Server-Side Programming

Project Report

Doan Minh Hieu 104168106 COS10026 Computing Technology Inquiry Project

I. Introduction:

A. Objective of the report:

The purpose of this report is to provide a comprehensive overview of the progress achieved in improving and extending the capabilities of the website we developed in Assignment 1. This report outlines the objectives, methods involving PHP server-side embedded scripting with access to a separate MySQL database server, accomplishments, and challenges encountered throughout this project's further development.

Additionally, our Group 1 can also effectively communicate the status of the project, pinpoint areas requiring enhancement, and ensure that all tutors are well-informed and aligned with our project's targets and aims.

B. Outline of the report's structure:

- I. Introduction :
 - A. Objective of the report:
 - B. Outline of the report's structure:
- II. The Website :
 - A. Website introduction:
 - B. Main functionalities of the website, including screenshots:
 - C. Technical details on the website development :
 - D. Highlight the key/innovative features of the website :
- III. Your Contribution :
- IV. Reflection and Discussion :
 - A. Reflections on my experience regarding professional purpose, teamwork, and effective communication in this project :
 - B. Discussions on one of the following web development-related issues:
- V. Conclusion :

II. The Website:

A. Website introduction:

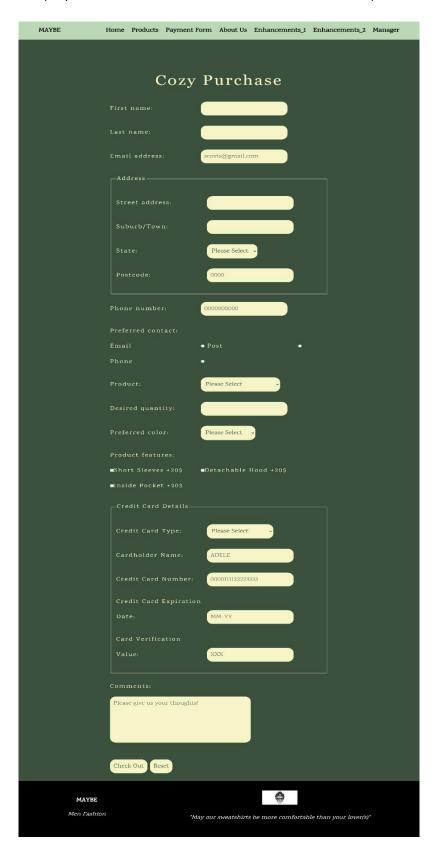
In Assignment 1, our Group 1 developed a men's sweatshirt online store called Maybe, using HTML and CSS. However, due to HTML's limitations, we couldn't offer a seamless and enjoyable shopping experience. Therefore, in this assignment 2, we applied our practical skills and knowledge in PHP and MySQL to enable customers to place orders directly on our website and receive an order receipt. Additionally, we ensured that the store manager could access, modify, and view reports for all orders in the database. Our goal is for customers to enjoy both our website and their purchases.

B. Main functionalities of the website, including screenshots:

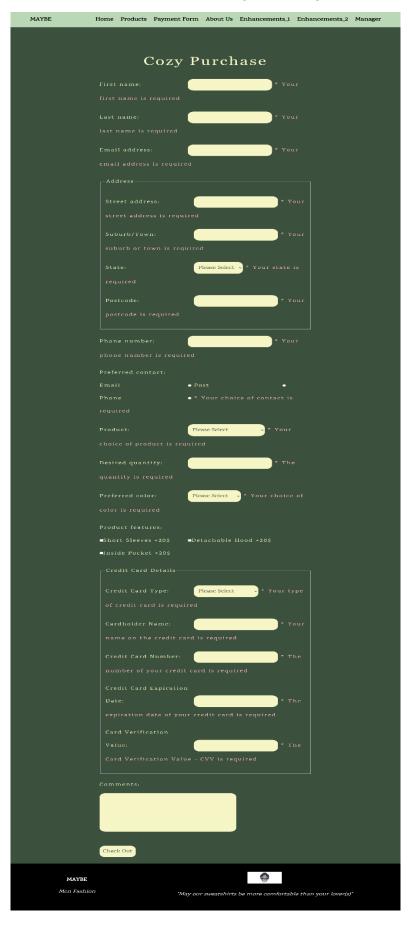
In addition to the details outlined in my Assignment 1 report, I will demonstrate the main functionalities of our website throughout this project:

1. Form Handling:

Users can fill in the payment form if he/she wants to make a purchase:



Users cannot submit the form without entering anything:



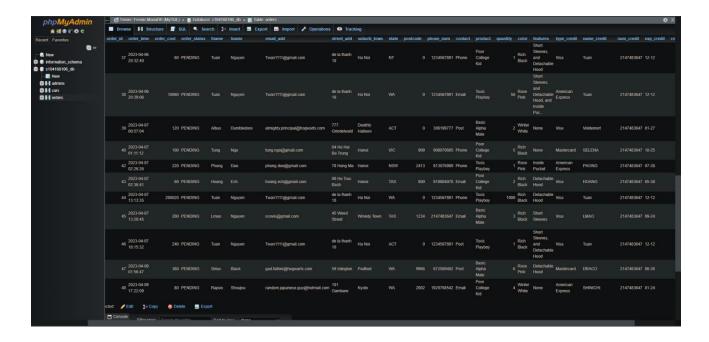
If users make a mistake, the form will keep the appropriate inputs and display the error messages to show which part needs correction:

мауве	Home Products Payment	Form About Us Enhancement	ts_1 Enhancements_2 Manager
	Cozz	Purchase	
	COZy	ruichase	
		Rapoo	
	Last name:	Shoujou	
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		101 Gambare	
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		Please Select -	
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		n	
		rate such as 06-24	
	Comments:		
	Check Out		
MAYBE		*	
Men Fashio	n "M	lay our sweatshirts be more comfo	ortable than your lover(s)*

2. Receipt page :

When the user inputs are validated, a receipt will be displayed and the order has been stored in the database:





3. Manager page:

The Manager can do orders-related searches on this page, view the results in a table, and modify or remove an order's status :

MAYBE Home Products Payment Form About Us Enhancements_1 Enhancements_2 Manager

The Orders

Order ID	Order Time	Order Cost	Order Status	First Name	Last Name	Product	Quantity	Color	Features	Actions
1	2023-03-30 04:54:45	460	ARCHIVED	Harry	Potter	Toxic Playboy	2	Rich Black	Short Sieeves, and Detachable Hood, and Inside Pocket:	Debte PENDING FILLEILED FAID ARCHIVED
2	2023-03-30 07:07:27	120	PAID	Hermione	Granger	Poor College Kid	4	Rose Pink	Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED
3	2023-03-30 17:34:09	80	ARCHIVED	Severus	Snape	Basic Alpha Male	1	Winter	Detachable Hood	Delete PENDING FULFILLED PAID [ARCHIVED]
20	2023-03-30 20:36:49	60	PAID	trung	duong	Poor College Kid	2	Rich Black	Short Siceves	Delete PENDING FULFILLED PAID ARCHIVED
21	2023-03-31 18:53:23	3220	PAID	Lmao	Nguyen	Toxic Playboy	16	Rich Black	Detachable Hood	POLITILIZED PAID ARCHIVED
24	2023-04-01 05:06:56	1040	PENDING	MCK	Nger	Toxic Playboy	5	Rich Black	Short Sleeves, and Inside Pocket	DEBEG PENDING FULTILLED FAID ARCHIVED
26	2023-04-05 17:25:12	80	PENDING	Jack	Lame	Poor College Kid	1	Winter White	Short Sieeves, and Detachable Hood, and Inside Pocket:	POLITILIED PAID ARCHIVED
27	2023-04-05 17:31:46	620	PENDING	Hendrick	Conan	Toxic Playboy	я	Rich Black	Detachable Hood	POLITELED PAID [ARCHIVED]
3.1	2023-04-05 17:42:48	180	PENDING	Mossi	Oliver	Poor College Kid	б	Rich Black	Short Sleeves, and Detachable Hood, and Inside Pocket	PHILIPPE FAIR
32	2023-04-05 17:43:30	780	PENDING	Yamio	НавАКсу	Basic Alpha Maic	12	Rose Pink	Short Sieeves, and Detachable Hood, and Inside Pocket:	DOIGG PENDING [FILTILED] [FAID] [AKCHIVED]
33	2023-04-05 17:49:31	800	PENDING	Wxrdie	Aagirlfriendstealer	Toxic Playboy	4	Rose Pink	None	Delete PENDING FULFILLED PAID ARCHIVED
34	2023-04-05 17:53:18	780	PENDING	Yasuo	HasAKcy	Basic Alpha Male	12	Rose Pink	Short Sleeves, and Detachable Hood, and Inside Pocket	Debte PENDING FULTILED PAID ARCHIVED
35	2023-04-05 18:10:49	780	PENDING	Yasuo	Yone	Basic Alpha Malc	12	Rose Pink	Short Sieeves, and Detachable Hood, and Inside Pocket	Delete PENDING [CH.CLLED] [FAID] [ARCHIVED]
36	2023-04-06 20:24:40	420	FULFILLED	Tuan	Nguyen	Poor College Kid	20	Rich Black	Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
37	2023-04-06 20:32:40	60	PENDING	Tuan	Nguyen	Poor College Kid	1	Rich Black	Short Siceves, and Detachable Hood	Delete PENDING FULTILLED PAID ARCHIVED
38	2023-04-06 20:39:06	10060	PENDING	Tuan	Nguyen	Toxic Playboy	50	Rose Pink	Short Siceves, and Detachable Hood, and Inside Pocket	Poloto PENDING [PULILLED] [PAID] [ARCHIVED]
39	2023-04-07 00:57:04	120	PENDING	Albus	Dumbledore	Basic Alpha Male	2	Winter	None	DUBLE PENDING FULTILLED FAID ARCHIVED
40	2023-04-07 01:11:12	100	PENDING	Tung	Ngo	Poor College Kid	8	Rich Black	None	POLITILED PAID ARCHIVED
42	2023-04-07 02:26:26	220	PENDING	Phony	Dao	Toxic Playboy	1	Rose Pink	Inside Pocket	POLITICED PAID [ARCHIVED]
43	2023-04-07 02:36:41	60	PENDING	Hoang	Ech	Poor College Kid	2	Rich Black	Detachable Hood	Debte PENDING FULFILLED FAID ARCHIVED
44	2023-04-07 13:13:35	200020	PENDING	Tuan	Nguyen	Toxic Playboy	1000	Rich Black	Detachable Hood	PHILLED FAID ARCHIVED
45	2023-04-07 13:20:45	200	PENDING	Lmao	Nguyen	Basic Alpha Maic	3	Rich Black	Short Sleeves	Delete PENDING FOLFILLED PAID ARCHIVED
46	2023-04-07 18:15:32	240	PENDING	Tuan	Nguyen	Toxte Playboy	1	Rich Black	Short Siceves, and Detachable Hood	Detete PENDING FULTILLED PAID ARCHIVED
47	2023-04-09 01:56:47	380	PENDING	Strius	Black	Basic Alpha Male	6	Rose Pink	Detachable Hood	PERDING FAIR ARCHIVER
48	2023-04-09 17:22:09	ಚಲ	PENDING	Rapoo	Shoujou	Poor College Kid	4	Winter White	None	Delete PENDING PULFILLED PAID ARCHIVED

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Scarch for a name

First Name:

Last Name:

Go

Search for a product

Product's Orders:

Options

Go

Search for pending orders

Sort the orders by total cost

More Reports

The Most Popular Product Ordered

The Average Number of Orders Per Day

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The Orders

Order ID	Order Time	Order Cost	Order Status	First Name	Last Name	Product	Quantity	Color	Features	Actions
1	2023-03-30 04:54:45	460	FULFILLED	Harry	Potter	Toxic Playboy	2	Rich Black	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED

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Order ID	Order Time	Order Cost	Order Status	First Name	Last Name	Product	Quantity	Color	Features	Actions
2	2023-03-30 07:07:27	120	PAID	Hermione	Granger	Poor College Kid	4	Rose Pink	Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED
20	2023-03-30 20:36:49	60	PAID	trung	duong	Poor College Kid	2	Rich Black	Short Sleeves	Delete PENDING FULFILLED PAID ARCHIVED
26	2023-04-05 17:25:12	80	PENDING	Jack	Lame	Poor College Kid	1	Winter White	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED
31	2023-04-05 17:42:48	180	PENDING	Messi	Oliver	Poor College Kid	6	Rich Black	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED
36	2023-04-06 20:24:40	420	FULFILLED	Tuan	Nguyen	Poor College Kid	20	Rich Black	Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
37	2023-04-06 20:32:40	60	PENDING	Tuan	Nguyen	Poor College Kid	1	Rich Black	Short Sleeves, and Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
40	2023-04-07 01:11:12	100	PENDING	Tung	Ngo	Poor College Kid	5	Rich Black	None	Delete PENDING FULFILLED PAID ARCHIVED
43	2023-04-07 02:36:41	60	PENDING	Hoang	Ech	Poor College Kid	2	Rich Black	Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
48	2023-04-09 17:22:09	80	PENDING	Rapoo	Shoujou	Poor College Kid	4	Winter White	None	Delete PENDING FULFILLED PAID ARCHIVED

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26	2023-04-05 17:25:12	80	PENDING	Jack	Lame	Poor College Kid	1	Winter White	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED
27	2023-04-05 17:31:46	620	PENDING	Hendrick	Conan	Toxic Playboy	3	Rich Black	Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
31	2023-04-05 17:42:48	180	PENDING	Messi	Oliver	Poor College Kid	6	Rich Black	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete FENDING FULFILLED PAID ARCHIVED
32	2023-04-05 17:43:30	780	PENDING	Yasuo	НаѕАКеу	Basic Alpha Male	12	Rose Pink	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED
33	2023-04-05 17:49:31	800	PENDING	Wxrdie	Aagirlfriendstealer	Toxic Playboy	4	Rose Pink	None	Delete PENDING FULFILLED PAID ARCHIVED
34	2023-04-05 17:53:18	780	PENDING	Yasuo	HasAKey	Basic Alpha Male	12	Rose Pink	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED
35	2023-04-05 18:10:49	780	PENDING	Yasuo	Yone	Basic Alpha Male	12	Rose Pink	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED
37	2023-04-06 20:32:40	60	PENDING	Tuan	Nguyen	Poor College Kid	1	Rich Black	Short Sleeves, and Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
38	2023-04-06 20:39:06	10060	PENDING	Tuan	Nguyen	Toxic Playboy	50	Rose Pink	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULPILLED PAID ARCHIVED
40	2023-04-07 01:11:12	100	PENDING	Tung	Ngo	Poor College Kid	5	Rich Black	None	Delete PENDING FULFILLED PAID ARCHIVED
43	2023-04-07 02:36:41	60	PENDING	Hoang	Ech	Poor College Kid	2	Rich Black	Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
45	2023-04-07 13:20:45	200	PENDING	Lmao	Nguyen	Basic Alpha Male	3	Rich Black	Short Sleeves	Delete PENDING FULFILLED PAID ARCHIVED
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Product's Orders: Options

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MAYBE Home Products Payment Form About Us Enhancements_1 Enhancements_2 Manager

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44	2023 04 07 13:13:35	200020	FULFILLED	Tunn	Nguyen	Toxic Playboy	1000	Rich Black	Detachable Hood	Delete PENDING [PULPILED] PAID [ARCHIVED]
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21	2023 03 31 18:53:23	3220	PAID	Lmao	Nguyen	Toxic Playboy	16 Rich Black		Detachable Hood	Delete PENDING [CULTILED] PAID [ARCHIVED]
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35	2023-04-05 18:10:49	780	PENDING	Yasuo	Yone	Basic Alpha Male	12	Rose Pink	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED
32	2023-04-05 17:43:30	780	PENDING	Yasuo	HusAKey	Baste Alpha Mule	12	Rose Pink	Short Sieeves, and Detachable Hood, and Inside Pocket	PULPILLED PAID ARCHIVED
27	2023-04-05 17:31:46	620	PENDING	Hendrick	Conan	Toxic Playboy	3	Rich Black	Detachable Hood	PULFILLED PAID AKCHIVED
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46	2023-04-07 18:15:32	240	PENDING	Tunn	Nguyen	Texte Playboy	1	Rich Black	Short Sleeves, and Detachable Hood	PULPILED PAID ABCHIVED
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45	2023 04 07 13:20:45	200	PENDING	Lmao	Nguyen	Basic Alpha Male	3	Rich Black	Short Sleeves	PULPILED PAID ARCHIVED
31	2023-04-05 17:42:48	180	PENDING	Messi	Oliver	Poor College Kid	6	Rich Black	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING [PH.PH.ED] [PAID [ARCHIVED]
2	2023 03 30 07:07:27	120	PAID	Hermione	Granger	Poor College Kid	4	Rose Pink	Detachable Hood, and Inside Pocket	POLITICED PAID [ARCHIVED]
30	2023-04-07 00:57:04	120	ARCHIVED	Albus	Dumbledore	Basic Alpha Malc	2	Winter	None	Duice PENDING [PELPILED] [PAID] [ARCHIVED]
40	2023 04 07 01:11:12	100	PENDING	Tung	Ngo	Poor College Kid	s	Rich Black	None	Delete MUNDING [POLITICED] [PAID] [ARCHIVED]
а	2023-03-30 17:34:09	80	ARCHIVED	Severus	Snape	Haste Alpha Mule	1	Winter White	Detachable Hood	Detect PENDING PERSONAL PAID ARCHIVED
26	2023 04 05 17:25:12	80	PENDING	Jack	Lame	Poor College Kid	ı	Winter White	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PUNDING FULFILLED PAID ARCHIVED
48	2023-04-09 17:22:09	80	PENDING	Rapoo	Shoujou	Poor College Kid	4	Winter White	None	Detete PENDING FILEHLED PAID ARCHIVED
43	2023-04-07 02:36:41	60	PENDING	Hoang	Ech	Poor College Kid	2	Rich Black	Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
37	2023-04-06 20:32:40	60	PENDING	Tuan	Nguyen	Poor College Kid	1	Rich Black	Short Sleeves, and Detachable Hood	POLIFICIONI PAID ARCHIVED
20	2023-03-30 20:36:49	60	PAID	trung	duong	Poor College Kid	2	Rich Binck	Short Sieeves	[Delete PENDING FILFILLED FAID ARCHIVED

Show All

Search for a name

First Name:

Last Name:

Go

Search for a product

Product's Orders:

Go

Search for pending orders

Sort the orders by total cost

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The Most Popular Product Ordered

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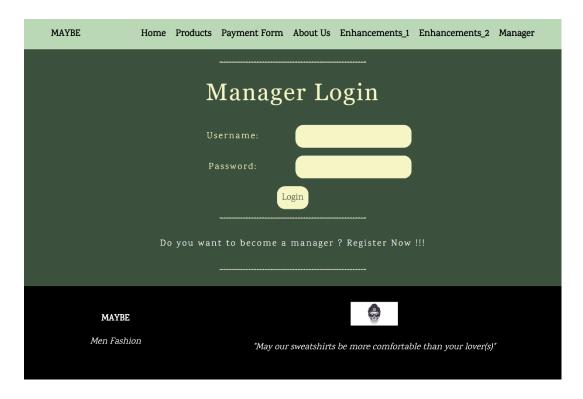
MAYBE Home Products Payment Form About Us Enhancements_1 Enhancements_2 Manager The Orders Features
Short Sleeves, and Detachable Hood, and Inside Pocket Color Rich Black Order Cost Order Status First Name Last Name Product Actions Order Time ARCHIVED Нагту Delete PENDING FULFILLED PAID ARCHIVED Rose Pink Detachable Hood, and Inside Pocket Poor College Kid 120 PENDING Delete PENDING FULFILLED PAID ARCHIVED

36	2023-04-06 20:24:40	420	FULFILLED	Tuan	Nguyen	Poor College Kid	20	Rich Black	Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
37	2023-04-06 20:32:40	60	PENDING	Tuan	Nguyen	Poor College Kid	1	Rich Black	Short Sleeves, and Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
38	2023-04-06 20:39:06	10060	PENDING	Tuan	Nguyen	Toxic Playboy	50	Rose Pink	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED

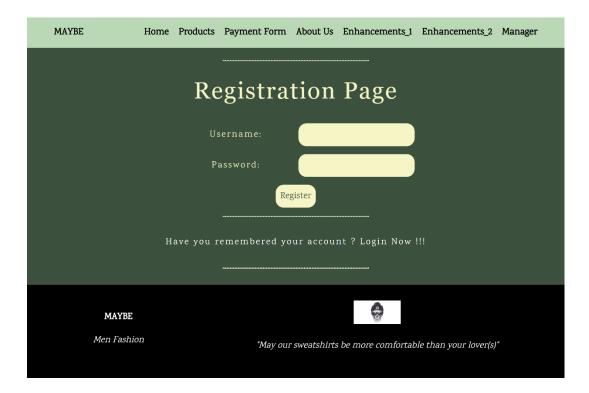
36	2023-04-06 20:24:40	420	FULFILLED	Tuan	Nguyen	Poor College Kid	20	Rich Black	Detachable Hood	Delete PENDING FULFILLED PAID ARCHIVED
38	2023-04-06 20:39:06	10060	PENDING	Tuan	Nguyen	Toxic Playboy	50	Rose Pink	Short Sleeves, and Detachable Hood, and Inside Pocket	Delete PENDING FULFILLED PAID ARCHIVED

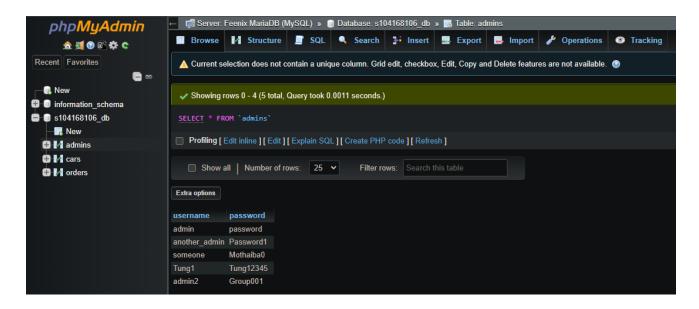
4. Enhancements:

If the manager wants to view the reports of all orders, he/she needs to log in:

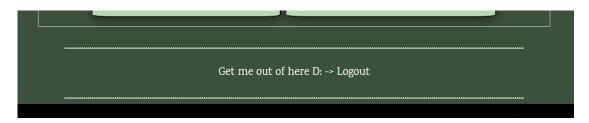


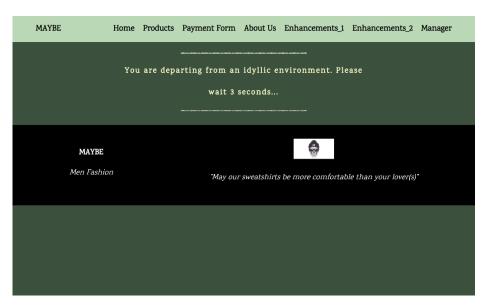
The manager can also choose to create a new account and this account will be stored in the database:



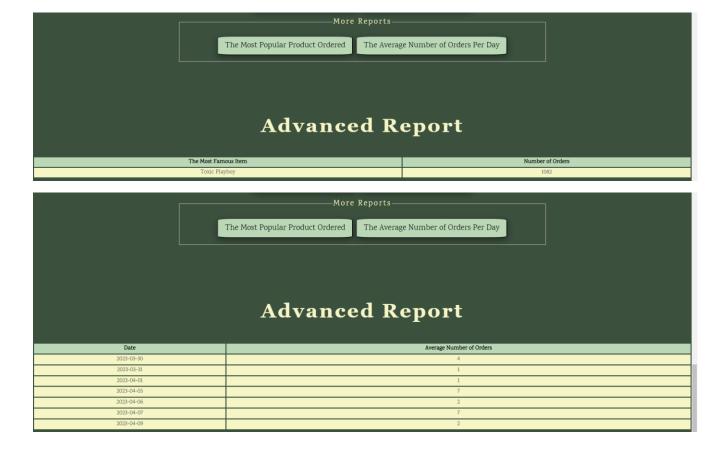


When the manager finishes his/her work, the logout button is at the end of the page:





Some advanced reports for the manager:



C. Technical details on the website development:

Regarding the frontend, which is the user interface that clients interact with while exploring and shopping on our website, was built using HTML, CSS in Assignment 1. During this project, one of our goals was to enhance the design, making it more intuitive, user-friendly, and convenient. We resolved minor issues from our previous design and proceeded to style the newly added pages including payment form, receipt page, manager page, login, logout, and register page. We still kept a consistent style throughout the pages, and we decided to change the table border for a more compact and modern appearance. Another element we looked into was the design of the buttons. We opted for a visually appealing and easy to use look for them.

Concerning the backend, PHP, which is a popular server-side scripting language, was employed to process user requests, manage data, and execute intended functions. Various PHP functions were used to meet the project's requirements. For example,

we applied the preg_match() and a custom function to validate user data inputs and then sanitize them before inserting into the database. PHP arithmetic operators were also employed to calculate the total cost of a customer's order.

Starting a PHP session was essential, as it allowed us to store necessary variables for use across multiple pages. This enabled us to provide a way for customers to correct their orders without re-filling forms and to generate an accurate receipt displaying the finalized order. Furthermore, we applied our understanding of PHP sessions and form handling to develop a security system, which will be elaborated on later in the section detailing my contributions.

Last but not least, MySQL, a popular open-source relational database management system (RDBMS), was utilized for storing and managing data on our online shopping website. We established two tables for orders and manager accounts and thoroughly tested queries in the database prior to implementing MySQLi (MySQL Improved), a PHP extension that simplify the interactions with MySQL databases.

By connecting to the feenix-mariadb server via the settings.php file and using MySQLi functions like mysqli_query() and mysqli_fetch_assoc(), we supported the Manager in querying order information, presenting results in an HTML table, and updating or deleting order statuses.

Additionally, we employed subqueries, which are queries nested within other queries, to provide the manager with advanced reports, such as the most popular product ordered and the average number of orders per day.

D. Highlight the key/innovative features of the website:

Considering our key features, it's essential to highlight the ease and user-friendliness of the form completion process. If a user makes an error, the form retains accurate inputs and only shows relevant error messages, enabling the user to concentrate solely on fixing incorrect input.

Moreover, we always take security into consideration. Customer credit card details are masked, and only managers with proper credentials can access all orders. To

prevent unintended actions, we redirect crucial PHP pages back to the payment form when a user attempts to access them directly via URLs.

III. Your Contribution:

To ensure seamless porting of our website to the testing environment, I utilized a PHP include file which is settings.php. This file contains connection variables for my MySQL database on the feenix-mariadb server.

After setting up this file, I was asked to build the manager.php page with another friend of mine whose name is Tuan. The most important part of my tasks was to construct accurate Mysql queries so that we could display a table of all the orders received from the users, along with the functions that helped the manager to sort out the orders he/she wanted to verify, and even updated the status of an order or deleted that order if it was in "pending" state.

Additionally, I introduced a security system for the manager page as an enhancement of our group's project, which comprised three components:

1. login.php

Managers need to provide their credentials to access all orders.

2. register.php

Managers have the ability to create their own accounts.

3. logout.php

Managers can easily log out with a single click.

To streamline the validation process, I established a default account with "admin" as the username and "password" as the password.

Finally, our group collaboratively tested all implemented functions, examining both desired data and error handling, to ensure our website's reliability and stability.

IV. Reflection and Discussion:

A. Reflections on our experience regarding professional purpose, teamwork, and effective communication in this project:

Regarding this project, we learned that teamwork holds immense significance. From the beginning, our group understood that it was crucial to establish the main objectives of the project. As a result, we prepared a clear outline of the goals and targets set for this further development of our website, addressing the areas that needed improvement from Assignment 1 and the required expansion of functionality.

Thanks to our collaborative mindset, we could work out our tasks effectively, avoid misunderstandings, and ensure that everyone understood their part in the project. Moreover, we organized several meetings each week so that we could keep ourselves updated and informed about the project's progress. This also provided us the opportunity to exchange valuable feedback with one another in order to resolve any issues or concerns.

B. Discussion on one of the web development-related issues:

While developing our online shopping website, it's essential to consider various aspects, including privacy, security, and commercial issues. My considerations for some of these aspects will be presented:

Firstly, It's vital to safeguard and secure users' personal information. For instance, the CVV code on customers' cards remains concealed, even on receipts, to minimize online fraud risks. Furthermore, users' orders are safely stored in our database, which can only be accessed through a manager account.

Secondly, input validation involves thoroughly examining any input provided by a user or application, preventing improper data from entering our database. In this project, server-side input validation was required to strengthen the website's security.

Finally, so as to accommodate our customers and maintain their interest, a user-friendly interface and smooth user experience are essential. Our team ensured that our layout was compact, fluid, and responsive across multiple devices.

V. Conclusion:

In conclusion, our Group 1 acquired a thorough understanding of this project's further development by reviewing this report. This report is a valuable resource not only for informed decision-making, aiming for constant enhancement, but also for the server-side programming techniques that we learned and practiced.

Besides, with our tutor's recommendations, we managed to adapt and learn from both our successes and setbacks. Our aspiration is for our online shopping website to sustain its growth and success in the years to come, as well as expand its market share and customer satisfaction.