

Design and Development of an Android E-commerce Mobile App: “Medulshop-BD”

BY

Md. Arafat Rahman Medul
ID: 193-15-1073

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

Supervised By
Mohammad Monirul Islam
Assistant Professor
Department of CSE
Daffodil International University

Co-Supervised By
Md. Sabab Zulfiker
Sr. Lecturer
Department of CSE
Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

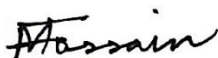
DHAKA, BANGLADESH

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APPROVAL

This Project titled “**Design and Development of an Andriod E-commerce Mobile App: Medulshop-BD**”, submitted by Md. Arafat Rahman Medul, ID No: 193-15-1073 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 24 January 2024.

BOARD OF EXAMINERS



Dr. Md. Fokhray Hossain (MFH)
Professor

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University


Chairman



Md. Ali Hossain (MAH)
Assistant Professor

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner



Israt Jahan (IJN)
Senior Lecturer

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner



Dr. Mohammad Shahidur Rahman (DMSR)
Professor

Department of Computer Science and Engineering
Shahjalal University of Science and Technology

External Examiner

DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Mohammad Monirul Islam, Assistant 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.

Supervised by:



Mohammad Monirul Islam

Assistant Professor

Department of Computer Science and Engineering

Daffodil International University

Co-Supervised by:



Md. Sabab Zulfiker

Sr. Lecturer

Department of Computer Science and Engineering

Daffodil International University

Submitted by:

Medul

Md. Arafat Rahaman Medul

ID: 193-15-1073

Department of Computer Science and Engineering

Daffodil International University

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ABSTRACT

Today we live in modern world. With the use of high-speed internet and some modern software or applications, our life has now become several times easier than before. Now we can do office from home, order food from home, get medical facilities from home etc. We can now do anything from the comfort of our homes through the internet and different types of applications. So keeping in tune with the current times i have created this app so that people can shop any product from home by their smartphone without going to the market. No complicated things are used in my app so that customers can use my app very easily. There are currently 7.33 billion smartphone users in the world. Among them, about 50 percent of people use android operating system mobiles. Apart from mobiles, people are also using different types of Android watches, tabs and TVs. Keeping these things in mind, i have developed “Medulshop-BD” app that can be run on Android operating system. Due to busyness, many people fail to go to the market to buy their necessary products. Some cannot go to the market due to illness. There are some who do not like to market in large crowds. There are thousands of reasons why many people don't like shopping at malls. I hope my app will be useful for them.

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CHAPTER 1

Introduction

1.1 Introduction:

Due to the modern era everything is now becoming online based. A few years ago, we had to physically run to different places if we needed to buy something necessary. But due to the wide spread of the internet, now we can buy anything online from the comfort of our homes from any part of the world. In this case, the need of online based e-commerce Android app is immense. If the number of e-commerce applications increases, shopping from homes will also increase and become easier for us. Hope “Medulshop-BD” can make a big contribution to e-commerce business in Bangladesh.

1.2 Motivation:

Apart from abroad, people in Bangladesh have also shown great interest in e-commerce apps. “Daraz” app is one example of that. Initially people were afraid to shop online. But people are now trusting the e-commerce apps. With the development of e-commerce apps, we now do not have to go to the store or market to buy anything and there is no hassle of checking products. By looking at people's ratings and reviews, we can easily verify any product at home without any hassle. Not having to spend money on vehicles to visit the shops. As a result, the demand for e-commerce apps is increasing and after a few years, the entire country may become an online shopping destination. Thinking about these things, I got proper motivation to develop the app.

1.3 Objectives:

The primary objectives of the Medulshop-BD project are as follows:

- a) Main objectives of my creation of this app is that people can order and buy any product very easily through their smartphones at home.

- b) Making shopping easier for the elderly or those who are unable to walk or have other physical problems.
- c) Making Bangladesh modern like other countries by shopping through smartphones.
- d) Creating a convenient shopping system for those who cannot find time for shopping due to busy schedule or working pressure.

1.4 Expected Outcomes:

The expected results that can be obtained from this project are:

- 1) Better quality shopping experience.
- 2) Step up Sales and Revenue.
- 3) Gaining customer loyalty.
- 4) Market Entrance.
- 5) Achievement to Local Economy.

1.5 Project Management and Finance:

The project has been developed very perfectly and accurately. In developing the project i have implemented my own wish, logic and co-operate. The obstacles that may arise in the development of the project are considered. The project took a whole year to build. The entire work of the project has been completed in various steps. For example, first thought about what features will be in the app, then thought about how the design of the app will be, how the database will be etc. A high configuration computer was purchased for developing the “Medulshop-BD”.

1.6 Report Layout:

This report has 7 different chapters as follows:

Introduction, Background, Requirement Specifications, Design Specification, Implementation and Testing, Impact on Society, Environment and Sustainability & Conclusion and Future Scope.

CHAPTER 2

Background Study

2.1 Preliminaries/Terminologies:

Since Android is continuously upgrading and Android is an open operating system so it is very appropriate and reasonable to develop any application for Android. Android is developed and controlled by Google. The Android operating system's Play Store has the largest number of applications that are not typically found in the Microsoft Store or the Apple Store. Almost all types of people can afford to use Android based devices as their prices are generally low than other operating devices. So developing apps for android can be a profitable business.

2.2 Related Works:

Nowadays many population are active on Android apps. Currently we visualize many well-known Android e-commerce apps. Such as : Flipcart, AliExpress, Amazon, Lazada etc. We have e-commerce android apps in Bangladesh like Daraz, Shajgoj, Chaldal, Evaly etc. These apps are performing very main act in buying product from home. Hopefully my developed app “Medulshop-BD” will add a new dimension in this regard.

2.3 Comparatives Analysis:

My app will not be any less than other e-commerce apps currently established in Bangladesh. My app is designed in such a way that any kind of people can understand it very easily. The app has been developed keeping in mind the educational qualification and other factors of the people of Bangladesh. The app uses such a user interface that even uneducated people can easily understand many things by looking at the icons. Other e-commerce apps have a lot of content inside of it and sometimes users don't feel

comfortable using them. All these aspects of the users have been kept in mind while implementing the project.

2.4 Scope of the Problem:

There are various types of problems that can arise in developing an app. Scope of the problem in developing an e-commerce app depends on various factors. First, if the user interface is cluttered, it can be a poor experience for users. Customers may feel annoyed if it takes a long time to load while clicking on any option in the app. When there are many users in the app, the database of the app can become slow. To eliminate these problems, the performance of the app should be maintained so that the users are not disappointed. Adequate security has been adopted for unauthorized access and safe payment. The application is created in such a way that it can easily adapt to any Android device.

2.5 Challenges:

All app development will have its challenges. There are various Android devices that have different screen resolutions and screen sizes. One of the main challenges is getting my app to adjust properly to each device screen. The information provided by the customers will be stored in the database. It is a challenge to ensure that no one steals customer data from the database and uses it for nefarious purposes. Another challenge is to ensure that the sellers who sell their products through my app do not cheat the customers. Also providing proper security for online payments, optimizing “Medulshop-BD” for all devices comes under the challenge.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling:

The following business process model was created using “Microsoft Designer” App:



Figure 1: BPM of Medulshop-BD

3.2 Requirement Collection and Analysis:

Different types of hardware are required in computers to develop different types of apps. In addition to that, software is definitely needed. All the requirements that i need to build this app are mentioned below:

Hardware Requirement: In order to build the app, it is necessary to have the following minimum hardware on the computer :

- 64-bit Microsoft® Windows® 8/10/11 operating system based computer.
- x86_64 Processor architecture; minimum Intel dual core or newer CPU / AMD ryzen 3 or newer processor with support for a Windows Hypervisor.
- 8 GB RAM or more.
- 20 GB of available disk space minimum (IDE + Android SDK + Android Emulator)
- 1280 x 800 minimum display resolution.

Software Requirement:

- Andriod Studio (2022.1 version or higher)
- Firebase
- Xampp software
- Notepad ++
- Adobe Express (web based application)

Andriod Studio: A software called “Android Studio” is used on the computer to develop & create various types of Android apps. Developed Android apps are used on Android operating system supported devices like TV, watch, mobile, tab, smartphone etc. I developed my entire app using Java programming language and XML code in Android

Studio. Basically XML codes are used to create the app design and java code is used to run the app functions.

Firestore: One of the features of the Android app is its notification system. Firestore is used to show any special messages or news to the app to the user's mobile notification bar.

Xampp Software: I used “xampp software” as local host to store app user’s data. xampp software has been used to store various types of data such as Product details, images, customer feedback, Orders and admin panel’s data by using different types of Database (SQL extension).

Notepad ++: Medulshop-BD’s admin panel is created by html, CSS, php & javascript files. Notepad++ is used to write codes to create these type of files.

Adobe Express: Used “Adobe Express” web application to create & design various logos, Symbols, icons, etc that is used in my app & admin panel.

3.3 Use Case Modeling & Description:

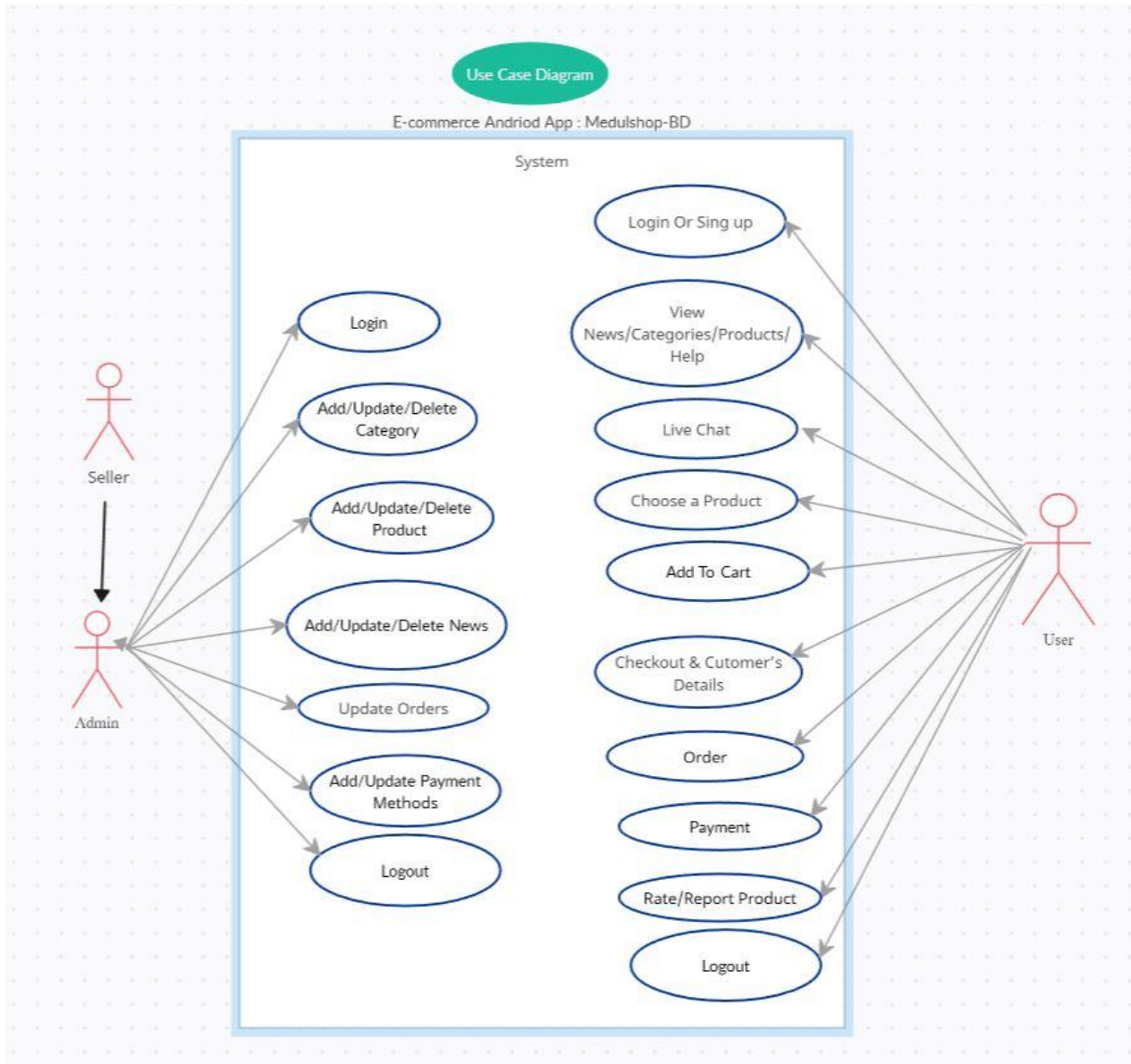


Figure 1.2: Use Case Diagram

Use Case Description:

Actors:

1) User: The person who rappsorts with the “Medulshop-BD” app to browse, find, purchase, and review products.

2) System: Represents the “Medulshop-BD” Android e commerce app.

Use Cases:

1. Browse Categories and Products

- Description: The user run the app and it presented with a page displaying several product categories, top products with ratings, a search bar & some icons.

- Steps:

- a. User launches the Medulshop-BD app. They need to “Login” or “Sing up”.
- b. The system displays the main page after login with categories, featured news, products & search bar.

2. Search or find for Products

- Description: The user searches for particular products using keyword or product name.

- Steps:

- a. User types search keywords in the search bar field.
- b. The system showing a list of products matching the search result.

3. View Product Information

❖ Description: The user click or touch a product and views its detailed information.

❖ Steps:

- a. User touch or click on a product from the list.
- b. The system displays the product details, including images, description, and price (BDT).

4. Submit a Rating / Review or Both

▪ Description: The user give or submit a rating and review for a bought product.

▪ Steps:

- a. User navigates to a bought product's details page.
- b. User touch on the "Submit Rating and Review" option.
- c. The system shows a field for the user to rate and write a review.
- d. User submits the rating and review.

5. Add Products to Cart

▪ Description: The user takes a selected product to their shopping cart option.

▪ Steps:

- a. User views the product details and informations.
- b. User touch or clicks the "Add to Cart" button.
- c. The system takes or add the product to the user's shopping cart.

6. View Cart and Checkout Process

- Description: The user shows the items in their cart, write their information, and proceeds to checkout process.

- Steps:

- a. User click or touch on the "Cart" option.
- b. The system shows the cart page with a list of added products and the total bill (BDT).
- c. User writes their information in the provided field / form.
- d. User touch the "Process Checkout" button of the app.

7. Confirm Order and Payment Process

- Description: Users gave their information & finished the order process, enter the payment method.

- Steps:

- a. User select "Process Checkout" button.
- b. System confirms the order and shows payment option page.
- c. User choose a payment option.
- d. System process the payment or back to the homepage.
- e. Exit from "Medulshop-BD"

3.4 Logical Data Model:

SDLC signifies Software Development Life Cycle. SDLC plays a very important role in any kind of software or app development. It has different models which are used in software development. Such as: Waterfall, Iterative, Spiral, Agile, RAD etc.

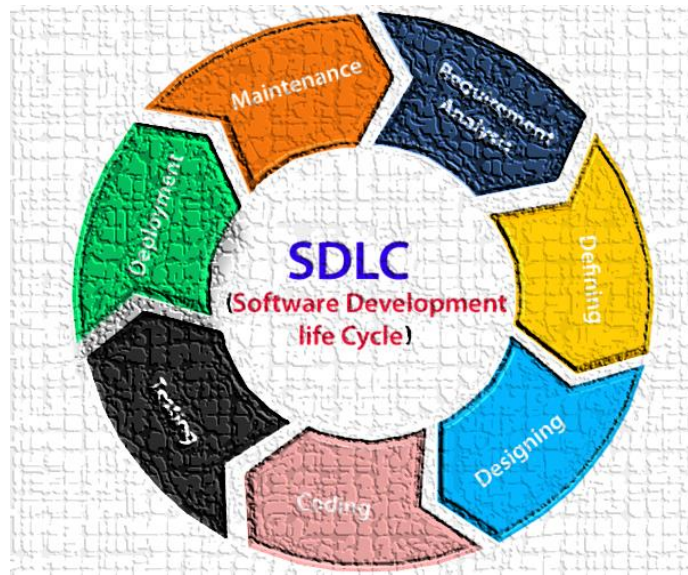


Figure 1.3: SDLC Model

Out of these I chose the “Agile model” for my app. Due to its iterative and flexible nature, the Agile model is very helpful for e-commerce type Android mobile app development. This model lets the developer know about specific issues very easily. This model highly prioritizes user feedback. This model has many roles in software or app regular testing and maintaining proper quality of application. This model saves a lot of time by shortening the development. It works according to the dynamic e-commerce industry, market demands, user preferences and business needs.

3.5 Design Requirement:

- i) A beautiful user interface that every user can easily understand.
- ii) Secure user authentication design for account creation and login .
- iii) Products are arranged into specific categories according to their type.
- iv) Display ratings and reviews along with detailed descriptions of each product.

v) The shopping cart is designed in such a way that anyone can easily add or remove products from it.

vi) All the important options of the app are kept together in one menu.

vii) Search bar is designed to find any product by typing their name. Searched histories are shown in the search bar.

viii) Beautiful and simple payment method options are designed to pay bills in digital way.

CHAPTER 4

Design Specification

4.1 Front-end Design:

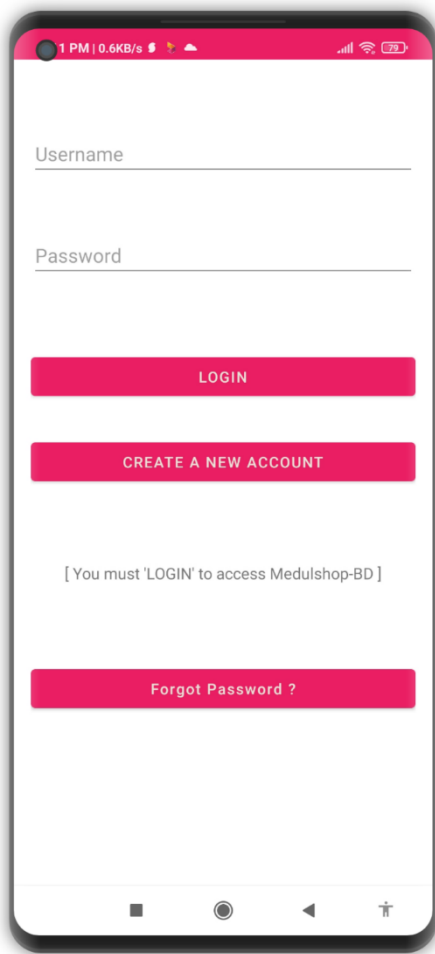


Figure 1.4: Start Screen

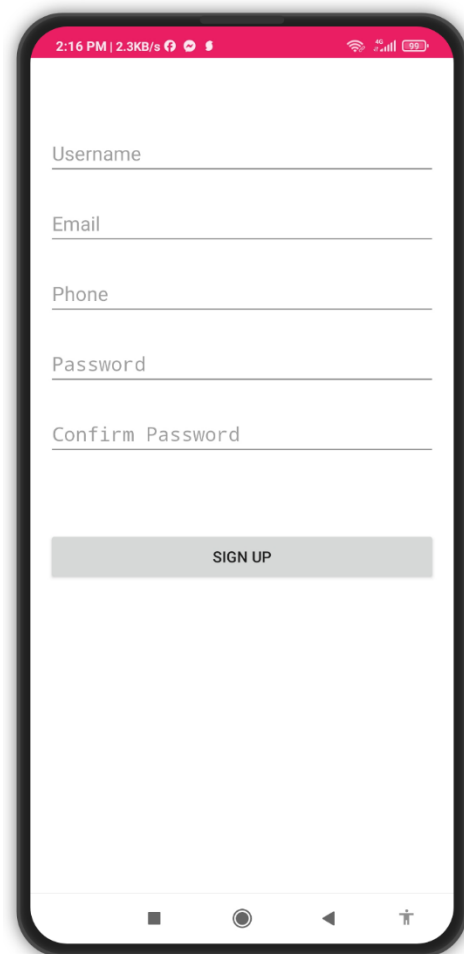


Figure 1.5: Singup Screen

- **Start Screen of Medulshop-BD:** Everyone has to create a user account to use my app. To create a new account, click on the “CREATE A NEW ACCOUNT” button and then provide the required information. And if someone has already created an account then he can access the homepage of my app by typing his username and password and clicking on the “LOGIN” button.

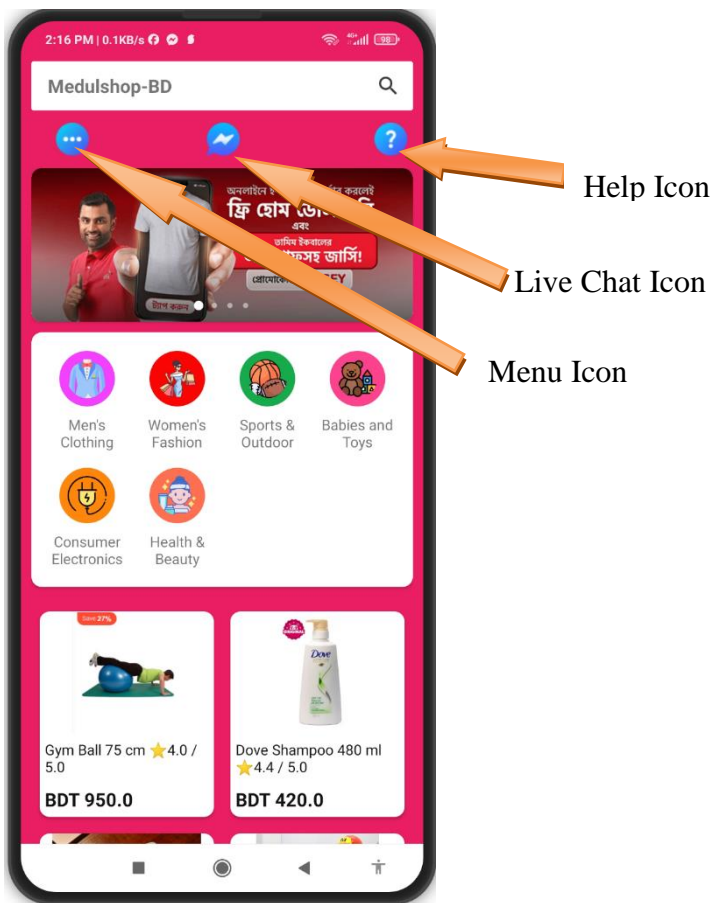


Figure 1.6: Home Page

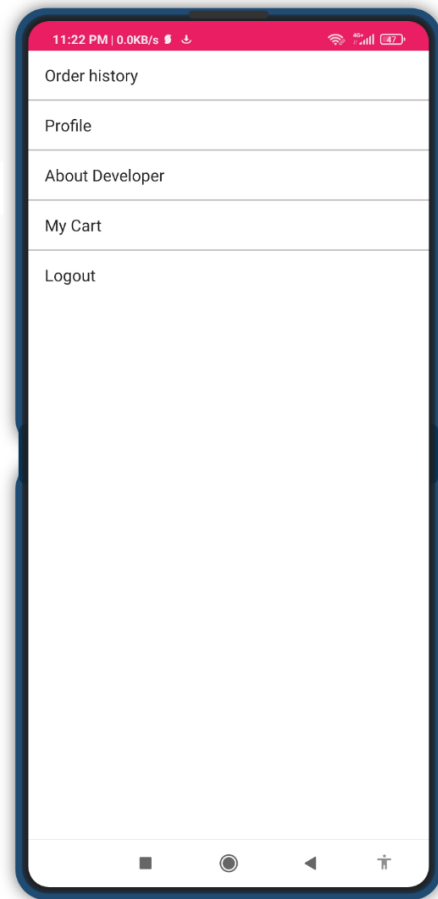


Figure 1.7: Menu

- **Home Page of Medulshop-BD:** After the successful login finishes, the main homepage of the app will display. There is a Search Bar at the top of the homepage where any product can be easily found by typing product name. Below the Search Bar, there is a live chat icon where users can directly chat with the sellers by clicking on it. If there is any confusion about the order or if the customer does not know anything, they can click to the 'Help' icon to know about it. A 'Menu' icon will appear to the left side of the chat icon. There is an view where different types of important or special news are shown and the news changes in the form of slide shows. Moreover, the homepage of the app has different product categories and the last one shows different types of products with their price and ratings.
- **Chat Features of Medulshop-BD:**

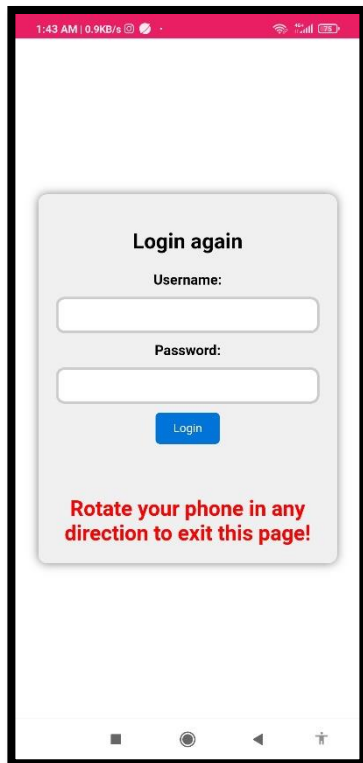


Figure 1.8: Login Page of Chat

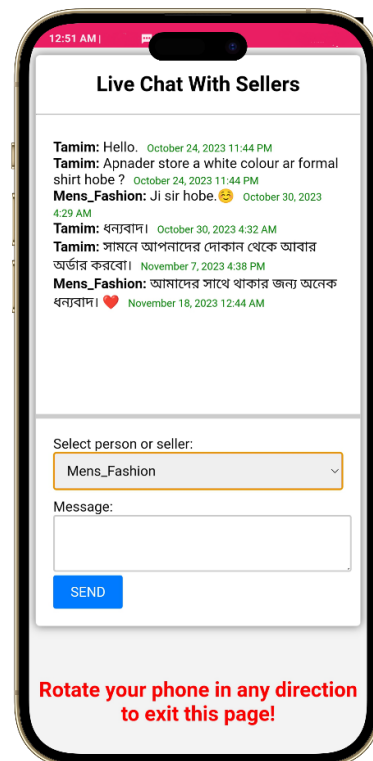


Figure 1.9: Home Page of Chat

After clicking the live chat icon, a page will appear. Seller and customer must create an account to access the chat. After creating an account, both the customer and the seller need to login with their Username and Password. To exit this chat option you need to rotate your device in any direction. To do this thing you must always enable “Auto Rotate” option from your device settings.

- **Select Products For Order:**

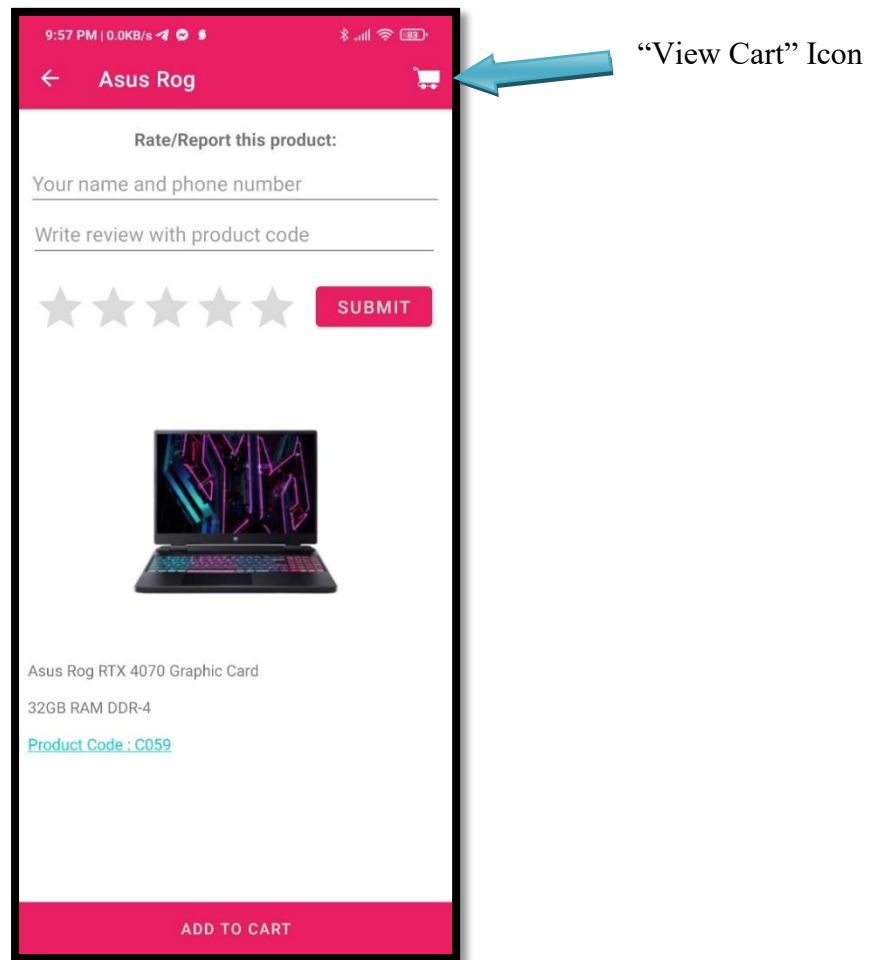


Figure 2: Product Selection

First, the customer has to think about which product they will order. Then they will select the product of their choice. After clicking on the product, a page will appear where the detailed information about the product will be given and each product will have a different code. For an example, The code number of the product shown in **Figure 2** is “C059”. After receiving the order, the customer can give their good or bad feedback on the product and submit a rating. By clicking on the “ADD TO CART” button, product will be added to the cart.

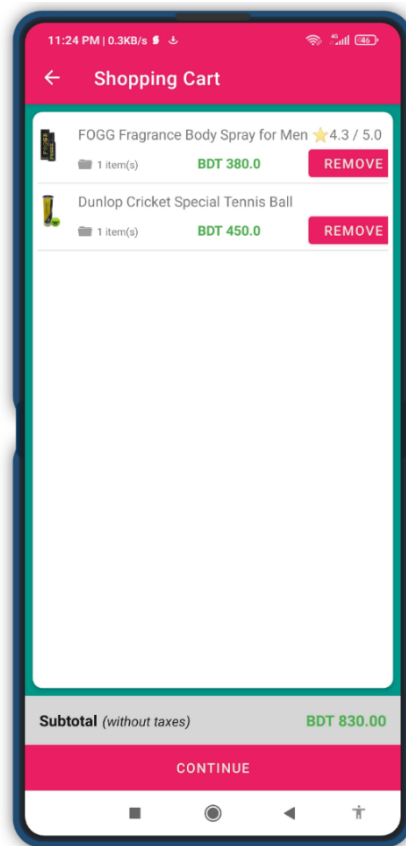


Figure 2.1: Shopping Cart

Customers can increase or decrease the products quantity in the shopping cart as per their need. But there is a limitation in this field.

Customer can only purchase products according to the quantity of products shown in stock. For example, if there are total five products in stock, then the customer can add only those five products. Can't add more than that. Customer can remove any product from the cart as per their needs.

- **Checkout Process:** The next step in this app is “Checkout” process. After landing on this page the prices of selected products will be shown above and this page will ask for some information about customer. This information is very important to deliver the products to the customer properly. If any customer gives wrong information then his order will be canceled automatically. If the order is cancelled, it will be informed to the user/customer through a notification.

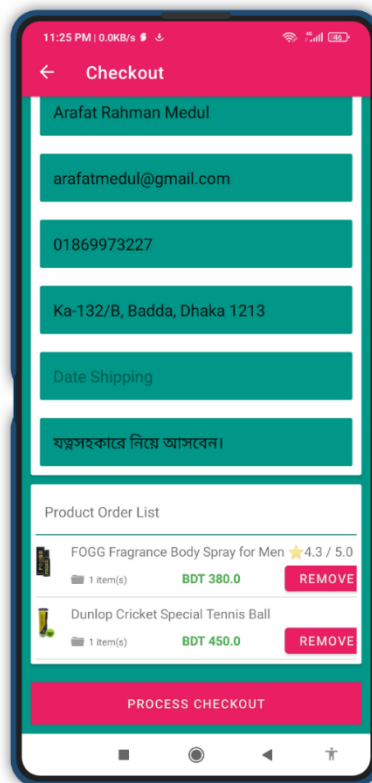


Figure 2.2: Checkout

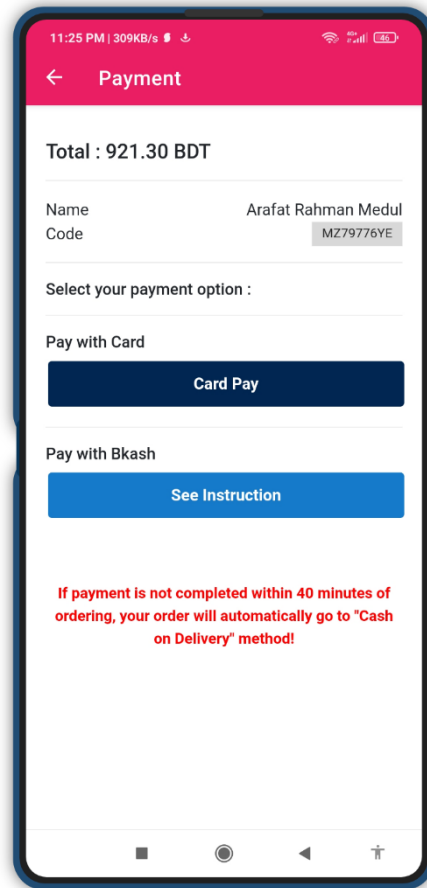
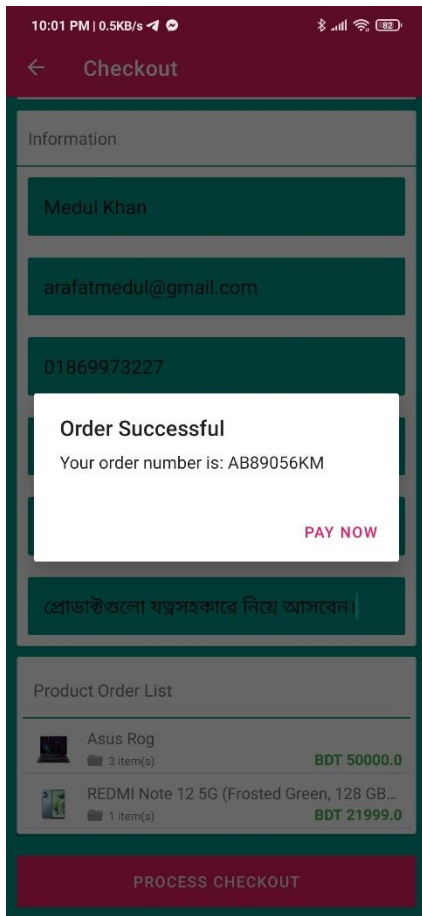


Figure 2.3: Order & Payment Option

When the customer clicks on the **“PROCESS CHECKOUT”** button, his order will be successful and his order number will be shown. Now customers can pay before receiving the product by clicking the **“PAY NOW”** button and can take the product on cash on delivery. There are various options to make payment like PayPal, Bkash send money, Bank account etc. The customer can choose any one of these if it is available in the option.

Some Features Of Admin Panel:

- **Login To Admin Panel:** To enter the admin panel, type the correct username and password of the admin panel and then click on the login button.

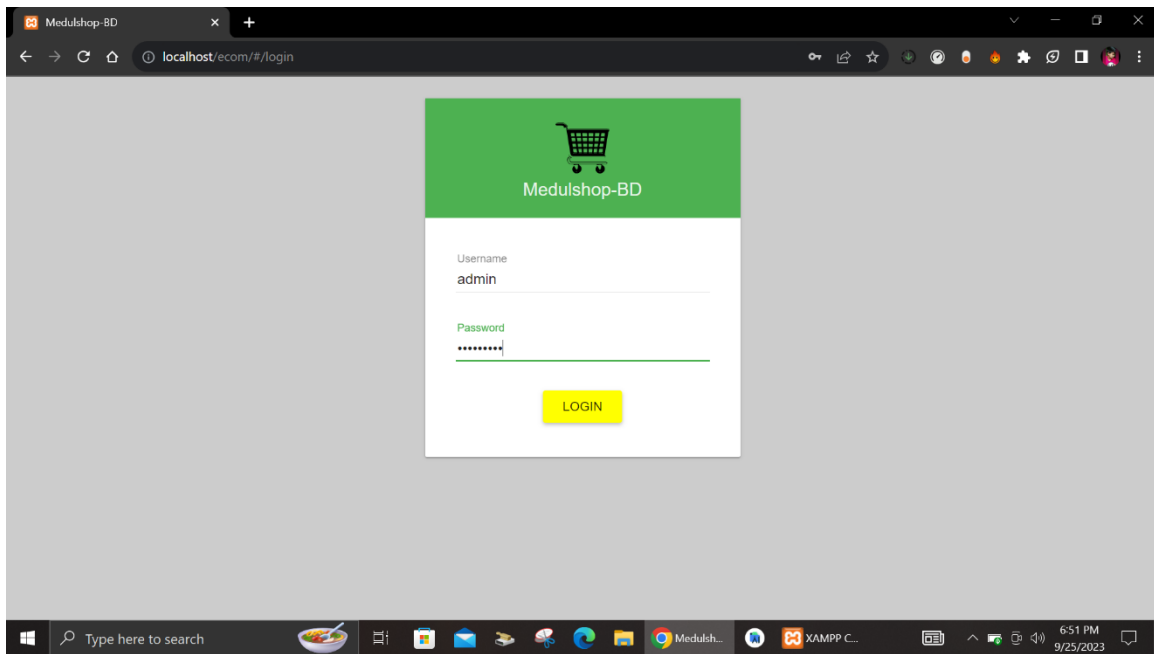


Figure 2.4: Login Screen of Admin Panel

- **Admin's Dashboard:** After logging in to the admin panel, the first page that appears is the "Dashboard". In the context of an admin panel, a "Dashboard" refers to the main or home page of the admin interface, where administrators or authorized users can access a summary of important information, statistics, and tools related to the system they are managing. The dashboard serves as a central hub from which administrators can monitor, control, and manage various aspects of a website, application, or system.

When we look at the dashboard, we can easily see some important information such as Product Order, Product Information, Category Information, News Info, App Version, Application Setting & Notification.

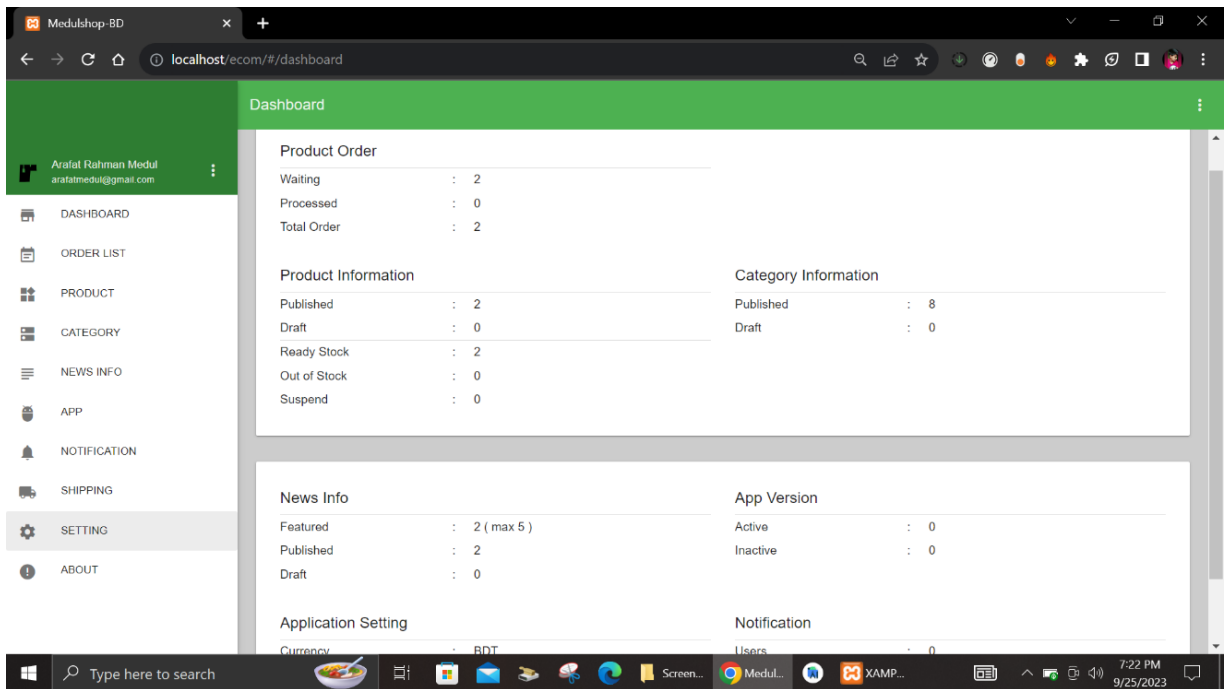


Figure 2.5: Admin Panel's Dashboard

- **Order List:** When customers order products using the client app, a list will be shown in “ORDER LIST” option. By entering this option admin can see name, order code, total fees, date etc of any customer who has ordered the product. Admin can do many things on an order. Admin can view full details of the order, customize the order, cancel the order, delete the order or add a new order manually from this panel. “Receipts” will be given to customers at the time of product delivery. The receipt will contain customer's information including the list of products ordered by them, Payment status, total fees, order code, shipping

etc. Admin can print “receipt” by going to order details option and clicking on “print icon”. Must have a printing machine or necessary hardware to print.

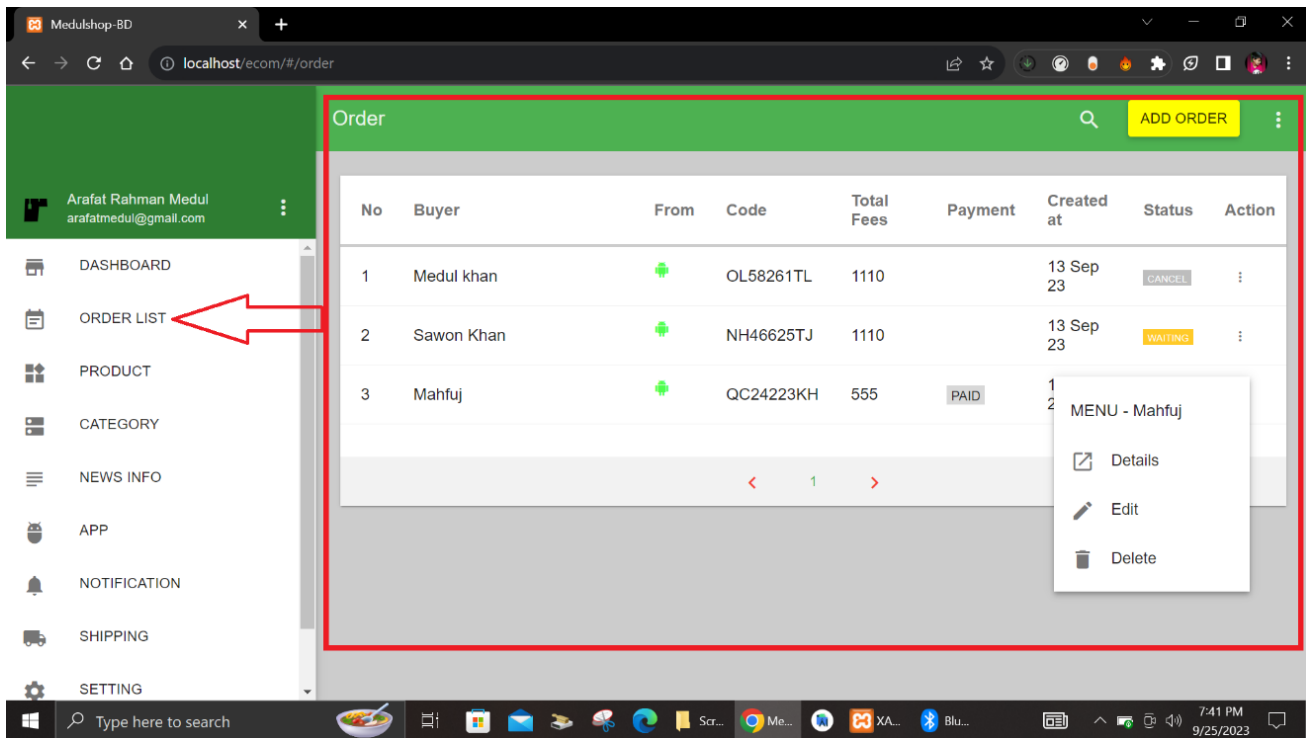



Figure 2.6: Order List

localhost/ecom/view/order/print.html?id=14

Medulshop-BD 

Details Order Code : **QC24223KH**

Buyer Name : Mahfuj
 Email :
 Phone :
 Address :

Shipping : (0 BDT)
 Shipping Location :
 Date Shipping : 13 September 2023

Payment Status : PAID
 Payment : BY ADMIN
 Status : WAITING
 Total Fees : 555.00 BDT

Created At : 12.11, 13 September 2023
 Last Update : 12.11, 13 September 2023

Comment :
 Serial : cab8c1a4e4421a3b

List Product Order :

No.	Product	Price Item	Amount	Price Total
1	Formal Shirt	500	1	500.00 BDT
Sub Total				500.00 BDT
Tax * (11 %)				55.00 BDT
Shipping				0.00 BDT
Total				555.00 BDT

* This tax may different with your current tax, this tax calculate when buyer submit order

Figure 2.7: Order Receipt

- **Add Product For client App:** When the admin clicks on the “PRODUCT” option from the menu, an option called “ADD PRODUCT” will appear. Sellers

will first talk to admin to sell products through Medulshop-BD app. That is, there will be an agreement between sellers and admin about their business. After the contract, the admin will collect product name, picture, stock, price and other information from the seller. First the admin has to click on “ADD PRODUCT” option. After giving proper details of product & clicking on the “SAVE” button at the bottom, the product will be added in admin panel and it will show in client app for sell.

When the customers install “Medulshop-BD” app on their andriod devices and when they open the app, they can view different type of products inside the app and order the products of their choice.

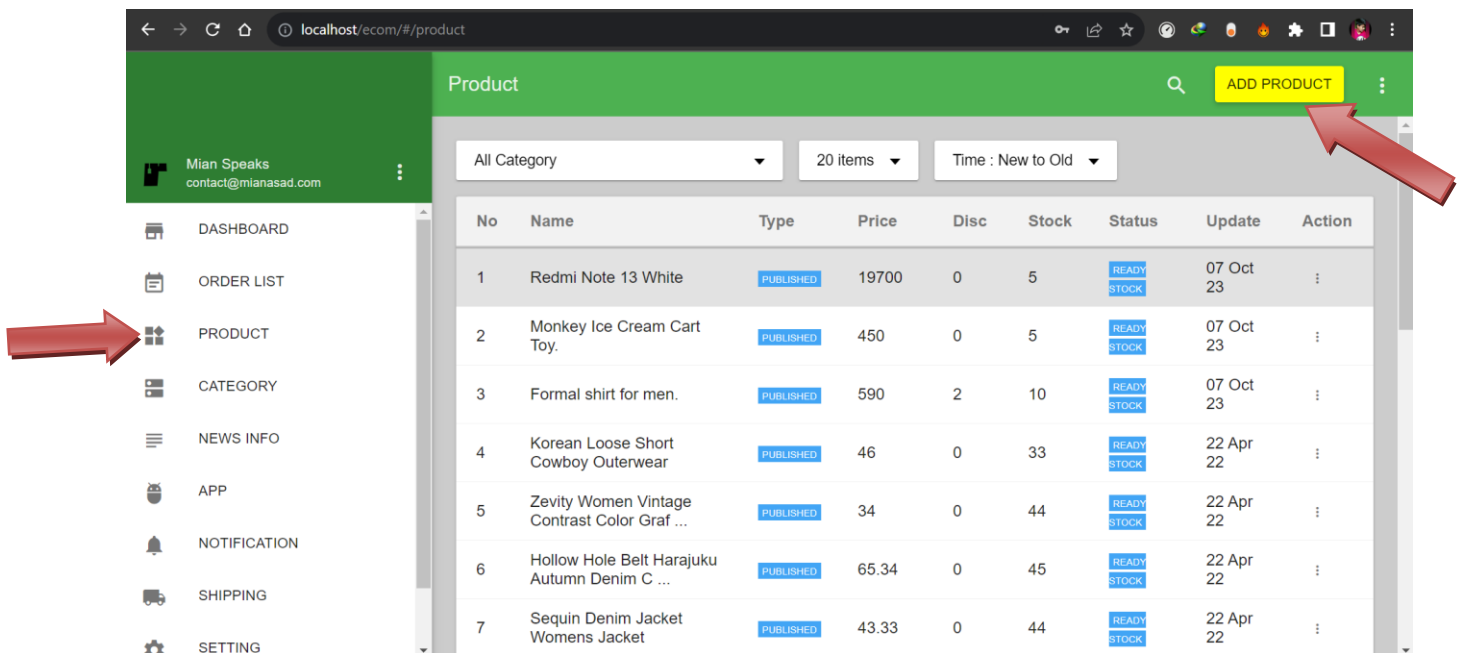


Figure 2.8: Adding Products for Client App

- **Add Product Details:** Name, price, stock, discount, category, image, description etc details of the products collected from the seller will be set by the admin in this field.

After filling everything then the 'SAVE' button will visible and on pressing that 'SAVE' button the product will be added to the admin panel and it will show in the client app.

The image shows a web browser window with the URL 'create_product'. The page title is 'Add Product'. The form contains the following fields and options:

- Product Name *
- Price *
- Stock *
- Price Discount * (0 for no discount)
0
- Product Status *
- Category *
 - Men's Clothing
 - Sports & Outdoor
 - Consumer Electronics
 - Women's Fashion
 - Babies and Toys
 - Health & Beauty

At least choose one category

On the right side, there are two image upload sections:

- Image Primary *
 - Choose File No file chosen
 - JPG/PNG only, max size 0.5MB
- Image Optional
 - Choose File No file chosen
 - Choose File No file chosen
 - Choose File No file chosen
 - Choose File No file chosen

Below the image sections is a Description * field with a rich text editor toolbar containing options for H1, H2, H3, P, bold, italic, underline, list, link, unlink, source, image, video, and embed.

Figure 2.9: Adding Details for A Product

- **Categories For Products:** Admin can create different categories for different products by going to 'CATEGORY' option in admin panel. Admin can edit the information of any category or delete any category as per his wish. A category can have multiple products under it.

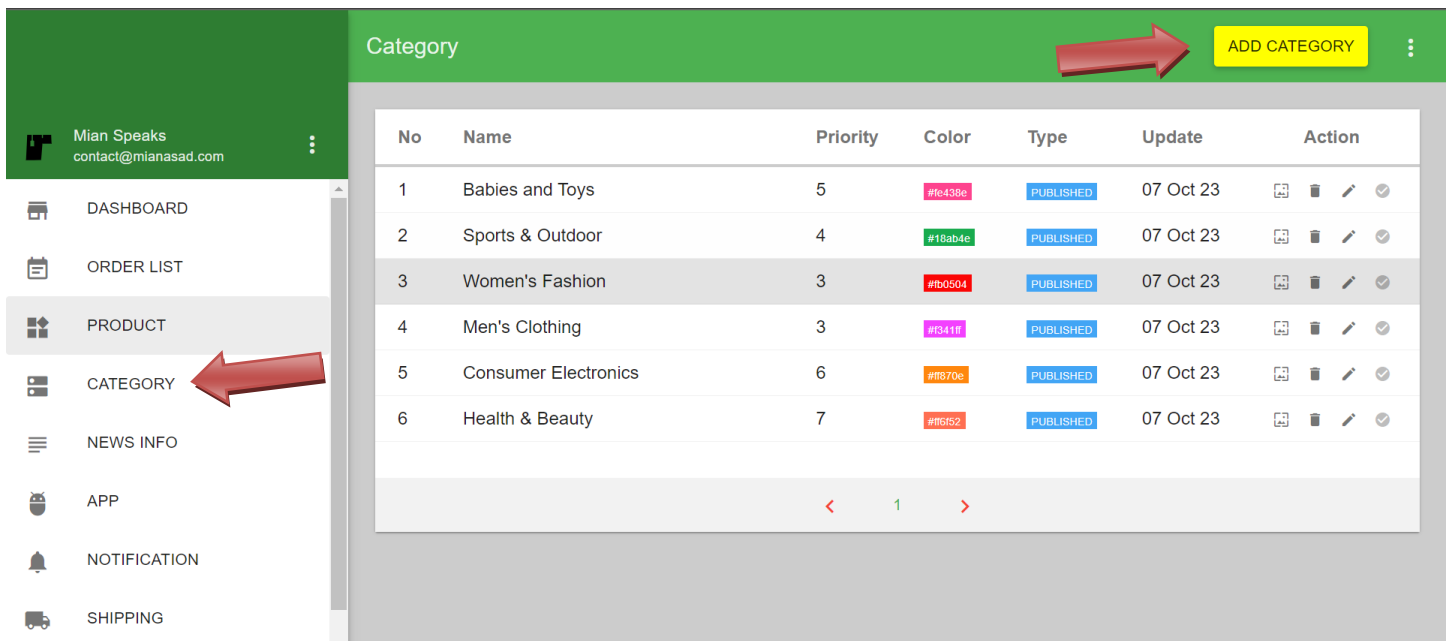


Figure 3: Make Categories for Products

- **News Info Feature:** By this option, a special news or offer show has been arranged for the client app. Admin can add news, delete or modify for client app.

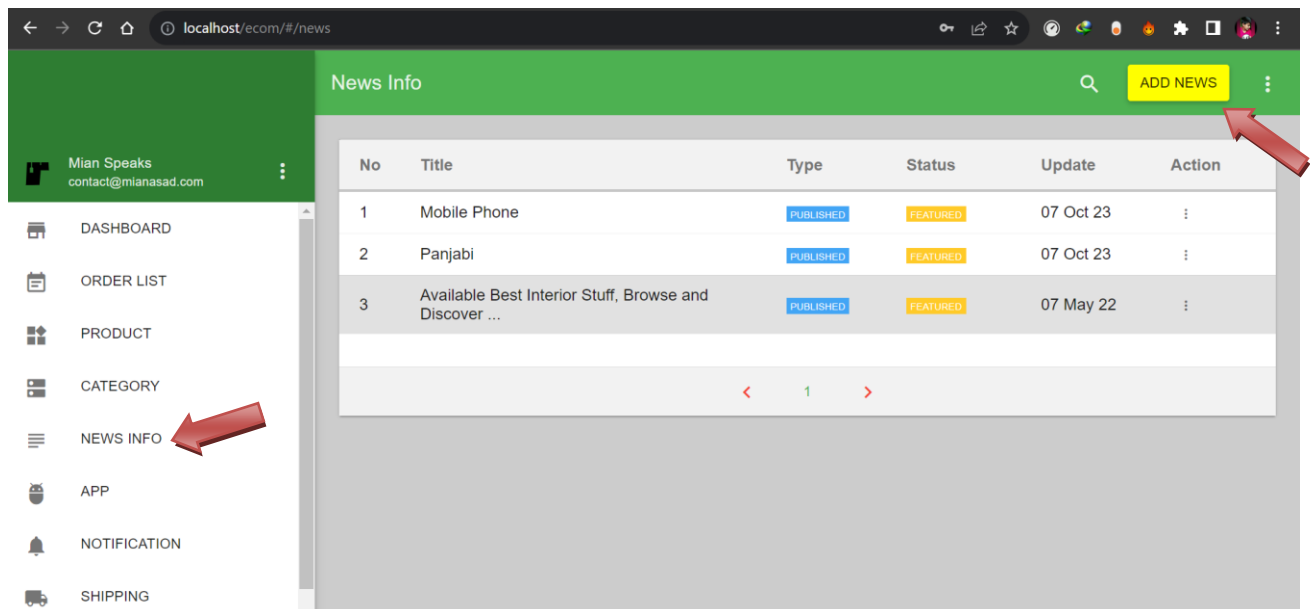


Figure 3.1: News Info Option

- **Settings Of Admin Panel:** Admin panel login username and password can be changed by going to ‘SETTING’ option. Also inside this setting option there are various sub-options related to payment method, currency, email, tax etc. Any changes made from here will be immediately reflected in the client app.

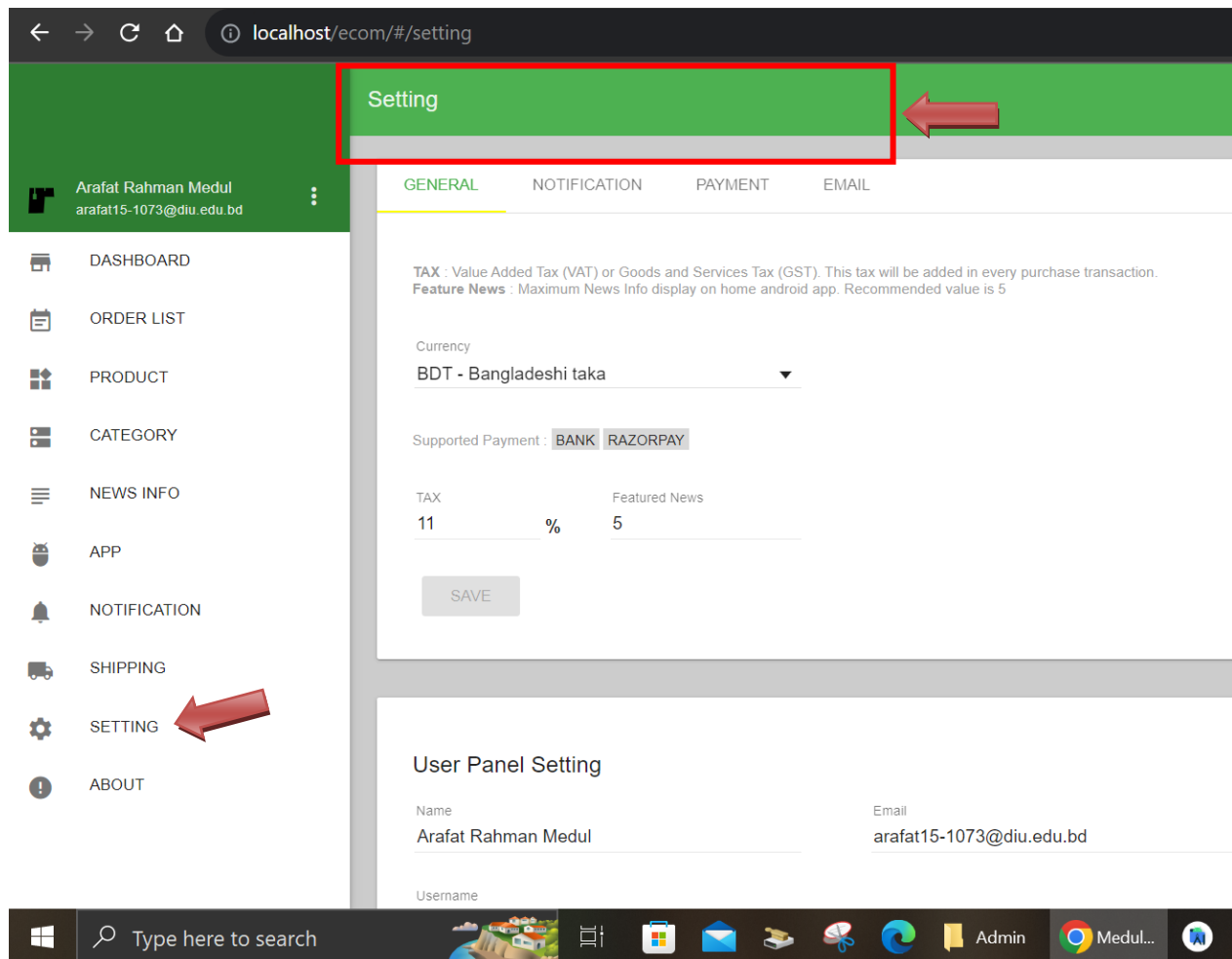
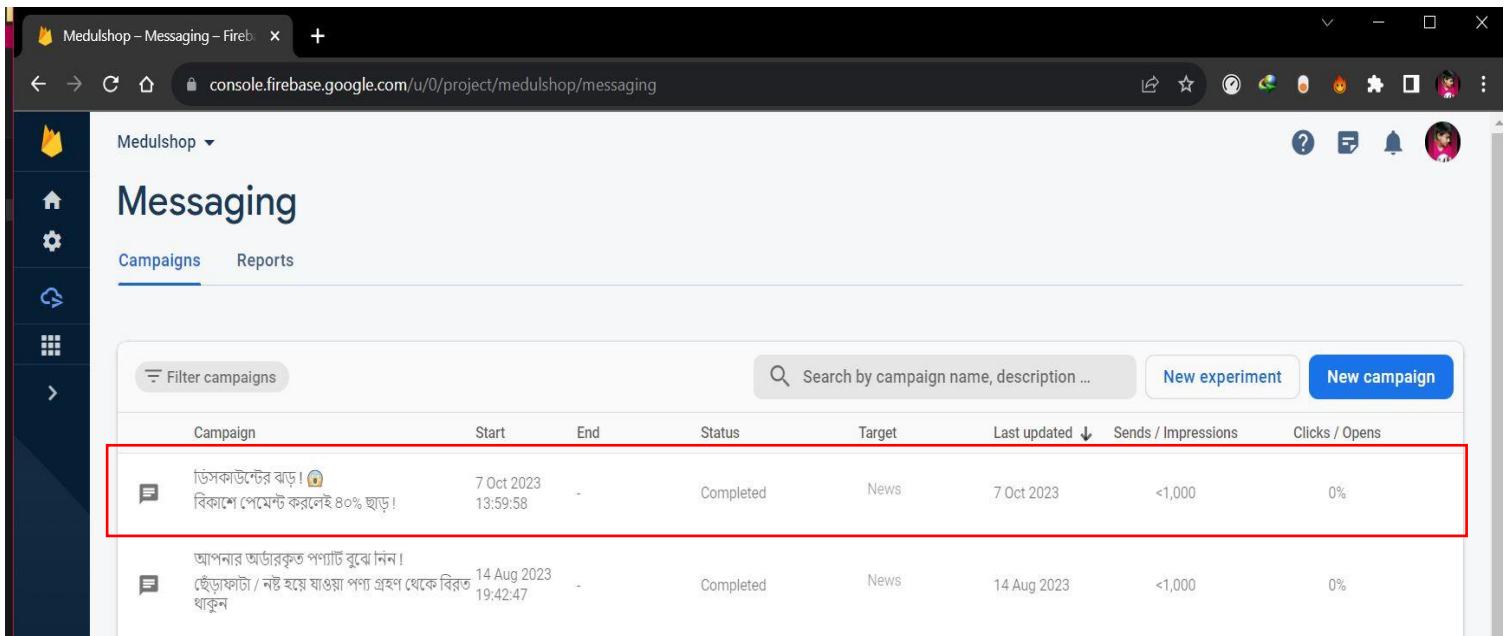


Figure 3.2: Setting Option

- **Notification System For Client App:** “Medulshop-BD” this project is connected with Firebase. We send different types of notifications to the client app by using the “Messaging” feature of Firebase. Once a notification is sent from Firebase, it will be displayed in the notification bar of the client's android devices.



The screenshot shows the Firebase Messaging console for the 'Medulshop' project. The page title is 'Messaging' and it has tabs for 'Campaigns' and 'Reports'. Below the navigation is a search bar and buttons for 'New experiment' and 'New campaign'. A table lists the campaigns with columns for Campaign, Start, End, Status, Target, Last updated, Sends / Impressions, and Clicks / Opens. The first campaign is highlighted with a red box.

Campaign	Start	End	Status	Target	Last updated ↓	Sends / Impressions	Clicks / Opens
ডিসকাউন্টের বাড়! 🎉 বিকাশে পেমেন্ট করলেই ৪০% ছাড়!	7 Oct 2023 13:59:58	-	Completed	News	7 Oct 2023	<1,000	0%
আপনার অর্ডারকৃত পণ্যটি বুঝে নিন! ছেঁড়াফাটা / নষ্ট হয়ে যাওয়া পণ্য গ্রহণ থেকে বিরত থাকুন	14 Aug 2023 19:42:47	-	Completed	News	14 Aug 2023	<1,000	0%

Figure 3.3: Sending Notification from Firebase by Admin

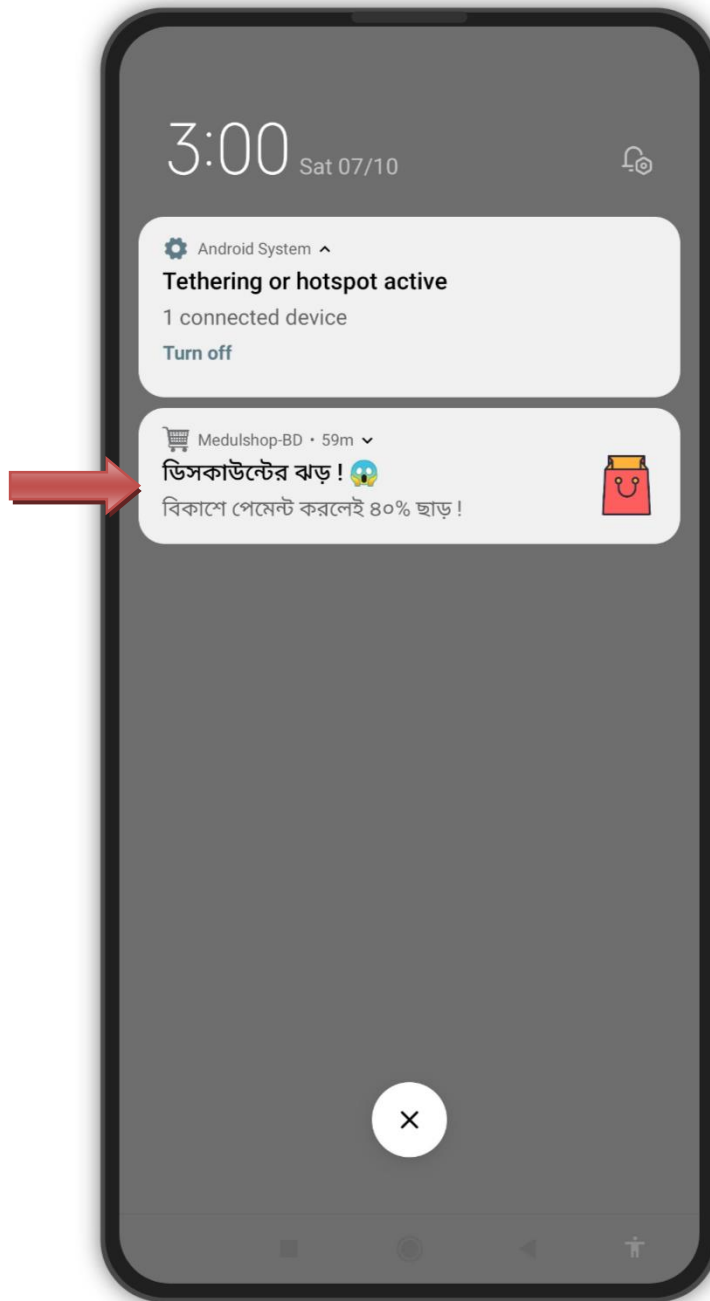


Figure 3.4: The notification sent by the admin is showing on the client's phone screen

4.2 Back-end Design:

❖ Andriod Studio For Developing & Designing Client app:

To build the app, several icons and images have been collected separately, which have to be imported into Android Studio. The icons and images used in this app is created & designed through various online based software, one of the notable software is “Adobe Express”. The main designs of the app are done by writing code in the XML compiler in Android Studio & app's activities are created by Java programming language.

It is a bit difficult and cumbersome to mention all the design of Back-End side in one report. So few designs and code images are mentioned below as examples :

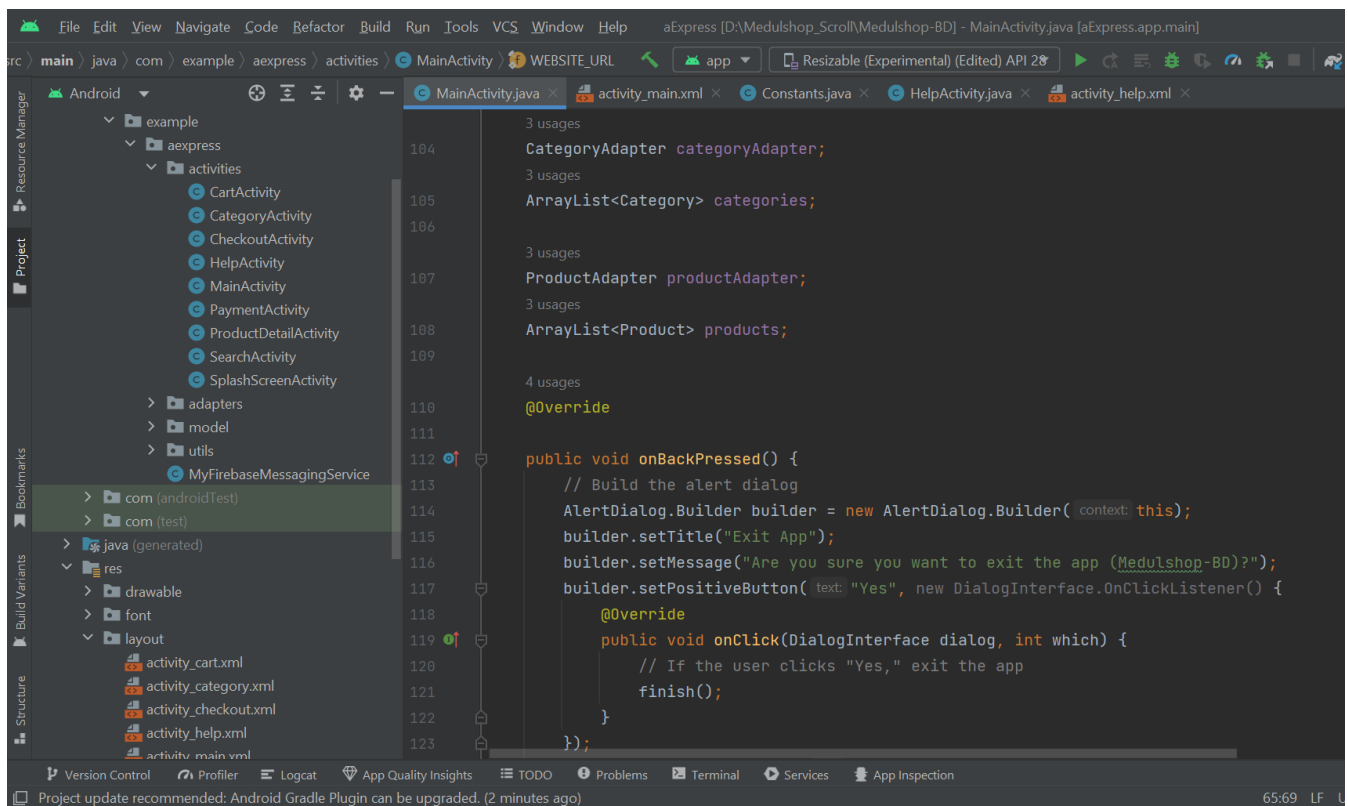


Figure 3.5: XML & Java files in Andriod Studio

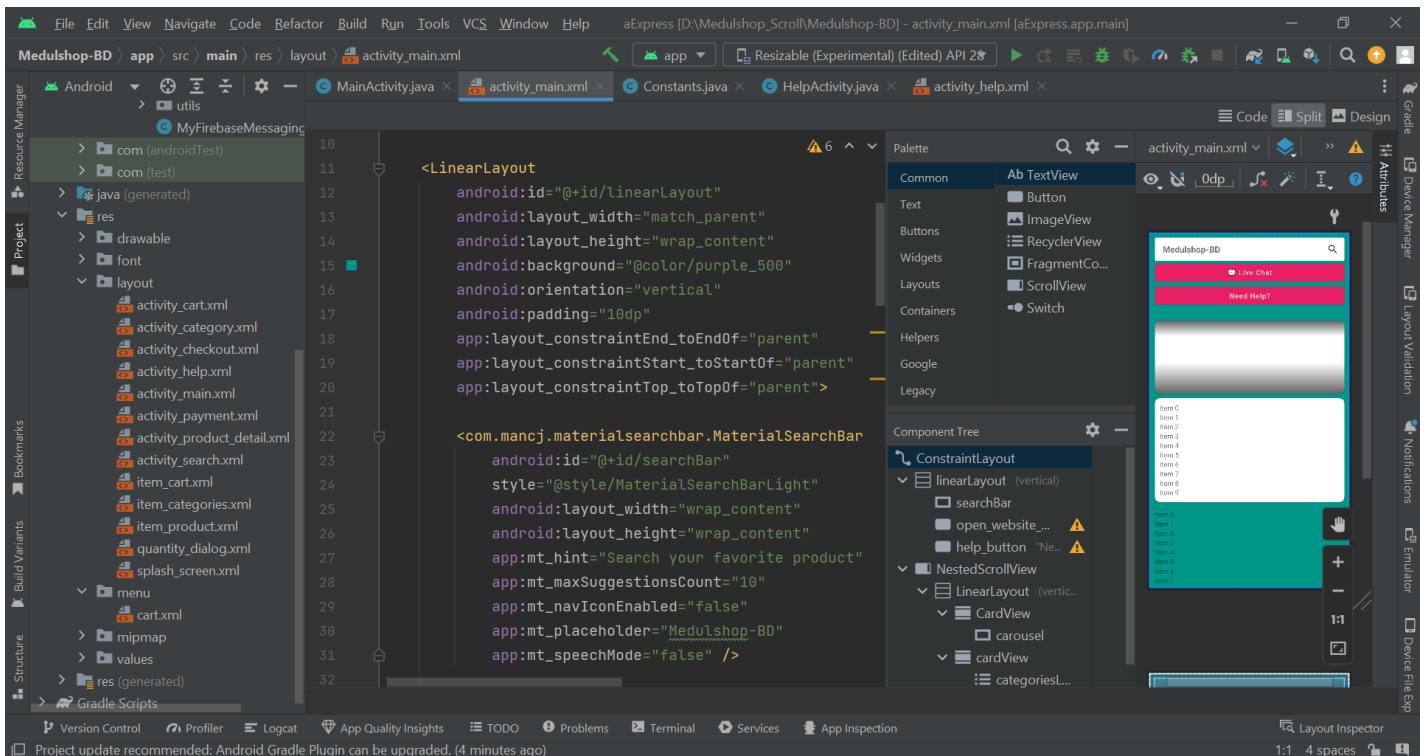


Figure 3.6: XML & Java files in Android Studio (ii)

❖ Files For Designing Admin Panel:

The files used to design and build the admin panel are :

1. Html
2. Css
3. Php
4. Javascript
5. SQL

```
C:\xampp\htdocs\ecom\view\login.html - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
login.html login.js conf.php
1 <section layout="column" flex layout-align="center center" class="
2 <md-card class="md-whiteframe-0dp" style="min-width:350px;" >
3 <md-toolbar>
4 <div layout="column" layout-padding layout-align="cent
5 <md-icon md-svg-src="lib/css/icons/medul.svg" style=
6 <div>Medulshop-BD</div>
7 </div>
8 </md-toolbar>
9 <md-card-content>
10 <form role="form" name="loginForm" class="md-padding">
11
12 <md-input-container>
13 <label>Username</label>
14 <input name="username" ng-model="userdata.userna
15 </md-input-container>
16
17 <md-input-container>
18 <label>Password</label>
19 <input type="password" name="password" ng-model=
20 </md-input-container>
21
22 <div layout="column" layout-align="center center">
23 <md-button ng-if="!submit_loading" ng-disabled='
24 <md-progress-circular ng-if="submit_loading" cla
25 </div>
26 </form>
27 </md-card-content>
28 </md-card>
29 </section>
```

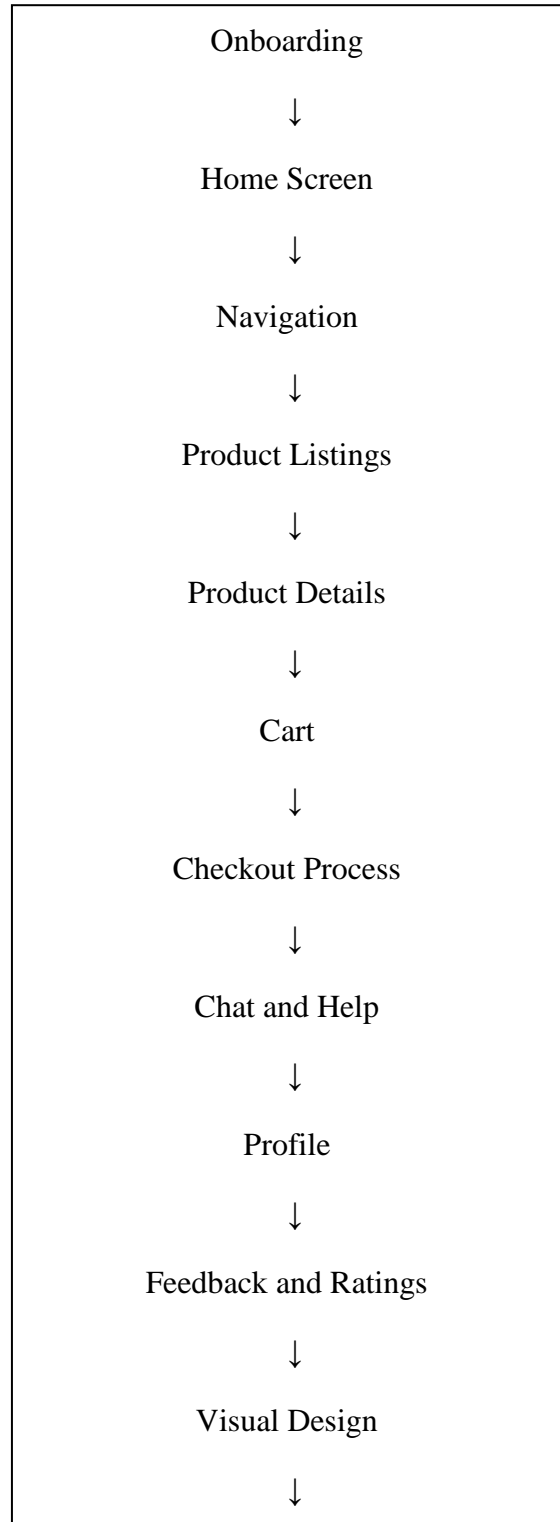
Figure 3.7: HTML File for Admin Panel's Login Page Design


```
1 <?php
2
3 class CONF {
4
5     /* Flag for demo version */
6     public $DEMO_VERSION = false;
7
8     /* Data configuration for database */
9     public $DB_SERVER    = "localhost";
10    public $DB_USER       = "root";
11    public $DB_PASSWORD   = "";
12    public $DB_NAME       = "dbtest";
13
14    /* [ IMPORTANT ] be careful when edit this security code, us
15    /* This string must be same with security code at Android, i
16    public $SECURITY_CODE = "secure_code";
17
18 }
19
20 ?>
```

length : 538 lines : 20 Ln : 20 Col : 3 Pos : 539 Windows (CR LF) UTF-8 IN

Figure 3.9: Php File for Connecting Databases with Admin Panel

4.3 Interaction Design and User Experience (UX):



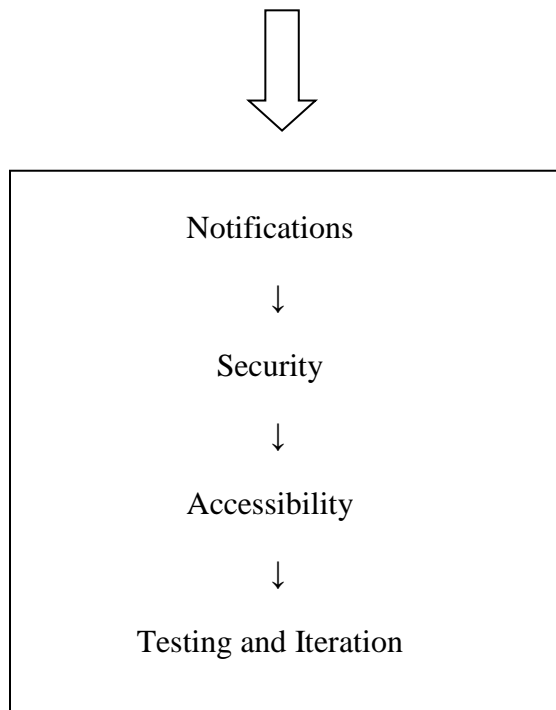


Figure 4: Interaction Design for Medulshop-BD

User Experience (UX): User experience about “Medulshop-BD” is very acceptable. Combination of homescreen, navigation, product details, cart, check out process, chat and help, profile, feedback, visual design, notification, testing and interaction, security, user experience of this app is fluent enough and smooth.

4.4 Implementation Requirements:

A large number of people in today's world are using Android mobile operating system. Another popular mobile operating system is ‘ios’. The ‘ios’ operating system is used in iPhones but because of the high cost of iPhones, many people can't buy it. Moreover, there are several limitations and complications in developing & running apps for iPhone. But Android framework has no such limitations, complications and it is very comfortable to build and run apps for Android OS. Android operating system has a large number of apps that are not available in other mobile operating systems. In order to implement Medulshop-BD app, following things are used :

- Framework: Andriod.
- Programming Language: Java.

- Design: XML.
- Admin panel & chat option design : Combination of Html, Css, Php, Javascript.
- Database: MySQL of XAMPP software.

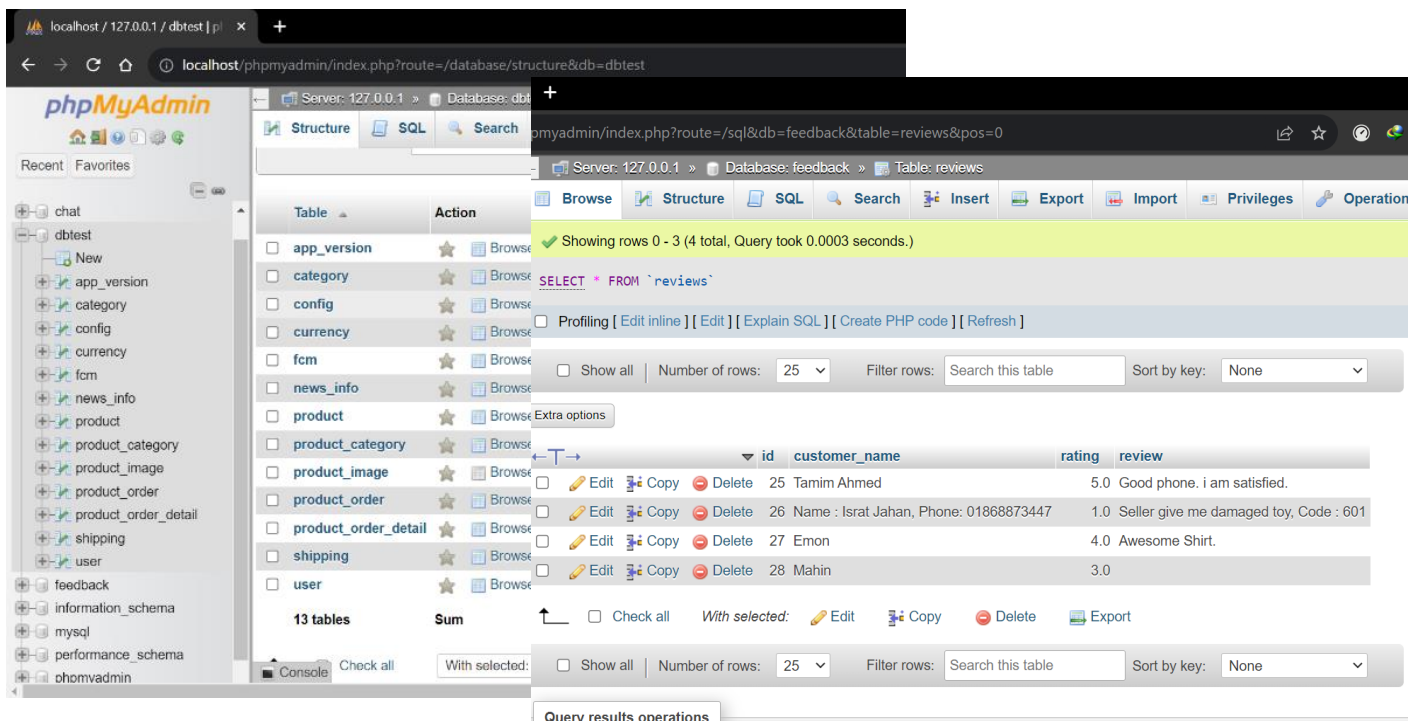
CHAPTER 5

Implementation and Testing

5.1 Implementation Of Database:

XAMPP software is used to store all the data of this app & admin panel. The client app is directly connected to the admin panel and the images or information displayed on the user app are all dependent on the database. Admin panel has a database that is imported into the MySQL option of XAMPP software. It has total 13 tables. To enter the admin panel, we must first run the XAMPP software. However, more databases have been imported into MySQL to store chat's data, rating-reviews's data, order history data, user's data etc.

For an example, below is the database implementation code for storing customer's ratings and reviews:



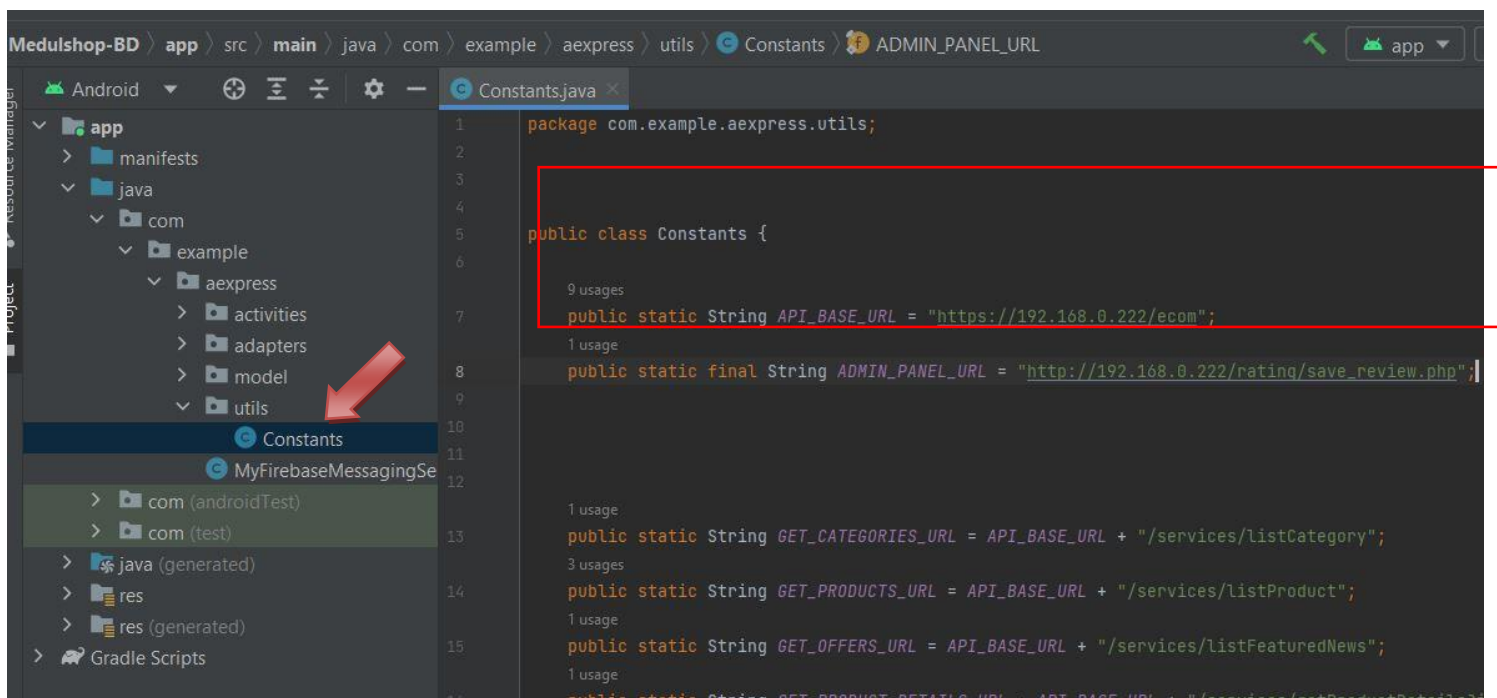
```

1  -- phpMyAdmin SQL Dump
2  -- version 5.2.1
3  -- https://www.phpmyadmin.net/
4  --
5  -- Host: 127.0.0.1
6  -- Generation Time: Oct 21, 2023 at 08:14 PM
7  -- Server version: 10.4.28-MariaDE
8  -- PHP Version: 8.2.4
9
10 SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO";
11 START TRANSACTION;
12 SET time_zone = "+00:00";
13
14
15 /*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
16 /*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
17 /*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
18 /*!40101 SET NAMES utf8mb4 */;
19
20 --
21 -- Database: `feedback`
22 --
23
24 -----
25
26 --
27 -- Table structure for table `reviews`
28 --
29
30 CREATE TABLE `reviews` (
31   `id` int(11) NOT NULL,
32   `customer_name` varchar(255) NOT NULL,
33   `rating` decimal(2,1) NOT NULL,
34   `review` varchar(100) NOT NULL
35 ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;
36
37 --
38 -- Dumping data for table `reviews`
39 --
40
41 INSERT INTO `reviews` (`id`, `customer_name`, `rating`, `review`) VALUES
42 (1, 'Mim jahan', 4.0, 'valo product. pore onk aram ache. \r\nProduct Code : 1060'),
43 (2, 'Reya hossain', 5.0, 'Kapor ar quality Awesome.\r\nProduct Code: 1060'),
44 (3, 'Nusrat', 3.0, 'i am satisfied with it.\r\nProduct Code: 1060');
45
46 --
47 -- Indexes for dumped tables
48 --
49
50 --
51 -- Indexes for table `reviews`
52 --
53 ALTER TABLE `reviews`
54   ADD PRIMARY KEY (`id`);
55

```

Figure 4.1: Different Types of Databases

5.2 Implementation of Front-end Design: First, run Android Studio and Emulator on the computer. Then find the IP address of the that computer. After finding the correct IP address, type it into a java file called “Constants” inside Android Studio. When Android Studio runs, the admin panel will be connected to the client app through the IP address.



The screenshot shows the Android Studio IDE with the following structure:

- Project: Medulshop-BD
- Package: app > src > main > java > com > example > aexpress > utils > Constants
- File: Constants.java

```
1 package com.example.aexpress.utils;
2
3
4
5 public class Constants {
6
7     9 usages
8     public static String API_BASE_URL = "https://192.168.0.222/ecom";
9
10    1 usage
11    public static final String ADMIN_PANEL_URL = "http://192.168.0.222/rating/save_review.php";
12
13
14    1 usage
15    public static String GET_CATEGORIES_URL = API_BASE_URL + "/services/listCategory";
16    3 usages
17    public static String GET_PRODUCTS_URL = API_BASE_URL + "/services/listProduct";
18    1 usage
19    public static String GET_OFFERS_URL = API_BASE_URL + "/services/listFeaturedNews";
20    1 usage
21    public static String GET_PRODUCT_DETAILS_URL = API_BASE_URL + "/services/getProductDetails?";
```

A red arrow points to the 'Constants' file in the project tree. A red box highlights the class definition and the first two static fields in the code editor.

Figure 4.2: Connection Between Client App & Admin app.

Now the developed Android app (Medulshop-BD) is fully ready to test on emulator or physical device. To run the created Android app on a physical device, an “apk file” must be generated from Android Studio.

5.3 Testing Implementation:

I have tested this app on android studio “Emulator” and a real smartphone that is: “Xiaomi Redmi Note 7”. Specifications of “Xiaomi Redmi Note 7” & “Emulator” are given below:

Redmi Note 7	Emulator
a) Screen: 6.3 inches, 97.4 cm ² , 1080 x 2340 pixels, 19.5:9 ratio (~409 ppi density)	Screen: 5.0 inches, 68.9 cm ²
b) Operating System: Android 10, MIUI 12	Operating System: Android 8.0
c) Processor: Qualcomm Snapdragon 660 (14 nm)	Processor: 2 core CPU
d) Ram & Memory: 4GB Ram & 64GB internal memory.	Ram: 1.5 GB & 4 GB internal storage
e) Power source: Battery (4000 mAh)	Power source: Unknown

This app will run on all android versions from “Android KitKat 4.4” to current & upcoming versions.

5.4 Test Results and Reports:

After testing my app by Android Studio emulator & real smartphones, i got the below test results:

- a) No errors occurred in Android Studio after run the app.
- b) No crashes while the user app is running.
- c) No bugs were seen.

d) The app run accurately on the screen of any Android device.

e) Runs perfectly on various versions (From Android 4.4 to current) without any issues.

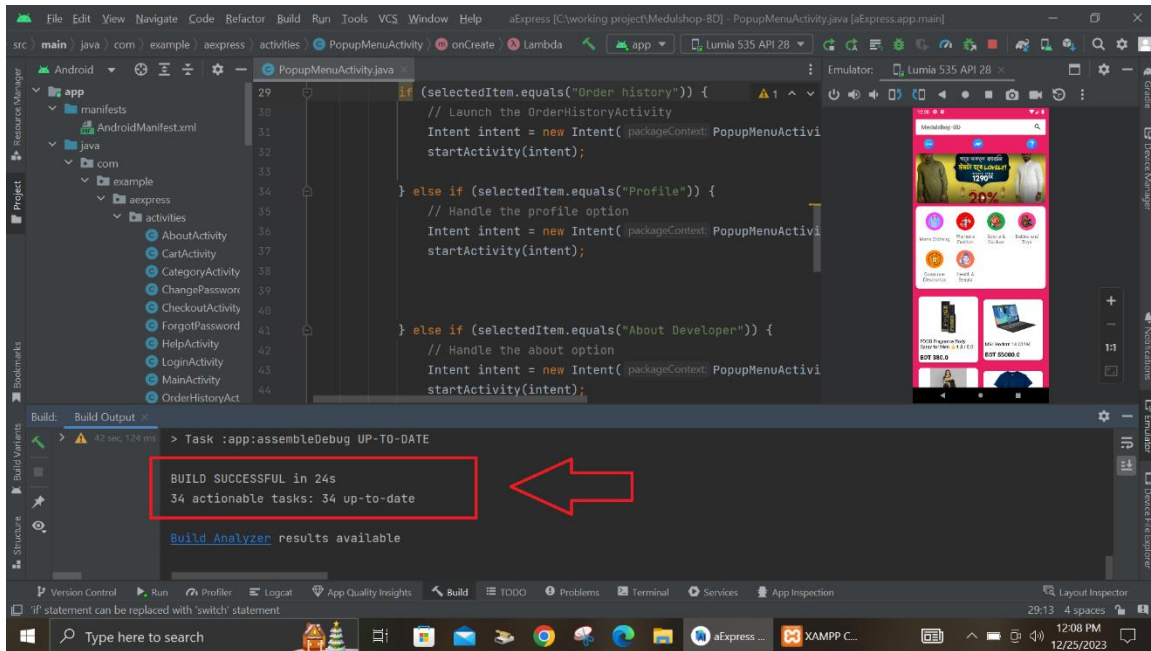


Figure 4.3: Successful Build.

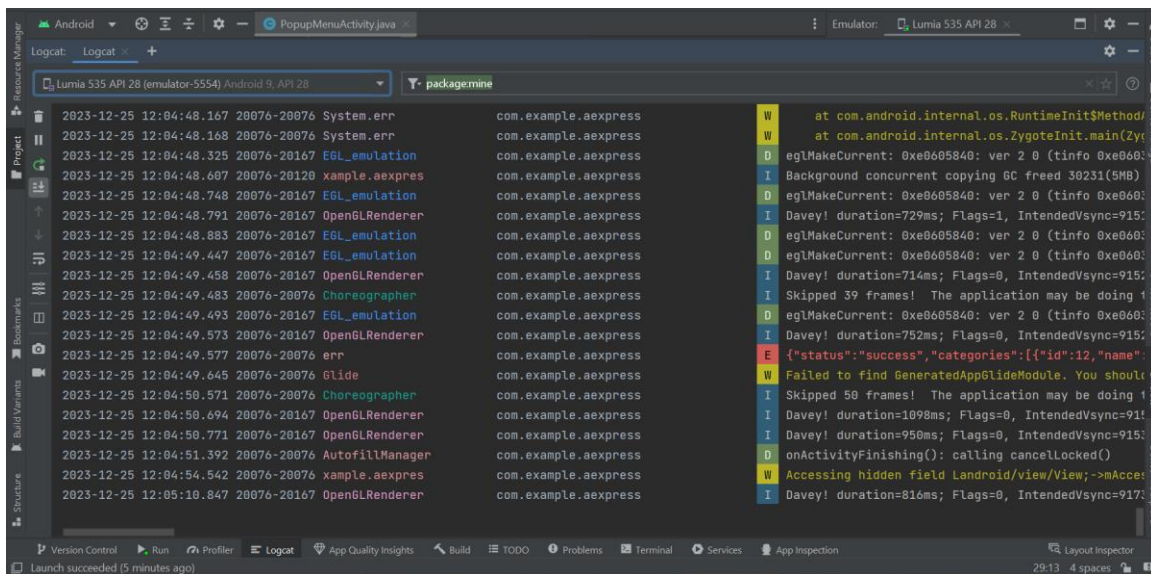


Figure 4.4: Test Report.

CHAPTER 6

Impact on Society, Environment and Sustainability

6.1 Impact on Society:

In the social context of Bangladesh, “Medulshop-BD” will make online shopping more accessible, convenient and efficient. Bangladesh has various rural areas where large quantities of crops are grown. Many times it is seen that the farmers have to search for the fertilizers, pesticides or necessary equipment used in crop production from long distances which is quite time consuming and laborious. My app will sell agricultural machinery and pesticides at very affordable prices for farmers to use. We need various things in our daily life. Many times we don't find necessary things in our neighborhood stores or shops. Especially those who live in villages often face such problems. It is very difficult for them to come to town and buy things and return home. Keeping them in mind I will try to sell everything needed in this app.

6.2 Impact on Environment:

As “Medulshop-BD” is a E-commerce apps so it allow digital transactions that will reduced the need for paper receipts and invoices. This helps in saving trees, Cutting of trees can be reduced. This app can give a chance of green packaging choices like minimalistic or biodegradable package materials. It can help to reduces the environmental effect of packaging waste. Due to the efficient java coding and optimization of the app, it consumes very little power or battery of the user's device. Energy efficient app will save the overall energy of the whole system which is a good aspect for the environment.

6.3 Ethical Aspects:

Enables robust security acts to secure user data from hackers or unauthorized access. Product fee, tax are clearly showing to avoid misleading customers. There is an opportunity to talk directly with the app owners if they have been cheated in purchasing things from the app. If any seller cheats the buyer, appropriate action will be taken against the dishonest trader or seller. If a buyer has been defrauded by purchasing the product and can show proper proof, the buyer is entitled to a full refund.

6.4 Sustainability Plan:

Medulshop-BD is committed to a robust sustainability plan that encompasses several key elements:

- 1) Proper description is written below the product image to minimize product returns.
- 2) Popular and reputed shops are placed in the app. This will remove the doubt about the quality of the product.
- 3) Customer and employee feedback about the app will be prioritized so that weaknesses in the app can be easily identified.
- 4) Care has been taken so that it does not take up too much of the device's memory while running.
- 5) The app has been thoroughly tested to ensure that the app does not crash on the device while running after installation.

CHAPTER 7

Conclusion and Future Scope

7.1 Discussion and Conclusion:

Hope customers will get good service through “Medulshop-BD”. Medulshop-BD android app is expected to play a significant role in making Bangladesh as smart as the outside world. But in this case, a lot of matter depends on people's interest in the app. So the app is designed in such a way that it can fulfill the needs of every customers.

7.2 Scope for Further Developments:

Committed to improving the app in the future and adding more features to the app to make shopping easier and a smooth shopping experience for peoples. There are plans to add artificial intelligence or AI features to the app in the future. Also provision will be made to give instructions in the app through voice commands. If the app becomes popular in Bangladesh, then there are plans to publish it in other countries of the world.

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