UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SECP1513
TECHNOLOGY AND INFORMATION SYSTEM

LOW-FIDELITY PROTOTYPE PROJECT
PART II

Name	Matric Number
Alvin Leow Yan Kai	A21EC0157
Nur Atifah Binti Din	A21EC0216
Ho Wei Chun	A21EC0184
Hanim Izzati Binti Musa	A21EC0182
Hana Humaira Binti Burhanuddin	A21EC0181

Contents

1. Introduction

In this project, we selected a furniture retailer that uses augmented reality (AR) technology in its business as our client. They face many problems when managing applications, such as security, server capacity, efficiency, maintenance fee and business expansion. Our team decided to introduce cloud computing to them to solve these problems.

Simply put, cloud computing is the delivery of computing services through the Internet (or we call "cloud")-including servers, storage, databases, networks, software, analysis and intelligence, to provide faster innovation, flexible resources and economies of scale. So cloud computing can well solve the problems faced by our clients.

2. Detail steps and descriptions related to the project

No.	Date	Start Time	End Time	Work content	Platform	Description	Remark
Project Part 1							
1	24/12/21	11:15:00 AM	11:45:00 AM	Discussion	Whatsapp	Discuss about topic of our project	Figure 1
		4:10:00 PM	4:20:00 PM				
		8:20:00 PM	8:45:00 PM			Decide when to discuss content of the project	
2	25/12/21	9:00:00 PM	10:45:00 PM	Discussion & Working on report	Whatsapp & Google Docs	Group members brainstorming ideas in Google Docs & Decide which idea we need.	Figure 2 & 3
3	26/12/21	8:00:00 PM	11:00:00 PM	Working on report	Whatsapp & Google Docs	Group members working on report using Google Docs & and provide comments in the group	NONE
4	27/12/21	11:20:00 AM	3:30:00 PM	Check & Submit work	Whatsapp & elearning	Make a final check and submit before 3:30 PM	Figure 4
Project Part 2							
1	19/01/22	4:40:00 PM	4:50:00 PM	Discussion	Whatsapp	Discuss what should we do in this project	Figure 5
		8:00:00 PM	8:30:00 PM		Google Docs	Separating work	
2	20/01/2022 to 23/01/2022			Working on report	Google Docs	Group members working on report	NONE
3	24/01/22	4:00:00 PM	5:00:00 PM	Check & Submit work	Whatsapp & elearning	Make a final check and submit before 5:00 PM	NONE

Figure 1

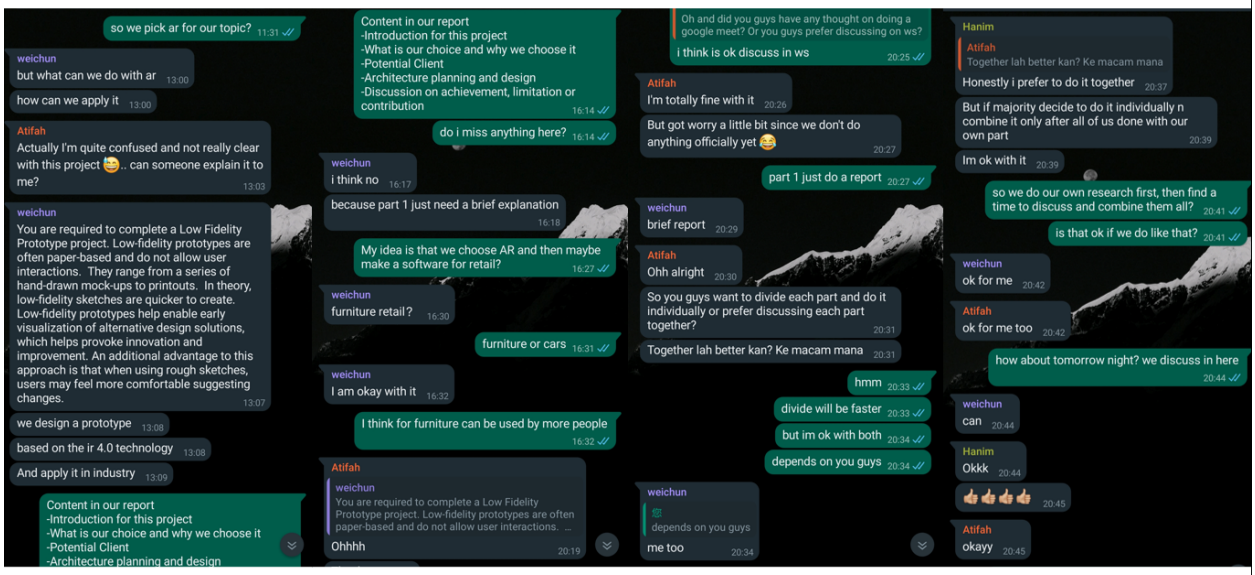


Figure 2

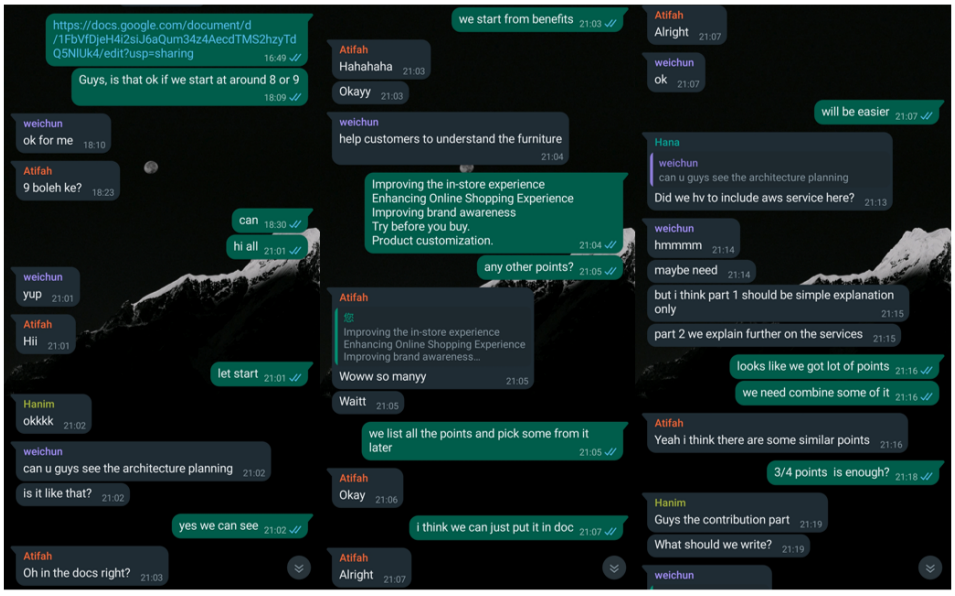


Figure 3

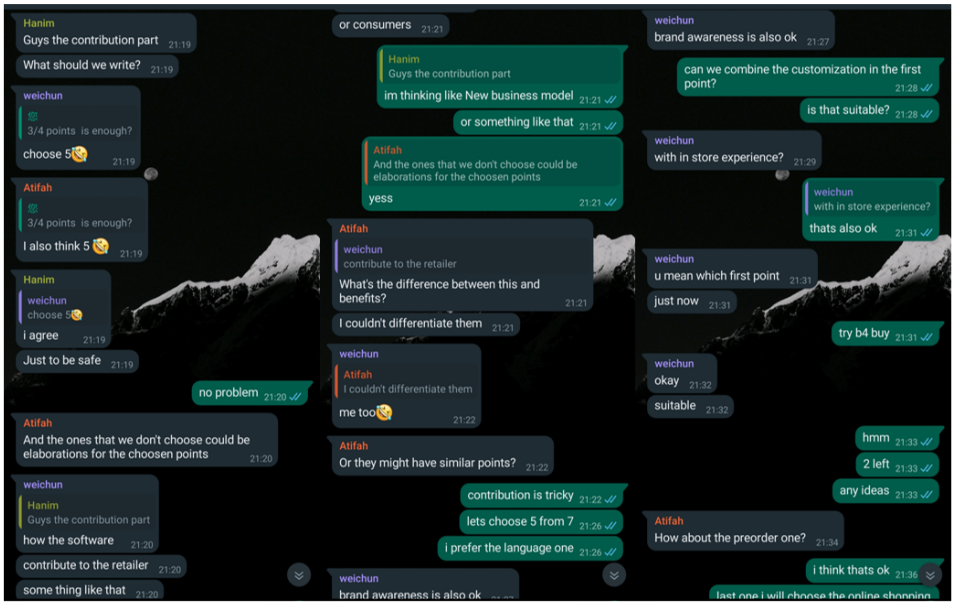


Figure 4

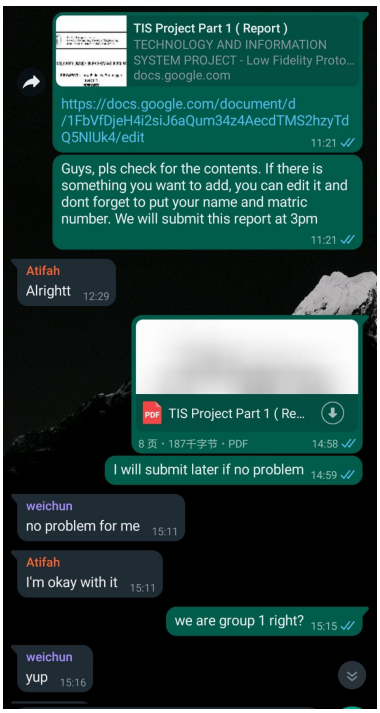
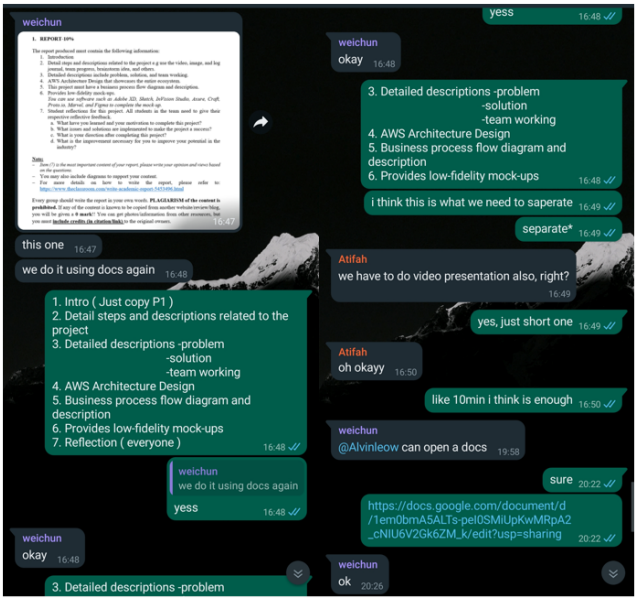


Figure 5


weichun
1. REPORT 10%
16:47
this one 16:47
we do it using docs again 16:48
1. Intro (Just copy P1)
2. Detail steps and descriptions related to the project
3. Detailed descriptions -problem
-solution
-team working
4. AWS Architecture Design
5. Business process flow diagram and description
6. Provides low-fidelity mock-ups
7. Reflection (everyone) 16:48
weichun
we do it using docs again
yess 16:48
weichun
okay 16:48
3. Detailed descriptions -problem
yess 16:48
weichun
okay 16:48
3. Detailed descriptions -problem
-solution
-team working
4. AWS Architecture Design
5. Business process flow diagram and description
6. Provides low-fidelity mock-ups 16:48
i think this is what we need to saperate 16:49
separate* 16:49
Atifah
we have to do video presentation also, right? 16:49
yes, just short one 16:49
Atifah
oh okayy 16:50
like 10min i think is enough 16:50
weichun
@Alvinleow can open a docs 19:58
sure 20:22
https://docs.google.com/document/d/1em0bmA5ALTs-pel0SMiUpKwMRpA2_cNIU6V2Gk6ZM_k/edit?usp=sharing 20:22
weichun
ok 20:26

3. Detailed descriptions

Problem

The primary components of Augmented Reality (AR) technology are feature extraction, feature point matching, and 3D object drawing, which are used to superimpose digital information onto the real camera. Consequently, implementing augmented reality that matched both feature extraction and feature points needed a significant financial investment and was costly. To provide a cost estimate for the creation of an AR interior design software, we must consider several aspects. For the general aspect, we must look at the number of features and their variability, as well as the quantity and types of devices targeted. Aside from that, there are extra and operational costs to consider, such as 3D model development, integrations, Content Management System (CMS), and 3D design tools.

Furthermore, our customer must spend a significant amount of money on the management and maintenance of the data centre due to the requirement to keep data information. The volume of augmented reality data is unlikely to diminish. They're rapidly expanding, and data centres are being impacted in some way. The user will be able to experience AR in the moment and save the data. For a user who wants to access images later, the AR data could contain dozens or even hundreds of photos. As a result, the needs of data centres will rise.

Next, users also demand that IT resources be delivered more quickly. The present problem is that IT resources are usually supplied to developers over a several-week timeframe. Customers nowadays demand IT services to be available immediately. They, too, want a fast solution to their issues. The causes for the recurrence of this severe issue are that the company does not establish a standard set of processes and procedures for the field, no accountability on the part of the agent if response times have been extremely long, or agents are not trained to handle multiple queries at the same time.

Solution

Cloud computing, fortunately, can resolve the problems that have been emphasised. One of the advantages of cloud computing is that it can cut expenses for businesses who use it. Skilled IT workers are costly; their salary, benefits, and other employment costs typically outweigh the costs of hardware and software, as well as the costs of finding good people with the required experience. When you migrate to the cloud, a portion of the service fee goes to the provider's staffing costs. However, it's usually a lot less than if you performed everything in-house. The business will save costs if it no longer needs to pay a technical support team to resolve server issues.

Because everything is simplified by the cloud provider, who handles all the equipment and software updates, cloud computing lowers IT costs and maintenance requirements. All duties and processes are optimised because all cloud services are grouped together under one professional supplier. There is no need for a huge in-house IT crew, and the company can concentrate only on growth and

profitability. Natural economies of scale are brought about by cloud computing. Cloud computing's practicality implies high utilisation and smoothing of workload's unavoidable peaks and troughs. Your workloads will share server infrastructure with other businesses' computing needs, rather than employing a dedicated server that you own, operate, and pay for regardless of demand. This helps the cloud computing provider to minimise the hardware demands of its data centres, resulting in lower operational costs by not paying for idle infrastructure.

Cloud-based apps may be used from practically any device with an Internet connection at any time, allowing for more collaboration, which is especially beneficial for firms with remote personnel. Cloud resources are elastic, which means they can handle more resources or expand capacity to support expansion and handle peak periods. Predicting what resources a small business will require is one of the most difficult components of running a small business. Rather than needing to foresee business demands, Cloud resources will react to them as they arise, using only what is needed to manage growth and improve efficiency.

Aside from that, the cloud can handle complex activities that demand a lot of processing power, while the device is only responsible for sensing, detecting, and presenting information. On the device side, this drastically reduces the requirements for data storage, memory, and computational capabilities. Cloud computing provides solutions to issues those developers confront. Several cloud service providers offer solutions to all types of challenging development issues. Resource management in cloud computing allows multiple development teams to share resources quickly and efficiently. Developers can now create a new environment in which to design and test websites and applications. They may establish virtual machines and databases, as well as take advantage of a variety of cloud services, to accomplish more with less work.

Team working

Our team, which is Group 1, consists of five individuals: Alvin Leow Yan Kai, Hana Humaira Binti Burhanuddin, Hanim Izzati Binti Musa, Ho Wei Chun and Nur Atifah Binti Din.

On The 24th of December 2021, we had our first discussion about our project in our Whatsapp group. During this discussion, the main problem that we faced was deciding which technology we should use for our project. This is because some of us still have a little bit of confusion about this project. But after going through the instruction given by our lecturer, Dr. Layla, one more time together, we are finally able to understand all the instructions given and manage to decide which technology to use. The technology that we chose was Augmented Reality or also known as AR. After choosing our technology, we discuss the contents needed in the first part of our report and the date to continue our discussion. Majority of us agreed to continue on the next day, which is 25th December of 2021.

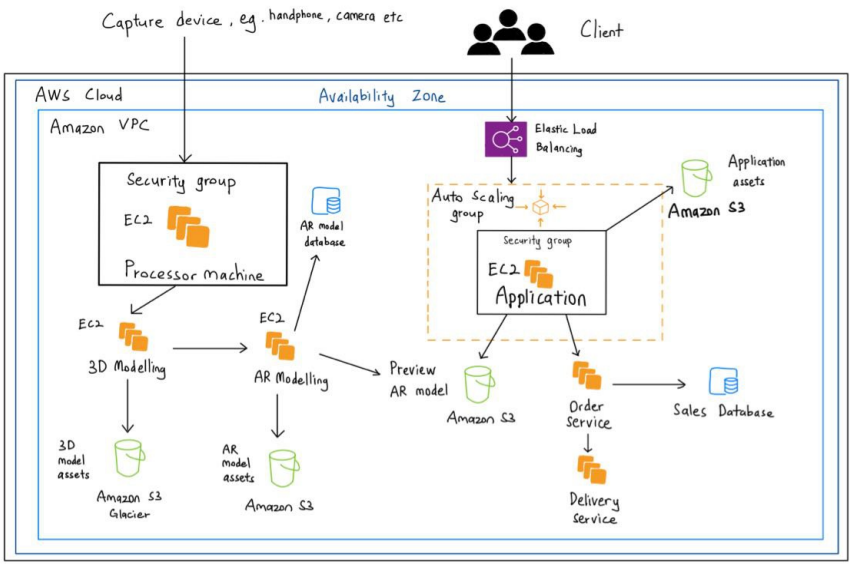
For the next discussion, we started with one of our members giving us a link to Google Docs so that we can write our ideas there. Since all of us are contributing to this discussion, we manage to have a lot of points for each content. However, half-way through the project, we encounter a new problem. It turns out that we have a little bit of misunderstanding about the instructions. Instead of creating a new business method using AR, we were supposed to solve a problem that is related to our technology and cloud computing. Luckily, we only need to change some points. On the next day, 26th December of 2021,

all of us decide to work individually to complete the report and after the final check on 27th December, our team member, Alvin submits the report in e-Learning.

For the second part of our project, we started to discuss it on 19th January of 2022, on our Whatsapp group. Once again, our group member, Alvin, provides us a Google Docs link so that all of us can write our ideas there. For this time, instead of brainstorming all contents together, we decided to divide it fairly between our members. This is because, all of us agree that dividing the work equally will help us to complete the report quicker. Each one of us has at least two contents that we need to write about. However, there is one task that everyone needs to do individually which is the reflection of this project. At the same time, although we decide to separate our task, do it individually, and combine it only after all of us finish, we still have a discussion on our Whatsapp group if one of our members has a problem with their parts.

From the 19th until 23rd of January of 2022, we did our task individually until the whole report was completed a day before the submission date. At the same time, our member, Atifah, who got the task to do the slides of our presentation, managed to finish it. Therefore, we proceed with the next task of our project which is video presentation. Each one of us starts to record our video of presenting our part. After all of us have finished the recordings, we combine all the videos together. Finally, on 24th January of 2022, we submitted our video presentation and the second report of our project on e-Learning.

4. AWS Architecture Design

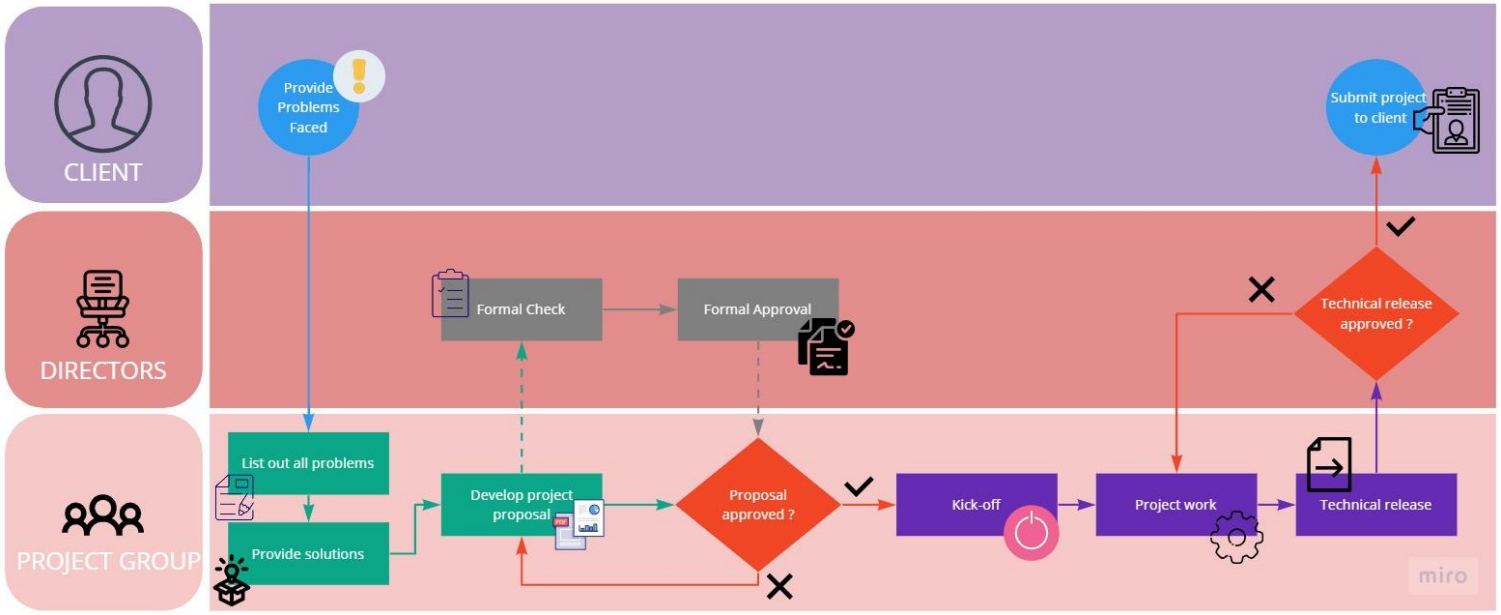


Capture devices such as handphones and cameras are used to capture the image of selected furniture and store it in its storage. Then, the image will be sent to the processor machine and processed. Once the process is done, the 3D modelling computing service will compute and then convert the image into a 3D model because AR needs a 3D model to work. The 3D model will be sent to AR modelling service to do the computing. 3D models are also linked to Amazon S3 Glacier in case the company needs to use it in the future. After the AR model is done,the information will be sent to the AR model relational database. Client can automatically scale database, enables high availability, manage backup and perform patching using Amazon Relational Database. Therefore, client can focus and optimise their application. The information will also be linked to AR model assets in Amazon S3 so it can be accessed from anywhere if the client's business is scaling up.

Client will use this application to preview the model of their selected furniture using Augmented Reality capable devices. The application use Amazon Elastic Load Balancing to distribute the network traffic and improve scalability. An Auto Scaling group is also used to enable client use Amazon EC2 Auto Scaling features such as health check replacements and scaling policies. The information when using the application will be stored in Amazon S3 Bucket. Client can view the model of their selected furniture and if they want to purchase the furniture, they can pay using credit card when shopping online or pay using cash if they are at the physical store. After that, the order service will send the purchase information to the sales database. Delivery service will proceed the order and deliver the product to the client. Client can check the delivery information using the delivery service.

5. Business process flow diagram and description

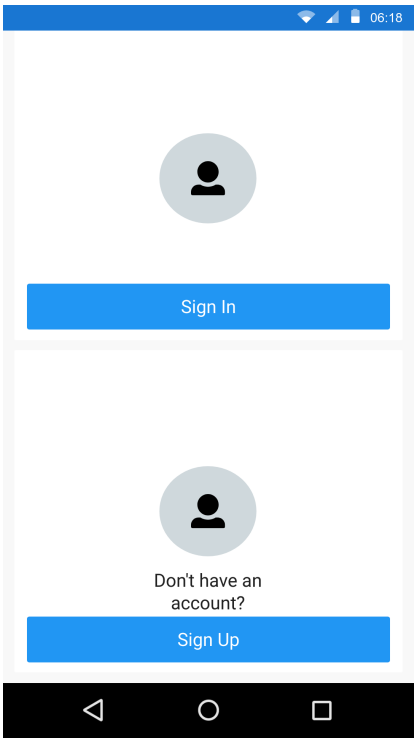
Business process flow diagram

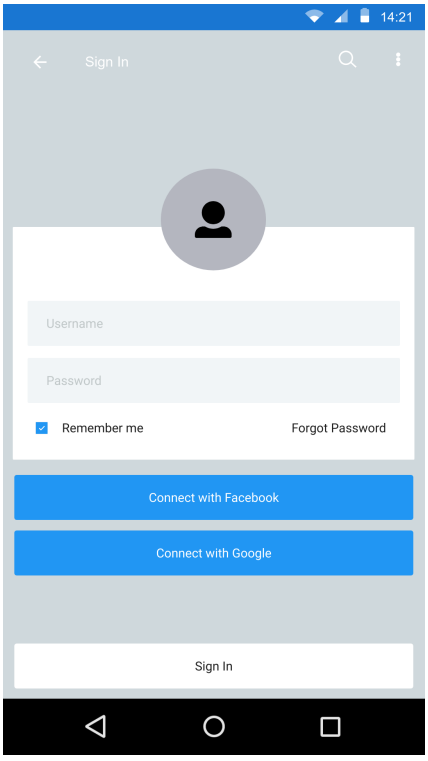


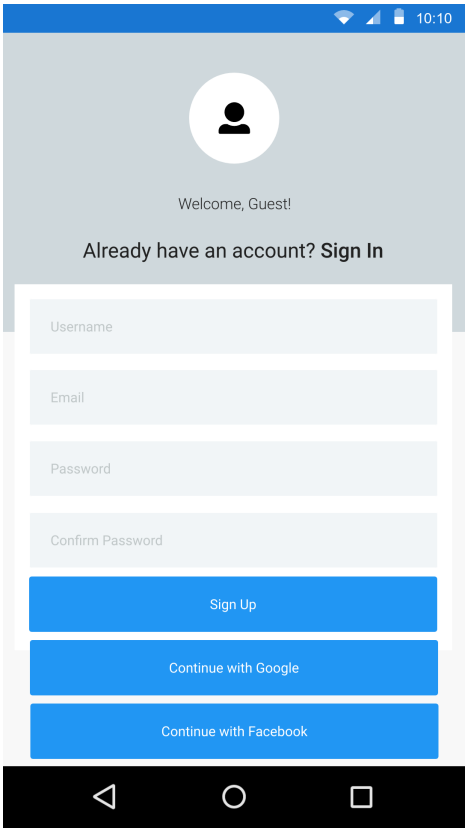
Description of the diagram

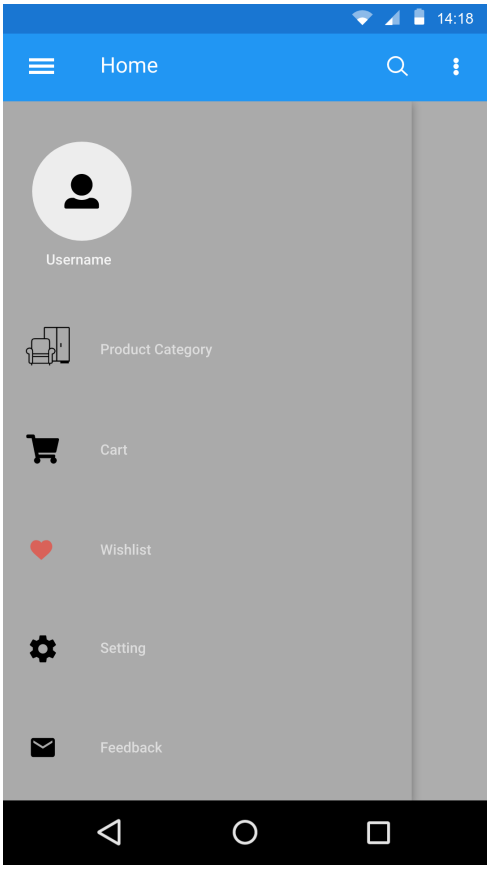
First, we will have a meeting with our clients to understand the issues they are facing. Next, we will list the problems faced by our clients and propose solutions to these problems. At the same time, we also develop a preliminary project proposal and submit it to the board of directors. When the proposal is approved, we will officially start working on our project, otherwise we will modify the proposal. We will repeat working until our technical release is approved. Finally, we are able to get the product into the hands of our clients.

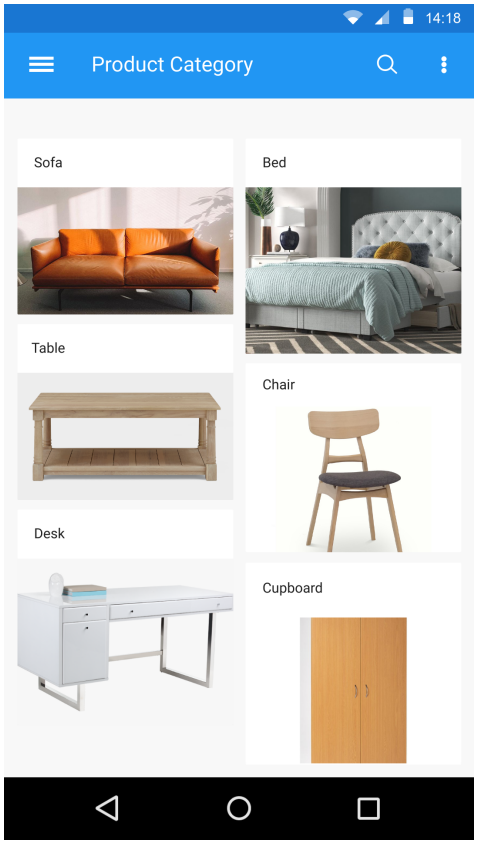
6. Low-fidelity mock-ups

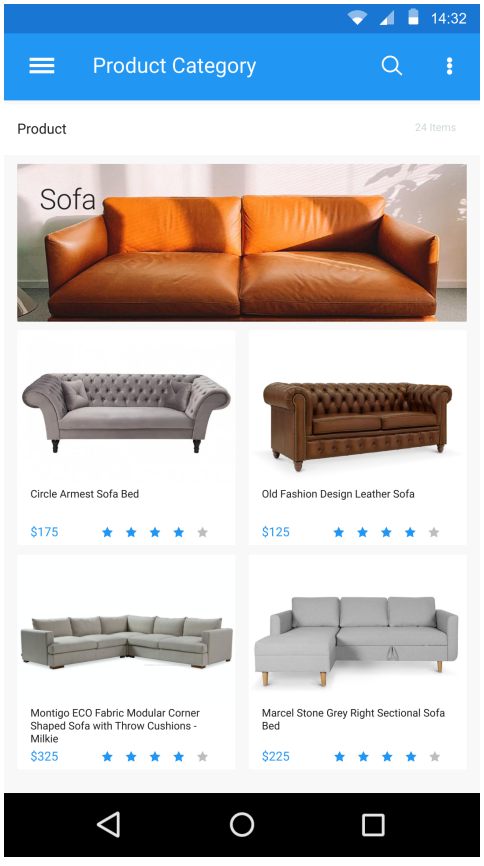





10:10
Welcome, Guest!
Already have an account? Sign In
Username
Email
Password
Confirm Password
Sign Up
Continue with Google
Continue with Facebook


14:18
Home
Username
Product Category
Cart
Wishlist
Setting
Feedback


14:18
Product Category
Sofa
Bed
Table
Chair
Desk
Cupboard


14:32
Product Category
Product
24 items
Sofa
Circle Armest Sofa Bed
$175
Old Fashion Design Leather Sofa
$125
Montigo ECO Fabric Modular Corner Shaped Sofa with Throw Cushions - Milkie
$325
Marcel Stone Grey Right Sectional Sofa Bed
$225

10:09

Product Category

Sofa

Marcel Stone Grey Right Sectional Sofa Bed

$225

View in AR

Width (cm): 211

Depth (cm): 92/135

Height (cm): 83

Seat Height (cm): 45

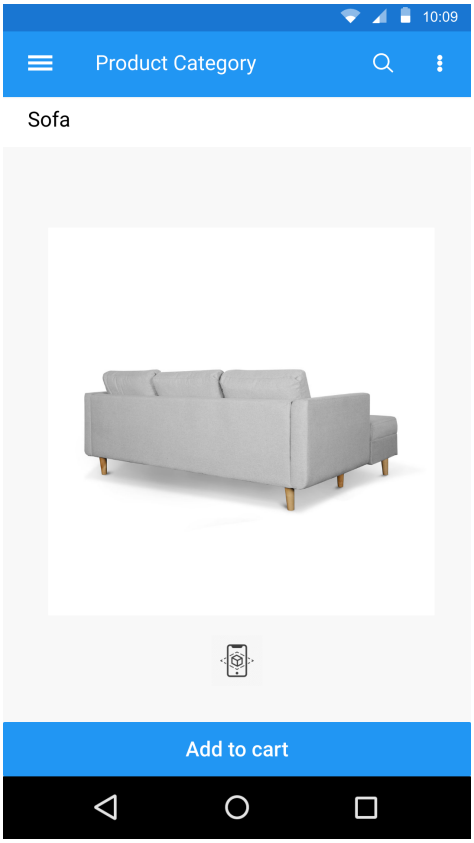
Add to cart

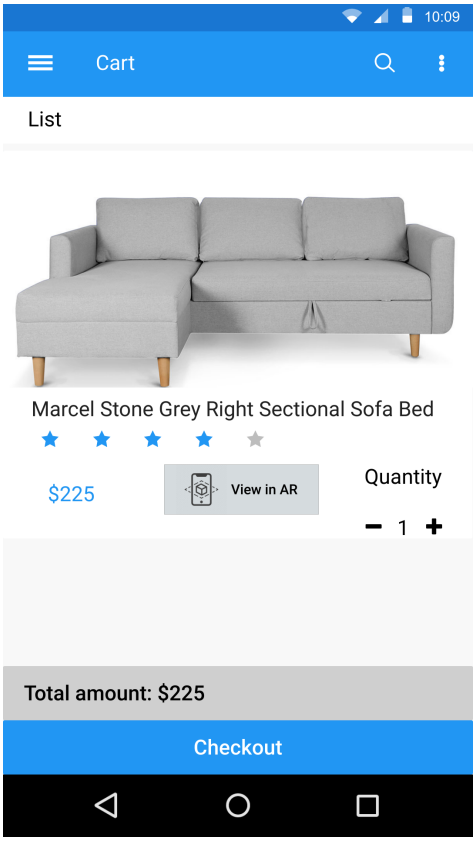
10:09

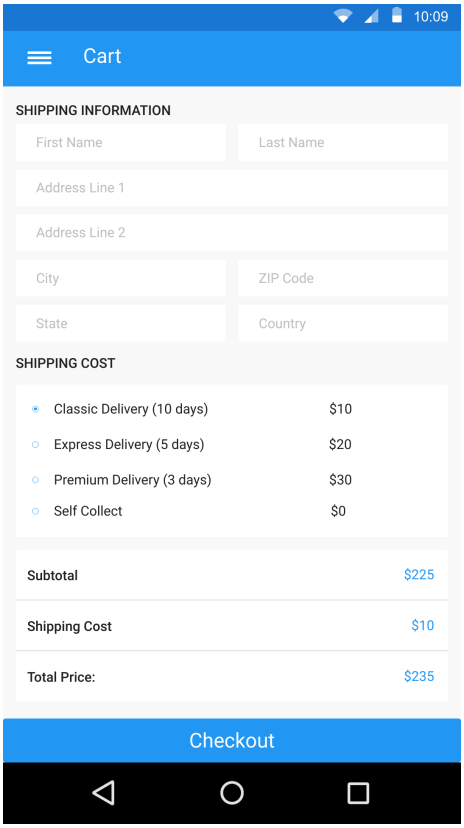
Product Category

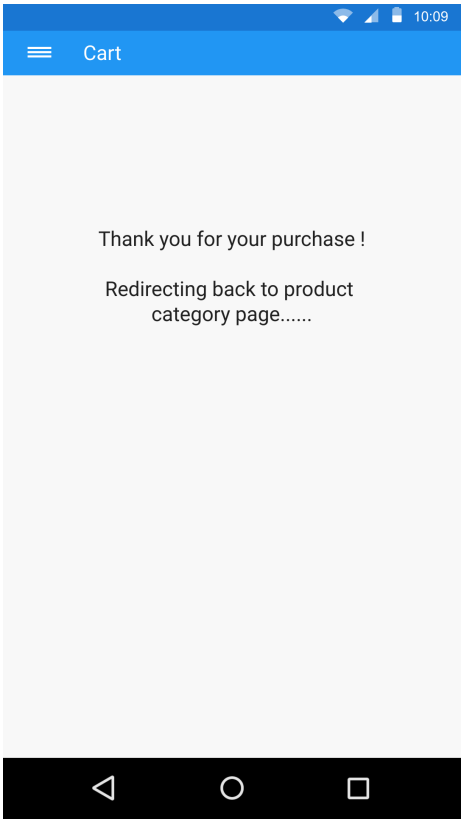
Sofa

Add to cart


10:09
Product Category
Sofa
Add to cart


10:09
Cart
List
Marcel Stone Grey Right Sectional Sofa Bed
$225
View in AR
Quantity
1
Total amount: $225
Checkout


10:09
Cart
SHIPPING INFORMATION
First Name
Last Name
Address Line 1
Address Line 2
City
ZIP Code
State
Country
SHIPPING COST
Classic Delivery (10 days)
$10
Express Delivery (5 days)
$20
Premium Delivery (3 days)
$30
Self Collect
$0
Subtotal
$225
Shipping Cost
$10
Total Price:
$235
Checkout


10:09
Cart
Thank you for your purchase !
Redirecting back to product category page.....

7. Reflection

Nur Atifah Binti Din

As we were working on our project, there were a lot of new things I have discovered and difficulties I have faced. For example, this project exposed us towards the usage of Microsoft BI, Low-Fidelity Prototype Project, AWS Architecture Design and Business Process Flow Diagram, which I have never heard about any of them before.

Afterall, I realized that teamwork, understanding and the ability to adapt and learn new things are really important. Especially, when today's technologies keep expanding and revolving at such a rapid pace, it requires me to take in a lot of information and new knowledge at one time. This also happened to me as I went through the instructions of the projects and not being able to catch up and get a clear vision on such a new term and workflow. In the end, I felt very glad that I have a great team to accomplish this project. Even though I keep asking for explanations in our WhatsApp group, my team members were really helpful and were not weary to guide me through the project.

In addition to teamwork and understanding skills, I have to realize that being able to use all of the softwares and technologies I have mentioned above is really crucial to me. This is because I'm currently a student of Software Engineering. So, by hook or by crook, later in the working industry, I should have skills to be able to use them for company work purposes, or I would meet other people or departments that use these technologies which I need to be familiar with.

Ho Wei Chun

By the time we complete our project, I have learned that teamwork is very important in order to complete this whole project. We worked together to complete the project before the due date. Other than that, during the process of doing this project, I have learned about cloud computing services, and how to implement it in business and maximise productivity. The motivation that motivates me to complete this project is the interest in cloud computing. I am very interested in cloud computing as I have never been in touch with it before and it is a new experience for me. The issues we met in this project are in Part 1. We realised that there is a part we did wrong one day before the due date. So, we quickly made corrections for it and managed to submit it before the due time. After Part 1 was submitted, we started to discuss Part 2 and distributed the work among us. I am very happy that my teammates can answer my questions when I face some difficulties. This is the reason why this project is a success. Before completing this project, my direction is to become a software engineer as this is the reason why I choose this Bachelor Degree programme. But now, I would like to become a software engineer that is involved in cloud computing. The necessary improvement for me to improve my potential in the industry is to study harder for now. I need to have the basics and try to improve from time to time so that I will become professional. Other than that, I also need to improve my time management skill as time management is very important for me if I want to complete all the work on time.

Alvin Leow Yan Kai

While doing this project, I learned something new, such as knowledge about cloud technology and how to make a business process flow diagram. In addition, I also learned the importance of teamwork. During the process of making this project, we performed our roles and collaborated with each other, which allowed us to produce a report that we were all satisfied with by the deadline. My main motivation for completing this project was not to drag the team down, so I always do a lot of research before writing a report.

In fact, when we were doing Part 1, we digressed in several parts. Fortunately, while we were discussing the project, one of the team members raised doubts, and after double-checking the instructions given by the lecturer in the group, we managed to modify Part 1 one day before the deadline.

After completing this project, I want to continue to learn about cloud technology, so that I can solve related problems more quickly and professionally in my future career.

To improve my potential in the industry, first, I must be able to use and allocate my time wisely. This allows me to take care of my health and avoid staying up late and lack sleep while doing work.

Next, of course, is to improve the knowledge of related industries. This can reduce the time required for doing research.

Hanim Izzati Binti Musa

I learned that having good communication between your team is very important. This is because, if you have a little bit of misunderstanding among the team members, this might affect the whole team and your group project. For motivation, I think my teammates are my motivation. They are the main reason that drives me to complete this project. At the same time, without them, I don't think I would be able to complete this project on my own.

Issues and solutions that are implemented to make the project a success would be something that is related to cloud computing. This is because I believe that the main problems that we encountered while working on this project are related to cloud computing. Fortunately, we also manage to find the solution to our problems by studying more about cloud computing.

My direction after completing this project would be, me gaining more knowledge about technologies that are related to Industrial Revolution 4.0 (IR 4.0) such as cloud computing and Internet of Things. This is because I believe, in the future, if I encounter a problem that is similar and related to it, I would be able to solve it easily.

The improvement that is necessary for me to improve my potential in industry, would be I need to be more familiar with the environment of IR 4.0. Not only that, I should learn more about this industrial revolution so that in the future I would be able to work with all these technologies without any problems.

Hana Humaira Binti Burhanuddin

I've always believed that completing a project requires detailed planning and execution. It turns out that as I work on this project, I'm constantly questioning the project's purpose and motive. One of the things I learned from this project is that we can't genuinely finish anything. We can only label the project as complete if we've completed all of the phases that make up that project. It's not as frightening if we break down larger chores into smaller chunks. We can simply do it and be pleased with ourselves.

Most of us are unfamiliar with this type of project. We take our time to digest all of the material and the tasks that must be completed for this job. Despite having a busy schedule, due assignments, and numerous lectures to attend, we manage our time well enough to discuss and complete all of the project's tasks. Taking the AWS course has also aided us in meeting all of the project's needs.

Following the completion of this project, I aimed to explore and develop more cloud computing-based projects. Maybe one day I'll be able to put all of this knowledge and expertise to good use and benefit society.

The ability to handle my fear of change is the first thing I want to develop about myself in order to boost my industry potential. Fear can keep us from progressing and improving. I'm going to start doing and learning things that I'm not comfortable doing. I'd also try to collaborate well with others. We are a trusted team member if we have excellent communication abilities. Despite my timid and introverted attitude, I will try to collaborate with others more. I will better organise my time, work, and materials. I will plan out projects so that I can do them smoothly and effectively. I will also be able to fulfil the deadlines and cooperate with others efficiently.