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Creation of an E-commerce Mobile Application

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Development of e-commerce Application

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To my parents and all members of my family for their continued support and I wish them good health and long life
To all my teachers who have done their best to give us as much information as possible,
to all those who have contributed in any way to the accomplishment of this work.
Above all, we take our thanks to our Almighty God for giving us the faith, strength and courage to complete this modest work
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General Introduction

In today’s competitive and convenience focused society, no longer do consumers want to venture to the high street in order to buy items, instead consumers want to shop from their own homes, making e-commerce a flexible solution for both businesses and buyers. E commerce is the process of doing business electronic. It changes the entire business scenario due to the powerful innovation of Internet, which is spreading fast through the world.

Problem statement

Having a customers from all over the county is quite good , but reaching them is quiet difficult. Not having a E-commerce platform generates a lack of communication like informing the customers when new products arrives, or informing them about promotions and new prices.

Motivation

Growing and expanding the company is a priority for it’s owners, and in order to grow, it must reach more to it’s customers and what is the better way to reach them then an e-commerce application. and one the motivations is i wanted to learn Flutter and expand my knowledge in it.

Outline

this dissertation is divided into three chapters ,chapter one we will talk about the E-commerce in general, in the second chapter we will dive a little bit in mobile development and talk about native development and cross-platform development , the third chapter we will introduce our app, and this chapter is divided into three sections implementation, analysis and design.

2

Electronic commerce

What is E-commerce ?

In this part we tend to help the reader to understand our work. The chapter is all about defining E-commerce, and it’s businesses applications, and the impact of it.

2.1 INTRODUCTION

From startups to small businesses right through to huge brands, there are a huge number of companies that can benefit from their own e-commerce apps or website, where they can sell their own products or services. In today's competitive and convenience focused society, no longer do consumers want to venture to the high street in order to buy items, instead consumers want to shop from their own homes, making e-commerce a flexible solution for both businesses and buyers.

2.1.1 E-COMMERCE

E commerce is a latest technology related with commerce and computer. Commerce is the exchange or transformation or buying and selling of entities (goods or commodities) on a very large scale involving transportation from one place to another. E commerce is the process of doing business online. Or we can say that E commerce is to conduct business by using the IT (Information technology, i.e., computer technology and electronic communication) it is the buying and selling of items or goods or services on the Web using electronic communication and digital information processing technology .EDI or Electronic Data Interchange is an early form of e commerce. Its high cost, use of proprietary standards etc. hampered the spread of e commerce. By the help of the flexibility offered by computer networks and the availability of the Internet , E commerce develop on traditional commerce . E commerce creates new opportunities for performing profitable activities online. It promotes easier cooperation between different groups: businesses sharing information to improve customer relations; companies working together to design and build new products or services or multinational company sharing information for a major marketing campaign. The followings are the business uses of the Internet. These services and capabilities are a core part of a successful e-commerce program. They are either parts of a value chain or are included as supporting activities:

- Buying and selling products and services .
- Providing customer service .
- Communicating within organizations .
- Collaborating with others .
- Gathering information (on competitors, and so forth) .
- Providing seller support .
- Publishing and distributing information .
- Providing software update and patches .

E commerce is the process of doing business electronic. It changes the entire business scenario due to the powerful innovation of Internet, which is spreading fast through the world. The power of Internet as a global access was felt with the introduction of the World Wide Web (WWW) in 1994. This global network makes global relations with the companies made easier. It is predicted that, in the near future the digital economy will overtake the traditional economy of all developed countries. E commerce is a composite of technologies process and business strategies that foster the instant exchange of information within between organization. E commerce strengthens relationship with buyers make it easier to attract new customer, improves customer responsiveness and open new markets on a global scale. E commerce is the application of various communication technologies to provide the automated exchange of business information with internal and external customer, suppliers and financial institutions. [2]

2.1.2 E-COMMERCE TIMELINE

Figure 2.1: E-commerce timeline. [1]

2.1.3 E-COMMERCE VS. TRADITIONAL COMMERCE

E commerce is an extension of traditional commerce, which is concerned with the activities of business, industry and trade including the exchange of goods, services, information and money. It has the same essential ingredients of ordinary commerce. The major difference between e commerce and commerce is that with e commerce, these exchanges of goods and services are carried out over the web instead of the traditional physical act of going to a trader for goods and services. Now that a large number of people have access to the internet and it is a good platform for the development of e commerce. Successful E commerce strategies allow organizations distinct advantages in terms of both cost and revenues the fundamentals of all business. This is because cost can be cut immensely as retail outlets are not required. Most of the cost associated with traditional high capital business is eliminated and or transformed into profit in the Internet environment. [2]

2.1.4 IMPORTANCE of E-COMMERCE IN TODAY'S WORLD

Through, E commerce, operating efficiency of the business firm will definitely improve and which in turn strengthen the value and service given to customers and provide a competitive edge over competitors. These improvements may result in more effective performance. The direct benefit accrue to an organization on practicing e commerce are better quality, greater customer satisfaction, better decision making, low cost, high speed and real time interaction. More specifically e commerce enables executing of information relating to the transaction between two or more using interconnected networks.

From the business perspective with less time spent during each transaction, more transaction can be achieved on the same day. As for the consumer, they will save up more time during their transaction. Because of this, E commerce steps in and replaced the traditional commerce method where a single transaction can cost both parties a lot of valuable time.

E commerce is the most cost effective compared to traditional commerce method. This is due to the fact where through e commerce, the cost for the middle-person to sell their products can be saved and diverted top another aspect of their business. For e commerce, the total overheads needed to run the business is significantly much less compared to the traditional commerce method. The reason due to that is where most of the cost can be reduced in E commerce.

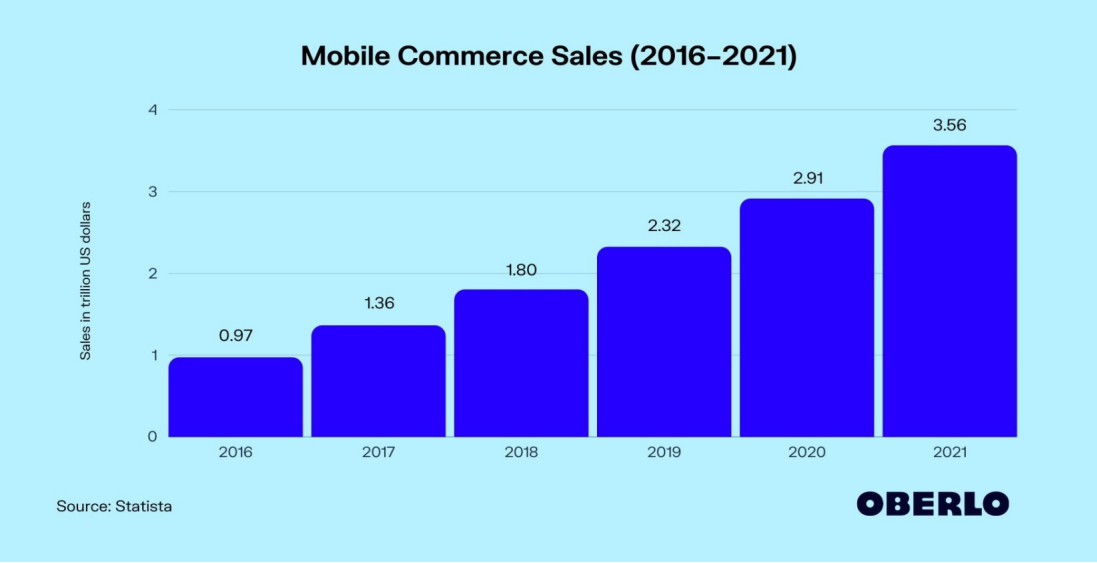
To both the consumers and business, connectivity plays an important part as it is the key factor determining the whole business. From the business point of view, E

commerce provides better connectivity for its potential customer as their respective website can be accessed virtually from anywhere through the Internet. This way, more potential customers can get in touch with the company's business and thus, eliminating the limits of geographical location. From the customer's standpoint, E commerce is much more convenient as they can browse through a whole directories of catalogs without any hassle, compare prices between products, buying from another country and on top of that, they can do it while at home or at work, without any necessity to move a single inch from their chair. Besides that for both consumers and business,

E commerce proves to be more convenient as online trading has less red tape compared to traditional commerce method. E commerce itself gives a boost to the global market. In short, if without any major obstacles, E commerce will certainly continue to mature in the global; market and eventually, it will become an essential business plan for a company in order to survive and stay competitive in the ever changing market.

E commerce business have numerous advantages over off line retail locations and catalog operators consumers browsing online stores can easily search to find exactly what they are looking for while shopping and can easily comparison shop with just a few clicks of the mouse. Even the smallest online retail sites can sell products and turn a profit with a very simple online presence. Web tracking technology allows e commerce sites to closely track customer preferences and deliver highly individualized marketing to their entire customer base. [3]

Figure 2.2: E-commerce Statistics



2.1.5 BENEFITS OF E-COMMERCE

1. Easy Accessibility:
   E-commerce enables customers to shop or conduct other transactions 24 hours a day, all year round from almost any location. For example, a customer can check his balances, making payments, obtaining travel and other information.

2. More choices:
   Customers can now choose a wide range of products and customize. He can buy goods and services even from an international selection of suppliers.

3. Price comparisons:
   Customers can 'shop' around the world and can make price comparisons either directly by visiting different sites, or by visiting a single site where prices of different sellers are exhibited.

4. Improved delivery processes:

This can range from the immediate delivery of digitized or electronic goods such as software or audio- visual files by downloading via the Internet, to the on-line tacking of the progress of packages being delivered by mail or courier. [4]

2.1.6 LIMITATIONS OF E-COMMERCE

Electronic commerce is also characterized by some technological and inherent limitations which have restricted the number of people using this revolutionary system. One important disadvantage of e commerce is that the Internet has still not touched the lives of a great number of people, either due to lack of knowledge or trust. A large number of people do not use the Internet for any kind of financial transaction. Another limitation of e commerce is that it is not suitable for perishable commodities like food items. People prefer to ship in the conventional way than to use e commerce for purchasing food products. So e commerce is not suitable for such business sectors. The time period required for delivering physical products can also be quite significant in case of e commerce. A lot of phone calls and e mails may be required till you get your desired products. However returning a product and getting a refund can be more troublesome and time consuming than purchasing, in case if you are not satisfied with a particular product. Some of the other limitations are:

- Credit card security is a serious issue if vulnerable .
- Costs involved with bandwidth and other computer and server costs .
- Extensive database and technical knowledge and experience required .
- Customer apprehension about online Credit Card orders .
- Constantly changing technology may leave slow business behind .
- Some customers need instant gratification, and shipment times interrupt that.
- Search utilities far surpasses the speed used to find products through catalogs.
- Encourages competition between small and large online retailers .

There was much publicity of Internet and E commerce over the last few years. But this type of commerce is not free from defects. These again will be dealt with according to the three major stakeholders organizations, consumer and society. [4]

2.2 E-COMMERCE BUSINESS APPLICATIONS

These are some of the Electronic commerce business applications :

2.2.1 B2B E-COMMERCE (BUSINESS TO BUSINESS)

B2B e commerce, or business-to-business electronic commerce, describes online order transactions between businesses. Because orders are processed digitally, buying efficiency is improved for wholesalers, manufacturers, distributors and other types of B2B sellers. [5]

2.2.2 B2C E-COMMERCE (BUSINESS TO CONSUMERS)

The term business-to-consumer (B2C) refers to the process of selling products and services directly between a business and consumers who are the end-users of its products or services. Most companies that sell directly to consumers can be referred to as B2C companies. B2C became immensely popular during the dotcom boom of the late 1990s when it was mainly used to refer to online retailers who sold products and services to consumers through the Internet. [6]

2.2.3 DIGITAL WALLET

A digital wallet (or e-wallet) is a software-based system that securely stores user's payment information and passwords for numerous payment methods and websites. By using a digital wallet, users can complete purchases easily and quickly with near-field communications technology. They can also create stronger passwords without worrying about whether they will be able to remember them later. [7]

2.2.4 PRINT-ON-DEMAND

Print on demand is a process where you work with a supplier to customize white-label products (like baseball hats or tote bags) with your own designs to sell them on a per-order basis under your own brand. That means you don't pay for the product until after you've actually sold it, so there's no need to buy in bulk or hold any inventory yourself. Plus, with print-on-demand services everything after the sale, from printing to shipping, is handled by your supplier. Once you've set everything up, it takes only a few clicks to fulfill an order once you've made a sale. [8]

2.3 E-COMMERCE IMPACTS

2.3.1 IMPACT ON MARKETS

Promotion of Products-Through E commerce product can be promote in an interesting way and with lots of information directly to the customers which reduces the cost of offline promotion because internet can interact a lot of customers and save amount of cost of advertisements can be used in different areas of business.

- Customer Service-Customer service can be enhanced because customers can search detailed information about product or marketplace which offers the product and can compare the prices of different market places.

- Brand Image- New business men can establish their brands on internet by using attractive images at an affordable price.

- Advertisement- Traditionally the advertisements were one- way to attract customers and let them know about the new product or market place but now through e-commerce advertisements are two-way in which customer can

browse the market place and product, can compare the prices and also can ask questions to the online retailers .

- Customization-Customized products can be made available according to the needs of customers. It will make a good place of business in market and new customers will be attracted.

- Order Making Process-Traditionally to take orders from customers, intermediaries are used which takes a lot of time and expenses but with e commerce the order taking is so easy which reduces a lot of time and expenses and they can make more sales.

- Customer Value-Traditionally attaining a big value from the customers was the main interest. Only customers were attracted and it was the biggest target but now sellers make long term relationships with customers to attain long term value by offering them special discounts. [9]

2.3.2 IMPACT ON RETAILERS

- Turnover-Due to e-commerce the turnover of offline retailers has reduced which is a warning signal for the enterprise.

- Profit Margin-On the arrival of online shops in the market offline retailers are suffering from pricing. To survive in market, they have to sell product in law prices which covers only their operational costs and they do not get any profit margin.

- Discount-Offline retailers sell their products at discounted rates because online stores offer heavy discount to the customers and to stay in the market and to attract the customers they have to sell the products at discounts.

- Variety of Stocks-Variety of goods is offered by online stores to which offline retailers cannot compete because at the end of year the left over stock can give a huge loss to the retailer.

- Customer Services-Offline retailers are providing different services at which online stores fails. Repair and goods of services, home delivery and after sales services also like online shops.

- Window Shopping-Low prices offered by online stores leads to window shopping by customers at physical stores and they buy product online. Due to which they have prospective customer’s more than actual customers.

- Advertisement-Offline retailers focus only on the advertisements so that they can attract customers and increase their sales. They do not leave a single chance to advertise. [9]

2.3.3 IMPACT ON EMPLOYMENTS

The development of e-commerce is likely to have both direct and indirect impacts on labor markets as well as the composition of employment. The widely expected rapid growth in e-commerce should boost the demand for jobs in e-businesses, but since the size of e-commerce in the short to medium term as a share of all activity is still likely to be small, these new jobs should not be counted on to relieve existing labor market problems in some countries. The latter still needs to be addressed by appropriate policies vis-à-vis labor markets. Although the direct employment consequences of e-commerce may not be large, it is likely to drive widespread changes in the labor market, shifting the composition of workers required to produce and deliver a product or service. For example, a retail sale via the Internet probably does not require the same intensity of sales staff, but it requires people with IT skills to develop and program software, operate and maintain computer servers and networks and people skilled in graphics design to keep the web site attractive and others to dispatch orders. In addition, firms will implement modifications to their production processes in order to exploit the potential of B2B and B2C commerce over the Internet. Certain jobs, especially those characterized by the transfer of information from one party to another such as travel agents, insurance and stock brokers are likely to be redefined and become less common. Faster rates of innovation and diffusion may also be associated with more turnover of jobs. In such an environment it is important that workers have the opportunity to learn new skills and that policies do not prevent the swift reallocation of labor to the changing needs of the economy. Otherwise, the new opportunities offered by the Internet may be missed or unnecessarily delayed.[10]

2.3.4 IMPACT ON CUSTOMERS

Greater Choice

With e-commerce, consumers are able to access a wide range of products and services. You can choose your product from anywhere in the world, make an order and have it shipped to you. This has given greater freedom to consumers by ensuring that they can get what they want despite their geographical location. Online

stores, unlike the physical ones, have no limitation as to space. As such, the seller can stock as many products as they wish, giving the consumers more options.

Convenience

E-commerce is very convenient. You can make an order for goods while in your house, office or even while travelling. You do not need to go to the store itself, you only need to have internet access.

E-commerce Saves Time

The process of selection and payment in online shopping is quite short. It is possible to complete everything in 15 minutes and wait for the product to be delivered as you do other things. There is no requirement of traveling to the physical store.

Lower Prices

With e-commerce, middlemen are eliminated. The consumer can buy products from the producers themselves. Additionally, e-commerce is not limited by geographical space. Firms can compete globally without the need to establish physical offices in every location. This increases competition and leads to lower prices of goods and services.

Availability of Information to Consumers

One of the advantages of online shopping is that you can search for product description and compare as many products as you wish. You are able to compare prices of various products as well. As a result, you settle on a product based on the information that you have accessed.

Global Markets

E-commerce relies heavily on the World Wide Web as opposed to physical presence. The internet has no physical limit and a trader in one country can advertise and sell his products to consumers in another country despite the geographical distance. In

essence, e-commerce businesses are capable of operating globally so long as they have the requisite means of sending the goods to consumers.

Direct Communication with Customers

A producer of goods or services can communicate with consumers directly through the internet. This makes it possible for the producer to obtain feedback from consumers and, therefore, adjust accordingly to meet the preferences of consumers. Any shortcoming of the product can be noted and addressed without delay.

Instantaneous Purchases

Digital products such as courses can be purchased and downloaded immediately. You do not need to go to a shop or make an order and wait for delivery. You purchase and get the product anywhere anytime.

Online Advertising

Online advertising, also referred to as online marketing, web advertising or internet advertising, uses the internet to deliver promotional messages to customers. E-commerce has diversified the modes of advertising so that as a trader, you can opt for email marketing, social media marketing, search engine marketing, mobile advertising and display advertising. As a result, traders are able to reach more people at reasonable expense. [11]

2.3.5 TOP EXAMPLES OF E-COMMERCE

Amazon

Figure 2.3: Amazon.Inc

Amazon.com is a vast Internet-based enterprise that sells books, music, movies, housewares, electronics, toys, and many other goods, either directly or as the middleman between other retailers and Amazon.com's millions of customers. Its Web services business includes renting data storage and computing resources, so-called "cloud computing," over the Internet. Its considerable online presence is such that, in 2012, 1 percent of all Internet traffic in North America traveled in and out of Amazon.com data centers. [12]

Alibaba

Figure 2.4: Alibaba.Inc

Alibaba is China's and by some measures, the world's biggest online commerce company. Its three main sites are Taobao, Tmall and Alibaba.com have hundreds of millions of users, and host millions of merchants and businesses. Alibaba handles more business than any other e-commerce company. Alibaba is the most popular destination for online shopping, in the world's fastest growing e-commerce market. Transactions on its online sites totaled $248 billion in 2020, more than those of eBay and Amazon.com combined. Alibaba became one of the most valuable tech

companies in the world after raising $25 billion . It is also one of the most valuable Chinese public companies, ranking among some of the country's state-owned enterprises. [13]

AliExpress

Figure 2.5: AliExpress.Inc

AliExpress is a popular online store for buying products at much cheaper prices than Amazon and other similar services. The store was founded in 2010 and is owned by Alibaba, a massive Chinese multinational company focusing on e-commerce and computing, and is one of the world's largest internet companies. AliExpress is considered to be a reliable place to buy products at a cheaper price than you would domestically. AliExpress is part of Alibaba Group, a large established company which focuses on commerce and media. AliExpress also provides shoppers with complete refunds on products that arrive damaged, late, or don't arrive at all. [14]

ebay

Figure 2.6: Ebay.Inc

eBay is an online shopping site that's best known for its auctions and consumer to consumer sales. It's also extremely popular for online merchants to use as a sales channel. eBay's available in many different countries. However, you can search for products available in your local area by entering the zip code. Alternatively, you can search for products available nationally or internationally. eBay is one of the most popular ways to buy and sell goods and services on the internet. It's a website where individuals and businesses can buy or sell new or second-hand items, from books and clothes to cars and holidays. [15]

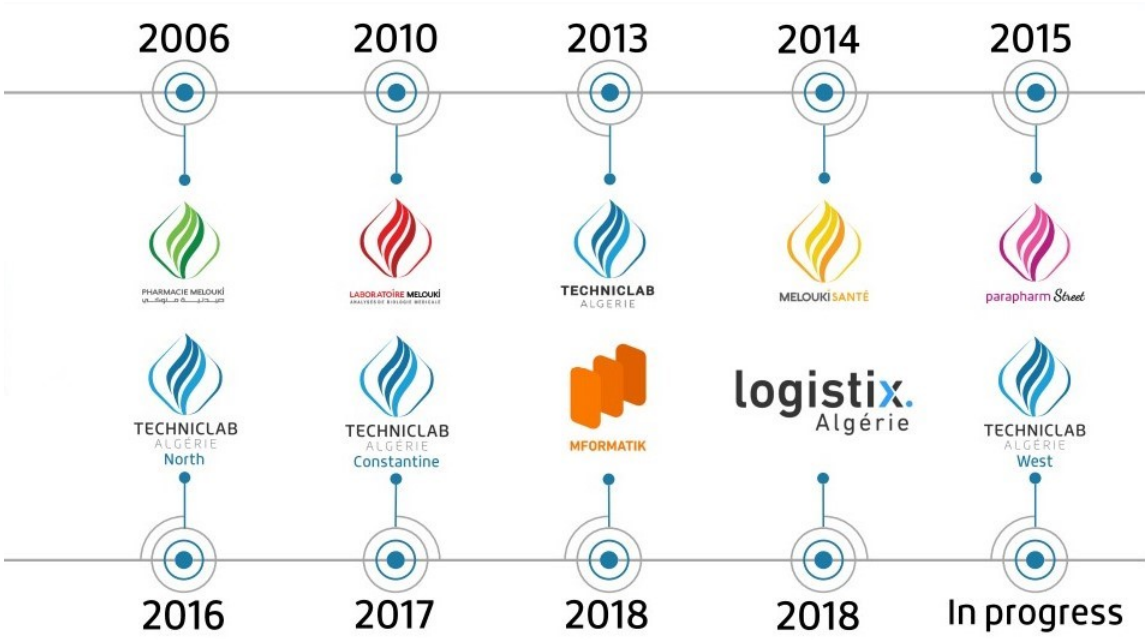
2.3.6 REPRESENTING MELOUKI GROUP

Who is Melouki GROUP

Melouki GROUP is a private company ,and has been launched in 2006 by it's managing director Dr. Melouki Ahmed Salim ,this Group has six Activities in the same field (medical). With over a 130 permanent employees This Group has a decentralized operating mode for each activity and autonomous , while working in synergy and progressing by sharing experience . This Group is a pioneer in the central region of Algeria while aspiring to leadership at the national level .

Melouki GROUP Timeline

Figure 2.7: Melouki GROUP Timeline.



The organizational chart of Melouki GROUP

Figure 2.8: Melouki GROUP organizational chart.

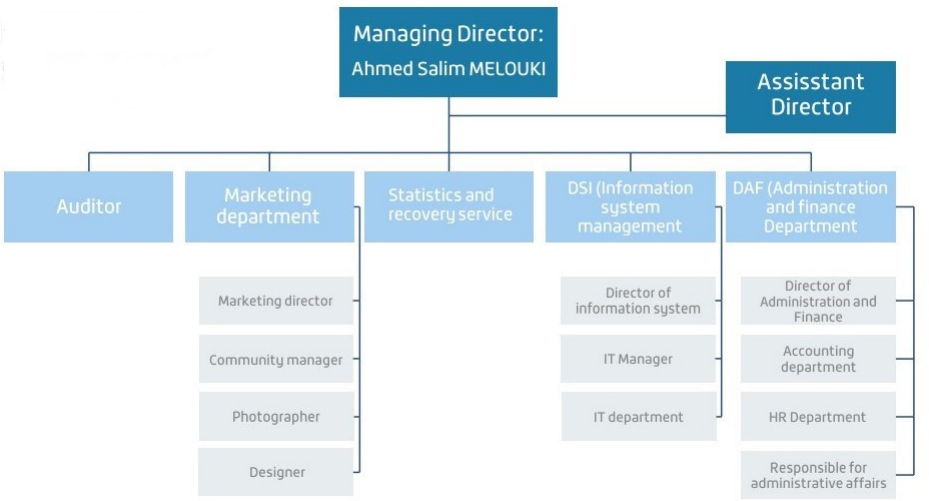
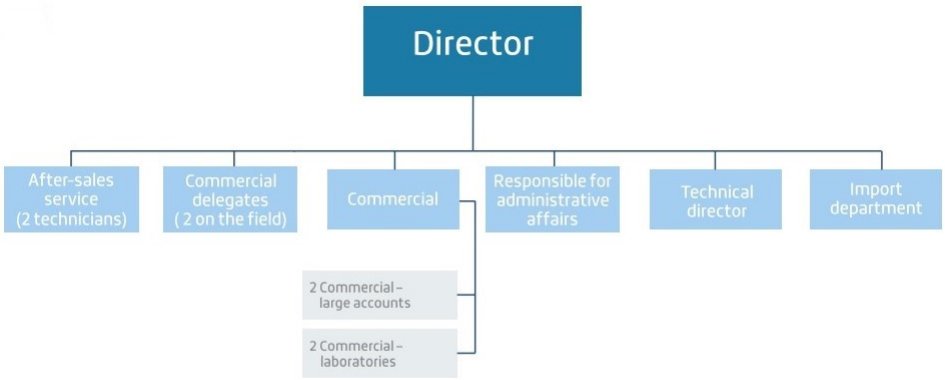


Figure 2.9: Melouki GROUP organizational chart.



3

Mobile application development

In this part we talk about mobile apps , mobile operating systems and mobile development .

3.1 GENERAL INFORMATION ABOUT MOBILE API

A mobile application (also called a mobile app) is a type of application designed to run on a mobile device, which can be a smartphone or tablet computer. Even if apps are usually small software units with limited function, they still manage to provide users with quality services and experiences. [16]

3.1.1 MOBILE OPERATING SYSTEMS

DEFINITION

A mobile operating system is an operating system for mobile phones, tablets, smartwatches, 2-in-1 PCs, smart speakers, or other mobile devices. While computers such as typical laptops are 'mobile', the operating systems used on them are generally not considered mobile ones, as they were originally designed for desktop computers that historically did not have or need specific mobile features. This distinction is becoming blurred in some newer operating systems that are hybrids made for both uses. Mobile operating systems combine features of a personal computer operating system with other features useful for mobile or handheld use, and usually including a wireless inbuilt modem and SIM tray for telephony and data connection. By Q1 2018, over 383 million smartphones were sold with 86.2 percent running Android and 12.9 percent running iOS. Android alone is more popular than the popular desktop operating system Microsoft Windows, and in general smartphone use (even without tablets) outnumbers desktop use. [17]

DIFFERENT OPERATING SYSTEMS

ANDROID OS (GOOGLE INC.)

Figure 3.1: ANDROID OS.

The Android mobile operating system is Google's open and free software stack that includes an operating system, middleware and also key applications for use on mobile devices, including smartphones. Updates for the open source Android mobile operating system have been developed under "dessert-inspired" version names (Cupcake, Donut, Eclair, Gingerbread, Honeycomb, Ice Cream Sandwich) with each new version arriving in alphabetical order with new enhancements and improvements.

BADA (SAMSUNG ELECTRONICS)

Figure 3.2: BADA OS.

Bada is a proprietary Samsung mobile OS that was first launched in 2010. The Samsung Wave was the first smartphone to use this mobile OS. Bada provides mobile features such as multipoint-touch, 3D graphics and of course, application downloads and installation.

Figure 3.3: BlackBerry OS.

BlackBerry OS

The BlackBerry OS is a proprietary mobile operating system developed by Research In Motion for use on the company s popular BlackBerry handheld devices. The BlackBerry platform is popular with corporate users as it offers synchronization with Microsoft Exchange, Lotus Domino, Novell GroupWise email and other business software, when used with the BlackBerry Enterprise Server.

IPHONE OS / IOS (APPLE)

Figure 3.4: IPHONE OS.

Apple’s iPhone OS was originally developed for use on its iPhone devices. Now, the mobile operating system is referred to as iOS and is supported on a number of Apple devices including the iPhone, iPad, iPad 2 and iPod Touch. The iOS mobile operating system is available only on Apple’s own manufactured devices as the company does not license the OS for third-party hardware. Apple iOS is derived from Apple’s Mac OS X operating system.

WINDOWS MOBILE (WINDOWS PHONE)

Figure 3.5: WINDOWS MOBILE.

Windows Mobile is Microsoft's mobile operating system used in smartphones and mobile devices with or without touchscreens. The Mobile OS is based on the Windows CE 5.2 kernel. In 2010 Microsoft announced a new smartphone platform called Windows Phone 7. [18]

3.1.2 MOBILE APPLICATION TYPES

Mobile applications come in many shapes and sizes. Here are the most popular types of mobile apps to help you understand the current trends in the mobile landscape.

GAMING APPS

This is the most popular category of mobile apps. You'd be surprised to learn how many users install games on their phones. Businesses invest an increasing amount of time and resources into creating games and mobile versions of well-known stationary games because it's such a profitable market. According to a recent study, mobile games account for 33% of all app downloads, 74% of consumer spending, and 10% of all the time spent using apps. The most successful mobile games like Candy Crush Saga or Angry Birds become known all over the world.

BUSINESS OR PRODUCTIVITY APPS

These apps hold a large chunk of the market today because people are increasingly prone to using their smartphones and tablets to perform many complex tasks on

the go. For example, apps can help them to book tickets, send emails, or track their work progress. Business apps are geared at boosting productivity and minimizing expenses as they allow users to complete a wide range of tasks, from buying new cartridges for office printers to recruiting a new office manager.

EDUCATIONAL APPS

This category includes mobile apps that help users gain new skills and knowledge. For example, language learning apps like Duolingo have become incredibly popular because they give users the flexibility they look for in learning. Educational game apps are an excellent tool for kids. Many educational apps turn out to be popular among teachers too, who use them to organize their teaching process better or educate themselves further.

LIFE-STYLE APPS

This broad category of apps spans shopping, fashion, virtual fitting rooms, workout, dating, and diet apps. These apps basically focus on various aspects of personal lifestyle.

M-COMMERCE APPS

the most popular shopping apps like Amazon or eBay offer the experience of their desktop versions to mobile users. Mobile commerce applications provide customers with convenient access to products and seamless payment methods for an optimal shopping experience.

ENTERTAINMENT APPS

these apps allow users to stream video content, search for events, chat, or watch content online. Social media apps like Facebook or Instagram are great examples. Moreover, video streaming apps such as Netflix or Amazon Prime Video have become incredibly popular with users all over the world. These apps usually boost user engagement by notifying members about updates and newly added products.

UTILITY APPS

these are so obvious that we barely even realize that we're using them. In fact, utility apps usually have the shortest user session times people use them to get things done and then move on. The most popular types of utility applications are barcode scanners, trackers, or healthcare apps.

TRAVEL APPS

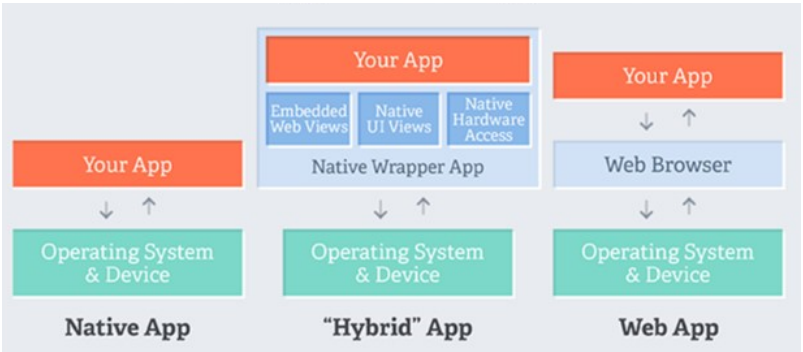
the main idea behind this category is helping users to travel easily. Travel apps transform a smartphone or tablet into a travel diary and guide that helps users to discover everything they need to know about the site they're visiting. Most of the tourists are digitally savvy travelers who know how to use apps to their advantage. Can you imagine what traveling would look like without Google Maps, Airbnb, or Uber? [19]

3.2 DEVELOPING MOBILE APPS

3.2.1 NATIVE APPS

A native app is an app for a certain mobile device (smartphone, tablet, etc.) They're installed directly onto the device. Users typically acquire these apps through an online store or marketplace such as The App Store or Android Apps on Google Play. [20]

Figure 3.6: Mobile app technology stacks.



DEVELOPING ANDROID NATIVE APPS

JAVA

Figure 3.7: JAVA.

Java is a powerful general-purpose programming language. It is used to develop desktop and mobile applications, big data processing, embedded systems, and so on. According to Oracle, the company that owns Java, Java runs on 3 billion devices worldwide, which makes Java one of the most popular programming languages. [21]

3.2.2 DEVELOPING IOS NATIVE APPS

SWIFT

Figure 3.8: Swift.

Swift is a general-purpose, multi-paradigm, compiled programming language developed by Apple Inc. and the open-source community, first released in 2014. Swift was developed as a replacement for Apple's earlier programming language Objective-C, as Objective-C had been largely unchanged since the early 1980s and lacked modern language features. Swift works with Apple's Cocoa and Cocoa Touch frameworks, and a key aspect of Swift's design was the ability to interoperate with the huge body of existing Objective-C code developed for Apple products over the previous decades. It is built with the open source LLVM compiler framework and has been included in Xcode since version 6, released in 2014. On Apple platforms, it uses the Objective-C runtime library which allows C, Objective-C, C++ and Swift code to run within one program. [22]

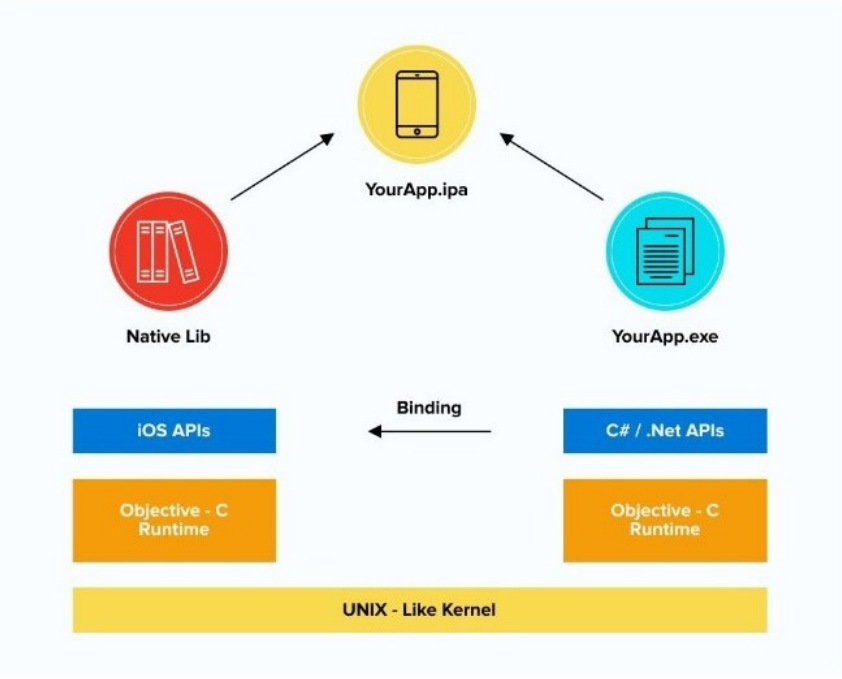
3.2.3 CROSS-PLATFORM APPS

Cross-platform solutions are effective; however, they did not gain enough mileage since their birth due to fragmentation in mobility platforms. Now that the mobile app development world is largely divided into two large platforms— Android iOS—cross-platform mobile app development is expected to experience much more advancement very soon.

3.2.4 Top 5 Cross-Platform App Frameworks

Xamarin : Loved by Developers, Trusted by Enterprise Xamarin was launched in 2011 as an independent cross-app development framework but was later acquired by Microsoft in 2016, thus lending it more credibility than before. It is an open-source framework that was launched to solve the problem of disjointed native technology stacks, which made mobile app development a difficult and expensive affair.
Pros of Xamarin

Figure 3.9: Basic overview of Xamarin architecture.



1. a) Xamarin app development uses C# for coding, meaning that it works

seamlessly on an array of platforms (including Android and iOS).

b) Xamarin has a strong community of over 60,000 contributors from more than 3,700 companies.

c) Share more than 75% of your code across platforms, for “write once, run anywhere” ease.

d) A single tech stack for faster development.

Cons of Xamarin

a) It is expensive for enterprises . Xamarin is a framework that comes free for individuals and startups. However, enterprises are required to buy a license for Microsoft’s Visual Studio.

b) Xamarin is not recommended for apps that demand heavy graphics because each platform has a different method for visually laying out screens. A UX/UI-rich application is advised to be implemented natively.

c) It also offers limited access to certain important libraries that the app developers need for mobile app development. Also, since the core of its user-interface creation is not mobile, creating the UI is time-consuming.

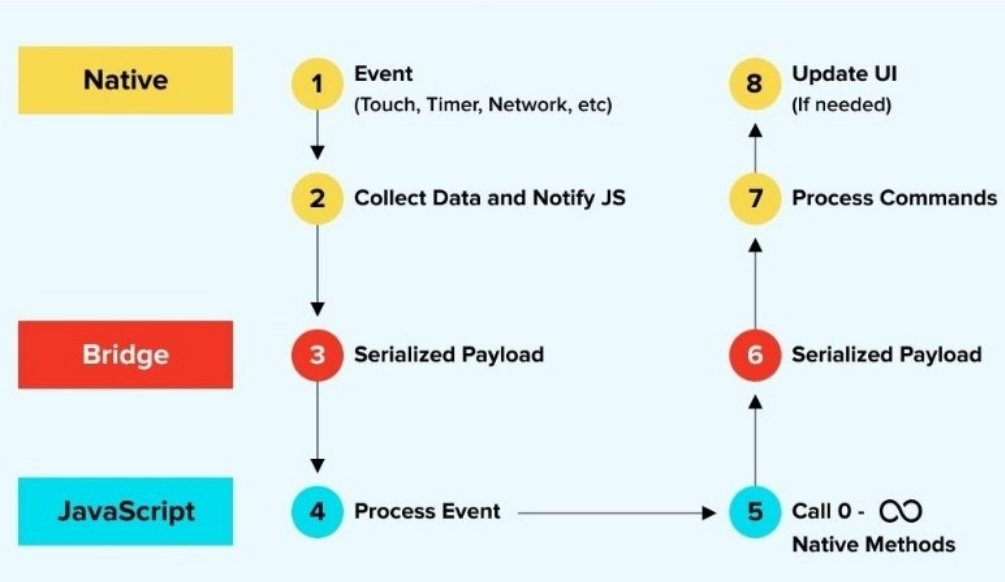
Apps Made with Xamarin

- Fox Sports
- Alaska Airlines
- HCL
- American Cancer Society
- BBC Good Food

2. **React Native : Learn Once, Write Anywhere**

   React Native is an endeavor that Facebook launched in 2015, and it did cause a wave in the market for hybrid frameworks. Within a few years of its introduction in the market, it is already one of the most popular ones.

Figure 3.10: Basic overview of React architecture.



Pros of React

a) Up to 80% of a code base can be shared across platforms, depending on the app's complexity.

b) Apart from code re-usability, it allows you to preview results right away, besides offering ready-to-apply elements, thus shortening the developing time considerably.

c) Hot Reloading feature enables developers to see changes made in code within seconds, not minutes when using native technologies.

d) React Native focuses on UI to a great extent rendering a highly responsive interface.

e) It also gives you access to certain great native functionalities like accelerometer and camera. The result it renders is a high-quality native-like user interface.

Cons of React

a) React Native is not fully a cross-platform app framework. To use some functions like camera or accelerometer you have to use native components, so there will be a separate code for Android and iOS.

b) Since the framework is not built in conjunction with iOS or Android, it lags behind the native platforms at times. This is one of the reasons that led Udacity to stop investing in React Native for new features.

c) React Native lacks consistency when it comes to releasing the updates.

d) React Native improves the speed of development, but also increases the duration of the debugging process, especially on Android.

Apps Made with React

- Instagram
- Bloomberg
- Pinterest
- Skype
- Tesla

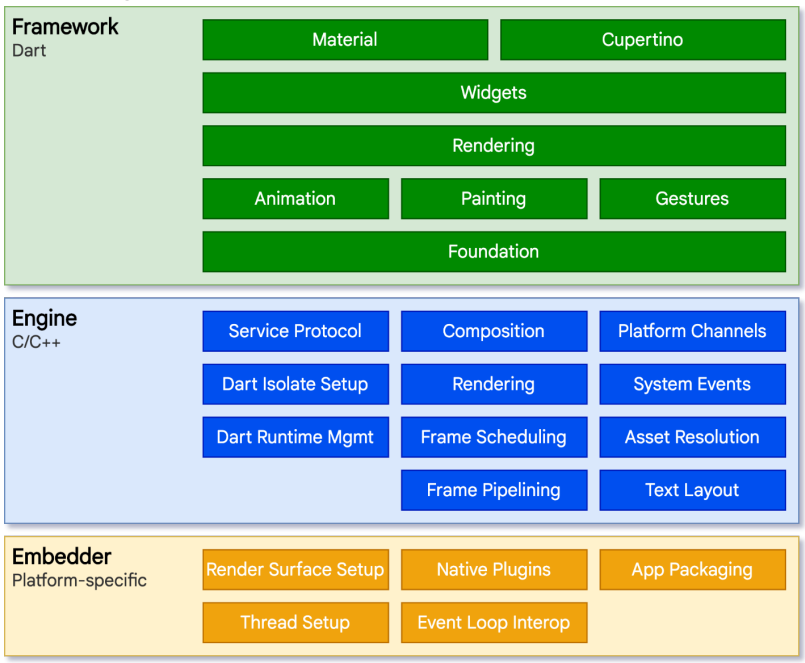
3. **Flutter: Beautiful Native Apps in No-Time**

Flutter is another open source and free cross-platform framework for creating native interfaces for Android as well as iOS. You might be thinking if Google announced Flutter recently in February 2018 at Mobile World Congress and released its first version on December 5th, 2018, what made me mention Flutter in this list of cross-platform app frameworks.

Remember, Flutter is a cross-platform app framework maintained by Google, the very same organization that develops the Android Native Framework. A survey held by Stack Overflow backs the other reasons that made me include Flutter in this list.

In the Developer Survey Results Flutter is amongst the top 3 most loved frameworks, and it added another complexity to the current popularity of the Reactive Native framework.

Figure 3.11: Basic overview of Flutter architecture.



Pros of Flutter

a) “Hot reloading” feature enables developers to see changes made in code within seconds not minutes as when using native technologies.

b) It is an ideal framework for MVP development. Instead of spending extra money and time on two separate apps, you can quickly build a Flutter

mobile application that looks native on both Android and iOS.

c) Flutter is based on Dart, an object-oriented programming language that developers have found rather easy to acquire the skill for.

d) Flutter has a full set of widgets in Google's Material Design and in Apple's style with the Cupertino pack.

e) Many ready-made solutions for native Android and iOS apps enable you to work with Continuous Integration platforms like Travis and Jenkins.

Cons of Flutter

a) There is limited TV support with apps built on Flutter framework, i.e., Flutter offers no support for Android TV and Apple TV.

b) Though by virtue of being developed by Google, there are several libraries with ready-to-implement functionalities, Flutter still lacks when compared to native development.

c) Since Flutter-enabled apps use built-in widgets and not platform widgets, the app's size is usually bigger. Currently, the smallest possible app made with Flutter can weigh no less than 4MB.

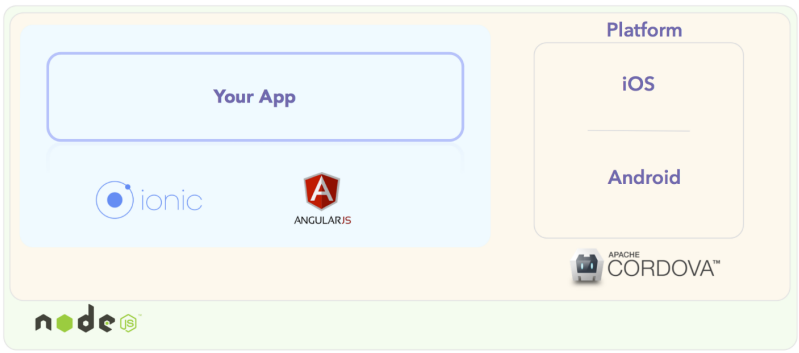
Apps Made with Flutter

- Alibaba
- Google
- Google Ads
- Tencent

4. **Ionic: Make App Creation Lightning Fast**

   Ionic is an open-source cross-platform app framework and licensed under MIT. It uses HTML5 for translation. Very similar to AngularJS in design and structure. It also inherits a few design elements from iOS as well as Android. It allows you to build native-like hybrid apps for Android and iOS as well as progressive web apps.

Figure 3.12: Basic overview of Ionic architecture.



Pros of Ionic

a) Ionic is based on a SAAS UI framework designed specifically for mobile operating systems. It provides numerous UI components for developing robust applications.

b) The Ionic framework allows you to ship continuously. From automated native builds to live updating and CI/CD, Ionic Appflow addresses the entire mobile DevOps life-cycle.

c) Ionic is backed by a vibrant community of more than 5M developers in over 200 countries.

Cons of Ionic

a) The knowledge of AngularJS becomes almost a necessity if one wants to go beyond basic apps.

b) Designing in-app navigation is complex because of its not-so-easy-to-use UI-router.

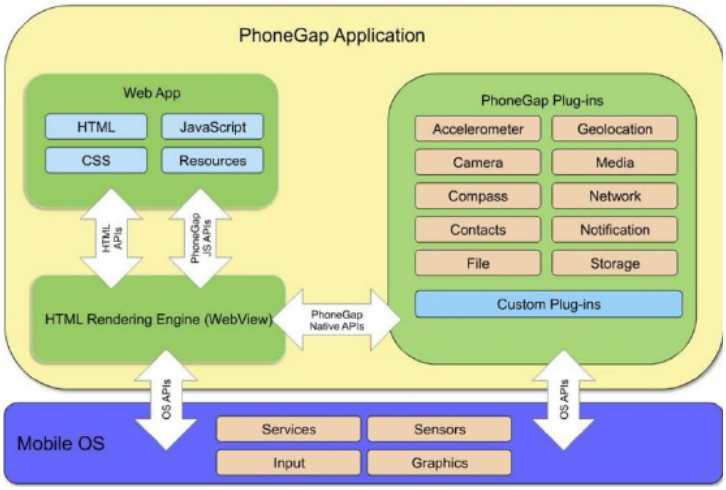
Apps Made with Ionic

- IBM
- ING
- SAP
- NASA

5. **Adobe PhoneGap: Build Amazing Mobile Apps Powered by Open Web Tech**

PhoneGap was previously known as Apache Cordova. It is owned as well as sourced by Adobe. It is a simple cross-platform app development framework that uses HTML5, CSS, and JavaScript.

Figure 3.13: Basic overview of PhoneGap architecture.



Pros of PhoneGap

a) It allows you to share the application with the team to garner their feedback.

b) It also offers a cloud solution in case you want to create your app directly.

c) Features like access to third-party tools, a large community (the one behind the free and open-source Apache Cordova), and a large number of plugins, make it better than its competitors.

d) It uses an intuitive desktop as for mobile app development and then serves the app created on the desktop to mobile devices connected to it.

Cons of PhoneGap

a) PhoneGap is not recommended for high-performance applications and hardware intensive apps like gaming apps due to its poor performance and lack of UI Widgets.

b) PhoneGap is dependent on iOS SDKs to build an app and downloading these SDKs requires a Mac.

c) Apps built with PhoneGap to tend to go a little low on performance as compared to native apps

Apps Made with PhoneGap

- Wikipedia
- TripCase
- FanReact [23]

3.2.5 The Difference Between Native and Cross-Platform

Native vs. cross-platform is a never-ending debate that has kept the tech community divided for years. There are a few experts who prefer native apps over cross-platform apps. On the other hand, companies like Uber are coming up with their cross-platform app framework—Ribs— to rewrite their driver app. Both native and cross-platform app development technologies are in a constant state of evolution. This changing nature of technologies signals that these topics should be revisited from time to time to check which of these options is currently leading the game. Native app development eschews the complexity of creating a sustainable product that spans multiple platform app development and focuses on generating a competent design that stays close to the target platform–Android, iOS, etc. Cross-platform frameworks seek to generate an app that reaches out to as many followers of your brand as possible by covering a wide number of end devices during the programming and creation process. [24]

3.2.6 Challenges in Cross-platform App Development Pro

A couple of years back, the cross-platform app development was constrained to make simple mobile apps and games. Over time, emerging technologies have made

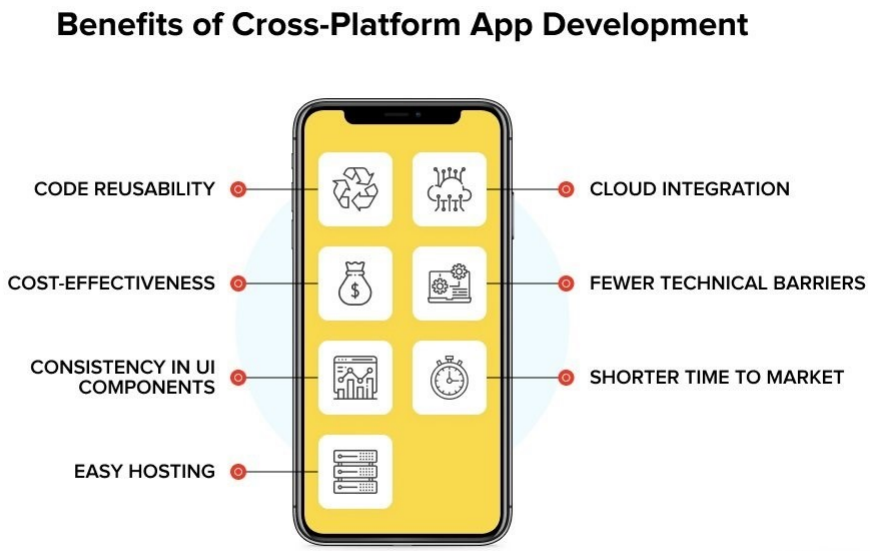
cross-platform development more adaptable, powerful, and flexible than before. However, cross-platform development still faces challenges like:

- Performance hiccups because of inconsistent communication between the native and non-native components of gadgets.
- Cross-platform developers find maintaining cross-compliance of apps with limited tools
- Performance-related glitches can lead to poor user experience.
- If your business app manages more of a corporate and the user's data, then going for cross-platform apps is not a good idea as per security concerns.

But, these challenges are minimal when compared to the benefits it has.[25]

3.2.7 Benefits of Cross-Platform App Development

Figure 3.14: Benefits of Cross-Platform App Development.



1. **Maximum Exposure to the Target Audience**

   Leveraging a mobile cross-platform development approach enables you to build an app and deploy over various platforms, including the web. This means that by building a single app, one can target both – iOS and Android platforms, thus, maximizing their reach.

2. **Reduced Development Cost**

   The cross-platform app development is based on a concept ‘write once, run everywhere’. Reusable codes and agile app development through tools can lessen the cost of development. Therefore, in order to improve your business on multiple platforms and tools in a cost-effective way, there is no other alternative to cross-platform apps.

3. **Easier Maintenance & Deployment**

   Since there’s only one developed app that runs over all platforms, it is easier to maintain as well as deploy code or changes made. Updates can promptly be synced over all platforms and devices, thus saving time and money. Moreover, if a bug is found in the common codebase, it should be fixed once. In this way, developers can save a lot on time and money.

4. **Quicker Development Process**

   The quick development process is another win-win situation when it comes to developing cross-platform apps. Single source code for multiple platforms can help reduce the development efforts by 50 to 80%. It helps you to get a feature-rich business app in less time. The team of developers can meet the expected deadlines in cross-platform app development.

5. **Reusable Code**

   Another good thing about this platform is that the code can be used again and again. Instead of developers developing new codes for every platform, a single code can be reused. This saves time as well as resources because it eliminates repetition in the task of creating codes.

6. **Easy Integration with Cloud**

   Cross-platform mobile apps are totally compatible and can take advantage of various plugins integrated with the cloud settings. In other words, the single source code is coordinated with various plug-ins and extensions to enhance the app’s scalability and functionality.

7. **Faster Time-to-Market and Customization**

   As we mentioned above ‘write once, run everywhere’ is the concept that is followed while building cross-platform app development. It allows app developers to reduce Time-to-Market (TTM) with a quick deployment. Also, if you need to transform or customize the app, it’s easy for the developers to do minor changes in a single code. This, further, helps to deliver products more swiftly than the competitors by improving customer engagement.

8. **Uniform Design**

   Users can recognize user interface (UI) elements, and foresee their interactions over various platforms. Therefore, User Experience (UX) is an important thing to consider for any app or software. It’s hard to sync the various development projects while developing multiple apps. Cross-platform mobile development tools allow developers as well as designers to build an uniform user experience that app users can enjoy. [26]

3.3 BRIEF LOOK ON FLUTTER.

3.3.1 About Google Flutter Framework.

Flutter is a free and open-source mobile UI framework created by Google and released in May 2017. In a few words, it allows you to create a native mobile application with only one code-base. This means that you can use one programming language and one code-base to create two different apps (for iOS and Android). [27]

3.3.2 System requirement.

To install and run Flutter, your development environment must meet these minimum requirements:

Operating Systems:

Windows 7 SP1 or later (64-bit), x86-64 based

Disk Space:

1.64 GB (does not include disk space for IDE/tools).

Tools:

Flutter depends on these tools being available in your environment.

- Windows PowerShell 5.0 or newer (this is pre-installed with Windows 10).
- Git for Windows 2.x, with the Use Git from the Windows Command Prompt option.

Install Android Studio

1. Download and install Android Studio.

2. Start Android Studio, and go through the 'Android Studio Setup Wizard'. This installs the latest Android SDK, Android SDK Command-line Tools, and Android SDK Build-Tools, which are required by Flutter when developing for Android.

Set up your Android device

To prepare to run and test your Flutter app on an Android device, you need an Android device running Android 4.1 (API level 16) or higher.

1. Enable Developer options and USB debugging on your device. Detailed instructions are available in the Android documentation.

2. Windows-only: Install the Google USB Driver.

3. Using a USB cable, plug your phone into your computer. If prompted on your device, authorize your computer to access your device.

4. In the terminal, run the flutter devices command to verify that Flutter recognizes your connected Android device. By default, Flutter uses the version of the Android SDK where your adb tool is based. If you want Flutter to use a different installation of the Android SDK, you must set the ANDROID-SDK-ROOT environment variable to that installation directory.

Set up the Android emulator

To prepare to run and test your Flutter app on the Android emulator, follow these steps:

1. Enable VM acceleration on your machine.

2. Launch Android Studio, click the AVD Manager icon, and select Create Virtual Device. . .

    - In older versions of Android Studio, you should instead launch Android Studio > Tools > Android > AVD Manager and select Create Virtual Device. . . . (The Android sub-menu is only present when inside an Android project.)
    - If you do not have a project open, you can choose Configure > AVD Manager and select Create Virtual Device. . .

3. Choose a device definition and select Next.

4. Select one or more system images for the Android versions you want to emulate, and select Next. An x86 or x86_64 image is recommended.

5. Under Emulated Performance, select Hardware - GLES 2.0 to enable hardware acceleration.

6. Verify the AVD configuration is correct, and select Finish. For details on the above steps, see Managing AVDs.

7. In Android Virtual Device Manager, click Run in the toolbar. The emulator starts up and displays the default canvas for your selected OS version and device. [28]

3.3.3 Flutter SDK.

Flutter consists of two important parts:

- An SDK (Software Development Kit): A collection of tools that are going to help you develop your applications. This includes tools to compile your code into native machine code (code for iOS and Android).
- A Framework (UI Library based on widgets): A collection of reusable UI elements (buttons, text inputs, sliders, and so on) that you can personalize for your own needs.

To develop with Flutter, you will use a programming language called Dart. The language was created by Google in October 2011, but it has improved a lot over these past years. Dart focuses on front-end development, and you can use it to create mobile and web applications. If you know a bit of programming, Dart is a typed object programming language. You can compare Dart's syntax to JavaScript. [29]

4

Implementation

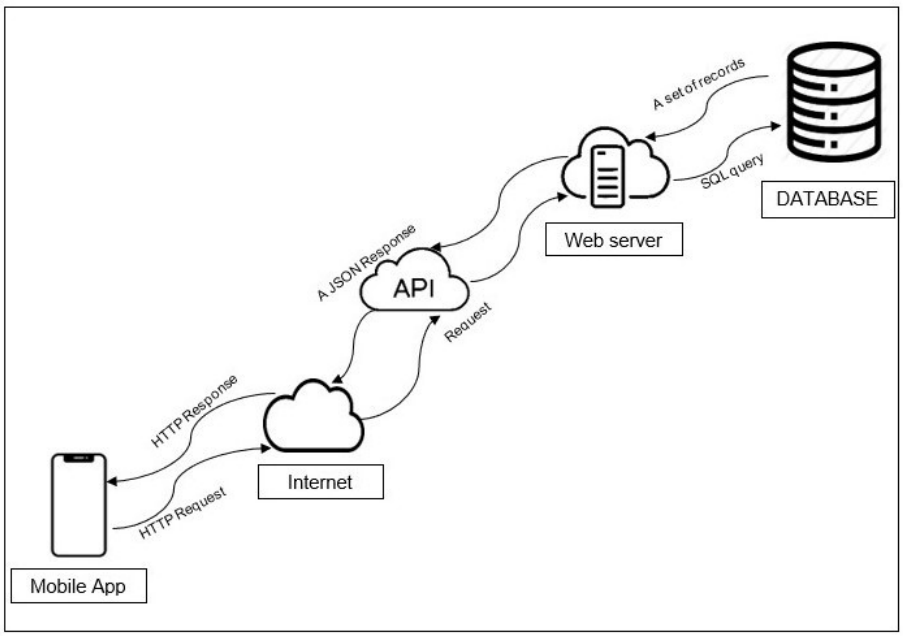
This part contains two parts the analysis and design of our app.

4.1 Implementation

4.1.1 App Architecture

Our app is communicating with the server through API's which is made by a HTTP Request, after calling the API, a SQL Query is sent to the database through the server. then the Response is A record set sent as a JSON Object. Retrieving data in our app is demonstrated in the figure below.

Figure 4.1: App Architecture.



4.1.2 Back-end Development

Development Environment

Visual Studio Code

Figure 4.2: Visual Studio Code.

Visual Studio Code is a lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extensions for other languages (such as C++, C#, Java, Python, PHP, Go) and runtimes (such as .NET and Unity). [30]

Postman

Figure 4.3: Postman.

Postman is a collaboration platform for API development. Postman's features simplify each step of building an API and streamline collaboration so you can create better APIs—faster. [31]

XAMPP

Figure 4.4: XAMPP.

XAMPP is the most popular PHP development environment XAMPP is a completely free, easy to install Apache distribution containing MariaDB, PHP, and Perl. The XAMPP open source package has been set up to be incredibly easy to install and to use. [32]

Technologies Used

Node Js

Figure 4.5: Node JS.

Node.js is a JavaScript runtime built on Chrome's V8 JavaScript engine. Node Js is primarily used for non-blocking, event-driven servers, due to its single-threaded nature. It's used for traditional web sites and back-end API services, but was designed with real-time, push-based architectures in mind. [33]

SequeLize ORM

Figure 4.6: SequeLize ORM.

SequeLize is a promise-based Node.js ORM for Postgres, MySQL, MariaDB, SQLite and Microsoft SQL Server. It features solid transaction support, relations, eager and lazy loading, read replication and more. [34]

MySQL

Figure 4.7: MySQL .

MySQL is an open-source relational database management system. Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language. [35]

Most Useful Back-end Packages

Express JS

Express is a minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications . With a myriad of HTTP utility methods and middleware at your disposal, creating a robust API is quick and easy.

Json Web Token (JWT)

JSON Web Token (JWT) is an open standard (RFC 7519) that defines a compact and self-contained way for securely transmitting information between parties as a JSON object. This information can be verified and trusted because it is digitally signed. JWTs can be signed using a secret (with the HMAC algorithm) or a public/private key pair using RSA or ECDSA. [36]

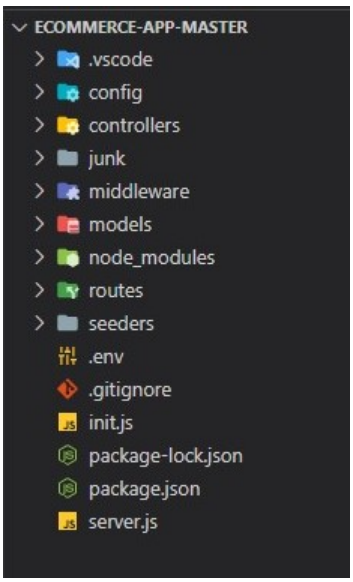
Node Mailer

email sending. The project got started back in 2010 when there was no sane option to send email messages, today it is the solution most Node.js users turn to by default. [37]

Back-end Code Structure

Below is the Back-end code structure.

Figure 4.8: Back-end Code Structure .



4.1.3 Front-end Development

Development Environment

Android Studio

Figure 4.9: Android Studio .

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It is available for download on Windows, macOS and Linux based operating systems or as a subscription-based service in 2020. It is a replacement for the Eclipse Android Development Tools (E-ADT) as the primary IDE for native Android application development. [38]

Flutter

Figure 4.10: Flutter .

A Framework (UI Library based on widgets): A collection of reusable UI elements (buttons, text inputs, sliders, and so on) that you can personalize for your own needs. [27]

Android Emulator

The Android Emulator simulates Android devices on your computer so that you can test your application on a variety of devices and Android API levels without needing to have each physical device. The emulator provides almost all of the capabilities of a real Android device. You can simulate incoming phone calls and text messages, specify the location of the device, simulate different network speeds, simulate rotation and other hardware sensors, access the Google Play Store, and much more.

Technologies used

Flutter and Dart

Flutter consists of two important parts:

- An SDK (Software Development Kit): A collection of tools that are going to help you develop your applications. This includes tools to compile your code into native machine code (code for iOS and Android).
- A Framework (UI Library based on widgets): A collection of reusable UI elements (buttons, text inputs, sliders, and so on) that you can personalize for your own needs. [29]

Most Useful Front-end Packages

Http Package

This package contains a set of high-level functions and classes that make it easy to consume HTTP resources. It's multi-platform, and supports mobile, desktop, and the browser. [39]

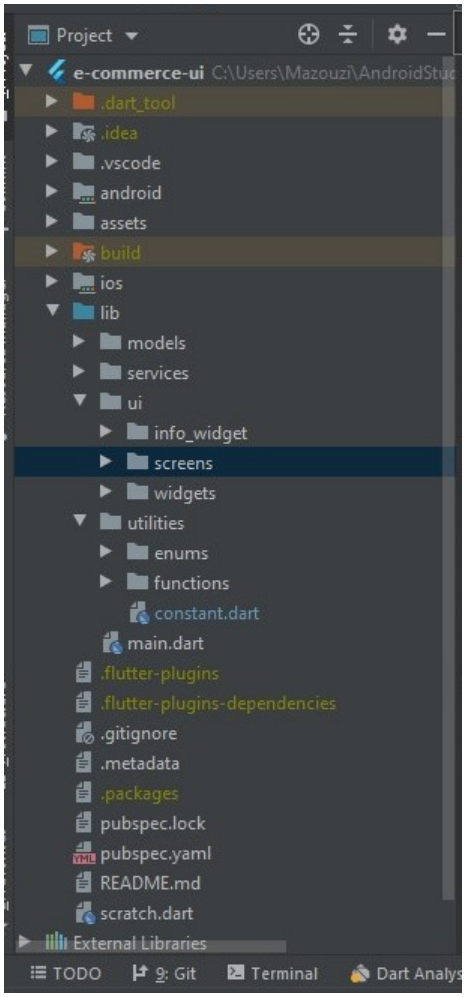
Provider Package

State management refers to the management of the state of one or more user interface controls such as text fields, OK buttons, radio buttons, etc. in a graphical user interface. In this user interface programming technique, the state of one UI control depends on the state of other UI controls. And for this application I decided to use provider because it's easy to use . [40]

Front-end Code Structure

Below is the Front-end code structure.

Figure 4.11: Front-end Code Structure .

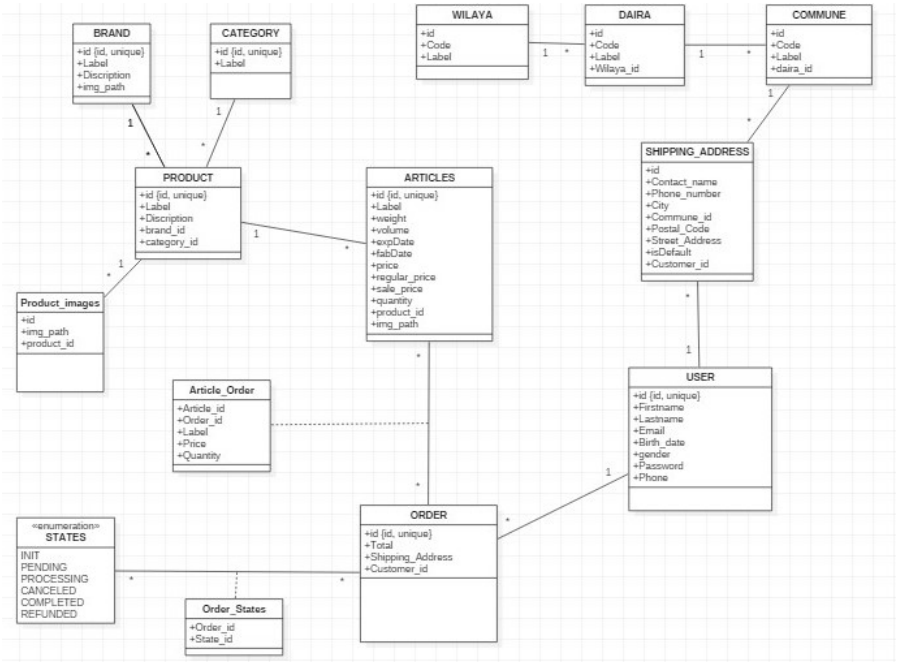


4.2 Analysis

4.2.1 Class Diagram

A class diagram is an illustration of the relationships and dependencies of source code between classes in UML. The class defines the methods and variables in an object, which is a specific entity in a program or unit of code representing that entity. Class diagrams are useful in all forms of object-oriented programming (OOP). We have used a certain number of objects in our app such as Product class, user class, and Order class ... etc.

Figure 4.12: Class Diagram .



4.2.2 Activity Diagram

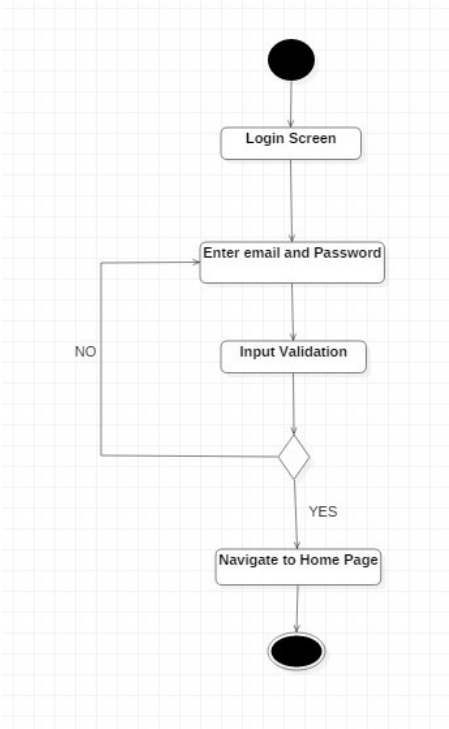
One of the important UML Diagrams is the activity diagram, which is defined as a flowchart that designs flow from one activity to another, describing the dynamic aspects of the system. In this part, we will show some activity diagrams:

- Login Activity.
- Search product Activity.

4.2.3 Login Activity Diagram

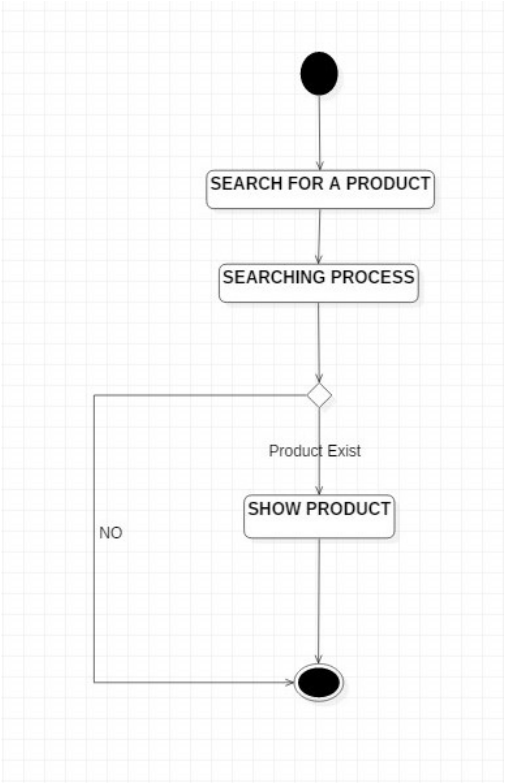
A log-in screen is shown to the user if he made a action that is require the user to be logged in if the user logged in successfully a token is sent and saved in the user device .

Figure 4.13: Login Activity Diagram.



4.2.4 Search product Activity Diagram

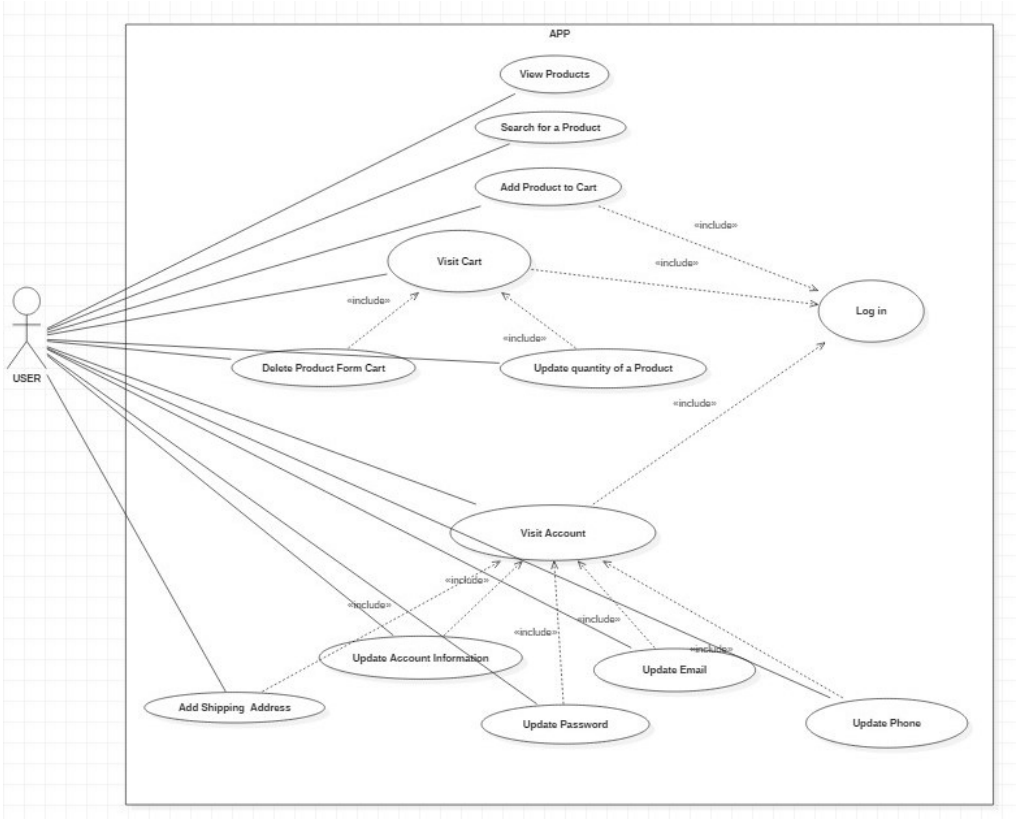
Figure 4.14: Search product Activity Diagram.



4.2.5 Use Case Diagram

Use Case Diagram is precise and specify ,the main functional objectives of the application as well as the relation between these objectives and the users. Largely, the whole design is based on this diagram.

Figure 4.15: Use Case Diagram.



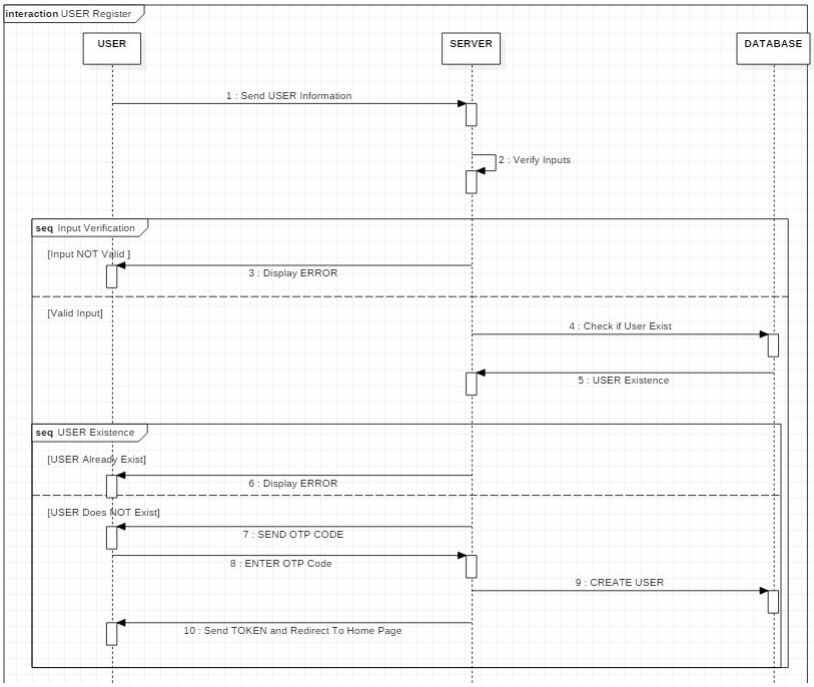
4.2.6 Sequence Diagram

The UML sequence diagram shows how the operations are performed, shows the order of interactions and focuses on time. This section shows us the most important Sequence Diagrams in our application such as the Register process and Adding Product to cart.

Sequence Diagram of User Register Process

Registering a user is done after verifying the inputs also verifying if the user is already registered ,then an OTP code is sent to the his email to check the email, if the OTP code is correct the user is created.

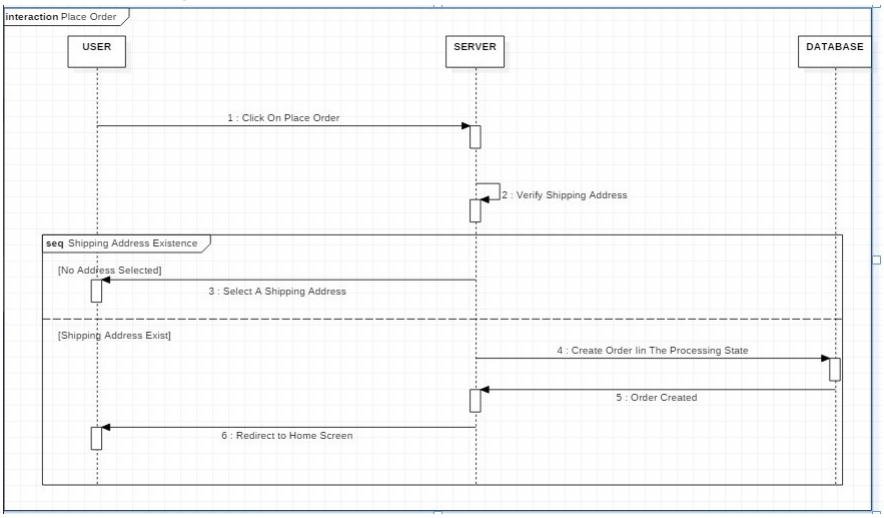
Figure 4.16: Sequence Diagram of User Register Process.



Sequence Diagram of Place Order

In Placing order the user must be logged-in , a shipping address must be selected , an order is created after that with the status of Pending.

Figure 4.17: Sequence Diagram of Place Order.



4.3 Design

We have been concentrated on the simplicity of the user interfaces in order to make all types of users able to access all the functions of our application.

4.3.1 The main screens in our app

The Home screen

The home screen contain a section of ads and a section of categories and week promotion and the a recommended section which contain the products.

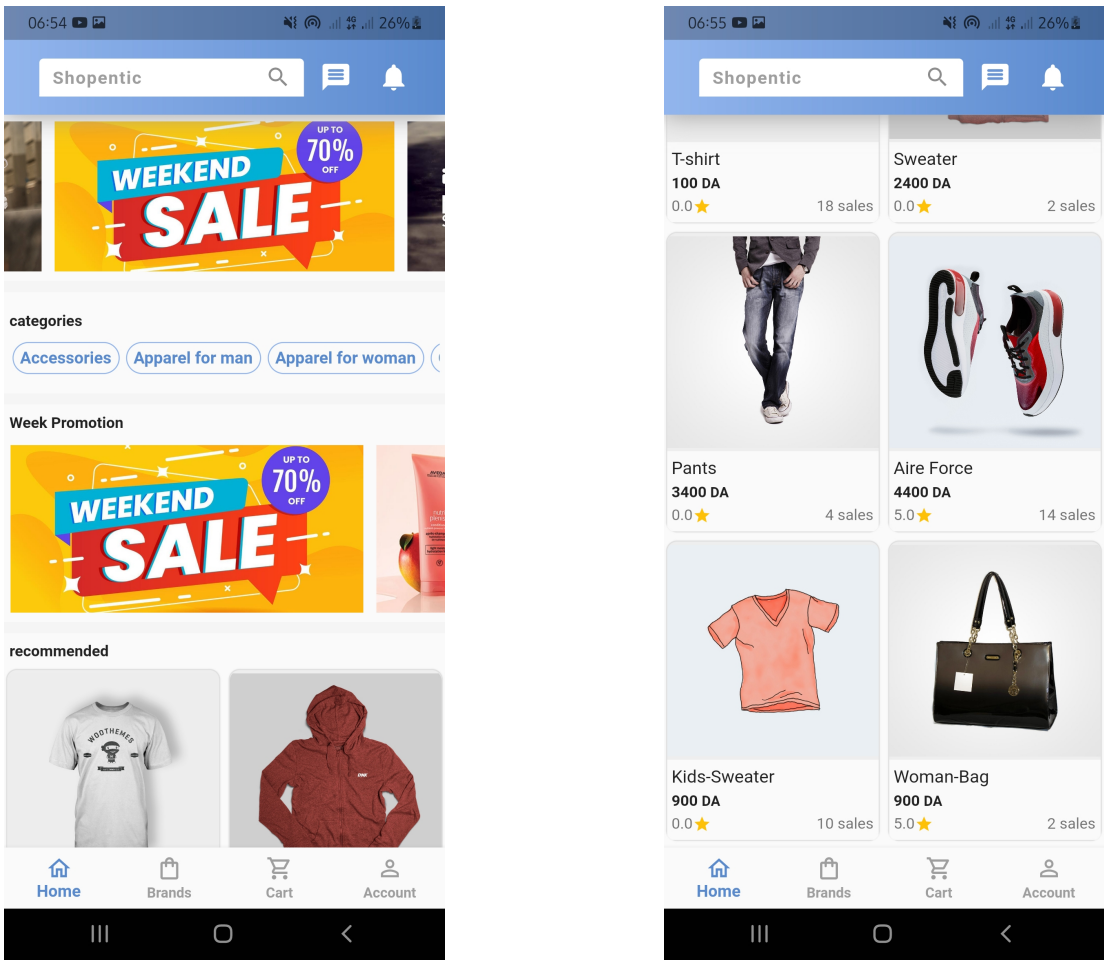
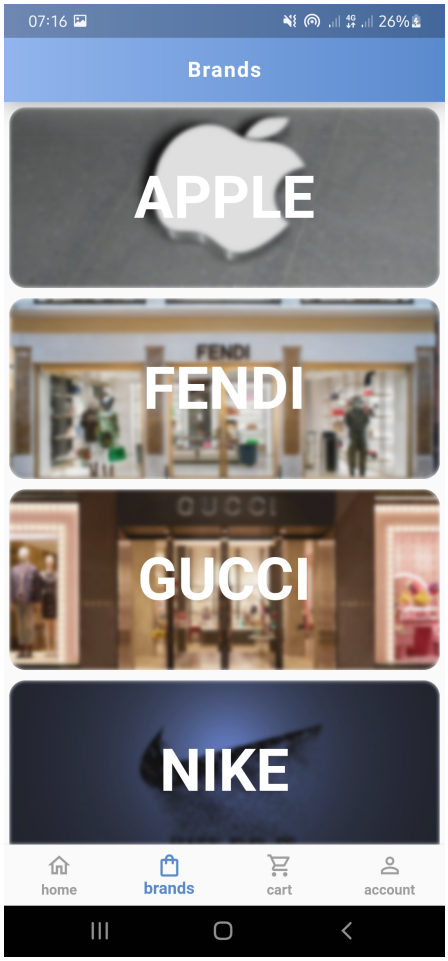


Figure 4.18: Home Screen.

The Brands screen

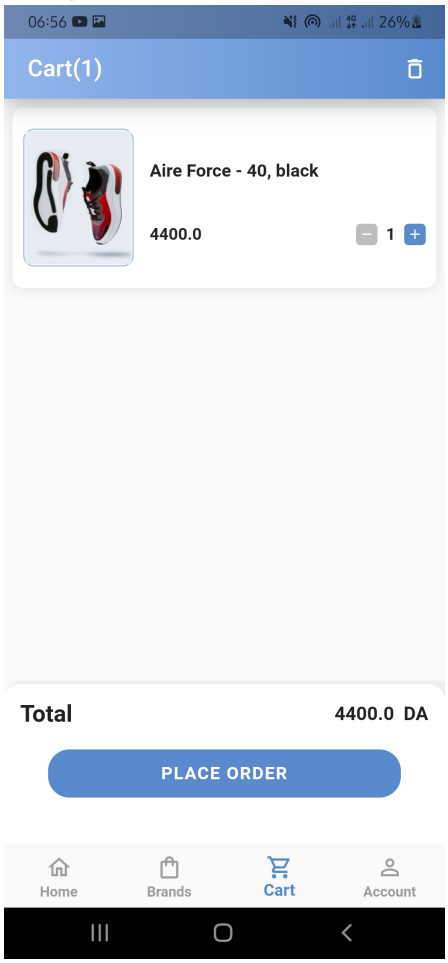
Figure 4.19: The Brands screen.



The Cart screen

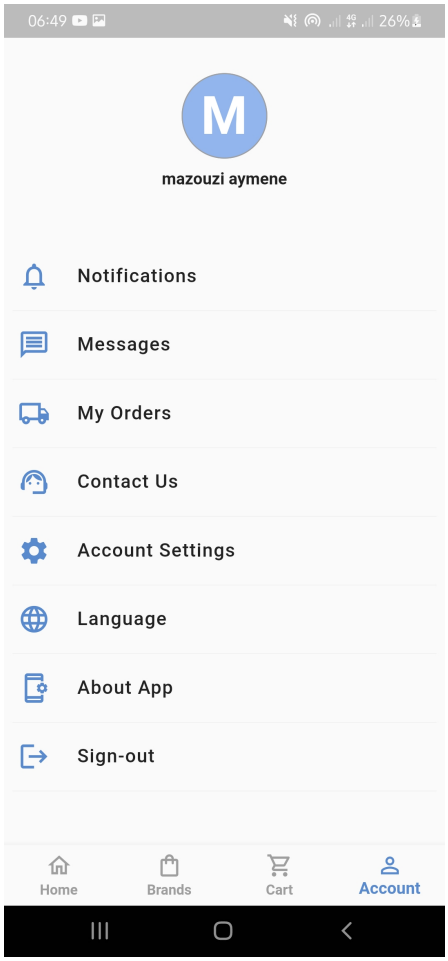
This how the cart looks after adding a product to the user cart.

Figure 4.20: The Cart screen.



The Profile screen

Figure 4.21: The Profile screen.



4.3.2 Ordering a product scenario

View product details screen and then select a option

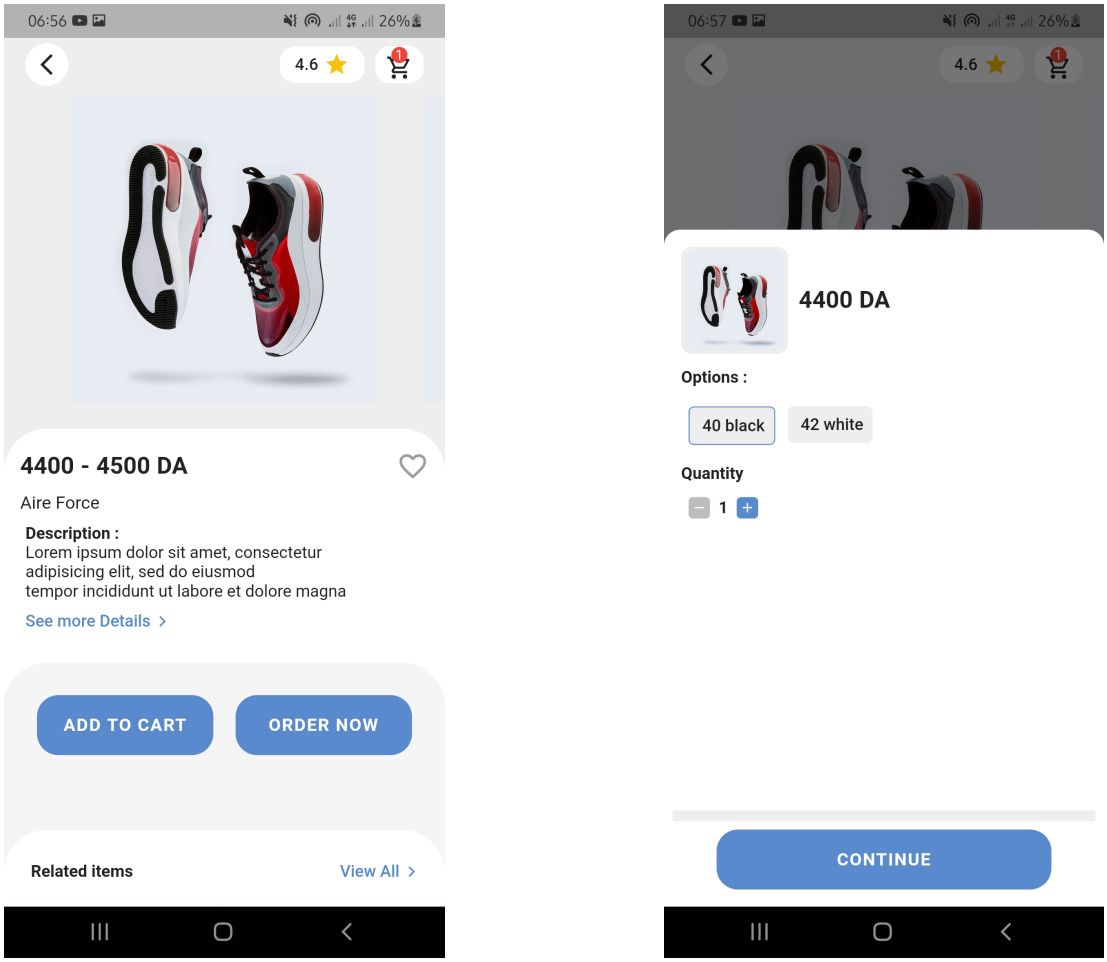


Figure 4.22: View product details screen and then select a option.

Navigate to the cart and place the Order

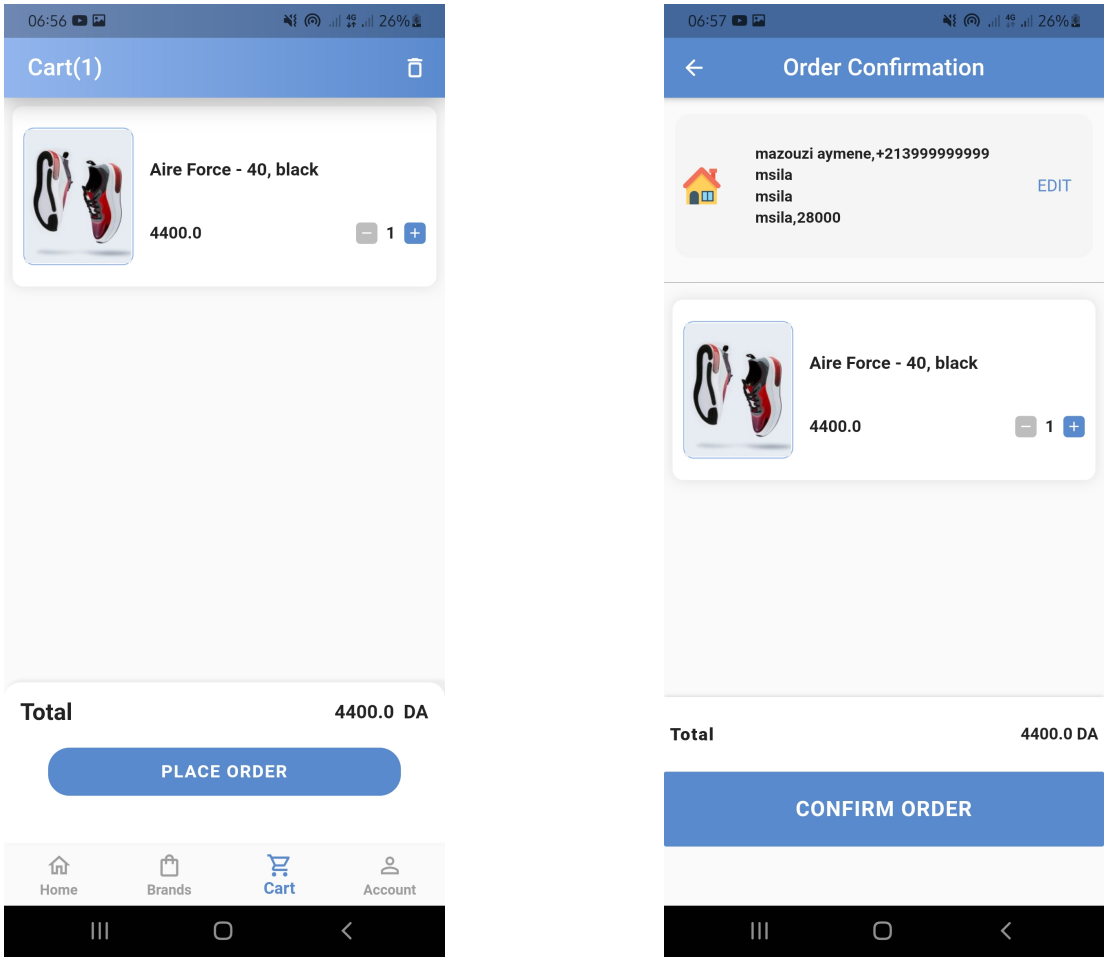


Figure 4.23: Navigate to the cart and place the Order.

Confirm order and navigate to orders list

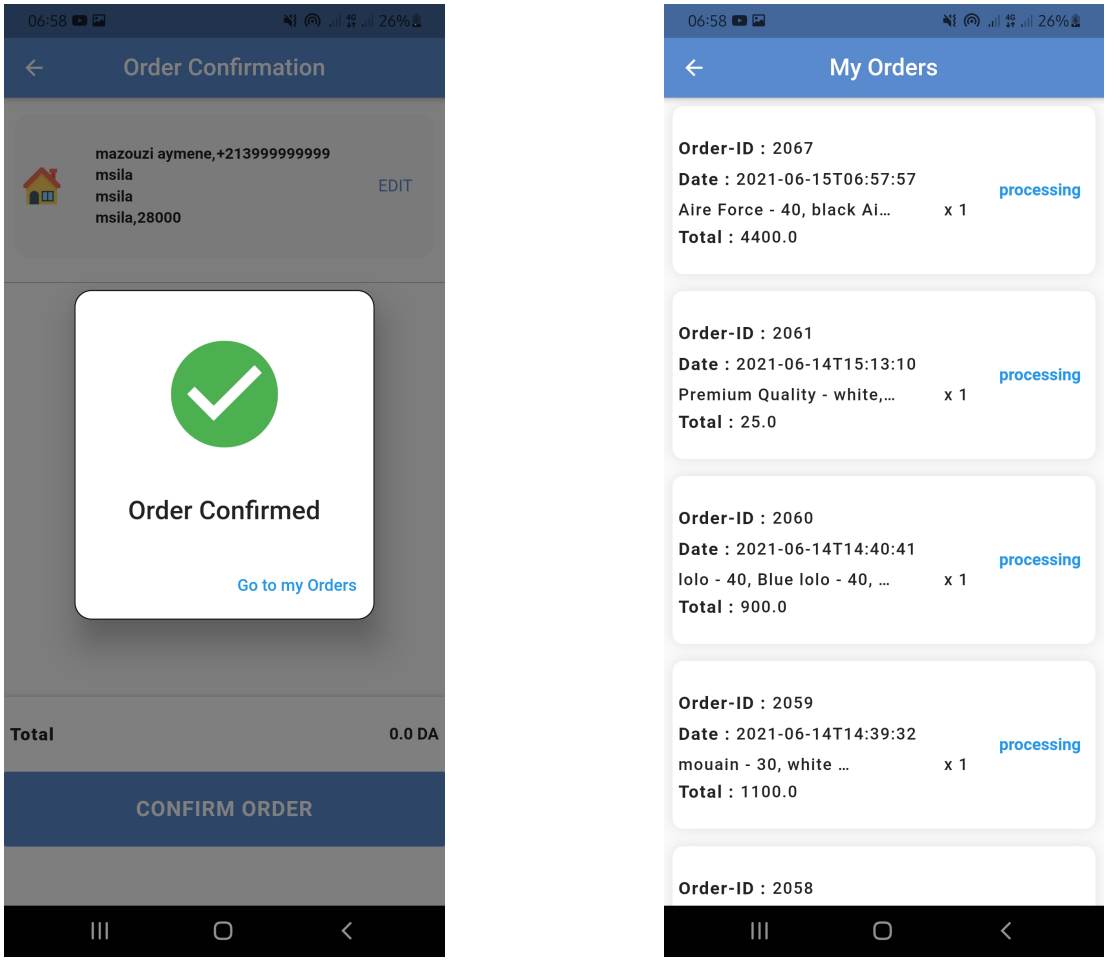


Figure 4.24: Confirm order and navigate to orders list.

View Order details

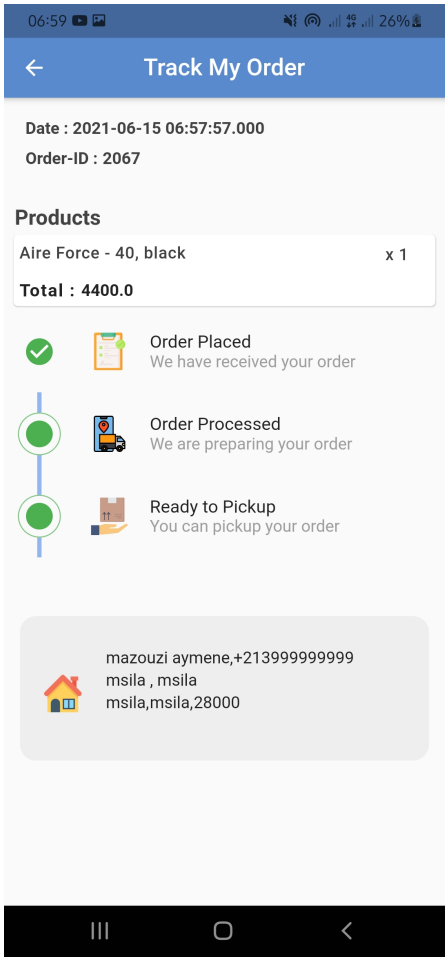


Figure 4.25: Order details screen.

4.3.3 Some of the features in our app

Our app support Multiple languages

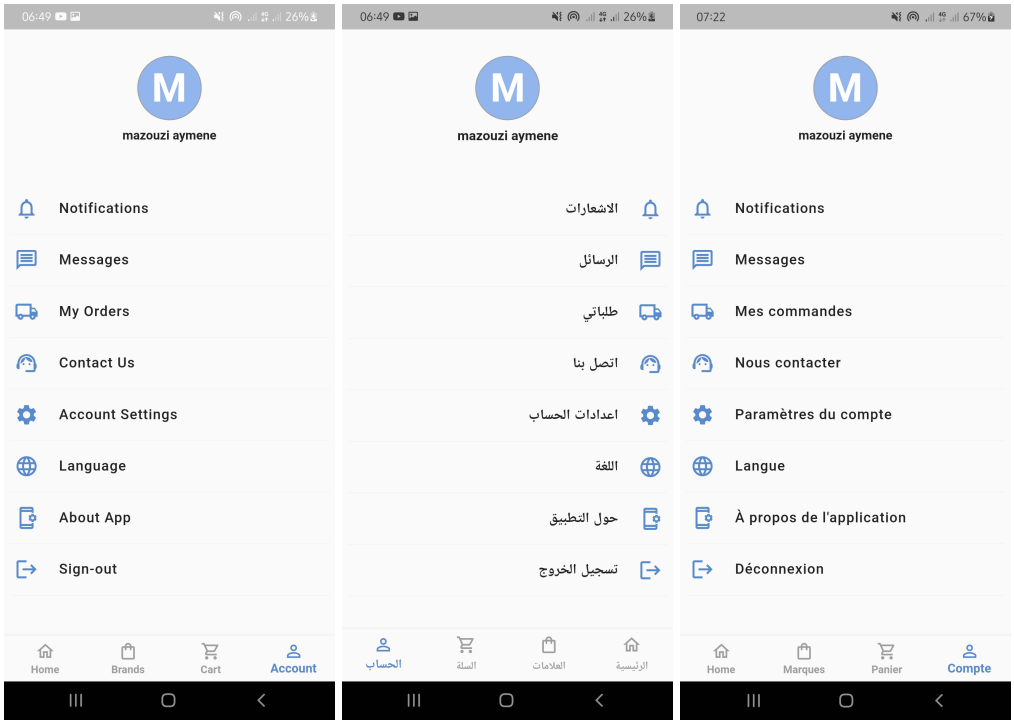


Figure 4.26: Our app support Multiple languages.

Our app support Searching & Filtering

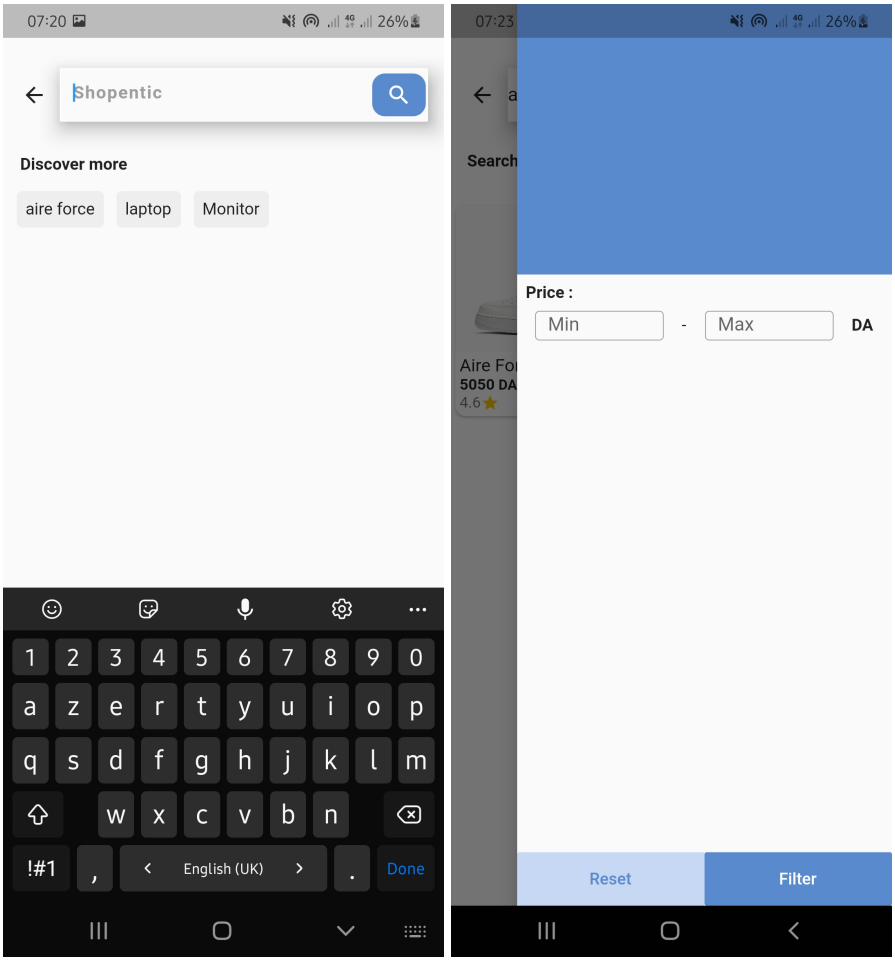


Figure 4.27: Our app support Searching & Filtering.

5

General Conclusion

Earlier parts of the dissertation we talked about E-commerce and it’s impact on most of the fields and we have introduced an E-commerce Application geared toward a private company, which is the solution of it’s main problem "keeping the customers up to date with new arrives and prices an promotions ...", and we have discussed Mobile App development and the most popular frameworks for it.

we have tried our best to implement the app, and we ended up by choosing the most appropriate and most efficient way, as well as for the design of the application so that we have been concentrated on the simplicity of the user interfaces in order to make all types of users able to access all the functions of our application.

Our project is not final and we are still working on accomplishing it and adding features and other facilities.

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Abstract :

E commerce is the process of doing business electronic. It changes the entire business scenario due to the powerful innovation of Internet, which is spreading fast through the world.

The objective of this work is to design and build an e-commerce mobile application that can help the company keeping the customers up to date with new arrives and prices an promotions and make them expand .

In order to develop this application we have chosen the latest technologies. For the fronted-end we picked “Flutter” which can make create Beautiful UI in No-Time . and for the back-end we picked “Node js” which is powerful and super fast .

Keywords : E-commerce , Mobile application .

ملخص :.

التجارة الإلكترونية هي عملية ممارسة الأعمال التجارية إلكترونيا. التي غيرت سيناريو العمل بأكمله بسبب .الابتكار القوي للإنترنت ، والذي ينتشر بسرعة في جميع أنحاء العالم.

الهدف من هذا العمل هو تصميم وبناء تطبيق للتجارة الإلكترونية على الهاتف المحمول يمكن أن يساعد الشركة في إبقاء العملاء على اطلاع دائم بأحدث العروض الترويجية والأسعار الجديدة وجعلها تتوسع.

من أجل تطوير هذا التطبيق اخترنا أحدث التقنيات. بالنسبة للواجهة الأمامية ، اخترنا "Flutter" الذي يمكنه إنشاء واجهة مستخدم جميلة في وقت قصير . وللنهاية الخلفية اخترنا "Node js" ، و التي هي قوية وسريعة للغاية.

الكلمات المفتاحية : التجارة الالكترونية, تطبيق هاتف نقال.

Résume :

Le commerce électronique est le processus de faire des affaires électroniques. Cela change tout le scénario commercial en raison de la puissante innovation d'Internet, qui se répand rapidement dans le monde.

L'objectif de ce travail est de concevoir et de construire une application mobile de commerce électronique qui peut aider l'entreprise à tenir les clients au courant des nouveautés, des prix et des promotions et à les faire grandir.

Afin de développer cette application nous avons choisi les dernières technologies. Pour le front-end, nous avons choisi “Flutter” qui peut créer une belle interface utilisateur en un rien de temps. et pour le back-end, nous avons choisi “Node js” qui est puissant et tres rapide.

Mots clés : E-commerce , Application mobile .