Interior Recommendation System

Project Code:

PR_CD_29010

Internal Advisor:

Tayyba Adien

External Advisor:

Mam Daima

Project Manager:

Tayyba Adien

Project Team:

Tayyba Adien

Submission Date:

06/07/2022

_____

Project Manager's Signature

Table of Contents

1. Introduction

1.1 Purpose of Document :

Designing your room with the perfect color combination and pattern is not as easy as we think. Let's say you are not an interior designer but you want that your space will look as you want but you don't know how to design your home with the right material and color combination. Then went to an interior designer who first takes a detailed interview of you and your requirements to get to a point to understand and to find out and for getting an idea of what kind of design you want. Then after finalizing the color combination you get through 3D modeling of your house where the Designer first Designs your interior and after a lot of variation you final finalize that you want such a design. 3D modeling itself is a lengthy procedure and by chance, if you are a confused customer and do not easily get satisfied in one go then this procedure will going to take a long time. So the solution for all the confusion is to design an app that will take your requirements are will show you previously built or new designs that are uploaded by someone Professional designer seller. This app provides you to enter your details and will show you the design according to your mood, space, color combination, material, patterns, and budget.

1.2 Project Overview:

Interior Recommendation System is an Android app that allows users to enter their interior requirements and then the system will suggest different designs for home interior and walls.

Objectives:

- Translate the client's idea and professional holistic vision.
- Recommend interior design based on requirement style desire.
- The app will track user interest.
- The user will save the design to the idea book.
- Provide a guide and educate users about interior design.
- Users can contact the seller for further guidance.
- Provide interior designers to get local clients online.
- Interior designers will be able to configure clients' style desires without 3D modeling.

Project Goal:

Recommending users the most efficient layout to make the most of a room's potential in terms of use and aesthetics while taking into account the characteristics of the space and the style desired.

Project Success criteria:

The user will log in to the system fill out the requirements form, and get an interior design recommendation. The Interior designers will upload interior designs and will get local clients online.

1.3 Scope :

The domestic decoration market economy scale has exceeded 4 trillion yuan. The number of home decoration consumers is huge, but the proportion of online shopping in the total consumption of the home decoration market is relatively small. Interior Design Recommendation app record the behavior logs of the user. The main task of this app is how to automatically locate and push the home decoration scheme that users are interested in from the massive information. By comprehensively analyzing the user's historical behavior and item label information, the app uses a Collaborative filtering algorithm to find the best item list for users. The app will allow the users to store filtered data on idea-book, contact sellers, and guides related to interior design.

App provides idea recommendation and selection without the use of 3D modeling. It only provides seller contact but not payment and commerce features.

Overall System Description

User characteristics

A target audience can be anyone – But most likely this application will assist the following individuals

- People who have just purchased a new home
- People who are redecorating their home
- People who are looking for a gift for someone else
- People who need to walls design, pattern, and material without the need of interior designer
- People who are looking for a particular style
- People looking for inspiration
- Interior Designer owner who wants to display its project online
- Professional Designer who want to get style desire of its client
- Store owner who wants to get local clients online

Hardware Specification

- System: HpEliteBook 820 core i5
- Processor: Intel Pentium IV 1.7 to 2.9 GHz
- System type: 32-bit Operating System
- RAM: 8 Gb or higher
- HDD: Storage size 550 GB

- SSD: 256 GB

Software Specification-

- **Operating System**

  Windows 10 pro-Linux (Manjaro KDE Plasma)

- **OS for Mobile application:**

  Android Mobiles

Tools:

- **For Development :**

  Android Studio, Vs Code, IntelliJ Idea

- **For UI Designing tool:**

  Adobe Xd, Figma

- **For UML Diagrams Creation:**

  EdrawMax,Draw.io

Technology used

- **FrontEnd:**

  Kotlin, Java, XML

- **Backend:**

  JavaScript, Node.Js, FireBase, MongoDB

System constraints

Interior Designing app has a limitation of paid software resources like buying premium hosting for keeping and maintaining database objects and records. Also,

the premium plugins that are required for adding extra functionality in IDEs to code professional. The Interior app will only operate on android mobile API levels greater than 23.

- **Hardware constraints*:***

  The Hardware on which this System is going to operate on the client-side is basically on android devices and screen size may vary from different devices which must have built-in internet and wifi connection, suitable storage size, and RAM greater than 2GB.

- **Cultural constaints**

  The built-in cultural constraint involved in this app will be set according to demographic context because culture and choices will vary from city to city. Let's suppose the interior choices of the people who lived in Panjab will vary from the e interior choices of people who lived in Baluchistan. Because every province has its own culture which will be filtered according to people's desires and needs.

- **Legal constraints**

  Admin are not allowed to post which not lied in the domain of interior design.Personal2 information is not allowed to share in the description of the product.

- **Environmental constraints**

  Numerous environmental boundaries will retard the app, like avoiding it to use in noise and heat-lightening places.

- **User constraints**

  Users are involved in interior designer customers and professional interior designers so according to the user's domain the user interface for an interior app should be more graphic and textual according to needs.

External Interface Requirements

The application will be implemented in Kotlin and java it will use Android SDK. Moreover. Android Studio will be used as IDE while implementing.

Diagram will show you the interaction between the external components of the system.

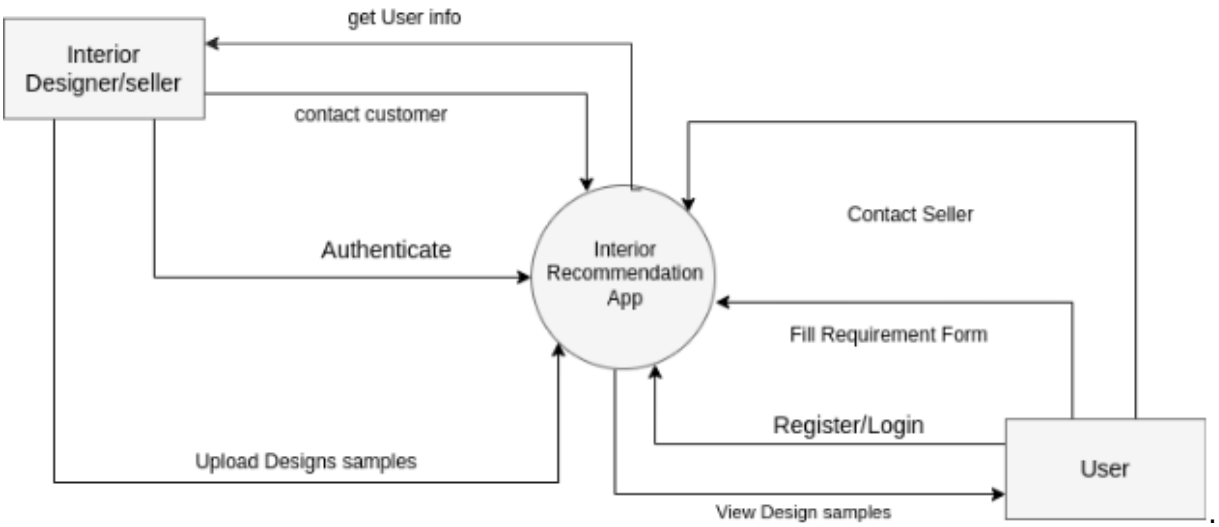


Figure 1.1 . Context Diagram

Hardware Interfaces

This application works on Android mobile devices and tablets. No other hardware is required.Since the application must run over the internet, all the hardware shall require to connect internet will be the hardware interface for the system. E.g. Modem, WAN – LAN, Ethernet Cross-Cable.

Software Interfaces

Interior recommendation app will first collect user requirements and style desires which will store in the database and their filtering algorithm will select and choose design samples according to user info. Since this application is a mobile application, it will only need an Android version 4.0 or higher to perform

2. Functional Requirements

This subsection contains the requirements for the interior app recommendation System

- Register
- Login
- User will be able to put his design requirement according to his style desire and home specification
- System will recommend user Design sample according to user information
- User can see Samples Details
- Provide comprehensive product details.
- The system shall display detailed information about the selected products.
- The system shall provide browsing options to see product details.

- The system shall display detailed product categorization to the user.
- Provide a Search facility.
- Provide Customer Support
- User can contact Seller
- Designer/Seller will upload design samples
- Designer will upload Sample Details

- Designer will get Local clients online

3.Non-functional Requirements

3.1 Performance Requirements

The product shall be based on a web application and has to be run from a web server Database.The app shall take initial load time depending on internet connection strength which also depends on the media from which the system is run.The performance shall depend upon the hardware components of the client/customer.

3.2 Safety Requirements

Potentially is no danger concern related to this app. But let's suppose the designer accidentally put some confidential and sensitive information in product details and descriptions then any malicious user can take advantage of that so it's only allowed that the seller is restricted to upload descriptions with predefined constraints.

3.3 Security Requirements

Customer Confidentiality *- The system shall not reveal any personal data related to usage scenarios or statistics.*

Development Access *- All development work shall be password-protected at or above the standards.*

4.Assumptions and Dependencies

Assumption:

- The person who uses this application has an android phone.
- Is that person having any knowledge about mobile services?

Risks:

- Person can use the phone for the wrong purpose.
- Any person is using your application just for fun..

Obstacles:

- Phone services should be available.

- The phone should be connected to the internet.

5 .System Architecture

The Interior Design Recommendation System contains many components that provide different functionality. The below are the overall system diagram that we will discuss in further

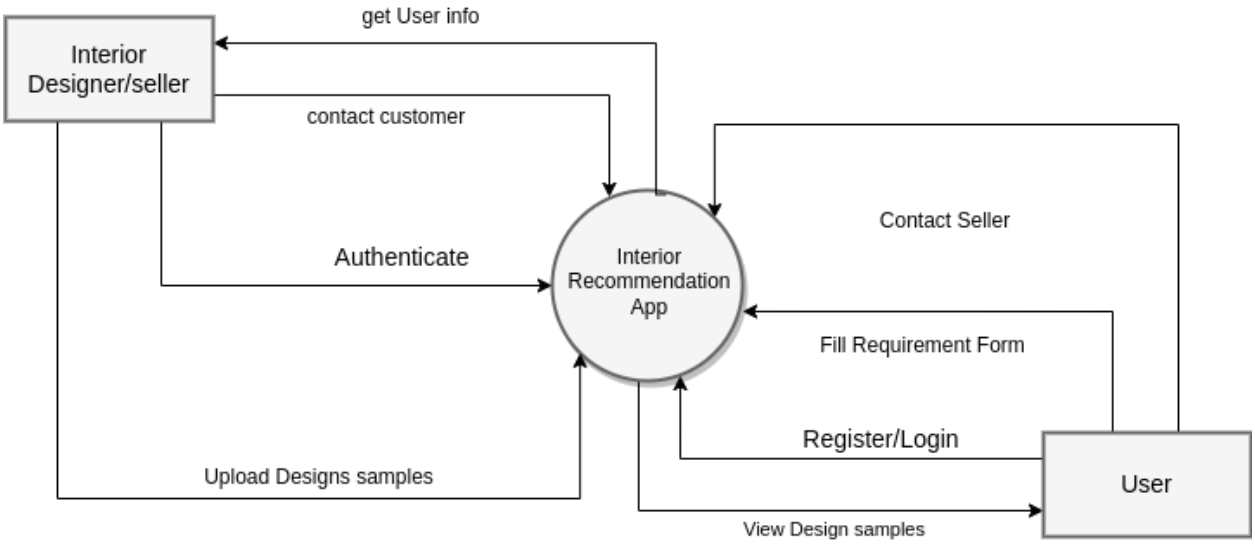


Figure 1.2 System Architecture Daigram

.

5.1 System Level Architecture

The Interior Design Recommendation System contains many components that provide different functionalities. The below are the overall system diagram that we will discuss in further.

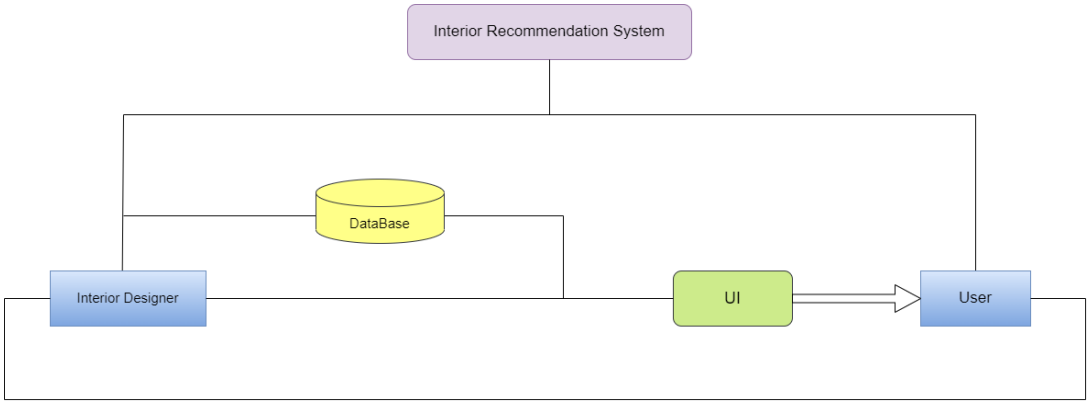


Figure 1.3 System Level Architecture

5.2 Sub-System / Component / Module Level Architecture

- **Interior Designer:**

  In this panel Interior Designer interact with UI to perform operations related to add , delete , edit and manage sample design .Admin will update a data time to time.

- **User:**

  In this panel user interact with UI to perform operations related to Fill requirement

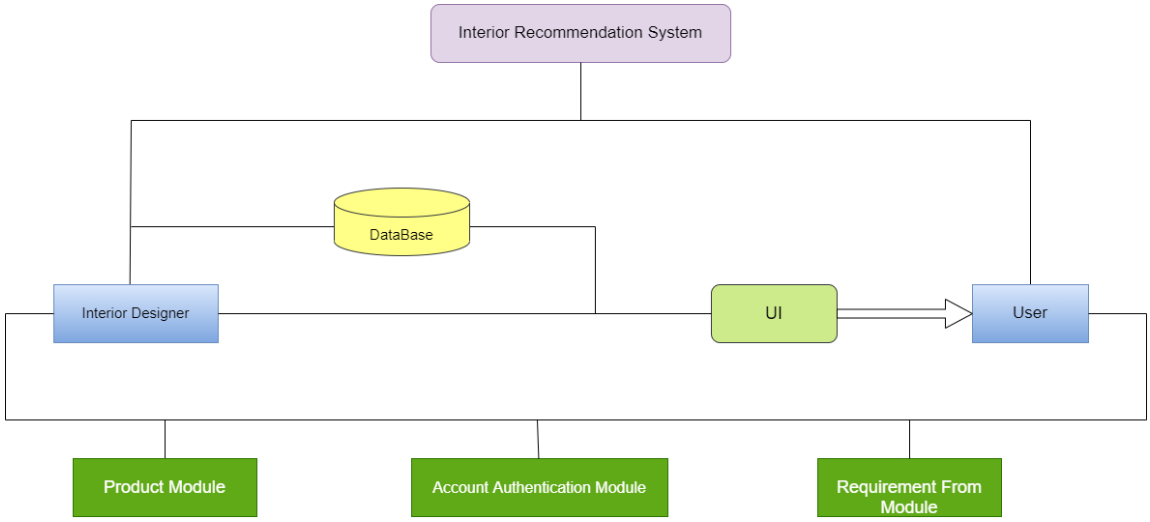


Figure 1.4 Module Level Architecture

5.3 . Sub-Component / Sub-Module Level Architecture (1…n)

Database:

Database will store the data related to user , interior designer , requirement from ,and sample design .So , in case of data lose user/interior designer will recover it from database.

Product module :

This module consist on

Sample Design:

In this we will store data related to product image , title , description etc

Search design:

Interior designer will search design related to his requirement.

Account authentication Module:

This module consist on

User / Interior Designer Registration

User will put its info related to registration information such as email and password

Login:

User will match his credential in this module

Requirement Form Module:

This module consist on

Enter Details:

This module will get info form user in the from of requirements

View Recommendation:

User will get recommendation from system int e form of requirements.

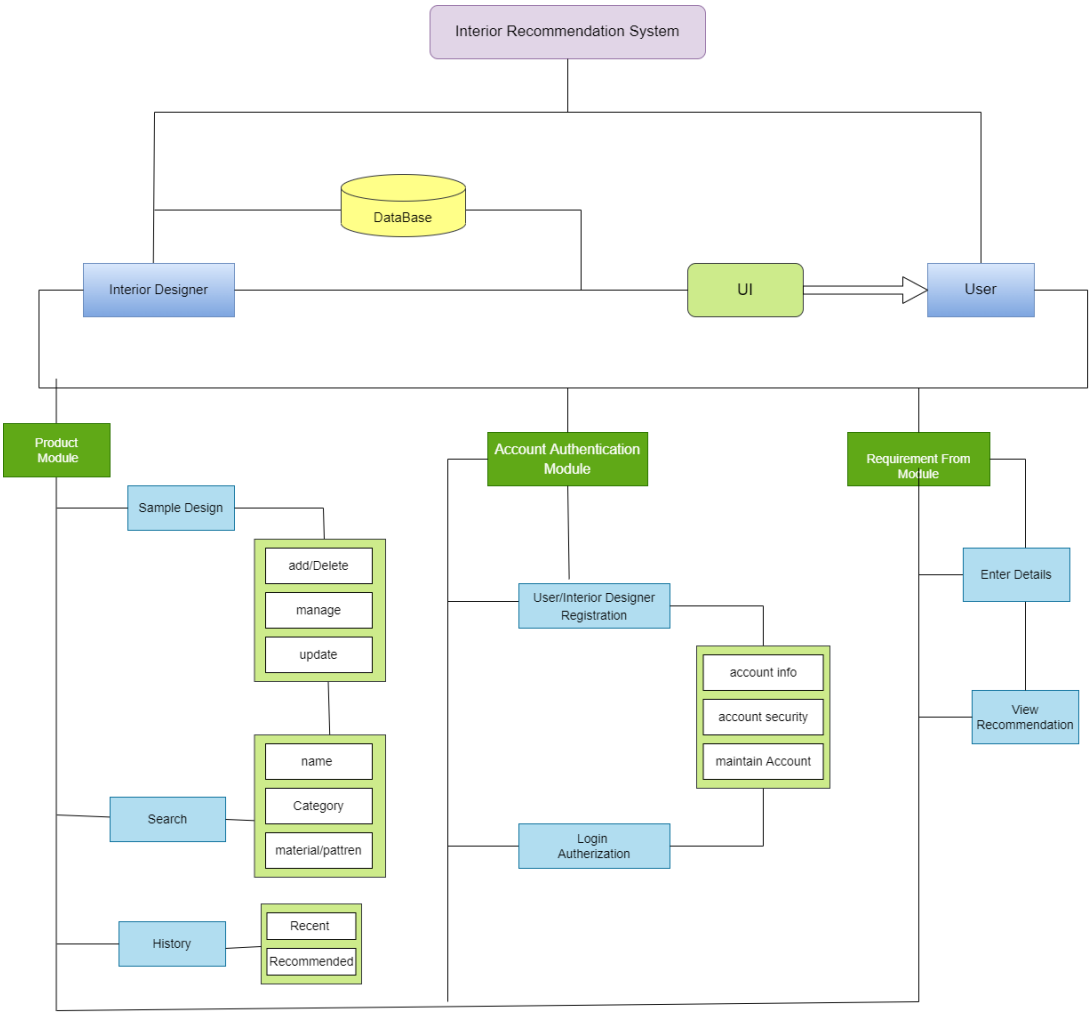


Figure 1.5 Sub-Module Level Architecture (1…n) Diagram

Design Strategies

Our application consist on tracking user behavior and queries

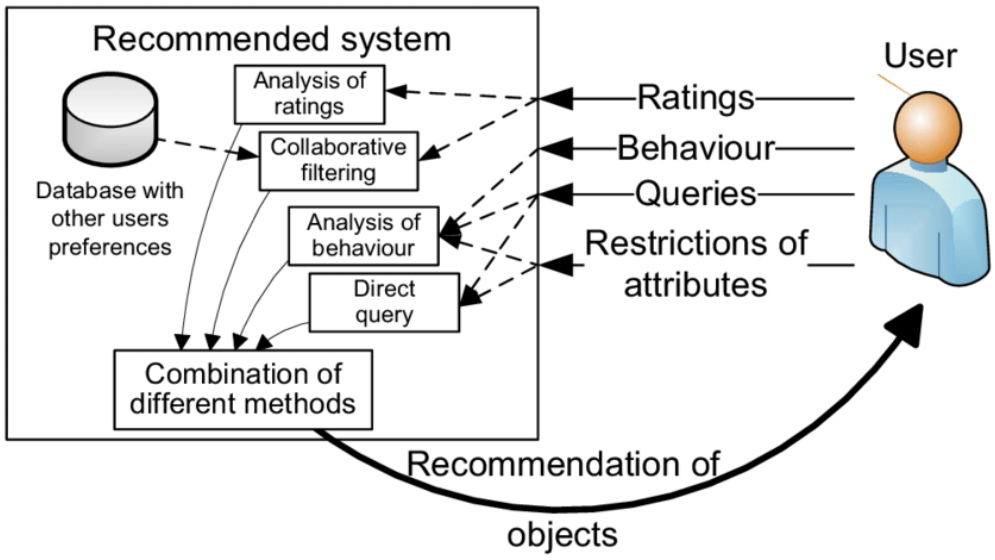


Figure 1.6 Design Diagram

Strategy 1…n

The designing Stratgy will be based on recommendation in which system will tract the user behavior queries to configure the user taste and desire and after that that data will goes to database through which design will be filtered according to attributes given.

Detailed System Design

Class Diagram

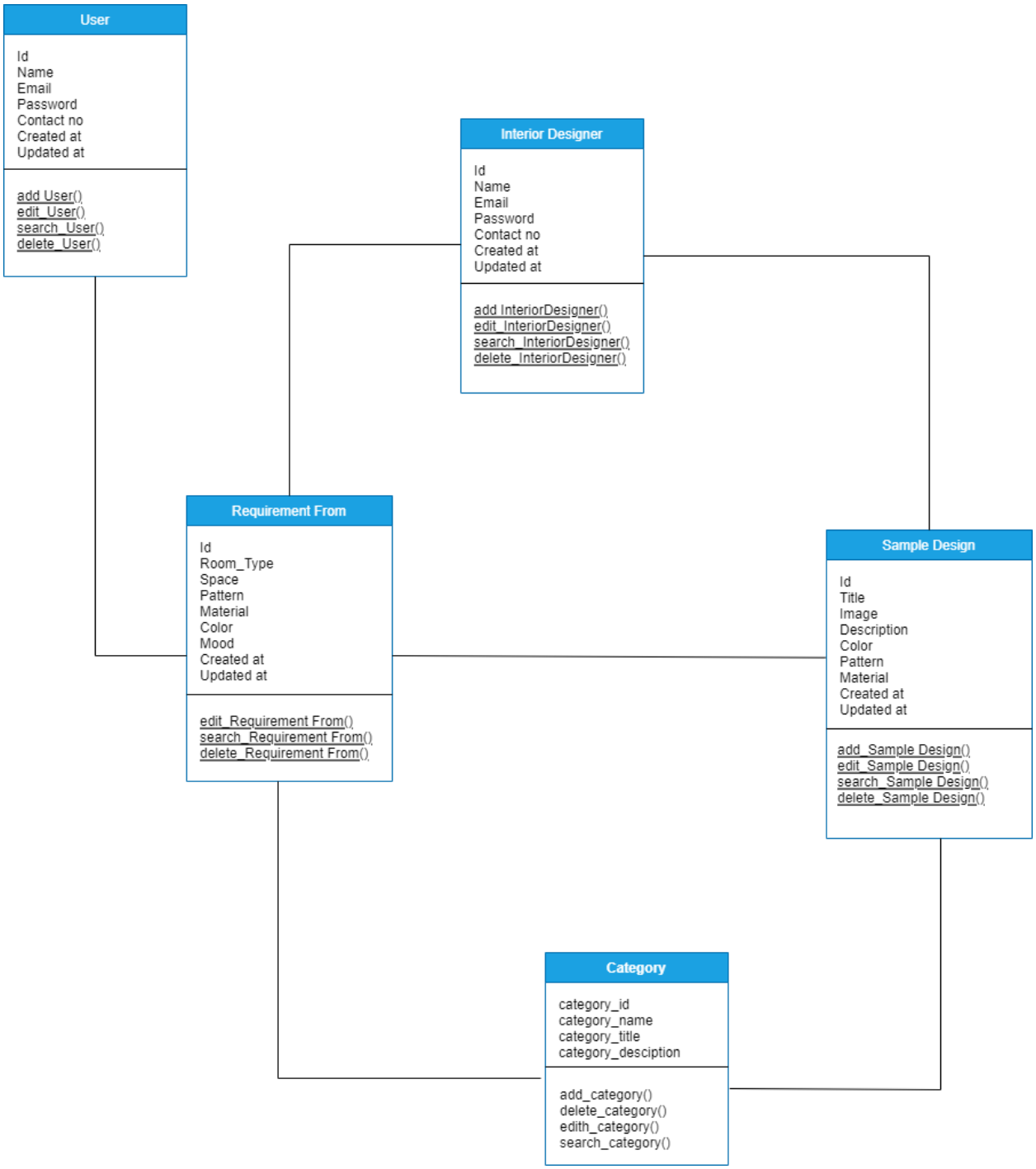


Figure 1.7 Class Diagram

User Class

ID: this is the unique identifier of each user
Name: the name of the user
Password: the password of the user
Email: the email id of the user

Contact no : this is the phone no of user

Interior Designer Class

ID: this is the unique identifier of Interior Designer
Name: the name of the Interior Designer
Password: the password of the Interior Designer
Email: the email id of the Interior Designer
Contact no : this is the phone no of Interior Designer

Design Sample Class

ID: this is the unique identifier of Design Sample
Title: the title of Design Sample
Image: the image of sample Design
Description : the description of sample Design
Color : the color of sample Design
Material: the Material of sample Design
Pattern: the pattern of sample Design

Requirement Form Class

ID: this is the unique identifier of Requirement Form
Title : the title of Requirement Form
Image: the image of Requirement Form
mood : the mood of Requirement Form
Color : the the color of Requirement Form
Material: the Material of Requirement Form
Pattern: the pattern of Requirement Form

Category Class

ID : this is the unique identifier of Category
Name : this is the Name of Category
Title : this is the unique Title of Category
Description : this is the Description identifier of Category

State Transition Diagram

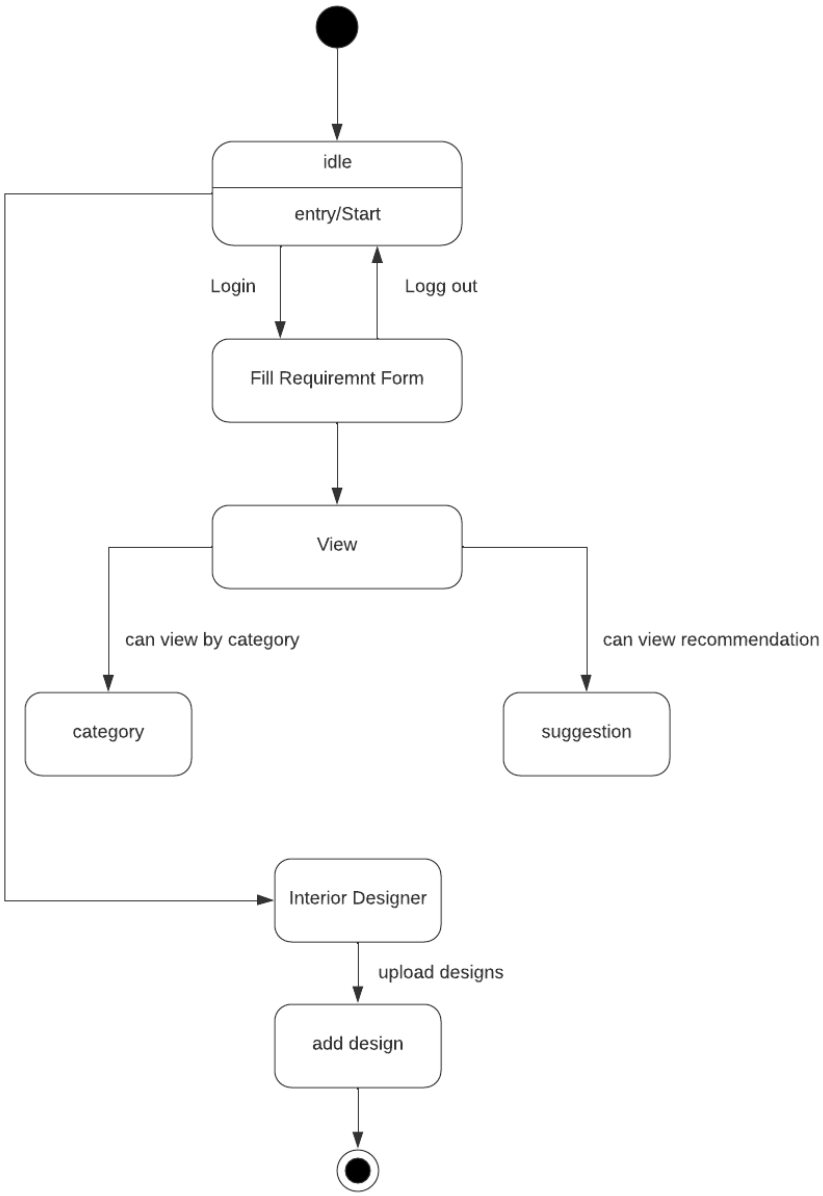


Figure 1.8 . State Transition Diagram

Sequence Diagram:

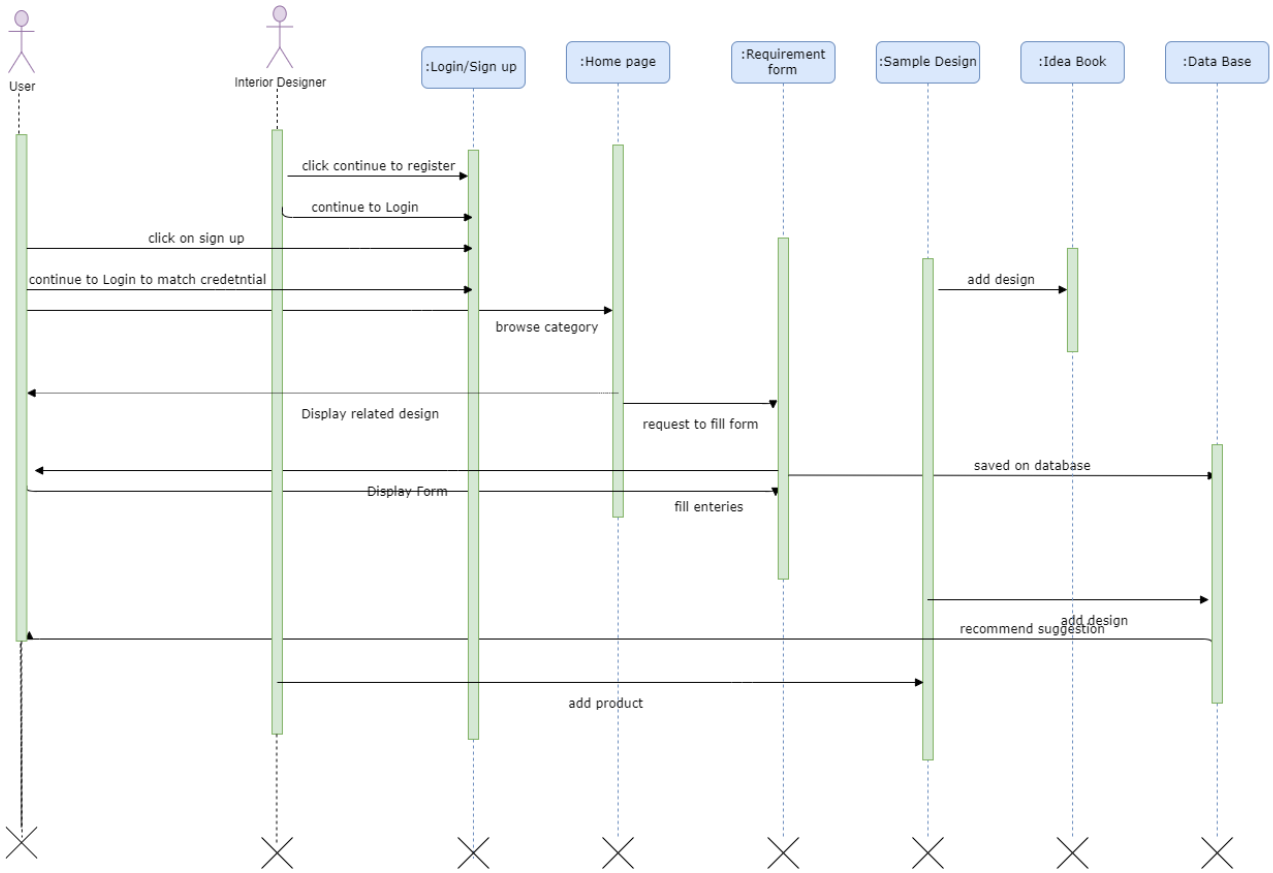


Figure 1.9 . Sequence Diagram

6.Use Case

6.1 Use Case Diagrams

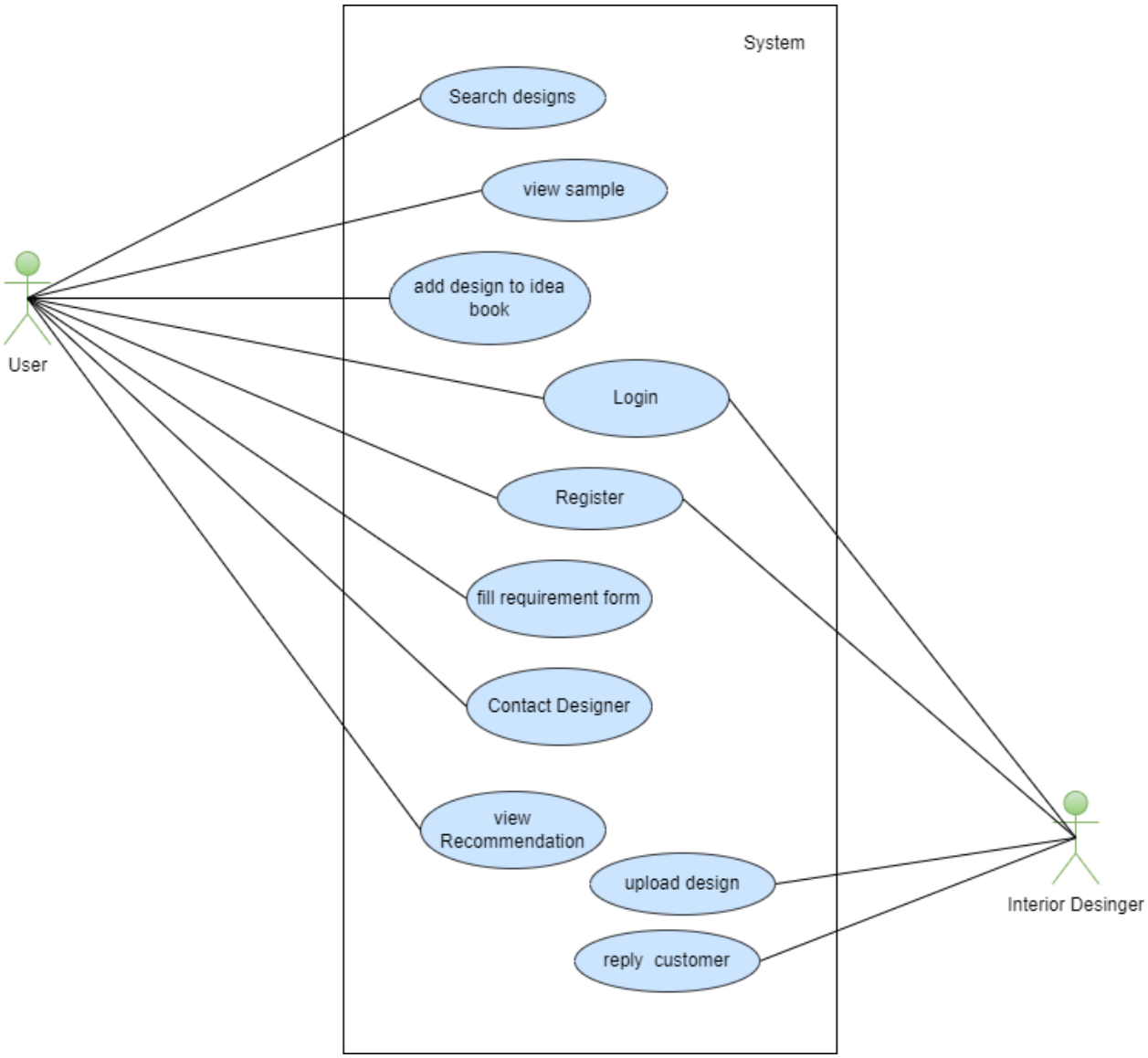


Figure 1.10 Use Case Diagram

6.2 Use Case Description

Use Case UC1: Interior Recommendation System		
Actors:	user , Interior Designer	
Feature:	*User will search for design and Interior designer will guide customer*	
Use case Id:	*UC1*	
Pre-condition:	User and Designer are identified and authenticated	
Scenarios		
Step#	**Action**	**Software Reaction**
1	*Login*	*Application will send credential to database to match the email and password*
2	Registration	Send user data to Database to add a user

3	View Suggestion	System will filter design suggestion based on user requirement criteria
4	Fill Recommendation	Store and process the info
5	Contact Interior Designer	System will direct the user to chats area
6	Add/Delete Design	System will add and delete products from database

Alternate Scenarios: .

1a: At any time system fails,
To support recovery system,ensure that system will persist sensitive state and events can be recovered

2a: At any Time user will forgot his id,
System should provide the mechanism to recover his account

Post Conditions

Step#	**Description**
1	*User successfully logged in*
2	Change made by admin will store on the database and retrieved when require

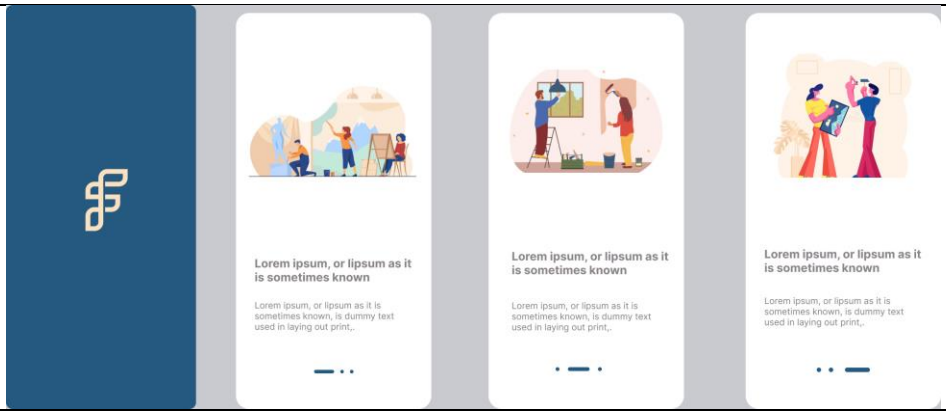
User Interface reference	*List user interface(s) that are related to this use case. Use numbered list in case of more than one user interface elements.*

Concurrency and Response

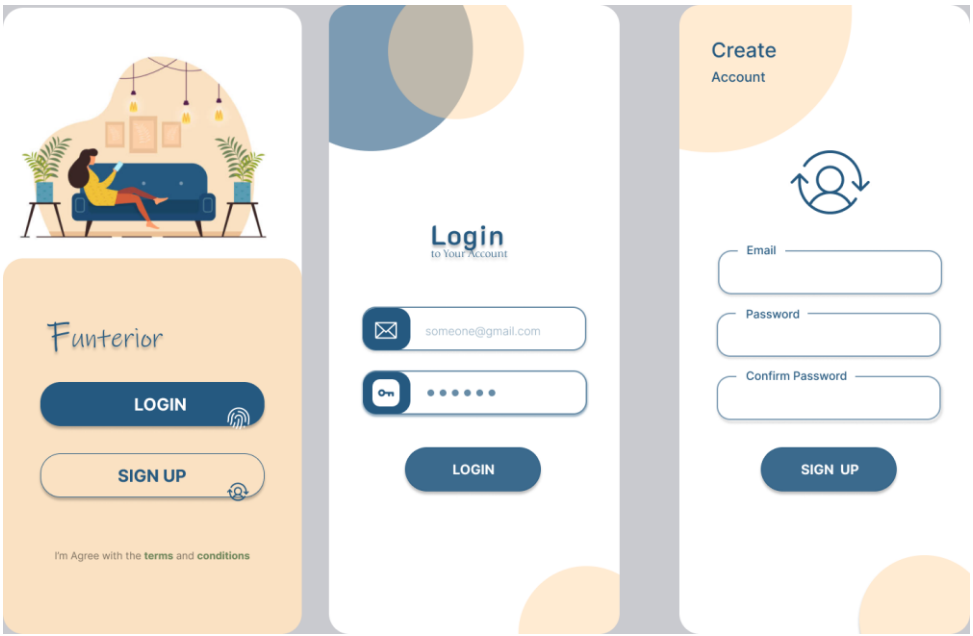
- ***2 users(customer and Interior Designer***
- ***Expected response Time 10 sec***

7 . Graphical User Interfaces

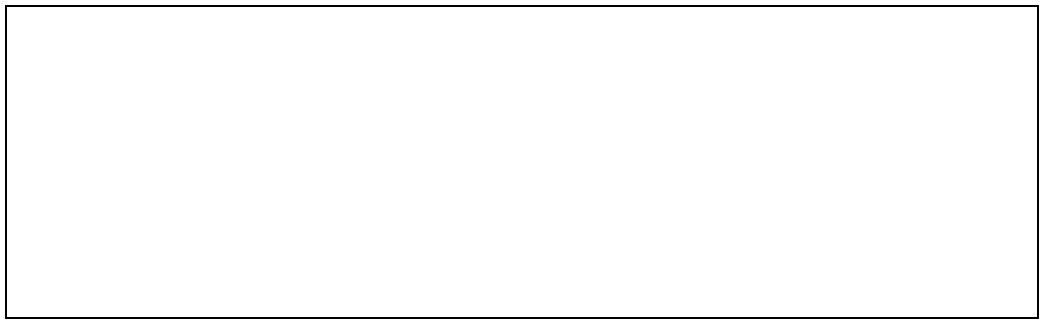
<1: Welcome Screen>	
Interface Id.	*1*
Use case Reference	*UC1*
Snapshot	

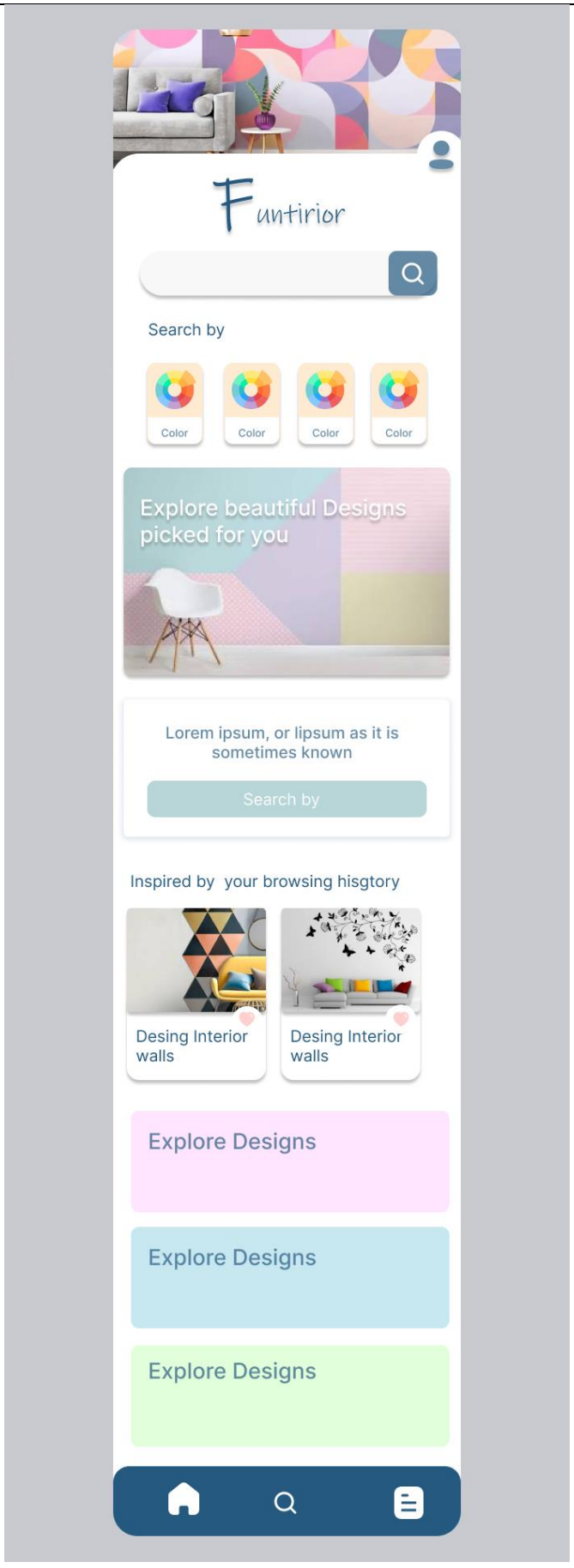


<2: Login/Sign Up>	
Interface Id.	*2*
Use case Reference	*UC1*
Snapshot	



<3: Home Screen>	
Interface Id.	*3*
Use case Reference	*UC1*
Snapshot	




Funtirior
Search by
Color
Color
Color
Color
Explore beautiful Designs picked for you
Lorem ipsum, or lipsum as it is sometimes known
Search by
Inspired by your browsing hisgtory
Desing Interior walls
Desing Interior walls
Explore Designs
Explore Designs
Explore Designs

<4:Sample Design Page>	
Interface Id.	*4*
Use case Reference	*UC1*
Snapshot	

Polygon ZigZag Pattren

Lorem ipsum, or lipsum as it is sometimes known

Lorem ipsum, or lipsum as it is sometimes known, is dummy text used in laying out print,.

Pattren

Materila

Lorem ipsum, or lipsum as it is sometimes known, is dummy t

Contact Seller

<5:Requirement Form>	
Interface Id.	*5*
Use case Reference	*UC1*
Snapshot	

8 .High Level Design

8.1 ER Diagram

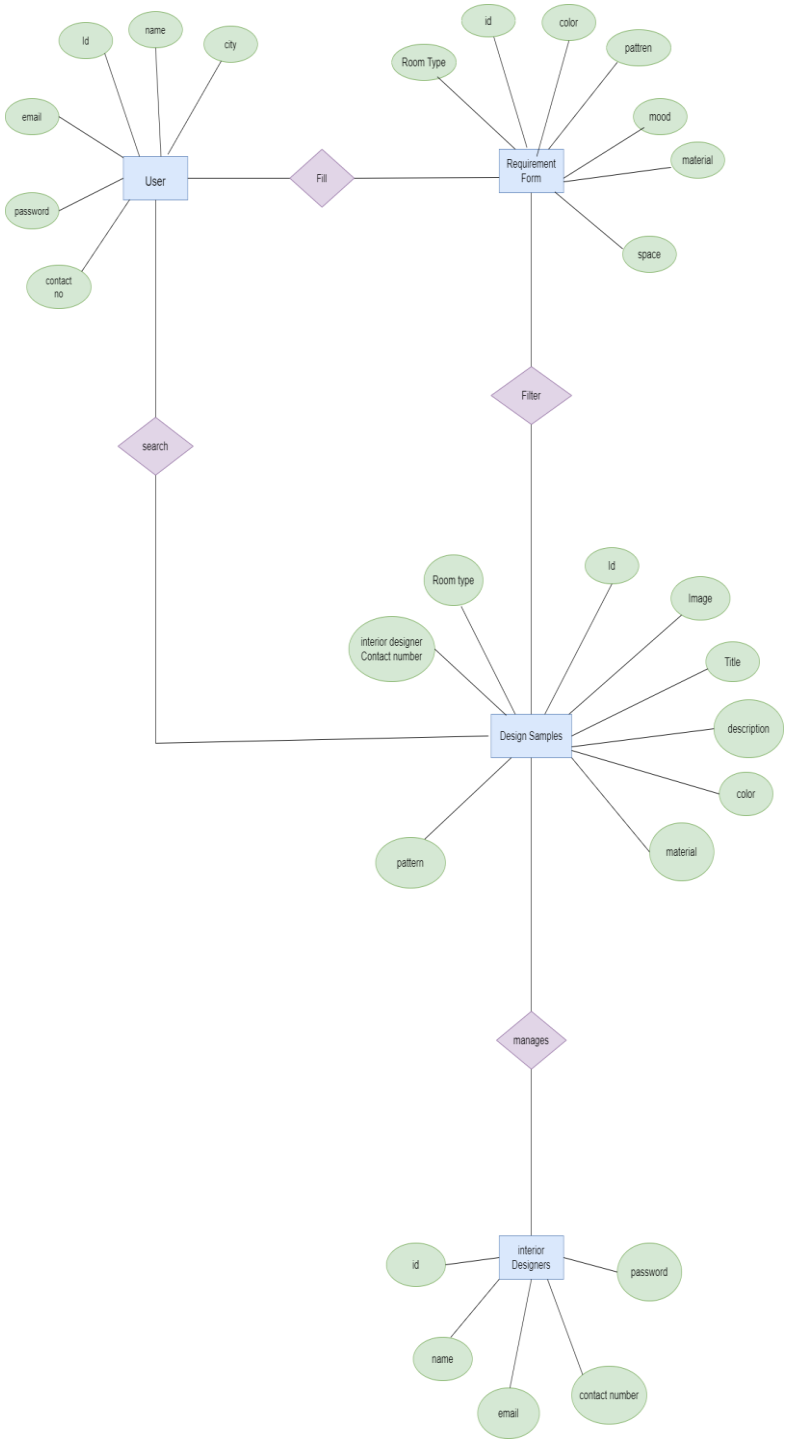


Figure 1.11 . ER Diagram

8.2.Data Dictionary

A Data Dictionary is a collection of names, definitions, and attributes about data elements that are being used or captured in a database, information system, or part of a research project**.**

8.2.1 Data 1

< Data 1>	
Name	*User*
Alias	*Id, name , email , password , contact no, city*
Where-used/how-used	*Data will be stored in User table in Database using user regeneration form , as an output of this process user account will be created ,and user will login by matching credentials*
Content description	*It consist on User database table fields*
Supplementary information	*DataType will be varchar , with fixed length 256*

8.2.2 Data 2

< Data 2>	
Name	*Requirements Form*
Alias	*Id, color , mode ,material , space , pattern , Room Type*
Where-used/how-used	*Data will be stored in Requirement Form table in Database ,which will store user requirement about interior design , using this data application will filter sample data to recommend it to the user*
Content description	*It consist on Requirement form database table fields*
Supplementary information	*DataType will be varchar , with fixed length 256*

8.2.3 Data 3

< Data 3>	
Name	*Interior Designer*
Alias	*Id, name , email , password , contact no, city*
Where-used/how-used	*Data will be stored in Interior Designer table in Database using user regeneration form , as an output of this process Interior account will be created ,and user will login by matching credentials*
Content description	*It consist on Interior Designer database table fields*
Supplementary information	*DataType will be varchar , with fixed length 256*

8.2.4 Data 4

< Data 4>	
Name	*Sample Design*
Alias	*Id, image , description , color , pattern , material , designer contact number*
Where-used/how-used	*Data will be stored in Sample Deign table in Database use to display design in on app*
Content description	*It consist on User database table fields*
Supplementary information	*DataType will be varchar , with fixed length 256*

9 . Requirements Traceability Matrix

Sr#	Feature	Use case ID	UI ID	Priority	Build Number	Use Case Cross reference
1	Login/Sign Up	UC_1	1	2	BN_1	UC_!
2	Home	UC_1	2	1	BN_2	UC_1
.3	Sample Design	UC_1	3	1	BN_3	UC_1
.4	Req Form	UC_1	4	3	BN_4	UC_1

10 . Risk Analysis

17 .1 Risk Tables

RISK ID#	RISK NAME
RS1	Requirement incompleteness
RS2	Time consuming
RS3	Data insecurity
RS5	Performance risk

Risk no 1:

RISK RECORD			
Risk ID	**RS1**	Risk Title	**Requirement Incompleteness**
Owner	Requirement Team	Status	Potential
Risk Description: Requirement team has not experienced to consider all aspects of whole system, due to this risk some requirement may be oversight and ambiguous.			

Impact Description: Incompleteness of requirements will lead us to moreissues in whole process.				
Probability/Impact Value:				
	Probability	Impact		
		Cost	Duration	Quality
Pre-mitigation	0.70	0.20	0.40	0.40
Post-mitigation	0.50	0.10	0.20	0.80

- **Risk no 2:**

RISK RECORD			
Risk ID	RS2	Risk Title	Time consuming
Owner	Un experienced person	Status	Potential
Risk Description: Users has not experienced to consider all aspects of whole system, due to this risk more time is spend on this process such as making different type of reports.			
Impact Description: Much waste of time will lead us to more issues in whole process. Dissatisfaction of client, lack of interest .			
Probability/Impact Value:			

	Probability	Impact		
		Cost	Duration	Quality
Pre-mitigation	0.50	0.20	0.40	0.80
Post-mitigation	0.70	0.10	0.20	0.40

Risk no 3:

RISK RECORD			
Risk ID	RS4	Risk Title	**Performance risk**
Owner	Un experienced users	Status	Potential
Risk Description: When our project performance is not good and it does not respons in a better way then no one like it and show their interest about this.			

Impact Description: Very bad performance of the project leads to very big loss and it does not fulfill the user's requirements .				
Probability/Impact Value:				
	Probability	Impact		
		Cost	Duration	Quality
Pre-mitigation	0.70	0.20	0.40	0.40
Post-mitigation	0.90	0.10	0.20	0.80

11 .Cost Estimation Sheet

1.	**Software cost**	500$
2.	**Package Software**	100$
3.	**Hardware**	300$
4.	**Network**	100$
5.	**Client**	200$
6.	**Misc**	
		Total Cost =1200$

12 .References

This section should provide a complete list of all documents referenced at specific point in time. Each document should be identified by title, report number (if applicable), date, and publishing organization. Specify the sources from which the references can be obtained (This section is like the bibliography in a published book).

Ref. No.	Document Title	Date of Release/ Publication	Document Source
PGBH07-2022-SRS	Design Document	July ,07 , 2022	https://github.com/Tayyba-Dev/Dcoumentation.git

13 . Appendices

Include supporting details that would be too distracting to include in the main body of the document.