Ajker Bazardor: Mobile Application for Comparing prices of Different Super Shop

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled "**Ajker Bazardor: Mobile Application for Comparing prices of Different Super shop**", submitted by **Mohammad Ali** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 25.01.2023

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DECLARATION

We hereby declare that, this project has been done by me under the supervision of **Nazmun Nessa Moon, Associate Professor, Department of CSE,** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

As the use of technology is increasing, people are going online. People are now buying all kinds of essential items online. Food is our basic need. Day by day online food ordering system continues to be popular and so, demand is created regularly. Many types of super shops have developed to fulfil these needs. Super shops have all the essentials for daily cooking. Home delivery is provided only if you order online. Due to the fact that there are many super shops, if people want to know the cheapest price of any product in a super shop, then they have to visit the website of each super shop. Sometimes it is seen that a product is available in one shop but not in another shop. For that one has to search from one super shop to another super shop. Due to this people waste a lot of time. To solve this problem, I came up with the idea of making an app called "**Ajker Bazardor**". Apps which will have category-wise products of every super shop. Products can be added to the cart and the data of the carted products will be collected from various super shops after comparing the price a result will be shown. We can know from the comparison results that if we buy those products from any super shop, that will be available at a low price. If any products are missing in any super shop, then compare result table will show it. At the end, by using my application, anyone can buy at the cheapest price from any super shop.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

"Ajker Bazardor" is an android based comparing e-commerce application. "Ajker Bazardor" online platform which deals all type of users Grocery, Vegetables and Meat essential. This application users with opportunity to compare all kinds of Grocery, Vegetables and Meat items. Firstly, Users can compare Grocery products such as Oil, Rice, Fresh ata, Salt, Species, and so on. Secondly, Users can compare Vegetable's products for example Potato, Onion, Tomato, Carrot, Eggplant, Cabbage and so on. Finally, Users also compare Meat products for instance Chicken, Beef, and so on. Customers will get online ordering and home delivery services of their favorite products from the super shop. It helps to compare products anywhere through the internet by using the apps.

1.2 Motivation

- As the use of technology is increasing, people are going online.
- Day by day online food ordering system continues to be popular and so, demand is created regularly
- People order food from online super store
- If people want to buy food at a cheaper price, they have to go one super shop website to another. This is waste of time
- To solve this problem, I have built the "Ajker Bazardor" apps

1.3 Objective

- To make my e-commerce apps user-friendly for everyone.
- To view and compare products from the Ajker Bazardor apps.
- To compare products easier and comfortable.
- To buy products from super shops at the cheapest price.

1.4 Expected Outcome

Users can save time comparing products with my Android apps. After finding the comparison result, users will buy the products from the corresponding super shop. As a result, users can save money.

1.6 Report Layout

Chapter 2: In this chapter, we are going to give an overall idea of our project along with a discussion about the current situation of this kind of service.

Chapter 3: Here, we have shown the diagram based on the project.

Chapter 4: Here, we present the front-end design and back-end design and elaborate on the implementation requirements.

Chapter 5: Here, we have discussed the API implementation of our project and also, shown the test results of this project.

Chapter 6: Provided a future plan for the project and discussed development updates.

CHAPTER 2
BACKGROUND

2.1 Introduction

Android Based e-commerce app named "Ajker Bazardor" is a platform where users can see grocery products, vegetables & meat items. Users can choose products and cart products for comparison. After comparison, users can decide where they can buy the products at the cheapest price.

2.2 Related Work

Ajker Bazardor is an android app that helps users to buy products at a cheaper price. The users can compare products from the Android app. Some e-commerce sites are partially related to my work. There is some common feature of each system. They are Agora, Chaldal, Othoba, Shwapno online shop etc. Below are some examples of related work in figure 2.1, 2.2, 2.3 & 2.4.
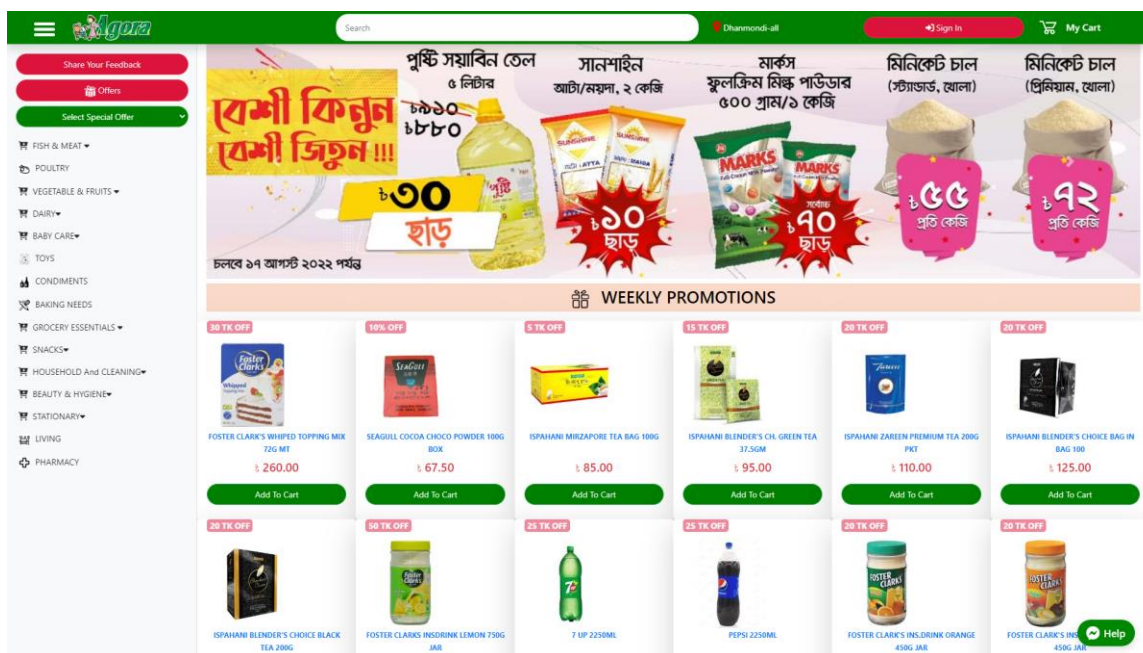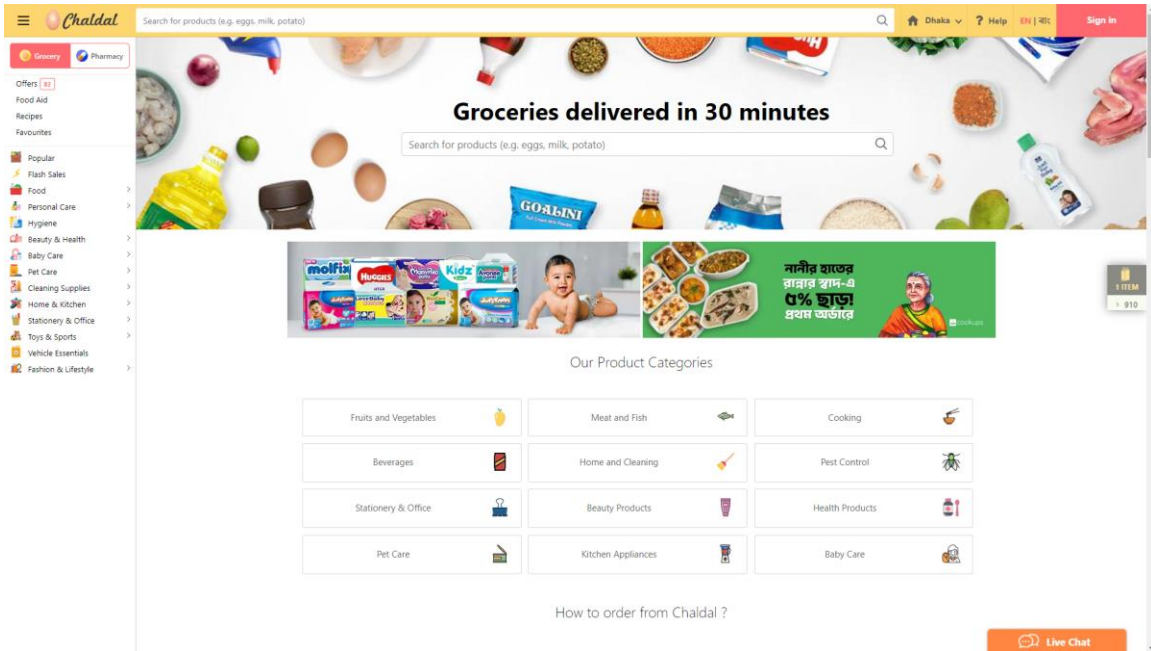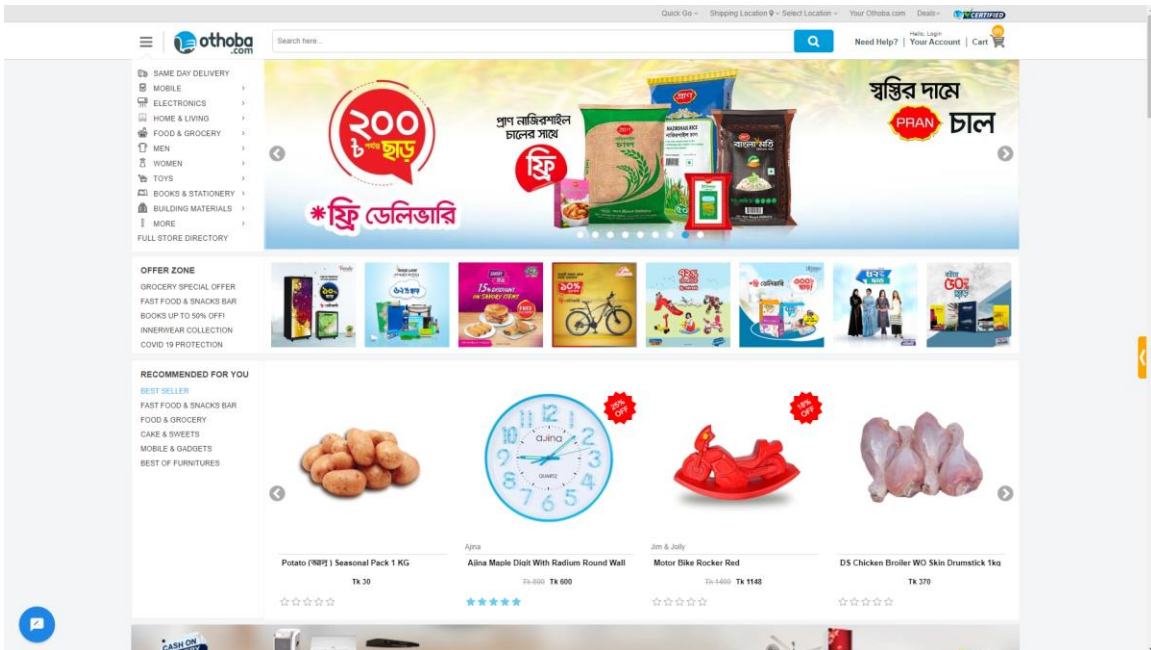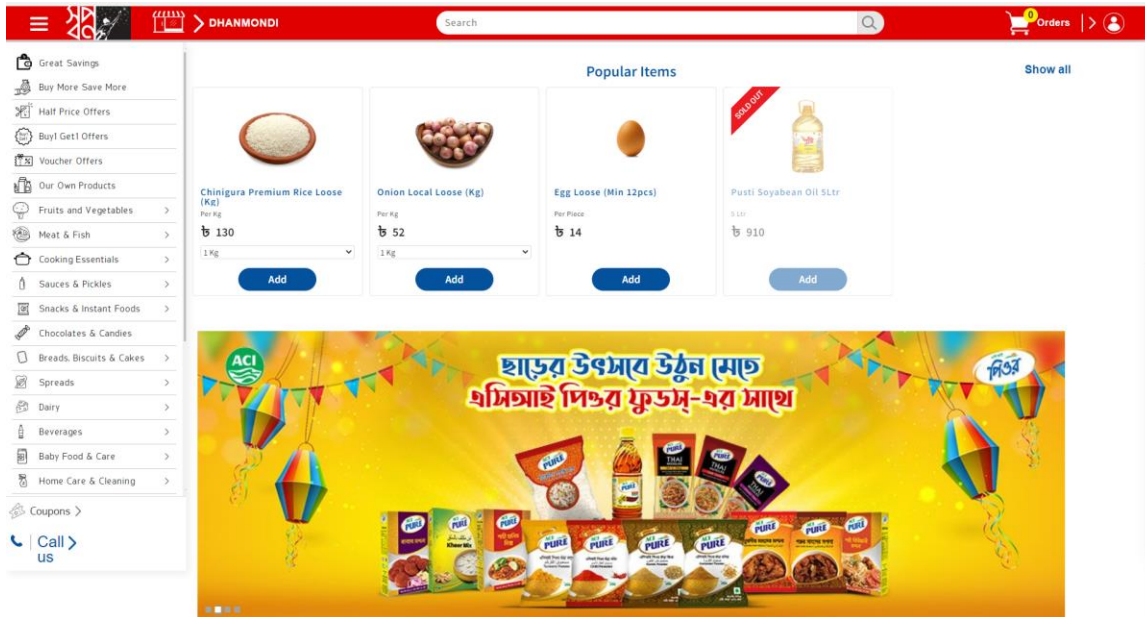

Figure 2.1: Agora

Figure 2.2: Chaldal

Figure 2.3: Othoba

Figure 2.4: Shwapno

2.3 Application Feature

   i.   Admin upload product category wise

   ii.   Same products visualization which is available in lots of super shops

  iii.   Application data comes from the real-time web scraping

  iv.   Users cart items easily

   v.   Comparing products

  vi.   After comparing users can easily find out the cheapest super shop.

2.4 Challenges

Without challenges, there is no work. For my project, I have faced little few challenges.

   i.   This is an Android base e-commerce application so without an internet connection, this application will not work.

   ii.   I have to create the application user-friendly.

  iii.   Many super shops do not accept web-scraping

  iv.   If the super shop's server is down, web-scraping will not able to capture data.

REQUIREMENT SPECIFICATION

3.1 Use Case Modeling and Description

Figure 3.1 is the use case model of our system. In this diagram, I have shown the working process. At first uses can view categories, after selecting category, users can view products. In the view products section users can add to cart products for comparison. Admin has lots of work, always update category and products.
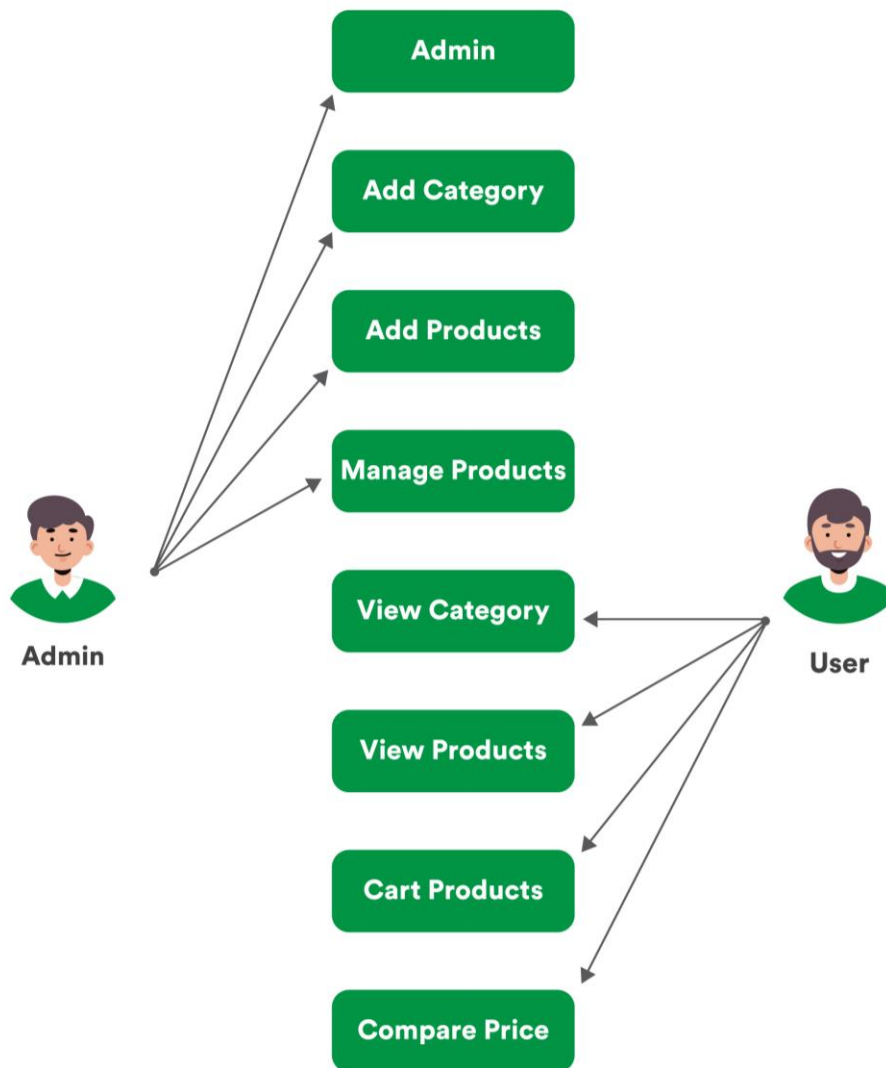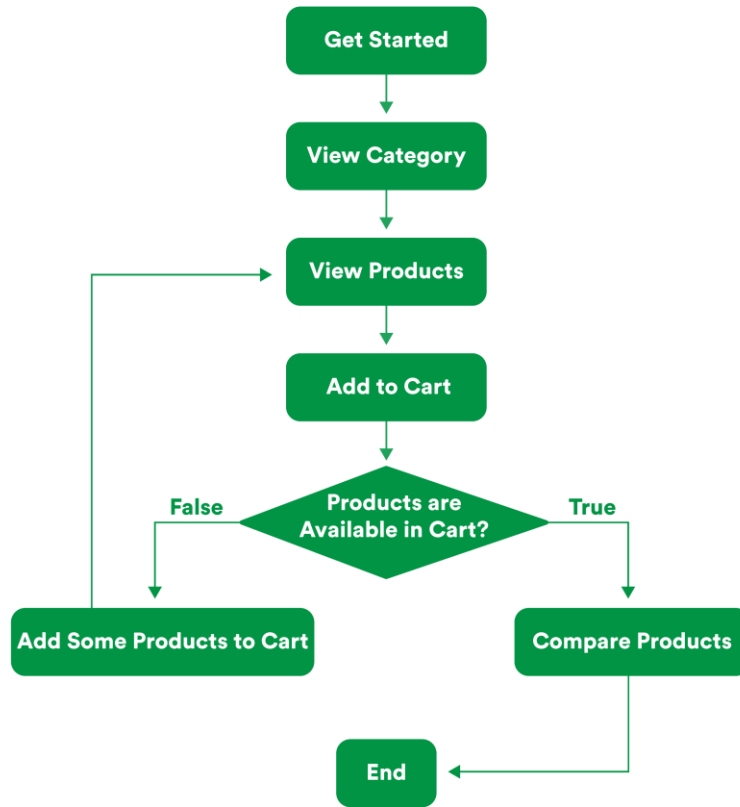

Figure 3.1: Use Case Diagram

3.2 Work Flow

Figure 3.2: Work Flow

3.3 Logical Data Model

The logical data model is one kind of relational table. This table has different entities. Some relational tables like User, Category, Products, and Compare Result. The table has some attributes like category id, name, photo, price, and weight. The whole logical model is shown in Figure 3.3.

Category

Category ID
Category Name
Category Photo

Products Item

Products ID
Products Name
Products Price
Products Photo
Products Weight

User

Add to Cart
Compare Products

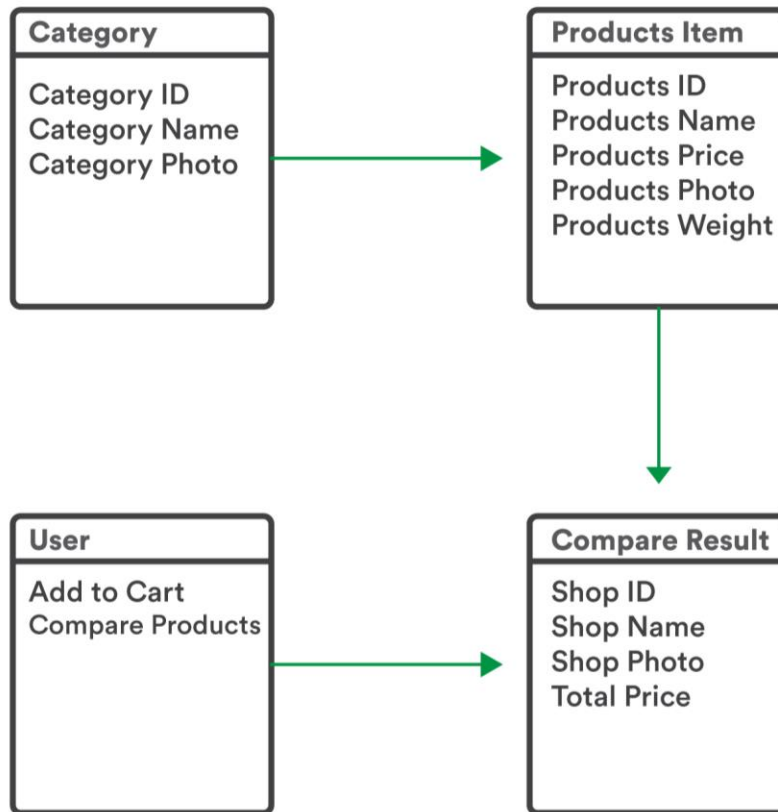**Compare Result**

Shop ID
Shop Name
Shop Photo
Total Price

Figure 3.3: Logical Data Model

3.4 Android Studio

Android studio [6] is an IDE (Integrated Development Environment) for develop native android application. Android studio was announced by Google I/O conference on May 16, 2013. Its build only development high quality native android application for every android device. It is fully an open source and Linux-carnal based operating system for mobile devices such as Android smartphones. "Ajker Bazardor" application built into the using Android Studio latest version.

3.5 System Requirement

Windows, Mac and Linux all operating system supports Android Studio IDE, Users able download Android Studio from the official website www.developers.android.com/studio where users also find the all-versions SDKs with Android Studio command-line tools. Before downloading Android Studio, make sure your platform meets the following requirements:

Windows Operating System Users
- Windows OS 10/11
- Minimum 3 GB-RAM, 16 GB-RAM (recommended) for fast
- Available disk space minimum 4 GB, 10 GB (recommended)

MAC Operating System Users
- OS 10.10 or Higher
- RAM 3GB minimum, recommended RAM 16 GB
- Available disk space minimum 4 GB, 10 GB (recommended)

CHAPTER 4
DESIGN SPECIFICATION

4.1 Front-End

A mobile application's front-end design is incredibly significant. It's recognized because of the program (UI) (user interface). With this UI, a user can easily evaluate what form of the app it's. Furthermore, the computer program is the most noticeable aspect of any application. The front-end design is accessible to users. Front-end design refers to the section formed by front-end developers. The side refers to everything a user sees on a smartphone device, including the planning. The interface of a mobile app is just what the user sees. The term "user experience" or "UX"; the side is where the user can interact with this stuff. Understanding and being proficient in design is a crucial part of that. Unfortunately, genuinely comprehending front-end design is more difficult than it appears. The skill sets required for coding and aesthetic design are somewhat different. As a result, some front-end developers aren't as skilled in the design part as they should be, and their work suffers as a result. I have to spend a lot of effort into designing our front-end design as a beginner. I need to study a variety of subjects, feature of an android application.

4.1.1 Get Start

This is the first page in figure 4.1 of my android application "Ajker Bazardor". There is a button for going to the main application which name is "Discover Button".

Figure 4.1: Get Started

4.1.2 Dashboard

The dashboard is the main focusing factor for the users. Users stay on the dashboard page most of the time using the application. On the dashboard in figure 4.2, there is a poster of discounts on the super shop. Below the poster, there are categories of the products. A compare button is visible for going to the comparison page.
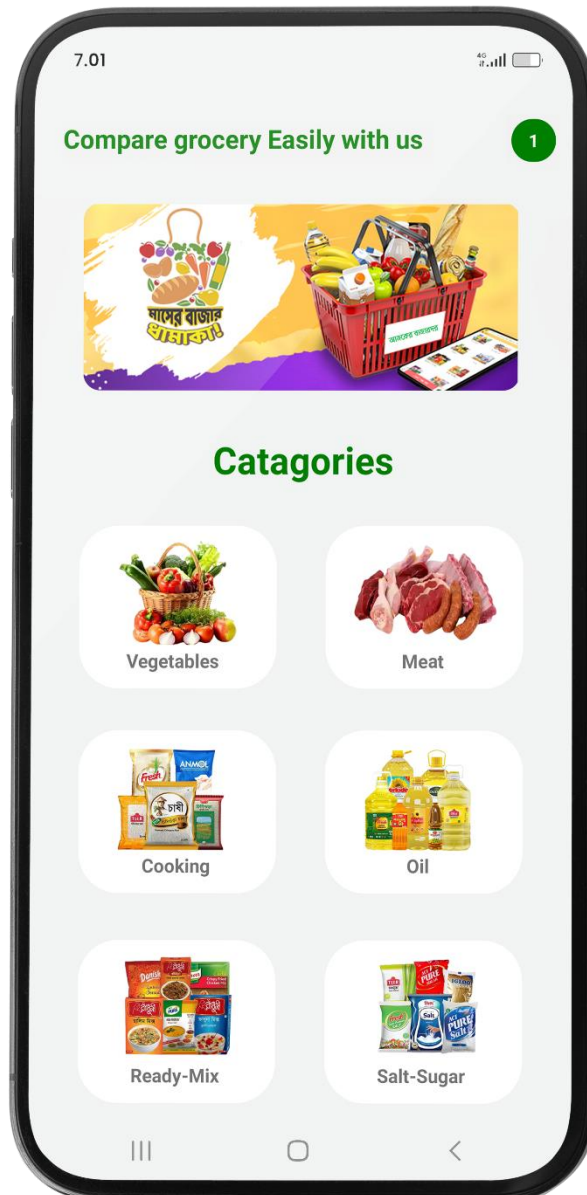

Figure 4.2: Dashboard

4.1.3 Products

A product is any item or service you sell to serve a customer's need or want. By selecting a category user can go to the products page. Users can add to the cart for comparison. There is lots of products for comparison. Below is the example of products page in figure 4.3.
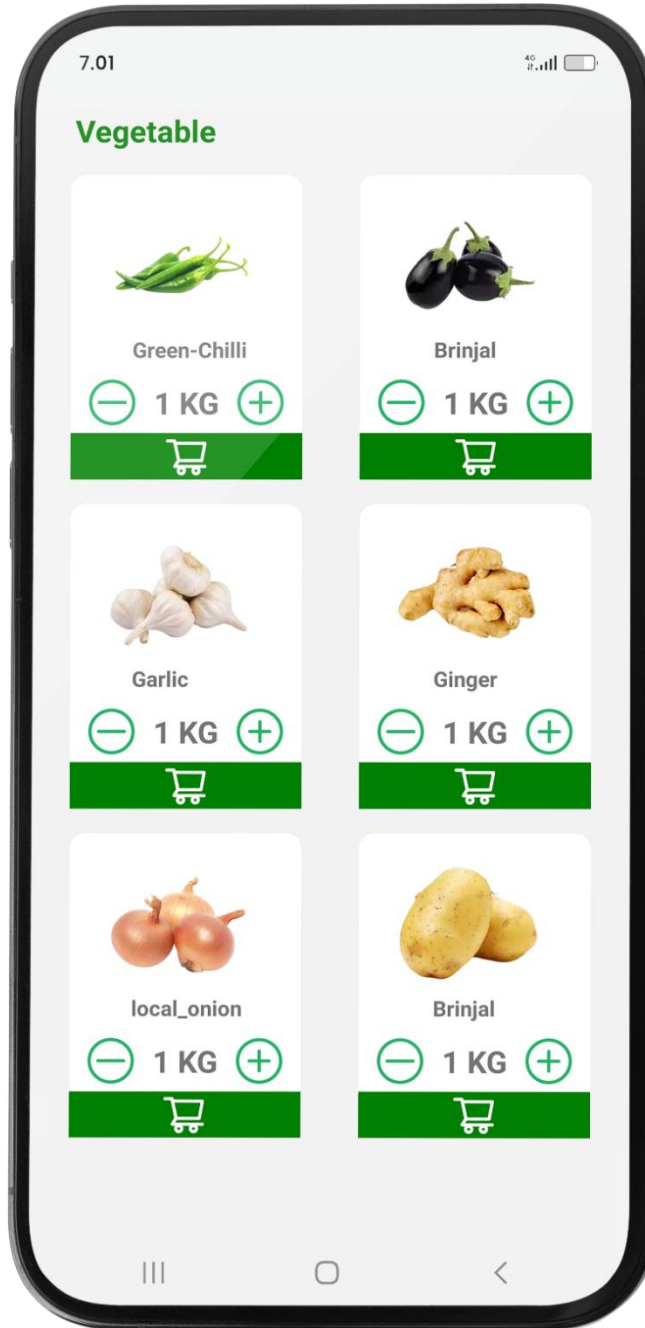

Figure 4.3: Products

4.1.4 Comparison of Products

This is our expected page in figure 4.4, where we will get the comparison of the super shop products' prices. Based on the comparison results, we can buy products at very low prices.

Figure 4.4: Comparison Page

4.2 Back-End

Node.js is used for the back end. By using Node.js I build a restful API. Scrape data from the website by using Node.js web-scraping. Below is the example of the output result of API.

4.2.1 Agora Super Store

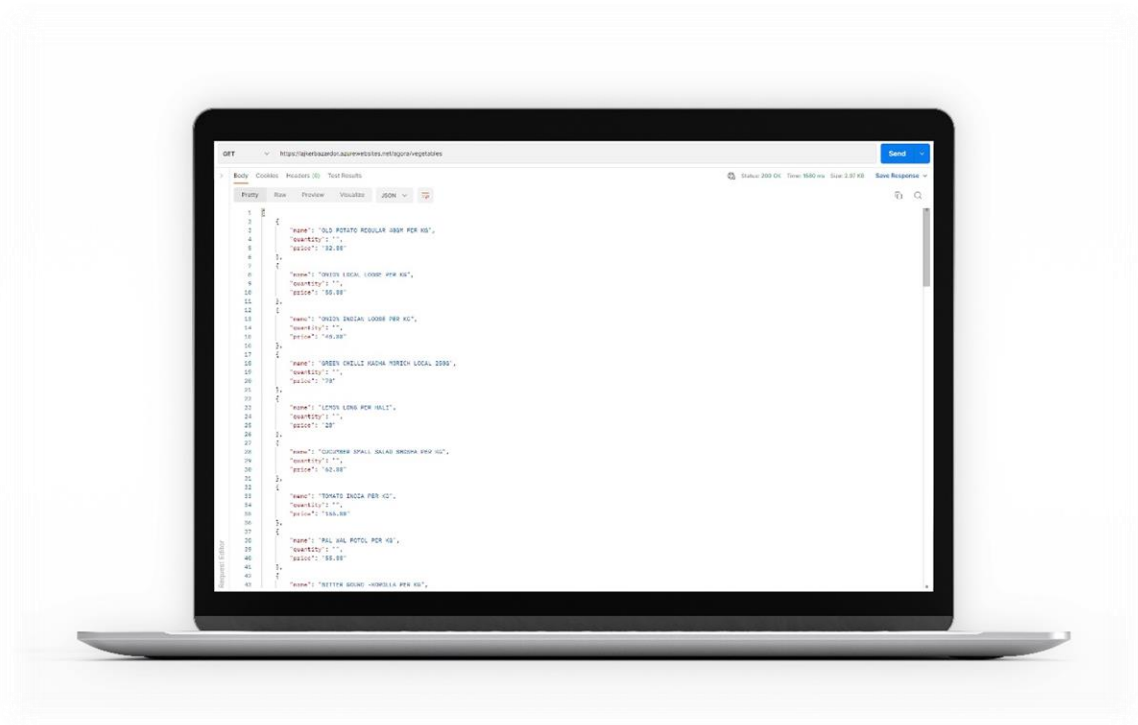Figure 4.5 is the API output result of the Agora Super Store.

Figure 4.5: Agora Super Store

4.2.2 Othoba Super Store

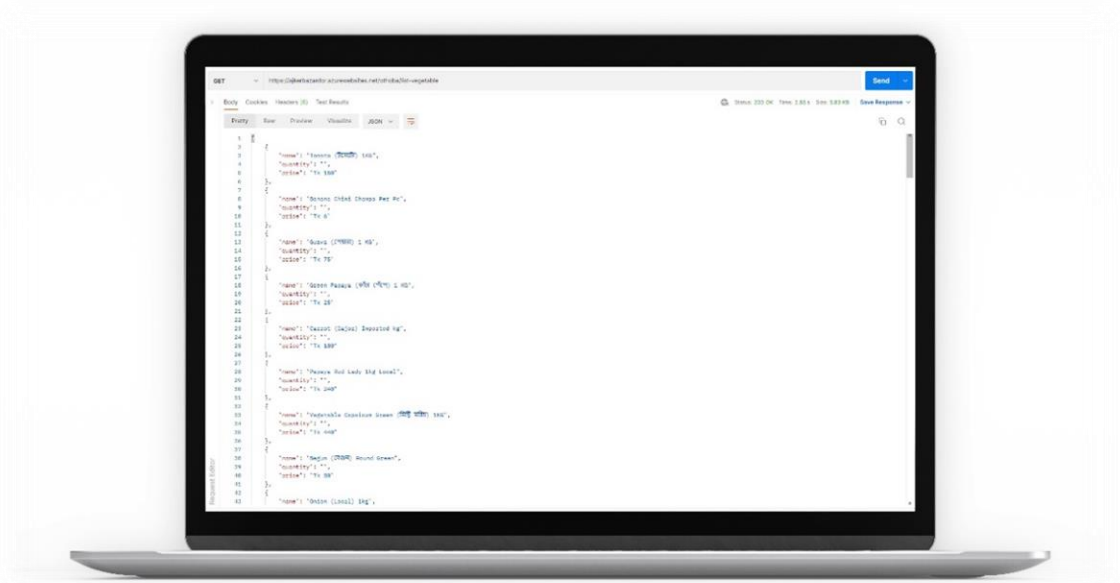Figure 4.6 is the API output result of the Othoba Super Store.

Figure 4.6: Othoba Super Store

4.2.3 Chaldal Super Store

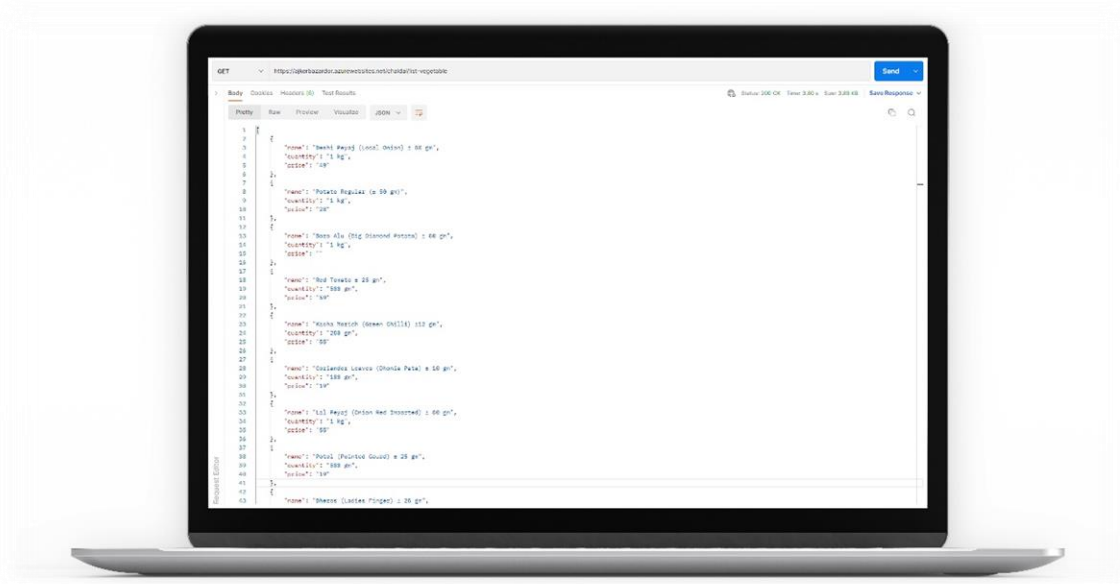Figure 4.7 is the API output result of the Chaldal Super Store.

Figure 4.7: Chaldal Super Store

4.3 Interaction Design and UX

Interaction design is one of the best crucial parts of an Android app. It reconnects and processes the user. It needs some design to manage and visualize easily. Like pictures, buttons, fonts, icons, etc. so that it is simple to use and understandable to all. I found that this application uses a gorgeous UX design. So, my application design is very user-friendly.

4.4 Implementation Requirements

It is my first application so I have learned lots of new technology. So, I have to spend a lot of time preparing the application. Below are some tools and programming languages that I have learned during the project.

Front-End:
- React Native [7]
- JavaScript
- CSS

Back-End:
- Node.js [8]
- Express.js
- Web scraping [9]

Database:
- SQLite

IDE:
- Vs Code [10]
- Android Studio [6]
- PowerShell

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of API

Web scraping is the process of collecting structured web data in an automated fashion. Express.js is used for the restful API. This is not an easy task because some websites do not accept web scraping. Here is the procedure for implementing API

   i.   Select the superstore
   ii. Collect website URLs for web scraping
   iii. Identify which information is needed for my project
   iv. Identify which HTML tag is needed for my project
   v.   Use web scraping for extracting data from the website
   vi. After extracting, data is visualized in a JSON format.

Below are some examples in figure 5.1, 5.2 & 5.3 of programming code.

```
1   const express = require("express");
2   const cheerio = require('cheerio');
3   const request = require('request');
4   const app = express.Router();
5
6   app.get('/list-vegetable', (req, res) =>
7   {
8   formData = [];
9
10  request('https://www.othoba.com/perishables', (error, response, html) => {
11    if (!error && response.statusCode == 200) {
12      const $ = cheerio.load(html);
13
14      $('.item-box').each((i, el) => {
15        const name = $(el)
16          .find('.details .product-title a')
17          .text()
18          .replace(/\b\s+/g, '');
19
20        const quantity = $(el)
21          .find('.subText')
22          .text()
23          .replace(/\b\s+/g, '');
24        var price = $(el)
25          .find('.details .add-info .prices .actual-price')
26          .text()
27          .replace(/\b\s+/g, '');
28
29        console.log(name)
30        console.log(quantity)
31        console.log(price)
32
33
34        formData.push({name,quantity,price});
35
36      });
```

Figure 5.1: Othoba Super Store API

```
1   const express = require("express");
2   const cheerio = require('cheerio');
3   const request = require('request');
4   const app = express.Router();
5
6   app.get('/list-vegetable', (req, res) =>
7   {
8   formData = [];
9
10  request('https://chaldal.com/fresh-vegetable', (error, response, html) => {
11    if (!error && response.statusCode == 200) {
12       const $ = cheerio.load(html);
13
14       $('.imageWrapper').each((i, el) => {
15         const name = $(el)
16           .find('.name')
17           .text()
18           .replace(/\b\s+/g, '');
19
20         const quantity = $(el)
21           .find('.subText')
22           .text()
23           .replace(/\b\s+/g, '');
24         const price = $(el)
25           .find('.discountedPriceSection .discountedPrice')
26           .text()
27           .replace(/\b\s+/g, '');
28           formData.push({name,quantity,price});
29       });
30
31       console.log('Scraping Done...');
32       res.send(JSON.stringify(formData));
33     }
34  });
35
36  });
37  app.get('/list-spices', (req, res) =>
```

Figure 5.2: Chaldal Super Store API

```
1   const express = require("express");
2   const cheerio = require('cheerio');
3   const request = require('request');
4   const app = express.Router();
5 > app.get('/', (req, res) => ···
10  });
11
12 > cookieSetUp=()=>{ ···
39  }
40  app.get('/vegetables', (req, res) =>
41  {
42  cookieSetUp();
43    formData = [];
44    fetch('https://agorasuperstores.com/product_filter/fetch_data/1', {
45        method: 'POST',
46        body: 'action=fetch_data&brand%5B%5D=A0308&search_product=',
47 >      headers: { ···
63        }
64  }).then(res => res.json())
65      .then(json =>
66
67        {
68      const $ = cheerio.load(json.product_list);
69
70      $('.product_dis_fra').each((i, el) => {
71        const name = $(el)
72          .find('.product_details_dis p strong a')
73          .text()
74          .replace(/\b\s+/g, '');
75
76        const quantity = $(el)
77          .find('.subText')
78          .text()
79          .replace(/\b\s+/g, '');
80
81        var price = $(el)
82          .find('.text-danger')
```

Figure 5.3: Agora Super Store API

5.2 Testing Implementation

I put the maximum priority on testing to create this Android application. My main goal was to create a bug-free application. I tried my best to make this application user-friendly and bug-free. That's why testing was a crucial part of my project. I have done testing a lot of times. In Figure 5.4 we are trying to compare products and successfully compare the products.
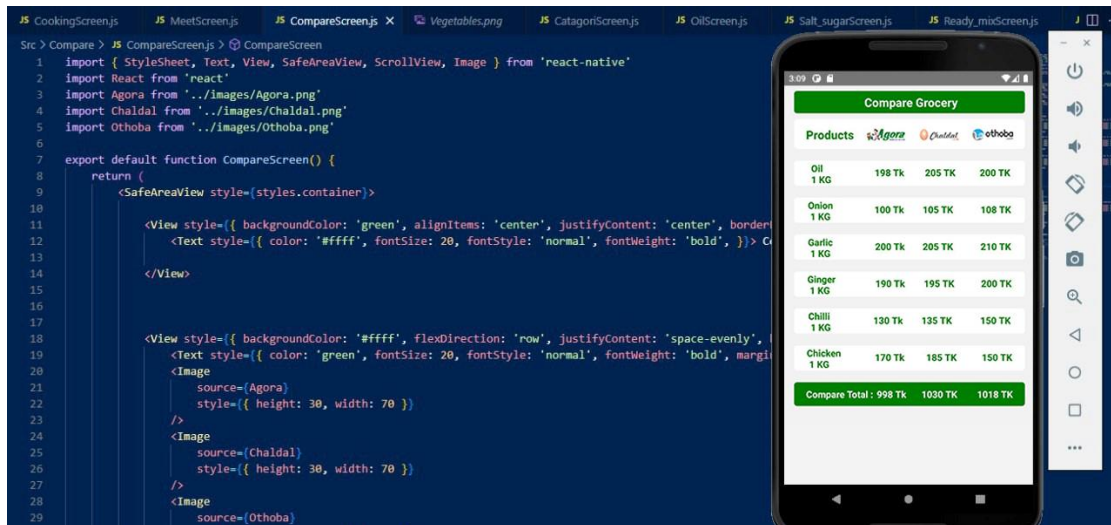

Figure 5.4: Testing of Comparing Products

5.3 Test Results and Reports

Table 1: Testing Table

Test Case	Expected Outcome	Obtain Outcome	Successful/Failed	Testing Period
Dashboard	Work Successfully	Did not Work Successfully	Failed	12-07-2022
Dashboard	Work Successfully	Work Successfully	Successful	20-07-2022
Add to Cart	Work Successfully	Work Successfully	Successful	02-08-2022
Remove Add to Cart	Work Successfully	Did not Work Successfully	Failed	05-08-2022
Remove Add to Cart	Work Successfully	Work Successfully	Successful	10-09-2022
Compare Products	Work Successfully	Did not Work Successfully	Failed	14-09-2022
Compare Products	Work Successfully	Work Successfully	Successful	25-10-2022
Web Scraping	Work Successfully	Work Successfully	Successful	30-10-2022
Restful API	Work Successfully	Did not Work Successfully	Failed	03-11-2022
Restful API	Work Successfully	Work Successfully	Successful	15-12-2022
Fetch Data from Apps	Work Successfully	Work Successfully	Successful	02-01-2023

CHAPTER 6
CONCLUSION AND FUTURE SCOPE

6.1 Conclusion

I have tried to create a unique Super Store Comparing system that is easy to use. My system has some unique concepts which are already explained. However, I have tried to make this system as user-friendly as possible. If I want in the future, this project can be improved and extended on a large scale as per the user's feedback. By doing this project I have learned lots of new concepts which will be helpful in my next project.

6.2 Future Work and Further Development

In future, I want to work together with all super shops. By comparing from my apps, the price of the super shop will be lower, you can order directly from that super shop from my app. This system will prevent a lot of human time wastage

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