USA
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Project: Moto spare (Final Year Project)

Version 1.0

ACKNOWLEDGEMENT

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Abstract

There are a large number of people who use their private transport. Most of the people use bikes and they've to replace or repair their vehicle parts occasionally. The retailers have to order the needed parts before 2-3 months and after that the order is received nowadays and it's a very hectic process for the retailers and for the customers as well. Vendors also play the bad game by selling copy of the genuine products pretending it's genuine. We are going to implement a system that'll eliminate these problems. Though retailers have the parts in their stock but once it's out of stock they've to wait a lot for the delivery after the order. Here our website comes in action. The vendors can implement our website and users can place the order directly from the website. The products can be produced and delivered in a very short time. The production will also be synchronized as the vendors would be able to see the orders they are receiving and produce the specific products in real time. This would not only eliminate the late deliveries and months of wait for the order but it'll also create job opportunities. The economy will be boosted dramatically. As the spare parts production and delivery will be optimized, the sales will be increased as well. People don't have time to wait for months for the genuine products so, they've to use third class or local parts instead of genuine ones. Our web based system is developed by using Django a Python based framework used for highly scalable, secure and efficient websites. All the information bases are planned utilizing Django's own ORM and the standard innovations like HTML, CSS and JavaScript are utilized for the frontend planning of the site. Along these lines, by picking the right tech stack we've made our site massively secure, quick and adaptable.

CHAPTER 01

INTRODUCTION

1.1   Introduction

In Pakistan most of the people use bikes as their primary source of transportation and they've to change the vehicle parts with the passage of time. Pakistan has a large number bike users. First quarter analysis of the last year shows **Pakistani bikes industry** has groomed and scored the highest first quarter with about half million sales by March, up 27.7% from 2020 and up 14.5% from the 2019 record year. Honda Atlas growth is increasing dramatically every year.

There are a lot more Chinese and Japanese brands like Road Prince, Yamaha, Suzuki and United that are selling bikes and bikes parts in Pakistan. As the bikes sales are increased the number of potential customers is also increased so, a higher number of people will be buying the spare parts in upcoming year. We all know that the every customer want the Honda's genuine parts even if his bikes is Road Price or United or any other Chinese bike. So, basically Honda has a large number of potential customers, not only customers but fans who love Honda. Our primary focus is to provide Honda's parts in our market. As it already has a large fan and customer base and the quality of the parts is too good to be honest all of us know that.

Once a bike user needs the spare parts they've to go to the retailers. The retailers order the parts in bulk by just a random idea how much they need. And the needed parts are delivered in 2-3 months after the order is placed. It's a very hectic process for the retailers and as the result retailers also play the bad game by selling copy of the genuine products pretending it's genuine. These products easily get damaged and users have to get them replaced again and again in very short time. There is a lot of loss of money, health and lives of citizens as well. Our system will eradicate the problem from its root. Once the genuine products are easily available in the market no doubt the third class parts will be no more in the market. People will definitely buy the genuine ones and they'll not be deceived by the retailers as well. Our system will not only provide an economic boost but the safety as well and a lot of job opportunities will be created for the unemployed youth.

The proposed system is a web based application "Motospare". A web based system that a vendor like Honda can use to sell motorbike spare parts to their affiliates like Honda Center and other retailers associated to them. As the retailers from all over the country

place the order and they'll be producing the products in real time to meet the short timelines. And the products could be delivered in a very short time as compared to nowadays.

It will also create job opportunities and also enhance the economic development in our country. E-commerce changes the way that business operates. And none of the Motorbike brands use it for their business. We are developing a system that'll definitely entice bikes industry to implement it for their business. The orders can be delivered in a very short time with the help of our system. The production and delivery system can be synchronized by our system. The needed parts can be produced in real time as the order is received and the delivery system could be more efficient and fast it is too profitable for the vendors that any company would implement it for their business either Honda, Yamaha or any other spare parts production company. Our system will be resolving the following problems:

- To provide all kinds of motorbike spare parts, needed by the customers.
- To create job opportunities for many unemployed youths through employing them.
- To help people not to travel very far to look for these products.
- To eradicate fake products from the market and save a lot of money and lives.
- To provide the application through which a customer/retailer can purchase all kinds of spare parts.

1.2   Background & Existing System

Pakistan has a diverse customer base in terms of bikes. Almost entire spare parts business is running offline. There are two main websites that are developed in the similar fashion but these are not really functional. They don't have potential customers due to their bad UI and UX. Both of the website are not fully functional. These are like the beta version of the website with no security, service and functionality.

- http://sparepartspakistan.com/

Spare Parts Pakistan is a dummy website and it's not working. This is just like a beta version or prototype of the website. There is no business behind it. The website has a very bad UX. There is no quality content on the website only dummy text is written on

it. There are no SSL certificates on the website; it means soon enough Google will automatically remove it from their search engines.

- http://saga.com.pk/

Saga is real time competitor of our business. Saga is producing their own Products. The prices are too high and the biggest thing is it's a Chinese company and it's not trusted as compared to Honda or Yamaha. Saga is a B2C marketplace while our system is B2B. We are not providing the parts directly to the customers. We are just expediting the production and the delivery of the parts from the genuine vendors. B2B marketplace is always on a large scale as compared to B2C. Our system can easily beat Saga as we our providing original parts to the customers from the trusted vendors not from the local or third class Chinese brands.

1.3 Problem in Existing System

Spare parts Pakistan

- The user interface is not good
- Products are not for sale they are just show off the products and when need to buy they redirect to the dealer.
- Content on the website is not good it's just a dummy text.
- There are no SSL certificates in the website.
- There is no add to cart option you can't buy their product through website.

Saga Pakistan

- Chinese products.
- They are selling their own products pretending to be Honda's genuine parts.
- No SSL security added, the account will not be secured.
- Customers can't trust them due to the Honda or Yamaha's brand value.
- Most people don't buy spare parts online, they trust the official retailers.

1.4 Problem statement

The Proposed system is a web based application. From where the retailers can place the order directly to the vendors. This will eliminate the long delivery times and

the official and genuine products will be easily available in the market. The website is secure, scalable and minimalist in design. This will be a B2B marketplace the orders will be in bulk and the production of the parts can be synchronized.

1.5   Main Modules

Customer

This module contains customer's data and the validation and verification of that data as well. Customers can sign up by providing their basic information like first name, last name, email, phone number and password to register their account. The data types are already saved if the user enters the phone number or email in the wrong format the user will be notified.

Customers can log into their accounts by using registered email and password. If any of the credentials are wrong the user will be notified.

Products

The admin can add or remove products in this module. The admin or super user will be able to upload images related to product add price and assign the product a category.

Cart

After complete shopping, the customer can view, edit and delete their products in the cart and confirm their order, and proceed further.

Checkout

After adding the products in the cart, the users can add the address and contact details for placing the orders.

Expected Outcomes

The web application will be used by the retailers to place the orders and the vendors will deliver the orders in a very short time as the production will be synchronized in the real time. The third class local and Chinese products will be eradicated from the

market and bike users will be availing the genuine parts. This will not only save a lot of money that is used in replacing the parts from time to time but the saves and health of the people as well which is lost in accidents. This system will not only boost the economy of the country but this will be a great system for a society and its welfare.

1.6   Tools & Technology

GUI (Front end)

The GUI of the website is developed using standard programming languages like HTML, CSS and Bootstrap. The front end is completely responsive; it means it adjusts itself according to the screen size.

HTML

It provides the basic structure of sites, which is enhanced and modified by other technologies like CSS and JavaScript.

CSS

Cascading style sheets are used to design web pages. Like fonts design and colors. It is used to make an interactive design with a beautiful UI which is not possible with only HTML.CSS is used to control presentation, formatting, and layout.

JavaScript

JavaScript is used to control the behavior of different elements, pop ups and other functions you want to add in the front end. It can be used in the front end and in the

Bootstrap

Bootstrap is a front end framework. Which uses precompiled CSS and JavaScript for creating layouts, as its responsive CSS is designed to conform to different devices. It can be employed to ensure consistency, eliminate cross-browser issues, and so on.

Backend Development

Python

Python is an open source programming language. It has gained a massive popularity due to its speed optimization and very easy to use syntax. Python has been one the most popular programming languages in the last decade. It provides extensive website development support.

Django

It is an object of a web framework in Python that encourages rapid development and a clean, pragmatic project, so we'll have to make use of it. It will, for the most part of the goings-on in relation to web development. It contains a ready-to-use environment so that we can focus on the writing of the app without having to reinvent the wheel. This is free and open-source. Some salient features of Django are:

- Time-saving Django interface
- URL management is easy
- Python is faster
- Just design the model it handles the database by itself
- Django is open-source.

CHAPTER   02
REQUIREMENT ANALYSIS

2.1 Requirement Analysis

We've done a proper search for our system. The UX and the functionality of the website is made as simple as possible so every user can use it. As our customers know what they are buying and they don't even bother to read the lengthy descriptions we've removed this from our system and a lot more features are minimized as compared to a standard ecommerce website. There are two main categories of the requirements:

2.2 Functional Requirements

Login

In our web app, users will log in by using their password and username. If the user is not logged in he or she will not be able to place an order.

Sign up

In our web app, users must have to sign up first because after signup they will get an account and then they will enjoy our interface.

Filter by category

The users can easily filter the products by categories. As we've kept in mind that most users might be illiterate, we've removed the search bar and minimized the UI. The category filter provides a bird eye view on all the products.

Add to cart

The users can add the items in the cart. It'll be used as a temporary list of the product they want to order. However, a user can modify his cart. He can add or remove the products from his cart.

Checkout

After adding the products in the cart the users will be shown the checkout section. Users can provide the address and contact details in this section and the order will be placed successfully.

2.3   Non Functional Requirements

Security

The website should be secure enough so it can't be hacked easily in case of any error it should not show much details so a hacker can understand the directory structure of the website.

Password hashing

The great thing about this website is its great security. Just in case if a hacker hacks our website he can't get access to the passwords as the passwords are stored after hashing. Django's hashing algorithm is one of the most powerful and secured algorithm.

User-friendly interface

The user interface should be so minimalist and clean a lay man user can surf it easily. We've removed all the unnecessary features from our website and the design is too simple anyone can use it easily.

Scalable

As we've a great customer base the website may face a large number of visitors. It is scalable enough to manage a thousands of requests per second.

Mobile friendly

Some people use mobile for surfing website and they've to scroll horizontally. This can be eliminated by a responsive design. Our website is fully responsive for the mobile devices.

HTTPS (SSL)

After the deployment the SSL certificates will be added in the website for secure data transfer to the servers. This is a great step towards security.

2.4   Proposed Methodology

Over the past few decades, e-commerce has seen a steady growth that has changed the nature of the business. Millions of people shop online every day, the vast majority of whom shop more than once a week. This has led to opportunities for profitable businesses that did not exist in the days before the internet. Businesses are no longer limited to customers in their immediate vicinity, but all e-commerce stores have the potential to reach millions. That's why we are going to provide businesses a platform that will help them to increase productivity and to provide hassle free processes by which they can deal with the retailers.

On the other hand, the provided system will also help retailers to place orders which will be delivered in the least amount of time.

2.5   Functionality of the system

Business models of e-commerce, the so-called business-to-business to consumer (B2B2C). This model is actually a combination of both B2B and B2C models. This is a legal agreement in which one company sells to another company and then resells them to its customers.

The main advantage of the B2B2C business model for e-commerce companies is the acquisition of new customers. This is especially important for new e-commerce companies that need a way to quickly grow their customers. In this way we are going to help all three parties including distributors, retailers and customers.

2.6   Methodology of the system

Customers create a sense of loyalty to commerce websites that give them a better user experience, and they pass on trust and trust. There are a variety of factors that affect how easy it is to find the product they are looking for, how easy / difficult it

is to make a payment, and how quickly an order is made. All of these factors determine whether a customer will make a purchase on that website or not. Often, potential buyers become impatient, which means they don't have much time to get what they want, or to get a good first impression. Our e-commerce module, part of which considers these and other requirements including the following.

- Attracting and retaining customers
- Peace of mind for both distributors & retailers
- Simplicity within the payment process
- Security and reliability
- Using intelligence for evolution
- Web design, usability and natural positioning within search engines

CHAPTER 03

DESIGN SPECIFICATION

3.1 Use Case Diagram
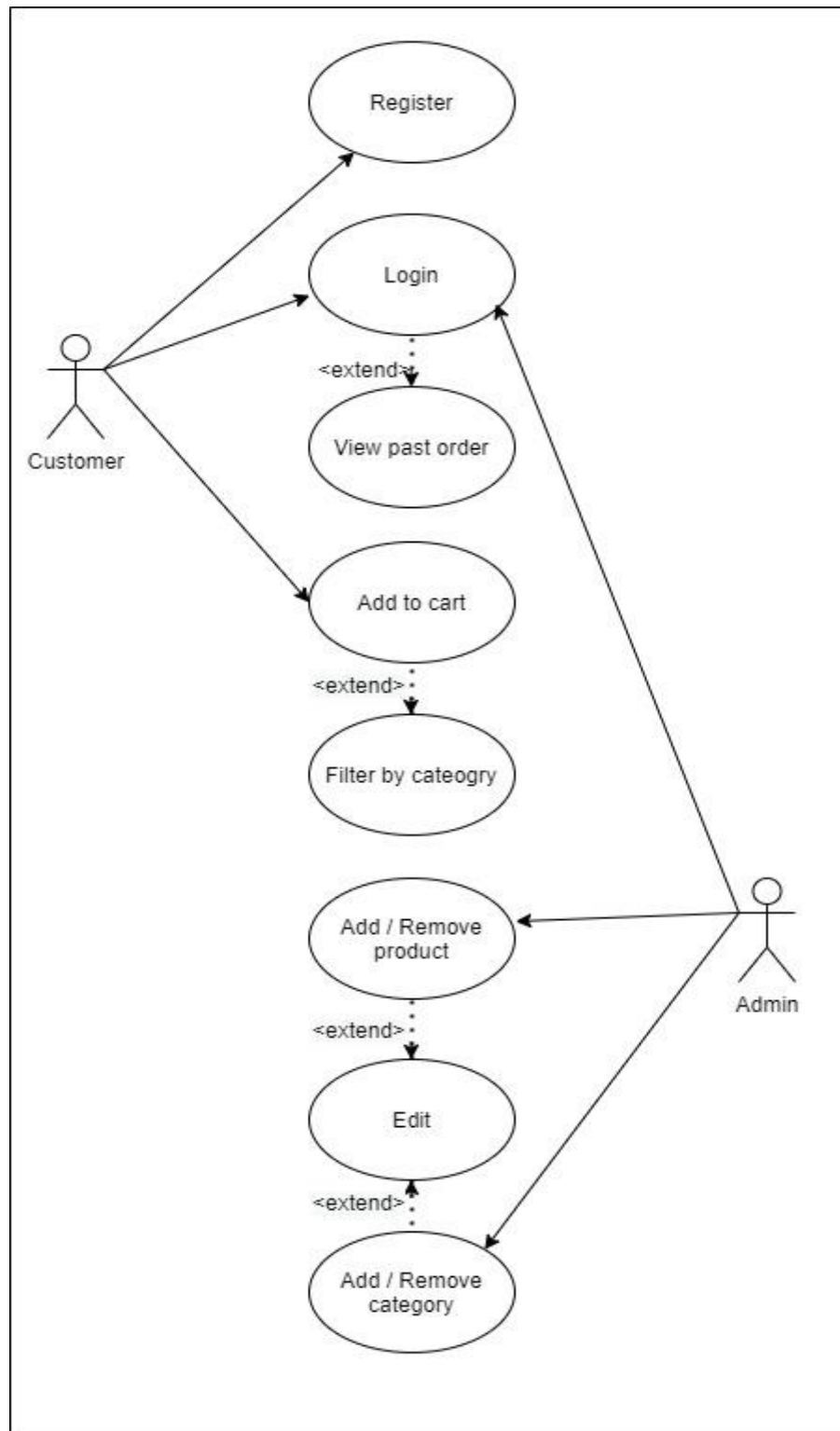
Figure : 3.1

3.2 Data Flow Diagram

a) DFD Level 0

Motospare

Data Flow Diagram Level 0
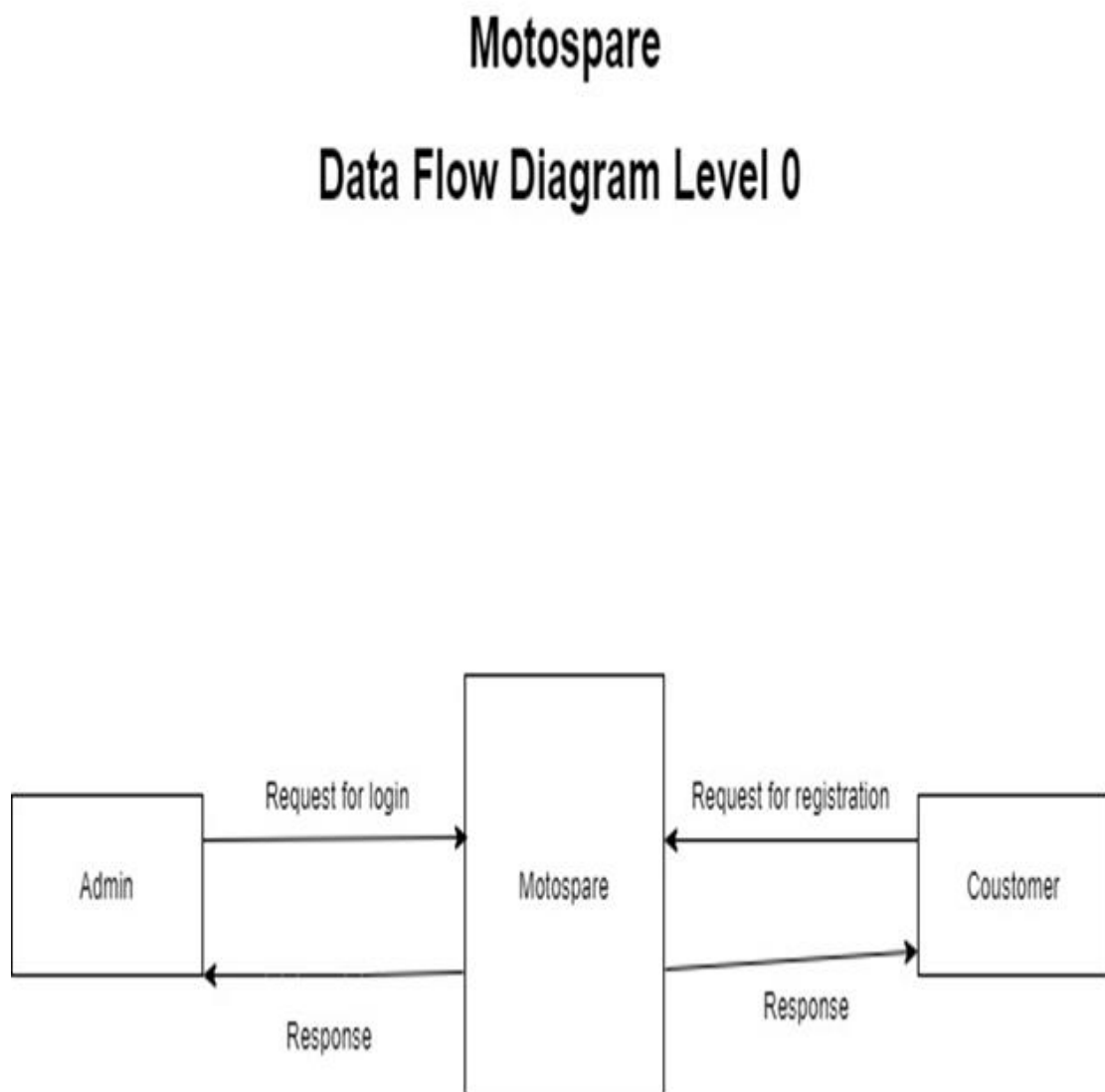
Figure : 3.2 (a)

b)   DFD Admin Level 1

Motospare

Data Flow Diagram Level 1

Admin side

	Request for Login	Check for login	
Admin	Login		AdminDB
	Response	Reply	

Add/Edit category → Manage Category — Insert Data → CategoryDB
Response ← ← Reply

Add/Edit Item → Manage item — Insert Data → ItemDB
Response ← ← Reply
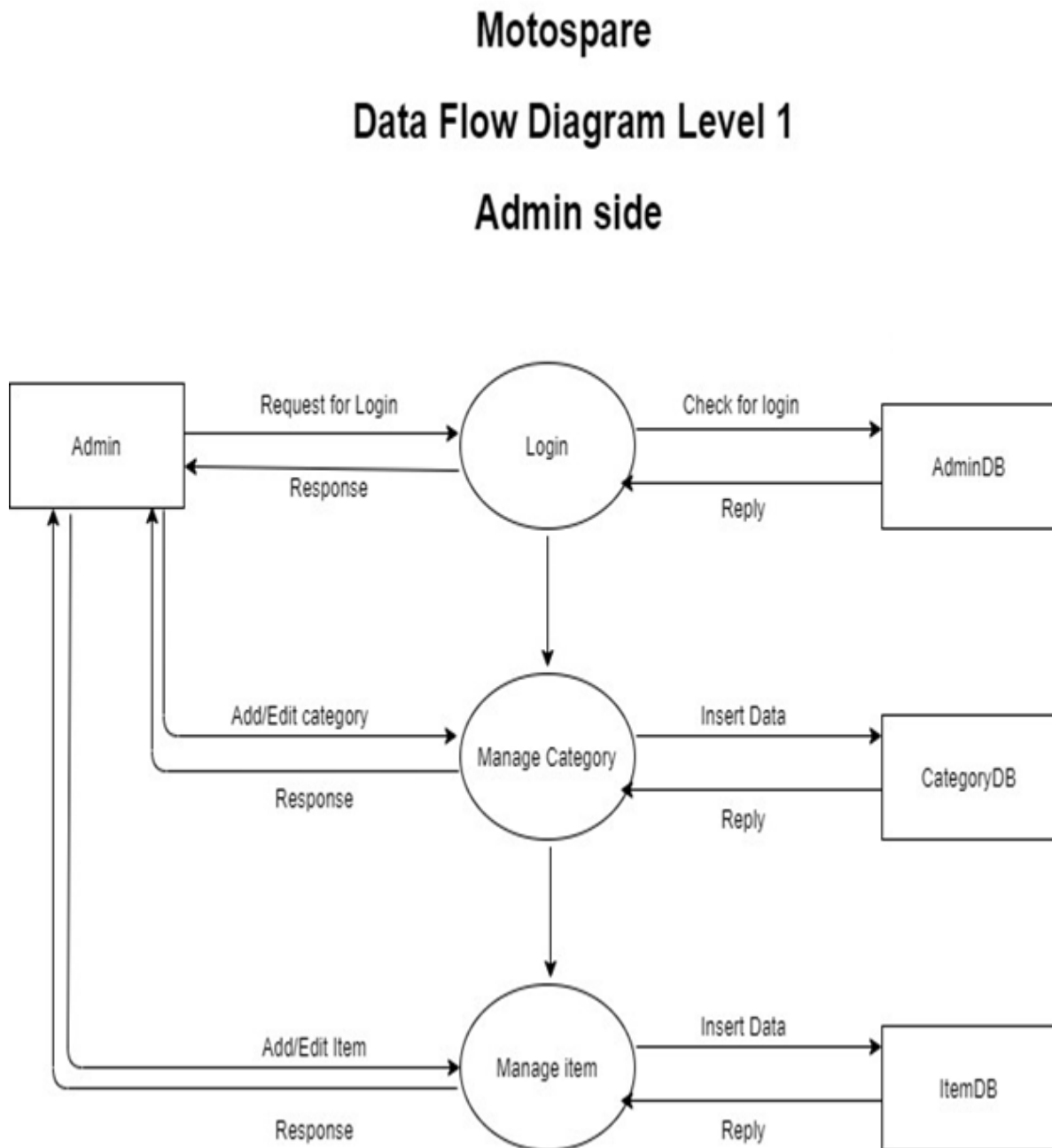
Figure : 3.2 (b)

c) **DFD Customer Level 1**
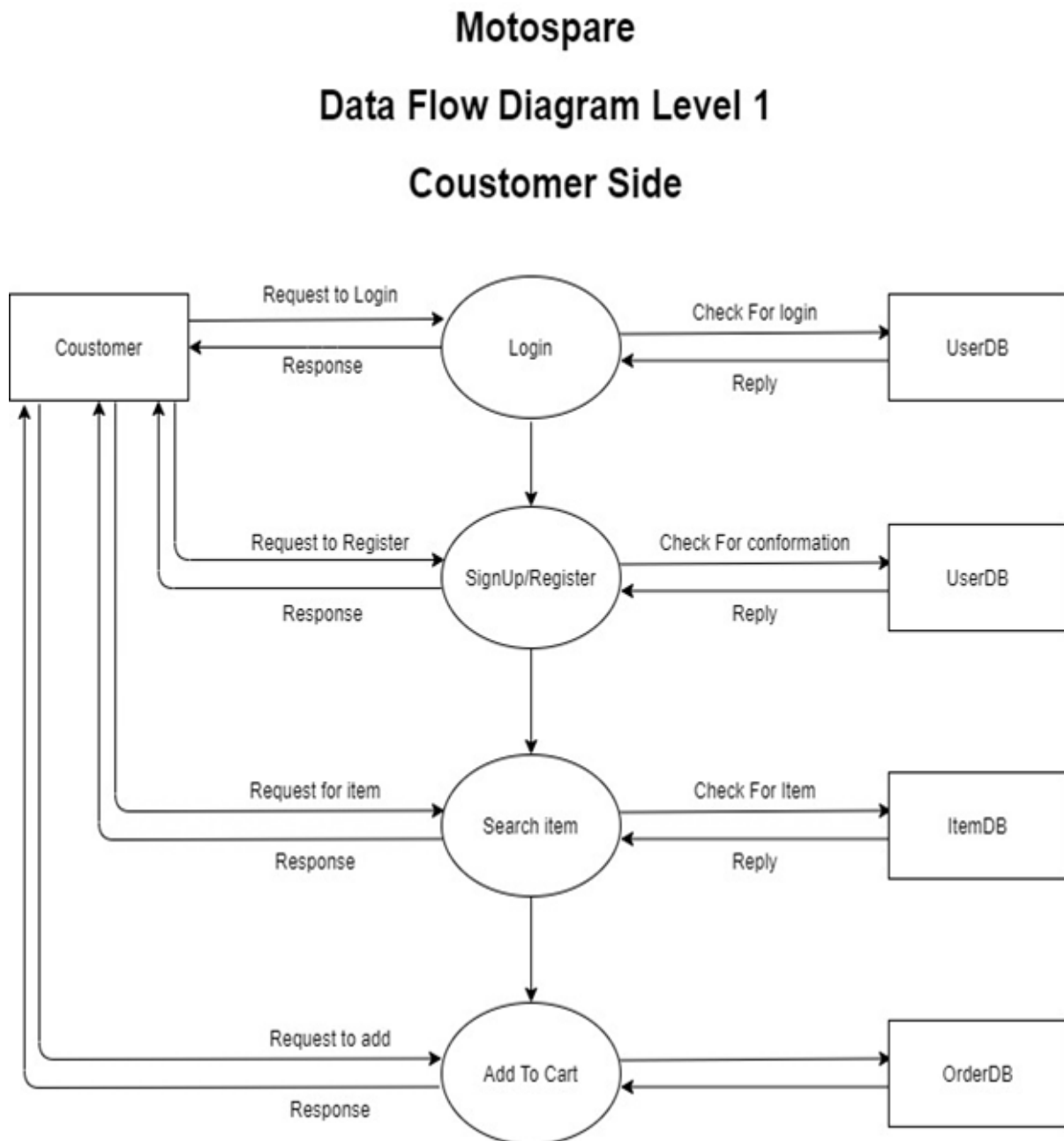
Figure : 3.2 (c)

3.3 State chart
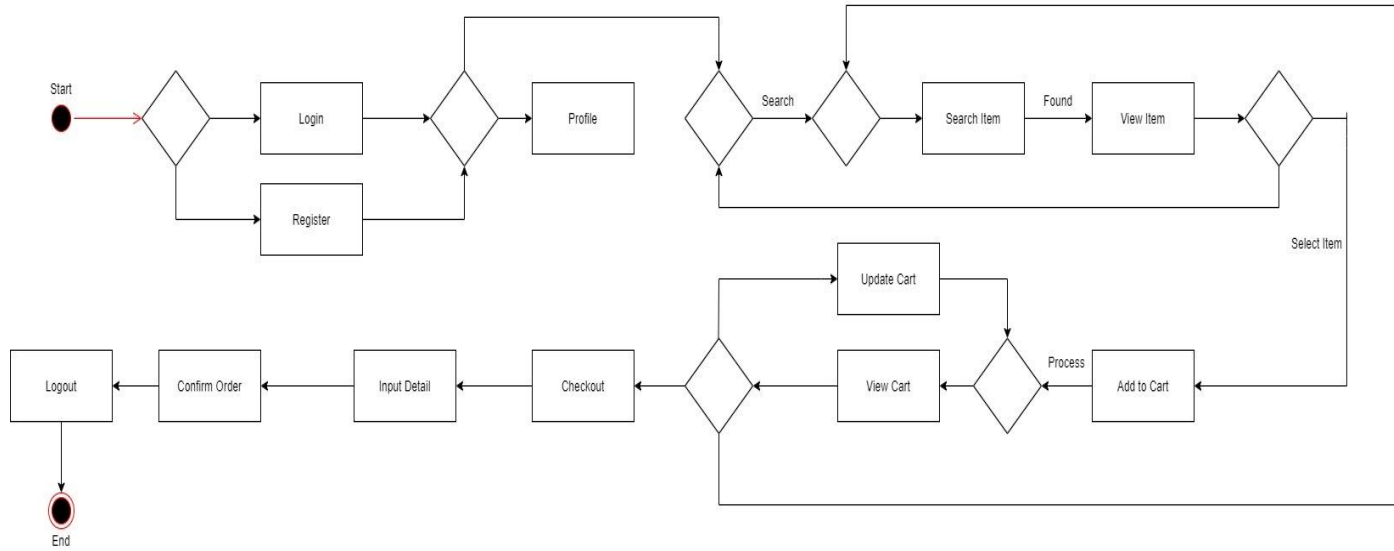
Figure : 3.3

3.4 Sequence Diagram

(a) Login

Login
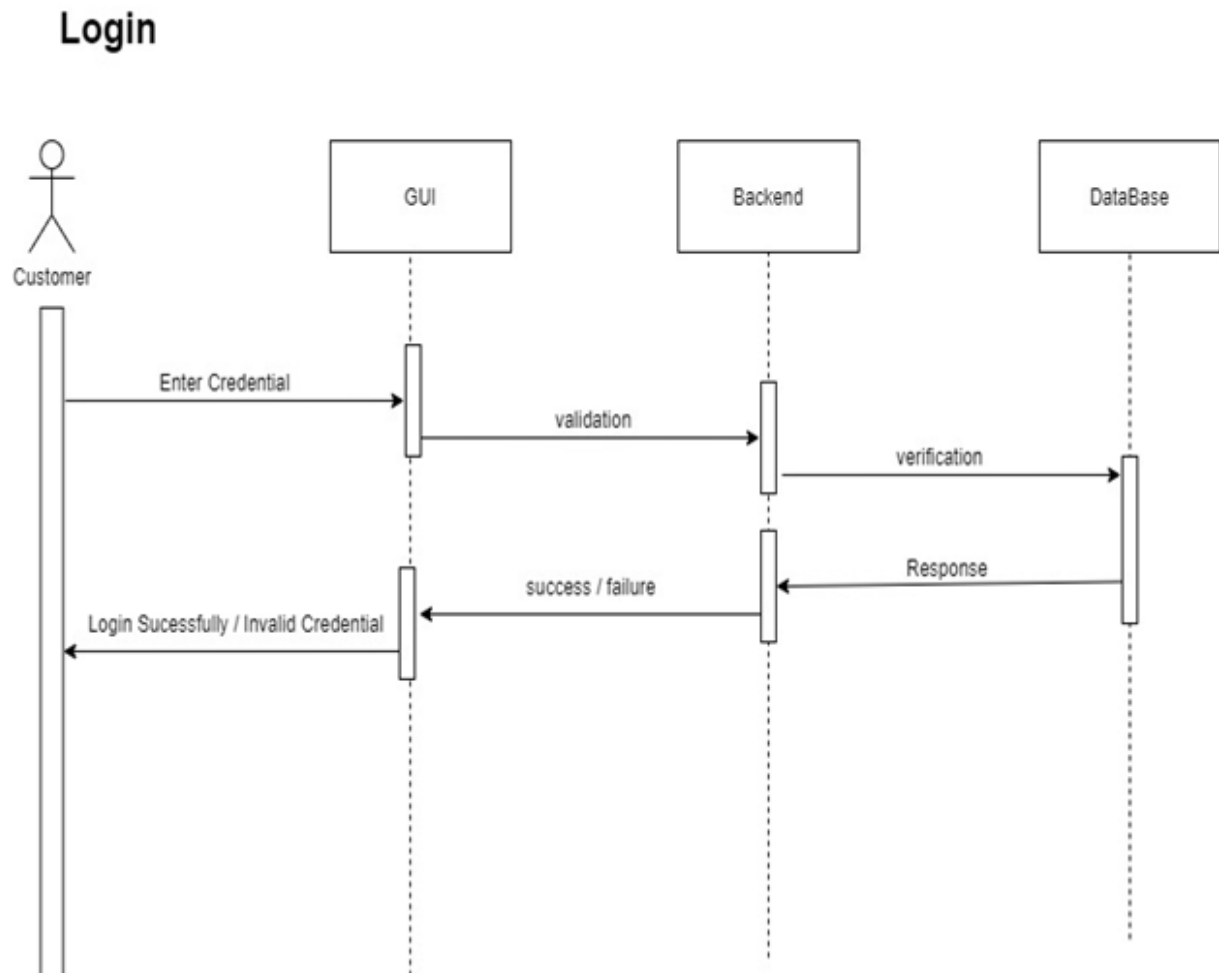
Figure : 3.4 (a)

(b)   Sign Up

Sign Up
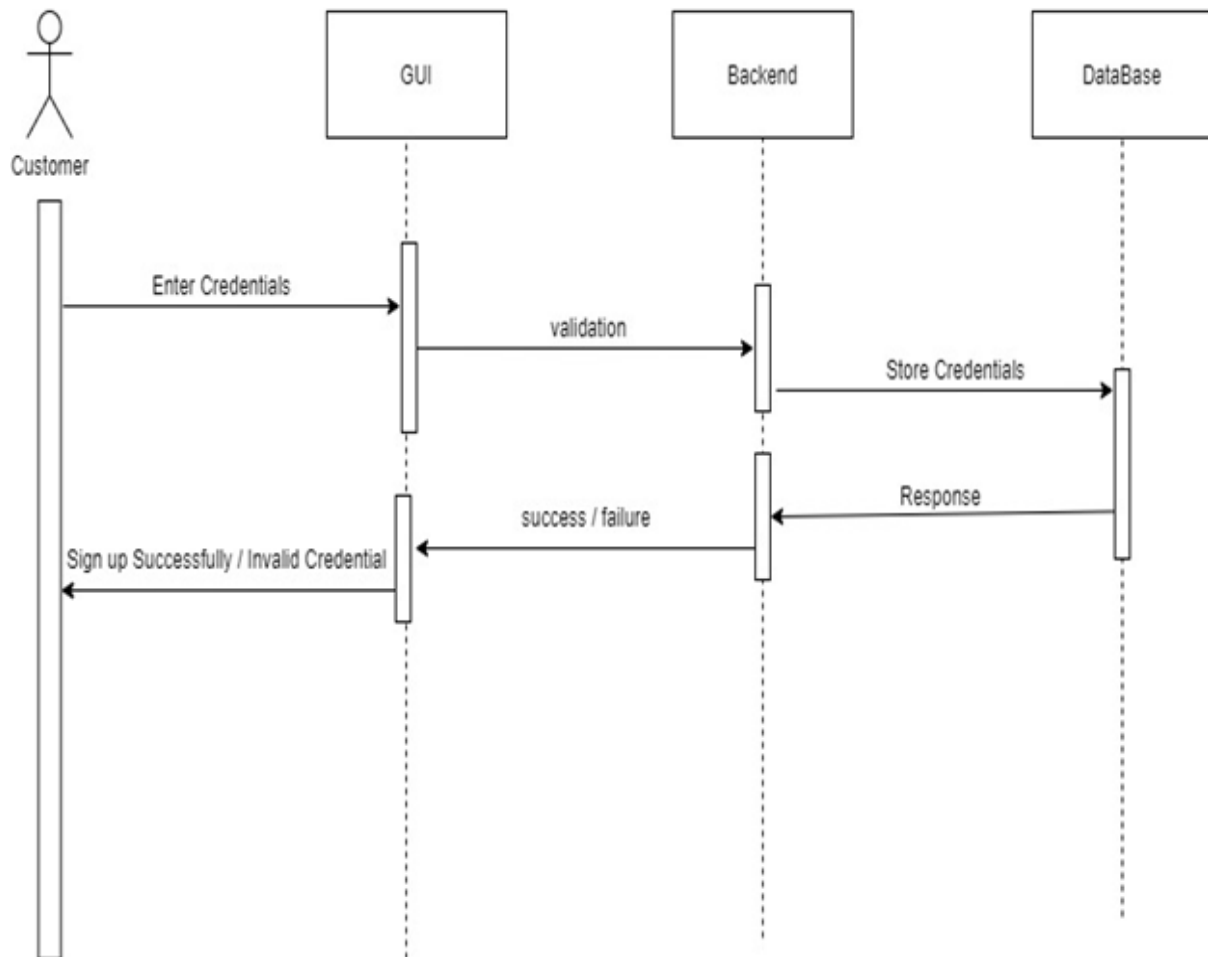
Figure : 3.4 (b)

(c)   Add To Cart

Add to Cart
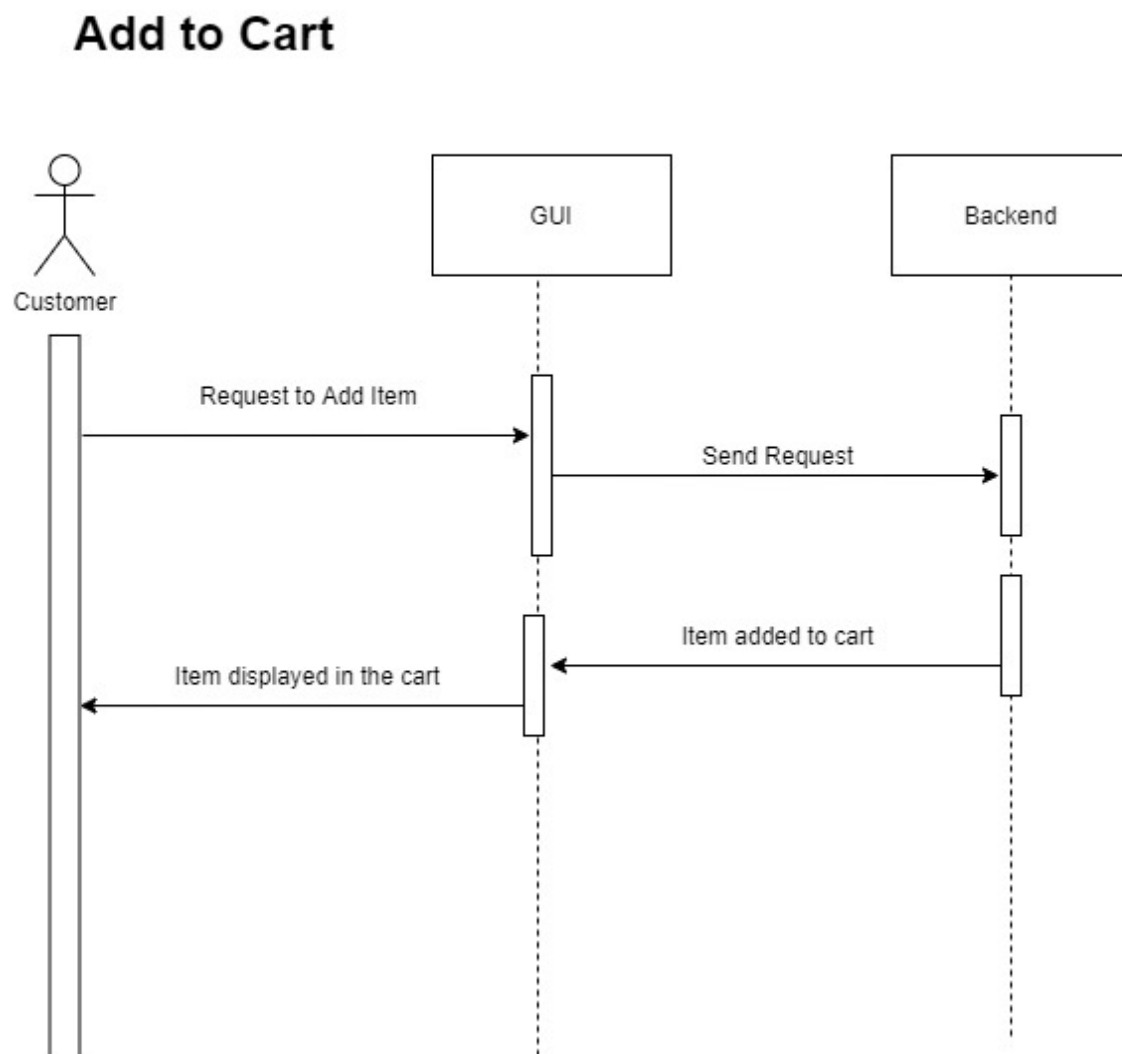
Figure : 3.4 (c)

3.5 Flow chart

Moto spare Flowchart

Start → Sign Up / Login ← Database

Sign up / Verify
- No → (back to Start)
- Yes → Display All products

Display All products → Select Product → Add to Cart → Checkout → Logout → END
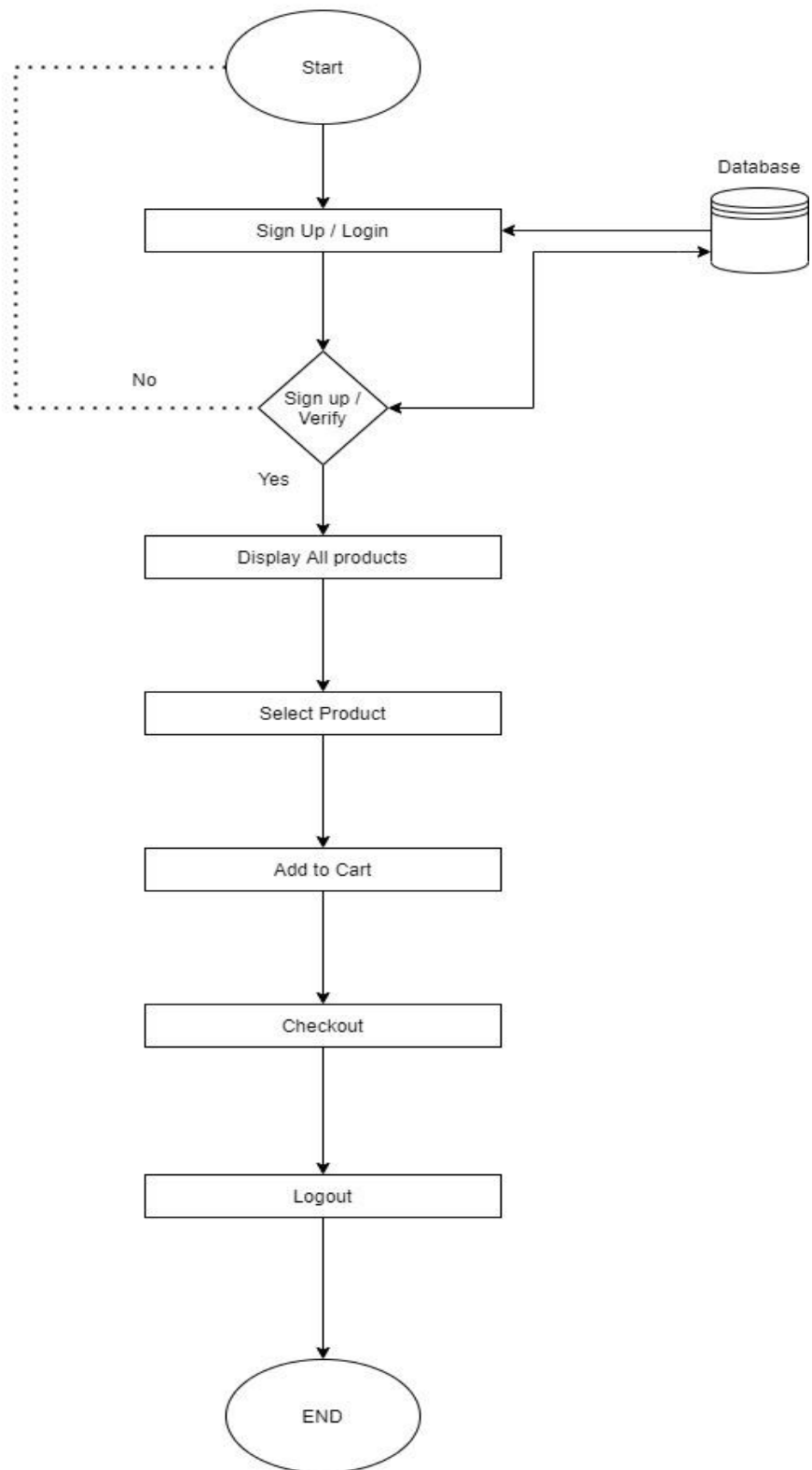
Figure : 3.5

3.6   ERD Diagram
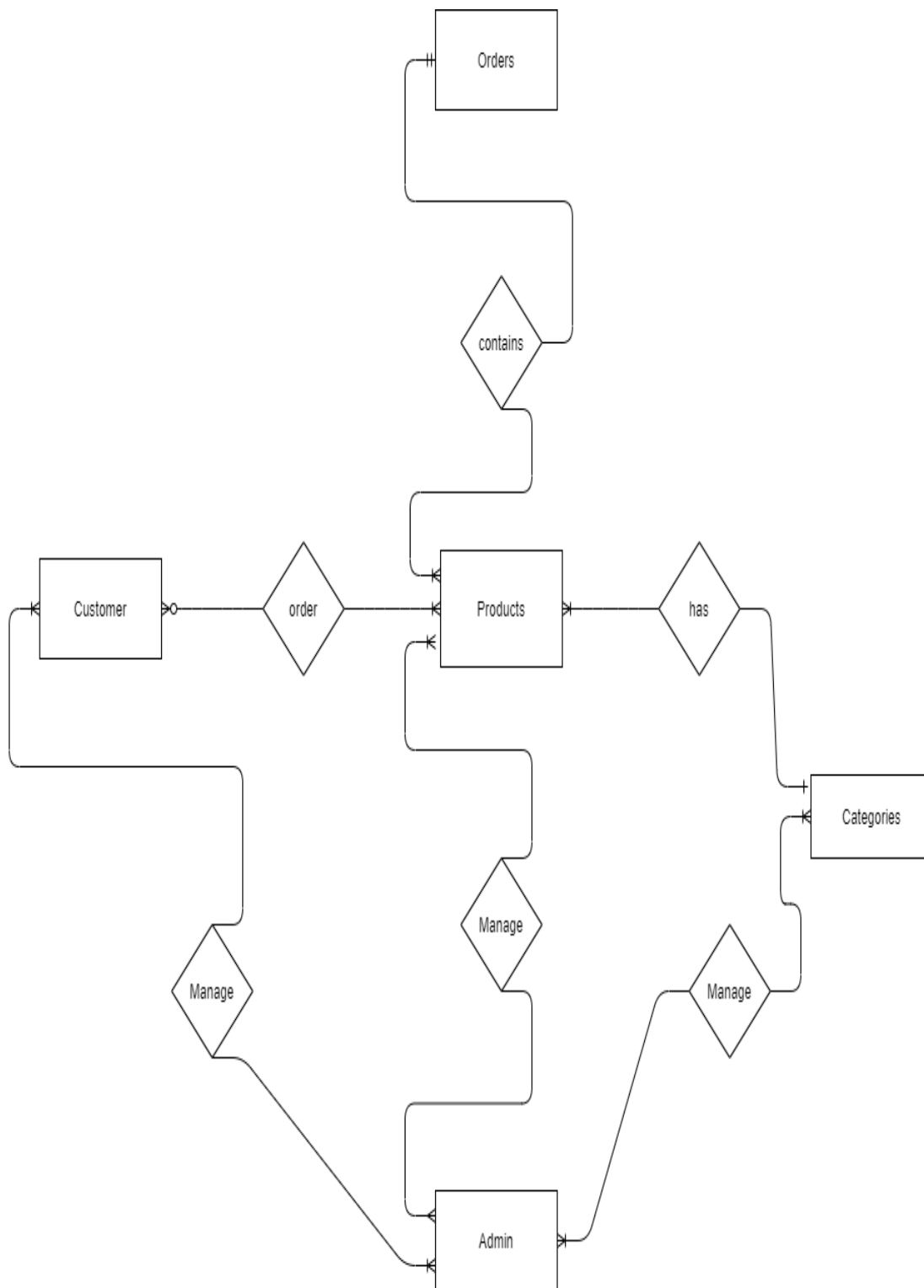
Figure : 3.6

3.7   Class Diagram

Moto Spare Class Diagram

Sign up
+ get() + customer Validate() + post()

Cart
+ get()

Index
+ post() + get()

Order View
+ get()

Login
- url_return
+ post() + get()

Check Out
+ post()

View

models

Model

Category
- name
+ __str__()

Customer
- first_name - last_name - email - password - phone
+ register() + exists()

Order
- customer - product - status - quantity - price - date - phone - address
+ place_order()

Product
- name - image - category - description - price

Figure : 3.7

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3.8   Component Diagram

Moto Spare Component Diagram
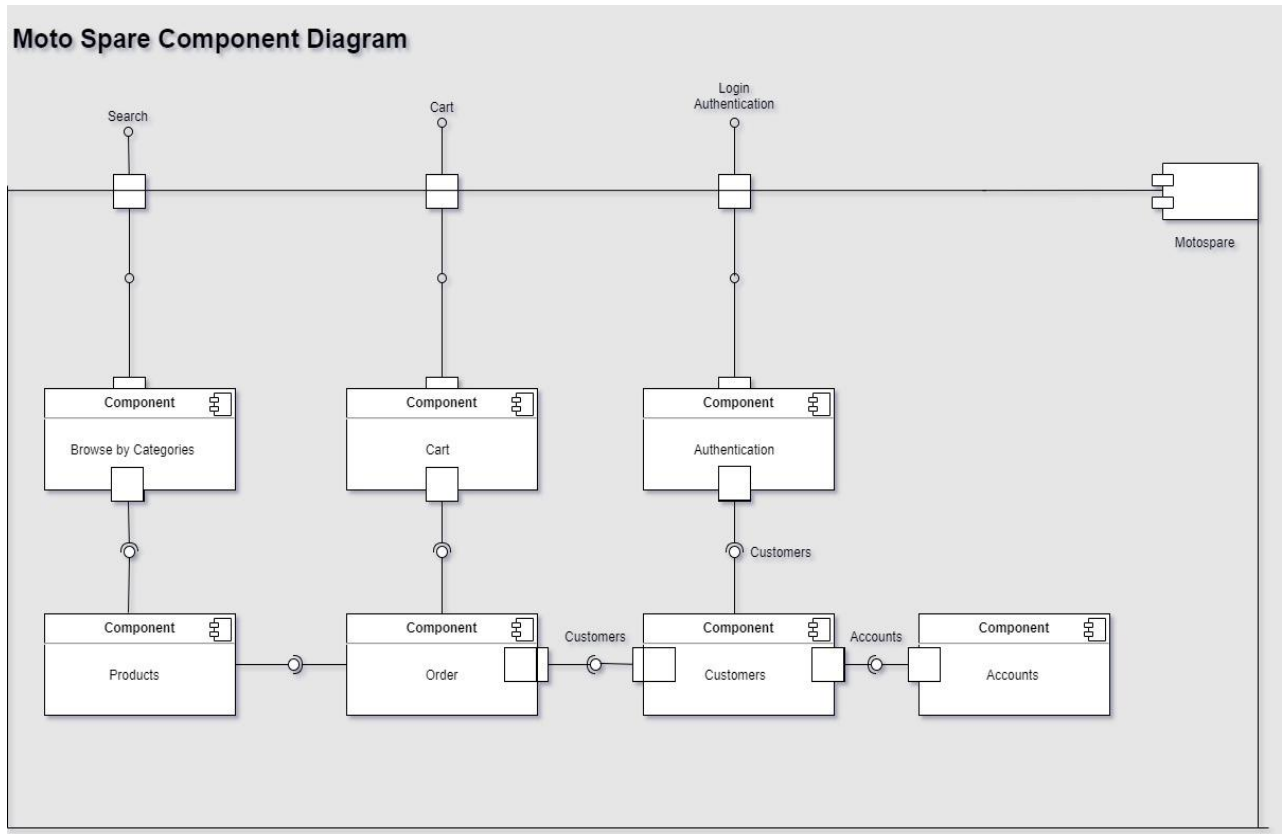
Figure : 3.8

3.9   Deployment
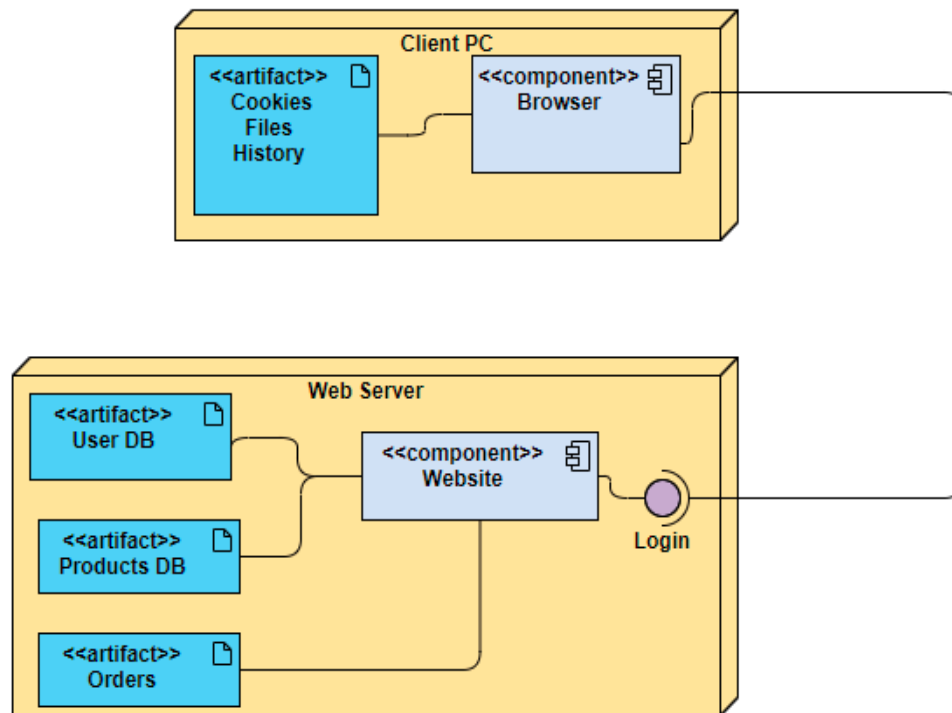
Figure : 3.9

CHAPTER 04

TESTING

4.1 System Testing

Software testing is an empirical study that was carried out in order to provide the information to the interested parties, such as the testing of a product or service and, depending on the context in which it is intended. The testing of the software provides an objective, independent opinion of the committee on the program, which allows companies to assess and understand the risks that are involved in the implementation. The test methods include, but are not limited to, the process of executing a program or application with the aim to detect the software or software failure. It can be expressed in terms of the process of validating and verifying that a software program/application / product is in conformity with the business and technical guidance, knowledge, and preparing it so that it works as expected and can be implemented with the same function. A test of the program, depending on which method is used, can be carried out at all stages of the development process, but the effort is put in to test it, and then decide on the requirement and complete the coding process. There are the following types of testing that are done with the system.

4.1.1 Unit Testing

The main purpose of unit testing is to obtain the smallest piece of software, testing, implementation, isolated from the rest of the code, and determine whether it behaves exactly as you expect it to. To test each of the blocks separately, prior to the integration of the modules to test the interfaces between modules.

4.1.2 Integration Testing

Integration and Testing is a process in which the application of the pieces are assembled and tested in groups in a variety of ways. In this context, is a unit of measure that is to be defined as a small, testable part of applications

Integration testing is able to identify a problem with the interface between the subjects of the program, while it is expected to be a problem with the execution of the program.

4.1.3 Validation Testing

At the validation level, user actions, and the well-known users in the system, the production process is exposed to the testing of attention. The validation of the test is considered successful when the application is running, and therefore, can be as smart as it is expected by the client.

It provides final assurances that software meets all functional, behavioral & performance requirements. Black box testing techniques are used.

4.1.4 Alpha Testing

An alpha test is a test of the actual performance, the testing by potential users/customers or an independent test team at the developers website. The Alpha test, the quick, fast, ready-to-use software, which is a form of internal acceptance testing, before the software goes into beta testing.

4.1.5 Black Box Testing

Black Box Test is a software test that tests the performance of software applications without knowing the internal code structure, operating information and internal methods. Black Box testing is very focused on the installation and removal of software applications and is based entirely on software requirements and specifications. Also known as Behavioral Testing.

4.1.6 White Box Testing

The technology has made significant strides in the past few years in order to provide customers with a better online shopping experience, and will continue to do so for years to come. Along with the rapid growth of the brand and product, and people have started to think about the fact that online shopping would be dominated by in-store purchases. In spite of this, which is always the case in some places, there is still a need for spare parts shops in the markets in which consumers will feel more comfortable when you are shopping online. However, with the availability of online shopping, it is a very effective way for a consumer to buy it without spending a lot of time.

4.2 Test Cases

4.2.1 Test Case 1: Signup Form

- Verify that all of the functionality of the registration form is working fine.
- Verify all the fields have valid placeholders.
- Verify that after submitting the form data from all of the fields successfully stored into the database.
- Verify that character limits in all of the fields are working and giving an error if we put data below the field's character limit.
- Verify that the validation of the email field by entering incorrect email id such as missing of @, .com (.uk , .us etc.)
- Verify that the password is in encrypted form when entered.

4.2.2 Test Case 2: Login Form

- Verify that login form contains fields of email and password.
- Verify that all functionality of login form is working fine.
- Verify all the fields have valid placeholders.
- Verify that the user is able to login with valid credentials.
- Verify that the user is not able to log in with a blank email or password.
- Verify that the logout link is redirected to the login/home page.
- Verify that the user is redirected to the appropriate page after successful login.

4.2.3 Test Case 3: Cart

- Add an item to the cart and verify.
- Increase or decrease quantity of cart and verify.
- Remove items from cart and verify.
- Add multiple items from different categories and verify.

4.2.4 Test Case 4: Checkout

- Verify that the user is redirected to the checkout payment page after clicking on the checkout button.
- Verify that the user can access the Checkout Page only after adding the product to the cart.
- Verify that the user is redirected to the home page when the order is confirmed.

Chapter 05

Graphical User Interface

5.1   Graphical User Interface

The GUI is a frontend that is included in the package for easy operation of the machine. A GUI is a Graphical User Interface. This is a standard user interface, the graphics, such as buttons and icons), and the communication can be carried out in combination with any one of these icons instead of the default text, or in order to the left.

The basic principles of the design of the graphical interface, follow the programming in the controller and model-view-controller), which separates the presentation of the details of how to present them to the user, which will lead to the creation of a platform on which users can see which tasks, and do not require the coding of the commands. Users interact with information by visually the models, which are designed to allow you to respond on the basis of the type of data that they have, and the support of all the actions that are required for the user to complete the task.

5.2 Homepage GUI
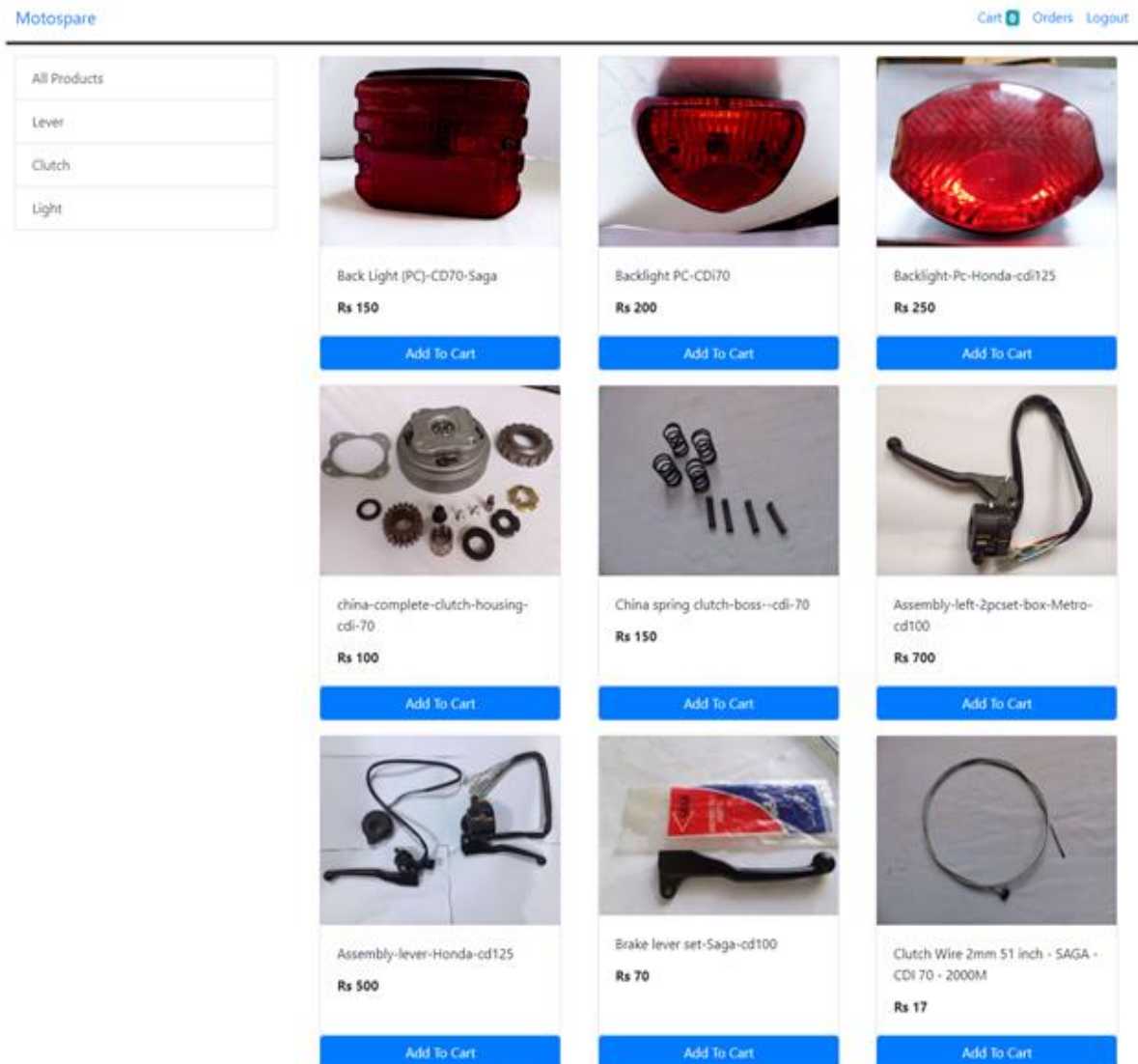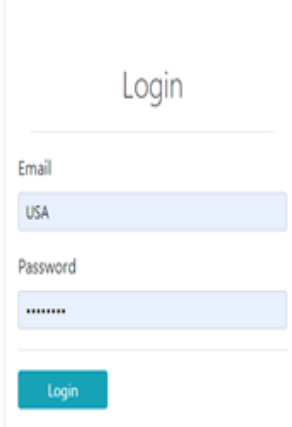
Figure : 5.1

5.3   Login Page Interface

Motospare   Cart 0 Signup Login

Login

Email

USA

Password

••••••••

Login

Figure : 5.2

5.4 Signup Page Interface

Figure : 5.3

5.5   Orders Page Interface

Figure : 5.4

5.6 Cart Page Interface

Figure : 5.5

Chapter 06

Conclusion & Future Work

6.1   Conclusion

Technology has made significant progress over the years to provide consumers with a better online shopping experience and will continue to do so for years to come. With the rapid growth of brands and products, people have come to think that online shopping will outweigh in-store purchases. While this has always been the case in some places, there is still a need for spare parts stores in market places where the consumer feels more comfortable while the product is being purchased. However, the availability of online shopping has produced an efficient way by which a consumer can easily buy without wasting much time. In exchange, online shopping has opened the door to many retailers who would not be in business if they needed the high cost of owning Honda / Yamaha original parts. In the end, it was a win-win situation for both retailers and distributors.

With the help of our provided system there will be a dramatic change in the market. It will entice the user to buy spare parts online. The user interface is quite simple so illiterate people can also use it with their device having an internet connection.

The provided web application will be used by both Honda / Yamaha Center retailers and Honda / Yamaha Distributors which will eradicate all the troubles including so many conversations, long delivery time, etc.

In this way, both retailers and distributors will be using hassle free web applications and our system will be successfully deployed.

6.2 Future Work

There are the following ideas some of which will be implemented before deployment and some of which are to be implemented after success of web application.

Android Application

In the near future after successful implementation of web applications we will be going for an android application as there are so many android users nowadays even the labor class knows how to use any android application.

Chat between Retailers and Distributors

Chat option will be added next to this web application through which retailers can contact distributors in case of any query or problem. This feature will be a great addition to the system.

Online Order Tracking

This feature will be added to this system by which retailers who ordered from the web application can track their order anytime.

Online Payment Method

Online payment methods will be added next in the system which will help to go paperless. All the transactions made while using the system will be recorded and monitored by a team.
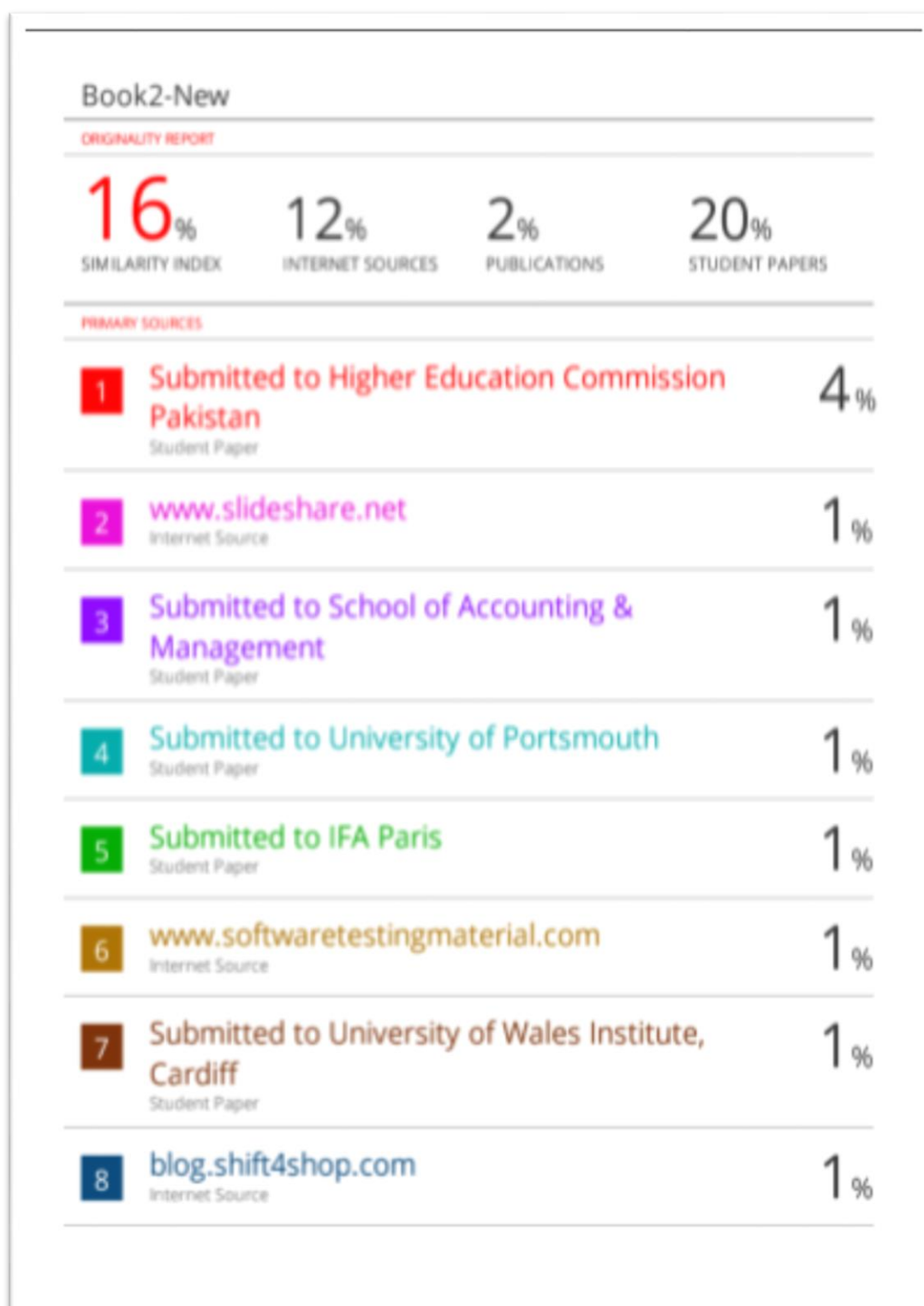
Chat Support

Furthermore, we will provide our customers a better and flexible customer support service which will handle customer queries including order modifications, cancellations etc.

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