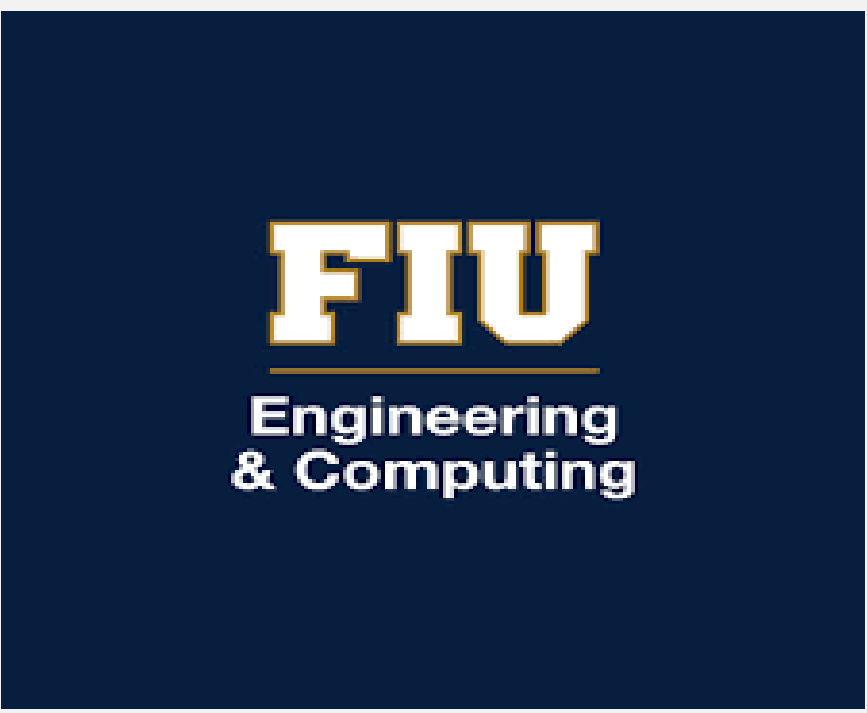




Engineering, Computing / Florida International University

Summer 2024 Senior Design Project

Design and Implementation of an E-commerce Database System

Student: Joshua Doucette

Product Owner: Robens Duvernay

Instructor/Faculty: Masoud Sadjadi, *Engineering/Computing*, Florida International University

INTRODUCTION

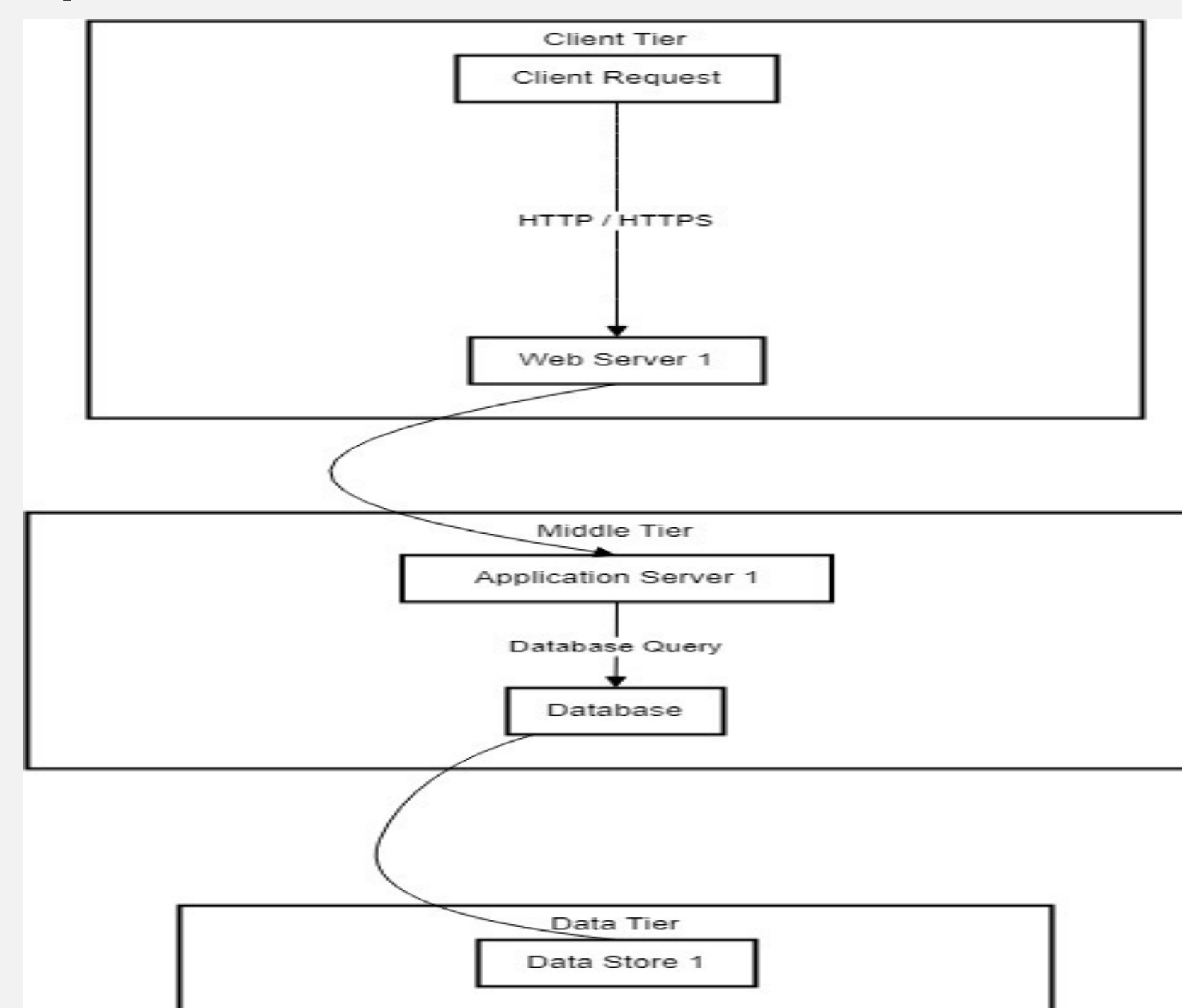
Background: Growing e-commerce businesses need efficient, scalable database systems to handle increasing transaction volumes and manage data accurately.

Objective: To develop a comprehensive e-commerce application that enables customers to effortlessly find products by brand, category, and name, and allows them to add items to their cart or wish list. The application will also provide an admin interface for modifying the store catalog and manage user authentication for secure access.

SYSTEM DESIGN

Architecture: MySQL, PHP.

Components: Front-end, Back-end, Database Server.



VERIFICATION

Testing Methods: Unit testing, Integration testing, user acceptance testing (UAT)

Results: Addressed issues, met performance criteria, validated system functionality.

For our eCommerce platform, we implemented a robust testing strategy to ensure both customer and admin functionalities were reliable across multiple platforms. We conducted dynamic verification throughout the development process and performed unit tests at each stage of feature implementation. Upon completing major use cases, we carried out integration tests to confirm that different components worked seamlessly together. A comprehensive system test was executed to verify that the platform functions correctly across all target devices and emulators. This thorough approach ensured that customers could effectively browse products, add items to their wishlist and cart, and make purchases, while admins could manage and edit the product catalog.

CURRENT SYSTEM

Issues: Current manual processes and basic database lead to slow performance, frequent errors, and inefficiencies.

Impact: Affects customer satisfaction, operational efficiency, and scalability.

User can be either the admin or a customer that will both need to register so they can login. Once logged in the customer can view products by name, category and brand. The customer can add products to their wishlist or cart.

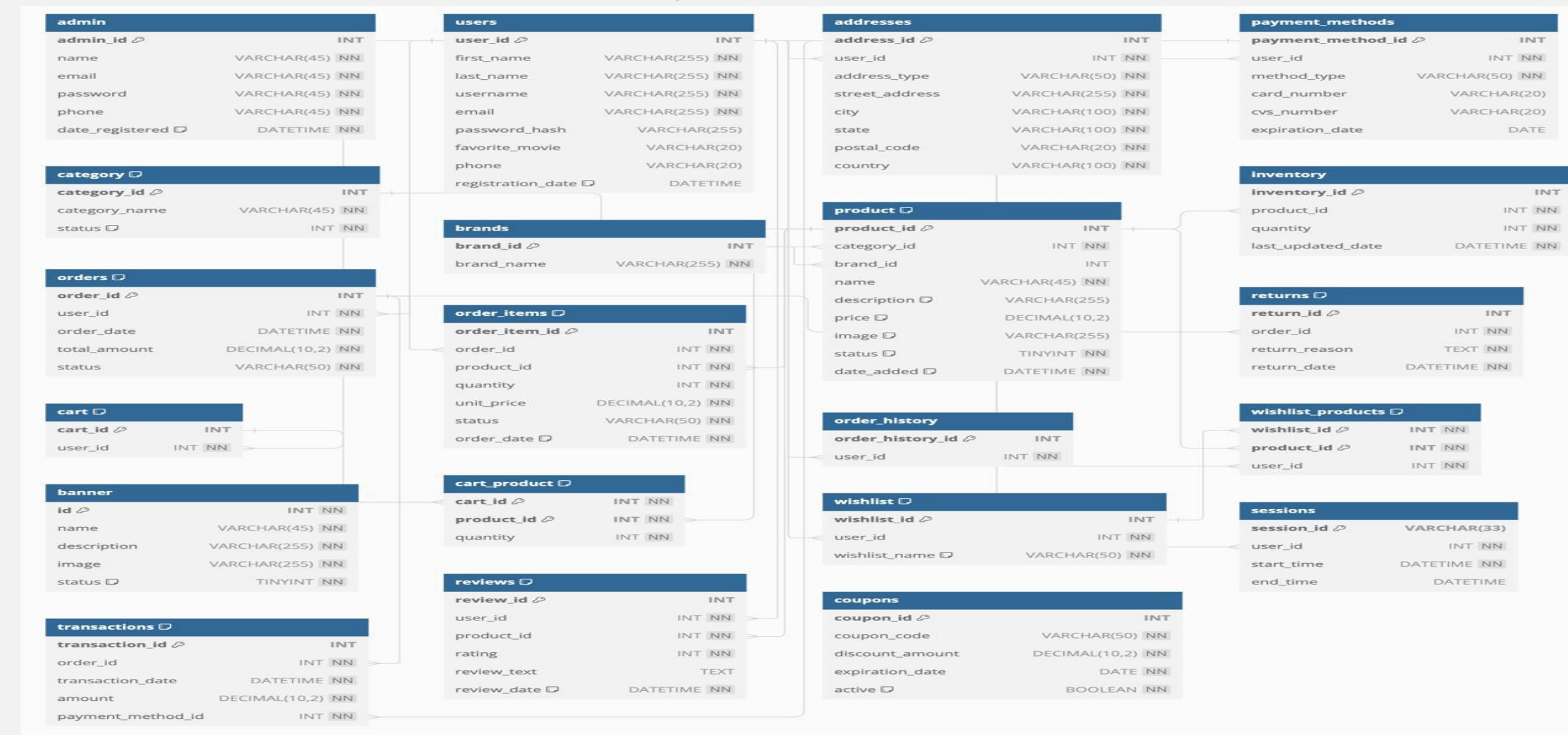
Once all desired products are added to cart user can then checkout which will submit a transaction with the saved billing information in their account.

The admin once logged in can update inventor, edit, add and delete brands, categories and products.

OBJECT DESIGN

Entities: Users, Categories, Products, Orders, Cart, and many more.

Relationships: Customers place Orders, Orders include Products, Inventory track Products.



SUMMARY

Summary: Successfully developed and implemented an efficient e-commerce database system.

Future Directions: Consider adding machine learning for recommendations and ongoing system optimization.

Our team successfully developed an advanced e-commerce application using PHP, MySQL, and JavaScript, focusing on customer interaction, comprehensive product management, and essential administrative functionalities. Looking forward, we aim to integrate AI technologies, such as market basket analysis, to enhance sales and provide advanced analytics through the admin portal. This strategic addition will empower administrators with deeper insights into customer behavior and preferences, ultimately optimizing decision-making processes. Our collaborative effort has resulted in a scalable, user-friendly platform that meets current needs while paving the way for future enhancements.

REQUIREMENTS

Functional: Handle orders, products, shipments, customer data, integrate with payments systems.

Non-Functional: Scalable, reliable, secure, and user-friendly.

To use this system following requirements must be met by the customer, and admin:

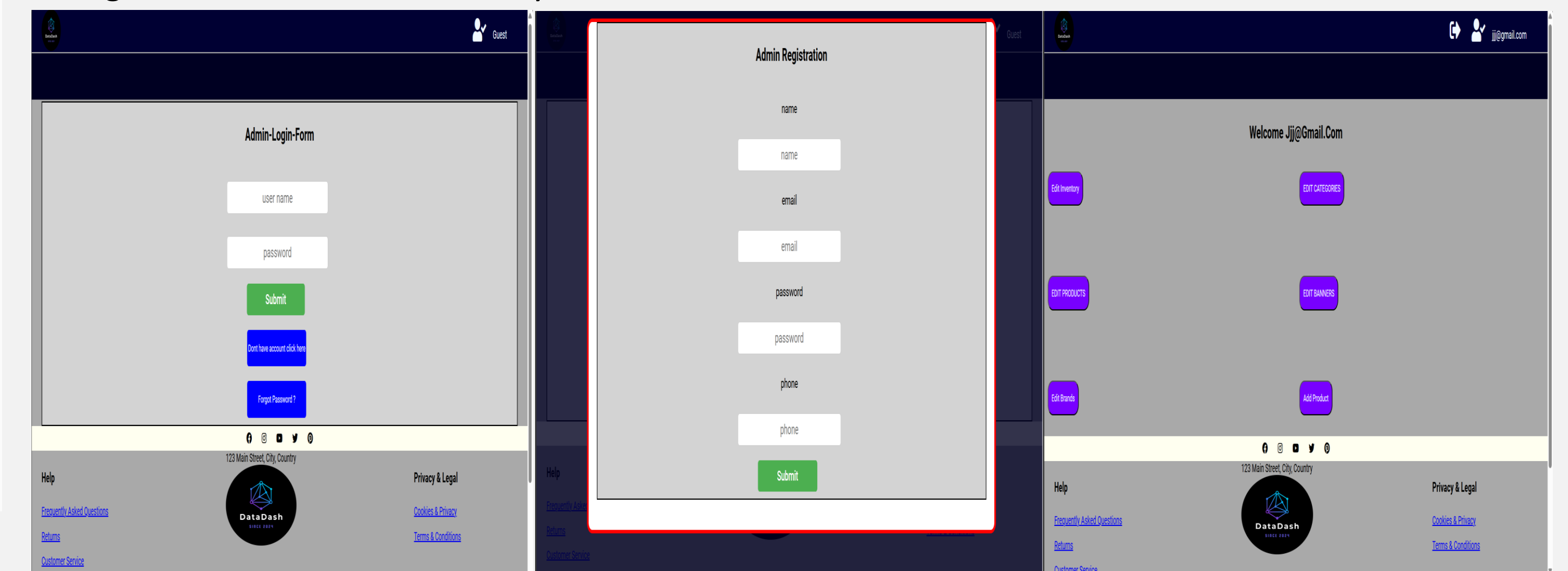
- User needs to be able to access the web from either a smart device or a pc
- Need to register to be able to access core functionality.
- Customer
- To make purchases will need billing information and shipping address

IMPLEMENTATION

Technologies Used: MySQL, PHP, JavaScript, HTML, CSS.

Key Steps: Database schema development, Backend and frontend creation, Integration and deployment.

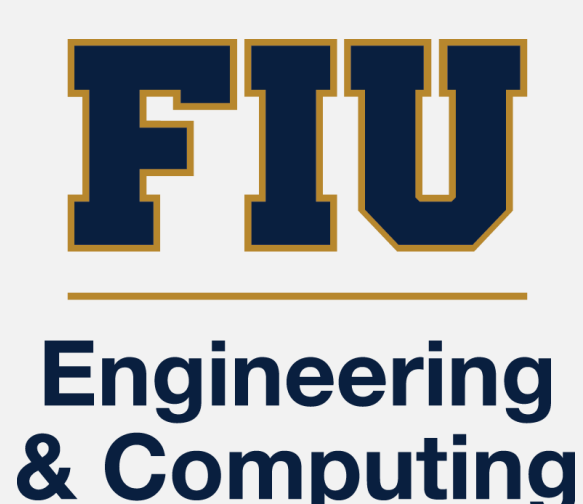
My significant contribution included designing and implementing the admin login portal and enhancing the catalog update functionalities. This involved creating secure authentication processes and intuitive interfaces for efficient management of product categories, brands, and inventory.



REFERENCES

Sources: YouTube, w3schools, Stack Overflow, and many more.

Credits: Aday Devora Delgado, Daniel Jesus Gamon, Joshua Michael Doucette, Natan Farhy, Robens Duverny



Acknowledgement

The material presented in this poster is based upon the work supported by Robens Duverny. I thank Robens Duverny for his assistance and mentorship that I received throughout the senior design project.