HOSTEL COMPLY MOBILE APPLICATION

A Major project report submitted to

Rajiv Gandhi University of Knowledge Technologies

SRIKAKULAM

In partial fulfillment of the requirements for the Award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

Submitted by

4th year B. Tech 2nd semester

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CERTIFICATE

This is to certify that the report entitled "**Hostel Comply Mobile Application**" was submitted by B.Lakshmi, bearing ID. No. S180487, T.Shyam, bearing ID. No. S180222, R.LakshmiSri bearing ID.No. S181016, P.Naga Vinay bearing ID. No. S180580 in partial fulfilment of the requirements for the award of Bachelor of Technology in Computer Science is a Bonafede work carried out by them under my supervision and guidance. The report has not been submitted previously in part or in full to this or any other University or Institution to award any degree or diploma.

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DECLARATION

We declared that this thesis work titled "**Hostel Comply Mobile Application**", by using Java modules and deployed on web during the year 2023-24 in partial fulfilment of the requirements for the Major Project in Computer Science and Engineering. Submitted by us under the guidance and supervision of CH.**Satish Kumar** is a bonfire work. We also declare that it has not been submitted previously in part or in full to this University or other University or Institution for the award of any degree or diploma. Furthermore, the technical details furnished in various chapters of this thesis are purely relevant to the above project and there is no deviation from the theoretical point of view for design, development and implementation.

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ACKNOWLEDGEMENT

We would like to articulate my profound gratitude and indebtedness to my project guide Mr .Ch.Satish Kumar, Assistant Professor who has always been a constant motivation and guiding factor throughout the project time. It has been a great pleasure for us to get an opportunity to work under his guidance and complete the thesis work successfully.

We wish to extend my sincere thanks to our head of the department Ch Lakshmi Bala madam, for her constant encouragement throughout the project.

We are also grateful to other members of the department without their support my work would have been carried out so successfully.

We thank one and all who have rendered help to me directly or indirectly in the completion of my thesis work.

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ABSTRACT

HostelComply is a mobile app facilitating complaint resolution in university hostels. It caters to three key roles: students, electricians, and plumbers. Students can easily report issues, specifying type and location. Electricians and plumbers receive real-time assignments and update complaint statuses upon resolution. The app boasts an intuitive interface for users and administrators alike. Admin features include user management and analytics. HostelComply aims to improve communication, reduce resolution times, and foster transparency. It offers interactive hostel layouts for efficient navigation. Real-time notifications ensure timely updates for all parties involved. The app emphasizes user feedback for continuous improvement.

Keywords: Mobile application, hostel layout, real-time notifications

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CHAPTER-1

INTRODUCTION

1.1 Introduction

Introducing HostelComply: a mobile app revolutionizing complaint resolution in university hostels. It offers seamless reporting for students and real-time assignments for electricians and plumbers. With interactive hostel layouts and efficient admin tools, it ensures swift issue resolution. HostelComply prioritizes user feedback and transparency, enhancing communication and fostering continuous improvement. Experience a streamlined and user-centric approach to hostel complaint management with HostelComply.

1.2 Motivation

The motivation for HostelComply arises from the inefficiencies of traditional hostel complaint systems, prompting a need for streamlined processes. Leveraging mobile technology, our aim is to provide students with an intuitive platform for prompt issue reporting. By offering real-time assignments and comprehensive hostel layouts, we empower service providers to resolve complaints efficiently. HostelComply is driven by a commitment to transparency and accountability, with a focus on continuous improvement through user feedback. Our ultimate goal is to revolutionize hostel complaint management, fostering a responsive and user-centric environment.

1.3 Problem Statement

HostelComply addresses the prevalent inefficiencies and communication barriers in university hostel complaint management systems. Current methods often result in delays in issue reporting and resolution, leading to frustration among students and service providers alike. Lack of transparency and coordination further exacerbates the problem, hindering timely resolution of hostel issues. HostelComply seeks to rectify these challenges by providing a user-friendly platform that facilitates seamless communication and efficient problem resolution processes.

1.4 Objectives

The primary objectives of the Email Assistant project include:

- Streamline complaint resolution by creating an intuitive mobile app interface for efficient reporting and resolution of hostel issues.
- Enhance communication and transparency through real-time notifications and interactive hostel layouts to facilitate seamless interaction between users and service providers.
- Foster continuous improvement by incorporating user feedback mechanisms to iteratively enhance HostelComply's features and functionalities for an optimized user experience.

1.5 Goal

The goal of the project is to revolutionize hostel complaint management by introducing HostelComply, a mobile application. It aims to streamline the reporting and resolution process, enhance communication and transparency, and ultimately deliver a user-centric and efficient system for managing hostel issues.

1.6 Scope

The scope of the project includes designing and developing the HostelComply mobile application. It encompasses creating user interfaces for students, electricians, plumbers, and administrators, along with integrating real-time notification systems and interactive hostel layouts. Additionally, the project involves implementing backend functionalities for complaint submission, assignment distribution, status tracking, and analytics.

1.7 Applications

Key applications of the Email Assistant include:

- In university hostels, HostelComply streamlines complaint management, enhancing student living experiences.
- Residential complexes benefit from HostelComply's efficient handling of tenant complaints, improving overall facility maintenance.
- HostelComply facilitates seamless issue reporting and resolution in corporate offices, ensuring a conducive work environment.

- The hospitality industry leverages HostelComply to enhance guest satisfaction by promptly addressing room maintenance requests and other concerns.

1.8 Limitations

Limitations of the Email Assistant include:

- HostelComply's functionality may be compromised in areas with poor network coverage or outdated technology infrastructure.
- Ensuring widespread adoption of HostelComply among users may require significant promotional efforts and user training.
- HostelComply must implement robust security measures to safeguard sensitive user data and mitigate privacy risks.
- The long-term sustainability of HostelComply depends on regular maintenance and updates to address bugs and remain compatible with evolving mobile platforms.
- Integration of HostelComply with existing hostel management systems may encounter compatibility issues, necessitating thorough planning and coordination.

CHAPTER-2

LITERATURE SURVEY

2.1 Collect Information

The project focuses on developing a voice-based system for desktop and mobile devices tailored for blind individuals, aiming to improve accessibility to email and multimedia functions. With approximately 60% of the global blind population residing in India, the need for such technology is significant. Current advancements include text-to-Braille systems, screen magnifiers, and screen readers, though efforts are ongoing to enhance internet accessibility. Prior attempts, such as IBM's text-to-speech interface, have been made, but designing complex interfaces remains a challenge. Simplified browsing solutions and tree structures have been explored, yet shortcomings persist in navigability and usability. Specific to India, existing solutions like Shruti Drishti and Web Browser for Blind integrate with Indian language ASR and TTS systems, but lack portability to mobile devices.

2.2 Study

Embarking on the development of a hostel compliance mobile application, this project aims to streamline hostel management processes, ensuring adherence to regulations and enhancing user experience. Through intuitive design and robust features, the application promises to optimize administrative tasks, improve communication, and foster a seamless living experience for hostel residents.

2.3 Benefits

- Enhances transparency and accountability by providing real-time access to hostel rules and regulations.
- Streamlines administrative tasks, reducing manual paperwork and saving time for hostel staff.

- Improves communication between hostel management and residents through instant notifications and updates.
- Enhances safety and security by implementing features like emergency alerts and incident reporting.
- Enhances the overall hostel experience by offering convenient access to essential services and amenities through a user-friendly mobile platform.

2.4 Summary

The literature highlights the following key points:

- Mobile Application: Develop a user-friendly mobile application for hostel management.
- Rule Compliance: Ensure adherence to hostel rules and regulations through the app.
- Real-Time Updates: Provide instant notifications and updates regarding hostel policies and events.
- Administrative Efficiency: Streamline administrative tasks such as room allocation, fee payment, and maintenance requests.
- Communication Platform: Serve as a centralized communication platform for hostel management and residents.
- Emergency Response: Implement features for emergency alerts and quick response to safety concerns.
- Incident Reporting: Enable residents to report incidents or issues directly through the app.
- Amenity Access: Facilitate convenient access to hostel amenities and services.
- Feedback Mechanism: Incorporate a feedback system for residents to share their experiences and suggestions.
- Enhanced User Experience: Ultimately, aim to enhance the overall hostel experience by leveraging technology to improve efficiency, communication, and safety.

CHAPTER-3

Existed System

3.1 Existing System

- Manual hostel management processes relying on paper-based documentation.
- Lack of centralized communication channels between hostel management and residents.
- Inefficient administrative procedures for tasks like room allocation and fee collection.
- Limited accessibility to hostel rules and regulations, leading to compliance issues.
- Inadequate emergency response mechanisms and incident reporting systems.

3.2 Disadvantages

- Potential user resistance due to technological unfamiliarity or preference for traditional methods.
- Initial investment required for software development, infrastructure setup, and staff training.
- Ongoing maintenance necessary for bug fixes, security updates, and compatibility with new mobile platforms.
- Concerns regarding data privacy and the need for stringent compliance with regulations.
- Digital divide issues arising from unequal access to smartphones and internet connectivity.
- Possible disruptions caused by technical issues such as connectivity problems or software glitches.
- Limited functionality may leave some aspects of hostel management reliant on manual processes.
- Security risks associated with cyberattacks targeting sensitive data stored within the application.
- Staff training requirements to ensure effective utilization of the application's features.
- Dependency on technology may lead to exclusion of users with limited access to digital devices or internet.

CHAPTER-4

4. PROPOSED SYSTEM

4.1 Proposed System

The proposed hostel management mobile application aims to modernize and streamline traditional manual processes. Through an intuitive mobile interface, residents and management will access features like room allocation, fee payment, and maintenance requests. Real-time communication channels will facilitate instant notifications, updates, and rule enforcement, ensuring compliance with hostel regulations. An emergency response system will allow for quick reporting and coordination during safety incidents. Residents can provide feedback through the app, fostering continuous improvement of services. Access to amenities like laundry booking and meal plans will be simplified. The system will be scalable, allowing for future expansion and integration with other platforms. Additionally, data analytics tools will provide insights into user behavior and preferences. Customization options will enable tailoring features to specific hostel requirements. The application prioritizes user convenience, safety, and efficiency in hostel management.

4.2. Advantages

- Efficiency: Streamlines administrative tasks, reducing manual workload for hostel staff.
- Convenience:Provides residents with easy access to essential hostel services and information through their mobile devices.
- Real-Time Communication: Facilitates instant communication between hostel management and residents, improving responsiveness to queries and concerns.
- Enhanced Compliance:Ensures adherence to hostel rules and regulations through automated reminders and alerts, reducing instances of non-compliance.
- Improved Safety:Integrates emergency response features for swift reporting and coordination during safety incidents, enhancing overall hostel security.
- Feedback Mechanism:Allows residents to share feedback, enabling continuous improvement of hostel services and amenities.
- Accessibility: Accommodates residents with diverse needs and preferences, promoting inclusivity and accessibility.
- Data Insights:Enables data-driven decision-making through analytics tools, providing insights into user behavior and trends for service enhancements.

- Scalability: Designed to scale with the growth of the hostel, accommodating future expansion and integration needs.

- Competitive Edge:Sets the hostel apart by offering modern, tech-savvy amenities and services, attracting residents seeking convenience and efficiency.

4.3 System Requirements

- The proposed system requires the following components and resources:
    - Internet Connectivity: Access to email servers via internet connection for sending and receiving
- emails.
    - Compatible Hardware: A microphone for speech input and speakers or headphones for audio
- output.
    - Python Environment: The system is implemented in Python and requires a suitable Python runtime
- environment with necessary libraries such as \`smtplib\`, \`imaplib\`, \`speech_recognition\`, and \`pyttsx3\`.

REQUIREMENT SPECIFICATION

Here's a requirement specification outline for your hostel management mobile application project:

1.User Interface:

Intuitive and user-friendly interface accessible on both iOS and Android platforms.
Responsive design optimized for various screen sizes and devices.
Clear navigation and layout for easy accessibility of features.

2.Authentication and Authorization:

Secure login system with options for residents, hostel staff, and administrators.
Role-based access control to ensure appropriate permissions for different user types.

3.Functional Features:

Room Allocation: Ability to view available rooms, select preferences, and allocate rooms based on availability and preferences.
Fee Payment: Secure payment gateway integration for hostel fees, with options for one-time or recurring payments.
Maintenance Requests: Submission and tracking of maintenance requests with status updates and notifications.

- Rule Compliance: Automated reminders and notifications for hostel rules and regulations, with enforcement mechanisms for non-compliance.
- Communication Platform: Real-time messaging system for communication between residents, hostel staff, and management.
- Emergency Response: Dedicated feature for reporting emergencies, triggering alerts, and coordinating responses.
- Feedback Mechanism: User-friendly interface for residents to provide feedback, suggestions, and complaints.
- Amenity Access: Booking and management of hostel amenities such as laundry facilities, meal plans, and common areas.
- Data Analytics: Analytics dashboard for hostel management to track user activity, monitor trends, and make data-driven decisions.

4. Technical Requirements:

- Cross-platform development using frameworks like React Native or Flutter for efficiency and compatibility.
- Secure data storage and transmission protocols to protect user privacy and sensitive information.
- Integration with third-party services for functionalities such as payment processing and communication.
- Regular updates and maintenance to address bugs, security vulnerabilities, and compatibility issues.

5. Compliance and Regulations:

- Compliance with data protection regulations such as GDPR or CCPA to ensure the privacy and security of user data.
- Accessibility standards compliance to ensure inclusivity and usability for users with disabilities.

6. Testing and Quality Assurance:

- Comprehensive testing procedures including unit testing, integration testing, and user acceptance testing to ensure functionality and reliability.
- Feedback collection from users during beta testing phase to identify and address usability issues and feature requests.

7. Documentation and Support:

- Comprehensive user documentation including tutorials, FAQs, and troubleshooting guides.
- Customer support channels for resolving user queries and technical issues.

8. Scalability and Future Expansion:

- Design architecture that allows for scalability to accommodate future growth and additional features.
- Regular updates and feature enhancements based on user feedback and technological advancements.

Below are the functional requirements for the Hostel Comply Mobile Application:

Functional requirements specify the system's behavior and capabilities. Here are the functional requirements for your hostel management mobile application project:

1. User Authentication:

- Residents, hostel staff, and administrators should be able to log in securely using credentials.
- Authentication methods may include username/password, biometric authentication, or social login options.

2. Room Management:

- Residents should be able to view available rooms, select preferences, and request room allocation.
- Hostel staff and administrators should have access to manage room allocation and update room statuses.

3. Fee Management:

- Residents should be able to view fee details, make payments securely, and receive payment receipts.
- Hostel staff and administrators should have access to manage fee details, generate invoices, and track payments.

4. Maintenance Requests:

- Residents should be able to submit maintenance requests for issues in their rooms or common areas.
- Hostel staff and administrators should receive notifications of maintenance requests, update request statuses, and track resolution.

5. Rule Compliance:

- Automated reminders and notifications should be sent to residents regarding hostel rules and regulations.
- Hostel staff and administrators should have access to manage rule notifications and enforce compliance measures.

6. Communication Platform:

- Residents should be able to communicate with hostel staff and other residents through messaging features.
- Hostel staff and administrators should have access to manage and respond to resident inquiries and messages.

7. Emergency Response:

- Residents should have access to emergency contact information and be able to report safety incidents or emergencies.
- Hostel staff and administrators should receive immediate notifications of safety incidents and be able to coordinate response efforts.

8. Feedback Mechanism:

- Residents should have the ability to provide feedback, suggestions, and complaints about hostel services and facilities.
- Hostel staff and administrators should have access to review and respond to resident feedback.

9. Amenity Access:

- Residents should be able to book and manage access to hostel amenities such as laundry facilities, gym, or common areas.
- Hostel staff and administrators should have access to manage amenity bookings and availability.

10. Data Analytics:

- Hostel staff and administrators should have access to analytics dashboards to track user activity, monitor trends, and make data-driven decisions.
- Analytics should include metrics such as room occupancy rates, fee collection trends, and maintenance request volumes.

11. Localization and Internationalization:

- The application should support multiple languages and currencies to accommodate residents from diverse backgrounds.
- User interface elements should be adaptable to different cultural norms and preferences.

These functional requirements ensure that the hostel management mobile application effectively meets the needs of both residents and hostel staff, streamlining operations and enhancing the overall hostel experience.

Non-functional requirements for the Email Assistant project:

Non-functional requirements specify the qualities or characteristics that describe how the system should behave or perform. Here are the non-functional requirements for your hostel management mobile application project:

1. Performance:

- The application should load quickly and respond promptly to user interactions, with minimal latency.
- Response times for critical functions such as room allocation, fee payment, and emergency reporting should be within acceptable limits.

2. Scalability:

- The application should be able to handle a growing number of users, rooms, and transactions without significant degradation in performance.
- It should support concurrent access by multiple users without compromising responsiveness or stability.

3. Reliability:

- The application should be highly reliable, with minimal downtime and robust error handling mechanisms.
- It should gracefully handle unexpected errors, preventing data loss or system crashes.

4. Security:

- The application should implement strong encryption protocols to protect sensitive user data and financial transactions.
- User authentication and authorization mechanisms should be secure and resistant to unauthorized access or tampering.

5. Privacy:

- User privacy should be ensured through compliance with data protection regulations such as GDPR or CCPA.
- Personal information should be collected and stored securely, with clear policies for data usage and sharing.

6. Accessibility:

- The application should be accessible to users with disabilities, complying with accessibility standards such as WCAG (Web Content Accessibility Guidelines).
- It should support assistive technologies such as screen readers and voice commands.

7. Usability:

- The user interface should be intuitive and easy to navigate, with clear instructions and feedback for user actions.

- It should follow design principles for consistency, simplicity, and visual clarity.

8. Compatibility:

- The application should be compatible with a wide range of mobile devices, operating systems, and screen sizes.
- It should support popular web browsers and maintain consistent functionality across different platforms.

9. Maintainability:

- The codebase should be well-organized, modular, and documented to facilitate future maintenance and updates.
- Changes and enhancements to the application should be implemented efficiently without causing regression issues.

10. Interoperability:

- The application should be able to integrate seamlessly with external systems and services such as payment gateways, messaging platforms, and analytics tools.
- It should support standard protocols and APIs for interoperability with other software components.

Addressing these non-functional requirements ensures that the hostel management mobile application delivers a reliable, secure, and user-friendly experience while maintaining high performance and scalability.

Hardware Requirements:

The hardware requirements for your hostel management mobile application project depend on factors such as the development environment, deployment infrastructure, and expected user base. However, here are some general hardware requirements to consider:

1. Development Environment:

- Personal Computer (PC) or Laptop: High-performance computer for software development tasks such as coding, testing, and debugging.
- Development Tools: Install development environments, Integrated Development Environments (IDEs), and software libraries suitable for mobile application development (e.g., Android Studio for Android development, Xcode for iOS development).

2. Testing Devices:

- Mobile Devices: Android and iOS smartphones and tablets for testing the application on different platforms and screen sizes.
- Emulators and Simulators: Software-based tools for simulating mobile devices and testing the application in various scenarios without physical devices.

3. Server Infrastructure:

- Web Servers: Servers to host the backend components of the application, including databases, APIs, and web services.

- Cloud Services: Consider using cloud platforms such as Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP) for scalable and cost-effective hosting solutions.

4. Networking Equipment:

- Internet Connection: Stable and high-speed internet connection for accessing development resources, downloading updates, and testing cloud-based services.
- Local Area Network (LAN): Local network infrastructure for communication between development devices and testing environments.

5. Deployment Hardware:

- Deployment Servers: Dedicated servers or cloud instances for hosting the production version of the application.
- Load Balancers (if necessary): Hardware or software-based load balancers to distribute incoming traffic across multiple servers for scalability and reliability.

6. Backup and Storage:

- Storage Devices: External hard drives or network-attached storage (NAS) devices for storing backups of application data and code repositories.
- Backup Systems: Automated backup solutions to protect against data loss and ensure business continuity in case of hardware failures or disasters.

7. Security Hardware:

- Firewalls: Hardware firewalls to protect the network infrastructure from unauthorized access and cyber threats.
- Intrusion Detection Systems (IDS) and Intrusion Prevention Systems (IPS): Hardware appliances or software solutions for monitoring and protecting against suspicious network activities.

8. Miscellaneous:

- Power Backup: Uninterruptible Power Supply (UPS) units to provide backup power in case of electrical outages and prevent data loss or corruption.
- Cooling Systems: Adequate cooling systems (e.g., air conditioning, fans) to maintain optimal operating temperatures for servers and networking equipment.

These hardware requirements provide a foundation for developing, testing, deploying, and maintaining your hostel management mobile application project. Adjustments may be necessary based on specific project needs, scalability requirements, and budget constraints.

Software Requirements:

1. Development Environment:

- Integrated Development Environment (IDE): Android Studio for Android app development or Xcode for iOS app development.
- Software Development Kit (SDK): Android SDK or iOS SDK for compiling, debugging, and testing mobile applications.
- Programming Languages: Java or Kotlin for Android development, and Swift for iOS development.
- Version Control System: Git for managing source code and collaboration among developers.

2. Backend Infrastructure:

- Web Server: Apache, Nginx, or Microsoft IIS for hosting backend services.
- Database Management System (DBMS): MySQL, PostgreSQL, MongoDB, or SQLite for storing application data.
- Server-Side Scripting Language: PHP, Python, Ruby, or Node.js for server-side logic and API development.
- Frameworks and Libraries: Express.js, Django, Flask, or Laravel for building RESTful APIs.

3. Frontend Development:

- JavaScript Frameworks: React.js, Angular, or Vue.js for building interactive user interfaces.
- UI Frameworks: Material Design for Android apps, UIKit or SwiftUI for iOS apps.
- CSS Preprocessors: Sass or Less for writing structured CSS code.
- Responsive Design Tools: Bootstrap or Foundation for designing mobile-friendly layouts.

4. Communication and Collaboration:

- Communication Tools: Slack, Microsoft Teams, or Discord for team communication and collaboration.
- Project Management Tools: Jira, Trello, Asana, or Monday.com for managing tasks, deadlines, and project progress.
- Version Control Hosting: GitHub, Bitbucket, or GitLab for hosting source code repositories and managing version control.

5. Deployment and Hosting:

- Cloud Services: Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP) for hosting backend services and databases.
- Containerization Tools: Docker for packaging applications into containers for deployment.
- Continuous Integration and Deployment (CI/CD) Tools: Jenkins, Travis CI, or CircleCI for automating build, test, and deployment pipelines.

6. Security and Monitoring:

- Security Tools: SSL/TLS certificates for securing data transmission, and security scanning tools for identifying vulnerabilities.

- Logging and Monitoring Tools: Elasticsearch, Logstash, and Kibana (ELK stack), or Prometheus and Grafana for monitoring application performance and logs.

7. Documentation and Collaboration:

- Documentation Tools: Markdown, reStructuredText, or AsciiDoc for writing project documentation.
- Wiki Platforms: Confluence, DokuWiki, or MediaWiki for creating and sharing project documentation.

8. Customer Support and Feedback:

- Customer Support Tools: Zendesk, Freshdesk, or Intercom for providing customer support and managing user inquiries.
- Feedback Collection Tools: UserVoice, SurveyMonkey, or Typeform for gathering user feedback and feature requests.

These software requirements provide the necessary tools and platforms for developing, deploying, and maintaining your hostel management mobile application project. Adjustments may be necessary based on specific project needs, technology preferences, and scalability requirements.

CHAPTER-5

System Design

5.1 Design of the System

The system design for your hostel management mobile application encompasses various components to ensure a seamless and efficient user experience. At its core, the application comprises a client-side mobile interface developed using platform-specific tools such as Android Studio for Android or Xcode for iOS. This interface provides residents with access to essential features including room allocation, fee payment, maintenance requests, and communication with hostel staff. The backend infrastructure consists of web servers hosting RESTful APIs developed using frameworks like Django or Express.js. These APIs handle requests from the mobile app, interacting with a database management system (DBMS) such as MySQL or MongoDB to store and retrieve hostel-related data, including room availability, resident details, and fee records.

Additionally, the backend system manages user authentication and authorization, ensuring secure access to application functionalities based on user roles and permissions. To facilitate real-time communication between hostel management and residents, WebSocket or push notification technologies are integrated to deliver instant updates, notifications, and alerts. The application employs industry-standard security measures, including encryption protocols for data transmission, user authentication mechanisms, and secure storage of sensitive information.

Deployment of the system involves hosting backend services on cloud platforms such as Amazon Web Services (AWS) or Microsoft Azure, ensuring scalability, reliability, and cost-effectiveness. Continuous integration and deployment (CI/CD) pipelines are implemented using tools like Jenkins or CircleCI to automate the build, test, and deployment processes, facilitating rapid iterations and updates. Monitoring and logging tools such as ELK stack (Elasticsearch, Logstash, Kibana) or Prometheus and Grafana are employed to track application performance, identify issues, and ensure system stability.

The system design also encompasses considerations for scalability, maintainability, and extensibility. The architecture is designed to accommodate a growing user base and evolving requirements, with modular components that can be easily extended or modified. Documentation and collaboration tools are utilized to facilitate knowledge sharing among development teams and ensure comprehensive documentation of system architecture, APIs, and deployment procedures. Overall, the system design prioritizes reliability, security, and usability to deliver a robust and user-friendly hostel management solution.

5.1.1 Class Diagram

Class diagrams usually depict the process which is also called the workflow or the relation between the entities. It includes several sections like entities, attributes and relationships. The motive of a class diagram is to depict the classes within a model. In object-oriented software, classes have attributes(member variables), operations (member capabilities) and relation.

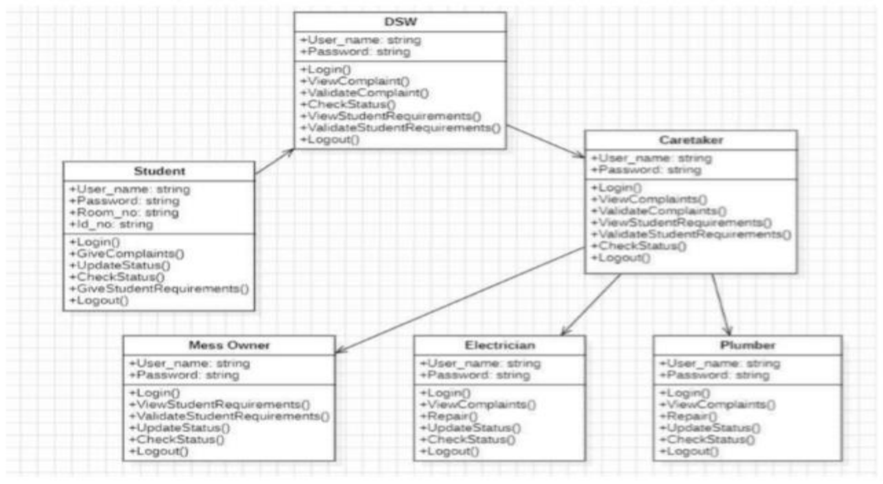
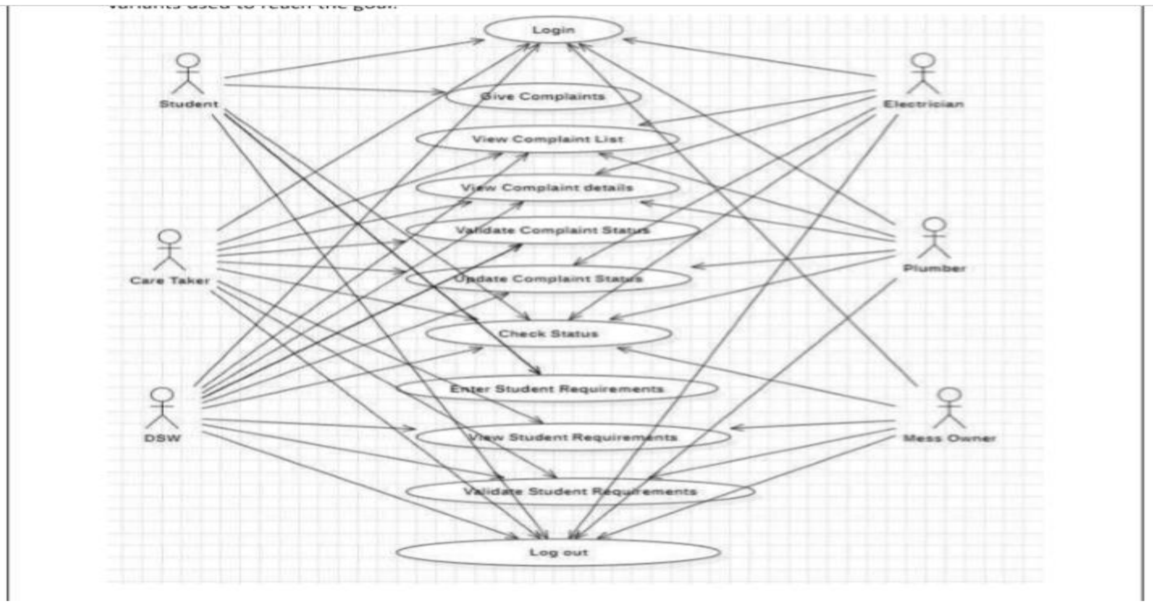


Table 3.1: Class Diagram

5.1.2 Use Case Diagram

A use case diagram is a type of Unified Modeling Language (UML) diagram that describes the functional requirements of a system and the actors that interact with it. The purpose of a use case diagram is to provide a high-level view of the system and its behavior from the perspective of end-users.The use case diagram consists of actors, use cases, and the relationships between them. An actor is an external entity that interacts with the system, such as a user or another system. A use case represents a set of actions or steps that a system performs in response to a request from an actor.



5.1.3 SEQUENCE DIAGRAM

A sequence diagram in Unified Modelling Language (UML) is one variety of interaction diagram that suggests how methods operate with one another and in what order. Sequence diagrams are quite often referred to as event-hint diagrams, event situations, and timing diagrams. A sequence diagram suggests, as parallel vertical traces (lifelines), special systems or objects that are residing at the same time, and, as horizontal arrows, the messages exchanged between them, within the order the place they occur.

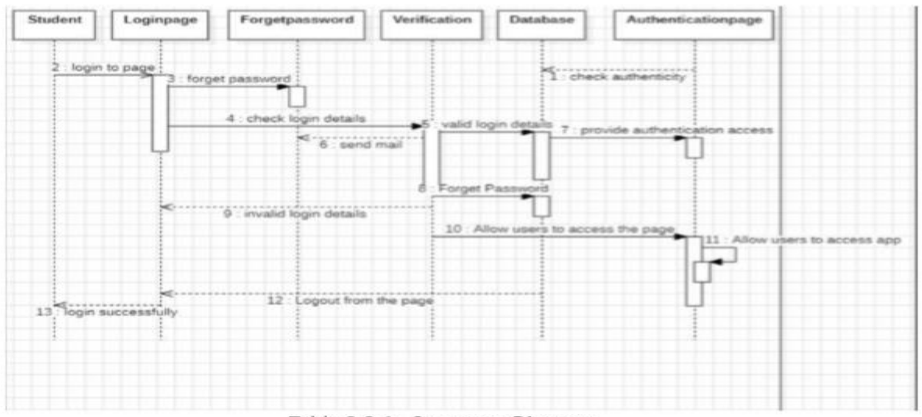


Table 3.3.1: Sequence Diagram

It is a visual representation data flows through a system. It is a popular modeling tool used in software engineering to describe the flow of data in a system, and to help identify areas where improvements can be made.A DFD consists of a set of processes, data stores, and data flows. A process represents a transformation or manipulation of data, such as calculations or data entry. Data stores represent where data is stored, such as a database or a file. Data flows represent the movement of data between processes and data stores. Symbols used in DFD

Description of Components:

1. User Interface:

- Represents the interface through which users interact with the Email Assistant system.

Users input voice commands and receive auditory feedback through speech recognition and text-to-speech conversion.

-

2. Speech Recognition:

- Receives voice commands from the user interface and converts them into text.
- Passes the interpreted commands to the email management component for further processing.

3. Email Management:

- Handles the processing of user commands related to email management tasks.
- Comprises functions for composing, sending, reading, forwarding, deleting, and searching emails

based on the interpreted user commands.

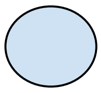
4. Email Server Integration:

- Interfaces with the email server (e.g., Gmail) to perform actions such as sending, receiving, and
- Executes the email-related tasks requested by the email management component and communicates
- the results back to the user interface for feedback.

This DFD provides an overview of the flow of data and processes involved in the Email Assistant

system, highlighting the interaction between the user interface, speech recognition, email management,

and email server integration components.



A circle represents a process.

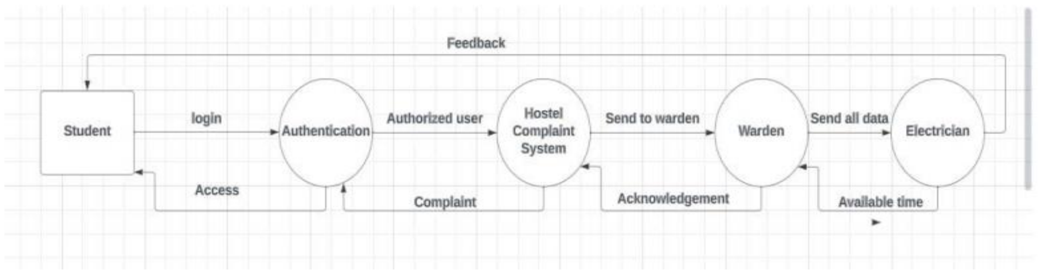
A rectangle represents external entity

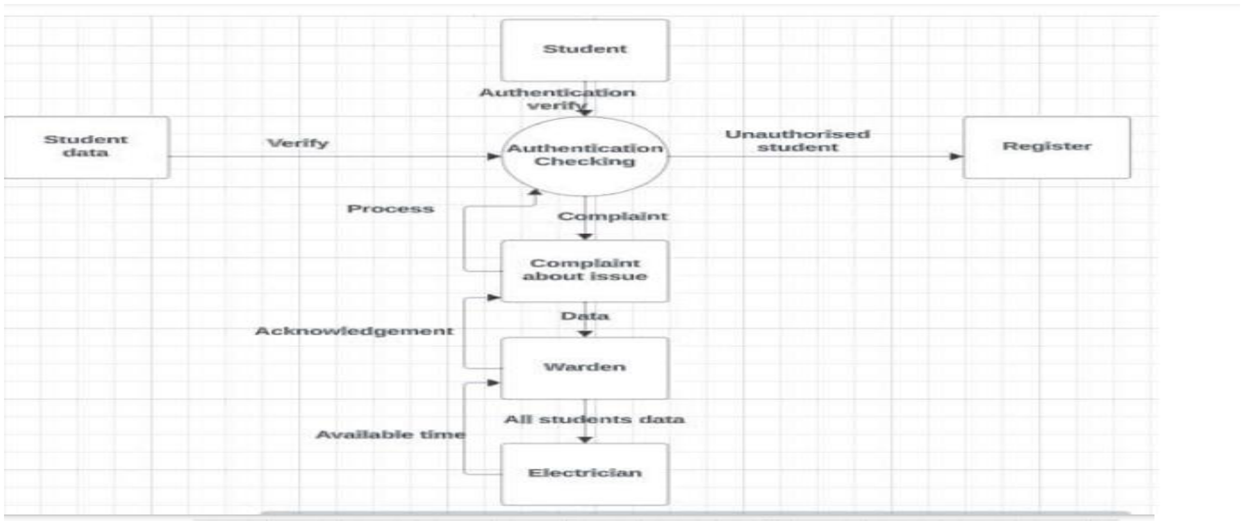
It defines a destination of the system data.

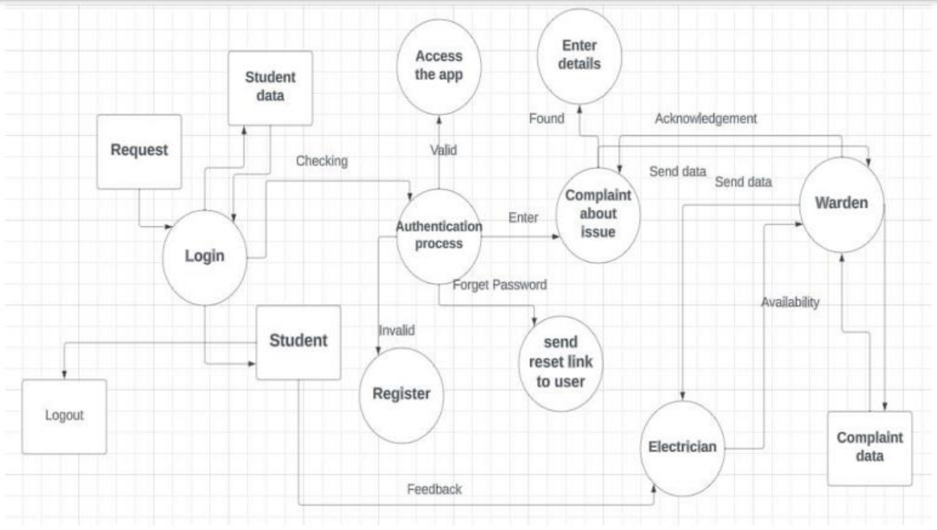
An arrow identifies dataflow.

Double line with one end closed indicates a data store.

DFD level-0:

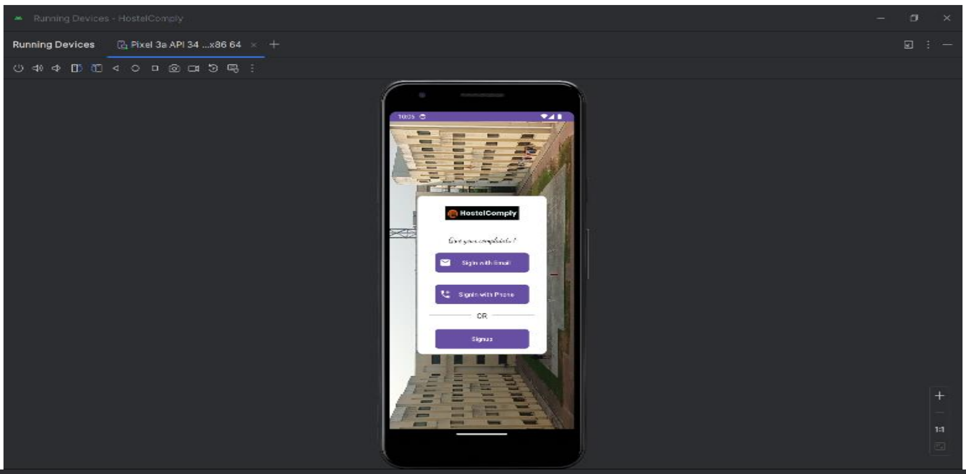

Feedback
Student
login
Authentication
Authorized user
Hostel Complaint System
Send to warden
Warden
Send all data
Electrician
Access
Complaint
Acknowledgement
Available time

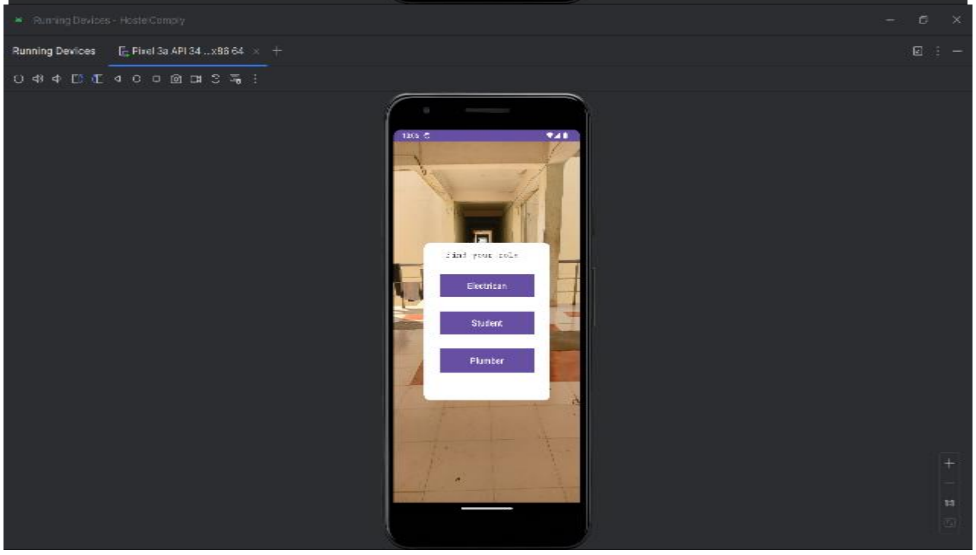

Student
Authentication verify
Student data
Verify
Authentication Checking
Unauthorised student
Register
Process
Complaint
Complaint about issue
Data
Acknowledgement
Warden
All students data
Available time
Electrician

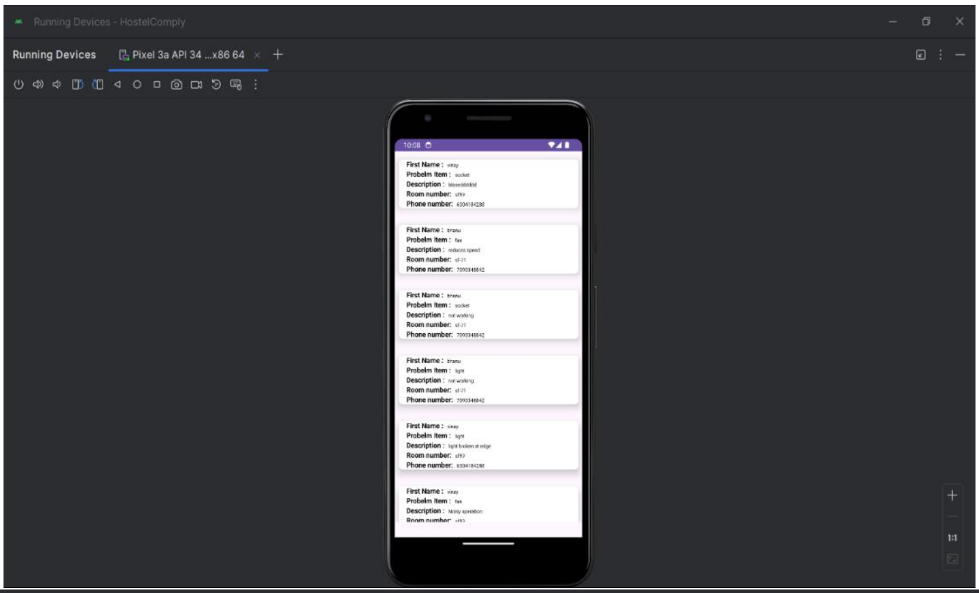

Student data
Access the app
Enter details
Request
Checking
Valid
Found
Acknowledgement
Send data
Send data
Complaint about issue
Warden
Login
Authentication process
Enter
Forget Password
Availability
Student
Invalid
send reset link to user
Logout
Register
Electrician
Complaint data
Feedback

CHAPTER-6

EXPERIMENT RESULTS







First Name : vinay
Probelm Item : socket
Description : blaseddddd
Room number: sf99
Phone number: 6304184288

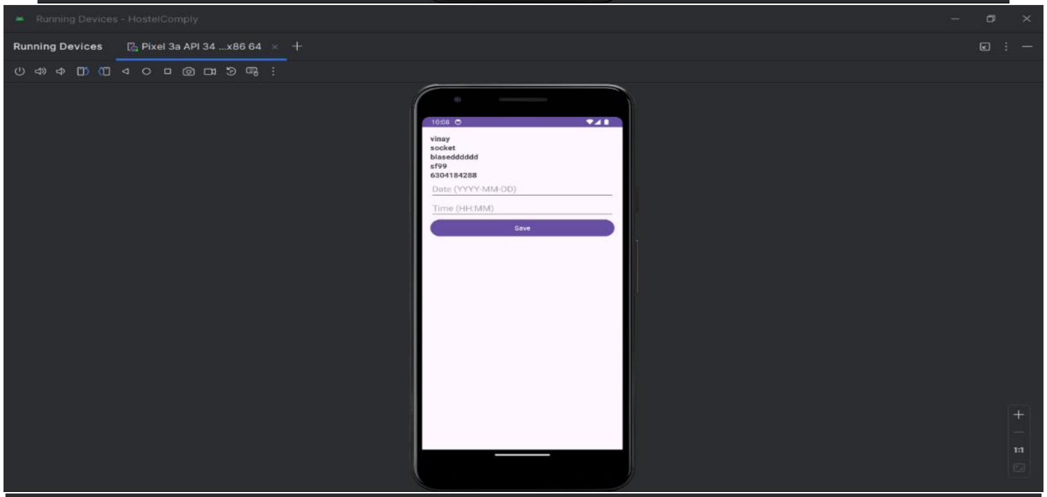
First Name : bhanu
Probelm Item : fan
Description : reduced speed
Room number: sf-71
Phone number: 7093348842

First Name : bhanu
Probelm Item : socket
Description : not working
Room number: sf-71
Phone number: 7093348842

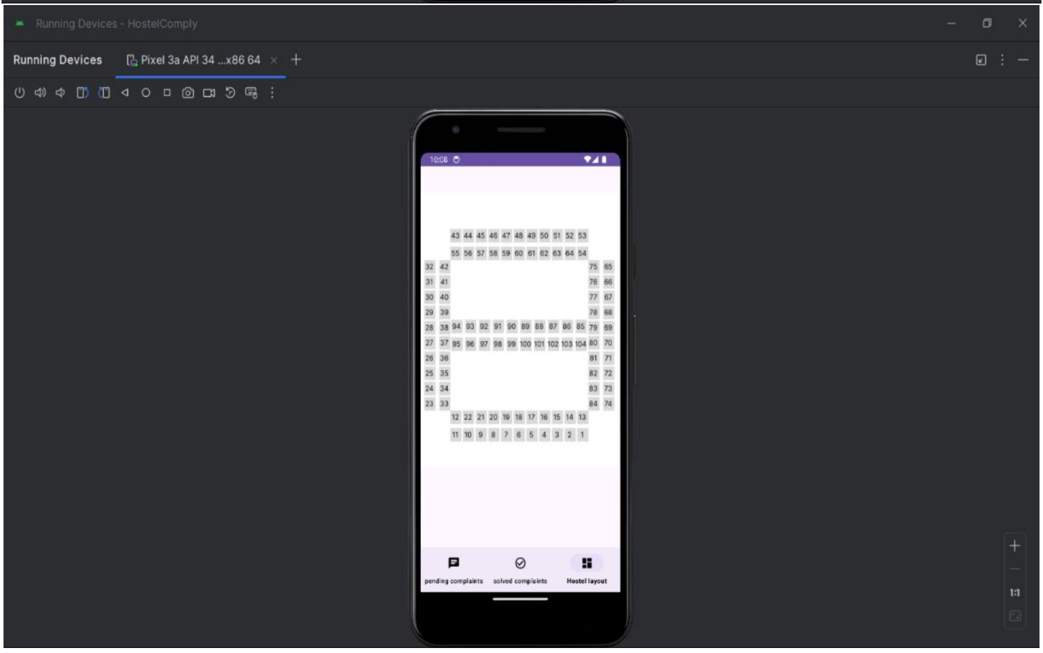
First Name : bhanu
Probelm Item : light
Description : not working
Room number: sf-71
Phone number: 7093348842

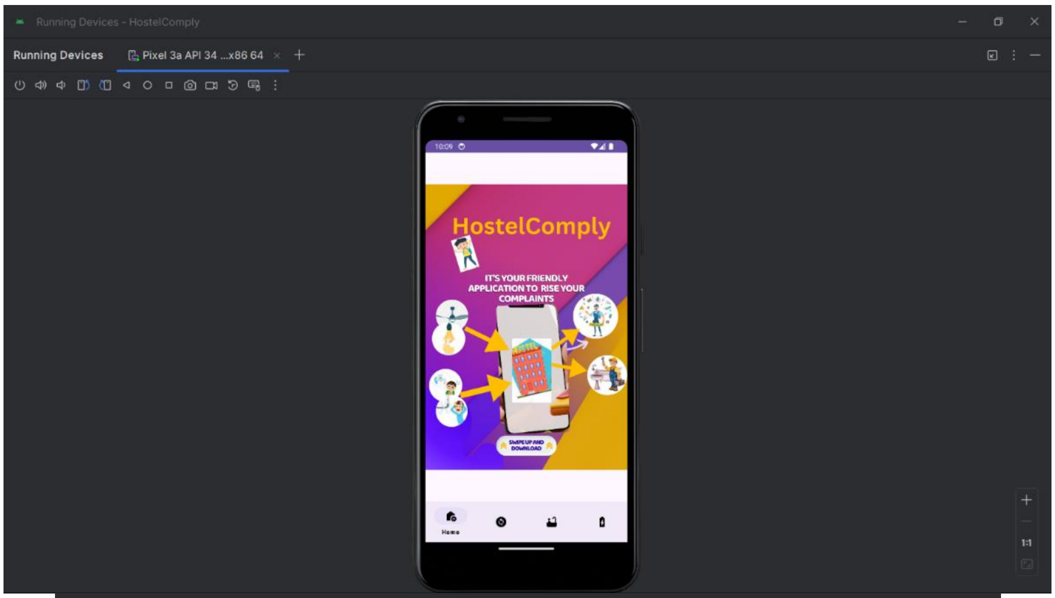
First Name : vinay
Probelm Item : light
Description : light broken at edge
Room number: sf99
Phone number: 6304184288

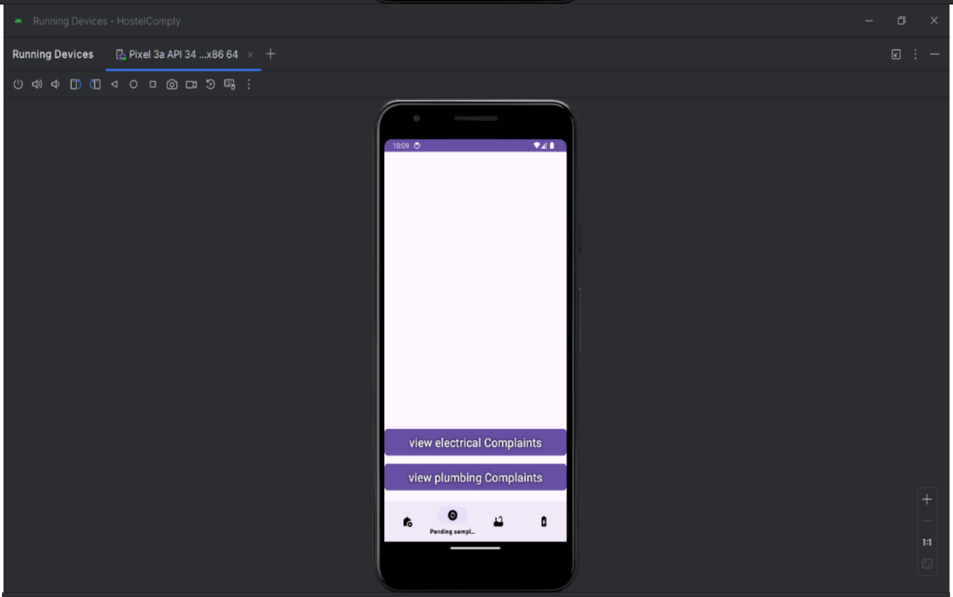
First Name : vinay
Probelm Item : fan
Description : Noisy operation
Room number: sf99

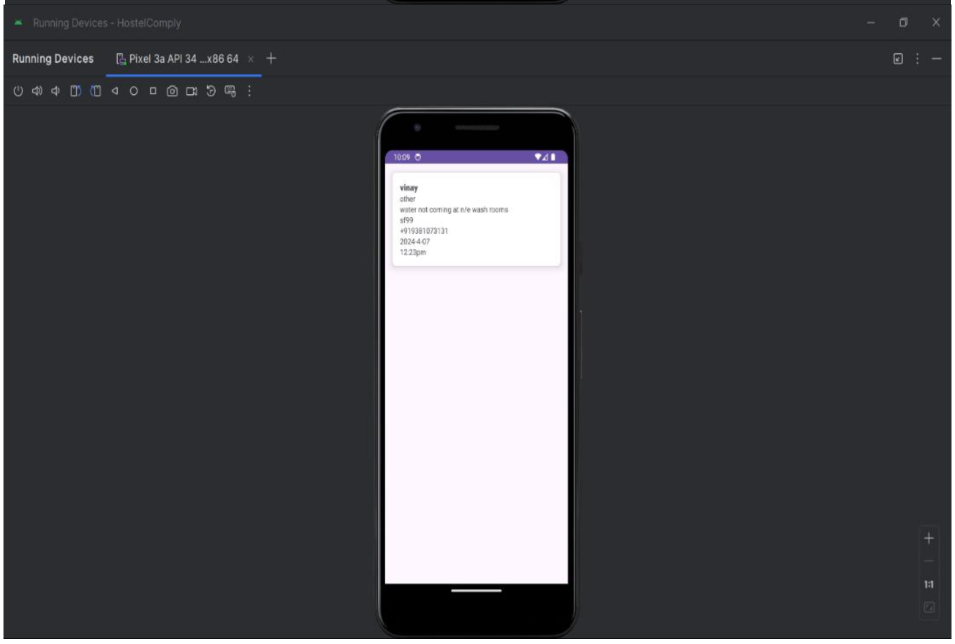


vinay
socket
blaseddddd
sf99
6304184288
Date (YYYY-MM-DD)
Time (HH:MM)

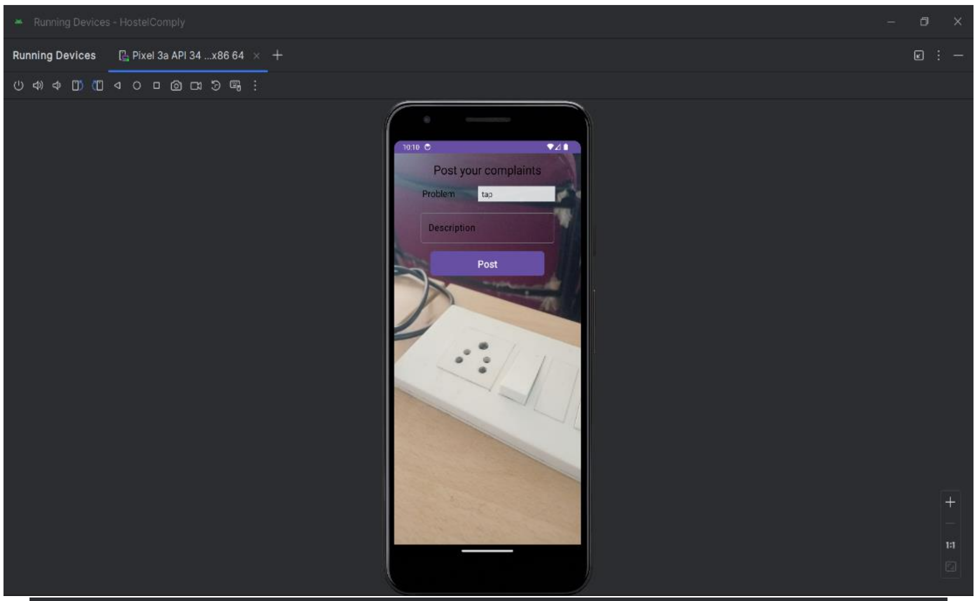


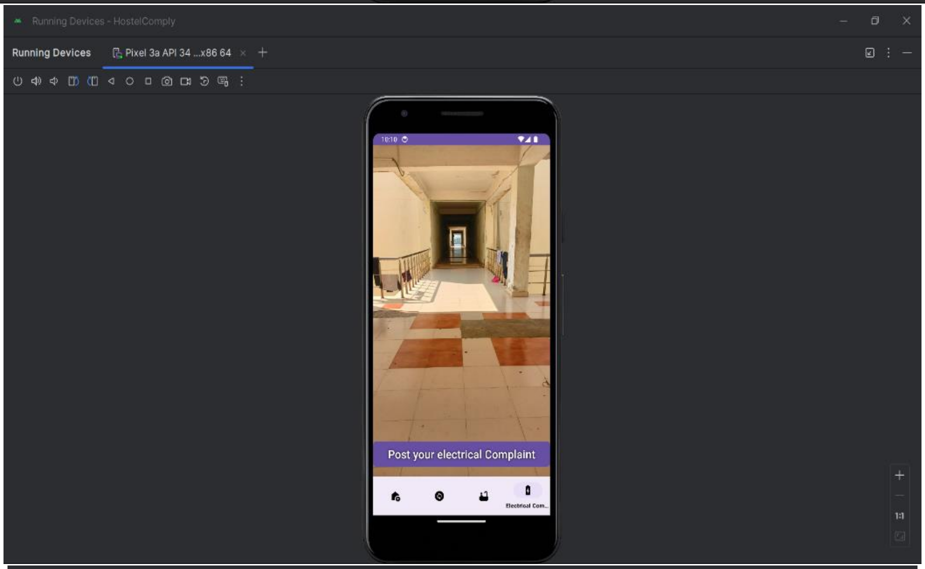

Running Devices - HostelComply
Running Devices
Pixel 3a API 34 ...x86 64
HostelComply
IT'S YOUR FRIENDLY APPLICATION TO RISE YOUR COMPLAINTS
SWIPE UP AND DOWNLOAD
Home

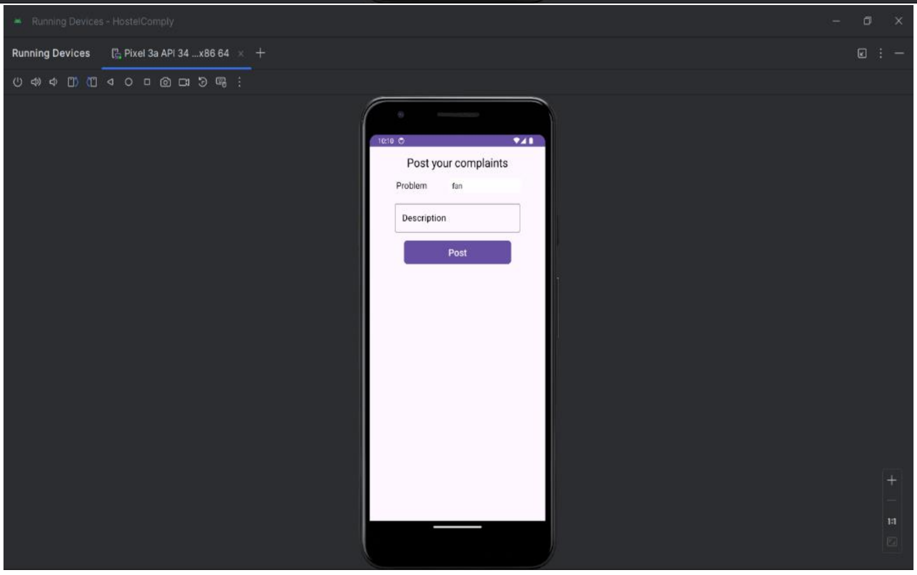

Running Devices - HostelComply
Running Devices
Pixel 3a API 34 ...x86 64
view electrical Complaints
view plumbing Complaints
Pending compl...



vinay
other
water not coming at n/e wash rooms
sf99
+919381073131
2024-4-07
12:23pm


Running Devices - HostelComply
Running Devices
Pixel 3a API 34 ...x86 64
Post your complaints
Problem
tap
Description
Post


Running Devices - HostelComply
Running Devices
Pixel 3a API 34 ...x86 64
Post your electrical Complaint
Electrical Com...


Running Devices - HostelComply
Running Devices
Pixel 3a API 34 ...x86 64
Post your complaints
Problem
fan
Description
Post

•

CHAPTER-7

Source Code

1. **ElectricianPanel**

Electrical_Hostel_layout.java

```
package my.hostelcomply.app.electricianPanel;

import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.Fragment;

import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

import my.hostelcomply.app.R;

public class Electrical_Hostel_layout extends Fragment {


    @Nullable
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup container, @Nullable
Bundle savedInstanceState) {

        View v = inflater.inflate(R.layout.activity_electrical_hostel_layout,null);
        getActivity().setTitle("Electrician hostel layout");
        return v;
    }
}
```

OneComplaintDisplay.java

```
package my.hostelcomply.app.electricianPanel;

import static android.opengl.ETC1.isValid;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.content.Intent;
import android.os.Bundle;
import android.text.TextUtils;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;
import com.google.firebase.auth.FirebaseAuth;
import com.google.firebase.auth.FirebaseUser;
import com.google.firebase.database.DataSnapshot;
import com.google.firebase.database.DatabaseError;
import com.google.firebase.database.DatabaseReference;
import com.google.firebase.database.FirebaseDatabase;
import com.google.firebase.database.ValueEventListener;

import java.util.Date;

import my.hostelcomply.app.R;
import my.hostelcomply.app.Student;
import my.hostelcomply.app.studentPanel.StudentComplaintDetails;
import my.hostelcomply.app.studentPanel.Student_postComplaint;


public class OneComplaintDisplay extends AppCompatActivity {
    EditText dateEditText, timeEditText;
    Button saveButton;
    FirebaseDatabase firebaseDatabase;
    DatabaseReference databaseReference;
    String dateStr, timeStr, status;
    StudentelectricalComplaintDetailswithdate sdw;

    FirebaseAuth mAuth;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_one_complaint_display);
        dateEditText = findViewById(R.id.dateEditText);
        timeEditText = findViewById(R.id.timeEditText);
        saveButton = findViewById(R.id.saveButton);
```

```
firebaseDatabase = FirebaseDatabase.getInstance();
databaseReference = firebaseDatabase.getReference("StudentelectricalComplaintDetailswithdate");

// Initialize the FirebaseAuth instance
mAuth = FirebaseAuth.getInstance();

// Initialize the StudentelectricalComplaintDetailswithdate object
sdw = new StudentelectricalComplaintDetailswithdate();

// Retrieve data from intent
Bundle extras = getIntent().getExtras();
if (extras != null) {
   String firstname = extras.getString("firstname");
   String problemItem = extras.getString("problem_item");
   String description = extras.getString("description");
   String roomNumber = extras.getString("roomnumber");
   String phoneNumber = extras.getString("phonenumber");
   String studentId=extras.getString("studentId");
   String randomUid=extras.getString("randomUid");


   // Display data in TextViews
   TextView firstNameTextView = findViewById(R.id.firstNameTextView);
   TextView problemItemTextView = findViewById(R.id.problemItemTextView);
   TextView descriptionTextView = findViewById(R.id.descriptionTextView);
   TextView roomNumberTextView = findViewById(R.id.roomNumberTextView);
   TextView phoneNumberTextView = findViewById(R.id.phoneNumberTextView);

   firstNameTextView.setText(firstname);
   problemItemTextView.setText(problemItem);
   descriptionTextView.setText(description);
   roomNumberTextView.setText(roomNumber);
   phoneNumberTextView.setText(phoneNumber);


   sdw.setFirstname(firstname);
   sdw.setProblemIte(problemItem);
   sdw.setDescription(description);
   sdw.setRoomNumber(roomNumber);
   sdw.setPhoneNumber(phoneNumber);
   sdw.setStudentId(studentId);
   sdw.setRandomUid(randomUid);

}

status = "du";

saveButton.setOnClickListener(new View.OnClickListener() {
   @Override
```

```
            public void onClick(View v) {
                dateStr = dateEditText.getText().toString();
                timeStr = timeEditText.getText().toString();

                if (TextUtils.isEmpty(dateStr) || TextUtils.isEmpty(timeStr)) {
                    Toast.makeText(OneComplaintDisplay.this, "Please enter date and time",
Toast.LENGTH_SHORT).show();
                } else {
                    saveComplaint();
                }
            }
        });
    }

    private void saveComplaint() {
        // Get the current user
        FirebaseUser currentUser = mAuth.getCurrentUser();

        if (currentUser != null) {

            String electricianPhoneNumber = currentUser.getPhoneNumber();
            String key = databaseReference.push().getKey();

            // Create a new complaint object
            StudentelectricalComplaintDetailswithdate complaintwd = new
StudentelectricalComplaintDetailswithdate(dateStr, timeStr, sdw.getFirstname(), sdw.getProblemIte(),
sdw.getDescription(), sdw.getRoomNumber(), sdw.getPhoneNumber(), status, sdw.getStudentId(),
electricianPhoneNumber,key,sdw.getRandomUid());

            // Generate a unique key for the complaint


            if (key != null) {
                // Save the complaint to Firebase
                databaseReference.child(key).setValue(complaintwd)
                        .addOnCompleteListener(new OnCompleteListener<Void>() {
                            @Override
                            public void onComplete(@NonNull Task<Void> task) {
                                if (task.isSuccessful()) {
                                    Toast.makeText(OneComplaintDisplay.this, "Complaint posted successfully",
Toast.LENGTH_SHORT).show();
                                    finish(); // Finish the activity after successful posting
                                } else {
                                    Toast.makeText(OneComplaintDisplay.this, "Failed to post complaint",
Toast.LENGTH_SHORT).show();
                                }
                            }
                        });
            } else {
                Toast.makeText(OneComplaintDisplay.this, "Failed to generate unique key",
        Toast.LENGTH_SHORT).show();
            }
          } else {
            Toast.makeText(OneComplaintDisplay.this, "Failed to get current user", Toast.LENGTH_SHORT).show();
          }
        }
      }
```

StudentelectricalComplaintDetailsList.java

```
package my.hostelcomply.app.electricianPanel;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;

import android.os.Bundle;
import android.util.Log;

import com.google.firebase.database.DataSnapshot;
import com.google.firebase.database.DatabaseError;
import com.google.firebase.database.DatabaseReference;
import com.google.firebase.database.FirebaseDatabase;
import com.google.firebase.database.ValueEventListener;

import java.util.ArrayList;

import my.hostelcomply.app.R;

public class StudentelectricalComplaintDetailsList extends AppCompatActivity {
  RecyclerView recyclerView;
  DatabaseReference database;
  StudentelectricalComplaintDetailsAdapter studentelectricalComplaintDetailsAdapter;
  ArrayList<StudentelectricalComplaintDetails> list;

  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_studentelectrical_complaint_details_list);

    recyclerView = findViewById(R.id.StudentelectricalComplaintDetailsList);
    database = FirebaseDatabase.getInstance().getReference("StudentelectricalComplaintDetails");
    recyclerView.setHasFixedSize(true);
    recyclerView.setLayoutManager(new LinearLayoutManager(this));

    list = new ArrayList<>();
    studentelectricalComplaintDetailsAdapter = new StudentelectricalComplaintDetailsAdapter(this, list);
    recyclerView.setAdapter(studentelectricalComplaintDetailsAdapter);

    // Retrieve data from Firebase
    database.addValueEventListener(new ValueEventListener() {
      @Override
      public void onDataChange(@NonNull DataSnapshot snapshot) {
        list.clear(); // Clear the list before adding new data
        for (DataSnapshot dataSnapshot : snapshot.getChildren()) {
          // Get data from each complaint entry
          String desc = dataSnapshot.child("desc").getValue(String.class);
          String fname = dataSnapshot.child("fname").getValue(String.class);
          String phonenumber = dataSnapshot.child("phonenumber").getValue(String.class);
          String problemitem = dataSnapshot.child("problemitem").getValue(String.class);
          String randomUid = dataSnapshot.child("randomUid").getValue(String.class);
          String roomnumber = dataSnapshot.child("roomnumber").getValue(String.class);
          String studentId = dataSnapshot.child("studentId").getValue(String.class);
          String status=dataSnapshot.child("status").getValue(String.class);

          // Create StudentelectricalComplaintDetails object
          StudentelectricalComplaintDetails complaintDetails = new StudentelectricalComplaintDetails(desc,
fname, phonenumber, problemitem, randomUid, roomnumber, studentId,status);
          if(complaintDetails.getStatus().equals("p")){
            list.add(complaintDetails);
          }


          // Add the object to the list

        }
        // Notify adapter about data changes
        studentelectricalComplaintDetailsAdapter.notifyDataSetChanged();
      }

      @Override
      public void onCancelled(@NonNull DatabaseError error) {
        // Handle database error
        Log.e("Firebase", "Error: " + error.getMessage());
      }
    });
    studentelectricalComplaintDetailsAdapter = new StudentelectricalComplaintDetailsAdapter(this, list);
```

```
        recyclerView.setAdapter(studentelectricalComplaintDetailsAdapter);
    }
}
```

2.**plumberPanel**

OneComplaintDisplayp.java

```
package my.hostelcomply.app.plumberPanel;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;
import com.google.firebase.auth.FirebaseAuth;
import com.google.firebase.auth.FirebaseUser;
import com.google.firebase.database.DatabaseReference;
import com.google.firebase.database.FirebaseDatabase;

import my.hostelcomply.app.R;
import my.hostelcomply.app.electricianPanel.OneComplaintDisplay;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetailswithdate;

public class OneComplaintDisplayp extends AppCompatActivity {




    EditText dateEditText, timeEditText;
    Button saveButton;
    FirebaseDatabase firebaseDatabase;
    DatabaseReference databaseReference;
    String dateStr, timeStr, status;
    StudentplumbingComplaintDetailswithdate sdw;

    FirebaseAuth mAuth;
```

```
@SuppressLint("MissingInflatedId")
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_one_complaint_displayp);
    dateEditText = findViewById(R.id.dateEditText);
    timeEditText = findViewById(R.id.timeEditText);
    saveButton = findViewById(R.id.saveButton);

    firebaseDatabase = FirebaseDatabase.getInstance();
    databaseReference = firebaseDatabase.getReference("StudentplumbingComplaintDetailswithdate");

    // Initialize the FirebaseAuth instance
    mAuth = FirebaseAuth.getInstance();

    // Initialize the StudentelectricalComplaintDetailswithdate object
    sdw = new StudentplumbingComplaintDetailswithdate();

    // Retrieve data from intent
    Bundle extras = getIntent().getExtras();
    if (extras != null) {
        String firstname = extras.getString("firstname");
        String problemItem = extras.getString("problem_item");
        String description = extras.getString("description");
        String roomNumber = extras.getString("roomnumber");
        String phoneNumber = extras.getString("phonenumber");
        String studentId=extras.getString("studentId");
        String randomUid=extras.getString("randomUid");


        // Display data in TextViews
        TextView firstNameTextView = findViewById(R.id.firstNameTextView);
        TextView problemItemTextView = findViewById(R.id.problemItemTextView);
        TextView descriptionTextView = findViewById(R.id.descriptionTextView);
        TextView roomNumberTextView = findViewById(R.id.roomNumberTextView);
        TextView phoneNumberTextView = findViewById(R.id.phoneNumberTextView);

        firstNameTextView.setText(firstname);
        problemItemTextView.setText(problemItem);
        descriptionTextView.setText(description);
        roomNumberTextView.setText(roomNumber);
        phoneNumberTextView.setText(phoneNumber);
```

```
            sdw.setFirstname(firstname);
            sdw.setProblemIte(problemItem);
            sdw.setDescription(description);
            sdw.setRoomNumber(roomNumber);
            sdw.setPhoneNumber(phoneNumber);
            sdw.setStudentId(studentId);
            sdw.setRandomUid(randomUid);

        }

        status = "du";

        saveButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                dateStr = dateEditText.getText().toString();
                timeStr = timeEditText.getText().toString();

                if (TextUtils.isEmpty(dateStr) || TextUtils.isEmpty(timeStr)) {
                    Toast.makeText(OneComplaintDisplayp.this, "Please enter date and time",
Toast.LENGTH_SHORT).show();
                } else {
                    saveComplaint();
                }
            }
        });
    }

    private void saveComplaint() {
        // Get the current user
        FirebaseUser currentUser = mAuth.getCurrentUser();

        if (currentUser != null) {

            String electricianPhoneNumber = currentUser.getPhoneNumber();
            String key = databaseReference.push().getKey();

            // Create a new complaint object
            StudentplumbingComplaintDetailswithdate complaintwd = new
StudentplumbingComplaintDetailswithdate(dateStr, timeStr, sdw.getFirstname(), sdw.getProblemIte(),
sdw.getDescription(), sdw.getRoomNumber(), sdw.getPhoneNumber(), status, sdw.getStudentId(),
electricianPhoneNumber,key,sdw.getRandomUid());

            // Generate a unique key for the complaint
            if (key != null) {
                // Save the complaint to Firebase
                databaseReference.child(key).setValue(complaintwd)
                        .addOnCompleteListener(new OnCompleteListener<Void>() {
                            @Override
                            public void onComplete(@NonNull Task<Void> task) {
                                if (task.isSuccessful()) {
                                    Toast.makeText(OneComplaintDisplayp.this, "Complaint posted successfully",
Toast.LENGTH_SHORT).show();
                                    finish(); // Finish the activity after successful posting
                                } else {
                                    Toast.makeText(OneComplaintDisplayp.this, "Failed to post complaint",
Toast.LENGTH_SHORT).show();
                                }
                            }
                        });
            } else {
                Toast.makeText(OneComplaintDisplayp.this, "Failed to generate unique key",
Toast.LENGTH_SHORT).show();
            }
        } else {
            Toast.makeText(OneComplaintDisplayp.this, "Failed to get current user", Toast.LENGTH_SHORT).show();
        }
    }
}
```

StudentelplumbingComplaintDetailsList.java

```
package my.hostelcomply.app.plumberPanel;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.util.Log;

import com.google.firebase.database.DataSnapshot;
import com.google.firebase.database.DatabaseError;
import com.google.firebase.database.DatabaseReference;
import com.google.firebase.database.FirebaseDatabase;
import com.google.firebase.database.ValueEventListener;
import java.util.ArrayList;

import my.hostelcomply.app.R;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetails;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetailsAdapter;

public class StudentelplumbingComplaintDetailsList extends AppCompatActivity {



    RecyclerView recyclerView;
    DatabaseReference database;
    StudentplumbingComplaintDetailsAdapter studentplumbingComplaintDetailsAdapter;
    ArrayList<StudentPlumbingComplaintDetails> list;

    @SuppressLint("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_studentelplumbing_complaint_details_list);

        recyclerView = findViewById(R.id.StudentelplumbingComplaintDetailsList);
        database = FirebaseDatabase.getInstance().getReference("StudentPlumbingComplaintDetails");
        recyclerView.setHasFixedSize(true);
        recyclerView.setLayoutManager(new LinearLayoutManager(this));

        list = new ArrayList<>();
        studentplumbingComplaintDetailsAdapter = new StudentplumbingComplaintDetailsAdapter(this, list);
        recyclerView.setAdapter(studentplumbingComplaintDetailsAdapter);

        // Retrieve data from Firebase
        database.addValueEventListener(new ValueEventListener() {
            @Override
            public void onDataChange(@NonNull DataSnapshot snapshot) {
                list.clear(); // Clear the list before adding new data
                for (DataSnapshot dataSnapshot : snapshot.getChildren()) {
                    // Get data from each complaint entry
                    String desc = dataSnapshot.child("desc").getValue(String.class);
                    String fname = dataSnapshot.child("fname").getValue(String.class);
                    String phonenumber = dataSnapshot.child("phonenumber").getValue(String.class);
                    String problemitem = dataSnapshot.child("problemitem").getValue(String.class);
                    String randomUid = dataSnapshot.child("randomUid").getValue(String.class);
                    String roomnumber = dataSnapshot.child("roomnumber").getValue(String.class);
                    String studentId = dataSnapshot.child("studentId").getValue(String.class);
                    String status=dataSnapshot.child("status").getValue(String.class);

                    // Create StudentelectricalComplaintDetails object
                    StudentPlumbingComplaintDetails complaintDetails = new StudentPlumbingComplaintDetails(desc,
fname, phonenumber, problemitem, randomUid, roomnumber, studentId,status);
                    if(complaintDetails.getStatus().equals("p")){
                        list.add(complaintDetails);
                    }


                    // Add the object to the list

                }
                // Notify adapter about data changes
                studentplumbingComplaintDetailsAdapter.notifyDataSetChanged();
            }

            @Override
            public void onCancelled(@NonNull DatabaseError error) {
                // Handle database error
                Log.e("Firebase", "Error: " + error.getMessage());
            }
        });
        studentplumbingComplaintDetailsAdapter = new StudentplumbingComplaintDetailsAdapter(this, list);
        recyclerView.setAdapter(studentplumbingComplaintDetailsAdapter);
    }
}
```

StudentplumbingComplaintDetailsAdapter.java

```
package my.hostelcomply.app.plumberPanel;

import android.content.Context;
import android.content.Intent;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;

import androidx.annotation.NonNull;
import androidx.cardview.widget.CardView;
import androidx.recyclerview.widget.RecyclerView;

import java.util.ArrayList;
import my.hostelcomply.app.R;
import my.hostelcomply.app.electricianPanel.OneComplaintDisplay;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetails;

public class StudentplumbingComplaintDetailsAdapter extends
RecyclerView.Adapter<StudentplumbingComplaintDetailsAdapter.MyViewHolder> {
    Context context;
    ArrayList<StudentPlumbingComplaintDetails> list;

    public StudentplumbingComplaintDetailsAdapter(Context context,
ArrayList<StudentPlumbingComplaintDetails> list) {
        this.context = context;
        this.list = list;
    }

    @NonNull
    @Override
    public StudentplumbingComplaintDetailsAdapter.MyViewHolder onCreateViewHolder(@NonNull ViewGroup
parent, int viewType) {
        View v = LayoutInflater.from(context).inflate(R.layout.complaint_item, parent, false);
        return new StudentplumbingComplaintDetailsAdapter.MyViewHolder(v);
    }

    @Override
    public void onBindViewHolder(@NonNull StudentplumbingComplaintDetailsAdapter.MyViewHolder holder, int
position) {
        StudentPlumbingComplaintDetails complaint = list.get(position);
        holder.firstname.setText(complaint.getFname());
        holder.problem_item.setText(complaint.getProblemitem());
        holder.description.setText(complaint.getDesc());
        holder.roomnumber.setText(complaint.getRoomnumber());
        holder.phonenumber.setText(complaint.getPhonenumber());


        holder.cardView.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(context, OneComplaintDisplayp.class);
                intent.putExtra("firstname", complaint.getFname());
                intent.putExtra("problem_item", complaint.getProblemitem());
                intent.putExtra("description", complaint.getDesc());
                intent.putExtra("roomnumber", complaint.getRoomnumber());
                intent.putExtra("phonenumber", complaint.getPhonenumber());
                intent.putExtra("studentId",complaint.getStudentId());
                intent.putExtra("randomUid",complaint.getRandomUid());

                context.startActivity(intent);
            }
        });
    }

    @Override
    public int getItemCount() {
        return list.size();
    }

    public static class MyViewHolder extends RecyclerView.ViewHolder {
        TextView firstname, problem_item, description, roomnumber, phonenumber;
        CardView cardView;

        public MyViewHolder(@NonNull View itemView) {
            super(itemView);
            firstname = itemView.findViewById(R.id.first_name);
            problem_item = itemView.findViewById(R.id.problem_item);
            description = itemView.findViewById(R.id.description);
            roomnumber = itemView.findViewById(R.id.roomnumber);
            phonenumber = itemView.findViewById(R.id.phonenumber);
            cardView = itemView.findViewById(R.id.cardView);
        }
    }
}
```

3.studentPanel

MyelectricalpendingComplaintDetailsList.java

```
package my.hostelcomply.app.studentPanel;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;

import android.os.Bundle;
import android.util.Log;

import com.google.firebase.auth.FirebaseAuth;
import com.google.firebase.database.DataSnapshot;
import com.google.firebase.database.DatabaseError;
import com.google.firebase.database.DatabaseReference;
import com.google.firebase.database.FirebaseDatabase;
import com.google.firebase.database.ValueEventListener;

import java.util.ArrayList;

import my.hostelcomply.app.R;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetails;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetailsAdapter;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetailswithdate;

public class MyelectricalpendingComplaintDetailsList extends AppCompatActivity {

    RecyclerView recyclerView;
    DatabaseReference database;
    StudentEComplaintDetailsAdapter studentEComplaintDetailsAdapter;
    ArrayList<StudentelectricalComplaintDetailswithdate> list;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_myelectricalpending_complaint_details_list);

        recyclerView = findViewById(R.id.MyelectricalpendingComplaintDetailsList);
        database = FirebaseDatabase.getInstance().getReference("StudentelectricalComplaintDetailswithdate");
        recyclerView.setHasFixedSize(true);
        recyclerView.setLayoutManager(new LinearLayoutManager(this));

        list = new ArrayList<>();
        studentEComplaintDetailsAdapter = new StudentEComplaintDetailsAdapter(this, list);
        recyclerView.setAdapter(studentEComplaintDetailsAdapter);
        String userid = FirebaseAuth.getInstance().getCurrentUser().getUid();

        // Retrieve data from Firebase
        database.addValueEventListener(new ValueEventListener() {
            @Override
            public void onDataChange(@NonNull DataSnapshot snapshot) {
                list.clear(); // Clear the list before adding new data
                for (DataSnapshot dataSnapshot : snapshot.getChildren()) {
                    // Get data from each complaint entry
                    StudentelectricalComplaintDetailswithdate complaint =
dataSnapshot.getValue(StudentelectricalComplaintDetailswithdate.class);
                    if (complaint != null && complaint.getStatus().equals("du")&&complaint.getStudentId().equals(userid))
{
                        list.add(complaint);
                    }
                }
                // Notify adapter about data changes
                studentEComplaintDetailsAdapter.notifyDataSetChanged();
            }

            @Override
            public void onCancelled(@NonNull DatabaseError error) {
                // Handle database error
                Log.e("Firebase", "Error: " + error.getMessage());
            }
        });
    }
}
```

MyplumbingpendingComplaintDetailsList.java

```
package my.hostelcomply.app.studentPanel;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.util.Log;

import com.google.firebase.auth.FirebaseAuth;
import com.google.firebase.database.DataSnapshot;
import com.google.firebase.database.DatabaseError;
import com.google.firebase.database.DatabaseReference;
import com.google.firebase.database.FirebaseDatabase;
import com.google.firebase.database.ValueEventListener;

import java.util.ArrayList;

import my.hostelcomply.app.R;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetailswithdate;
import my.hostelcomply.app.plumberPanel.StudentplumbingComplaintDetailswithdate;

public class MyplumbingpendingComplaintDetailsList extends AppCompatActivity {



  RecyclerView recyclerView;
```

```
    DatabaseReference database;
    StudentPComplaintDetailsAdapter studentpComplaintDetailsAdapter;
    ArrayList<StudentplumbingComplaintDetailswithdate> list;

    @SuppressLint("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_myplumbingpending_complaint_details_list);

        recyclerView = findViewById(R.id.MyplumbingpendingComplaintDetailsList);
        database = FirebaseDatabase.getInstance().getReference("StudentplumbingComplaintDetailswithdate");
        recyclerView.setHasFixedSize(true);
        recyclerView.setLayoutManager(new LinearLayoutManager(this));

        list = new ArrayList<>();
        studentpComplaintDetailsAdapter = new StudentPComplaintDetailsAdapter(this, list);
        recyclerView.setAdapter(studentpComplaintDetailsAdapter);
        String userid = FirebaseAuth.getInstance().getCurrentUser().getUid();

        // Retrieve data from Firebase
        database.addValueEventListener(new ValueEventListener() {
            @Override
            public void onDataChange(@NonNull DataSnapshot snapshot) {
                list.clear(); // Clear the list before adding new data
                for (DataSnapshot dataSnapshot : snapshot.getChildren()) {
                    // Get data from each complaint entry
                    StudentplumbingComplaintDetailswithdate complaint =
dataSnapshot.getValue(StudentplumbingComplaintDetailswithdate.class);
                    if (complaint != null && complaint.getStatus().equals("du")&&complaint.getStudentId().equals(userid))
{
                        list.add(complaint);
                    }
                }
                // Notify adapter about data changes
                studentpComplaintDetailsAdapter.notifyDataSetChanged();
            }

            @Override
            public void onCancelled(@NonNull DatabaseError error) {
                // Handle database error
                Log.e("Firebase", "Error: " + error.getMessage());
            }
        });
```

```
  }
}
```

StudentEComplaintDetailsAdapter.java

```
package my.hostelcomply.app.studentPanel;

import android.content.Context;
import android.content.Intent;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;

import androidx.annotation.NonNull;
import androidx.cardview.widget.CardView;
import androidx.recyclerview.widget.RecyclerView;

import java.util.ArrayList;

import my.hostelcomply.app.R;
import my.hostelcomply.app.electricianPanel.OneComplaintDisplay;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetails;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetailsAdapter;
import my.hostelcomply.app.electricianPanel.StudentelectricalComplaintDetailswithdate;

public class StudentEComplaintDetailsAdapter extends
RecyclerView.Adapter<StudentEComplaintDetailsAdapter.MyViewHolder> {

  Context context;
  ArrayList<StudentelectricalComplaintDetailswithdate> list;

  public StudentEComplaintDetailsAdapter(Context context,
ArrayList<StudentelectricalComplaintDetailswithdate> list) {
    this.context = context;
    this.list = list;
  }

  @NonNull
  @Override
  public StudentEComplaintDetailsAdapter.MyViewHolder onCreateViewHolder(@NonNull ViewGroup
parent, int viewType) {
    View v = LayoutInflater.from(context).inflate(R.layout.student_complaint_item, parent, false);
    return new MyViewHolder(v);
  }

  @Override
  public void onBindViewHolder(@NonNull StudentEComplaintDetailsAdapter.MyViewHolder holder, int
position) {
    StudentelectricalComplaintDetailswithdate complaint = list.get(position);
    holder.firstname.setText(complaint.getFirstname());
    holder.problem_item.setText(complaint.getProblemIte());
    holder.description.setText(complaint.getDescription());
    holder.roomnumber.setText(complaint.getRoomNumber());
    holder.emobile.setText(complaint.getEmobile());
    holder.date.setText(complaint.getDate());
    holder.time.setText(complaint.getTime());



    holder.cardView.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            // Navigate to OneComplaintDisplay activity
            Intent intent = new Intent(context,OneComplaintStudentDisplay.class);
            intent.putExtra("firstname", complaint.getFirstname());
            intent.putExtra("problem_item", complaint.getProblemIte());
            intent.putExtra("description", complaint.getDescription());
            intent.putExtra("roomnumber", complaint.getRoomNumber());
            intent.putExtra("phonenumber", complaint.getEmobile());
            intent.putExtra("studentId", complaint.getStudentId());
            intent.putExtra("date", complaint.getDate());
            intent.putExtra("time", complaint.getTime());
            intent.putExtra("status", complaint.getStatus());

            intent.putExtra("key", complaint.getKey());
            intent.putExtra("randomUid", complaint.getRandomUid());






            context.startActivity(intent);
        }
    });
}

@Override
public int getItemCount() {
    return list.size();
}

public static class MyViewHolder extends RecyclerView.ViewHolder {
    TextView firstname, problem_item, description, roomnumber, emobile,date,time;
    CardView cardView;

    public MyViewHolder(@NonNull View itemView) {
        super(itemView);
        firstname = itemView.findViewById(R.id.first_name);
        problem_item = itemView.findViewById(R.id.problem_item);
```

```
            description = itemView.findViewById(R.id.description);
            roomnumber = itemView.findViewById(R.id.roomnumber);
            emobile = itemView.findViewById(R.id.ephonenumber);
            date = itemView.findViewById(R.id.date);
            time = itemView.findViewById(R.id.time);


            cardView = itemView.findViewById(R.id.cardView);

        }
    }
}
```

StudentProfileFragment.java

```
package my.hostelcomply.app.studentPanel;

import android.annotation.SuppressLint;
import android.content.Intent;
import android.graphics.drawable.AnimationDrawable;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.Button;

import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.constraintlayout.widget.ConstraintLayout;
import androidx.fragment.app.Fragment;

import com.google.android.material.bottomnavigation.BottomNavigationView;

import org.checkerframework.common.subtyping.qual.Bottom;

import my.hostelcomply.app.R;

public class StudentProfileFragment extends Fragment {
    Button postComplaint;
    ConstraintLayout backimg;

    @SuppressLint("MissingInflatedId")
    @Nullable
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup container, @Nullable
Bundle savedInstanceState) {
        View v = inflater.inflate(R.layout.fragment_student_profile,null);
        getActivity().setTitle("Post complaints");
        AnimationDrawable animationDrawable = new AnimationDrawable();
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.bg2),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img2),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img3),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img4),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img5),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img6),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img7),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img8),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.bg3),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img9),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img10),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img11),3000);
        animationDrawable.addFrame(getResources().getDrawable(R.drawable.img11),3000);

        animationDrawable.setOneShot(false);
        animationDrawable.setEnterFadeDuration(850);
        animationDrawable.setExitFadeDuration(1600);
        backimg=v.findViewById(R.id.back1);
        backimg.setBackgroundDrawable(animationDrawable);
        animationDrawable.start();

        postComplaint=(Button) v.findViewById(R.id.post_complaint);
        postComplaint.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                startActivity(new Intent(getContext(),Student_postComplaint.class));
            }


        });
        return v;
    }
}
```

Student_postComplaint.java

```
package my.hostelcomply.app.studentPanel;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.text.TextUtils;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.Spinner;
import android.widget.Toast;

import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;
import com.google.android.material.textfield.TextInputLayout;
import com.google.firebase.auth.FirebaseAuth;
import com.google.firebase.database.DataSnapshot;
import com.google.firebase.database.DatabaseError;
import com.google.firebase.database.DatabaseReference;
import com.google.firebase.database.FirebaseDatabase;
import com.google.firebase.database.ValueEventListener;
import com.google.firebase.storage.FirebaseStorage;
import com.google.firebase.storage.StorageReference;

import my.hostelcomply.app.R;
import my.hostelcomply.app.Student;

public class Student_postComplaint extends AppCompatActivity {

    Button post_complaints;
    DatabaseReference dataaa;
    Spinner ProblemItems;
    TextInputLayout desc;
    String description, problems;
    FirebaseStorage storage;
    StorageReference storageReference;
    FirebaseDatabase firebaseDatabase;
    DatabaseReference databaseReference;
    FirebaseAuth FAuth;
    String StudentId;
    String Roomnumber, Phonenumber, First_name,status;

    @SuppressLint("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_student_post_complaint);

        firebaseDatabase = FirebaseDatabase.getInstance();
        databaseReference = firebaseDatabase.getReference("StudentelectricalComplaintDetails");

        ProblemItems = findViewById(R.id.Pitems);
        desc = findViewById(R.id.description);
        post_complaints = findViewById(R.id.post);
        FAuth = FirebaseAuth.getInstance();

        try {
            String userid = FirebaseAuth.getInstance().getCurrentUser().getUid();
            dataaa = firebaseDatabase.getReference("Student").child(userid);
            dataaa.addListenerForSingleValueEvent(new ValueEventListener() {
                @Override
                public void onDataChange(@NonNull DataSnapshot dataSnapshot) {
```

```
                Student studentc = dataSnapshot.getValue(Student.class);
                Roomnumber = studentc.getRoomnumber();
                Phonenumber = studentc.getMobile_No();
                First_name = studentc.getFirst_Name();
                status="p";

                post_complaints.setOnClickListener(new View.OnClickListener() {
                    @Override
                    public void onClick(View v) {
                        problems = ProblemItems.getSelectedItem().toString().trim();
                        description = desc.getEditText().getText().toString().trim();

                        if (isValid()) {
                            saveComplaint();
                        }
                    }
                });
            }

            @Override
            public void onCancelled(@NonNull DatabaseError databaseError) {
                Log.e("DatabaseError", databaseError.getMessage());
            }
        });

    } catch (Exception e) {
        Log.e("Errrrrr: ", e.getMessage());
    }
}

private boolean isValid() {
    desc.setErrorEnabled(false);
    desc.setError("");

    boolean isValidDescription = !TextUtils.isEmpty(description);
    if (!isValidDescription) {
        desc.setError("Description is Required");
    }

    return isValidDescription;
}

private void saveComplaint() {
    String randomUid = String.valueOf(System.currentTimeMillis()); // Generating unique ID
    StudentId = FirebaseAuth.getInstance().getCurrentUser().getUid();
```

```
        StudentComplaintDetails complaint=new
StudentComplaintDetails(First_name,Roomnumber,Phonenumber,problems, description,randomUid,status,
StudentId);
        databaseReference.child(randomUid).setValue(complaint)
                .addOnCompleteListener(new OnCompleteListener<Void>() {
                    @Override
                    public void onComplete(@NonNull Task<Void> task) {
                        if (task.isSuccessful()) {
                            Toast.makeText(Student_postComplaint.this, "Complaint posted successfully",
Toast.LENGTH_SHORT).show();
                            desc.getEditText().setText(""); // Clearing the description field
                        } else {
                            Toast.makeText(Student_postComplaint.this, "Failed to post complaint",
Toast.LENGTH_SHORT).show();
                        }
                    }
                });
    }
}
```

CHAPTER-8

Conclusion and Future Work

8.1 Conclusion

In conclusion, the hostel management mobile application presents an innovative solution for streamlining administrative tasks and enhancing communication between residents and management. With its intuitive interface, robust features, and emphasis on security and usability, the application promises to significantly improve the hostel living experience. Its successful implementation is poised to revolutionize hostel management practices, fostering efficiency, compliance, and satisfaction among users. As technology continues to evolve, the application stands as a testament to the potential of digital solutions in optimizing everyday processes and enriching user experiences.

8.2 Future Work

Future work for the hostel management mobile application includes:

- Implementing additional features such as predictive maintenance scheduling and smart room allocation algorithms to further optimize operations.
- Enhancing security measures with biometric authentication options and advanced encryption protocols to safeguard sensitive data.
- Integrating IoT devices for real-time monitoring of hostel facilities and environmental conditions, enabling proactive maintenance and resource management.
- Expanding compatibility to support emerging platforms and technologies, ensuring continued relevance and accessibility for users.
- Exploring AI and machine learning algorithms for personalized recommendations, predictive analytics, and automated decision-making, further enhancing user experience and efficiency in hostel management.

CHAPTER-9

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