Software Requirements Specification

for

Hostel Room booking and Complaint Management

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

This Software Requirement Specification (SRS) document is intended to give a complete overview of Hostel Booking and Complaint Registration System including the user interface and functionalities provided. The SRS document details all features upon which the system has currently decided with reference to the manner and importance of their implementation. This software is aimed to simplify the hostel booking and complaint registration process of both the students and administration as well as create transparency in the system.

1.2 Document Conventions

- **Main Heading Titles**
  - Font: Times
  - Face: Bold Black
  - Size: 18
- **Subheading Titles**
  - Font: Times
  - Face: Bold Black
  - Size: 15
- **Main points**
  - Font: Arial
  - Face: Bold Black
  - Size: 12
- **Other text explanations**
  - Font: Arial
  - Face: Normal Black
  - Size: 10
- **Abbreviations**
  - BH1: Boys Hostel 1
  - BH2: Boys Hostel 2
  - BH3: Boys Hostel 3
  - GH: Girls Hostel
  - SRS: Software Requirement Specification
  - HRBCMS**:** Hostel Room Booking and Complaint Management System

1.3 Intended Audience and Reading Suggestions

This project is a prototype for the hostel management and complaint registration system and it is restricted within the college premises. This has been implemented under the guidance of college professors. This project is useful for the authority as well as for students.

1.4 Product Scope

Hostel Booking and Complaint registration application will be an automated application used for maintaining the records in an organized way and to automate almost all the calculation, accounting work which will be precise and accurate.

- Hostel Booking and Complaint registration system is designed for university hostels.
- System Verifies the attested login details of students obtained from the user side & check it with the student database.
- If the student is relevant and eligible then the request of Hostel room booking and services are taken into account.

Objectives:

- Room booking and allocation
- Resolving student complaints
- Maintaining Student Records
- Maintain Fee payment Records

Goals:

- **T**he Major Goal of this system is to provide a reliable and effective platform by accepting these problems and provide an optimal solution by :
  (i) Organizing Database and maintaining consistency among data fields.
  (ii) Ease of access
  (iii) Developing application more user friendly
  (iv) Providing self explanatory terms to reduce complexity for users,etc.

1.5 References

- Software Engineering, Ian Sommerville, Pearson, 2017, 8th edition.
- An Integrated Approach to Software Engineering by Pankaj Jalote, Narosa Publishing 2nd Edition.
- https://www.visual-paradigm.com/guide/uml-unified-modeling-language/uml-class-diagram-tutorial/

2. Overall Description

2.1 Product Perspective

2.1.1 System Interface

The is a complete web enabled system which can be accessed through a web browser.

2.1.2 User Interface

The user interface is as follows:
1.) Screen Name Description
2.) Login into system as student or admin

The Hostel management system is a fully independent product. Our product is not a part of any other system. We have user interface which is further divided into two parts :

- Admin Interface
- Student Interface

Interfaces for Admin :

List of interfaces are listed as below

1.) Register Student: Admin can register a new user in the student database. Admin will be able to access all information about students & can manage them.

2.) View Applicant: Admin can view the applicants by selecting the year, semester and course.

3.) Access Complaints: Admin have access for the complaints of students through complaint access.

Interfaces for Student :

List of interfaces are mentioned below:

1.) View Details: Users can view their personal details.

2.) Change Password: Users can change their password by verifying the old password.

3.) Book Hostel: Users can select the room as per their preferences and availability.

4.) Register Complaint: User can register the complaint regarding the hostel.

2.2 Product Functions

“Hostel Room booking and Complaint Management System” is an attempt to simulate basic management systems, The system enables the following functions:

For student

- Select Room Type(single seater, double seater) as per the availability.
- Select the specific roommate using the application id given to the roommate.
- Payment of hostel fees.
- View hostel rules and regulations.

- Helplines (contact details of warden BH1, BH2, BH3, BH4, GH).

For Admin

- Permitted Database Access (Information of students).
- Maintaining hostel room information through updating database of hostel details

2.3 User Classes and Characteristics

The Admin:
This user has to have at least Window 7/Linux OS and Internet browsing skills for administering HRBCMS user profiles.

The Student:
This user has to have at least Windows 7/Linux OS and Internet browsing skills to use the system.

2.4 Operating Environment

Server side:
Apache Web server is installed and will enable HRBCMS to interact with its users. NodeJS is a server-side scripting language, which will be used to code the HRBCMS.

Client Side:
On the client side the required software product is Internet Explorer/Google Chrome/Mozilla Firefox supporting at least HTML version 3.2, java enabled, and any operating system that can run the browsers.

Communication Interface:
Transmission Control Protocol/Internet Protocol (TCP/IP) is the standard protocol for data transmission between servers and clients. HyperText Transfer Protocol (HTTP) will be utilized at the higher level for communication between the web server and client.

2.5 Design and Implementation Constraints

- The developed system should run under any platform i.e. Unix, Linux, Windows etc. There can be any security risk involved.
- Details provided by the individual during his sign in. Student details can be updated or changed by only the admin.
- Time constraint.

2.6 Assumptions and Dependencies

- The details related to the student, rooms and complaints are already present.
- Admin has created the database already.
- Roles and Tasks are predefined.
- The roommate has also made the payment in a double seater while entering the application id.

3. External Interface Requirements

3.1 User Interfaces

There are three types of user Interfaces like :

• Admin Interface

• Student Interface

> **Admin:** An admin is one who monitors all users and user transactions. Admin has to maintain data of every student profile in the database. When the request is given by the user, admin checks the availability of the user account then it is forwarded to the student database. Admin has the complete information related to every student and all the information related to the students. All data is maintained at the admin level.

> **Student:** Every student who has a room in the hostel has a database and a student account to access his data. These permissions shall be shown after admin approval. Students can check his or her data. Also he/she can check the monthly reports of their fines.

3.2 Hardware Interfaces

Hardware Interfaces are required in many systems for smooth operation and make good use of application systems. Some of the minimum requirements are as follows:

Processor (CPU): Intel Core i5 (sixth generation or newer) or equivalent

Operating System: Microsoft Windows 10

Memory: 8 GB RAM

Storage: 512 GB internal Hard disk drive with 256 GB SSD or 512 GB SSD recommended.

Monitor/Display: 13" LCD monitor

Keyboard/mouse: Compatible with system support specifications.

Network Adapter: 802.11ac 2.4/5 GHz wireless adapter

Other: Webcam, external drive for backups

3.3 Software Interfaces

Software is developed using basic control commands and class files provided by Node Package Manager(NPM) which are defined under package.json and can run on operating systems which support these specifications.

Operating system : Windows10 and above versions, Linux, iOS.

Designing tools: MongoDB, ReactJs, Express, NodeJS, JavaScript.

Developing tools: Command prompt ,VS Code, etc.

3.4 Communications Interfaces

This project supports all types of web browsers. HTTPS is used for secure communication over a computer network. We are using a payment gateway in our website for online transactions, a complaint portal for different types of complaints.The system shall be a stand alone product that does not require any communication interfaces.

4. System Features

4.1 Allocation of Hostel room

4.1.1 Description and Priority

Description: This feature allows the students to book the hostel room as per the availability of double seater and single seater room. It also provides the flexibility to the user to get the room with his/her roommate.

Priority: This functionality is of High Priority.

4.1.2 Stimulus/Response Sequences

Stimulus: User Request to book an Hostel room.

Response: Software asks to pay the fees of the hostel.

Stimulus: User Pays the fee

Response: System generates the application ID and direct User to the vacancy of the hostel rooms.

Stimulus: User select the single seater or double seater room

Stimulus: Double seater selected

Response: System ask to enter the roommate application ID or books the room

Stimulus: User enters the roommate application ID

Response: Validate the application ID and Allocate the room.

Stimulus: Single seater selected

Response: Allocate the room

4.1.3 Functional Requirements

REQ-1: Payment
REQ-2: Choosing specific roommate for double seater

4.2 Complaint Registration

4.2.1 Description and Priority

Description : This feature allows the students to complain regarding the functioning of the hostel like plumbing , proper dusting of floors , electricity issues , Air conditioning,etc.

Priority : This functionality is of High Priority.

4.1.2 Stimulus/Response Sequences

Stimulus : student selects the complaint registration option.

Response : software provides form type page to fill the details regarding complaint.

Stimulus : student then selects the complaint type and writes some information about the complaint.

Response : software then checks the details given by the user, if it is valid then a complaint will be registered and it will go to the waiting queue otherwise students have to fill the complaint details again.

Stimulus : Admin access the complaints from the waiting queue and resolve the complaints.

Response : software removes that complaint from the waiting queue.

4.1.3 Functional Requirements

REQ-1: Register complaint
REQ-2: Removes complaints

4.3 View Student Details

4.3.1 Description and Priority

Description: This feature allows you to view the details of the registered students from the admin side.

Priority: This functionality is of low priority.

4.3.2 Stimulus/Response Sequences

Stimulus : User inputs the credential(username,password) on login page

Response : Validates the credentials of User input and direct the user to student page

Stimulus : User select the student details section

Response : System Displays the Student Details.

4.1.3 Functional Requirements :

REQ-1 : Login

4.4 Change Password

4.4.1 Description and Priority

Description: This feature allows users to change the old password given from the admin side to maintain confidentiality.

Priority: This functionality is of medium priority.

4.4.2 Stimulus/Response Sequences

Stimulus : User inputs the credential(username,password) on login page

Response : Validates the credentials of User input and direct the user to student page

Stimulus : User select the student details section

Response : System Displays the Change Password section

Stimulus: User selects Change Password function.

Response: System asks to enter the old password and the new password

Stimulus: User inputs the old and new password

Response: System checks the old password, If it gets correct input from the user side Password is updated.

4.4.3 Functional Requirements :

REQ-1 : Login
REQ-2 : Change Password

5. Other Nonfunctional Requirements

These are the following non-functional requirements of hostel management system :

5.1 Performance Requirements

The web site shall be based on Full stack and has to be run on any platform. the website shall task initial load time depending on performance of the operating system and browser. The performance shall depend upon hardware and software components of the computer.

5.2 Safety Requirements

The database may get crashed any time due to the virus or operating system failure. Therefore, it is required to take backup of the database.

5.3 Security Requirements

This project provides genuine security to all those individuals who are having their account on the database as they are password protected. This is a very important aspect of the design and should cover areas of hardware reliability, fallback procedures, physical security of data and provision for detection of fraud and abuse.

5.4 Software Quality Attributes

- **Reliability and Availability:** The project shall provide storage of all databases on redundant computers with Oracle Databases, Microsoft, IBM, MongoDB, Amazon Web Services (AWS), SAP, Google, MariaDB, Cloudera.
- **Maintainability:** The system shall provide the capability to back up the database.
- **Portability:** The Hostel Management System shall run on any Microsoft Windows environment.
- **Flexibility:** Ability to add new features to the system and handle them conveniently.
- **Reusability:** What is the ability to use the available components of the system in others.
- **Efficiency:** How much less resources and time are required to achieve a particular task through the system.

5.5 Business Rules

- The system is desired to handle all the activities of the students as well as the administrative level.
- The system will have the ability to search the student's information about his/her room and all the other things.
- Once the current and previous record is entered then the database will be updated for the new students automatically.
- The main constraint is the system registration is valid if the department has been approving that student is valid for the department.

- The Other constraints are the amount of the hostel dues that are calculated in the system. These dues should be paid within 10 days. If anyone could not do the payment for some reason the system will notify the name of the student.
- System will be used by the warden of the hostel.
- Time constraint
- Complain Details
- Penalty details for damages done to hostel properties.

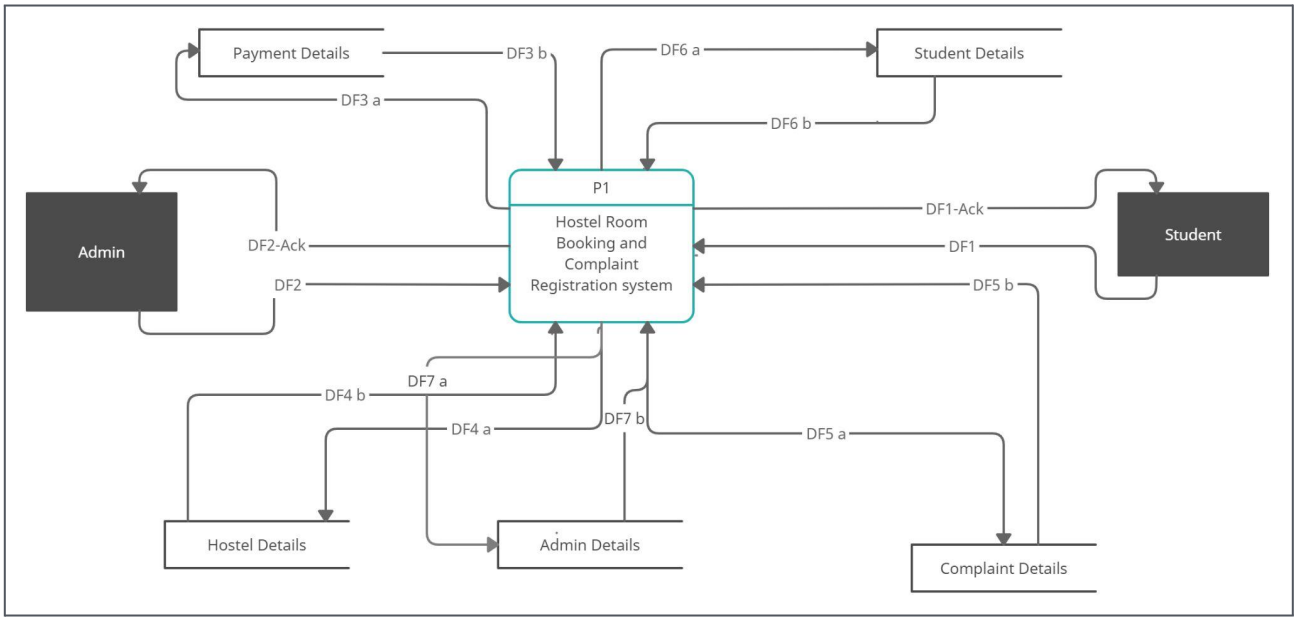
6. Other Requirements

Appendix A: Glossary

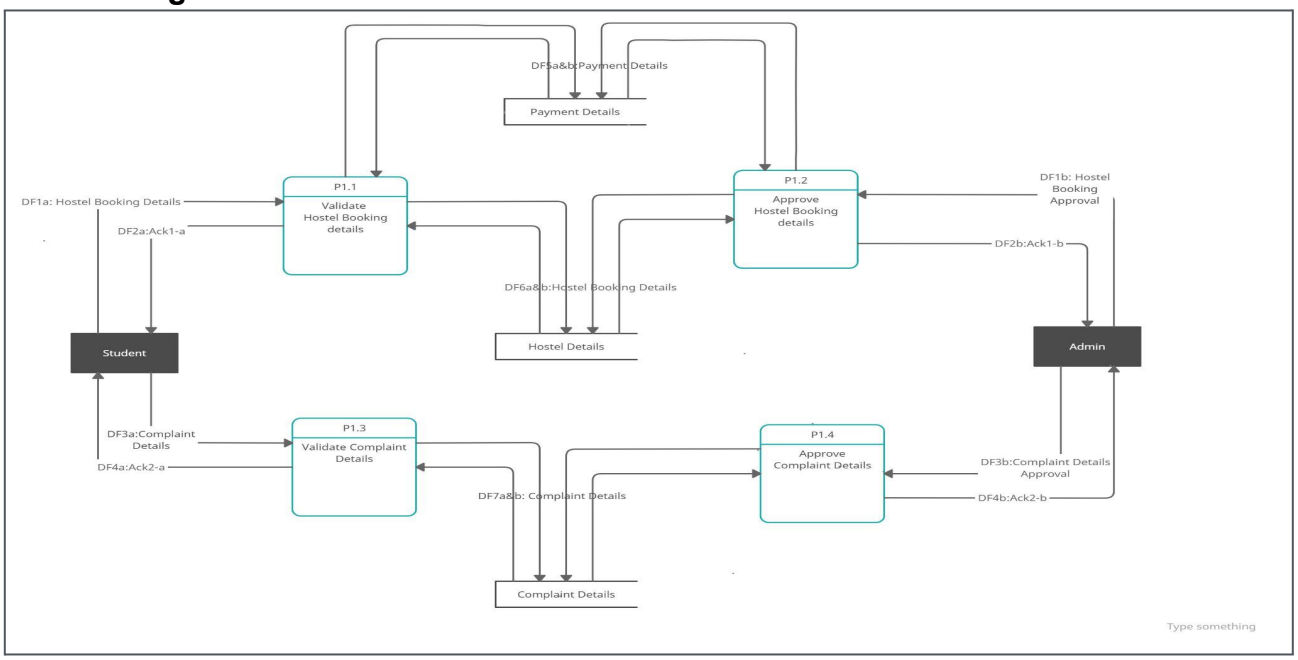
- **SRS:** System Requirement Specification
- **DFD:** Data Flow Diagram
- **ERD:** Entity Relationship Diagram
- **HRBCMS:** Hostel Room Booking and Complaint Management System
- **User:** The student who is in the university and needs a hostel room.
- **Database:** The records of every old and current student are saved here.

Appendix B: Analysis Models

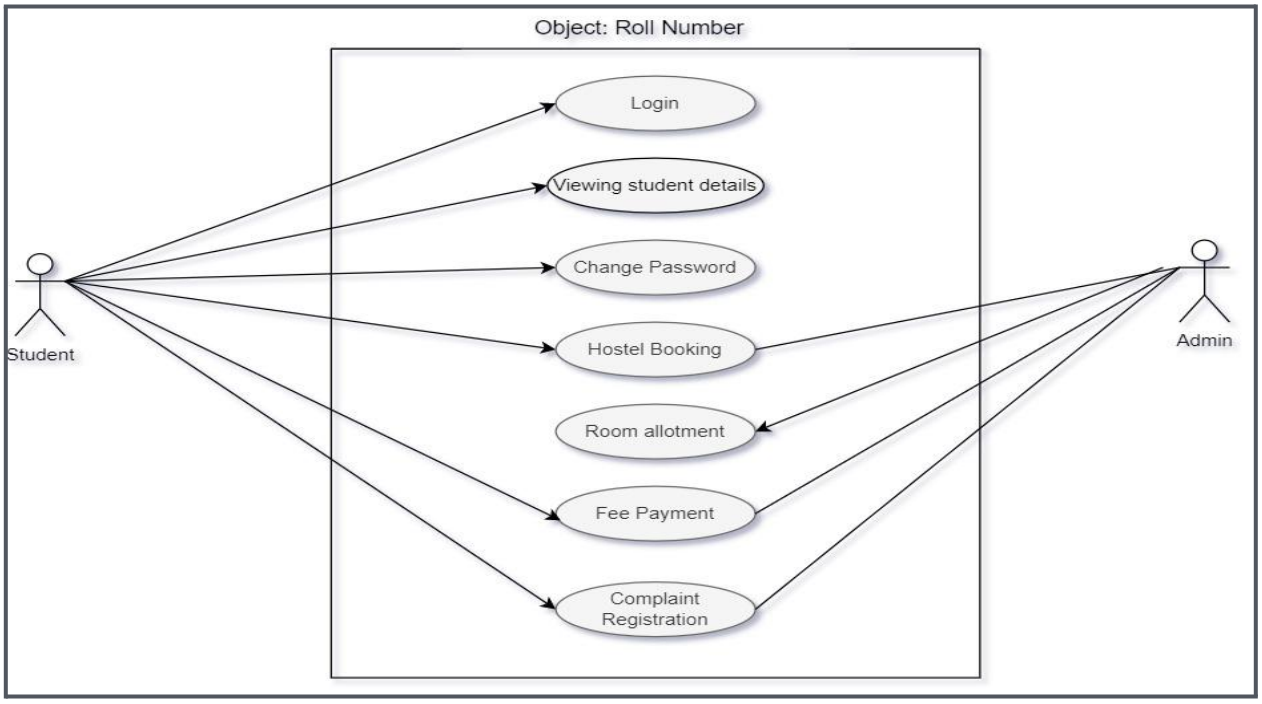
Level-0 Diagram

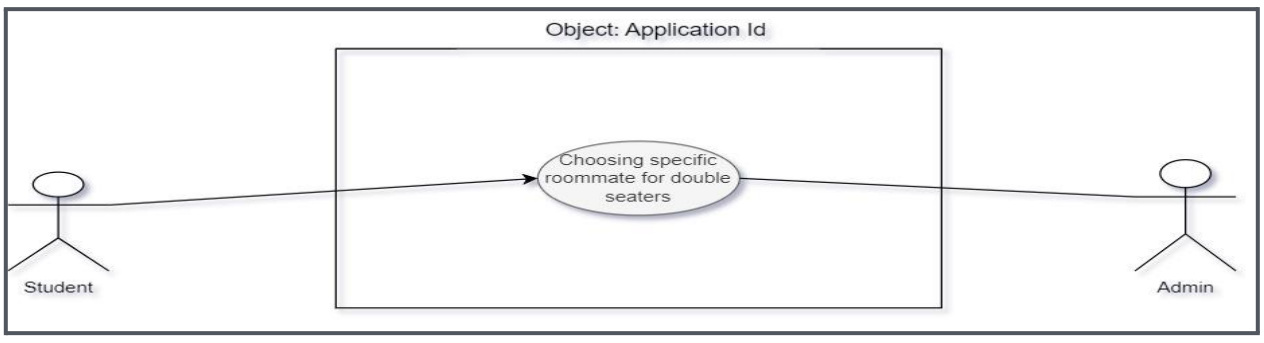


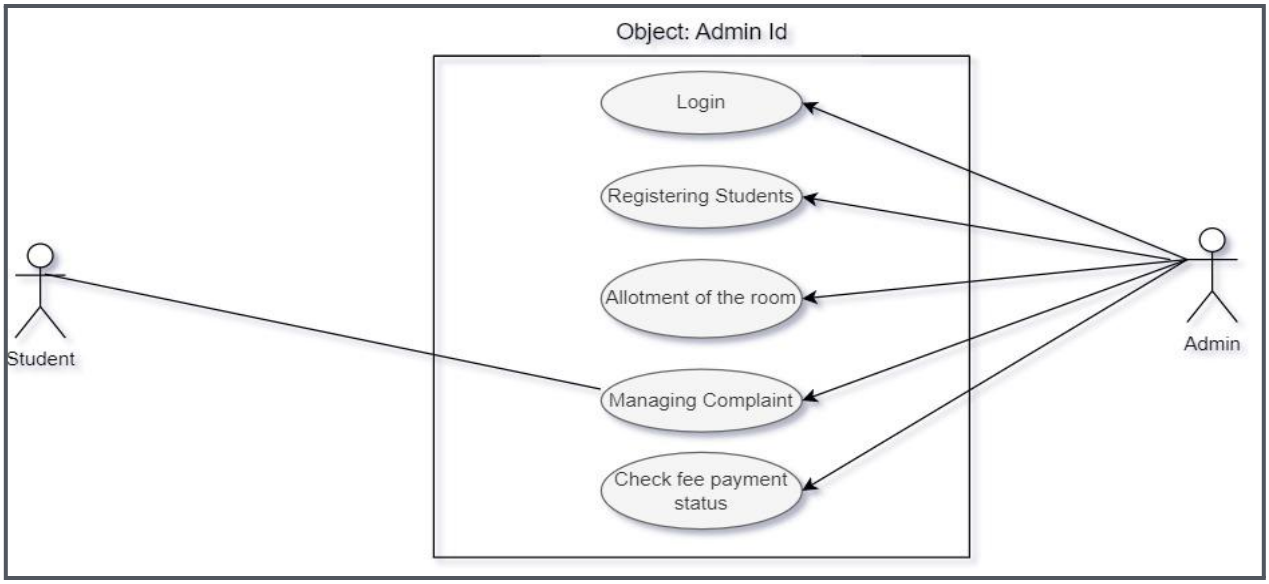
Level-1 Diagram



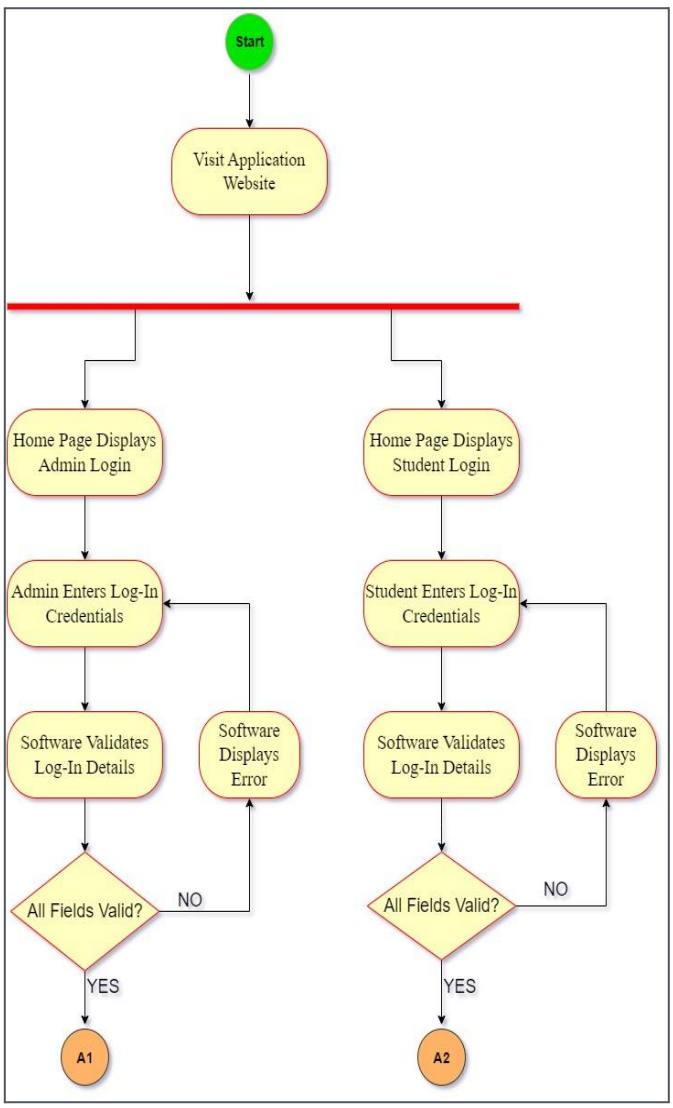
Use Case Diagrams

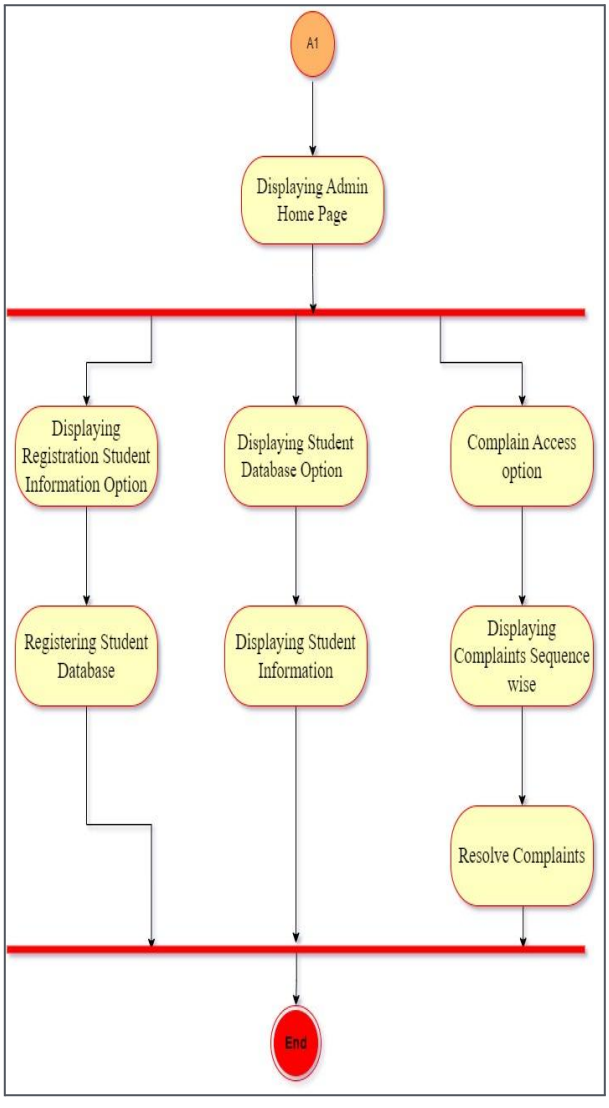


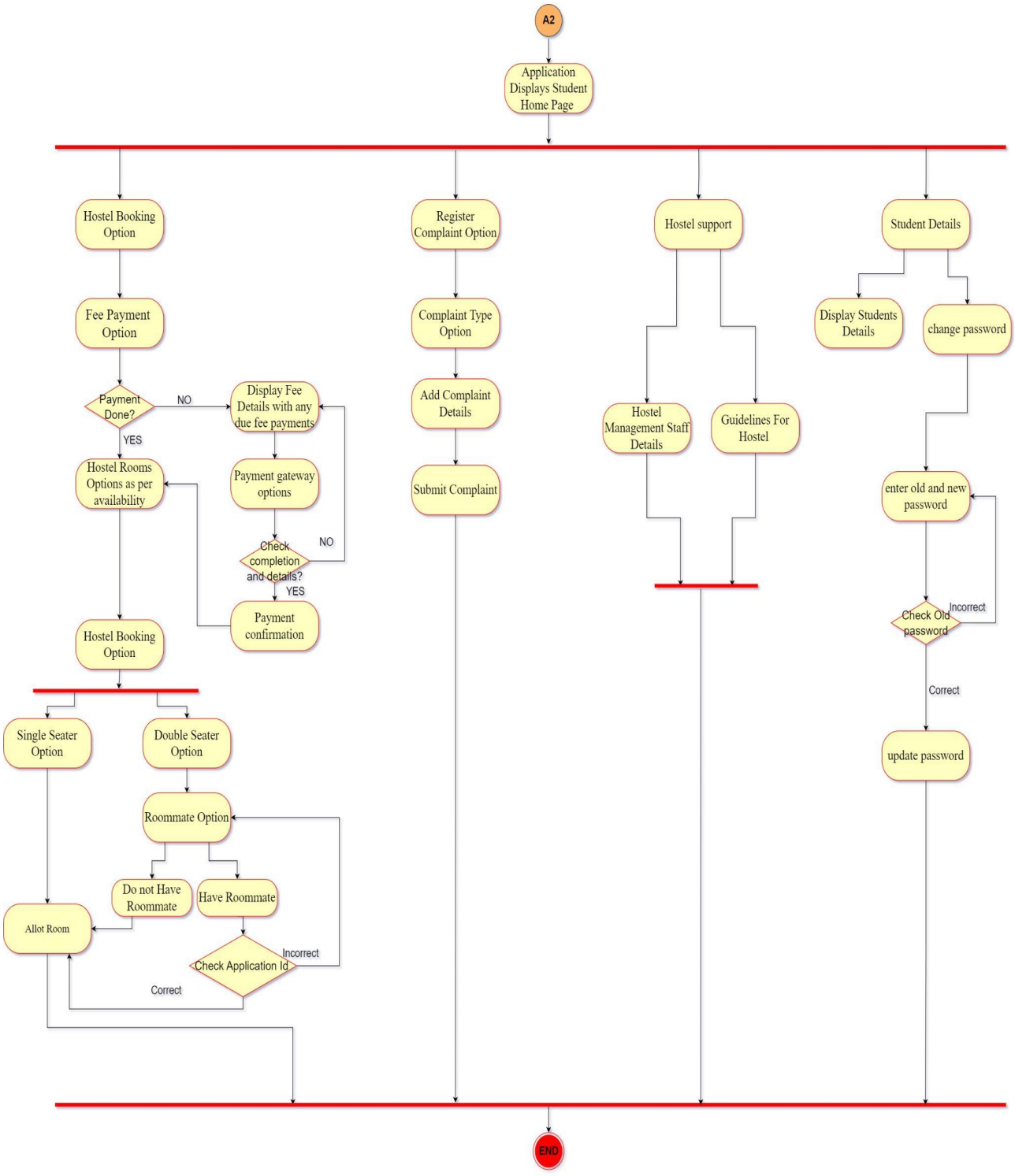




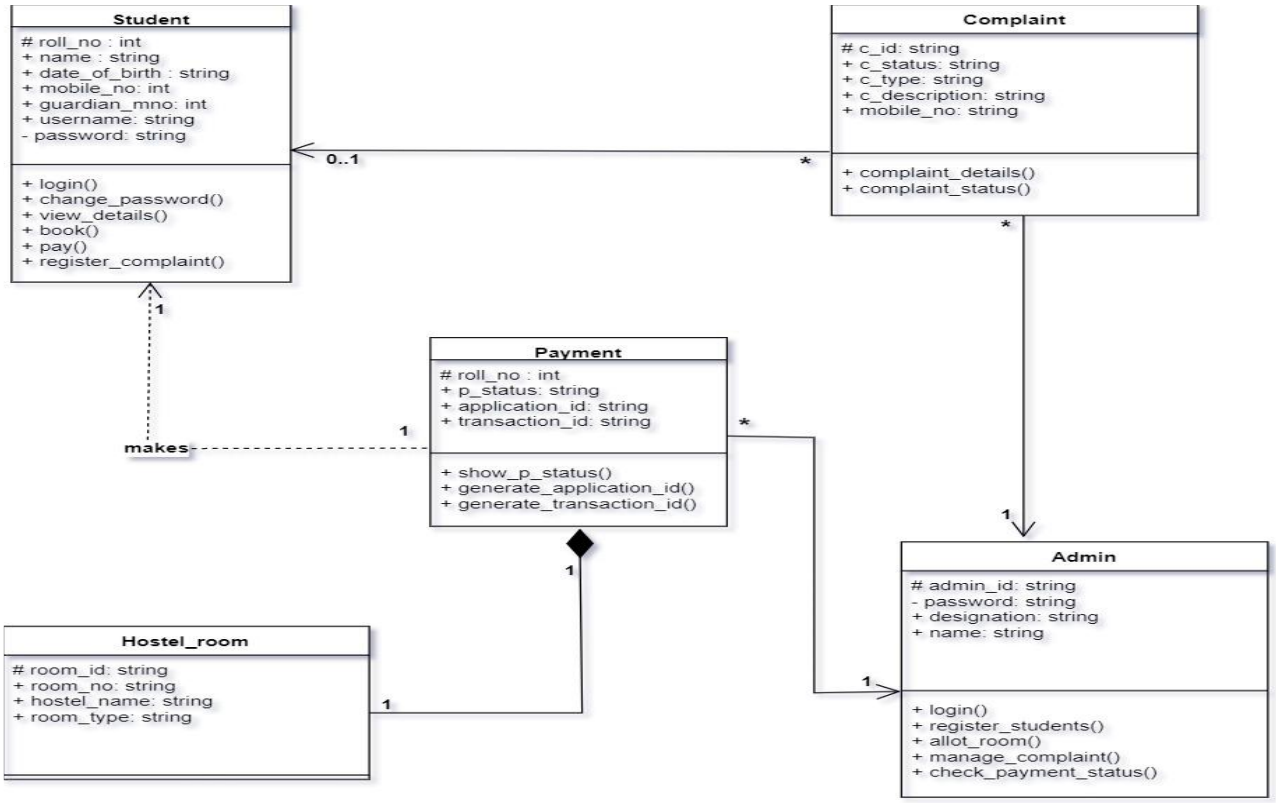
Elaborating Use Cases as Use-Case Activity Diagrams



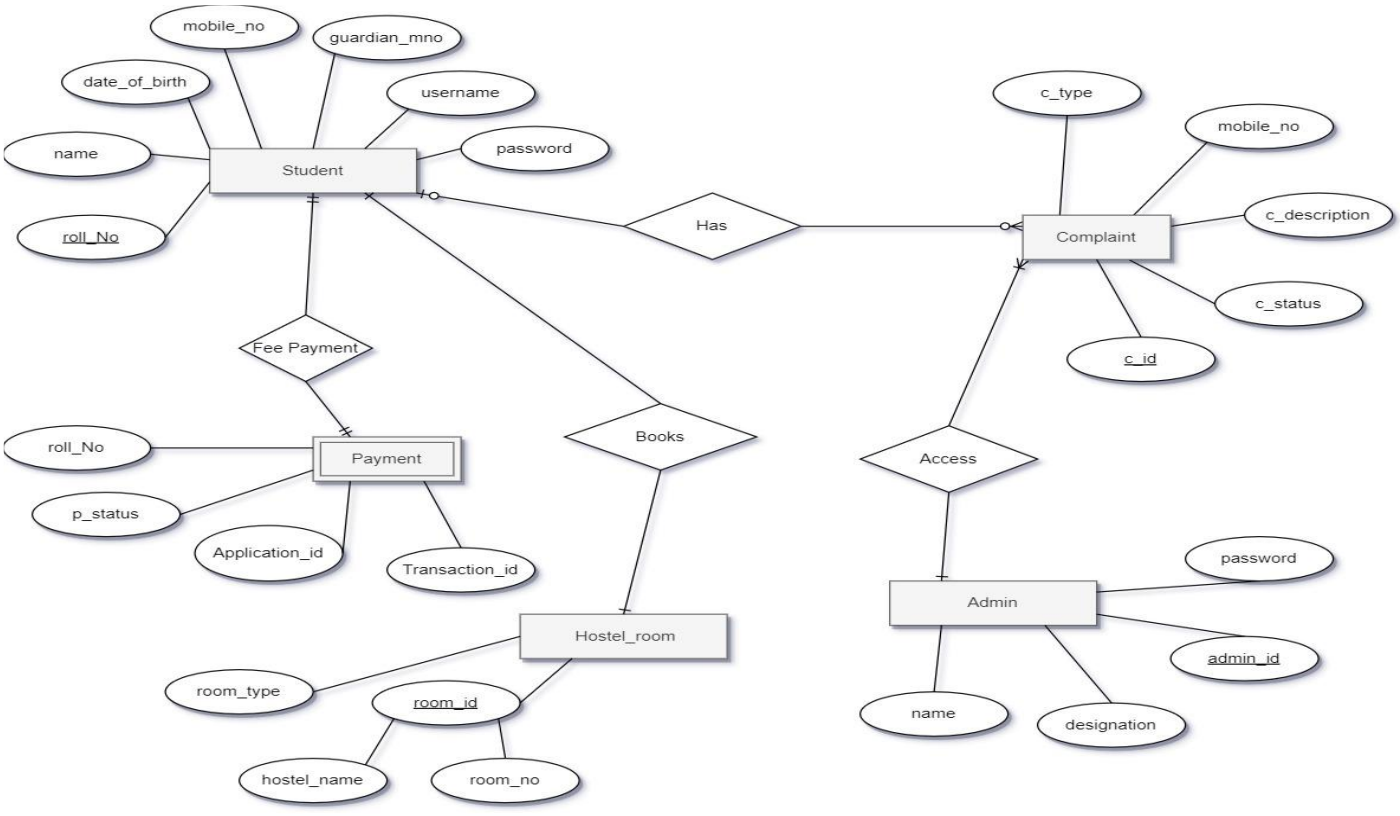




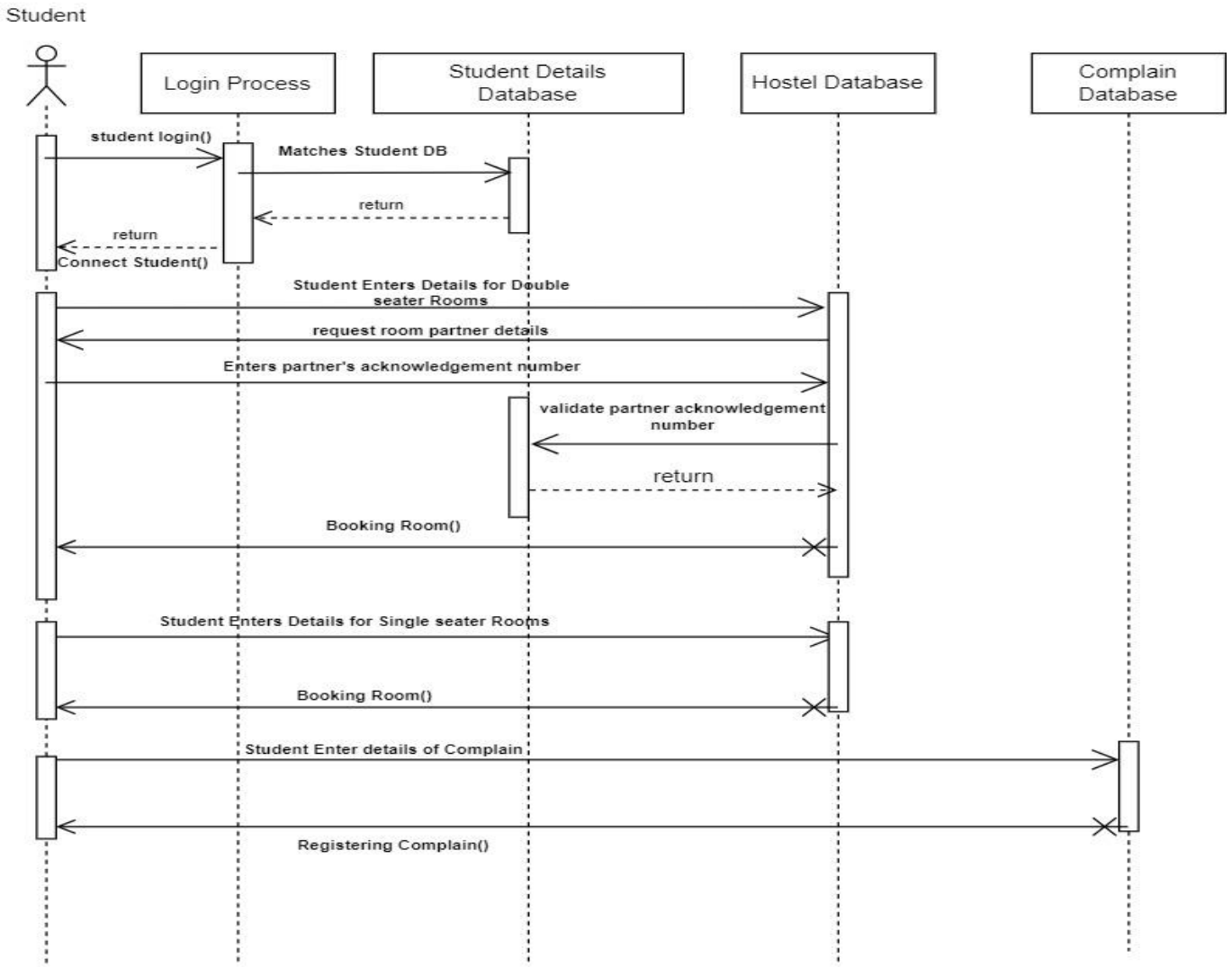
Class Diagrams

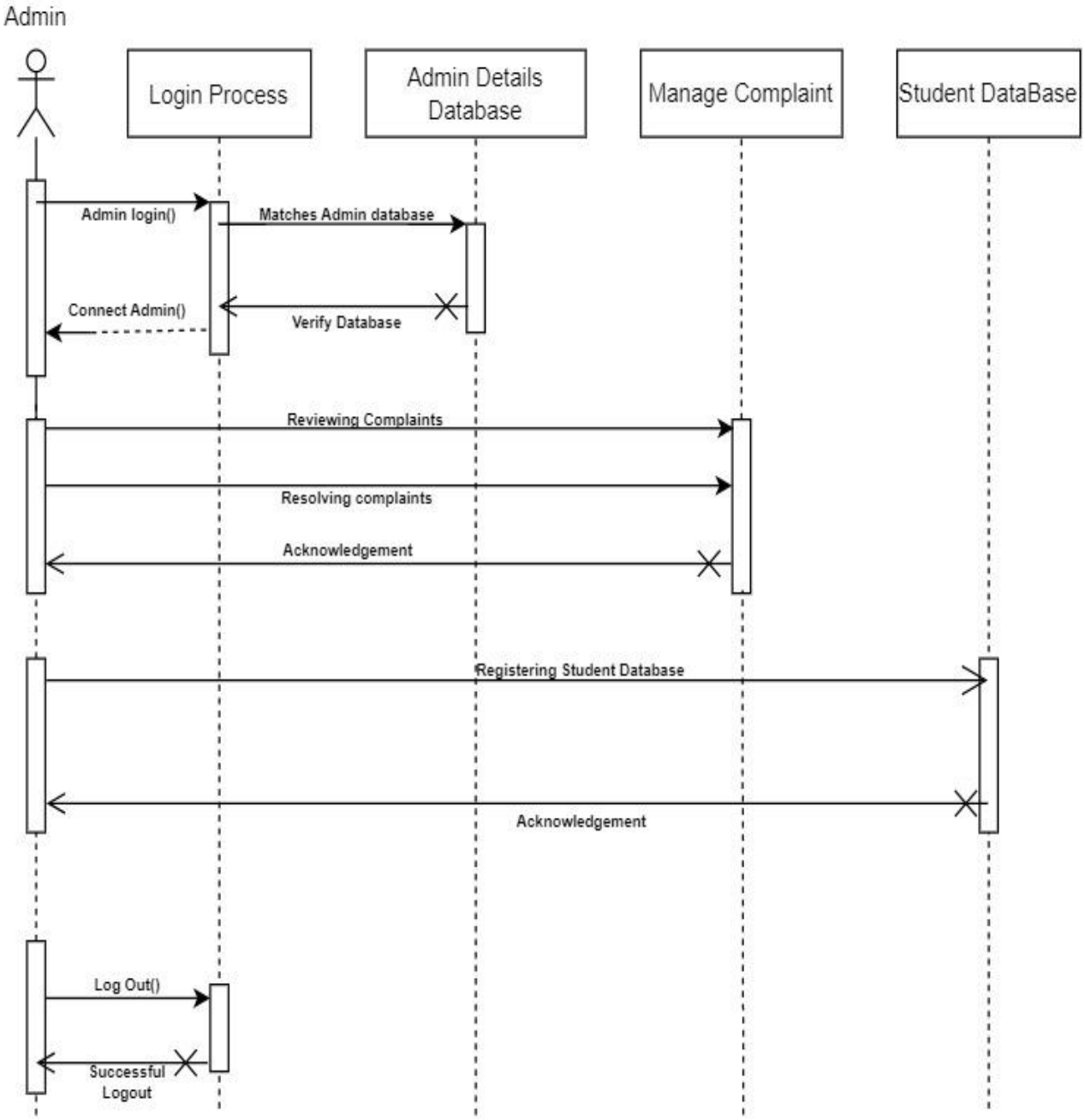

Student
roll_no : int
+ name : string
+ date_of_birth : string
+ mobile_no: int
+ guardian_mno: int
+ username: string
- password: string
+ login()
+ change_password()
+ view_details()
+ book()
+ pay()
+ register_complaint()
Complaint
c_id: string
+ c_status: string
+ c_type: string
+ c_description: string
+ mobile_no: string
+ complaint_details()
+ complaint_status()
Payment
roll_no : int
+ p_status: string
+ application_id: string
+ transaction_id: string
+ show_p_status()
+ generate_application_id()
+ generate_transaction_id()
makes
Admin
admin_id: string
- password: string
+ designation: string
+ name: string
+ login()
+ register_students()
+ allot_room()
+ manage_complaint()
+ check_payment_status()
Hostel_room
room_id: string
+ room_no: string
+ hostel_name: string
+ room_type: string
0..1
*
1

E-R Diagrams


mobile_no
guardian_mno
date_of_birth
username
name
password
Student
roll_No
Has
c_type
mobile_no
c_description
Complaint
c_status
c_id
Fee Payment
Books
Access
roll_No
Payment
p_status
Application_id
Transaction_id
password
Admin
admin_id
Hostel_room
room_type
room_id
name
designation
hostel_name
room_no

Sequence Diagrams




Admin
Login Process
Admin Details Database
Manage Complaint
Student DataBase
Admin login()
Matches Admin database
Connect Admin()
Verify Database
Reviewing Complaints
Resolving complaints
Acknowledgement
Registering Student Database
Acknowledgement
Log Out()
Successful Logout