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Department Of Computer Science & Engineering

Software Requirement Specification Document

for

Augmented Reality in E-commerce

Abstract

Now-a-days information and communication technology support the development of human interaction with physical, computer and virtual environment such as science, commercial, banking, education, etc. Augmented reality is a field of computer research which deals combination of reality with computer related data.

In early days if we users wanted to buy a furniture objects without visiting the shops it was possible but it was not possible to check how the object actually looks in home structure. Now in our proposed system, it is possible for user to buy the furniture objects sitting in the home without visiting the shops. The main purpose of the "Furniture Layout Application Using Augmented Reality" is to develop an android application for trying different furniture in virtual way using a mobile which supports AR camera. The application will eliminate the human efforts by physically visiting the furniture store which is very time-consuming activity. Besides, this it might be easier to use this technique in Online shopping as an option for user to try out the furniture items in their room they are thinking to buy and allow user to visualize the room how it will look after placing furniture in it. User can try out multiple combinations virtually, without physical movement of furniture items. Our motivation here is to increase the time efficiency and improve the accessibility of furniture try on by creating furniture augmented reality application. This system will help the customer to view the furniture object virtually in real environment before buying the object. Due to this system customer will come to know how his home structure would look after buying the furniture object. This system would let the user to try multiple combination of object virtually without physical movement of furniture objects. These will help the buyer to determine how to setup furniture in home structure.

Among the emerging technologies, Augmented Reality(AR) is driving the e-commerce industry to the wide horizon. Using AR in e-commerce has rapidly attracted the customer interest by enhancing their experience. And with time, e-commerce is continuously expanding in new direction with the help of AR. AR is still in the phase of research. There exist bespoke solutions among a few e-commerce giants. The reason is research and development of AR is a highly costing procedure. With advancement of Machine Learning(ML) wider doors were open to expand AR along with ML.

In this proposal we propose an AR service platform that can connect both stakeholders(i.e. ecommerce businesses and their customers). We will be developing a web-based application for the e-commerce businesses to register themselves and provide and host 3D models relevant to their products marketed online and a mobile application for their customers to preview and interact with those models. Our focus is for wearable items(out of which a watch and a necklace augmentation will be developed and tested by us) augmentation. Additionally, a live streaming feature will be added to the system which will provide the user an option to share their augmenting experience with another person.

The proposed system will detect human hand or neck and then it identifies the key points and augment the 3D model on the identified key points. Marker less augmentation process is followed in this proposed system(i.e. augmenting the object on the real environment without using external markers). The 4 main components will be integrated together to achieve this objective. Using the live streaming feature the augmentation instance can be shared with another user of choice.

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1.Introduction

Augmented reality has been a hot topic in software development circles for a number of years, but it's getting renewed focus and attention with the release of products like Google Glass. Augmented reality is a technology that works on computer vision-based recognition algorithms to augment sound, video, graphics and other sensor-based inputs on real world objects using the camera of your device. It is a good way to render real world information and present it in an interactive way so that virtual elements become part of the real world. Augmented reality displays superimpose information in your field of view and can take you into a new world where the real and virtual worlds are tightly coupled. It is not just limited to desktop or mobile devices.

A simple augmented reality use case is: a user captures the image of a real-world object, and the underlying platform detects a marker, which triggers it to add a virtual object on top of the real-world image and displays on your camera screen.

•Problem Definition

As the customer purchases various types of furniture through online, but in online it shows only photo and cannot be determined size in room. Even though there are certain applications present which are based on augmented reality they are not suitable for live processing and takes more time to process the area and some are fixed to a particular image plane. So, to overcome that he can use this application to check whether the furniture is adjustable or not which can be placed in the customer living area like home or office using augmented reality images.

Our application is a step in this direction, allowing users to view a 3D rendered model – a virtual resemblance of the physical furniture without any interruption of the markers – which can be viewed and configured in real time using our Augmented reality application.

This study proposes a new method for applying Augmented Reality [1] technology to furniture, where a user can view virtual furniture and communicate with 3D virtual furniture data using a dynamic and flexible user interface.

•Existing System

Traditional methods of designing include advising and assisting customers who have relied upon a combination of verbal explanations and 2D drawings through online shopping application. However, this medium of approach clearly restricted to the limit of explanations provided to customer for the particular placement of a furniture and makes him less efficient and confused to buy the furniture.

The main drawbacks in the mediums of existing system are:

- Static view of design which is unable to convey • Cannot determine the furniture will fix to our needs.

- Information like height and breadth can't be known.

- **Proposed System**

With the approach of augmented reality application, this can be easily achieved. Interior designing is a field where augmented reality has not been able to get its grip to it fullest. People today are well versed with the technology and are operating smartphones which support AR. Thus, the concept of creating a furniture layout-based application brings the designer step closer to being technologically advanced.
With the recent emergence of better cameras and more accurate sensors in soon-to-be mainstream devices. In our current implementations of application, we use Google AR Core[7] to accurately detect the real- world environment, such as the locations of walls and points of intersection, allowing users to place virtual objects into a real context.

The proposed system uses Marker-less Augmented Reality as a basis for enhancing user experience and for a better perception of things. Marker less tracking is a method of positional tracking – the determination of position and orientation of an object within its environment. This is a very important feature in augmented reality (AR), making it possible to know the field-ofview and perspective of the user – allowing for the environment to react accordingly or the placement of augmented reality content in accordance with real world. While marker-based methods of

motion tracking use specific optical markers, marker-less positional tracking does not require them, making it a more flexible method. It also avoids the need for a prepared environment in which fiducial markers are placed.

The basic premise of the proposed system is to overlay digital 3D models on top of real things using a camera.

- This Application will use AR supported mobile phone to scan the living area and display the augmented furniture object to check whether it adjusts or not and that helps in better choosing of the right furniture for our need.

- Augmented objects are the virtual objects (3D Model) which are similar to furniture tool developed using Auto desk Maya[8] and Substance painter.

- Autodesk Maya is a software which offers a comprehensive creative feature set for 3D computer animation, modelling , simulation, rendering, and compositing.

- The next step involves setting up light, shadow, and camera positioning of these models using various components of Unity 3D.

- Next, the furniture model is selected and the selected model is rendered and processed to be loaded on the scanned surface by Google AR Core.

- Mapping of 3D model onto the smartphone screen takes place which decides the dimensions of the model which is then rendered and displayed onto the screen.

1.1 Purpose

With the approach of augmented reality application, this can be easily achieved. Interior designing is a field where augmented reality has not been able to get its grip to it fullest. People today are well versed with the technology and are operating smartphones which support AR. Thus, the concept of creating a furniture layout-based application brings the designer step closer to being technologically advanced. With the recent emergence of better cameras and more accurate sensors in soon-to-be mainstream devices. In our current implementations of application, we use Google AR Core[7] to accurately detect the real- world environment, such as the locations of walls and points of intersection, allowing users to place virtual objects into a real context.

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a) SCOPE

- Augmented Reality is a very new technology, used mostly in gaming as of now, and is yet to make a significant impact in the trillion dollar E-Commerce market.

- As the shopping moves online for everything like electronics, apparel, medicines, cosmetics and home furniture, the demand for a great shopping experience also rises, and that's where AR make becomes a game changer . With AR, users can get a 360 degree view of the product, and helping in making a better judgement.

- Areas where AR can make an impact goes long including Gaming, E-Commerce, Medical, Training, Education, Entertainment, etc.

Benefits of Augmented Reality based E-commerce

1) Pre-Buying Visualization of the Product Experience:

By helping consumers visualize the product in the context of the physical space they'll occupy, AR apps eliminate the detrimental ambiguity from e-commerce purchases. Home furnishings giant IKEA's IKEA Place AR app is a case in point here. The app helps shoppers visualize how the furniture and other decorative pieces will look inside their living rooms. Shoppers can then easily

change products, alter product attributes such as size and color, and see how different furniture items and the room decor will complement each other.

Note that apart from letting the shoppers visualize the actual use and benefit of products, AR based ecommerce also speeds up the product search process for high-value and bulky products.

2) Utmost Personalization:

In an era which is marred by all-too-similar-products, differentiating the business solely on products is almost impossible. Customer experience, thus, is going to emerge as the biggest battleground for acquiring and retaining the customers. AR based ecommerce can give a long rope to the struggling online retailers by making the whole buying experience ultra-personal.

As AR can let shopper virtually try the products, AR apps can collect, save, and analyze information of every shopper. For example, a fashion company can save information about the shopper's size and style preferences. Later, the app can make recommendations and upsell the customer.

Moreover, it can also help shoppers make decisions more quickly. The AR app from Sephora, for example, allows users to upload images of their face. They can then virtually apply various

makeup and skincare products to the images, enabling them to visualize how the makeup would look on their face.

The best part of this app is it streamlines the purchasing process and reduces the number of products that customers return. When customers can precisely envision what product suits them, they won't return it frequently.

3) Store-Like Experience:

One of the biggest motivations for shoppers to shop at a retail store is the availability of products on neatly organized shelves and aisles. AR based ecommerce can replicate this "retail aisle" experience on digital avenues.

With an AR app, an e-commerce retaile r can create a virtual shelf with various range of products, projecting it on the walls of a customer's living room. By just pointing and clicking on the products they're more interested in, customers can get more information about the same.

Its obvious benefit is the way it brings proximity between the buyer and the product which is there on the screen, and not in the hands of buyers. Unless there is this psychological connection, conversion is a distant dream.

4) Making Products More Comprehensible:

Nearly 95% of shoppers read online reviews before making a purchase, and 72 % of customers don't take action until they have read reviews. It's a clear reflection of the extra-cautiousness that buyers show while buying. They don't want to buy until they are sure about the usability and the quality of the product. That's their way to keep a buyer's guilt at bay. Online retailers, thus, need to create a system which will dispel all the initial doubts that buyers may have. AR based ecommerce, through AR manuals, is a potent weapon in achieving it.

AR user manual exhibits the process of reading a product manual in an interactive way with a step-by-step virtual guide. Users, who are used to smart devices, can easily go through the details of

the product. It doesn't just reduce the product evaluation time. It also cut shorts the unknown risks that customers might have with the products.

Owing to the immersive 3D experience integrated with AR Technology, AR manual increases the chances of comprehensibility. With a simple scan of the appliance, the AR manual specifies all the useful instructions and features virtually.

Here's a general overview of the common types of augmented reality applications to consider:

1.1.1 Marker-based AR

With marker-based AR, the application uses a predefined marker (such as a QR code or picture) to superimpose images into the physical world. A visual marker is hardcoded into the system, then the app uses that marker to determine the orientation and positioning of the camera.

Nowadays, pretty much any image can be used as a marker, but as Kelly Hecker, the Lead Game Programmer at Art + Science Labs demonstrates in the following video, the ones that work best tend to be markers with high contrast, many edges, and no repetitive patterns.

One of the best examples of marker-based AR comes from IKEA. The retailer's 2014 catalogue had augmented reality capabilities that enabled users to preview how different furniture pieces would look in their homes. Shoppers would just place the printed IKEA catalogue (i.e., the marker) in the part of the room where they intend to put the furniture, and the app will augment a 3D image of the product so customers can preview how it would look using their mobile device virtual.

1.1.2 Marker less AR

Progress in the AR realm has enabled developers to create apps that don't require markers. Instead, these applications can recognize patterns, colors, and other attributes within a frame.

Snapchat's World Lenses is a good example of marker less AR. With World Lenses, users can generate live filters simply by pointing their smartphone at any object or scene.

Harley Davidson also has a great marker less AR app. As you'll see in the demo below, users can customize and preview different Harley Davidson models in their environment without using any pre-determined markers. Customers can just launch the app and be good to go.

1.1.3 Location-based AR

Location-based apps are a type of markerless AR that uses your GPS location to generate visual elements.

The most prominent example of a location-based AR app is Pokemon Go, which detects players' GPS coordinates and displays Pokemon depending on where someone is located.

There aren't many location-based AR applications for online pure-plays since most ecommerce sites primarily do business online. But keep this AR app on your radar if you're planning to engage customers through real world activities such as events or pop-up stores.

Location-based AR apps can effectively promote your offline initiatives. For instance, the Tony award-winning musical Hamilton has an app with photo filters that can be unlocked if the user is in a particular location.

1.1.4 Projection-based AR

This type of AR app projects lights onto a 3D model to create a realistic looking object. If you're in ecommerce, a projection-based app would Be perfect for showcasing different designs of the same item without having to ship or carry multiple SKUs.

1.2 Document Conventions

While writing for SRS document we have made the following conventions and adopted the IEEE standards

- **Font used** – Times New Roman
- **For main headings font size –** 14
- **For subheadings font size –** 12

•**For normal text** – 12

- Headings are highlighted in bold.
- Document text is single spaced and maintains the 1" margin.

1.3 Intended Audience and Reading Suggestions

The document is intended for project guide , class coordinator and professor . The SRS document contains overall descriptions , specific requirements , and other non- functional requirements of the project.

1.4 Product Scope

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technology and are operating smartphones which support AR. Thus, the concept of creating a furniture layout-based application brings the designer step closer to being technologically advanced.

- Augmented Reality is a very new technology, used mostly in gaming as of now, and is yet to make a significant impact in the trillion dollar E-Commerce market.

- As the shopping moves online for everything like electronics, apparel, medicines, cosmetics and home furniture, the demand for a great shopping experience also rises, and that's where AR make becomes a game changer . With AR, users can get a 360 degree view of the product, and helping in making a better judgement.

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OBJECTIVE

- To Provide Real Life Shopping Experience From The Comfort Of Your Home.

- To Make Shopping More Entertaining Than Just Scrolling Through A List Of Products.

- To Provide Trending Technology Such As Augmented Reality Experience To Users.

- To Provide Brand New Way Of Shopping.

- To Make More Informed Shopping Experience. .

- To Make More Informed Purchasing Decisions.

- To Be Ahead Of The Competition In The E-commerce Space.

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2.1 Product Perspective

IKEA Catalogue was released by IKEA is the year of 2013. It comprises of nearly the full collection of company's products. IKEA Catalogue incorporate AR technology in their app by utilizing the device's rear camera and gyroscope sensor. The 3D model of the furniture will be displayed at the position of the room being pinpointed as it's there. This helps the users to imagine and arrange the furniture at their place. The IKEA catalogue uses a marker-based AR approach in their application. It requires a printed catalogue to augment the 3D model. And without the printed catalogue it is not possible to move the model around the real environment. Which is a significant disadvantage of the application.

The Project is about Improving the shopping experience of the furniture using

Augmented Reality (AR) technology.

HOW IT USES AR TECHNOLOGY?

- It overlays digital content such as image, video, text, etc., and in our case a furniture on to a physical object or location in 3D Form and it is typically experienced by looking through the Smartphone Camera.

- The Project is an E-Commerce Application harnessing the power of AR Technology.

- Project includes an Android App for users with an aim to make purchases.

Project also includes Web App for the administrator to manage the Shopping Experience.

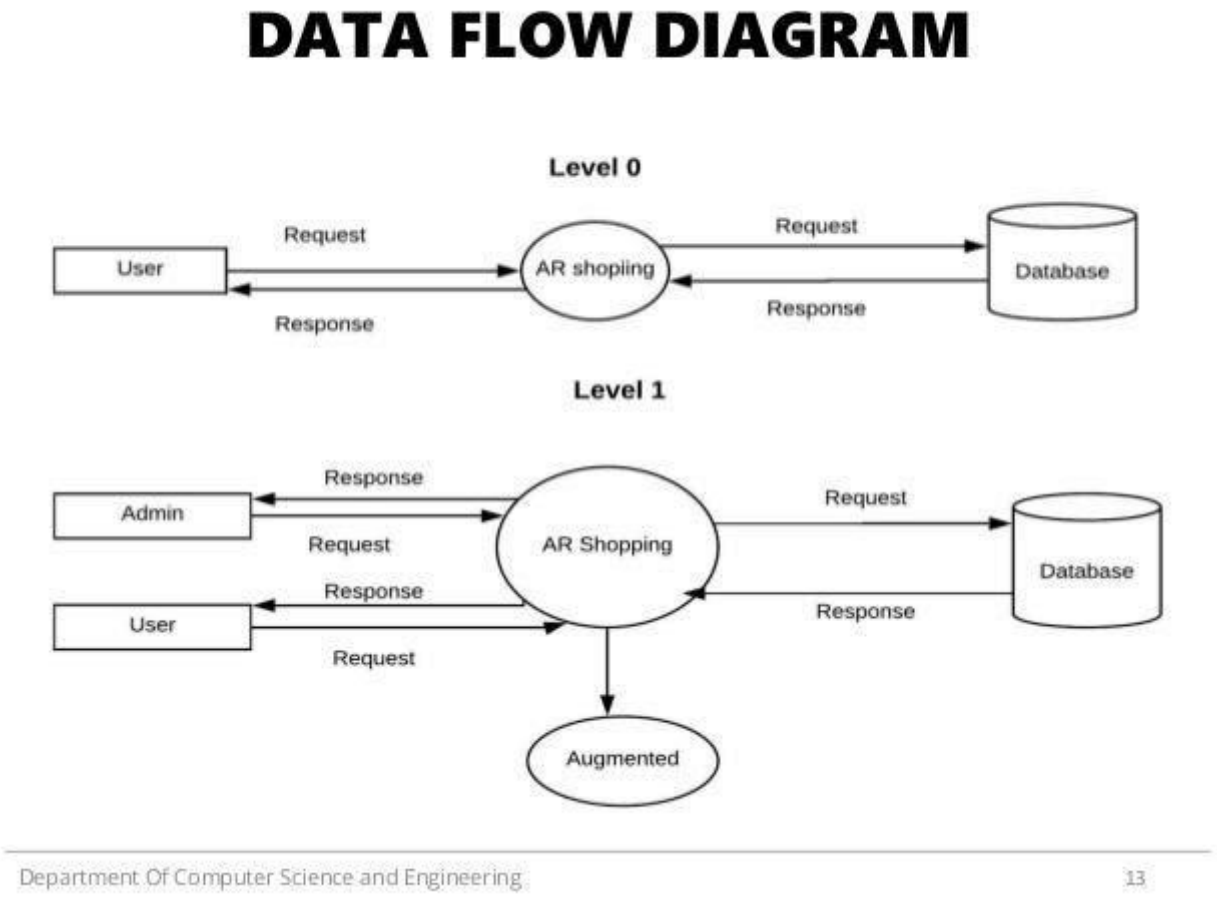
1.6 Product Functions

2.2.1 Augmented Reality Function

2.2.1.1 Computer generated graphics

2.2.1.2 Provides visualization of POI(s)

● Data flow diagram



2.2.2 Details Function

2.2.2.1 Provide detailed information for selected POI(s)

2.2.3 Query Function

2.2.3.1 Access Watertrek database with REST API calls

2.2.4 Local Database Function

2.2.4.1 Store queried data onto devices local database

2.2.4.2 Local database will populate data in the applications.

1.2.2 Use case Diagram

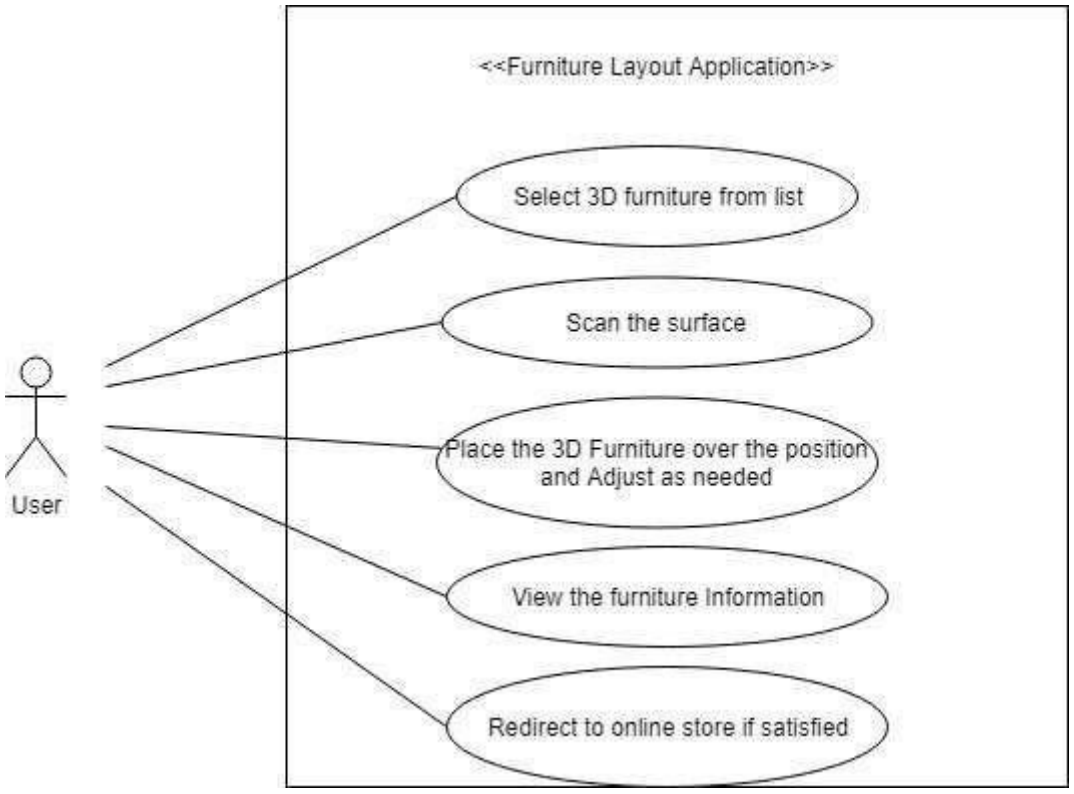


Figure 3.4: Use case diagram

As shown from the above figure 3.4, it describes the use case diagram of the application where the user interacts with application using Android device that supports AR camera. Initial we select the model in which we are interested then scan the surroundings using camera of device and place the model to verify whether it fulfill our needs, if satisfied we can move to online store. The actor here is the user and uses cases select 3D furniture, scan the surface, place the 3D furniture, view the information and redirect to online store if satisfied.

1.2.2 Class Diagram

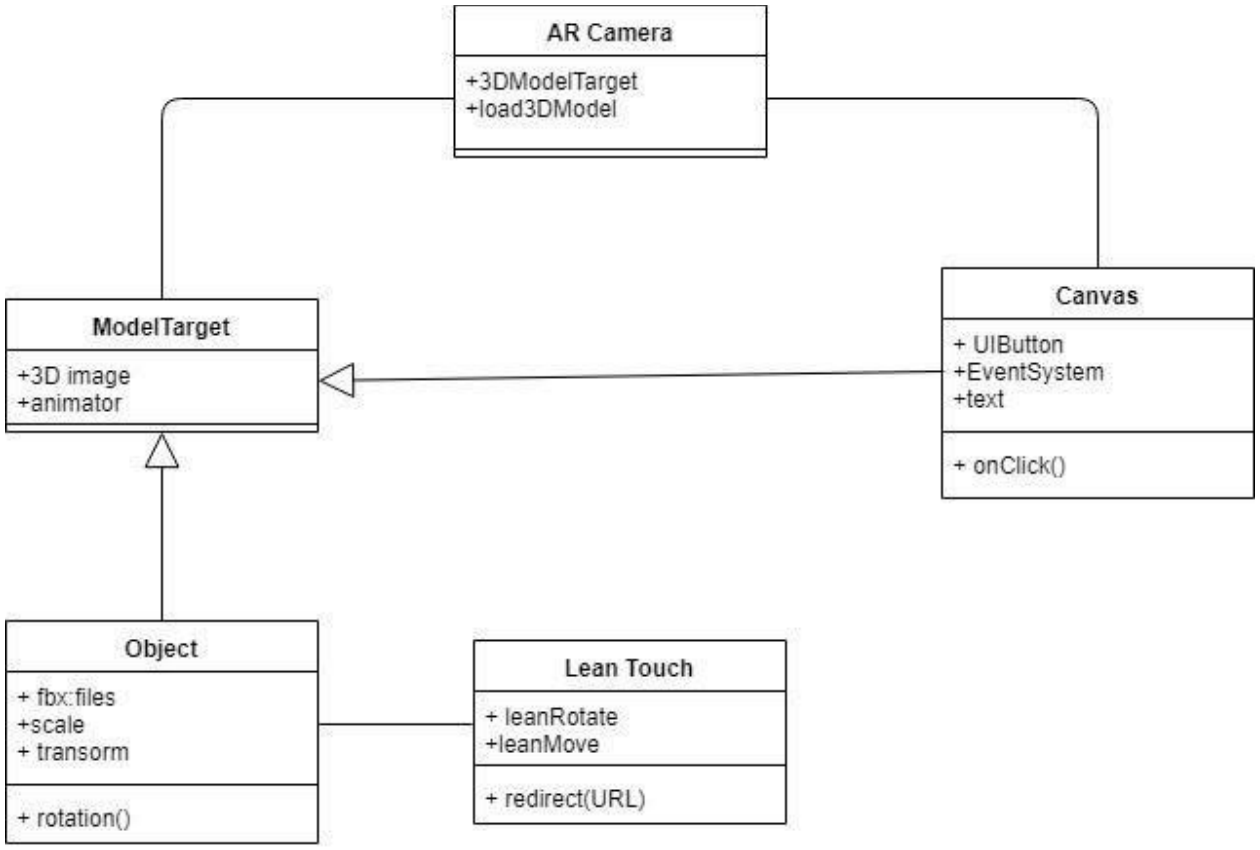


Figure 3.5: Class diagram

As shown from the above figure 3.5, it describes the class diagram of the application where the main classes include AR Camera, Model Target, Object, Lean touch, Canvas. AR Camera consists of the main configuration to be set to get the 3D model when model target is given by user. Canvas class consists of the buttons and texts that are used in the application interface. Object is the 3D model and consists of the information of scaling, transform. Lean touch class consists of how to rotate application i.e. portrait or landscape and all user interactions with the device using lean touch scripts.

1.2.3 Sequence Diagram

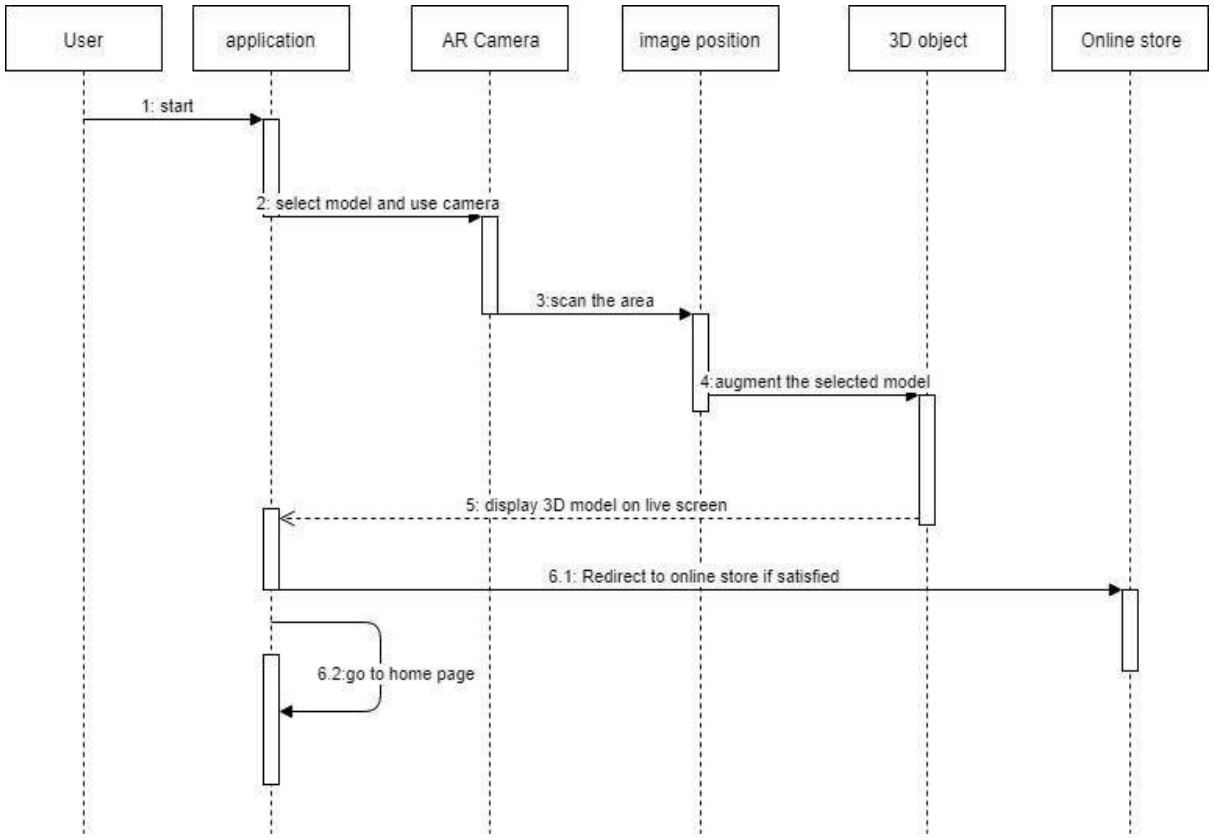


Figure 3.6: Sequence diagram

As shown in the above figure 3.6, it describes the sequence diagram of the application, i.e. how the application is started and to the end of the resultant augmented display in a sequence of interactions. User, application, AR Camera, image position, 3D object, Online store are the main objects of this diagram. First user starts the application and holds the living area by scanning surface. As soon as the area is scanned the 3D model selected is placed over the area. After that if user satisfy then he can move to online store else return to home page of this application.

1.2.4 Activity Diagram

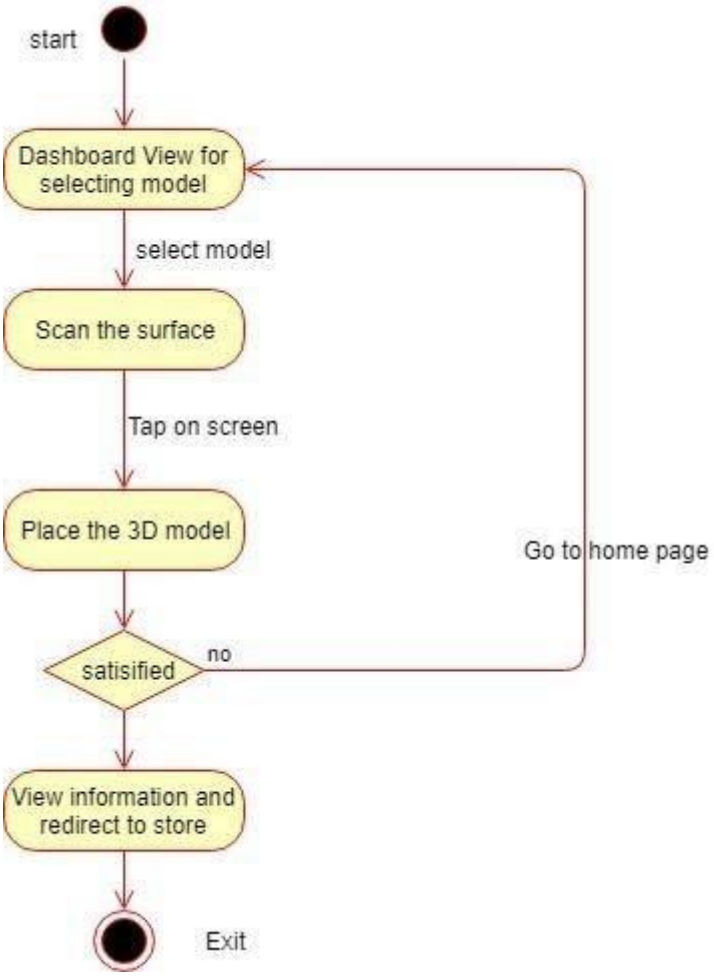


Figure 3.7: Activity diagram

As shown from the above figure 3.7, it describes the activity diagram of the application that consists of flow of the application which has the actions Dashboard view for selecting the model i.e. home page. Next scan the surface, place 3D model and finally if satisfied move to online store.

3.1 Architecture design

The system basically uses mobile phone built-in camera which supports Augmented reality to collect view as the real scene view observed by human eye and stacks the 3D furniture models

on the screen displayed. First of all, we need to setup the scenes in Unity 3D[6] for User Interface of application like buttons, text areas, background image and virtual object selection. Later we build 3D furniture models by Autodesk Maya and import the models into Unity 3D. Through identifying and tracing the surface area, the camera obtains pointers using Google AR Core and establishes projection models, at last stacks the imported 3D virtual model in the Real-world view. Because Android smart phone has touch-screen interface function, we can place the furniture by sliding screen.

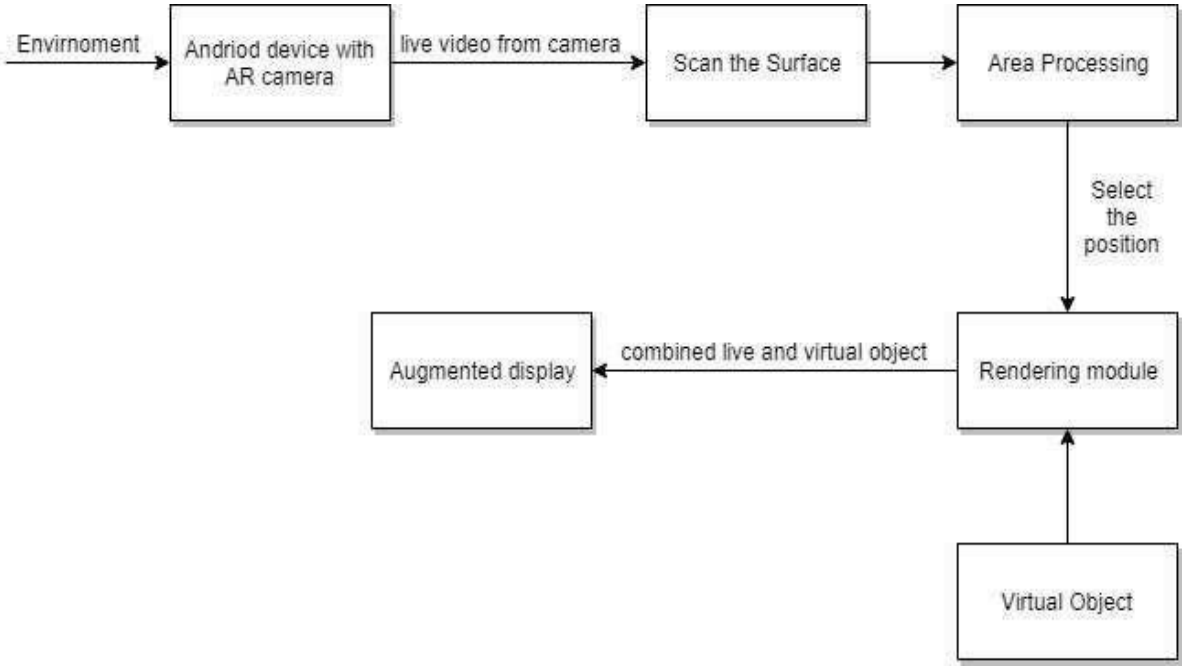


Figure 3.1: System Architecture of Application

As shown from the above figure 3.1, it describes the architecture of the application that take the real view as input with the help of AR camera then process it with virtual object to get the resultant output as augmented display.

Modules

The application implementation consists of four modules.

- Creating Augmented Reality Objects.
- Developing Scenes for User Interface.
- Place the Object on the Surface Area.
- Verification of placed objects.

1.7 User Classes and Characteristics

This product does not have different levels of functionality based on a particular user class. There is only one general user class that will provide all the functionality that requires only general knowledge of using an android device.

1.8 Operating Environment

SYSTEM REQUIREMENTS

Web app (Admin) - PC	
OS	Windows 10 / Linux 17.04+ / MacOS
RAM / Processor	2 GB / 1.3 GHz intel core i3 (5th gen) Processor
Web Browser	Google Chrome, Firefox, Safari
Other	Wi-Fi

Android App (Client) - Smartphone	
OS	Android OS 6+
RAM	1 GB RAM
Tools Used	Wi-Fi Connectivity

Augmented Reality App (Client) - Smartphone	
Camera	5MP Quality Camera
Sensors	Accelerometers and Gyroscope

2.4.1 The application will run on an Android device with API 15 and above

2.4.2 The application will use the back facing camera

2.4.3 The application will need an internet connection

2.4.4 The application will use sensors to detect rotation

2.4.5 The application will need GPS Location enabled

2.4.6 The application will need OpenGL ES 2.0

1.9 Design and Implementation Constraints

1.9.1 Feasibility study

In the feasibility study phase, we appraise financial, organizational values and the technical benefits.

Under technical benefits we consider about the,

- Development of mobile app which capable of capture images, analysis the object and put on augmented reality object.
- Develop machine learning models to identify the wrist, neck, detect feature points and analysis of those models
- To provide service to app develop web server with centralized server. In financial section we ensure that benefits that gain from project overweight than the estimated cost for our suggested application. In financial section we considered,
- Tangible benefits
- Intangible benefits
- Recourses
- Stationary cost

- Hardware equipment cost

When we consider about estimate cost and the benefits, benefits have more value than the estimated cost. This project is financially feasible project. Technical benefits are the greater than existing developed software's that we can consider this project is technically feasible project.

1.9.2 Requirement gathering and analysis

This phase contained of how needs and condition gathered for the software solution, how they are collected and analyzed. For Augmented reality smart shopping application requirements gathered using following resources,

In this requirement gathering and analysis phase identify the important tasks,

1. Identifying different type of augmented reality smart shopping techniques/system

2. identify differences and similarities between those augmented reality smart shopping system
3. Identify advantages and limitations of each augmented reality smart shopping system

4. Identify the ways and techniques to overcome the identified limitations

2.5.2 Weak/Unstable Network Connectivity - May cause issues in retrieving data from database

2.5.3 Watertrek database - Database being down or REST calls that are needed are not provided

2.5.4 Device Performance - Need adequate performance from the device to render meshes and/or any other computer generated objects

2.5.5 Device Storage - Need for caching large amounts of data retrieved from database

2.5.6 Budget - Open source application program interfaces are the only option; paid services would help to improve performance

TECHNOLOGIES USED

Web app (Admin)	
Frontend	HTML, CSS, Bootstrap frontend library and JavaScript.
Backend	Java
Database	MySQL,
Tools Used	NetBeans, Sublime Editor, Apache Server, WAMP (PHPMyAdmin), SQLyog

Android App (Client)	
Frontend	XML
Backend	Java, Java Servlet
Tools Used	Android Studio

Augmented Reality App (Client)	
Tools Used	Unity 3D Engine and Vuforia Engine.

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Technologies In Augmented Reality Application

1. Image Recognition

It allows to identify objects, places and images.

• Smartphones and other devices use machine vision together with camera and Al software to track images that can be overlayed with objects, animations, content etc.

2. 3D Recognition and Tracking

• Due to the tracking, an app can "understand" and enhance the large spaces around the user, inside of large buildings such as airports, bus stations, shopping malls, etc.

Applications supporting it can recognize three-dimensional objects like boxes, cups, cylinders, toys etc.

3. OpenSceneGraph

OpenSceneGraph is an open source 3D graphic toolkit (application programming interface). It's used by app developers in such domains as computer .

games, augmented and virtual reality, scientific visualization

and modelling.

4. GPS support (Geolocation)

If you are going to create a location-based AR application, geolocation is a fundamental feature that must be supported by the AR tool you are going to use.

. GPS can be used both in AR games like Pokemon Go as well as in apps made to overlay data on some nearby locations.

5. Unity support

Unity is known to be the most popular and powerful game engine worldwide. Though it's usually used for developing computer games, it can also be utilized for making AR apps with powerful effects.

6. SLAM support

SLAM means Simultaneous Localization and Mapping.

It is an algorithm that maps the environment where the user is located and tracks all of their movements.

• AR apps containing this feature can remember the position of physical objects within some environment and position virtual objects accordingly.

SLAM has huge potential and can be used in many kinds of apps, not only AR apps.

• The main advantage of this technology is the ability to be

used indoors while GPS is only available outdoors.

● How To Use AR Experience

1. To place furniture make sure the room is well lit and hold your smartphone at waist level.

2. Make sure the floor in front of you is non-reflective and free of clutter.

3. Scan an empty piece of floor by moving your device around.

4. Search the list of available products and select one.

5. Find an empty spot in the plane and place the product there.

6. Move around the Augmented Furniture to get a 360

degree View.

1.9.2 Technologies Proposed to Be Used

- **AR Core**

AR Core is a platform developed by Google for building augmented reality experiences. Using different APIs, AR Core enables your mobile phone to sense its environment, understand the world and interact with information. Some of the APIs are available across both Android and IOS to enable shared AR experiences.

- **Tensor Flow**

Tensor Flow is an open source software library originally developed by researchers and engineers of Google Brain team within Google's AI organization, for high performance numerical computation. It's flexible architecture allows easy development of computation across a variety of platforms such as CPUs, GPUs, TPUs, and from desktop to clusters of servers to mobile and edge devices. It has a strong support for machine learning and deep learning. Google's Tensor Flow is the most widely used machine learning library.

- **Keras**

Keras is a high-level neural network API, written in Python and capable of running on top of Tensor Flow. It was developed with the focus on enabling fast experimentation.

- **ML Kit**

ML Kit is a mobile SDK that brings Google's machine learning expertise to Android and iOS apps in a powerful yet easy-to-use package. ML Kit provides convenient APIs that allows us to use our own custom Tensor Flow models in mobile apps.

Gantt Chart

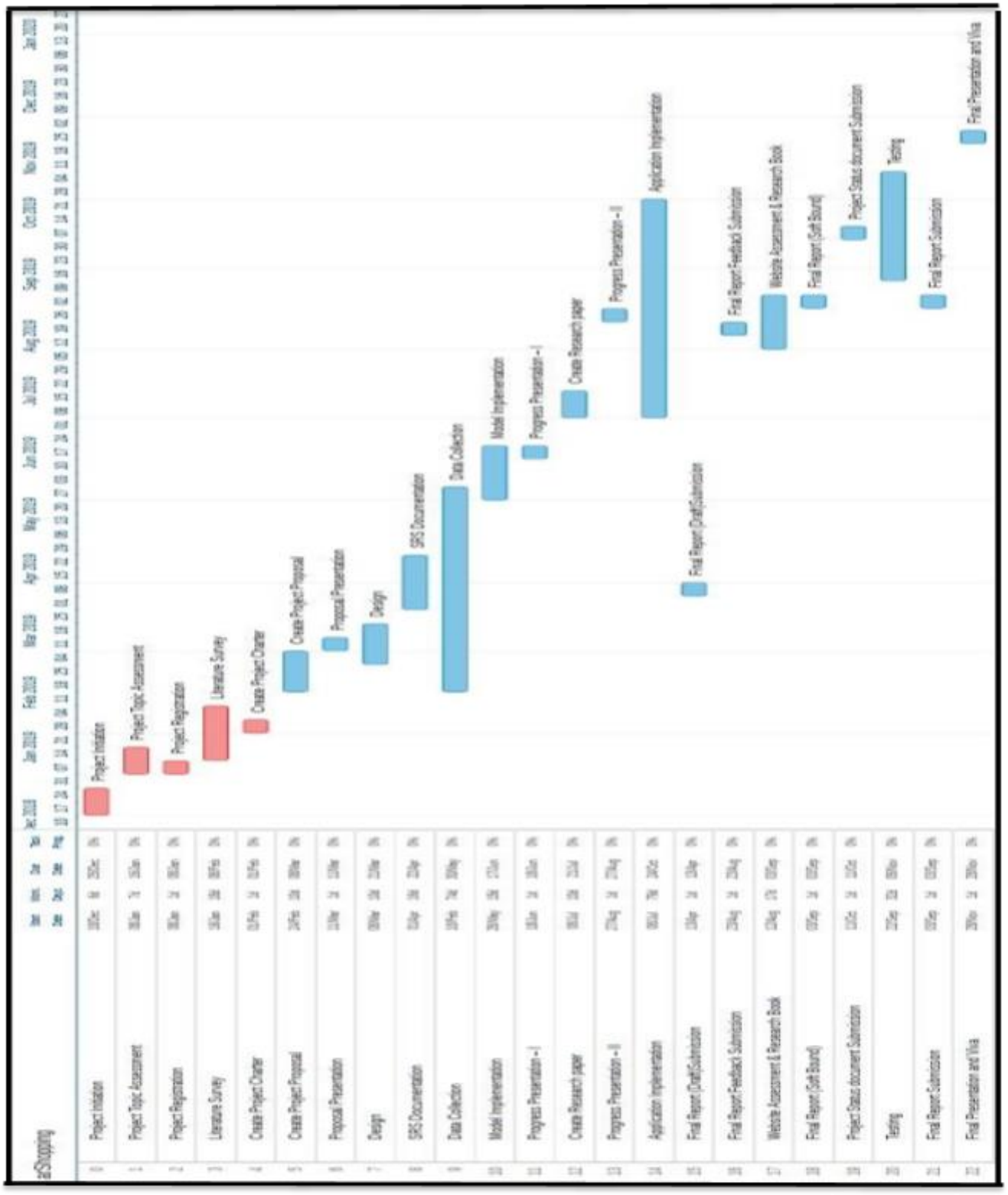


Figure - Gantt Chart

Work Breakdown Structure

We will be building a web API with a service for e-commerce businesses to integrate to their online application and host their models for products they market online and provide users with a mobile application to experience those product models from anywhere. This application implementing using android studio and train machine learning models to detect and identify the features.

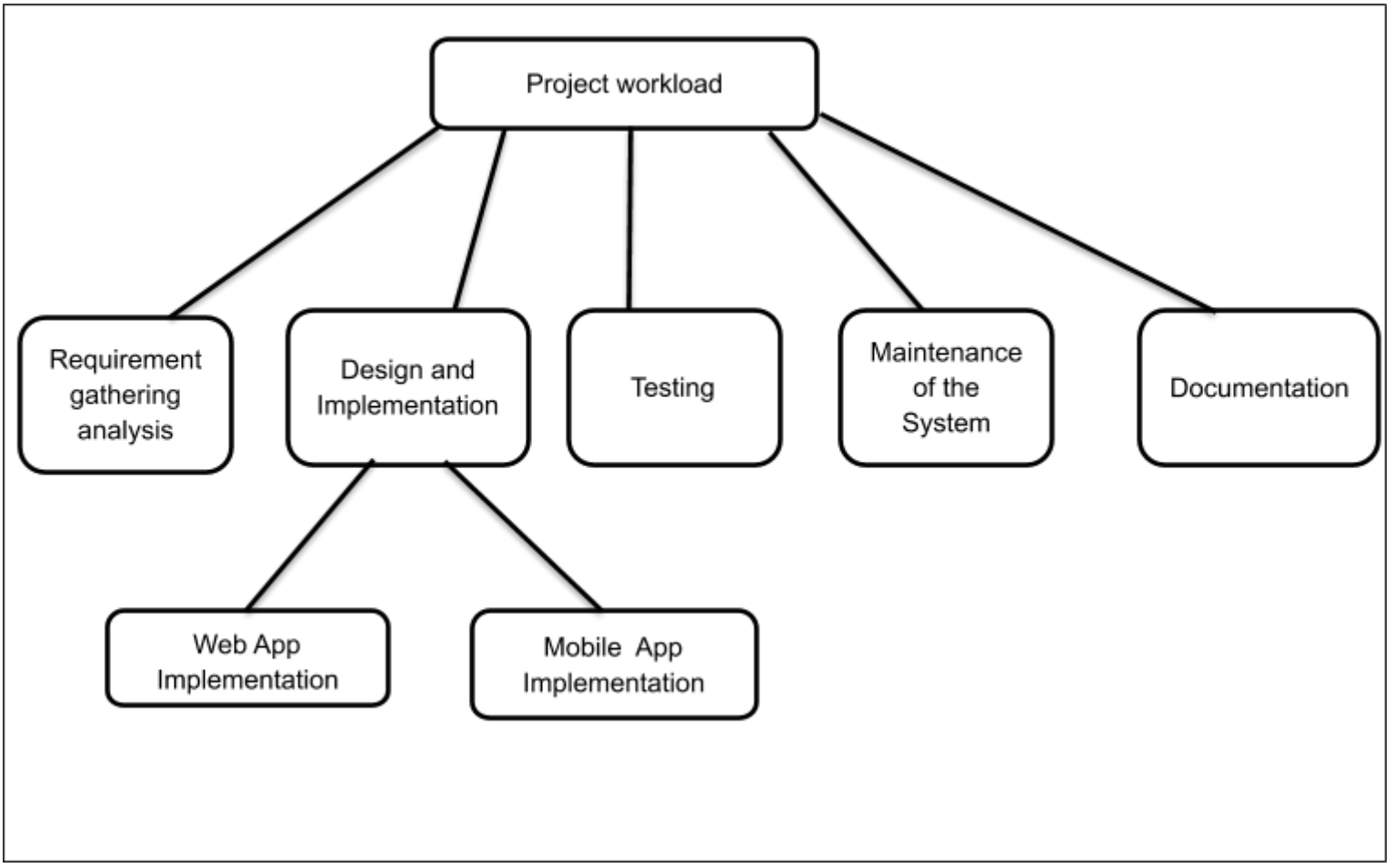


Figure - Work Breakdown Structure

Memory constraints

- 2 GB RAM and 8GB HDD space in Android or Apple mobile phone.
- 8GB RAM 500GB HDD space in Server machine.

Operations

System User is capable of following operations.

- **Create Profile** – User can provide a username and password in order to login to the application.

- **View Profile and Edit Information** – User can view and update the profile information.

- **View product viewed history** – User can View what are the products view earlier.

- **View product in the Camera –** User can open a 3D model from an e-commerce page and load the view the product in an augmented environment.

- System Administrator is capable of following operations.

Login - Admin can provide a username and password in order to login to the application. Manage the user details – Has the privilege to manage user details.

- **Upload 3D Models** – Admin can upload 3D models and link them the related item.

- **Database**

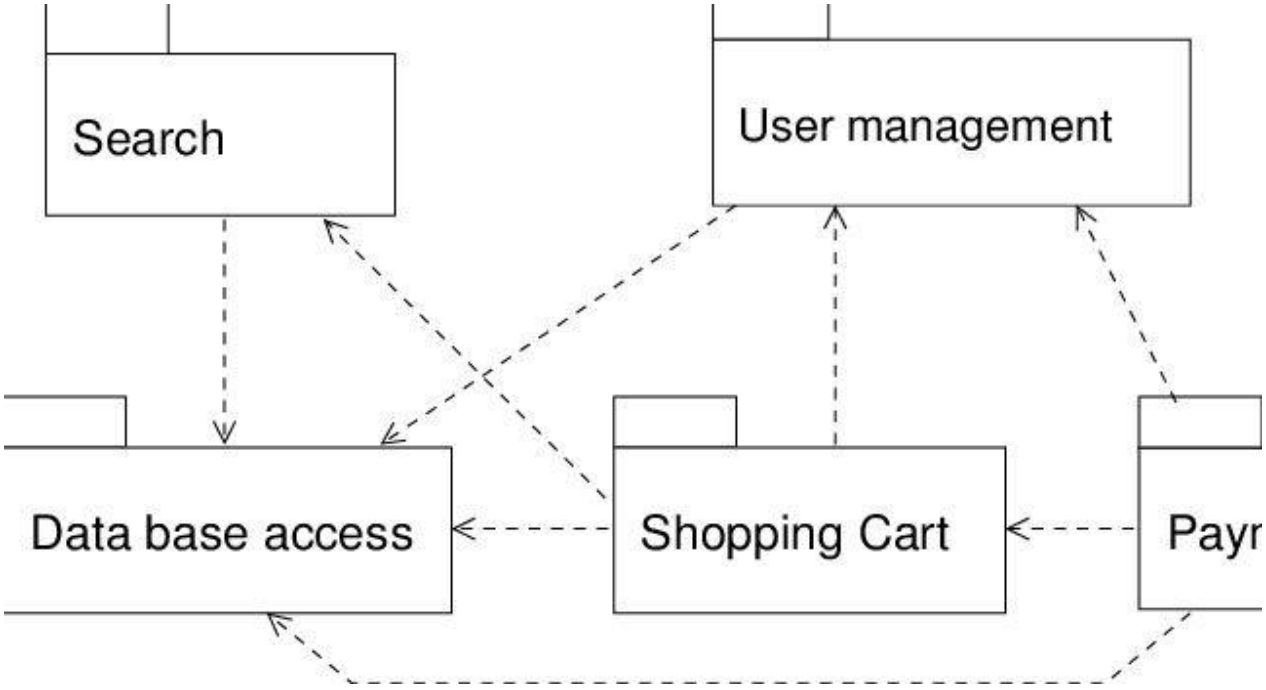
DATABASE

No	Table	Columns	KEYS	Comments
1	category	2	1 PK	To classify items
2	item	6	1 PK, 1FK	Store item details
3	login	4	1 PK	Store user credentials
4	Order_master	6	1 PK, 1FK	Store details of order placed by users
5	Order_slave	4	1 PK, 2FK	Order table split into 2, to reduce data redundancy and for Normalization Purpose.
6	review	6	1 PK, 2FK	Store Reviews
7	User_details	10	1 PK, 1FK	Store User details
Total	7 Tables	38		

3.3 Component Design

3.3.1 Package Diagram

A package diagram in the Unified Modeling Language depicts the dependencies between the packages that make up a model.



3.3.2 Component Diagram

In the Unified Modeling Language, a component diagram depicts how components are wired together to form larger components and or software systems. They are used to illustrate the structure of arbitrarily complex systems.

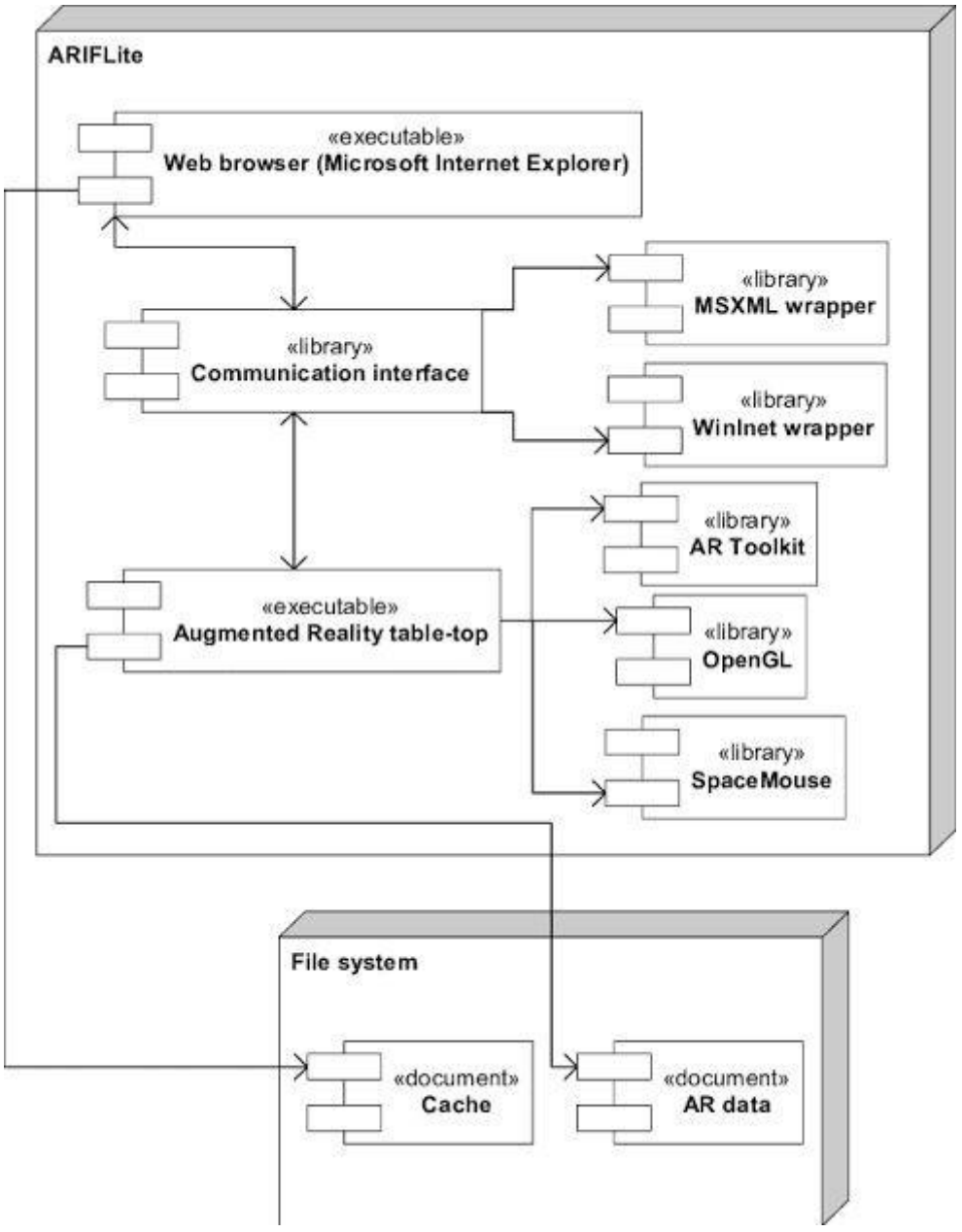


Fig:- component diagram

3.3.2 Deployment Diagram

A deployment diagram in the Unified Modeling Language models the physical deployment of artifacts on nodes.[1] To describe a web site, for example, a deployment diagram would show what hardware components ("nodes") exist (e.g., a web server, an application server, and a database server), what software components ("artifacts") run on each node (e.g., web application, database), and how the different pieces are connected (e.g. JDBC, REST, RMI).

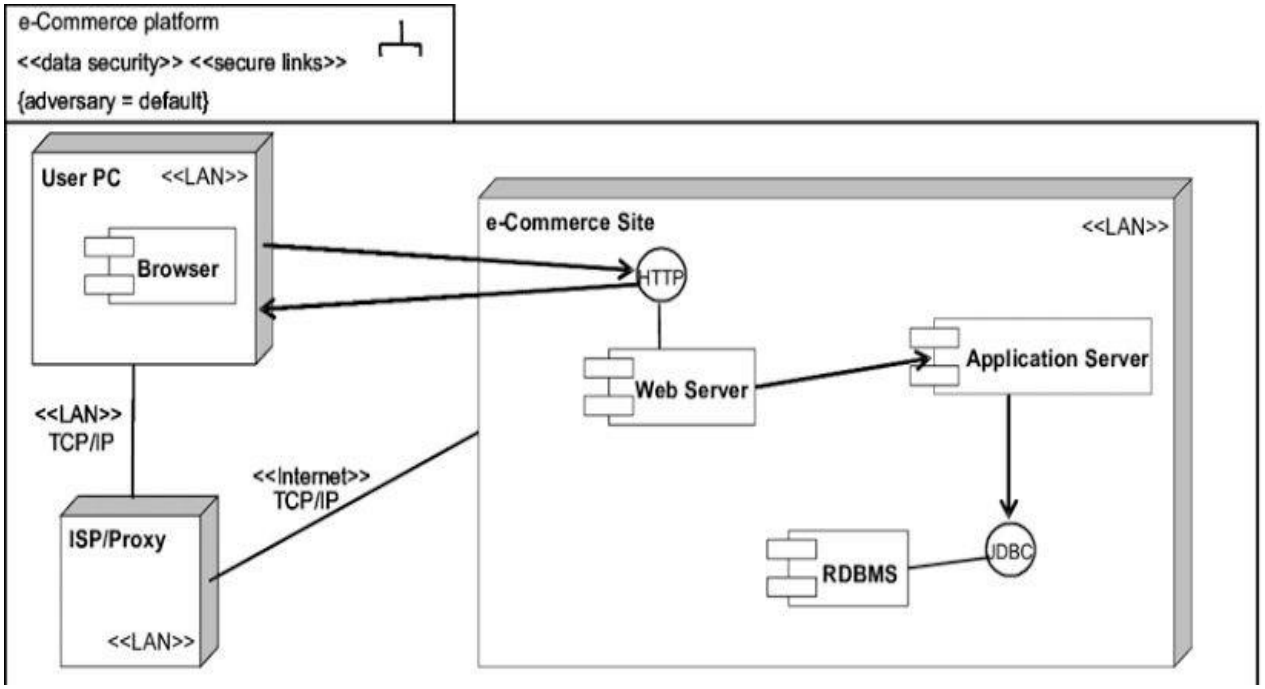


Fig:- deployment diagram

2. User Documentation

User documentation will not be provided with the delivery of the software. Hints may be provided in the application to assist with the ease of use of the program.

3. Assumptions and Dependencies

2.7.1 Android Device is assumed to have Android API level 15 or higher.

2.7.2 Android Device is assumed to have a working camera and location sensor.

2.7.3 Users are expected to have credentials from JPL to access the database on their devices.

2.7.4 User is expected to have a stable internet connection to retrieve data from the database.

2.7.5 Developers assume all necessary API calls are provided by JPL ,and are operating, for their database.

2.7.6 Developers assume access to the Open Street Maps API calls are continuously operating

4. External interface requirements

The analysis of requirements was done to describe basic features of application. The requirements for a system are the descriptions of what the system should do— the services that it provides and

the constraints on its operation. These requirements reflect the needs of customers for a system that serves a certain purpose such as controlling a device, placing an order, or finding information.

4.1 User Interfaces

Application will be used as a vehicle terminal, it should be possible to use some basic functionalities during the driving. User Interface elements, that allow to interact with them should be sizable for easier handling. Spaces between clickable components should be also bigger than in normal applications to avoid miss clicks. Application should not distract user while it is driving. User Interface will be designed in dark and pale colors, because application will be used mostly in winter, when most of the day time is dark.

4.2 Hardware Interfaces

LUUTA using augmented reality needs to receive some data from device hardware components. Camera and GPS sensor. Application can run on device without GPS sensor or camera, but it will be not able to provide AR features. Additionally, application is using compass and accelerometer to provide better handling of displaying virtual objects in AR mode.

3.3 Software Interfaces

Application will work on Android platform. Above Android API 22 users can grant permission for “risk permissions” during application runtime. LUUTA need 2 risk permissions: camera and localizations.

Application shall handle runtime permissions for these features.

3.4 Communication Protocols

Application will be communicated with external server. Server will be hosted on Azure platform. LUTTA shall use 2 protocols to communicate with Azure. MQTT for Azure IoT Hub communication and HTTP for Azure REST service.

5. System Features

The System After Careful Analysis Has Been Identified To Be Presented With The Following Modules And Roles

1. **ADMIN** - Role includes CRUD (Create/Read/Update/Delete)

items, categories, and other tasks available from the

dashboard

2. **CLIENT** - Use by customers for shopping.

3. **AUGMENTED REALITY** - On selecting AR View of a product from client, an INTENT is send to the AR Module for displaying a 3D View of the available item.

ADMIN - WEB APP

- The Administrator is the Super User of this application and also the owner of company.
- Only they have access to the dashboard and to all other functionalities available from it.
- They can manage Items.
- They can view information about all the registered users.
- They can view Item reviews posted by various user.
- They can view all the Orders placed by Users.

- They can send notifications to desired users on details like Offers, Shipping details, etc.

CLIENT - ANDROID APP

1. User Registration and Login.
2. Display of all the available items along with item name, image and price.
3. User can View/Edit/Update their profile.
4. User can view notification sent by admin regarding shipping details, offers, etc.
5. On selecting a particular product user can view product details such as item name, enhanced item image, price, category and description.
6. View product reviews and rating.
7. Add review and rating.
8. Make an order.
9. View order status.

AR MODULE

1. User can see the furniture in front of them using AR
2. Technology through smartphone camera.
3. User can take the Screenshot of the item from a particular viewpoint.

FR001 Application shall be able to provide list of companies which can place an order.

FR002 Application shall be able to provide the list of tasks can be performed.

FR003 Application shall be able to send the database data on: task, commissioning company, location of user and speed of user.

FR004 Application shall be able to display current position of the user on map.

FR005 Application shall be able to display speed, temperature of the user in area and actual time.

FR006 Application shall be able to fetch information about nearest Points of Interest.

FR007 Application shall be able to display information about Point of Interest using camera.

6. Nonfunctional Requirements

6.1 Performance Requirements

6.1.1 The application shall perform smoothly, taking at most 5 seconds to retrieve calls from the database with a good internet connection.

6.1.2 The number of simultaneous users, initially, should support two to three dozens.

6.2 Safety Requirements

6.2.1 User is expected to be aware of their surroundings.

6.2.2 User is expected to obey posted signs (ex. ‘Restricted Area’, ‘No swimming’, ‘No Trespassing’).

6.3 Security Requirements

- The application does not store, collect any personal information of the users.
- It only collects the item preferences and search history in order to provide a better service for the regular users. • For the registered users, login requires usernames and passwords which are stored using encryption methods.

6.4 Software Quality Attributes

5.4.1 Reliability

- The generated responses should be reliable since they are forwarded to the customer
- The data contained in the generated responses should be reliable
- The system should be capable of generating responses for untrained material based on machine learning model
- The system should gracefully accept exceptions in the system with relevant responses

5.4.2 Availability

- The system should be available whenever a customer uses the application.
- To ensure availability of the application new instance of the server will be started whenever within 1 minute in case of a system crash with recovery.

5.4.3 Security

- The application does not store, collect any personal information of the users.
- It only collects the item preferences and search history in order to provide a better service for the regular users. • For the registered users, login requires usernames and passwords which are stored using encryption methods.

5.4.4 Maintainability

- The system should have maintainability built into the core modules of system since the application runs for a long period of time
- The system should improve its machine learning models based on the feedback provided by human agents
- The system should be developed in a modular way for ease of injecting other languages to the system .

6.5 Other requirements

6.5.1 Adaptability

- The system should be developed in such a way that users with limited knowledge about the system can also operate on the system without having to seek for help.

6.5.2 Usability

• The system should have an easy process of training from existing conversation data.

7. Project Plan

7.1 Team Members

- Aashi Agrawal
- Prateek Sahu
- Hitesh Bhragu

7.2 Division of Work

- Aashi Agrawal – Requirement gathering , analysis and documentation
- Prateek Sahu – Frontend
- Hitesh Bhragu – Backend

7.3 Time Schedule

<Tentative time requirement for a part of project to be completed.>

Appendix A: Glossary

Augmented Reality (AR): A technique in computer graphics that superimposes (places) a computer generated object into a devices camera view to alter the perception of the real world.

Application Program Interface (API): Functions or methods for accessing software services or libraries.

Framework: One of the software deliverables from Augmented Reality for Hydrology (Version 1) that provides components to assist in the development of the AR objects in the application.

Hydrology: A study of the properties of earth's water, focusing on the movement of the water in relevance to the land.

Point of Interest (POI): A place in the real world that is represented by a computer generated object in the AR view of the program.

REST API: An API practice that uses HTTP or HTTPS request to GET, PUT, POST, and DELETE data from a database.

Watertrek: A database provided by JPL that stores Hydrology data and is accessible using a REST API.
Appendix B: To Be Determined List

<Collect a numbered list of the TBD (to be determined) references that remain in the SRS so they can be tracked to closure.>

Appendix

Activity login

```
: <?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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xmlns:app="http://schemas.android.com/apk/res-auto"
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android:layout_height="match_parent" tools:context=".LoginActivity"
android:background="@color/colorBlue"
>

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app:layout_constraintStart_toEndOf="parent"
app:layout_constraintTop_toTopOf="parent"></androidx.cardview.widget.CardView>


<androidx.cardview.widget.CardView
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tools:ignore="MissingClass,MissingConstraints"
tools:layout_editor_absoluteY="101dp"></androidx.cardview.widget.CardView>
```

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app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toStartOf="parent"        app:layout_constraintStart_toStartOf="parent"
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tools:ignore="MissingClass,MissingConstraints"></androidx.cardview.widget.CardView>

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android:outlineSpotShadowColor="#0000"
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app:layout_constraintTop_toTopOf="parent">

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android:layout_width="wrap_content"
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```

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In"  android:textColor="@color/colorWhite"
android:textSize="24dp"></TextView>

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android:textColorHint="@color/colorWhite"
android:textSize="16dp"></EditText>

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android:textColorHint="@color/colorWhite"
android:textSize="16dp"></EditText>

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android:textSize="16dp"></TextView>

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In"          android:textColor="@color/colorBlue"
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Sign up

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xmlns:tools="http://schemas.android.com/tools"
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android:layout_height="match_parent"     tools:context=".MainActivity"
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>

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app:layout_constraintLeft_toLeftOf="parent"         app:layout_constraintRight_toRightOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:navGraph="@navigation/mobile_navigation"/>
<com.google.android.material.bottomnavigation.BottomNavigationView
android:id="@+id/buttom_nav_view"                                android:layout_width="match_parent"
android:layout_height="wrap_content"                                app:labelVisibilityMode="labeled"
app:backgroundTint="@color/colorWhite"       app:itemIconTint="@drawable/bottom_nav_color"
app:itemTextColor="@drawable/bottom_nav_color"            android:layout_gravity="bottom|end"
android:background="?android:attr/windowBackground"
app:layout_constraintBottom_toBottomOf="parent"
```

app:layout_constraintLeft_toLeftOf="parent" app:layout_constraintRight_toRightOf="parent"
app:menu="@menu/bottom_nav_menu" /> </androidx.constraintlayout.widget.ConstraintLayout>
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[17/11, 12:11 PM] Prateek: <?xml version="1.0" encoding="utf-8"?>
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xmlns:app="http://schemas.android.com/apk/res-auto"
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```

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android:textColor="@color/colorBlack"
android:layout_marginLeft="20dp"
android:layout_marginVertical="15dp"
></TextView>
<androidx.cardview.widget.CardView
android:layout_width="18dp"                  android:layout_height="18dp"
android:layout_gravity="center"
android:layout_marginLeft="2dp"
android:layout_marginBottom="1dp"
android:outlineAmbientShadowColor="#0000"
android:outlineSpotShadowColor="#0000"
android:backgroundTint="@color/colorWhiteBlue"
app:cardCornerRadius="10dp">

<TextView
```

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"                android:text="8"
android:textColor="@color/colorBlue"
android:layout_gravity="center"
android:gravity="center"                android:textSize="12dp"
></TextView>
</androidx.cardview.widget.CardView>          </LinearLayout>

<LinearLayout          android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="10dp"
android:orientation="horizontal"
>
<androidx.cardview.widget.CardView
android:layout_width="60dp"       android:layout_height="60dp"
android:layout_marginVertical="5dp"
android:layout_marginHorizontal="20dp"
app:cardCornerRadius="100dp"
>
<ImageView
android:layout_width="match_parent"
android:layout_height="match_parent"
android:scaleType="centerCrop"
android:src="@drawable/shoesstand"
android:padding="2dp"
></ImageView>
</androidx.cardview.widget.CardView>

<TextView                android:layout_width="0dp"
android:layout_height="wrap_content"
android:text="Ebee Store Metal Collapsible Shoe Stand"
android:textColor="@color/colorBlack"
android:layout_weight="1"
android:layout_marginBottom="8dp"
android:layout_gravity="center"
android:textSize="18dp"
```

```
></TextView>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="9:35                    AM"
android:gravity="right"
android:layout_gravity="center"
android:layout_marginBottom="18dp"
android:layout_marginRight="20dp"
android:textColor="@color/colorGrey"
android:textSize="18dp"      ></TextView>
</LinearLayout>              <LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="10dp"
android:orientation="horizontal"
>
<androidx.cardview.widget.CardView                    android:layout_width="60dp"
android:layout_height="60dp"                    android:layout_marginVertical="5dp"
android:layout_marginHorizontal="20dp"
app:cardCornerRadius="100dp"
>
<ImageView
android:layout_width="match_parent"
android:layout_height="match_parent"
android:scaleType="centerCrop"
android:src="@drawable/item2"
android:padding="10dp"
></ImageView>
</androidx.cardview.widget.CardView>

<TextView                    android:layout_width="0dp"
android:layout_height="wrap_content"
android:text="Relaxing Home Seat Cushion Long Chair"
android:textColor="@color/colorBlack"
```

```
android:layout_weight="1"
android:layout_marginBottom="8dp"
android:layout_gravity="center"    android:textSize="18dp"
></TextView>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="9:35                              AM"
android:gravity="right"
android:layout_gravity="center"
android:layout_marginBottom="18dp"
android:layout_marginRight="20dp"
android:textColor="@color/colorGrey"
android:textSize="18dp"        ></TextView>
</LinearLayout>                <LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="10dp"
android:orientation="horizontal"
>
<androidx.cardview.widget.CardView
android:layout_width="60dp"        android:layout_height="60dp"
android:layout_marginVertical="5dp"
android:layout_marginHorizontal="20dp"
app:cardCornerRadius="100dp"
>
<ImageView
android:layout_width="match_parent"
android:layout_height="match_parent"
android:scaleType="centerCrop"
android:src="@drawable/stool"
></ImageView>
</androidx.cardview.widget.CardView>
```

```
<TextView                    android:layout_width="0dp"
android:layout_height="wrap_content"
android:text="Wooden Beautiful Handmade Stool (Brown)"
android:textColor="@color/colorBlack"
android:layout_weight="1"
android:layout_marginBottom="8dp"
android:layout_gravity="center"    android:textSize="18dp"
></TextView>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="9:35                    AM"
android:gravity="right"
android:layout_gravity="center"
android:layout_marginBottom="18dp"
android:layout_marginRight="20dp"
android:textColor="@color/colorGrey"
android:textSize="18dp"       ></TextView>
</LinearLayout>               <LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="10dp"
android:orientation="horizontal"
>
<androidx.cardview.widget.CardView
android:layout_width="60dp"       android:layout_height="60dp"
android:layout_marginVertical="5dp"
android:layout_marginHorizontal="20dp"
app:cardCornerRadius="100dp"
>
<ImageView
android:layout_width="match_parent"
android:layout_height="match_parent"
android:scaleType="centerCrop"
```

```
android:src="@drawable/stand"
android:padding="10dp"
></ImageView>
</androidx.cardview.widget.CardView>

<TextView android:layout_width="0dp"
android:layout_height="wrap_content" android:text="Wall
Decor Book Shelf/Wall Display Rack"
android:textColor="@color/colorBlack"
android:layout_weight="1"
android:layout_marginBottom="8dp"
android:layout_gravity="center" android:textSize="18dp"
></TextView>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="9:35 AM" android:gravity="right"
android:layout_gravity="center"
android:layout_marginBottom="18dp"
android:layout_marginRight="20dp"
android:textColor="@color/colorGrey"
android:textSize="18dp"
></TextView>
</LinearLayout> <LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="10dp"
android:orientation="horizontal"
>
<androidx.cardview.widget.CardView
android:layout_width="60dp" android:layout_height="60dp"
android:layout_marginVertical="5dp"
android:layout_marginHorizontal="20dp"
app:cardCornerRadius="100dp"
>
```

```
<ImageView
android:layout_width="match_parent"
android:layout_height="match_parent"
android:scaleType="centerCrop"
android:src="@drawable/shoesstand"
android:padding="2dp"
></ImageView>
</androidx.cardview.widget.CardView>

<TextView                android:layout_width="0dp"
android:layout_height="wrap_content"
android:text="Ebee Store Metal Collapsible Shoe Stand"
android:textColor="@color/colorBlack"
android:layout_weight="1"
android:layout_marginBottom="8dp"
android:layout_gravity="center"
android:textSize="18dp"
></TextView>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="9:35                AM"
android:gravity="right"
android:layout_gravity="center"
android:layout_marginBottom="18dp"
android:layout_marginRight="20dp"
android:textColor="@color/colorGrey"
android:textSize="18dp"    ></TextView>
</LinearLayout>          <LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="10dp"
android:orientation="horizontal"
>
```

```
<androidx.cardview.widget.CardView
android:layout_width="60dp"        android:layout_height="60dp"
android:layout_marginVertical="5dp"
android:layout_marginHorizontal="20dp"
app:cardCornerRadius="100dp"
>
<ImageView
android:layout_width="match_parent"
android:layout_height="match_parent"
android:scaleType="centerCrop"
android:src="@drawable/item2"
android:padding="10dp"
></ImageView>
</androidx.cardview.widget.CardView>

<TextView                          android:layout_width="0dp"
android:layout_height="wrap_content"
android:text="Relaxing Home Seat Cushion Long Chair"
android:textColor="@color/colorBlack"
android:layout_weight="1"
android:layout_marginBottom="8dp"
android:layout_gravity="center"    android:textSize="18dp"
></TextView>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="9:35 AM"     android:gravity="right"
android:layout_gravity="center"
android:layout_marginBottom="18dp"
android:layout_marginRight="20dp"
android:textColor="@color/colorGrey"
android:textSize="18dp"                ></TextView>
</LinearLayout>                        <LinearLayout
android:layout_width="match_parent"
```

```
android:layout_height="wrap_content"
android:layout_marginTop="10dp"
android:orientation="horizontal"
>
<androidx.cardview.widget.CardView
android:layout_width="60dp"        android:layout_height="60dp"
android:layout_marginVertical="5dp"
android:layout_marginHorizontal="20dp"
app:cardCornerRadius="100dp"
>
<ImageView
android:layout_width="match_parent"
android:layout_height="match_parent"
android:scaleType="centerCrop"
android:src="@drawable/stool"
></ImageView>
</androidx.cardview.widget.CardView>

<TextView                          android:layout_width="0dp"
android:layout_height="wrap_content"
android:text="Wooden Beautiful Handmade Stool (Brown)"
android:textColor="@color/colorBlack"
android:layout_weight="1"
android:layout_marginBottom="8dp"
android:layout_gravity="center"     android:textSize="18dp"
></TextView>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="9:35                          AM"
android:gravity="right"
android:layout_gravity="center"
android:layout_marginBottom="18dp"
android:layout_marginRight="20dp"
android:textColor="@color/colorGrey"
```

```
android:textSize="18dp"        ></TextView>
</LinearLayout>                <LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="10dp"
android:orientation="horizontal"
>
<androidx.cardview.widget.CardView
android:layout_width="60dp"        android:layout_height="60dp"
android:layout_marginVertical="5dp"
android:layout_marginHorizontal="20dp"
app:cardCornerRadius="100dp"
>
<ImageView
android:layout_width="match_parent"
android:layout_height="match_parent"
android:scaleType="centerCrop"
android:src="@drawable/stand"
android:padding="10dp"
></ImageView>
</androidx.cardview.widget.CardView>

<TextView                      android:layout_width="0dp"
android:layout_height="wrap_content"    android:text="Wall
Decor        Book        Shelf/Wall        Display        Rack"
android:textColor="@color/colorBlack"
android:layout_weight="1"
android:layout_marginBottom="8dp"
android:layout_gravity="center"    android:textSize="18dp"
></TextView>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="9:35 AM"    android:gravity="right"
android:layout_gravity="center"
```

```
android:layout_marginBottom="18dp"
android:layout_marginRight="20dp"
android:textColor="@color/colorGrey"
android:textSize="18dp"
></TextView>
</LinearLayout>

<TextView
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Load                    More"
android:textSize="20dp"    android:gravity="center"
android:layout_marginBottom="20dp"
>
</TextView>
</LinearLayout>
</ScrollView>
</androidx.constraintlayout.widget.ConstraintLayout>
[17/11, 12:11 PM] Prateek: notification
[17/11, 12:12 PM] Prateek: signup
[17/11, 12:12 PM] Prateek: <?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"    xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"    android:layout_height="match_parent"
tools:context=".LoginActivity"    android:background="@color/colorBlue"
>

<androidx.cardview.widget.CardView
android:id="@+id/cardView2"    android:layout_width="400dp"
android:layout_height="400dp"
android:backgroundTint="@color/colorDarkBlue"
app:cardCornerRadius="400dp"    app:layout_constraintEnd_toStartOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"></androidx.cardview.widget.CardView>
```

```
<androidx.cardview.widget.CardView
android:id="@+id/cardView4"        android:layout_width="200dp"
android:layout_height="200dp"
android:backgroundTint="@color/colorDarkBlue"        app:cardCornerRadius="400dp"
app:layout_constraintBottom_toBottomOf="@+id/cardView2"
app:layout_constraintEnd_toEndOf="@+id/cardView3"
app:layout_constraintStart_toEndOf="@+id/cardView3"
app:layout_constraintTop_toTopOf="@+id/cardView3"
tools:ignore="MissingClass,MissingConstraints"></androidx.cardview.widget.CardView>

<androidx.cardview.widget.CardView
android:id="@+id/cardView5"        android:layout_width="200dp"
android:layout_height="200dp"
android:backgroundTint="@color/colorLightBlue"        app:cardCornerRadius="400dp"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"        app:layout_constraintStart_toEndOf="parent"
app:layout_constraintTop_toBottomOf="parent"
tools:ignore="MissingClass,MissingConstraints"></androidx.cardview.widget.CardView>

<androidx.cardview.widget.CardView
android:id="@+id/cardView3"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:backgroundTint="#0000"
android:outlineAmbientShadowColor="#0000"
android:outlineSpotShadowColor="#0000"
android:layout_marginHorizontal="42dp"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent">

<LinearLayout                android:id="@+id/linearLayout"
android:layout_width="match_parent"
android:layout_height="wrap_content"
```

```
android:orientation="vertical"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_gravity="center_horizontal"
android:fontFamily="@font/poppins"
android:gravity="center_horizontal"  android:text="AR
Shop"  android:textColor="@color/colorWhite"
android:textSize="34dp"
android:textStyle="bold"></TextView>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="60dp"
android:fontFamily="@font/poppins"  android:text="Sign
Up"  android:textColor="@color/colorWhite"
android:textSize="24dp"></TextView>

<EditText
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="50dp"
android:backgroundTint="@color/colorWhite"  android:hint="Full
Name"  android:textColor="@color/colorWhite"
android:textColorHint="@color/colorWhite"
android:textSize="16dp"></EditText>

<EditText
android:layout_width="match_parent"
android:layout_height="wrap_content"
```

```
android:layout_marginTop="20dp"
android:backgroundTint="@color/colorWhite"  android:hint="Email
Address"  android:textColor="@color/colorWhite"
android:textColorHint="@color/colorWhite"
android:textSize="16dp"></EditText>
<EditText
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="20dp"
android:backgroundTint="@color/colorWhite"  android:hint="Phone
Number"  android:textColor="@color/colorWhite"
android:textColorHint="@color/colorWhite"
android:textSize="16dp"></EditText>
<EditText
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="20dp"
android:backgroundTint="@color/colorWhite"
android:hint="Password"  android:textColor="@color/colorWhite"
android:textColorHint="@color/colorWhite"
android:textSize="16dp"></EditText>


<TextView  android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_gravity="right"
android:layout_marginTop="20dp"
android:fontFamily="@font/poppins"
android:text="Forgot!"
android:textColor="@color/colorWhite"
android:textSize="16dp"></TextView>

<androidx.cardview.widget.CardView
android:layout_width="match_parent"
android:layout_height="45dp"  android:layout_marginTop="40dp"
app:cardCornerRadius="5dp">
```

```
<TextView
android:layout_width="match_parent"
android:layout_height="match_parent"
android:layout_gravity="center"
android:fontFamily="@font/poppins"
android:gravity="center"                android:text="Sign
Up"                android:textColor="@color/colorBlue"
android:textSize="20dp"
android:textStyle="bold"></TextView>

</androidx.cardview.widget.CardView>

<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_gravity="center"
android:layout_marginTop="120dp"
android:gravity="center">



</LinearLayout>

</LinearLayout>
</androidx.cardview.widget.CardView>



</androidx.constraintlayout.widget.ConstraintLayout>
```

Splash

```
<?xml version=”1.0” encoding=”utf-8”?>
<androidx.constraintlayout.widget.ConstraintLayout
Xmlns:android=http://schemas.android.com/apk/res/androi  d
Xmlns:app=http://schemas.android.com/apk/res-aut  o
Xmlns:tools=http://schemas.android.com/tool  s
```

```
Android:layout_width=”match_parent”
Android:layout_height=”match_parent”
Android:background=”@color/colorBlue”
>

<androidx.cardview.widget.CardView
Android:id=”@+id/cardView”
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginBottom=”150dp”
Android:outlineAmbientShadowColor=”#0000”
Android:outlineSpotShadowColor=”#0000”
App:cardCornerRadius=”20dp”
App:layout_constraintBottom_toBottomOf=”parent”  App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”  App:layout_constraintTop_toTopOf=”parent”>

<ImageView
Android:layout_width=”150dp”
Android:layout_height=”150dp”
Android:src=”@drawable/ar”></ImageView>
</androidx.cardview.widget.CardView>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:text=”AR Shop”
Android:layout_marginTop=”20dp”
Android:textSize=”28dp”
Android:textStyle=”bold”
Android:fontFamily=”@font/poppins”
Android:textColor=”@color/colorWhite”  App:layout_constraintEnd_toEndOf=”@+id/cardView”
App:layout_constraintStart_toStartOf=”@+id/cardView”
App:layout_constraintTop_toBottomOf=”@+id/cardView”></TextView>

</androidx.constraintlayout.widget.ConstraintLayout>
```

Fragment home

<?xml version=”1.0” encoding=”utf-8”?> <androidx.constraintlayout.widget.ConstraintLayout
xmlns:android=http://schemas.android.com/apk/res/androi d
Android:layout_width=”match_parent”
Android:layout_height=”match_parent”
Xmlns:app=http://schemas.android.com/apk/res-aut o
Xmlns:tools=http://schemas.android.com/tool s
Android:background=”@color/colorWhite”>
<ScrollView
Android:layout_width=”match_parent”
Android:layout_height=”match_parent”
Android:scrollbarSize=”0dp”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent” App:layout_constraintTop_toTopOf=”parent”>

<LinearLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”
Android:orientation=”vertical”>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width=”match_parent”
Android:layout_height=”45dp”>

<ImageView
Android:id=”@+id/imageView”
Android:layout_width=”30dp”
Android:layout_height=”30dp”
Android:layout_marginHorizontal=”20dp”
Android:layout_marginTop=”15dp”
Android:src=”@drawable/search”
App:layout_constraintBottom_toBottomOf=”parent”

```
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”
App:tint=”@color/colorGrey”>

</ImageView>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”                Android:layout_marginTop=”10dp”
Android:text=”AR Shop”
Android:textSize=”24dp”
Android:textStyle=”bold”
Android:textColor=”@color/colorBlack”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”></TextView>

<androidx.cardview.widget.CardView              Android:layout_width=”20dp”
Android:layout_height=”20dp”
Android:layout_marginRight=”10dp”
Android:layout_marginBottom=”30dp”
Android:backgroundTint=”@color/colorBlue”
App:cardCornerRadius=”10dp”
App:layout_constraintBottom_toBottomOf=”@+id/imageView2”
App:layout_constraintEnd_toEndOf=”@+id/imageView2”
App:layout_constraintStart_toEndOf=”@+id/imageView2”
App:layout_constraintTop_toTopOf=”@+id/imageView2”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_gravity=”center”
Android:gravity=”center”
Android:text=”13”
Android:textColor=”@color/colorWhite”                Android:textSize=”12dp”></TextView>
```

```
</androidx.cardview.widget.CardView>

<ImageView
Android:id=”@+id/imageView2”
Android:layout_width=”30dp”
Android:layout_height=”30dp”
Android:layout_marginHorizontal=”20dp”
Android:layout_marginTop=”15dp”
Android:onClick=”openNotification”
Android:src=”@drawable/notification”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintTop_toTopOf=”parent”
App:tint=”@color/colorGrey”>

</ImageView>

</androidx.constraintlayout.widget.ConstraintLayout>


<LinearLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”
Android:layout_marginTop=”10dp”          Android:orientation=”vertical”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”20dp”          Android:layout_marginTop=”10dp”
Android:fontFamily=”@font/poppins”
Android:text=”New arrival”
Android:textColor=”@color/colorBlack”
Android:textSize=”18dp”
Android:textStyle=”bold”></TextView>

<androidx.cardview.widget.CardView
```

```
Android:id=”@+id/banner_cardview”
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”
Android:layout_below=”@+id/tab_layout”          Android:layout_alignParentBottom=”true”
Android:layout_marginVertical=”10dp”
Android:layout_marginBottom=”10dp”
Android:backgroundTint=”#70C6C6C6”
Android:layout_marginHorizontal=”20dp”          App:cardCornerRadius=”20dp”
Android:outlineAmbientShadowColor=”#0000”
Android:outlineSpotShadowColor=”#0000”
App:layout_constraintStart_toStartOf=”parent”          App:layout_constraintTop_toTopOf=”parent”>
<com.smarteist.autoimageslider.SliderView
Android:id=”@+id/imageSlider”
Android:layout_width=”match_parent”
Android:layout_height=”150dp”
App:sliderAnimationDuration=”600”
App:sliderAutoCycleDirection=”back_and_forth”
App:sliderAutoCycleEnabled=”true”
App:sliderIndicatorAnimationDuration=”600”
App:sliderIndicatorGravity=”center_horizontal|bottom”
App:sliderIndicatorMargin=”15dp”
App:sliderIndicatorOrientation=”horizontal”
App:sliderIndicatorPadding=”3dp”
App:sliderIndicatorRadius=”2dp”
App:sliderIndicatorSelectedColor=”#5A5A5A”
App:sliderIndicatorUnselectedColor=”#FFF”
App:sliderScrollTimeInSec=”1”
App:sliderStartAutoCycle=”true” />

</androidx.cardview.widget.CardView>

</LinearLayout>


<LinearLayout
Android:layout_width=”match_parent”          Android:layout_height=”wrap_content”
```

```
Android:layout_marginTop=”10dp”
Android:orientation=”vertical”>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”
Android:orientation=”horizontal”>

<TextView
Android:id=”@+id/textView”
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”20dp”
Android:fontFamily=”@font/poppins”
Android:text=”Exclusive deals”
Android:textColor=”@color/colorBlack”
Android:textSize=”18dp”
Android:textStyle=”bold”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”></TextView>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginRight=”20dp”
Android:fontFamily=”@font/poppins”
Android:text=”View all”
Android:textColor=”@color/colorGrey”
Android:textSize=”16dp”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintTop_toTopOf=”parent”></TextView>
</androidx.constraintlayout.widget.ConstraintLayout>

<HorizontalScrollView
```

```
Android:layout_width=”match_parent”
Android:layout_height=”match_parent”
Android:scrollbarSize=”0dp”>

<LinearLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”
Android:orientation=”horizontal”>

<LinearLayout
Android:layout_width=”170dp”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”20dp”
Android:orientation=”vertical”>

<androidx.cardview.widget.CardView                    Android:id=”@+id/cardView7”
Android:layout_width=”165dp”
Android:layout_height=”130dp”
Android:layout_gravity=”center”
Android:layout_margin=”5dp”
App:cardCornerRadius=”10dp”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”>

<ImageView
Android:layout_width=”match_parent”
Android:layout_height=”match_parent”
Android:padding=”15dp”
Android:scaleType=”centerCrop”
Android:src=”@drawable/iten1”></ImageView>

</androidx.cardview.widget.CardView>

<LinearLayout
Android:layout_width=”wrap_content”
```

```
Android:layout_height=”wrap_content”
Android:layout_marginTop=”5dp”
Android:orientation=”horizontal”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”10dp”
Android:fontFamily=”@font/poppins”

Android:text=”₹5000”

Android:textColor=”@color/colorBlack”
Android:textSize=”16dp”
Android:textStyle=”bold”
App:layout_constraintTop_toBottomOf=”@+id/cardView7”></TextView>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”10dp”
Android:fontFamily=”@font/poppins”
Android:text=”@string/mrp1”
Android:textColor=”@color/colorBlue”
Android:textSize=”14dp”
Android:textStyle=”bold”
App:layout_constraintTop_toBottomOf=”@+id/cardView7”></TextView>                </LinearLayout>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”
Android:layout_marginTop=”5dp”
Android:orientation=”horizontal”>

<TextView
Android:id=”@+id/textView3”
Android:layout_width=”wrap_content”
```

```
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”10dp”
Android:fontFamily=”@font/poppins”
Android:text=”Resting Chair”
Android:textColor=”@color/colorBlack”
Android:textSize=”16dp”
Android:textStyle=”bold”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”></TextView>

<androidx.cardview.widget.CardView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”                    Android:layout_marginRight=”10dp”
Android:layout_marginBottom=”5dp”
Android:backgroundTint=”@color/colorBlue”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintTop_toTopOf=”parent”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginHorizontal=”5dp”                  Android:layout_marginTop=”1dp”
Android:fontFamily=”@font/poppins”                     Android:text=”4.5”
Android:textColor=”@color/colorWhite”
Android:textSize=”12dp”
Android:textStyle=”bold”
App:layout_constraintTop_toBottomOf=”@+id/cardView7”></TextView>
</androidx.cardview.widget.CardView>

</androidx.constraintlayout.widget.ConstraintLayout>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”>
```

```
<LinearLayout
Android:layout_width=”match_parent”
Android:layout_height=”15dp”
Android:background=”@color/colorBlue”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”></LinearLayout>

<androidx.cardview.widget.CardView
Android:id=”@+id/cardView821”
Android:layout_width=”match_parent”
Android:layout_height=”30dp”
Android:backgroundTint=”@color/colorBlue”
App:cardCornerRadius=”10dp”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_gravity=”center”
Android:text=”Add To Cart”
Android:textColor=”@color/colorWhite”
Android:textSize=”16dp”
Android:textStyle=”bold”></TextView>


</androidx.cardview.widget.CardView>
</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>

<LinearLayout
```

```
Android:layout_width=”170dp”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”20dp”
Android:orientation=”vertical”>

<androidx.cardview.widget.CardView
Android:id=”@+id/cardView27”
Android:layout_width=”165dp”
Android:layout_height=”130dp”
Android:layout_gravity=”center”
Android:layout_margin=”5dp”
App:cardCornerRadius=”10dp”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”>

<ImageView
Android:layout_width=”match_parent”
Android:layout_height=”match_parent”
Android:padding=”15dp”
Android:scaleType=”centerCrop”
Android:src=”@drawable/item2”></ImageView>

</androidx.cardview.widget.CardView>

<LinearLayout
Android:layout_width=”wrap_content”                    Android:layout_height=”wrap_content”
Android:layout_marginTop=”5dp”
Android:orientation=”horizontal”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”10dp”
Android:fontFamily=”@font/poppins”
```

```
Android:text="₹18000"
Android:textColor="@color/colorBlack"
Android:textSize="16dp"
Android:textStyle="bold"
App:layout_constraintTop_toBottomOf="@+id/cardView7"></TextView>

<TextView
Android:layout_width="wrap_content"
Android:layout_height="wrap_content"                    Android:layout_marginLeft="10dp"
Android:fontFamily="@font/poppins"
Android:text="@string/mrp2"
Android:textColor="@color/colorBlue"
Android:textSize="14dp"
Android:textStyle="bold"
App:layout_constraintTop_toBottomOf="@+id/cardView7"></TextView>
</LinearLayout>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width="match_parent"
Android:layout_height="wrap_content"
Android:layout_marginTop="5dp"
Android:orientation="horizontal">

<TextView
Android:id="@+id/textView33"
Android:layout_width="wrap_content"
Android:layout_height="wrap_content"
Android:layout_marginLeft="10dp"
Android:fontFamily="@font/poppins"
Android:text="Sofa and table"
Android:textColor="@color/colorBlack"
Android:textSize="16dp"
Android:textStyle="bold"
App:layout_constraintBottom_toBottomOf="parent"
App:layout_constraintStart_toStartOf="parent"
```

App:layout_constraintTop_toTopOf=”parent”></TextView>

<androidx.cardview.widget.CardView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginRight=”10dp”
Android:layout_marginBottom=”5dp”
Android:backgroundTint=”@color/colorBlue”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintTop_toTopOf=”parent”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginHorizontal=”5dp”
Android:layout_marginTop=”1dp”
Android:fontFamily=”@font/poppins” Android:text=”4.5”
Android:textColor=”@color/colorWhite”
Android:textSize=”12dp”
Android:textStyle=”bold”
App:layout_constraintTop_toBottomOf=”@+id/cardView7”></TextView>
</androidx.cardview.widget.CardView>

</androidx.constraintlayout.widget.ConstraintLayout>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”>

<LinearLayout
Android:layout_width=”match_parent”
Android:layout_height=”15dp”
Android:background=”@color/colorBlue”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”

App:layout_constraintTop_toTopOf=”parent”></LinearLayout>

<androidx.cardview.widget.CardView
Android:id=”@+id/cardView81”
Android:layout_width=”match_parent”
Android:layout_height=”30dp”
Android:backgroundTint=”@color/colorBlue”
App:cardCornerRadius=”10dp”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent” Tools:ignore=”MissingConstraints”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_gravity=”center”
Android:text=”Add To Cart”
Android:textColor=”@color/colorWhite”
Android:textSize=”16dp”
Android:textStyle=”bold”></TextView> </androidx.cardview.widget.CardView>
</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>

<LinearLayout
Android:layout_width=”170dp”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”20dp”
Android:orientation=”vertical”>

<androidx.cardview.widget.CardView
Android:id=”@+id/cardView72” Android:layout_width=”165dp”
Android:layout_height=”130dp”
Android:layout_gravity=”center”
Android:layout_margin=”5dp”

```
App:cardCornerRadius=”10dp”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”>

<ImageView
Android:layout_width=”match_parent”
Android:layout_height=”match_parent”
Android:padding=”15dp”
Android:scaleType=”centerCrop”
Android:src=”@drawable/itenm2”></ImageView>

</androidx.cardview.widget.CardView>

<LinearLayout
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginTop=”5dp”
Android:orientation=”horizontal”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”10dp”
Android:fontFamily=”@font/poppins”

Android:text=”₹3500”

Android:textColor=”@color/colorBlack”
Android:textSize=”16dp”
Android:textStyle=”bold”
App:layout_constraintTop_toBottomOf=”@+id/cardView7”></TextView>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”10dp”
```

```
Android:fontFamily=”@font/poppins”
Android:text=”@string/mrp3”
Android:textColor=”@color/colorBlue”
Android:textSize=”14dp”
Android:textStyle=”bold”
App:layout_constraintTop_toBottomOf=”@+id/cardView7”></TextView>
</LinearLayout>

<LinearLayout
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginTop=”5dp”
Android:orientation=”horizontal”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”10dp”
Android:fontFamily=”@font/poppins”                    Android:text=”Resting
Chair”
Android:textColor=”@color/colorBlack”
Android:textSize=”16dp”
Android:textStyle=”bold”
App:layout_constraintTop_toBottomOf=”@+id/cardView7”></TextView>

<androidx.cardview.widget.CardView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”10dp”
Android:backgroundTint=”@color/colorBlue”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginHorizontal=”5dp”
Android:layout_marginTop=”1dp”
```

```
Android:fontFamily=”@font/poppins”
Android:text=”4.5”
Android:textColor=”@color/colorWhite”
Android:textSize=”12dp”
Android:textStyle=”bold”
App:layout_constraintTop_toBottomOf=”@+id/cardView7”></TextView>
</androidx.cardview.widget.CardView>

</LinearLayout>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”>

<LinearLayout
Android:layout_width=”match_parent”                    Android:layout_height=”15dp”
Android:background=”@color/colorBlue”                  App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”></LinearLayout>

<androidx.cardview.widget.CardView
Android:id=”@+id/cardView8”
Android:layout_width=”match_parent”
Android:layout_height=”30dp”
Android:backgroundTint=”@color/colorBlue”
App:cardCornerRadius=”10dp”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”
Tools:ignore=”MissingConstraints”>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_gravity=”center”
```

```
Android:text=”Add To Cart”
Android:textColor=”@color/colorWhite”
Android:textSize=”16dp”
Android:textStyle=”bold”></TextView>


</androidx.cardview.widget.CardView>
</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>


</LinearLayout>
</HorizontalScrollView>

</LinearLayout>

<LinearLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”
Android:layout_marginTop=”15dp”
Android:orientation=”vertical”>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”
Android:orientation=”horizontal”>

<TextView
Android:id=”@+id/textView2”
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”20dp”                    Android:fontFamily=”@font/poppins”
Android:text=”Category”
Android:textColor=”@color/colorBlack”
Android:textSize=”18dp”
```

```
Android:textStyle=”bold”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”></TextView>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginRight=”20dp”
Android:fontFamily=”@font/poppins”
Android:text=”View all”
Android:textColor=”@color/colorGrey”
Android:textSize=”16dp”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintTop_toTopOf=”parent”></TextView>
</androidx.constraintlayout.widget.ConstraintLayout>

<HorizontalScrollView
Android:layout_width=”match_parent”
Android:layout_height=”match_parent”
Android:scrollbarSize=”0dp”>

<LinearLayout
Android:layout_width=”match_parent”
Android:layout_height=”wrap_content”
Android:layout_marginTop=”10dp”
Android:orientation=”horizontal”>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”10dp”>

<androidx.cardview.widget.CardView
Android:id=”@+id/cardView6”
```

```
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:outlineAmbientShadowColor=”#0000”
Android:outlineSpotShadowColor=”#0000”
App:cardCornerRadius=”10dp”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”
Tools:ignore=”MissingConstraints”>

<ImageView
Android:layout_width=”80dp”
Android:layout_height=”80dp”
```

```
Android:padding=”5dp”
Android:scaleType=”centerCrop”
Android:src=”@drawable/chair”
App:tint=”@color/colorBlue”></ImageView>

</androidx.cardview.widget.CardView>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginVertical=”10dp”
Android:text=”Chairs”
Android:textColor=”@color/colorGrey”
Android:textSize=”15dp”
Android:textStyle=”bold”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toBottomOf=”@+id/cardView6”></TextView>
</androidx.constraintlayout.widget.ConstraintLayout>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginLeft=”30dp”>

<androidx.cardview.widget.CardView
Android:id=”@+id/cardView43”
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:outlineAmbientShadowColor=”#0000”
Android:outlineSpotShadowColor=”#0000”
App:cardCornerRadius=”10dp”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
```

App:layout_constraintTop_toTopOf=”parent”

Tools:ignore=”MissingConstraints”>

<ImageView

Android:layout_width=”80dp”

Android:layout_height=”80dp”

Android:scaleType=”centerCrop”

Android:padding=”5dp”

Android:src=”@drawable/sofa”

App:tint=”@color/colorBlue”></ImageView>

</androidx.cardview.widget.CardView>

<TextView

Android:layout_width=”wrap_content”

Android:layout_height=”wrap_content”

Android:layout_marginVertical=”10dp”

Android:text=”Sofa”

Software

Android:textColor=”@color/colorGrey”

Android:textSize=”15dp”

Android:textStyle=”bold”

App:layout_constraintBottom_toBottomOf=”parent”

App:layout_constraintEnd_toEndOf=”parent”

App:layout_constraintStart_toStartOf=”parent”

App:layout_constraintTop_toBottomOf=”@+id/cardView43”></TextView>

</androidx.constraintlayout.widget.ConstraintLayout>

<androidx.constraintlayout.widget.ConstraintLayout

Android:layout_width=”wrap_content”

Android:layout_height=”wrap_content”

Android:layout_marginLeft=”30dp”>

<androidx.cardview.widget.CardView

Android:id=”@+id/cardView23”

Android:layout_width=”wrap_content”

```
Android:layout_height=”wrap_content”
Android:outlineAmbientShadowColor=”#0000”
Android:outlineSpotShadowColor=”#0000”
App:cardCornerRadius=”10dp”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”
Tools:ignore=”MissingConstraints”>

<ImageView
Android:layout_width=”80dp”
Android:layout_height=”80dp”
Android:scaleType=”centerCrop”
Android:padding=”5dp”
Android:src=”@drawable/table”
App:tint=”@color/colorBlue”></ImageView>

</androidx.cardview.widget.CardView>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginVertical=”10dp”
Android:text=”Chairs”
Android:textColor=”@color/colorGrey”
Android:textSize=”15dp”
Android:textStyle=”bold”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toBottomOf=”@+id/cardView23”></TextView>
</androidx.constraintlayout.widget.ConstraintLayout>

<androidx.constraintlayout.widget.ConstraintLayout
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
```

```
Android:layout_marginLeft=”30dp”>

<androidx.cardview.widget.CardView
Android:id=”@+id/cardView54”
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:outlineAmbientShadowColor=”#0000”
Android:outlineSpotShadowColor=”#0000”
App:cardCornerRadius=”10dp”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toTopOf=”parent”
Tools:ignore=”MissingConstraints”>

<ImageView
Android:layout_width=”80dp”
Android:layout_height=”80dp”
Android:padding=”5dp”
Android:scaleType=”centerCrop”
Android:src=”@drawable/cabinet”
App:tint=”@color/colorBlue”></ImageView>

</androidx.cardview.widget.CardView>

<TextView
Android:layout_width=”wrap_content”
Android:layout_height=”wrap_content”
Android:layout_marginVertical=”10dp”
Android:singleLine=”true”
Android:text=”Cabinet”
Android:textColor=”@color/colorGrey”
Android:textSize=”15dp”
Android:textStyle=”bold”
App:layout_constraintBottom_toBottomOf=”parent”
App:layout_constraintEnd_toEndOf=”parent”
App:layout_constraintStart_toStartOf=”parent”
App:layout_constraintTop_toBottomOf=”@+id/cardView54”></TextView>
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
</LinearLayout>
</HorizontalScrollView>

</LinearLayout>
</LinearLayout>
</ScrollView>
</androidx.constraintlayout.widget.ConstraintLayout>
```