VIETNAM NATIONAL UNIVERSITY, HO CHI MINH CITY

HO CHI MINH UNIVERSITY OF TECHNOLOGY

Individual Website Report

Web Programming

Keyboard E-commerce Website

Class: CC01 – CC02

Lecturer: Nguyễn Đức Thái

Student Name	Student ID
Nguyễn Lê Duy Khang	2252303

Table of contents

I. Introduction

The purpose of this project is to design and develop an e-commerce website named JK Keyboard, dedicated to selling keyboard-related products. The primary function of the website is to facilitate online shopping, providing a seamless experience for customers to browse, select, and purchase keyboards. The target audience includes individuals with an interest in keyboard-related products, such as gamers, office workers, and tech enthusiasts. By applying the Software Development Life Cycle (SDLC) methodology, this project aims to ensure a systematic approach to building a robust, user-friendly, and secure platform. This report outlines the entire development process, from planning to maintenance, highlighting the objectives, challenges, and solutions implemented.

II. Planning

1. Objective

The JK Keyboard website aims to provide a wide range of keyboard-related products while offering users an intuitive and efficient online shopping experience. The platform will serve as a one-stop shop for customers seeking mechanical, membrane, or wireless keyboards, catering to various preferences and budgets.

2. Time line

The development process is planned to span **4 weeks**, with each phase allocated specific timeframes to ensure timely completion.

3. Resources

The project will be undertaken by a single developer, relying on individual effort for design, coding, testing, and deployment. This constraint emphasizes the need for efficient time management and prioritization of critical features.

4. Technologies Used

- **Frontend**: HTML, CSS, JavaScript for creating an interactive and responsive user interface.
- **Backend**: PHP for server-side logic and handling user requests.
- **Database**: MySQL for storing product, user, and order data.

5. Risk

- **Resource Limitation**: With only one developer, managing a large influx of customers or maintaining the website during peak traffic could be challenging. A scalable hosting solution and automated processes will be implemented to address this risk.

III. Requirement Analysis

1. Functional Requirements

The website must include the following features to meet user and administrative needs:

- **Product Search:** Allow users to search for products using keywords.
- **Product Categorization:** Organize products into categories (e.g., Keyboard Kit, PreBuild, Keycap, Switch).
- **Sorting Options:** Display products sorted by name or price.
- **Related Products:** Show related products when a user views a specific item.
- **Shopping Cart Management:** Enable users to add, remove, or adjust product quantities in the cart.
- **Order Tracking:** Allow users to view the status of their orders.
- **Order Cancellation:** Permit cancellation of orders that have not yet been shipped.
- **Payment Processing:** Support secure online payments.
- **User Account Management:** Enable users to register, log in, and reset forgotten passwords.
- **Persistent Login:** Allow users to remain logged in for 7 days unless they log out.
- **Store Information:** Provide details about physical store branches and contact information.
- **Admin Capabilities:** Allow administrators to modify order details, add products, and approve or cancel orders.

2. Non-Functional Requirements

- **Security**: Ensure customer password is encrypted and protected.
- **Usability**: Design a user-friendly interface that is easy to navigate.
- **Responsiveness**: Ensure the website is fully functional across devices (desktops, tablets, and smartphones).

3. Target User

The website targets a broad audience, including anyone interested in purchasing keyboard-related products. This includes casual users, professionals, and hobbyists seeking high-quality keyboards for various purposes.

IV. Design

1. Interface Design

The JK Keyboard website will feature a clean and intuitive interface to enhance user experience:

•   **Main Page**: Consists of a header (with navigation links and search bar), a footer (with contact information and policies), and a dynamic body section that changes based on user selection
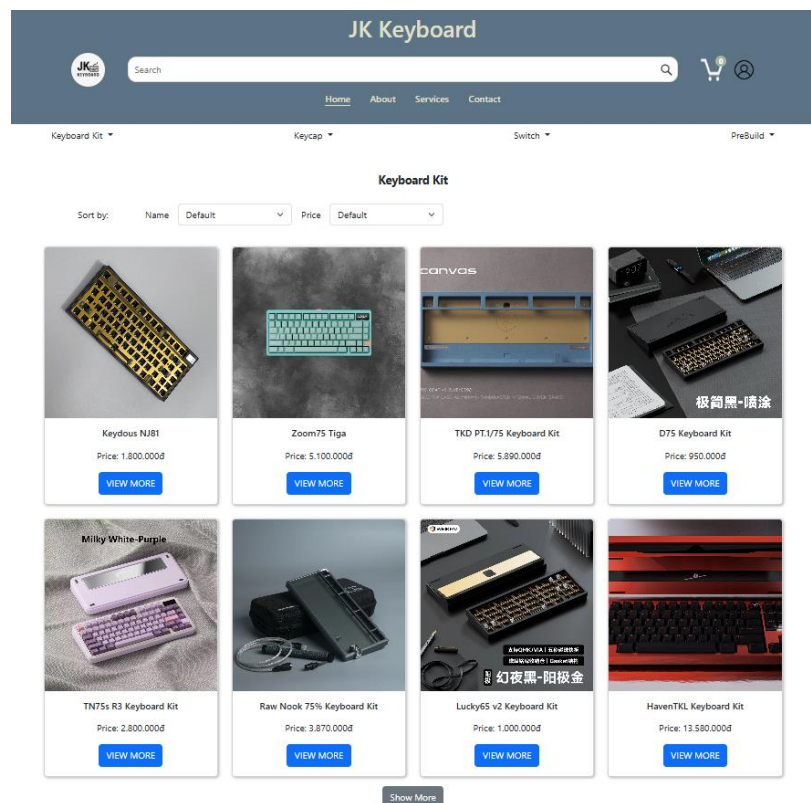

Figure 1Main Page

• **Product Page**: Displays the product image on the left and details (name, color, price, quantity selector) on the right. Below this, additional sections include product descriptions, related products, and promotional videos.
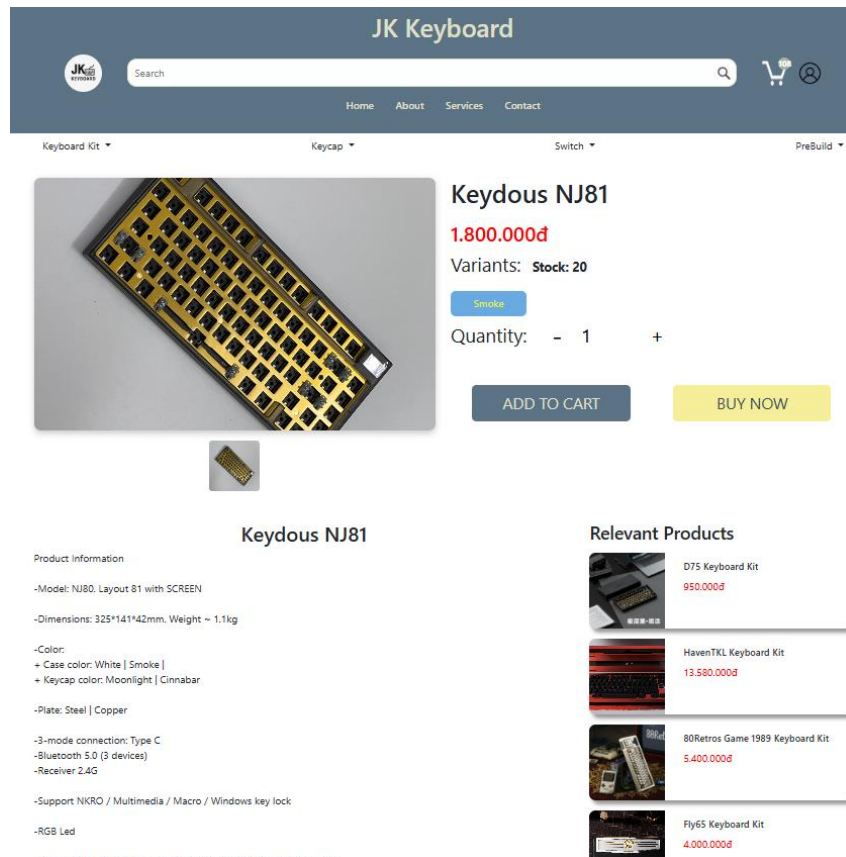
• **Cart and Order Pages**: Share a similar layout, with items listed in horizontal rows, showing product names, quantities, and prices.
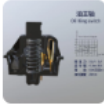
Your Cart

	Set Keycap MDA Virtual War 141 Basic Delete	Price: 790.000đ	
		Quantity: – 2 +	1.580.000đ
	Switch Linear Gateron Oil King Basic Delete	Price: 12.000đ	
		Quantity: – 100 +	1.200.000đ
	Switch Outemu Silent v3 Lime V3 Delete	Price: 4.000đ	
		Quantity: – 6 +	24.000đ

Figure 3 Cart View

Your Orders

2 Zoom75 Tiga Pink	10.200.000đ	**Order Information** • Order ID: **15** • Order Date: 2025-04-06 Time: 17:25:00 • Receiver Name: Khang Nguyen • Receiver Phone: 0935118607 • Receiver Address: 497 Hoa Hao • Shipping Method: Fast Shipping • Payment Method: Banking • Order Status: **Canceled** • Request: **No request**	**Price:** ~~10.260.000đ~~

Figure 4 Order View

• **Login Page**: On large screens, the page is split into two sections—an image on the left and input fields (username, password) on the right.

Figure 5 Login Page

- **Checkout Page**: Features three columns:

  - Recipient information (name, address, phone).

  - Shipping and payment options.

  - Order summary (items, total cost).

Figure 6 Check out Page

2. Database Design

The database is structured to store and manage all necessary data efficiently:

- **User Table**: Stores customer details (name, address, phone number, username, hashed password).
- **Product Table**: Contains product information (name, category, description, price).
- **ProductVariant Table**: Tracks variants (e.g., colors) and corresponding inventory levels.
- **User_Tokens Table**: Stores login cookies for persistent sessions.
- **Password_Reset_Token Table**: Stores one-time passwords (OTPs) for password resets.
- **Orders Table**: Records order details (order ID, user ID, status, total cost).
- **OrderProduct Table**: Links orders to specific products and quantities.
- **CartProduct Table**: Tracks items in each user's shopping cart.

3. System Architecture

- **Frontend**: Built using HTML for structure, CSS for styling, and JavaScript for interactivity.
- **Backend**: Powered by PHP to handle server-side logic, such as processing user requests and managing database interactions.
- **Database**: MySQL provides a relational database for efficient data storage and retrieval.

V. Development

1. **Tools and Technologies**

The website was developed using open-source tools and frameworks to ensure cost-effectiveness and flexibility. Visual Studio Code served as the primary code editor, with XAMPP used for local server testing. Git was employed for version control to track changes and ensure code integrity.

2. **Development Process**

The development was divided into modules to streamline the process:

- **Frontend Development**: HTML/CSS was used to create static pages, followed by JavaScript to add interactivity (e.g., dynamic product filtering, cart updates).
- **Backend Development**: PHP scripts were written to handle user authentication, product management, and order processing.
- **Database Integration**: MySQL queries were implemented to store and retrieve data, ensuring seamless communication between the frontend and backend.
- **Module Integration**: All components were integrated to form a cohesive system, with APIs connecting the frontend to backend services.

VI. Testing

1. **Functional Testing**
2. **Security Testing**

Verified that passwords are hashed before being stored in the database

username	password
admin	$2y$10$45.EtBYhAHnTNVjBlJR8DOu5u8HKyyWXUwl567dqdlV...
User1	$2y$10$qKZdWx46kXXg2BeN/DJ7vu/gCMHTyxU2B1rHWBAyPbA...
user2	$2y$10$SNM46T/AyGNeYrHvB.3zye4Nzr5nV7Y3bKJ8TZ0pXEk...
User3	$2y$10$TdPum73lcZFoZTd049v2o.22IVV1yCp/1Hj2vbg5SzN...

Figure 27 Password hashed before save to Database

3. Interface Testing

Ensured the interface is responsive on small-screen devices (e.g., smartphones) by testing with tools like Chrome DevTools.
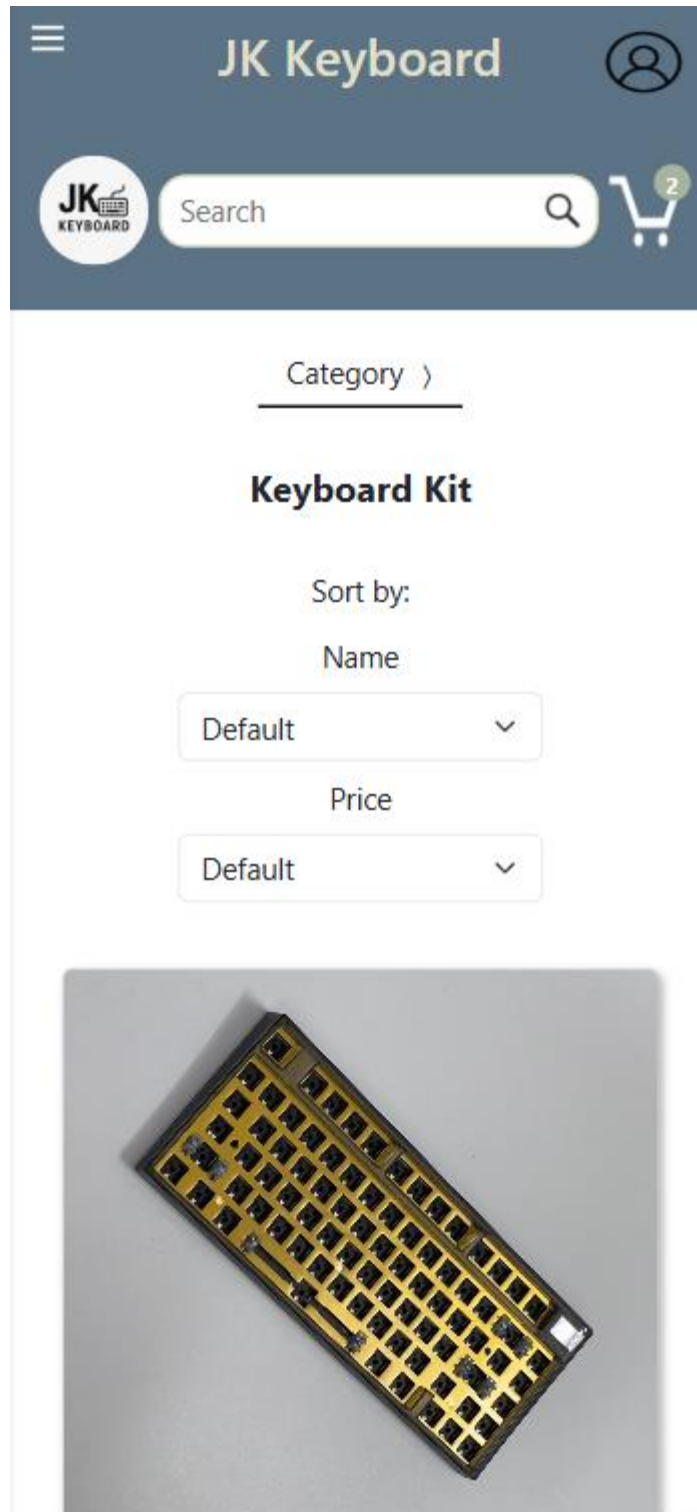
Figure 28 Home page in phone view

Category

×

Keyboard Kit ⌄

Keycap ⌄

Switch ⌄

PreBuild ⌄

Figure 29 Category in phone view
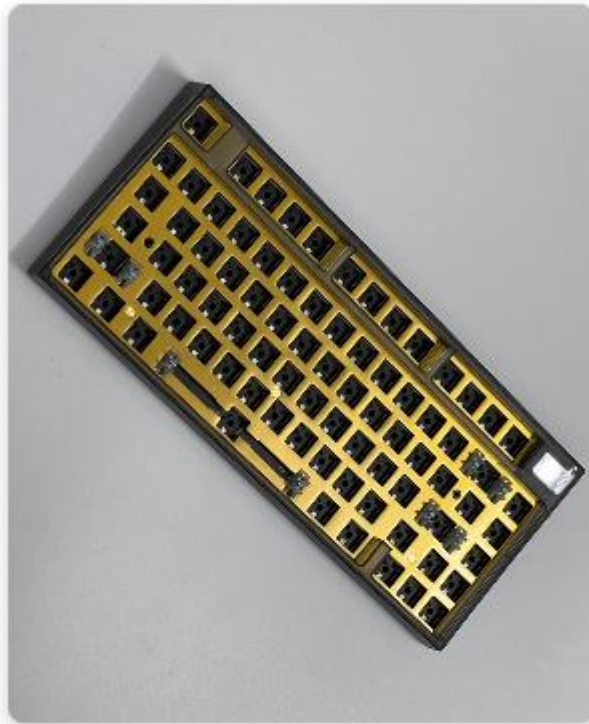
Keydous NJ81

1.800.000đ

Variants: Stock: 20

Smoke

Quantity: –   1   +

Figure 30 Product view in phone view

Figure 31 Cart view in phone view

Receiver Information

Full Name
Khang Nguyen

Phone
0935118607

Address
497 Hoa Hao

Special request (Optional)

Receiver Information

⦿ Fast Shipping   **60.000đ**
Receive in 2-3 days
Estimated: Mon, 07/04/2025

○ Normal Shipping   **30.000đ**
Receive in 5-7 days
Estimated: Thu, 10/04/2025

Figure 32 Check out page in phone view

About Us

JK Keyboard is a store specializing in mechanical keyboards and related accessories. With a mission to deliver the best experience to users, we are committed to doing our best to ensure every product reaches customers in the most perfect condition.

JK Keyboard was established in 2019, originally known as Khang MK - a place that provided various types of keycaps and keyboards manufactured in China. In early 2022, it was rebranded as JK Keyboard with the goal of becoming a leading supplier in Vietnam for products such as mechanical keyboards, switches, keycaps, springs, stabilizers, and other related accessories.
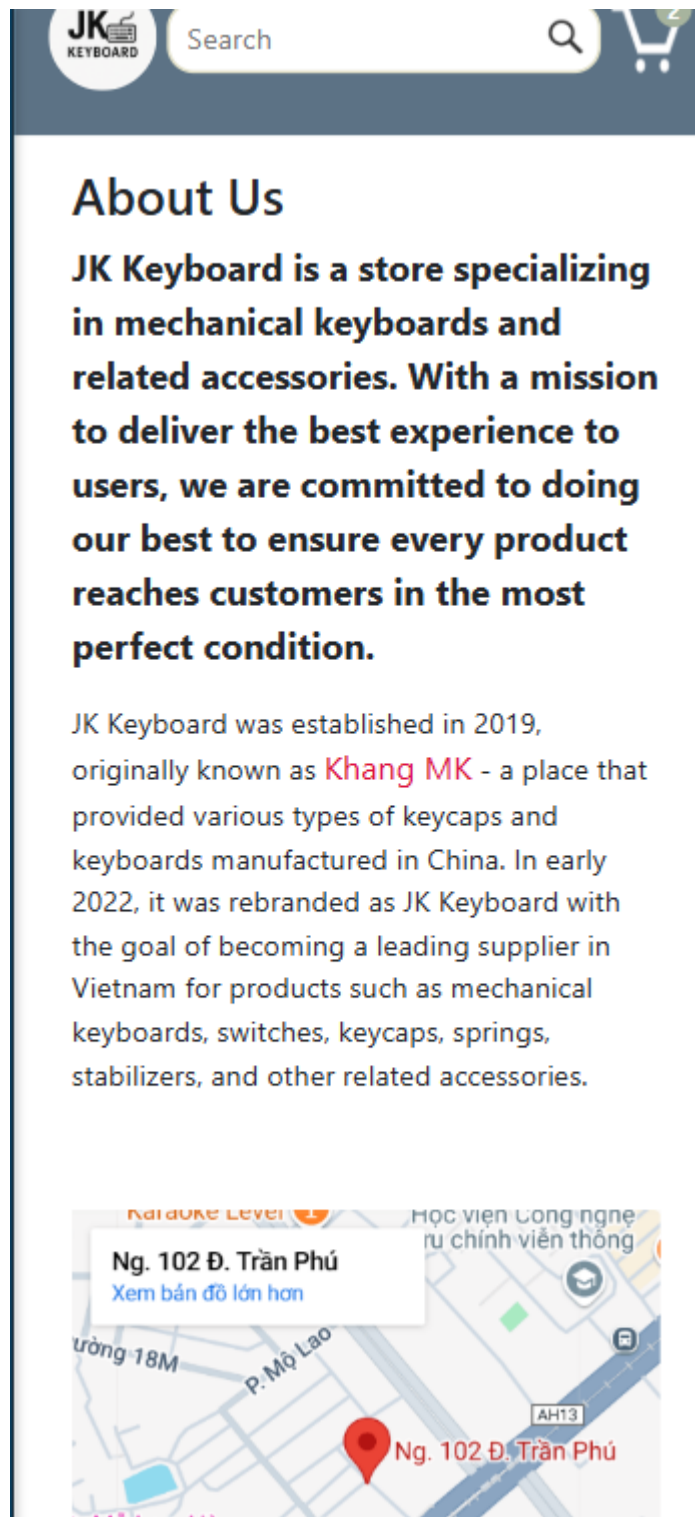
Figure 33 About Page in phone view

VII. Deployment

The website is currently running on localhost only, will be deploy on a hosting platform with a registered domain name in the future

VIII. Maintainance

1 Ongoing Maintenance

- **Updates**: Regularly add new products and update inventory levels.
- **Bug Fixes**: Address any issues reported by users, such as broken links or payment errors.

2 Customer Support

In the future, a chatbot may be integrated to handle common questions.

3 Long-Term Plan

To remain competitive, the website will be enhanced with features like personalized product recommendations and loyalty programs. Scalability will be improved by migrating to a cloud-based hosting solution if traffic increases significantly.

IX. Conclusion

The development of the JK Keyboard e-commerce website successfully followed the SDLC methodology, resulting in a functional and user-friendly platform. By addressing key requirements such as product search, secure payments, and responsive design, the website meets its objective of providing an efficient shopping experience for keyboard enthusiasts. Future improvements, such as advanced analytics and additional features, will further enhance the website's value. This project demonstrates the effectiveness of the SDLC in delivering a high-quality software product within a constrained timeline.