Zubaria Rasool
(01-134132-203)

Mobile Application for Interior Designing

Bachelor of Science in Computer Science

Supervisor: Muhammad Umar Khattak
Co-Supervisor: Dr. Muhammad Muzammil

Department of Computer Sciences
Bahria University, Islamabad

June, 2017

Certificate

We accept the work contained in the report titled **"Mobile Application for Interior Designing"**, written by Miss. Zubaria Rasool as a confirmation to the required standard for the Partial fulfillment of the degree of Bachelor of Science in Computer Science.

Approved by:

Supervisor: Muhammad Umar Khattak (Senior Lecturer)

_____

Internal Examiner: Dr. Arif Ur Rahman (Assistant Professor)

_____

External Examiner: Dr. M Sajjad Khan (Assistant Professor)

_____

Project Coordinator: Dr. Arif Ur Rahman (Assistant Professor)

_____

Head of the Department: Dr. Faisal Bashir (Associate Professor)

_____

June, 2017

Mobile Application for Interior Designing

Zubaria Rsool
(01-134132-203)

Abstract

Mobile Application for Interior Designing Application is a platform for the Android mobile users. The main Project idea is to make a mobile application where users can set their room, offices or home. In this application users can set the interior of any room, building, hall etc. The application is useful to all those people who are interior designers and are fond of setting their home on monthly or weekly bases. The application can also provide a platform to the interior designers to store the useful information and settings according to the requirements of the users. The users must place the size of the hall, rooms etc. and the furniture will be placed according to the requirement. The application has the database to store the settings which the users want. This system is made using Android Studio and database.

Acknowledgements

First, I would like to thank Allah Almighty God who blessed me at every stage of my life. He gave me healthy life and good mind; with which I can get comprehensive knowledge.

I would also like to thank my parents and other members of my family for their support throughout my studies. There are few other people to be thanked, because without their support it wasn't possible for me to achieve all of this.

I would like to thank my honorable supervisor Sir Muhammad Umer Khattak without his guidance and help I couldn't have come this far in complete my project. He guided me at every stage about each aspect of this project. He motivated me in such a friendly many ways that were very helpful for me to complete this project.

Secondly, I would like to thank my teachers who did their best to deliver me the best of their knowledge. They played an important role, in completion of my project.

I am also thankful to my friends who encouraged and supported me during the completion of my research work. It would have been difficult for me to complete this project without their help and support.

Zubaria Rasool
Islamabad, Pakistan

June, 2017

Contents

List of Figures

List of Tables

Chapter 1

Introduction

1.1 Background

To redesign or rearrange a room is a huge problem for those people who love to change their rooms on monthly basis and for those who have transfer issues due to which after some time they must change their houses and must redesign it and for designing different office rooms etc.so this is the app which will help those people This app is the solution of all the problems mentioned above. Now what this app will do? Take a picture of a room. Place items created using graphics to choose the best suitable design. Instead of practical / physical implementation and placing items physically, all this can be done by using this single app in few minutes.

1.2 Introduction

I present an interactive furniture layout system that assists users by suggesting furniture arrangements that are based on interior design guidelines. My results demonstrate that the suggestion generation functionality measurably increases the quality of furniture arrangements produced by participants with no prior training in interior design. You are moving into another home and need to orchestrate the living room furniture. You have a couch, easy chairs, end table, end tables, hassocks, and a media focus. What course of action will make the most agreeable and outwardly satisfying setting for your home? Furniture position is testing since it requires together upgrading an assortment of useful and visual criteria. Talented inside fashioners take after various abnormal state rules in delivering furniture designs. In a parlor for instance, the furniture ought to bolster agreeable discussion, adjust with noticeable elements of the space, and all in all frame an outwardly adjusted piece. By and by these rules are regularly loose and occasionally conflicting. Experienced originators figure out how to adjust the tradeoffs between the rules through an iterative experimentation prepare. However, a great many people in Charge of outfitting another home have no preparing in inside outline. They may not know about inside outline rules and they are probably not going to have the inferred learning furthermore, encounter required to ideally adjust the tradeoffs. Such novice fashioners depend on instinctive principles, for example, pushing huge furniture things against the dividers. These natural standards regularly prompt practically insufficient and outwardly imbalanced game plans. The subsequent

furniture designs "just don't look or feel right," and far and away more terrible the beginner fashioner "can't pinpoint what the issues are". In summary, my work makes two main contributions. First, we identify and operationalize a set of design guidelines for furniture layout. Second, we develop an interactive system for creating furniture arrangements based on these guidelines. My results demonstrate that the suggestion generation functionality of my system measurably increases the quality of furniture arrangements produced by users with no prior training in interior design.

1.3   Objective

To design a Android Studio based application for smart phones that provides best customization options for our client's requirements (room, offices, or any other structures) by utilization of the spaces and their said resources and requirements.

1.4   Problem Description

In real life, it is very difficult to lift or move heavy furniture and at times manage office space when you need to best manage and utilize the said resources, from one place to another and from time to time based on the changing requirements. The task of rearrangement is not only trying, challenging and time consuming but also hinders to the quality of work that needs to be done. This Proposed project will not only help answering the above said problems but serve as a tool for them to best utilize the said space, area and other resources, all adding to the overall quality, efficiency and effectiveness of the work operations.

1.5   Methodology

Firstly, the app will be designed and then it is to me implemented on the interface of the application. In this Project the Android Studio is used which will be used for designing the furniture and other items, Camera will click the photo and then user will give the commands to app that which item should be placed where?First, user will take a picture of room then app will calculate the area of the room after that it will give the option of categories, that which item should be placed where, and it also gives the option of rearranging that setting. In the end will give the final picture of the room.

1.6   Project Scope

This project is very important and can serve as a resource tool for several industries such as interior designing and decoration, home furnishing, home building and construction and serves as a platform to numerous users and owner of the companies to customize their required and desired spaces and areas.
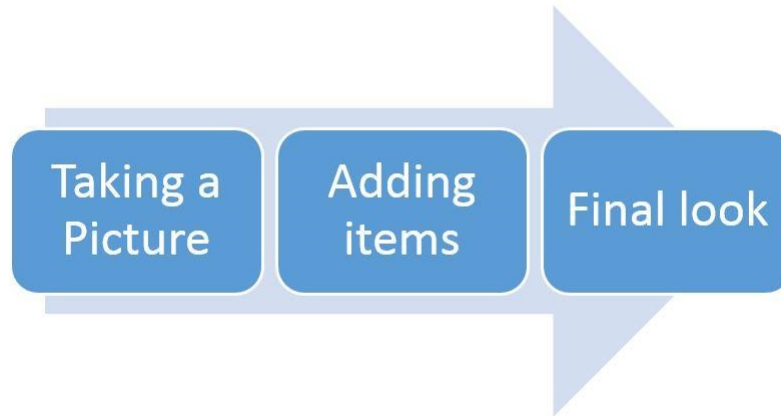
Figure 1.1: Five Modules of System

1.7   Feasibility Study

Keeping the above-mentioned scope in mind, all the goals are likely to be achievable before the deadline.

- Risks Involved: There is no such risk in my Project.

- Resource Requirement: Android Mobiles, Tab, Mobile Camera etc.

- Competition Analysis: If there exists such tool in the market, how it is being implemented and what is my edge over them.

1.8   Solution Application Area

As this will be a good project for the future of interior designing. It will provide users and owner a new direction of the field. This application will simple save the time of both the interior designer and the person who will pay for to him/her. Application will easier settle everything related to interior designing. Like it can settle furniture in room in a picture and user don't have to do hard work.

1.9   Tools/Technology

- Android Studio

Chapter 2

Literature Review

The application is an important part of the daily life which is used in the interior designing because many people like to change their room after few months so it is difficult for everyone to spend lot of money by paying interior decorator. By this application these unusual expenditures can be cut lose and it will be easy for the user to set their room according to their requirement without interruption of anyone [1].

2.1 Interior Designing Application

In previous designed applications, the working of every application was very different from this one as this application can complete be **modeled** at running time or we can say on present time. The previous applications usually have option to set the furniture's and other setting which are used in the room. Room size should be entered in the application to set the room according to the user requirements. In previous applications, the user was bound to use only the data of interior designing which was present in the database of the application or the data. In our country, interior designing is done only by manual system which is done only by the interior designer by himself. These applications were easy in use but it was difficult or impossible for a person who do not belong to this field to work on this application [2].

2.2 Mobile Application for Interior Designing

Mobile application for interior designing will be a good option for those who are interested to change their room and home interior on month, weekly or yearly bases. It will also provide a platform for the users that spend lot of money and time in these interior designing. Now-a-days people are so much busy that they don't have time to go to interior designer and to ask designer that what and when he will be available to complete their home's interior designing. To avoid this kind of problem this application will be a great bow to the field of interior designing. As my application is unique but the application which I am about to develop is much different from the applications that are already present in the market or in the industries. In this application, the user will take a live picture of the room. By using his/her

android phone camera which will help user in capturing the picture of the room, different option of colored walls, cupboard setting, sofa setting, bed setting, table setting etc. and cupboard colors, sofa colors, bed colors, table colors etc. these all settings and color combinations can be done live on the application. This application will also provide some other features as well. If an interior design is done once then there while be an option of previous data of interior design which is present in database this application will store each room data with its size so that in future if the user wants to use it again. It will be easy for him to search and edit the data present in it. This application has all the features what a user except from the application.

2.3   Color Snap

Paint brand and commonly recognized name Sherman-Williams wants to sprinkle the palette of your most loved scene—or material, or show-stopper, or whatever other wellspring of motivation—onto your inside. The application can investigate the shades of any photograph on your cell phone and let you know which shade of Sherman-Williams paint it matches. Examine the substance of its 1,500-shade stock and apply it to virtual specimen rooms [3].

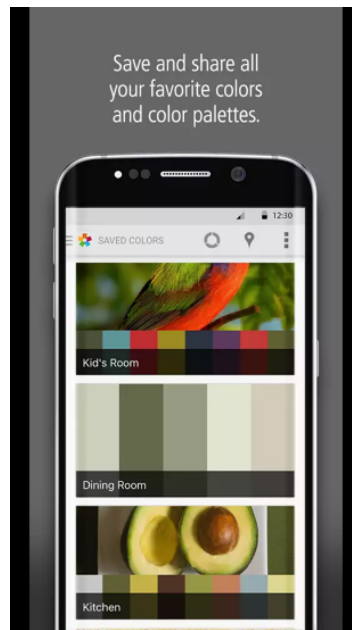Figure 2.1: Color Snap

The following are the advantages and disadvantages of this application:

Advantages	Disadvantages
1. It is good to see splashes.	1. It is not a free app.
2. Good user Interface.	2. Does not allow you to preview your favorite color.
3. Many color options.	3. Can't visualize your room.

Table 2.1: Color Snap Advantages and Disadvantages Table

2.4 Zillow Digs

Zillow, the accessible online database that has a gauge for (nearly) every land address in America, now offers a similar administration for home change and plan. The Zillow Digs application gives appraises on the variety of inside activities in its database, at that point guides you to retailers to help source your items. By and large, it enables you to pick the venture that matches your value point. The application additionally gives guidance from genuine inside planners, and a web-based social networking stage that enables you to share, as, and take after different clients [4].
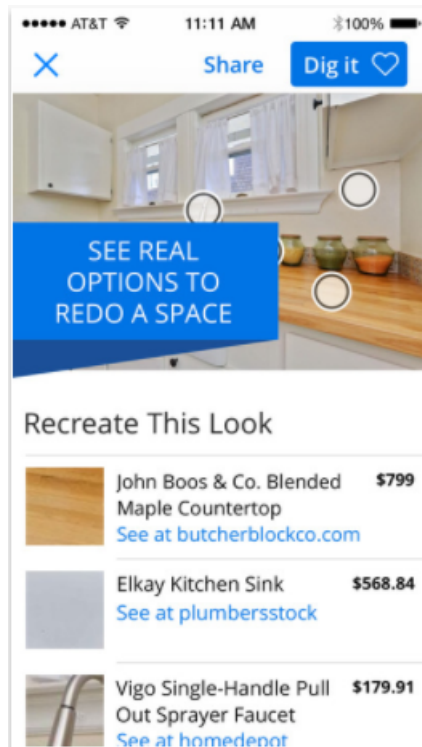
Figure 2.2: Zillow Digs

The following are the advantages and disadvantages of this application:

Advantages	Disadvantages
1. Good articles relating Home interior.	1. Less Interactive capabilities.
2. Valuable information related to products.	2. Not available on Android.
3. Have easy decision making.	3. Very Old with no more updates.

Table 2.2: Zillow Digs Advantages and Disadvantages Table

2.5 Houzz

Houzz is, apparently, the mother of all outline applications—CNN once called it the "Wikipedia of inside and outside plan." Its database contains more than 5 million high-res home pictures labeled and sorted out as indicated by style, room, and area. Peruse, hunt, and spare top choices to your "Idea book," which both stores your thoughts and gives the application's genuine living, proficient outline experts a thought of what you're into [5].
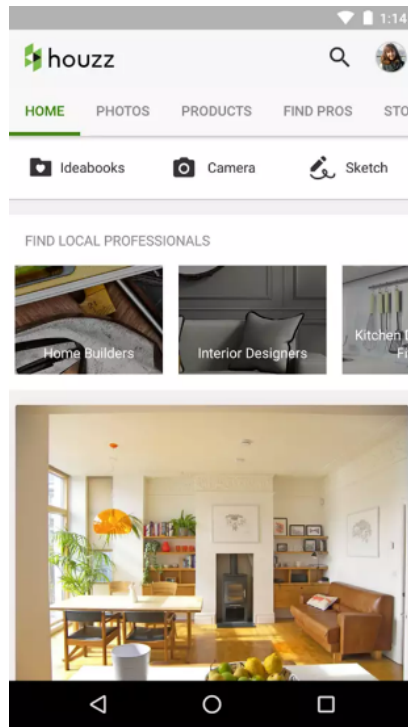

Figure 2.3: Houzz

The following are the advantages and disadvantages of this application:

Advantages	Disadvantages
1. Good articles and pictures.	1. Pictures take too much time to load.
2. Amazing endless inspirations.	2. Categories don't always match the option.
3. Fun to use.	3. Sign-in problems.

Table 2.3: Houzz Advantages and Disadvantages Table

2.6 Homestyler

HomeStyler charges itself as a "virtual fitting room," and as it should be. Experiment with various searches for your space by superimposing genuine items—3-D models of different furniture, apparatuses, etc.—onto a real preview of your front room. Share your thoughts in the Design Gallery, and investigate what every other person is doing. Likewise peruse profiles and arrangement of real fashioners in your general vicinity to make inquiries and make associations [6].
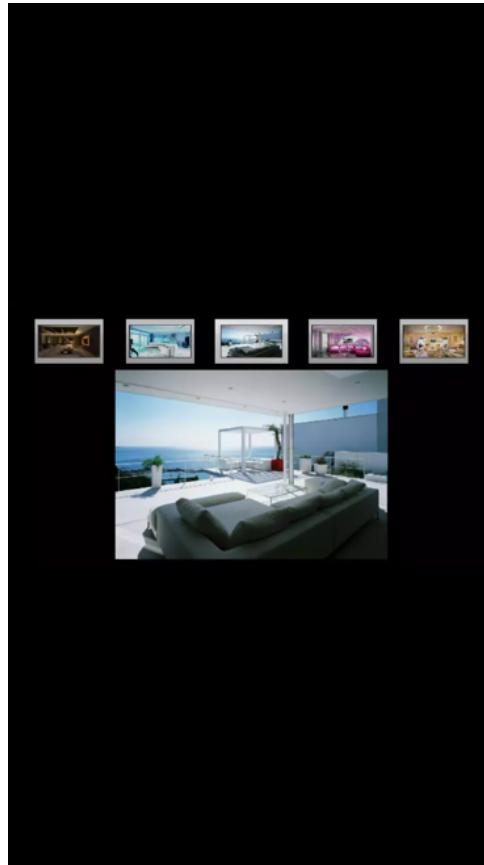

Figure 2.4: Homestyler

The following are the advantages and disadvantages of this application:

Advantages	Disadvantages
1. Really good choice of pictures.	1. Not much options.
2. Very fast and efficient.	2. Not available on IOS.
3. Very Easy to Use.	3. Very Old with no more updates..

Table 2.4: Homestyler Advantages and Disadvantages Table

Chapter 3

Requirement Specifications

In this project, Requirement phase is very important because specific progressing of this project is entirely dependent on the specified requirements. The system is developed by keeping the user's demands in mind as they are the important stakeholders of this system. Usually things become easy to handle when they are divided into small parts; when long steps are divided into small steps and then integrated them to get desired product [7].

3.1   Application Functions

Identifier	R1
Title	View picture.
Requirements	Previous pictures must be present in the gallery.
Rationale	To select pictures from the gallery.
Restrictions And Risks	There are no pictures in the gallery.
Dependencies	Device's Memory.
Priority	Normal.

Table 3.1: Application Gallery

Identifier	R2
Title	Go to app.
Requirements	App must be installed.
Rationale	Opens the application for use.
Restrictions And Risks	The application is hidden or not installed or restricted.
Dependencies	Whether the user has hidden it or has not installed it.
Priority	High.

Table 3.2: Go to App

Identifier	R3
Title	Picture Clicking.
Requirements	Camera should be operable and the application has the access to the camera.
Rationale	User can take picture of the room/area.
Restrictions And Risks	Application has no access.
Priority	Normal.

Table 3.3: Picture Clicking

Identifier	R4
Title	Picture Post.
Requirements	Link to internet and social media websites.
Rationale	User can upload the result picture at social media websites.
Restrictions And Risks	Internet is down or application is not linked to social media websites.
Dependencies	Internet Connection.
Priority	Low.

Table 3.4: Picture Post

Identifier	R5
Title	Delete.
Requirements	A picture must be clicked before to have it deleted.
Rationale	A user can delete a picture he does not like.
Dependencies	A picture must be clicked before.
Priority	Low.

Table 3.5: Delete

3.2 Functional Requirements

This section elaborates all the functional requirements that were gathered while keeping all the stakeholders in focus.

3.2.1 Camera View:

The application is unity based and for that a phone having a good camera is the basic requirement of the system. User will take a picture of the room.

3.2.2 Icons Setting:

First the user will take a picture of the room. User will simply set the icon (Furniture's and different materials) according to the requirements which he/she want to place according to the requirements. Icons which are being set according to that are sofa, bed, table, chairs etc.

3.3 Non-Functional Requirements

Along with functional requirements non-functional requirements are also important to be fulfilled.

3.3.1 Performance:

An android application always required a good hardware which good and compatible and work properly so that that the performance of the application should be good and effective.

3.3.2 Reliability:

It will be very easy for users to use this application if the interface is simple. Simple things have more impact on user than the complicated one. The interface is designed by keeping in mind the requirements of the users. In case of any failure it should maintain the actual state. The application is reliable and chance of crashing is very less.

3.3.3 Operability:

Interface will be user friendly will be easy to understand.

3.3.4 Simplicity:

As the interface and software be user friendly it will be simple to use. The work flow will be easy. It will be easy to use for the final user.

3.3.5 Scalability:

System should be upgradeable if required.

3.3.6 Maintainability:

System should be easy to manage according to the requirements.

3.4 Use Case Diagrams

Use case diagram show the interaction or relationship of user with different parts of the proposed system and it helps us to show the functionality of our system. Use cases are also helpful in defining the role of different users along with their interaction with several activates.
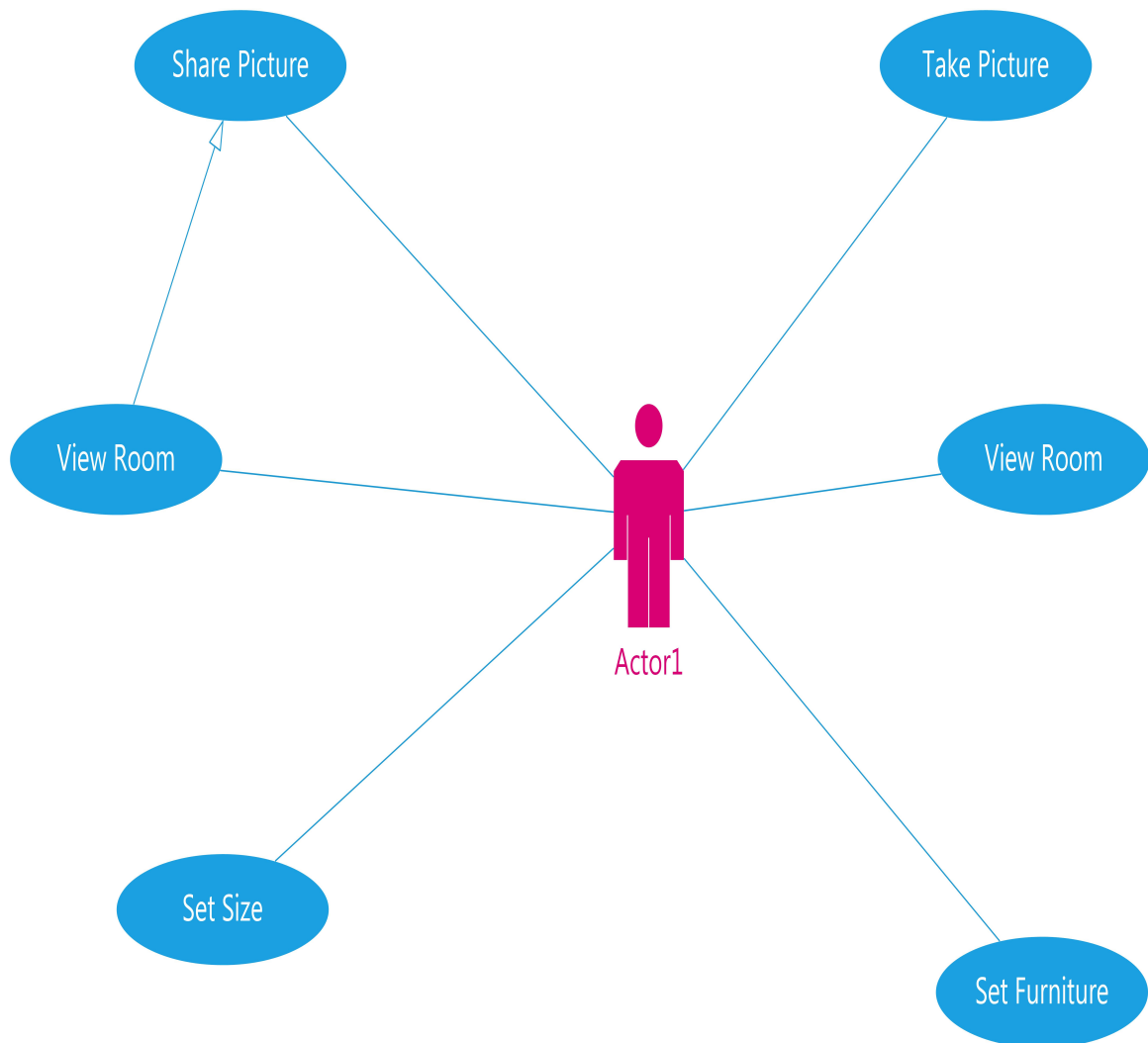
3.4.1 General Use Case

Figure 3.1: General Use Case

General use case shows that the sole actor in this system is the User. User can take a picture, view the room, and set the furniture in the picture of the room. User can set the size of the furniture to have it adjusted to the room and can see the result of the complete process in one picture.

3.4.2 Use Case 01

In UC-1, user can use the application to click the picture of the room or area that needs to be designed. A picture is clicked via the camera of the android device.
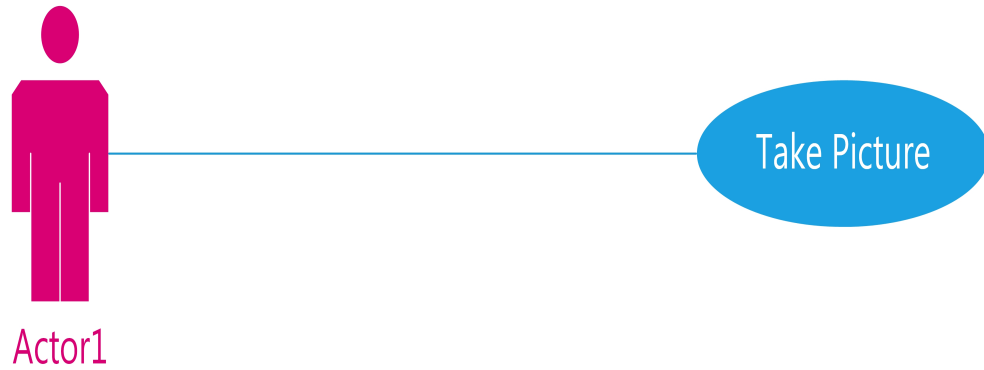

Figure 3.2: Take Picture Use Case

Use Case ID	UC-1
Title	Take Picture.
Description	User takes a picture of the room.
Primary Actor	User.
Post-Condition	Picture is taken.

Table 3.6: Take Picture Use Case

3.4.3 Use Case 02

In UC-2 user can view the picture of the room and resize the room to the preference of the user and according to the designing the user wants.
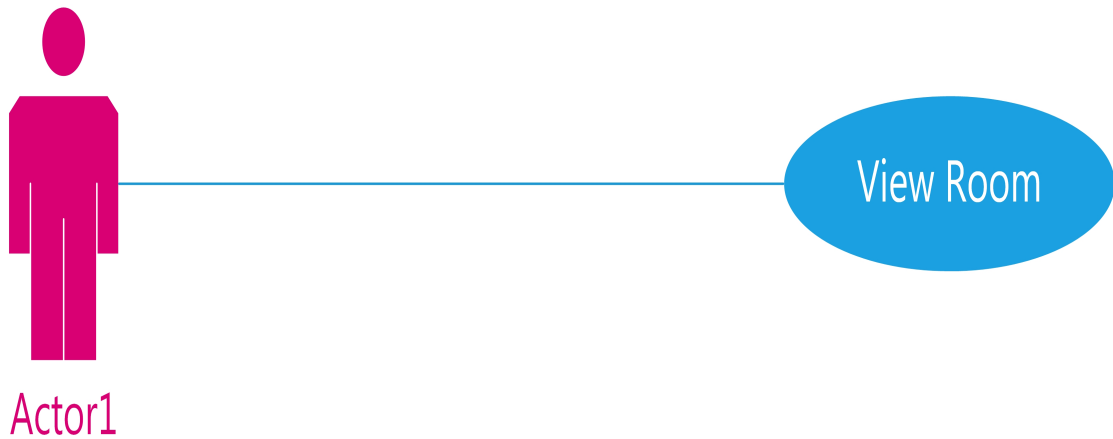
Figure 3.3: View Room Use Case

Use Case ID	UC-2
Title	View Room.
Description	User views the room in the picture and resize the room.
Primary Actor	User.
Pre-Condition	Picture is clicked.
Post-Condition	Picture of room is resized.

Table 3.7: View Room Use Case

3.4.4 Use Case 03

In UC-3, User move the furniture in the picture and place it at desired position. This action is completed using the drag and drop method.
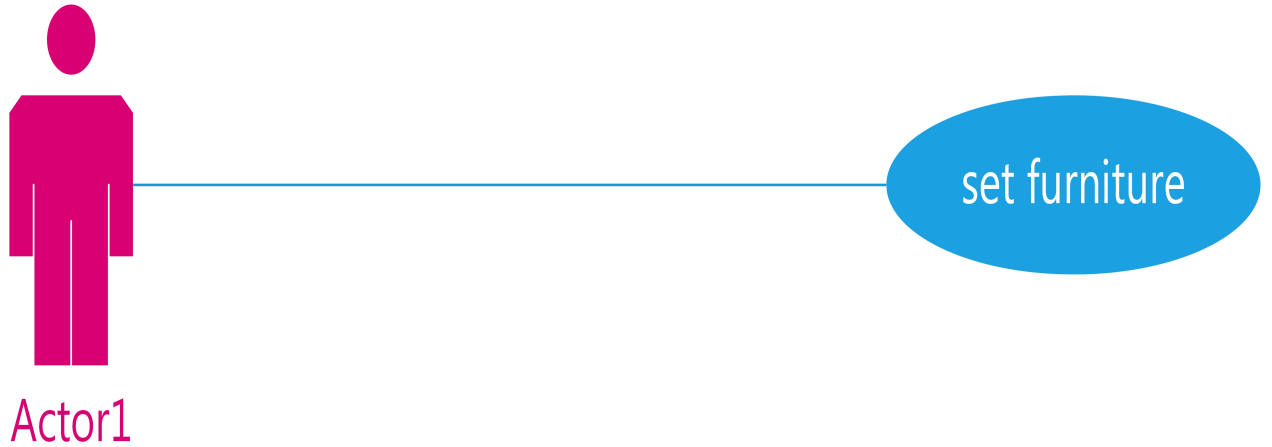
Figure 3.4: Set Furniture Use Case

Use Case ID	UC-3
Title	Set Furniture.
Description	User places furniture (pictures) using drag and drop method.
Primary Actor	User.
Pre-Condition	User will take picture.
Post-Condition	Furniture is placed at the user's required places.

Table 3.8: Set Furniture Use Case

3.4.5   Use Case 04

UC-4 shows that the user can also resize the furniture icons according to the requirement of the user and according to the room.
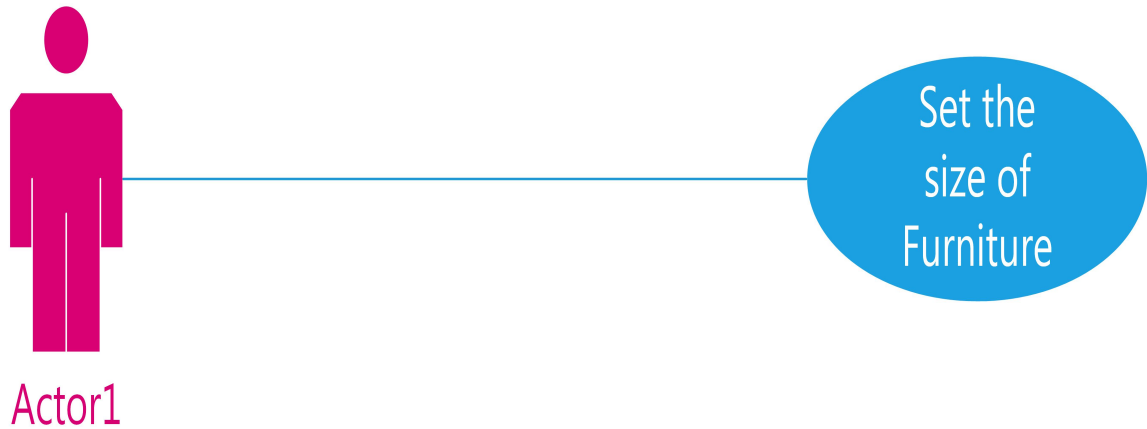
Figure 3.5: Set Furniture Size Use Case

Use Case ID	UC-4
Title	Set Size of Furniture.
Description	User sets the furniture in the room and sets their sizes.
Primary Actor	User.
Pre-Condition	Picture is Clicked.
Post-Condition	Picture will crop the room according to the required area.

Table 3.9: Set Furniture Size Use Case

3.4.6 Use Case 05

UC-5 shows that the user can view the result in one picture and can also use this application to share that picture on social media platforms.
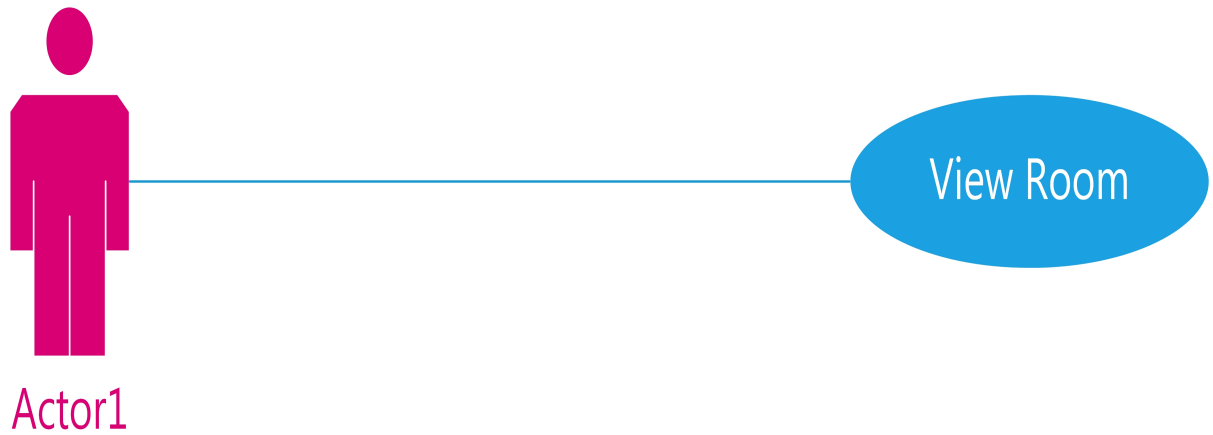
Figure 3.6: View Room Use Case

Use Case ID	UC-5
Title	View Room After.
Description	User will be able to visualize the complete process in one picture.
Primary Actor	User.
Pre-Condition	Entire process is completed.
Post-Condition	Picture will be shared to others using the app.

Table 3.10: View Room Use Case

Chapter 4

System Design

4.1   System Overview

In this portion of report the detail architecture of proposed system with the help of detailed diagrams is discussed. This system will allow user to take pictures and of the room and place the different items on that picture to give an overview of the design of the room. The main objective of this application is to design a unity based application for smart phones that provides best customization options for our client's requirements (room, offices, or any other structures) by utilization of the spaces and their said resources and requirements. Instead of practical /physical implementation and placing items physically, all this can be done by using this single app in few minutes. There are different types of items that can be choose from the given menu of multiple types of items. Different UML diagrams would be used to show different aspects of our system like its structure, flow and other things.

4.2   System Architecture

To object-oriented modifying development, model-view-controller (MVC) is the sake of a procedure alternately outline example to effectively Also proficiently relating those client interface with underlying information models. Those MVC design is broadly utilized within project advancement for modifying dialects for example, such that Java, Smalltalk, C, what's more C++.The MVC design need been proclaimed toward A large number developers Likewise a suitable example to the reuse about article code also a design that permits them on altogether diminish the duration of the time it takes to create provisions with client interfaces. Those model-view-controller example proposes three primary parts Alternately questions with be utilized within product development:
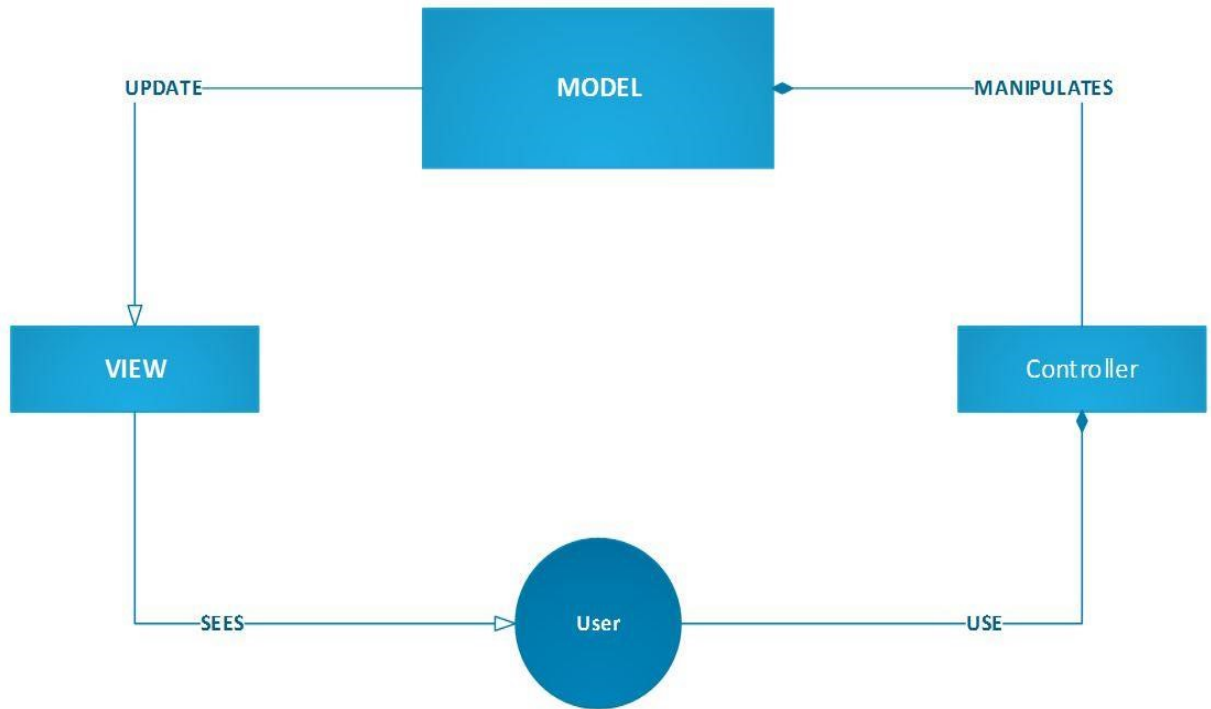
Figure 4.1: System Architecture

4.3 System Sequence Diagram

4.3.1 Request

In this System Sequence Diagram, user will start application manually, then the application will request the OS to open camera if user clicks on the camera icon to take a picture, if the request is granted then the other functions of this app will work. Other functions may include inserting objects on picture, saving images before and after the design.
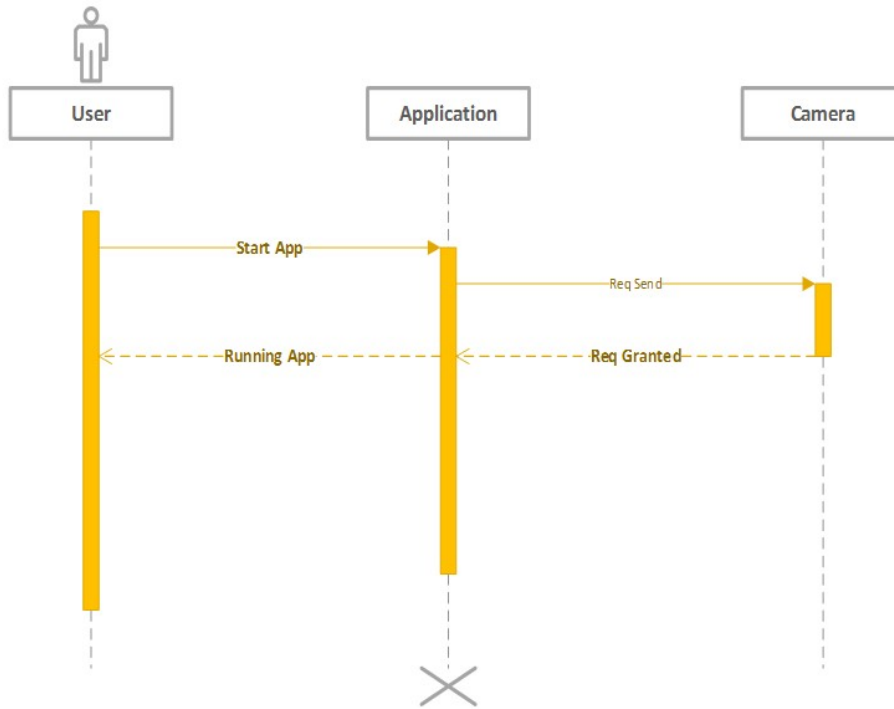
Figure 4.2: Request Sequence Diagram

4.3.2 Selection of Room

In this diagram user will invoke application. Taking the picture of a suitable room then we can select different types of furniture available in the menus. Chairs, Tables, Beds and many other types of furniture is available.
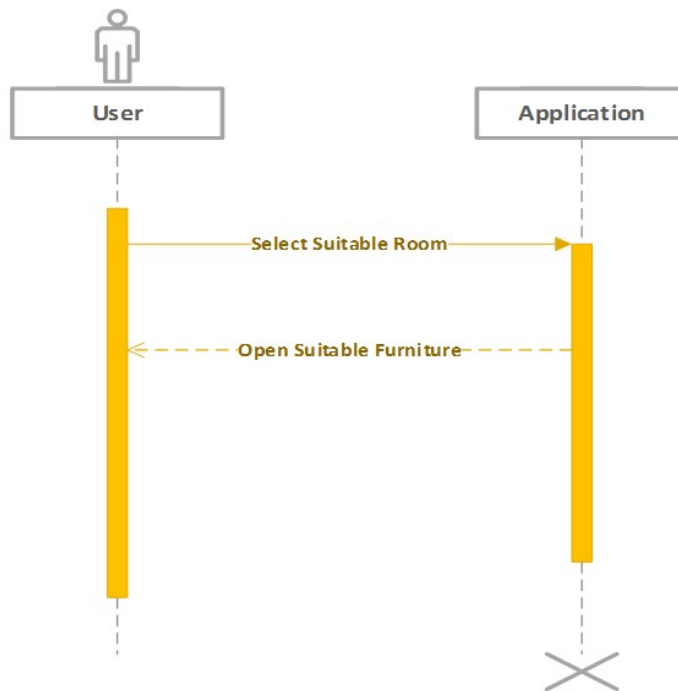

Figure 4.3: Selection of Room

4.3.3 Image Saving Database

In this Diagram after user takes picture and after designing the room there is a need to save the image so we save image in the database and can be retrieved upon request of user.
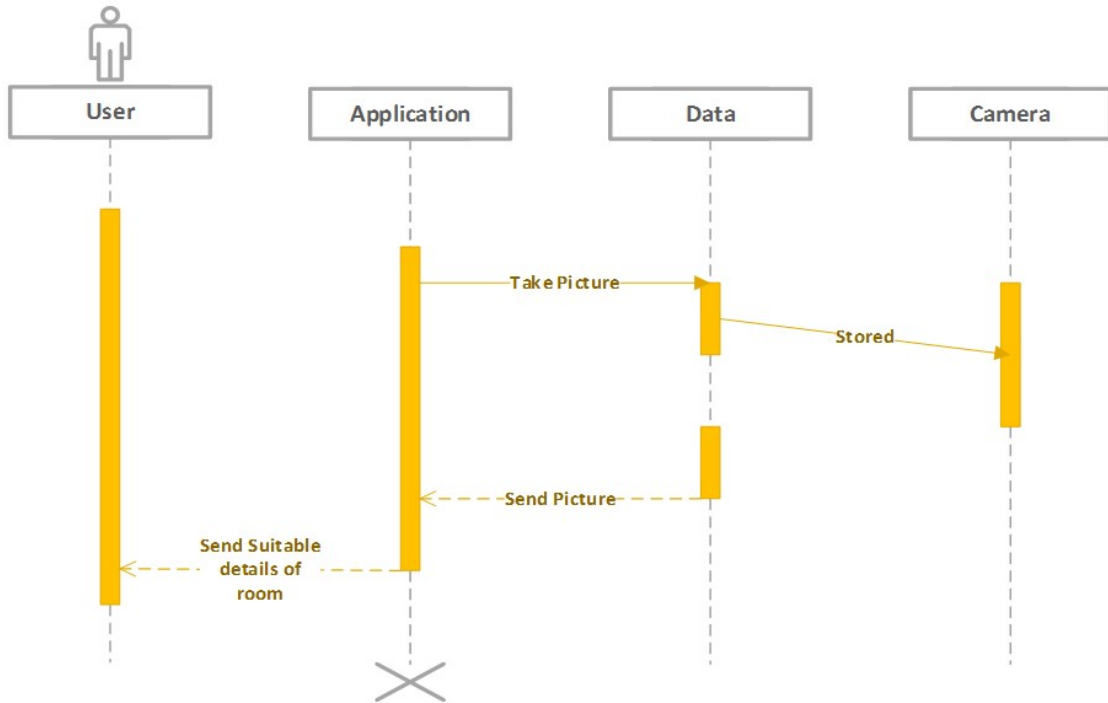

Figure 4.4: Image Saving in Database

4.3.4 Selection of Furniture
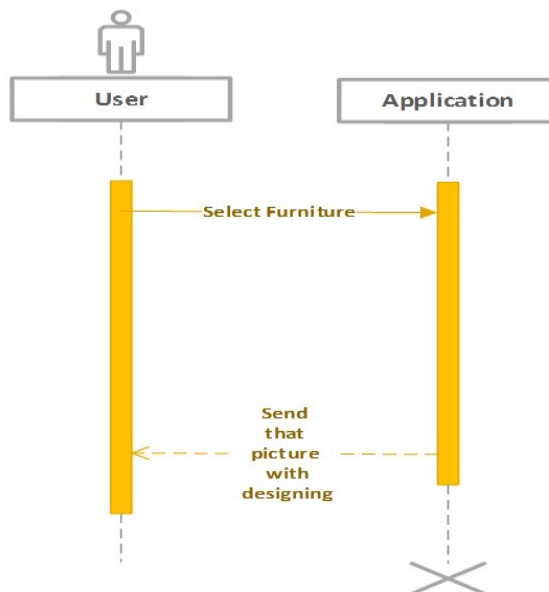
Figure 4.5: Selection of Furniture

4.4 Class Diagram

Picture Taking

Camera
Take picture of the room

View Room

Displays the clicked picture of the room
Re-sizing of the room
Displaying of the picture

Set the
Size of Furniture

Picture of room
Picture of furnitures
Drag and drop furniture in room

Set Furniture

Furniture Icons
Pictures of Furniture
Different options for different pictures
Different Icons for furnitures

View Room After

Picture of final room
Pictures as to be shared on facebook

Figure 4.6: Class Diagram

4.5 Activity Diagrams

4.5.1 Take Picture

In this diagram user will invoke application. Application will request OS to allow user to open camera, and after opening camera picture can be taken.

Figure 4.7: Take Picture

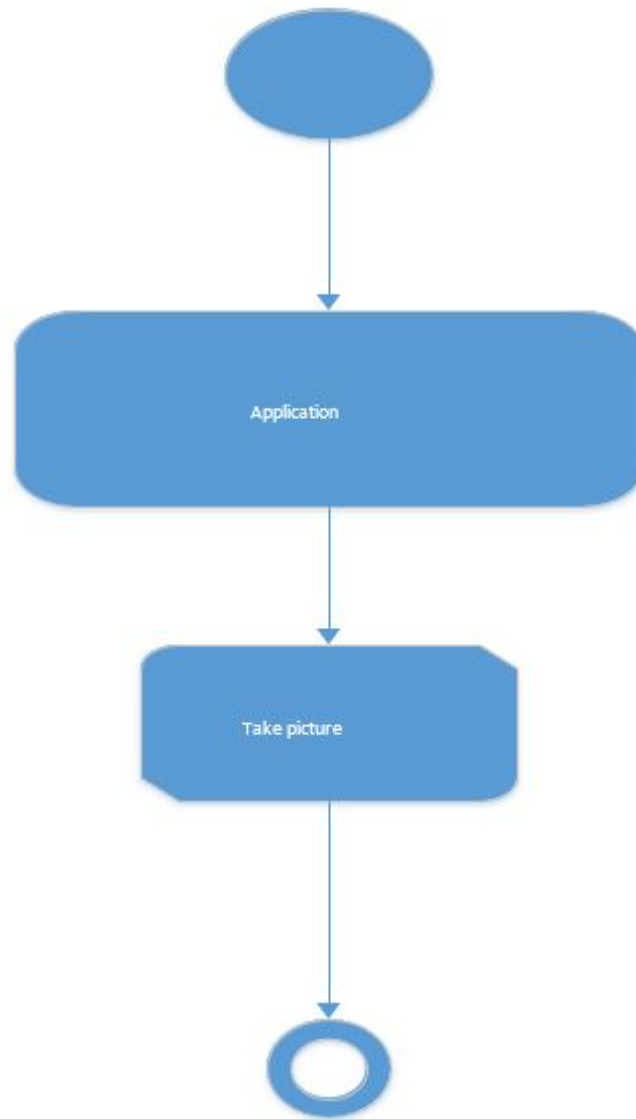## 4.5.2 View Room

In this diagram user can see the picture which he has taken, after taking picture of the room there is an option of view room with or without the new design or furniture.
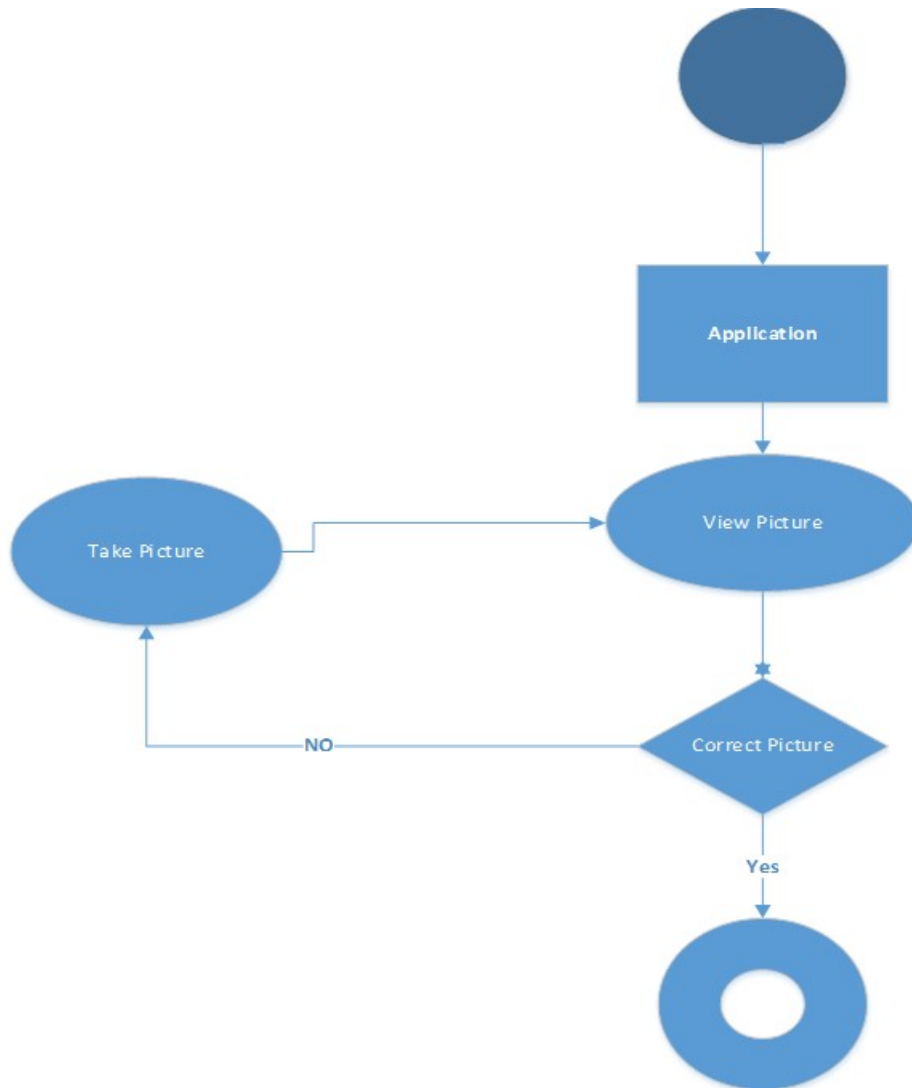
Figure 4.8: View Room

4.5.3 Set Furniture

In this diagram, after the process of taking picture and selection of room the next thing is to design the room by setting up the related furniture on the room.
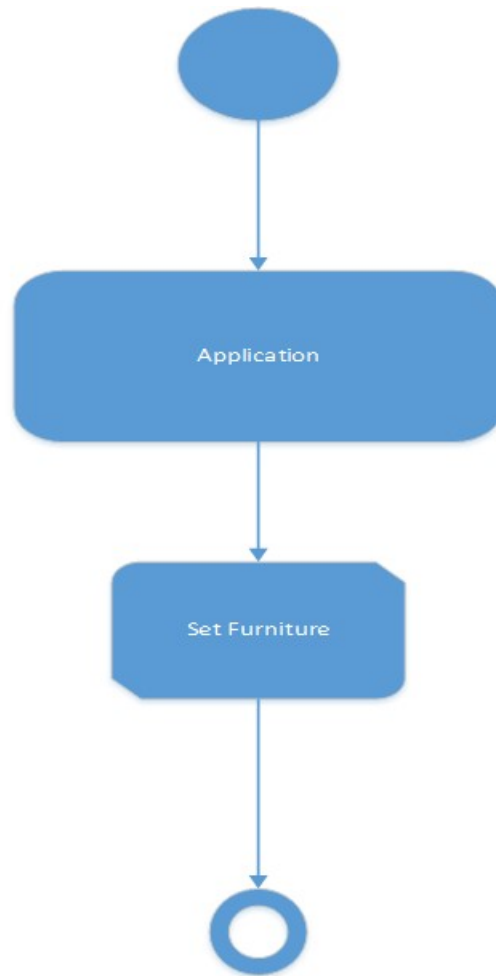
Figure 4.9: Set Furniture

4.5.4 Set Size of Furniture

In this diagram, after the process of selection and designing of the room next step is to set the furniture according to the size of the room to complete the process of designing.

Figure 4.10: Set Size of Furniture

4.5.5   View Room After

In this diagram, after the completion of all the previous processes the user can view the room that user has designed.

Figure 4.11: View Room After

Chapter 5

System Implementation

5.1 System Architecture
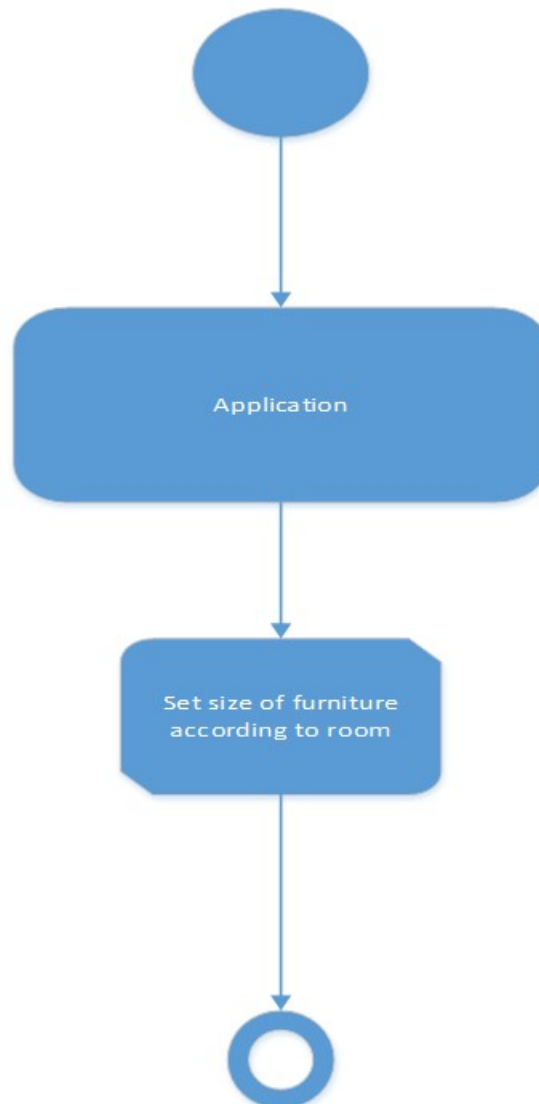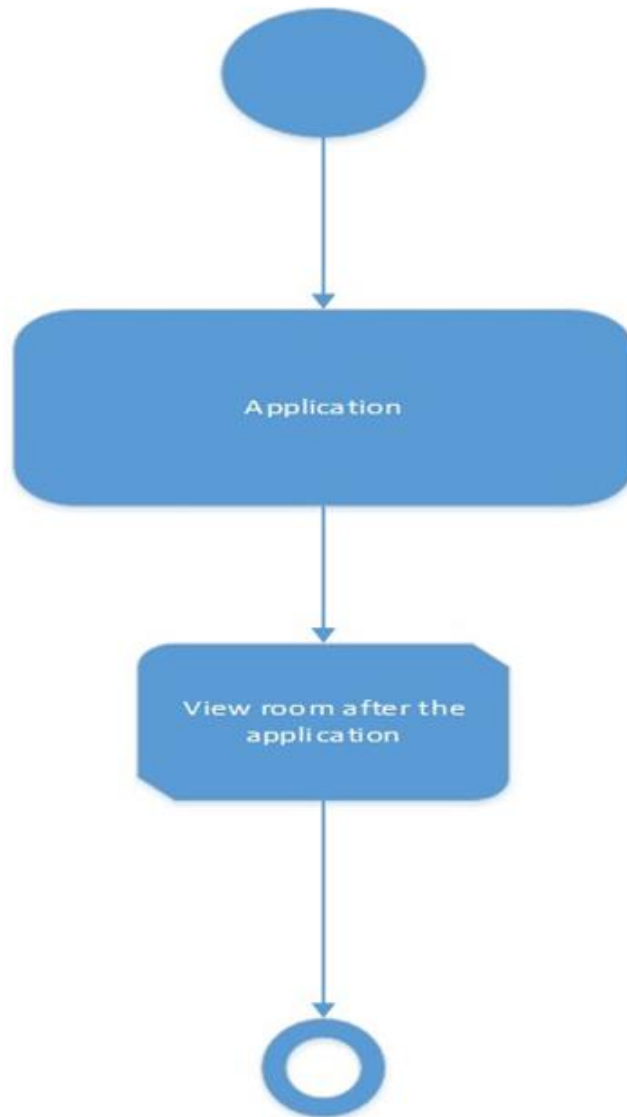
In this chapter system implementation would be explained in detail [8].

5.1.1 Android Application

This application required an android phone. Only users can use this application. User can user by opening the application and take the picture of the room. User can save these pictures in the gallery. Users can use this application to add, delete, update, and view the settings of the room, office, and building. Application will be providing the interior designer a facility to edit and setting according to the requirement of the users and by this user can save his/her money from useless expenditures and other vice versa. Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA. On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhance your productivity when building Android apps, such as:

- A flexible Gradle-based build system.

- A fast and feature-rich emulator.

- A unified environment where you can develop for all Android devices.

- Instant Run to push changes to your running app without building a new APK.

- Code templates and GitHub integration to help you build common app features and import sample code.

- Extensive testing tools and frameworks.

- Lint tools to catch performance, usability, version compatibility, and other problems.

- Built-in support for Google Cloud Platform, making it easy to integrate Google Cloud Messaging and App Engine.

We are using Android studio as the basic tool as our whole application is developed in Android studio. It provides us with easy accessibility over the interface and the back end and connectivity between the application and different APIs.

5.2   System Internal Component

5.2.1   Android Studio

Android studio will be providing a platform where the application is created and the application are installed. Android studio is a platform that provide numerous facilities according to the requirements of the users. In the world class programming codes, we can edit, debug, performance tools and many more applications can be changed or deployed for the system to allow you to focus on high and unique quality of the application. In android studio, application is created easily and efficiently in the way to use that applications. Android studio is used to build the gradle support, refactoring and quick fixes, performance, usability, compatibility. Android studio is the software that uses java language to develop the application.

5.2.2   JAVA

Java is an object orientated language that is used for the development in the present days. Java language is providing a good platform that give us the facilities to develop different application in suitable different studios and platforms that uses java as their basic programming language. Java is a common language these days as it is the easiest language as compared to other language and currently it is very into the trends.

Chapter 6

System Testing and Evaluation

Android application testing process ensures that each module of the product is working and providing results according to the requirements. Each of the individual modules of the application is tested individually and complete application is also tested. The main objective of testing is to check whether the developed application meets the required quality standards or not. Testing is also aimed at determining whether the application is providing the desired result. Testing can be of many types like explained below [9].

6.1   Graphical User Interface Testing

Graphical User Interface testing is done on all the system components to ensure such as layout, icon etc. are well suitable for the user to understand the system quickly.

ID	TC Function 01
Name	Interface Testing
Conditions	This is only applicable on desktop application. User should open the application.
Step No.	**Task and Expected Result.**
1	Open The Camera (Pass).
2	Save in Gallery (Pass).

Table 6.1: Interface Testing

6.2   Usability Testing

As the application tested many time in the normal environment to measure the product capacity to meet its intended purpose.

ID	TC Function 02
Name	Usability Testing
Conditions	This is only applicable on desktop application.
Step No.	**Task and Expected Result.**
1	Maximize image in gallery (Pass).
2	Crop images in Gallery (Pass).
3	Save in Gallery (Pass).

Table 6.2: Usability Testing

6.3   Load Testing

The application is very much good to take the load when used by several visitors.

ID	TC Function 03
Name	Load Testing
Conditions	This is only applicable on desktop application. User should open the application
Step No.	**Task and Expected Result.**
1	Verifying by adding minimum 10 entries in the DB (Pass).
2	Verify by restarting from start (Pass).

Table 6.3: Load Testing

6.4   Security Testing

Security testing is defined as the testing an application to determine that an information system protects its data or not. Some basic concepts in security testing are:

6.4.1   Integrity

As every information of the system is stored in gallery only accessible to the user.

6.4.2   Performance Testing

It is a process to determine the speed and effectiveness of the application. This process involves measuring the response time of the application. This process checks the reliability, effectiveness and accuracy of the application. Performance testing has following types.

- Stress Testing

- Configuration Testing

- Regression Testing

- Security Testing

6.4.3   Acceptance Testing

Acceptance testing is processed to test the acceptability of the system. This process evaluates the system to check whether the system is acceptable for delivery. In our project, the installation of application in involve in acceptance testing. Installation of application involves:

- To verify the installation of the complete system on device

- To verify the functional and nonfunctional requirements of the system after installation on device.

Chapter 7

Conclusions

7.1 Conclusions

The basic purpose of developing "Mobile Application for Interior Designing" was to develop an android application which can provide people with the facility to manage interior designing of house, building and offices which the use in their daily life. This application is an android application. Android and database were used for developing this app, and it was the most important part of project. The basic version of this application was developed by me, but there was long way to go to improve this application and make more user friendly and easy to use. As I already got offers from different interior designers to deploy this application for them. This application will be converted into other platform to increase span of its usage. Another important thing to do will be connecting this application with Cloud database as we know present era is of Cloud computing, and converting normal database to Cloud Database will be good for application especially for data handling. It was because of the blessings of Allah Almighty and prayer of our love ones that we have achieved this goal and developed an application that will change concept to new level.

7.2 Future Enhancements

Future enhancement includes:

- Web / IOS Development

In future web application will be made so that this application is not available only to the android users.

Bibliography

[1] N. Cross, "Computing technology," 2016. 4

[2] E. PUYBARET and eTeks, "Sweet home 3d," 2017. http://www.sweethome3d.com/license.jsp. 4

[3] S. Williams, "Colorsnap® visualizer," 2017. https://play.google.com/store/apps/details?id=com.colorsnaphl=en. 5

[4] Zillow, "Zillow digs," 2014. https://www.zillow.com/digs/bedrooms/. 6

[5] H. Inc., "Houzz," 2015. https://www.houzz.com/photos/bedroom. 7

[6] A. Inc., "Autodesk homestyler," 2017. https://www.homestyler.com/mobile. 8

[7] Houzz, "Houzz," April 2017. 9

[8] G. Inc., "Android studio," 2017. https://developer.android.com/studio/index.html. 28

[9] D. G. Google, "Udacity," 2016. 30