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College of Computer Science & Information Technology

Chalet

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Chalet Android Application

Declaration

We hereby declare that this project report entitled “Chalet Android Application” is based on our original work except for citations and quotations, which have been duly acknowledged. We also declare that it has not been previously or concurrently submitted for the fulfillment of any course. This project has been undertaken in order to complete the course project for Mobile Applications Programming course in Imam Abdulrahman Bin Faisal University.

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1. Problem Statement

People like to spend their holidays with friends and families in places where they feel relaxed and comfortable like a resort known as chalet in Arabic. The problem is that it is time consuming to look for a resort that is suitable for them. The chalet application can solve this problem. This app serves two purposes. It can be used by both the customers looking for a resort or for resort owners who wants to rent their resort. Customers can view resorts in detail to know about the full details about the resort that they are going to reserve like, number of rooms, bathrooms etc. and availability of features like swimming pools, play area etc. in that resort. Resort owners can add their resort through the application by providing all the details.

Through this application, two types of problem will be solved. The first problem solved is for those people who wants to get away from their hectic life can quickly open this app and book a resort by sitting in their comfort zone and can plan for the trip in advance. The second one is for those owners looking frantically for customers. They can add their resort to the application and be anywhere while earning money each time a customer rents his/her resort.

2. Introduction

Leisure is often described as a quality of experience or just as something people do in their free time. It can be anything from reading a book to spending holidays in a different country. Different people have different tastes in the way they like to spend their leisure time. Across all parts of the UK, men spend around an average of six hours and nine minutes every day and women spend around five hours and twenty-nine minutes per day [1]. Therefore, it is true to the point that people spend most of their time doing leisure activities.

One of the main leisure activities is to book resorts and spend time in a different country or in a different place where people can get away from the stress of life. There are many applications and websites that provide the service of booking resorts in different places all over the world. One of the best website out there is the famous Booking.com through which travelers can book resorts. There are also countless number of applications that provide the same functionality like HotelTonight, Starwood, Travelocity, HotelQuickly and many more [2].

The main problem is that there are no great applications or websites that can provide travelers or normal people with the facility of booking good resorts in Saudi Arabia. Therefore, this project aims at developing an android application that can provide people with great resorts that they can book in any part of Saudi Arabia.

3. Project Scope

The project scope defines the work to be done. It also defines the boundaries of the project. It will include the project goals, deliverables and project limitations.

3.1. Project Goals and Objectives

The project's objectives are:

- To make it easy for any person to find a chalet (i.e. resort) inside KSA for leisure.
- To make it easy for a chalet owner to post his/her chalet in the application inside KSA.
- Ensure a good application usability by making it easy for the users to use the application through simple and clean interfaces.

3.2. Project Deliverables

The project deliverables are:

- Deliverable #1 – Milestone #1
- Deliverable #2 – Final Report
- Source code for the application
- Project presentation

3.3. Limitations/Restrictions

The main limitations of the project are:

- Due to the tightly scheduled semester, implementing payment methods is not possible as time is very short for it.
- The project is limited to and only applicable in Saudi Arabia or GCC countries because the way people spend time in resorts is different compared to the rest of the world.

4. Success Factors and Benefits

Success factors are:

- The success of the project will be measured by how much the end users are satisfied with the Android application.
- Meeting the project objectives will also determine the success of this project.
- The project should be delivered within the agreed time.
- The application should work as intended, providing chalet information to those who wants to spend their leisure time.
- The application should have well designed interfaces to simplify navigation and to find information easily.
- A well-functioning and happy development team should be maintained throughout the project.

Benefits are:

- A user can only access the information about chalets if he/she has a registered account using email ID and password.
- The application provides all the information needed about a chalet in one place. For example, the location, price, services and even the number of rooms etc. are mentioned so that the user gets the complete picture of the chalet in advance.
- It provides owners of chalet with a platform through which they can share and make money wherever they are.

5. Why an Android App?

Android is a mobile operating system developed by Google. It is one of the most popular operating systems for mobile phones out there. In 2017, Android accounted for more than 80 percent of all smartphone sales to end users worldwide [x]. It is expected to increase to 85% by the end of 2020 [x]. Therefore, developing applications for Android phones will gain more audience and the application will be able to serve more number of people due to its popularity.

Moreover, the development tools for developing Android applications are freely available compared to that of iOS or any other mobile operating system. This is also a major factor in choosing Android as the development platform for our application. Development kits are freely available on the internet and the documentation for creating applications are unnumbered.

6. Project Details Step-by-step Including Relevant Diagrams

This subsection contains the details of each component's structure, behavior or information/control flow. This is shown by activity diagrams for each component to document the internal structure of the application. At the beginning, we will depict the system's use-case that will give an idea about the application's functionalities.

6.1. Use Case Diagram

The advantage of use case diagrams is to summarize the interaction and possible actions between the users and chalet application. The use case is shown below in Figure 1.

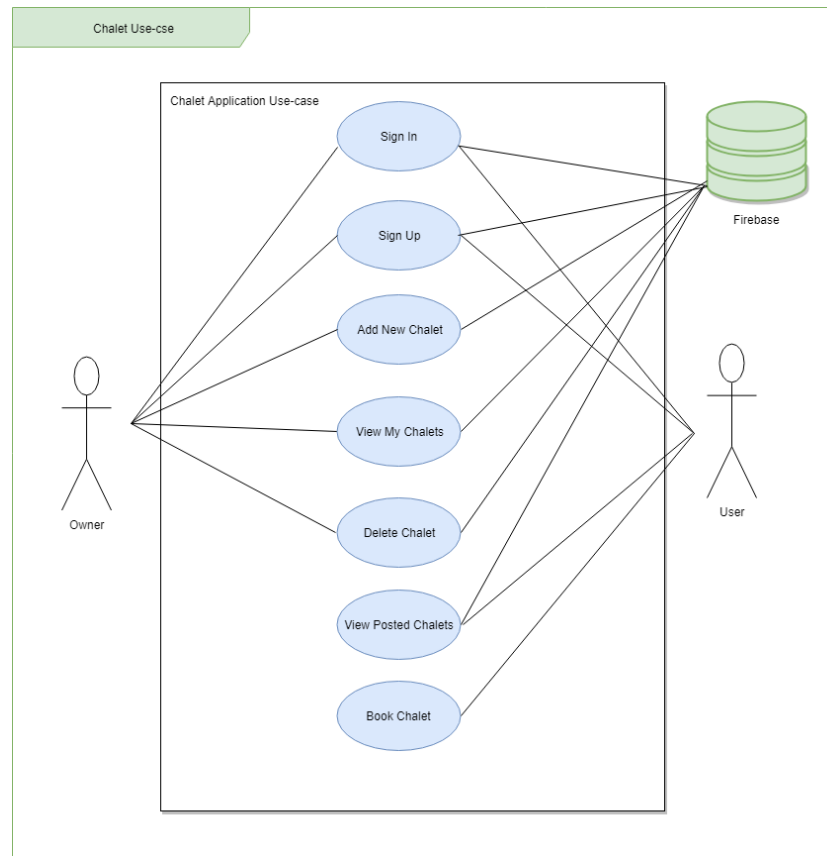


Figure 1: Use Case Diagram

6.2. Activity Diagrams

The following activity diagram shown in Figure 2 represents the “Login” functionality.

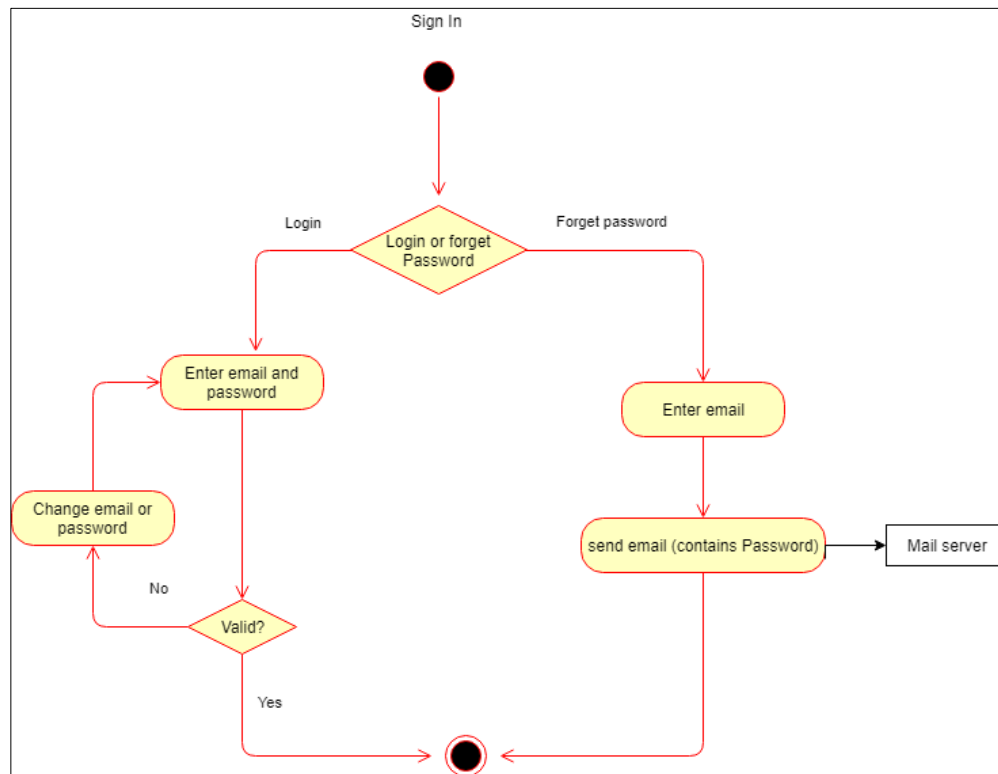


Figure 2: Login Activity Diagram

The following activity diagram shown in Figure 2 represents the “Register” functionality.

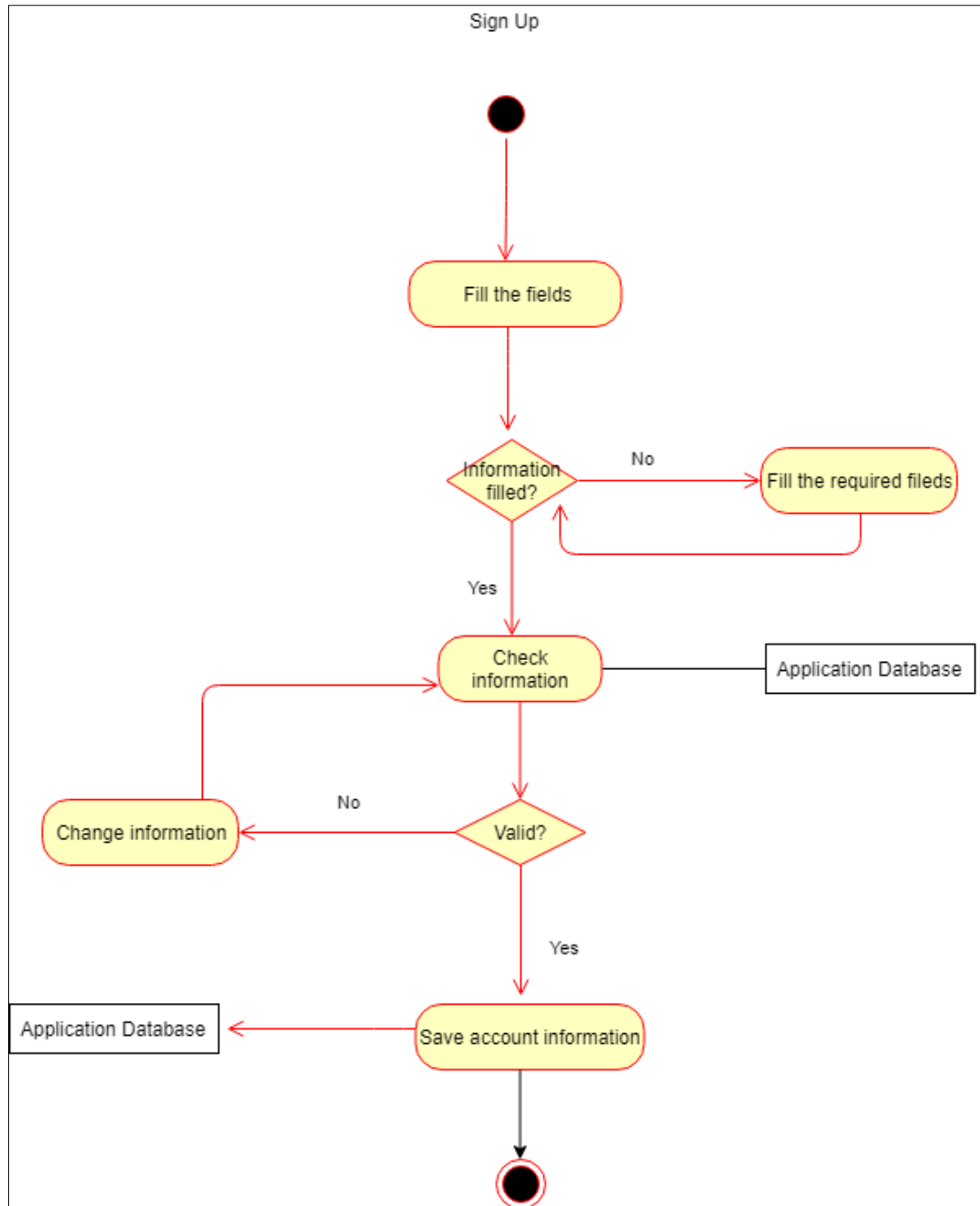


Figure 3: Register Activity Diagram

The following activity diagram shown in Figure 2 represents the “Chalet information” functionality.

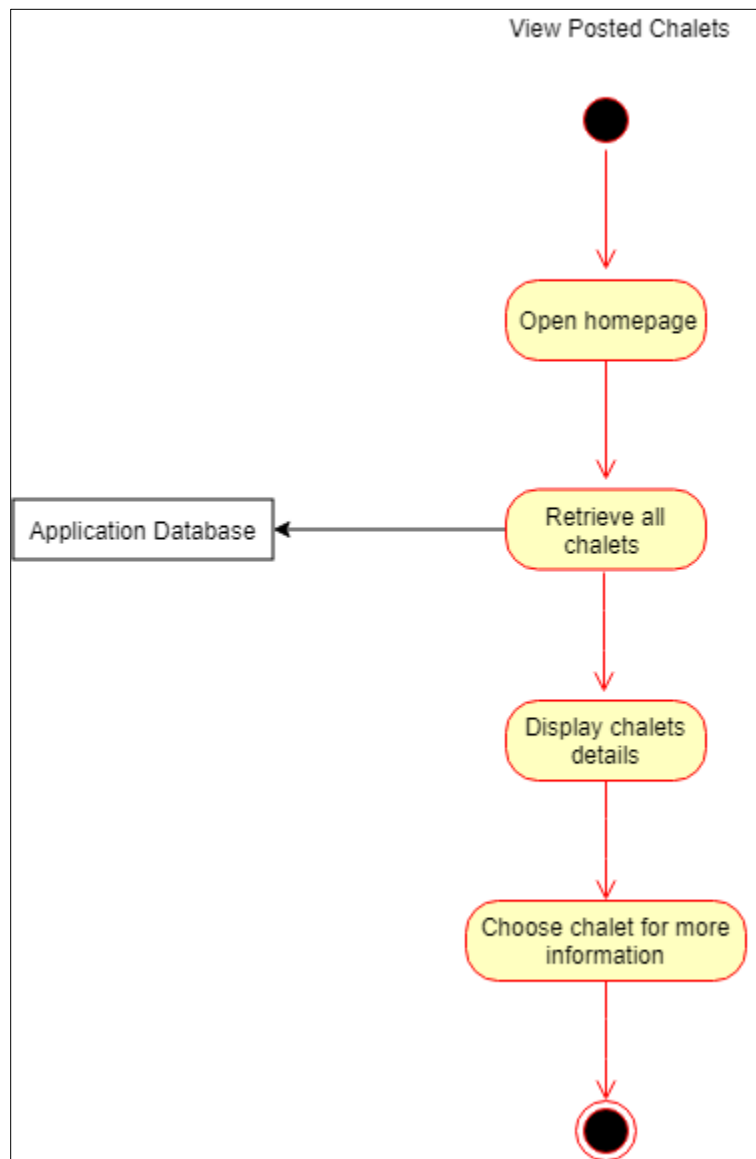


Figure 4: Chalet Information Activity Diagram

The following activity diagram shown in Figure 2 represents the “Add chalet” functionality.

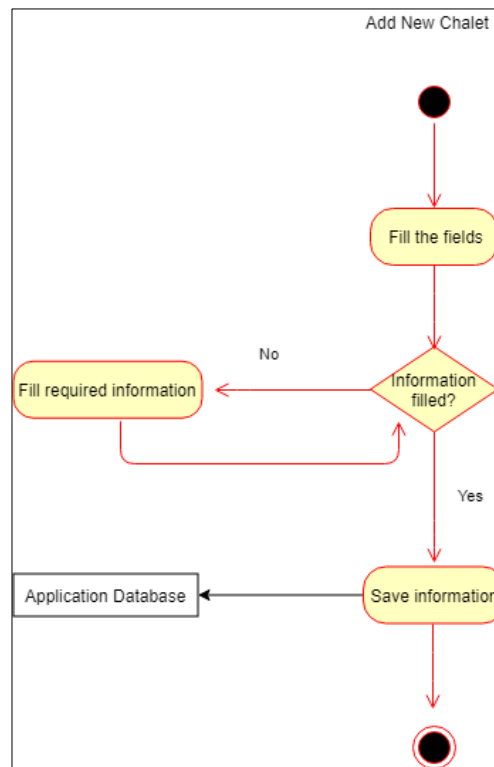


Figure 5: Add Chalet Activity Diagram

The following activity diagram shown in Figure 2 represents the “View my added chalets” functionality.

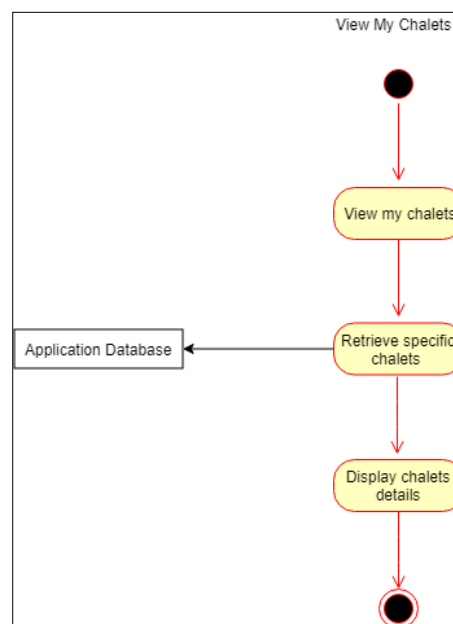


Figure 6: View My Chalets Activity Diagram

The following activity diagram shown in Figure 2 represents the “Delete chalet” functionality.

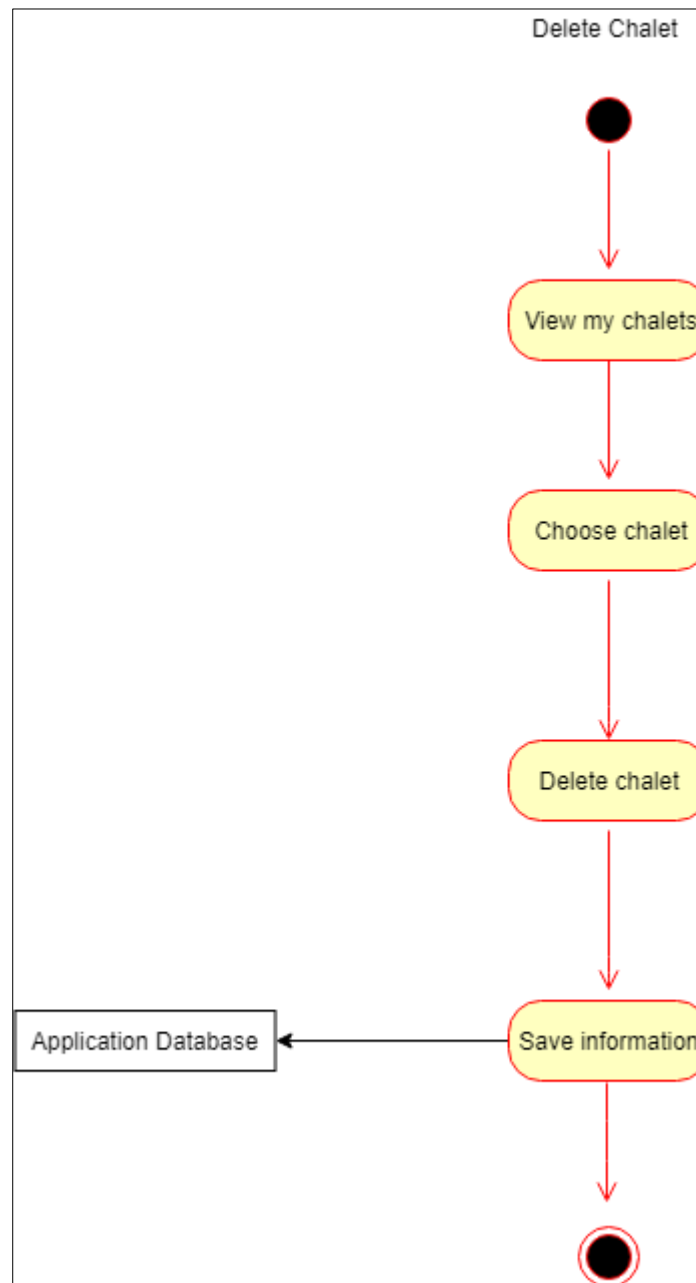


Figure 7: Delete Chalet Activity Diagram

The following activity diagram shown in Figure 2 represents the “Book a chalet” functionality.

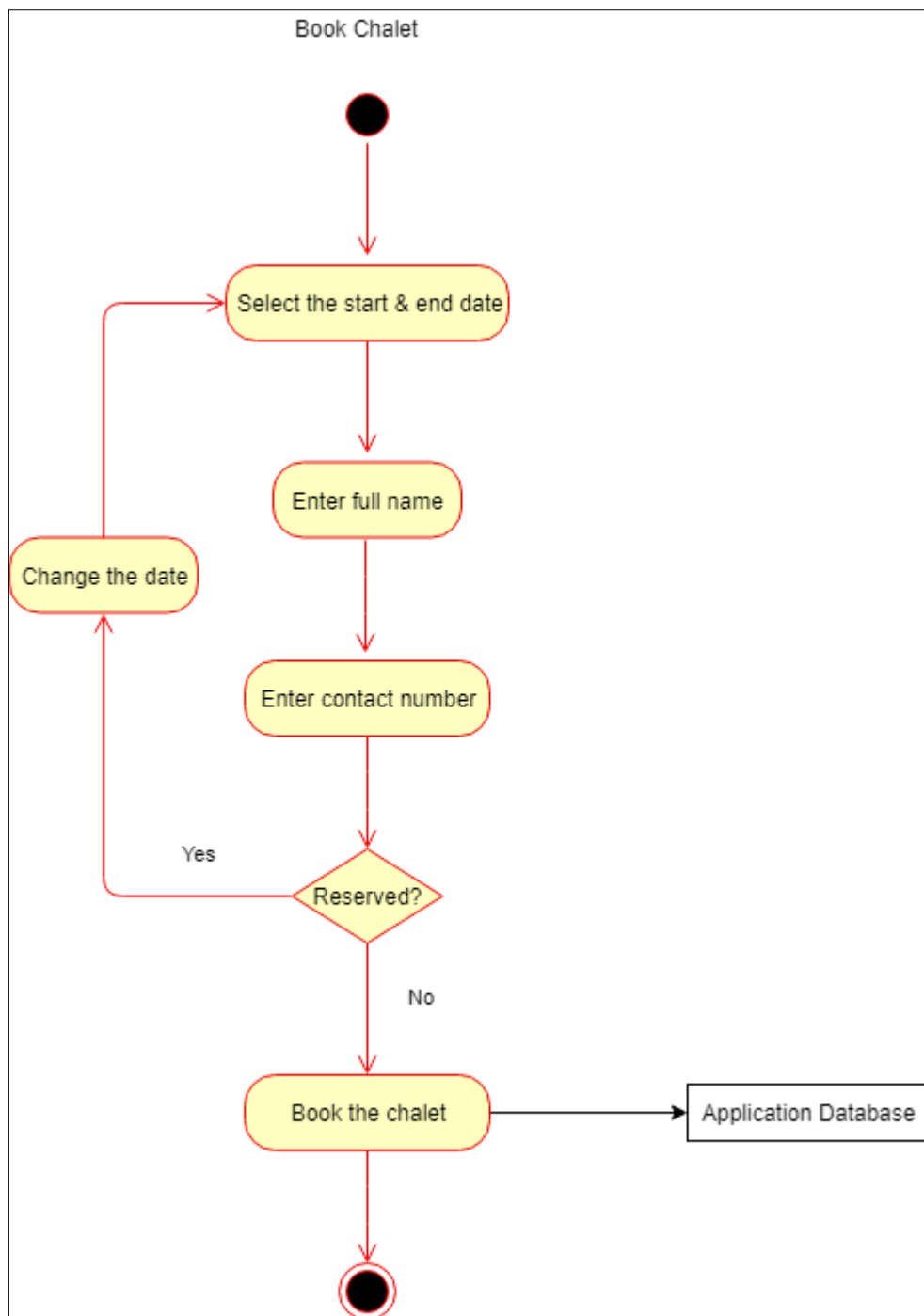


Figure 8: Book Chalet Activity Diagram

7. Project Details with Screenshots

This section depicts some of the screenshots of the Chalet application. The aim of this part is to show the application's interface and the work flow of the software. Below are the screen images and descriptions of each interface inside the Chalet app.

7.1. Splash Screen Interface

The splash screen is shown when the app is launched. It shows the logo of the application and a progress bar that shows the percentage of the app loaded. The splash interface is shown below in Figure 2.

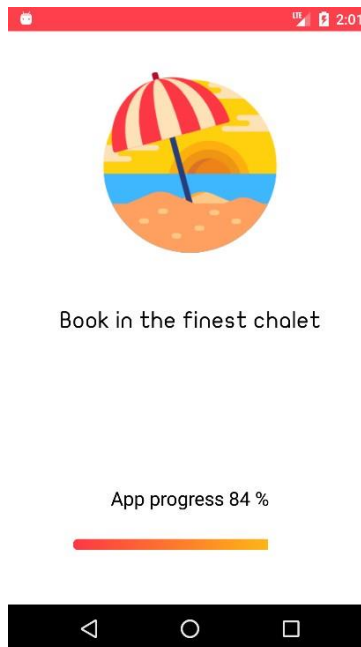


Figure 9: Splash Interface

7.2. Intro Interface

Users will see the intro page after the splash screen loads completely. The main advantage of this interface is to highlight the features that the app provides for its users. The intro page interface is shown below in Figure 3.

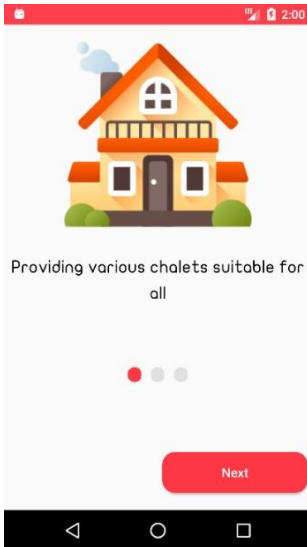


Figure 11: Intro Interface - I

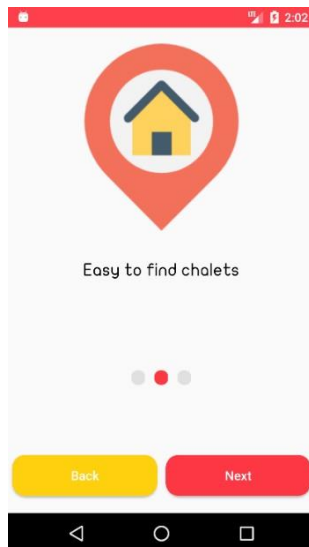


Figure 12: Intro Interface - II

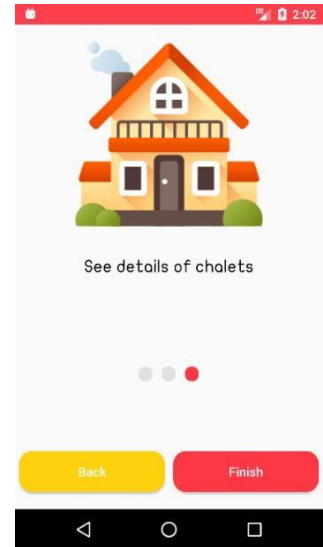


Figure 10: Intro Interface - III

7.3. Login and Register Interfaces

Users should be able to see the login interface when they want to add a resort or want to search for a resort. The login interface is shown below in Figure 4. If the user has an account already, he/she should enter his/her email and password to login. If the user doesn't have an account, he/she must click on sign up button to register. The user must enter his/her full name, phone, email and password. The sign-up interface is also shown below in Figure 5.

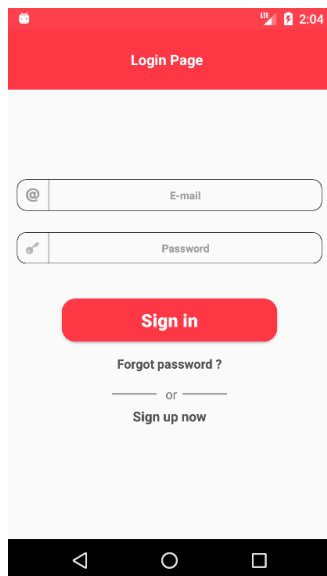


Figure 13: Login Interface

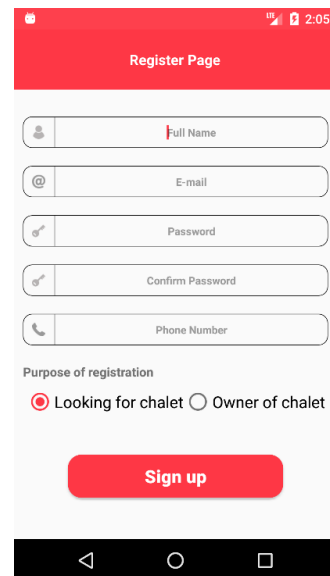


Figure 14: Signup Interface

7.4. Homepage Interface

Figure x shows the general homepage. It is the main interface of the app which displays the resorts and provides brief information about it. It also contains the navigation drawer, through which the users can access the other interfaces. Furthermore, if the user is searching for a resort he/she won't see the "Add Chalet" and "My Chalet" in the navigation drawer as it is of no use to them. The navigation drawer of a normal user is shown in Figure x. If he/she is the owner of a resort, then he/she can see the "Add Chalet" and "My Chalet" options in the navigation drawer as they have the permission to add a resort. The navigation drawer in an owners' homepage is shown below in Figure 6.

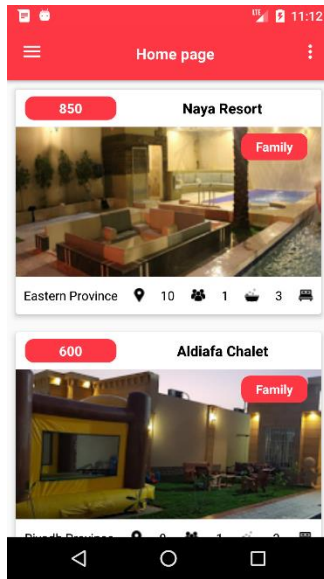


Figure 15: Homepage Interface

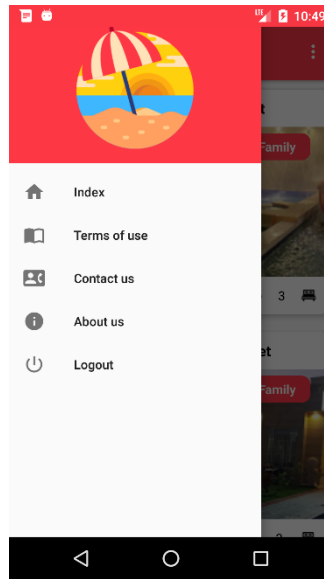


Figure 17: User Navigation Drawer

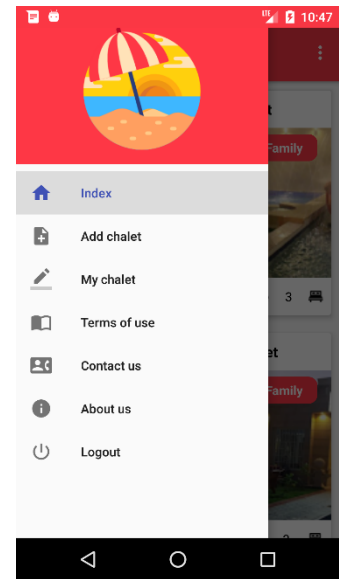


Figure 16: Owner Navigation Drawer

7.5. Chalet Information Interface

This feature is designed for the users who want to browse the chalets posted by the owners and to view the location, image, price, chalet type and more information about the chalet. It is opened when the user clicks on a chalet. The chalet information interface is shown in Figure 16.

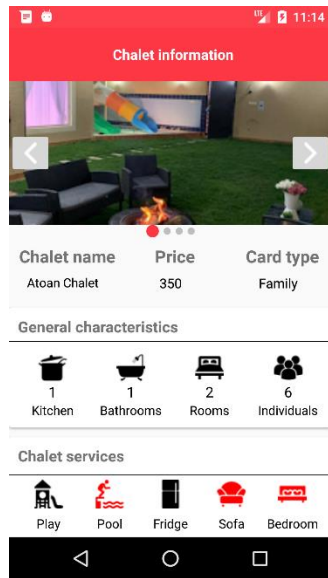


Figure 19: Chalet Info Interface - I

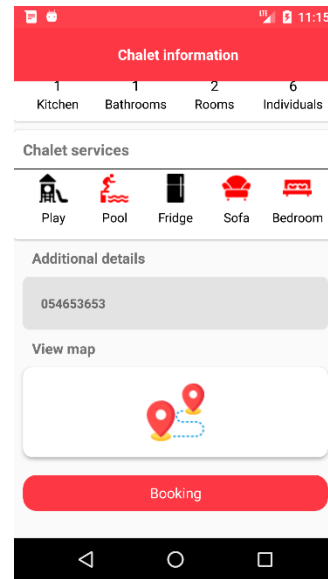


Figure 18: Chalet Info Interface - II

7.6. Book Chalet Interface

This interface comes after selecting one of the posted chalets that the user feels like is suitable for his/her requirements. It is used to reserve a chalet for the user. “Book Chalet” interface contains four fields; start and end dates, user’s full name and contact number. After filling those fields, the application will check if the specified time period is already reserved by someone or not. If not, it will show the user an appropriate message stating that the chalet is reserved. The book chalet interface is shown in Figure 17.

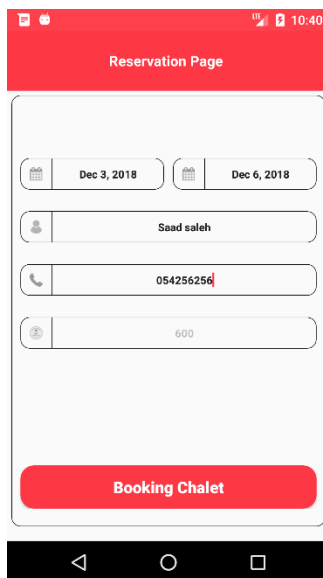


Figure 22: Book Chalet Interface

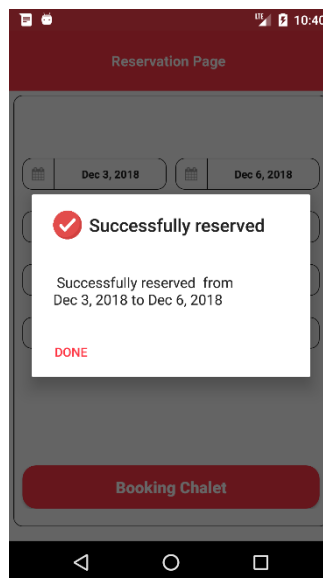


Figure 20: Reserved Dialogue Box

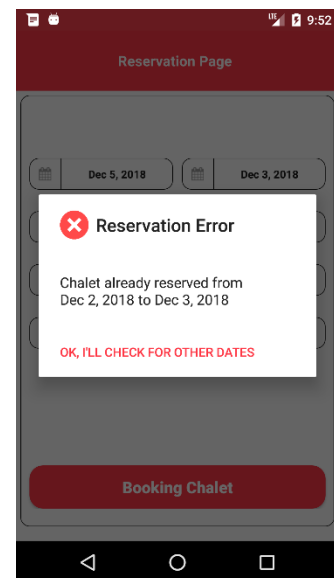


Figure 21: Not Reserved Dialogue Box

7.7. Add Chalet Interface

This feature is specially designed for the chalet owners to be able to add new chalets to “My Chalets” interface, which stores all the added chalets for each owner separately. The process will be successfully completed when the owner fills in all the required information designed in the “Add Chalet” interface. The fields to be filled are chalet name, price, chalet type, general characteristics, chalet services, additional details, location and chalet images. The add chalet interface is shown in Figure 18.

Figure 24 shows the first part of the 'Add chalet' form. It includes a table for 'Chalet name', 'Price', and 'Card type' with the example 'chalets romance', '1000', and 'Men/Family' respectively. Below this is a section for 'General characteristics' with input fields for 'Kitchen', 'Bathrooms', 'Rooms', and 'Individuals'. The 'Chalet services' section contains five toggle switches for 'Play', 'Pool', 'Fridge', 'Sofa', and 'Bedroom'. The 'Additional details' section has a text input field with the placeholder 'Example: Mobile number or email'. The 'Choose location' section has a search bar with the placeholder 'Enter the address / city'.

Figure 24: Add Chalet Interface - I

Figure 23 shows the second part of the 'Add chalet' form. It includes a map view with a red pin and a label 'Googleplex'. Below the map is a section for 'Upload the images' with two input fields.

Figure 23: Add Chalet Interface - II

Figure 25 shows the third part of the 'Add chalet' form. It includes a section for 'Upload the images' with four input fields. Below this is a red button labeled 'Add Chalet'.

Figure 25: Add Chalet Interface - III

7.8. My Chalet Interface

This interface will be displayed after the chalet owner adds his/her chalet successfully into the database and he/she want to view all chalets added by him/her. Each chalet owner has his/her own chalets which can be controlled and managed by him/her only. Moreover, the owner can also delete the chalet. The My chalet interface is shown in Figure 19.

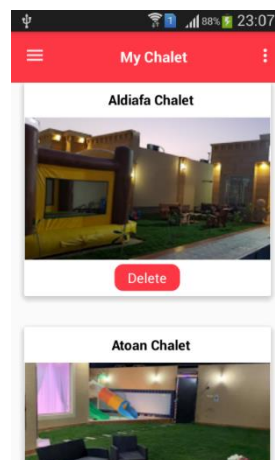


Figure 26: My Chalet Interface

7.9. Terms of Use Interface

The aim of this interface is to put a contract in place between the users and the owner of the application such as limited liability and the content ownership of the application. The term of use interface is shown in Figure 20.

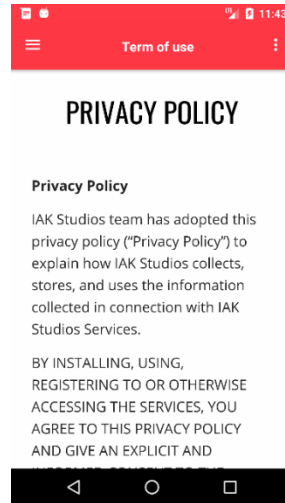


Figure 27: Terms of Use Interface

7.10. Other Interfaces

"Contact Us" interface is to allow the user to contact the owner of the application through the email. Additionally, the "About Us" interface will show more information to users about the owners of the application. The contact us and about us dialogues are shown in Figure 21 and 22.

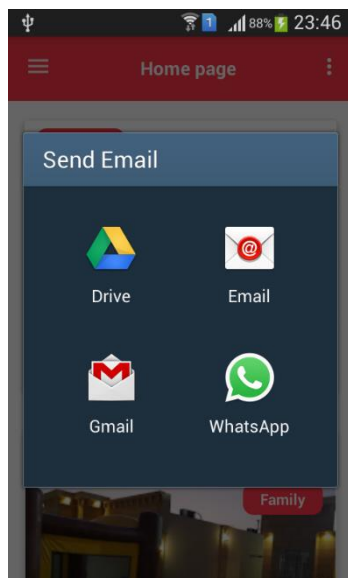


Figure 28: Contact Us Dialogue

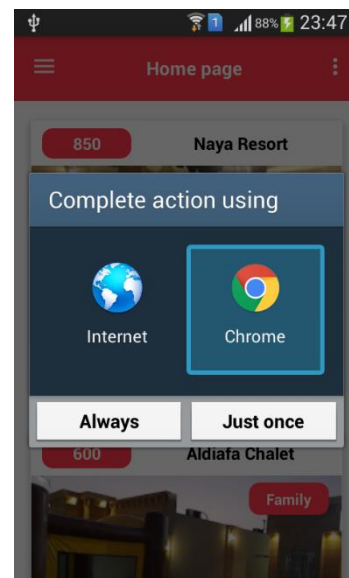


Figure 29: About Us Dialogue

7.11. Admin Panel Interface

This interface is designed as a website that allows the admins to control the reservation of the chalets. Admin panel interface is shown in Figure 23.

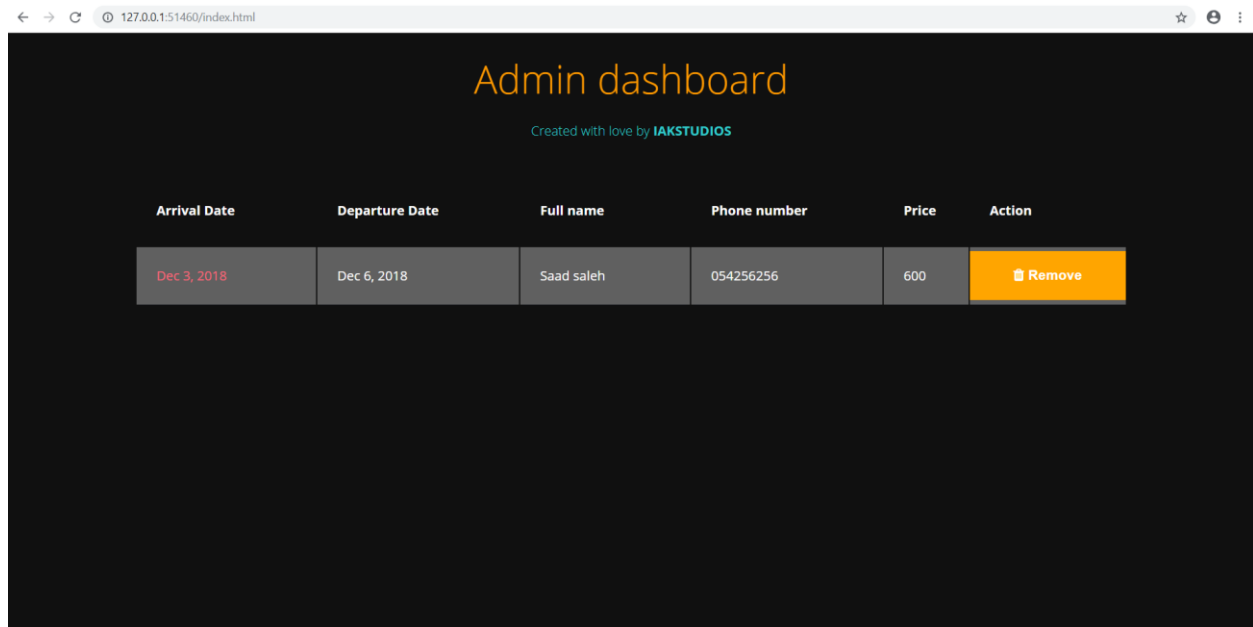


Figure 30: Admin Panel Interface

8. Layouts

The layout defines the visual structure of an app. Android uses this structure to display the view elements on the screen. In Chalet app we used different layout depending on the structure and elements of the screen. Some screens were developed using more than one layout. Table 1 below illustrates each screen, layout used, type and description about it.

Table 1: Layouts Table

Screen	Layout Used	Type	Description
Splash screen	Constrain Layout	Activity	The first screen displayed when user opens the app.
Intro activity	Linear Layout	Activity	Screen that displays different welcoming messages when the user opens the app.
Signup page	Linear Layout	Activity	Screen that lets a user to create a new account.
Sign in page	Linear Layout	Activity	Screen to log in to the app.
Main activity	Drawer Layout	Activity	Screen that uses navigation drawer to let the user navigate through different activities.
Home page	linear Layout, Constraint Layout, Card View	Fragment	Screen that display all chalets available in the app.
Viewmore page	Linear Layout, Frame Layout, Relative Layout	Activity	Screen that shows more detailed information about the specific chalet user clicked from the homepage.
Reservation page	Linear Layout	Activity	Screen that the user can use to book a chalet.
Add page	Linear Layout, Card View	Fragment	Screen for adding new chalet to the app.
My chalet	Linear Layout	Fragment	Screen that displays all chalets added by a specific user.

9. Fragments

Fragments are one of the most powerful tools provided for mobile applications developers by Android. It can be visualized as a portion of the users' interface in the activity and sometimes they are also called as sub-activities [3]. The benefit of implementing fragments in our application is that we can reduce the number of activities required for performing specific actions which are frequently performed by the users and to avoid code repetition throughout the application's code. Figures below shows the fragment implementation for some of our application activities.

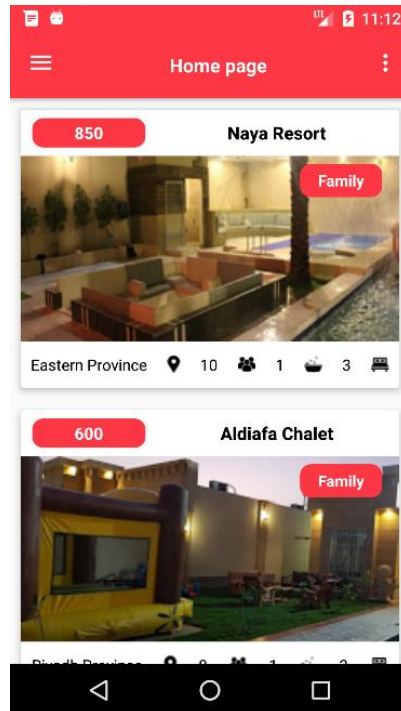


Figure 31: Homepage Fragment

The above screenshot shows the homepage fragment which displays the posted chalets by the users and its details like name, price, location, chalet's picture and type. Since, the number of posts will be increasing throughout the application's usage by different users, applying dynamic fragments in the homepage have allowed us to increase the number of chalets shown without compromising performance.

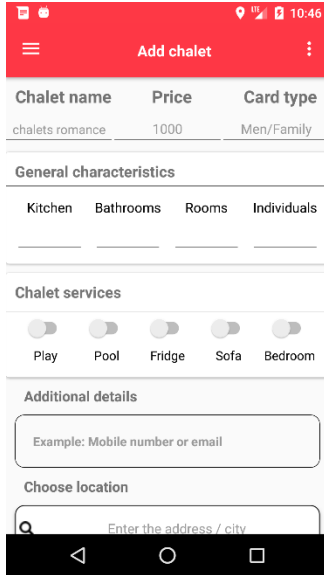


Figure 32: Add Chalet Fragment - I

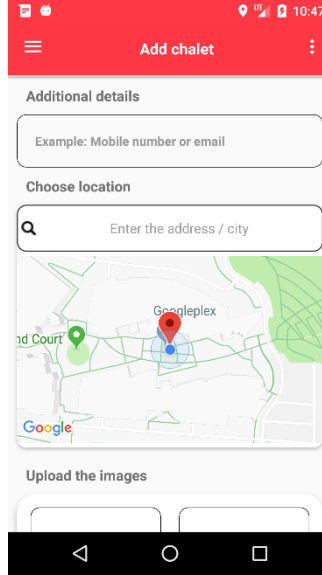


Figure 33: Add Chalet Fragment - II



Figure 34: Add Chalet Fragment - III

The above screenshot shows add chalet fragments which displays the required information about the chalet that should be provided by the users.

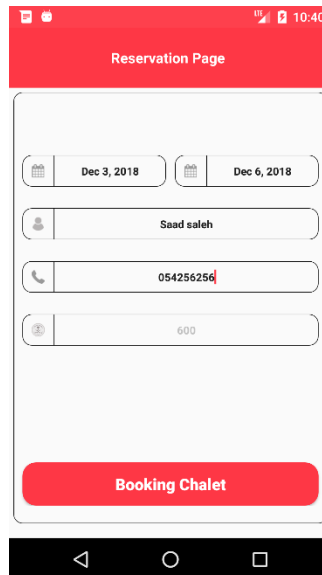


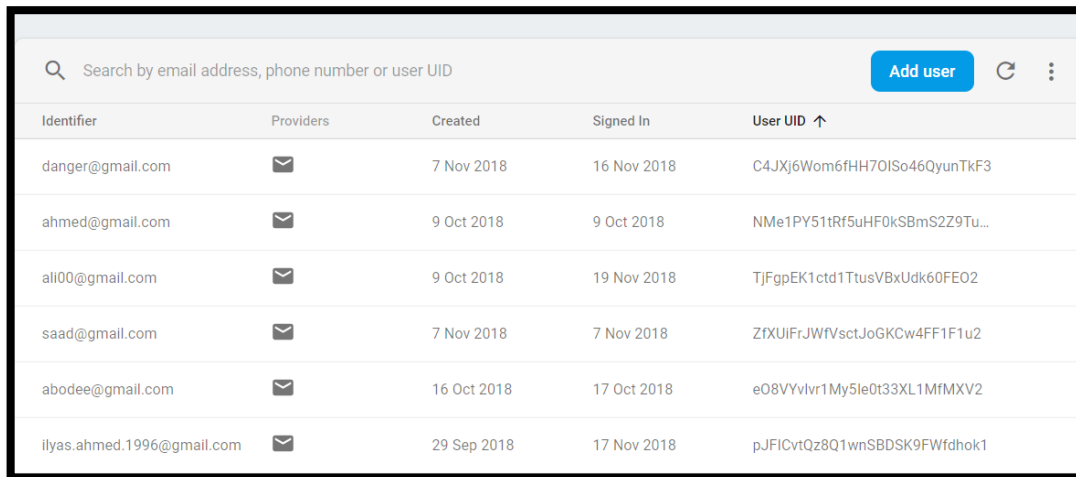
Figure 35: Reservation Fragment

The above screenshot shows reservation page fragment which displays the starting and ending date, full name, phone number and price for the chalet. Reservation process will be applied for all chalets. Therefore, fragment implementation is required in this interface to reduce redundant code in the application's source code.

10. Database

Chalet app uses Firebase database instead of SQLite. It is because we want to store our data online and not internally in the app. There are many reasons why we chose Firebase database and they are all listed below as follows:

Firebase Auth: To create account and authenticate users who want to rent their chalet or seeking for a chalet securely. Authenticated users are shown in Figure 10.



Identifier	Providers	Created	Signed In	User UID ↑
danger@gmail.com	✉	7 Nov 2018	16 Nov 2018	C4JXj6Wom6fHH7OIso46QyunTkF3
ahmed@gmail.com	✉	9 Oct 2018	9 Oct 2018	NMe1PY51tRf5uHF0kSBmS2Z9Tu...
ali00@gmail.com	✉	9 Oct 2018	19 Nov 2018	TJFgpEK1ctd1TtusVBxUdk60FE02
saad@gmail.com	✉	7 Nov 2018	7 Nov 2018	ZfXUIFrJWfVscJoGKCw4FF1F1u2
abodee@gmail.com	✉	16 Oct 2018	17 Oct 2018	eO8VYvIvr1My5le0t33XL1MfMXV2
ilyas.ahmed.1996@gmail.com	✉	29 Sep 2018	17 Nov 2018	pJfICvtQz8Q1wnSBDsK9FWfdhok1

Figure 36: Authenticated Users

Realtime Database: It is to upload the chalet information by the owner of the chalet and retrieve the chalet information to help the users to browse chalets and make reservation. The Chalet database is shown in Figure 11.

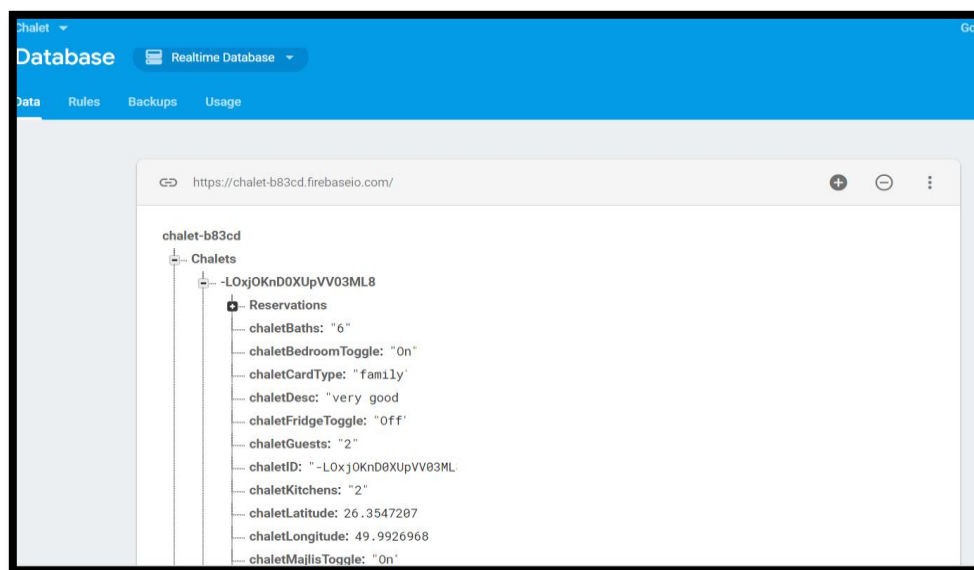
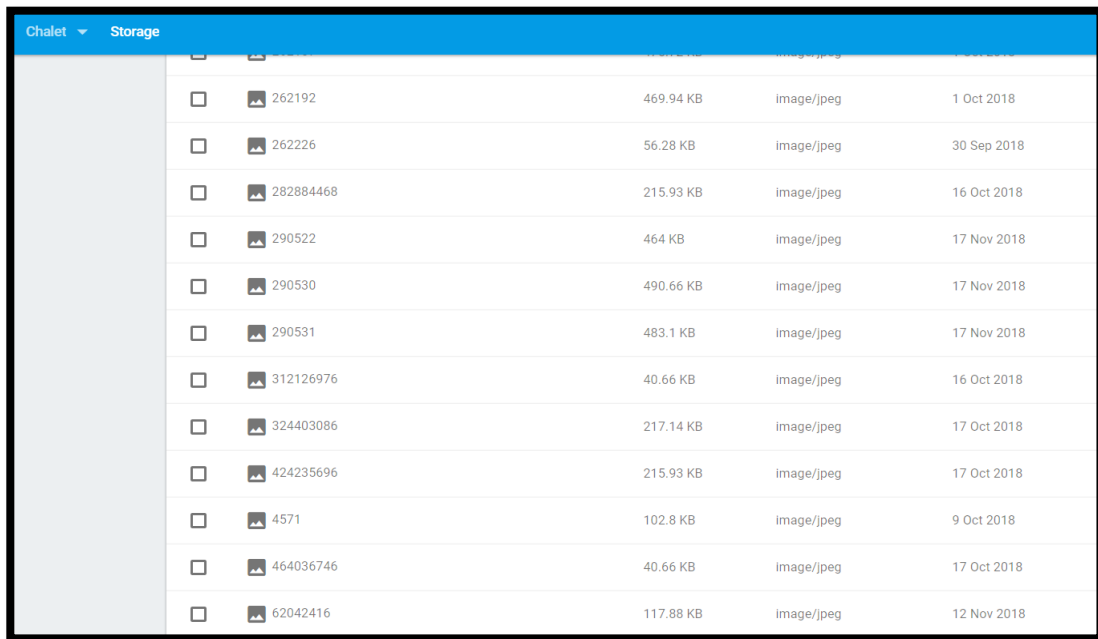


Figure 37: Realtime Database

Firebase Storage: All the images uploaded by the owners of chalets are stored with unique ID to be retrieved later. The storage of chalet images is shown in Figure 12.















<input type="checkbox"/>		262192	469.94 KB	image/jpeg	1 Oct 2018
<input type="checkbox"/>		262226	56.28 KB	image/jpeg	30 Sep 2018
<input type="checkbox"/>		282884468	215.93 KB	image/jpeg	16 Oct 2018
<input type="checkbox"/>		290522	464 KB	image/jpeg	17 Nov 2018
<input type="checkbox"/>		290530	490.66 KB	image/jpeg	17 Nov 2018
<input type="checkbox"/>		290531	483.1 KB	image/jpeg	17 Nov 2018
<input type="checkbox"/>		312126976	40.66 KB	image/jpeg	16 Oct 2018
<input type="checkbox"/>		324403086	217.14 KB	image/jpeg	17 Oct 2018
<input type="checkbox"/>		424235696	215.93 KB	image/jpeg	17 Oct 2018
<input type="checkbox"/>		4571	102.8 KB	image/jpeg	9 Oct 2018
<input type="checkbox"/>		464036746	40.66 KB	image/jpeg	17 Oct 2018
<input type="checkbox"/>		62042416	117.88 KB	image/jpeg	12 Nov 2018

Figure 38: Storage of Chalet Images

11. Intents

Android Intent is the message that is passed between components such as activities, content providers, broadcast receivers, services etc. Intents are asynchronous messages which allows application components to request functionality from other Android components. Intents allow you to interact with components from the same applications as well as with components contributed by other applications [1]. Table below shows intent used in the Chalet application.

Table 2: Intents Table

No	Activity/Page	Type	When	Action	Data Sent
1	Intro activity	Start new activity	User clicks the finish button.	Open sign in page	None
2	Signup page	Start new activity	User clicks the register button.	Open signup page	None
3	Sign in page	Start new activity	User enters his/her credentials to login.	Direct the user to home page activity	None
4	Home page adapter	Start new activity	When user clicks any chalet that is displayed on home page.	Open view more page to let the user see the details of the chalet he/she clicked.	It uses putExtra method to send chalet id to view more page.
5	View more page	Start new activity	When user clicks the book button.	Open reservation page that lets the user book a chalet	It uses putExtra method to send chalet id to the reservation page
6	View more page	Action view	When user clicks the map image.	It directs the user to google maps to see the location the of chalet.	None

12. Conclusion

In conclusion, this report discusses about the Chalet application developed on Android platform. The main objective of the application is to provide people to resorts inside the Kingdom to spend their leisure time. To accomplish this, the team have briefly explained all the necessary steps taken in different sections.

The first section describes the problem statement i.e. the bottleneck solved by developing the application. The section that follows it introduces the background about the project. In section 3, the project scope is discussed. It shows the main objectives the team aimed at in developing the applications and the limitations due to time and geographic constraints. The sections that follow afterwards depicts diagrams, screenshots of the application and database, fragments, layouts and intents.

The team gained a lot of knowledge after developing this application in Android application development. It was a great experience in dealing with codes and designing the interfaces.

12.1. Future Work

In future, the team would like to implement more functionalities to the application. Due to time constraints, functionalities like handling payments were not implemented as it requires more time and resources. We would like to implement payments through debit card, credit card, PayPal and even internet banking. This will help us to automate the payment process between the owners and the users.

We would also like to take the application to an international level in the near future by modifying some of the fields in chalet details. For now, the application is custom made for Saudi Arabia and other GCC countries. It is because resorts in other parts of the world are used differently as compared to KSA or GCC countries.