COEN 275 Project Report

Astha Gupta

Shivani Sanjay Tergaonkar

Table of Contents

1. Project Members and Contribution

Member Name	Modules Written / Tasks	Files Owned

Astha Gupta	• Groceries
	• Housing
	  ○ Find A Roommate
	  ○ Fill an application
		Groceries.java
		FilterRoomie.java
		RoomieForm.java

Shivani Sanjay Tergaonkar	• Home Page
	• Login
	• Registration
	• Essentials
	• Ratings
	  ○ Rate our App
	  ○ Read User Feedback
		Home.java
		Login.java
		Registration.java
		Essential.java
		Reviews.java
		DisplayReviews.java
		DatabaseConn.java

2. Code Written by us

All the application code was written by us. A list of files can be found in section 1.

3. Introduction

The goal of the project is to design and implement an application that would serve as a one-stop solution for all the international students arriving in the United States for the first time. Incoming students would be able to search for their preferred roommate, look for groceries, kitchen essentials, and furniture shops, etc. which are near the Santa Clara University, all in one place. Hence, the name of our application is ***"One-Stop".***

Keeping in mind the various efforts the students go through; many modules have been implemented and the remaining is left for the future scope.

The various functionalities which are provided by the application include:

- **Account creation and maintenance**: A login page will be designed with an option to sign-up for new users, and sign-in for existing users.
- **Finding a roommate:** A portal to post ads or search ads with a search criterion with gender, food preferences, etc. Fill out your preferences for roommate and apartment
- **Search for grocery stores:** A portal that lists the different choices of grocery stores.
- **Search for furniture stores:** Furniture shops in the vicinity with a filtering criterion based on reviews and pricing.
- **Search for Kitchen essential stores:** Kitchen essential stores near the University
- **See feedback of residents:** It helps students to get more insight into the areas near the University.
- **Provide Feedback:** Existing users can provide valuable inputs.

4. Design

4.1. Overview

This section provides a high-level overview of the application. The lower level technical details are explained in depth in section 4. A flowchart described in figure 1, gives a visual representation of the application.

The One-Stop application has a main page, and menu options that re-direct to different modules such as log-in, housing, essentials,

groceries, and ratings. The main page also has a section to display the contact information of the application owners.

In the log-in module, a new user can register to the application by clicking on the registration button by providing email-id, password, and other important details. A returning or existing user can click on the sign-in option to access their portal.

The housing module has two options - find a roommate based on a preference filter, and to fill an application providing additional details about the user so that other users can directly reach out. Find a roommate options returns the result of the query based on preference filter, whereas fill an application captures a record of the user who is looking for a roommate.

In the essential's module, the user has options such as household essentials and furniture. Under these options, there are filter criteria such as "luxury" or "economical" pricing. If pricing is not a concern, then "all" options can be picked. Further, once the user picks the store, the application re-directs to the store's home page.

Finally, the user can rate the app or view the feedback from other users via the ratings module.

A user can access all the modules except for the housing and rate our app without a login and can be considered a guest user for the application. The application should not block any user from providing feedback to improve the application or latest information that can be used to improve the application's user experience. At the same time, the essentials and grocery modules can provide an overview of how the application can benefit the user. If interested, the user can then register and use all the menu option. Another

reason for blocking guest access to housing is to safeguard the user information to some extent.

The flowchart below is a visual representation of the sequence of steps and decisions needed to perform a process.

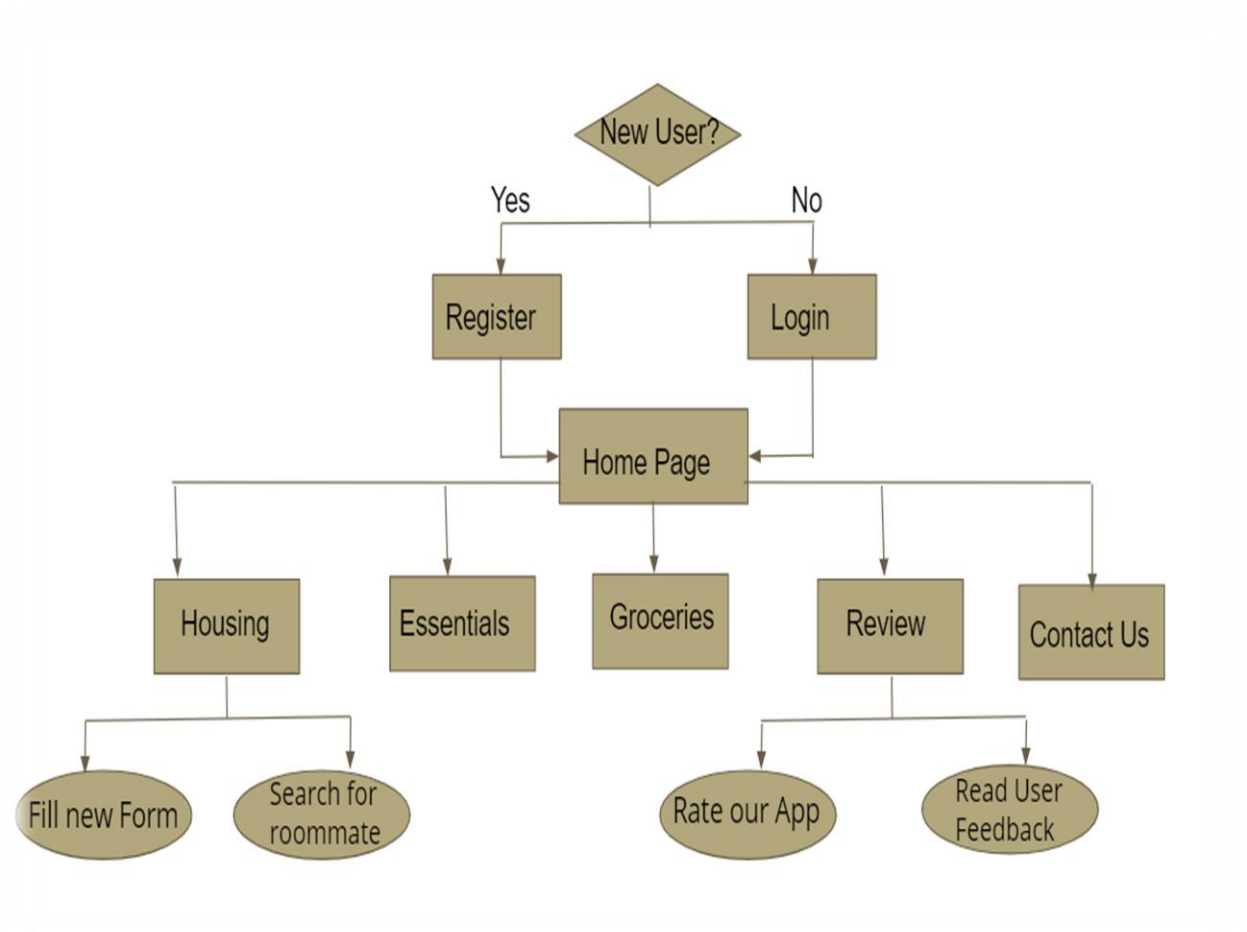

Figure 1. Flowchart of OneStop Application

4.2. Checkpoint 1 Analysis

4.2.1. Use Cases

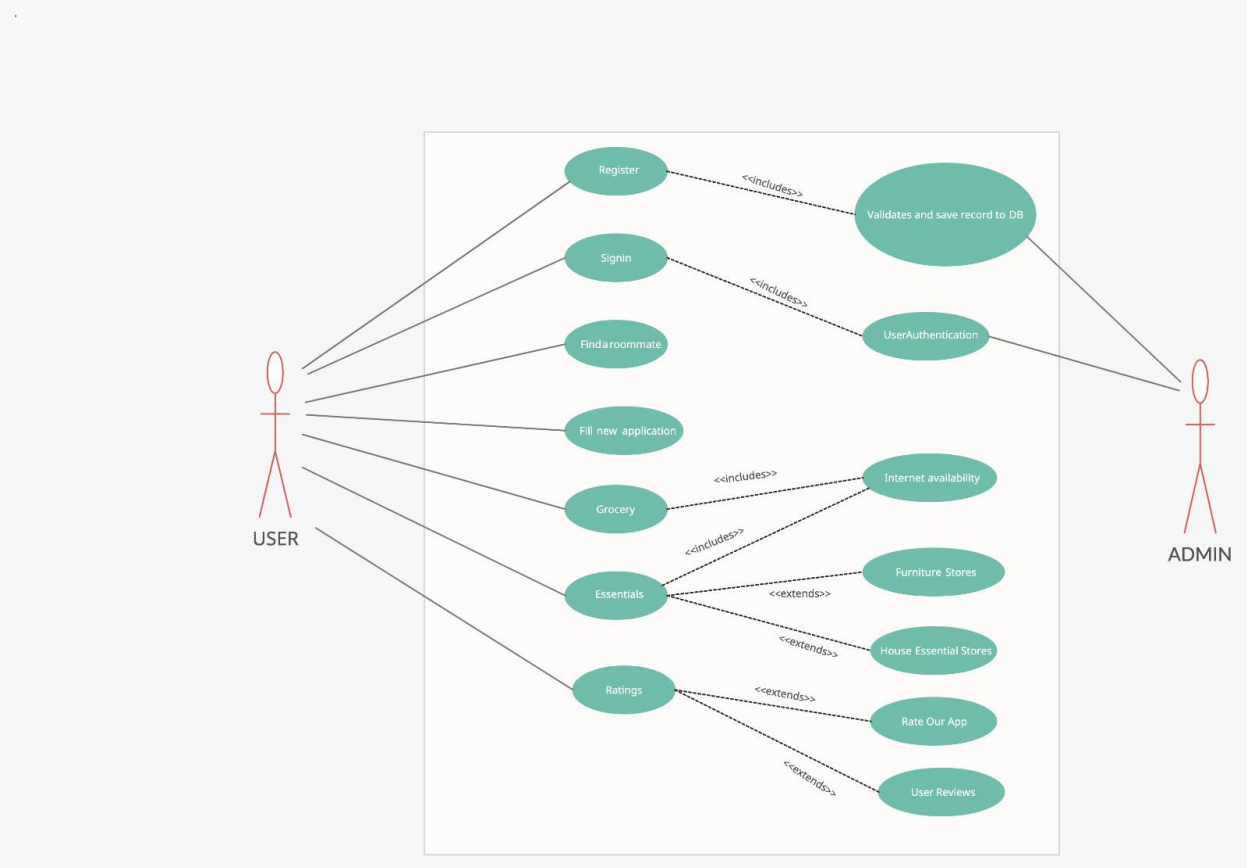

Figure 2. Uses Cases

4.2.2. Analysis Classes

1. Boundary Classes: Window (Home.java)
2. Control Classes:
    a. Register controller
    b. Sign-in controller
    c. Find Roommate controller
    d. Fill new application controller
    e. Grocery controller
    f. Essentials controller

g. Ratings controller.

3. Entity Classes:
    a. User Information:
        i. Register table: The registration table contains user data such as First Name, Last name, Email id, password which are stored in the database in Registration table.
        ii. User details table: This table consists of the user details after he/she fills out an application and enter details such as preferred roommate, food, apartment, drink preference, date of travel, budget, cooking habit etc.

    b. App rating information:
        i. Register table: The registered user can choose to rate the application on a scale of 1-5. This data will be stored in the column ‘Ratings’ of Register table.

4.3. Checkpoint 2 Analysis

4.3.1. State Diagram

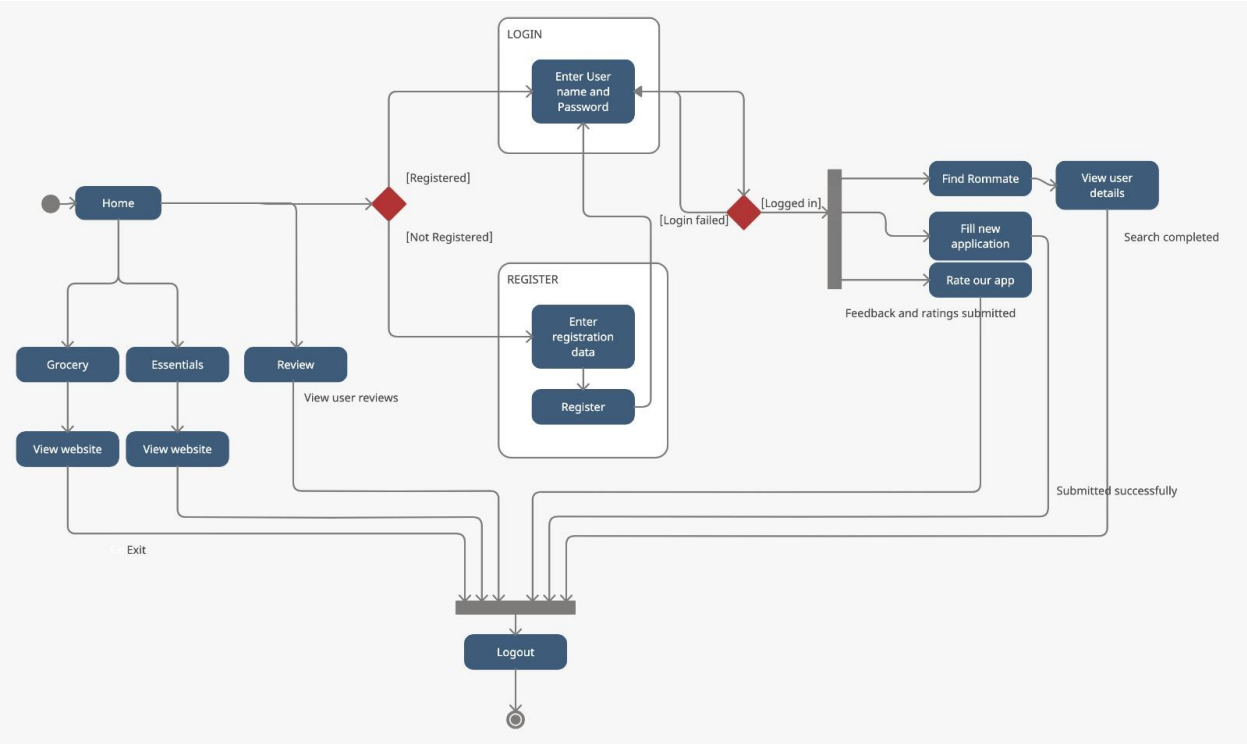

Figure 3. State Diagram for OneStop Application

4.3.2. Class Diagram

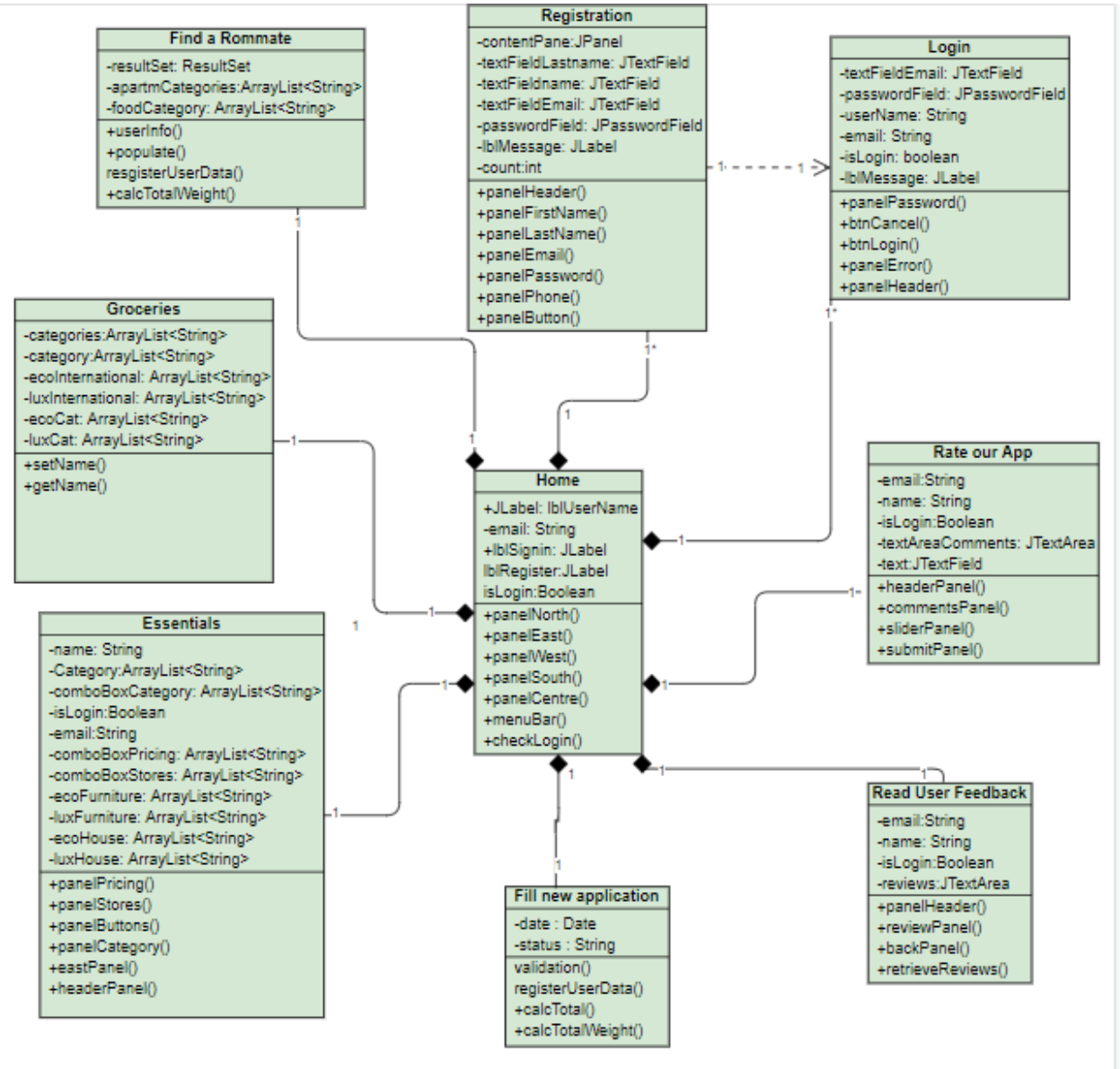

Figure 4. Class Diagram for OneStop Application

4.3.3. Activity Diagram

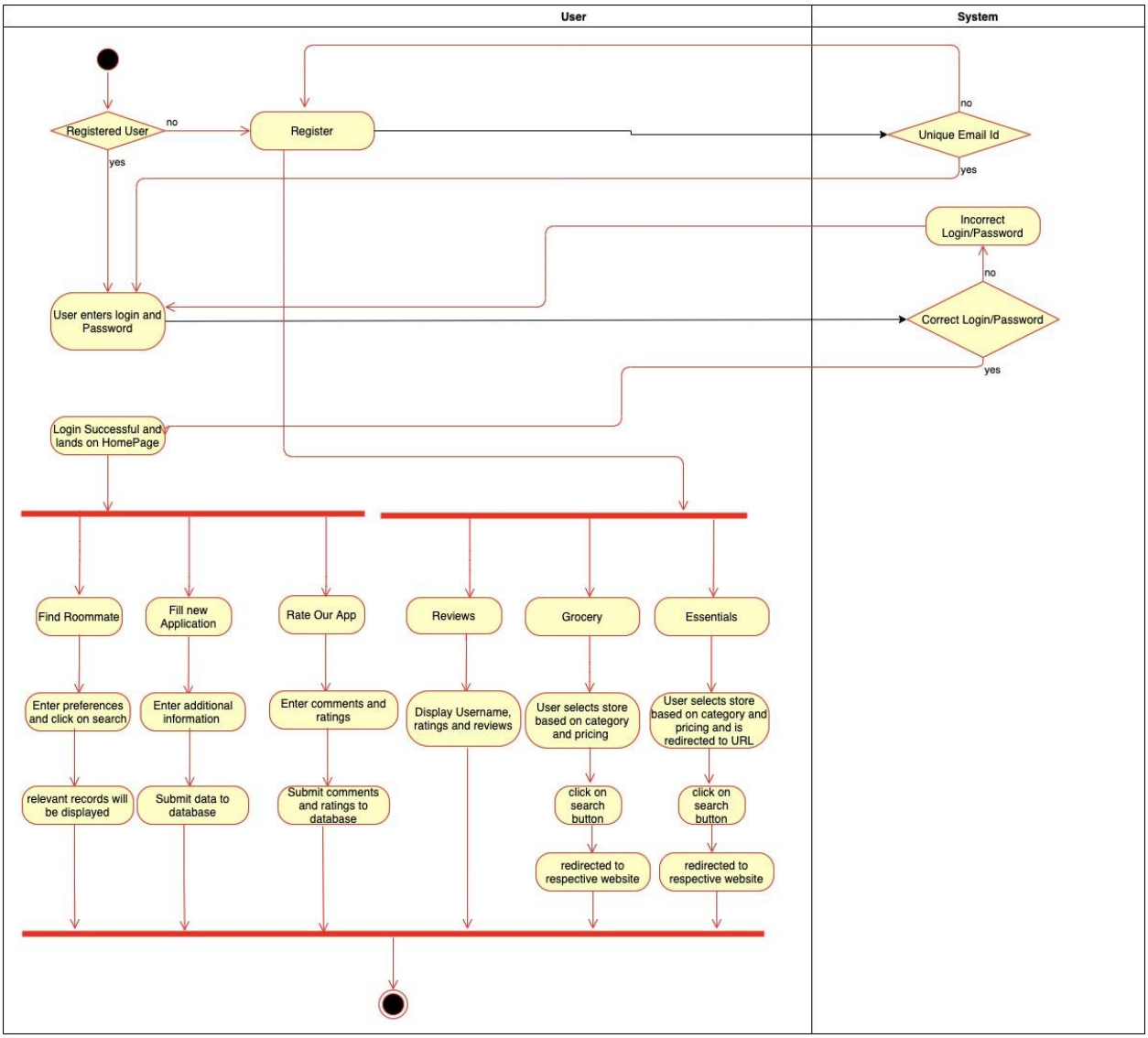

Figure 5. Activity Diagram for OneStop Application

5. Implementation Details

5.1. Features

This section provides in-depth technical details of the OneStop application.

5.1.1. Home Page

The home page is the main GUI presented where user can navigate through different menu options in the OneStop application. The GUI is implemented using the BorderLayout listed under java.awt library.

- In the north region, JPanel component is added which is again a BorderLayout.
    - The header information is the center region of this border layout and is printed using a JLabel component.
    - The east region has the JLabel defined for sign-in and register. When this JLabel is clicked, a mouseClicked event redirects to the login / register page.
    - The west region has JLabel that displays the username on successful sign-in.
- The gif images are added in the east and west regions to enhance user experience.
- The south region has a JPanel of type GridLayout to display the contact information.
- The center region has a menu bar which lists all the modules like Housing, Groceries, Essentials, and Ratings.
    - The housing module has below two menu options – Fine Roommate and New Application, added using JMenuItem when clicked triggers a mouseClicked event. This will block any user access if not signed in and re-directs to the sign-in

page. If already signed in, the user is re-directed to the respective page.

- If the user clicks Groceries, and Essentials JMenuItem, again a mouseClicked event re-directs to the respective page.
- The ratings module is like housing module and has two menu options – Rate our App and Reviews. However, the user login is necessary only for providing feedback.

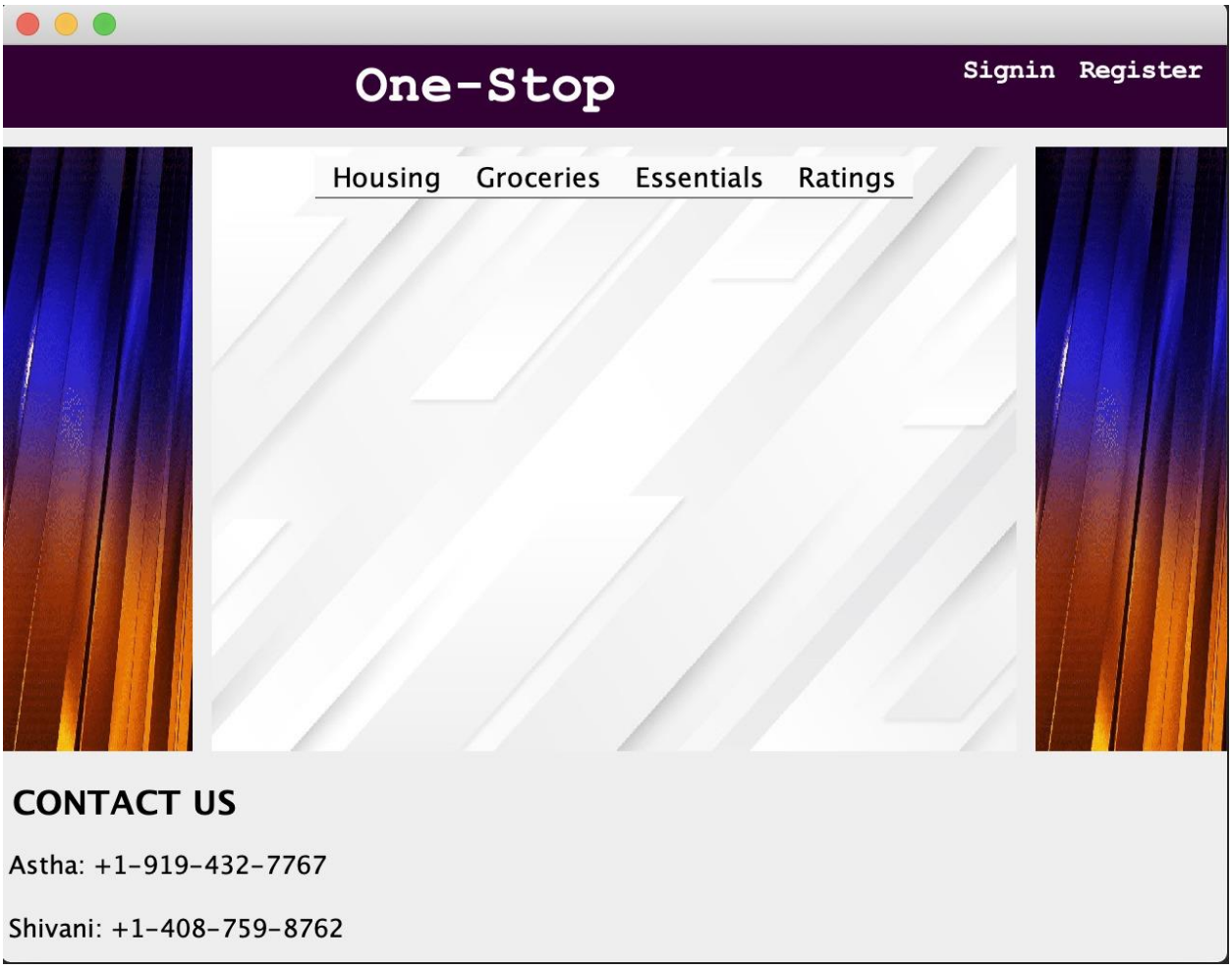

Figure 6 OneStop Home Page

5.1.2. Log-in

5.1.2.1. Sign-In Window

The sign-in module is implemented using a BorderLayout. The north region consists of a header represented using JLabel. Then the center region consists of JPanel which of GridLayout of dimensions 4 x 2. The first row has JTextField to enter the email ID, and the password can be entered in JTextField in the second row. Third row consists of two buttons – Home and Login. Clicking on Login triggers a mouseClicked event which performs different checks such as text box empty, registered email, and correctness of password. If the checks resolve successfully, the application re-directs to the home page. The last row consists of JPanel which has a BorderLayout. The west side of this BorderLayout has a JLabel to print any error messages. The east side as JLabel for sign-up which re-directs to register page upon clicking.

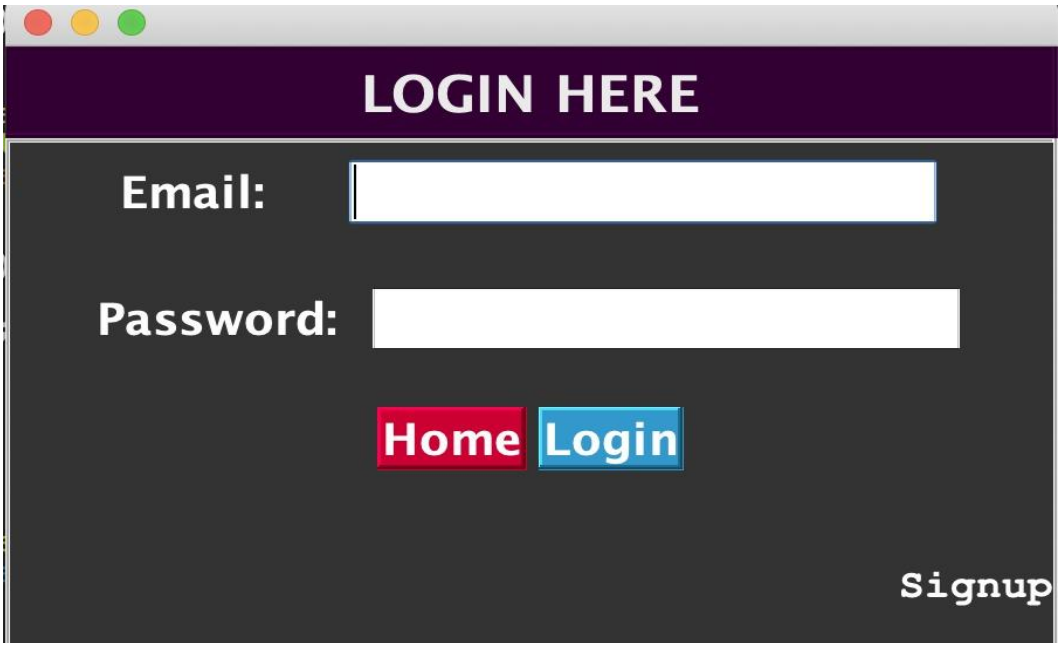

Figure 7 Sign-In Page

5.1.2.2. Register Window

The register module is implemented using a BorderLayout. The north region consists of a header represented using JLabel. The center region has seven panels – First Name, Last Name, Email ID, Password, Phone Number, Home and Register buttons, and for displaying error messages. All the panels except for buttons and error messages, a JTextField is provided to accept user input. When the user enters an email id, an ActionListener event is triggered that can query the Oracle Database and check if the email already exists. If so, an error is returned to the register window. If all the details entered by the user are correct, a successful message is printed upon clicking the register button.

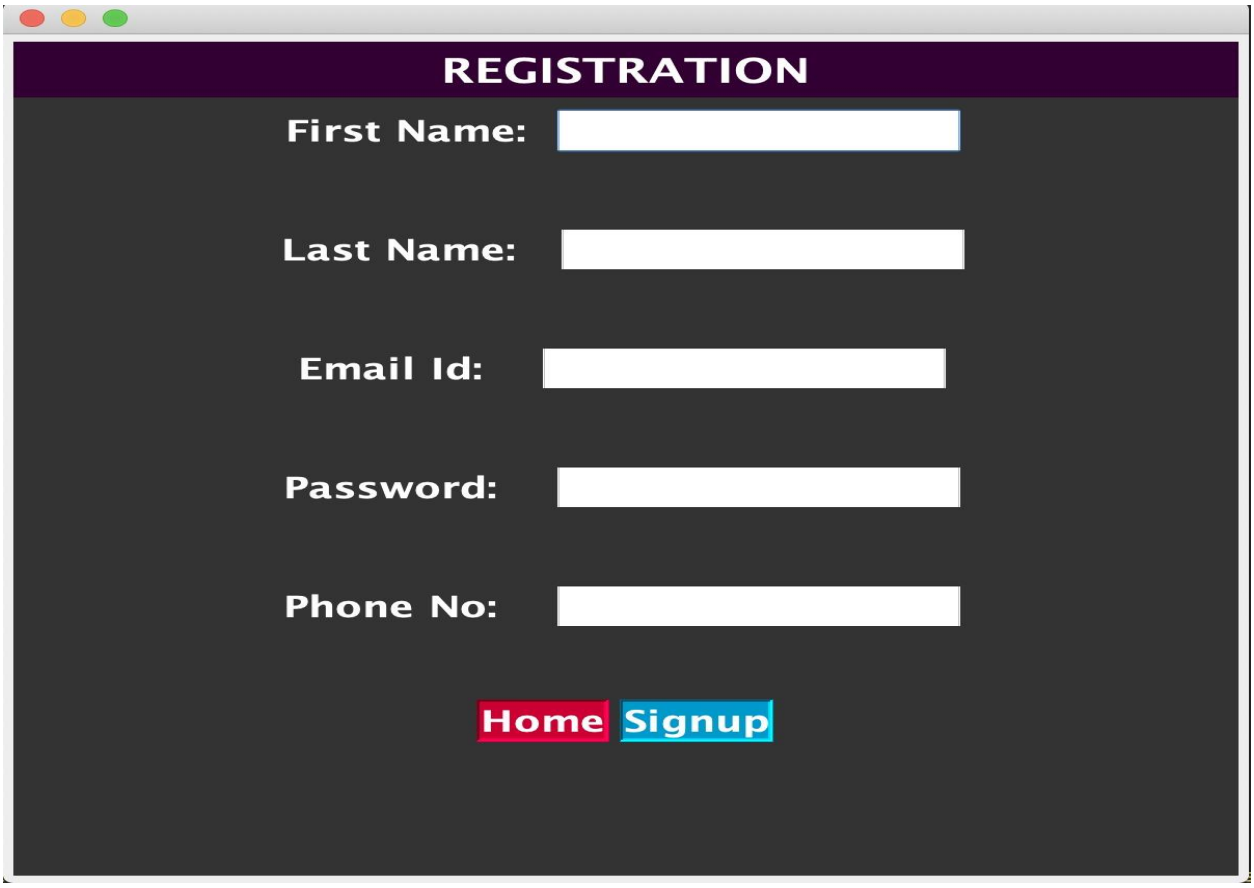

Figure 8 Registration GUI

5.1.3. Groceries

The user can look for Groceries near Santa Clara University based on different criteria. Example-

- Type of Grocery- Asian, International, Indian
- Budget- Luxury or Affordable
- Stores- It gives a variety of options to choose from

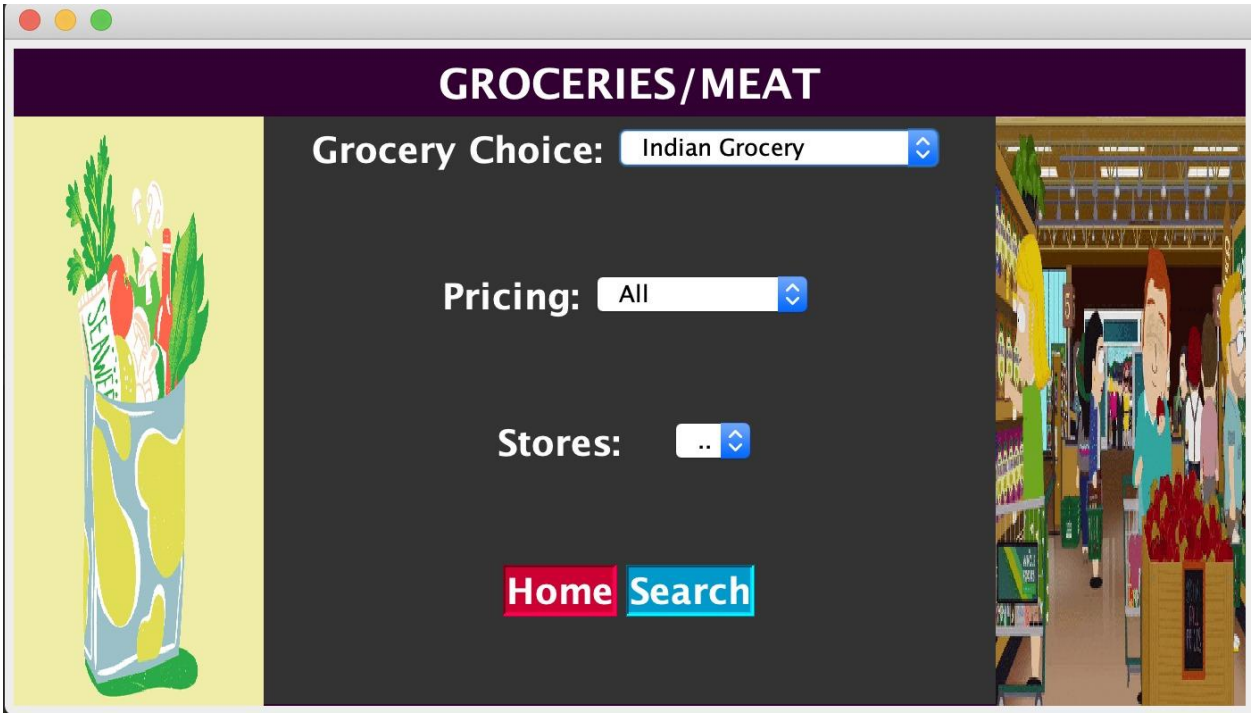

Figure 9. Groceries Page

5.1.4. Essentials

Essentials module is also implemented using a BorderLayout. The north region has the header information. The East and West region has gif images which is added to improve user experience. The center region has four panels as listed below.

- **Category Panel:** It has a JComboBox housing two ArrayList items called Furniture and Kitchen essentials.

- **Pricing Panel:** It has a JComboBox housing three ArrayList items called “All”, “Luxury”, and “Economical”.
- **Stores Panel:** It has JComboBox consists of ArrayList items determined using Category and Pricing combination.
- **Search and Home Button:** Clicking on the search button triggers a mouseClicked event which re-directs to the URLs embedded the application based on the store selected. Whereas clicking on Home button re-directs to the Home Page.

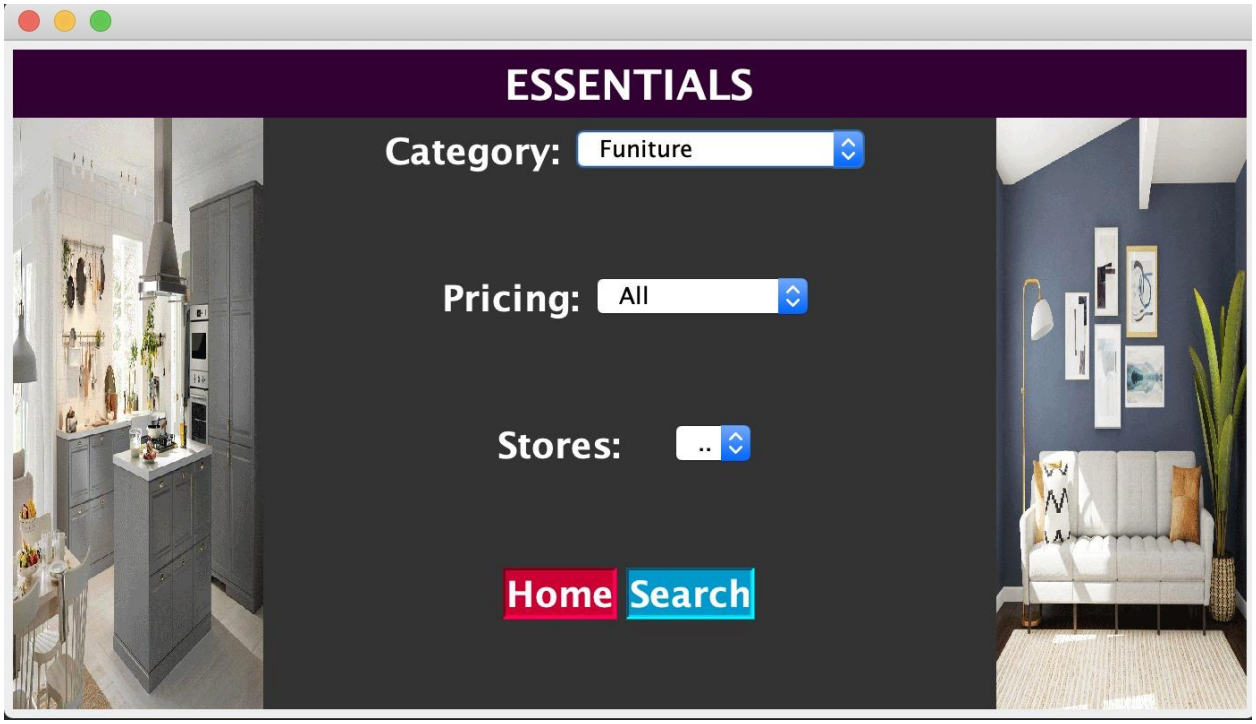

Figure 10 Essentials Page

5.1.5. Ratings

5.1.5.1. Rate Our App

Ratings module has a grid layout of dimension 4 x 1. The first row has a header which displays the header information represented using a JLabel. The second row consists of a JTextArea to capture the user comments which is enclosed within a JScrollPane. The third

row has JSlider to select the rating from 1 to 5. The last row has Home and Submit buttons. The submit button if clicked, stores the record in the Oracle Database using JDBC. Clicking on Home button triggers a mouseClicked event and re-directs to the Home page.

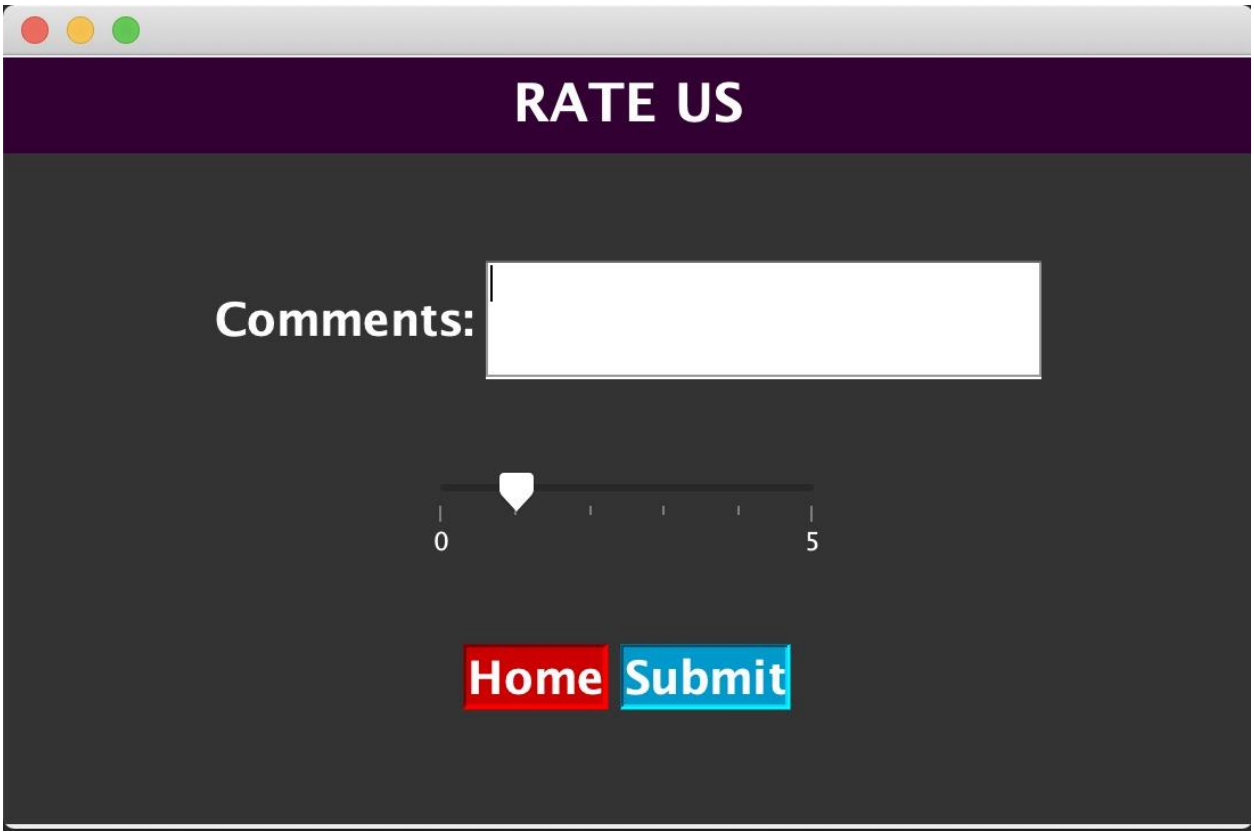

Figure 11 Rate Our App Page

5.1.5.2. Reviews

Reviews module is also implemented using a BorderLayout. The north region has the header information. The center region comprises of two panels – the first panel consists of JTextArea enclosed with JScrollPane to display username, ratings, and comments, and the second plan has a home button which returns to the home page.

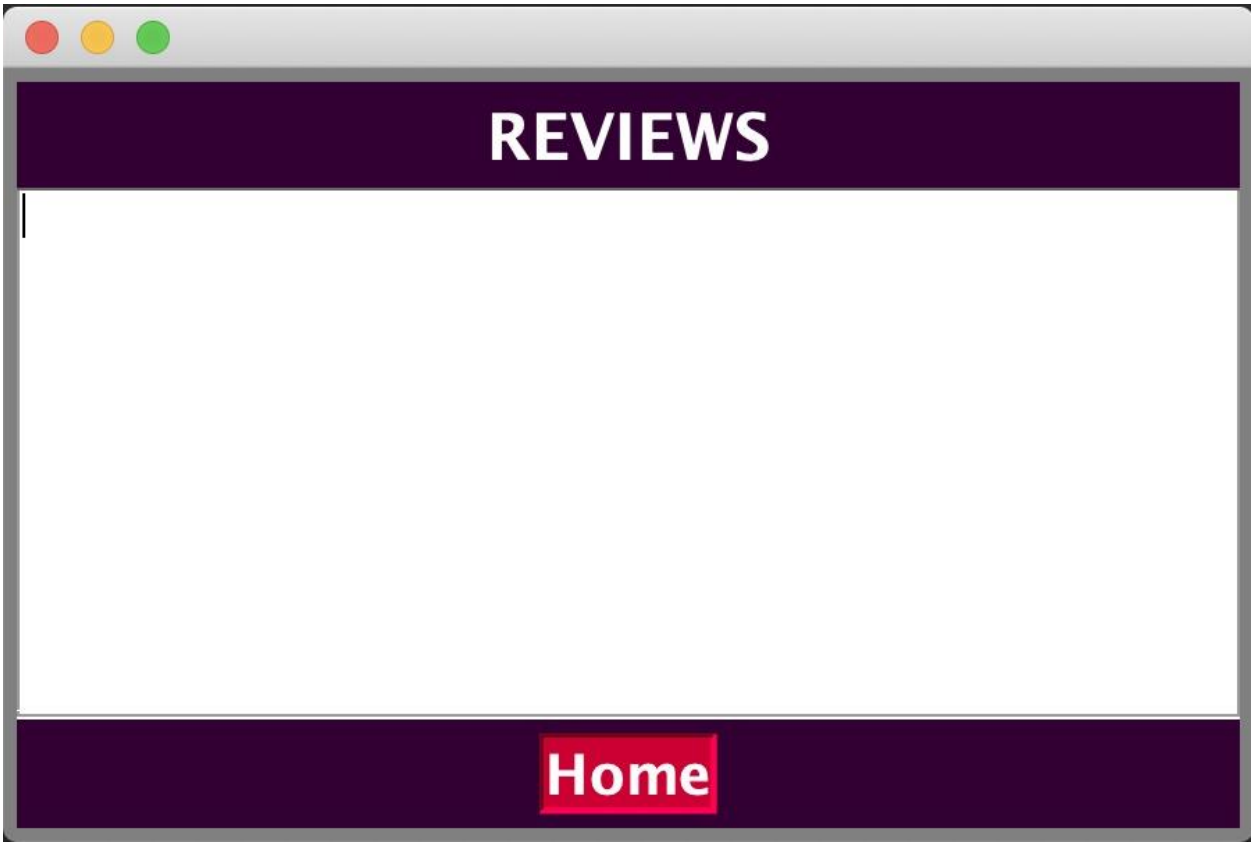

Figure 12. Reviews Page

5.1.6. Housing

5.1.6.1. Fill a new application

The application gives you the option to feed your details into the system, so that others can find you.
You can choose to enter your details like- your name, choice of roommate (Male/Female), choice of food (Veg/Non-Veg), apartment type(2BR/3BR) etc.

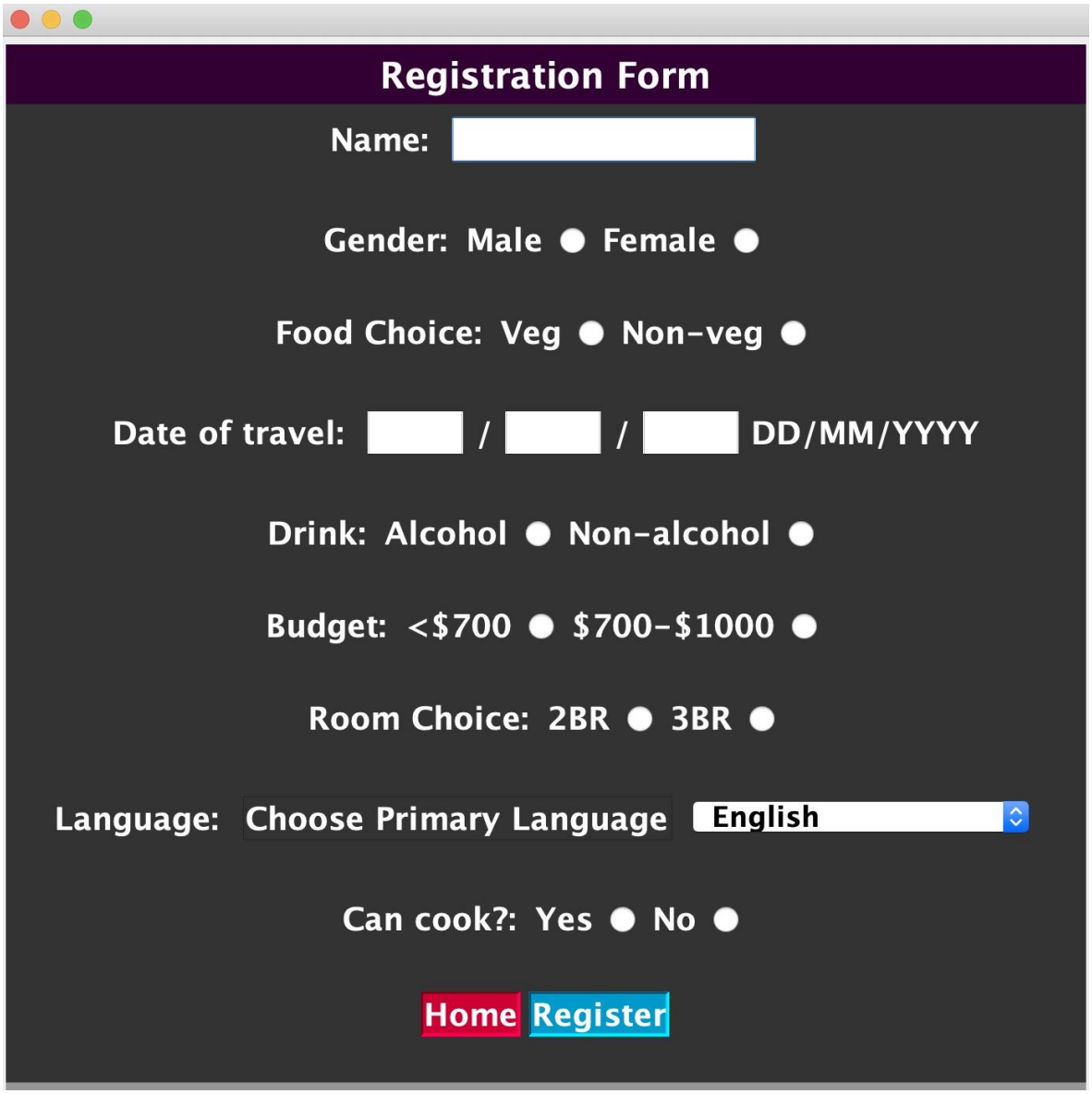

Figure 13. Housing - Fill an Application

5.1.6.2. Search for a Roommate

If a user wishes to search for a roommate based on criteria such as Food Preference, apartment preference etc. he/she can do it use it using the below module.
It helps to filter out the options and give a suitable result choice.

Figure 14. Find a Roommate query window

5.2. Technologies Used

Purpose	Technology
GUI	Java Swing
Application	Java
Database	Oracle DB

5.3. Libraries Used

5.3.1. Swing Library

- Swing in Java is a Graphical User Interface (GUI) toolkit that includes the GUI components.
- Swing provides a rich set of widgets and packages to make sophisticated GUI components for Java applications.

5.3.2. Collections

- The Collection in Java is a framework that provides an architecture to store and manipulate the group of objects

- The collection framework has been across multiple modules like Groceries, Furniture Stores, etc. in the form of ArrayList.

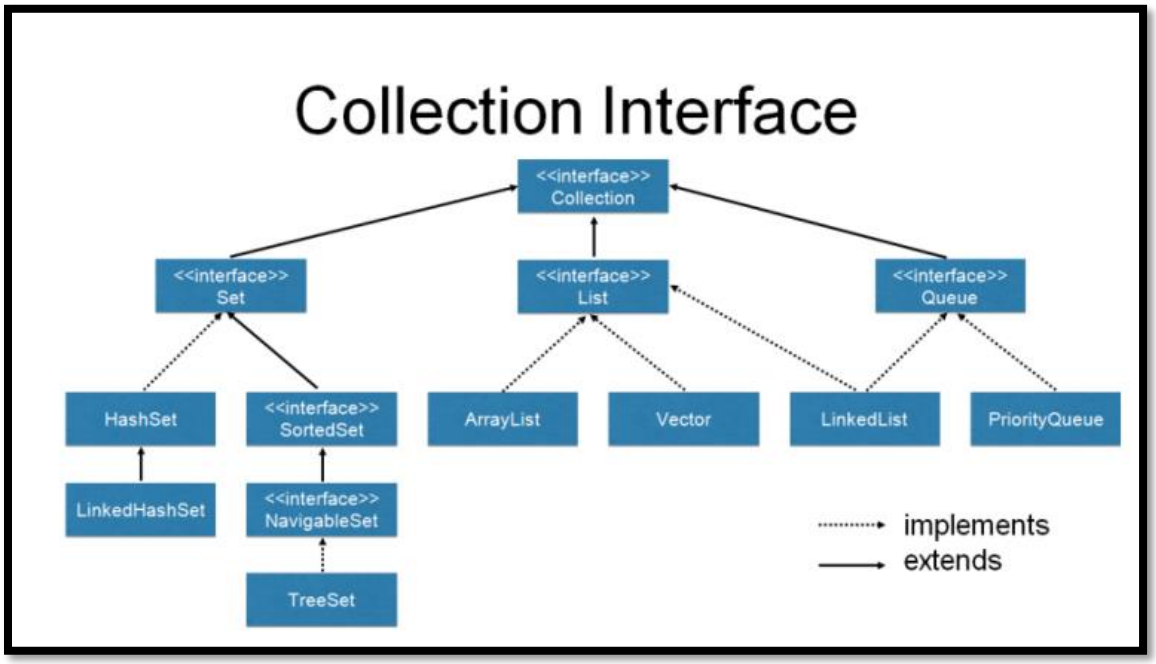

Figure 15. Collections Interface

5.4. Database and Connectivity

Java Database Connectivity (JDBC) is an application programming interface (API) for the programming language Java, which defines how a client may access a database. It is part of the Java Standard Edition platform, from Oracle Corporation

- The database used in building the application is **Oracle MySQL Developer**.
- JDBC stands for Java Database Connectivity, which is a standard Java API for database-independent connectivity between the Java programming language and databases.

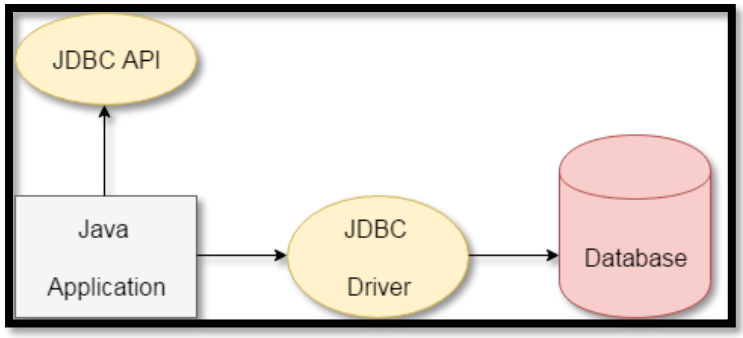

Figure 16. Java Database Connectivity

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	NAME	VARCHAR2(255 BYTE)	Yes	(null)	1	(null)
2	GENDER	VARCHAR2(255 BYTE)	Yes	(null)	2	(null)
3	FOOD	VARCHAR2(255 BYTE)	Yes	(null)	3	(null)
4	DOJ	VARCHAR2(255 BYTE)	Yes	(null)	4	(null)
5	DRINK	VARCHAR2(255 BYTE)	Yes	(null)	5	(null)
6	BUDGET	VARCHAR2(255 BYTE)	Yes	(null)	6	(null)
7	ROOM	VARCHAR2(255 BYTE)	Yes	(null)	7	(null)
8	LANGG	VARCHAR2(255 BYTE)	Yes	(null)	8	(null)
9	COOK	VARCHAR2(255 BYTE)	Yes	(null)	9	(null)
10	LANGGINDEX	VARCHAR2(255 BYTE)	Yes	(null)	10	(null)

Figure 17 Database

Queries:

INSERT INTO User_Details
(Name,Gender,food,doj,drink,budget,room,langg,cook,langgIndex)
VALUES('"+name+"','"+gender+"','"+food+"','"+dojj+"','"+drink+"','"+budget+"'
,'"+room+"','"+langg+"','"+cook+"',"+index+

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	FIRSTNAME	VARCHAR2(100 BYTE)	Yes	(null)	1	(null)
2	LASTNAME	VARCHAR2(100 BYTE)	Yes	(null)	2	(null)
3	EMAIL	VARCHAR2(100 BYTE)	No	(null)	3	(null)
4	PASSWORDID	VARCHAR2(100 BYTE)	Yes	(null)	4	(null)
5	PHONENO	NUMBER(38,0)	Yes	(null)	5	(null)
6	COMMENTS	VARCHAR2(500 BYTE)	Yes	(null)	6	(null)
7	RATINGS	NUMBER(38,0)	Yes	(null)	7	(null)

Figure 18 Database for Registration entries

Queries:

INSERT INTO
REGISTER(FIRSTNAME,LASTNAME,EMAIL,PASSWORDID,PHONENO) VALUES (?,?,?,?,?);

insert into REGISTER values (" + FirstName + "," + LastName + "," + Email + "," + PasswordID + "," + PhoneNo + ");

Few queries used to retrieve data from the above table:

SELECT * FROM REGISTER WHERE EMAIL=?

SELECT * FROM REGISTER WHERE EMAIL=? and PASSWORDID=?

UPDATE REGISTER SET COMMENTS=?,RATINGS=? WHERE EMAIL=?

SELECT * FROM REGISTER WHERE COMMENTS IS NOT NULL

select * from User_Details where Gender='Male' AND room= '2BR' AND food='Veg'

select * from User_Details where Gender='Male' AND room= '2BR' AND food='Non-Veg'

select * from User_Details where Gender='Male' AND room= '3BR' AND food='Veg'

select * from User_Details where Gender='Male' AND room= '3BR' AND food='Non-Veg'

select * from User_Details where Gender='Male' AND room= '3BR' AND food='Non-Veg'

select * from User_Details where Gender='Female' AND room= '2BR' AND food='Non-Veg'

select * from User_Details where Gender='Female' AND room= '3BR' AND food='Veg'

select * from User_Details where Gender='Female' AND room= '3BR' AND food='Non-Veg'

SELECT * FROM REGISTER WHERE COMMENTS IS NOT NULL

5.5. Special features:

It is a unique idea which has not been implemented yet and no app available in the market offers these special features.

The websites which are available online that helps you find an apartment do not allow the user to search for a roommate or nearby stores all in one place. The idea behind building this application was to ease the life of students who will be travelling to the country for the first time.

The application is built keeping in mind not just the incoming students from a single country, but from across the world.

The application is user-friendly and very easy to use.

6. Results

6.1. Login Module

If a user enters an email id that already exists, then the application displays an error message as show in the below figure.

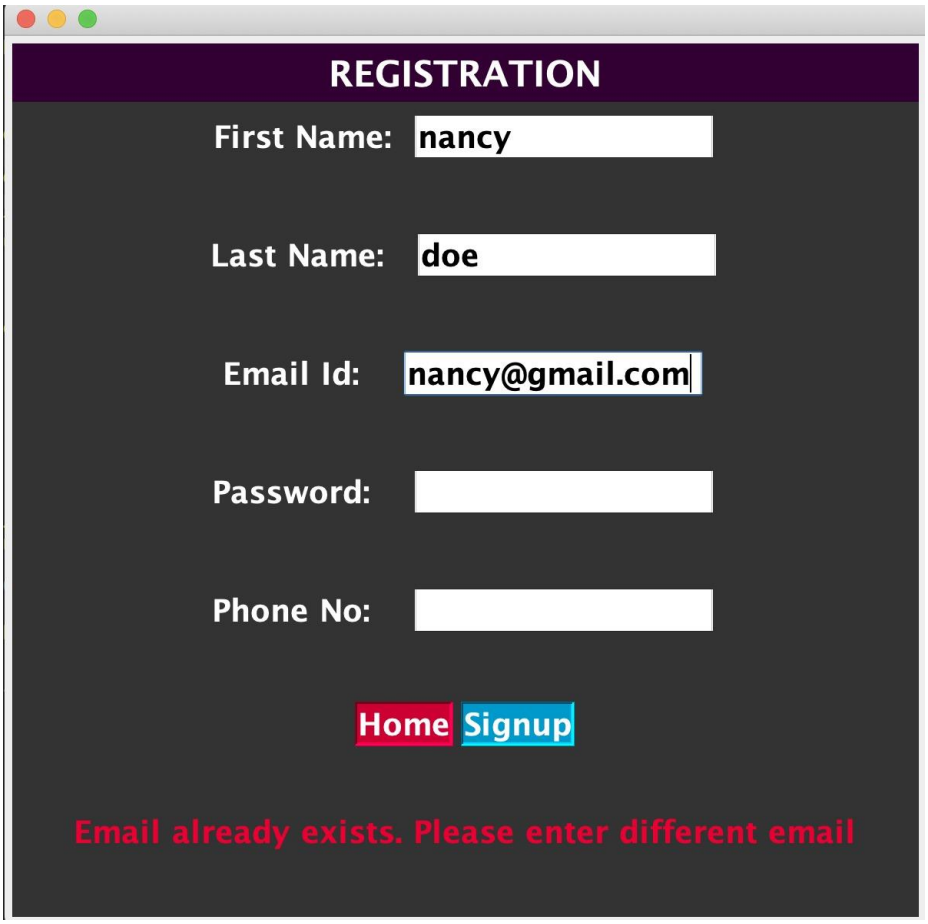

Figure 19. Duplicate Email error during registration

If all the details provided by the user is correct, then the record is updated in the backend database, and the application displays a successful registration message.

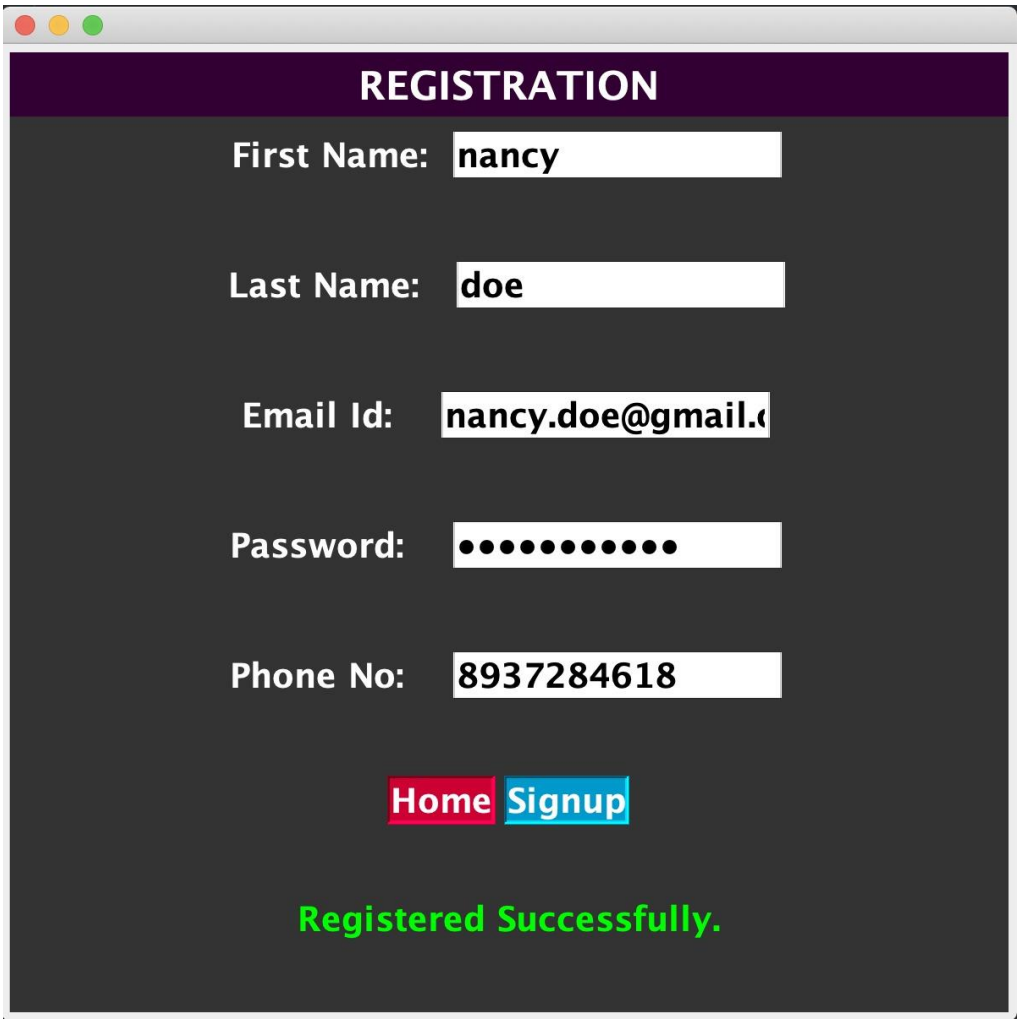

Figure 20. Successful registration

A returning user can use the sign-in option to log in to their profile. If the email or password is incorrect, a suitable error message is displayed as shown in the below screen shots.

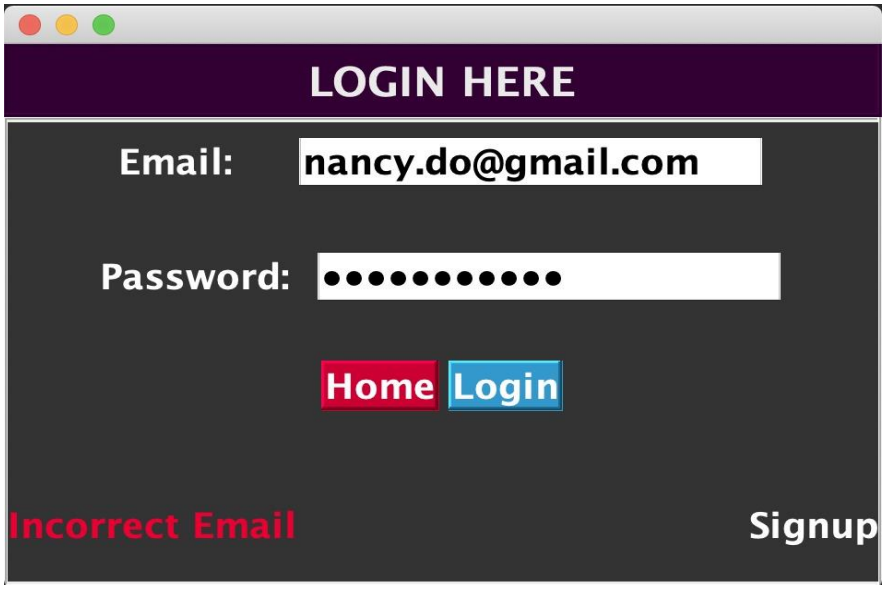

Figure 21 Errors during Sign-in - Incorrect Email

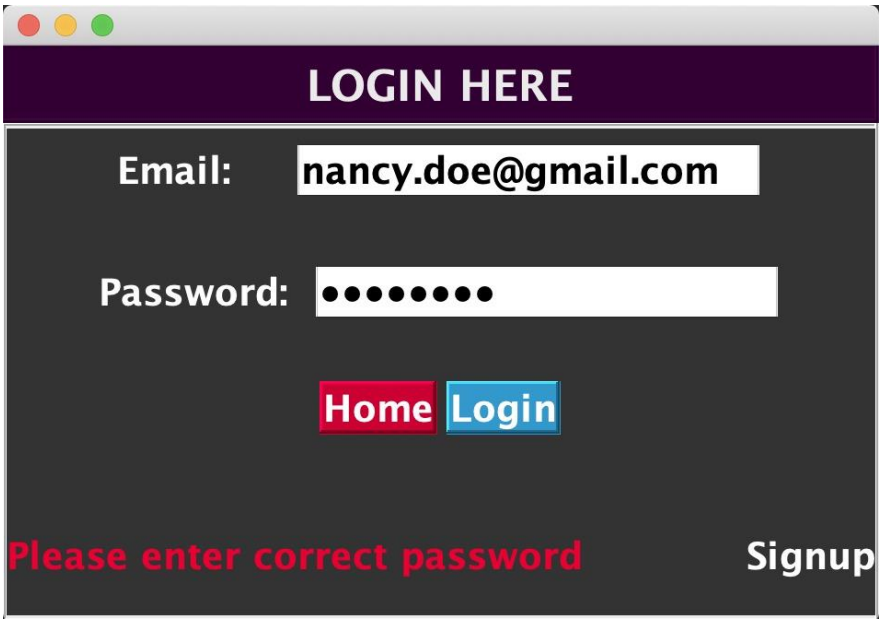

Figure 22 Errors during Sign-in - Incorrect Password

If the entered credentials are correct, then log-in successful message is displayed. Once the user clicks on ok button, the application re-directs to the home page.

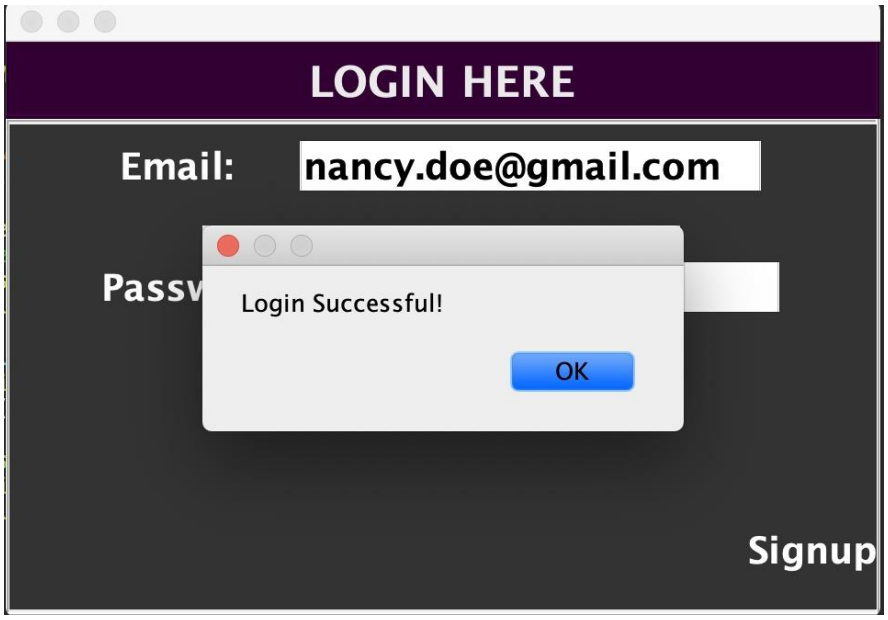

Figure 23. Successful Sign-in - Message Dialogue Box

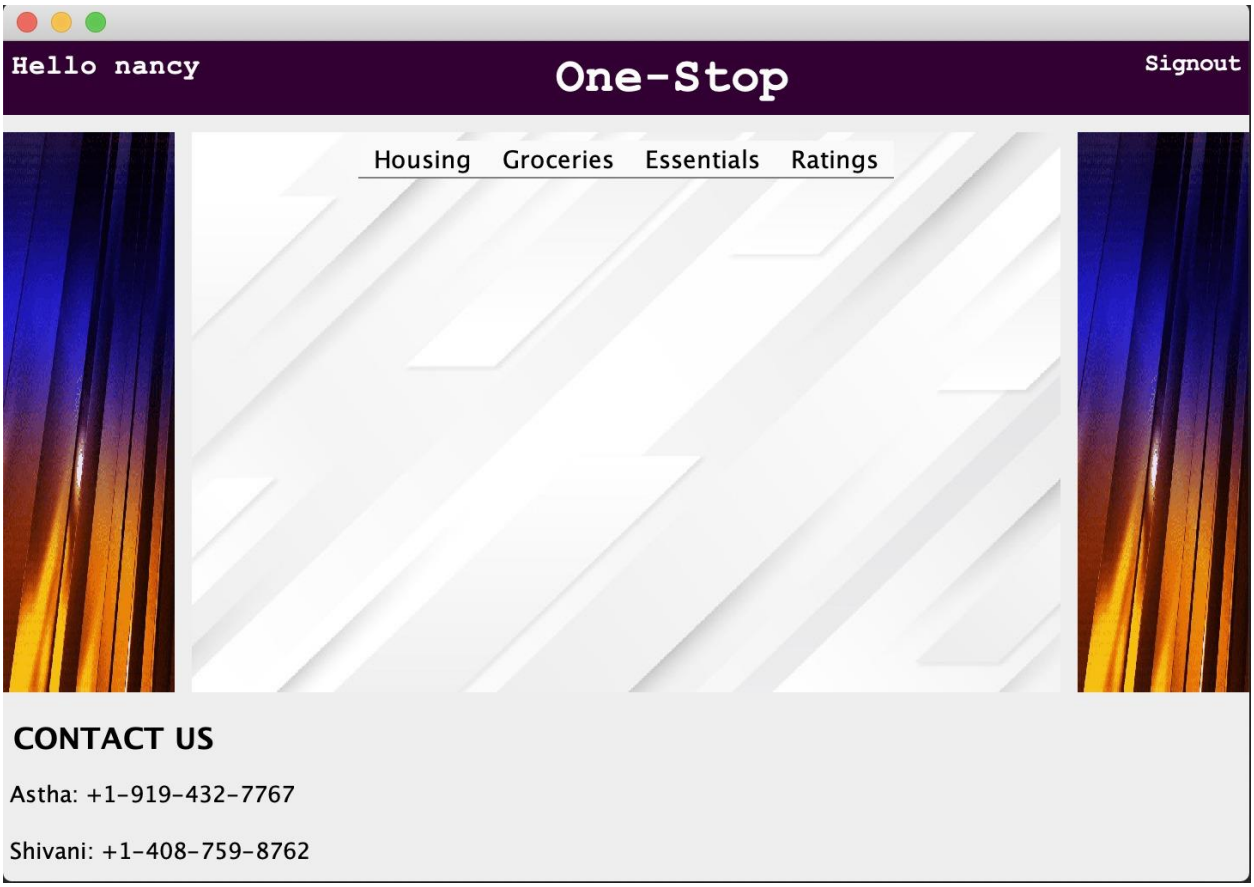

Figure 24. Successful Sign-in: Redirection to Home Page

6.2. Groceries Module

If the user clicks on the Grocery button, the application re-directs to the grocery page as shown below. The user can then use the drop down and choose the preferred choice, pricing, and the store. Once the user clicks on search, the application opens the URL of the store's home page.

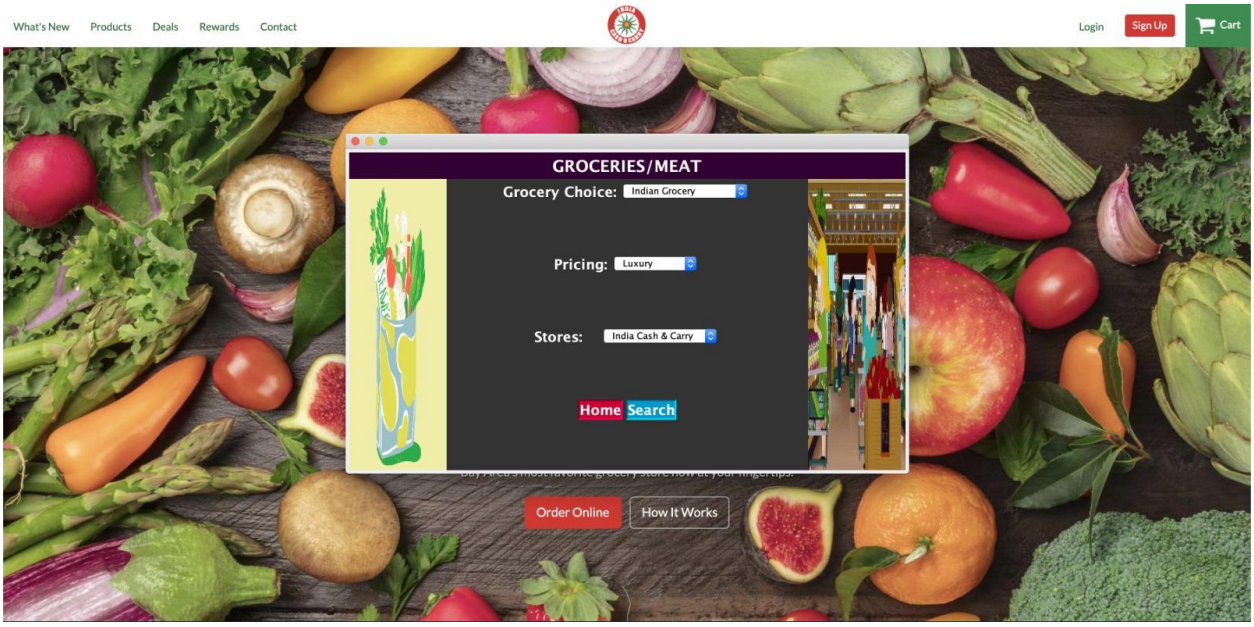

Figure 25 Grocery Module – Filter setting, Search and URL re-direction

6.3. Essentials Module

If the user clicks on the essentials button, the application re-directs to the essential page. Upon clicking on the search button after entering category, pricing, and store information, the application re-directs to the store home page.

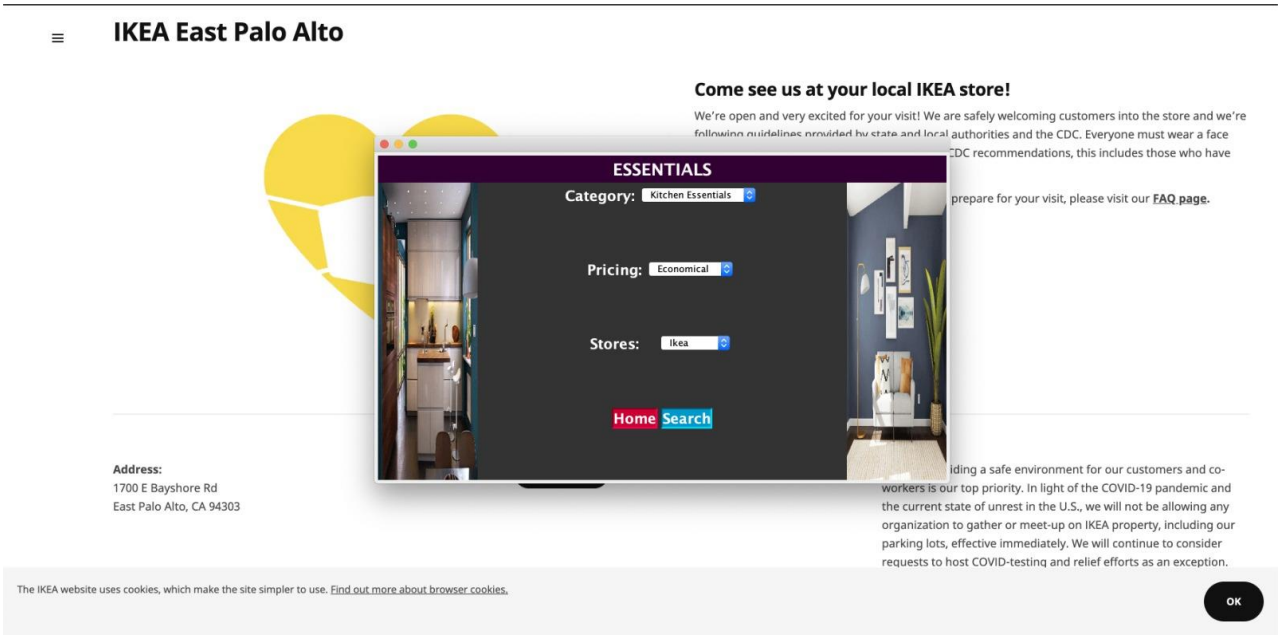

Figure 26. Essentials Module - Filter Setting, Search and URL Re-direction

6.4. Ratings Module

If the user clicks on the rate our app option drop-down in the ratings module, the application presents a text box to enter the comments, and a slider to provide rating points. The record is saved in the database and the application returns a thank you message.

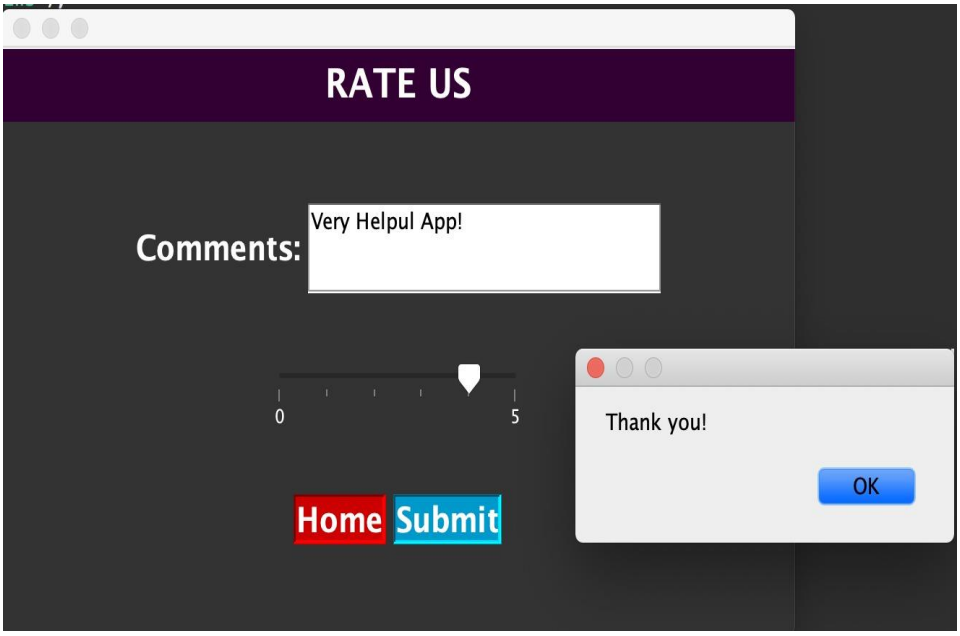

Figure 27. Ratings Module - Rate Our App

If the user wants to check feedback from other users, they can use the reviews button in the drop down. The application will pull this information from the database and display it as shown in the below snapshot.

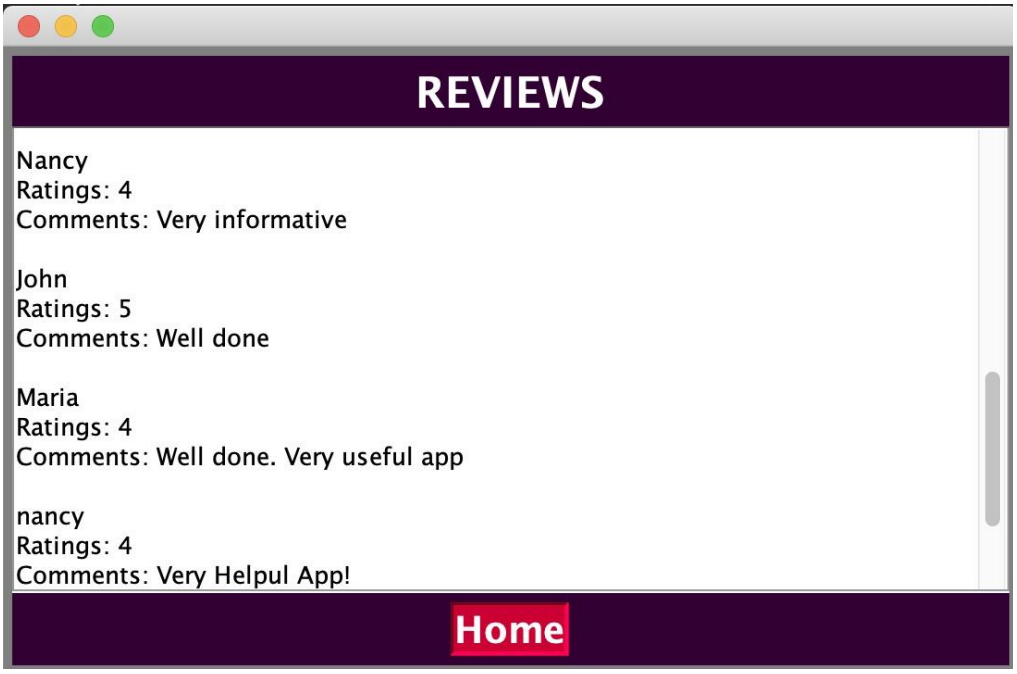

Figure 28. Ratings Module – Reviews

6.5. Housing Module

If the user tries to access the housing module without logging in, the access is denied with an error message as can be seen in the figure 29. Once logged in, the user is now able to use the two options from the drop-down in the housing module. A user looking for a roommate can fill an application giving their personal details and the record gets stored in the database, as shown in figure 30. If another user wants to search for a roommate, they can click on the "Find A Roommate" drop down from the menu. Once clicked, the user can set their filter as shown in figure 31. Upon clicking the search button, the application returns the database query results as shown in figure 32.

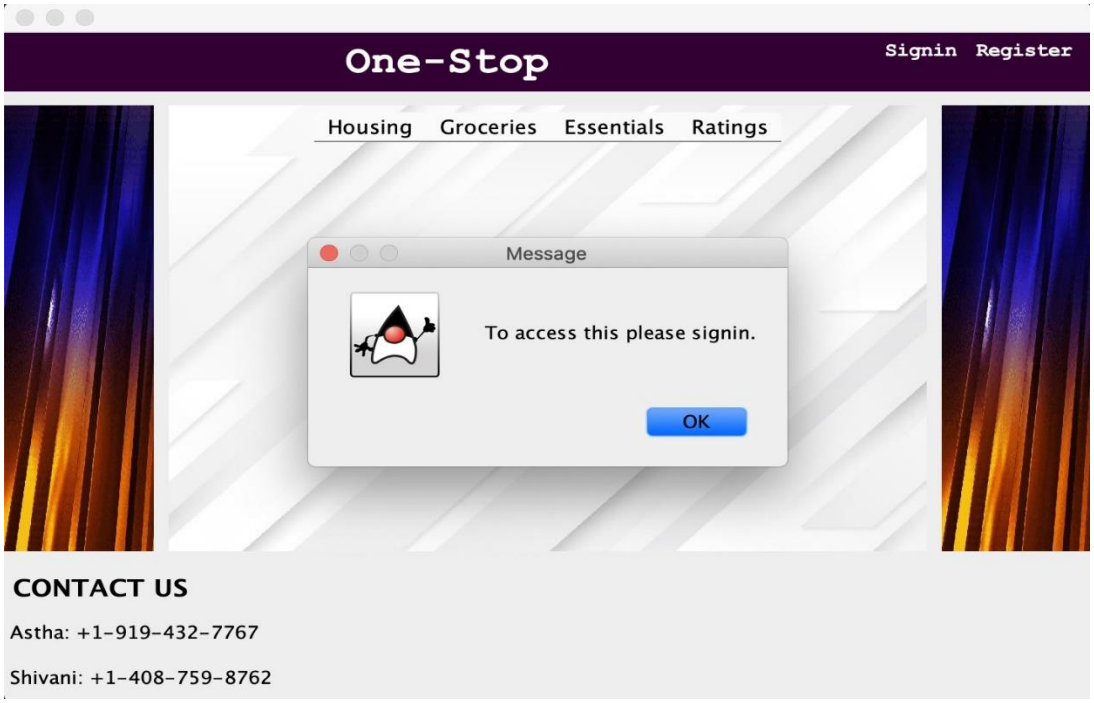

Figure 29. Housing - Accessing without logging in

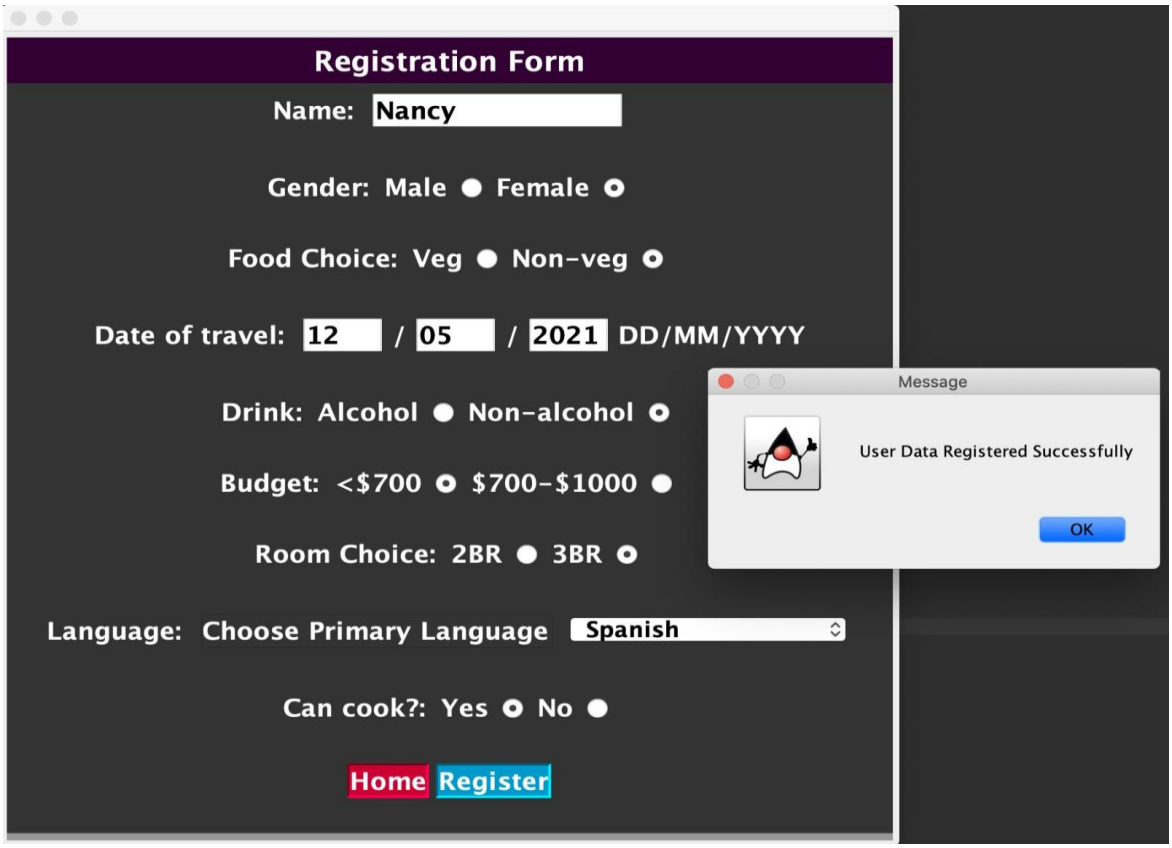

Figure 30. Housing - Fill an application

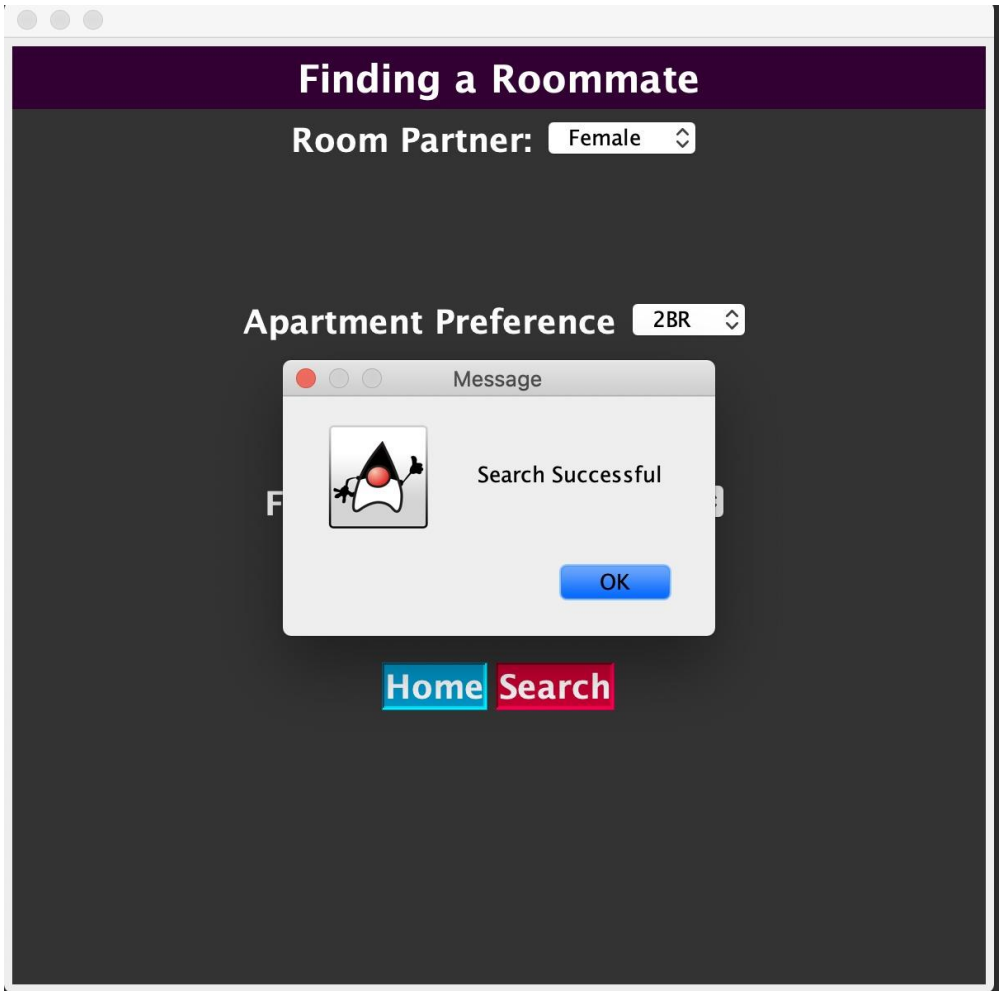

Figure 31. Housing - Successful Search

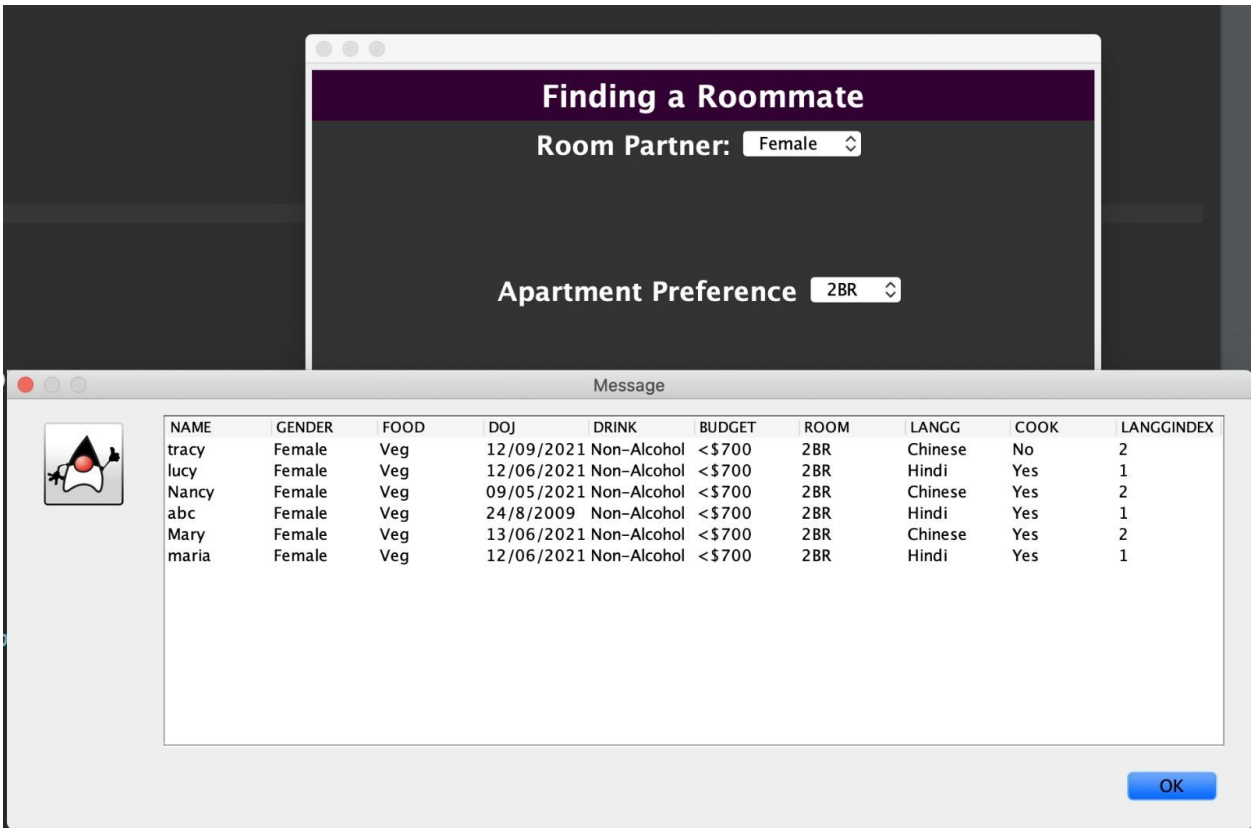

Figure 32. Housing - Search Results

7. Conclusion

OneStop application can prove to be useful to any international students arriving to the United States. Some of the troubles of getting accustomed in the early days in a new country are addressed through this application.

From academic learning perspective, this project provides us with a good hands-on experience with Java and its utilities. It also reinforced and extended the concepts taught in the class. During the different stages of the project, we were able to effectively develop use case models once the project requirement was defined. UML and activity diagrams made the implementation seamless. Overall, developing an application using Java Collection classes, Swing API, JDBC in building an object-oriented application enhanced the learning experience.

7.1. Future Scope

The first version of this application has many features. At the same time, there is scope to extend the application and add many other features such as travel options around the campus, alumni network, marketplace etc. The application can also made available to be downloaded on to mobile phone or available in the form of web application. The application can be made exclusive based on the scu.edu email id.