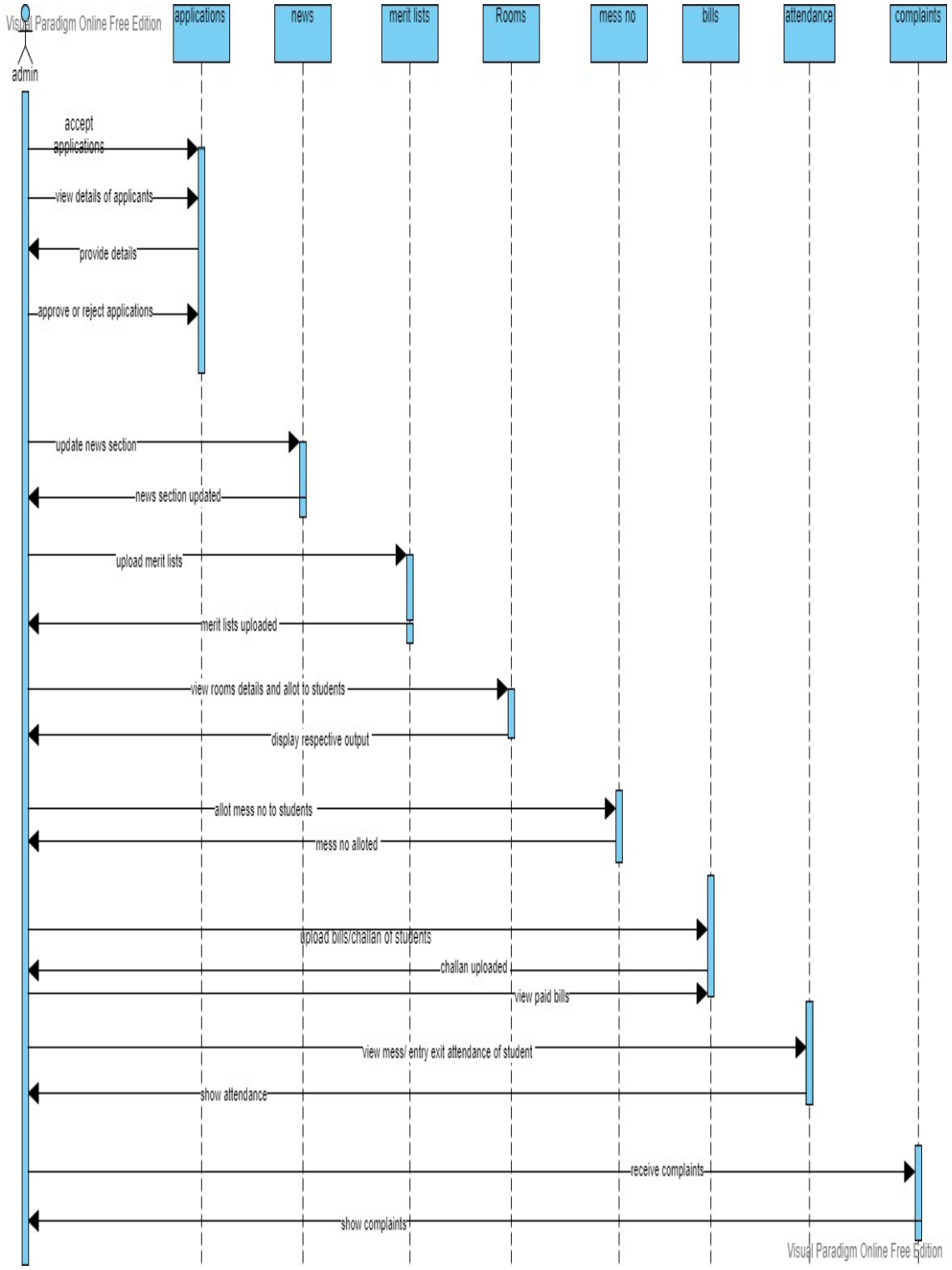



FIGURE 2.7: Admin Sequence Diagram

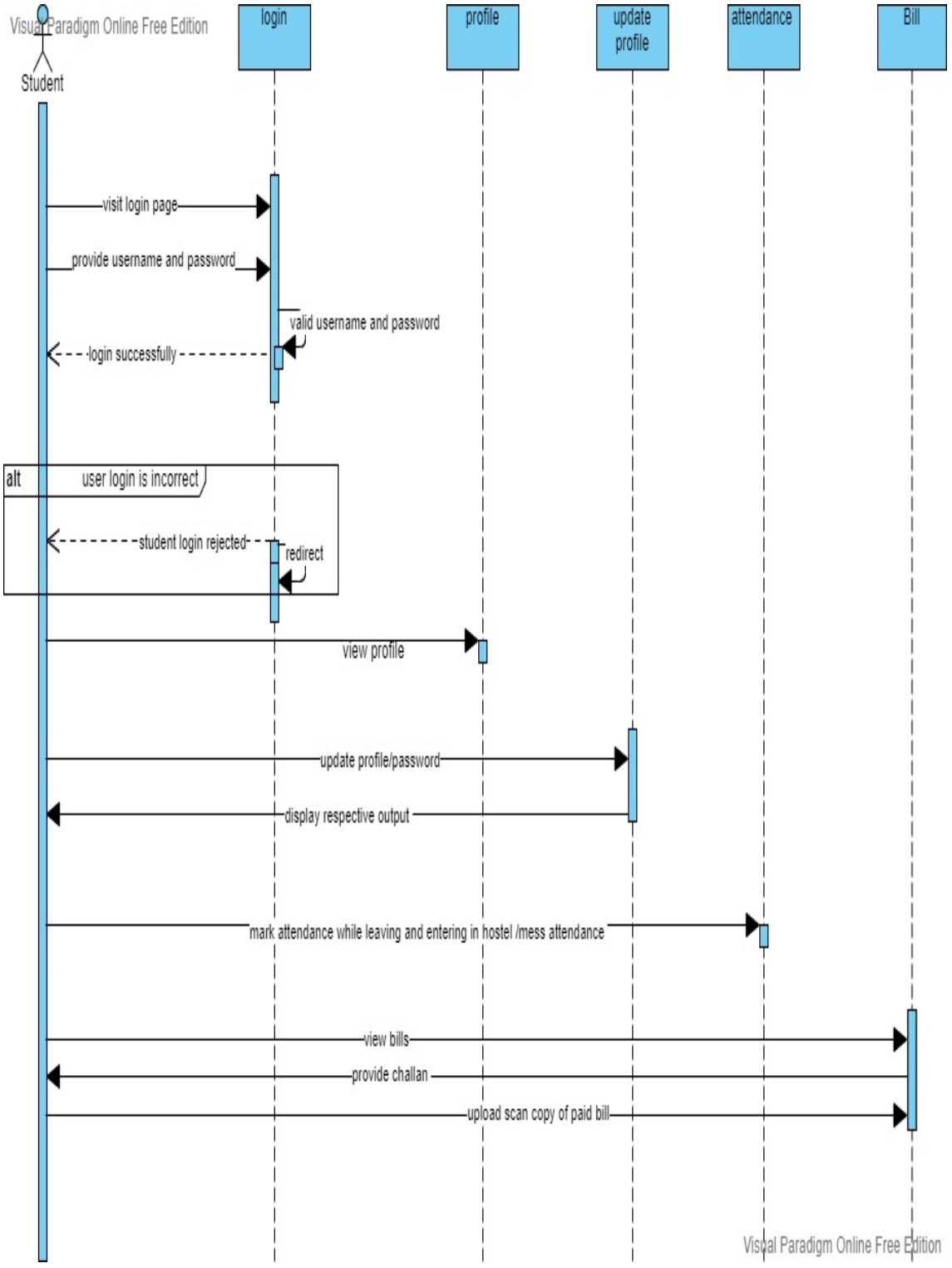



FIGURE 2.8: Student Sequence Diagram

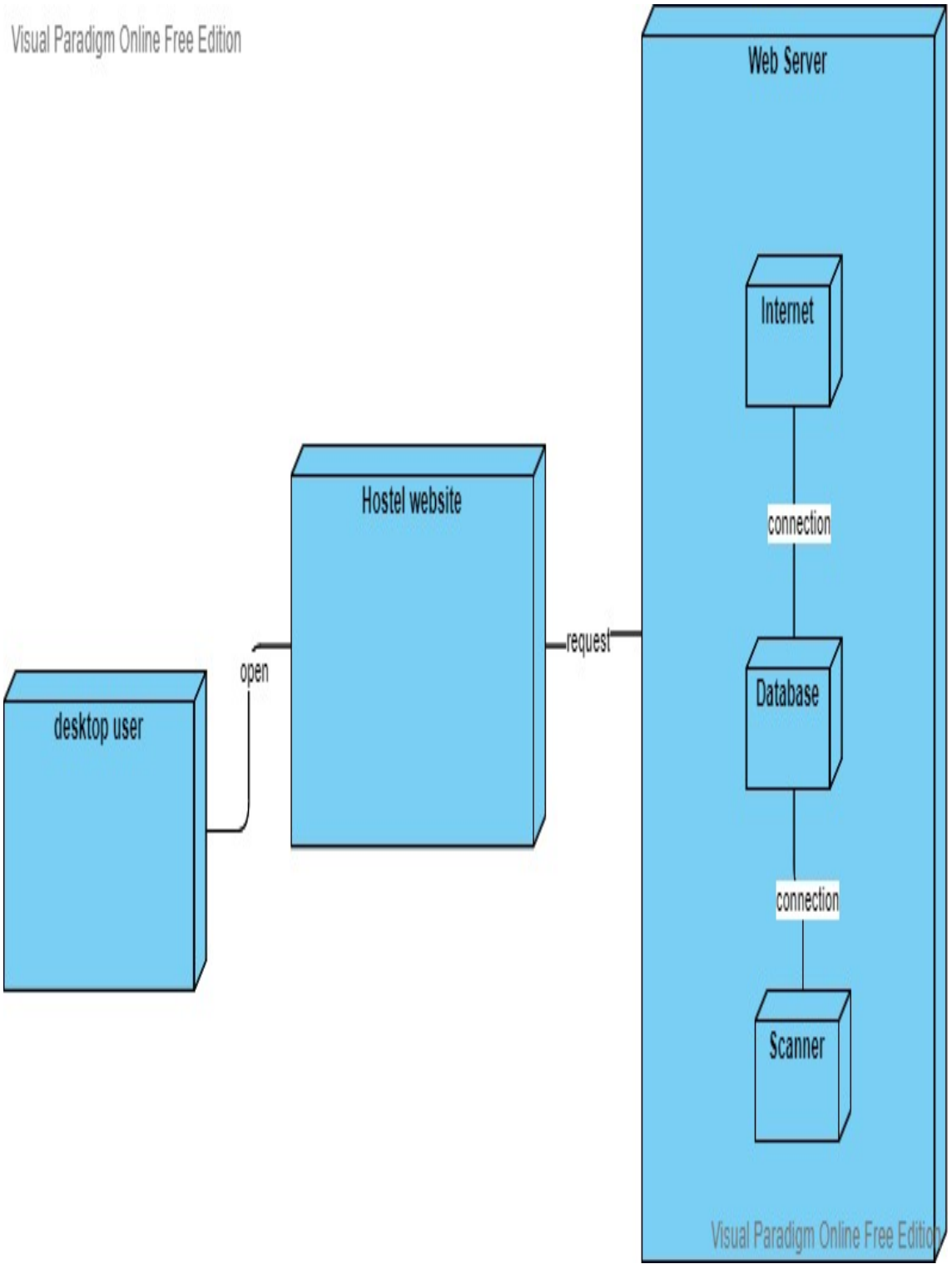


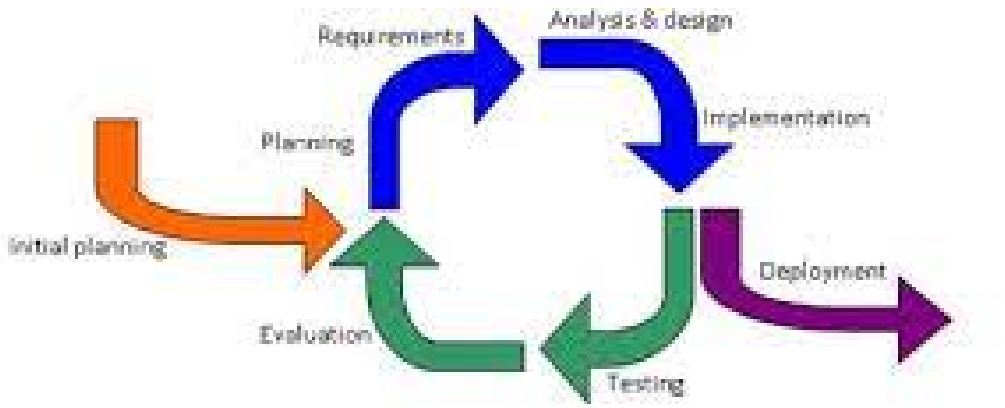

FIGURE 2.9: Deployment Diagram

# Chapter 3

# Project Design

## 3.1 Methodology

In this project we will be using iterative model. An iterative process is not random it is a systematic process .we will be following each step as mentioned below:




Model 1: Typical iterative development process

- Step1: Planning and Requirements:

This cycle will be all about building a schedule and timetable for the first iterative cycle by setting out the initial requirements, compiling relevant documents, and preparing the first iterative cycle.

Step 2:The Design and Analysis:

Based on the schedule, finalise the user and admin needs, database templates, and technological specifications. Make a working architecture, schematic, or algorithm that meets the specifications.

Step 3: Implementation:

Create the necessary features and architecture to satisfy the requirements.

Step 4: Testing:

Identify and find something that isn't running or behaving as it should. Stakeholders, consumers, and product reviewers give their perspectives.

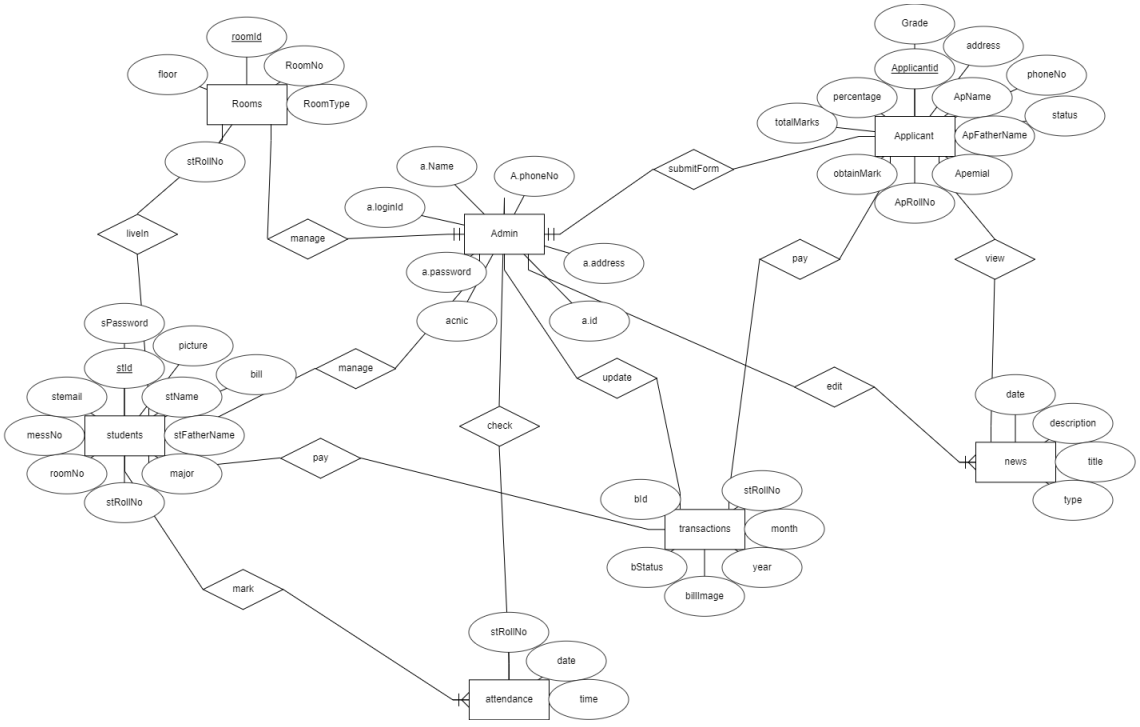
Step 5: Evaluation and Review:

The evaluation phase is the final step of the Iterative life cycle, in which the entire team, along with the customer, examines the state of the project and validates if it meets the recommended requirements.

Compare and contrast this iteration to the specifications and requirements.

## 3.2 Architecture Overview

### 3.2.1 Entity-Relationship Diagram

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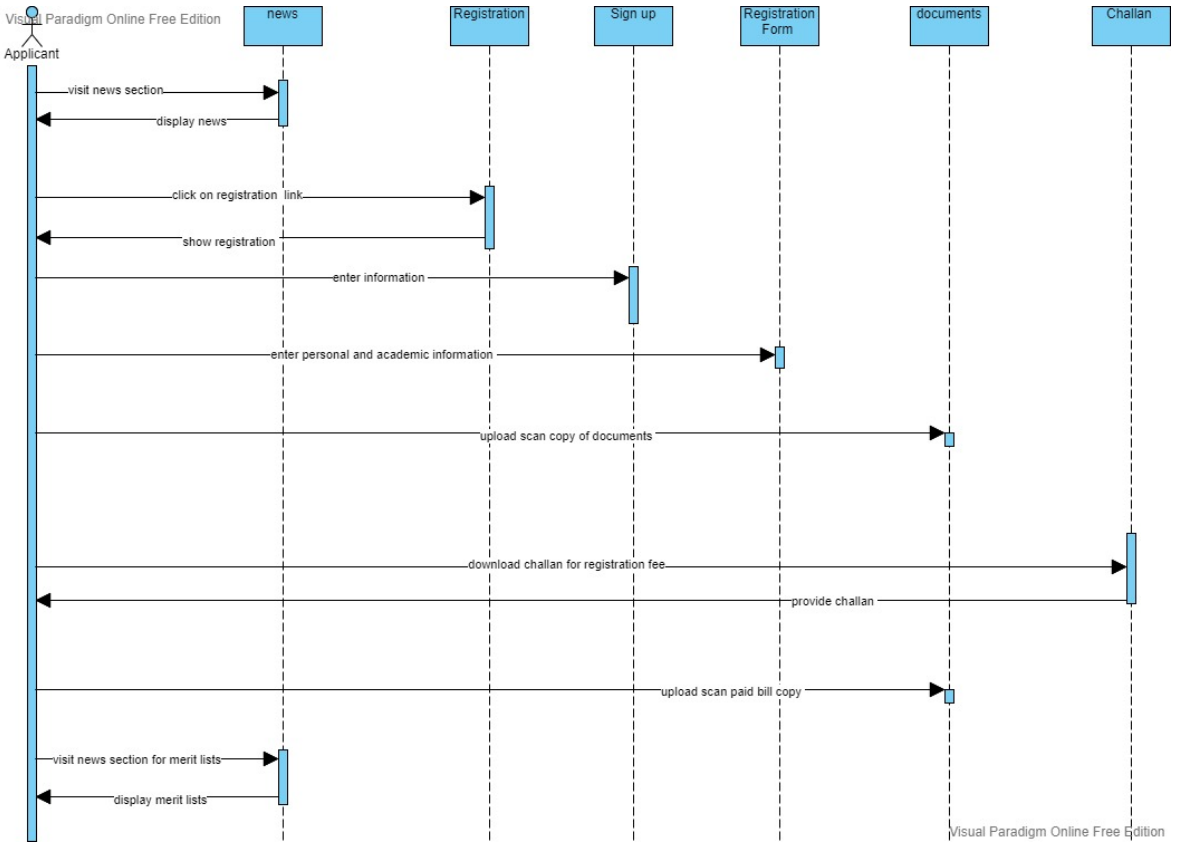
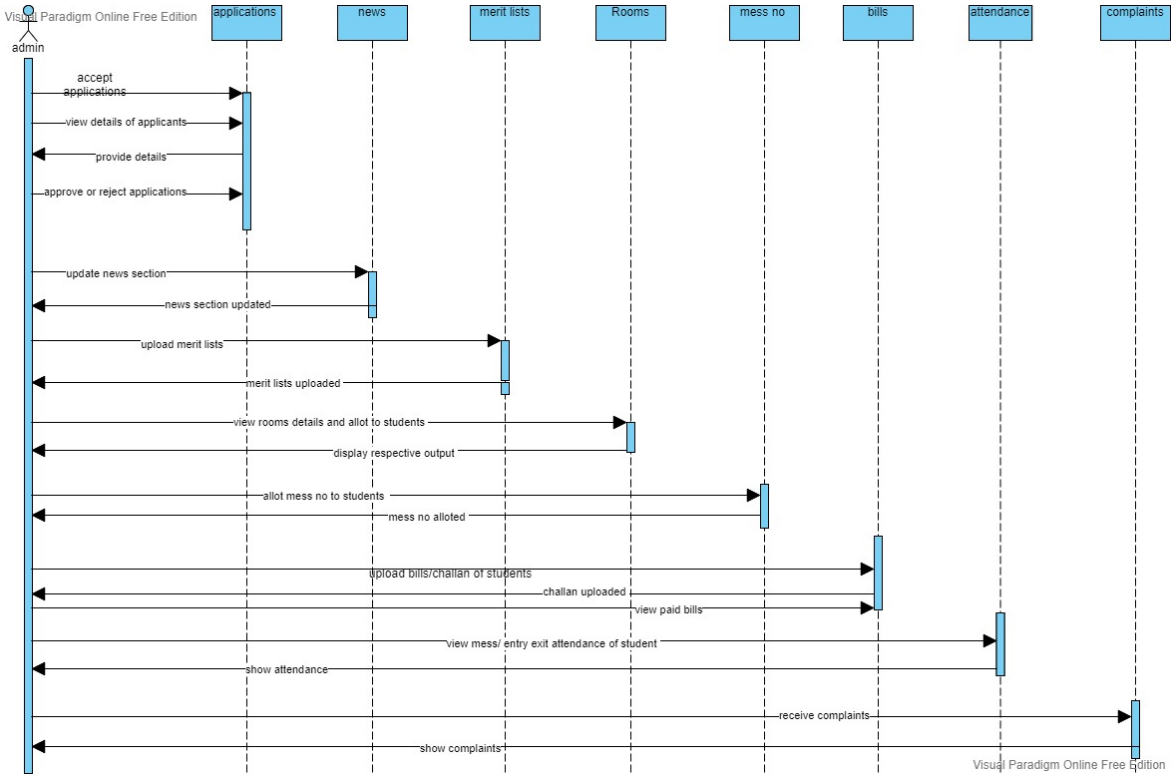
### 3.2.2 Sequence Diagram

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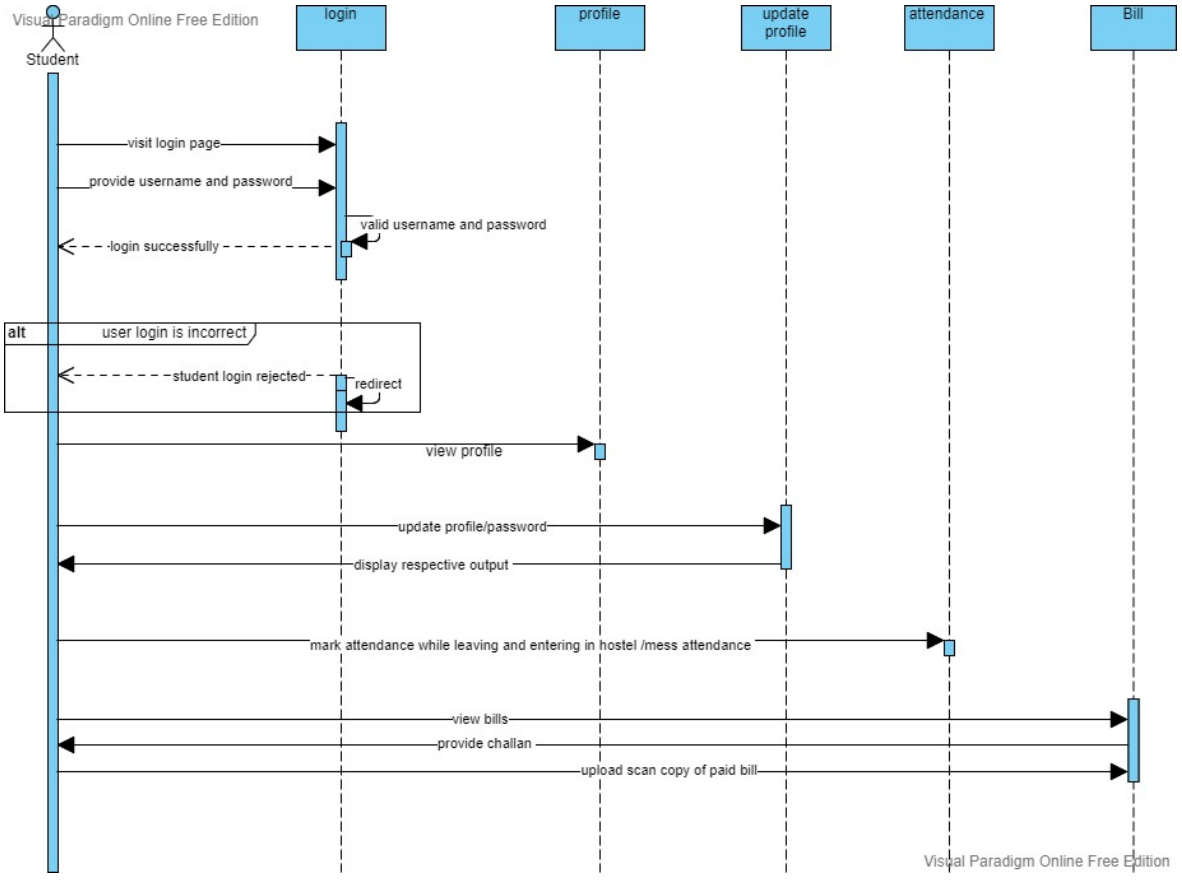
admin
applications
news
merit lists
Rooms
mess no
bills
attendance
complaints
accept applications
view details of applicants
provide details
approve or reject applications
update news section
news section updated
upload merit lists
merit lists uploaded
view rooms details and allot to students
display respective output
allot mess no to students
mess no alloted
upload bills/challan of students
challan uploaded
view paid bills
view mess/ entry exit attendance of student
show attendance
receive complaints
show complaints
Visual Paradigm Online Free Edition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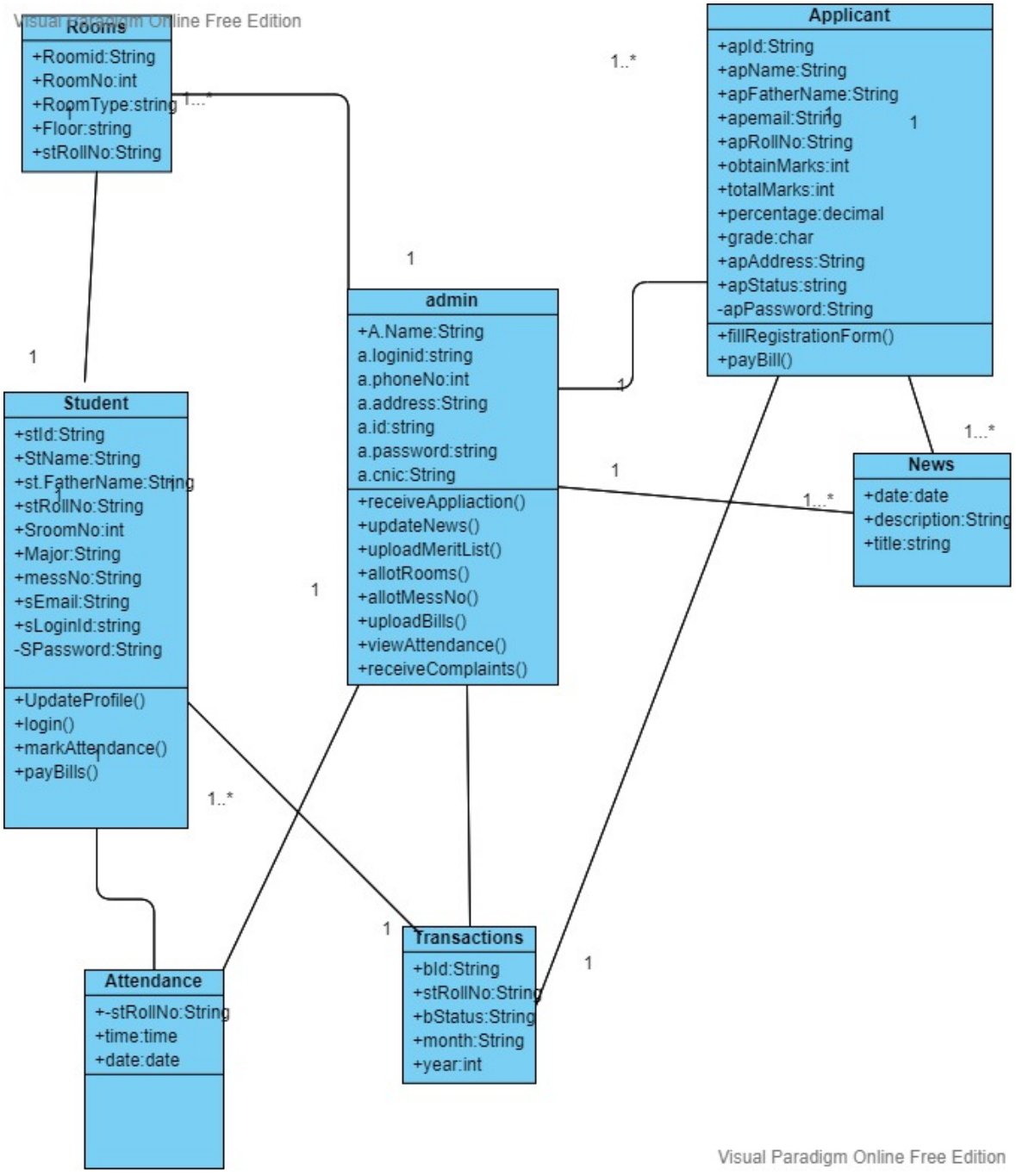
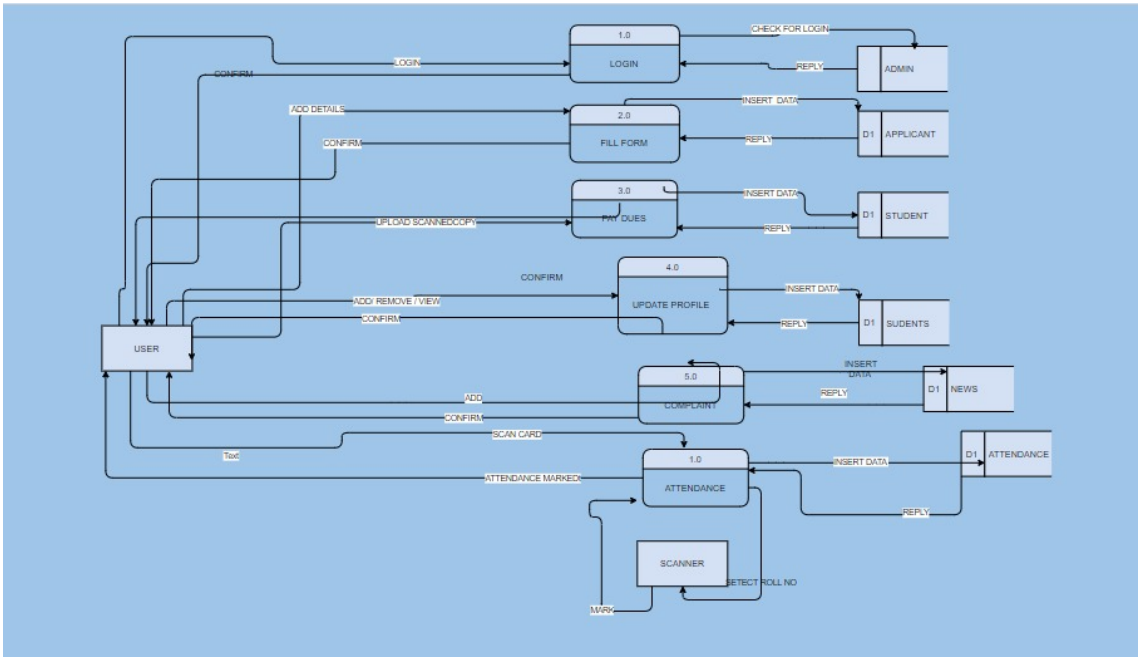
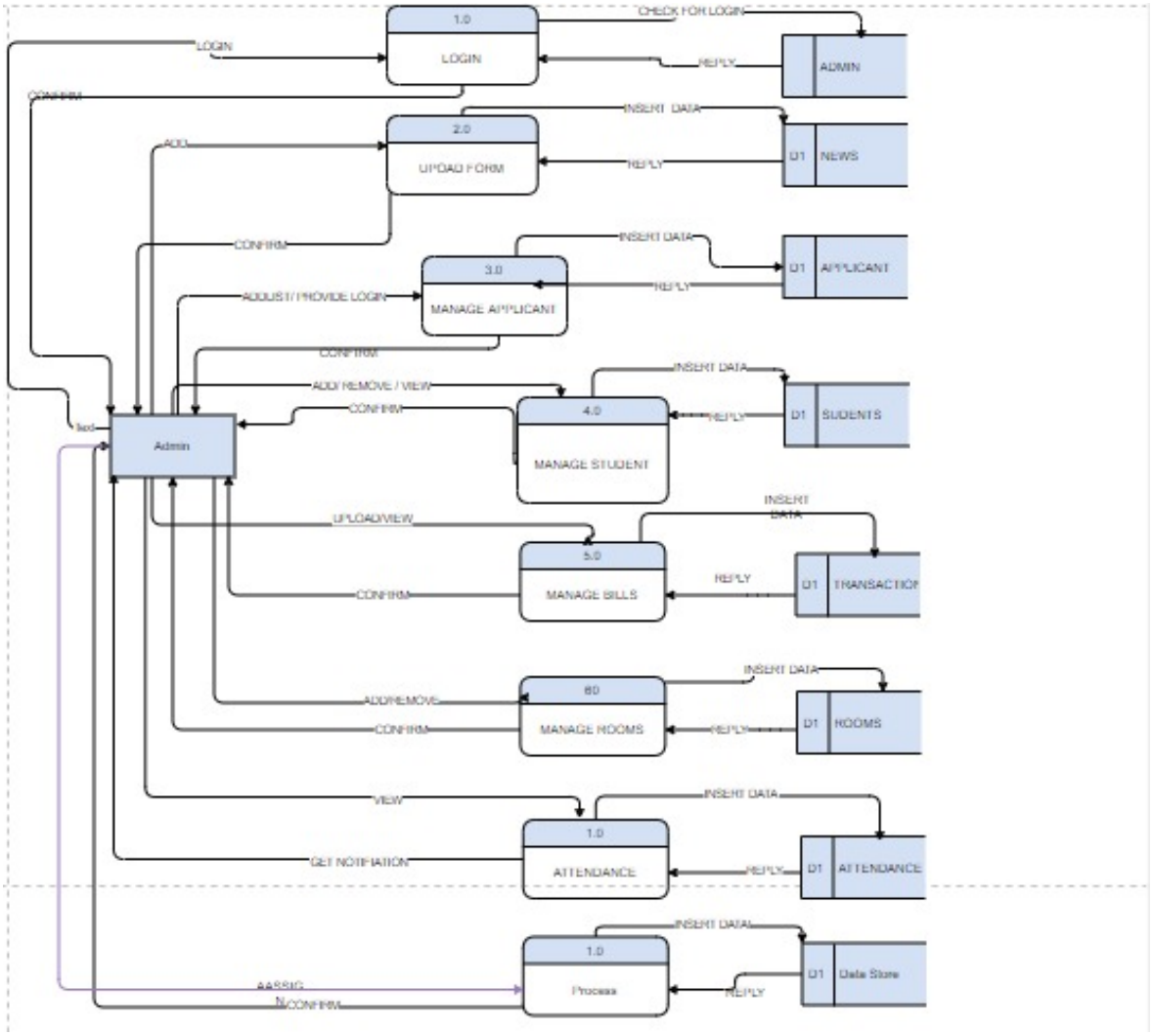
Student
login
profile
update profile
attendance
Bill
visit login page
provide username and password
valid username and password
login successfully
alt
user login is incorrect
student login rejected
redirect
view profile
update profile/password
display respective output
mark attendance while leaving and entering in hostel /mess attendance
view bills
provide challan
upload scan copy of paid bill
Visual Paradigm Online Free Edition

### 3.2.3 Class Diagram

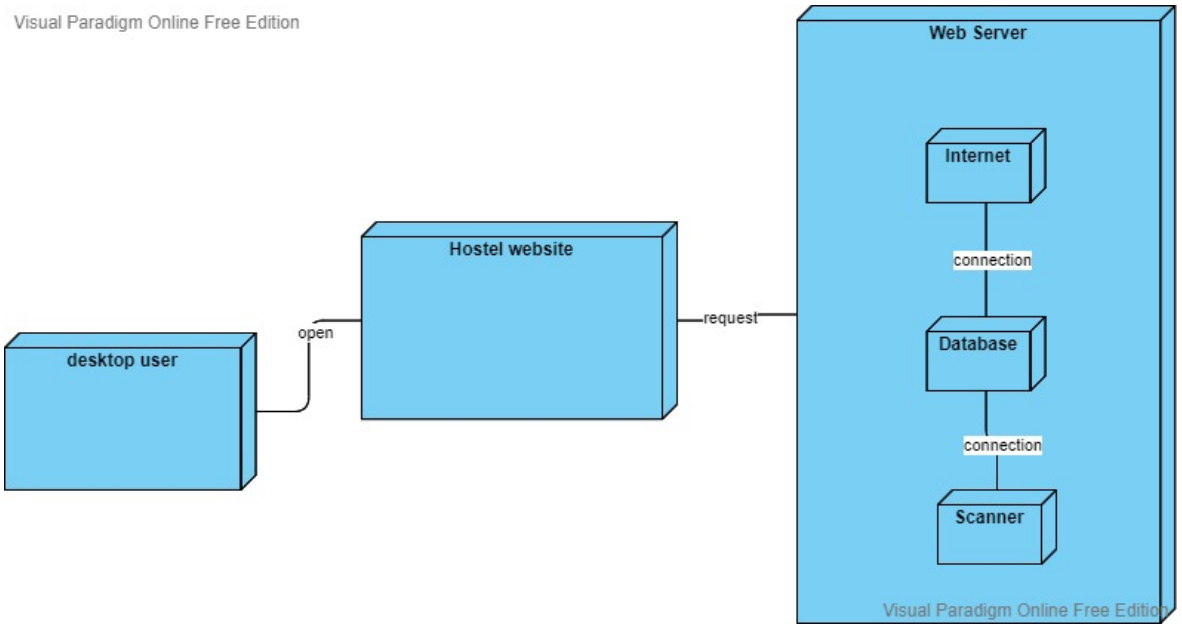


### 3.2.4 Data Flow Diagram




1.0
LOGIN
CHECK FOR LOGIN
REPLY
ADMIN
LOGIN
CONFIRM
INSERT DATA
2.0
UPOAD FORM
ADD
REPLY
D1
NEWS
CONFIRM
INSERT DATA
3.0
MANAGE APPLICANT
REPLY
D1
APPLICANT
ADDUST/PROVIDE LOGIN
CONFIRM
INSERT DATA
ADD/REMOVE / VIEW
4.0
MANAGE STUDENT
CONFIRM
REPLY
D1
SUDENTS
Admin
INSERT DATA
UPLOADVIEW
5.0
MANAGE BILLS
REPLY
D1
TRANSACTION
CONFIRM
INSERT DATA
6D
MANAGE ROOMS
ADD/REMOVE
CONFIRM
REPLY
D1
ROOMS
VIEW
INSERT DATA
1.0
ATTENDANCE
GET NOTIFIATION
REPLY
D1
ATTENDANCE
INSERT DATA
1.0
Process
D1
Data Store
REPLY

### 3.2.5 Deployment Diagram



## 3.3 Design Description

Hardware Requirements:

1)Proessor: intel 5 or better

2) RAM: 8GB

3) Hardisk: 1Tb

4)Keyboard

5) monitor or LCD

6) Barcode Reader(Bc-7160)

7) Barcoded Card

Software Requirements:

1)Tool: Visual studio code

2) Database: mongodb compass

3) Operating System: Microsoft Windows

4)postman

5)React

6) Express

7) Node.js

# Chapter 4

# Implementation and Evaluation

## 4.1 Development Stages

### 4.1.1 Strategy

We designed our website while keeping in mind the requirements of our end users. In order to make it a success we planned each and everything beforehand. we have learnt our users demand and then planned our project on it. We designed it in such a way that it can be easy to use and handle. After jotting down our requirements we made diagrams so that it can give an outlook of our system. After this we worked on our database and later on its implementation. we also wrote the project code. Then we integrated and tested our project to check its working.

### 4.1.2 Tool Used

- Visual Studio Code
- Mongodb Compass
- Postman

### 4.1.3 Languages

#### 4.1.3.1 React

React (also known as React.js or ReactJS) is a free and open-source JavaScript front-end library for creating user interfaces or UI components. It is run by Facebook and a community of independent developers and businesses. React may be used as a foundation for single-page or mobile apps.

#### 4.1.3.2 Node

Node.js is a cross-platform open source runtime environment for creating server-side and networking applications. Node.js apps are written in JavaScript and may be executed on OS X, Microsoft Windows, and Linux using the Node.js runtime.

#### 4.1.3.3 Mongodb

MongoDB is a cross-platform document-oriented database software that is open source. MongoDB, a NoSQL database software, employs JSON-like documents with optional schemas. MongoDB was created by MongoDB Inc. and is provided under the Server Side Public License.

#### 4.1.3.4 Express

Express is a well-known neutral web framework developed in JavaScript and hosted on the Node.js runtime environment.It is a data modelling language for product data that is widely used. The ISO Standard for the Exchange of Product Model STEP (ISO 10303) formalises and standardises EXPRESS as ISO 10303-11.

### 4.1.4 Methodologies

This approach focuses on the initial set of requirements and specifications, then builds modules with each iteration until the project complexity rises and the system becomes more detailed until it is suitable for testing. We chose iterative and incremental development since it was more suited to our needs, as each module was designed, produced, and tested before being merged with the rest of the program.
‘

### 4.1.5 System Architecture

Our system is built on a three-tier design, with each layer isolated from the others.Data collection comes first, followed by data processing, and finally data representation.

#### 4.1.5.1 Data Layer

This layer, often known as the database layer, contains all data storage and repositories. Mongodb was utilised to store the data of our users and projects.

#### 4.1.5.2 Processing Layer

The processing layer is the intermediate layer that performs processing and communicates between the data and presentation layer. Here all necessary task will be performed to use our application, like user requests to the database and database responses.

#### 4.1.5.3 Representation Layer

The user interface will be included in this layer. In order to create the user interface, we used React.

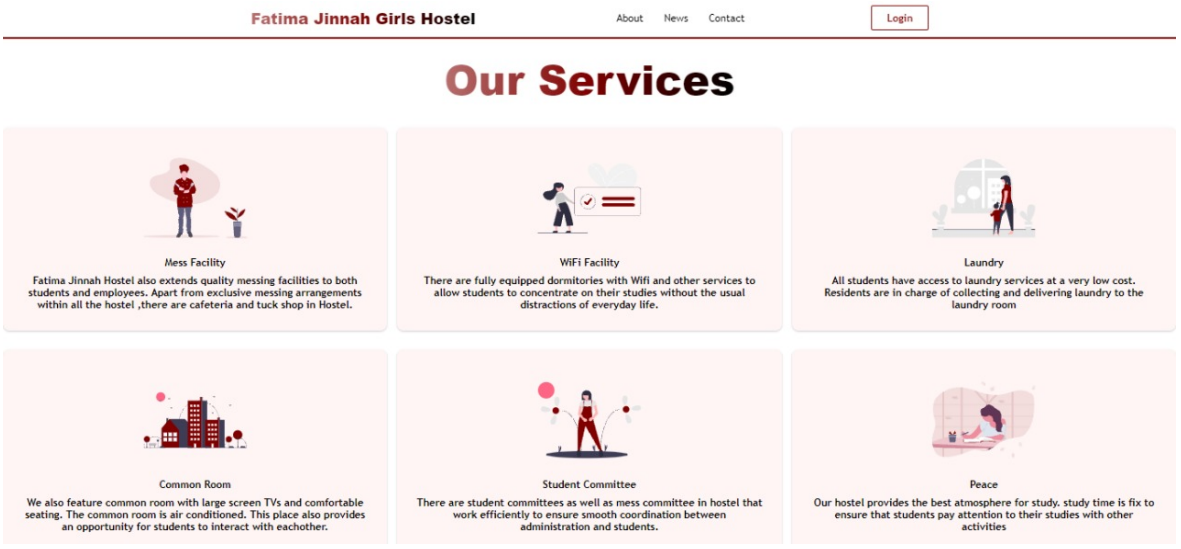
## 4.2 System Integration

We chose the Express and Node.js since it is widely used nowadays for developing seamless web applications and has shown to be a user and developer accessible backend. It comes with an easy-to-use admin panel that anybody with a basic grasp of computers may utilise.MERN aims to make development easier by streamlining basic chores seen in most online applications, such as authentication, routing, sessions, and caching.The following are the standard interfaces that are used in this application:

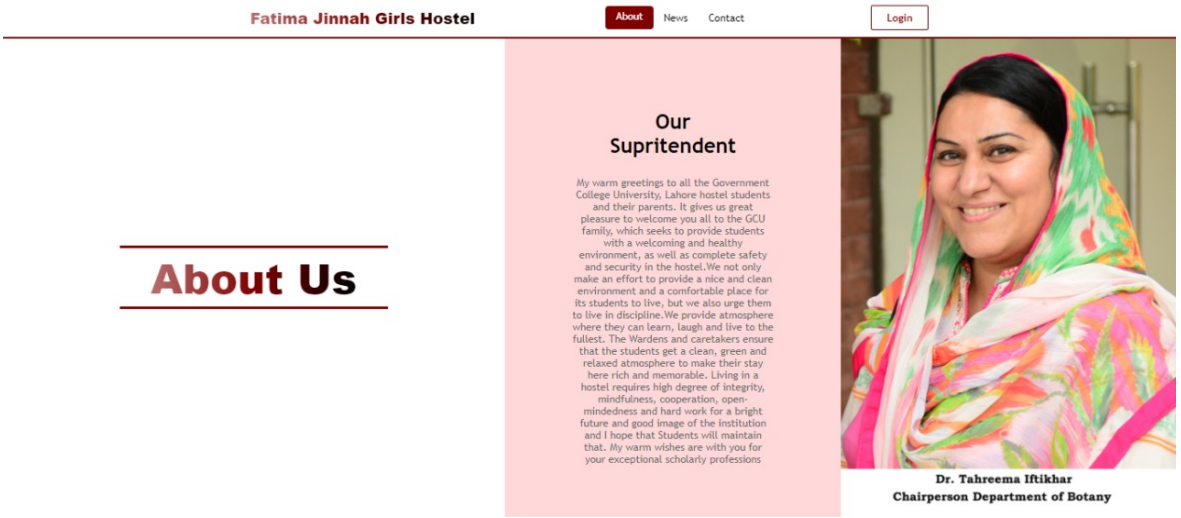
### 4.2.1 User Interface

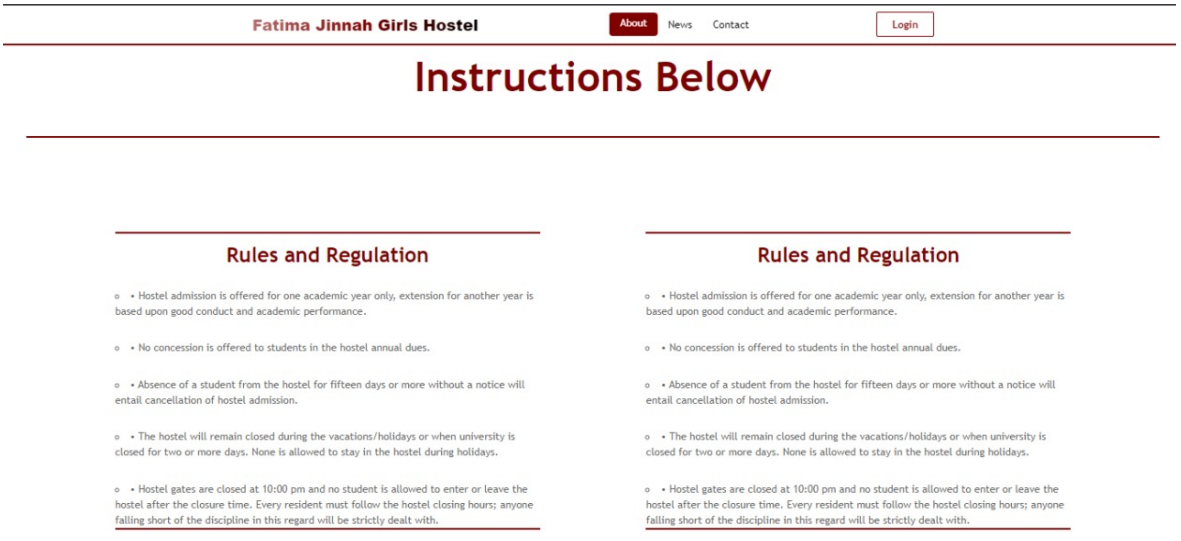
We have supplied the user with a very user-friendly interface; the design was created following a thorough User Research, which can be found below. Users may quickly navigate our website, and all of the site's features are clearly displayed, allowing them to easily register, view, and edit their profiles.We made hostel management easier by computerising everything. Now, both students and administrators can examine billing and attendance information. The user can always contact the administrators if they have any further questions.

#### 4.2.1.1 HomePage

#### 4.2.1.2 about


Fatima Jinnah Girls Hostel
About
News
Contact
Login
About Us
Our
Supritendent
My warm greetings to all the Government College University, Lahore hostel students and their parents. It gives us great pleasure to welcome you all to the GCU family, which seeks to provide students with a welcoming and healthy environment, as well as complete safety and security in the hostel.We not only make an effort to provide a nice and clean environment and a comfortable place for its students to live, but we also urge them to live in discipline.We provide atmosphere where they can learn, laugh and live to the fullest. The Wardens and caretakers ensure that the students get a clean, green and relaxed atmosphere to make their stay here rich and memorable. Living in a hostel requires high degree of integrity, mindfulness, cooperation, open-mindedness and hard work for a bright future and good image of the institution and I hope that Students will maintain that. My warm wishes are with you for your exceptional scholarly professions
Dr. Tahreema Iftikhar
Chairperson Department of Botany


Fatima Jinnah Girls Hostel
About
News
Contact
Login
Instructions Below
Rules and Regulation
• Hostel admission is offered for one academic year only, extension for another year is based upon good conduct and academic performance.
• No concession is offered to students in the hostel annual dues.
• Absence of a student from the hostel for fifteen days or more without a notice will entail cancellation of hostel admission.
• The hostel will remain closed during the vacations/holidays or when university is closed for two or more days. None is allowed to stay in the hostel during holidays.
• Hostel gates are closed at 10:00 pm and no student is allowed to enter or leave the hostel after the closure time. Every resident must follow the hostel closing hours; anyone falling short of the discipline in this regard will be strictly dealt with.
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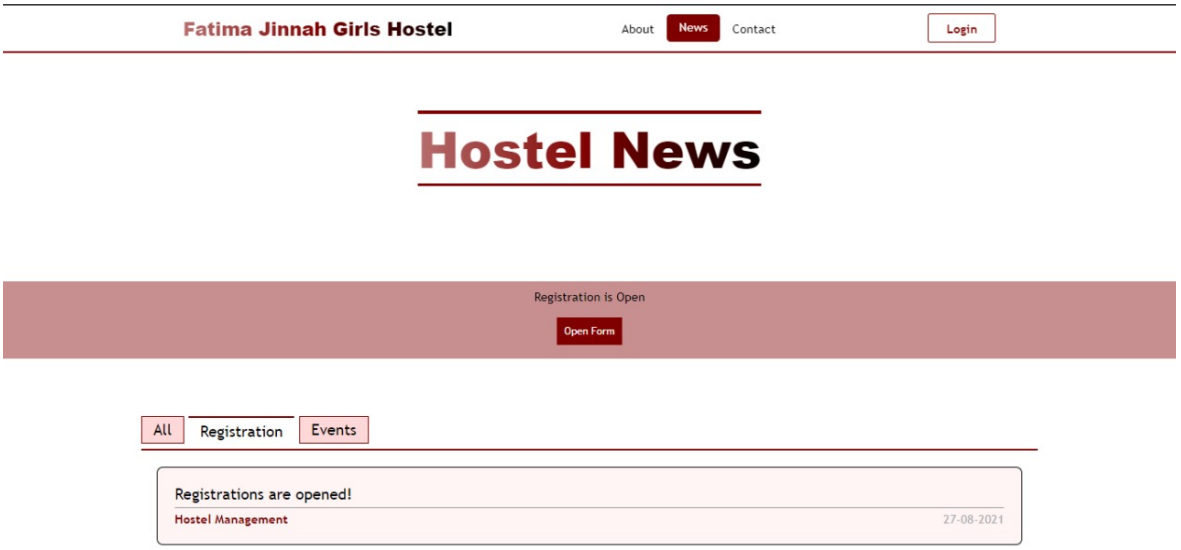
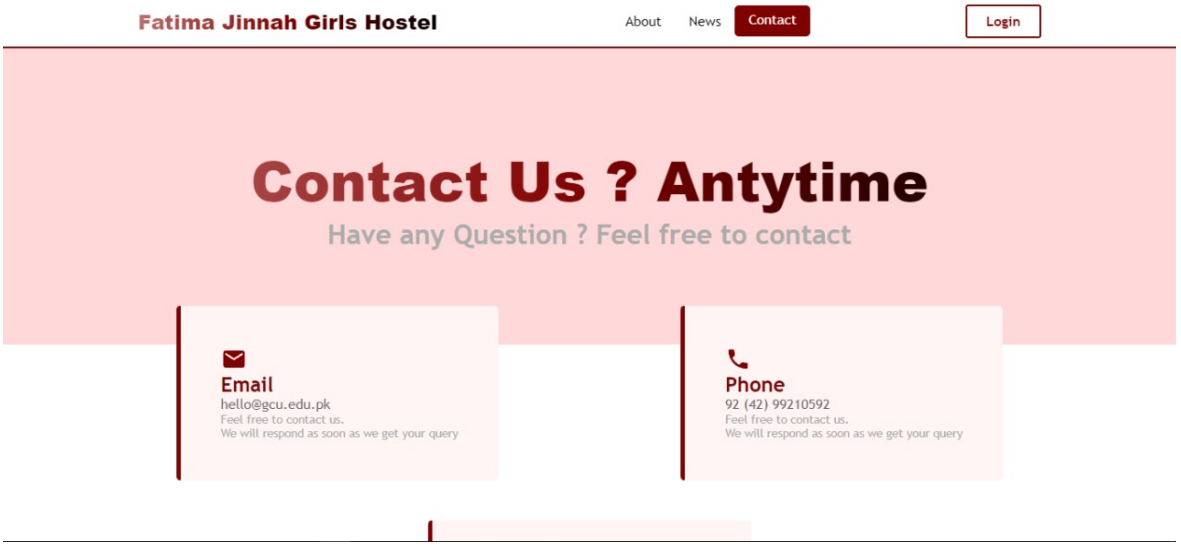
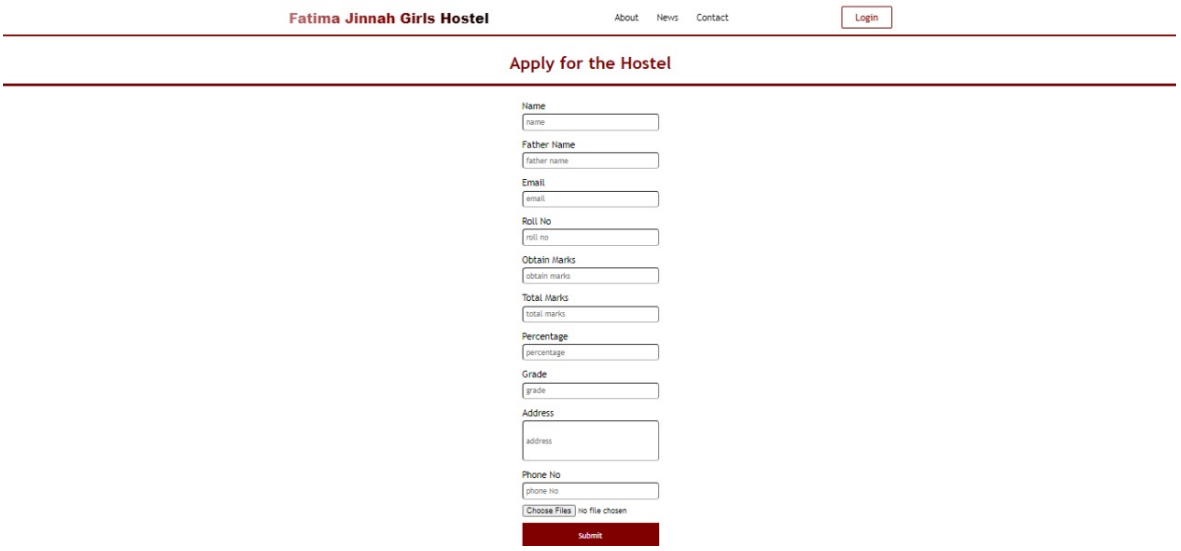
#### 4.2.1.3 News



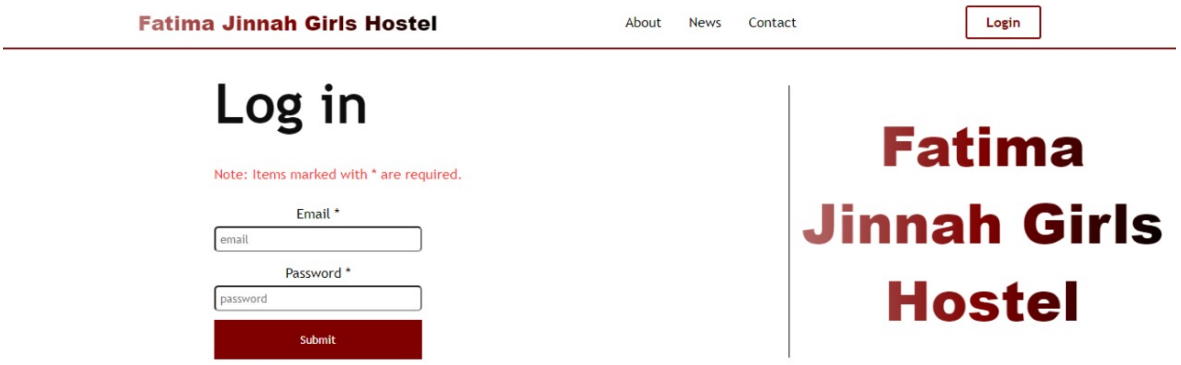

#### 4.2.1.4 Contact



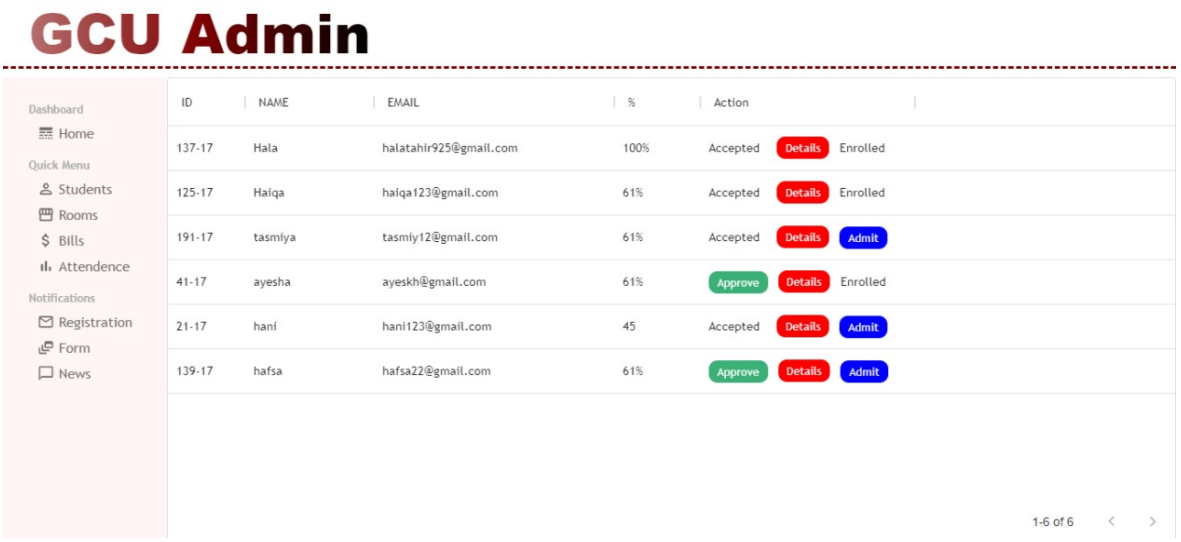
#### 4.2.1.5 Registration




#### 4.2.1.6 Login



#### 4.2.1.7 Admin Module




## 4.3 Evaluation

Each element of our website is meticulously designed based on the findings of User Research, which takes into account criteria such as age, technical knowledge, and comprehension.The user is given a seamless experience, allowing them to easily see, update, upload, and manage their data.While designing the website, Human Computer Interaction concepts were taken into account, allowing the user to see where they are presently working and easy to use. Before releasing the website, we make sure that all of the tabs and buttons are visible and double-checked and everything is working properly. Once the website is ready for the user, it will be extensively tested and any necessary changes will be done.hence the website is user friendly. No ambiguity found.

## 4.4 Unit Testing

Unit testing is a type of software testing that examines individual program units or components. The objective is to verify that each unit of software code functions properly. During the development (code) phase of an application, developers perform unit testing. Unit tests may also be used to isolate a piece of code and ensure that it is correct. A unit can be defined as a single function, approach, or practise.

## 4.5 Functional Testing

Functional testing is a type of software testing that compares the functionality of a software system to functional requirements and specifications. Functional tests are used to evaluate a software program's output by providing acceptable input and comparing it to functional requirements. Errors and problems are eliminated during testing. Functional testing is the process of examining an application, website, or system to ensure that it is working as intended.

### 4.5.1 Testing Requirements

Human errors may result in a defect or failure at any stage during the software development life cycle; hence, testing is a crucial component of the software development process since it defines the application's dependability. A number of testing methods are used to assess the quality of the programme. Before deploying software, it must be properly tested. Testing guarantees that the application is bug-free and of high quality. Initially, we utilised unit testing to create our software, followed by component testing. After integrating our system, we developed a comprehensive testing mechanism by creating certain instances and then putting them to use on our system.

## 4.6 Test Cases

### 4.6.1 Table for Testing Requirements

| Functional Requirement Number | Description |
|---|---|
| FR-01 | Applicants forms |
| FR-02 | check news section for merit list. |
| FR-03 | student Login |
| FR-04 | update profile |
| FR-05 | student can mark their attendance. |
| FR-06 | pay bills |
| FR-07 | submit complaints |
| FR-08 | View bills history |
| FR-09 | View Attendance history |
| FR-10 | Admin handle applicants requests |
| FR-11 | Admin handle rooms |
| FR-12 | Admin handle Student |
| FR-13 | Admin handle complaints |
| FR-14 | student can logout |

### 4.6.2 Table for Test Cases

| Functional Requirement Number | Test Case Number | Description |
|---|---|---|
| FR-01 | TCase-01 | To test,Applicants Registration |
| FR-02 | TCase-02 | To test,news Section for merit lists. |
| FR-03 | TCase-03 | To test, student login |
| FR-04 | TCase-04 | To test,update profile |
| FR-05 | TCase-05 | To test,student can mark their attendance. |
| FR-06 | TCase-06 | To test,student pay hostel dues |
| FR-07 | TCase-07 | To test,submit complaints. |
| FR-08 | TCase-08 | To test,View bills history |
| FR-09 | TCase-09 | To test,View Attendance history |
| FR-10 | TCase-10 | Admin handle applicants requests |
| FR-11 | TCase-11 | Admin handle Rooms |
| FR-12 | TCase-12 | Admin handle Student |
| FR-13 | TCase-13 | Admin handle complaints |
| FR-14 | TCase-14 | user can logout |

### 4.6.3 TCase-01 Testing Applicants Registration

| Test id | 01 |
|---|---|
| Title | Applicants Registration process |
| Description | After visiting our website user can easily access the registration form. |
| Input | There should have an internet connection. |
| Steps to Perform | U1: Open the website and click on news then registration.<br>S1: Registration from is displaying on screen.<br>U2: Applicants have to put Name,father name, Email,address,<br>CNIC,Mobile,obtain mark, total marks, percentage, grade and documents<br>S2: System accept the registration form, |
| Output | Applicant Registered |

### 4.6.4 TCase-02 Testing news Section for merit lists

| Test id | 02 |
|---|---|
| Title | News section for merit lists |
| Description | Applicant view news section of website for merit lists |
| Input | There should have an internet connection. |
| Steps to Perform | U1: Open the website and click on news then view merit list.<br>S1: merit lists is displaying on screen.<br>U2: Applicant can view their name on the lists<br>S2: System show the merit list |
| Output | Applicants checked the merit lists |

### 4.6.5 TCase-03 student Login Test

| Test id | 03 |
|---|---|
| Title | student Login |
| Description | After adding the details user can easily access the postal. |
| Input | There should have an internet connection and current location on. |
| Steps to Perform | U1: Open the website<br>S1: Login page is displaying on screen.<br>U2: User have to put Username,Password and select the Login button.<br>S2: System validates on the basis of username and password. |
| Output | student Login |

### 4.6.6 TCase-04 update profile

| Test id | 04 |
|---|---|
| Title | Update Profile |
| Description | After adding the details student can easily access the portal<br>and update the profile. |
| Input | There should have an internet connection. |
| Steps to Perform | U1: Open the website<br>S1: Login page is displaying on screen.<br>U2: User have to login.<br>S2: System show the update profile option on screen after editing the profi<br>U3: user click on save button.<br>S3: system save the sent change. |
| Output | Profile Updates successfully. |

### 4.6.7 TCase-05 Test for Attendance Marking

| Test id | 05 |
|---|---|
| Title | Student can Mark their Attendance |
| Description | After Scanning their Student card, they can mark their attendance easily |
| Input | There should have a scanner in hostel |
| Steps to Perform | U1: User enter or leave the hostel or<br>take mess scans their student card by scanner<br>S1: Scanner indicate the acceptance of card. |
| Output | Attendance marked |

### 4.6.8 TCase-06 Test for pay student bills

| Test id | 06 |
|---|---|
| Title | student can pay bills |
| Description | After keeping the payment of bills student can easily<br>upload scan copy of the paid bill |
| Input | There should be an internet connection |
| Steps to Perform | U1: Student login in to portal and then select<br>download the challan.<br>S1: Challan is available on student portal.<br>U2: student can pay bill and after that they can upload scanned copy of bi<br>S2: System verify the bills and change the status. |
| Output | Bill paid |

### 4.6.9 TCase-07 Test for student submit complaints

| Test id | 07 |
|---|---|
| Title | student can submit complaints |
| Description | Student can add complaints |
| Input | There should have an internet connection |
| Steps to Perform | U1: Student login in to portal and then select the complaint box.<br>S1: Complaint box is displaying on student portal.<br>U2: student can add complaint on their portal.<br>S2: System will send that complaints to admin. |
| Output | compalints submitted |

### 4.6.10 TCase-08 Test for view bills history

| Test id | 08 |
|---|---|
| Title | student can view bills history |
| Description | student can view bills history of previous months |
| Input | There should have an internet connection |
| Steps to Perform | U1: Student login in to portal and then click on bills.<br>S1: all bills details are displayed on student portal.<br>U2: student can view bills and status of previous months<br>S2: System provides the history. |
| Output | Bill paid |

### 4.6.11 TCase-9 Test for view attendance details

| Test id | 9 |
|---|---|
| Title | admin can view attendance details |
| Description | After logging into their system admin can view attendance history of stude |
| Input | There should have an internet connection |
| Steps to Perform | U1: admin login in to portal and then select<br>the attendance.<br>S1: student attendance with date and time are displayed on the portal.<br>U2: admin can view late comers details as well.<br>S2: System provide history of attendance |
| Output | attendance history displayed |

### 4.6.12 TCase-10 Test for Admin Handle applicants form

| Test id | 10 |
|---|---|
| Title | Admin can Handle applicants form |
| Description | After Login in to the website admin can<br>easily handle the applicants form. |
| Input | There should have an internet connection. |
| Steps to Perform | A1: Admin login in to website and then go to admin pannel<br>S1: System show the Admin pannel page.<br>A2:Admin select the form option<br>S2: System show the applicants requests<br>A3: Admin can approve or disapprove<br>the applicants form.<br>S3: System will allow login to approved users. |
| Output | Managed applicants form |

### 4.6.13 TCase-11 Test for Admin Handle Rooms details

| Test id | 11 |
|---|---|
| Title | Admin can Handle rooms details |
| Description | After Login in to the website admin can<br>easily view rooms details. |
| Input | There should have an internet connection. |
| Steps to Perform | A1: Admin login in to website and then go to admin panel<br>S1: System show the Admin panel page.<br>A2:Admin select the Rooms option<br>S2: System show the rooms<br>A3: Admin can see the details like floor, rooms, rooms no, capacity and st<br>S3: System will allow login to view rooms.<br>A4: Admin can add student, remove student<br>S4: System will allow admin to perform these functions |
| Output | Managed Rooms details |

### 4.6.14 TCase-12 Test for Admin handle students

| Test id | 12 |
|---|---|
| Title | Admin can Handle Students |
| Description | After Login in to the website admin can<br>easily manage students. |
| Input | There should have an internet connection. |
| Steps to Perform | A1: Admin login in to website and then go to admin pannel<br>S1: System show the Admin pannel page.<br>A2:Admin select the students option<br>S2: System show the Student details<br>A3: Admin can see the details of student.<br>S3: System will allow login to view student details. |
| Output | Managed students details |

### 4.6.15 TCase-13 Test for Admin handle complaints

| Test id | 13 |
|---|---|
| Title | Admin can Handle Complaints |
| Description | After Login in to the website admin can handle complaints. |
| Input | There should have an internet connection. |
| Steps to Perform | A1: Admin login in to website and then go to admin panel<br>S1: System show the Admin panel page.<br>A2:Admin select the complaint option<br>S2: System show the complaint of students |
| Output | Managed students Complaints |

### 4.6.16 TCase-14 Test for Logout

| Test id | 14 |
|---|---|
| Title | User can Logout |
| Description | user can easily exit the website after click on Logout. |
| Input | There should have an internet connection. |
| Steps to Perform | U1: User(admin,student) login in to app and then select Logout from Navbar<br>S1: System show the dailogue box for taking user permission either he wants to exit or not.<br>U2: User click on yes(if he want to logout) or no(if user dont want to logout) button.<br>S2: System logout the app if user select yes and if user select no then no logout action take place. |
| Output | Logout from the website |

# Chapter 5

# Conclusion & Future Work

## 5.1 Conclusion

Individuals' methods of doing tasks are becoming mechanised as a result of technological advancements, as is the pressing need to automate everything. Fatima Jinnah Girls Hostel Management System is a platform where students and administrators may participate in a variety of activities. This proposal is based on user needs and an assessment of the present system, with space for future growth. The number of educational institutions has risen considerably in recent years. As a result, the number of hostels available to accommodate students is growing, and the hostel manager is becoming increasingly stressed due to the manual nature of the process. This project addresses the challenges of maintaining a hostel as well as the issues that arise when tasks are completed manually. The goal is to develop a computerised system that is both compatible with the present system and user-friendly.

## 5.2 Future Work

There is a possibility of introducing new features to the site to make it more comprehensive and to enhance it according to the trends. Some future planning includes:

- Manage mess and generate mess bills automatically.
- Adding Live Chat feature with the Admin to gain help.
- Manage employees accounts as well.
- We can incorporate a feature into this system that will produce payroll for all of the hostel workers.