Interior Designing Application

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Interior Designing Application

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DEPARTMENT OF COMPUTER SCIENCES
COMSATS UNIVERSITY ISLAMABAD,
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UNDERTAKEN

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Dated: _____   Dated: _____

FINAL APPROVAL

Certified that we have read this project report submitted by Ammara Sajjad and Syeda Masooma Zehra and it is, in our judgment, of sufficient standard to warrant its acceptance by Department of Computer Science, COMSATS University Islamabad, Attock Campus, for the Bachelor of Science in Computer Science.

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4. Dean/Director   _____

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PROJECT BRIEF

PROJECT NAME   INTERIOR DESIGNING APPLICATION

ORGANIZATION NAME   COMSATS ATTOCK

OBJECTIVE   TO LEARN BASIC AUGMENTED REALITY AND ANDROID

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COMPUTER USED   CORE i7 7TH GENERATION

SOURCE LANGUAGE   C# | JAVA

OPERATING SYSTEM   ANDROID

TOOLS USED   UNITY | ANDROID STUDIO

ABSTRACT

The project intends to design an Android application for Interior designing. It focuses on all types of events. Customer can easily choose their particular event like Offices, Restaurants, and Hotels decoration. Customers have the leverage to choose their specific teams according to their working capability by rating. These teams will be working under an administrator. Customer can also give feedback about the performance of a team. According to customer requirements different services are provided by teams. An estimated bill will be generated according to the availed services after placing an order.

This project is about Interior Designing that provide lots of facilities to the customers. Regarding designing of interior we want to use it as online Android application for different events designing. In real life there are few zones where people are not able to design their events so they can take help from this interior designing tool. By using this Android application, we provide easiness through different teams to manage events of people of different areas. In this project we are using machine learning for the security of team's member in profile management by fingerprint recognition. Providing different services related to events or designing (like catering or decoration services).

We are using image customization to change the interior according to user needs. Application give suggestions of different items to place while taking an image and also communicate through Chat bot.

Acknowledgement

All praise is to Almighty Allah who bestowed upon us a minute portion of His boundless knowledge by virtue of which we were able to accomplish this challenging task.

We are greatly indebted to our project supervisor "Dr. Yasir Ali Shah". Without their personal supervision, advice and valuable guidance, completion of this project would have been doubtful. We are deeply indebted to him for his encouragement and continual help during this work.

And we are also thankful to our parents and family who have been a constant source of encouragement for us and brought us the values of honesty & hard work.

Ammara Sajjad   Syeda Masooma Zehra

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Chapter 01

Introduction

1.1 Brief

Every individual want a better place having best locality for living or for any other commercial work. But they don't really ponder interior design to be all that important. There are some people who want to decorate and make their place colorful according to their choice.

This could be possible with the help of interior designers. As the interior designer can make any place remarkable as it is their career that gain creativity, technical know-how, industrial and professional skills on spacing, building, architecture and well-known to different human lifestyles.

Interior design is not just about the look and beauty, added to this it also has an ability to showcase any place as residence or commercial place according to customer's demand with proper design and comfort lighting. To be more precise, it is all about transforming people lives according to their dreams and makes their life better one by the facility of good interior design.

Interior design is much important than it seems so in this regard the techniques like image customization, services for designing is to provide a platform where user can customize and avail services according to their choice. The one advantage by having best interior design is that user can bring its dream place alive. Another benefit is to have a better interior designed place is that it will fetch higher bids during the sale of that place (house, office or any building) than any other.

The application is an Android-based application for interior designing. This application will facilitate the customer while sitting at home with the best of interior designs for different events and all the other services regarding decoration and design.

1.2 Relevance to Course Modules

It has three main modules:

1.2.1 Fingerprint Recognition

It is the machine learning module for the security of team member's after login.

1.2.2 Chat bot

It is the artificial intelligence module that provides the facility of chatting to the customer about any query or details of further requirements.

1.2.3 Image Customization

It provides real look and feel (real environment) by providing customization option to be customized by customer according to their need.

1.3 Project Background

As there are hardly few websites or apps that provide interior designing. People who are unable to decor their houses, offices and any other residential or commercial place require such an app by which they make their dream place alive. Such people have large places but they don't know how to manage the space and make it more presentable.

Interior designing is used to help those people that are unable to decorate their home. The main goal of interior designing is to improve the user experience by providing efficient solution for a better use of space available in intervened environment. Fundamentally, it is a way to change the lives of people who live or enjoy a certain space, improving their quality of life in this through design and decoration.

Different designing techniques are proposed in the literature: Decoration, catering service, furniture items and provide real environment by customization. This was the motivation for us to provide a platform where user customize their places according to their desire and needs. After listening the needs from customer, the interior designing teams evaluates in a way that reflects on option that optimize its use, that based on what customer want for each division.

1.4 Literature Review

Some of other applications are develop that provides the same features which include color scheming, different themes, real environment for customization to facilitate the user but our application will provide some other feature along these that we are providing different teams from where the user can choose their team according to their work, capabilities and rating etc. Along

this our application provide some other features like Chatbot, Fingerprint recognition for the security of team's members that make it unique from present applications.

1.5 Analysis from Literature Review

To develop an application, which is faster easy to use, simple, handy, effective and advanced application that is time saving and made an ease for user in every aspect to increase the user's interest towards interior designing.

To overcome the problem of those people that are unable to decorate but have some dreams for their places for this they collaborate and connect with different service providers like painters, carpenters and architect to get the work done.

So we developed an android based application which help user by providing all features like furniture, customization, and other services at one platform and our main challenge is to achieve client goals on time, under budget and up to the expectation.

There are other applications too like "Traci Connell Design Delivered" which offers everything from furnishings and a remodel online design option. This application has some features that our application contains but our application is different because it offers lots of services to its user by gathering the requirements of user. Some gallery pictures will be presented in order to show different items and work of different teams to its customer. It provides different categories of events and services by which customer can effortlessly select their particular type of event and related services.

1.6 Methodology and Software Lifecycle for this Project

We would be using Incremental Model because Requirements of Software are first broken down into several modules that can be incrementally constructed and delivered. Therefore, it is easier to modify the version as per the need of the customer.
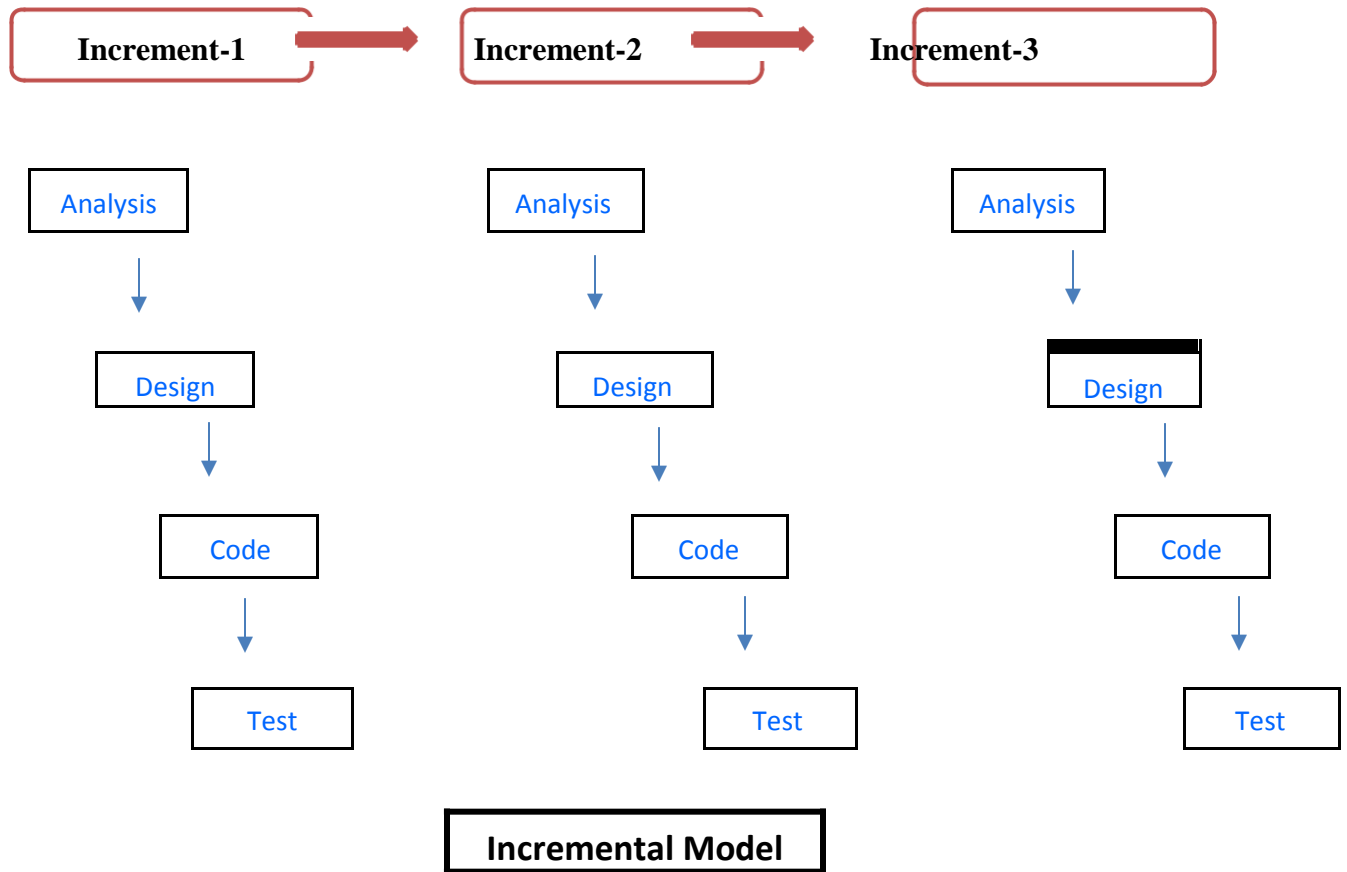
Figure 1.1 Incremental Model

Once the core features are fully developed, then these are refined to increase levels of capabilities by adding new functions in successive versions. Each incremental version is usually developed using an iterative waterfall model of development.

1.6.1 Rationale behind Selected Methodology

We select this methodology because our requirements are clear so through this the development will be fast and features will be added in a systematic way.

In this methodology we will develop application through repetitive increments that in first increment we will develop interface in second increment we will add functionalities that a system will perform.

Chapter 02

Problem Definition

2.1 Problem Statement

As the time passes, the life becomes too difficult, and the busy schedules of every person around the world, that's why many people are not sure that how can they arrange their events. In this era, everyone are getting more dependent on technology like android applications given an extraordinary features and easiness to their users in just a cell phone.

Our main focus is that, we have to create an interior designing android application that provides those features to the android users that reflects the real environment. In Pakistan, we've researched that there are no applications for users to interior their living places and also provide an existent atmosphere. That's why we have to provide a platform for those users who wants to design their places by choosing best and trustable resource

2.2 Deliverables

Android Application

Provides an interface for the android users for the existing features and in what way the application alike.

Image Customization

The system should suggest and allow the user to locate furniture items to feel the real environment while capturing an image.

Virtual Chat bot

For an effective communication with the user.

Ensure Security

To provide security to the team members through fingerprint recognition.

Project Report

A complete Project Report that includes Software Requirements Specification, Software Design Specification, GUI Mockups, Test Cases, and other major tasks that we have to perform.

2.3 Development Requirements

There have following requirements for the users of this android application in the perspective of how can they run the application in their systems (PC's and Android Cell Phones).

Operating System Requirements

- Android devices
- Having minimum Android version 10
- Also AR supported.

Application Requirements

- Android Studio
- Unity Software
- Visual Studio

Other requirements

Figma, MS word, PowerPoint for the mockups, designing and presentation.

2.4 Current Interior Designing Applications

Here we have many current application of interior designing:

2.4.1 P-Funer E-Design Services

This application provides following features:

- It offers online interior design services
- It provides the affordable alternate to the traditional interior design
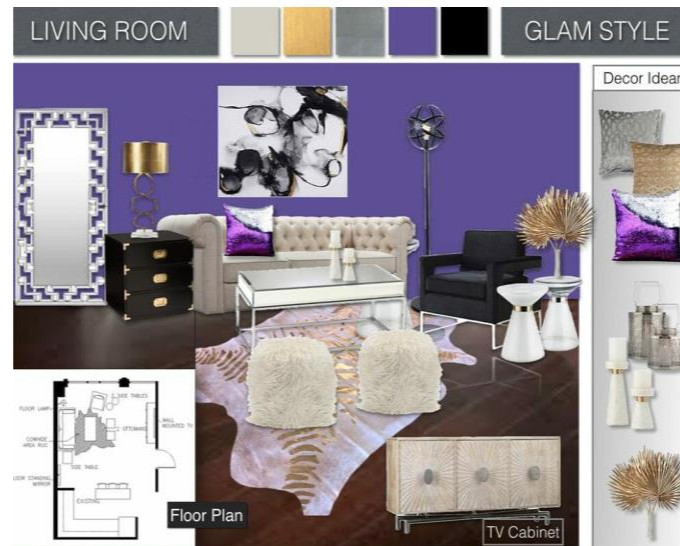 Users can communicate through email

Figure 2.1

Major drawback of this application is that, it doesn't provide a real environment for their users.

2.4.2 Houzz Online Interior Design AR Tool

Houzz online interior design AR tool gives many features to facilitate their users but main service is:

- It offer a new augmented reality tool that lets client try on feature from their catalog before purchasing

One limitation is that it doesn't allow clients to view two or more items to scale at once. As a result, it may be difficult to create a whole room design from scratch.

2.4.3 Traci Connell Design Delivered

This interior designing android application main focus is that, to get information from the user and create a dream space for them. It provides many services like:

- Commercial and Residential Projects
- Custom Furniture and Cabinetry Designs
- Interior Space Planning and Furniture Layouts
- Interior Construction Design

- Color Consultations
- Online Design Services
- Renovation Contracting.

2.5 Relation with P-funer, Houzz and Traci Connell

Our project is based on many useful services, basically all the above current applications main focus is that to provide an online platform for the customer. So, our main motive is that to provide an online application with real environment and also end-to-end communication. Interior designing android application related with them in this way:

- A virtual chat bot will be provided to communicate with customer.
- Another main objective of this project is to provide different options like teams on the basis of specifications, working capability and good rating then user will choose according to their choice by seeing all the details.
- By image customization, the system should suggest and allow the user to place furniture items to feel the real environment while capturing an image.

Traci Connell, ask their customers to fill out a short questionnaire, they communicate with their customers through email. On the other hand, we provide a Chat bot that gives more fast communication with our users/customers. User can choose different items, and also apply them at that time. We also provide a platform, in which user can easily buy items for every type of events like Traci Connell.

P-funer, it doesn't provide an effective communication, as we all know that in this era email is not more effective communication type. So here we have, more focus on communication, that's why customer can easily explain their requirements.

Our main focus is that, to enhance the features by adding more advanced features that gives all types of facility to our users at one platform. In this application, we provide security, an effective communication, online shopping of different items according to events. Events means, to create an application which will assist in designing multiple categories of events in schools, conferences, house decoration, weddings or office work according to user profile and local environment. This

project provide an effective feature i.e. image customization, which gives a real environment according to customer needs

2.6 Comparison Table

The comparison table between our designed application and already done projects is given below

Table 2.1 Comparison Table

Functionality	Interior Designing Application (Proposed)	P-Funer E-Design Services	Houzz Online Interior Design AR Tool	Traci Connell Design Delivered
Different Events	✓	✓	✓	✓
Sample Items (Gallery)	✓	✓	✓	✓
Customization	✓	✗	✓	✓
Buy Items	✓	✗	✗	✓
Estimated Bill	✓	✓	✓	✓
Chat bot	✓	✗	✗	✗
Different Teams	✓	✗	✗	✗

Chapter 03

Requirement Analysis

3.1 Use Case Diagram

We are going to discuss the interaction of different actors with the proposed application, and the functional and non-functional requirements of our application. Based on these functional and non-functional requirements, we will further develop our project. We will also create a use case diagram and a detail description of those use cases. It will provide interaction between the application and user of the application.

Figure 3.1 is the use case diagram of our android application. The user will phase two panels either as customer or as team. In Customer mode, user can use application after login and see user interface that include different services that application provides. In Team mode, user must be any team's member who can login through fingerprint for more security and then see the customer details. While the admin can see all the details related to application like feedback/rating of teams or customer details etc.
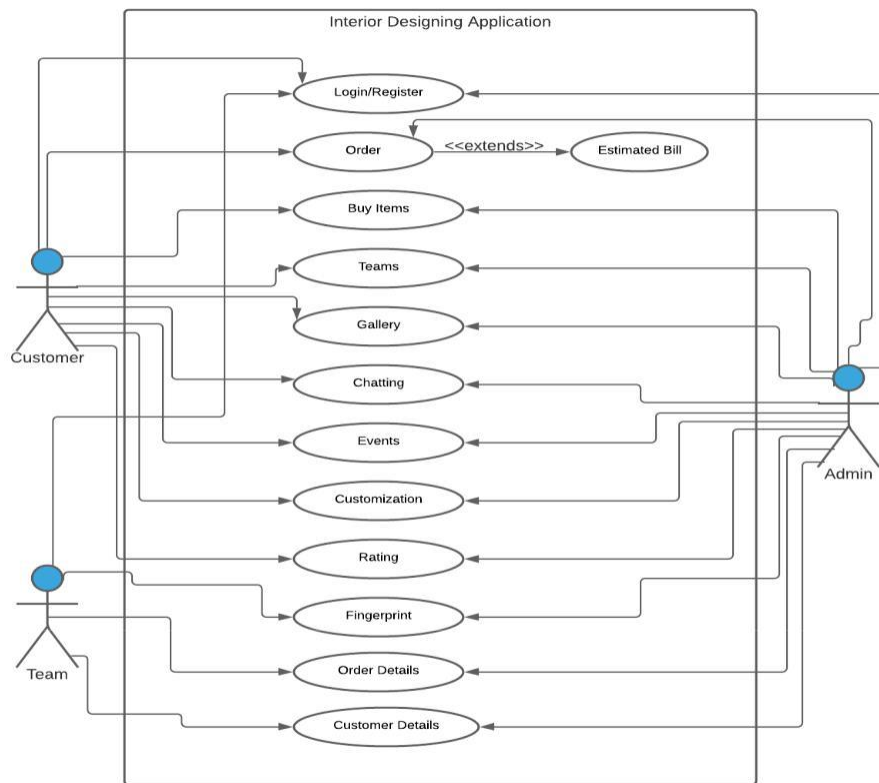

Figure 3.1 Use Case Diagram

3.2 Detailed Use Case

Use case name: Customer

Priority: 1

Actor: User

Summary: Customer mode allow the user to facilitate by different services of the application to decorate the places according to their choice after login.

Pre-condition: The user open the application and see two different panels/modes.

Post-condition: The user places the order and satisfied by their desired theme for their place.

Extends: None

Uses: Customer Interface.

Use case name: Team

Priority: 1

Actor: User

Summary: Take the user to the second panel/mode that includes customer details, order and feedback/rating given to different teams. Team member can login through fingerprint also for more security.

Pre-condition: The user open the application and see two different panels/mode.

Post-condition: The user is team member and can see all the details of customer related to their team.

Extends: None

Uses: Fingerprint

3.3 Functional Requirements

Functional requirements will tell us the behavior of our system functionalities and tasks that our system will perform. Functional requirements are those requirements that our application must have. The functional requirements of our application include Customer mode that consists

of customer interface having all the services and features provided by the application to facilitate their user and give feedback to their selected teams. Secondly Team mode that consists of security of team member's account through fingerprint recognition and then see all the details related to customer.

3.3.1 Buy Items

Name	Buy Items
Summary	This function provide the facility of buying items related to interior designing.
Rationale	User can easily buy items of their choice from this application.
Pre-Requisite	The user must login through user account. Select teams according to their work or feedback. Then buy items.

Table 3.1 Buy Items

3.3.2 Chatting

Name	Chatting
Summary	This function provide the facility of chatting through Chatbot.
Rationale	User can answer the questionnaire for more details.
Pre-Requisite	The user must login through user account. For more queries, the user can chat.

Table 3.2 Chatting

3.3.3 Teams

Name	Teams
Summary	This function provide the option of selecting different teams according to their work, expenditures and rating.
Rationale	User can select team of their choice on some basis like work etc.
Pre-Requisite	The user must login through user account. Select teams according to their work or feedback.

Table 3.3 Teams

3.3.4 Order

Name	Order
Summary	This function provide the estimated bill after availing the services and show the total bill.
Rationale	User can avail different services and can place order according to their need.
Pre-Requisite	The user must login through user account. Select team and avail services.

Table 3.4 Order

3.3.5 Rating

Name	Rating/Feedback
Summary	This function provide the facility to their user to rate their favorite team on the basis of best work done.
Rationale	User can give feedback in the form of rating to the teams.
Pre-Requisite	The user must login through user account. Select team and avail services by placing order and give rating.

Table 3.5 Rating

3.3.6 Image Customization

Name	Image Customization
Summary	This function will provide customization option to the user by which user can place different interior items according to their choice.
Rationale	User can easily customize like real environment.
Pre-Requisite	The user must login through user account. The user must select some items for customization.

Table 3.6 Image Customization

3.3.7 Events

Name	Events
Summary	This function will provide different events along their services such as wedding decoration and catering service.
Rationale	User can easily choose service according to their choice and fill their essential credentials related to that service along their contact information and place order.
Pre-Requisite	The user must login through user account. The user should open events from main menu and avail any service.

Table 3.7 Events

3.3.8 Fingerprint Recognition

Name	Fingerprint Recognition
Summary	This function will provide advance security to the team's member while login through fingerprint recognition.
Rationale	Team member can easily login by their fingerprint.
Pre-Requisite	The member should make an account if not register.

Table 3.8 Fingerprint Recognition

3.4 Non-Functional Requirements

Non-functional requirements are those requirements that specify the quality of the system. Following are the non-functional requirements of our application.

3.4.1 Efficiency

Our application will be much efficient so that it will provide different services, features and accurate amount of bill after placing an order.

3.4.2 Learnability

Our application will be efficient and easy to understand so that novice and expert both users can use it easily.

3.4.3 Robustness

Our application will be robust so that it can tolerate the faults. The system shall recover itself in less time if it is failed due to some external or internal issued.

3.4.4 Maintainability

Our application will be ready to maintain and update with time. Its component will be independent and can easily be maintained.

3.4.5 Reliability

Our application will recover itself in less time in case if it is failed due to some reasons. Our system will be reliable enough to use.

3.4.6 Usability

Our application will be user friendly and easy to use so that user will not face any kind of difficulty while using the application.

3.4.7 Availability

Our application is online Android application designed for this purpose that it will available to its users all the time and they can access it through online platform easily at any time to avail its services.

3.4.8 Security

Our application will provide security by authentication process. For customer, when he login into the application than application will verify their credentials through email. For teams, the application will give advance security through fingerprint recognition.

Chapter 4

Design and Architecture

4.1 System Architecture (Block Diagram)

Figure 4.1 shows the system architecture of our project. Our project on two modules i.e. users and teams. The users/customers directly interact with the interface. Firstly, they login into the system, then we have different features and facilities for the users. There are some sample items in gallery and from that items user get inspired and visit the application and buying their favorite items for living places, Chat bot (to develop strong connection with the user so they can easily tell their needs and wants). To provide real environment for the users, customization option is there, so they can easily see their real picture or design according to their demands. Here we are using image customization through AR for this purpose.

Second module, teams, here we have three different teams which are divided according to their specialization, expenses, ratings and performance. They can login in the system through fingerprint recognition.
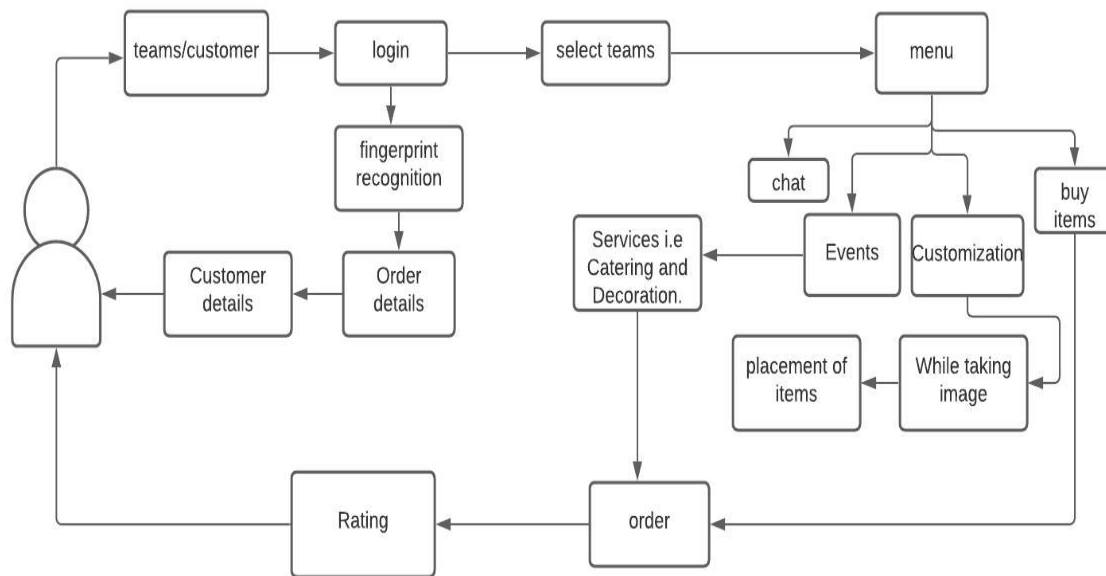
Figure 4.1 System Architecture

4.2 Class Diagram

Figure 4.2 shows the class diagram of our project, in this diagram we have different classes. Team, events, customer, items and order are classes in which they have different attributes and functions. This diagram also represent the relationship with other classes. Also we have public and private elements in it.
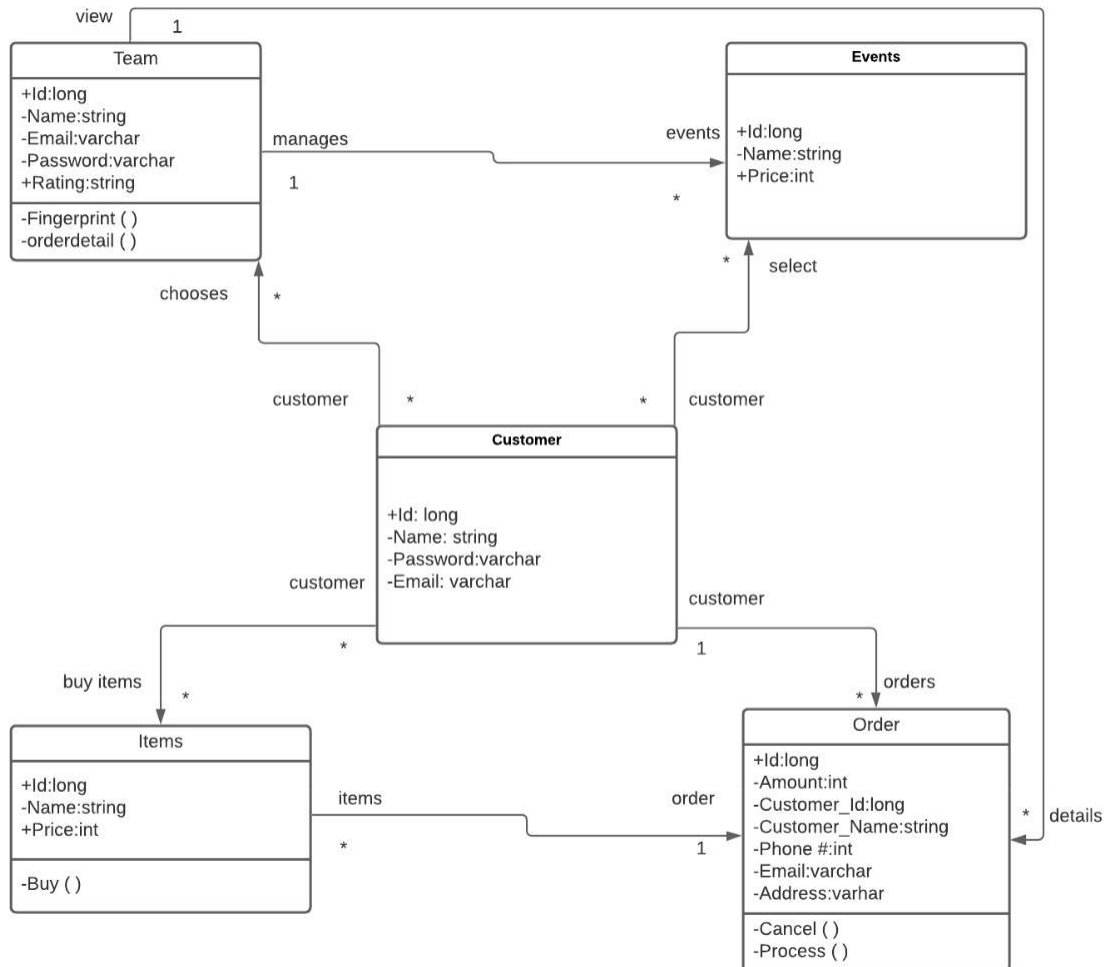
Figure 4.2 Class Diagram

4.3 Sequence Diagram

Figure 4.3 shows that the sequence diagram for the user module. User login to the application, verify the all information given by the user, if it exist in the database then after login user directly connected with the application.

Figure 4.4 shows sequence diagram of second module which is team. Team login in the system using fingerprint recognition. If data matches with existing database information, then team members can easily access the application and can see all the details of customers.
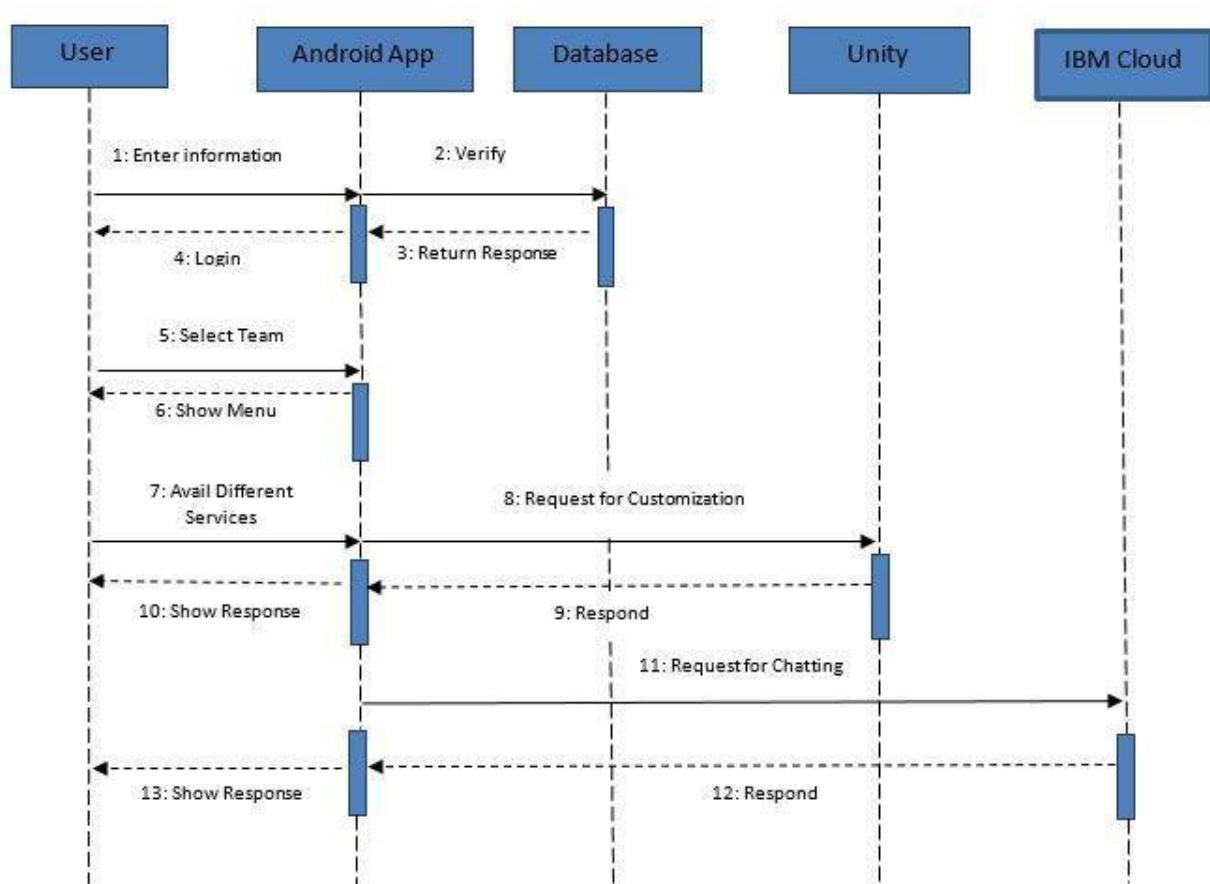
Figure 4.3 Sequence diagram for user
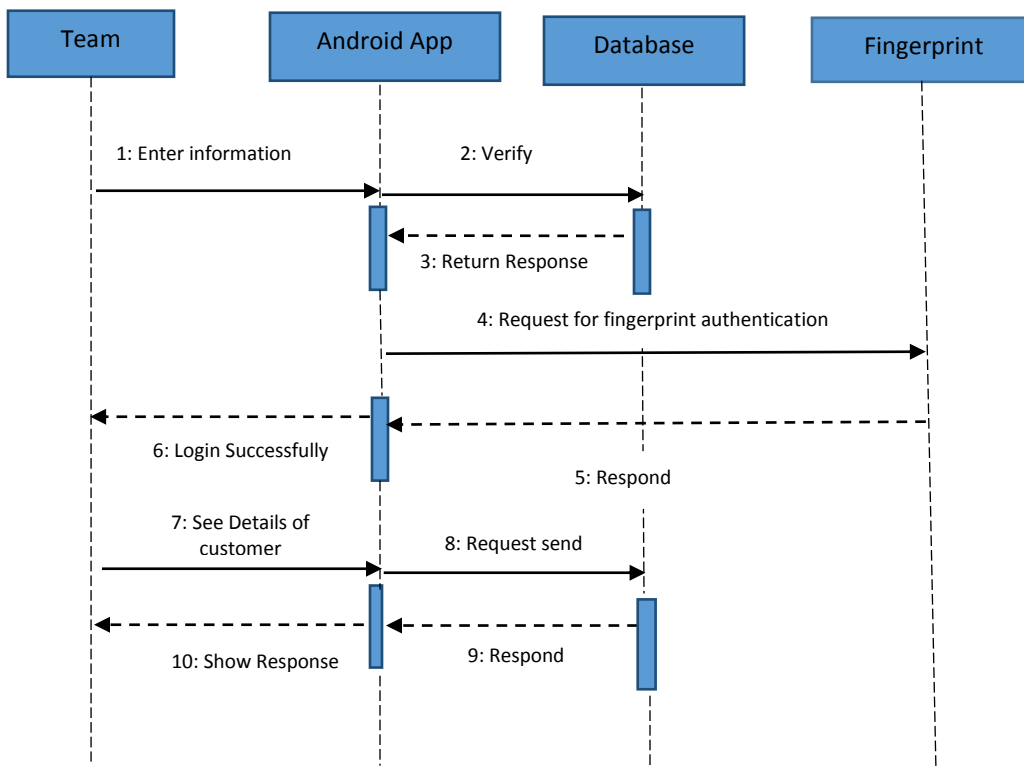
Figure 4.4 Sequence diagram for teams

4.4 Activity Diagram

Figure 4.5 shows the activity diagram of our, teams login through fingerprint recognition, then see all the details.

On the other hand, user login if exist then go to the application otherwise they have to registered themselves. Then they have many features, all the features are responsible to fulfill the requirements of the user. Using image customization, they can easily find their needs and fulfillment of their requirements.
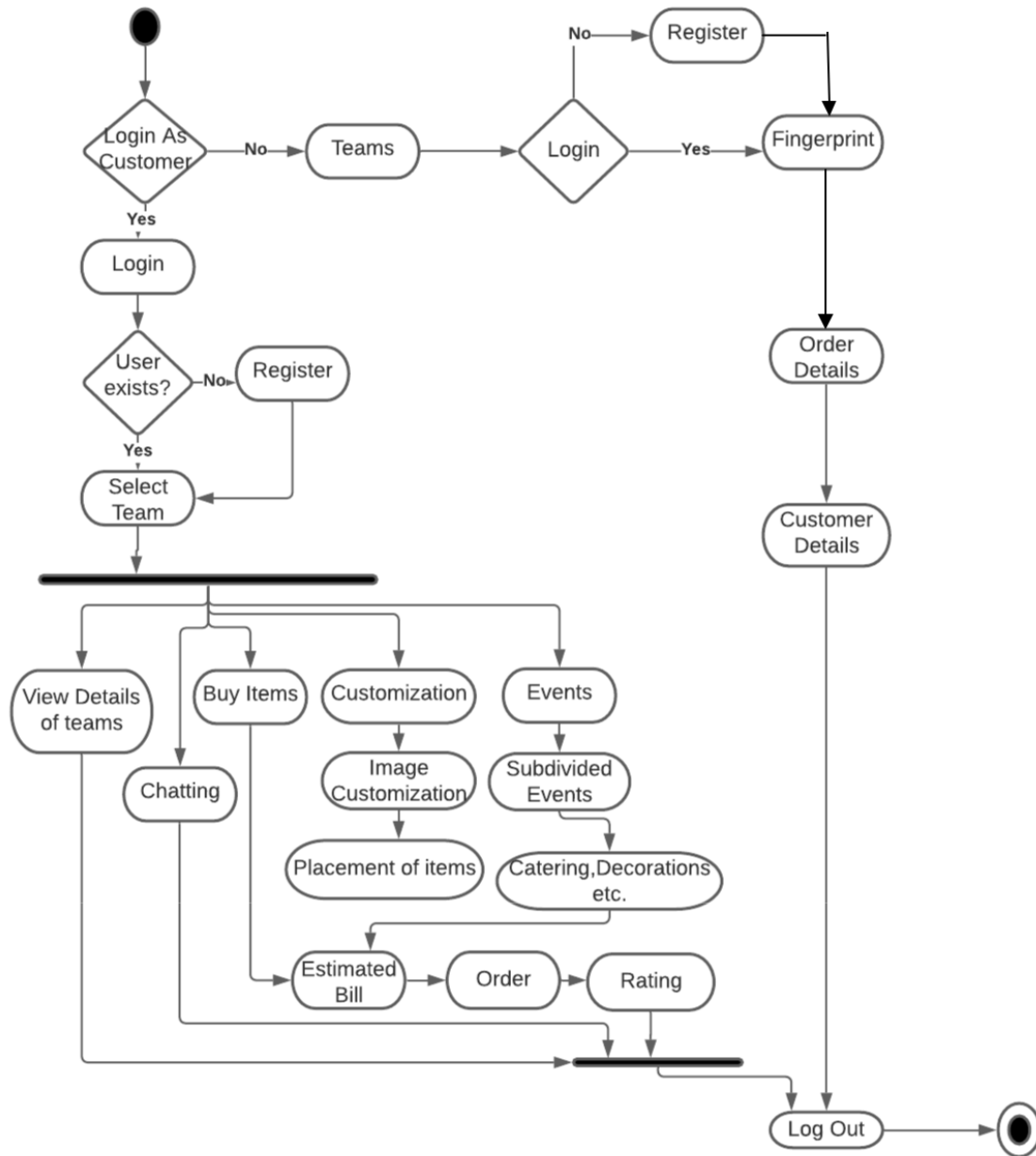
Figure 4.5 Activity Diagram

4.5 Entity Relationship Diagram

Figure 4.6 shows the ER diagram of our project, we have different entities like user, teams, order, items, feedback and events. User can buy zero or many products, one user can give zero or many orders, many users can choose many teams, one user can give one feedback, many teams have one rating, teams can see the details of the users, and many users can choose many events.
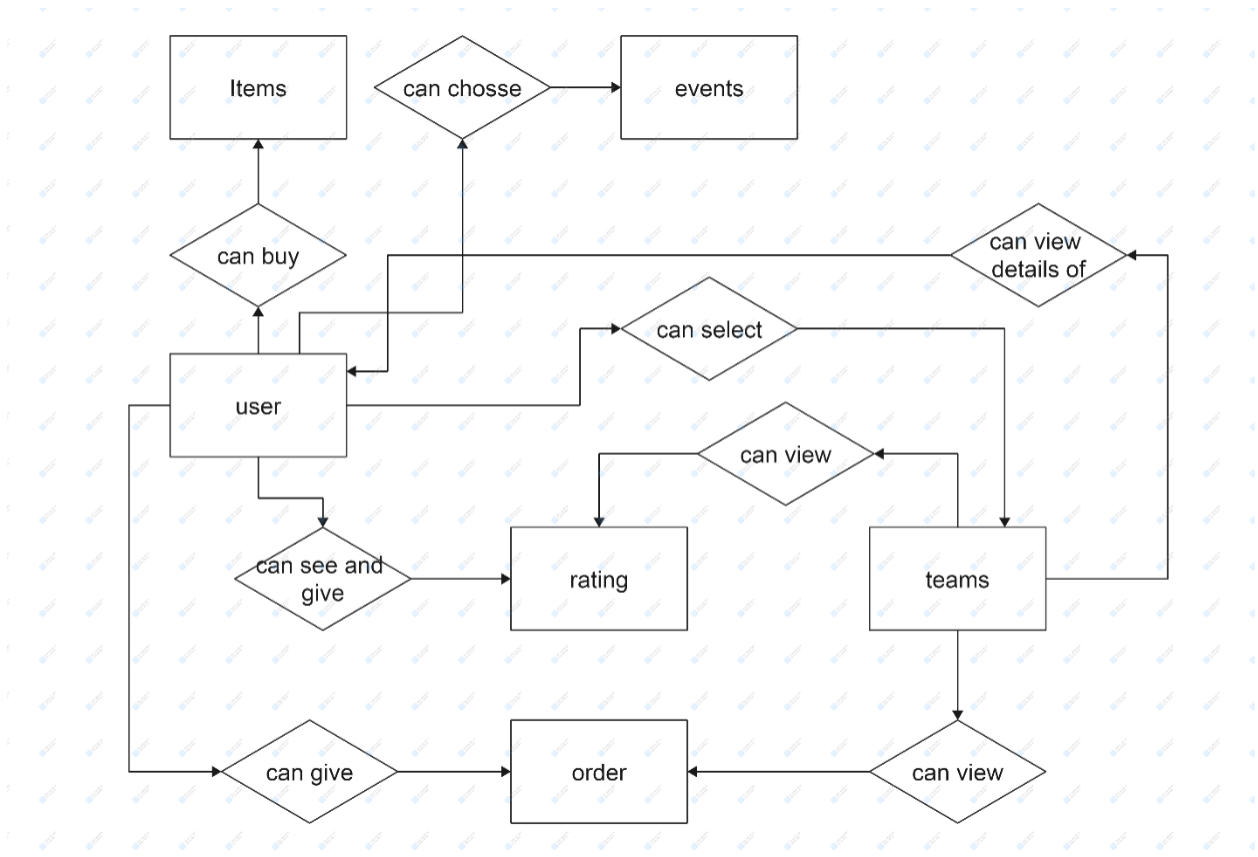
Figure 4.6 ER Diagram

Chapter 5

Implementation

5.1 External APIs

This chapter represents the programming tools that are used in development of application. The software is developed in multiple stages designing, programming, documenting, and testing involved in creating the application. Important tools that are used to develop the application are listed below.

5.1.1 Tools:

- Android studio
- Firebase Database
- Unity 2020.2.3f1
- SQLite Database

Android Studio:

Interior Designing Application is developed in Android studio. It is the IDE (Integrated Development Environment) for application development. Android studio provides build automation, dependency management and customizable build configurations. As we need android application for our project so we used android studio for the development of our project.

Firebase Database:

Firebase is a real-time database that store and sync data between users in real-time. We used firebase for storing the data of our application .Firebase provides authentication developer can define who has access to data. Applications which are connected with firebase remain responsive when even offline. Interior Designing Application is developed by using firebase database for authentication purpose.
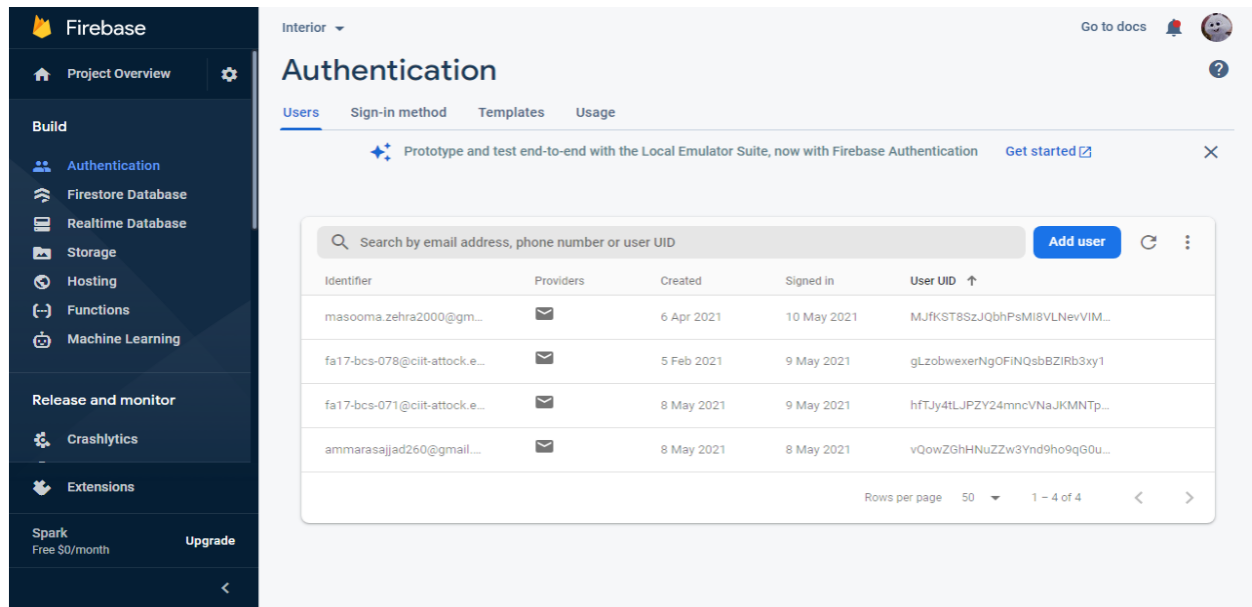
Figure 5.1 Database of Interior Designing Application

Unity 2020.2.3f1:

Unity software is the developer of the Unity Engine that makes the use of 2D and 3D interactive content more accessible. Unity is known for its high quality, next level visual effects. The highly customizable rendering technology that any application offer. It is the tool that power the creations of the developer. Although it is the game development software but we uses it here for customization purpose means to place different objects while taking picture to enjoy real look and feel by augmented reality that it provides.
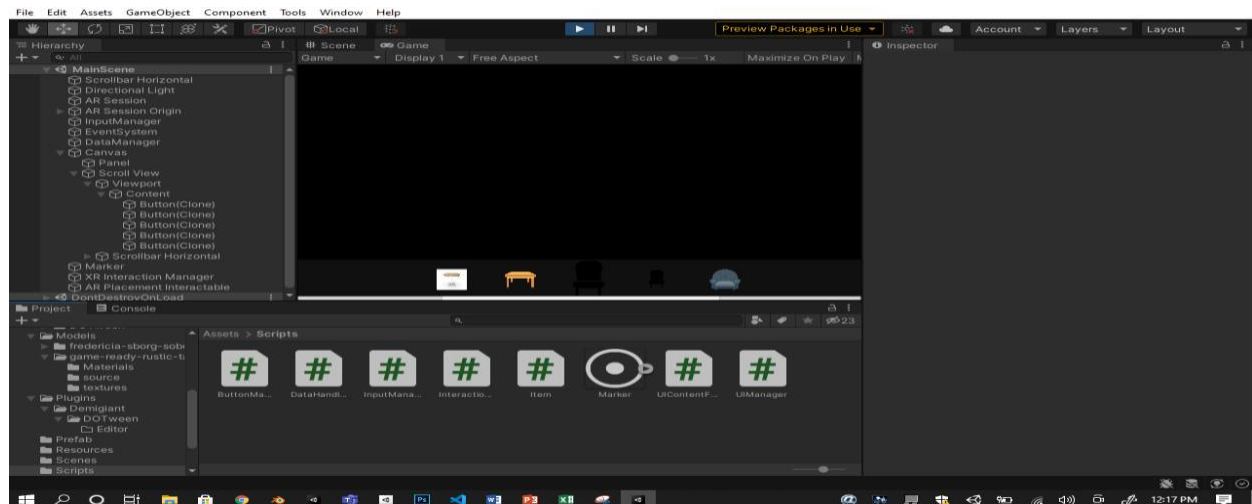
Figure 5.2 Unity Editor for Customization

SQLite Database:

SQLite is an open source SQL database that stores data to a text file on a device. Android comes in with built in SQLite database implementation. SQLite supports all the relational database features (definitions, tables, indices and data itself). SQLite is not a client–server database engine. Rather, it is embedded into the end program. So we also use this database for storing different types of information such as order details, customer profile etc.

5.1   User Interface

GUI (Graphical User Interface) that allow users to interact with devices. Our Application contains various modules and each module contains various stages. Interface of application consist of two basic modules Customer and Team. Following are the phases of the development of Interior Designing Application.

5.1.1 Splash Activity:

When the application runs, Android splash screen is the first screen that is visible to user. It is the introductory screen that provides information about the Interior Designing Application.
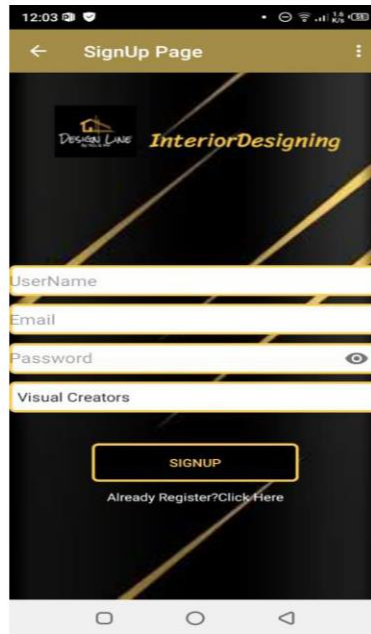
5.1.2 Login As Activity:

This activity shows that there are two modules and user has to select one of them either customer or team member to see further proceedings. If the user chooses **Team** module:
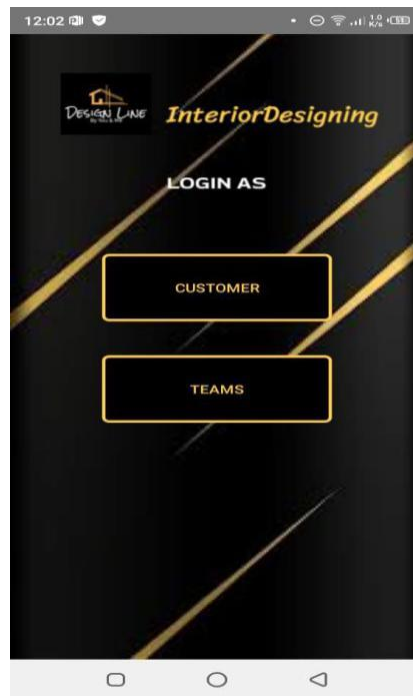
5.1.3 Team Signup Activity:
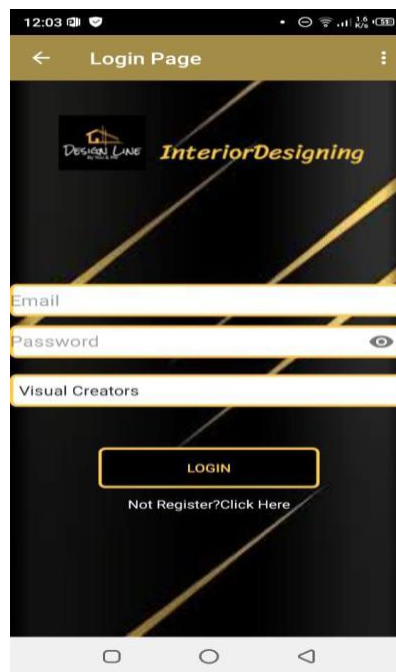
User will register to the application by their Name, Email, Password and Team's Name. No user will login to the application until he /she get registered themselves in the application. If the user is already registered to the app then he will login to the app.

5.2.4 Team Login Activity:

User login to the application after filling the credentials. User information matched with the data stored in the database otherwise he will first register himself by clicking on specified signup button.

5.1.5 Fingerprint Authentication Activity:

As fingerprint sign in makes our app login much faster. Here we are using fingerprint authentication for more security after login.
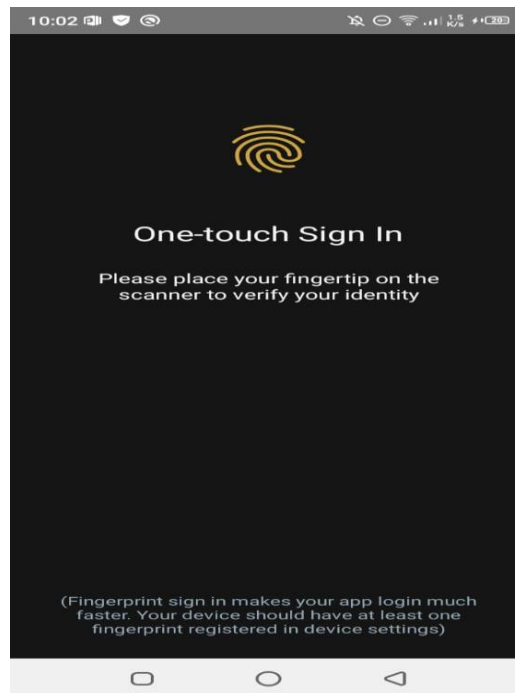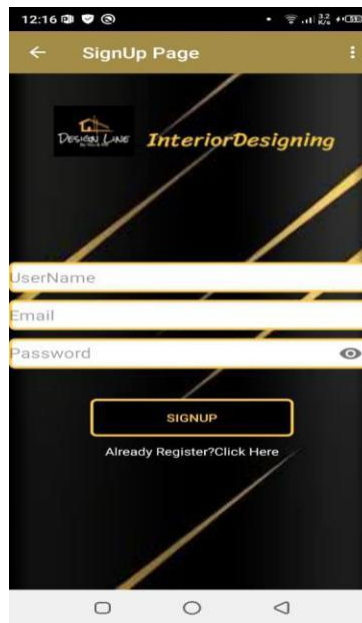

5.2.6 Order Details Activity:

After filling all the credentials, the user will see all the order details including customer details.

Now if the user select the **Customer** module:

5.2.7 Customer Signup Activity:

User will register to the application by their Name, Email and Password. If the user is already registered to the app then he will login to the app.
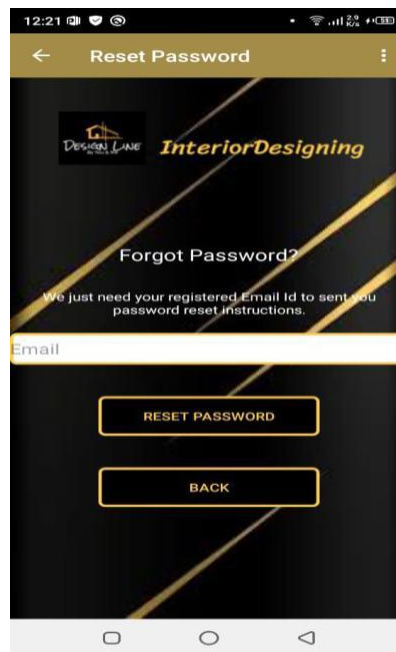

5.2.8 Customer Login Activity:

User login to the application after filling the credentials. User information matched with the data stored in the database otherwise he will first register himself in the application.

5.2.9 Forgot Password Activity:

User will easily reset his password by giving an appropriate email.

5.2.10 Select Team Activity:

Here representing three teams and their details. On the basis of best work, extra ordinary specifications and skills, good quality items and best services having reasonable cost, user will choose any team according to its preference.

5.2.11 Detail Activity:

By this activity, user can see the detail of every team like services, specifications, Gallery, Rating. From all these user will further made decision of choosing any team.

Gallery

It contains all the items or we can say overall portfolio of each team.
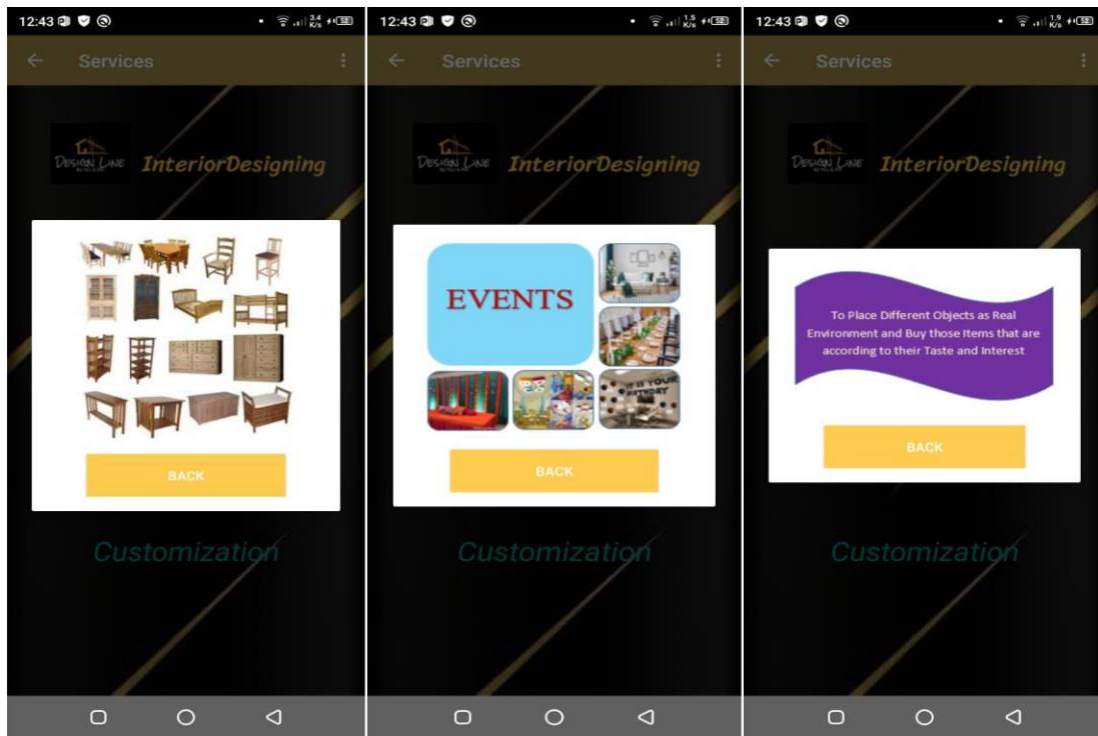
Specifications

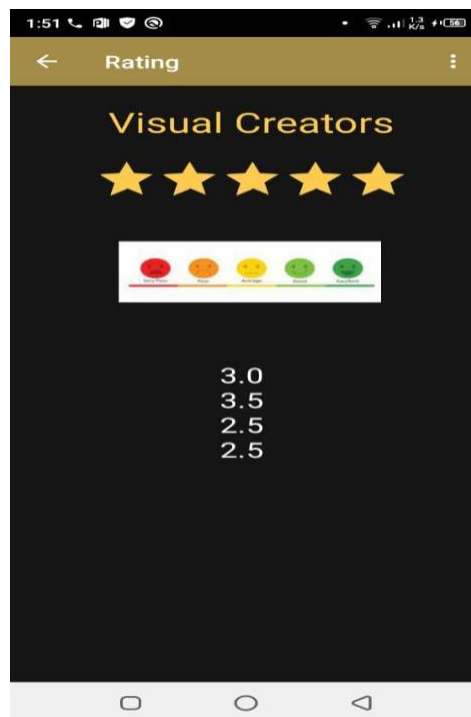It shows the specification and capabilities of each team.

Services

This activity shows different services that each team is providing.

Rating

In this, user can see the rating given by other users to each team.
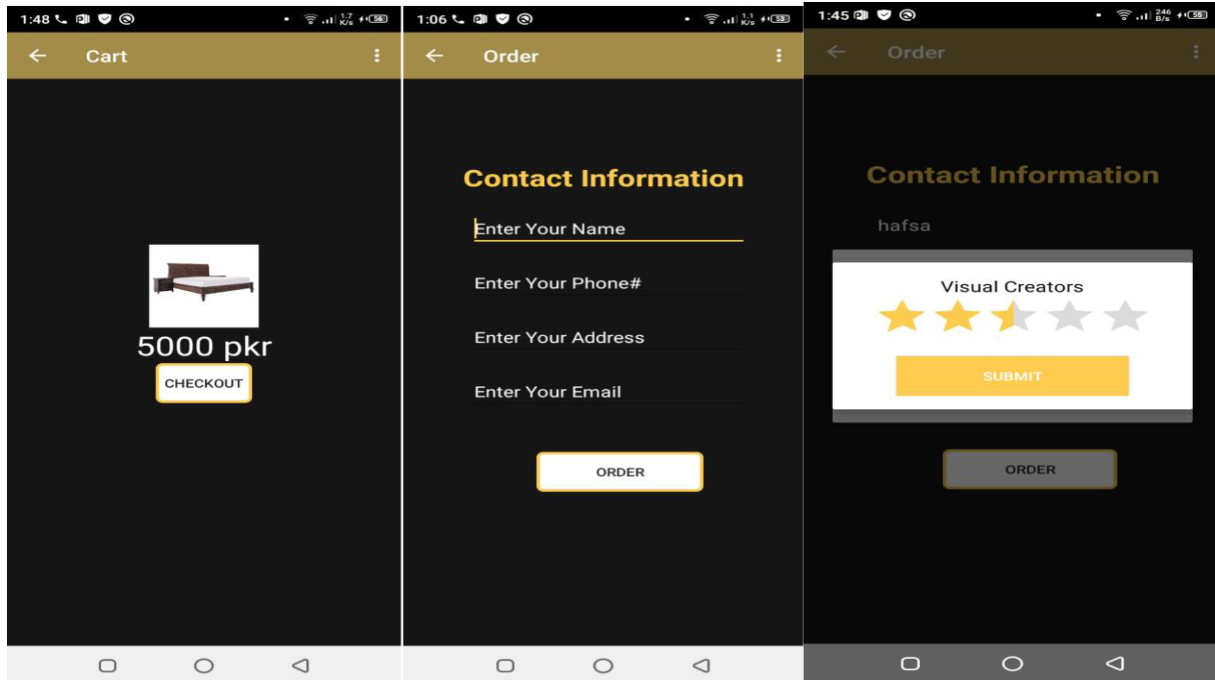
5.2.12   Main Menu Activity

This activity shows the main dashboard of the application in which there are four further options that includes:
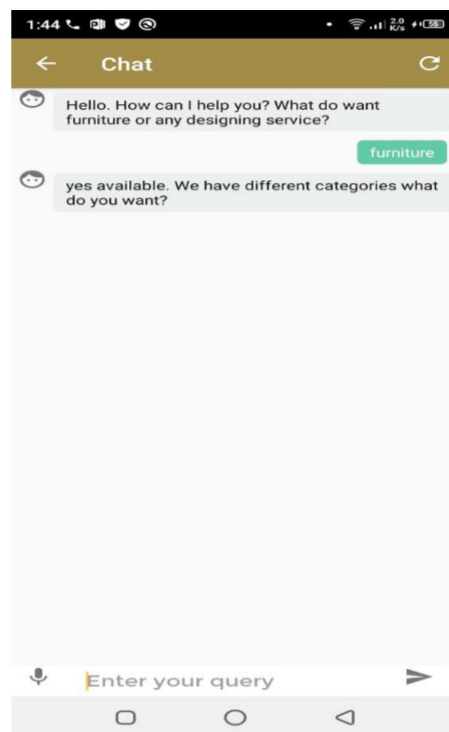

5.2.13   Buy Items

This activity contains those items that user can buy online from this application. After adding item in cart, user will provide contact information, place order and give rating to the team
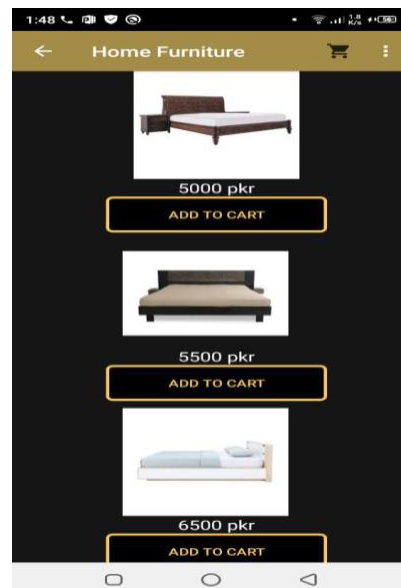
5.2.14   Chatting
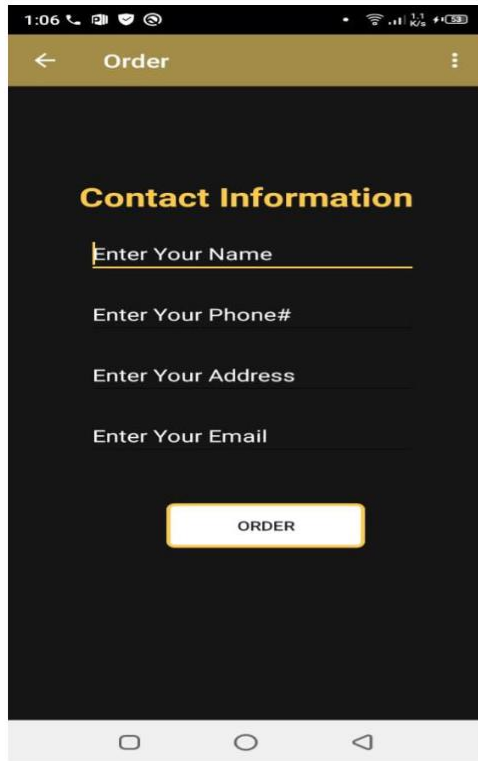
In this, chatting facility is provided to the user by Chatbot.

5.2.15 Events

This activity include all the services that user want for any specific event like for wedding user want decoration or catering or both. For this, there is essential form for every service and then order form where user fill his contact information. After confirming order, user can give rating to the specific team that was chosen by him.
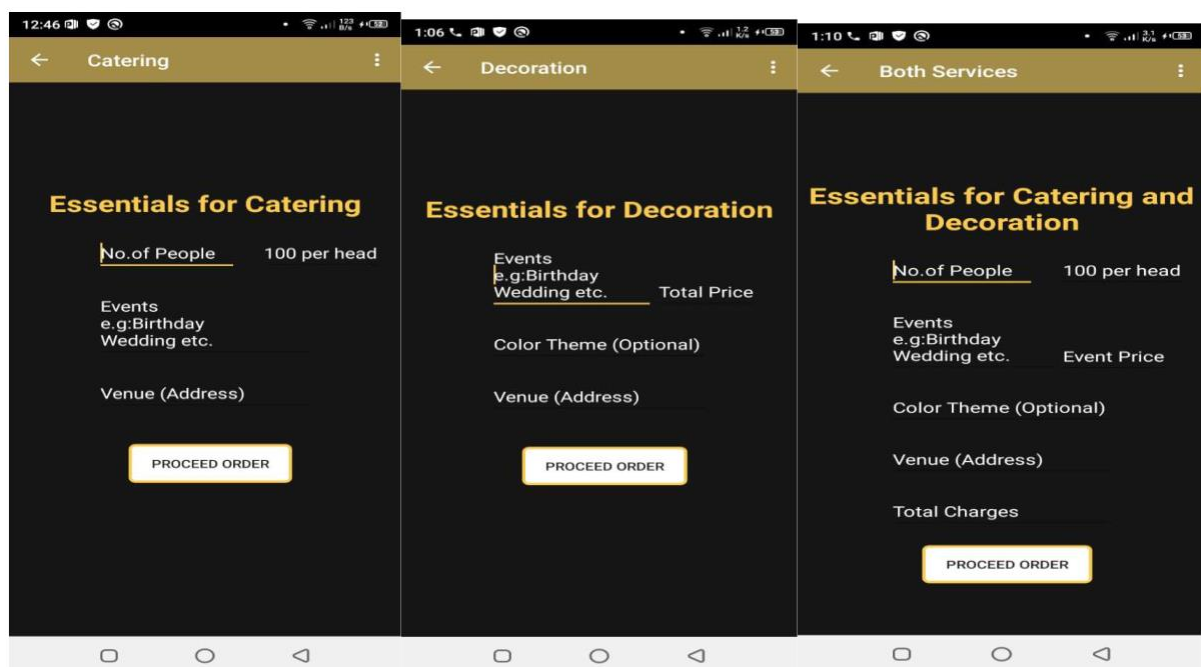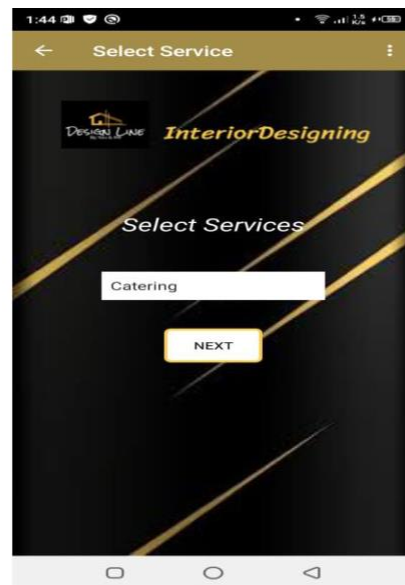
5.2.16 Customization

User can customize while taking image by placing different objects to enjoy real look and feel.

- Real Time Customization

- **Customization For Suggestions**
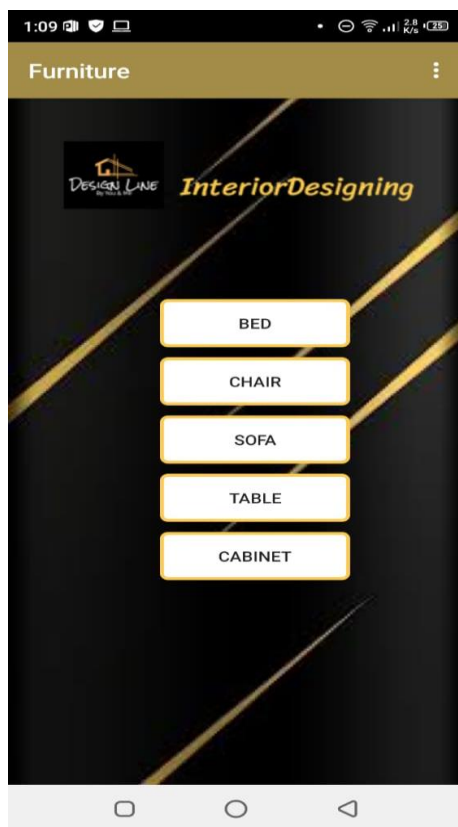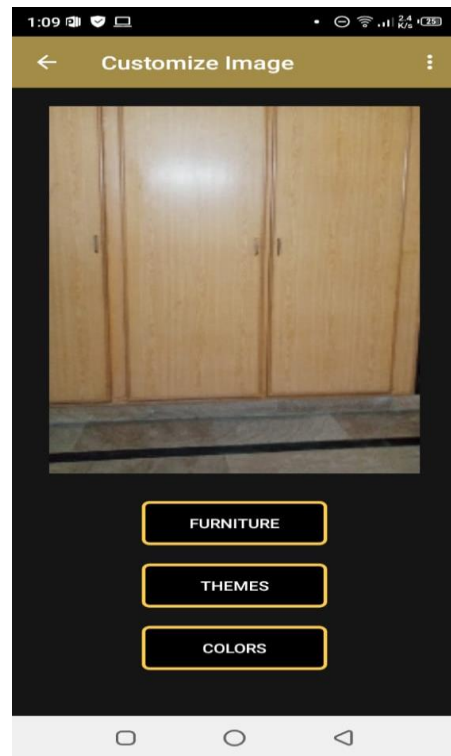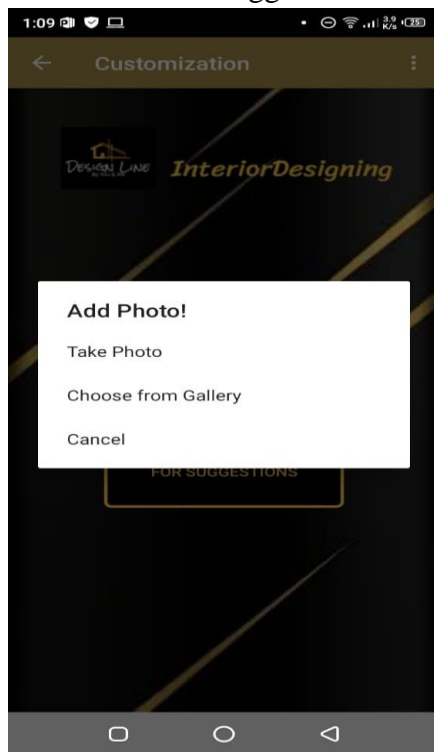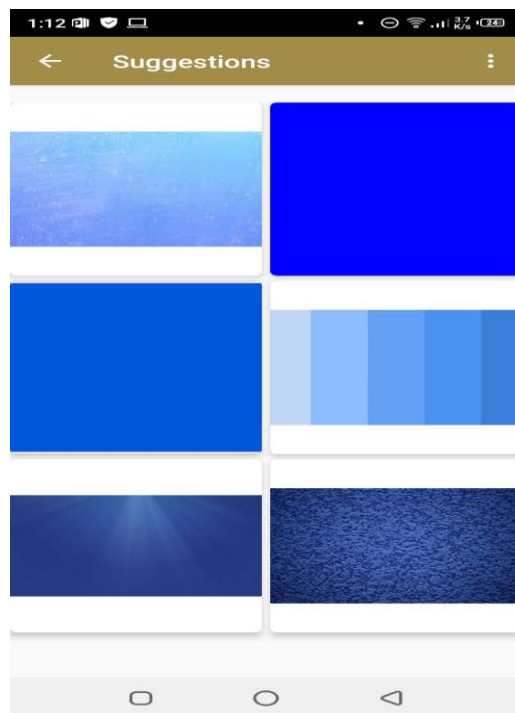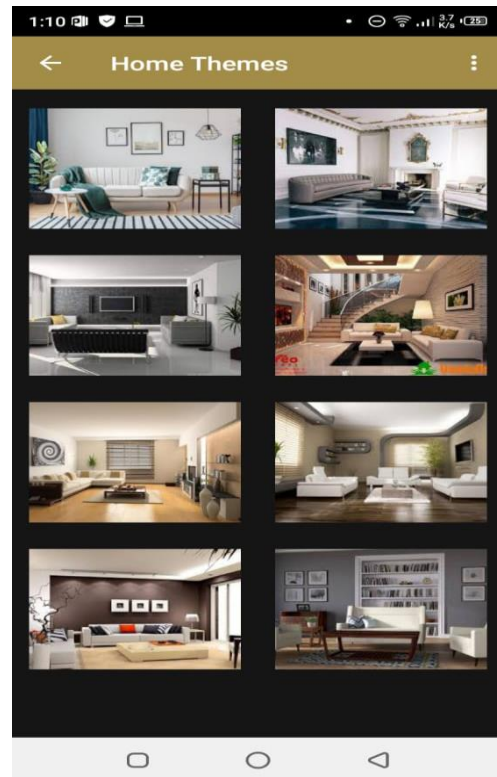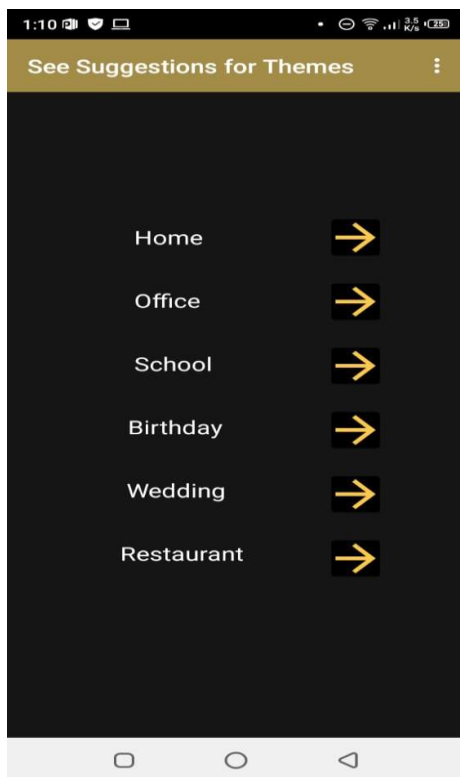
5.2.17 About

Chapter 6

Testing and Evaluation

6.1 Manual Testing

Manual testing is a testing technique that is used to test manually in order to find defects without using any tool. It is ensured that application is working correctly .We have tested the appl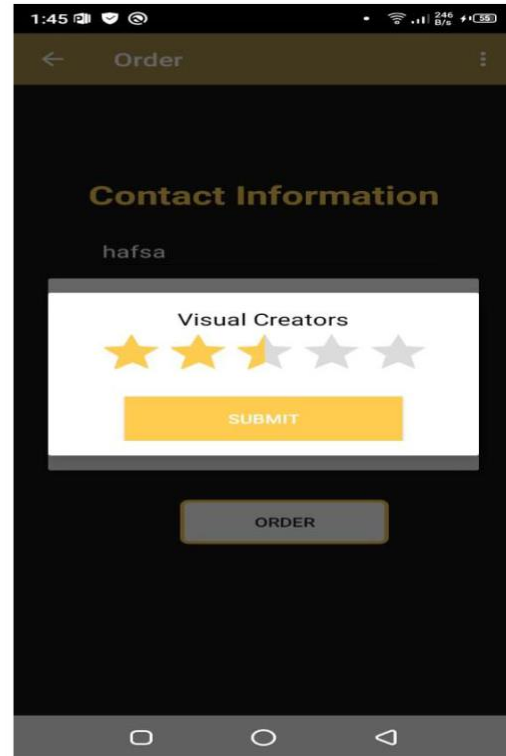ication in each and every perspective. User is required to enter the valid data for the login. In case of invalid data (either customer or team) is not able to login the application. User's data verification is done in the database and user can login to the application. Only authorized customer can avail the services of an application. Similarly, authorized team members will see further details of customer.

6.1.1 System Testing

System testing is a testing process conducted to integrate the modules as a whole system. Overall flow and behavior of system is tested in system testing. In system testing, we have checked database issues and interface problems while entering the invalid data in application. We also have checked unauthorized person cannot avail the services of an application. For this, user registration is necessary for further proceedings.

6.1.2 Unit Testing

Unit testing is a testing process where an individual component of software is tested. The purpose of unit testing is to validate each component of software. This testing is applied to the whole system starting from login as, signup, login, select team on the basis of their details, details include gallery, specifications, services, rating , after selecting team main menu include buy items, chatting, events and customization. So each and every module is tested in unit testing.

6.1.3 Functional Testing

Functional testing is a black box testing technique where the system is tested against the functional requirements and specification. During the functional testing, we need to check whether the system meets its requirement or not. In this phase, we check all the modules along with customization module either it is working according to the given inputs and expected output or not.

6.1.4 Integration Testing

Integration testing is testing technique where individual component are combined and tested as one application. It is used to check the behavior of different features in modules when we combine it. In our application, during this testing we checked the integration of different modules by linking them such as unity module with unity module. We tested how the system works after integrating the both modules.

6.1.5 Test Case#1

Test case#1

Test Case Name: user login (valid and invalid data)

System: Interior Designing Application

User Designed by: Ammara, Masooma

Executed by: Ammara, Masooma

Design Date: 11/05/2021

Execution Date: 11/05/2021

Short Description: Testing user login with valid and invalid data

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Pre-condition

User has valid username and password.

User has already signup to the application.

No.	Actions	Expected Result	Result
1	User opens the application.	System will display the loginas screen to the user.	Pass
2	If user enter invalid email and password.	The email that enter does not match to any account.	Fail
3	If user enter password less than 6 digits.	Enter password up to 6 digits.	Fail

4	User will login with email and password.	No error message.	Pass
5	User click on Login button.	User will Login to the app.	Pass

Post-condition:

- User will login to the application.
- Test fails if user has no existing account.
- Test fails if user enter invalid password.

6.1.6 Test Case#2

Test case#2

Test Case Name: Available services

System: Interior Designing Application

User Designed by: Ammara, Masooma

Executed by: Ammara, Masooma

Design Date: 12/05/2021

Execution Date: 12/05/2021

Short Description: Testing available services with valid and invalid data.

Pre-condition

User want to search the available services.

No.	Actions	Expected Result	Result
1	Click on Events option in menu.	System will display different services to the user.	Pass

2	User want to select any service.	Different services are displayed to him.	Pass
3	Then user fill all further essentials to avail the services.	Essentials are displayed for each service to the user.	Pass
4	User want to give contact information for order.	Contact information is displayed to him.	Pass
5	User click on Order button	User will successful in placing order.	Pass

Post-condition:

- User will avail the service that he want.

- User confirms the order.

6.1.7 Test Case#3

Test case#3

Test Case Name: Select Team

System: Interior Designing Application

User Designed by: Ammara, Masooma

Executed by: Ammara, Masooma

Design Date: 12/05/2021

Execution Date: 12/05/2021

Short Description: Testing user to select any team with valid and invalid data

Pre-condition

User has valid username and password.

User has to select any team for interior designing.

No.	Actions	Expected Result	Result
1	User Login the application.	System will show select team screen to the user.	Pass
2	If user wants to check any detail about any team.	System will also show view details option to the user.	Pass
3	User wants to see available services.	System will show services panel to the user.	Pass
4	User wants to see rating of any specific team.	System will show specific team rating in rating panel.	Pass
5	After satisfying by any team user want to select that team	User will select any team from select team activity.	Pass

Post-condition:

User will select any team.

User will further avail its services and items.

6.1.8 Test Case#4

Test case#5

Test Case Name: Customization.

System: Interior Designing Application

User Designed by: Ammara, Masooma

Executed by: Ammara, Masooma

Design Date: 13/05/2021

Execution Date: 13/05/2021

Short Description: Testing user want to customize his room by placing object before buying.

Pre-condition

User want to buy furniture item.

No.	Actions	Expected Result	Result
1	User opens the buy items in menu.	System will display different categories of furniture.	Pass
2	User want furniture of Home and Office.	System will display home furniture in that panel and office furniture in office panel.	Pass
3	User want to buy that item.	System will show checkout button.	Pass
4	User want to give contact information and place order.	System will show confirmation message after filling credentials and take rating from user.	Pass
5	User click on Logout button.	User will Logout from the app.	Pass

Post-condition:

User will wait for his order.

User will have furniture items that he want.

6.1.9 Test Case#5

Pre-condition

User has already login to the application.

No.	Actions	Expected Result	Result
1	User opens the customization.	System will display the customization screen.	Pass
2	User want to place the objects.	System will show only camera.	Fail

3	Again user reopen the camera.	System will display suggestion along camera to place.	Pass
4	User will place objects.	System allow user to place objects while capturing image.	Pass

Post-condition:

User will customize while capturing image.

After customization, successfully finalize any item for their places.

Chapter 7

Conclusion and Future Work

7.1　Conclusion

Interior Designing Application in android using the advance features of unity for customization, it helps the user to feel a real environment at one platform. Only authorized user can easily login to the application and also avail services and features in the context interior designing. User can easily choose the specific team on the basis of their given details that includes specifications, gallery items, services and rating by other users.

In menu, user can avail four features that are buy items, chatting, events, and customization. This application provide different furniture items for the user like home, offices, schools and restaurants. They can easily buy those items according to their choice and at the end they can also give feedback to the team in the form of rating. Using AI, chatting facility is provided by a chat bot. Another feature of events provide different services for those users who want to decorate their events along with catering services. The main feature of this android application is customization, in which user can easily locate the furniture items in the real environment.

This application has another module of Teams in which different team's member can see the details of customer and their orders. For providing security, this module has fingerprint facility for the team members because the user details are important credentials.

7.2　Future Work

There is always a need of modification and updation in any application. There are many possible improvements in Interior Designing Application in future. Some future work is listed below.

- In Customization module, there should be other customizable options such as changing color of background, walls, floor and curtain etc.
- For more customization, there should be other items for user to buy such as curtains, rugs and different decoration pieces etc.
- This application runs on specific compatible devices for AR, so in future add AR feature in a way that it runs on every android mobile.

7.3 References

- Interior Designers in Miami, P-Funer Design https://pfunerdesign.com/

- Home Design App for Mobile, Houzz App https://www.houzz.com/mobileApps

- Online Design, Traci Connell Interiors https://traciconnellinteriors.com/online-design/