
SHOP & SHIP

E-commerce application



2023 - 2024

Acknowledgements

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Together, we have accomplished a remarkable feat, and we are truly grateful for the support, encouragement, and dedication of everyone involved. Thank you for being part of this journey and for your invaluable contributions to the project's success.

Table of Contents

Acknowledgements.....	2
Table of Contents.....	3
Chapter 1 – Project Requirements.....	5
1.1 - Introduction and general presentation	5
1.2 - Requirements.....	5
1.2.1 - Functional Requirements.....	5
1.2.2 - Non-functional Requirements	6
1.3 - Actors	7
Chapter 2 – User Interface Design.....	8
<i>Home Page</i>	8
<i>Add Product to cart from index</i>	9
<i>Search Products by Category or Name</i>	9
<i>Go to product from index</i>	10
<i>Ratings & Reviews</i>	10
<i>Navigate Cart</i>	11
<i>Place an Order</i>	12
<i>Product has limited quantity case</i>	13
<i>Product out of stock case</i>	13
<i>Country has been removed case</i>	14
<i>Create Account process</i>	14
<i>Reset password process</i>	15

<i>Update Profile</i>	15
<i>Order History</i>	16
<i>Adding an Admin to the S&S application</i>	17
<i>Adding a Product</i>	18
<i>Update a Product</i>	18
<i>S&S's statistics</i>	19
<i>mobile's look and feel</i>	20
Chapter 3 – Project Management	21
3.1 - Project Charter	21
3.2 - WBS Diagram	24
3.3 - Gantt Diagram	25
Chapter 4 – System Design	26
4.1 – Entity Relationship Diagram	26
4.2 - Use Case Diagram	26
4.3 - Documentations	27
4.4 - Class Diagram	32
4.5 - Sequence Diagrams	33
4.6 - Activity Diagram	34
Chapter 5 - System implementation	35
5.1 - Operating Environment	35
5.2 - Tools Used	35
Conclusion	35

Chapter 1 – Project Requirements

1.1 - Introduction and general presentation

In today's world, shopping has become an essential part of our lives. Whether it's for everyday needs or special occasions, the convenience of being able to find and purchase products online has transformed the way we shop.

Recognizing the growing importance of e-commerce and the need for a reliable and user-friendly application, we started the journey to develop our own e-commerce application. Our goal was simple: to create a seamless and efficient shopping experience for both customers and store owners. Through our dedicated planning, agile development methodologies, and rigorous testing protocols, we attempt to craft an application that not only meets but exceeds the expectations of our stakeholders.

Our e-commerce application serves the needs of customers who seek convenience, privacy and security in their online shopping journey. With our application, customers can easily browse through a wide range of products supported by a strong user interface designed for ease of use and accessibility, place orders with our high-level ordering system which ensures swift order processing and instant request(s) processing, enhancing overall efficiency and reliability. Furthermore, customers can manage their accounts with confidence, knowing that their personal information is safeguarded with high-level security measures.

For administrators, our application provides comprehensive management tools to organize their operations and drive business growth. From managing products, categories, countries and handling customer accounts to monitoring application statistics and viewing customer data to track the improvement and the public recognition of this business and trying to improve it based on factors studied.

Moreover, our application extends its capabilities to the owner, offering administrative controls to oversee the entire operation and ensure smooth functioning at all levels.

In essence, the S&S application is more than just an application for buying and selling products. It's a testament to our commitment to innovation, efficiency, and security in the digital marketplace, providing a reliable solution for businesses and consumers alike.

1.2 - Requirements

1.2.1 - Functional Requirements

A functional requirement specifies the actions a system must perform, defining the input-output behavior of the system while excluding physical constraints. Our application must meet the following functional requirements:

- The system must allow the Owner to add, remove, and update Admin accounts.
- The system must support User registration (login and logout), including the creation of new accounts for Clients to store personal information and manage addresses, with an email verification message to complete the account creation process.
- Clients must be able to update their accounts, reset passwords, and log out.

- During the password reset process, the system must generate a one-time password (OTP), which has an expiry time of 3 minutes, and forward it to the customer's registered email address, with the ability to request another OTP (maximum 3 requests/hour) if the previous one has expired or an error has occurred. The customer is required to input the OTP within a designated time to authenticate their identity and proceed with the password reset. To uphold security measures, the system should enforce restrictions on the number of OTP validation attempts, temporarily suspending further attempts after a predefined limit has been reached.
- When a user logs in to his/her account from a different device, any existing active sessions associated with that user's account on other devices must be terminated to ensure security and prevent unauthorized access (The account is structured to handle 1 session from 1 device at a time to avoid interruptions and conflicts).
- Users must be able to browse products through various categories, with each product having a dedicated page displaying images, detailed descriptions, and Client reviews, as well as real-time availability information, ratings, and prices.
- Clients must be able to view, add, and remove items from the cart, update quantities, view estimated shipping costs, place orders (specifying shipment and payment info and ability to use points to gain a discount), receive email confirmations upon successful order placement containing the order's summary, and earn points for each order, and the estimated time needed for delivery.
- Clients must be able to rate products, provide reviews, request help, and view their order history.
- Admins should be able to add, remove, and update products, countries and categories, view Clients' accounts and orders as well as viewing application's statistics and tracking clients' data.

1.2.2 - Non-functional Requirements

A non-functional need is a requirement specifying system properties, such as environment and implementation constraints, performance requirements, platform dependency, ease of maintenance, scalability, and reliability. Our application must meet the following non-functional requirements:

- The system must provide real-time instant-checking for each item's availability for an order placed by a client before completing the transaction (first-come first-served approach). If at least an item is not available (or the selected quantity is not completely available), the customer is redirected to the shopping cart with a message declaring the issue and allowing the client to modify the items and the quantities to complete his/her order.
- To guarantee data integrity and avoid race conditions in specific scenarios and operations, a table-level lock is applied on the database in these scenarios to accept a single request at a time to ensure that all sensitive information is up to date and correct.
- User sensitive data, like passwords, should be stored in a secure format in the database to maintain the highest levels of privacy using high-standard hashing algorithms.
- The software must have a response time of less than 5 seconds for 80% of user interaction.
- The system must be able to handle concurrent users and process multiple transactions (ex: 100 transactions/second) without any performance degradation.
- The system must maintain network performance to ensure timely response times even during periods of high server demand.

- The code must be optimized in a way that minimizes the interaction with the database due to its significant effect on the performance.
- To guarantee quality, multiple tests must take place during the development phase, with at least 90% test coverage.
- Different user roles (admin, owner, and client) should have distinct levels of access and permissions.
- The application should follow secure coding practices and have secure default configurations to minimize vulnerabilities.
- The user interface should be intuitive and easy to navigate, with consistent design elements across all pages.
- Responsive design techniques should be used to ensure consistent user experience across different screen sizes and devices.
- The implemented code should be well-documented with comments and comprehensive developer documentation.
- All user inputs should be validated and sanitized to prevent injection attacks such as SQL injection, XSS (Cross-Site Scripting), and CSRF (Cross-Site Request Forgery).
- The ordering process should be intuitive and user-friendly, with clear instructions and error messages provided to guide customers through each step.

1.3 - Actors

User:

- Browse items.
- Create an account.

Client:

- Place and view orders.
- Cart Management (add, remove, update items).
- Account Management.
- Submit ratings and feedback.

Admin:

- Manage Products, categories, countries, clients' accounts and orders.
- View the application's statistics.
-

Owner:

- Full Control Privilege which includes all the admin privileges in addition to the ability of managing admins and deleting accounts.

Chapter 2 – User Interface Design

The following is a demonstration of the most frequent scenarios that a user will engage with, not all scenarios are shown.

Home Page

The screenshot displays the homepage of the S&S SHOP&SHIP website. The top navigation bar includes a logo, a search bar with the placeholder "What are you looking for?", and a "Sign In" button. The main content area is organized into three sections: "TOP DEALS", "NEW ARRIVALS", and "DISCOUNTS", each featuring a grid of product cards.

TOP DEALS

- Travel Tripod**
4.20 ★ \$75.15 \$79.95 6% OFF
- SanDisk 256GB**
4.50 ★ \$29.99
- Montech X3 Fans**
4.30 ★ \$53.99 \$69.99 10% OFF
- DJI Mini 4 Pro Drone**
4.00 ★ \$863.10 \$999 10% OFF
- WILSON DRV Pro**
3.90 ★ \$20.79 \$25.99 20% OFF
- Nikon Zf**
3.17 ★ \$1,597.56 \$1996.95 20% OFF

NEW ARRIVALS

- Nikon Zf**
3.17 ★ \$1,597.56 \$1996.95 20% OFF
- Ultra Sport Watch**
-- ★ \$413.09 \$485.99 15% OFF
- Sony a7**
3.20 ★ \$1,183.42 \$1498 21% OFF
- Huawei Smartwatch**
3.90 ★ \$98.99 \$109.99 10% OFF
- Dartboard**
3.50 ★ \$32.65 \$36.49 8% OFF
- Soccer Goal**
3.60 ★ \$18.39 \$19.99 8% OFF

DISCOUNTS

- Wilson Ultra**
3.40 ★ \$31.69 \$63.38 50% OFF
- Canon PowerShot**
4.00 ★ \$240.00 \$479.99 50% OFF
- WILSON AVP**
-- ★ \$47.97 \$79.95 40% OFF
- Canon EF 75-300mm**
4.20 ★ \$139.30 \$199 30% OFF
- Sony a7**
3.20 ★ \$1,183.42 \$1498 21% OFF
- Nikon Zf**
3.17 ★ \$1,597.56 \$1996.95 20% OFF

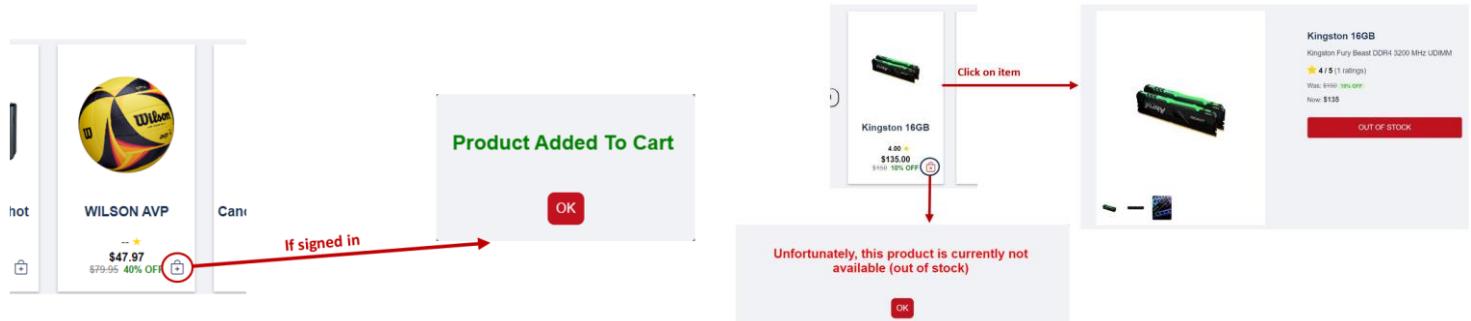
Need Help?
Contact us through any of these support channels

Contact us via Mail Whatsapp Us

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Add Product to cart from index

Users can conveniently add products to their cart directly from the main page. Each product cart includes a cart "Add to Cart" button, enabling users to add items to their cart with a single click, of quantity: 1 , without navigating away from the page. This feature improves the shopping experience by making the purchasing process more efficient and easier.



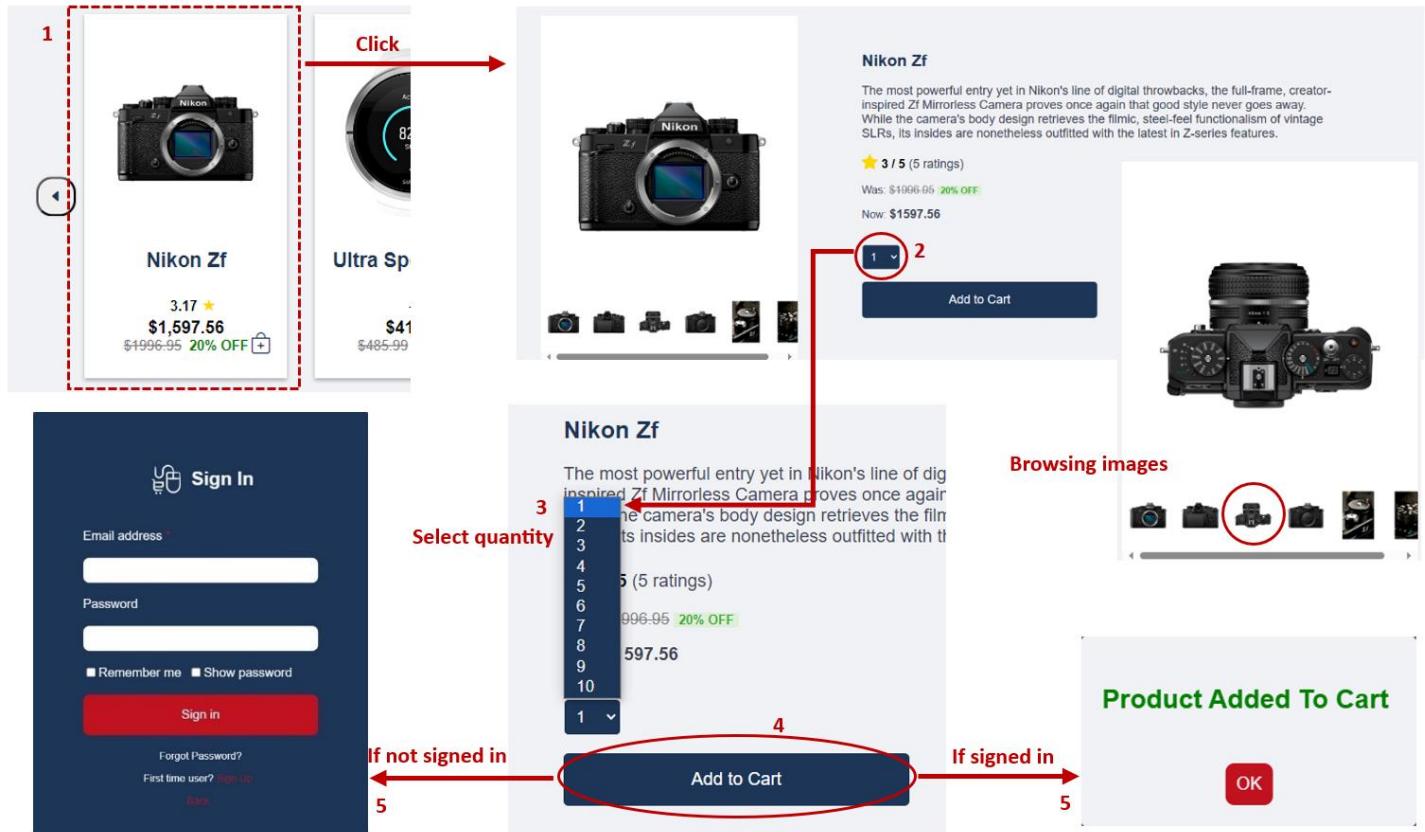
Search Products by Category or Name

Users can easily browse products according to their categories or names. Selecting a category displays a list of relevant products, and the search function enables users to enter the name of the desired product into the search bar, which then displays a list of matching items offering a more organized and focused shopping experience.



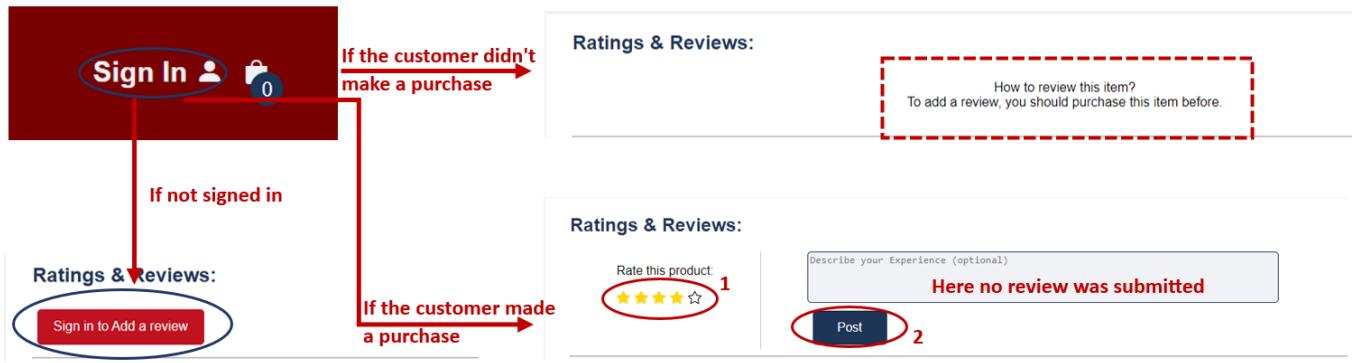
Go to product from index

To navigate the product's details, users start by clicking on the product's image or name from the index page, which redirects them to a dedicated product page. This page provides comprehensive information about the selected product, including detailed descriptions, high-quality images, and customer reviews. Users can also browse through additional images of the product to get a better understanding before making a purchase decision, they can select the desired quantity of the product and then add the product to cart if they're signed in, else they'll be forwarded to the **Sign In** page.



Ratings & Reviews

This feature allows customers to provide feedback on purchased products. If a user is not signed in, they will be forwarded to the **Sign in** Page to add a review. If the customer has not purchased the item, they will see a message indicating that only customers who have purchased this product are able to leave reviews. For those who have made a purchase, they can rate the product and write (or update) detailed feedback about their experience. Once the review is written, clicking the "**Post**" (or "**Update**") button will submit their review, and it'll be displayed in the reviews section.



Update case



Navigate Cart

Customers can easily view and manage their selected items. By clicking on the cart icon, if the user is signed in, he/she will be redirected to a detailed overview of their shopping cart, displaying all items added, including product images, descriptions, prices, and quantities. Customers can adjust the quantity of each item, remove items, and see the updated total price instantly. This feature enables users to review their selections before proceeding to checkout.

Points:299

SHOP & SHIP

clothes ok What are you looking for?

Alaa Points:299

Cart (3 items)

PRODUCT	PRICE	QUANTITY	TOTAL
SanDisk 256GB	\$15	- 2 +	\$30
Logitech G502	\$59	- 1 +	\$59

Order Summary
SubTotal(0 items)

Order Totals
Sub-Total 0.00 \$

Checkout

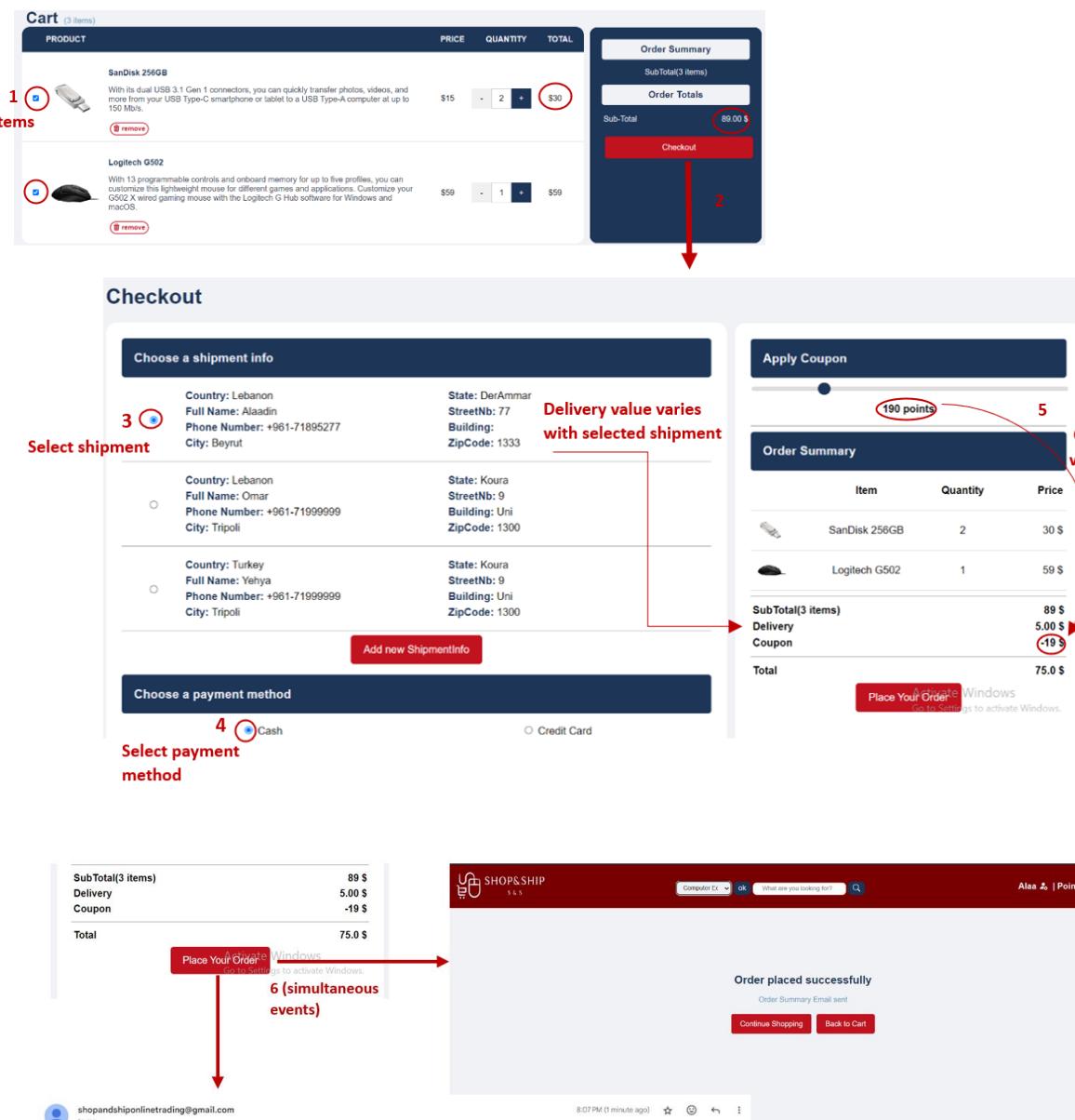
Continue Shopping

Need Help?
Contact us through any of these support channels

Contact us via Mail
Activate Windows
WhatsApp Us

Place an Order

The ordering process begins when the user selects items from their cart, proceeding to input shipment details and choosing a payment method. They have the option to apply points for discounts. Upon clicking the "Place Order" button, the system verifies the availability of each item in real time. In cases where simultaneous orders occur, priority is given to the first user to complete the transaction, while the other user is directed to their cart where an error message is displayed indicating the unavailability of the item. Upon successful purchase, a detailed order summary email is sent to the customer, containing order's items, quantity, total price, delivery fees, applied discounts, number of earned points as well as the estimated time for the order to be delivered.



Thank you for your purchase from our S&S website. Below is a summary of your order:

Item	Quantity	Price (per unit)	Total Price
SanDisk 256GB	2	\$15	\$30
Logitech G502	1	\$59	\$59
SubTotal			\$89
DeliveryFees			\$5
Coupon			\$19
Total Price			\$75.00

You earned 40 points.
Order will be delivered within 8 to 12 days.

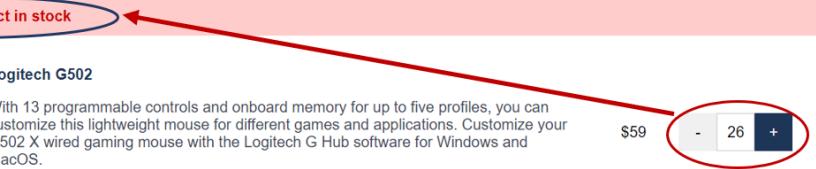
Activate Windows
Go to Settings to activate Windows

Product has limited quantity case

In cases where a user selects a quantity greater than what's available for a specific product, the system verifies the availability of each item at the point of checkout. If the available quantity is insufficient to fulfill the user's request, the system prompts the user with an error message, notifying them of the limited stock. Then, the user can adjust the quantity in their cart according to the given quantity. This process ensures that users are informed of the available stock and can make necessary adjustments to their order before proceeding to checkout.

We're sorry, but it seems that some of the items in your cart have quantities that exceed our current stock availability.

Cart (28 items)

PRODUCT	PRICE	QUANTITY	TOTAL
 SanDisk 256GB With its dual USB 3.1 Gen 1 connectors, you can quickly transfer photos, videos, and more from your USB Type-C smartphone or tablet to a USB Type-A computer at up to 150 Mb/s. remove	\$15	<input type="button" value="-"/> <input type="text" value="2"/> <input type="button" value="+"/>	\$30
Only 25 of this product in stock 			
 Logitech G502 With 13 programmable controls and onboard memory for up to five profiles, you can customize this lightweight mouse for different games and applications. Customize your G502 X wired gaming mouse with the Logitech G Hub software for Windows and macOS. remove	\$59	<input type="button" value="-"/> <input type="text" value="26"/> <input type="button" value="+"/>	\$1534

Order Summary
SubTotal(0 items)

Order Totals
Sub-Total 0.00 \$

Checkout

Activate Windows
Go to Settings to activate Windows.

Product out of stock case

When a product is out of stock, the system displays an error message alerting the user to its unavailability, and simultaneously disables the selection button for that particular item.

PRODUCT	PRICE	QUANTITY	TOTAL
 Logitech G502 With 13 programmable controls and onboard memory for up to five profiles, you can customize this lightweight mouse for different games and applications. Customize your G502 X wired gaming mouse with the Logitech G Hub software for Windows and macOS. remove	\$59	<input type="button" value="-"/> <input type="text" value="1"/> <input type="button" value="+"/>	\$59
 JBL Quantum 200 Keep chatting during long gaming sessions with the Quantum 200 Wired Over-Ear Gaming Headset in black from JBL. Designed for comfort and clarity, this headset features memory foam over-ear pads and an adjustable boom mic with auto on/off and mute functions. remove	\$59	<input type="button" value="-"/> <input type="text" value="1"/> <input type="button" value="+"/>	\$59

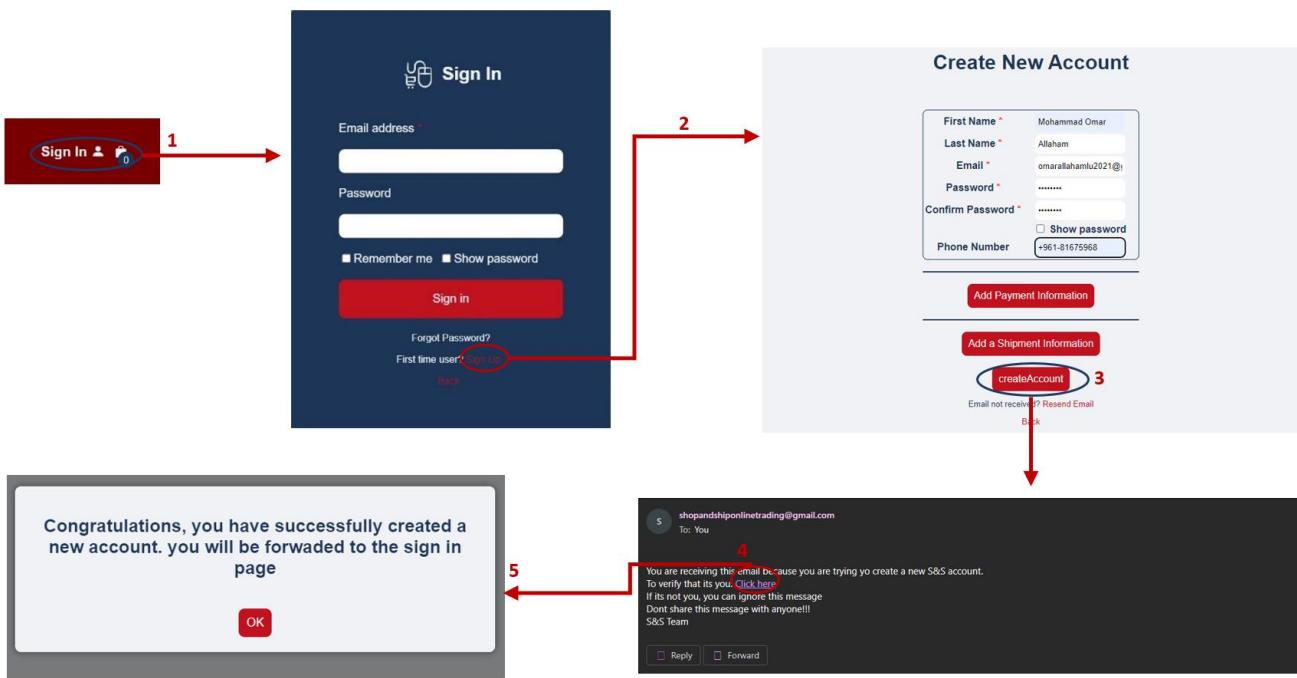
Country has been removed case

If a country is removed from the system's shipping destinations, users will encounter an error message, informing them of the unreachability of this location. Simultaneously, the system disables the selection button of this country.

○	Country: Lebanon Full Name: Omar Phone Number: +961-71999999 City: Tripoli	State: Koura StreetNb: 9 Building: Uni ZipCode: 1300	
Location currently unreachable			
Disabled button	○	Country: Turkey Full Name: Yehya Phone Number: +961-71999999 City: Tripoli	State: Koura StreetNb: 9 Building: Uni ZipCode: 1300
Add new ShipmentInfo			

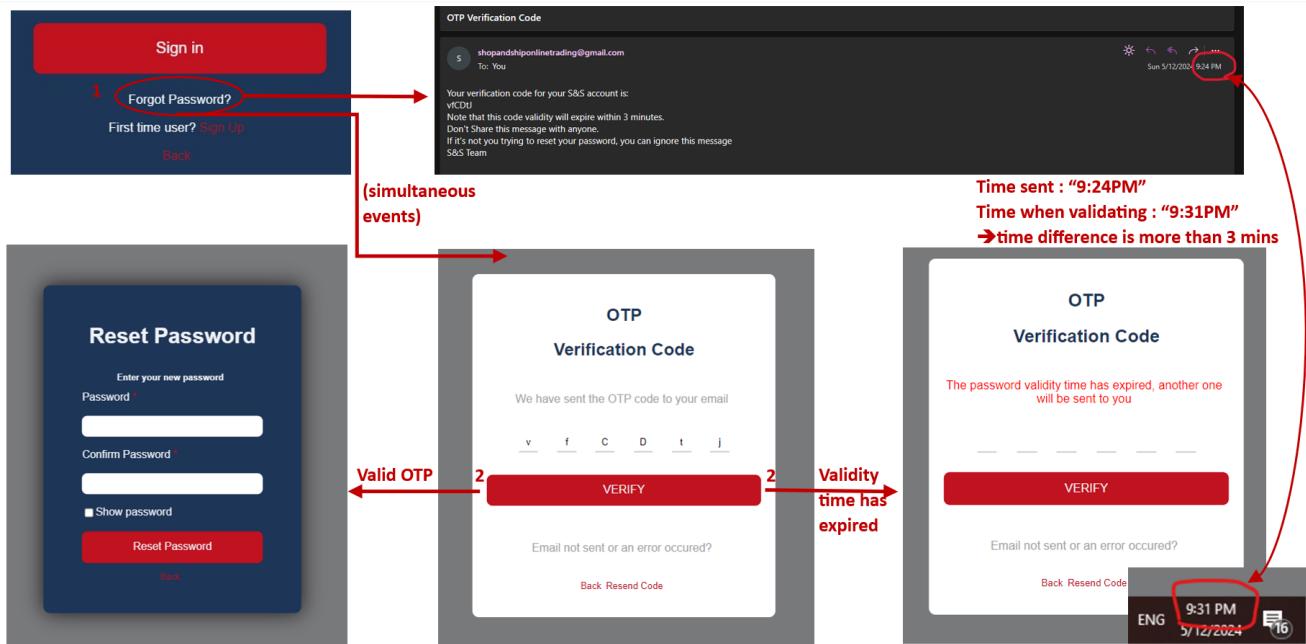
Create Account process

The application offers creating an account for new users by clicking on the "sign up" button on the **sign-in** page, which will redirect the user to the new account form which contains the necessary information to be filled by the user to complete his/her registration. The system ensures that the entered email is not associated with any existing account, otherwise it will display a message indicating that an account already exists for this email. Once the user fills out the form and submits it by clicking on the "create account" button, a verification link is sent to the user's entered email to complete the registration process within 3 minutes after receiving the email (the user can request the email again if an error occurred or if it is not received or expired). Once the verification link is activated, a popup message declaring successful registration will appear for the user and when it is closed, the user is redirected again to the **sign-in** page.



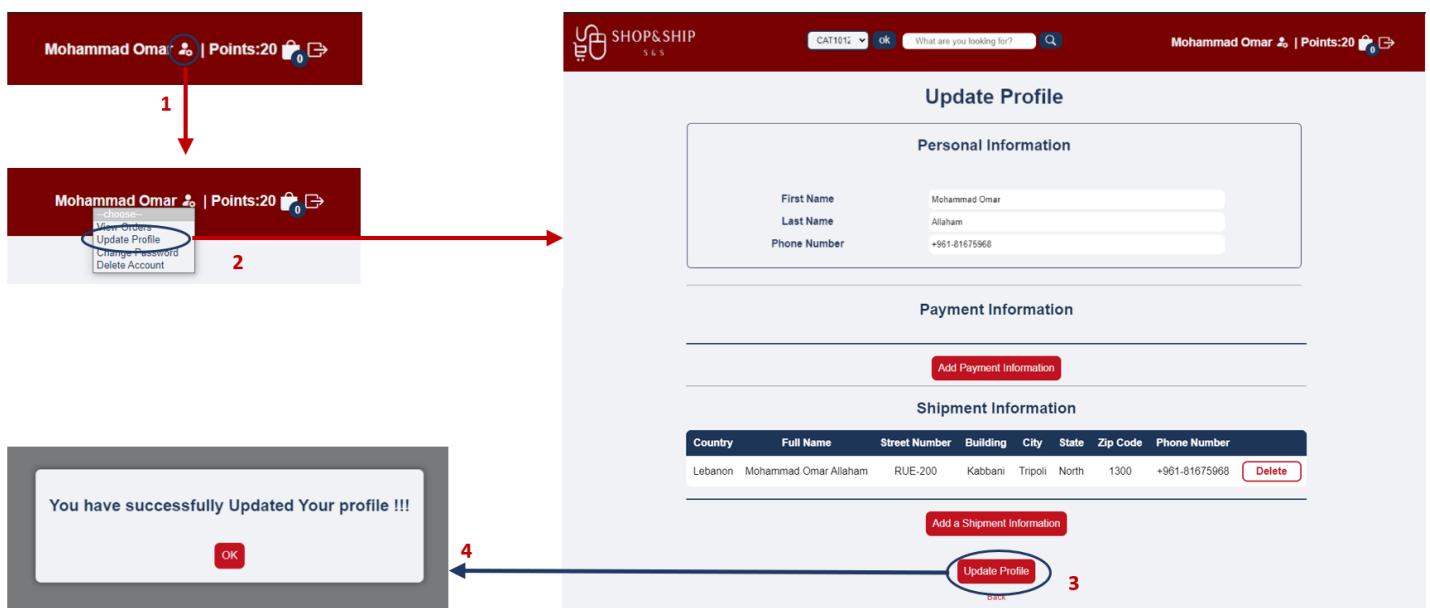
Reset password process

The system offers a "Password resetting" operation which is activated when a user forgets his/her account password. Once the "forgot password" button is clicked (on the sign-in page), the user will receive an email containing a one-time password to be submitted within 3 minutes after receiving the email (resend feature available) to advance to the reset password form. Once the OTP is submitted and validated, the user is redirected to the **reset password** page which asks for the new password (and confirmation of the new password) to be entered and submitted. If the submitted form meets the standard (identical fields and they follow the password standard), the password will be updated (message will appear) and the user will be redirected to the **sign-in** page again.



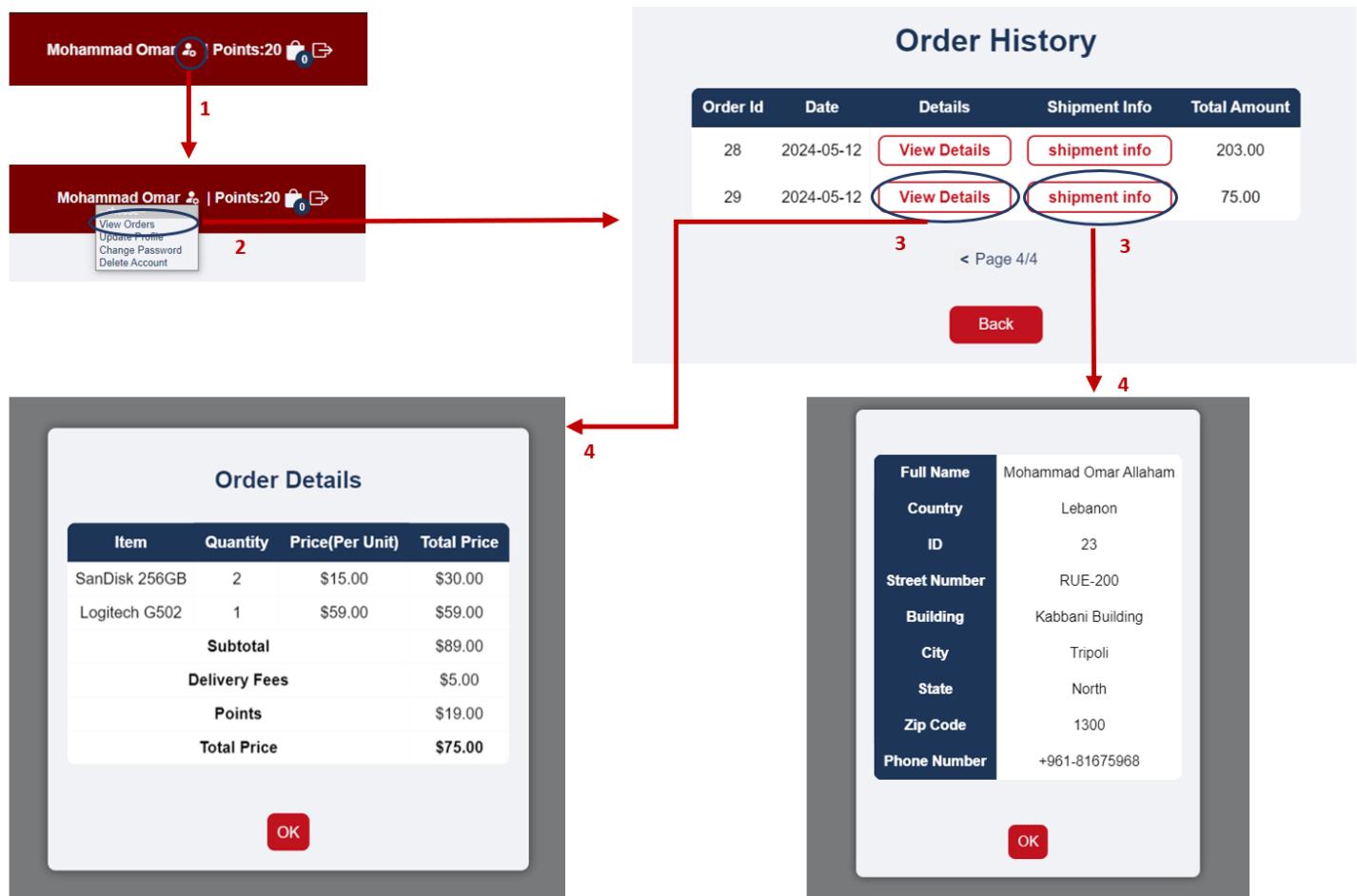
Update Profile

To keep the client's information up to date, the system allows the client to update their profile whenever they want by selecting the "update profile" option which will load the page containing the current information for this client. The client can simply modify the concerned fields and update them by clicking on the "update profile" button which will display a success message and return to the home page after applying the performed modifications.



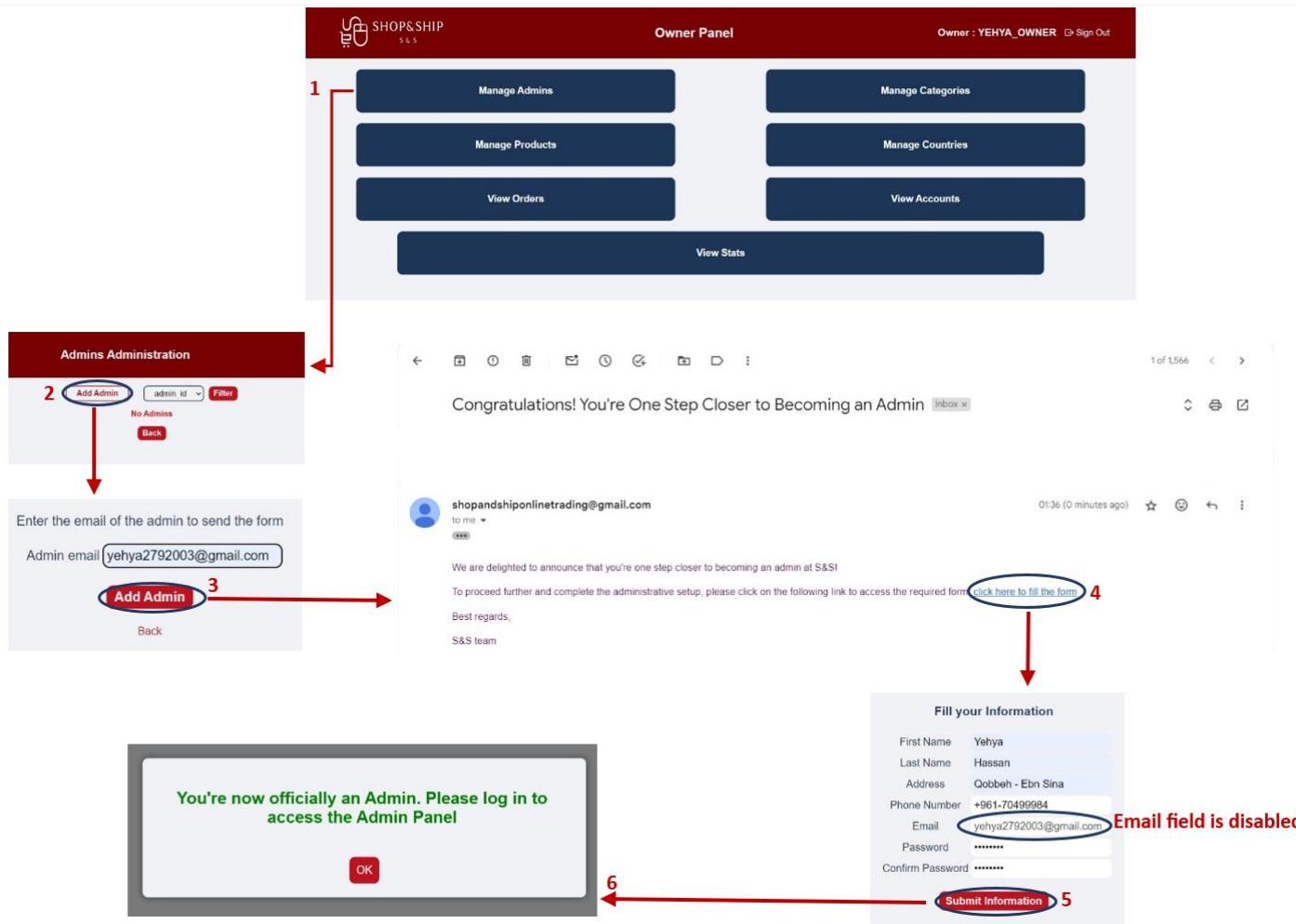
Order History

The system offers clients to check their orders at any time by clicking on the "view orders" option as shown in the figure. Once the option is selected, a page containing a list of all orders placed by the client associated with their date, amount, and further details and information that can be expanded on request.



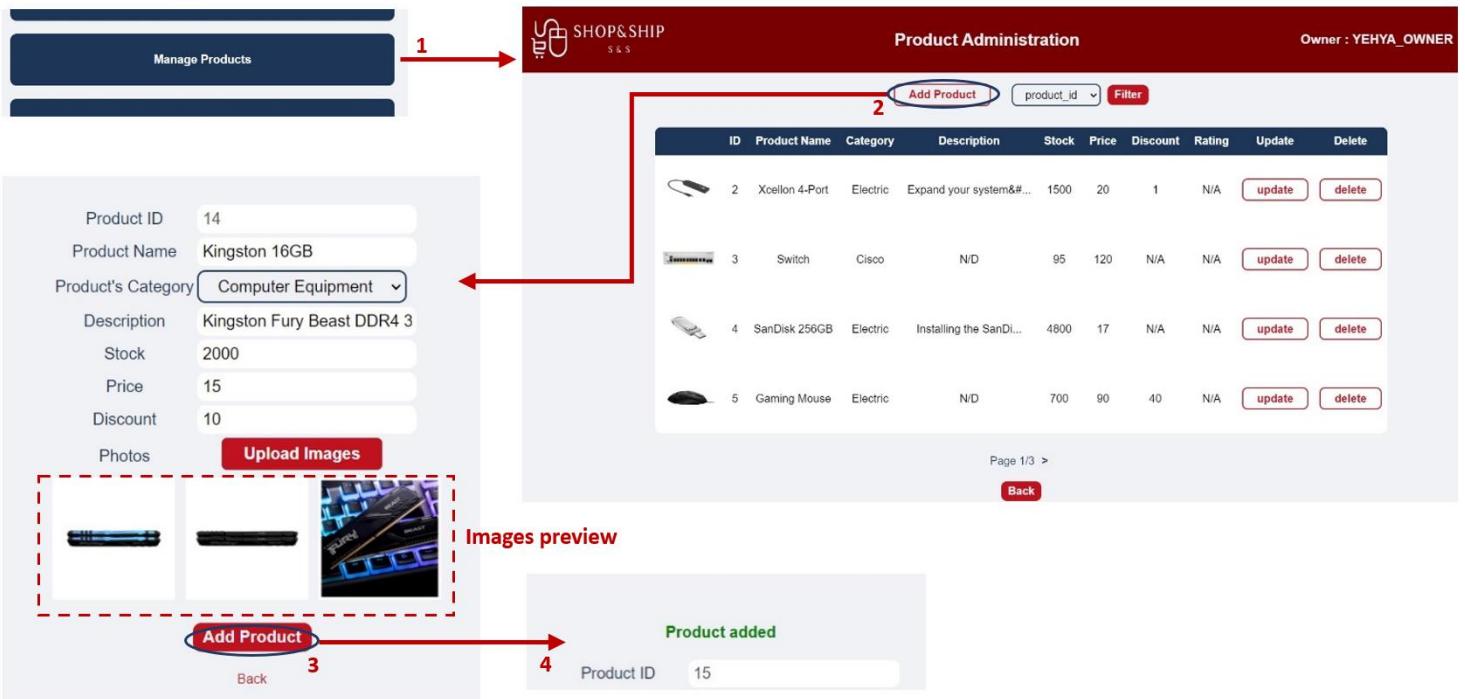
Adding an Admin to the S&S application

The process of adding an admin begins when the owner inputs the email of the person to be designated as an admin. Upon submission, an email containing a unique link to fill out the necessary information is sent to the specified email address. During this process, the email field will be disabled to ensure the identity of the intended admin. Once they complete the form, they'll receive a popup congratulating them on their new admin status, and then they'll be redirected to the **Sign-in** page.



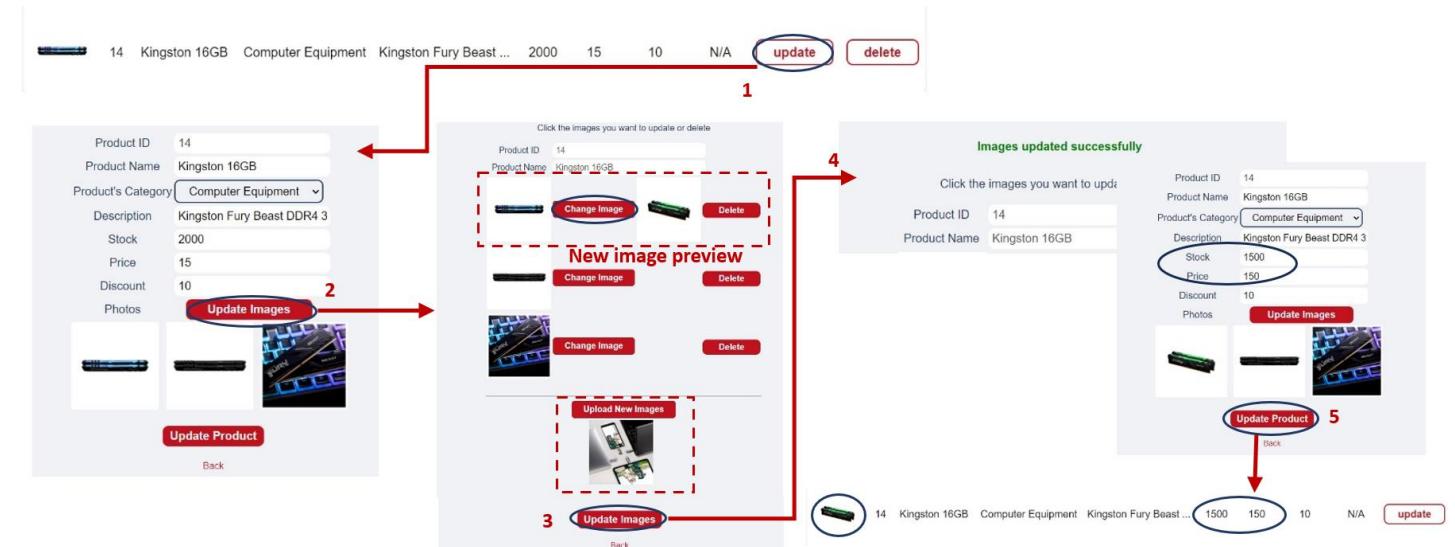
Adding a Product

Adding a product involves filling in all necessary fields with details such as product name, category, price, and stock and images. As well as optional fields such as description and discount value (per 100). A preview of the images will be displayed to ensure accuracy before final submission. Product id will be displayed for extra information but it's a read-only field.



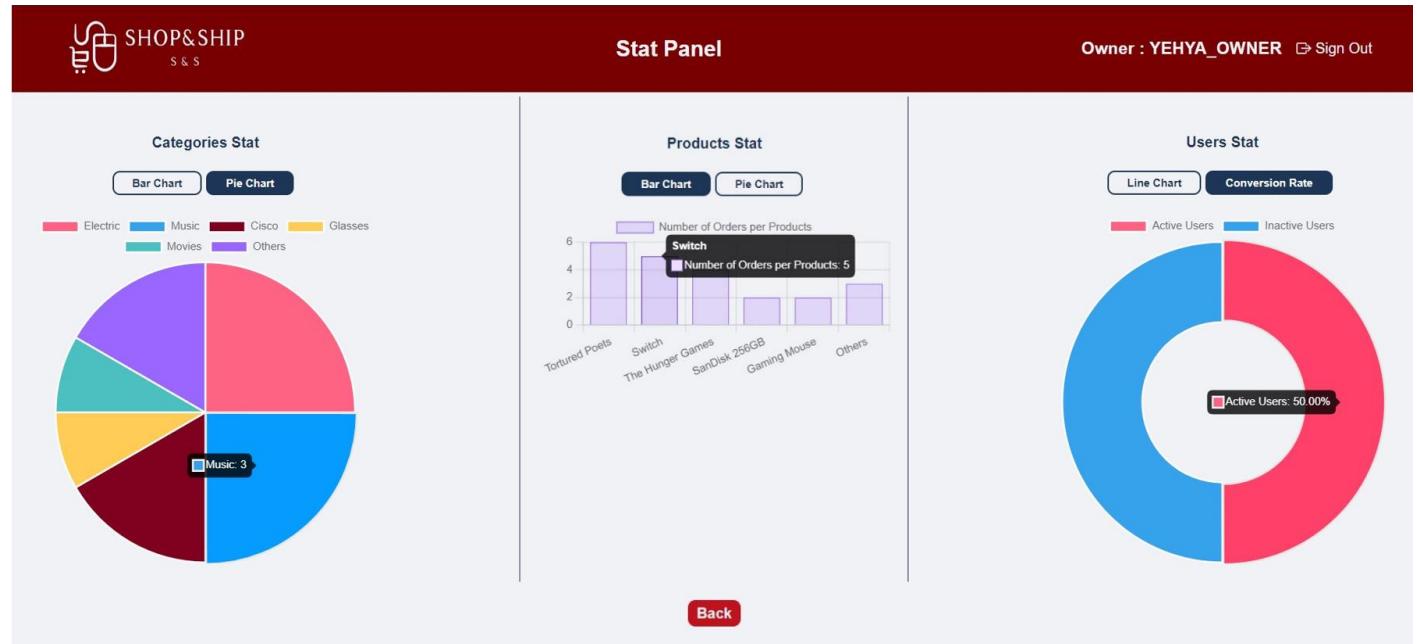
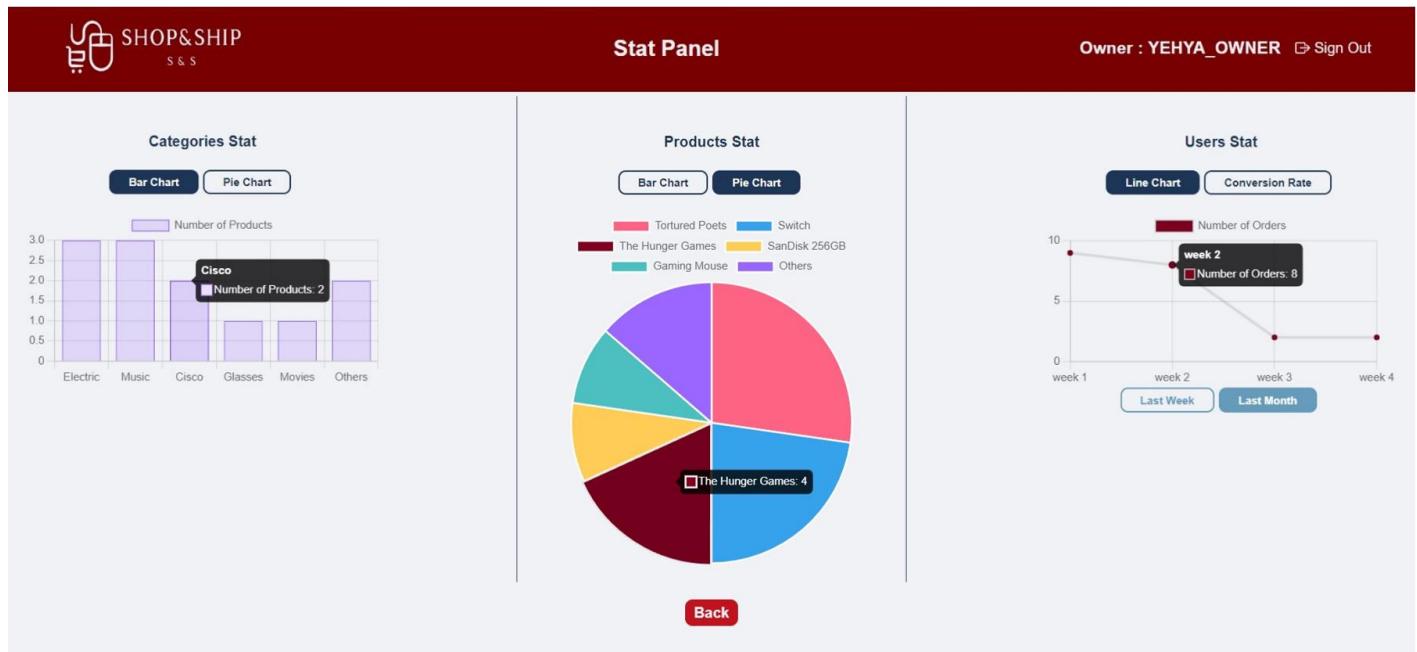
Update a Product

When updating a product, admins have the capability to modify all fields, excluding the id field, with appropriate values as well as updating the product's images, with the ability to delete, replace, or add new images, each accompanied by a preview for visual confirmation.

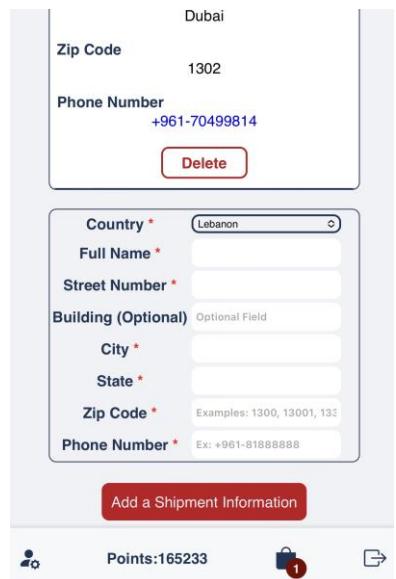
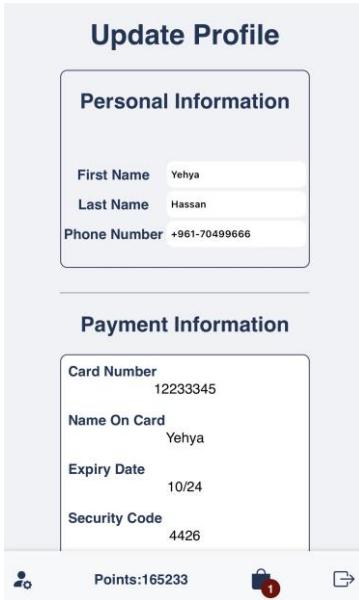
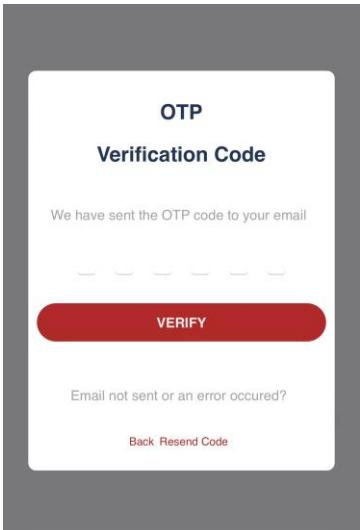
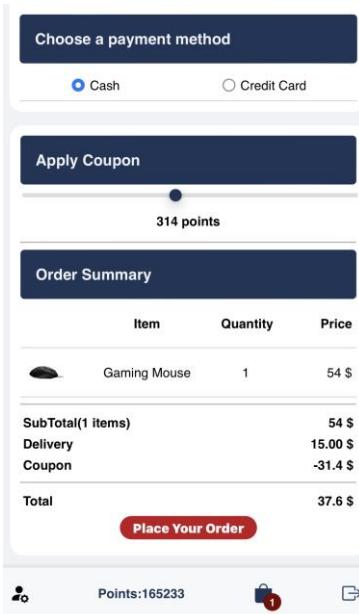
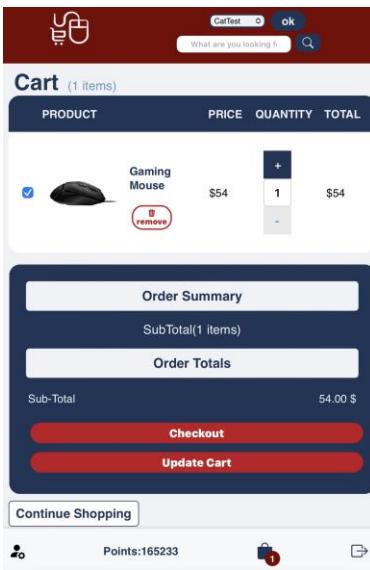
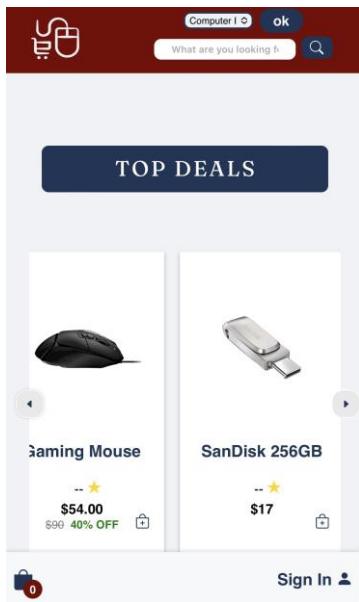
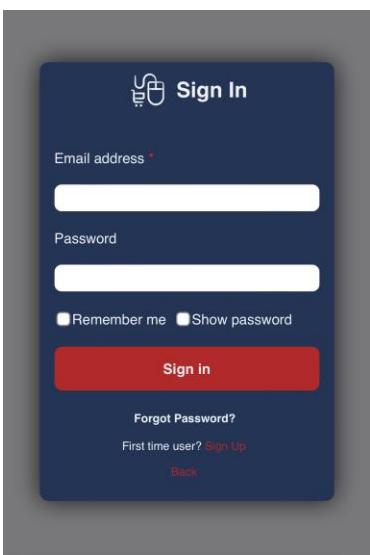


S&S's statistics

Administrators can access visual statistics presentations of the application's performance. This includes the number of products per category and the most ordered products, visually represented through both pie and bar charts. Additionally, administrators can eliminate specific items from these charts by clicking on their names. Furthermore, a conversion rate chart is available, determining the number of active users within the application, defined as those who have made purchases. Lastly, a line chart displays the number of orders over the past week and month, offering insights into the application's recent transaction trends.



The following is a sneak peek of the *mobile's look and feel*



Chapter 3 – Project Management

3.1 - Project Charter

1.0 PROJECT IDENTIFICATION	
Name	Shop and Ship (S&S)
Description	The S&S Online application is an e-commerce web application where customers can conveniently shop for a wide range of products online.
Sponsor	N/A
Project Manager	N/A
Project Team Resources	4 Participants (Mohammad Omar Mohammad Samir Allaham, Yehya Ghassan Hassan, Alaa Houssam AL dahaby, Abdrahman Tarek Sabaa)

2.0 BUSINESS REASONS FOR PROJECT

- Enhance Customer Experience.
- Improve Operational Efficiency.
- Enhance Security and Trust.

3.0 PROJECT OBJECTIVES (PURPOSE)

- Develop a responsive website that works smoothly on both desktop and mobile devices.
- Create an efficient order processing system to handle orders promptly and accurately.
- Develop a comprehensive dashboard for administrators to manage products, categories, countries, orders, and customers efficiently.

4.0 PROJECT SCOPE

- Design and development of the web-application frontend and backend.
- Integration of essential e-commerce functionalities such as product catalog, shopping cart, checkout, and user account management.
- Incorporation of responsive design principles for a good performance across various devices.
- Testing and quality assurance to ensure the web-application meets performance, security, and usability standards.
- Sharpen the participants skills and teamwork

5.0 CONSTRAINTS			
DIMENSION	CONSTRAINT	TO DO	DEGREE OF FREEDOM
Features	The project must prioritize the implementation of core features such as customer needing and security (high priority), with additional features considered based on available resources and time (low priority).	To focus on high priority features, and design the software such that other features can be easily added at a later date.	100% of high priority features must be included in. 60% of low priority features may be included.
Quality	The final product must meet industry standards for reliability, performance, and user experience.	To produce a product with as few bugs as possible.	90-95% of tests must pass.
Schedule	The project timeline is predetermined and cannot be extended or modified. All project activities must stick to the established schedule to ensure timely delivery.	The final product must be complete by May 12 th , 2024	No degrees of freedom.
Staff	The project team size is restricted to a maximum of 4 members. Each team member has other commitments outside the project.	To assign work to the team member which can complete it most efficiently.	No degrees of freedom.

6.0 KEY PROJECT DELIVERABLES	
Name	Description
Brainstorming	Researches, sessions, discussions, and ideas to kick off the project.
System Design	UML diagrams including entity relationship diagrams, use case diagrams, class diagrams, sequence diagrams, activity diagrams, and use case documentation. And completing the database schema including tables, relationships, and attributes. SQL scripts and database creation files.
Backend Development	Backend code developed using PHP and MYSQL (with the InnoDB engine used to benefit from the row-level lock when needed) including dynamic page generation and database interaction.
Frontend Development	Frontend code developed using HTML, CSS, and JavaScript, implementing both design and functionality.
Project Assembling	Assembling of backend and frontend components coded by all team members to produce the final product.
Testing	Test cases and scenarios planned in previous stages.
Report	Project report documenting objectives, specifications, stages, and output.

7.0 MILESTONE DATES

Item	Major Events / Milestones	Dates
1.	Strategic Planning and researches	09/03/2024
2.	System Design Completion	16/03/2024
3.	Backend Development Completion	16/04/2024
4.	Frontend Development Completion	30/04/2024
5.	System Integration Completion	07/05/2024
6.	Testing and Maintenance Phase Completion	09/05/2024
7.	Project Report Submission	18/05/2024

8.0 BUSINESS RISKS

RISK	PROBABILITY	IMPACT	MITIGATION
Project fails	Low	Severe	Start early and stick to an organized plan. Seek help as soon as any problems arise
Schedule Delays Risk	Medium	Medium to severe	Develop a realistic project schedule with a time buffer for unforeseen delays and problems.

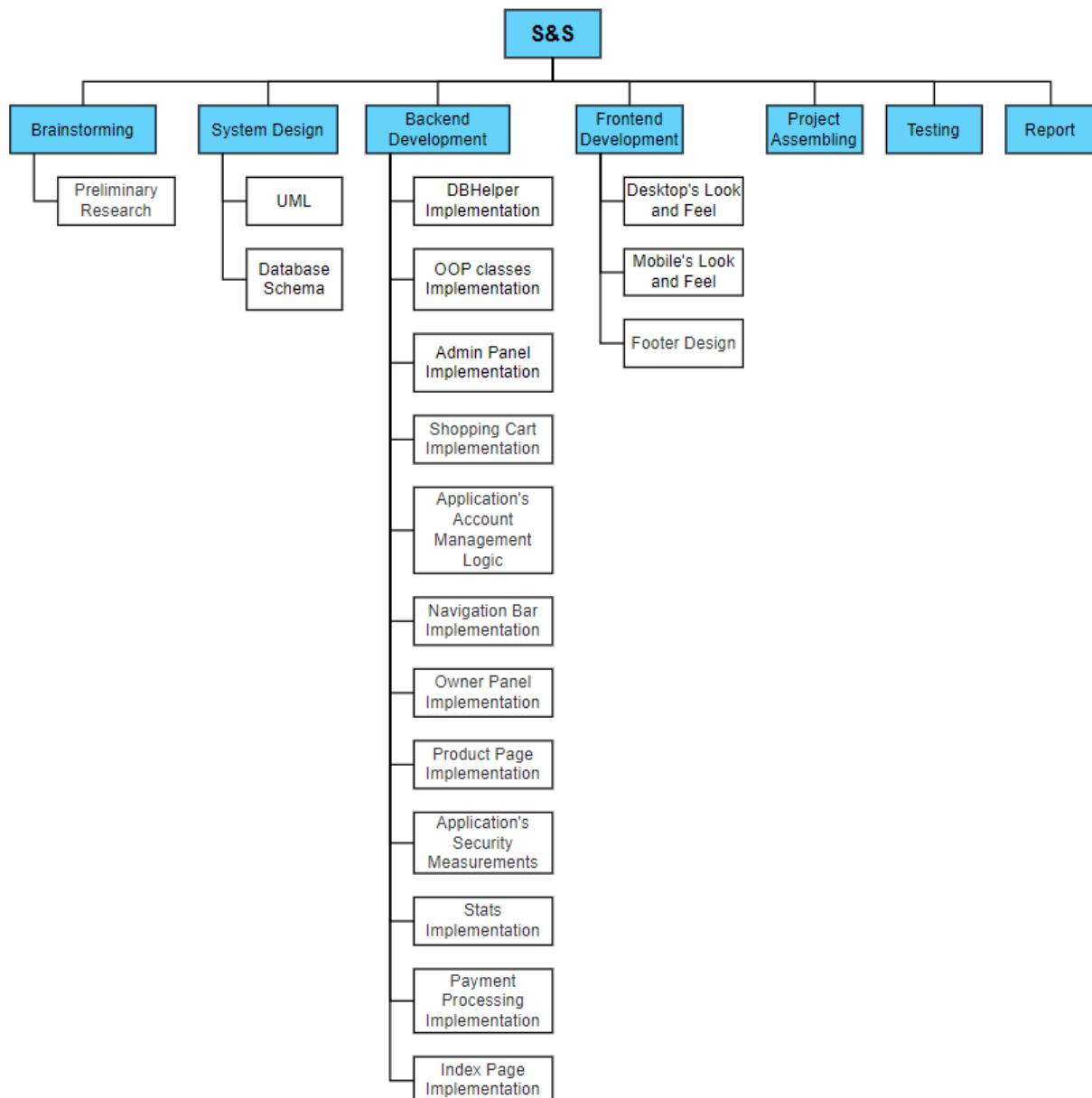
9.0 PROJECT'S CRITERIA FOR SUCCESS (MUST BE MEASURABLE)

- the team will have its own product.
- There will be a remarkable improvement in each participant.
- The project will create a healthier and more supportive working environment.
- Each participant will feel the value of his contribution.

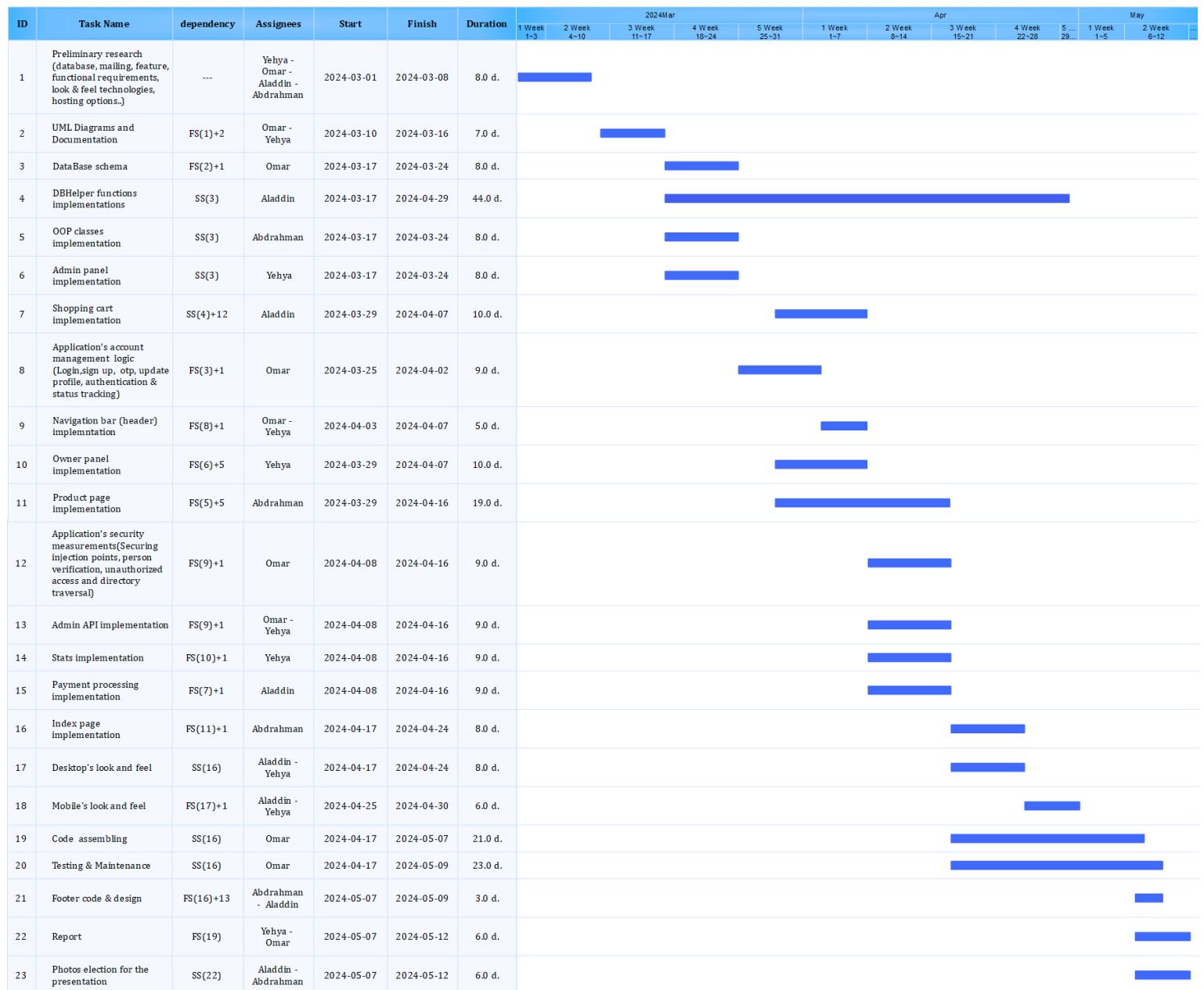
10.0 RESOURCES

RESOURCE	DESCRIPTION AND SOURCE
Development team (Mohammad Omar, Mohammad Samir Allaham, Yehya Ghassan Hassan, Alaa Houssam AL Dahaby, Abdrahman Tarek Sabaa)	The development team consists of four people. Between them they will share the roles of Project Manager, Design Lead, and Development Lead. Furthermore, all four will help with coding and testing.

3.2 - WBS Diagram



3.3 - Gantt Diagram

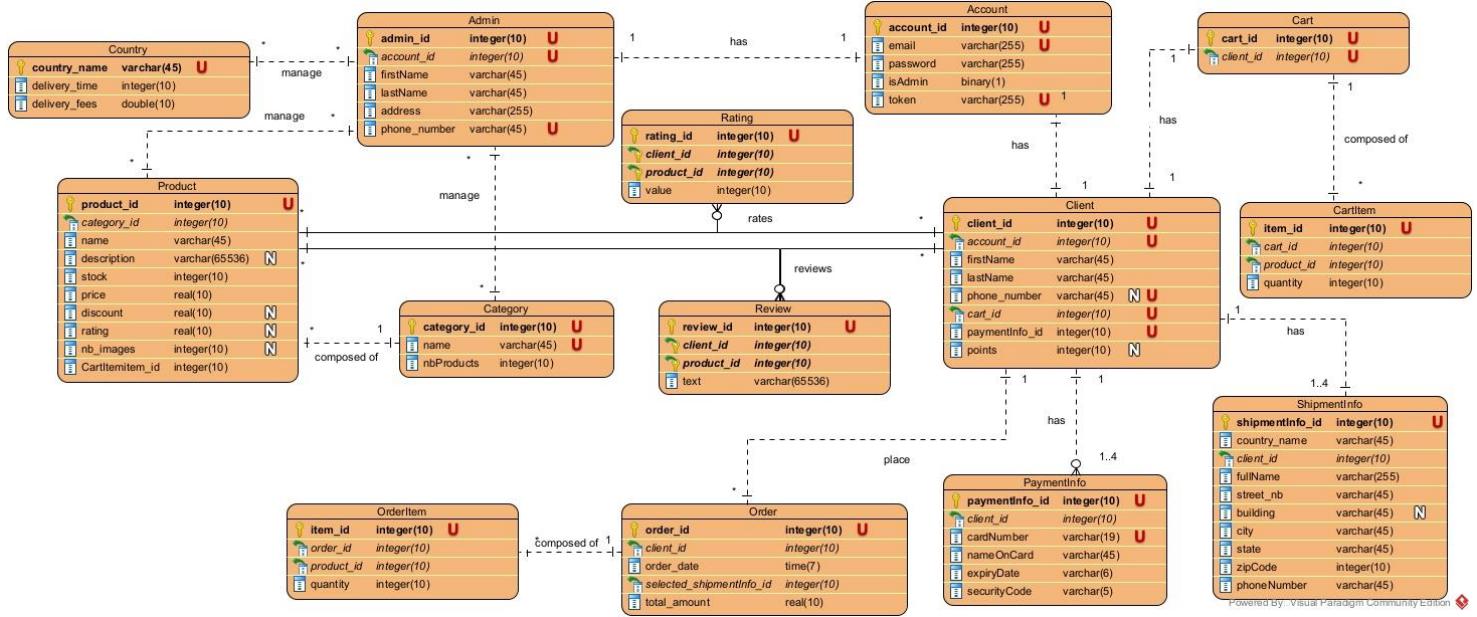


Chapter 4 – System Design

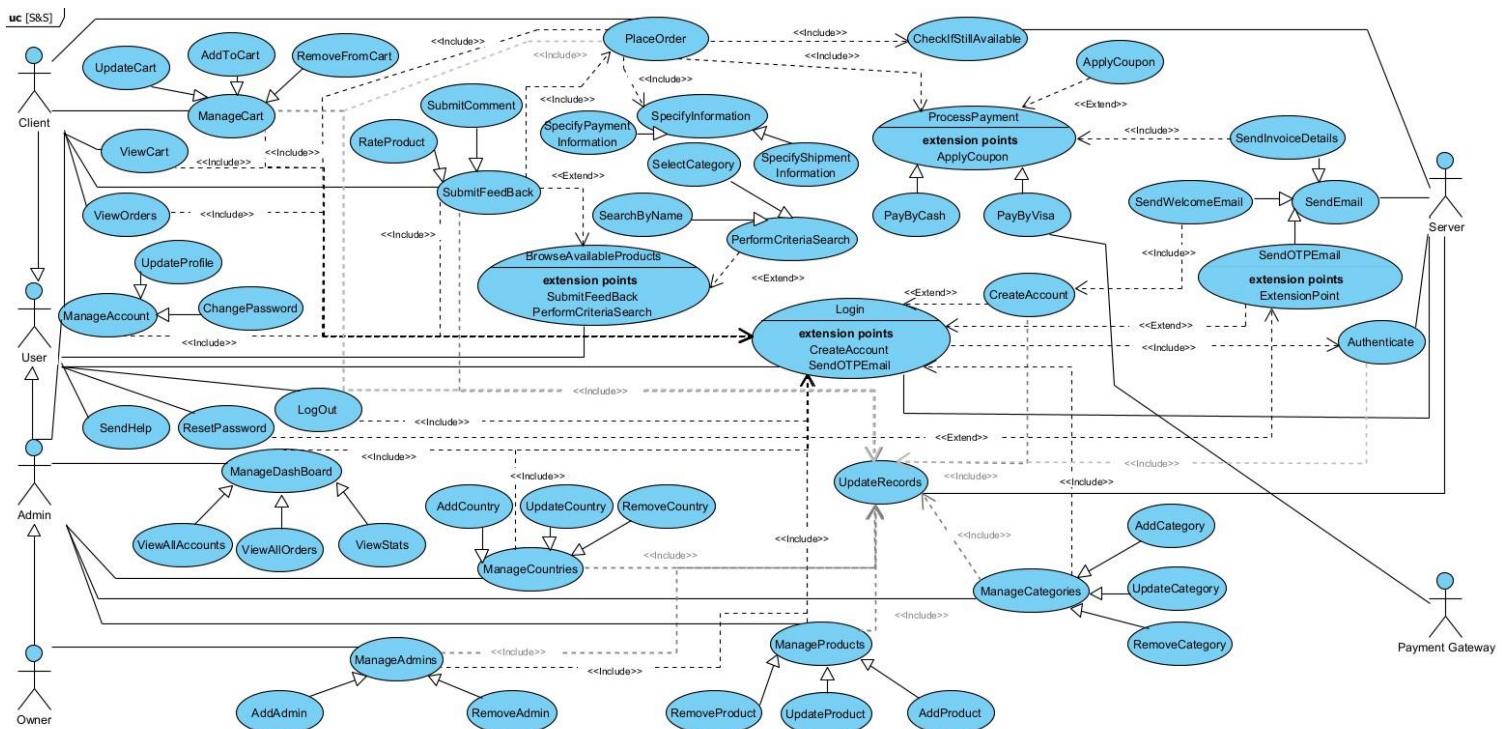
4.1 - Entity Relationship Diagram

Below is the entity relationship diagram that shows how the relational database of this web app is constructed. This diagram demonstrates in detail how each table is related to the other and what kind of relation it is whether it's a one-to-one, one-to-many, many-to-many...

Also, a detailed study on the behavior of each foreign key was performed, where each foreign key's behavior is specified accurately in different scenarios that may occur like updating or deleting (**SET NULL, NO ACTION, CASCADE, RESTRICT**).



4.2 - Use Case Diagram



4.3 - Documentations

The following are the documentations for the main scenarios of the application, the rest of the documentations will be provided upon request.

Use Case: UpdateRecords
ID: 1
Brief Description: The system writes all applied modifications on the database.
Primary Actors: Server
Secondary Actors: None
Preconditions:
<ul style="list-style-type: none">• A modification (add, remove, or update) has occurred.
Main Flow:
1. The use case starts when the system detects a modification that is applied.
2. The server writes each committed update on the database and stays available for any instant modification to be triggered.
Postconditions: All stored data are up to date.

Use Case: Login
ID: 2
Brief Description: The user logs into his/her account
Primary Actors: User
Secondary Actors: Server
Preconditions: None
Main Flow:
1. The use case starts when the user presses the login button or interacts with any feature that requires login.
Extension Point: CreateAccount (if the user has no account yet)
2. The user enters his/her email.
3. The server checks if an account exists in the database for this email.
4. If the account doesn't exist:
4.1 The system displays an error message stating that there is no existing account for this email.
4.2 The main flow returns to step 2.
5. Otherwise:
5.1 The user is asked to enter his/her password.
Extension Point: SendOTPEmail (if user forgot his/her password)
5.2 If the user entered credentials are for the owner:
5.2.1 The system redirects the user to the owner's page and updates the state of the account.
6. Include (Authenticate)
7. If the account is a client account:
7.1 The system redirects the user to the homepage (index).
8. Otherwise (admin):
8.1 The system redirects the user to the administration panel.
9. The system updates the state of the account.
Postconditions: The user is now signed in into his account.

Use Case: Authenticate
ID: 3
Brief Description: The process of validating user's credentials.
Primary Actors: Server
Secondary Actors: None
Preconditions:
<ul style="list-style-type: none"> • The user enters an email and password to sign in.
Main Flow:
<ol style="list-style-type: none"> 1. The use case starts when the server detects a new login try. 2. The server searches for the account having these entered inputs. 3. If no account is found: <ol style="list-style-type: none"> 3.1 The system displays an "invalid credentials" error message and the operation is terminated.
<ol style="list-style-type: none"> 4. Otherwise: <ol style="list-style-type: none"> 4.1 The server retrieves the account from the database. 4.2 If remember me checkbox is checked: <ol style="list-style-type: none"> 4.2.1 The system generates the cookie containing the token with a 3-month validity. 4.3 Otherwise: <ol style="list-style-type: none"> 4.3.1 The system generates the cookie containing the token with a 1-week validity.
5. Include (UpdateRecords)
Postconditions: User credentials are now validated.

Use Case: CreateAccount
ID: 4
Brief Description: The user creates a new account to use it in the web application.
Primary Actors: User
Secondary Actors: Server
Preconditions:
<ul style="list-style-type: none"> • The user has no account.
Main Flow:
<ol style="list-style-type: none"> 1. The use case starts when the user clicks on the "sign up" button. 2. The system displays a form to be filled by the user. 3. The user fills the form with his/her email, password, name, address... 4. The server checks if there is already an account (exists) for the entered email. 5. If there exists an account: <ol style="list-style-type: none"> 5.1 The system displays an error message stating that this account already exists. 5.2 The main flow returns to step 2.
<ol style="list-style-type: none"> 6. Otherwise: <ol style="list-style-type: none"> 6.1 The system sends a verification email to the entered email and waits for verification (3 mins expiry time for this email). 6.2 If email expired or not received: <ol style="list-style-type: none"> 6.2.1 While the number of resend attempts doesn't exceed 3: <ol style="list-style-type: none"> 6.2.1.1 The user can request the email again (number of attempts incremented by 1 in this case). 6.2.2 If the number of attempts exceeded 3: <ol style="list-style-type: none"> 6.2.2.1 The system blocks the user from requesting a verification email for 1 hour. 6.3 Otherwise: <ol style="list-style-type: none"> 6.3.1 The account is created.
6.4 Include (UpdateRecords)
Postconditions: The user now has a new client account.

Use Case: SendOTPEmail
ID: 5
Brief Description: One time password is sent to user to reset his/her forgotten password.
Primary Actors: Server
Secondary Actors: None
Preconditions:
<ul style="list-style-type: none"> • An account exists.
Main Flow:
<ol style="list-style-type: none"> 1. The use case starts when the user clicks on the “forgot password” button. 2. The server generates a random OTP code and sends it via email to the user, who is asked to submit it within 3 minutes. 3. If mail is not received or otp code has expired: <ol style="list-style-type: none"> 3.1 While the number of resend attempts doesn’t exceed 3: <ol style="list-style-type: none"> 3.1.1 The user can ask for a new code (number of attempts incremented by 1 in this case). 3.2 If the number of attempts has exceeded 3: <ol style="list-style-type: none"> 3.2.1 The server blocks the user for 1 hour before allowing him/her to request a new code again.
<ol style="list-style-type: none"> 4. Otherwise: <ol style="list-style-type: none"> 4.1 The server checks if the submitted code is correct.
Extension Point: ResetPassword (if the code is correct)
<ol style="list-style-type: none"> 4.2 If the code entered is invalid: <ol style="list-style-type: none"> 4.2.1 The system displays an “invalid code entered” message. 4.2.2 The main flow returns to step 3.1.
Postconditions: The user can access his/her account using the new password.

Use Case: PlaceOrder
ID: 6
Brief Description: The client requests the selected items.
Primary Actors: Client
Secondary Actors: None
Preconditions:
<ul style="list-style-type: none"> • The client must be logged in. • The client should select items to order.
Main Flow:
<ol style="list-style-type: none"> 1. Include (Login) 2. Include (SpecifyInformation) 3. The use case starts when the client clicks on the “place order” button. 4. Include (ProcessPayment) 5. Include (CheckIfStillAvailable) 6. Include (UpdateRecords) 7. An email containing order summary and details is sent to the client.
Postconditions: The user completed the ordering process and is waiting for his/her order to be received.

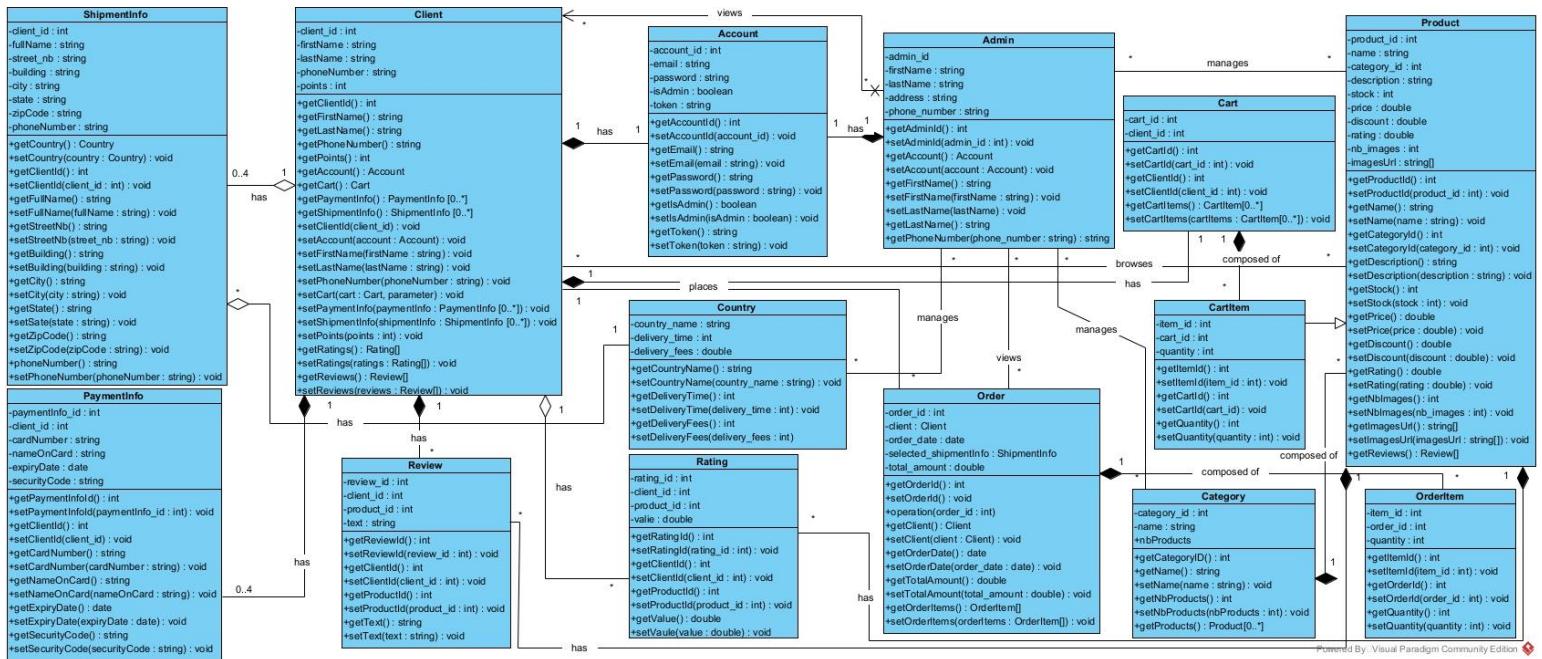
Use Case: SpecifyInformation
ID: 7
Brief Description: The client fills required information regarding shipment and payment.
Primary Actors: Client
Secondary Actors: None
Preconditions: None
Main Flow:
1. The use case starts when the client presses the “Choose payment & shipment info” button for his/her order.
2. If the current number of shipment information for this client is less than 4:
2.1 The client can add a new shipment info or choose an existing one (if there is any).
3. Otherwise:
3.1 The client can only choose one shipment information from the 4 info he/she already has.
4. If the selected shipment info address is currently unreachable:
4.1 The system displays an error message stating that this address is temporarily unreachable.
4.2 The main flow returns to step 2.
5. If payment method selected is “Credit Card Payment”:
5.1 If the current number of payment information for this client is less than 4:
5.1.1 The client can add a new payment information or choose an existing one (if there is any).
5.2 Otherwise:
5.2.1 The client can only choose a payment information from his/her existing information (4) .
Postconditions: The client has specified necessary details and can forward to the next step.

Use Case: ProcessPayment
ID: 8
Brief Description: The client specifies and completes payment procedures.
Primary Actors: Client
Secondary Actors: Payment Gateway
Preconditions:
• New order operation is being triggered.
Main Flow:
1. The use case starts when the client navigates to the payment section when placing an order.
2. The client is offered to choose whether to pay by cash or to pay via a credit card.
3. If the client chooses credit card payment:
3.1 If the client has less than 4 existing payment information:
3.1.1 The client can choose an existing payment information (if there is any) or fill the form and have a new payment information to select.
3.2 Otherwise:
3.2.1 The client has only the option to choose one of the existing payment information for this credit card payment.
3.3 When the client selects his/her payment information, the payment gateway carries out the process of verification for the entered information to ensure that they are valid.
3.4 If verification fails:
3.4.1 The system displays an error message for the client asking him/her to enter valid information.
3.4.2 The main flow returns to step 2.
Postconditions: The user completed the payment process and can proceed to the next step without any issues.

Use Case: CheckIfStillAvailable
ID: 9
Brief Description: Instant verification of the requested product's availability.
Primary Actors: Server
Secondary Actors: None
Preconditions:
<ul style="list-style-type: none"> • A new order operation is triggered.
Main Flow:
<ol style="list-style-type: none"> 1. The use case starts when a new order request is spotted by the server. 2. The system blocks all the incoming similar requests (serializing transaction) to avoid race conditions. 3. The system checks for the availability of each selected cart item.
4. For each selected cart item:
4.1 If item's requested quality is not available:
4.1.1 The system redirects the client to the cart page displaying the error message.
4.1.2 The operation is terminated (rolled back) and the system is available again to accept requests.
4.2 Otherwise:
4.2.1 The system creates a new order item from this selected and adds it to the list of ordered items.
5. If the list of order items is not empty:
5.1 create an order composed of this list of items.
5.2 commit changes.
6. The server is available again to accept any request.
Postconditions: All items ordered are available and order can be processed.

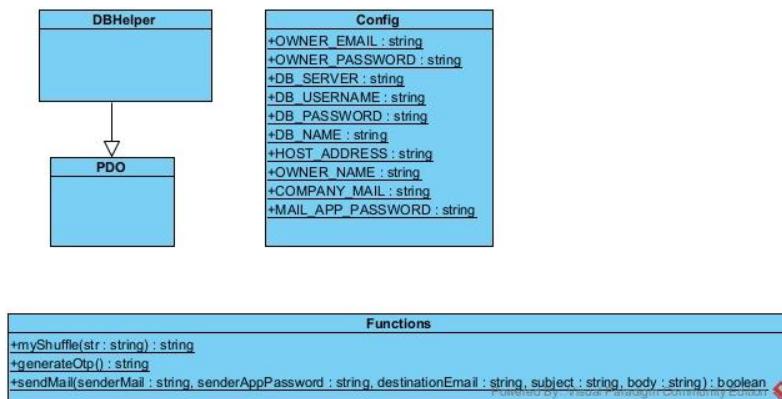
Use Case: ResetPassword
ID: 10
Brief Description: The user resets his/her password to remember it.
Primary Actors: User
Secondary Actors: None
Preconditions:
<ul style="list-style-type: none"> • The user has passed the OTP verification phase.
Main Flow:
<ol style="list-style-type: none"> 1. The use case starts when the user completes the OTP verification form successfully. 2. The user is asked to enter the new password and confirm it. 3. If the two fields ("password" and "confirm password" fields): <ol style="list-style-type: none"> 3.1 The system displays an error message stating that both fields must be identical to complete the operation. 3.2 The main flow returns to step 2. 4. Include (UpdateRecords)
Postconditions: The user has acquired a new password.

4.4 - Class Diagram

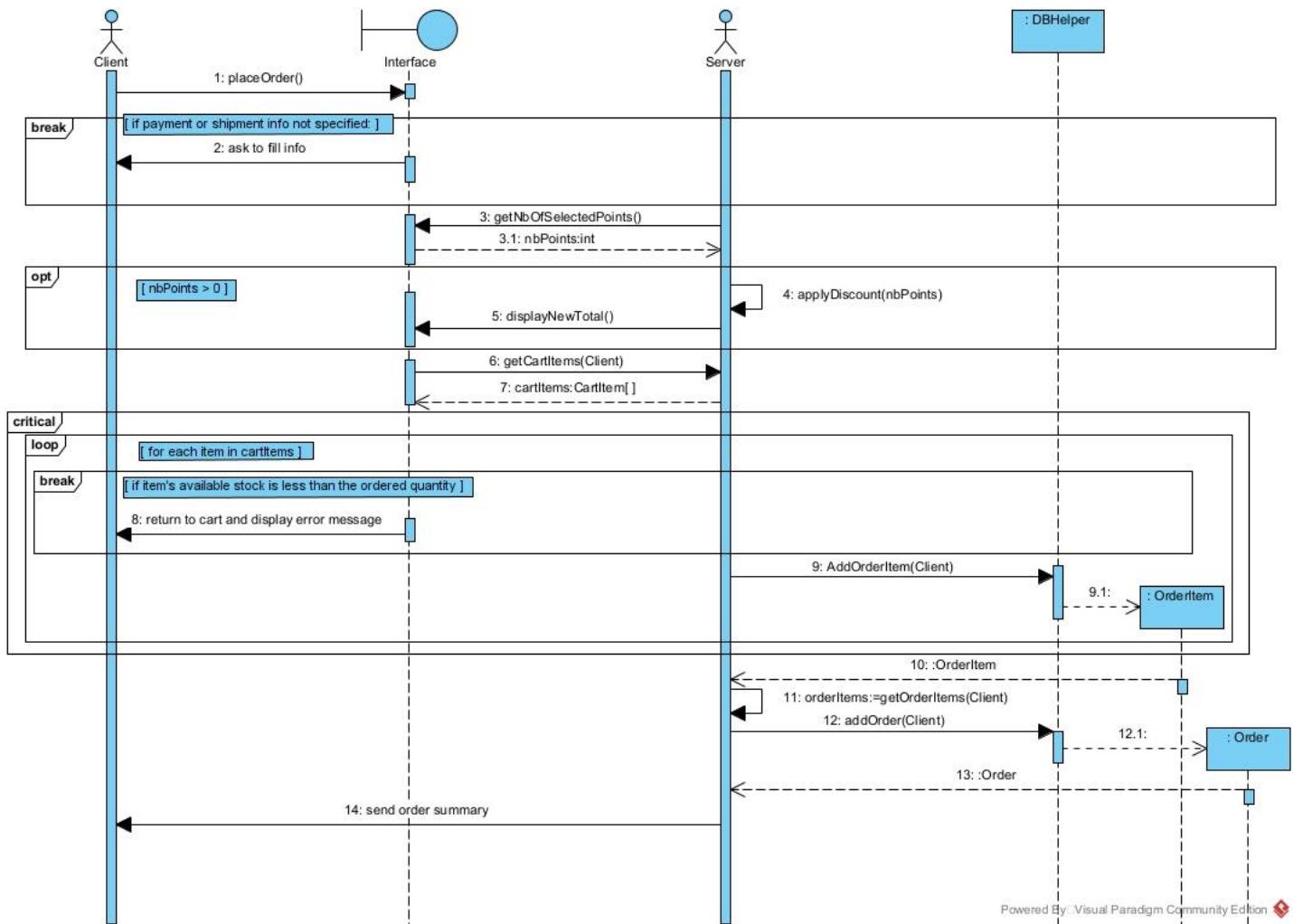


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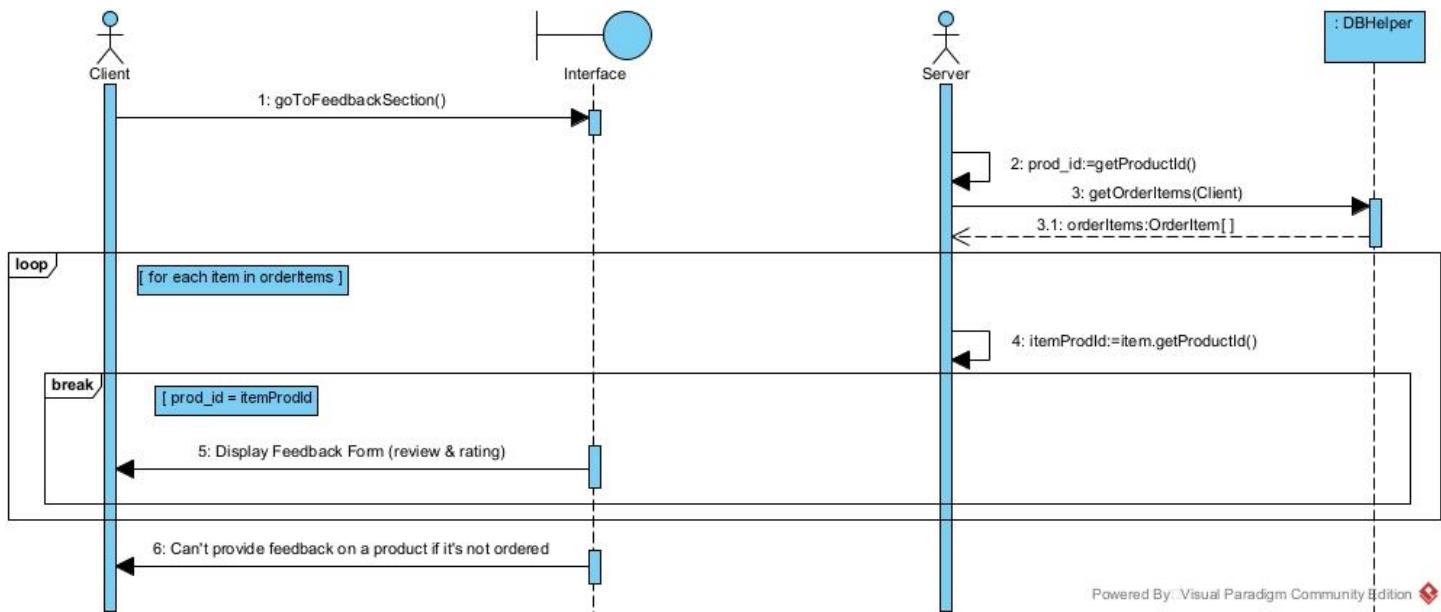
The following diagram represents the helper classes “DBHelper and Functions”, where the former handles operations consisting of interactions with the database, and the latter is composed of static functions that are implemented separately to be used many times in the process of coding . These classes concept serves in maintaining and enhancing the scalability where any modification in the database’s operations will only take place in the helper classes, as well as the separation of concerns grounded in splitting and separating the functionalities of the application into subdomains which makes the code more organized and easier to debug.



4.5 - Sequence Diagrams

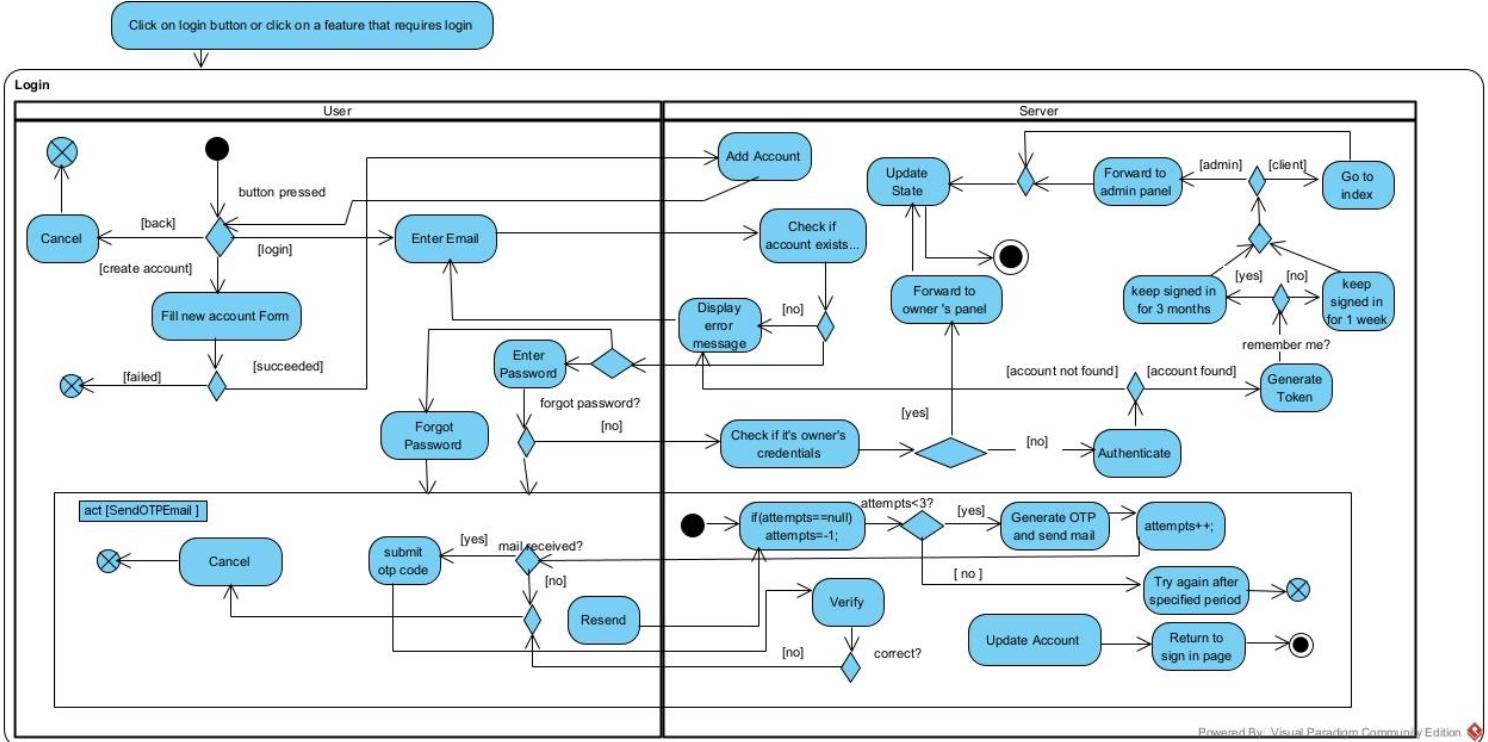


Place Order's sequence diagram



Submit Feedback's sequence Diagram

4.6 - Activity Diagram



Login's Activity Diagram

Chapter 5 - System Implementation

5.1 - Operating Environment

The application operates within a versatile environment, accessible from any device capable of connecting to the internet. Whether accessed through a personal computer, mobile phone, or portable device, users enjoy seamless connectivity and functionality.

5.2 - Tools Used

The application uses **PHP** and **MySQL** with the InnoDB storage engine for its back-end architecture because these technologies provide strength and flexibility when dealing with complicated data structures and ensuring reliable data storage and retrieval. The combination of PHP and MySQL ensures high performance, enabling the efficient processing of concurrent transactions.

For front-end development, the application utilizes **HTML**, **CSS**, and **JavaScript** due to their familiarity, ease of use, and efficient implementation. These languages offer a user-friendly development environment, enabling quick creation and smooth integration of interactive user interfaces. Additionally, their widespread utilization and compatibility with modern web browsers ensure a consistent and enjoyable experience on different devices and platforms.

For charts representation, the application uses the **Chart.js** library to efficiently handle the visualization of statistics. This powerful tool enhances our ability to present data with dynamic and interactive charts.

Conclusion

In summary, the completion of this project marks a significant achievement, highlighting the dedication and determination of our team. Throughout the project, we completed each phase, overcoming various challenges. From planning to implementation, we navigated complexities with strength and resolve.

The work involved a wide range of tasks, including careful planning, thorough development, and rigorous testing. Each step was executed with precision to ensure a high-quality outcome.

Despite facing inevitable obstacles, such as technical difficulties and resource limitations, our team remained committed to success. Through teamwork and proactive problem-solving, we effectively addressed challenges and stayed focused on our objectives.

In closing, we extend our gratitude to all team members, stakeholders, and supporters who contributed to the success of this project. Your collaboration and commitment have been invaluable, and we eagerly anticipate future opportunities to work together.