

Software Requirements Specification

For



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Revision History

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1. Introduction

1.1 Purpose

The purpose of writing a Design Specification (SDS) document is to provide detailed specifications of the flow website. It explains the website's architectural design, and its components, data, and users' interface design to implement in an easy way. This document will follow and design the requirements specified in SRS which were previously delivered.

1.2 Scope

This document covers all the design features corresponding to the planned flow website. The website shall provide specific characteristics and services that Fluxo Company. This document contains the system's architecture and logical design, the system's prototype to show the flow of each interface and some explanation and pseudocode of the main function in the system. It includes modeling of the data, relationships between entities, and data processes using:

- Entity-relationship Diagram (ER)
- Sequence Diagrams.
- Context Data Flow Diagram
- Data Flow Diagrams (DFD)

1.3 Definitions, Acronyms, and Abbreviations

Table 1 specifies and clarifies any technical terminology mentioned in this document.

Table 1: List of Terminologies.

Terminology:	Definition:
Software	The programs, routines, and symbolic languages control the functioning of the hardware and direct its operation.
Interface	Refer to controls used in a program that allows the user to interact with the program.
SRS	A document that specifies all the requirements that need to be completed before the completion of the project.
Context Diagram	A context diagram is a top level (also known as "Level 0") data flow diagram. It only contains one process node ("Process 0") that generalizes the function of the entire system in relationship to external entities.
IEEE Standard	A universal standard template followed by multiple software developers use to document.
HTTPS	is an extension of the Hypertext Transfer Protocol (HTTP). It is used for secure communication over a computer network and is widely used on the Internet.
OS	An operating system is system software that manages computer hardware, software resources, and provides common services for computer programs.
Data Flow Diagram	A data flow diagram (DFD) illustrates how data is processed by a system in terms of inputs and outputs. As its name indicates its focus is on the flow of information, where data comes from, where it goes and how it gets stored.

MySQL	MySQL, the most popular Open-Source SQL database management system, is developed, distributed, and supported by Oracle Corporation.
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Table 2 below defines the acronyms used in this document:

Table 2: List of Acronyms

Acronym:	Definition:
SRS	Software Requirement Specification
IEEE	Institute of Electrical and Electronics Engineers
E-mail	Electronic Mail
JDK	Java Development Kit
DFDs	Data flow diagram
HTTPS	Hypertext Transfer Protocol Secure
OOP	Object-oriented programming
ER	Entity-Relationship Diagram

1.4 References

Listed below are the references used in this document:

- [1] IEEE Recommended Practice for Software Requirements Specifications. (1998, June 25). Retrieved October 31, 2020, from https://vle.iau.edu.sa/bbcswebdav/pid-4360079-dt-content-rid-69578154_1/courses/800039_29Aug2021_38072C_COMSC/4%20-%20IEEE830%20-%20SRS.pdf
- [2] MyHistoryFeed. (2020, June 22). Software Requirements Specification (SRS Document). Retrieved November 06, 2020, from https://medium.com/@vincetran_28429/software-requirements-specification-srs-document-fd9ab103b18.

2. System overview

This section of the document contains an overall description of Flow website. These two sections include an explanation of the application's perspective as well as its basic functionalities.

2.1. System Functionality

The functionalities that mention below it has detailed description in SRS document in part 2.2.

- **Registration:** All merchants and clients can register on the website to have a personal account and be able to log in.
- **Request open store:** Only for the merchant to open a store within the website.
- **Viewing the information:**
 - o For employee: View all Information for each Merchant's store with sales statistics. And view all products added for sale into each store.
 - o For merchant: View all products in their store and their information. And view sales statistics and ratings for their store.
 - o For Client: View the products and their information. And view their information.
- **Selling:** Each merchant can add new product for sale.
- **Placing order:** Each Client can place an order successfully after entering the shipping information, choosing payment method, and confirming the order.
- **Searching:** The Employee and Client can search about the store name when she\ he writes the name of it then clicks the search button.
- **Deletion:** The Employee has authority to delete any store.
- **Forget and change password:** each user can change their password if they forget their password.
- **Direct chat:** The Employee will be able to send and receive messages to/from clients and merchants. And The merchant will be able to send and receive messages to/from clients and the support team. And The client will be able to send and receive messages to/from merchants and the support team.

3. Design Considerations

In this section we are going to examine the assumptions and dependencies of "Flow" as well as the general constraints that impact the system.

3.1 Assumptions and Dependencies

Various assumptions must be considered and put into mind during Flow design phase. These assumptions, regarding the system and its use, can be further divided into categories related to:

- Software or hardware
- Operating systems
- End-user characteristics
- Possible and/or probable changes in functionality

3.1.1 Software or Hardware

Any personal computer, mobile or tablet is qualified to open browser and run the website. Regarding the software, it is planned to have a simple design united with a nicely devised database. The database will be implemented in a Rational Database Management System (RDBMS) using My Structured Query Language (MySQL). The device should have a browser and internet connection to run the website.

3.1.2 Operating Systems

The system can run on any platforms, Windows, Macintosh, android and IOS or any other operating systems. The system's source code will be written in Java language, which is eligible to run on both systems.

3.1.3 End-user Characteristics

Flow had three key end users: Employee, Client, and c service. The users don't require from them a high technical knowledge to use flow website, minimal knowledge enough. The client should be 16 or older and the merchants should be 18 or older.

3.1.4 Possible and/or Probable Changes in Functionality

Design at the end of the phase might differ from beginning of the design phase. Old designs may not remain achievable or better designs with enhanced implementation may be found. Minor changes in the functionalities can be tolerated if they fit into the project's complexity, otherwise major changes are time-consuming, and this project is time-bound.

3.2 General Constraints

"Flow" uses HTTP and HTML protocol to provide security of the overall system. Also will provide a fluid and user-friendly interface that will appeal to the user. There are some aspects that will affect the design of the interfaces:

- Desirability and Aesthetics.

-
- Accessibility.
 - Simplicity
 - clarity

3.2.1 Data repository and distribution requirements

The data will be stored in the database on MySQL, and we would use MySQL to retrieve and store data.

3.2.2 Security requirements

Because of the sensitive data on our website such as Client address' and private numbers, the website will require the Client to login with a unique username and a strong password. Also, a 'forgot password' interface will be provided to increase privacy in case of a stolen account or a forgotten password.

3.2.3 Performance requirements

All performance requirements specified in the SRS document, section 3.3.1. of the proposed Flow are required to be tested. Further enhancements may be required if any of the defined performance measures failed.

3.2.4 Verification and validation requirements (testing)

The main purpose here is to test for bugs and detect any failures with the website specifications, to detect the problems early on and fix them. We also must compare the current website specification with the client specification to make sure that we deliver what they asked for.

4. User Interface Design

This chapter gives an overview of the planned user interfaces. It defines their designs, rules, images, objects, and actions.

4.1 Overview of User Interface

Our interfaces are easy to use, manageable and user friendly. Each user can interact with Flow system starting from home page, which contains Three main options to identify the type of user which is either Employee or Client Or merchants. All users have their own special interface depending on their authority. However, there are some other interfaces are common between them.

- **Employee:**
 - Login
 - Change password if forgotten
 - Open-stores requests
 - Add Merchants stores
 - Delete Merchants stores
 - Search for stores
 - View information for each merchant store
 - Direct chat

-
- Modify personal information
 - **Client:**
 - Login
 - Change password if forgotten
 - modify personal information
 - Create account
 - View the stores
 - Search for stores
 - Add items to shopping cart
 - Add items to Wishlist
 - Place order
 - View last orders
 - Direct chat
 - **MERCHANTS:**
 - Login
 - Change password if forgotten
 - Create account
 - Add products
 - Modify products
 - View Order List
 - Direct chat
 - View Rating and statistics
 - modify personal information

4.2 Interface Design Rules

The key purpose of the design phase is to have clear, concise, operational, and well-organized interfaces. To accomplish this goal, the design of Flow should emphasize on the "Eight Golden Rules" a guide to good interaction design. These rules are:

- **Strive for consistency:** Colors, fonts, layout, and menus should be consistent. Reliable commands should be employed throughout.
- **Enable frequent users to use shortcuts:** Reduce the number of interactions and increase the pace of interaction.
- **Offer informative feedbacks:** For every operator action, there should be some system feedback.
- **Design dialogs to yield closure:** Give an indication about a user action if it is completed or failed. Informative feedback at the completion of a group of actions gives the users the satisfaction of accomplishment.
- **Offer simple error handling:** Design the system so the user cannot make a serious error. If an error is made, the system shall be able to detect the error and offer simple, comprehensible mechanisms for handling the error.
- **Permit easy reversal of actions:** Errors can be undone.
- **Support internal locus of control:** Design the application to make the user an initiator of actions and not a responder.
- **Reduce short-term memory load:** Avoid designing interfaces in which a user must recall information from the previous ones. Displays must be kept simple.

Following these rules makes the proposed application user friendly for all types of users.

4.3 Screen Images

This section demonstrates each interface and the functionality that available for each user.

4.3.1 Common Interface

4.3.1.1 Home page Interface

The home page is the first interface on the website and all end users have access to this interface, the user can choose one of the three options provided to continue as an Employee, Merchant, or Client.

Employee option: It will move the employee form the home page to his login interface.

Merchant option: It will move the merchant form the home page to his login interface.

Client option: It will move the client form the home page to his login interface.

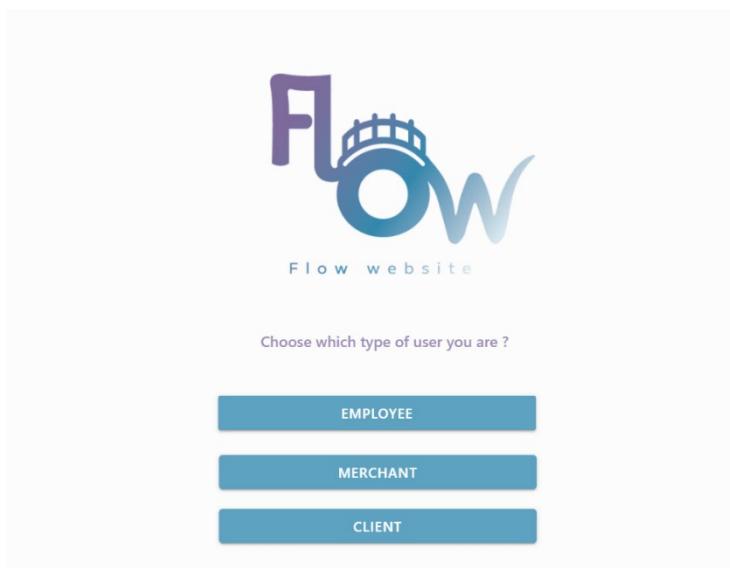


Figure 1:Home Page Interface.

4.3.1.2 Forget And Change Password Interfaces

all end user's employee, merchant, and client can reset their password once they click on "Forgot Password" "option in the login interface. There will be two options, either a phone number or email, the user must choose one of them and enter it in addition to the username. if the information is validated a link to change the password will be sent and through it, the user can change his password by entering and verifying the new password ,in case of an invalid input an error message will be displayed with clarification of the error reason. Finally, if the

password change process is successful, a confirmation message will appear to the user with the option "log in" to go to the login interface.

The figure consists of six screenshots arranged in a 3x2 grid, illustrating the password recovery and change process:

- Row 1: Forget Password**
 - Left:** Shows the initial "forget password" screen with fields for "user name" and "Email/PHONE NUMBER". Buttons for "EMAIL" and "PHONE NUMBER" are at the top.
 - Middle:** Shows the same screen after entering "user name" and "phone number". A "SEND" button is at the bottom.
 - Right:** Shows the screen after entering invalid credentials ("sahar.123" and "sahar000@gmail.com"). An error message "incorrect username or email,please try again" is displayed above the "SEND" button.
- Row 2: Forget Password (Continued)**
 - Left:** Shows the screen after entering invalid credentials. An error message "incorrect username or phone number,please try again" is displayed above the "SEND" button.
 - Middle:** Shows a large checkmark icon indicating success. Below it, a message says "The change password link has been sent to you successfully". A blue "OK" button is at the bottom.
 - Right:** Shows the "change password" screen with fields for "new password" and "confirm new password". Buttons for "Enter password..." are at the top.
- Row 3: Change Password**
 - Left:** Shows the "change password" screen with fields for "new password" and "confirm new password". A note below states "wrong entry , The password must be at least 10 characters long including upper letter, lower letter, and at least 3 numbers." A "UPDATE" button is at the bottom.
 - Middle:** Shows the same screen after entering matching passwords. A red error message "passwords does not match !" is displayed above both fields. A "UPDATE" button is at the bottom.
 - Right:** Shows a large checkmark icon indicating success. Below it, a message says "your password has ben updated". A blue "LOG IN" button is at the bottom.

Figure 2:: Forget And Change Password Interfaces

4.3.2 Employee Login Interface

After the user chooses the employee option in the homepage interface this interface will appear. The employee will be asked to enter the username and password that was created directly from the company, in case the password is forgotten, there is an option

that allows employees to reset their password by entering their username and phone number or email as shown in the common interface forget password interfaces figure 2, In case of an invalid username or password an error message will be displayed “Incorrect username or password, please try again”. If the login is done successfully, the employee page interface will appear.

The employee will not have the option "signup" to create a new account because the company provides its employees with unique accounts.

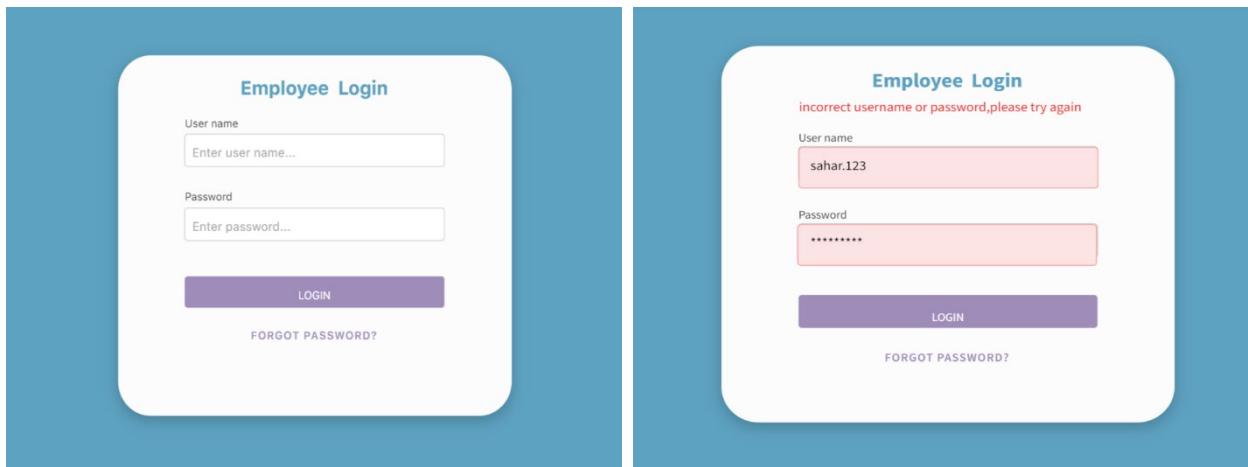


Figure 3:Employee Login Interface

4.3.3 Employees Page Interface

The employee is responsible for accepting and rejecting store requests, deleting stores after viewing the statistics of stores, and providing technical support for Merchants and clients by responding to them and solving their problems. For clarification an employee doesn't have to register as the account is created directly from the company and sent to him by email.

4.3.3.1 Open-stores requests Interface

On this page, the employee has the authority to accept and reject the merchant's request to register. The merchant personal ,store information , and legal documents will be displayed in this interface, when click in the button next of store name read button, so that the employee will determine if the store has satisfied the requirement to open a store, then the merchant store will be accepted to listed on the site , and email will be sent to the merchant by the employee with the approval letter. If not accepted a rejection email will be sent to the merchant by the employee with the reasons for the rejection.

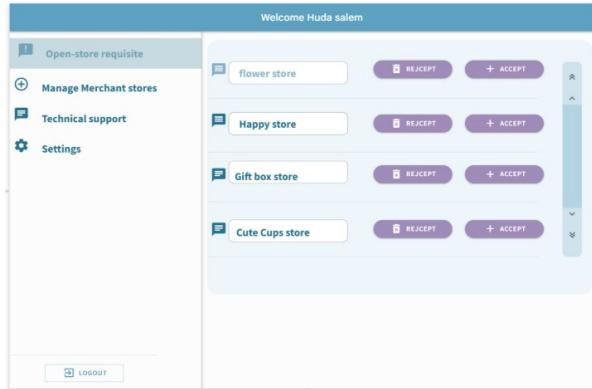


Figure 6: Open store request

Figure 5: Open store request

Figure 4: accept and reject

4.3.3.2 Manage Merchants stores Interface

In this interface, stores will be listed with their basic information such as the name of the store, and name of the merchant, and the category of the store. Then the employee can access each store individually in the Information for each Merchants stores Interface

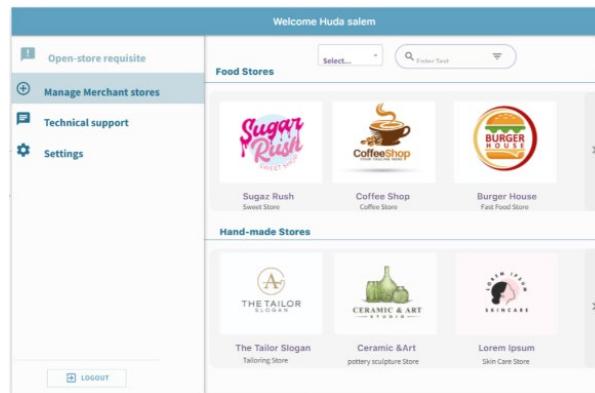


Figure 7: manage merchants store interface

4.3.3.2.1. Information for each Merchants stores Interface

After searching of the store's name, category, and name of the owner will appear with sales statistics in terms of all products that were sold during the month and year. The employee has the authority to delete the store .

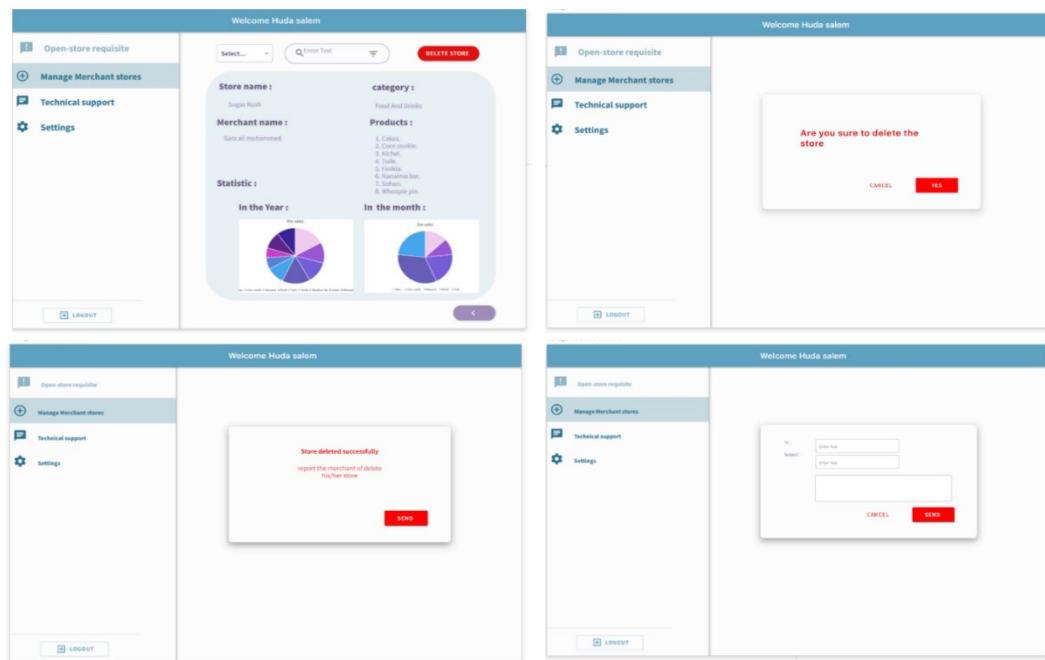


Figure 8: delete store in information for each merchant store interface

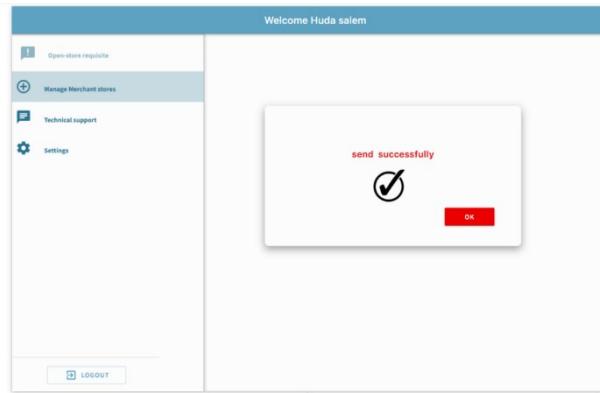


Figure 9: delete store in information for each merchant store interface

4.3.3.3 Technical support Interface

This interface is accessible from the employee page, there are two boxes appear in this interface, a box for receiving clients' messages and another box with merchants' messages can respond to their message by clicking on the respond button next to the name (client/merchant) move to direct message to reply on

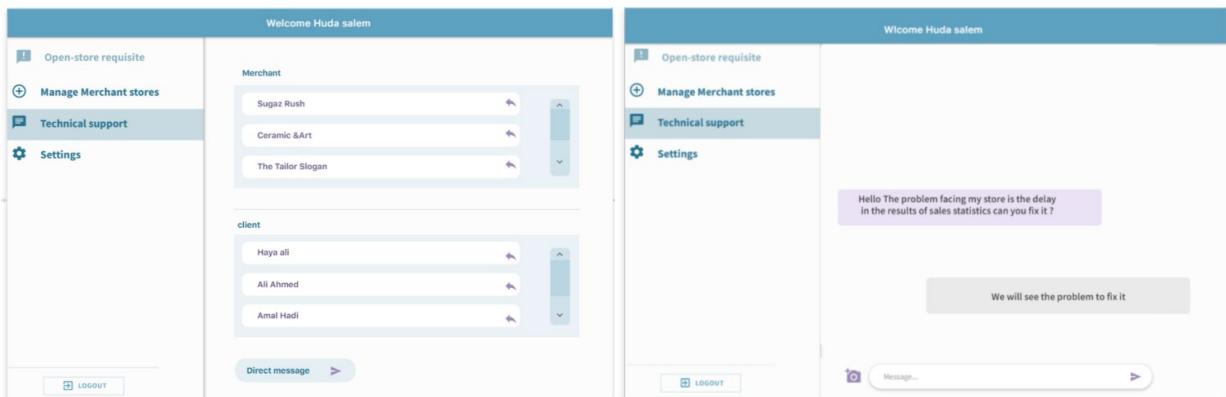


Figure 10: technical support interface

his/her message.

and there is also the feature of messaging the merchant or client even if

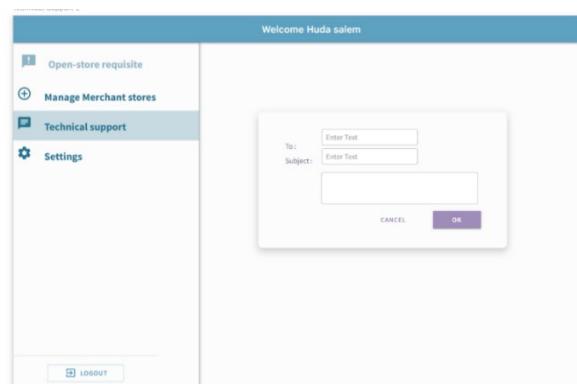


Figure 11: technical support interface

messages are not received from them.

4.3.3.4 Settings Interface

In this interface, the employee can modify their personal information such as name, email, and phone.

The figure consists of two side-by-side screenshots of a web-based application interface. Both screenshots have a header 'Welcome Huda salem' and a sidebar with links: Open-store requisite, Manage Merchant stores, Technical support, and Settings (which is highlighted). The main area is titled 'Personal Information' and contains four input fields: 'first name' (Rahaf), 'last name' (Ali), 'phone number' (+966 538295275), and 'email' (rahaf@gmail.com). At the bottom are 'MODIFY' and 'CANCEL' buttons. In the second screenshot, the 'last name' field is empty. The 'phone number' field contains '0020322401' and has an error message: 'invalid phone number must be numbers'. The 'email' field contains 'sara@gmail' and has an error message: 'invalid email address'. The 'first name' field is highlighted in pink.

Figure 12: setting interface

4.3.4 Client Login Interface

After the user chooses the client option in the homepage interface this interface will appear. In this interface, if the client has an account already the client login interface will allow the client to enter his email and password, in case the password is forgotten, there is an option that allows the client to reset his password by entering username and phone number or email as shown in the common interface forget password interfaces figure 2, In case of an invalid username or password an error message will be displayed “Incorrect username or password, please try again”, If the login is done successfully, the client interface will appear.

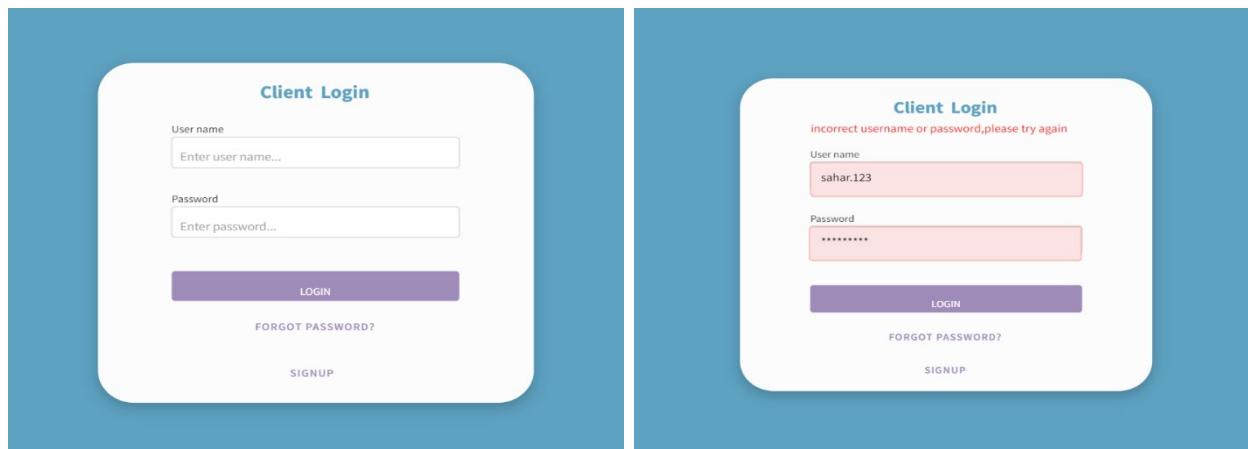


Figure 13:Client Login Interface

4.3.5 Client Register Interface

If the client does not have an account, a new account can be created by pressing “signup”, then the client will be asked to enter his personal information such as first and last name, username, password, phone number, email, date of birth, city, and postcode. In case of an invalid input or leaves any fields empty an error message will be displayed with clarification of the error reason. when he finishes filling it out, the new account will be established, and the client page interface will be displayed.

The figure consists of five screenshots of a "Client Signup" form, each with a blue header and footer and a white central area for the form. The form fields are arranged in two columns: First Name, Username, Email, Password (left) and Last Name, Phone Number, Date of Birth, Post Code (right). A purple "SIGNUP" button is at the bottom.

- Screenshot 1:** All fields are empty. The "SIGNUP" button is purple.
- Screenshot 2:** First Name: "sahar", Last Name: "alzahrani", Username: "sahar.123", Email: "sahar.123@gmail.com", Password: "*****". Error messages: "username already exists!" under Username, "email address already exists!" under Email, and "phone number already exists!" under Phone Number.
- Screenshot 3:** First Name: "sahar", Last Name: "alzahrani", Username: "sahar.111", Email: "sahar.111@gmail", Password: "*****". Error message: "wrong entry , The password must be at least 10 characters long including upper letter, lower letter, and at least 3 numbers." under Password.
- Screenshot 4:** First Name: "sahar", Last Name: "alzahrani", Username: "sahar.111", Email: "sahar.111@gmail", Password: "*****". Error message: "some of the fields are missing !" above the form.
- Screenshot 5:** First Name: "sahar", Last Name: "alzahrani", Username: "sahar.111", Email: "sahar.111@gmail", Password: "*****". Error message: "invalid email address!" under Email and "age must be 16 and above !" under Date of Birth.

Figure 14: Client Register Interface

4.3.6 Client Page Interface

After the client login process is completed, now he will have the authority to perform several functions, which is to view stores, search for a specific store and choose one from the list of stores, add products to the Shopping-Cart, or add products to the Wish-list, also he has the authority to modify his Personal information through settings and can communicate with merchants or support team through direct messages. On each interface of the client there will be a vertical Bar containing all the functions that he has the authority to implement, to make it easier for the client to navigate between the interfaces. Also, there is upper horizontal bar it is containing client name.

4.3.6.1 Client Home Page:

In this interface will display all stores that offer different categories of products, such as sites that sell food and some that sell clothes, etc. To make it easier for the client to find what he is interested in through this interface.

The screenshot shows the Client Home Page. On the left is a sidebar with icons for Homepage, Search, Shopping Cart, Wish-List, Orders, Direct Chat, and Settings. Below the sidebar is a 'Logout' button. The main content area is titled 'Welcome Asma Al-Hajri'. It features two sections: 'Food Stores' and 'Hand-made Stores'. The 'Food Stores' section contains three items: 'Sugaz Rush SWEET SHOP' (Sweet Store), 'Coffee Shop YOUR TAGLINE HERE' (Coffee Store), and 'BURGER HOUSE' (Fast Food Store). The 'Hand-made Stores' section contains three items: 'THE TAILOR SLOGAN' (Tailoring Store), 'CERAMIC & ART STUDIO' (pottery sculpture Store), and 'LOREM IPSUM SKINCARE' (Skin Care Store). Each store item includes a small thumbnail image and a brief description.

Figure 15: Client Home page

If the client clicks on one of the stores, the store page will appear with all products that he offers, and he can add the products to the shopping cart or wish list by clicking on the icons on the right bottom side of the product.

The screenshot shows the store page for 'Basic And Peachy Clothing Boutique'. At the top, there is a logo featuring a peach and the text 'BASIC & PEACHY'. Below the logo, the store name 'Basic And Peachy' and its description 'Clothing Boutique' are displayed, along with a 5-star rating icon. The main content area shows two products: 'Grinch Sweatshirt' (Multicolored) and 'To-Do List Sweatshirt' (Multicolored). Each product is shown with a thumbnail image, a description, a price (50 SAR and 70 SAR respectively), and icons for adding to the shopping cart and wish list.

Figure 16: store page

4.3.6.2 Search

The client will be able to look for a specific post or search for a merchant website.

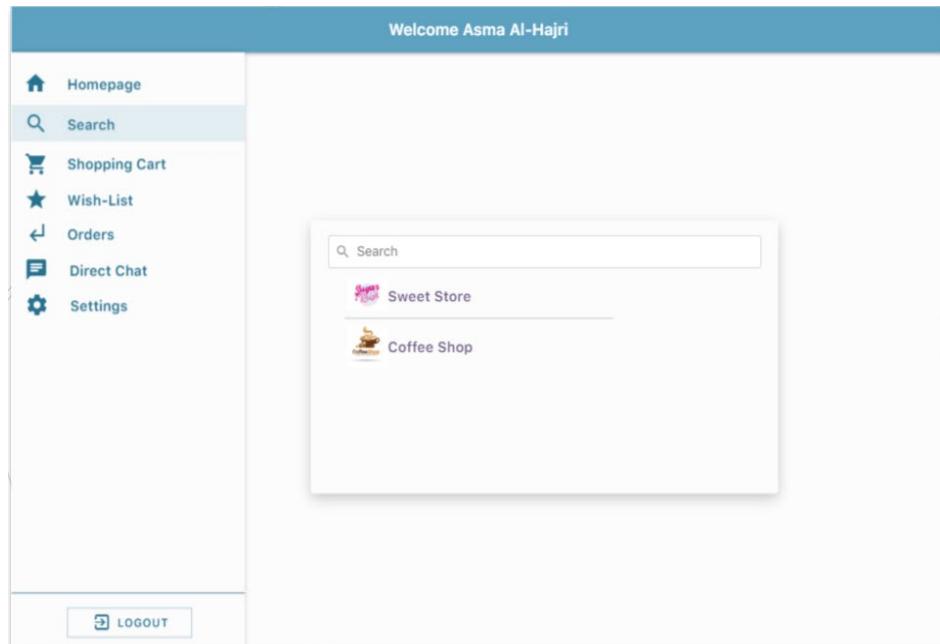


Figure 17: Client Search

4.3.6.3 Shopping Cart Interface

In this interface the products chosen by the client will appear in the shopping cart even if their products are from different stores. The client can select the quantity of the product and remove the product from the shopping cart or move it to the wish list. The client also has two options to continue shopping or continue to the checkout interface.

If the client clicks on continue shopping the home page would appear, else if he clicked on checkout then checkout page will appear.

Welcome Asma Al-Hajri			
	Product	Price	Qty.
	 Loretta	50.37 SAR	<input type="button" value="Select..."/>
	 Brown Sweatshirt	140.65 SAR	<input type="button" value="Select..."/>
			<input type="button" value="DELETE"/> <input type="button" value="★ MOVE TO WISH-LIST"/>
<input type="button" value="CONTINUE SHOPPING"/>		<input type="button" value="CHECK OUT"/>	
<input type="button" value="LOGOUT"/>			

Figure 18: Shopping cart page

4.3.6.4 Wish-list Interface

In this interface clients can add items to their wish list while they are shopping, or from the shopping cart. Also, they can delete the items form wish-list.

Welcome Asma Al-Hajri			
	Product	Price	
	 Loretta	50.37 SAR	<input type="button" value="DELETE"/> <input type="button" value="MOVE TO SHOPPING CART"/>
	 Brown Sweatshirt	140.65 SAR	<input type="button" value="DELETE"/> <input type="button" value="MOVE TO SHOPPING CART"/>
<input type="button" value="LOGOUT"/>			

Figure 19:wish-list interface

4.3.6.5 Checkout Interface

On this page, the client will go through three stages, the first stage is the shipping information, which is filling the address, city, and postcode, then in the second stage choosing the payment method and fill the card information, and at the last stage reviewing the items, total price, promo code that he can use. finally, by clicking on place order, an email will be sent with all the order details such as the order number.

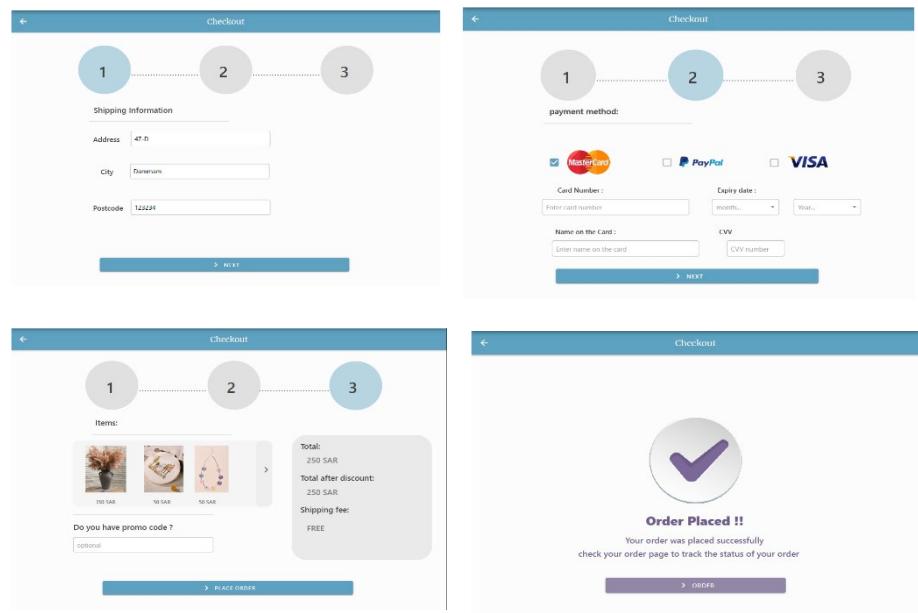


Figure 20: checkout interface

4.3.6.6 Orders Interface

In this interface, the client can view his previous orders, leave comments on the products, and rate them.

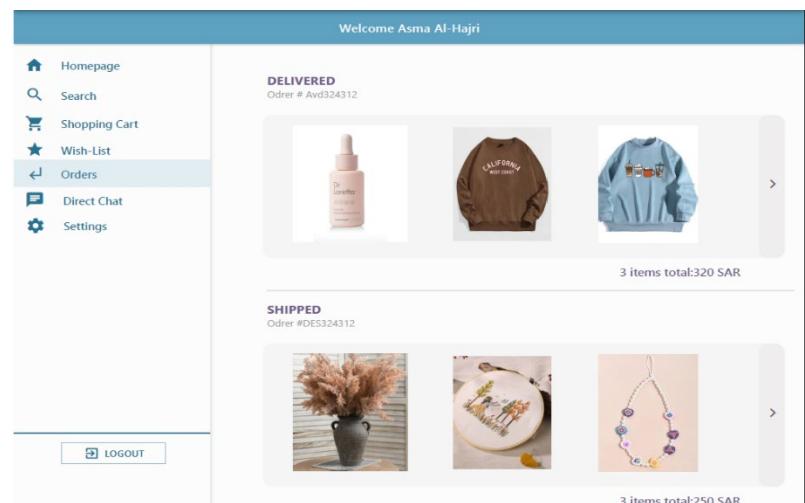


Figure 21: client order

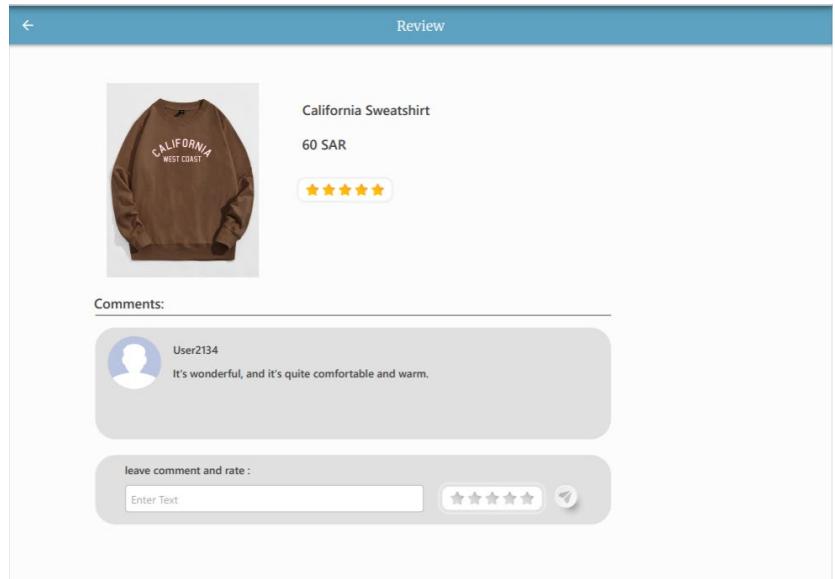


Figure 22 Client review and rating interface

4.3.6.7 Direct Chat interface

This interface will be interactive just like any chatting system such as WhatsApp, but it will be embedded on the website. The client can communicate with the support team if he is facing a problem, or he can communicate with merchants who want to buy products from them,

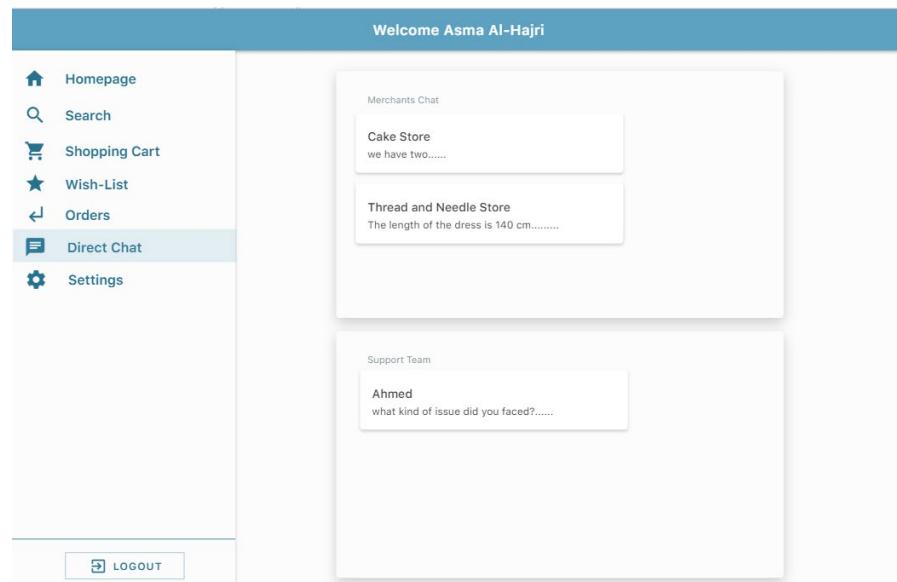


Figure 23 Client Direct chat interface

It'll have 2 sections:

In this section, the client will be able to send and receive messages to/from merchants to ask questions or to add some specifications to their order and other reasons.

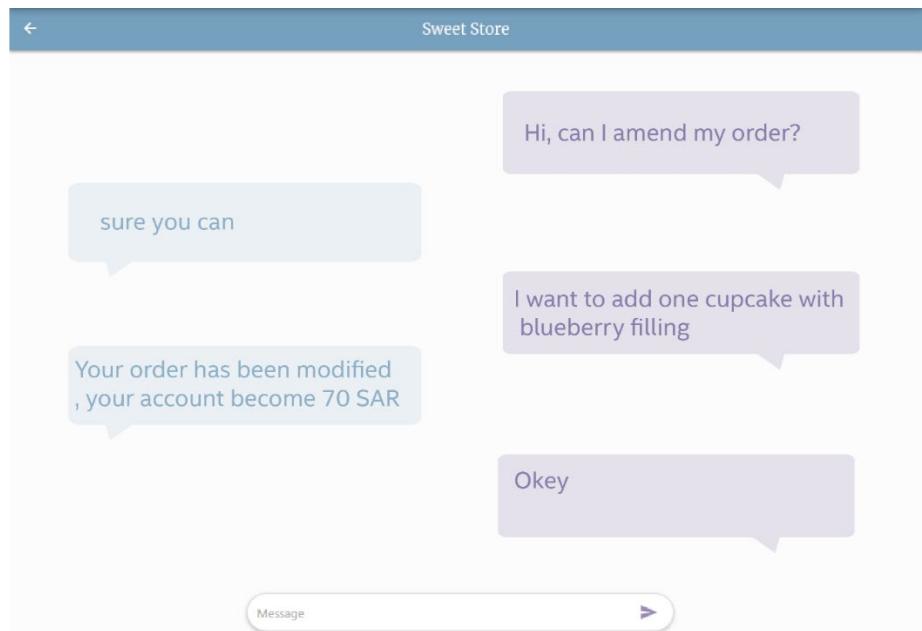


Figure 24 Client with merchant interface

In the second section, the client will also be able to send and receive messages to/from the support team to ask about concerns to resolve a problem with their order.

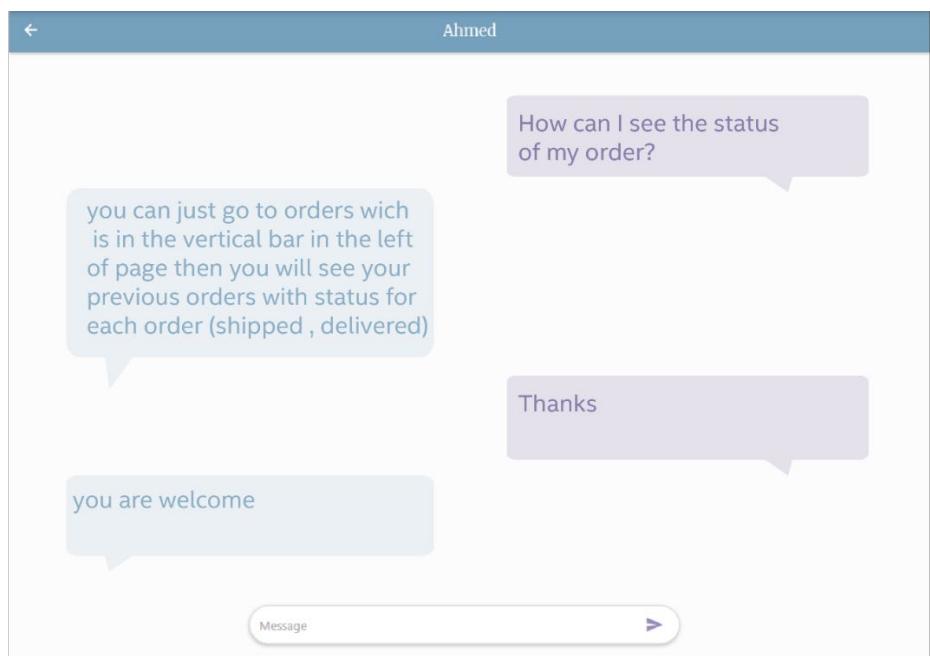
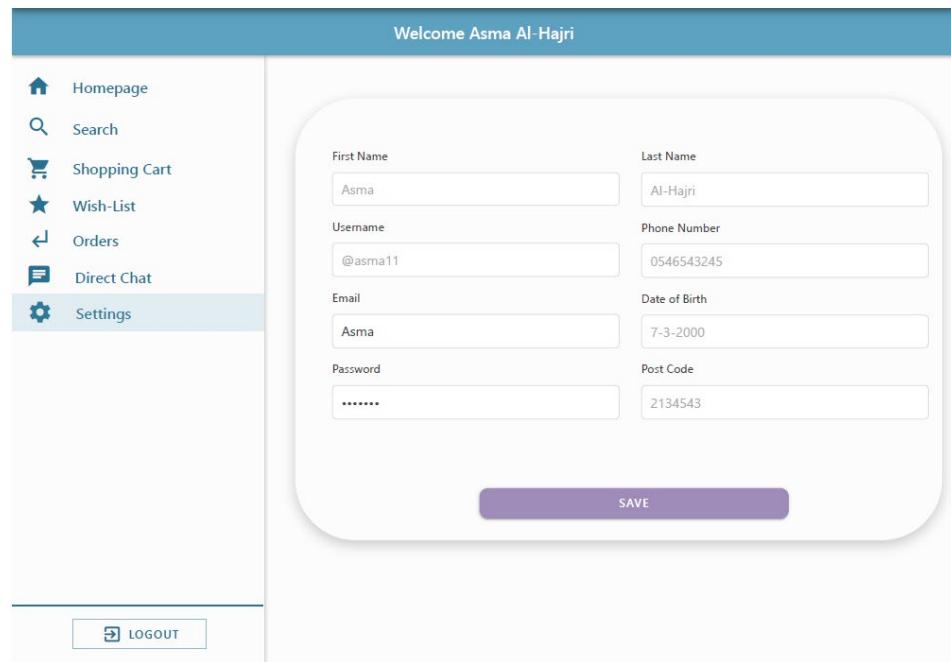


Figure 26 Client with employee chat interface

4.3.6.8 Settings Interface

In this interface, the client can modify his personal information such as name, email, and phone number. the modify process will be successful by clicking on save button.



The screenshot shows a client settings interface. At the top, a blue header bar displays "Welcome Asma Al-Hajri". Below the header is a sidebar menu with the following items: Homepage, Search, Shopping Cart, Wish-List, Orders, Direct Chat, and Settings. The "Settings" item is highlighted with a light blue background. The main content area contains a form for modifying personal information. The form fields are arranged in two columns:

First Name	Last Name
Asma	Al-Hajri
Username	Phone Number
@asma11	0546543245
Email	Date of Birth
Asma	7-3-2000
Password	Post Code
*****	2134543

At the bottom right of the form is a purple "SAVE" button. At the bottom left of the sidebar is a "LOGOUT" button.

Figure 27 Client setting interface

4.3.7 Merchants Login Interface

After the user chooses the merchant option in the homepage interface this interface will appear. In this interface, if the Merchant has an account already, he just needs to enter his valid username and password, in case the Merchant forgets his password, there is an option that allows him to reset password his by entering their username and phone number or email as shown in the common interface forget password interfaces figure 2,In case of an invalid username or password an error message will be displayed “Incorrect username or password, please try

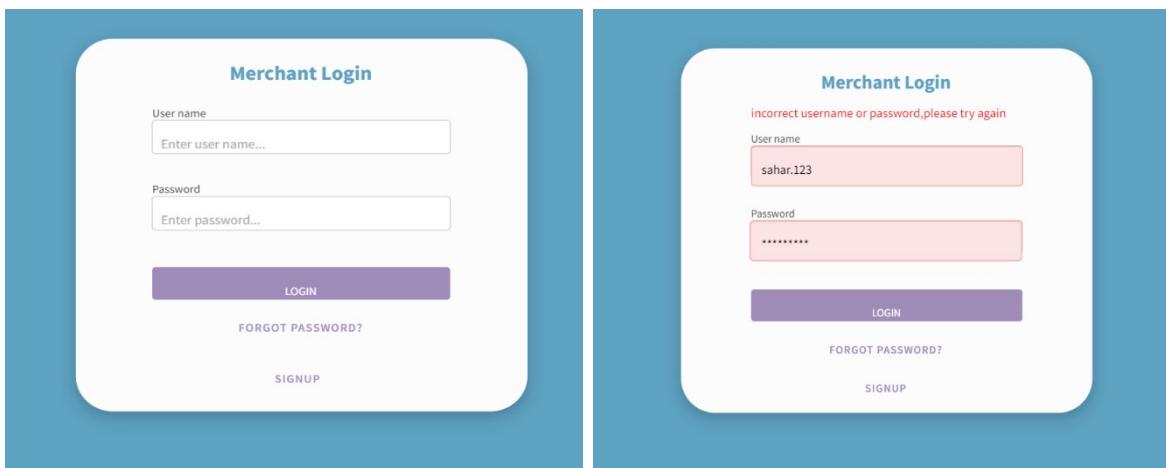


Figure 28:Merchants login Interface.

again”, If the login is done successfully, the merchants interface will appear.

4.3.8 Merchants Register Interface

If the merchant does not have an account, a new account can be created by pressing “signup”, to create an account and send a request to include his store on the website. The merchant will be asked to enter his personal information such as first and last name, Id, username, password, phone number, email, date of birth, city, and postcode. After that, the Merchant should fill a request that includes information about the store itself, such as store name, store category, soft copy of the Commercial Record, Maroof certificate, a brief description of its store, and its contents. In case of an invalid input or leaves any fields empty an error message will be displayed with clarification of the error reason. When he finishes, the request will be sent and he should wait for the result, either acceptance or rejection. If the request is accepted by the employees, the merchant will be contacted directly by email to finalize the settings for including the store and the agreements. Finally, he will be able to enter the website as a merchant and a merchant page interface will appear for him. If not accepted a rejection email will be sent to the merchant with the reasons for the rejection.

Merchant Signup

personal information

first name	last name
<input type="text" value="Enter first name..."/>	<input type="text" value="Enter last name..."/>
user name	phone number
<input type="text" value="Enter user name..."/>	<input type="text" value="0550000000"/>
email	password
<input type="text" value="example@gmail.com"/>	<input type="text" value="Enter password..."/>
id	date of birth
<input type="text" value="enter id..."/>	<input type="text" value="05/04/2019"/>
city	postcode
<input type="text" value="enter city..."/>	<input type="text" value="enter postcode..."/>

store information

store name	store category
<input type="text" value="Enter store name..."/>	<input type="text" value="Selected Category"/>
Commercial Record <input type="button" value="ATTACH FILE"/>	
Maroof certificate <input type="button" value="ATTACH FILE"/>	
a brief description of the store <small>(maximum of 100 words)</small>	

Merchant Signup

personal information

first name	last name
<input type="text" value="sahar"/>	<input type="text" value="alzahrani"/>
user name <small>user name already exists !</small>	phone number <small>phone number already exists !</small>
<input type="text" value="sahar.999"/>	<input type="text" value="0540984467"/>
email <small>email address already exists !</small>	password
<input type="text" value="sahar.111@gmail.com"/>	<input type="text" value="*****"/>
id <small>id already exists !</small>	date of birth
<input type="text" value="11089307777"/>	<input type="text" value="15/08/2000"/>
city	postcode
<input type="text" value="Dammam"/>	<input type="text" value="31146"/>

store information

store name <small>store name already exists !</small>	store category
<input type="text" value="happiness store"/>	<input type="text" value="clothes"/>
Commercial Record <input type="button" value="ATTACH FILE"/>	
Maroof certificate <input type="button" value="ATTACH FILE"/>	
a brief description of the store <small>(maximum of 100 words)</small>	

Our store offers different types of clothes with good prices compared to the market...

Merchant Signup

personal information

first name	last name
sahar	alzahrani
user name	phone number
sahar.777	0540984455
email	password
sahar.778@gmail	*****
id	date of birth
11089307777	age must be 18 and above.
city	postcode
Dammam	31146

store information

store name	store category
happy things	clothes
Commercial Record	Maroof certificate
ATTACH FILE (ایضاً ملف 12) Commercial Record.docx	ATTACH FILE (ایضاً ملف 12) Maroof certificate.docx
a brief description of the store (maximum of 100 words)	
Our store offers different types of clothes with good prices compared to the market...	

Merchant Signup

personal information

wrong entry, the password must be at least 10 characters long including upper letter, lower letter, and at least 3 numbers.

first name	last name
sahar	alzahrani
user name	phone number
sahar.777	0540984455
email	password
sahar.778@gmail	***
id	date of birth
11089307777	18/07/2006
city	postcode
Dammam	31146

store information

store name	store category
happy things	clothes
Commercial Record	Maroof certificate
ATTACH FILE (ایضاً ملف 12) Commercial Record.docx	ATTACH FILE (ایضاً ملف 12) Maroof certificate.docx
a brief description of the store (maximum of 100 words)	
Our store offers different types of clothes with good prices compared to the market...	

Merchant Signup

personal information

some of the fields are missing !

first name	last name
sahar	alzahrani
user name	phone number
	0540984455
email	password
sahar.778@gmail	
id	date of birth
11089307777	18/07/2006
city	postcode
Dammam	31146

store information

store name	store category
happy things	clothes
Commercial Record	Maroof certificate
ATTACH FILE (ایضاً ملف 12) Commercial Record.docx	ATTACH FILE (ایضاً ملف 12) Maroof certificate.docx
a brief description of the store (maximum of 100 words)	
Our store offers different types of clothes with good prices compared to the market...	

Figure 29:Merchant Register Interface

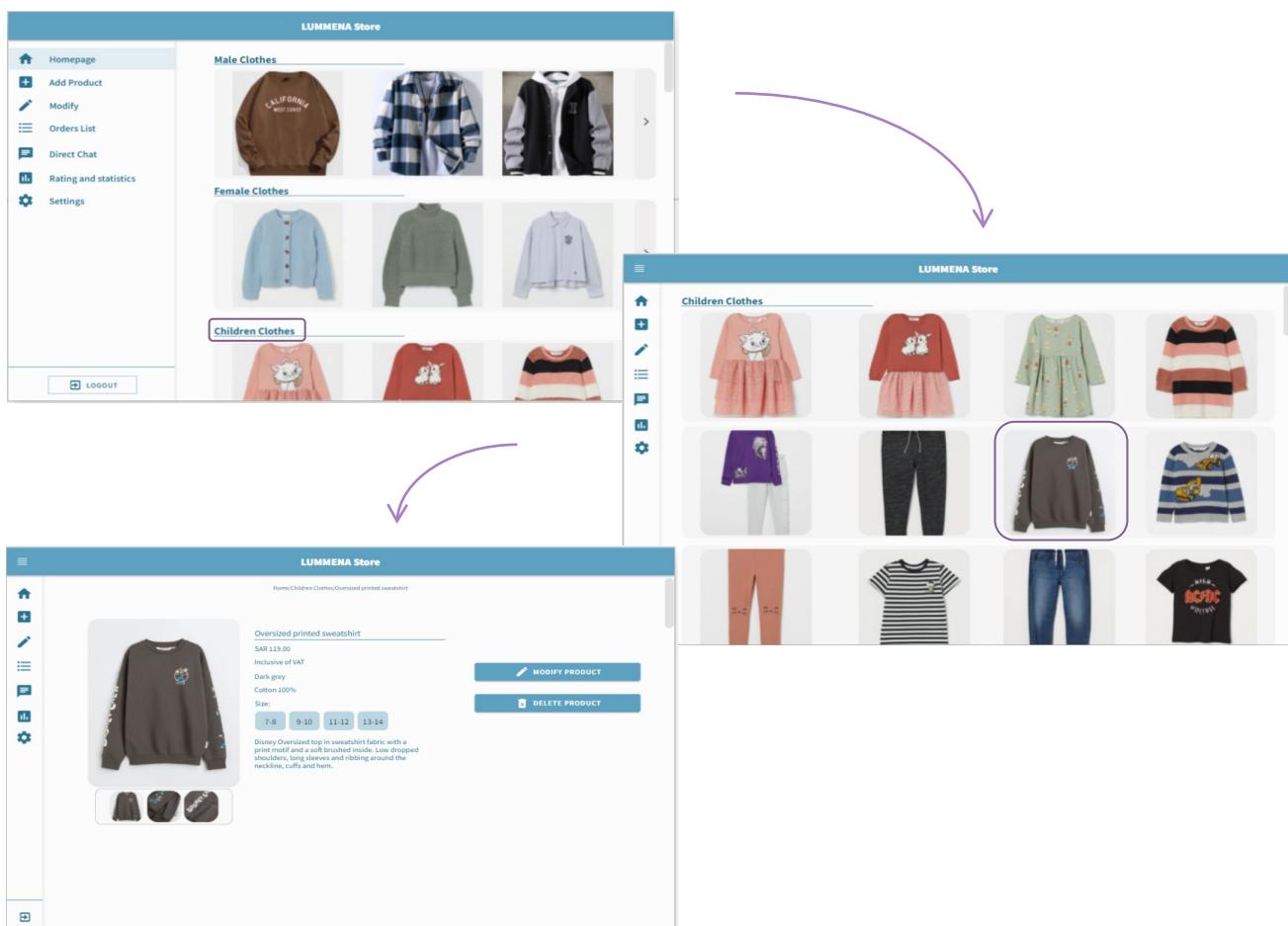
4.3.1 Merchants Page Interface

4.3.1.1 Shop Page Interface

This interface acts as the main page (can also be called Homepage), it'll contain the overall setup of the store; it has the products that the merchant has listed and the categories it's listed in.

This page will have a vertical bar that acts as an intermediate to the Add Product, Modify, Order List, Settings, Rating And Statistics, And Direct Chat interfaces (display them as buttons) so when the merchant clicks on the wanted interface it'll open it for him. Merchants will also have the option to logout by clicking on the "LOGOUT" button at the bottom of the vertical bar.

Once the merchant enters the shop page or any other page, a dark color will be over the page name in the navigation vertical bar automatically. To view more categories, merchants can use the vertical scrollbar on the right of the page. Merchants can view each category individually by clicking on the category name. When clicking on a product, it will show the product details such as name, price, color, and product description. Merchants also have the option to delete it or edit it by clicking on the "DELETE PRODUCT"/"MODIFY PRODUCT" button. To return to the Homepage from here, the merchant has to click on the Homepage icon.



4.3.1.2 Add products Interface

To get to this interface, the merchant must click on “Add product” from the vertical bar at the left of the page. Merchants can add products by filling in the required fields.

Product name, material, price, color and description are text fields that the merchant must fill. Product category and size are also text fields but work in a different way. When the merchant wants to add a new category, he has to type the name of the category in the text field then click “ADD” button, then a new category will be added. For deleting a category, the merchant has to click on the category (the selected category will be in a darker color) then click on “DELETE” button.

The figure consists of three screenshots of the Lummenna Store's 'Add Product' interface, connected by purple arrows indicating a sequential flow.

Screenshot 1: The first screenshot shows the initial state of the form. The 'Product Category' section contains three buttons: 'Male Clothes', 'Female Clothes', and 'Children Clothes'. Below this are two buttons: a grey one labeled 'DELETE' and a blue one labeled '+ ADD'. The 'Size' field is empty. A purple arrow points from this screen to the second screenshot.

Screenshot 2: In the second screenshot, a new category 'New Born Clothes' has been added. This category is highlighted with a purple border. The 'Size' field now contains the value '11-12'. A purple arrow points from the first screenshot to this one.

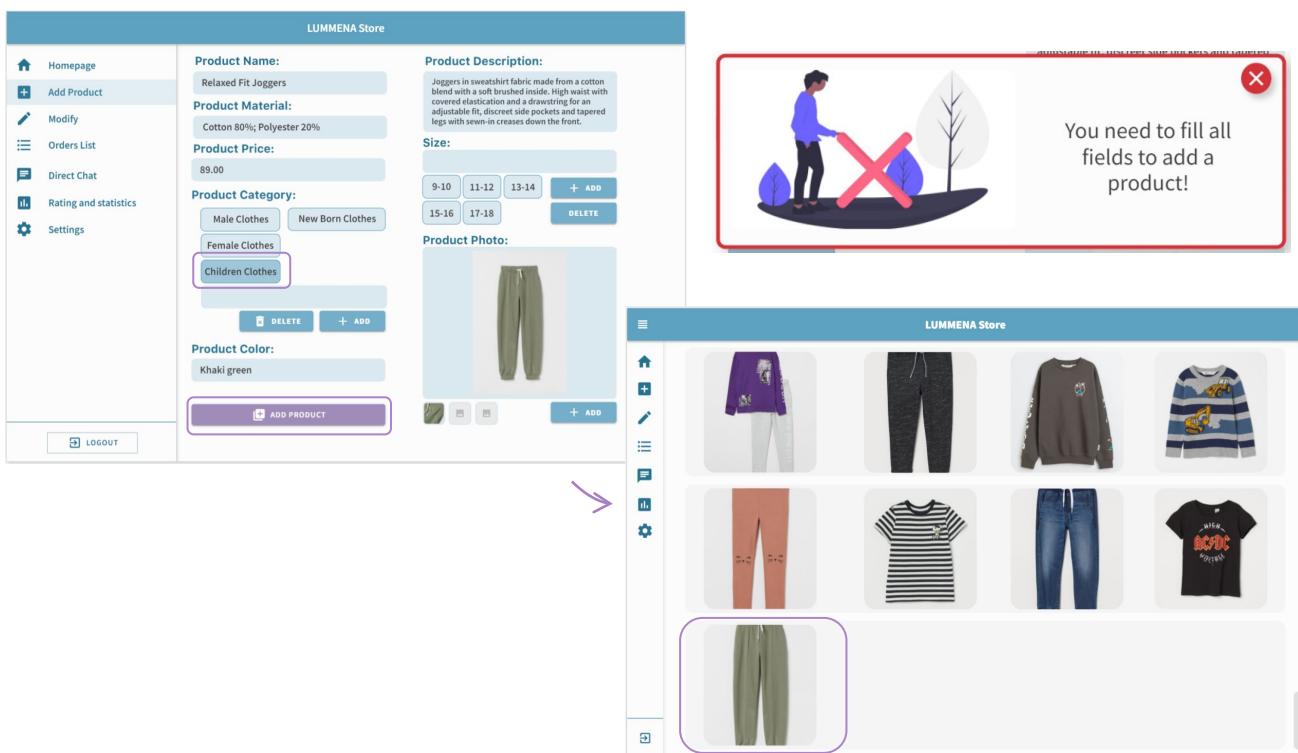
Screenshot 3: The third screenshot shows the completed product entry. The 'Product Category' section now includes 'Male Clothes', 'Female Clothes', 'Children Clothes', and 'New Born Clothes'. The 'Size' field contains '9-10', '11-12', '13-14', '15-16', and '17-18'. The 'Product Photo' section shows a placeholder image. On the right side of the page, there are three sections: 'Female Clothes' (with three items), 'Children Clothes' (with three items), and 'New Born Clothes' (with three items). A purple arrow points from the second screenshot to this final one.

To add a picture, a merchant has to click on the “ADD” button then choose a picture of the product they want to add from their device to add to the store.

If the merchant didn’t fill all the required fields and clicked on “ADD PRODUCT” button then an error message will appear saying “you need to fill all fields to add a product”, otherwise a new product will be added.

To choose a category for the product the merchant has to select from the categories he added before (the chosen category will be in a darker color).

The field shown to add a product will differ depending on the category of the store. For example, if the category of the store is “clothes” then the fields would be name, price, color, and material of the product, description of the product, along with the sizes available. But if the category of the store was “food and drinks” then the field would be name, type, spice level, price, and so on.



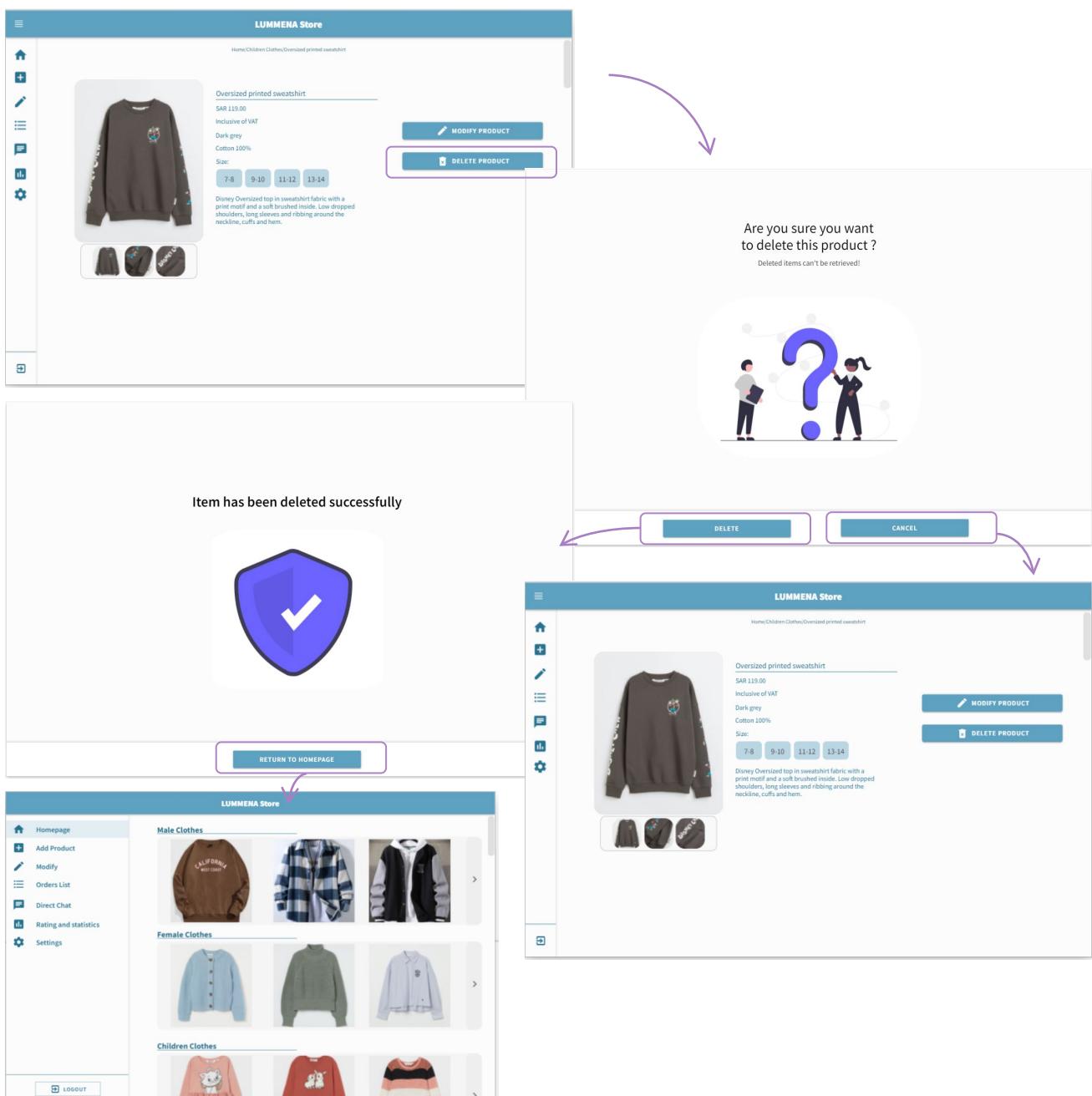
4.3.1.3 Modify products Interface

In this interface, the merchant can either delete or update a product.

4.3.1.3.1. To delete a product:

If the merchant wishes to delete a product, he will have to click on the “DELETE PRODUCT” button, then a confirmation dialogue will show up asking “Are you sure you want to delete this product?” if the merchant wishes to continue then he should click on “DELETE PRODUCT” then a success page will show up then the merchant should click on “RETURN TO HOME PAGE”.

However, if the merchant changes their mind and doesn't want to delete the product then he should click on “CANCEL” to go back to the product page.



4.3.1.3.2. To update a product:

Fields from the add product interface will also be included in this interface so that the merchant can edit the fields he wants by clicking on the text field.

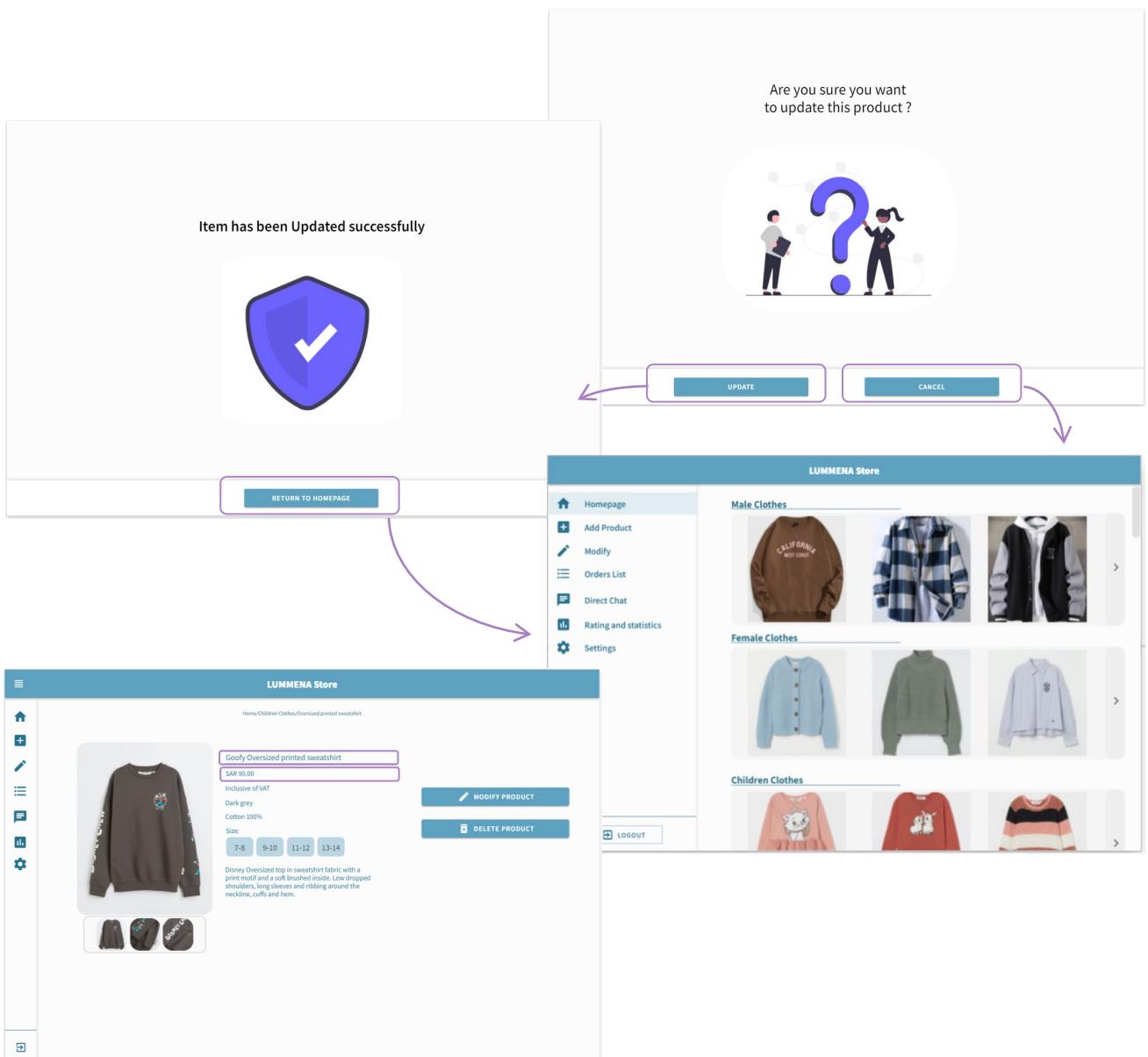
Category and size work the same as they do in adding a product interface. So, if the merchant wants to add a new category, he has to type the name of the category in the text field then click the “ADD” button, then a new category will be generated. For deleting a category, the merchant has to click on the category (the clicked category will be in a darker color) then click the “Delete” button. To choose/change a category for the product the merchant has to select from the categories he added before (the chosen category will be in a darker color).

If the merchant wishes to continue then he should click on “UPDATE PRODUCT” then a success page will show up, then the merchant should click on “RETURN TO HOME PAGE”. The modifications are automatically updated on the product page.

However, if the merchant changes their mind and doesn't want to update the product then he should click on “CANCEL” to return back to the product page.

The figure consists of three vertically stacked screenshots of the Lummena Store application, illustrating the steps to update a product.

- Screenshot 1: Product Detail Page**
This screenshot shows a product detail page for an "Oversized printed sweatshirt". The product image is a dark grey sweatshirt with a cartoon character print on the chest. Below the image are three smaller images of the sweatshirt from different angles. On the right side of the page, there are two buttons: "MODIFY PRODUCT" (highlighted with a purple box and a purple arrow pointing to it) and "DELETE PRODUCT".
- Screenshot 2: Modify Product Page**
This screenshot shows the "Modify" section of the Lummena Store. It includes fields for "Product Name" (Oversized printed sweatshirt), "Product Description" (Disney Oversized top in sweatshirt fabric with a print motif and a soft brushed inside. Low dropped shoulders, long sleeves and ribbing around the neckline, cuffs and hem.), "Product Material" (Cotton 100%), "Product Price" (119), "Product Category" (Children Clothes selected), "Product Color" (Dark grey), and "Product Photo" (an image of the sweatshirt). There are "DELETE" and "ADD" buttons for categories and sizes, and a "LOGOUT" button at the bottom.
- Screenshot 3: Updated Product Page**
This screenshot shows the updated product details. The "Product Name" field now contains "Goofy Oversized printed sweatshirt". The "Product Description" field remains the same. The "Product Category" dropdown now includes "Male Clothes", "New Born Clothes", and "Female Clothes", with "Children Clothes" still selected. The "Product Color" field remains "Dark grey". The "Product Photo" field shows the same sweatshirt image. At the bottom, there is a "LOGOUT" button.



4.3.1.4 Order List Interface

In this interface, a list of orders is available to the merchant. Each order has a unique number and consists of the client's name, address, phone number, and the date of the order. Each order also has a list of product pictures, names, and prices. The total price is also listed at the end of the order. The Merchant can modify the state of the order as ongoing, completed, shipped, and delivered from the dropdown list.

The screenshot shows the Lummena Store's Order List interface. On the left, a sidebar menu includes: Homepage, Add Product, Modify, Orders List (selected), Direct Chat, Rating and statistics, and Settings. The main area displays two orders:

- Order # 2158496345:** Client Name: Asma Al-Hajri, Client Address: Dammam - Alfaisalya- 54854- 3214, Phone Number: 0564525478, Order Date: 11/10/2021. Products: Brown Sweatshirt (90 SAR), Blue Wool Sweater (50 SAR), Lulu Caty Pink Dress (44 SAR), 2 set SW (144 SAR). Total Price: 350 SAR. Status: Ongoing (highlighted).
- Order # 2158496357:** Client Name: Hajar Bawazir, Client Address: Jeddah - Alsafa - 69752- 2482, Phone Number: 0564365482, Order Date: 8/11/2021. Products: (three items shown).

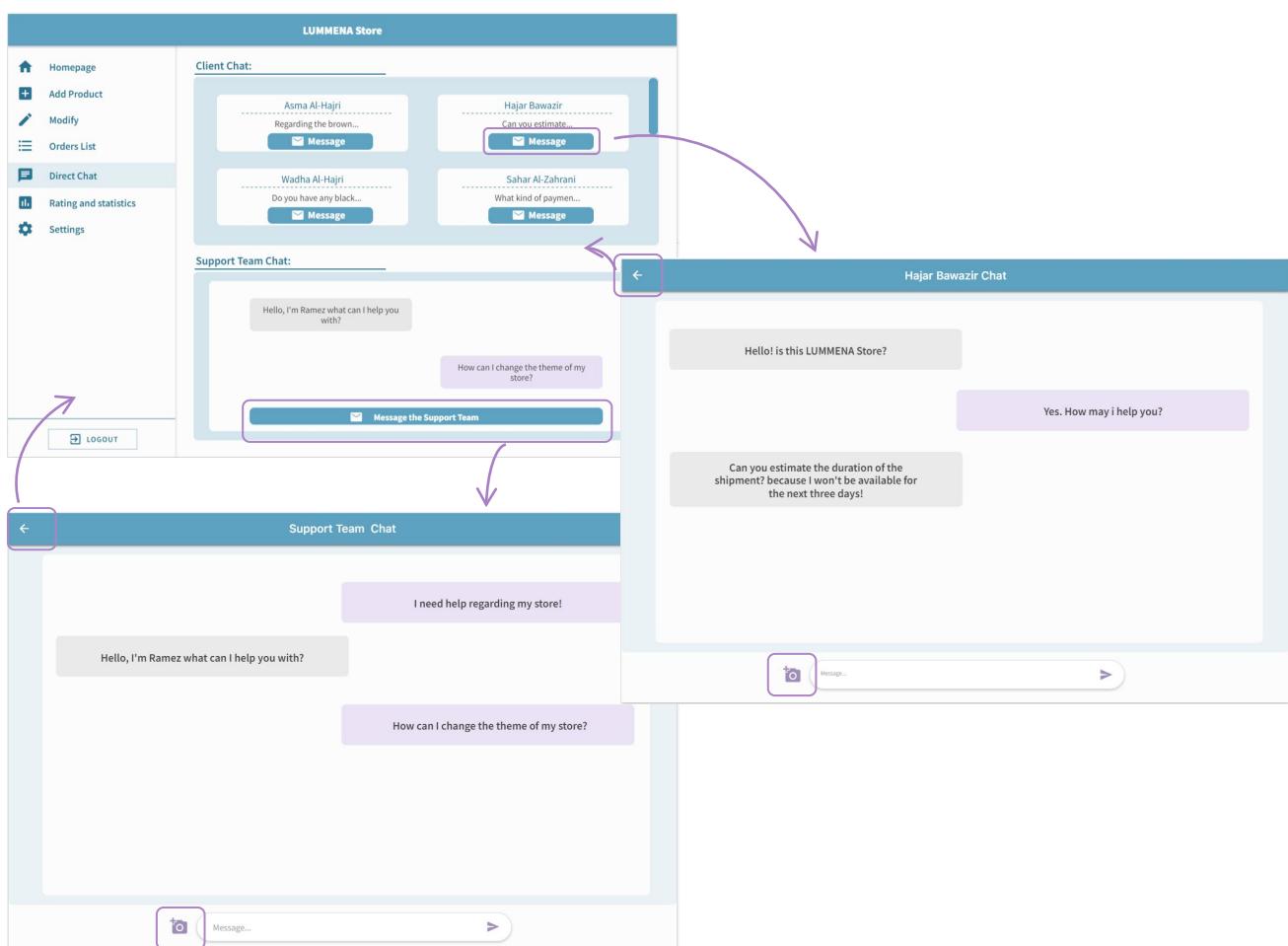
A dropdown menu on the right lists order statuses: Shipped, Ongoing (selected), Delivered, Shipped, and Completed. An arrow points from the 'Ongoing' status in the dropdown to the 'Ongoing' status in the order details.

4.3.1.5 Direct chat interface

This interface will be interactive just like any chatting system such as WhatsApp, but it will be embedded on the website. It'll have 2 sections:

1. Client chat: the merchant will be able to send and receive messages to/from clients to answer their questions or to ask them about their orders and other issues. Clients will be displayed in a box with their names, the last sent message, and a message button. Merchants can access a client chat by clicking on the “MESSAGE” button under the client’s name. Merchants can view more client chats by using the scrollbar.
2. Support Team Chat: the merchant will also be able to send and receive messages to/from the support team to ask about concerns about their store. The last 2 messages will be displayed in a box with a message button. Merchants can access a Support Team Chat by clicking on the “MESSAGE THE SUPPORT TEAM” button at the bottom of the Support Team Chat section.

After entering the chat, an arrow at the top left of the interface can return to the direct chat interface. Merchants will also have the ability to send pictures by clicking on the camera icon.



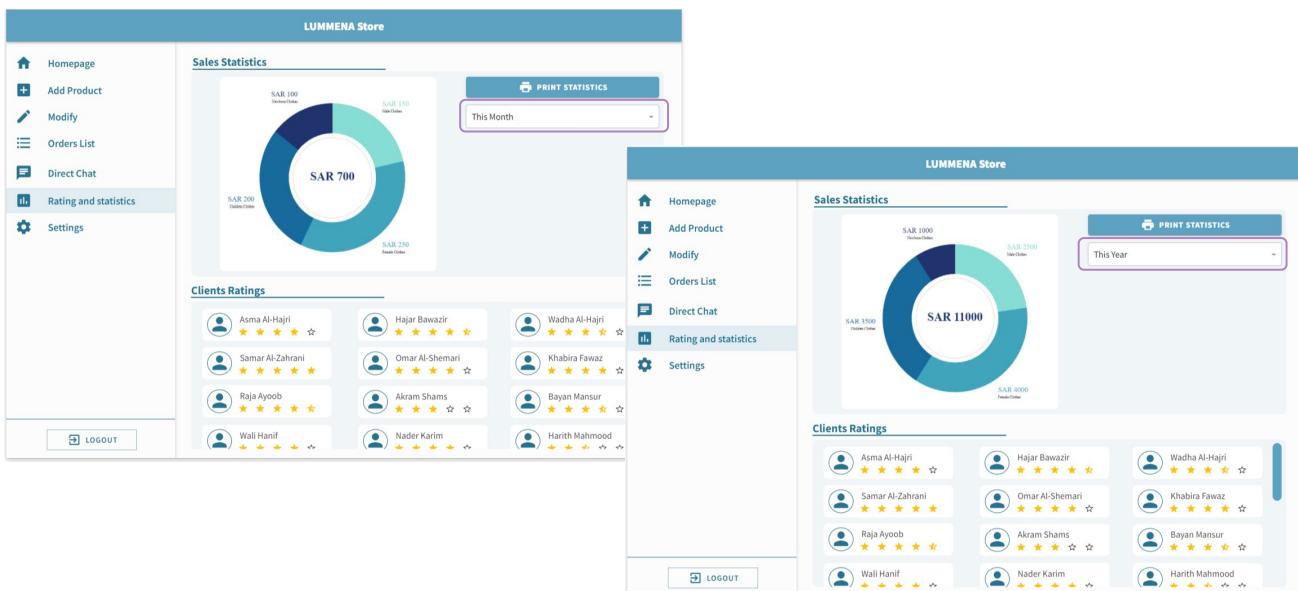
4.3.1.1 Rating and statistics Interface

This interface will have two sections. The first one is to view clients' ratings. The other is to view the sales statistics in terms of all products that were sold during this month and this year. Merchants will also be able to print sales statistics from the beginning of their store to the present.

The ratings are designed to be viewed as a list with the client's name and a 5-star review. Merchants can view more client reviews by using the scrollbar.

Using the dropdown list, the merchant can view the sale statistics for this month or this year by clicking on the appropriate element. A pie chart is designed to display the sales for categories and the total sales for the month/year.

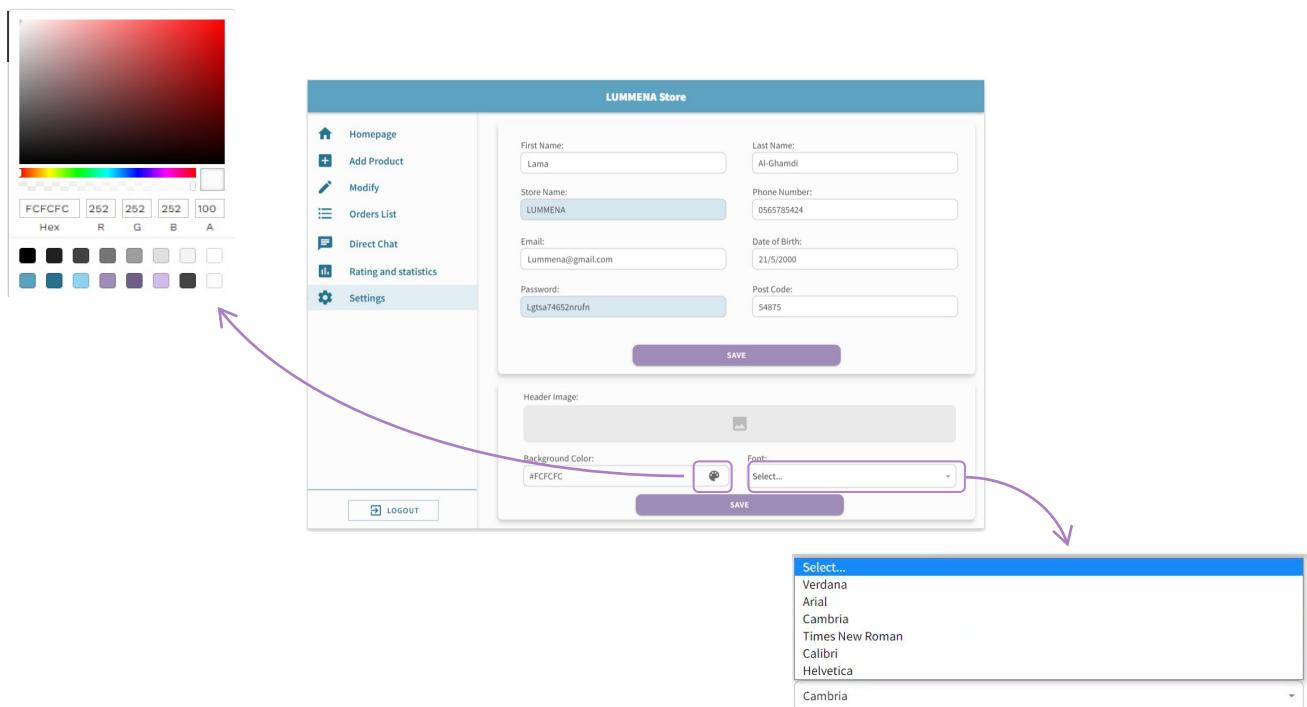
By clicking on "PRINT STATISTICS", merchants can also print the sale statistics from the beginning of their store to the present.



4.3.1.2 Settings Interface

MERCHANTS can modify their personal information such as First and last name, email, date of birth, postcode, and phone number. The Store name and password can be changed (displayed in a different color). After the Merchant has modified his personal information, it will be saved when he clicks on the save button.

MERCHANTS can also modify the design of the page, for example changing the background color, font, and adding photos. To change background color, the merchant has to choose from the color palette by clicking on the pallet icon. MERCHANTS can also choose a font from a drop-down list. Then click the “SAVE” button to save changes.



4.4 Screen Objects and Actions

Table 3 : Screen objects and actions

No.	Object	Type	Action
Common Interfaces			
Homepage interface			
1)	employee	button	move to employee login interface
2)	client	button	move to client login interface
3)	merchant	button	move to merchant login interface
Forget password interface			
4)	email	button	To Show email and username Fieldes
5)	Phone number	button	To Show Phone number and username Fieldes
6)	send	button	To send change password link to email/phone number
7)	email	button	To Show email and username Fieldes
change password interface			
8)	update	button	Change the old password to the new password
9)	Log in	button	move to the user login interface
Employee Interfaces			
Employee login interface			
10)	Log in	button	move to employee page
11)	Forget password	link	To take the employee to “Forgot Password” interface which help him to change his password
Open-stores requests Interface			
12)	Read	Button	The merchant personal, store information, and legal documents will be displayed
13)	Open folder	Button	Open the attached file to read it and download it
14)	Close	Button	To close Store / merchant information box.
15)	Accept	Button	<ul style="list-style-type: none"> The store will be accepted to listed on the site. Open box to send email to the merchant.
16)	Reject	Button	<ul style="list-style-type: none"> No accepted it (It will not list it on the site). Open box to send email to the merchant.
17)	Send	Button	Send email massage to Merchant (for

			reason of reject or for approve the store).
18)	Cancel	Button	Cancel sending message.
19)	Manage Merchants stores Interface	Button	Go to Manage Merchants stores Interface
20)	Technical support Interface	Button	Go to Technical support Interface.
21)	Settings Interface	Button	Go to Settings Interface.
22)	Read	Button	The merchant personal ,store information , and legal documents will be displayed

Manage Merchants stores Interface

23)	Search button	Button	To search for specific store.
24)	Select category	Drop down list	To choose for specific category store.
25)	Open-stores requests Interface	Button	Go to open-stores requests Interface
26)	Technical support Interface	Button	Go to Technical support Interface.
27)	Settings Interface	Button	Go to Settings Interface.

Information for each Merchants stores Interface

28)	Back button	Button	To return back to Manage Merchants stores Interface.
29)	Search button	Button	To search for specific store.
30)	Delete store	Button	To show the confirmation message for deleting the store
31)	Yes	Button	To delete the store
32)	Cancel	Button	To Cancel deleting the store
33)	Send	Button	Send email massage to Merchant (report the deletion of store).
34)	Cancel	Button	Cancel send the message

Technical support Interface

35)	Open-stores requests Interface	Button	Go to open-stores requests Interface
36)	Manage Merchants stores Interface	Button	Go to Manage Merchants stores Interface
37)	Settings Interface	Button	Go to Settings Interface.
38)	Replay	Button	To respond to store / client messages
39)	Direct message	Button	To send direct message to store / client
40)	Ok	Button	Send the message

Settings Interface

41)	Open-stores requests Interface	Button	Go to open-stores requests Interface
42)	Manage Merchants stores Interface	Button	Go to Manage Merchants stores Interface

43)	Technical support Interface	Button	Go to Technical support Interface
44)	logout	Button	
45)	Modify	Button	Allowed to modify the employee's personal information.
46)	Cancel	Button	Cancel modification of employee personal information
Client Interfaces			
client login interface			
47)	Log in	button	move to client page
48)	Forget password	link	To take the client to "Forgot Password" interface which help him to change his password
49)	signup	link	To take the client to registration interface
client registration interface			
50)	signup	button	create new account and move to client page
Client Page Interface			
51)	open store page	button	to view store product
52)	add to cart	button	to add product to shopping cart
53)	add to wish-list	button	to add product to wish-list
54)	delete a product	button	delete a product from wish-list
55)	move to cart	button	move the product from wish-list to cart
56)	delete a product	button	delete a product from cart
57)	move to wish-list	button	move the product from cart to wish-list
58)	continue shopping	button	moving from cart to home page
59)	check out	button	moving to checkout page
60)	payment method	checkbox	choosing the payment method
61)	Place an Order	Button	To finish ordering
62)	Write a Review	Button	To write any review about product
Merchants Interfaces			
Merchant login interface			
63)	Log in	button	move to merchant page
64)	Forget password	link	To take the Merchant to "Forgot Password" interface which help him

			to change his password
65)	signup	link	To take the Merchant to registration interface
Merchant registration interface			
66)	signup	button	send a request to open store and create new account
67)	attach file	button	open files to choose one of them
Merchant Shop Page Interface			
68)	Each Product page		
a)	Modify Product	Button	Move to Modify products Interface
b)	Delete Product	Button	Delete Product
69)	Add product	Button	Move to Add products Interface
a)	Add	Button	To add a category
b)	Delete	Button	To delete a category
c)	Add	Button	To add a size
d)	Delete	Button	To delete a size
e)	Add	Button	To add a photo
f)	Add Product	Button	To add a product
70)	Modify page		
a)	Add	Button	To add a category
b)	Delete	Button	To delete a category
c)	Add	Button	To add a size
d)	Delete	Button	To delete a size
e)	Add	Button	To add a photo
f)	Modify Product	Button	To Modify a product
71)	Order List	Button	Move to Order List Interface
a)	State of order	Drop down list	To change the State of the order
72)	Direct chat	Button	Move to Direct chat interface
a)	Message	Button	For each client chat, Move to a chat page with the client
b)	Message the Support Team	Button	Move to a chat page with the Support Team
73)	Rating and statistics	Button	Move to Rating and statistics Interface
a)	Print Statistics	Button	To print a statistics sheet from the start of the store
b)	this month/year statistics picker	Drop down list	To show either this year or this moth statistic graph
74)	Settings	Button	Move to Settings Interface.
a)	Save	Button	To save changes in merchant

			information
b)	Font Selector	Drop down list	To select a font style
c)	Color pallet icon	Button(icon)	Opens a color picker
d)	Header image (Gray image Background)	Button	To add a header photo
e)	Save	Button	To save information in merchant store

5. System Architecture

This section provides an indication of Flow architecture. It covers the architectural design approach, the overall system, and subsystems architectures.

5.1 Architectural Design Approach

We stated in SRS section 3.1.4 that we will use client-server architecture, but due to the need for a high level of security to protect users' information such as credit card information, national identity number, and commercial registry for merchants, all of which are sensitive and require high protection, we have decided to change the system architecture to Layered Architecture to provide a higher level of protection.

The architecture consists of 3 basic layers: presentation layer, business layer and data layer.

- **Presentation layer:** This is the upper layer that is responsible for managing user's interaction with the system, by displaying information and taking appropriate inputs. The input is then manipulated and processed in the business layer.
- **Business layer:** Inputs from the user are treated in this layer. This is the middle layer that handles and performs all the application's functions.
- **Data layer:** This layer provides an access to the database within the system constraints. Data can be stored and retrieved by executing queries. Consequently, Results are sent back to the business layer.

The multilayered architecture contributes to improved application maintainability, flexibility, and security. Updating processes and adding new functions may be handled without disrupting the entire application, resulting in a more manageable system. Similarly, the independence of each layer boosts the application's adaptability. Finally, if the system was not layered, security threats would be concentrated in a single layer, making them difficult to manage and mitigate.

5.2 Architectural Design

The architectural design diagram for the proposed application is shown in Figure 30.

- **Presentation layer:** provides tools to present and display data. Moreover, it takes inputs from the intended users (Website Employee, Merchant and Client) and interacts with them accordingly. Java Development Kit (JDK) will be used to create interfaces.
- **Business layer:** Java, an object-oriented programming (OOP) language, will be used as a bridge between the interfaces and the corresponding database. The database will be used to retrieve data required to be displayed as well as store new data from corresponding inputs.
- **Data layer:** The data can be stored in and retrieved from MySQL Relational Database Management System (RDBMS). First, the Java Virtual Machine (JVM) sends queries to the database (MySQL). Accordingly, MySQL RDBMS sends the results back to the JVM. The application helps the intended users (Website Employee, Merchant and Client) interact with the system by entering inputs and storing them into the database and by retrieving data as outputs as well.
-

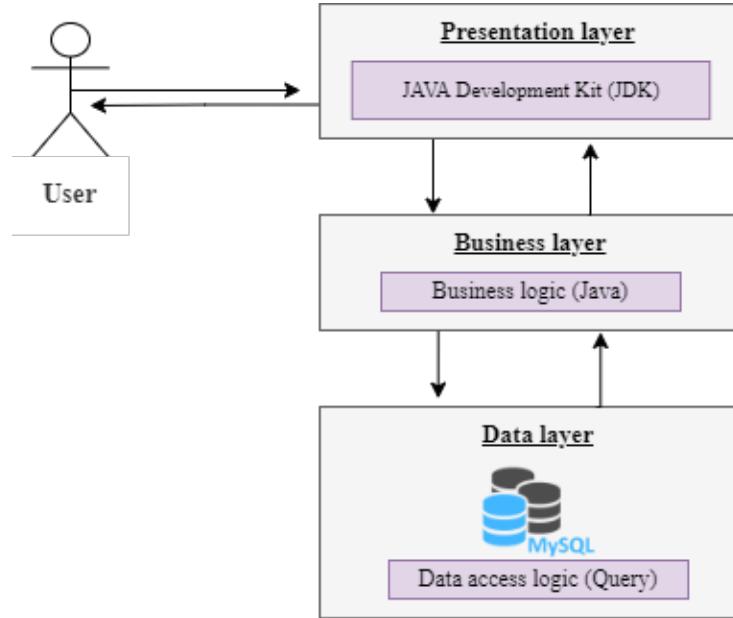


Figure 30: Layered Architecture Design

5.3 Subsystem Architecture

This section describes in detail the functions and major processes for the projected "Flow". It defines how data is processed and how the application stored that data. It demonstrates the logical architecture by providing data flow diagrams (DFDs) to define the processes, data flows, and data stores at different levels. Ultimately, this section depicts the association between each and every user with the system.

5.3.1 General View of the System

Context DFD illustrates the capacity and limitations of the wished-for Flow website. Context DFD shows the website's boundaries and its relationships with its environment. Figure 31 shows the context DFD to illustrate how the users interchange information within the system.

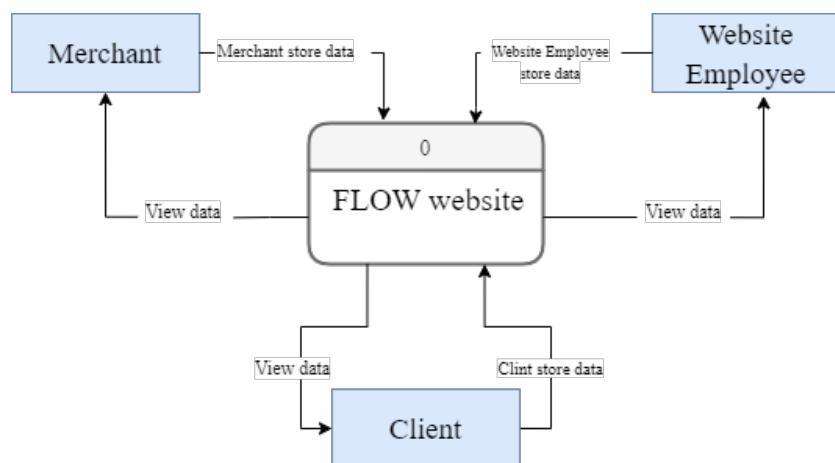


Figure 31: context level DFD

5.3.2 All Users' Subsystem

This subsection specifies a graphical representation of the common functionalities among all three users, Website Employee, Merchant and Client, and how they interact with the system as shown in Figure 32.

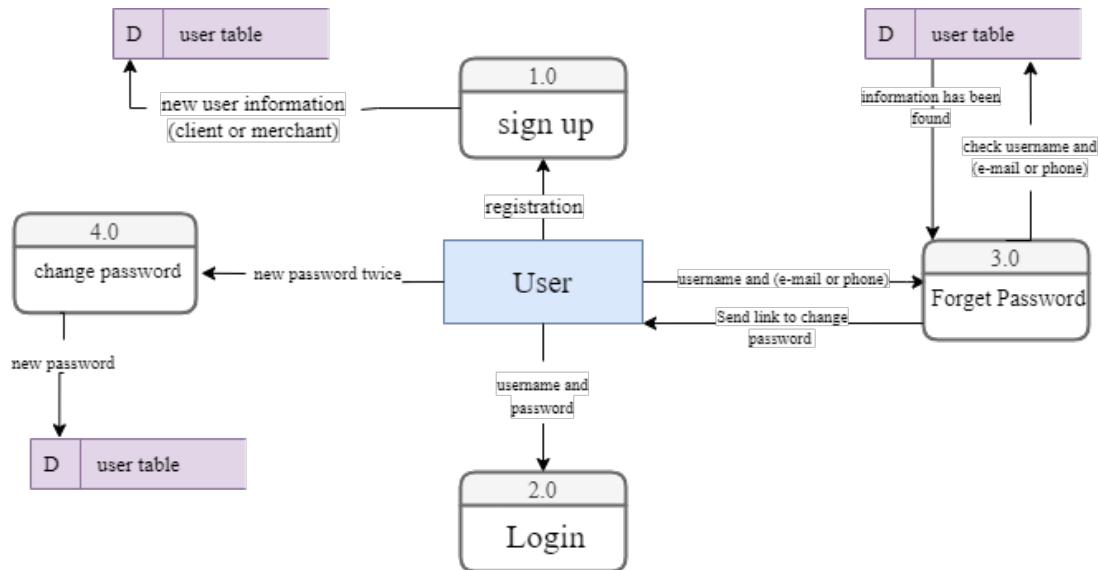


Figure 32: Level-0 DFD for All Users' Subsystem

5.3.3 Website Employee's Subsystem

This section provides a graphical representation of how the employee of Flow interacts with the system. Figure 33 shows the Level-0 DFD of the employee's subsystem and describes how the data flows between the system and the employee.

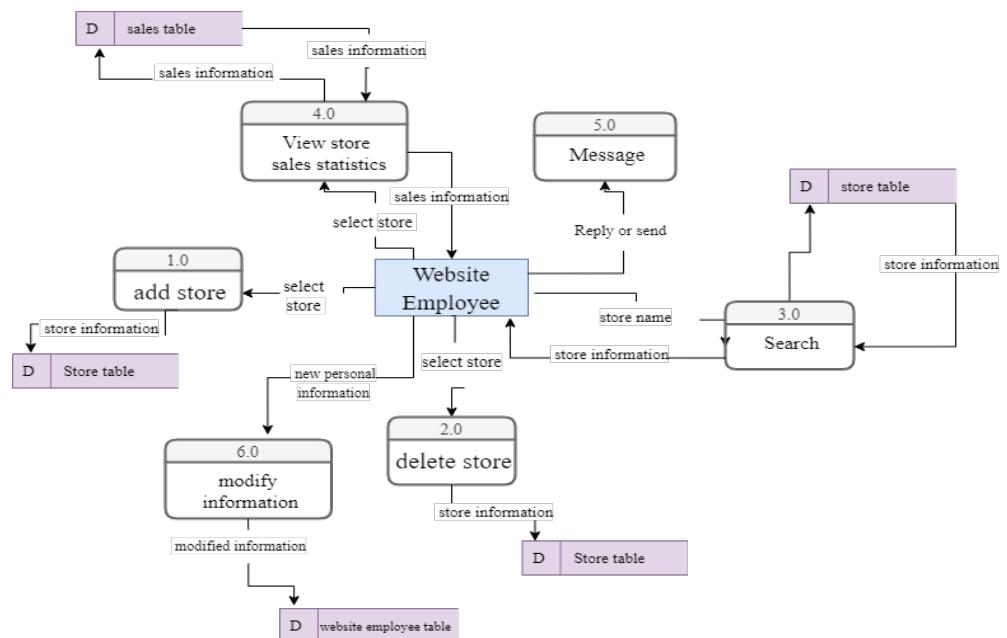


Figure 33: Level-0 DFD for Website Employee's subsystem

5.3.4 Merchant's Subsystem

This section provides a graphical representation of how the Merchant interacts with the system. Figure 34 shows the Level-0 DFD of the Merchant's subsystem and describes how the data flows between the system and the Merchant.

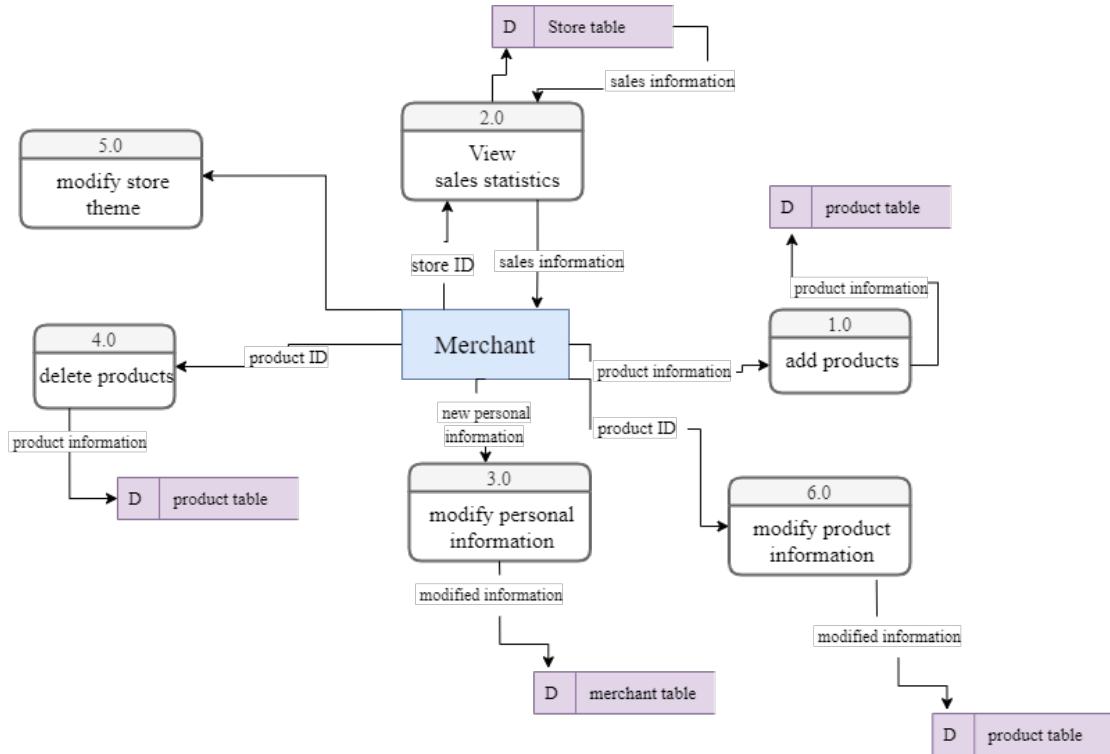


Figure 34: Level-0 DFD for Merchant's subsystem

5.3.5 Client's Subsystem

This section provides a graphical representation of how the Client interacts with the system. Figure 35 shows the Level-0 DFD of the Client's subsystem and describes how the data flows between the system and the Client.

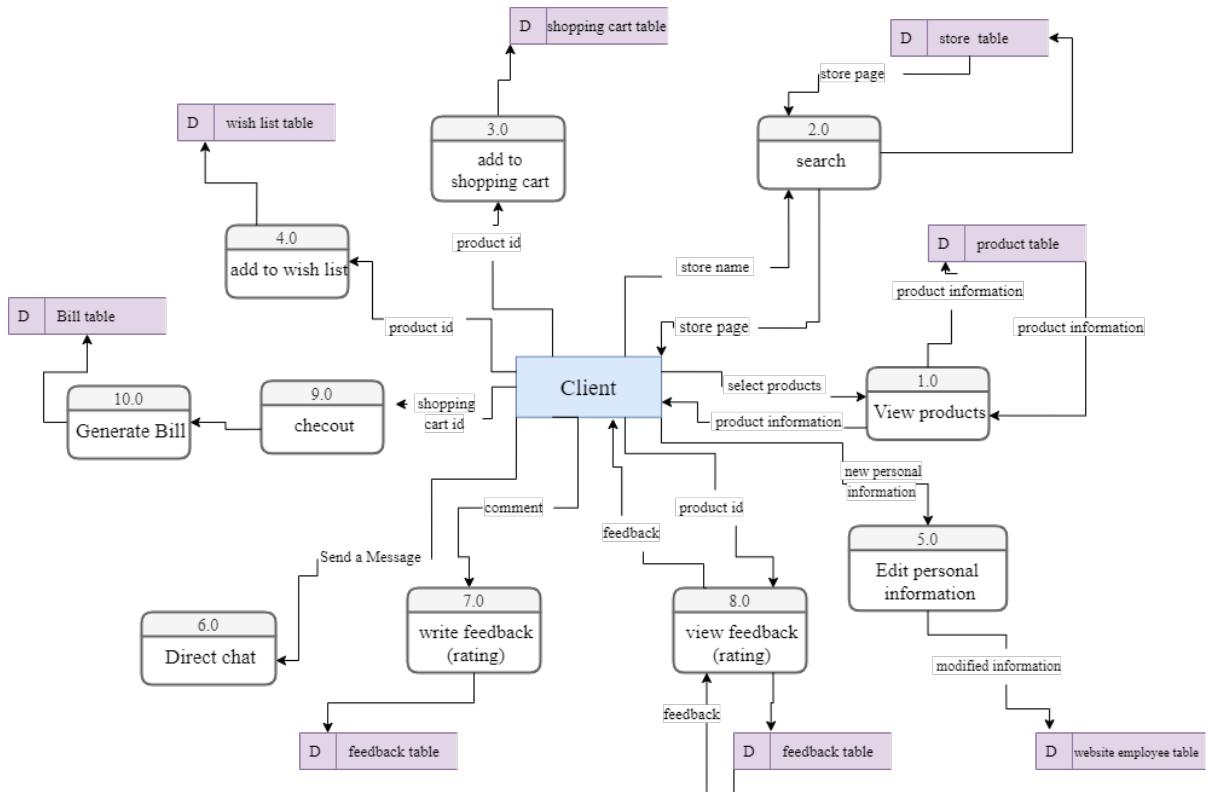


Figure 35: Level-0 DFD for Client's subsystem

6. Data Design

This section provides a description of the data, data types, required fields, list of the entities and a description of the database.

6.1 Data Description

The Flow system includes all the data required to have comprehensive, thorough, and complete functionalities. Data is accessible to the users based on their allowed access control. Every user can view his/her own information. In case of storing and manipulating the data, the website employee has more rights and privileges. The database entities, their required fields, data types, and constraints are shown in Table below.

Table 4 Data base entity and fields

Entity	Field	Type	Constraints
Website Employee	WE_ID	VARCHAR (10)	Primary Key, Unique, Not NULL
	WE_username	VARCHAR (10)	Unique, Not NULL
	WE_pass	VARCHAR (10)	Not NULL
	First_name	VARCHAR (45)	Not NULL
	Last_name	VARCHAR (45)	Not NULL
Client	Client_ID	VARCHAR (10)	Primary Key, Foreign Key, Unique, Not NULL
	Client_username	VARCHAR (10)	Unique, Not NULL
	Client_pass	VARCHAR (10)	Not NULL
	First_name	VARCHAR (45)	Not NULL
	Last_name	VARCHAR (45)	Not NULL
	Phone_num	INT (10)	Unique, Not NULL
	Email	VARCHAR (45)	Unique, Not NULL
Merchant	DateOfBirth	DATE	Not NULL
	M_SSN	VARCHAR (10)	Primary Key, Unique, Not NULL
	M_username	VARCHAR (10)	Unique, Not NULL
	M_pass	VARCHAR (10)	Not NULL
	First_name	VARCHAR (45)	Not NULL
	Last_name	VARCHAR (45)	Not NULL
	Phone_num	INT (10)	Unique, Not NULL
Store	Email	VARCHAR (45)	Unique, Not NULL
	DateOfBirth	DATE	Not NULL
	Store_ID	VARCHAR (10)	Primary Key, Foreign Key, Unique, Not NULL
	Store_name	VARCHAR (45)	Unique, Not NULL
Product	Store_category	VARCHAR (45)	Not NULL, multy values
	Commercial_record	VARCHAR (10)	Unique, Not NULL
	Product_ID	VARCHAR (10)	Primary Key, Foreign Key, Unique, Not NULL
	Product_name	VARCHAR (45)	Not NULL
	Product_price	FLOAT	Not NULL

	Product_category	VARCHAR (45)	Not NULL
payment	payment_ID	VARCHAR (10)	Primary Key, Unique, Not NULL
	payment_methode	VARCHAR (10)	Not NULL
	Name_on_card	VARCHAR (45)	Not NULL
	Card_num	VARCHAR (20)	Not NULL
	CVV	INT (3)	Not NULL
	Expir_date	DATE	Not NULL
Bill	Bill_ID	VARCHAR (10)	Primary Key, Foreign Key, Unique, Not NULL
	Payment_price	FLOAT	Not NULL
	Bill_date	DATE	Not NULL
Shopping Cart	Cart_ID	VARCHAR (10)	Primary Key, Unique, Not NULL
	Quantity	INT (1)	Not NULL
	Total_price	FLOAT	Not NULL
Wish list	Wish_list_ID	VARCHAR (10)	Primary Key, Unique, Not NULL
Feedback	Feedback_ID	VARCHAR (10)	Primary Key, Unique, Not NULL
	Comment	VARCHAR (100)	Not NULL

6.2 Data Dictionary

This section lists all the entities and defines or describes all the required fields. Table below shows the data dictionary of the anticipated Flow system.

Table 5 Database Dictionary

Entity	Field	Description
Website Employee	WE_ID	Website Employee identification must be unique.
	WE_username	Website Employee's username. employee should use it to log in to the website, and it must be unique.
	WE_pass	Website Employee's password
	First_name	Employee's first name.
	Last_name	Employee's last name.
Client	Client_ID	Client identification must be unique.
	Client_username	Client's username. Client should use it to log in to the website, and it must be unique.
	Client_pass	Client's password.
	First_name	Client's first name.
	Last_name	Client's last name.
	Phone_num	Client's phone number. This attribute is unique for each client.
	Email	Client's e-mail. This attribute is unique for each client.
	DateOfBirth	Client's birth date.

Merchant	M_SSN	Merchant's Social Security Number. This attribute is unique for each Merchant.
	M_username	Merchant's username. Merchant should use it to log in to the website, and it must be unique.
	M_pass	Merchant's password.
	First_name	Merchant's first name.
	Last_name	Merchant's last name.
	Phone_num	Merchant's phone number. This attribute is unique for each merchant.
	Email	Merchant's e-mail. This attribute is unique for each merchant.
Store	DateOfBirth	Merchant's birth date.
	Store_ID	Store identification must be unique for each Store.
	Store_name	Store name must be unique for each Store.
	Store_category	Store category.
Product	Commercial_record	Merchant store Commercial record.
	Product_ID	Product identification must be unique for each product.
	Product_name	Name of the product.
	Product_price	Product price.
	Product_category	Product category.
payment	payment_ID	Payment identification.
	payment_methode	Payment method the Client chooses.
	Name_on_card	The Cardholder name.
	Card_num	Card number.
	CVV	Card verification value.
	Expir_date	Expiry date of the card.
Bill	Bill_ID	Bill identification must be unique for each bill.
	Payment_price	Total price that the customer will pay.
	Bill_date	Date of the bill.
Shopping Cart	Cart_ID	A unique Cart identification for each Shopping Cart.
	Quantity	Product quantity.
	Total_price	Total price of all the products in the shopping cart.
Wish list	Wish_list_ID	Wish list identification must be unique for each Wish list.
Feedback	Feedback_ID	Feedback identification must be unique for each Comment.
	Comment	Client's comments.

6.3 Database Description

The database is necessary for our system, we will use MySQL to implement it. All the data will be arranged into tables, and each table will contain the field's name, data type, and constraint for each field, but first we must design the Entity-Relationship Diagram (ER), which shows the entities and their relationships, and then convert it to the Relational Mapping. The Entity Relationship Diagram is depicted in Figure 36.

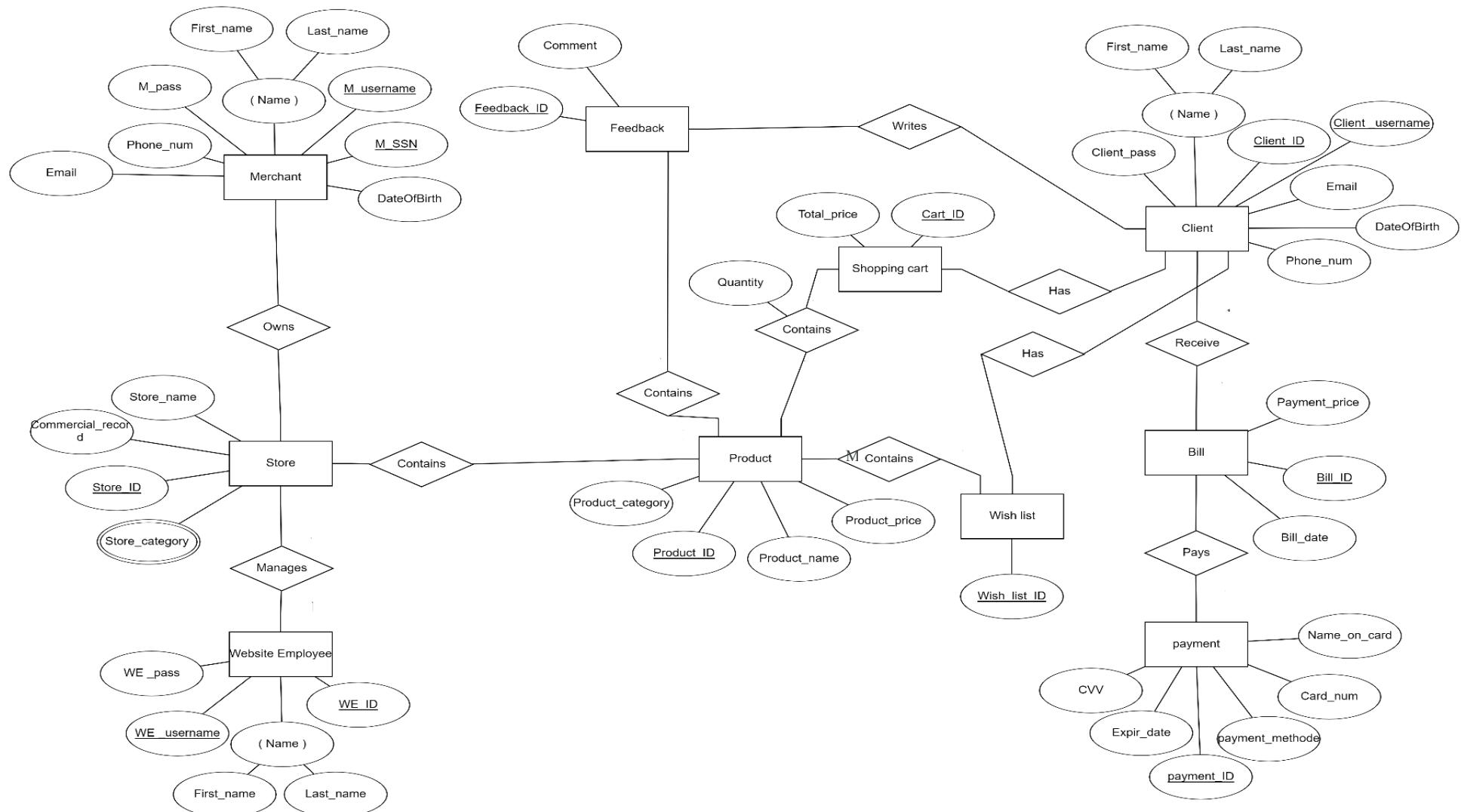


Figure 36: Entity Relationship Diagram

In Figure 37 we will represent the Relational Mapping after converting it from ER. After that, we can design the tables in MySQL.

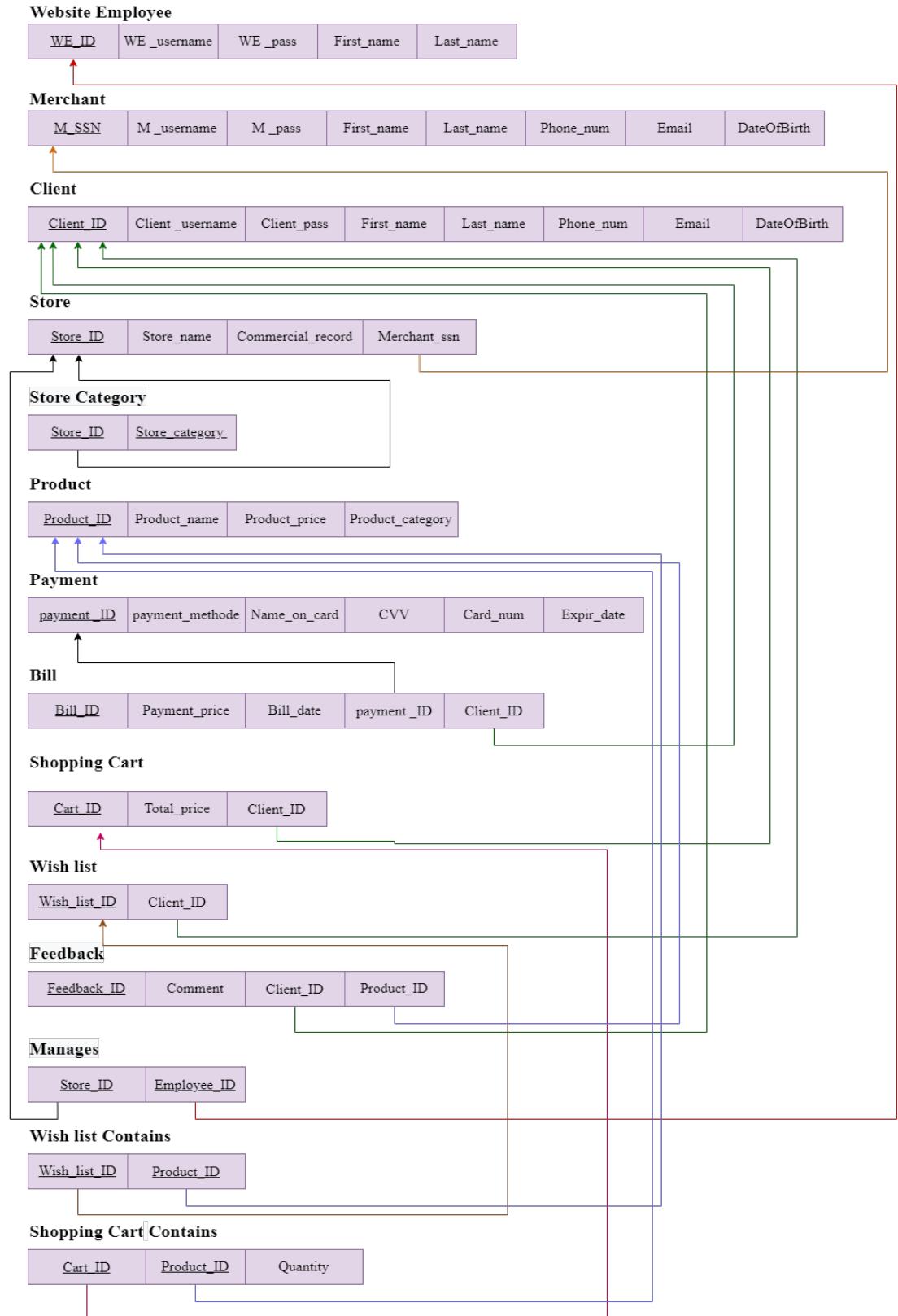


Figure 37: Relational Mapping

7. Component Design

7.1 Common Functions

7.1.1 login Function

```
login () {  
    Enter username  
    Enter password  
    If username and password found in database  
        Then go to the user page interface  
    Else Show Error message " Incorrect username or password,please try again "  
}
```

7.1.2 Forgot password Function

```
Forgot Password (){  
    Enter user name  
    Enter email or phone number  
    If the user name and email found in database  
        Then send a change password link to the email  
    Else Show Error message " incorrect email , please try again "  
    Else if the user name and phone number found in database  
        Then send a change password link to the phone number  
    Else Show Error message " incorrect phone number, please try again "  
}
```

7.1.3 Change Password Function

```
Change Password () {  
    Enter new password  
    Enter confirm password  
    If the password not at least 10 characters long including upper letter,lower  
    letter, and at least 3 numbers.  
        Then Show Error message " wrong entry! The password must be at least 10  
        characters long including upper letter, lower letter, and at least 3 numbers"  
    Else If (new password != confirm password)  
        Then Show Error message " passwords does not mach!"  
    Else  
        Update the old password in database by the new password  
}
```

7.2 Employees

7.2.1 Open-stores requests

```
Function Addstore(){  
    if employee click on read button  
        then all information of the store will appear  
    if employee click on accept button  
        then store will be add to the website  
    else if employee click on reject  
        then store will be add to the website  
}
```

7.2.2 Manage Merchants stores

Function *search () {*

Enter for specific store name to show it

If employee select specific store name

Then all information of the store will appear}

7.2.3 Information for each merchant store

Function *Deletestore () {*

if employee click on delete button

then display "are you sure to delete the store?"

if employee click on yes button

then Delete the store from (database)

else if click on No button

not delete the store}

7.2.4 Technical support

Function *toMessage () {*

If employee click on reply button

Then show chat message to reply on client /employee

Else If employee click on send direct message

Then enter name of who want to send message to it if it the store or client and

Enter the message that she/he want to send}

7.2.5 Settings

Function *modifyInformation () {*

Show the old information in editable fields

Input employee information that you want to modify it

If some fields missing

Then show red asterisk next to missing fields

If the format of the inputs is invalid

Display "Please re-enter the information, invalid format"

If all fields are filled and the format is correct

Then if employee click on modify

Then update the fields in database

Else if click on cancel it will not update anything}

7.3 Client

7.3.1 Registration Function

```
Registration (){  
    Enter first , last name, username, password, phone number, email, date of  
    birth, city,postcode  
    if some fields missing  
        Show Error message " some of the fields are missing"  
    if email is not in this format xxxxx@example.com □  
        Show Error message " invalid email address!"  
    If age<16  
        Show Error message " age must be 16 and above"  
    If username or phone number or email are exist  
        Show Error message " already exists"  
    If the password not at least 10 characters long including upper letter,lower  
    letter, and at least 3 numbers.  
        Show Error message " wrong entry! The password must be at least 10  
        characters long including upper letter, lower letter, and at least 3 numbers"  
    if postcode is not in this format "xxxxxx"  
        Show Error message " invalid postcode !"  
    if phone number is not in this format "0xxxxxxxxx"  
        Show Error message " invalid phone number !"  
    Else create account and move to the client page  
}
```

7.3.2 Search function

```
Function Search () {  
    Enter StoreName  
    If StoreName Found  
        Move to Store page  
    Else  
        Show "Not found " message}
```

7.3.3 Edit personal information

```
Function Edit () {  
    if some fields missing  
        Show red asterisk next to the missing filed  
    Else if email is not in this format "xxxxx@example.com"  
        Show a red asterisk with a message "Check the email format!"  
    Else if phone number is not in this format "5#####"  
        Show a red asterisk with a message "Check the phone number format!"  
    Else  
        Update the fields in database;
```

7.3.4 Add to cart Function

Function AddCart () {

If Client click on “Add to cart” button

Then the product will go to the shopping cart}

7.3.5 Add to wishlist

Function Addwishlist () {

If Client click on “Add to wishlist” button

Then the product will go to the wishlist cart}

7.3.6 Checkout

Function checkout () {

Enter Address, city, postcode, card number, expiry date, name on card, CVV

If some fields missing

Show red asterisk next to the missing filed

If some fields filled in incorrect format

Show Error message “Invalid input! Check the format!”

Else

Display order interface}

7.3.7 Direct Chat

Function Direct_chat(){

If Client click on Direct chat button

*Then show merchant chat message and employee
chat message*

*If Client click on merchant chat or employee
chat message*

Then enter the message that he wants

If Client clicks on send button

Then the message will be sent to merchant/ employee

}

7.4 Merchants

7.4.1 Registration Function

Registration () {

Enter first , Id, last name, username, password, phone number, email, date of birth, city, postcode.

Enter store name, a brief description of its store, store category, soft copy of the Commercial Record, soft copy Maroof certificate

if some fields missing

Show Error message " some of the fields are missing

if email is not in this format xxxxx@example.com □

Show Error message " invalid email address!"

If age < 18

Show Error message " age must be 18 and above!"

If username or phone number or email or id or store name are exist

Show Error message " already exists!"

If the password not at least 10 characters long including upper letter, lower letter, and at least 3 numbers.

Show Error message " wrong entry! The password must be at least 10 characters long including upper letter, lower letter, and at least 3 numbers"

If the brief description > 100 words

Show error message "brief description must be a maximum of 100 words"

if postcode is not in this format "xxxxxx"

Show Error message " invalid postcode !"

if id is not in this format "xxxxxxxxxx"

Show Error message " invalid id !"

if phone number is not in this format "0xxxxxxxxx"

Show Error message " invalid phone number !"

Else send a request to open store and create new account

}

7.4.2 Add a Product

Function AddProduct() {

If merchant, click on "ADD PRODUCT" button && fields are complete

Then the product will be added to store

If merchant, click on "ADD PRODUCT" button && fields are not complete

Show red error message dialog

}

7.4.3 Modify a product

Function ModifyProduct() {

If merchant, click on "MODIFY PRODUCT" button

Then the product will be edited in store
}

7.4.4 Delete a product

Function DeleteProduct(){

If merchant, click on “DELETE PRODUCT” button
Then the product will be deleted from store
}

7.4.5 Add & Delete a category

Function AddCategory(){

If merchant, click on “ADD” button && three is text in category textfield
Then the category will be added
}

Function DeleteCategory (){

If merchant, click on “DELETE” button && a category label is selected
Then the category will be deleted
}

7.4.6 Add & Delete a size

Function Addsize(){

If merchant, click on “ADD” button && three is text in size textfield
Then the size will be added
}

Function DeleteSize (){

If merchant, click on “DELETE” button && a size label is selected
Then the size will be deleted
}

7.4.7 Change an order state

Function ChangeState (){

If merchant, click on “shipped” dropdown list
Then changed state to shipped
Else merchant, click on “Delivered” dropdown list
Then changed state to Delivered
Else merchant, click on “ongoing” dropdown list
Then changed state to ongoing
Else merchant, click on “completed” dropdown list
Then changed state to completed
}

7.4.8 Chat with clients and support team

Function EnterClientChat (){

If merchant, click on “MESSAGE” button of the client
Then the move to the clicked client’s chat
}

Function EnterSupportTeamChat (){

If merchant, click on “MESSAGE THE SUPPORT TEAM” button
Then the move to the clicked support team chat
}

7.4.9 Save merchant settings

Function SaveMerchantInformation(){
If merchant, click on “SAVE” button
Then Save information from editable fields
}
Function SaveMerchantStoreSettings(){
If merchant, click on “SAVE” button
Then Save information from editable fields
}

7.4.10 Display and print statistics

Function DisplayStatistics (){
If merchant, click on “This month” from dropdown list
Then display this month statistics
Else If merchant, click on “This year” from dropdown list
Then display this year statistics
}
Function PrintStatistics(){
If merchant, click on “PRINT STATISTICS” button
Then print the statistics sheet
}

8. Detailed System Design

8.1 Classification, Definition and Responsibilities

Table 6 Classification, Definition and Responsibilities

No.	Component	Classification	Definition and Responsibility
Common Functionalities			
1)	Login	Function	This function enables different users to access their accounts by providing their usernames and passwords
2)	Forgot Password	Function	This function enables different users to receive change password link through email or phone by providing their usernames and email or phone number
3)	Change Password	Function	This function allows different users to change their password.
Employee			
Open-stores requests Interface			
4)	Open-stores requests	Function	This function permits employee to add new store to the system or not by view all three type of information (personal information ,store information ,local documents) to determine accept this store or reject it depending on these information .
Manage Merchants stores Interface			
5)	Search	Function	This function will allow the employee to search for specific store name.
6)	Select	Function	This function will allow the employee to choose by the category of the store.
Information for each Merchants stores Interface			
7)	Delete store	Function	This function will allow the employee to delete a Store from the website.
Technical support Interface			
8)	Message	Function	<ul style="list-style-type: none"> This function allows the employee to send and receive messages from other client or merchant And to reply to messages sent by client and merchant
Settings Interface			
9)	Modify Information	Function	This function allows employee to modify their personal information
Client			
10)	Client Registration	Function	This function enables clients to create account

11)	Search	Function	This function allows the Client to Search for specific items or Store account.
12)	Shopping Cart	Function	This function holds all the items that the client selected, also the client could specify the quantity or remove an item.
13)	Add Items to Wishlist	Function	This function will allow the customer to add items to a list
14)	Checkout	Function	This function will allow the client to choose between multiple payment methods, add any promotion codes and lastly show the total price.
15)	Last Orders	Function	This function allows the client to access previously made purchases.
16)	Direct Message	Function	This function allows the client to send and receive messages from Support team or merchants.
17)	Write Reviews	Function	This function will allow the client to rate the purchased products
18)	Modify information	Function	This function will allow the client to modify his personal information
Merchant			
19)	Merchant Registration	Function	This function enables Merchant to send a request to open store and create new account
20)	Add a Product	Function	This function will allow the merchant to add a product to their store as an item they want to sell and specify details about the item.
21)	Modify a Product	Function	This function will allow the merchant to modify the product they added previously.
22)	Delete a Product	Function	This function will allow the merchant to delete the product they added previously from the store.
23)	Add a Category	Function	This function will allow the merchant to add a Category to their store.
24)	Delete a Category	Function	This function will allow the merchant to delete a Category to their store.
25)	Add size	Function	This function will allow the merchant to delete a size their store.
26)	Delete Size	Function	This function will allow the merchant to add a size their store.
27)	Change the State	Function	This function will allow the merchant to modify the state of the order as ongoing,

			completed, shipped, and delivered.
28)	Enter a Client Chat	Function	This function will allow the merchant to enter a specific client chat.
29)	Enter Support Team Chat	Function	This function will allow the merchant to chat with the support team.
30)	Save Merchant Information	Function	This function will allow the merchant to save edited personal information.
31)	Save Merchant Store Settings	Function	This function will allow the merchant to save edited store settings.
32)	Display Statistics	Function	This function will allow the merchant to view the sales statistics in terms of all products that were sold during this month and this year as a pie chart.
33)	Print Statistics	Function	This function will allow the merchant to print the sale statistics from the beginning of the store until the current time.

8.2 Constraints and Composition

Table 7 Constraints and Composition

No.	Component	Constraints	Pre-Condition	Post-Condition
Common Functionalities				
1)	Login	The user must have an account.	Provide a valid username and password	Check if the username and password are authentic
2)	Forgot Password	The user must have an account.	Provide a valid username and email or phone number	The change password link should be sent to the corresponding email or phone number
3)	Change Password	The new password must be at least 10 characters long including upper letter, lower letter, and at least 3 numbers	Provide the new password and confirm the new password	The password should be updated.
Employee				
Open-stores requests Interface				
4)	Open-stores	The employee should be in the system.	Provide the authorized password of the employee.	Display the store Information to accept or

				reject it.
Manage Merchants stores Interface				
5)	Select	None	Choose the category of the store	display the store names related to the chosen category
6)	Search	None	Provide the store name	display the store name related to the searched word.
Information for each Merchants stores Interface				
7)	delete store	None	Select the store to be deleted.	-The store should be deleted. -An email should be sent to the merchant explain the reason of deletion.
8)	View store information	None	Choose the Store to display its information.	Display a the store information .
Technical support Interface				
9)	Message	Employee must be logged in.	Write a message any client or merchant ,and reply on their message ones it send to them open a message from client or merchant to Reply On .	Send the message and receive them
Settings Interface				
10)	Modify Information	The employee information should exist in the database.	Update (change) information that need to be change and save it	The employee's information shall be updated.
Client				
11)	Client Registration	Required fields should be filled with valid data.	Filling the fields with the client information	The new account will be created
12)	Search	None	Provide an item's name or a Store name.	Display the items or store page that related to the searched word.
13)	Shopping Cart	The selected items stay in the shopping cart for only 24 hours.	Add items to the shopping cart.	Display the items that the client selected and either

				move to checkout or continue shopping - After the time limit is reached the items will be moved to the Wishlist.
14)	Add Items to Wishlist	None	Add items to the Wishlist.	Display items added to the list or moved from the shopping cart.
15)	Shipping information	- The client should be registered. - Items should be in shopping cart	Provide the address, city, postcode.	Move to the 'payment' page.
16)	Checkout	Payment - The client should be registered. - Items should be in shopping cart	Provide a payment method.	- Charge the provided payment method. - Move to the 'place order' page.
17)	Place Order	- The client should be registered. - Items should be in shopping cart	Check availability of the items in the shopping cart.	Charge the provided payment method.
18)	Last Orders	Client must be logged in.	None.	Display all previous orders and status of this order
19)	Direct Message	Client must be logged in.	- Write a message to support team or merchants	Send the message and receive them.
20)	Write Reviews	Client must be logged in.	- Write a review and select a rating.	Send the review to the intended merchant.
21)	Setting	Client must be logged in.	Provide the First name,second,name ,email,Phone number	Update the information on the data base.
Merchant				
22)	Merchant Registration	Required fields should be filled with valid data.	Filling the fields with the Merchant and store information	The request to open store and create new account will

				be sended
23)	Add a Product	None	All fields must be filled.	Product should be added to the store.
24)	Modify a Product	The product information should exist in the database.	Select a product to modify and All fields must be filled same as add product.	Product should be modified to the store.
25)	Delete a Product	None	Select a product to delete.	Product should be deleted to the store.
26)	Add a Category/Size	None	The category/size text field must be filled	A category should be added.
27)	Delete a Category/Size	None	Select a category/size label	A category should be deleted.
28)	Change the State	None	Select “ongoing” or “completed” or “shipped” or “delivered” from dropdown list.	State should be changed
29)	Enter a Client Chat/ Support Team Chat	None	open a client chat or support team chat.	Send the message and receive them.
30)	Save Merchant Information/ Store Settings	The merchant information should exist in the database.	Update (change) information that need to be change and save it.	Merchant information and store settings should be updated.
31)	Display Statistics	The merchant Statistics should exist in the database.	Select “this month” or “this year” from dropdown list.	Display statistics of sales.
32)	Print Statistics	The merchant Statistics should exist in the database.	None	Print statistics of sales.

8.3 Uses/Interactions (sequence diagrams)

8.3.1 Common Functions

8.3.1.1 Login

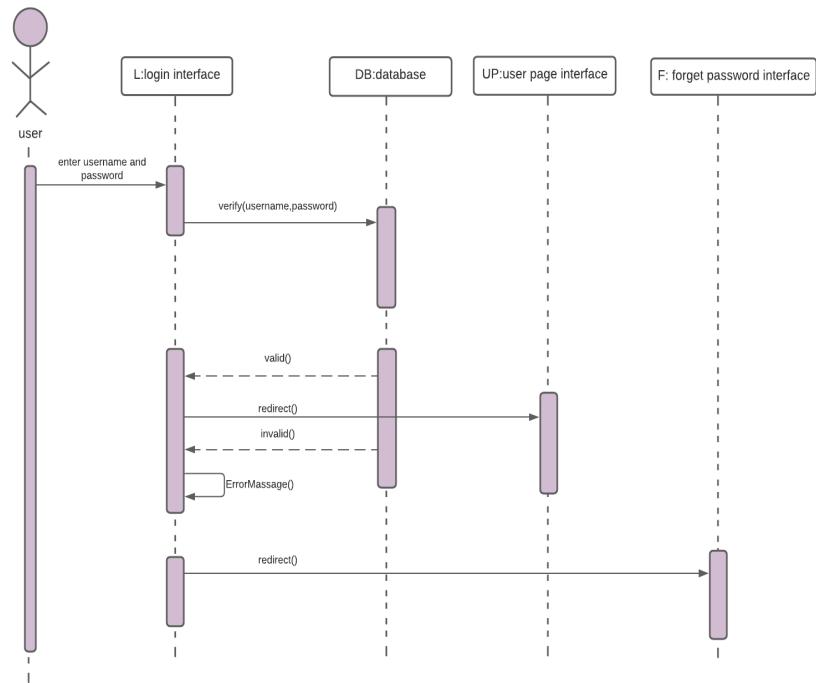


Figure 38: shows the Login sequence diagram

8.3.1.2 Forgot and change Password

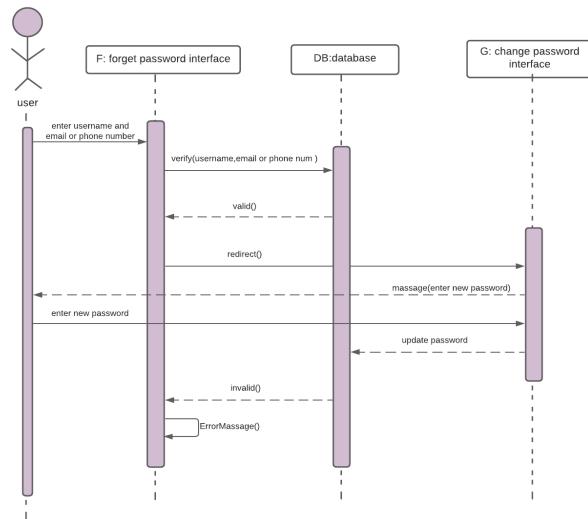


Figure 39: shows the Forgot and change Password sequence diagram

8.3.2 Employee

8.3.2.1 add store

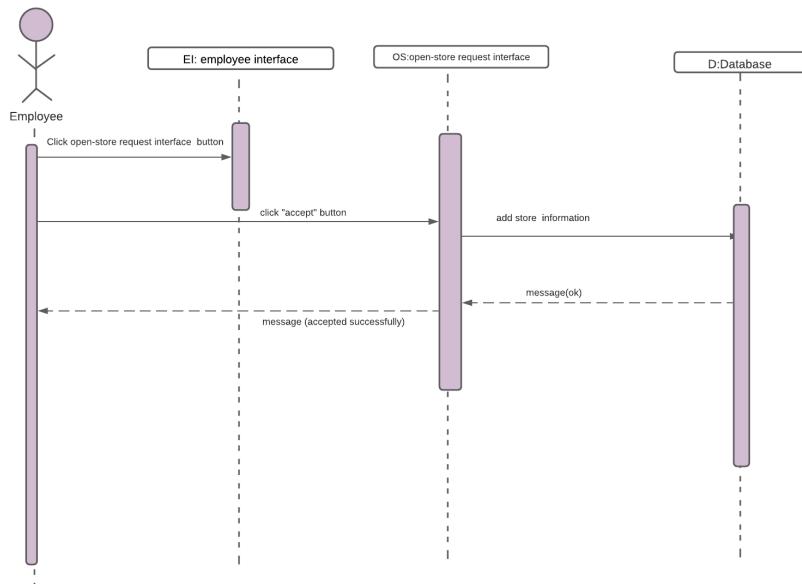


Figure 40: add store sequence diagram

8.3.2.2 search for specific store

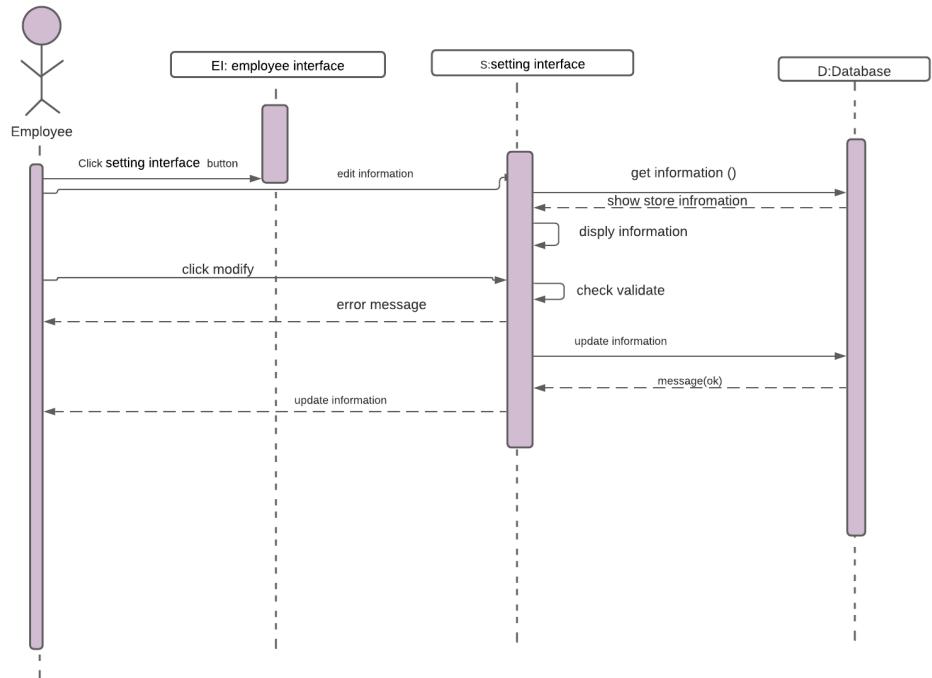


Figure 43: modify information sequence diagram

8.3.2.3 delete store

8.3.2.4 modify information

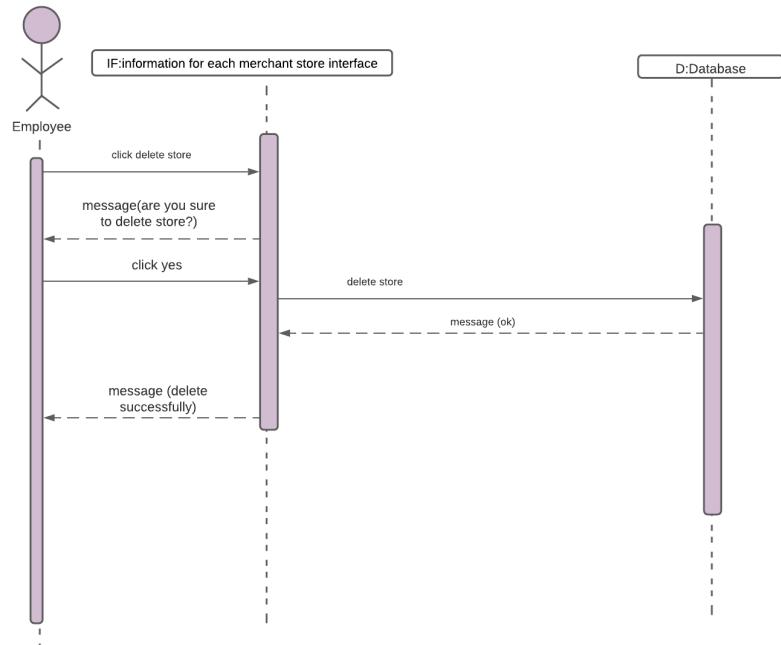


Figure 42: Delete store sequence diagram

8.3.3 Client

8.3.3.1 client Registration

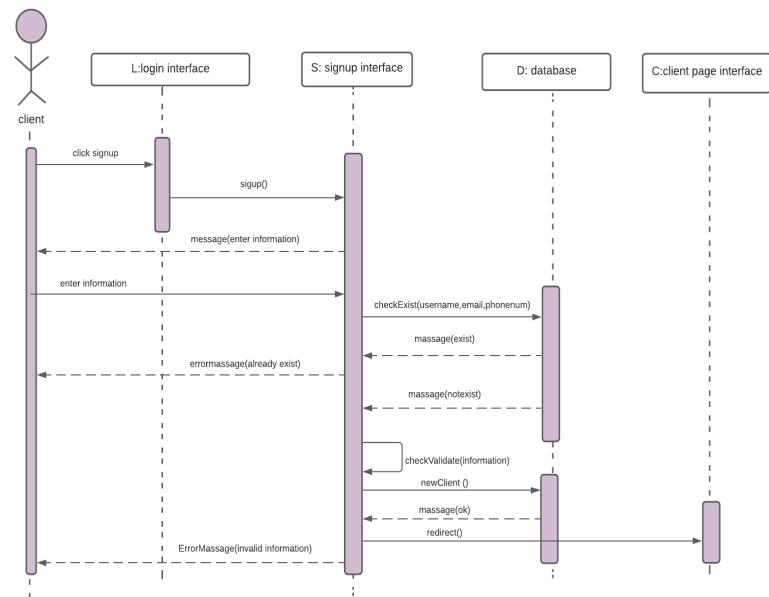


Figure 44:client Registration sequence diagram

8.3.3.2 Shopping

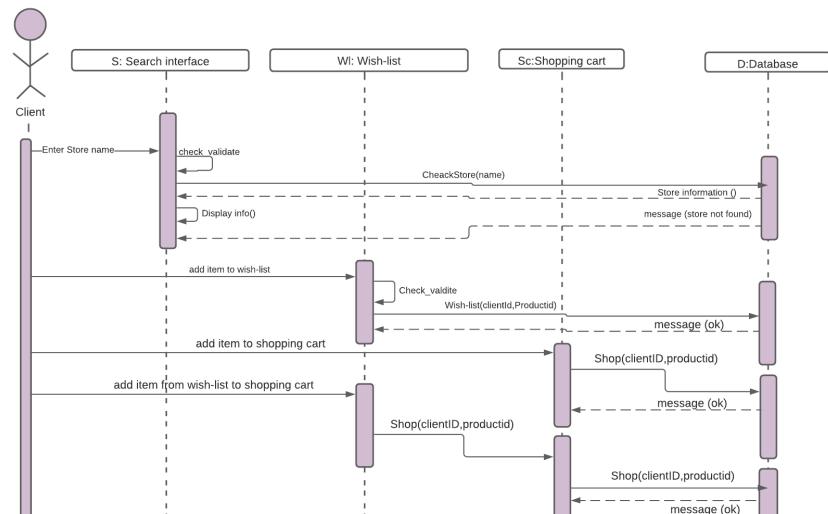


Figure 45 shopping sequence diagram

8.3.3.3 Checkout

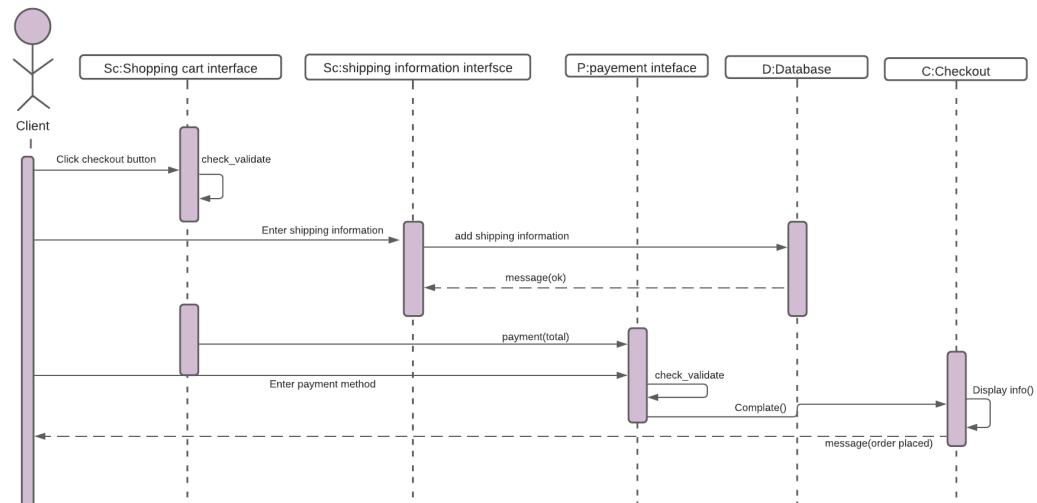


Figure 46 checkout sequence diagram

8.3.4 Merchant

8.3.4.1 merchant Registration

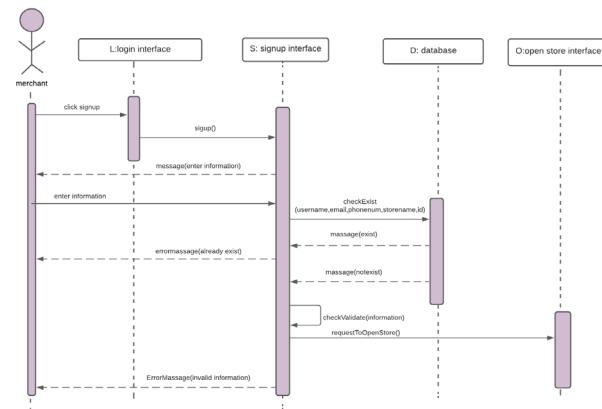


Figure 47:merchant Registration sequence diagram

8.3.4.2 Add products

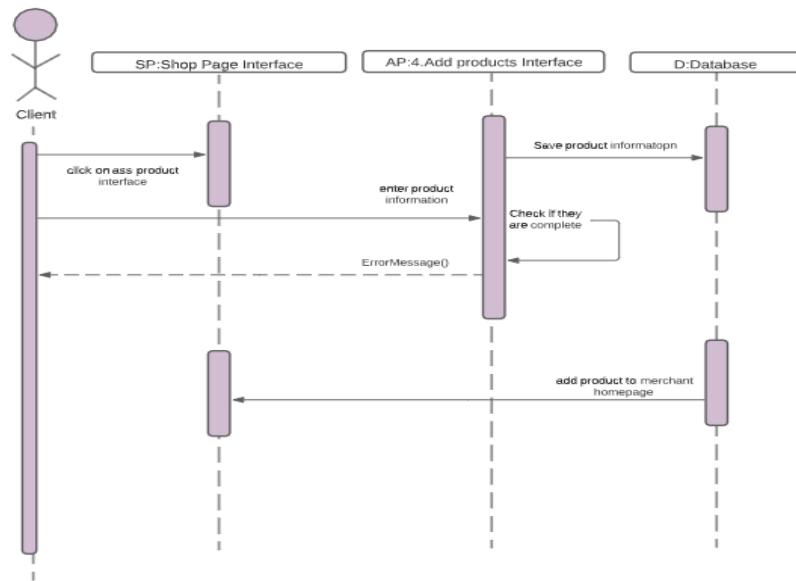


Figure 48: Add products sequence diagram

8.3.4.3 Modify / Delete products

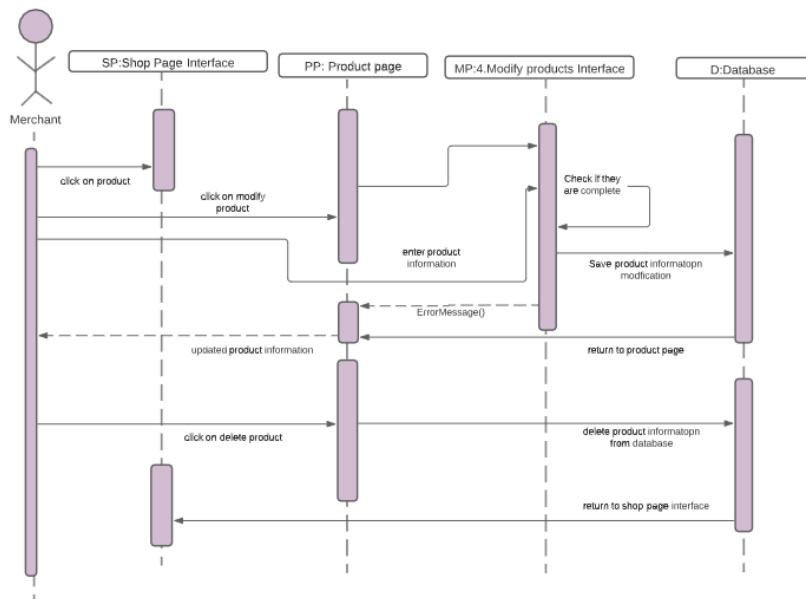


Figure 49: Modify / Delete products sequence diagram

8.3.4.4 Change Order List state

8.3.4.5 Change settings

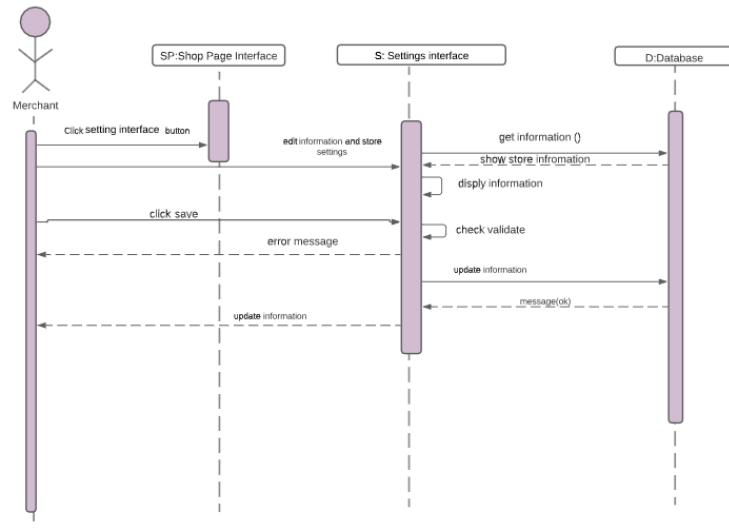


Figure 51: change settings sequence diagram

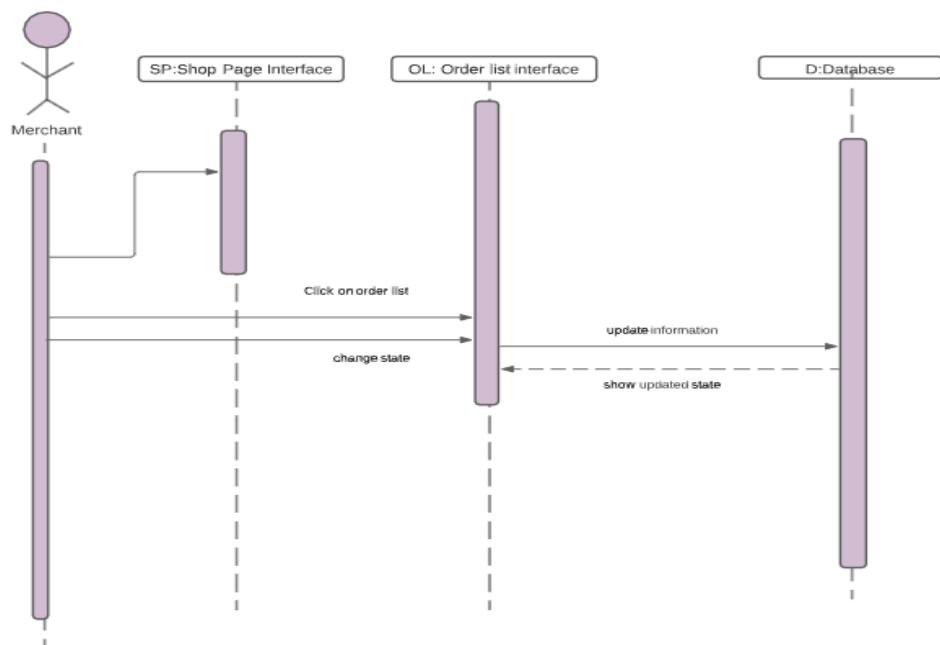


Figure 50: Change Order List state sequence diagram

8.4 Resources

External entity resources required for the Flow website are acknowledged in this section. Resource specifications were set according to specified requirements by Fluxo company. The compulsory resources for Flow are database, memory storage, and operating system. Table shows the resources' specification:

Table 8 resources specification

Type	Resources
Database	MySQL Database
Memory Storage	At least 5MB memory free
Operating system	Window 10 or higher, Macintosh IOS 14 or later, and android 9.0 pie or later operating systems

The table below shows the race condition that may happen in the system:

Table 9 Race Condition

Race Condition	Solution
When two or more clients purchase the same product at the same time, and this product has only one piece available	The item will be given to the client who completes the payment process first.

The table below shows the deadlock situations that may happen in the system:

Table 10 Deadlock Situation

Deadlock situation	Description	Solution
Close the website window	When closing the website window from the browser	Discards the last unsaved activities and starts from the initial state.
Wi-Fi turned off	The user requests a functionality that requires an Internet connection when no connection is available.	Notify the user that the current activity cannot proceed.

8.5 Processing

8.5.1 Common Functions

8.5.1.1 Login

Description	The user can access their account by entering a valid username and password. The username and password should match the data in the database. After username and password have been verified the user will be redirected to the (Employee/ Client / Merchant) page interface.
Input	Username
Output	password

Constraint	(Employee/ Client / Merchant) be redirected to the (Employee/ Client / Merchant) page interface and use his privileges.
-------------------	---

8.5.1.2 Forgot Password

Description	The user's username and email or phone number should be entered so that the change password link can sent to the user. The user will be able to change his password only if the username and email or phone number entered matches the data in the database
Input	Username, Email or phone number
Output	change password link will be sent to the user in his email or phone number that he entered
Constraint	<ul style="list-style-type: none"> If username or Email is incorrect, an error message displayed " Incorrect username or email , please try again ". If username or phone number is incorrect, an error message displayed " Incorrect username or phone number, please try again ".

8.5.1.3 Change Password

Description	Change the password by entering the new password and verifying it
Input	new password confirm new password
Output	The old password will be changed to the new password
Constraint	<ul style="list-style-type: none"> If the password not at least 10 characters long including upper letter, lower letter, and at least 3 numbers, an Error message displayed" wrong entry! The password must be at least 10 characters long including upper letter, lower letter, and at least 3 numbers" If new password does not match the confirm password, an Error message displayed" passwords does not match!"

8.5.1 Employee

8.5.1.1 Open store request

Description	The employee will be able to view all the store with their information to determine accept and added it in the website or reject it.
Input	Click on button that next to "store name"
Output	Employee view all information of store (personal information of merchant, store information ,and local documents)

8.5.1.2 Delete store

Description	The employee will be able to delete any store from website
Input	Click on “Delete store ” button then click on "yes"
Output	<ul style="list-style-type: none"> • A dialog box will be displayed to the employee “ are you ensure to delete the store ?” • A dialog box will be displayed to the employee “ the store deleted ” . • The Merchant will receive an email about that the employee deleted the store.

8.5.1.3 Modify Information

Description	employee can show its personal information and edit it.
Input	Selects "setting interface " button.
Output	Employee’s personal information or profile will be displayed with editable text fields.
Constraint	If there is a mismatch in some of the information’s format, such as e-mail, phone number and so on, then a hint will be shown beside that field showing the valid format.

8.5.1.4 Search

Description	employee can search for name of specific store
Input	Name of the store
Output	The page will be updated with the employee ’s search with the store name related to the searched word.

8.5.1.1 Select

Description	Employee can choose the category of the store
Input	click on specific category of store that exist in the list
Output	The page will be updated of the store names that related to the chosen category.

8.5.2 Client

8.5.2.1 client Registration

Description	The client can Register to create an account, he will be asked to enter his personal information and when he finishes filling it out, the new account
--------------------	---

	will be established, and the client page interface will be displayed.
Input	first and last name, Username, Password, phone number, email, date of birth, city, and postcode.
Output	the new account will be established, and the client page interface will be displayed.
Constraint	<ul style="list-style-type: none"> • If some fields are missing, an Error message displayed” some of the fields are missing”. • If there is an invalid input like Mismatch of some information format in any fields an error message will be displayed , For example, “invalid email address . • If the password not at least 10 characters long including upper letter,lower letter, and at least 3 numbers, an Error message displayed” wrong entry! The password must be at least 10 characters long including upper letter, lower letter, and at least 3 numbers”. • If age<16, an Error message displayed ” age must be 16and above”. • If username, phone number or email are exist, an Error message displayed” already exists” •

8.5.2.2 Add to cart

Description	Client can add to the cart all the products he chooses.
Input	Click on “add to cart icon” beside the products.
Output	The products will be added to the cart shopping.
Constraint	In case one of the items is sold while the customer proceeding to thee checkout, a warning message will be displayed “one of the items is sold out”

8.5.2.3 Checkout

Description	After the Client selects the items, he can provide shipping information and choose any suitable payment method so he can enter his payment information.
Input	Click on “Check out” button
Output	Confirmation order email to the client email.
Constraint	If the Client has not logged in into the system, a warning message will be displayed “you have to log in first “.

8.5.2.4 Wishlist

Description	clients can add items to their wish list while they are shopping, or from the shopping cart. Also, they can delete the items from wish-list.
Input	Click on “Wishlist” button
Output	Item added to wish-list.

8.5.2.5 modify information

Description	client can modify their personal information.
Input	First name Second name Email Phone number
Output	After the client has modified his personal information, it will be saved when he clicks on the save button.
Constraint	All fields must be filled and email must be in this format " xxxx@example.com ". Also, the phone number must be in this format "5#####".

8.5.2.1 search

Description	Client can search for a listing or another customer's account.
Input	Name of the product The name of store.
Output	The page will be updated with the Client search.

8.5.3 Merchant

8.5.3.1 Merchant Registration

Description	The Merchant can Register to create an account, he will be asked to enter his personal and store Information and when he finishes, the request will be sent and he should wait for the result to be sent to his email, If the request is accepted the merchant will be able to log in for the Merchant page interface will be displayed.
Input	Personal information such as first and last name, Id, username, password, phone number, email, date of birth, city, and postcode.
Output	store information, such as store name, store category, soft copy of the Commercial Record, Maroof certificate, a brief description of its store

	and its contents.
Constraint	<ul style="list-style-type: none"> • If some fields are missing, an Error message displayed” some of the fields are missing”. • If there is an invalid input like Mismatch of some information format in any fields an error message will be displayed , For example, “invalid email address . • If the password not at least 10 characters long including upper letter,lower letter, and at least 3 numbers, an Error message displayed” wrong entry! The password must be at least 10 characters long including upper letter, lower letter, and at least 3 numbers”. • If age<18,an Error message displayed ” age must be 18 and above”. • If username , phone number , email , id or store name are exist,an Error message displayed” already exists” • If the brief description>100 words, an error message displayed “brief description must be a maximum of 100 words”

8.5.3.2 Add a Product

Description	The Merchant will be able to add a new product to their store by specifying the details related to the product.
Input	Name of the product. Category of the product. Pictures of the product. Size of the product. Price of the product. Color of the product. Material of the product. Description of the product.
Output	A new product will be added to the merchant store.
Constraint	If some fields are missing, a red message dialog will be shown.

8.5.3.3 Modify a Product

Description	The Merchant has the ability to modify any product they choose.
Input	<ul style="list-style-type: none"> – Name of the product. – Category of the product. – Pictures of the product. – Size of the product. – Price of the product. – Color of the product. – Material of the product. – Description of the product.

Output	The Product will be modified to the store.
Constraint	If some fields are missing, a red message dialog will be shown.

8.5.3.4 Delete a Product

Description	The Merchant has the ability to delete any product they choose.
Input	<ul style="list-style-type: none"> – Name of the product. – Category of the product. – Pictures of the product. – Size of the product. – Price of the product. – Color of the product. – Material of the product. – Description of the product.
Output	The Product will be deleted to the store.
Constraint	

8.5.3.5 Add a Category/Size

Description	Merchant will have the ability to add a Category/size to their store.
Input	When adding category: category name. When adding size: size.
Output	When clicking on “ADD” a category/size will be added
Constraint	If some fields are missing, a red message dialog will be shown.

8.5.3.6 Delete a Category/Size

Description	Merchant will have the ability to delete a Category/size to their store.
Input	When deleting a category, a category label must be selected. When deleting a size, a size label must be selected.
Output	When clicking on “DELETE” a category/size will be added
Constraint	

8.5.4 Change the State

Description	The Merchant can modify the state of the order as ongoing, completed, shipped, and delivered
Input	To modify a state of an order the Merchant must click on one of the elements of the dropdown list: <ul style="list-style-type: none"> • Ongoing. • Completed. • Shipped. • Delivered.
Output	The state of an order will be modified.
Constraint	-

8.5.4.1 Enter a Client Chat/ Support Team Chat

Description	MERCHANTS can communicate with the support team if he is facing a problem with their store, or he can communicate with clients who bought products from them to specify their order and other reasons.
Input	<ul style="list-style-type: none"> – In case of wanting to talk to a client, the merchant has to only click on the “Message” button under the client’s name. – In case of wanting to talk to the support team, the merchant has to only click on the “MESSAGE THE SUPPORT TEAM” button. – Content of the message
Output	Open a chat page with client/support team and send/receive messages.
Constraint	-

8.5.4.2 Save Merchant Information/ Store Settings

Description	Merchant can modify their personal and information such as name, email, and phone number. They can also modify the design of the page, for example changing the background color, font, and adding photos.
Input	<p>Merchant information:</p> <ul style="list-style-type: none"> – Firstname – Last name – Phone number – Email – Date of birth – Postcode <p>Store settings:</p> <ul style="list-style-type: none"> – Header picture – Background color

	<ul style="list-style-type: none"> - Font.
Output	Merchant information and store settings will be saved.
Constraint	If the merchant left any field empty, an error message will be displayed “missing information”.

8.5.4.3 Display Statistics

Description	Every Merchant has the ability view the sales statistics in terms of all products that were sold during this month and year.
Input	Using the dropdown list, the merchant can view the sale statistics for this month or this year by clicking on the appropriate element.
Output	Display the statistics of this month or this year.
Constraint	-

8.5.4.4 Print Statistics

Description	Every Merchant has the ability to printing the overall statistics of the store.
Input	Click on " Print statistics ", merchants can also print the sale statistics from the beginning of their store to the present.
Output	Print the sale statistics from the beginning of the store until the current time.
Constraint	-

8.6 Detailed Subsystem Design (activity diagram)

8.6.1 Common Functionalities

8.6.1.1 log in

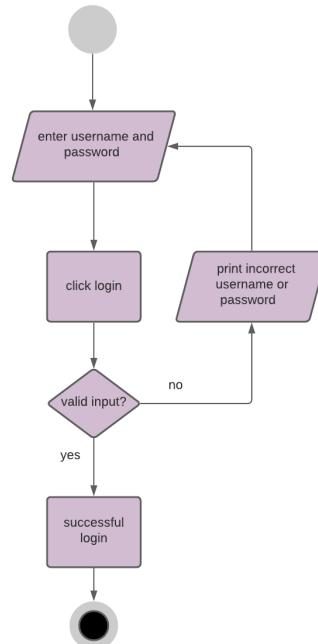
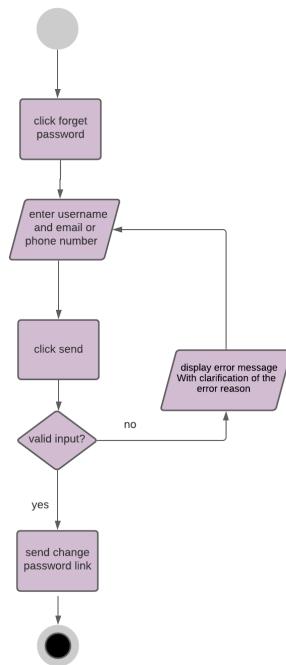


Figure 52 login flowchart

8.6.1.2 forget password



8.6.1.3 change password

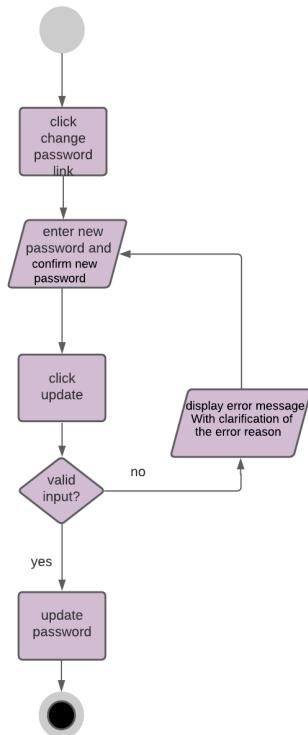


Figure 53 change password flowchart

8.6.2 Employee

8.6.2.1 Delete store

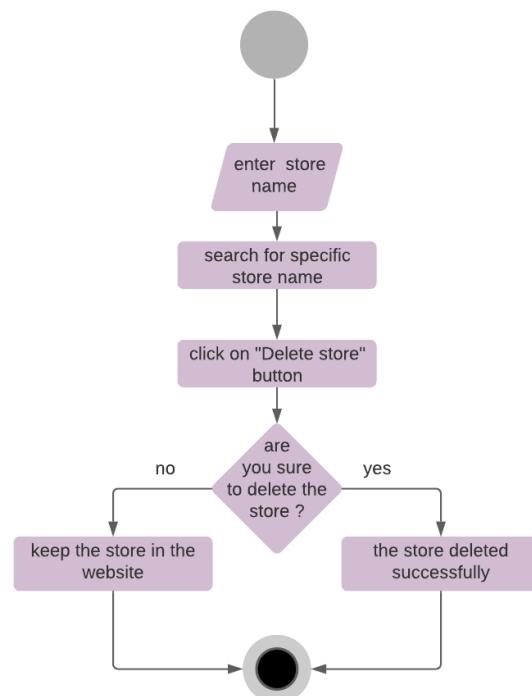


Figure 54: Delete store flowchart

8.6.2.2 Add store

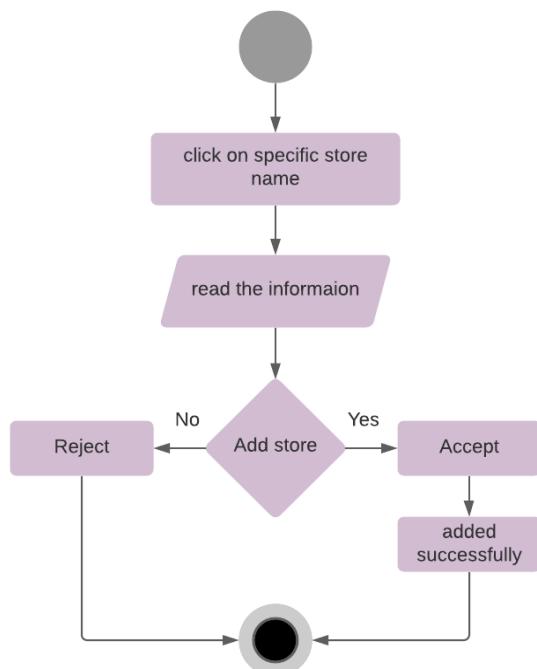


Figure 55: Add store flowchart

8.6.2.3 Direct message

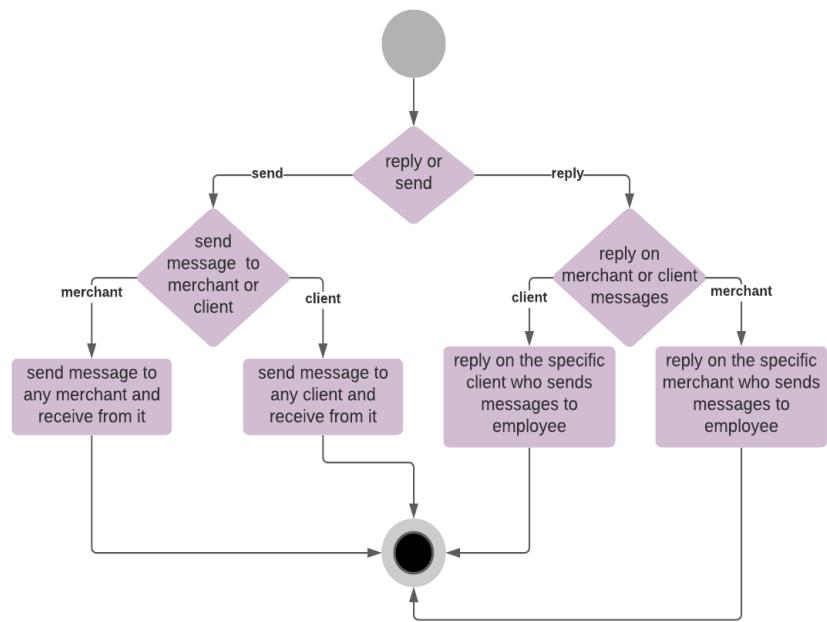


Figure 56: Direct message flowchart

8.6.2.4 Search

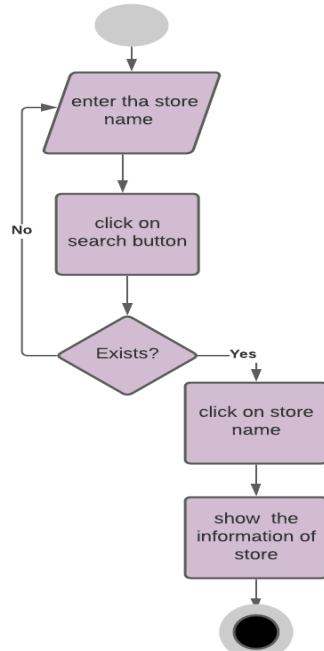


Figure 57: search flowchart

8.6.2.5 Modify

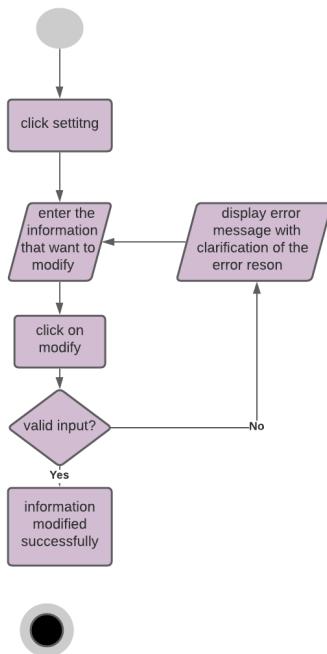


Figure 58: modify flowchart

8.6.3 Client

8.6.3.1 Client Registration

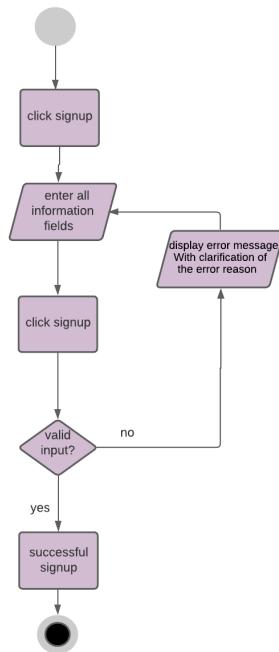


Figure 59 Client registration flowchart

8.6.3.2 Add review

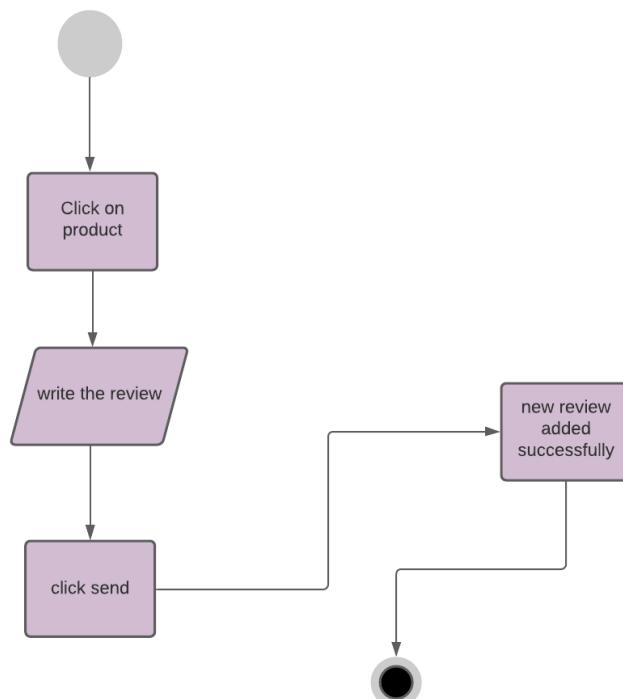


Figure 60 Add review flowchart

8.6.3.3 Checkout

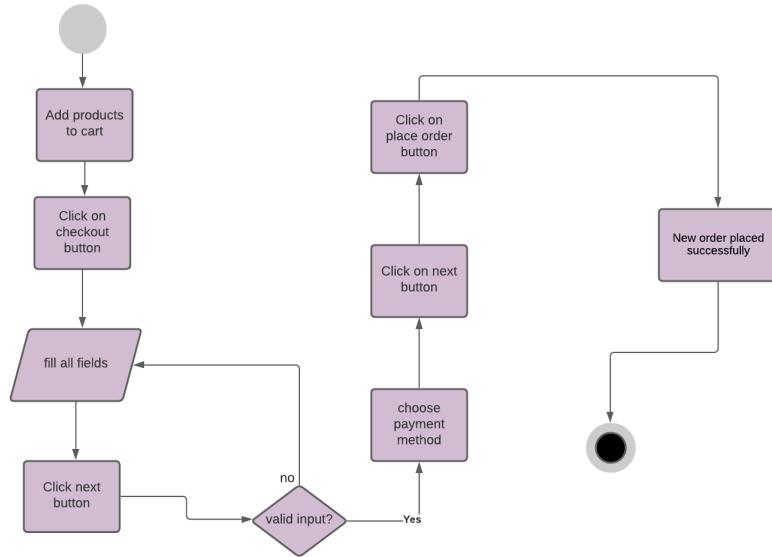


Figure 61 Cheackout flowchart

8.6.3.4 Modify information

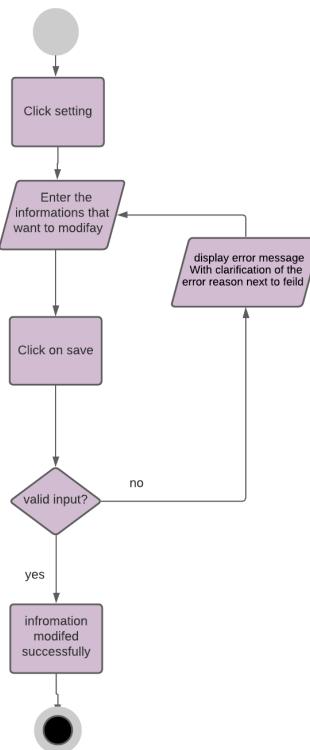


Figure 62 Modify flowchart

8.6.4 Merchant

8.6.4.1 Merchant Registration

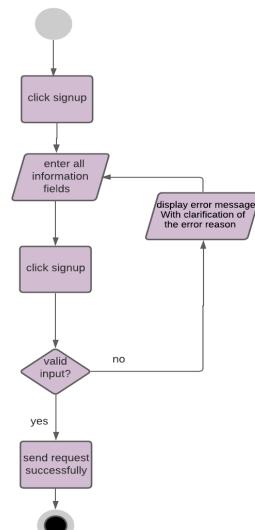


Figure 63 merchant registration flow chart

8.6.4.2 Add Product

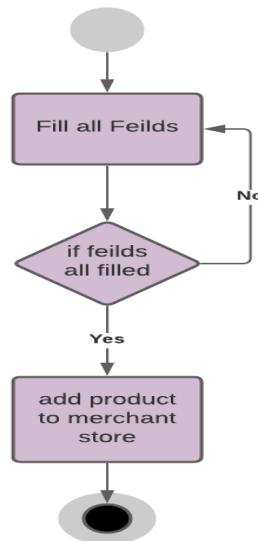


Figure 64: Add product flow chart

8.6.4.3 Modify/Delete Product

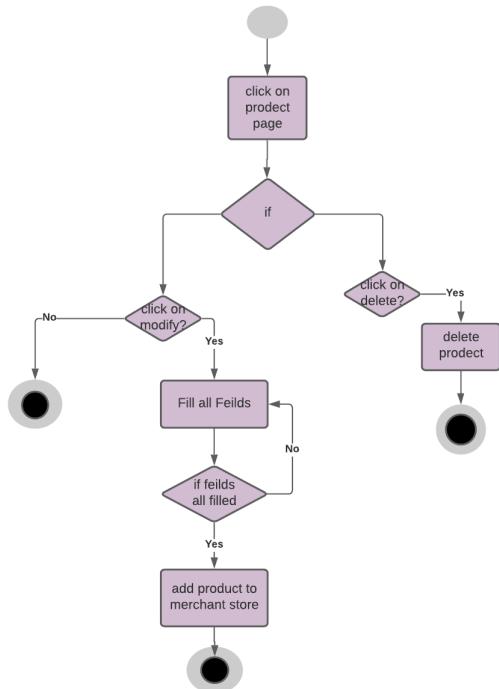


Figure 65: Modify/delete flow chart

8.6.4.4 Change Order State

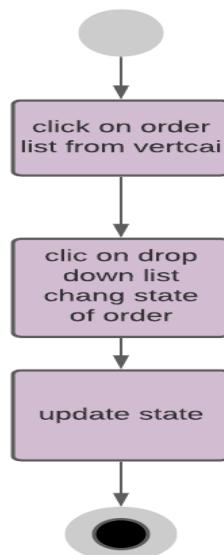


Figure 66:Change order status flow chart

8.6.4.5 Modify Sittings

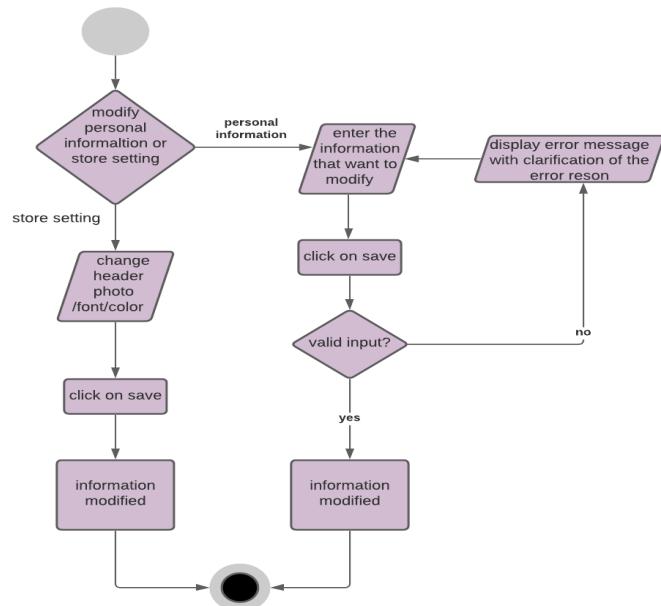


Figure 67: Setting flow chart

9. Requirements Traceability Matrix

Table 11 Requirements Traceability Matrix

Associated ID in SRS	Technical Assumption(s) and/or Customer Need(s)	Functional requirement	System components
3.2.1: Common functionalities	The user can login by providing a valid username and password.	Login	Login
	The user will be able to change his password by clicking "forget password" then a change password link will be sent to his email or phone number then he can Change the password by entering the new password and verifying it and the old password will be changed to the new password	Forget password	Forget password change password
3.2.2: User 1: Employee	The employee will be able to view all the store with their information to determine accept and added it in the website or reject it. the employee will be able to search for specific store name.	Open-stores requests	Add store search
	The employee will be able to delete any store from website The employee will be able to Write a message to any client or merchant ,and reply on their message ones it send to them.	information for each merchant store interface	Delete store Message
	employee can show its personal information and edit it.	Settings Interface	Modify Information
3.2.3: User 2: Merchant	The Merchant can Register to create an account by entering his personal and store	Merchant Registration	Merchant Registration

	Information and when he finishes, the request will be sent and he should wait for the result to be sent to his email, If the request is accepted the merchant will be able to log in for the Merchant page interface will be displayed.		
3.2.4: User 3: client	The client can Register to create an account by entering his personal information and when he finishes, the new account will be established, and the client page interface will be displayed.	client Registration	client Registration
	Client can change their personal information.	Modify personal information	Setting
	Client can find specific product or store.	Search	Search
	Client can add products to the shopping cart, then moving to the checkout interface by clicking "checkout"	Add to shopping cart	Add to cart
	If the products exceed the shopping cart time limit, then the Client can find them in the Wishlist as well as he can add any product directly to it.	Add to Wishlist	Add to Wishlist
	Client can confirm his order by	Checkout	Checkout

	complete the payment information.		
	Client can review and rate product	Review and rating	Review
	Client can view last orders	Last order	order
	Client can send and receive the message from employee and merchant	Direct chat	Direct chat