UNIVERSITY OF CALOOCAN CITY
COMPUTER ENGINEERING DEPARTMENT

Software Design

Progress Report No. 7

Designing the System

Submitted by:
Luminario, Venice Lou Gabrielle M.
Calica, Ljay L.
Gabuyo, Ivan Love D.
Enverzo, Kyle Andrey D.
Aquino, Jester J.
Tan, Charles Dominic S.
Elpedes, Glen Jorge A.

Instructor:
Engr. Maria Rizette H. Sayo

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I. Objectives

Objectives

In this section, the goals in this laboratory are:

- To describe the conceptual design and the technical design of the system
- To transform the requirements into a working system

II. Methods

Presentation Content:

The formal design review begins after the system design work reaches its completion point when the project solution needs to be tested against its project requirements. The review process consists of three distinct phases which directly match the design process's three main stages. The first stage is the Preliminary Design Review, where the conceptual design of the Clothing Brand Web System is presented to customers and users. The current stage tests whether the system meets all requirements by assessing product browsing capacity and inventory management functions and order processing capabilities. The gathered feedback from this review process helps confirm system concept alignment with both client business objectives and user needs.

The Critical Design Review serves as the second stage which focuses on assessing the technical design of the system. The developers and technical experts conduct an examination of the software architecture together with the selected technologies and data structures and system algorithms during this review. The design verification process aims to confirm the technical feasibility and operational efficiency and security measures and system scalability of the design. The team identifies all possible issues which could impact performance and security and maintainability, and they fix these problems before starting implementation work.

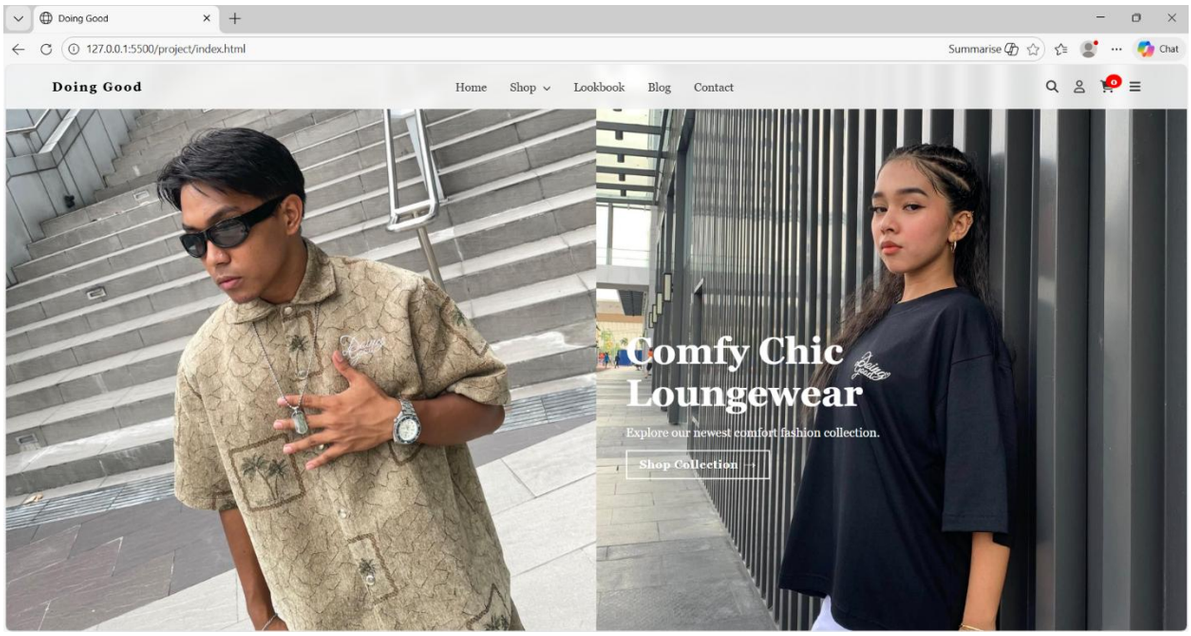

Figure 1 Front of the Website

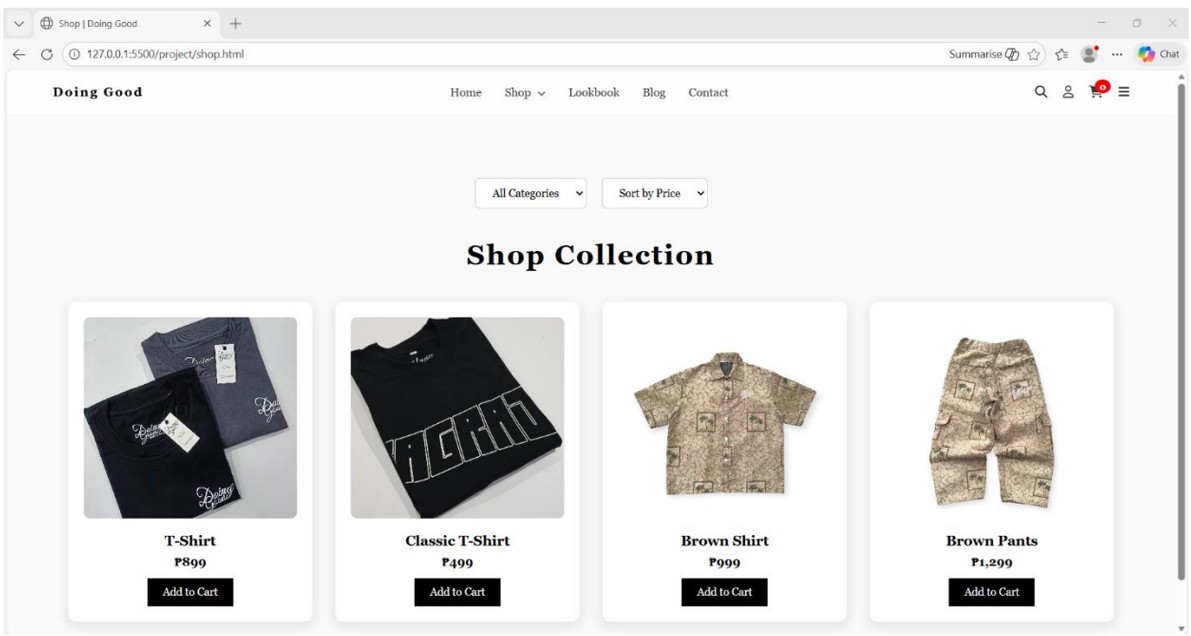

Figure 2 Inside of the Website

The final stage is the Program Design Review, which is conducted prior to full system development. The programmers test the completed design to confirm its completeness and its suitability for implementation in programming. The developers use this review to present their implementation problems and to explain system functions and to propose changes which will make the system more efficient and easier to use. The project achieves design review through three stages which help reduce development risks while establishing a user-centered and technically sound Clothing Brand Web System design before construction starts.

Hardware Configuration

The system does not require specialized hardware. It operates using standard devices and infrastructure:

- **Client Devices:** Desktop computers, laptops, tablets, and smartphones with web browsers
- **Server:** Standard web hosting server for backend services and database
- **Network:** Internet connection for client-server communication

Software Architecture

The system follows a **three-tier architecture**:

1. **Presentation Layer (Frontend)**
    - Developed using React
    - Handles user interaction, product display, and form validation
2. **Application Layer (Backend)**
    - Developed using Node.js and Express
    - Manages authentication, order processing, inventory updates, and business logic
3. **Data Layer (Database)**
    - Stores user accounts, product details, orders, and inventory records

This architecture improves maintainability, scalability, and security by separating system responsibilities.

User Interface Design

The user interface is web-based and accessible through modern browsers. It consists of:

- **Customer Interface:**
    - Product browsing and category filtering
    - User registration and login
    - Shopping cart and order placement
- **Administrator Interface:**
    - Product and inventory management
    - Order monitoring and updates
    - Secure access control

The interface follows **WCAG 2.1 Level AA** guidelines to ensure accessibility.

Data Structures

The system uses structured database tables, including:

- **Users Table:** Stores customer and administrator account information
- **Products Table:** Contains clothing details such as name, category, price, and stock
- **Orders Table:** Records customer orders and transaction details
- **Inventory Table:** Tracks stock levels and updates automatically after each order

Input and Output Requirements

Inputs:

- User registration details
- Product information entered by administrators
- Customer order and payment data

Outputs:

- Displayed product catalogs
- Order confirmations and summaries
- Inventory and sales reports for administrators

System Flow Description

1. The user accesses the website through a browser
2. Requests are sent from the React front end to the Node.js backend
3. The backend processes the request and interacts with the database
4. Processed data is returned to the front end for display

III. Conclusion

The progress report showed both the conceptual design and the technical design of the Clothing Brand Web System which will be used for online retail operations. The system design establishes its complete system architecture together with its interface components and database structures and operational procedures. The preliminary design review confirmed that the proposed design meets all client requirements for product management and inventory control and secure transactions and user accessibility. The approved design will serve as the foundation for the system's development and implementation.

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