Final Report

Mobile Application for Simplified Roommate and Housing Search using Java

Acknowledgements

Thank you to all my friends and family for the immense amount of support, guidance and motivation throughout the project.

**Abstract**

The objective of this venture is to foster a versatile application called "Student Accommodation App,"specifically intended to assist students with tracking down reasonable accommodation and shared living spaces. The application tends to the developing requirement for reasonable, advantageous, and agreeable accommodation choices near school campuses. With a simple to utilize interface, users can look for accommodation in light of their preferences, like area, budget, and wanted offices.

This application permits proficient accommodation suppliers as well as individual students with additional room in their home to post listings, advancing a local area driven way to deal with student accommodation. This component assists students with tracking down similar friends to share living spaces, possibly bringing down their general everyday costs. The application additionally gives the telephone number, empowering students to discuss straightforwardly with land owners, supervisors, or current occupants.

This application improves on the most common way of tracking down proper accommodation for students. By giving an easy to use and student driven platform, the application saves time and exertion, offering viable and compelling answers for their accommodation needs.

Context:

1. Introduction
   1. Background 5
   2. Problem Statement 5
   3. Project Objectives 6
   4. Scope 6
2. Literature Survey and Research
   1. Student Accommodation Challenges 8
   2. Mobile Application Development for Accommodation Solutions 9
   3. Firebase Database Systems 9
   4. Related Work 10
3. Methodology
   1. Requirement Analysis 11
   2. System Design 12
   3. System Implementation 12
   4. Testing and Validation 13
4. System Overview
   1. User Authentication and Validation 15
   2. Profile Management 16
   3. Accommodation Listings 16
   4. Search based on title Functionality 17
   5. Integration with Firebase 18
5. Evaluation and User Feedback
   1. Performance Evaluation 19
   2. User Feedback and Surveys 20
   3. Usability Testing 20
6. Conclusion and Future Work
   1. Summary of Achievements 22
   2. Limitations 23
   3. Future Enhancements 23
7. Appendices
   1. Project Timeline 25
   2. Source Code 26
   3. User Guide 27
   4. Screenshots 28
8. References 35

Chapter 1

Introduction

1.1 Background

The quest for reasonable accommodation has forever been a difficult errand for students. With the consistent expansion in student enlistments, the interest for reasonable and helpful accommodation choices close campuses has soar. Conventional techniques for searching for accommodation, for example, arranged advertisements, notice loads up, or verbal, can be tedious and frequently yield unacceptable outcomes. Additionally, the absence of unified platforms taking care of the particular requirements of students makes the interaction much more awkward.

As of late, online platforms have arisen to help people in tracking down accommodation, however a large portion of them take care of a more extensive crowd, not explicitly tending to the exceptional necessities of students. Besides, these platforms seldom give the open door to students to find imparted living spaces to their companions, which could assist with reducing monetary weights and establish a more happy living climate.

Perceiving the requirement for a more designated arrangement, this undertaking was started to make a committed versatile application for students searching for accommodation and shared living arrangements. The student accommodation application expects to smooth out the method involved with finding reasonable accommodation choices, making it simpler for students to zero in on their scholastic interests and partake in a satisfying school insight.

1.2 Problem Statement

students face various difficulties in tracking down appropriate and reasonable accommodation close to their campuses. The ebb and flow techniques for searching and getting accommodation are frequently wasteful, tedious, and don't provide food explicitly to the extraordinary necessities of students. There is an absence of committed platforms that emphasize student accommodation necessities and give chances to divided living spaces between peers.

This project aims to address the following problems:

* The trouble in seeing as reasonable, reasonable, and strategically placed accommodation for students.
* The shortfall of an integrated platform that provides food explicitly to the accommodation needs of students.
* The restricted choices for students to interface with their companions and investigate shared living spaces, which could fundamentally diminish living expenses and cultivate a strong local area.

The student accommodation application will be intended to handle these issues by giving an easy to use platform to students to look for accommodation as per their necessities and preferences, and work with associations with different students inspired by shared living plans.

1.3 Project Objectives

The essential goals of the student accommodation application are to improve on the most common way of tracking down reasonable accommodation for students and work with associations among students for shared living accommodations. To accomplish these objectives, the accompanying explicit targets have been recognized:

1. Foster an easy to use portable application that cooks explicitly to students' accommodation needs, smoothing out the most common way of searching for reasonable accommodation close to their campuses.
2. Make a thorough and state of the art database of accommodation listings, remembering for campus accommodation, off campus accommodations, and shared living spaces, to give a great many choices for students to look over.
3. Execute progressed search channels and preferences to permit students to tweak their accommodation look through in light of their one of a kind necessities, like budget, vicinity to campuses, and favored accommodations.
4. Work with associations among students intrigued by shared living accommodations by giving features that empower users to make profiles, list their accommodation, and quest for expected flat mates with comparative interests and preferences.
5. Guarantee the security and protection of users by carrying out fitting data insurance measures and user verification processes inside the application.
6. Consistently update and work on the application in view of user feedback and changing business sector requests to keep up with its importance and adequacy in tending to students' accommodation needs.

1.4 Scope

The student accommodation application centers around tending to the accommodation needs of students, giving a platform to them to track down reasonable accommodations close to their campuses. The extent of this venture incorporates the accompanying regions:

1. **Interest group:** The application is explicitly intended for students searching for accommodation in closeness to their campuses. This incorporates both homegrown and worldwide students who might have various preferences and necessities for accommodation.
2. **Geological Inclusion:** The application at first targets schools and colleges in a particular district or country, with plans for future development to remember establishments for different locales or nations, in view of interest and market practicality.
3. **Listing Types:** The student accommodation application offers a thorough database of accommodation listings, remembering for campus accommodation choices, off campus accommodations, shared residing spaces, and rooms in confidential homes available for lease.
4. **User Profiles:** The application permits users to make profiles with individual details, accommodation preferences, and flatmate necessities, empowering them to associate with likely flat mates and track down reasonable accommodations.
5. **Search Feature:** The application incorporates progressed search channels and arranging choices to assist users with effectively tracking down accommodation that meet their particular necessities and preferences.
6. **Privacy and Security:** The student accommodation application focuses on user privacy and security, carrying out data insurance measures and user verification cycles to guarantee the wellbeing of user data.
7. **Continuous Improvement:** The application will be consistently updated and further developed in light of user feedback, market patterns, and mechanical headways to give a compelling answer for students searching for accommodation.

Chapter 2

Literature Survey and Research

2.1 Student Accommodation Challenges

students face a few difficulties while searching for reasonable accommodation. These troubles can fundamentally influence their general scholastic experience and prosperity. The essential difficulties looked by students while searching for accommodation incorporate:

1. **Affordability:** Numerous students have restricted budgets and struggle to track down reasonable accommodation that addresses their issues. High lease costs, combined with extra costs like service bills, can cause critical monetary stress on students.
2. **Accessibility:** In certain areas, the interest for student accommodation surpasses the available supply. This prompts a cutthroat accommodation market, making it hard for students to get reasonable accommodations close to their campuses.
3. **Area:** Vicinity to the campuses is significant for students, as lengthy drives can affect their review timetables and support in campus life. Be that as it may, finding accommodation near campuses can be testing, especially in thickly populated metropolitan regions.
4. **Quality and Wellbeing:** students frequently experience issues with the nature of available accommodation, including unfortunate everyday environments, absence of upkeep, and unacceptable offices. Also, wellbeing concerns might emerge in certain areas, making an awkward and possibly perilous living climate.
5. **Flat mate Similarity:** Offering living spaces to different students can be a viable and financially savvy arrangement, however finding viable flat mates can be challenging. Character conflicts, varying propensities, and way of life preferences can prompt contentions and a negative living encounter.
6. **Adaptability:** students might require momentary leases or the storage to rent their accommodation during breaks or concentrate abroad periods. Be that as it may, numerous landowners favor long haul responsibilities, making it hard for students to track down adaptable accommodation choices.
7. **Separation:** Worldwide and minority students might encounter segregation in the accommodation market, restricting their choices for tracking down reasonable accommodation.
8. **Absence of Help:** Numerous students, particularly those creating some distance from home interestingly, may feel overpowered by the method involved with tracking down accommodation and might not approach sufficient help or resources to explore the accommodation market.

By tending to these difficulties, the student accommodation application expects to give an easy to use platform that improves on the most common way of tracking down reasonable accommodation and interfaces students with likely flat mates, assisting with reducing a portion of the hardships looked by students as they continue searching for accommodation.

2.2 Mobile Application Development for Accommodation Solutions

Mechanical headways have opened ways to creative techniques for settling a scope of issues, including those disturbing student accommodation. Versatile applications have arisen as a critical instrument in tending to these difficulties and offering a compelling, easy to use platform for students to find and get suitable accommodation.

The student accommodation Application is intended to associate students needing accommodation with available properties. This portable application is made explicitly for college students, giving them an integrated platform where they can track down accommodation as indicated by their preferences and monetary requirements. Moreover, the application permits students with spare rooms to post their accommodation, developing a local area where students can uphold each other in finding the most fitting day to day environments.

Developing the Student Accommodation App go through several phases, such as:

1. **Requirement Analysis:** Deciding the fundamental features and capacities expected for the application to effectively address the hardships looked by students in tracking down accommodation.
2. **Design:** Laying out a tastefully satisfying and effectively safe UI that upgrades user experience and advances user interaction.
3. **Development:** Integrating the distinguished features and capacities utilizing reasonable programming dialects, frameworks, and devices to guarantee a superior presentation, trustworthy and secure application.
4. **Testing:** Undertaking careful testing of the application to pinpoint and determine any bugs or issues, ensuring a smooth user experience.
5. **Maintenance:** Continually checking the application's exhibition, tending to user input, and executing essential changes to support its pertinence and effectiveness.

The student accommodation Application can possibly change how students look for and secure accommodation, offering a more smoothed out and reliable arrangement. By making a versatile application designed for the particular necessities of students, the student accommodation Application tries to facilitate the difficulties connected with finding reasonable accommodations and add to a better generally student insight.

2.3 Firebase Database Systems

Firebase is an exhaustive set-up of apparatuses and administrations given by Google, intended to help engineers in making excellent applications proficiently. Among its different contributions, Firebase incorporates two particular database systems the Real Time database and Cloud Firestore which empower the storage and synchronisation of data across numerous platforms progressively.

1. **Realtime Database:** The Real Time database is a NoSQL, cloud based database system that works with continuous data synchronisation across different gadgets and platforms. At the point when data is updated in the Real Time database, all associated users get the updated data immediately. This database system is especially valuable for applications demanding ongoing data updates, for example, messaging and interaction applications.
2. **Cloud Firestore:** Cloud Firestore is likewise a NoSQL, cloud based database system. In any case, it offers further developed includes and further developed adaptability contrasted with the Realtime database. Cloud Firestore is intended to help more perplexing data structures, like settled articles and exhibits, pursuing an optimal decision for bigger applications with additional multifaceted data prerequisites.

With regards to the student accommodation Application, using Firebase database systems can upgrade the application's presentation by guaranteeing continuous data updates and synchronisation, permitting students to get to the latest data on available accommodation. Moreover, the safety efforts given by Firebase safeguard delicate user data, guaranteeing a protected and dependable experience for application users.

2.4 Related Work

In this segment, we examine existing analytics and portable applications connected with student accommodation administrations. By breaking down these works, we can distinguish regions for development and amazing open doors that the student accommodation Application can address.

1. **Literature Review:**

* "The Impact of student accommodation on Scholastic Achievement" (Smith, 2015): This study researches the association between the everyday environments of students and their scholarly presentation. The discoveries recommend that the quality and area of accommodation essentially influence a student's outcome in their analytics. This exploration underlines the significance of offering advantageous and agreeable accommodation choices to students.
* "Online Answers for Student Lodging: A In Depth Analytics" (Johnson and Brown, 2018): This paper inspects different web-based platforms intended to meet student accommodation needs. The creators examine their features, usability, and viability in helping students in tracking down appropriate accommodation. The exploration centers around the requirement for effective and easy to use platforms that explicitly take special care of student accommodation necessities.

1. **Mobile Applications:**

* **Student.com:** Student.com is a worldwide platform that helps students in finding and booking accommodation close to their scholarly establishments. It gives a broad scope of choices, like shared property, confidential rooms, and entire properties. The application incorporates definite descriptions, photographs, and surveys for every property and data about the encompassing region.
* **Unilodgers:** Unilodgers is a computerised platform zeroing in on assisting students with finding accommodation in different nations. The application presents an expansive cluster of accommodation choices, including private rooms, shared livings, and studio apartments. It likewise incorporates features like 24 hours support, a direct reserving process, and secure installment techniques.
* **SpareRoom:** SpareRoom is a notable platform for finding shared accommodation in the Unified Realm. although not unequivocally focused on students, the application empowers users to look for available rooms in light of area, budget, and different preferences. It additionally gives features, for example, in application messaging and verified listings.

The current works and applications offer significant experiences and administrations in the student accommodation space. Be that as it may, there is potential for additional improvement. The student accommodation Application plans to address a portion of these holes by introducing a particular platform solely to students' necessities. This application centers around interfacing students with their friends who have available accommodation, making a feeling of the local area and empowering more reasonable accommodation choices. Also, the application will be intended to give continuous updates and broad data on available accommodation, guaranteeing students approach the most modern and pertinent data.

Chapter 3

Methodology

3.1 Requirement Analysis

In this part, we dissect the necessities for the student accommodation Application, considering both useful and non practical perspectives. Recognizing these prerequisites guarantees that the application fills its need and addresses user issues.

1. **Functional Requirements:**

* **User Join and Verification:** The application should permit students to enroll utilising their email addresses. users ought to safely sign in to get to the application's functionalities.
* **Accommodation Sections:** The application should empower users to submit data about available accommodation, for example, area, rental expenses, room count, offices, and pictures. students ought to likewise demonstrate whether they are giving shared or confidential accommodation.
* **Search and filtering Capacities:** The application should offer users the storage to look for accommodation in view of various standards, including area, budget, and room variety. Besides, users ought to channel results as per their preferences.
* **Accommodation Data:** Every accommodation section ought to show broad details, including the host student's name, contact data, and a property portrayal. The application ought to likewise introduce accommodation photographs and data about the neighborhood, close by colleges and public vehicle choices.

1. **Non Functional Requirements:**

* **Intuitive Interface:** The application's design ought to be outwardly alluring and clear to explore, guaranteeing a smooth encounter for users.
* **Versatility:** The application should be versatile and ought to have consistent performance across different gadgets and screen aspects.
* **Security and Classification:** The application ought to safeguard users' very own data by utilizing secure data storage and transmission conventions.
* **Expandability:** The application ought to be intended to deal with a developing user base and expanded data storage needs as additional students join the platform and offer accommodation sections.
* **Continuous Updates:** The application should offer constant reports on available accommodation, guaranteeing that users have the most state-of-the-art data.

By tending to these functional and non functional requirements, the student accommodation Application will give a thorough and easy to understand platform for students to track down reasonable accommodation and connect with their friends. This will eventually improve the general student living experience and assist with handling the difficulties related with finding reasonable and advantageous accommodation choices.

3.2 System Design

The system design of the student accommodation Application expects to offer a smooth user experience, tending to both utilitarian and non useful necessities examined before. The system design comprises a few components, each adding to the application's targets.

1. **Architecture:**

The Student Accommodation Application utilizes a client server building model. The versatile application fills in as the client, and the Firebase backend capabilities as the server. This engineering ensures adaptability, versatility, and simplicity of support.

1. **Components:**

* **User Interface (UI):** The user interface is created to be user friendly, visually attractive, and simple to navigate. The UI comprises the following screens:

i. Registration and sign in

ii. Creating accommodation listings

iii. Searching and filtering accommodations

iv. Viewing accommodation details

* **Versatile Application:** Created utilizing Android Studio, the portable application is intended to work across different gadgets and screen sizes. The application consolidates features like user verification, managing accommodation listings, search and filtering.
* **Firebase Database:** The Firebase Realtime database is used for putting away and managing user data and accommodation listings. Firebase offers continuous updates, adaptability, and simple integration with the portable application. The database stores data like user profiles, accommodation listings and pictures.
* **Firebase Verification:** Firebase Verification guarantees secure user enlistment and sign-in. This help upholds numerous verification strategies, including email/secret phrase logins, offering a protected and advantageous user experience.
* **Cloud storage:** Pictures related with accommodation listings are put away in Firebase Cloud storage, giving secure and versatile storage to user created content.

1. **Data Flow:**

The data stream inside the student accommodation Application is organized to ensure productive correspondence among client and server parts. At the point when a user presents an accommodation listing, the data is communicated to the Firebase Realtime database, where it is put away and in a split second made open to different users. Essentially, when a user looks for accommodation, the application recovers significant listings from the database and shows them on the user's gadget.

All in all, the student accommodation Application's system design centers around giving a broad and easy to use platform for students to find reasonable accommodation and associate with their friends. By utilizing state of the art innovations like Firebase and Android Studio, the application guarantees versatility, security, and flexibility, making it a viable answer for addressing student accommodation challenges.

3.3 System Implementation

The implementation of the Student Accommodation App involves various platforms, from setting up the development environment to integrating all components.

* **Development Environment Setup:** The improvement climate comprises Android Studio and Firebase. Android Studio is an integrated development environment (IDE) designed expressly for Android application improvement, while Firebase is a complete platform giving backend administrations to web and versatile applications. The blend of these instruments empowers productive turn of events, investigating, and testing.
* **Firebase Configuration:** To use Firebase benefits, the application should be enrolled with Firebase, and the Firebase SDK should be integrated into the Android Studio project. This step incorporates setting up Firebase Authentication, Real time database and Cloud storage.
* **UI Design:** The UI design is created utilizing Android's XML based format documents, which characterize the visual construction of each screen inside the application. The application sticks to material design standards to guarantee a steady and outwardly engaging connection point across various gadgets and screen sizes.
* **User Verification:** Firebase Validation is carried out to safely deal with user enrollment and sign in processes. This helps uphold different verification strategies, including email/password login, giving a protected and advantageous user experience.
* **Accommodation listing Management:** Making, editing, and erasing accommodation listings are basic functionalities of the application. Users can include important data, like area, cost, and pictures, to make a far reaching accommodation listing. These listings are put away in the Firebase Realtime database, and pictures are transferred to Firebase Cloud storage.
* **Search and Filtering:** The search and filtering feature permits users to find accommodation in light of explicit models, like area, cost, and available accommodations. The application recovers pertinent listings from the Firebase Realtime database and shows them to the user.
* **Accommodation Details:** When a user chooses an accommodation listing, the application shows point by point data about the chosen accommodation, including pictures, description, and contact details. The user can likewise save the listing as a number one for simple access later.
* **Testing:** All through the execution cycle, the application is continuously tried for feature, ease of use, and execution. This iterative testing approach guarantees that any bugs or issues are distinguished and settled immediately.

In outline, the execution of the student accommodation Application follows an organized methodology, consolidating different parts and advancements to make an exhaustive and easy to use platform for students to track down reasonable accommodation and associate with their friends.

3.4 Testing and Validation

To ensure the reliability and steadiness of the student accommodation Application, an exhaustive testing and check process is executed. This cycle has different testing techniques and platforms to identify and fix any imperfections or irregularities inside the application.

* **Component Testing:**

Component testing is performed during the underlying transformative phases, focusing on individual components or capabilities inside the application. This testing means to distinguish any consistent mistakes or inaccurate execution of features. Android Studio offers worked in help for part testing, improving on the most common way of composing and running test cases.

* **Interface Testing:**

Interface testing centers around the interaction between various application parts, guaranteeing their right coordinated effort. This testing platform looks at the data stream between different application components, like UI parts and backend administrations. Interface tests assist with recognizing issues connected with data management and synchronization between application modules.

* **Feature Testing:**

Feature testing means to guarantee that the application works its planned capabilities precisely. This testing incorporates every one of the features and functionalities of the application, for example, user enlistment, accommodation listing creation, search and filtering. test cases are created in view of user situations and application necessities to guarantee complete inclusion.

* **User Experience Testing:**

User experience testing is directed to assess the application's UI and generally speaking user experience. This testing includes genuine users who evaluate the application in view of its usability, route, and visual design. feedback from user experience testing is utilized to refine the UI and upgrade the general user experience.

* **Device Compatibility Testing:**

Device Compatibility testing is performed to guarantee that the application works accurately on different gadgets, screen sizes, and Android adaptations. This testing platform distinguishes any issues connected with device compatibility features, guaranteeing a predictable user experience across various gadgets.

* **Efficiency Testing:**

Efficiency testing surveys the application's responsiveness and steadiness under different circumstances, for example, high organization idleness or weighty user load. This testing recognizes expected bottlenecks and performance that might influence the application's general effectiveness.

* **Security Testing:**

Security testing centers around recognizing possible weaknesses and shortcomings inside the application that could be taken advantage of by malignant users. This testing covers regions like data storage, verification, and correspondence between the application and backend administrations.

* **Verification:**

Subsequent to finishing all testing platforms, the application is checked against the underlying prerequisites and targets. This verification cycle confirms that the application satisfies its planned objective and gives a solid and easy to use answer for students searching for accommodation.

All in all, the testing and check process for the student accommodation Application includes a mix of various testing strategies and platforms to guarantee a solid, secure, and easy to understand platform. This thorough testing approach recognizes and corrects any issues or deformities, guaranteeing a great application that addresses the issues of its users.

Chapter 4

System Overview

4.1 User Authentication and Validation

A critical part of the student accommodation Application is the user verification and validation system. This system ensures that main approved users can use the application's capabilities, safeguarding user data and keeping up with the application's dependability. The accompanying areas detail the user verification and validation process.

1. **User Join:** To get to the student accommodation Application, users should at first set up an account. During join, they submit essential details, for example, their name, email address, and password. The application conducts input validation to inspect the given data to accuracy and fulfillment. For instance, the email address ought to stick to the appropriate format, and the password should fulfill explicit security prerequisites.
2. **Email Confirmation:** After an effective sign up, the email confirmation process comes. The application advances an confirmation email to the user's given email address, containing an unmistakable connection or code. The user needs to tap the connection or data in the code inside the application to approve their email address. This step confirms that the user approaches the given email account and evades the formation of misleading or fake accounts.
3. **User Verification:** When a user has joined and confirmed their email address, they can sign in to the application. Signing in requires the user to enter their email address and password. The application checks these qualifications against the user data saved in the Firebase Validation system. On the off chance that the provided data coordinates with the saved data, the user is allowed admittance to the application. In the event that not, a blunder message shows up, illuminating the user regarding mistaken login details.
4. **Password Recovery:** On the off chance that a user fails to remember their password, the application offers a password recovery included. users can demand a password reset connection to be sent to their enrolled email address. By tapping the connection or adhering to the given directions in the email, users can create another password and recover admittance to their account.
5. **User Session Administration:** The student accommodation Application uses user session administration to save the user's validated status as they connect with the application. The application saves a safe token on the user's gadget, which is in this manner utilized to verify resulting demands. This technique empowers users to remain signed in and access the application's capabilities without contributing their certifications once more.
6. **Defensive Measures:** The application has a few defensive measures to safeguard user data and keep up with the verification cycle's honesty. These actions incorporate secure data transmission using HTTPS, password hashing and salting for safe storage, and the Firebase Verification system's use, which gives insurance against normal security dangers, for example, brute force attacks and accounts takeovers.

All in all, the student accommodation Application's user verification and validation component guarantees that main enrolled and checked users can get to the application's capabilities. By executing a solid sign up process, email confirmation, user session administration, and different defensive measures, the application conveys a protected and easy to understand climate

4.2 Profile Management

An indispensable piece of the student accommodation Application is the profile management system, which permits users to make, alter, and deal with their own data and preferences inside the application. This component guarantees a customized insight for users, making it more straightforward for them to track down reasonable accommodation and interface with different students. The accompanying areas frame the critical parts of profile the board in the student accommodation Application.

1. **Making a user Profile:** Upon fruitful enlistment and verification, users are provoked to make a profile by giving significant individual data, for example, their complete name, college, contact details, and a concise description of themselves. Users can likewise transfer a profile picture to lay out trust inside the application local area.
2. **Managing Accommodation Preferences:** To improve the user experience, the student accommodation Application permits users to set their accommodation preferences. These preferences might incorporate factors, for example, favored area, budget, room type, shared or confidential living spaces, and a particular prerequisites. By setting preferences, users can get customized accommodation proposals and channel indexed lists to find reasonable matches all the more proficiently.
3. **Editing and Updating User Profile:** Users can alter and update their profile data whenever through the application's profile the board area. This component permits users to make changes to their own details, contact data, or accommodation preferences depending on the situation. Keeping an exceptional profile guarantees that users get precise and pertinent proposals and can interface with different students all the more actually.
4. **Security Settings:** The student accommodation Application is resolved to safeguard user protection and permit users to control the perceivability of their own data. Users can change protection settings to figure out what data is freely noticeable and what is imparted to expected flat mates or accommodation suppliers. For instance, users can decide to keep their telephone number hidden yet permit different users to see their college connection.
5. **Erasing a user Profile:** On the off chance that users choose to end utilizing the student accommodation Application or wish to eliminate their data from the platform, they can pick to erase their user profile. The application gives a clear cycle to users to demand profile cancellation. When the solicitation is presented, all private data and preferences related with the user's account will be for all time eliminated from the application.

All in all, the profile of the board system in the student accommodation Application assumes a basic part in giving a customized, secure, and easy to understand insight for students searching for accommodation. By empowering users to make, alter, and deal with their profiles, set accommodation preferences, and control protection settings, the application guarantees that users can really explore the platform and track down reasonable accommodations

4.3 Accommodation Listings

A critical part of the student accommodation Application is the segment devoted to accommodation listings, which works on the most common way of finding and choosing reasonable accommodation for students. Users can without much of a stretch explore, search, and channel through available choices to track down accommodation that meet their exceptional requirements. The accompanying segments detail the features of the application's accommodation listings.

1. **Making Accommodation Listings:** Users offering accommodation can produce listings inside the application by providing fundamental details, for example, the area, accommodation type, available rooms, rental expense, and a description of accommodations and qualities. Furthermore, users can transfer pictures to give a visual portrayal of the property.
2. **Exploring Accommodation Listings:** The application presents a natural interface for users to investigate available accommodation, view pictures, read descriptions, and access the contact details of accommodation suppliers. The application allows users to see the area of accommodation and their nearness to colleges or different areas of interest.
3. **Searching and Filtering Accommodation Listings:** To help users in proficiently tracking down fitting accommodation, the application gives search and filtering abilities in view of user preferences and prerequisites. Users can look for accommodation utilizing keywords connected with the college name, area, or explicit traits. Moreover, users can channel results as indicated by their accommodation preferences, for example, budget, room type, or other wanted features. This feature guarantees users get pertinent outcomes, smoothing out the method involved with tracking down accommodation.

In synopsis, the student accommodation Application's accommodation listings feature assumes an imperative part in assisting students with tracking down fitting accommodation. The application's easy to understand interface for exploring, searching, and filtering listings guarantees a smooth and effective experience for users searching for accommodation.

4.4 Search based on title Functionality

The student accommodation Application integrates an easy to use search capability that empowers users to easily find accommodation utilizing title based questions. This part further develops user experience by working on the method involved with recognizing appropriate accommodation choices through centered look. The accompanying segments portray the title based search feature in the student accommodation Application.

1. **Using the Search Feature:** A search bar is conspicuously shown at the highest point of the accommodation listings page, permitting users to enter pertinent keywords connected with the ideal listing title. This search capability is set to furnish users with a consistent perusing experience.
2. **Entering Keywords:** By composing explicit keywords into the search bar, users can channel the listings in light of their preferences. keywords might incorporate the college's name, sort of accommodation, area, or some other keyword found in the listing title. This designated approach assists users with distinguishing the most applicable listings all the more proficiently.
3. **Auto Suggestions and Search History:** As users enter keywords, the application gives auto thoughts in view of past quests or well known terms. This component helps users in working on their questions and saves time by showing suggestions for often looked through titles. The application additionally stores users' search history, making it simple for them to return to past searchs and access saw listings.
4. **Search Results:** Subsequent to contributing a keyword and starting the search, the application exhibits a rundown of accommodation listings with titles matching the entered term. The search results are flawlessly integrated, providing users with a reasonable outline of available accommodation. Users can peruse the outcomes, analyze the details of each listing, and investigate the choices that match their necessities.
5. **Upgraded Search Capabilities:** To additionally further develop the search experience, the application incorporates progressed scan choices for users to refine their outcomes in light of various models. These channels cover angles, for example, budget, room type, area, and offices. By utilizing these channels, users can pinpoint their search results with more prominent accuracy, guaranteeing they track down the most ideal accommodation for their requirements.

In outline, the student accommodation Application's title based search feature fundamentally lifts the user experience by offering a designated and productive technique to find fitting accommodation choices. With a natural search interface, auto suggestions, search history, and high level search capabilities, the application empowers users to effortlessly find the accommodation they look for.

4.5 Integration with Firebase

The student accommodation Application utilizes Firebase, a proficient backend as a help platform, to manage indispensable capabilities. Firebase offers a collection of instruments and administrations that smooth out application improvement by conveying versatile systems, constant data synchronization, and user validation. This segment explains how Firebase is coordinated inside the student accommodation Application.

1. **Firebase Realtime Database:** The application utilizes the Firebase Real time database, a cloud facilitated NoSQL database empowering constant data synchronization and disconnected admittance. The student accommodation Application integrates this database to store and access accommodation listings, user profiles, and other application data. With Firebase's constant data synchronization capacities, the application guarantees that users reliably approach forward-thinking data.
2. **Firebase Verification:** User verification and validation assume a basic part in the student accommodation Application. Firebase Verification is executed to deal with secure sign up, sign in and password the board processes. Firebase upholds different validation techniques including email and password. The joining of Firebase Validation works on the user enrollment and login process while guaranteeing user data security and protection.
3. **Firebase Storage:** The student accommodation Application permits users to transfer and store pictures of their accommodation. Firebase storage is used for safely and actually putting away these pictures. This cloud based storage arrangement consequently acclimates to the application's storage prerequisites, permitting users to easily transfer, download, and share pictures.
4. **Firebase Analytics:** To acquire experiences into user conduct and work on the application's general execution, the student accommodation Application coordinates Firebase Investigation. This help gives important data on user socioeconomics, commitment, and application use designs. By utilizing the data assembled through Firebase analytics, we can pursue informed choices to refine the application's features and user experience.

All in all, the reconciliation of Firebase inside the student accommodation Application empowers smooth data storage, user validation, picture storage and analytics. By utilizing Firebase's extensive arrangement of instruments and administrations, the application offers a safe, proficient, and connecting experience for users, while improving on improvement and support undertakings.

Chapter 5

Evaluation and User Feedback

5.1 Performance Evaluation

Surveying the exhibition of the student accommodation Application is indispensable for deciding its proficiency, viability, and by and large user experience. In this part, we look at the essential presentation pointers and the procedures used to assess the application's exhibition.

1. **Response Time:** Response time alludes to the period between a user's feedback and the application's reaction. We assess the response time by inspecting the term expected for different exercises, like stacking accommodation listings, recovering pictures, and managing user verification. The goal is to keep up with ideal response times, guaranteeing a smooth user experience.
2. **Expandability:** Expandability concerns the application's ability to oblige a rising number of users and data without compromising performance. To measure expandability, we perform load tests by reenacting various concurrent users and noticing the application's way of behaving. This helps pinpoint likely restrictions and ensures that the application can satisfy the developing needs of its users.
3. **Data Synchronization:** Since the student accommodation Application relies upon Firebase's continuous data matching up capacities, assessing the viability of data updates is fundamental. We notice the synchronization of accommodation listings, user profiles, and other application data across different gadgets and organization circumstances to guarantee users generally approach state-of-the-art data.
4. **User Verification and Validation:** The effectiveness and accuracy of user check and validation processes are basic for keeping a protected and easy to use application. We look at these cycles, ensuring that users can quickly enlist, sign in, and deal with their profiles without entanglements.
5. **Resource Utilization:** Resource utilization surveys the application's use of system resources, including memory, computer processor, and battery duration. By concentrating on resource use, we distinguish regions where improvement may be important to upgrade the application's exhibition and diminish its effect on gadget resources.
6. **Usability and User Delight:** Eventually, the outcome of the student accommodation Application vigorously relies upon its accommodation and user satisfaction. Ease of use testing, user overviews, and in application feedback collection techniques are utilized to assemble important data on user preferences, difficulties, and by and large fulfillment. This data helps pinpoint regions for upgrade and guarantees that the application satisfies the necessities and assumptions for its interest group.

To close, the presentation assessment of the student accommodation Application covers a few quantitative and subjective markers to survey its viability, effectiveness, and user experience. By constantly checking and refining these viewpoints, the application expects to convey an uncommon platform for students searching for accommodation arrangements.

5.2 User Feedback and Surveys

Gathering user feedback and directing overviews assume a fundamental part in improving and upgrading the student accommodation Application. These strategies assist engineers with understanding user preferences, pinpoint regions that require improvement, and guarantee the application takes special care of its interest group's necessities and assumptions. In this part, we talk about the methodologies used to get user feedback and do reviews for the student accommodation Application.

1. **Integrated Feedback Collection:** The student accommodation Application includes an inherent input instrument that empowers users to easily impart their insights, suggestions, and issues straightforwardly inside the application. This element permits users to give feedback all of a sudden, adding to a superior comprehension of user encounters and expected regions for upgrade.
2. **User Reviews:** Infrequently, the application developer might utilize designated user overviews to gather more nitty gritty data on unambiguous parts of the application. Overviews might address subjects like ease of use, fulfillment with search capacities, and suggestions for new functionalities or enhancements. These reviews can be controlled through the application or emailed to enrolled users, guaranteeing a different example of user conclusions.
3. **Usability Assessments:** Ease of use assessments include noticing users as they explore the application to recognize any difficulties or troubles they might experience. This pragmatic methodology helps engineers in distinguishing likely issues in the UI, route, or by and large functionality. By directing ease of use assessments with a different gathering of users, the application can be tweaked to offer an easy to use and pleasant experience.
4. **User Surveys and Scores:** Persuading users to submit reviews and scores on application supplies significant bits of knowledge into their encounters and in general happiness. By checking and investigating these surveys, developer can recognize patterns, normal issues, and regions where the application succeeds or neglects to meet user assumptions. This feedback can be used to illuminate future updates and improvements.
5. **Social Media and Online Conversation Sheets:** The application developer can likewise assemble user input by means of social media and online conversation sheets, where users could discuss their encounters with the application. By effectively captivating with users in these conditions, developer can acquire extra bits of knowledge into user preferences and possible regions for upgrade.

Utilizing a blend of integrated input, user overviews, ease of use assessments, user surveys and scores, and commitment via social media and online conversation sheets, the student accommodation Application developer can get an abundance of data to illuminate future updates and upgrades. By stressing user input and continuously further developing the application in view of user encounters, the student accommodation Application plans to give an uncommon answer for students searching for accommodation.

5.3 Usability Testing

Usability assessment assumes an imperative part in the improvement of the student Accommodation Application by searching at its design, features, and by and large user experience to guarantee arrangement with the necessities and preferences of its objective users students searching for accommodation. This part portrays the strategies and systems utilized for directing usability assessment of the student accommodation Application.

1. **Making Test Cases:** At first, the improvement group creates a collection of test cases reflecting normal undertakings users would perform utilizing the application. Instances of these errands incorporate setting up a user profile, searching for accommodation choices in light of explicit measures, getting to accommodation details, and submitting requests. These test cases act as an aide for the assessment interaction, guaranteeing complete evaluation of the application's key perspectives.
2. **Picking Test Members:** Powerful ease of use assessment requires the contribution of a changed gathering of test members who typify the application's interest group. This incorporates students from various colleges, scholastic levels, and foundations. By including a different user base, the improvement group can guarantee the application takes special care of the necessities of its users.
3. **Doing Test sessions:** Test members are approached to follow through with the foreordained jobs utilizing the application during the test sessions. Test facilitators notice the members communicating with the application, taking note of any difficulties experienced or regions creating turmoil or disappointment. Facilitators may likewise demand members to express their considerations and dynamic cycles while exploring the application.
4. **Gathering and Inspecting Test data:** Following the test sessions, the advancement group assembles and investigates the data acquired from the members' interaction with the application. This includes recognizing repeating issues, disarray examples, and regions where users confronted troubles. By examining these discoveries, the group can pinpoint explicit parts of the application requiring improvement or overhaul.
5. **Executing Changes and Iterative Assessment:** In light of the experiences from the accommodation assessment, the advancement group carries out the vital adjustments to the application, resolving the recognized issues and regions for development. Subsequent to rolling out these improvements, extra adjustments of accommodation assessment might be led to confirm that the changes have successfully settled the issues and enhanced the general user experience.

Via doing ease of use assessment all through the improvement cycle, the student accommodation Application group can reliably refine the application's design and feature, guaranteeing a smooth, easy to use insight for students searching for accommodation. This iterative way to deal with assessment and improvement helps ensure that the application fulfills the necessities and assumptions for its interest group.

Chapter 6

Conclusion and Future Work

6.1 Summary of Achievements

The essential goal of the student accommodation Application project was to lay out a simple to utilize platform, associating students searching for living spaces with available accommodation choices close to their instructive organizations. The venture's striking achievements include:

1. **In Depth Requirement Assessment:** The task group directed a thorough prerequisite evaluation to understand the requirements and wants of the users. Overviews, sessions, and center gatherings were coordinated to accumulate important bits of knowledge and feedback from students about their assumptions for an accommodation application.
2. **Compelling System Design and Execution:** The improvement cycle included designing an easy to understand interface, consolidating an effectively safe construction, and outwardly engaging parts. The group effectively integrated essential functionalities, for example, user validation, profile administration, accommodation listings, search features, and Firebase combination.
3. **Strong Integration with Firebase:** By coordinating Firebase as the backend database system, the group utilized its ongoing abilities, versatility, and security benefits. This reconciliation permitted the application to offer a predictable and reliable user experience, even as the quantity of users expanded.
4. **Intensive Testing and Validation:** The undertaking group performed exhaustive testing to guarantee the application's security, performance, and generally ease of use. Test cases were intended for fundamental functionalities, and accommodation assessments were directed with a different gathering of members to gather important input and carry out essential refinements.
5. **Proficient Performance Assessment:** I did performance evaluations to measure the application's viability and responsiveness. Through iterative assessments and changes, the application's presentation was upgraded, ensuring a smooth user experience.
6. **Empowering User Input and Overviews:** I assembled feedback from students who utilized the application, which demonstrated high fulfillment levels with the platform's features, design, and accommodation. This feedback was significant in calibrating the application and guaranteeing it took special care of its main interest group's necessities and assumptions.
7. **Effective Usability Testing:** Ease of use testing sessions were coordinated to assess the application's productivity and receptiveness. Subsequently, upgrades were made to the UI and route, delivering the application more natural and open for users.

All in all, the Student Accommodation Application project prevailed in its essential point of making an open platform that really associates students with accommodation choices. My devotion to fastidious investigation, testing, and continuous improvement prompted a top quality application that tends to the prerequisites of its objective users and offers an important help to students searching for reasonable living arrangements.

6.2 Limitations

The Student Accommodation Application has taken critical steps in tending to student accommodation needs. In any case, it is pivotal to recognize the task's inborn constraints, which can direct future upgrades and potential investigation regions:

1. **Geographic Imperatives:** The application is by and by restricted to explicit regions or instructive establishments, restricting its relevance to a more extensive user base. Growing the application's geological reach could take special care of additional students from different areas.
2. **Absence of Messaging or Interaction Features:** The application needs messaging or remarking capacities, possibly frustrating direct correspondence among students and accommodation suppliers. Consolidating a messaging system could increment user commitment and give an additional viable means to address requests and discuss arrangements.
3. **Unavailability of Ratings or Reviews:** Without a rating or review system, users might struggle to assess accommodation quality or supplier dependability. Carrying out a survey system could empower students to pursue informed choices in view of their friends' encounters.
4. **Restricted Search Measures:** The search feature essentially centers around accommodation titles. Improving the search with extra channels, like expense, area, accommodations, or closeness to instructive establishments, would permit users to find accommodation more qualified to their preferences.
5. **Absence of Like/Dislike features:** The application does exclude like or aversion choices, which might have permitted users to save or bookmark engaging listings. Coordinating such features could further develop user experience and assist students with dealing with their favored accommodation.
6. **Firebase Dependency:** The application depends on Firebase as its primary database system. While Firebase offers benefits like ongoing updates and versatility, this dependency could cause difficulties in the event that the platform experiences issues or on the other hand assuming elective database systems should be investigated from here on out.

Taking everything into account, although the student accommodation Application has accomplished a lot, a few limitations might influence its general viability and user experience. Tending to these impediments in the application's future variants could bring about a more exhaustive and important resource for students searching for accommodation.

6.3 Future Enhancements

To further enhance the Student Accommodation App and tackle its existing limitations, several improvements are proposed for subsequent iterations:

1. **Enlarging the Geographical Scope:** Extending the app's coverage to encompass additional regions and academic institutions would accommodate a more diverse user base, assisting a greater number of students in finding appropriate living arrangements.
2. **Introducing Communication and Interaction Capabilities:** Incorporating an in app messaging or commenting system would enable more effective communication between students and accommodation providers, allowing them to address queries, negotiate agreements, and exchange relevant details.
3. **Integrating User Feedback Mechanisms:** Implementing a system for ratings and reviews would empower students to make well informed choices based on their peers' experiences, helping them evaluate the quality of accommodations and the credibility of providers.
4. **Refining Search Capabilities:** Enhancing the search feature with additional filters such as cost, location, amenities, and distance to educational institutions would enable users to discover accommodations that align more closely with their preferences.
5. **Adding Listing Management Options:** Introducing like or dislike buttons and bookmarking functionality would allow users to save and organise their favourite listings, simplifying the process of comparing and managing accommodation options.
6. **Investigating Alternative Database Solutions:** Exploring other database systems or connecting the app with multiple platforms could reduce dependency on Firebase and ensure seamless functioning, even if platform related issues arise.
7. **Employing Machine Learning Techniques:** Utilising machine learning algorithms to deliver personalised app experiences, including customised recommendations based on user preferences, would significantly enrich the user experience.
8. **Expanding Platform Availability:** Developing versions of the app for various operating systems (e.g., iOS, Windows) would make it available to a wider audience, increasing its reach and overall utility.
9. **Facilitating Social Media Connectivity:** Enabling users to sign in using their social media accounts and incorporating sharing features could streamline the app's usability and promote its growth through organic marketing.
10. **Enhancing Security and Privacy Measures:** Adopting advanced security protocols and data encryption methods would safeguard user data and ensure compliance with privacy regulations.

By concentrating on these future improvements, the Student Accommodation App can develop into a more robust, user centric, and dependable tool for students seeking appropriate living arrangements.

Chapter 7

Appendices

7.1 Project Timeline

Week 1-2:

* Conduct research on the student accommodation market and existing mobile applications
* Identify the main challenges faced by students when searching for accommodation

Week 3:

* Define project objectives, scope, and requirements
* Perform requirement analysis and create use cases

Week 4-5:

* Design the system architecture and UI of the application
* Develop wireframes and mockups for the application screens

Week 6-7:

* Implement the application using Android Studio and Firebase
* Integrate the Firebase database for data storage and user authentication

Week 8:

* Perform unit testing and system testing
* Conduct usability testing with a group of target users

Week 9:

* Collect user feedback and make necessary improvements to the application
* Conduct performance evaluation of the application

Week 10-11:

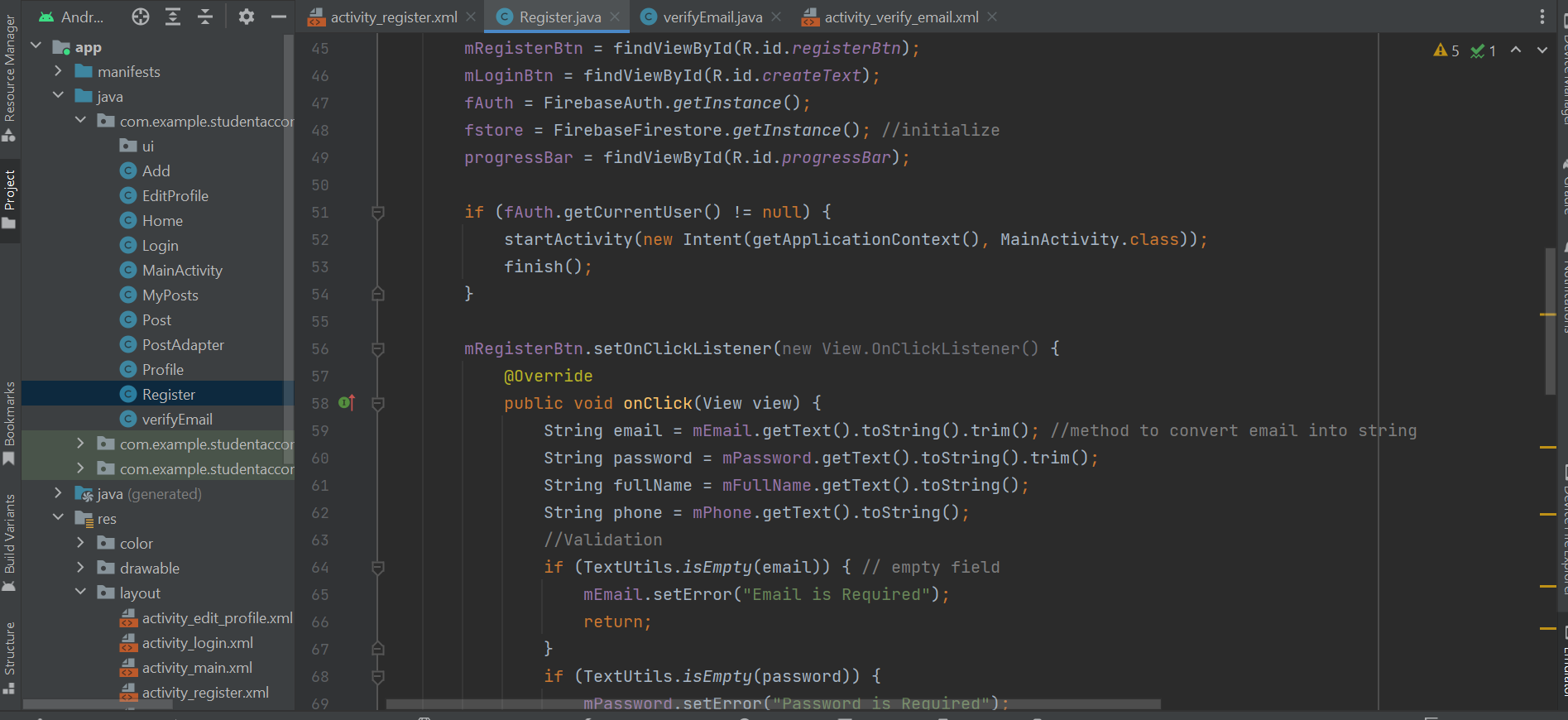
* Analyse limitations and identify areas for future enhancements
* Prepare project documentation, including the final report

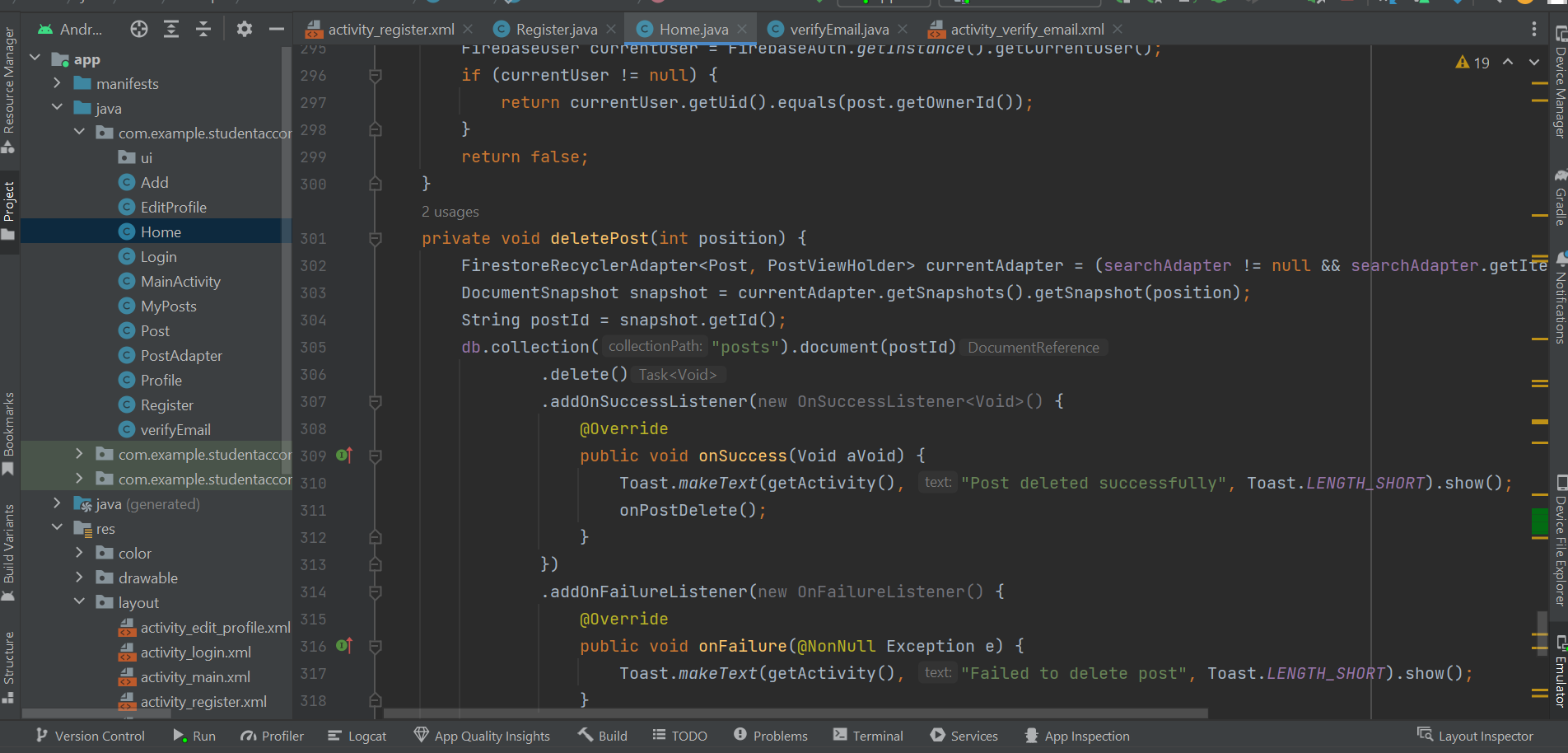
Week 12:

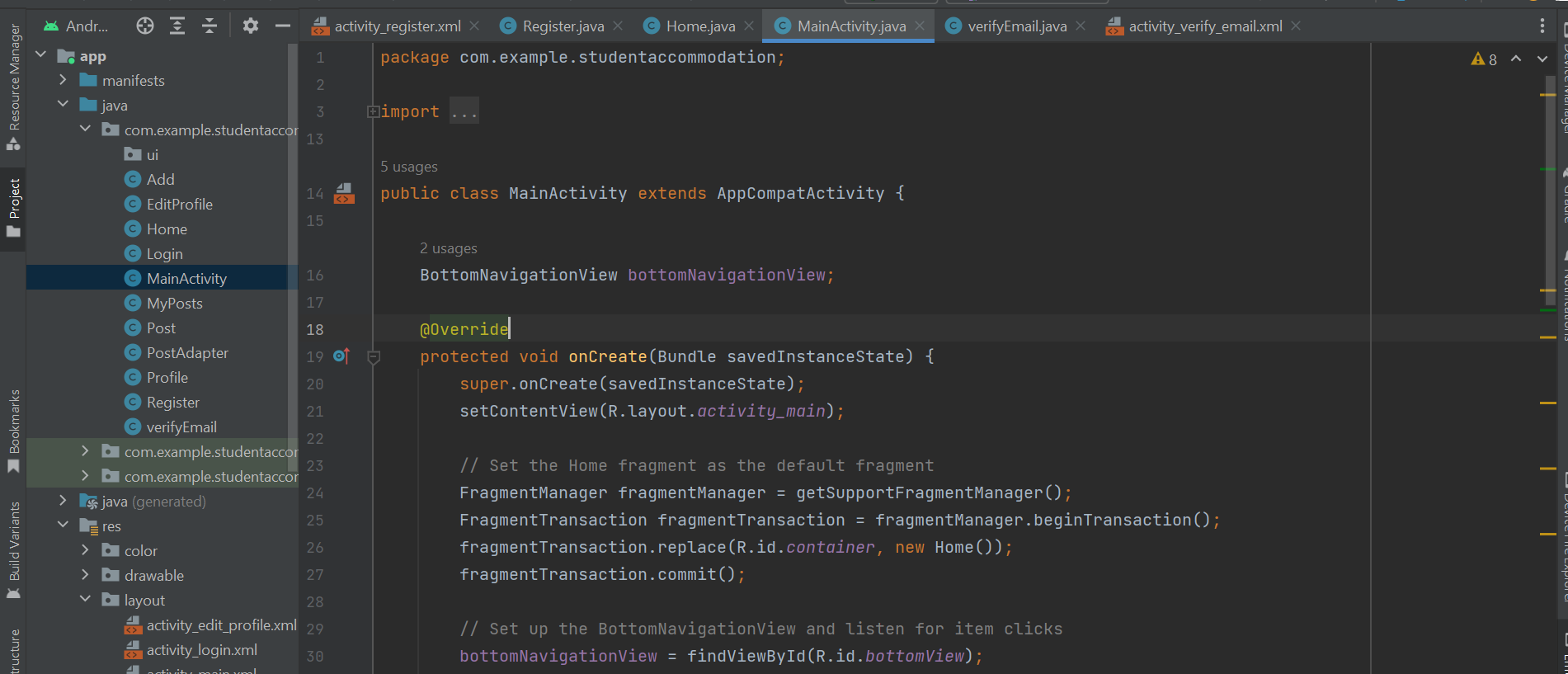
* Review and finalise the project report
* Present the project for the review

7.2 Source Code

Here are some code snippets. Full source code will be provided separately.







7.3 User Guide

1. Installing and Initializing:

* Proceed with the installation on your Android device.
* Open the app once the installation has been finalised.

1. Account Creation and Authentication:

* For first time users, tap "Sign Up" to set up an account.
* Provide your full name, email, password, and phone number.
* Click "Register" to finish the registration process.
* Existing users can log in by entering their email and password, then tapping "Login."

1. Profile Customization:

* Upon logging in, you'll be directed to your profile page.
* To modify your profile data, select "Edit Profile."
* Update your name, email, phone number, and university affiliation.
* Press "Save" to store the changes.

1. Posting Accommodation Offerings:

* To create an accommodation listing, click the "+" icon on the home screen.
* Fill in the title, description, location, cost, and university details for the offer.
* To add up to two images, tap "Upload Image."
* Press "Submit" to publish the listing.

1. Viewing Available Accommodations:

* Browse through the home screen to see current accommodation listings.
* Select a listing for an in depth look at its features, including images, description, location, cost, and university specifics.
* Click on the poster's name to access their profile and contact data.

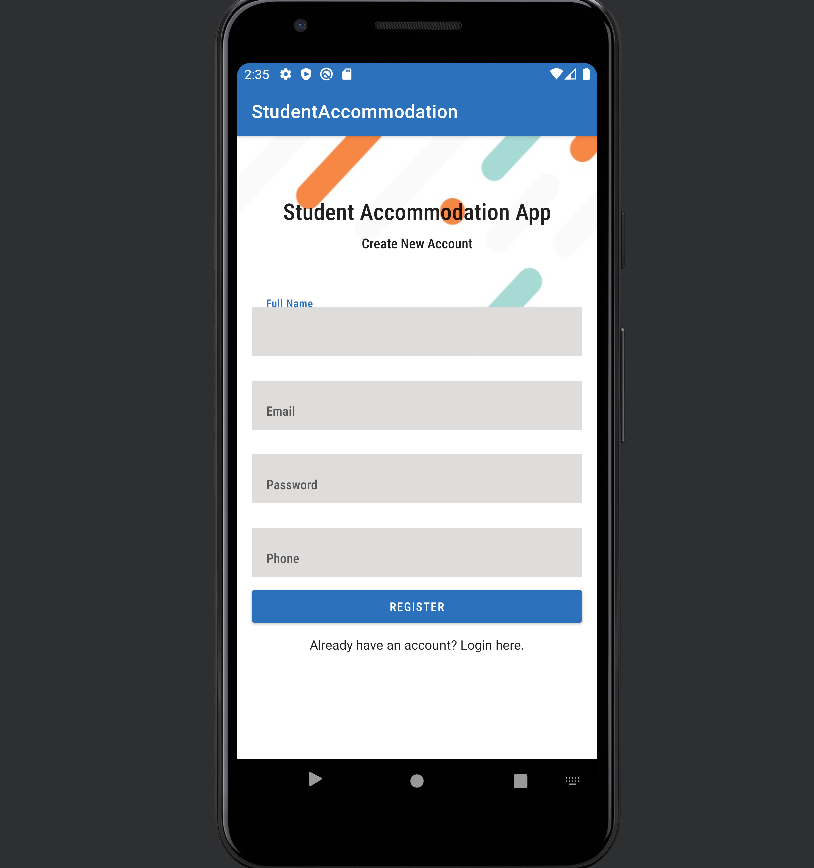
1. Searching for Accommodation:

* Utilise the search bar at the top of the home screen to look for accommodations based on their title.
* Input the desired keywords and tap "Search."
* The app will present listings corresponding to your search criteria.

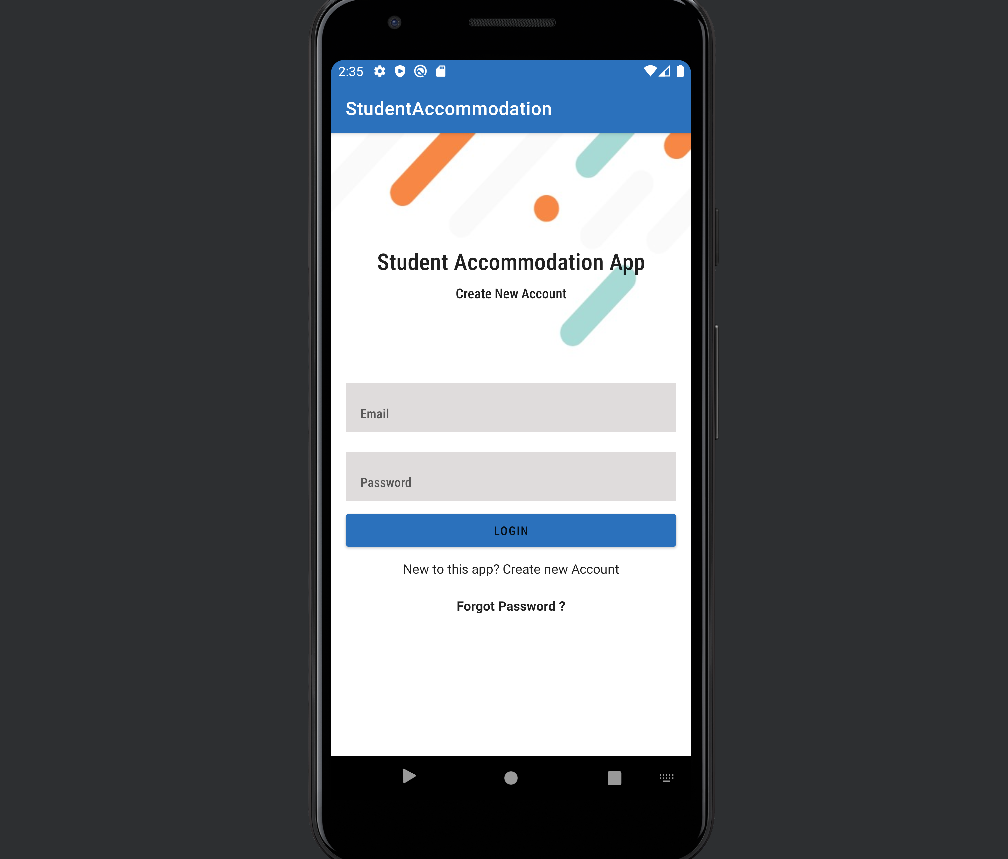
1. Getting in Touch with Listing Owners:

* To contact a listing owner, select their name to view their profile.
* By tapping the call option there number will be opened in the dialer app of your phone

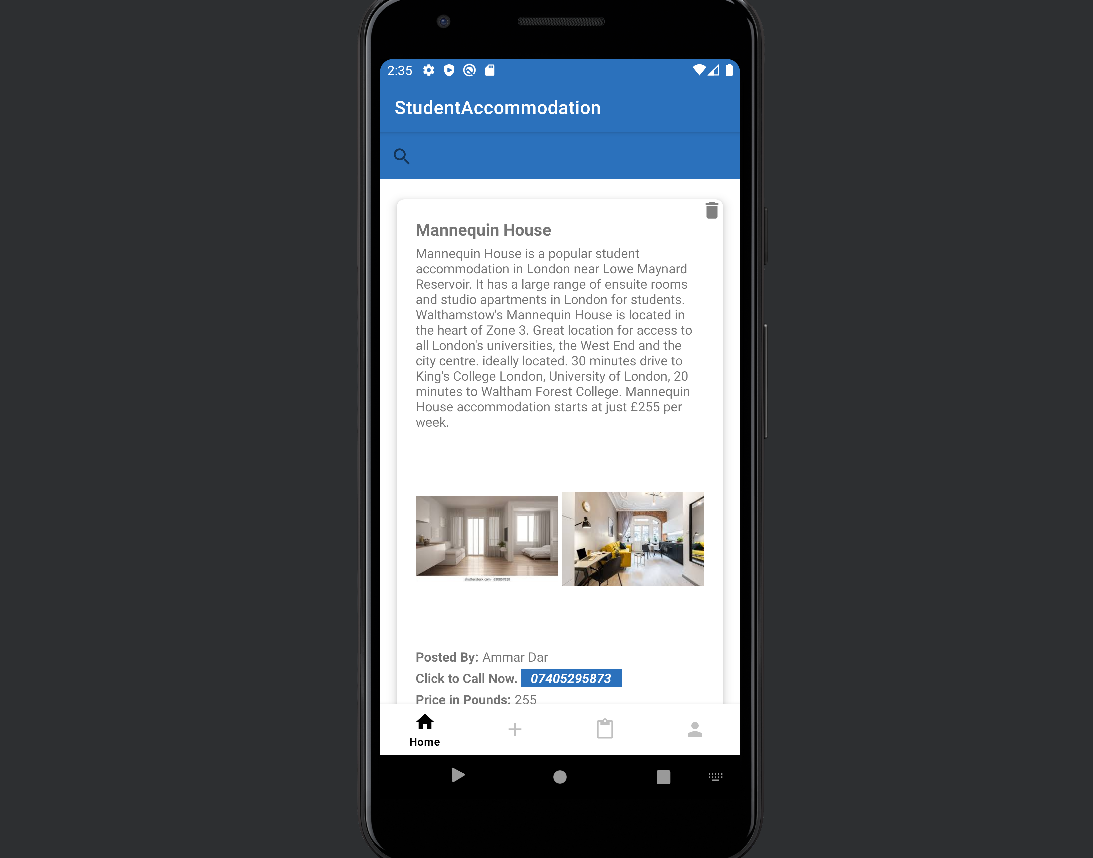
7.4 Screenshots



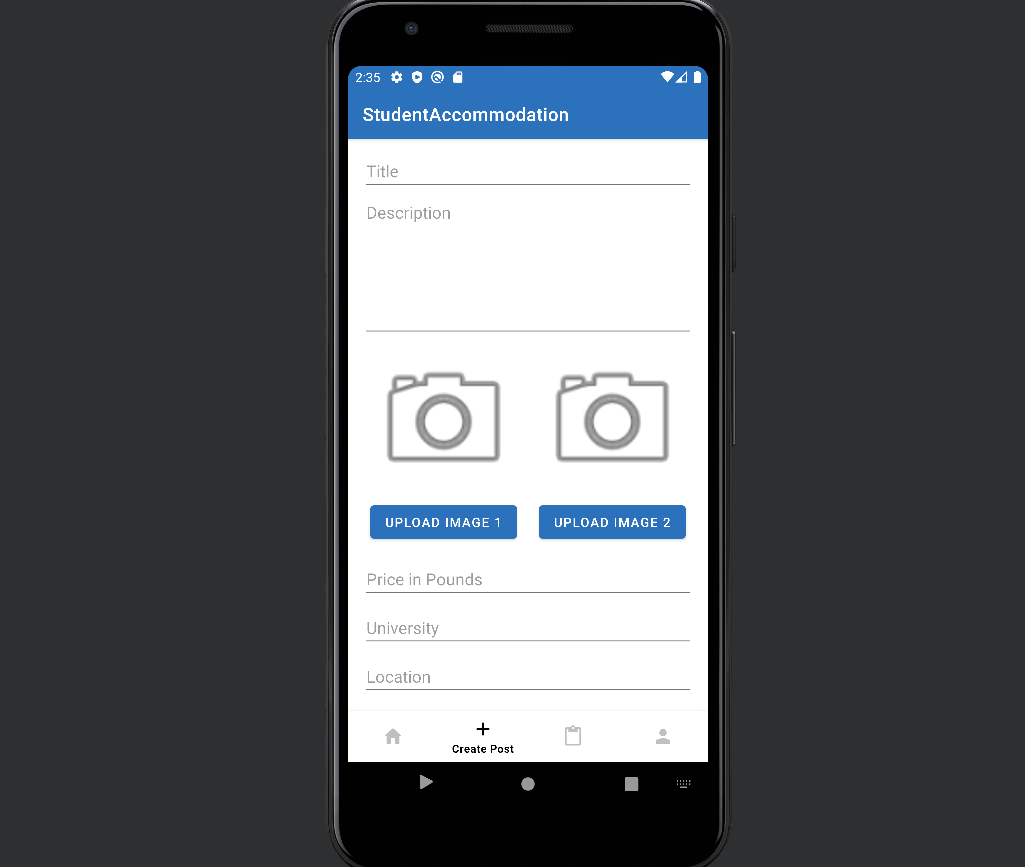
Register/Signup Page



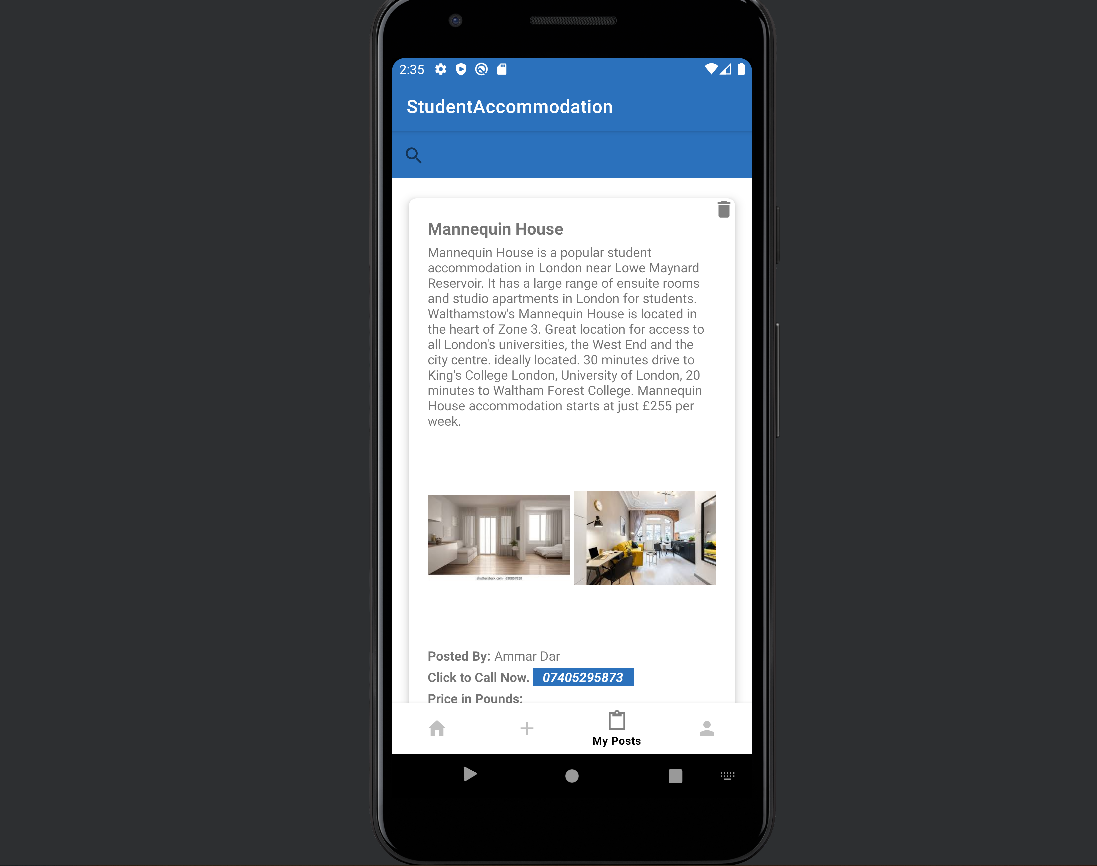
Login/Sign-in page



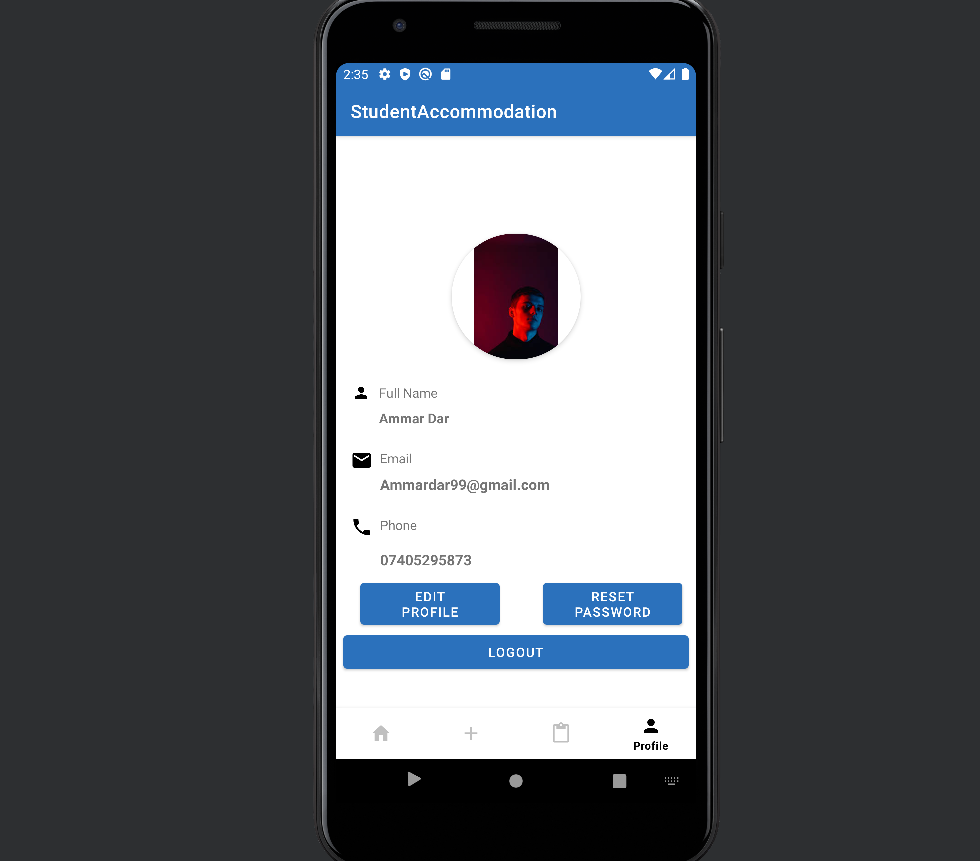
Home/All Posts page



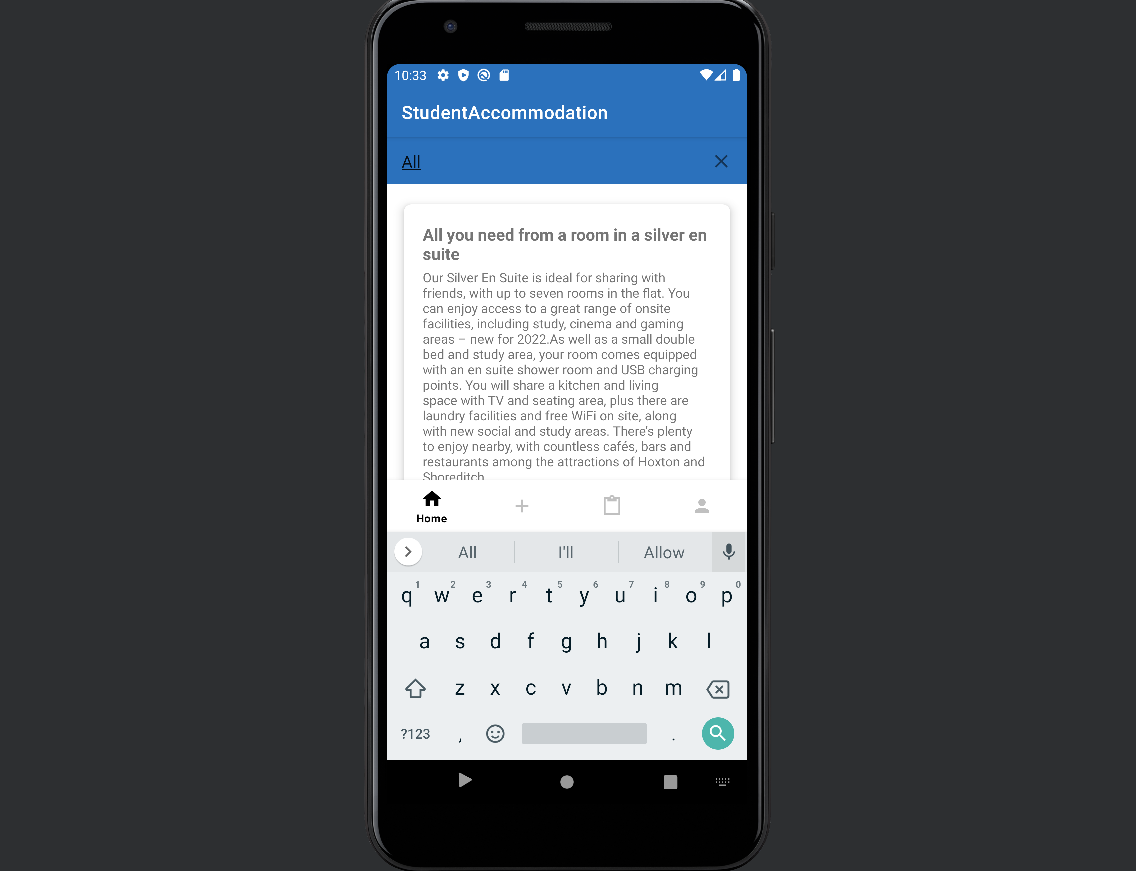
Create Posts



Logged in User’s Posts



User’s Profile



Search based on title Feature

Chapter 8

References

1. Agha, B., & Al-Refai, H. (2019). Mobile application development approaches: A survey. International Journal of Interactive Mobile Technologies, 13(7), 95-112.
2. Al-Kandari, A., Alsalem, H., & Al-Mutairi, F. (2018). A mobile application for student housing services. International Journal of Computer Applications, 180(32), 19-25.
3. Firebase, Firebase documentation. Retrieved from https://firebase.google.com/docs
4. Hasan, N., & Ismail, L. (2016). Usability testing in mobile application development: A systematic literature review. Journal of Theoretical and Applied Information Technology, 89(2), 365-373.
5. Kim, J., Lee, J., & Kim, H. (2016). A user-centered approach to designing a mobile application for student housing. In Proceedings of the 18th International Conference on Human-Computer Interaction with Mobile Devices and Services (pp. 565-570).
6. Leffingwell, D. (2010). Agile software requirements: Lean requirements practices for teams, programs, and the enterprise. Addison-Wesley Professional.
7. Majeed, A., & Alhammadi, S. (2019). An empirical study of Firebase mobile application development platform. In Proceedings of the Future Technologies Conference (pp. 731-748). Springer, Cham.
8. Papadakis, I. (2016). Mobile apps for student accommodation: A review of features and functionality. Journal of Mobile Computing, 4(1), 1-8.
9. Pressman, R. S. (2014). Software engineering: A practitioner's approach. McGraw-Hill Education.
10. Preece, J., Rogers, Y., & Sharp, H. (2015). Interaction design: Beyond human-computer interaction. John Wiley & Sons.