UNIVERSITI TEKNOLOGI MALAYSIA

SECP1513 – Section 07

Technology and Information System

ASSIGNMENT: Project 1 Part 2

LECTURER: Mr. Hairudin Bin Abdul Majid

DUE DATE: 04/02/2022

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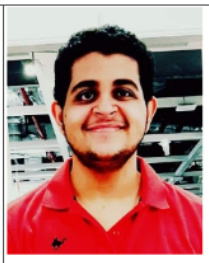
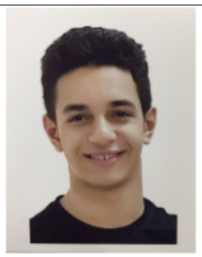
GROUP MEMBERS	 Arshad Parvez Dipto **(Group Leader)**	 Yousef Khaled	 Amar Hassan	 Maysara Mohamed	 Youssef Rames Mohamed
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1. Introduction

Quick navigate is an app that helps you to search for any product that you may come across on the internet or you have its picture or if you want to search for a similar product and find from where you can get it either the nearest local store or the available online store.

This app can be useful in many ways and suitable for both elder and young audience. It is designed to be easy to use and very beneficial at the same time, just in couple clicks you would get directly to your destination. It also provides the user with a variety of ways to search making sure the user is satisfied.

Of course, during this period of time the app is supported by IR4.0 technologies such as AI, Cloud computing and big data.

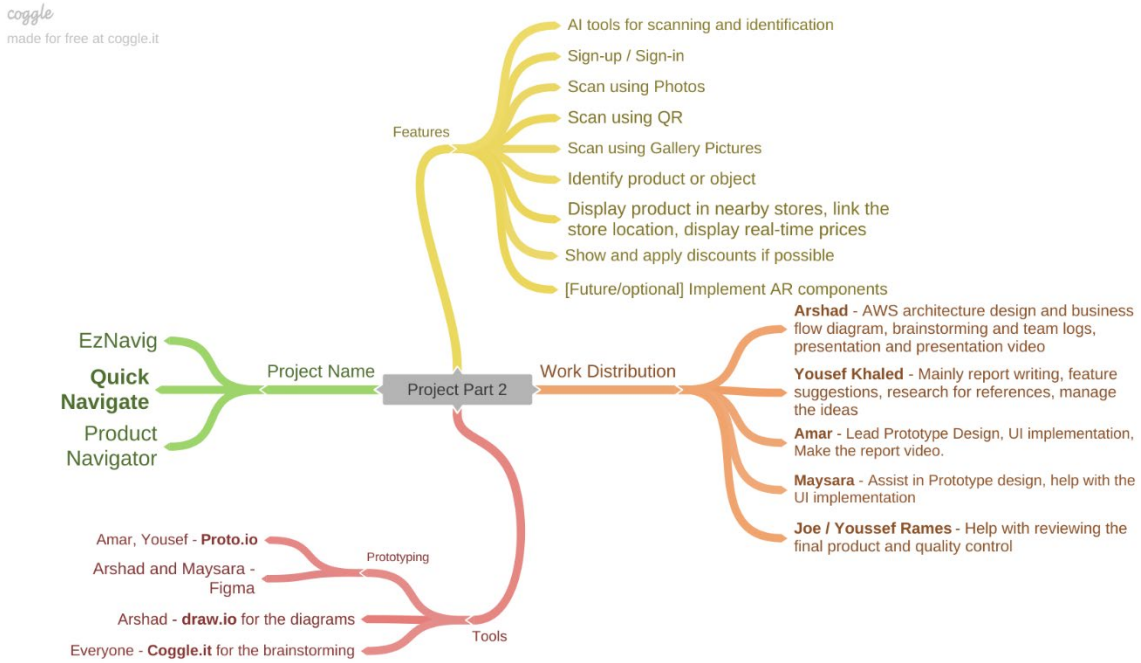
Artificial Intelligence helps in detecting the barcode and the searching for similar picture of the product that the user is looking from only the picture without product number or any additional information.

After scanning the barcode, the app goes and search for similar product number in multiple data bases on the internet. It also stores users' information and sorts thing that he searched for; them all user's data is stored in data bases. This is basically how the app works with **Big Data**.

One more thing to mention is that the app will be web based completely. Obviously, using AWS (Amazon Web Services) which allows us to relay completely on them when it comes to managing the servers and maintaining everything in the clouds. Which also helps us to focus more on the project. That's why we are using **Cloud computing** in this project rather than traditional old computing ways.

These are the main factors than we believe it will push this project to higher levels and will keep it up to date throughout the years. In fact, this project can be upgraded as time goes on, there is a possibility of including Augmented reality which will make the app more fun to use and interactive with the user.

2. Work Distribution and Team Logs



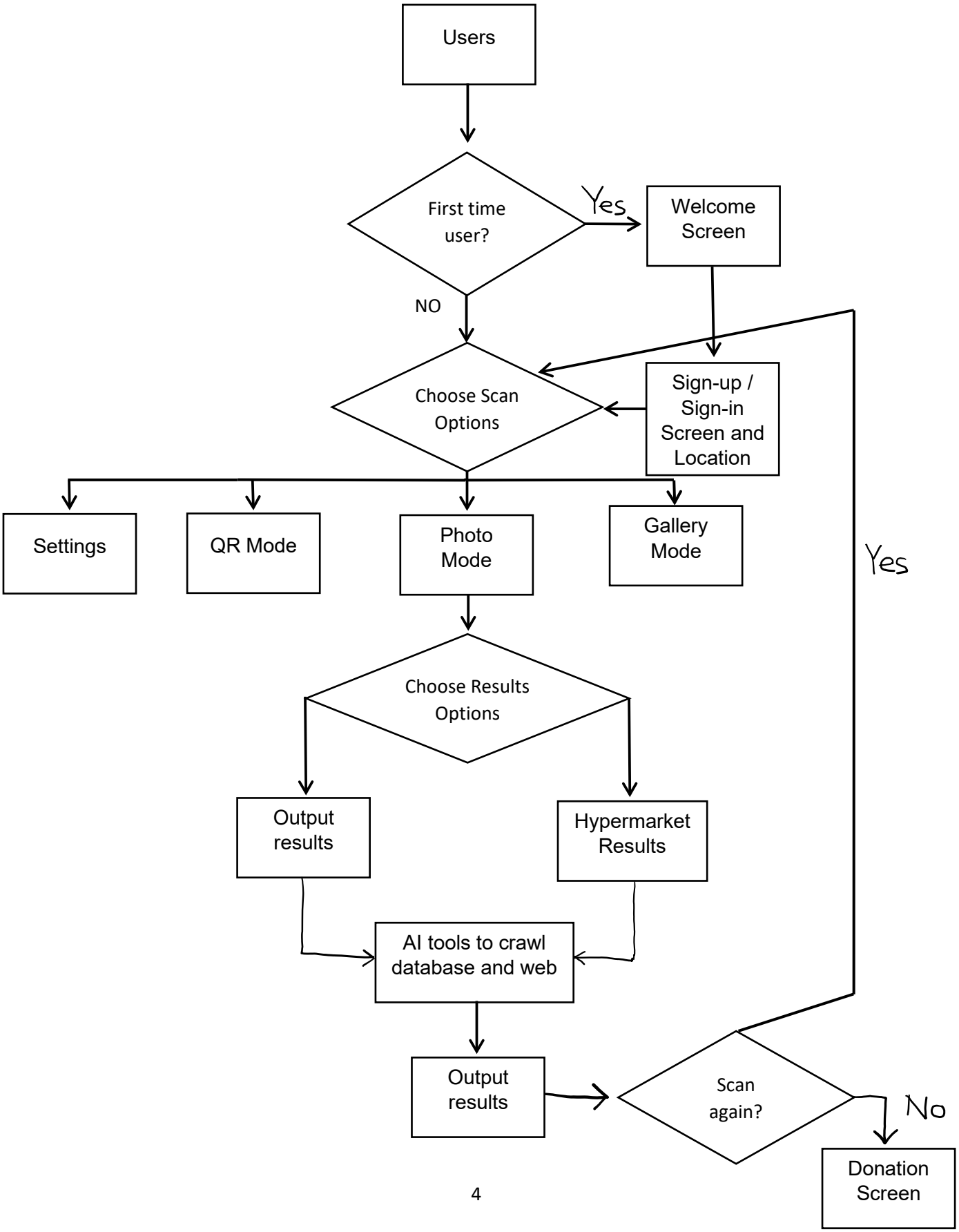
Based on our team meetups done through Discord and the logs kept for the entire workflow:

- **Arshad** has handled the AWS Architecture and Business Flow Diagram design, brainstorming and team logs. He has also handled led the presentation and made the video for the presentation.
- **Yousef Khaled** has handled the report writing, research some samples of similar projects, suggest tools, features and manage the implementation of these ideas. He has also compiled all our reflections.
- **Amar** has mainly handled the prototype design and the UI design for the application on proto.io. He has also made the video for the report, which showcases our journey while making the report and project.
- **Maysara** has helped Amar design the prototype and suggested UI implementations working together with Amar.
- **Youssef Rames** has helped by reviewing the final prototype. He was mainly in charge of Quality Control and helped make some final adjustments to the project.

However, we all tried to share our own ideas, and we have distributed our work based on our strengths and weaknesses. The team logs are mostly accurate, but we have neglected the minor interactions we have done while we were engaged with the project. But, the team has worked together in solving the problems and everyone is satisfied with their team members and the outcome of the project.

3. Business Process Flow

Quick Navigate is free software, but it will rely on the donations of its users. These donations will fund the development of the project.

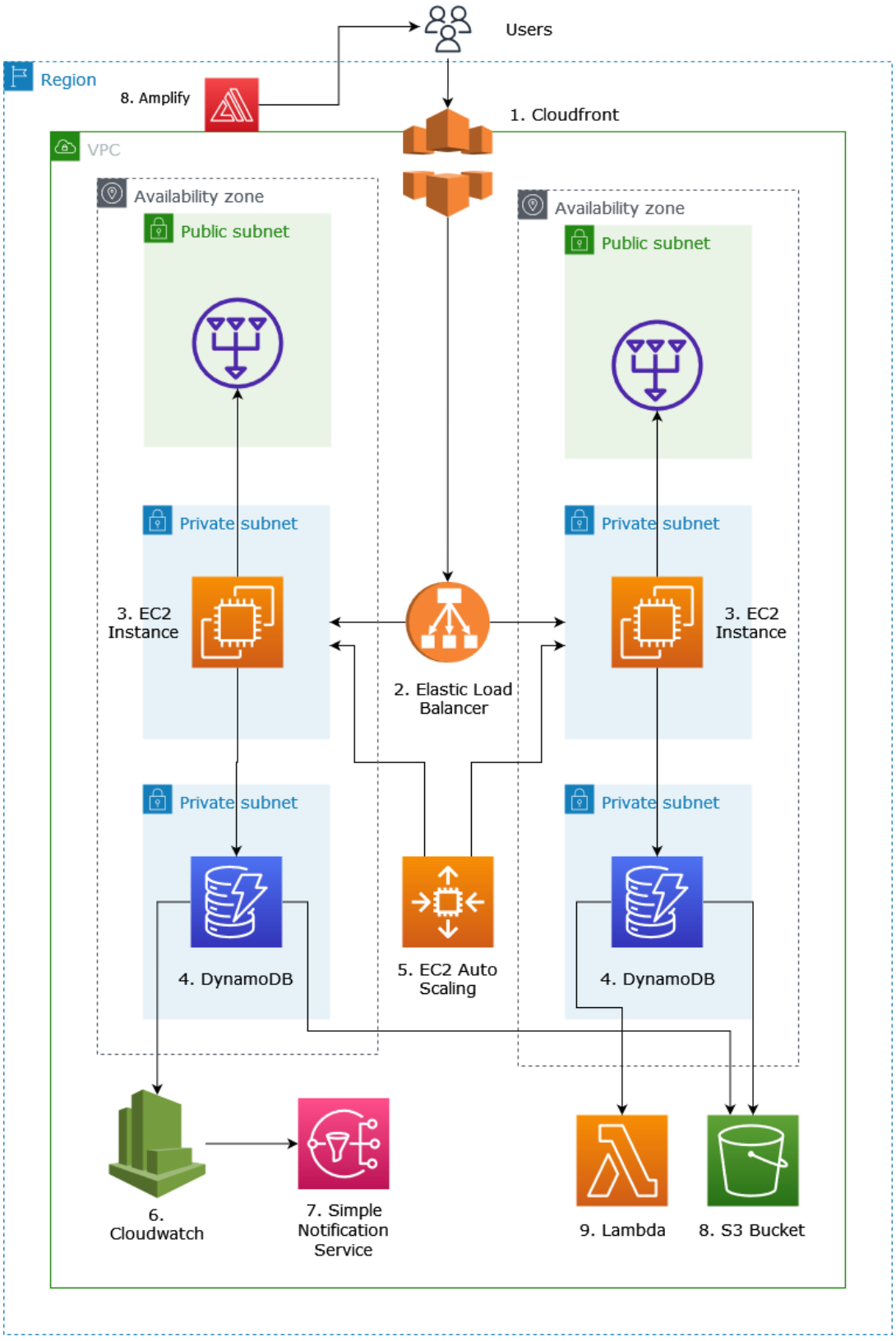


Description

We believe our showcase of the prototype in the next section is a much better way to understand the entire project. Nonetheless, here is a description through an example of our business process.

a) First, the user launches the application and if they are opening the app for the first time, they see the welcome screen. This welcome screen then goes over to the sign-up / sign-in screen, where they are presented with the option to do so or skip. They are also given the option to either choose their location manually or through the help of GPS.
b) Then they are shown the options. They can either choose one of the 3 scanning options or they can directly go to the settings through the sidebar. Let us proceed with scanning using photo for this example.
c) The user chooses whether they want to see internet store results or hypermarket results.
d) Based on user choices, our app will send us the data over the internet and our AI tools will identify the product compare to our databases, including crawling from the web. The discounts for the available product will also be chosen and applied if available.
e) The results will be outputted. Showing the desired output, consisting of the product, similar products, real-time prices, names, discounts and locations.
f) The user will be given the option to either scan again or quit the app. They will be presented the donation screen if they choose not to. And the process will cycle from step b, if they choose to continue.

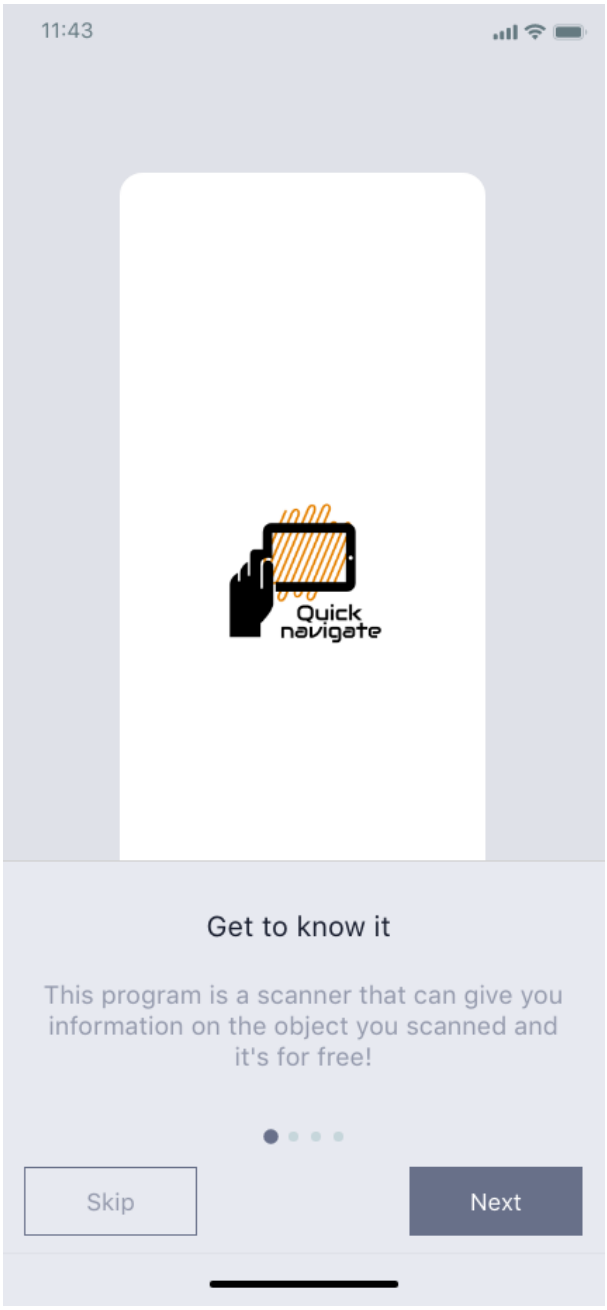
4. AWS Architecture Design



Below is a complete breakdown of our purposes of using the stated web services:

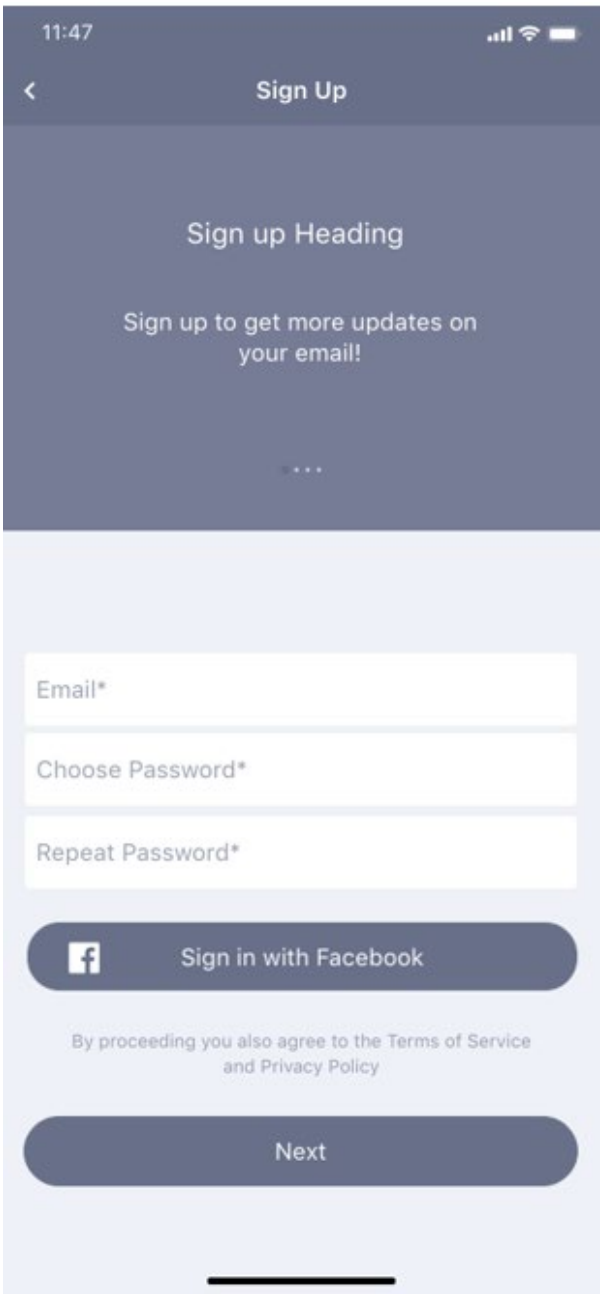
1) **CloudFront:** Amazon CloudFront is a web service that will be utilized to distribute our static and dynamic online content to our users. Which include .html, .css, .js, and image files.
2) **Elastic Load Balancing:** Incoming application traffic will be distributed between 2 EC2 instances using Elastic Load Balancing.
3) **EC2:** Will provide us with VM (virtual machines) that have scalable computing capabilities based on our needs.
4) **DynamoDB:** Our data structures and key-valued cloud services will both be supported by DynamoDB. For all of our internet-scale services, it provides us with benefits, such as - auto-scaling, in-memory caching, backup, and restore options.
5) **EC2 Auto Scaling:** Will assist us in maintaining application availability by allowing us to automatically add and remove EC2 instances based on our pre-defined conditions.
6) **CloudWatch:** Our AWS resources and the applications we operate on AWS will be monitored in real time by Amazon CloudWatch. CloudWatch will also be used to collect and track metrics. Giving us alarms and notifications if a threshold is breached.
7) **Simple Notification Service:** this will help us in delivering messages from us to our clients and newsletter subscribers, who are also known as consumers. It will also enable use to send SMS messages anywhere in the world.
8) **S3 Bucket:** Gives us the capacity to back up files for long-term use and store, retrieve and access any quantity of data at any time and from any location we want.
9) **Lambda:** Lambda is a headless / serverless computing service that will automatically manage our underlying compute resources while our code executes in response to a certain set of events. Reducing our costs as simple user operations do not require the compute capabilities of an entire EC2 instance.
10) **NAT gateway:** NAT gateways allow our EC2 instances in our private subnets to connect to other services outside of our VPC. Which is very secure as those external services cannot initiate a connection with the services themselves.

5. Prototype Showcase



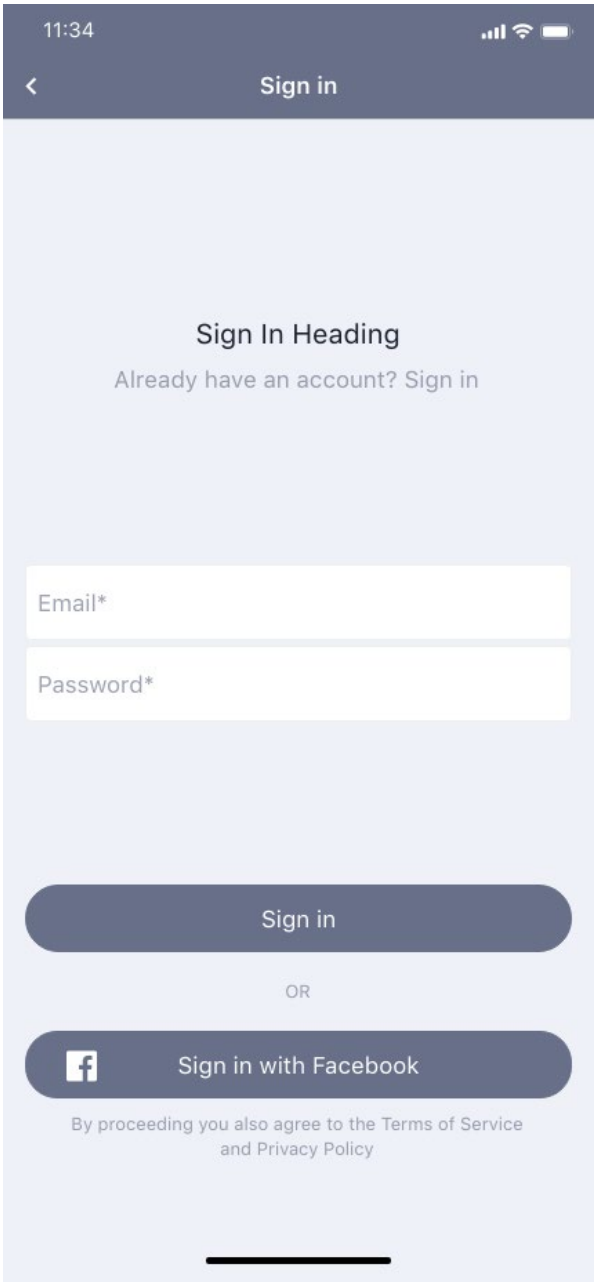
Welcome/Instruction's screen

First screen displayed once the app is launched, however, this screen only appears the for new users. This page gives the user a quick overview on the app and how does it work so the user get the main idea about the app and why he/she should use this app and shows the app logo. The main purpose of this screen is to welcome the user and give a positive first impression of the application and show a brief description of the purpose of this application.



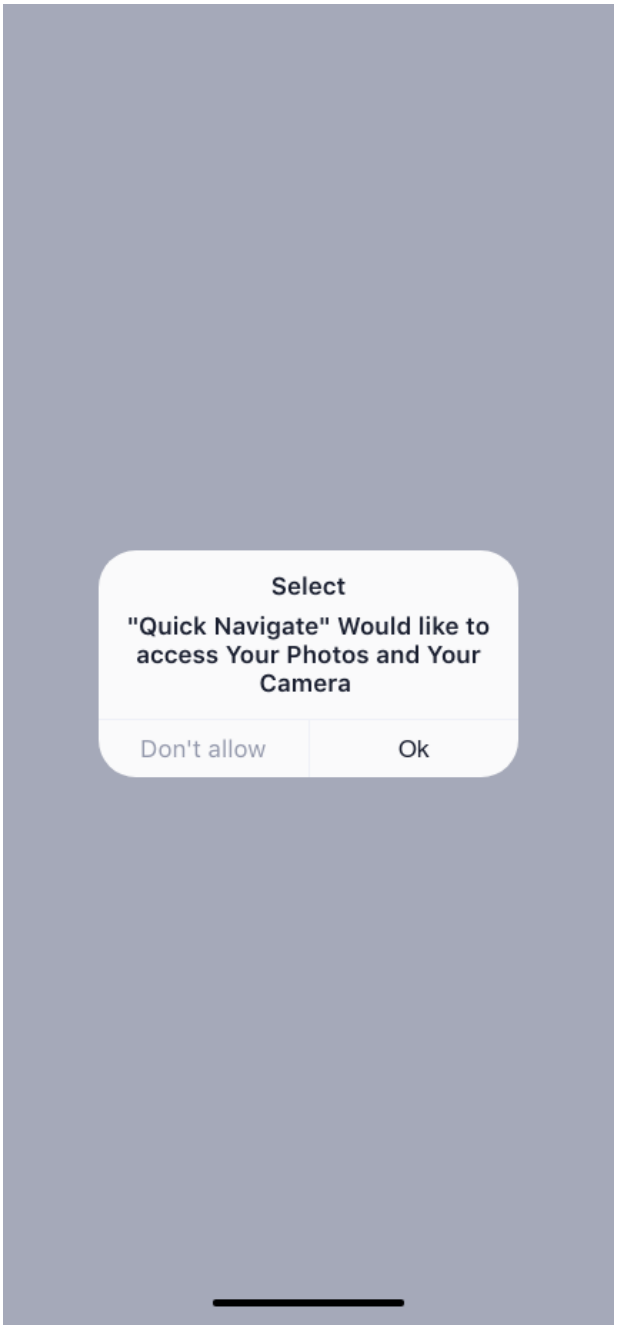
Sign up screen

A screen that pops up after clicking the **next** button on the last instructions page. Here the user can make his new account using his email. We avoided using signing in with phone number for users' privacy because it is a new application. And the user is required to set a password and repeated to make sure there was no typing mistakes in the previous field. The purpose of this page is to get direct contact with the user for promotions and marketing reasons. Or they can use an old account if they have. Or sign up using their Facebook account.



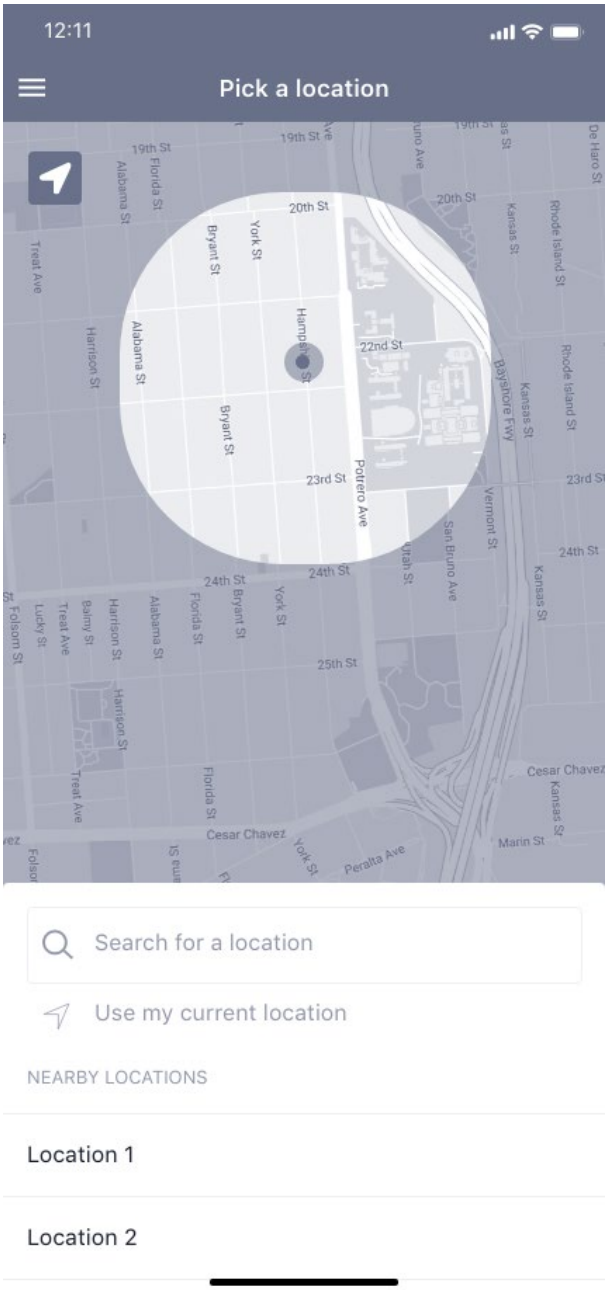
Sign in Page

If the user clicked already have an account this scree will be displayed. This is the first screen that non-new users see once they open the app. In this page the old users that already did sign up before and has an existing valid account in the apps data bases. In this screen user have only to enter his/her email and password. Or they can choose to sign in with their Facebook account.



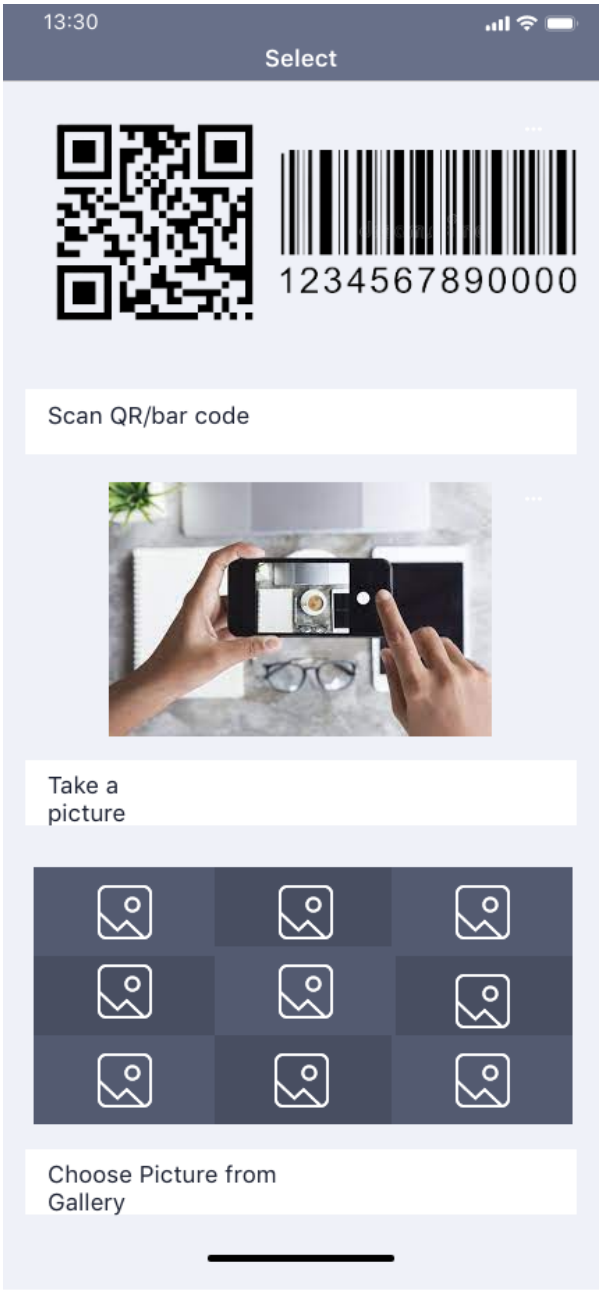
Permissions

This is part of the sign-up process. The user is required to give the app permission and give access to the user files, camera and location. The user can't user the searching method without fulfilling these three permissions. The camera and files access are important because the app is going to ask user to take photos or upload from their device. In fact, normally the smart phones block these permissions by default.



Choosing location

This is one of the most important steps that the user can't start using the app without it. The user is asked to either give permission to the app to access his location or chose his location manually by searching his address in the map. This part is important because the app needs to know the user location so it can search for the nearest venues that the product, he/she is searching for is available.

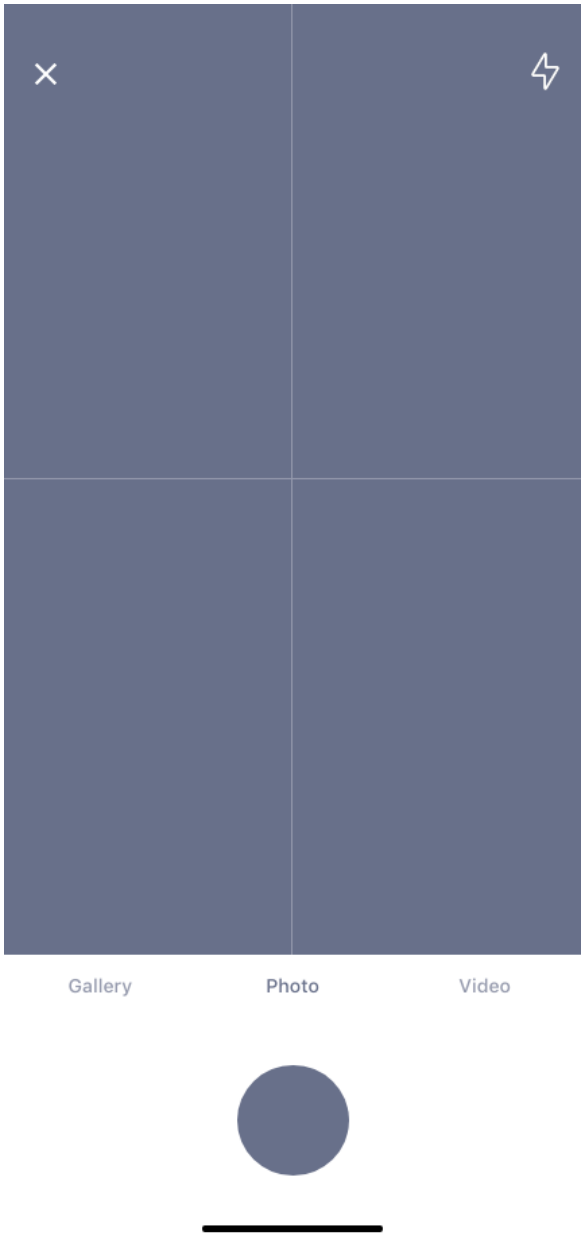


Home screen

After the user successfully finished signing up and inserting the location or logging in this screen will be displayed. In this phase the users start the process of searching for a certain product. The user has to choose between the three ways of searching which are search by scanning the barcode or QR code, search by taking a picture of the product, search by uploading picture from your own device.

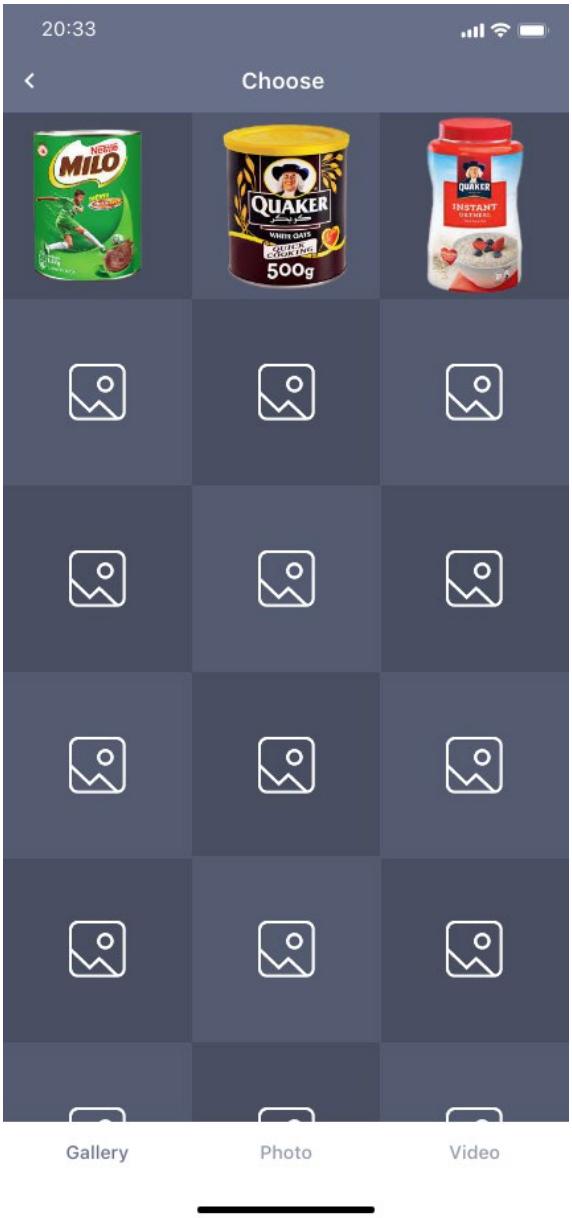
Scanning method

If the user clicked one the **Scan QR/bar code** button this page appears. Then the user can either scan QR code or barcode of a certain product. Meanwhile the user can swipe to change the method of searching in case he/she changed their mind mid process. Big square brackets are provided to the user to help positioning the code so the AI can read it easily and quickly.



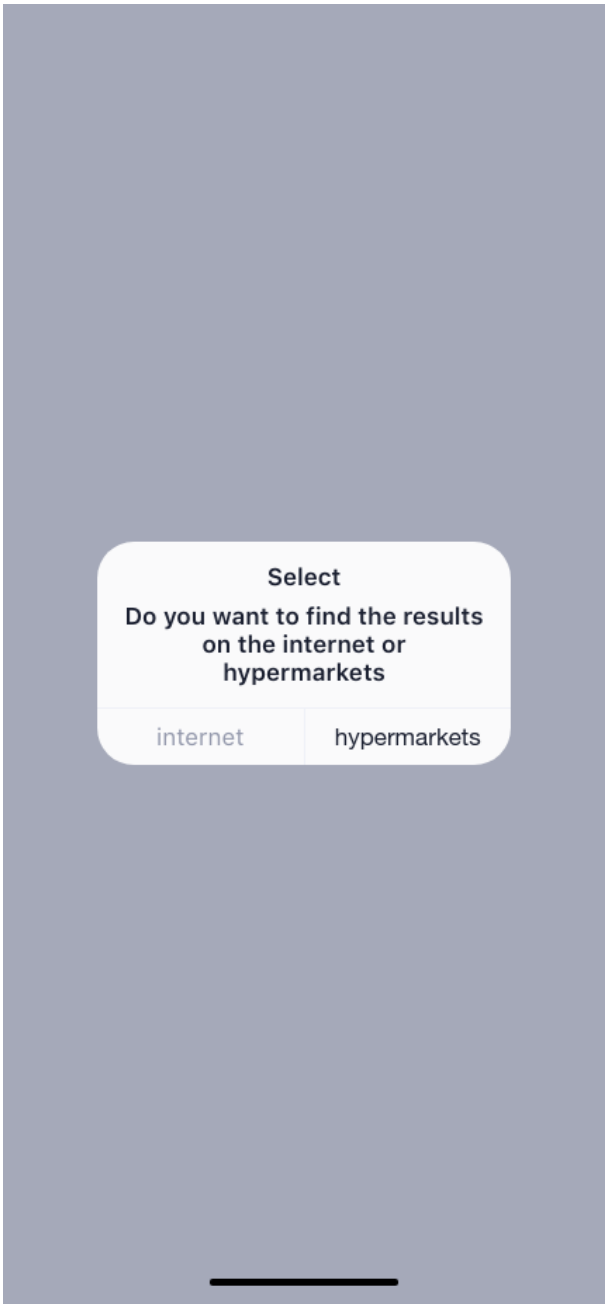
Take picture method

When the user chooses to take a picture, a similar screen to the scanning screen appears but this time without the big square brackets in the middle of the screen. In addition, the app provides the user with an exit button (X) to stop the search and go back to the home screen, and a flash light button if the environment doesn't provide a good lighting. These features are also provided in the scan a code method.



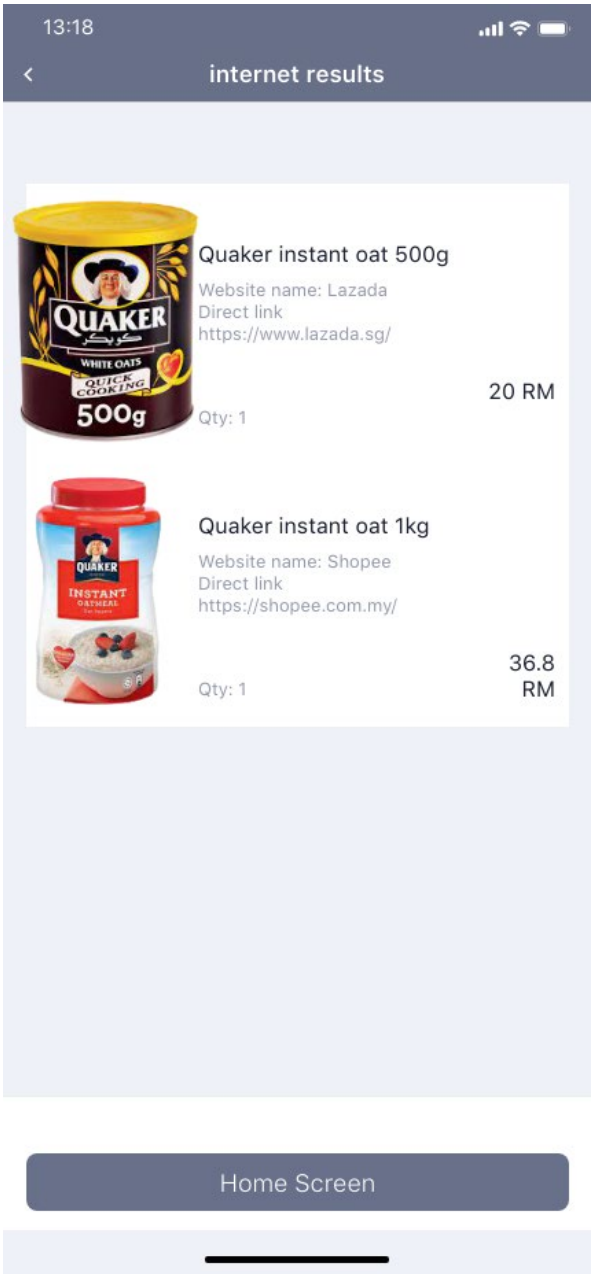
Select a picture method

This method allows the user to select a picture from his/her own device, which requires the permission to access device files form the user. The purpose of making it a separate method from the camera method is because the user may have a stored image of the product that was screenshotted by him from the internet so in order for him to search for products from the internet this method is developed.



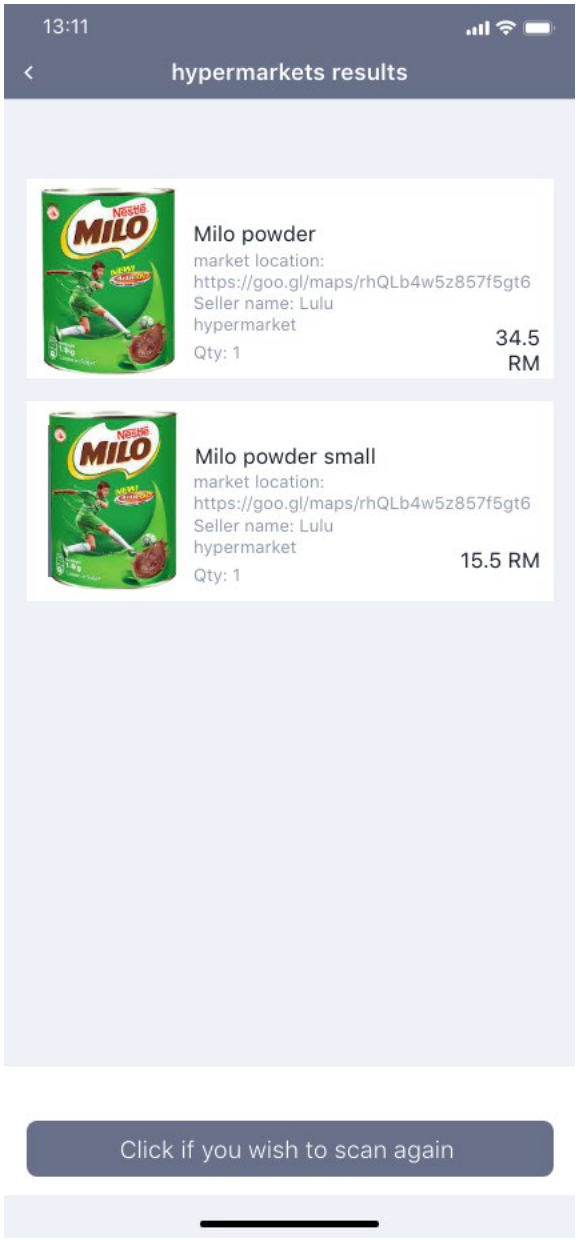
Hypermarket or internet

After scanning a code or taking a picture or uploading a picture of the product, this display message will pop-up in the user's screen asking them to decide whether he/she wants the app to search for the product on the online stores such as Amazon or to search for the product in the local hypermarkets such as Lulu Hypermarket.



Internet results

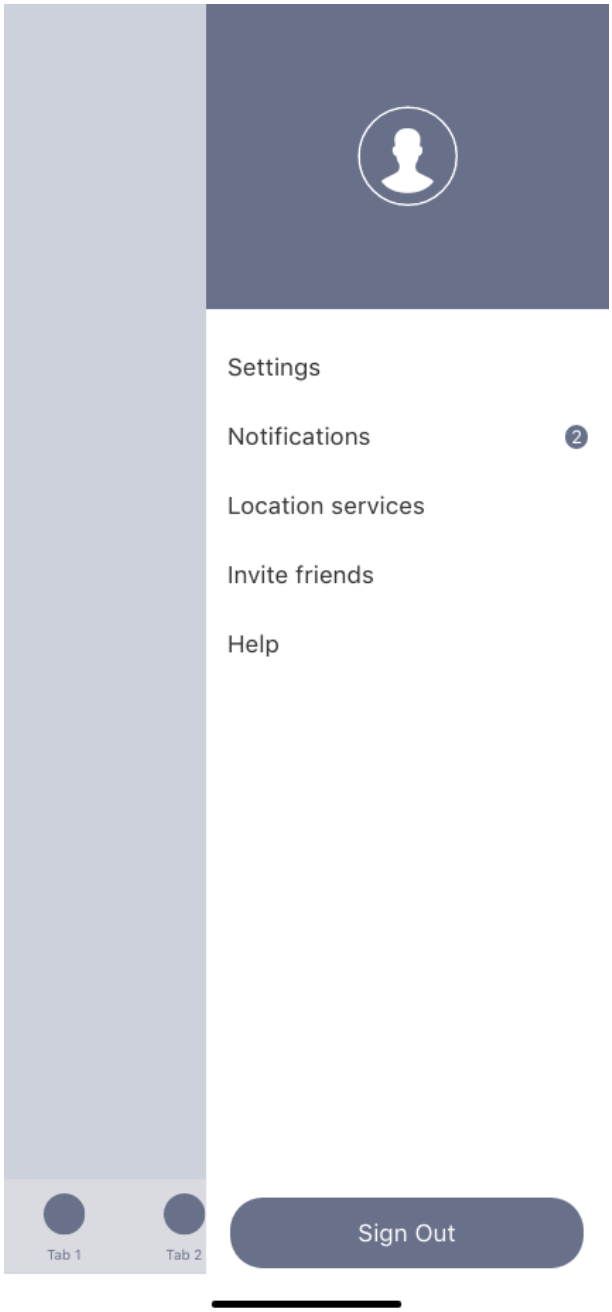
This screen appears once the user chooses to search in the online websites. Using AI, the app search for the exact same product or very similar products that could possibly satisfy the user needs. Results appears on this page showing the name and a picture of the product, product's price, seller website name and direct link to buy the product if its available (ex : Shopee and Lazada).



Hypermarket results

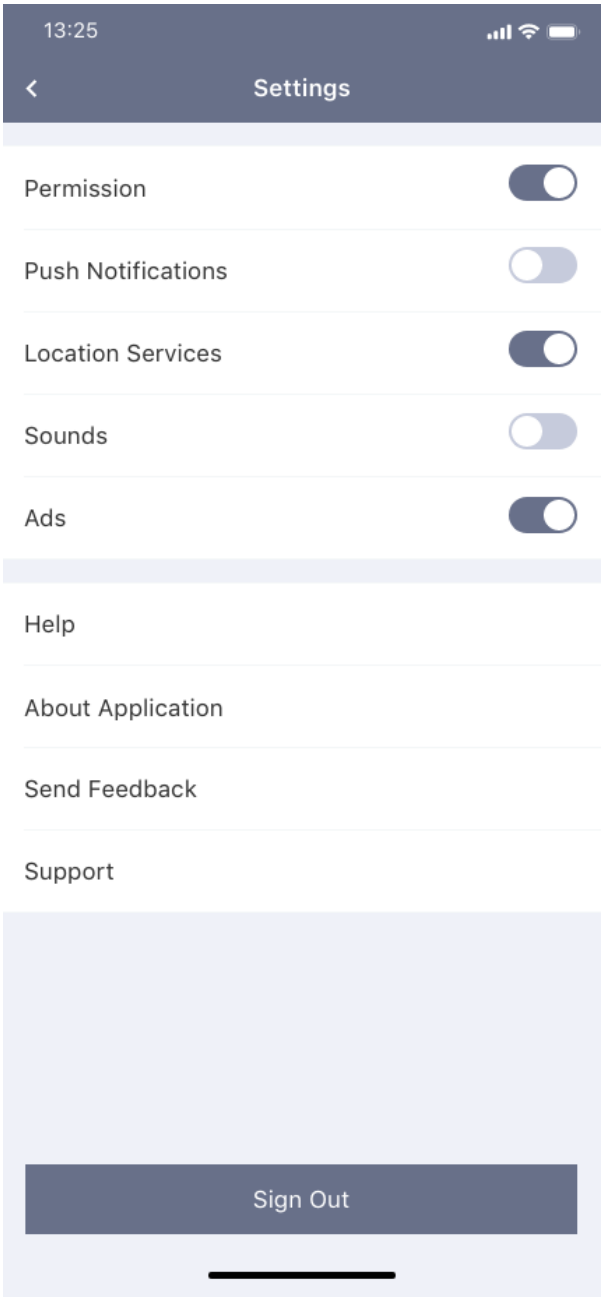
This screen appears if the user chose to find the product on the local hypermarket. Same as the internet page, the user will see the product name and price, but this time he will see the name of the hypermarket and a google maps link that guide him to the hypermarket location.

If the user didn't like the search results for either internet or hypermarket, by simply clicking on the home screen at the bottom he can go back and start searching for other products.



Profile Sidebar

This is basically a menu that the user can see his profile picture and change it, see his/her notification, change the location manually, invite his friends by sharing the app link (which is affective marketing wise) sign out and the most important thing to go to the application's setting.



Settings

Here is the screen where the user can adjust the app's permissions that he gave before and control his other preferences such as the sounds notifications and pop-up advertisements. Also, through the settings the user can go to the help disk contact the support team and give their useful feedback.

6. Reflections:

The following are each of our reflections for the project:

Yousef Khaled (A21EC4023):

At the beginning of the project, we were struggling to find out how can we make a prototype of an app that would be beneficial and can be executed in real life. As the days passed, we managed to help each other and come up with this project. Every person did his best to handle the parts that he felt the most comfortable with also the team leader Arshad did a great job dividing the tasks knowing each one's strength and weak points.

I learnt how to make an app from literal scratch, walking through the process step by step, starting from developing the idea and situation scenario up until the mock up prototype. Now, I'm motivated to complete working on this project in the future and try to implement real coding in it. The main issue that I faced in the beginning of the course is idea of the project and how can we make it work. And then we faced some other issues like time difference between the countries that each group member lives in, also finding the best prototyping tool was a bit hard. My direction after doing this project is to complete the 6 steps of **software development life cycle,** after this project we will be done with the first three steps planning, analysis and designing and my next step will be implementing the coding to convert it from a prototype into a real usable app. The most significant improvement that I can make is to learn how code application like this project so I can execute and run the app. Also, I need to learn more about cloud computing and know the deep details.

AMAR HASSAN (A21EC4004):

I was puzzled at first since we were having so much trouble coming up with a solid concept. We eventually came up with the concept of a scanning prototype. As soon as we started assigning tasks to each person, I was assigned the most difficult task: creating a prototype design and making it function. We utilized a tool called Proto.io to assist us to select the right design. After putting the finishing touches on the prototype, I realized that obtaining this expertise had been an incredible experience, and I'm looking forward to putting these coding talents to use and creating a genuine app that supports the cause.

We ran into a number of problems while working on the prototype, such as time differences between team members, determining what work to accomplish, and having various perspectives on some of the challenges, but we ultimately came to a consensus on one opinion and one perspective. Having the option to take the AWS course was also quite beneficial. It has a wealth of useful knowledge and skills. Finally, working on this project with

this fantastic team was such an incredible experience. I'm forward to learn more about the prototypes and turning them into a real application by coding them.

Maysara Mohamed (A21EC4002):

First, we wanted to think about the main idea of the program to design the prototype, and how we are going to make a useful app, after that we gathered online to divide the project and decide how we are going to do every part.

I got to many benefits from this project in communication skills and cooperation with your team

Also, I learned how to make a design of an application step by step I think that will help me in the future now I'm very excited to make an application. the real problem that we had in this project is to find the best tool to design the application but at the end we decided to use (proto.io). After this project I would be able to connect, communicate, design, analyze and think out of the box. I hope soon would be able to write a whole code for applications. the most important benefit that I had from this project is now I can think about every step when I use any app.

Arshad Parvez Dipto (A21EC4007):

When we started off with the project, we were really clueless on how to advance. The thought of a report in semester 1, was rather a surprise to us. But it all turned out great. I had the ideas to develop a project that would identify objects and display interactable AR objects, that would show all the necessary information about that object. Amar had the plans for a banking app, while Yousef had a plan for an app that would scan an object and find similar products in nearby stores. Me and mainly Maysara, on the other hand, had the idea for a very fun and creative pizza store app. But as the project has to showcase our knowledge of the AWS Academy Cloud Foundations course, so we had to scratch that idea. And so, we merged all our ideas to create this project.

We learnt many things during this project, we have increased the team bond, we learned each other's strengths and weaknesses. And most importantly, we learnt how to co-operate as a team. I was the team lead for this project and it was a big step for me, as I have never been a leader for something prior to this course. I have always been a team player, rather than a leader. We all had our separate sets of tools and UI ideas. They were Figma, proto,io and Azure and Adobe XD. Me and Maysara had to scratch the idea of Figma because it seemed everyone was more comfortable with the interface of proto.io. And I saw it as an opportunity to learn a new tool as well. Yousef has helped a lot with the suggestion of features and also supported me a lot in leading the team itself. I do not think I would have been successful in leading the team, if it were not for him. Amar on the other hand can design very well even

under pressure. I can design well, but I require a lot of time, as I get distracted by minor details. Maysara is really good at designing as well.

Now all that is left is to implement the back-end for our prototype. We need to make the code our front-end will run on. Maybe we will consider making this project successful if given the time and support. This project has helped me boost my communication skills, learn new stuff and share ideas with my team. All of us were a bit sleep deprived while doing the project. But it was a very fun project and I hope to be able to do projects with this team again, under the guidance of Mr. Hairudin sir.

YOUSSEF RAMEZ MOHAMED (A21EC9133)

At first, I was excited about the idea of the app, but all the thoughts in my mind were about whether we would succeed on the first try in coming up with a successful app. but we collaborated with the members of the group and we thought for long periods and tried to think of unique ideas out of the box until we got to the final idea being explained. Certainly, he faced many consequences, such as the time difference between group members, the time available for group work among group members, the distribution of roles and tasks between us, and in the end, we passed all the penalties collectively. In the end, I am happy to work with the group and proud of our results. In fact, I benefited from a lot of experiences in the content of the application