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**WEB APPLICATION DEVELOPMENT – IT093IU**

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**TRUE – WELLNESSWAY**

**A Website to Sell Fitness & Workout Equipments**

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## **CHAPTER 1: ACKNOWLEDGMENTS**

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This project would not have been possible without their guidance and the support of everyone involved. We are incredibly grateful for the opportunity to work on this project and look forward to applying the knowledge and skills we have gained to future endeavors. We eagerly anticipate the opportunities and challenges that lie ahead.

Finally, we dedicate this work to those who believe in the power of collaboration and teamwork. This report exemplifies what can be achieved when diverse perspectives and ideas are united toward a common goal. We hope that our efforts inspire others to pursue innovation and discovery in their own pursuits.

## **CHAPTER 2: EXECUTIVE SUMMARY**

### **2.1. Overview**

The fitness and workout equipment industry is experiencing significant growth as more individuals prioritize health and wellness [1]. This web focuses on analyzing the key trends, innovations, and market dynamics shaping this vibrant sector. With a wide range of equipment options catering to



both commercial gyms and personal home setups, the market continues to evolve to meet diverse consumer needs.

A variety of fitness equipment categories are covered, including strength training machines, free weights, cardio equipment, and essential workout accessories like resistance bands, yoga mats, and stability balls. Increasingly, multifunctional and compact equipment is gaining popularity, appealing to consumers seeking efficient and space-saving workout solutions.

Technology plays a pivotal role in the industry, with smart fitness devices incorporating features such as real-time performance tracking, virtual coaching, and seamless connectivity with fitness apps. These innovations are reshaping the workout experience, making it more interactive and personalized.

Sustainability is another critical focus area, as manufacturers work to meet consumer demand for environmentally friendly products. This involves the use of recyclable materials, energy-efficient technologies, and sustainable production practices, aligning with global trends toward eco-conscious consumption.

Additionally, the competitive landscape showcases the efforts of established brands and new entrants to innovate and differentiate their offerings. By addressing challenges such as affordability, durability, and accessibility, the market continues to expand and adapt to changing consumer preferences.

Through its detailed exploration of the market, this web provides valuable insights for stakeholders, helping them navigate opportunities and challenges in the fitness and workout equipment industry.

## 2.2. Objectives and Scopes

### 2.2.1. Objectives

**Expanding the Customer Base:** In today's competitive business landscape, growing the customer base is essential for companies. Offering additional value-added services while ensuring product and service quality can help achieve this goal. This is particularly important for e-commerce businesses, as it significantly contributes to increased sales and overall profitability.

**Improving Customer Service:** E-commerce businesses operate around the clock, allowing customers to access product support anytime. By presenting comprehensive information about

products and services, customers can make more informed choices. The availability of online services enables companies to provide superior customer service, which is another key objective of e-commerce. Focusing on enhanced customer service allows businesses to capture a larger share of the market.

**Strengthening Business Relationships:** E-commerce serves as a vital platform for fostering stronger connections between businesses and their customers. By facilitating direct interaction, it improves communication and expands the company's market reach. This objective of e-commerce plays a critical role in building and maintaining long-term business relationships.

**Increasing Online Store Sales:** To boost sales in an online store, businesses must prioritize objectives such as improving conversion rates. A higher conversion rate indicates that more visitors are making purchases after navigating the site. This can be achieved by creating engaging content and ensuring a user-friendly website design. Another goal is to increase the average order value, which can be accomplished by offering exclusive discounts, promotions, and a positive shopping environment. Such strategies not only encourage repeat purchases but also enhance overall sales performance.

**Enhancing Customer Satisfaction:** Achieving customer satisfaction involves meeting customer expectations, addressing their needs, and minimizing complaints. Ensuring accurate product information, providing instructional videos, and promptly responding to inquiries are key aspects of this goal. By focusing on delivering a positive experience, e-commerce businesses can effectively meet consumer demands and build loyalty.

**Reducing Shopping Cart Abandonment:** One common challenge for e-commerce businesses is shopping cart abandonment. Strategies to tackle this include simplifying the return and refund processes, making it easier for customers to navigate the website, and ensuring a seamless shopping experience. By adopting these practices, businesses can increase customer retention and reduce abandonment rates.

**Improving User Experience:** A top priority for e-commerce websites is to deliver an exceptional user experience. This involves ensuring that the site is easy to navigate, functional across desktop and mobile devices, and visually appealing. Additionally, providing timely support and assistance

enhances the customer journey. By optimizing the user experience, businesses can boost conversion rates and encourage repeat customers to return to their online store.

### 2.2.2. Scope

**Electronic Data Transfer:** Digital data exchange plays a crucial role in modern business transactions. These exchanges occur when electronic orders are placed, when product and service flows are coordinated, or when interactions happen between individuals or organizations. Such data transfers streamline communication and operational efficiency.

**Technology-Driven Transactions:** E-commerce, or electronic commerce, refers to conducting business using technological tools. The most common interface for consumer interaction is the web browser, though other technologies, such as automated teller machines (ATMs), also fall within this category. Before e-commerce's rise, all business transactions relied solely on human interaction. Technology has since transformed how businesses interact with customers and marketplaces.

**Facilitating Trade:** E-commerce facilitates trade within and between businesses through computer-based activities. These activities, whether intra-organizational or inter-organizational, enhance market trade directly or indirectly. This includes internal operations, processes, and systems, as well as external interactions with customers, partners, competitors, and markets. E-commerce has reshaped how businesses function and engage with external entities.

**Enhancing Customer Experience:** Providing a high-quality customer experience, both online and offline, is critical to the success of an e-commerce business. To create a positive online shopping experience, several strategies can be employed. Ensuring fast website loading times (preferably under three seconds) is essential to minimize user frustration and prevent site abandonment. User testing can uncover and address accessibility issues, while intuitive navigation enhances usability. Elements like call-to-action buttons, messaging, product pages, and checkout processes should undergo A/B testing to boost user engagement and search engine optimization (SEO). High-resolution product images are vital, as they significantly impact purchasing decisions. Detailed and authentic product descriptions build customer trust, while instructional blog content can help guide purchasing decisions. Encouraging user reviews and ratings also enhances credibility and provides valuable insights for potential buyers. By implementing these strategies, e-commerce platforms can improve customer satisfaction and foster loyalty.

### 2.3. Key Achievements and Milestones

**Enhancing the Shopping Experience:** True-WellnessWay ensures a seamless and intuitive shopping journey, enabling customers to easily search, filter, and discover high-quality fitness products tailored to their needs. This streamlined experience boosts customer satisfaction and encourages repeat purchases.

**Wishlist Feature:** The Wishlist tool allows visitors to bookmark their favorite products before creating an account. This simplifies the registration process and provides a convenient way for users to save and revisit desired items.

**Administrative Achievements:** The platform successfully launched a new fitness product line, contributing to revenue growth. The payment service ensured secure and efficient transaction processing, handling a high volume of transactions without breaches. This commitment to safeguarding financial operations built trust among users and reinforced the platform's reliability.

**Gathering User Feedback:** After purchasing fitness products from True-WellnessWay, customers can leave reviews for individual items. The administrator received extensive feedback from fitness enthusiasts, highlighting both satisfaction and dissatisfaction with product quality. This feedback not only enhanced the credibility of the products but also helped True-WellnessWay improve the quality of its offerings, attracting new customers in the process.

### 2.4. Summary of Project Outcomes

The fitness-focused e-commerce platform has established itself as the go-to destination for fitness enthusiasts and business owners seeking a comprehensive solution for their maintenance and product needs. Its extensive product range, integrated services, and intuitive interface ensure a seamless user experience. The platform has fostered a growing community of satisfied fitness owners and service providers, contributing to significant user engagement and adoption.

E-commerce involves a wide array of activities, including emailing, franchising, engineering, and online shopping. Partners collaborate to manage product and service delivery as well as digital data exchanges, such as electronic orders. Technology-enabled interactions, like those provided by automated teller machines (ATMs), are vital to the e-commerce ecosystem. Efficient supply chain management, supported by integrated databases and electronic data interchange (EDI), enhances supplier coordination, accounting, and financial planning, streamlining business operations and

market trade between organizations. A standout customer experience remains a critical factor in e-commerce success.

E-commerce platforms aim to achieve several goals, such as expanding their customer base, improving customer service, fostering long-term client relationships, boosting revenue by increasing average order values and conversion rates, building brand awareness, driving website traffic, and enhancing customer satisfaction. They also strive to minimize cart abandonment and encourage repeat purchases. Additionally, online retailers focus on delivering an outstanding user experience by ensuring compatibility across devices and providing exceptional customer support. Collectively, these strategies drive the growth and success of e-commerce businesses.

## CHAPTER 3: INTRODUCTION

### 3.1. Goal

#### 3.1.1. Customer Service

**Clear Contact Information:** Ensure that your website prominently displays all necessary contact details, including customer service links, phone numbers, and email addresses. Make it convenient for customers to reach out with questions, concerns, or inquiries.

**Responsive Customer Support:** Address customer inquiries and resolve their issues promptly. Strive to deliver outstanding customer service across all channels, including social media, email, and phone.

**Order Updates and Notifications:** Keep customers informed about the status of their orders through timely electronic notifications. Notify them when their orders are confirmed, shipped, and delivered, and provide tracking numbers or links for easy shipment monitoring.

**Hassle-Free Returns and Exchanges:** Streamline your return and refund processes to ensure customer satisfaction. Clearly communicate your return policy, offer a straightforward return process, and process refunds promptly when necessary. Enable customers to initiate returns or exchanges easily through their accounts or by contacting customer service.

**Encouraging Customer Feedback:** Actively request feedback from customers about their experiences with your products and services. After purchases, encourage them to leave ratings and

reviews. Use this valuable feedback to enhance your product offerings, services, and overall customer experience.

**Commitment to Improvement:** Regularly assess customer satisfaction levels, response times, resolution rates, and feedback. Identify areas for improvement and take proactive measures to optimize customer service performance.

**Intuitive User Interface:** Develop and maintain a user-friendly interface that works seamlessly across various devices and operating systems. Ensure the design meets the preferences and needs of a diverse user base.

**Diverse Product Range:** Offer an extensive and appealing selection of products tailored to different types, price ranges, and customer needs. Ensure the product catalog remains comprehensive and attractive to a wide audience.

### **3.1.2. Platform Performance**

**Enhancing Transactions and Visitor Experience:** Optimizing the performance of a furniture e-commerce platform is essential to improving the online shopping experience, boosting search engine rankings, and accommodating increased traffic. The project prioritizes performance enhancements, including reducing page load times to under three seconds by optimizing scripts, images, and other components. Additionally, the platform aims to improve transaction processes for secure and seamless customer interactions while increasing website traffic.

**Ensuring Stability and Scalability:** Build and expand the online store to handle a growing user base, product catalog, and transaction volume. The system must maintain stability and performance even during periods of high demand or traffic surges. Implement solutions such as horizontal scaling, load balancing, and a robust database architecture to ensure scalability and reliability.

**Optimized Filtering and Search:** Offer an advanced search feature that allows users to easily find their desired furniture products. Enhance search queries using indexing techniques and provide relevant filters to refine results. These improvements enhance the user experience and increase conversion rates.

**Streamlining the Checkout Process:** Simplify the checkout process to boost conversion rates and minimize cart abandonment. Reduce the number of steps required to complete a purchase, optimize

payment gateway integration, and speed up database searches. Ensure the process is both user-friendly and secure.

**Data Protection and Security:** Strengthen security measures to safeguard customer information, including personal and payment data. Employ encrypted communication channels, implement regular security updates, and ensure secure data transmission to protect user privacy and maintain trust.

### 3.2. A Brief Overview of The Report's Structure

The report is organized into fifteen chapters, covering various aspects of the fitness-product e-commerce platform project. These chapters include a summary, introduction, project planning, requirements analysis, design and architecture, development, testing and quality assurance, deployment and implementation, user documentation, project evaluation, lessons learned, conclusion, appendices, references, and acknowledgments. Each chapter provides an overview, objectives, status updates, system architecture, member contributions, customer requirements analysis, and outcomes related to a specific area of the project.

The appendices offer additional references and resources, while the final chapter summarizes the content of all previous chapters. The references section credits the sources of data, information, and resources used in the report, ensuring transparency, credibility, and intellectual integrity. The acknowledgments section expresses gratitude to the individuals and organizations whose contributions were instrumental to the success of the True-WellnessWay project.

## CHAPTER 4: PROJECT PLANNING

### 4.1. Project Management Methods

#### 4.1.1. Agile

A specialized and adaptable approach to software development is provided by the agile management methodology to enterprises [3]. Agile has had a significant influence on many big firms' and enterprises' project management methodologies, helping them deliver products to consumers as rapidly as possible via its interactive working process, integration, and continuous feedback loop.



Because of its focus on the customer, the Agile technique is used extensively. Consumers come first because they provide developers with continuous opportunities to fully understand and meet their needs. Moreover, Agile promotes the ongoing creation of products or software that are beneficial and offers prompt feedback by putting it through testing as new features become available [2]. It's important to note that Agile fosters more collaboration and teamwork. A clear and consistent direction has been set from the beginning, allowing team members to do the task with ease and in line with the objectives.

#### **4.1.2. Scrum**

Using a set of values, principles, and practices, Scrum is an agile project management framework that helps teams plan and organize their work [4]. Scrum helps teams to self-organize while solving a problem, learn from past mistakes, and evaluate their successes and failures in order to keep getting better. This is akin to the way a rugby team (whose name it takes from) gets ready for a major match.

Scrum helps eliminate pointless steps so that you can focus on the ones that are critical to meet client needs. Inspection, adaptability, and transparency are the three primary parts of an empirical process management paradigm.

**Transparency:** Using Scrum successfully requires transparency in processing information. Information could include customer requests, work-in-progress, the product's vision, and further challenges. From then on, all members, regardless of work, have access to all the information needed to make decisions that would boost output.

**Inspection:** As tasks in the Scrum process get closer to the objective, they need to be regularly reviewed to identify any unexpected abnormalities. Inspection frequency shouldn't be unduly high to avoid interfering with work. Scrum will keep becoming better when competent people do inspections at key points in the project.

**Adaptation:** One reason Scrum is so adaptable is because it offers a high degree of flexibility. Based on ongoing and transparent information from the inspection and work process, Scrum may result in positive enhancements that ultimately contribute to the project's success.

Scrum is our choice because it improves software quality and is easy to use and comprehend. Shorten software release cycles to enable consumers to begin utilizing the product more quickly. Encourage unity among team members and optimize the development team's output and endeavors. Increase



your return on investment. Boost customer satisfaction scores Efficient project administration and continuous improvement When making things, lessen the risks.

## 4.2. Project Timeline and Milestones

### 4.2.1. Gantt Chart

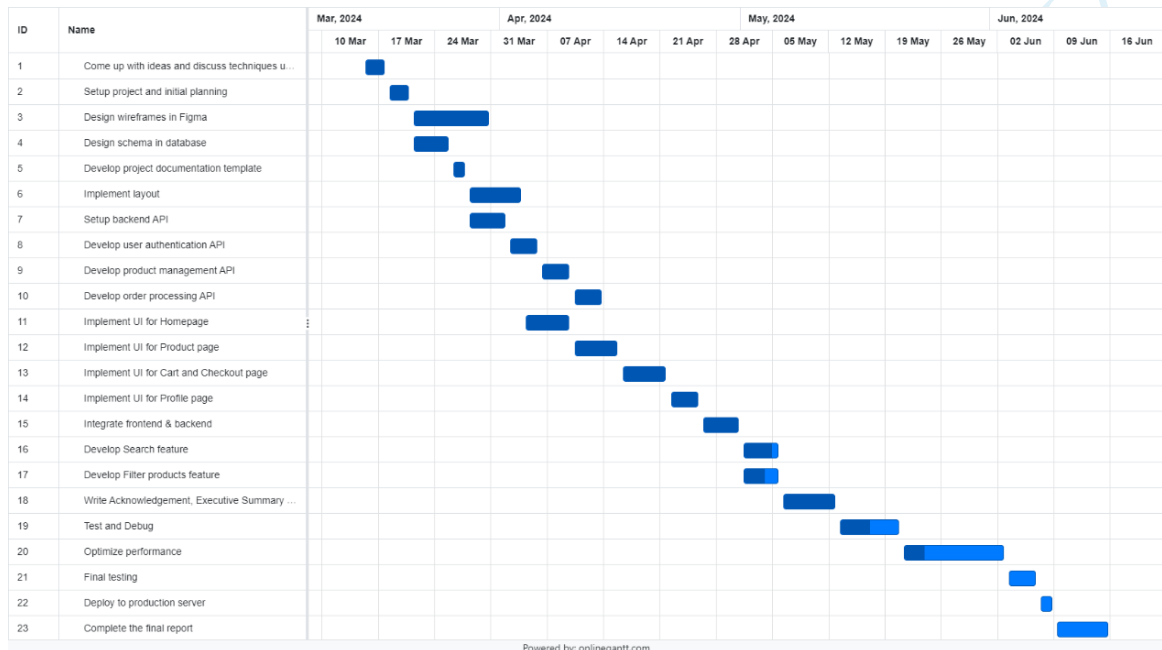


Figure 1: Gantt Chart

Our team has created the Gantt Chart below to illustrate all the major tasks involved in the software development process. The chart's little bars show how long it may take to do that work at its longest. Specifically, the completed work is represented by the dark blue, while the ongoing, unfinished labor is represented by the remaining light blue.

### 4.2.2. Task Divisions

No.	Task	Assignee(s)	Reviewer(s)	Starting day	Deadline
1	Come up with ideas and discuss techniques used in the project	All	All	September 09 <sup>th</sup> , 2024	Septemebr 11 <sup>th</sup> , 2024
2	Setup project and initial planning	Tu Chi	All	September 14 <sup>th</sup> , 2024	September 20 <sup>th</sup> , 2024

3	Design wireframes in Figma	Hoang Bao	All	September 21 <sup>st</sup> , 2024	September 30 <sup>th</sup> , 2024
4	Design schema in database	Hoang Bao	All	September 21 <sup>st</sup> , 2024	September 25 <sup>th</sup> , 2024
5	Develop project documentation template	Tu Chi	All	Septemebr 26 <sup>th</sup> , 2024	September 27 <sup>th</sup> , 2024
6	Implement layout	Tu Chi	All	September 28 <sup>th</sup> , 2024	October 3 <sup>rd</sup> , 2024
7	Setup backend API	Hoang Bao	All	September 28 <sup>th</sup> , 2024	October 1 <sup>st</sup> , 2024
8	Develop user authentication API	Hoang Bao	All	October 2 <sup>nd</sup> , 2024	October 5 <sup>th</sup> , 2024
9	Develop product management API	Hoang Bao	All	October 6 <sup>th</sup> , 2024	October 9 <sup>th</sup> , 2024
10	Develop order processing API	Hoang Bao	All	October 10 <sup>th</sup> , 2024	October 13 <sup>th</sup> , 2024
11	Implement UI for Homepage	Tu Chi	All	October 4 <sup>th</sup> , 2024	October 9 <sup>th</sup> , 2024
12	Implement UI for Product page	Tu Chi	All	October 10 <sup>th</sup> , 2024	October 15 <sup>th</sup> , 2024
13	Implement UI for Cart and Checkout page	Tu Chi	All	October 16 <sup>th</sup> , 2024	October 21 <sup>st</sup> , 2024
14	Implement UI for Profile page	Tu Chi	All	October 22 <sup>nd</sup> , 2024	October 25 <sup>th</sup> , 2024
15	Integrate frontend & backend	All	All	October 26 <sup>th</sup> , 2024	October 30 <sup>th</sup> , 2024
16	Develop Search feature	Tu Chi	All	November 1 <sup>st</sup> , 2024	November 5 <sup>th</sup> , 2024
17	Develop Filter products feature	Tu Chi	All	November 1 <sup>st</sup> , 2024	November 5 <sup>th</sup> , 2024

18	Write Acknowledgement, Executive Summary and Introduction of report	Tu Chi	All	November 6 <sup>th</sup> , 2024	November 12 <sup>th</sup> , 2024
19	Test and Debug	All	All	November 13 <sup>th</sup> , 2024	November 20 <sup>th</sup> , 2024
20	Optimize performance	Hoang Bao	All	November 21 <sup>st</sup> , 2024	December 2 <sup>nd</sup> , 2024
21	Final testing	All	All	December 3 <sup>rd</sup> , 2024	December 6 <sup>th</sup> , 2024
22	Deploy to production server	Hoang Bao	All	December 7 <sup>th</sup> , 2024	December 8 <sup>th</sup> , 2024
23	Complete the final report	All	All	December 9 <sup>th</sup> , 2024	December 15 <sup>th</sup> , 2024

*Table 1: Project Timeline*

## CHAPTER 5: REQUIREMENTS ANALYSIS

### 5.1. Description of Project Requirements

#### 5.1.1. Functional Requirements

Req.ID	Requirement Name	Detailed Description
001	Registration and Authentication of Users	Users must be able to safely register, log in, and edit their profiles. Among the features that improve accessibility and user convenience are social media login options, email verification, and password recovery.
002	Product Management	Product addition, updating, and deletion should be made easy for administrators by the system. For the purpose of giving prospective customers full information, each product entry has to have data such as the name, description, price, discount, category, and excellent photos.
003	Application of Advanced Search and Filtering	This is an essential feature. A variety of search parameters, including name, category, price range, and discounts, need to be available to users while looking for items. To limit

		search results according to user preferences, filters must be accessible as well.
004	Shopping Cart and Checkout Process	It must be possible for users to add goods to their shopping carts, check what's in there, change quantity, and delete things. It should be easy to check out and accept a variety of payment options, including PayPal, credit/debit cards, and other safe payment gateways.
005	Order Management	The system should provide access to a user's order history, order status, and return/exchange management. Administrators should handle order processing, order status updates, and customer inquiries pertaining to orders.
006	Reviews and ratings from customers	Users should be able to provide reviews and ratings for things they've bought in order to foster trust and offer insightful commentary. An administrative backend is needed to control user-generated material, along with functionality for submitting, editing, and deleting reviews.
007	User Interaction Features	Wish lists, product comparisons, and social sharing options are examples of features that may be included to improve user engagement and enable more dynamic consumer interaction with the platform.

*Table 2: Functional requirements of FurniScape*

### **5.1.2. Nonfunctional Requirements**

<b>Req.ID</b>	<b>Requirement Name</b>	<b>Detailed Description</b>
001	Performance	There should be very little downtime, quick load times, and a highly responsive platform. To guarantee a seamless user experience, this involves streamlining front-end code, database queries, and server speed.
002	Scalability	FurniScape has to be built to accommodate an increase in the volume of transactions and users. A scalable infrastructure that can handle higher traffic and data loads without sacrificing speed is needed for this.
003	Security	It's critical to guarantee user data security. Strong encryption techniques for data transfer and storage, safe authentication

		procedures, and frequent security audits to find and fix weaknesses are all part of this.
004	Usability	The platform should have a clear, eye-catching user interface and be simple to use and navigate. In order to increase customer happiness, usability testing is crucial for gathering input and making the required modifications.
005	Accessibility	All users, including those with impairments, should be able to use FurniScape. This entails following the web accessibility guidelines (WCAG) to guarantee that users of different abilities can use the platform.

*Table 3: Nonfunctional requirements of FurniScape*

## 5.2. User Stories

- As a customer

- + In order to effectively identify furniture that suits my requirements, I would want to use a comprehensive search engine to find particular furniture products by name, category, or price range.
- + In order to reduce my alternatives to the best ones accessible, I would want to filter search results based on several factors such as price, discount, and customer ratings.
- + I want to prepare my purchase before checking out by adding things to my shopping basket and managing the items in my cart (adding, removing, and adjusting amounts).
- + In order for me to comfortably finish my purchase, I want a simple, secure checkout experience that offers a variety of payment methods, such as credit card and PayPal.
- + To be updated on the progress of my purchase, I would like to get email confirmations and order tracking information.
- + I would want to rate and evaluate the things I have bought so that I may share my knowledge and assist others in making wise choices.
- + I wish to see a variety of well-liked furniture items on the internet, such as couches, beds, tables, and accessories.

- + In-depth product details, including measurements, composition, and maintenance guidelines, are what I need to see in order to make an educated choice.
- + To help me make a wise choice, I would want to examine other customers' evaluations and product rankings.
- + I would want to openly assess and make comments on the product on the website for everyone to see.
- As a visitor
  - + I would want to view things that the website automatically suggests based on my browsing tastes and history.
  - + I want to look for things based on certain attributes like color, style, and size. Without logging in, I would want to add or delete items from my shopping basket.
- As an administrator
  - + To ensure that the user base and inventory are current and correct, I want to oversee all user accounts, product listings, and service providers.
  - + To make sure customers follow the rules and don't disparage the provider, I want to keep an eye on and control product reviews.
  - + In order to make wise business choices, I would want to examine sales statistics, particularly for well-known brands.
  - + My goal is to assist clients in resolving issues pertaining to purchases or product quality.
- As a payment service
  - + I need complete access to the customer's name and account number in order to process payments correctly.
  - + For the sake of mistake prevention and safe transactions, I would want the website to demand that users adhere to trading standards.

### 5.3. Diagrams

### 5.3.1. Context Diagram

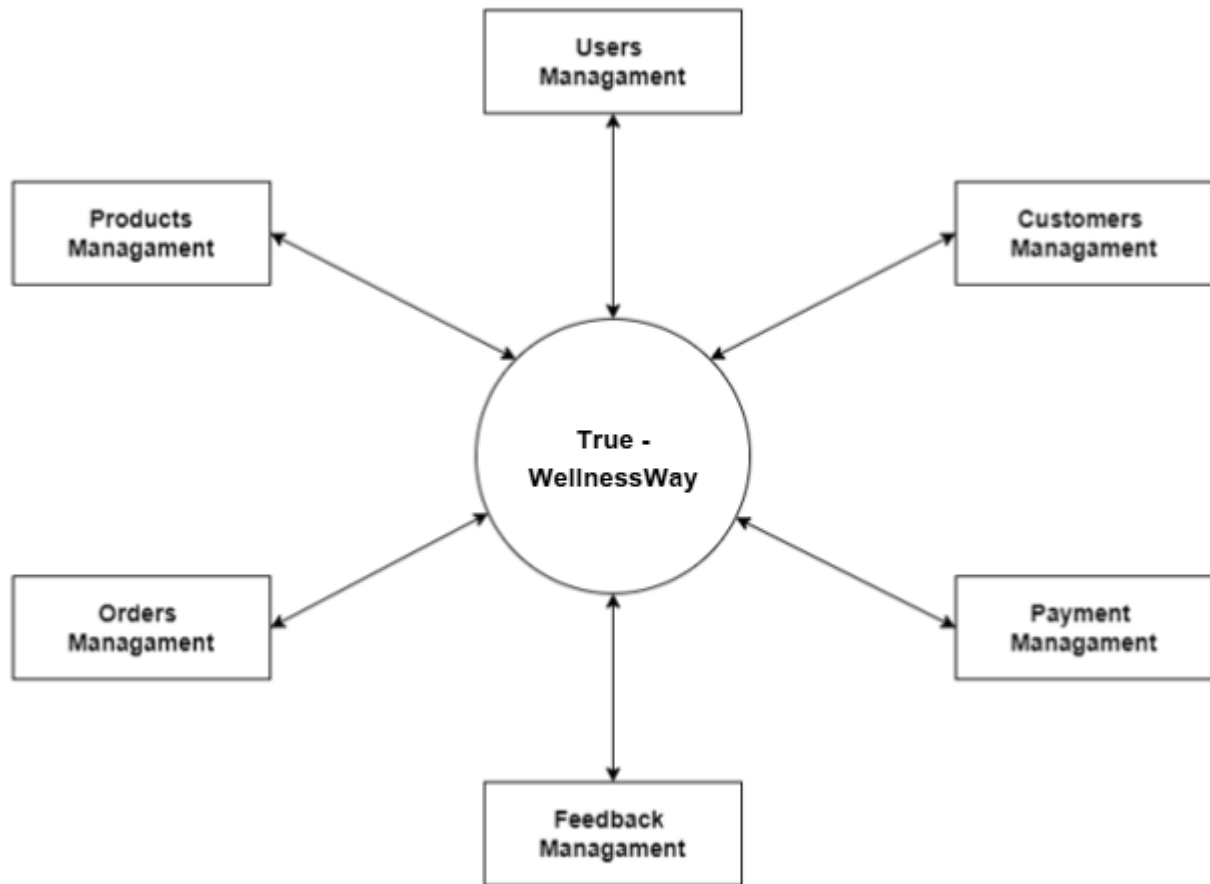


Figure 2: Context diagram of True-WellnessWay

Action	Goal
User Management	Manages user accounts, which include user authentication, registration, login, and profile changes.

Products Management	Oversees the furniture product inventory, which includes keeping track of inventory levels, adding new goods, and updating product descriptions.
Orders Management	Order generation, order status tracking, and order fulfillment management are all made easier with the help of this system.
Payment Management	Oversees payment processing, guarantees safe transactions, takes care of payment validation, and handles refunds as needed.
Feedback Management	Gathers and maintains customer input, such as ratings and reviews of products, in order to enhance service quality and product selection.
Customers Management	Pay close attention to maintaining client connections, keeping note of preferences and past purchases, and making tailored suggestions.

Table 4: Context diagram analysis

### 5.3.2. Use case Diagram

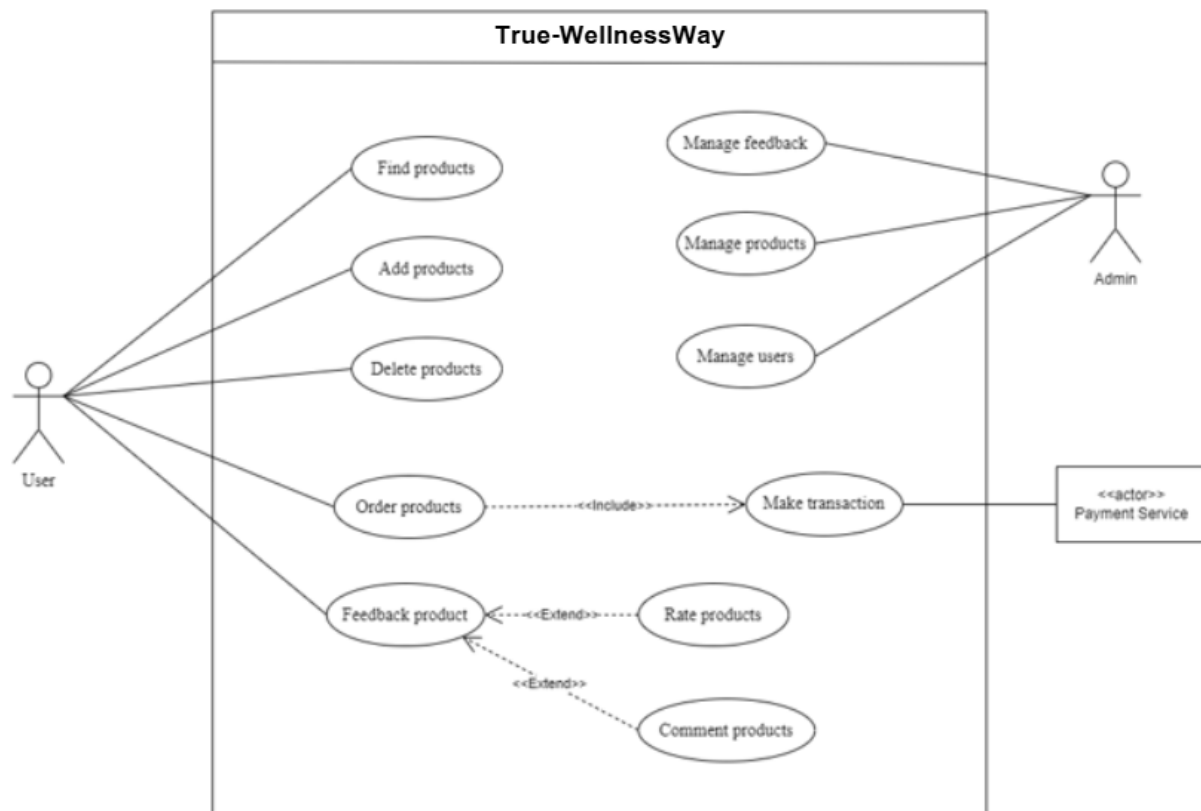


Figure 3: Use case diagram of True-WellnessWay



#### 5.3.2.1. Actors Analysis

Actor	Role
User	The principal user of the site, with the ability to peruse merchandise, conduct purchases, and post comments.
Admin	The user with the greatest authority may manage customers, add and remove goods, schedule appointments, and do other site-wide tasks.

Table 5: Actor explanation

#### 5.3.2.2. Use case Analysis

Use case	Goal
Find products	Customers can search for furniture products by category, keyword, or filter.
Add products	Customers can add the products which they want into the cart.
Delete product	Customer can remove products from cart.
Order products	Customers can purchase furniture products from this platform and deliver them to their houses.
Make transaction	Customers can pay for their orders using a payment service
Rate products	Customers can rate products they have purchased
Comment on products	Customers can leave comments on products
Manage products	Admins can add new products, edit product information, and delete products from the platform.
Manage users	Admins can create and manage user accounts including customer and admin accounts
Mange feedback	Admins can view and manage feedback left by customers.

Table 6: Use cases explanation

### 5.3.2.3. Relationship

- Use case "Make transaction" requires that the user has at least one ordered product in their basket, hence "Order product" encompasses the use case "Make transaction."
- The "Rate products" and "Comment products" use cases are expanded to include "Feedback products," indicating that both may be used to do "feedback products" as part of the entire process.

### 5.3.3. Entity Relationship Diagram (ERD)

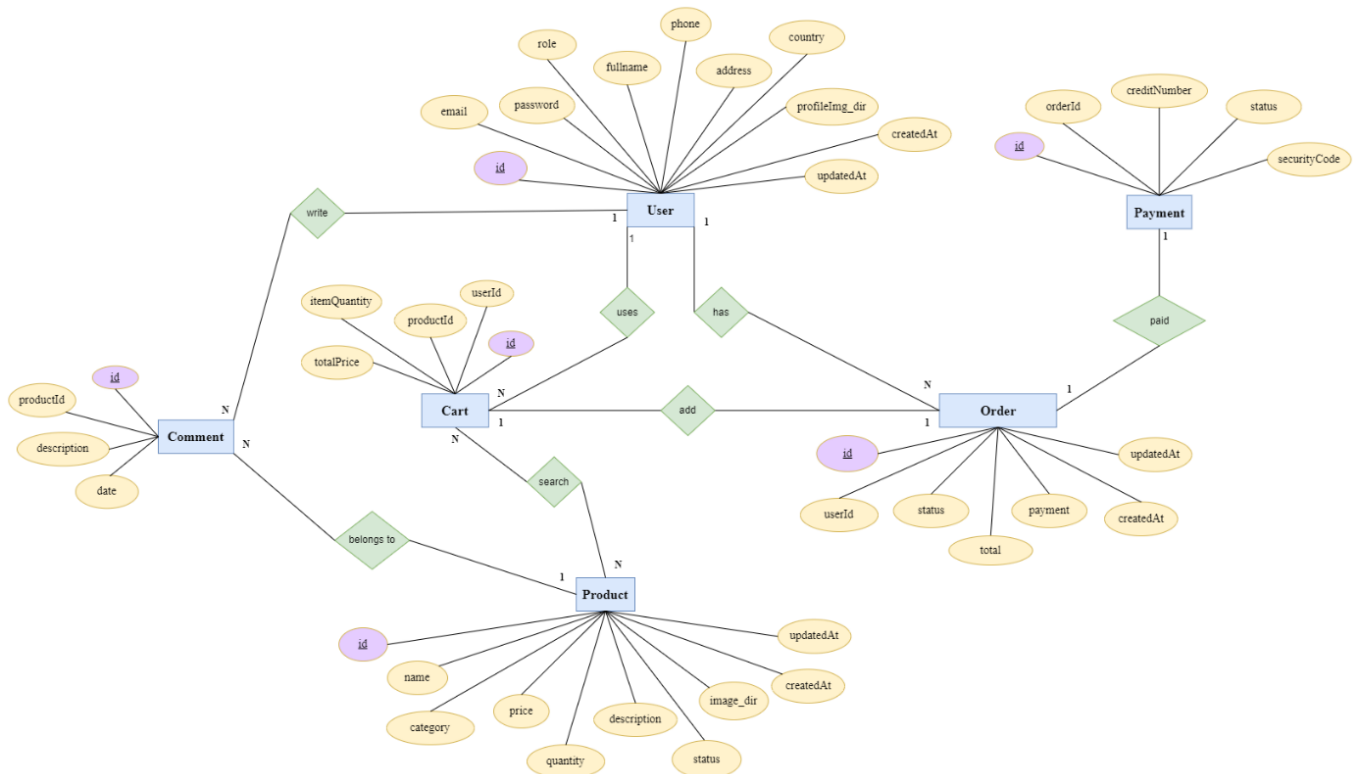


Figure 4: ERD of True-WellnessWay

#### 5.3.3.1. Normal Form Analysis

Normal Form	Description
1 N.F.	The database does not have any multivalued tuples
2 N.F.	All the non-key attributes depend on the primary key
3 N.F.	The are no transitive dependencies between non-key attributes

BCNF	Every non-trivial functional dependency in the database depends on a candidate key
------	--

*Table 7: ERD normal form analysis*

### 5.3.3.2. Schemas and Table Analysis

Table	Attributes
User	id <b>INT</b> AUTO_INCREMENT <b>PRIMARY</b> KEY, email <b>VARCHAR(255)</b> NOT NULL UNIQUE, password <b>VARCHAR(255)</b> NOT NULL, role <b>VARCHAR(50)</b> , fullname <b>VARCHAR(255)</b> , phone <b>VARCHAR(50)</b> , country <b>VARCHAR(100)</b> , address <b>TEXT</b> , profileImg_dir <b>VARCHAR(255)</b> , createdAt <b>TIMESTAMP</b> DEFAULT CURRENT_TIMESTAMP, updatedAt <b>TIMESTAMP</b> DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP
Product	id <b>INT</b> AUTO_INCREMENT <b>PRIMARY</b> KEY, name <b>VARCHAR(255)</b> NOT NULL, category <b>VARCHAR(100)</b> NOT NULL, price <b>DECIMAL(10, 2)</b> NOT NULL, description <b>TEXT</b> , quantity <b>INT</b> NOT NULL, status <b>VARCHAR(50)</b> , image_dir <b>VARCHAR(255)</b> , createdAt <b>TIMESTAMP</b> DEFAULT CURRENT_TIMESTAMP, updatedAt <b>TIMESTAMP</b> DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP

	CURRENT_TIMESTAMP
Order	<p>id <b>INT</b> AUTO_INCREMENT <b>PRIMARY</b> KEY,          userId <b>INT</b> NOT NULL,          status <b>VARCHAR(50)</b> NOT NULL,          payment <b>VARCHAR(50)</b> NOT NULL,          total <b>DECIMAL(10, 2)</b> NOT NULL,          createdAt <b>TIMESTAMP</b> DEFAULT CURRENT_TIMESTAMP,          updatedAt <b>TIMESTAMP</b> DEFAULT CURRENT_TIMESTAMP ON UPDATE          CURRENT_TIMESTAMP,</p> <p><b>FOREIGN</b> KEY (userId) REFERENCES User(id)</p>
Comment	<p>id <b>INT</b> AUTO_INCREMENT <b>PRIMARY</b> KEY,          productId <b>INT</b> NOT NULL,          description <b>TEXT</b> NOT NULL,          date <b>TIMESTAMP</b> DEFAULT CURRENT_TIMESTAMP,</p> <p><b>FOREIGN</b> KEY (productId) REFERENCES Product(id)</p>
Cart	<p>id <b>INT</b> AUTO_INCREMENT <b>PRIMARY</b> KEY,          userId <b>INT</b> NOT NULL,          productId <b>INT</b> NOT NULL,          itemQuantity <b>INT</b> NOT NULL,          totalPrice <b>DECIMAL(10, 2)</b> NOT NULL,</p> <p><b>FOREIGN</b> KEY (userId) REFERENCES User(id),  <b>FOREIGN</b> KEY (productId) REFERENCES Product(id)</p>

Payment	id <b>INT</b> AUTO_INCREMENT <b>PRIMARY KEY</b> , orderId <b>INT</b> NOT NULL, creditNumber <b>VARCHAR(16)</b> NOT NULL, securityCode <b>VARCHAR(4)</b> NOT NULL, status <b>ENUM</b> ('pending', 'completed', 'failed') NOT NULL,  <b>FOREIGN KEY</b> (orderId) REFERENCES `Order`(id)
---------	--

*Table 8: ERD's tables analysis*

From the above table, we can conclude some requirements as follows:

- The **User** table stores information about the customer, such as their name, email address, and their role.
- The **Product** table stores information about products, such as name, description, category, price, and quantity.
- The **Order** table represents a customer's purchase of one or more products. Attributes include user's information, date, quantity purchase.
- The **Cart** table represents a temporary holding place for a product a customer is considering before checkout. Attributes include customer information, a list of products, and quantities of products.
- The **Comment** table represents customer feedback on a specific product. Attributes include customer's id, product's id, comment's id, date, and detail comment.
- The **Payment** table represents the financial transactions associated with an order.

Relationship between these tables:

- **User** has a **one-to-many** relationship with **Order**: A customer can place multiple orders, but an order belongs to a single customer.
- **User** has a **one-to-many** relationship with **Cart**: A customer can place multiple carts, but a cart belongs to a single customer.

- **Product** has a *many-to-many* relationship with **Cart**: A product can be added to multiple shopping carts, and a shopping cart contains multiple products.
- **Product** has a *one-to-many* relationship with **Comment**: A product can have multiple comments, but a comment belongs to a specific product.
- **Order** has a *one-to-one* relationship with **Payment**: An order has a single payment, and a payment belongs to a single order.
- **Cart** has a *one-to-one* relationship with **Order**. A cart has a single order, and an order belongs to a single cart.

### 5.3.4. Class Diagram

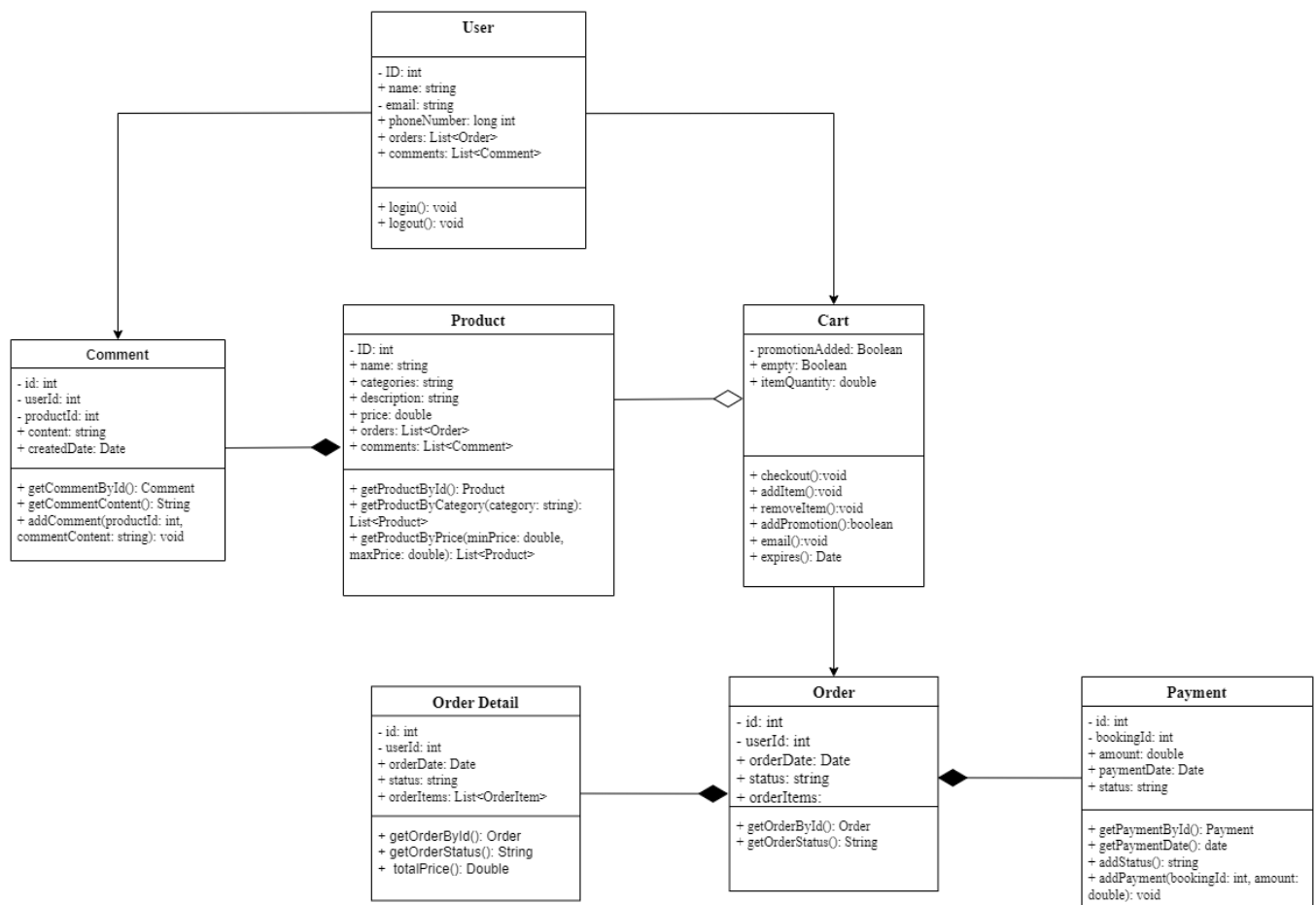
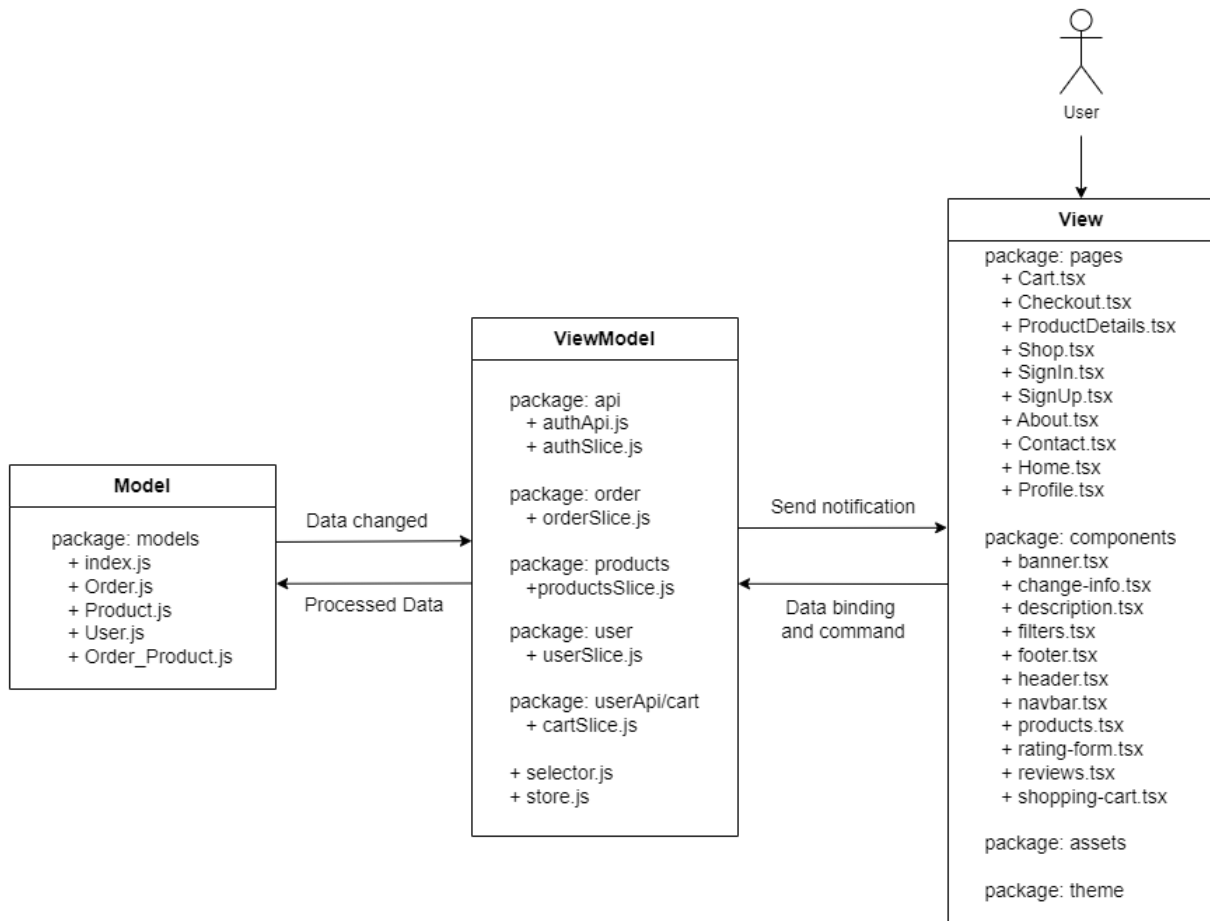


Figure 5: Class Diagram of True-WellnessWay

From the above class diagram, we can summary some information as follows:

- **User:** Represents the users of the system.
- **Product:** Represents items or products in platform.
- **Cart:** Stores a collection of products temporarily for a customer before purchase
- **Comment:** Represents feedback or reviews left by customers on products.
- **Order Detail:** Represents specific items within an order, such as products and quantities.
- **Order:** Represents a customer's purchase or transaction.
- **Payment:** Represents a financial transaction associated with an order.

### 5.3.5. MVVM Model



*Figure 6: MVVM model of True-WellnessWay*

- Model:

- + Represents the application's data and business logic.
- + Contains classes that specify the data structure and methods to handle the business logic, such as Order.js, Product.js, User.js, and Order\_Product.js.

- ViewModel:

- + Serves as a go-between for the Model and the View.
- + Includes slices and packages such as userSlice.js, productsSlice.js, orderSlice.js, and authSlice.js.
- + Manages the logic for commands and data binding, processing information from the Model and informing the View of any changes to the data.
- + Maintains the UI's state and makes sure the data shown in the View is accurate.

- View:

- + Symbolizes the user interface elements that the user interacts with.
- + Includes components and pages for presenting the user interface, such as Checkout.tsx, ProductDetails.tsx, Shop.tsx, and Cart.tsx.
- + Renders data from the ViewModel and modifies the user interface.

### **5.3.6. Sequence Diagrams**



### 5.3.6.1. Login functionality

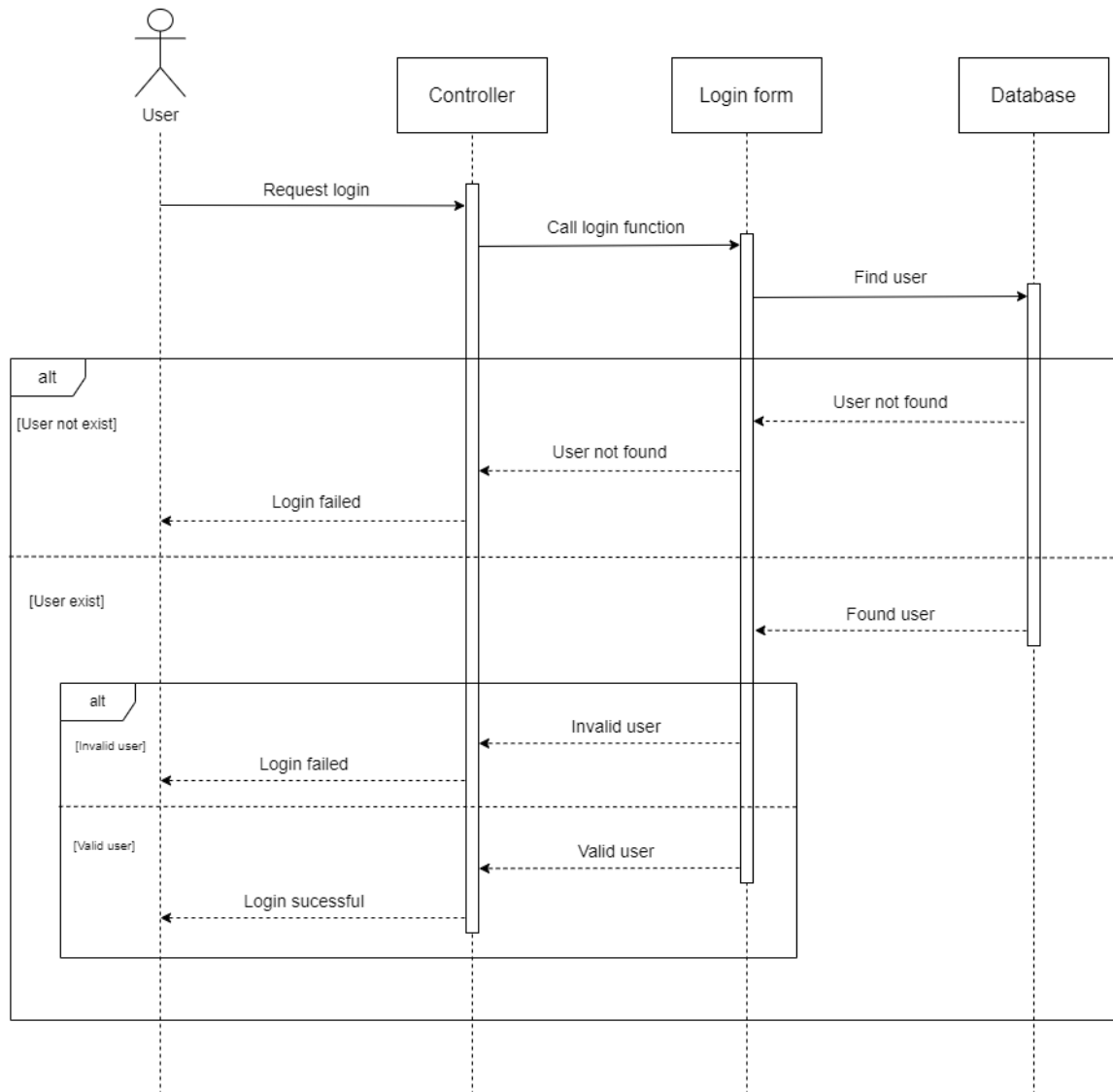


Figure 7: Sequence diagram for “Login” functionality

- Actor:

+ Customer: The user initiating the login process

- Object:

+ Controller: A component that handles user interaction and coordinates system actions.

- + Login form: The interface where the customer enters their login credentials.
- + Database: Stores user information, including login credentials.
- Control flow:
  - + By submitting a login request, the user starts the login procedure. After that, the controller calls the login method, which retrieves the user's data from the database.
  - + The login procedure fails and the user is informed that their attempt to log in was failed if the database is unable to locate them.
  - + The system verifies the credentials if the user is located in the database. The login procedure fails if the credentials are not valid. The user receives access if the login procedure is successful and the credentials are valid.
- Interactions:
  - + Customer initiates login: The customer interacts with the login form to request login.
  - + Controller calls login function: The controller receives the login request and calls a function to handle the login process.
  - + Database lookup: The login function attempts to find the user's information in the database
  - + User not found: If the user is not found, the login function returns an error message indicating an invalid user.
  - + User found: If the user is found, the login function proceeds to validate their credentials.
  - + Invalid user: If the credentials are incorrect, the login function returns an error message indicating invalid credentials.
  - + Valid user: If the credentials are valid, the login function marks the login as successful and grants the user access to the system.

#### 5.3.6.2. *Registration functionality*

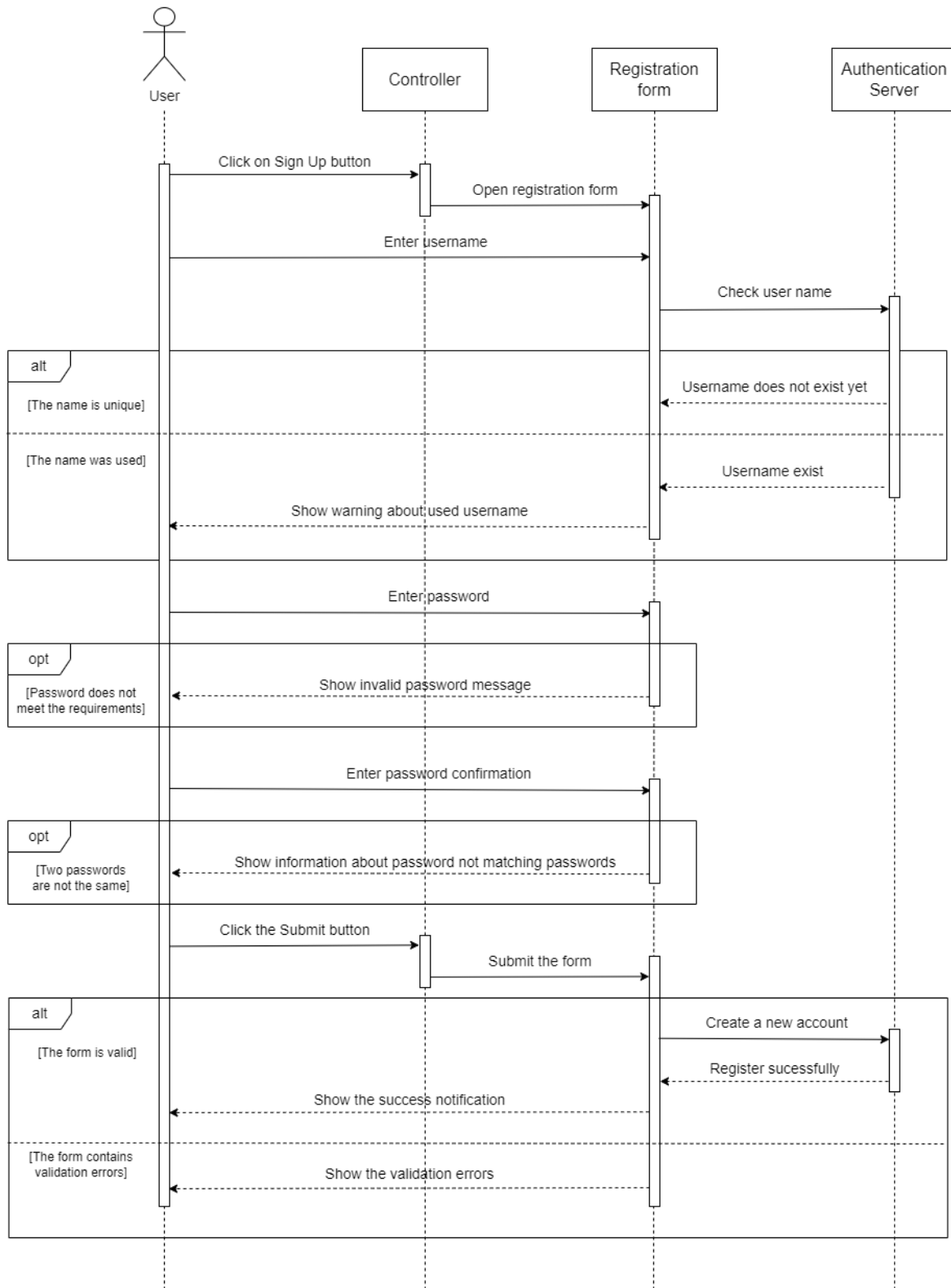


Figure 8: Sequence diagram for “Registration” functionality

- Actor:

- + Customer: Represents the individual registering for an account.
- Objects:
  - + Controller: A component that handles user interactions and coordinates with other system components.
  - + Register Form: The interface where the customer enters their registration information.
  - + Authentication Server: Verify user information and assess website access rights.
- Control flow:
  - + After clicking the Sign-Up button, the user's registration form opens. The system verifies the originality of the username they enter. The user enters a password if the username is unique; if it already exists, a warning is shown.
  - + The user enters and verifies a password. Corresponding error messages are shown if the password doesn't match or doesn't fulfill the criteria. The user hits Submit after making sure both inputs are correct.
  - + The complete form is validated by the system. A new account is created and a success message is shown if all of the inputs are correct. The user is notified of any validation failures that occur.
- Interactions:
  - + Customer requests registration: The customer submits their registration information by interacting with the registration form.
  - + Registration form: the controller receives the registration data and send to Authentication Server.
  - + Authentication Server: The server check the username and return the message.
  - + User found: If the username is found, the server return an error message indicating an invalid username.
  - + User not found: If the username is not found, the server return a success message and process to next step.

- + Valid first password: The Registration form check the correct format. Announce success message and process the second password.
- + Invalid first password: The Registration form find the incorrect format, announce fail message and require to reinput.
- + Valid second password: The Registration form check the correct format and similar first password. Send the request to Authentication Server.
- + Invalid second password: The Registration find the incorrect format and require to reinput second password.
- + User creation: The controller creates a new user record in the server with the provided information.
- + Registration successful: Once the registration process is complete, the controller sends a success message to the customer and potentially redirects them to a login page or their account dashboard.

#### 5.3.6.3. Adding products functionality

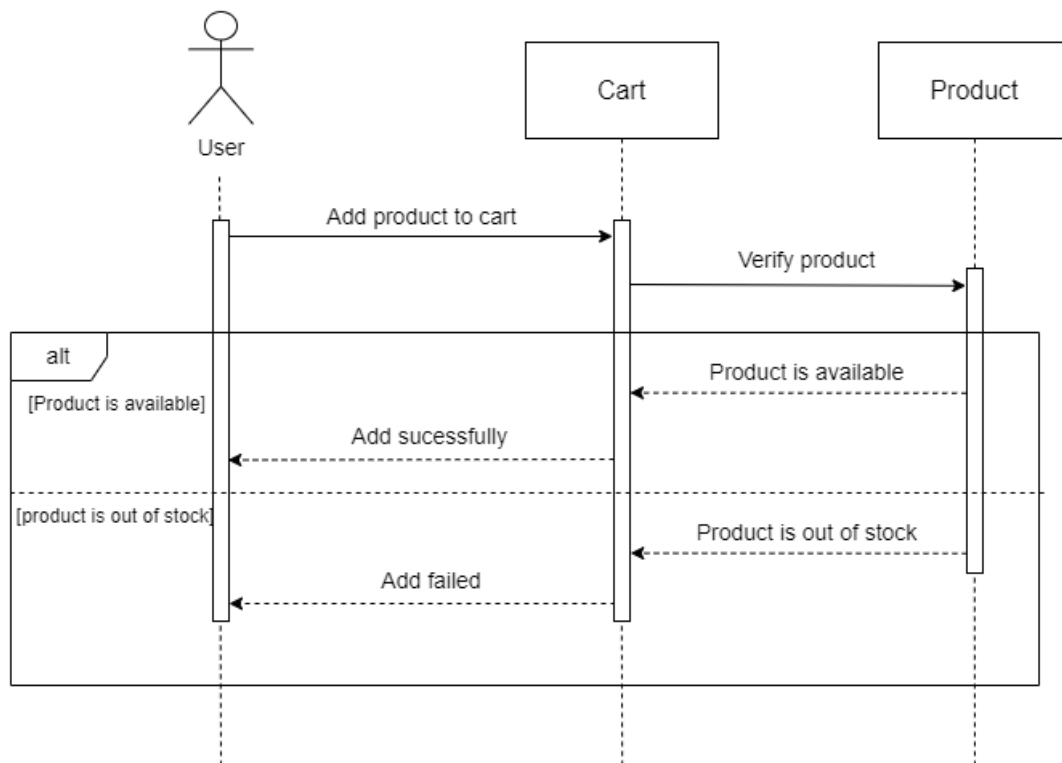


Figure 9: Sequence diagram for “Add Product” functionality

- Actor

- + User: The user initiating the adding products process

- Objects:

- + Cart: The object representing the user's shopping cart.
- + Product: The object representing the product the user wants to add to the cart.

- Control flow:

- + The system confirms that a product is available before allowing the user to add it to their basket.
- + The product is added to the cart and the user receives a success message if it is available.
- + The user is notified that the cart adding attempt was unsuccessful if the product is not available.

- Interactions:

- + User initiates product addition: The user enters product information (name, description, price, etc.) using an interface.
- + System gets product data: The system records user input and verifies its accuracy and completeness.
- + Optional system stock check: The system confirms the quantity or availability of a product in stock, if relevant.
- + Product data is persisted by the system: A database or other storage device is used by the system to store the product data.
- + System updates product list: The system updates the product list or catalogue to include the recently added product.
- + System provides feedback: The system notifies the user that the product addition was successful and may even show the new product.

#### 5.3.6.4. Checkout functionality

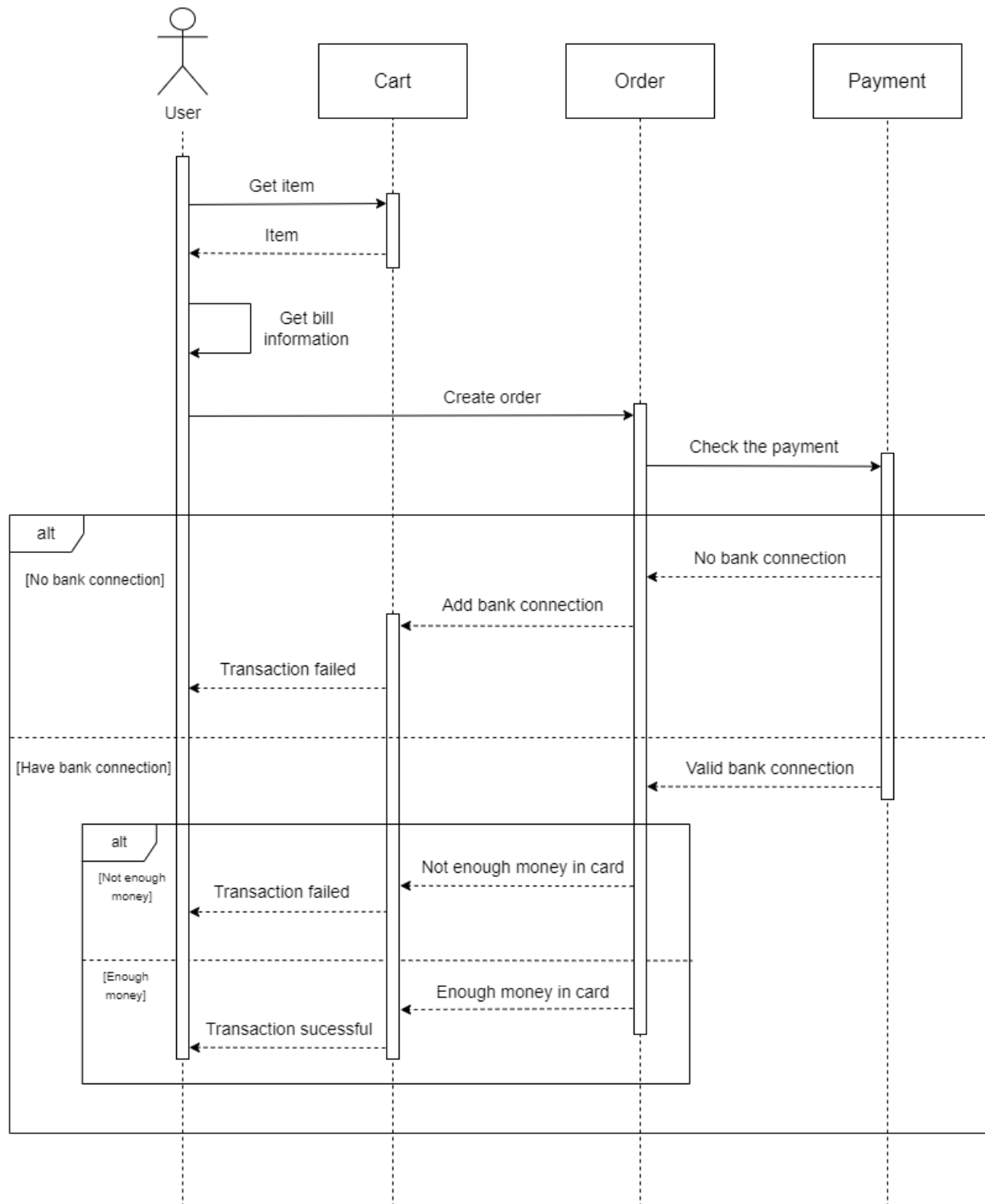


Figure 10: Sequence diagram for “Checkout” functionality

- Actor:

- + Customer: The user initiating the login process
- Object:
  - + Cart: A component that handles user interaction with products and coordinates payment system actions
  - + Order: The interface where the customer progresses to checkout of product
  - + Payment: A component that checks the payment method info of the user has been chosen to validate
- Control flow:
  - + The user places an order, obtains bill information, and chooses products from the shopping basket. After then, the order system verifies the payment.
  - + The user must add a bank connection if one does not already exist; depending on the condition of the bank connection, this might result in a transaction failure or success.
  - + The card balance is checked by the system after a legitimate bank connection has been made. When funds are insufficient, a transaction is unsuccessful; when funds are sufficient, a transaction is successful.
- Interactions:
  - + Customer gets items: customer requests to add the item to the cart list
  - + Shopping cart control “Add product” function: The controller receives the add product and replays it back to the user then updates the user's shopping cart
  - + Get bill information: Calculate the cart total price
  - + Create order: User request checkout to order component
  - + Check the payment: The order requests the payment method that the user has already chosen
  - + No bank account: Payment component replay the bank account does not exist to order, then the order is sent back to the customer that the transaction has failed
  - + Valid bank account: Payment component reply valid bank connection to order



- + Not enough money in the card: Order return transaction has failed to the customer
- + Enough money: Order component returns successful transactions to the customer

#### 5.3.6.5. Rating functionality

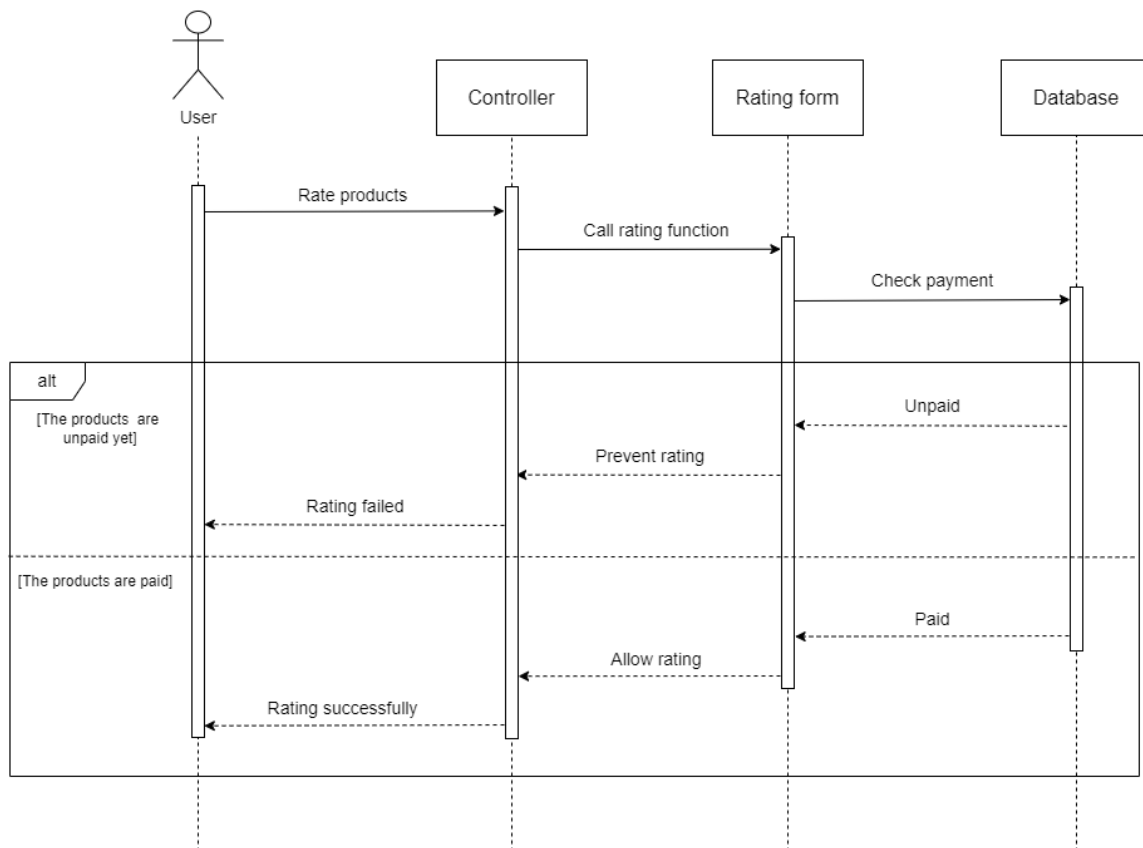


Figure 11: Sequence diagram for “Rating” functionality

- Actor:

- + User: The user initiating the rating process

- Objects:

- + Controller: This part of the system manages interactions with other parts and rating logic.
- + Rating form: This is the data structure including the rating details (user ID, product ID, rating value, comments, etc.).

- + Database: The long-term rating data storage system.
- Control flow:
  - + A product's rating is started by the user, which causes the controller to run the rating function.
  - + The rating function looks for the product's payment status in the database.
  - + The rating is blocked and unsuccessful if the product is not paid for; it is permitted and successful if the product is paid for.
- Interactions:
  - + User starts rating: The user starts the rating process by interacting with the rating interface, usually by selecting a star or leaving a written review.
  - + System receives rating request: The system logs the user's rating as well as any related information, including product IDs or comments.
  - + System validates input: The system verifies data integrity and determines if the rating falls inside acceptable bounds (such as a predetermined rating scale).
  - + System verifies payment status (conditional): The system confirms that the user has made the payment for the product if the rating function is dependent on the purchase or payment of the product.
  - + System stores rating: A database or other storage device is used by the system to keep track of the rating data.
  - + System updates product ratings (optional): Based on the updated individual rating, the system, if appropriate, recalculates and updates the overall product rating.
  - + System provides feedback: The user receives feedback from the system in the form of a confirmation message or an updated product rating display.

## **CHAPTER 6: DESIGN AND ARCHITECTURE**

### **6.1. Overview of The System's Architecture**

**Customer-Side (Frontend):** The frontend serves as the visual interface that allows users to interact with the system. It includes features such as product displays, search functionality, and user actions like registration and login. Our frontend is developed using ReactJS, a JavaScript framework designed to simplify the creation of dynamic and responsive web applications. Communication between the frontend and backend is facilitated by application programming interfaces (APIs), which enable data retrieval and display.

**Server-Side (Backend):** The backend handles the core business logic and processes user requests by interacting with the database. It manages functions like user authentication, authorization, and session handling. We utilize backend frameworks such as NodeJS to streamline integration with the frontend. The backend APIs are responsible for retrieving, storing, and processing data, which is then presented on the user interface.

**Database:** The database acts as the central repository for all backend data. For this project, we use MySQL as the database management system, which stores and retrieves essential information about products, users, and orders.

**User Authentication:** For secure data transfer and to maintain data integrity, we employ JWT (JSON Web Token) for user authentication and authorization. JWT also supports a single sign-on (SSO) model, enabling users to access multiple applications with a single login. This approach ensures security and simplifies user access management.

## 6.2. Key Design Decisions and Justifications

**User-Friendly Interface:** The interface of True-WellnessWay is designed for simplicity and ease of use, featuring prominently displayed function buttons. This ensures that users can navigate the website effortlessly, even without technical expertise.

**High-Quality Visuals:** To enhance the overall user experience, True-WellnessWay prioritizes rich media content and high-resolution images, allowing customers to thoroughly examine products and services.

**Advanced Search and Filter:** The platform includes robust search and filtering capabilities, enabling users to quickly find fitness equipment and services tailored to their specific needs.

**Scalable Design:** The website is built with a modular and scalable architecture, allowing it to handle additional features and traffic spikes efficiently without compromising performance.

**Secure Payment System:** True-WellnessWay employs a secure payment gateway to protect users' personal and financial information. This ensures safe transactions and builds customer trust, particularly for handling sensitive financial data.

**Personalized User Experience:** The platform offers customization features, such as personalized recommendations and tailored content, to enhance user satisfaction and engagement.

**Review and Rating Feature:** A transparent review and rating system allows customers to share honest feedback on fitness products and services. This builds trust and helps potential buyers make informed decisions by considering the experiences of other users.

## CHAPTER 7: DEVELOPMENT

### 7.1. Description of The Development Process

#### 7.1.1. Agile Development Methodology

The Agile methodology we used during the development of True-WellnessWay aimed at reusing functional groups. Customer input and regular sprint cycles mean the software is built to flexibly adapt to real-world situations.

To be specific and simple for developers, we use Scrum, one of the most popular Agile frameworks. It focuses on organizing and managing work on complex projects through a sequence of events, roles, and specific artifacts.

In Scrum, there are short-term development cycles called Sprints. By delivering functional increments on time, this iterative method guarantees that stakeholders see tangible progress and have the chance to provide feedback at every level of the development process. regular.

In conclusion, Agile software development is one of the most effective solutions to ensure that testers, product owners, developers, designers all agree on the project goals. That's because it improves effective communication and increases team members' sense of responsibility and ownership.

### **7.1.2. User-Centered Design**

Our project puts user experience first. During the software development process, we focus on users to create a user-friendly interface suitable for all ages. To do that, developers like us need to test the website's ability to receive continuous feedback from end users and how smooth it is [5].

Software capability testing sessions are held regularly to receive comments directly from potential users. The overall user experience can thus be significantly improved. However, to ensure that the finished product is appealing to the target market, user feedback should be methodically integrated into the development cycle.

In the future, the website will be developed to be more compatible with many e-commerce platforms, users will have many visually appealing experiences on many devices of different sizes. This flexibility both improves accessibility and user satisfaction while adhering to modern design principles.

## **7.2. Technologies**

### **7.2.1. Programming Languages**

#### **7.2.1.1. JavaScript**

JavaScript, abbreviated as JS, is a client-side scripting language commonly used in hosting environments to connect client-side and server-side, creating dynamic websites with user interaction [6]. Thanks to its multi-paradigm, single-threaded, prototype, and object-oriented characteristics, JavaScript is considered one of the core technologies of the World Wide Web.

We built the FurniScape project using this programming language for the first reason that it has a rich library and framework. Frameworks that integrate with available libraries help developers save time and significantly simplify their work in building a website. They don't have to rebuild everything from scratch, they just need to call up existing components for convenient and quick use. The second reason we chose JavaScript is that it helps reduce server load. In case a large number of people access the website, it can lead to overload because the server cannot manage all tasks. However, the problem of network congestion due to server overload can be improved because JavaScript can perform logical operations and server work on the client itself. One reason that cannot be ignored is the ability to run cross-platform. This programming language can run on almost any web browser and operating

system, allowing users to access it on many different platforms, thereby increasing the accessibility of websites around the world. The last typical reason is high performance. JavaScript tools have been optimized by the founders combined with a JIT (Just-In-Time) compiler to help improve execution performance. This enables web applications written in JavaScript run faster and smoother.

#### 7.2.1.2. *MySQL*

MySQL, short for My Structured Query Language, is a Relational Database Management System (RDBMS for short) that operates on a client-server model [7]. MySQL manages data through databases. Each database contains many tables that are closely related to each other. Each table has many rows and columns used to store data.

We choose to use MySQL as our main tool for data management and storage mainly because of its stability and reliability. The reason MySQL is reliable is because it has been developed and improved over many years, combined with programmers' extensive experience in real projects of large corporations, so the level of stability is increasingly improved. The second reason is MySQL's high performance. This tool is designed to process queries quickly and accurately, especially when working with large amounts of data because it integrates many optimization tools and techniques to improve query and processing performance. Another important factor is scalability. MySQL allows data replication and partitioning so the database scales easily to meet growing user needs. This makes future development of our FurniScape project more convenient and easier. The last but not least important factor is security. MySQL offers strong security features such as data encryption, granular access control, and SSL support to protect data. Therefore, users can manage access rights and protect their data from external threats.

#### 7.2.1.3. *HTML & CSS*

Hypertext Markup Language, or HTML, is a programming language used to build and organize features such as headers, blockquotes, and paragraph breaks in websites and applications [8]. HTML elements (HTML Elements) are the pieces of an HTML document that are indicated by tag pairs enclosed in parentheses.

Cascading Style Sheets, or CSS for short, is a programming language used to locate and restyle HTML components [9]. CSS operates by doing a search based on pre-selected locations. The name

of an HTML element, an ID, a class, or many other kinds might be the chosen region. The necessary characteristics will subsequently be applied to that option.

## **7.2.2. Frameworks & Library**

### **7.2.2.1. ReactJS**

ReactJS is a Javascript library developed by Facebook used to build interactions with components on the website [10]. It can render data on both the client and server sides with the core purpose of not only making the website smooth but also fast, highly scalable and simple.

ReactJs is widely utilized as the primary tool for website development because to its excellent user experience and fast speed. ReactJs makes React apps quicker and smoother than updating the DOM directly by leveraging Virtual DOM to speed up UI changes. By dividing programs into separate, easily manageable, and reusable sections, component-based design helps to increase overall performance. The capacity to reuse components is the second important factor. React components allow for component reuse across many application sections, which reduces development time and effort. Every component works independently of the others and is simple to maintain or replace without interfering with other areas of the program. The fact that ReactJs has a robust user base and robust libraries is the last compelling argument. Every component works independently of the others and is simple to maintain or replace without interfering with other areas of the program. It is simple to locate documentation, examples, and assistance from other developers because to the large and vibrant community.

### **7.2.2.2. NodeJS**

NodeJS is a platform built on “V8 Javascript engine” written in C++ and Javascript. It makes requests using a single thread or non-blocking input/output, which helps it process client requests more rapidly and provide responses more quickly. It also saves system memory and supports a large number of concurrent connections [11].

First of all, since Node.js is extremely performant, our team decided to use it as the tuning tool to create a methodical backend. The asynchronous and non-blocking I/O mechanism that Node.js employs helps manage several concurrent requests effectively, improving the speed of the application. It also uses an event loop to handle jobs while operating on a single thread, which reduces

latency and improves scalability. Excellent scalability is the next equally significant factor. Node.js's strong speed in managing hundreds of concurrent connections makes it ideal for developing scalable applications. Additionally, it works well with microservices architecture, which facilitates the independent scalability and maintenance of the application's components. The quick development period is the last noteworthy attribute. By utilizing pre-existing components, the Node.js npm ecosystem provides millions of module and library packages, assisting in the reduction of development time. Furthermore, using JavaScript for both the front end and the back end reduces the complexity of handling several languages and speeds up development.

#### *7.2.2.3. Ant Design*

Ant Design is a CSS library designed specifically for React. It gives both designers a useful evaluation of excellent design and expands on the same design patterns and principles to provide broad direction and answers to design objectives [12].

Our team uses Ant Design mostly because it enables high-quality designs while creating website interfaces. Professionally created, contemporary, and consistent user interface components from Ant Design improve user experience and leave a positive impression. Strict adherence to design principles ensures excellent usefulness and beauty in these designs. The vast component library is the second exceptional characteristic that has to be noted. A vast array of user interface (UI) components, including buttons, forms, tables, modals, menus, and more, are available in Ant Design, which speeds up development and guarantees consistency in design. It's easy to modify components to meet the unique needs of your project. The simplicity of integration is the last compelling factor. Development may be accelerated by using Ant Design's simple integration with well-known frameworks and libraries like React, Vue, and Angular. The responsiveness of Ant Design components is optimized for a wide range of platforms, including desktop and mobile.

#### **7.2.3. Tools Used**

Github: Version Control, Data Import

Figma: Design User Interface, User Experience

Project Manager: Create Gantt Chart, Follow The Project

Visual Studio Code: Edit Files, Website Building



Jira: Manage Project, Assign Works

Vercel: Display Website

## CHAPTER 8: TESTING AND QUALITY ASSURANCE

### 8.1. Testing Methodologies Employed

#### 8.1.1. Unit Testing

Unit testing is a software testing methodology that evaluates a system's appropriateness and responsiveness by separately analyzing its constituent parts, such as operating procedures, groups of computer program modules, and processes [13].

Objective of Unit Test:

- Remove a section of the code
- Check the correctness of the code
- Test each process and function
- Reduce expenses and rectify mistakes early in the development cycle
- Enables developers to swiftly make changes and aids in their understanding of the codebase
- Facilitates code reuse

Unit testing, which comes in just two varieties-manual and automated-has greatly benefited development units. Quick learning about the API's background and the provider's use case is possible for developers. Additionally, programmers may easily make modifications to the code to ensure that the module works as intended without having to test the whole system. Additionally, code may be changed more easily in the future without worrying about how it will affect functionality as it stands thanks to unit testing. Consequently, it helps developers fix problems quickly and effectively before they become worse, which makes their systems more reliable.

#### 8.1.2. Integrating Testing

Integration testing is the practice of assessing the interaction between two software modules or components [14]. Its primary objective is to verify data interchange and component interaction in

order to identify any weaknesses in the integration between integrated units. According to the Software Development Life Cycle (SDLC) and V-Model, integration testing occurs after unit testing.

Integration testing progresses framework execution when a parcel of information is required by affirming how the system's components work concordantly and economically. It too gives engineers with the capacity to look at database utilize and information get to. Usually fundamental in arrange to confirm the rightness of the information appeared on the client interface. Since the project's components are coherent and well-organized, integration testing is made conceivable, empowering software engineers to recognize issues early on and address them some time recently they have an affect on the project's last discharge. It is vital for lessening the dangers related with the program advancement prepare and raising income for companies.

### **8.1.3. User Acceptance Testing (UAT)**

UAT is the final testing phase before the product is released to market. User reviews play a critical role in the UAT process [15]. Users will utilize it and check to see if there are any possible bugs or problems with the user experience. After that, they will provide the development team input so that the program may be improved to better meet needs and expectations. Customers and end users usually do UAT. These are the most proficient UAT workers, assisting in making the program user-friendly and optimal.

System testing using UAT guarantees both quality and user acceptability. Customer satisfaction is increased when goods are made to satisfy end users' wants and expectations thanks to UAT. It also verifies that every project need has been correctly implemented, assisting in preventing any future implementation issues. Early mistake and issue identification is an advantage of using UAT as well. Before the product is released into the market, UAT assists in finding and fixing bugs, saving time and money on post-release bug solutions. It enhances user experience by assisting in the detection of usability problems that end users can run across. Reducing deployment risk is the last major reason our team employs UAT. UAT helps to guarantee a seamless deployment process by reducing the chance of delivering a product that is unfinished or has bugs. From there, it makes sure the product conforms with industry norms and laws, preventing legal problems when it is released.

## **8.2. Test Results and Bug Tracking**

**Extensive Test Suite:** Our large library of test cases covers a broad variety of scenarios, such as edge cases, boundary conditions, and stress testing. This meticulous process ensures a thorough evaluation of the platform's utility, security, and scalability. Our test suite is always being updated and enhanced to meet the evolving demands of our projects.

**Bug Tracking:** Without an successful bug following framework, our improvement preparation would not be doable. Each issue that's found is given a one-of-a-kind distinguishing proof, which encourages communication between the advancement and testing groups. Standard bug triage sessions encourage an open and compelling bug determination prepare by empowering incite distinguishing proof and taking care of basic issues.

**Relapse Testing:** Relapse testing is carried out after the rectification of flaws to guarantee that new adjustments don't meddle with or make unused issues with functionalities that as of now exist. This iterative preparation stabilizes the program improvement life cycle. Robotized relapse testing makes a difference to supply quick reaction times and assist the testing handle.

### 8.3. Quality Assurance Measures Taken to Ensure Software Reliability

**Code Audits:** Protecting the quality of the code is pivotal. Experienced designers do normal peer surveys, investigating code to guarantee compliance with best hones, coding guidelines, and any vulnerabilities. In expansion to making strides code quality, code surveys moreover energize information trade and a agreeable improvement environment.

**Robotized Testing:** A key component of our testing approach is mechanization. For time- expending and rehashed forms, robotized testing is utilized to guarantee reliable and dependable results. This technique assists the method of testing, expands test scope, and speeds up the discovery of deficiencies all through the improvement life cycle.

**Security Audits:** Our fundamental center is security, and in orchestrating to find and settle any conceivable vulnerabilities, we as often as possible carry out security surveys. By taking a proactive position, the e- commerce stage is better able to stand up to security breaches and keep up buyer security and security. Security surveys are carried out in ascension with best sharpens and industry prerequisites.

**Execution Testing:** One basic component of our quality control strategies is execution testing. It overviews the steadiness, flexibility, and responsiveness of the stage underneath a couple of stack

scenarios. This guarantees an impeccable client inclusion and tall execution in the midst of utilization periods. Execution testing disclosures are utilized to coordinate ceaseless optimization and checking exercises.

To whole up, our careful testing and quality control strategies are basic to giving a strong and reliable e-commerce stage. Through the utilize of an assortment of testing approaches, strict bug following strategies, and quality confirmation methods, we need to provide a secure, adaptable, and natural stage that not as it were fulfills but moreover past client desires. These steps moreover bolster the software's long-term strength and maintainability.

## CHAPTER 9: USER INTERFACE & API

### 9.1. User Interface

#### 9.1.1. “Sign up” page



Figure 12: Illustration of “Sign up” page

A contemporary fitness picture on True-WellnessWay's Sign-Up page on the left reflects the design and caliber of the fitness equipments available. The True-WellnessWay logo and phrase are prominently shown on the registration form, which has spaces for email, full name, phone number,

address, country, password, and confirm password on the right. For increased convenience, social networking sign-up options via Google and Facebook are provided below.

Complete the form on the right with your email address, full name, phone number, address, country, password, and confirm password to register on FurniScape. Press "Sign Up" to finish the procedure. Alternatively, you can use the Facebook or Google logos below the form to join up using those services. To log in if you already have an account, choose "Sign in now". As a result, creating a new account is fast and simple.

### 9.1.2. "Sign in" page



Figure 13: *Illustrator of "Sign in" page*

The True-WellnessWay login page has a form on the right side and is elegantly basic. When logging in, users may choose to have their email address and password stored for subsequent logins. For recovery, there's a "Forgot password" link, and for new users, there's a "Sign up now" option. Additionally, users may log in using Google or Facebook.

Enter your password and email address to log in, then click "Sign In." Check the "Remember me" box if you would want the website to remember you. To retrieve your password, choose "Forgot

password." In addition to choosing "Sign up now," new users may click the corresponding buttons to log in using Google or Facebook.

### 9.1.3. "Home" page

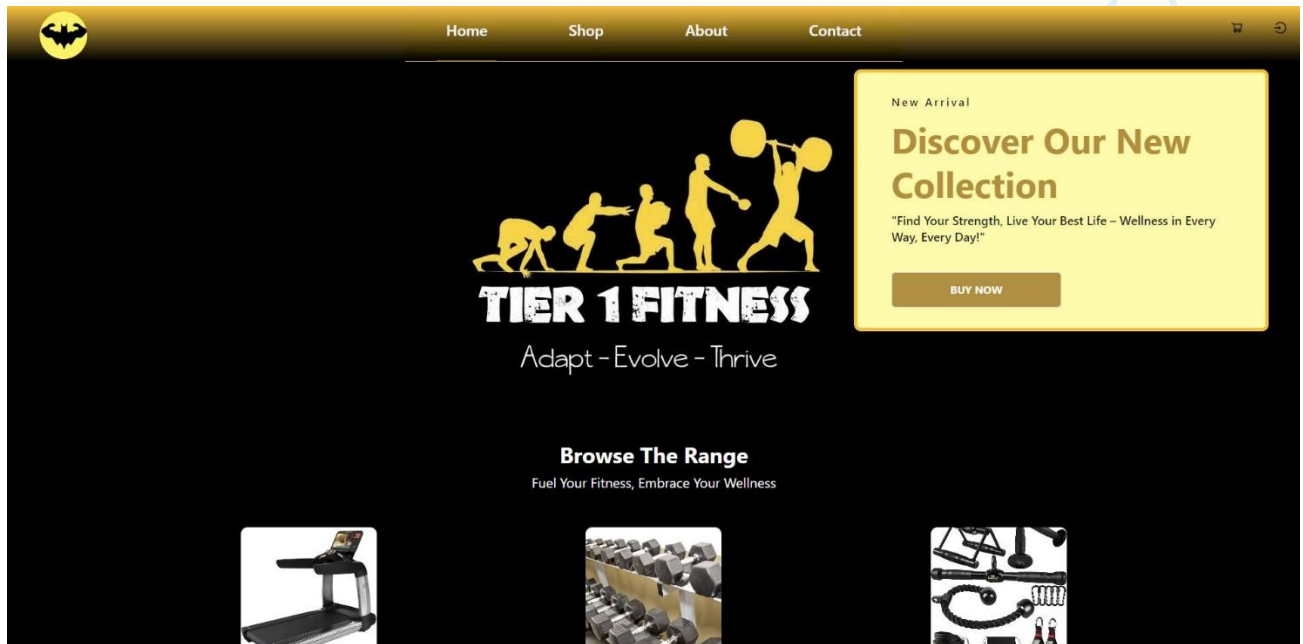


Figure 14: Illustration of "Home" page

The simple, contemporary style of the True-WellnessWay home page is intended to draw visitors in. With a large "Buy Now" button, the website invites users to explore the newest fitness range and promotes recent arrivals. Users are invited to explore more by perusing a variety of items that are elegantly displayed with photographs and succinct descriptions underneath.

Start by selecting the "Buy Now" button to see the newest arrivals on the "Shop" page. To see the various fitness categories, scroll down. To rapidly reach additional areas such as Home, Shop, About, and Contact, use the top navigation bar. You may click on any product to get additional details and buy alternatives.

### 9.1.4. "Shop" page



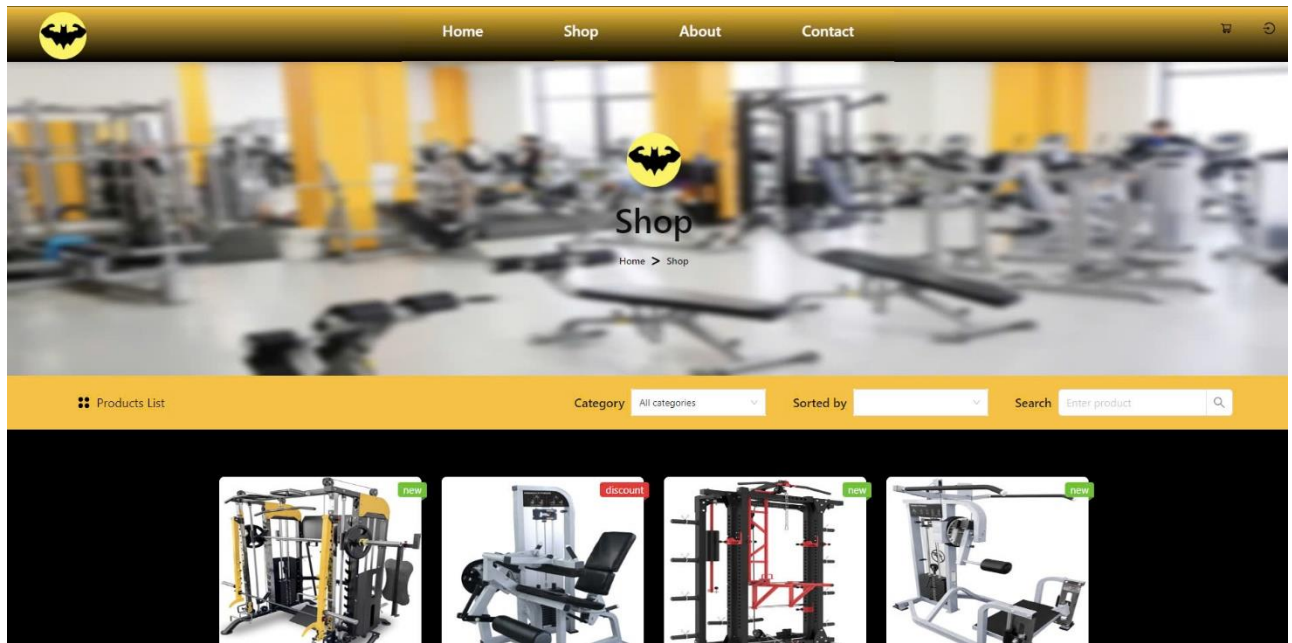


Figure 15: *Illustrator of “Shop” page*

The True-WellnessWay Shop website is designed to be simple to use and browse items quickly. With its simple style, the website offers customers the ability to choose items according to their tastes via categories and sorting choices. A category dropdown and a sorting option at the top allow you to order goods based on popularity, price, or relevancy.

Utilize the "Category" menu to choose certain furniture categories while interacting with the Shop page. To arrange the items according on your requirements, use the "Sorted by" dropdown menu. Use the search box to find particular things by typing the product name or a keyword. Any product picture may be clicked to see more information and buy options.

#### 9.1.5. *“Product details” page*

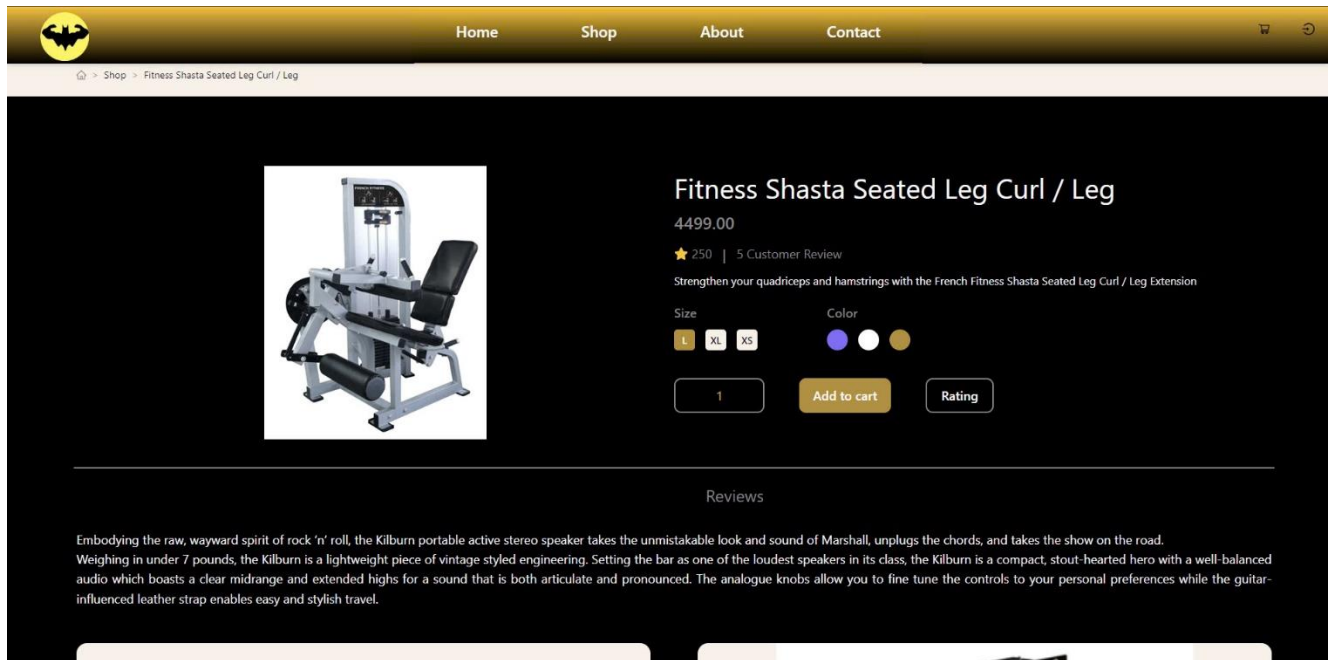


Figure 16: *Illustrator of "Product details" page*

All of the product's details are available on the True-WellnessWay Product Details page. Viewers may peruse crisp photos, thorough descriptions, and client endorsements. The pricing, size, and color choices are all shown on the website, making it simple to alter the product to your taste.

Choose your preferred size and color from the selections on the Product Details page, then use the amount buttons to indicate how many products you want to buy. To add the item to your shopping basket, click the "Add to cart" button. By selecting the "Rating" option, you can also give the product a rating. Go back and forth between the "Description" and "Reviews" tabs for more details.

#### 9.1.6. "Cart" page



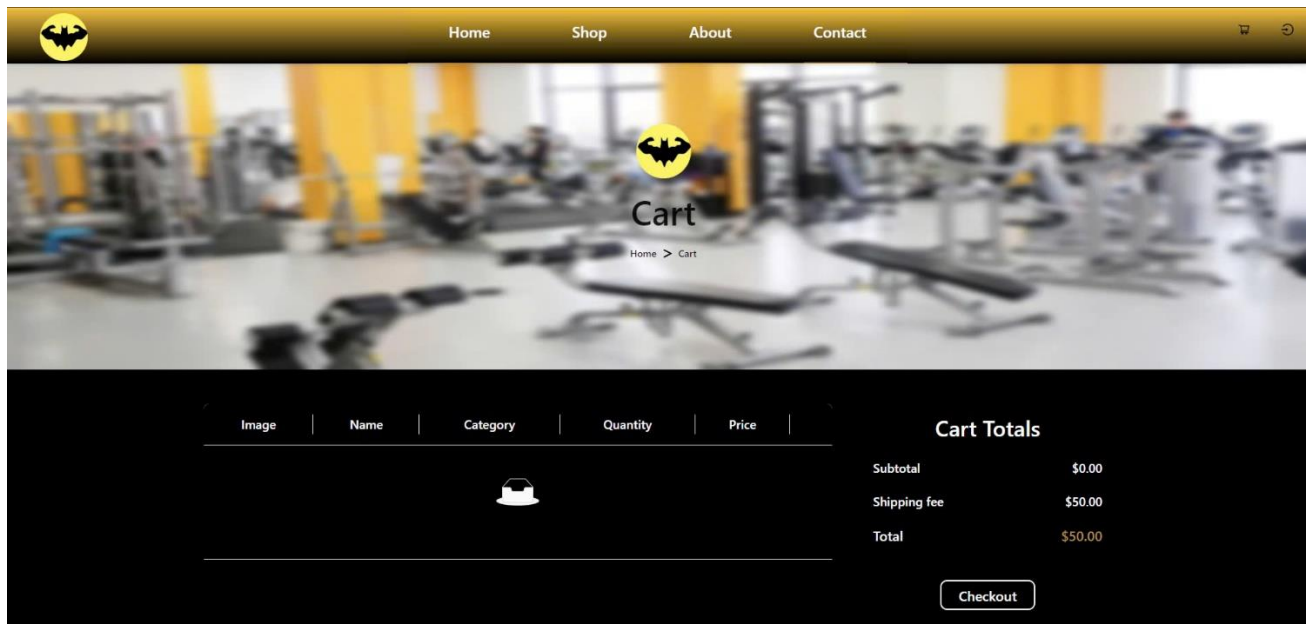


Figure 17: Illustrator of “Cart” page

### 9.1.7. “Checkout” page

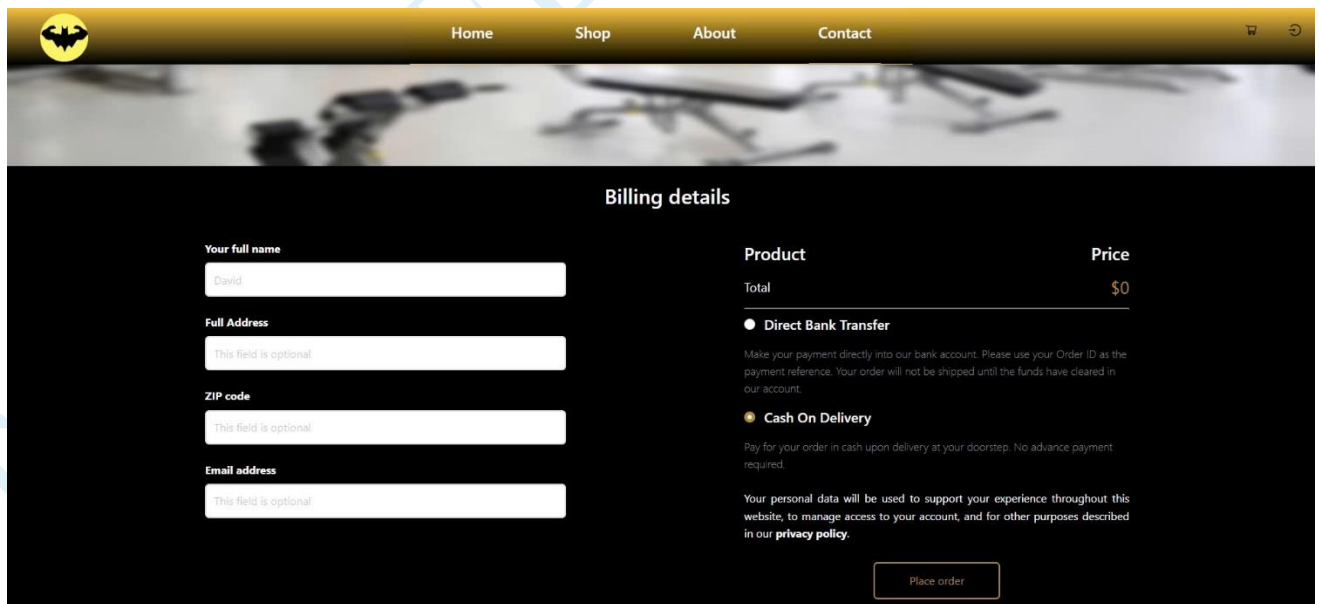


Figure 18: Illustrator of “Checkout” page

An extensive view of the things you have put to your shopping basket is available on the True-WellnessWay basket page. The picture, name, category, quantity, and price of each product are shown. The subtotal, delivery cost, and total amount due are shown in the Cart Totals section.

The plus and minus buttons next to the amount box on the Cart page allow you to interact with the item's quantity. Click the trash can symbol next to the product to delete it. After checking over your basket and making any required changes, click "Checkout" to go on to the payment page.

### 9.1.8. “About” page

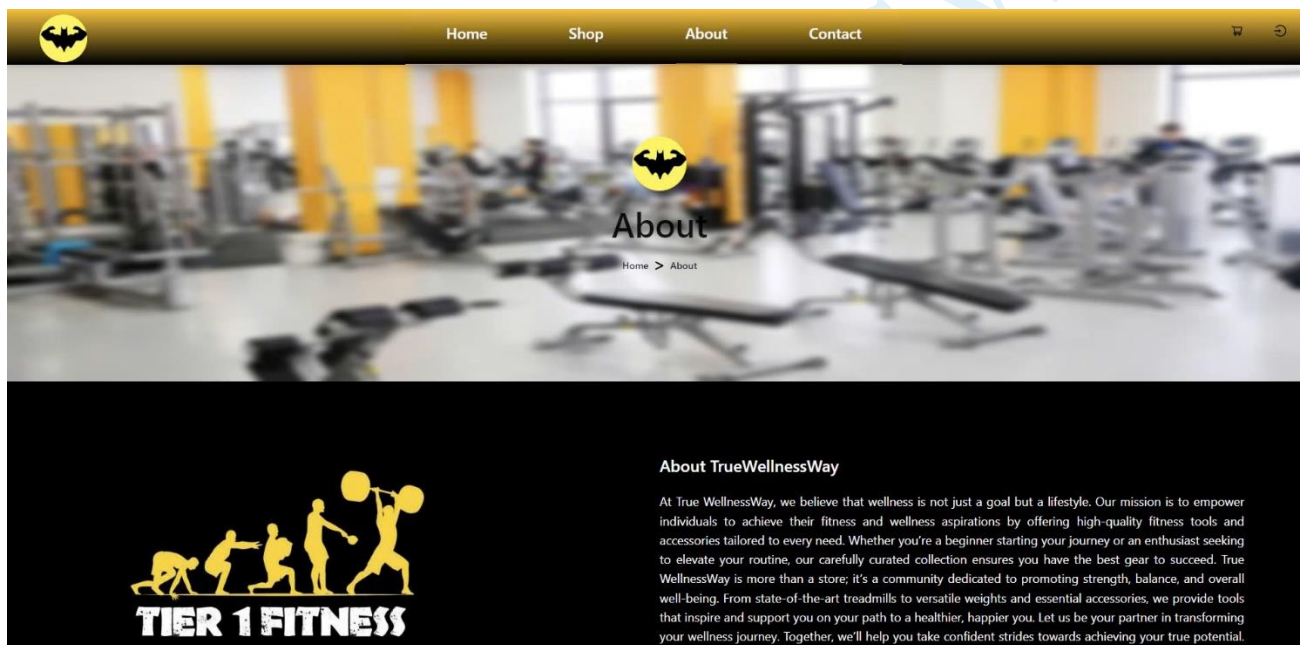


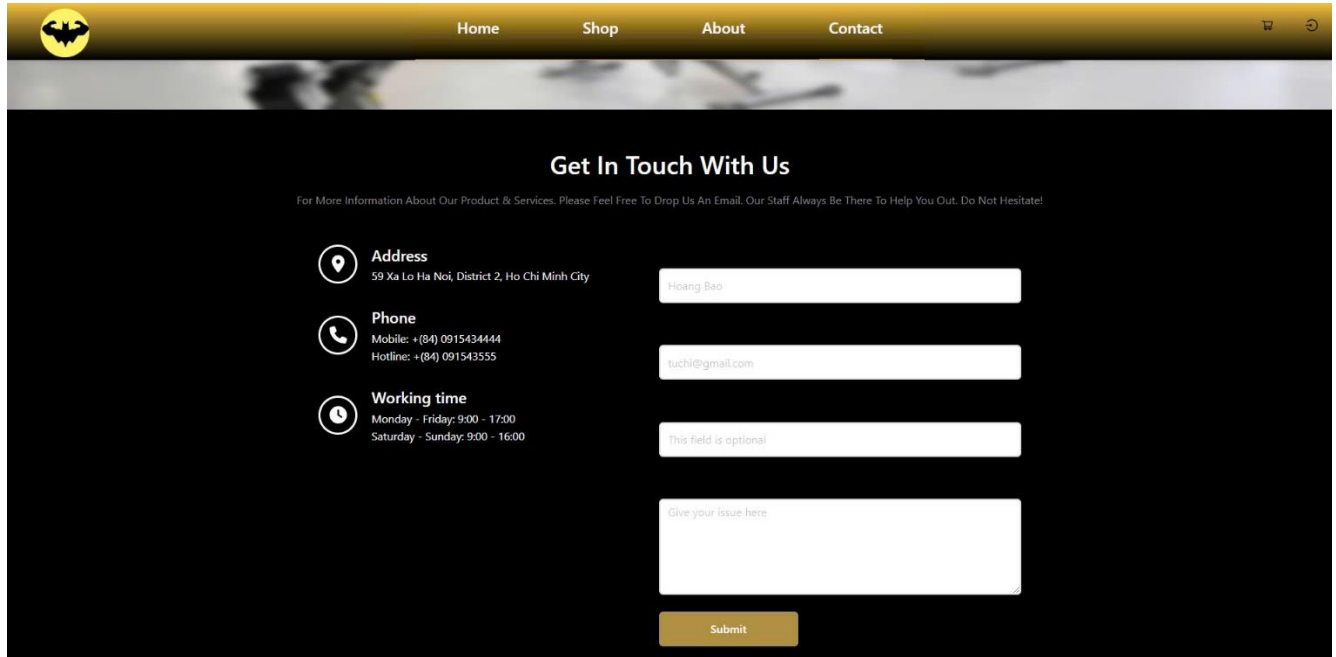
Figure 19: Illustration of “About” page illustration

True-WellnessWay's purpose is to change living spaces with elegant and comfy fitness, as stated on their "About" page. It demonstrates their dedication to sustainability and quality by using eco-friendly practices and products that are acquired ethically. The website also provides a short biography and pictures of each member of the founding and management team.

To learn more about True-WellnessWay's goals, core principles, and sustainability initiatives, just scroll down. Information regarding the founding team's backgrounds may be found further down.

This section gives a clear and succinct summary of the team members behind True-WellnessWay including their names and images.

### 9.1.8. “Contact” page



The screenshot shows the 'Contact' page of the True-WellnessWay website. The page features a dark background with a yellow header bar. The header contains a logo, navigation links (Home, Shop, About, Contact), and social media icons. The main content area is titled 'Get In Touch With Us' and includes contact information (Address, Phone, Working time) and a contact form with fields for name, email, message, and a submit button.

Figure 20: *Illustrator of “Contact” page*

True-WellnessWay's "Contact" page has all the information you need to get in touch with the business. True-WellnessWay's location, phone number, and business hours are conveniently listed, facilitating clients' search and communication. Additionally, the website has a contact form that allows customers to get in touch with the customer support staff directly by entering their name, email address, message, and topic.

To use the contact page, provide your name, email address, message, and topic. Once finished, submit your query by clicking the "Submit" button. In case consumers would rather communicate directly, the contact information and working hours supplied guarantee that they may get in touch over the phone.

### 9.1.9. “Profile” page

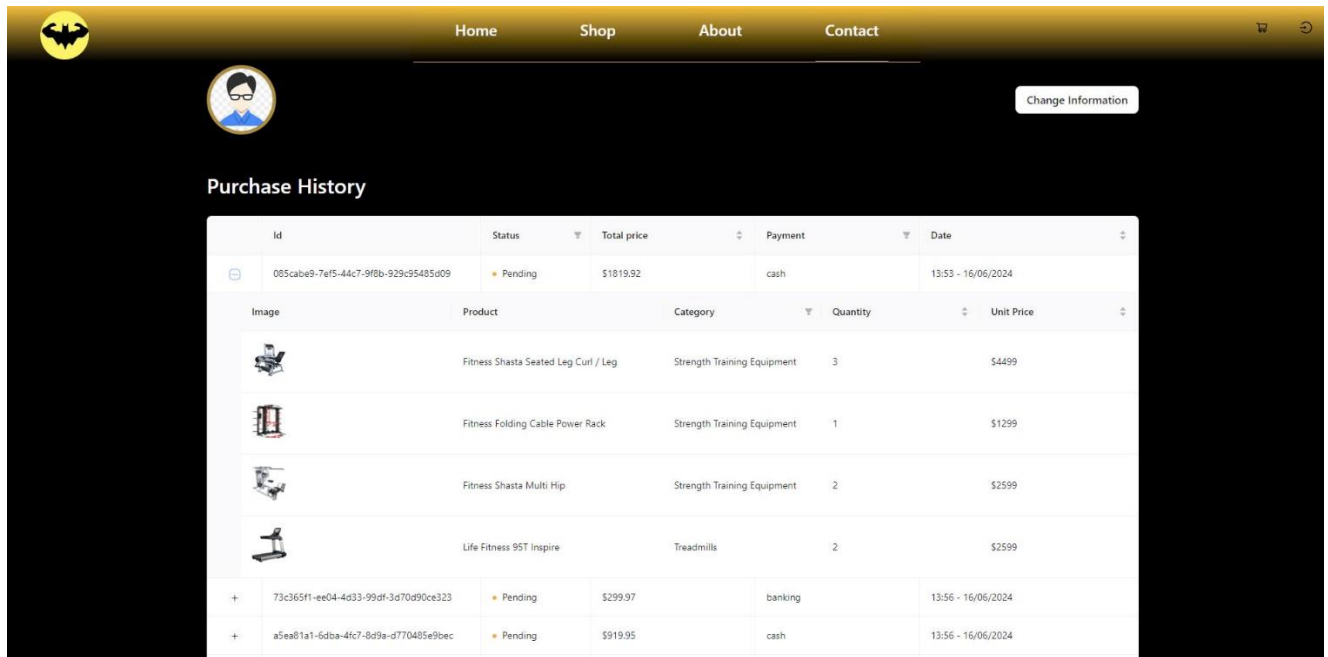


Figure 21: *Illustrator of "Profile" page*

The "Profile" page of True-WellnessWay displays user information and a purchase history. Users can view their name, email, and a list of past purchases, including order IDs, status, total price, payment method, and date. This allows users to keep track of their orders and review past transactions.

To use the Profile page, review your displayed information and purchase history. If you need to update your details, click the "Change Information" button. This feature ensures your profile remains current and accurate. The page provides a comprehensive overview of your shopping activity, enhancing the user experience.

#### 9.1.10. "Users Management" page for Admin

User ID	Avatar	Name	Email	Phone Number	Address	Created Date	Updated Date
4e54e7f2-846d-4a44-8a79-c8c33ed2874a		Bảo Phan	hoangbao15082002@gmail.com	0855414583	181/29a2 Nguyễn Thượng Hiền	20:12 - 15/12/2024	20:12 - 15/12/2024
98749d69-ab42-4cdd-8a72-bf4920a1545e		bao	bao@gmail.com			23:02 - 15/06/2024	23:02 - 15/06/2024
b158c423-1fd0-47ed-9125-1507b94b6fda		user5	user5@gmail.com	213455464	354/1/37 Phan Văn Trị	13:56 - 16/06/2024	13:56 - 16/06/2024
c2469515-7a0e-4c01-8442-66bcb0baad		user4	user4@gmail.com	123456789	285/2/7 Phan Đình Phùng	13:53 - 16/06/2024	13:53 - 16/06/2024

Figure 22: *Illustrator of “Users Management” page for Admin*

True-WellnessWay's "Users Management" page is intended to help administrators efficiently manage user accounts. A detailed list of users is shown, along with their phone number, email address, address, created and updated dates, username, avatar, name, and other personal information. Using this tool, administrators may monitor every registered user and make sure all of their information is correct and up to date.

Use the list to search for individual users on the Users Management page. You may quickly access comprehensive information and edit or amend user data as necessary. By guaranteeing the efficient administration of user data, this feature helps to preserve the accuracy and structure of user records.

#### 9.1.11. *“Orders Management” page for Admin*

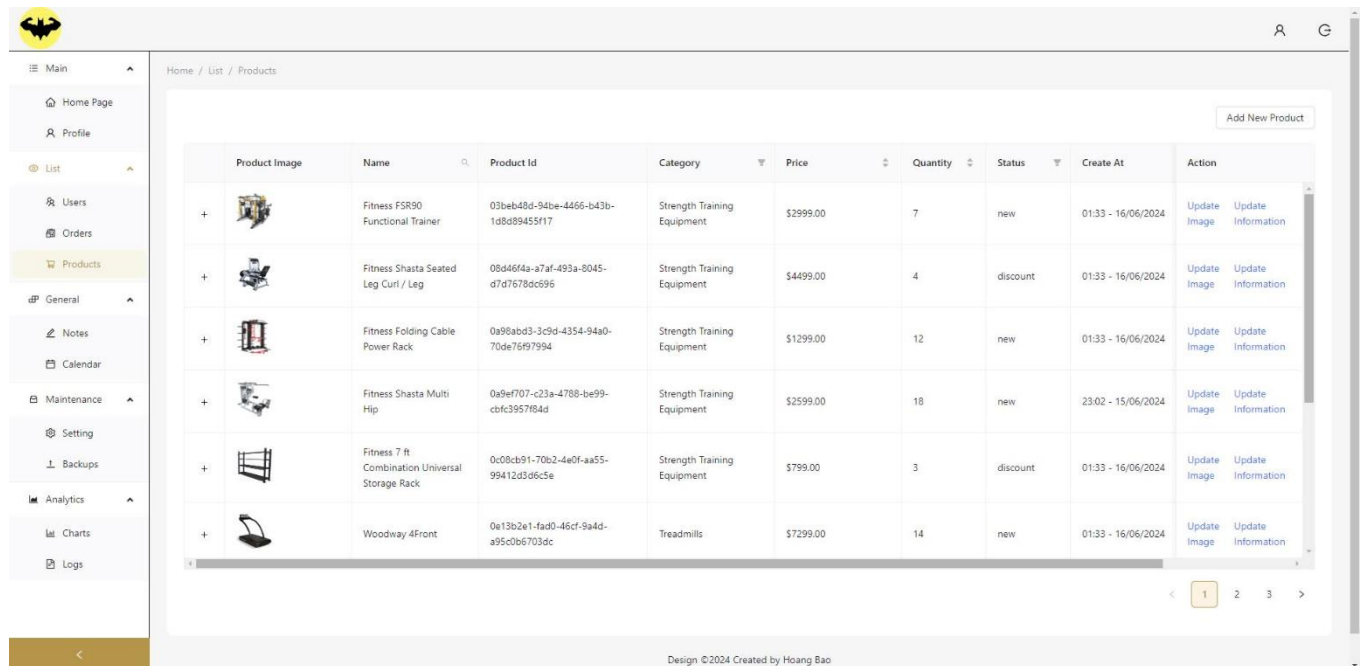
	Order Id	User Id	Date	Status	Total price	Payment
+	085cabe9-7ef5-44c7-9f8b-929c95485d09	c2469515-7a0e-4c01-8442-66bcb0baad	13:53 - 16/06/2024	Pending	\$1819.92	cash
+	73c365f1-ee04-4d33-99df-3d70d90ce323	b158c423-1fd0-47e4-9125-1507b94b6fda	13:56 - 16/06/2024	Pending	\$299.97	banking
+	a5ea81a1-6dba-4fc7-8d9a-d770485e9bec	b158c423-1fd0-47e4-9125-1507b94b6fda	13:56 - 16/06/2024	Pending	\$919.95	cash
+	ca81b666-0d5b-4d09-bb9e-d96382640260	c2469515-7a0e-4c01-8442-66bcb0baad	13:54 - 16/06/2024	Pending	\$1029.97	cash
+	d5bed815-8290-4266-bba5-062e247837b4	c2469515-7a0e-4c01-8442-66bcb0baad	13:54 - 16/06/2024	Pending	\$1049.97	cash

Figure 23: Illustrator of “Orders Management” page for Admin

True-WellnessWay's "Orders Management" page is designed to help administrators effectively monitor and handle client orders. A comprehensive record of all orders is available on this page, complete with Order ID, User ID, Date, Status, Total Price, and Payment Method. Admins may obtain a detailed view of every order's details as it also displays photos of the items along with information about their categories, quantities, and unit costs.

Admins may utilize the filters to discover particular orders or browse through the list to see all of the orders when using the Orders Management page. Each order's status may be checked, its information reviewed, and if needed, the order status can be updated. This guarantees the precise and effective processing of every order, maintaining a high standard of customer care and operational effectiveness.

### 9.1.12. “Products Management” for Admin



Product Image	Name	Product Id	Category	Price	Quantity	Status	Create At	Action
	Fitness FSR30 Functional Trainer	03beb48d-94be-4466-b43b-1d8d89455f17	Strength Training Equipment	\$2999.00	7	new	01:33 - 16/06/2024	<a href="#">Update Image</a> <a href="#">Update Information</a>
	Fitness Shasta Seated Leg Curl / Leg	08d4664a-a7af-493a-8045-d7d7678dc696	Strength Training Equipment	\$4499.00	4	discount	01:33 - 16/06/2024	<a href="#">Update Image</a> <a href="#">Update Information</a>
	Fitness Folding Cable Power Rack	0a98abd3-3cd9-4354-94a0-70de7697994	Strength Training Equipment	\$1299.00	12	new	01:33 - 16/06/2024	<a href="#">Update Image</a> <a href="#">Update Information</a>
	Fitness Shasta Multi Hip	0a9ef707-c23a-4788-be99-cbf3957894d	Strength Training Equipment	\$2599.00	18	new	23:02 - 15/06/2024	<a href="#">Update Image</a> <a href="#">Update Information</a>
	Fitness 7 ft Combination Universal Storage Rack	0c08cb91-70b2-4e0f-aa55-99412d3d6c5e	Strength Training Equipment	\$799.00	3	discount	01:33 - 16/06/2024	<a href="#">Update Image</a> <a href="#">Update Information</a>
	Woodway 4Front	0e13b2e1-fad0-46cf-9a4d-a95c0b6703dc	Treadmills	\$7299.00	14	new	01:33 - 16/06/2024	<a href="#">Update Image</a> <a href="#">Update Information</a>

Figure 24: *Illustrator of “Products Management” for Admin*

True-WellnessWay's "Products Management" page is designed to help administrators effectively manage the product listings. All items are shown in full on this page, together with important information including the Product Image, Name, Product ID, Category, Price, Quantity, Status, and Creation Date. Administrators have the ability to promptly evaluate the inventory and make the required modifications to maintain accurate and current product information.

Administrators may use the search and filter tools to identify particular goods on the goods Management page, or they can browse through the product list to see all items. By choosing "Update Image" or "Update Information" under the Action column, they may update current items or add new ones by clicking the "Add New Product" button. This feature makes sure that the product catalog is up to date and accurately represents the stock that is available, which improves the shopping experience for consumers.

## 9.2. Application Programming Interface (API)



Authorization API Endpoints	/auth/signup	Endpoint for new users to create an account.
	/auth/signin	Endpoint for existing users to log in.
	/auth/forgotpassword	Endpoint to initiate the password recovery process.
	/auth/resetpassword	Endpoint to reset the password using a unique ID and token.
User API Endpoints	/user/getuser	Retrieves details of the authenticated user (verifyToken).
	/user/getalluser	Retrieves details of all users. Admin-only access (verifyAdmin).
	/user/updateUser	Updates the details of the authenticated user (verifyToken).
Product-Related API Endpoints	/product/addProduct	Adds a new product to the catalog. Admin-only access (verifyAdmin).
	/product/addProducts	Adds multiple products to the catalog at once. Admin-only access (verifyAdmin).
	/product/getProducts	Fetches a list of products available in the catalog.
	/product/getProductDetail	Retrieves detailed information about a specific product.
	/product/getProductPicture	Fetches the image of a specific product.
	/product/updateProduct	Updates product details. Admin-only access (verifyAdmin).
	/product/updateProductImage	Updates the image of a product. Requires image upload and admin access (verifyAdmin).
	/product/searchByKeyword	Searches for products based on a keyword.
	/product/searchByCategory	Searches for products within a specific category.



Order API Endpoints	/order/placeOrder	Places a new order. Requires user authentication (verifyToken).
	/order/getOrderList	Retrieves the list of orders for the authenticated user (verifyToken).
	/order/getOrderDetails	Fetches detailed information about a specific order. Requires user authentication (verifyToken).
	/order/getAllOrders	Retrieves a list of all orders. This is an admin-level action (verifyAdmin).

Table 9: *API of True-WellnessWay*

## CHAPTER 10: PROJECT EVALUATION

### 10.1. Evaluation Criteria Used to Measure Project Success

Five factors should be assessed at different stages of the project: performance in relation to the business case, schedule, quality, cost, and stakeholder satisfaction. In any case, this is something you ought to be doing casually. When a phase or stage comes to a close, a formal project review can be helpful since it can show you how the project is doing in comparison to the initial estimates. The following section of work can then be approved (or denied) based on the information provided.

**Schedule Baseline:** Many times, adhering to the original project timeline is what makes a project manager successful or unsuccessful. Proficiency in project management is necessary to understand how difficult that is, but it can be made slightly less difficult if you keep assessing your development as you go. Frequently—at least once a week, in my opinion—you will change your project schedule. As part of a monthly report to your Project Board or senior stakeholder group, you can also conduct a more formal schedule appraisal at the conclusion of each stage or phase. Using an online Gantt chart, which turns tasks and deadlines into timelines that can be visually viewed, makes it simple to change your project schedule. Examine all your significant achievements to see if they still occur on the dates that you first decided upon. Calculate the amount of any slippage and how it will affect the overall timeliness of your project.

**Quality Assurance:** A quality review should be conducted at the conclusion of a project phase. You can assess the caliber of your project management techniques as well as the deliverables. For example, can you ensure that you consistently follow the change management process? You may determine if what you are doing satisfies the requirements outlined in your quality plans by conducting a quality review. It's best to find out early, before the project gets too far along, as it might be too late to fix it then. To make sure you're checking everything off while reviewing quality, project management software is helpful. Some list views are far inferior than Project Manager's. Beyond only a simple to-do list, our application allows you to assign tasks, connect files, and even view the percentage of each item on your quality review that is completed. Quality review is facilitated by our cloud-based application, which links all members of your team in real time. To assess the caliber of your job, use a high-quality instrument.

**Project Budget:** Assessing the financial performance of a project is critical since many CEOs consider cost management to be one of their top concerns. At this time, compare your project budget to your actual spending. Look for explanations for any variations that may exist. A project dashboard allows you to view your real-time actual spend. In addition, you should estimate the budget forward until the project's completion. Make sure it is sufficiently near to your initial estimate so that your management team can be assured that the job is proceeding as planned. Again, it's better to know now, but if your projections increase excessively, it could mean that your project's spending will spiral out of control.

**Stakeholder Satisfaction:** Checking in with your stakeholders, or larger team, is important because they play a major role in completing most of the job. Find out what they think about the project currently and what you could be doing better. You can still ask them for a rating out of 10, but statistical documentation of this metric is challenging. It is nevertheless a beneficial practice even if you are gauging their level of satisfaction in an arbitrary manner. You can make preparations to completely engage stakeholders in an effort to try and change their behavior if you see that they are not entirely supportive.

**Performance to Business Case:** In the end, you should review the business case to confirm the initial terms that were agreed upon. What is the status of your project? Verify that the business issue this initiative was intended to address still exists and that the benefits are still reasonable. Project teams often embark on exciting new endeavors, but by the time they're done, the business landscape

has changed, making the project obsolete. During the course of the project, no one bothered to review the business case, and as a result, no one became aware that the job was no longer necessary. Avoid working on something that is unpopular! Regularly review the business case and assess it in view of the current goals of the company. Additions to this list are permitted. In reality, it ought to represent your priorities and those of your team; you ought to be assessing the things that truly count, so go ahead and include extras or remove any that don't concern you as much. Project management software can assist you in hunting down the essentials. To track development and performance, the Project Manager offers a real-time dashboard. Never set up your dashboard with subpar tools. When you log in, ours is already operational. For more intelligent decision-making, it also records data in real-time. To provide a quick status report, we compute expenses, time, and other factors.

## 10.2. Assessment of Whether Project Goals Were Achieved

The extend has been 100% completed with the essential necessities of a E-commerce stage. The site completely meets all client needs, such as looking for items, sifting merchandise through catchphrases, seeing item data, including merchandise to cart, checking items, etc. Other than, the set objectives have been completed 95% to 100%. Such as clear contact data, arrange upgrade, user-friendly interface, item assortment, ceaseless change, proficient look and item sifting, smooth checking prepare. We are within the handle of testing and idealizing a few highlights such as proactive customer input and responsive client back, and security. Within the highlight, we trust that all capacities can be completed.

## 10.3. User Feedback and Satisfaction

**Wide Choice of things:** True-WellnessWay offers a wide run of things to meet the different requests of furniture proprietors. Your location truly could be a one-stop shop for anything furniture-related, advertising everything from high-quality furniture nourishment to elegant embellishments and necessities for therapeutic care.

**Inviting Client Interface:** Your website's client interface is exceptionally instinctive to utilize and does not essentially see great. Smooth encounters that include to a hassle-free shopping travel incorporate exploring through different categories, finding particular items, and wrapping up the checkout strategy.

**Exhaustive Item Depictions:** They esteem the intensive item portrayals and client comments that are given for each thing. It helps me in making well-informed choices concerning the merchandise they purchase for the shop's creature companions, making beyond any doubt that their needs are fulfilled and indeed surpassed.

**Quick and Dependable Conveyance:** They have continuously been satisfied with how rapidly things are conveyed. Their proceeding dedication to your stage is to a great extent due to the information that they can number on True-WellnessWay to convey the shop's fitness supplies on time.

**Responsive Client Back:** Your client back benefit has been great in reacting to my uncommon request and concerns, as well as in settling them rapidly. The by and large wonderful involvement is assist upgraded by the polished skill and commitment of your back team.

**Special Bargains and Devotion Program:** Your dependability program and uncommon bargains are amazing actuations for individuals to keep coming back. True-WellnessWay is clearly thankful of its supporters and goes over and over to fulfill their needs.

## CHAPTER 11: FUTURE WORK

### 11.1. Responsive Interface Design

Utilize responsive web plan methodologies to have the interface alter to different screen sizes. Plan with versatile gadgets in intellect at first to guarantee the leading conceivable involvement on little shows. Utilize a assortment of gadgets to conduct client testing to discover and settle any ease of use issues. Make beyond any doubt that the client encounter is smooth and uniform over all stages, including tablets, smartphones, and desktop computers.

Ready to start to approach versatile by making the client interface for small-screen versatile gadgets, at that point slowly move forward it for greater ones. Donate littler shows need when it comes to imperative usefulness and substance. Adaptable Media and pictures to numerous screen sizes. To keep pictures from filling their holders to the brim, think around utilizing the max-width: 100% parameter. Utilizing relative units for text style sizes in responsive typography to empower content to resize to fit the viewport.

On littler shows, alter the line statures and dividing for way better perusing. Route by utilizing techniques like off-canvas menus, collapsible route, or cheeseburger menus to optimize route on littler shows. Make beyond any doubt the route things are simple to tap and are touch neighborly. We moreover make touch-friendly buttons and frame inputs with adequate separate between them to maintain a strategic distance from unintended.

## 11.2. System Optimization

Make strides the in general execution, speed, and unwavering quality of the furniture item e-commerce stage. Within the ever-evolving world of furniture e-commerce, remaining up to date with the most recent innovative progressions is pivotal. Two key highlights that have ended up progressively vital are conveying the site on a server and executing OTP (One- Time Watchword) usefulness. Furthermore, computerizing answers to client comments and consolidating a star rating framework for input is fundamental for improving the in general client involvement.

Passing on the furniture e-commerce location on a server gives different benefits. By encouraging the location on a strong and secure server, businesses can ensure their arrange is persistently open to clients. This apportions with the chance of downtime, progresses area execution, and makes strides the by and huge faithful quality of the online shopping experience. Moreover, server sending licenses for successful organization of resources, flexibility, and basic integration with other systems or third-party organizations, contributing to a steady client experience.

The utilization of OTP convenience incorporates a layer of security to the furniture e-commerce location. With the extending prevalence of cyber threats, securing client data and trades is of first importance. By requiring clients to affirm their identity through OTP, businesses can soothe the risk of unauthorized get to and untrue works out. This ingrains certainty in clients and develops accept within the stage, coming almost in extended client fulfillment and steadfastness.

Streamlining client brilliantly requires a essential entirety of robotization. Businesses may rapidly take note and resolve client issues, issues, or input by mechanizing responses to their comments. This comes approximately in overhauled client affiliation, speedier response times, and a more individualized level of advantage. A smooth communication channel between the company and its clients is made by the system's capacity to comprehend and provide pertinent answers through machine learning and common lingo dealing with methods.

To construct up critical input, uniting a star rating system is fundamental. By allowing clients to rate their buys or by and expansive experience, businesses can collect quantitative data on client fulfillment. This input serves as a critical gadget for recognizing zones of headway, understanding client slants, and making data- driven choices to make strides the quality of things and organizations. The star rating system as well benefits inescapable clients, as they can allude to these evaluations to create taught obtaining choices.

Thus, sending a furniture e-commerce location on a server, executing OTP convenience, mechanizing answers to client comments, and joining a star rating framework are pivotal components for triumph inside the ever-comfurnitureitive furniture e-commerce industry. These highlights guarantee a reliable, secure, and user-friendly inclusion, developing client fulfillment, steadfastness, and diligent improvement for businesses in this enthusiastic commercial center.

### **11.3. AI and Machine Learning Integration**

Utilizing AI and machine learning to personalize client encounters, progress item proposals, and streamline forms. The integration of AI and Machine Learning into furniture e-commerce websites brings various critical benefits. In this exposition, I will talk about a few particular applications:

Firstly, AI and Machine Learning can be utilized to recommend items. By analyzing client behavior, buy history, and individual inclinations, the framework can prescribe items that are reasonable for each client. This makes strides the openness of items that clients are curious about and upgrades the transformation rate.

Besides, brilliantly look usefulness can be actualized utilizing AI and Machine Learning. This empowers the site to supply precise and significant look comes about based on client questions. These calculations can get it common dialect and recover data from different information sources, making it simpler for clients to discover wanted items and related data.

Thirdly, different creature species may be consequently categorized and recognized utilizing picture classification and acknowledgment. This makes it less demanding for clients to search for and select merchandise that are appropriate for their kind of furniture. It moves forward client involvement and speeds up the look prepare.

Fourthly, client interaction through chatbots can be encouraged. AI-powered chatbots can give back and counsel to clients. They can reply as often as possible inquired questions, give data

approximately items and administrations, and offer assistance clients learn more approximately a few sorts of furnitures and their care. This makes a helpful and provoke intuitively involvement for clients.

In conclusion, AI and Machine Learning can be utilized to anticipate patterns and oversee stock. By utilizing machine learning procedures, the site can estimate future buying patterns and client requests. This optimization empowers productive stock administration, guaranteeing the accessibility of fitting products and avoiding circumstances of overabundance or inadequately stock.

Coordination AI and Machine Learning into furniture e-commerce websites offers incalculable benefits for both businesses and clients. It gives an improved shopping encounter, conveys personalized data, and administrations, and makes a difference businesses cultivate interaction and development within the furniture industry.

#### 11.4. Continuous User Feedback and Testing

Foster an iterative approach to development by continuously gathering user feedback and testing new features. Implement feedback mechanisms such as surveys, ratings, and user reviews. Conduct A/B testing to evaluate the effectiveness of interface changes. Iterate the website and application based on user insights and preferences.

## CHAPTER 12: TESTING

### 12.1. Test case 1: Login

<b>Test Case #1</b> <b>System: True-WellnessWay</b> <b>Designed by: Mr. Phan Nguyen Hoang Bao</b> <b>Executed by: Ms. Huynh Thi Tu Chi</b> <b>Short Description: Test “Login” functionality</b>	<b>Test Case Name: Login</b> <b>Subsystem: User</b> <b>Design Date: 02/10/2024</b> <b>Execution Date: 13/11/2024</b>
<b>Pre-conditions</b> <ul style="list-style-type: none"><li>- The user account for which the login is being tested must already exist in the system</li><li>- The website or application hosting the login functionality should be accessible and operational</li><li>- The tester should have the correct login credentials for the user account being used in the test</li></ul>	



Step	Action	Expected System Response	Pass/Fail	Comments
1	Access the website at the first time	Show the user the page in guest mode	Pass	
2	Click the "Login" button in guess page	Display the "Login" page	Pass	
3	Enter email and password	Email and password are properly shown in the fields		
4	Press the "Login" button on login page	Load email and password into the database for checking	Pass	
5	Check the account's validity	Compare the database with the supplied account. Send the user to the login page with an error message if the account is invalid.	Pass	
6	Examine the account type	Compare the database with the input account: If the account is a client/worker account, go back to the worker/client home page. If the account is an admin account, go back to the admin page.	Pass	



**Post-conditions**

- Enables users to utilize additional features according to their account type and access their account home page.

## 12.2. Test case 2: Forget Password

<b>Test Case #2</b> <b>System: True-WellnessWay</b> <b>Designed by: Mr. Phan Nguyen Hoang Bao</b> <b>Executed by: Ms. Huynh Thi Tu Chi</b> <b>Short Description: Test "Forget password" functionality</b>	<b>Test Case Name: Forget password</b> <b>Subsystem: User</b> <b>Design Date: 05/10/2024</b> <b>Execution Date: 14/11/2024</b>
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**Pre-conditions**

- The user account for which the password is being reset must already exist in the system
- The website or application hosting the "Forgot Password" functionality should be accessible and operational
- If the "Forgot Password" process involves sending an email with a password reset link, ensure that the email configuration is correct, and emails can be sent and received

Step	Action	Expected System Response	Pass/Fail	Comments
1	Click the "Forgot Password" link	Show the "Forgot Password" page	Pass	
2	Enter the correct email and new password	Display a form where the user may update their password and email address.	Pass	

3	Click the submit button	Check user information and produce a success message before referring users to the "Login" page.	Pass	
4	Try logging in with your old password	The website reports an incorrect password	Pass	

**Post-conditions**

- The database stores the new password in case the change is successful
- The password has not been saved in the database when we fail to update the new

### 12.3. Test case 3: Register

<b>Test Case #3</b> <b>System: True-WellnessWay</b> <b>Designed by: Ms. Huynh Thi Tu Chi</b> <b>Executed by: Mr. Phan Nguyen Hoang Bao</b> <b>Short Description: Test "Register" functionality</b>	<b>Test Case Name: Register</b> <b>Subsystem: User</b> <b>Design Date: 06/10/2024</b> <b>Execution Date: 15/11/2024</b>
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**Pre-conditions**

- The website or application hosting the registration functionality should be accessible and operational.
- Information required for registration, such as email address, username, password, and any additional fields, should be available to the tester.
- The tester should use a unique email address or username that has not been previously registered in the system to avoid conflicts.

Step	Action	Expected System Response	Pass/Fail	Comments
1	Access the website at the first time	Show the user the page in guest mode	Pass	
2	Press the “Register” button in guest page	Display the “Register” page	Pass	
3	Enter name, age, email, password			
4	Press the “Register” button in “Register” page	Load this information into the database	Pass	
5	Save user information into the database	New user data, including email address and password, is inserted into the system database.	Pass	
6	Navigate to “Login” page for checking			
7	The user enters the email and password for the account just registered	Show the "Successful" message and navigate to Dashboard or Homepage	Pass	

#### Post-Conditions

- A new user account should be successfully created in the system
- If the registration process involves email verification, a confirmation email should be sent to the registered email address
- Upon successful registration, the user may be redirected to their dashboard or the application's home page

#### 12.4. Test case 4: Change Password

<b>Test Case #4</b> <b>System: True-WellnessWay</b> <b>Designed by: Ms. Huynh Thi Tu Chi</b> <b>Executed by: Mr. Phan Nguyen Hoang Bao</b> <b>Short Description: Test “Change Password” functionality</b>	<b>Test Case Name: Change Password</b> <b>Subsystem: User</b> <b>Design Date: 10/10/2024</b> <b>Execution Date: 16/11/2024</b>
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**Pre-conditions:**

- Sign in successfully to the page.
- Display an error message if incorrect information is entered outside of the parameter.

Step	Action	Expected System Response	Pass/Fail	Comments
1	Access the website	Show the user the "View as guest" page	Pass	
2	Press “Sign in”	Display the “Sign in” page	Pass	
3	Enter email/username, password			
4	Press confirm	Show the homepage	Pass	
5	Press “Profile”	Display the personal user information	Pass	
6	Press “change password”	Display the required input frame to enter the old password	pass	
7	Press ”confirm”	Show the renew password frame	Pass	
8	Enter the new password			
9	The information is saved to the database	Show the "Successful" message		

**Post-conditions:**

- The new password is different from the old password.
- The new password satisfies the system requirements.

## 12.5. Test case 5: Filter Products

**Test Case #5**

**System:** True-WellnessWay

**Designed by:** Mr. Phan Nguyen Hoang Bao

**Executed by:** Ms. Huynh Thi Tu Chi

**Short Description:** Test “Filter products” functionality

**Test Case Name:** Filter products

**Subsystem:** User

**Design Date:** 12/10/2024

**Execution Date:** 17/11/2024

**Pre-conditions**

- Users previously searched for products.
- New version search for products before

Step	Action	Expected System Response	Pass/Fail	Comments
1	Access the website	There are generic products in the center of page (8 products/page)	Pass	
2	Press the View all button	Display all available products	Pass	
3	Input the name into the search	The recommended name is shown in the search bar	Pass	
4	Filter categories of products you want to find			

5	Press “confirm”	Display the list of product which was filtered to match with name and categories	Pass	
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#### Post-conditions

- On the home page, provide a list of random products related to the users' prior jobs.
- The search engine displays the results that are accessible and similar to the keyword that the user entered.

## 12.6. Test case 6: View Product Details

<b>Test Case #6</b> <b>System: True-WellnessWay</b> <b>Designed by: Mr. Phan Nguyen Hoang Bao</b> <b>Executed by: Ms. Huynh Thi Tu Chi</b> <b>Short Description: Test “View list of product detailed” functionality</b>	<b>Test Case Name: View list of product detailed</b> <b>Subsystem: User</b> <b>Design Date: 15/10/2024</b> <b>Execution Date: 18/11/2024</b>
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#### Pre-conditions

- Users have already found their list of products which they want.
- The list can not be empty.

Step	Action	Expected System Response	Pass/Fail	Comments
1	Access website	The website homepage displays the “View filtered product list” option	Pass	
2	Click on “View product list”	The website displays a list of filtered product	Pass	
3	<b>Check post-condition</b>			

	<b>1</b>			
4	Click on “Whiskas cat food”	Displays product details that match the booking information described in pre-condition	Pass	
5	<b>Check post-condition 2</b>			
6	Click on store’s profile	Displays store’s details were provided this product	Pass	

**Post-conditions**

- “View detailed product” function should display the product’s name, price, description, comment and quantity.
- Display the store information.

## 12.7. Test case 7: Check The Service

<b>Test Case #7</b> <b>System: True-WellnessWay</b> <b>Designed by: Mr. Phan Nguyen Hoang Bao</b> <b>Executed by: Ms. Huynh Thi Tu Chi</b> <b>Short Description: Test “Check the service” functionality</b>	<b>Test Case Name: Check the service</b> <b>Subsystem: User</b> <b>Design Date: 18/10/2024</b> <b>Execution Date: 20/11/2024</b>
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**Pre-conditions**

- Users have successfully logged into the True-WellnessWay - Fitness Caring E-commerce Platform.
- The user has navigated to the section where services are listed.

Step	Action	Expected System Response	Pass/Fail	Comments
1	Access website	The website homepage is displayed.	Pass	
2	Navigate to the services section	The services section is displayed.	Pass	
3	Select a specific service	Details of the selected service are displayed.	Pass	
4	Check service details	The displayed information matches the details of the selected service.	Pass	
5	Proceed to service booking	The system allows the user to initiate the service booking process.	Pass	

**Post-conditions**

- The user has successfully checked the details of the selected service.
- If applicable, the user has initiated the service booking process.

## 12.8. Test case 8: Check The Bill

<b>Test Case #8</b> <b>System: True-WellnessWay</b> <b>Designed by: Mr. Phan Nguyen Hoang Bao</b> <b>Executed by: Ms. Huynh Thi Tu Chi</b> <b>Short Description: Test “Check the bill” functionality</b>	<b>Test Case Name: Check the bill</b> <b>Subsystem: User</b> <b>Design Date: 20/11/2024</b> <b>Execution Date: 03/12/2024</b>
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**Pre-conditions:**

- Users have successfully logged into the True-WellnessWay - Fitness Caring E-commerce Platform.
- The user has completed a transaction or service booking that generates a bill.

Step	Action	Expected System Response	Pass/Fail	Comments
1	Access website	The website homepage is displayed.	Pass	
2	Navigate to the user's account or transaction history	The user's account or transaction history page is displayed.	Pass	
3	Locate and select the relevant transaction or service booking	Details of the selected transaction or service booking are displayed.	Pass	
4	Check the bill details	The displayed information matches the details of the selected transaction or service booking.	Pass	
5	Verify total amount and payment details	The total amount and payment details are accurate and reflect the user's transaction.	Pass	

**Post-conditions**

- The user has successfully checked the bill details for the selected transaction or service booking.
- If applicable, the user has verified the total amount and payment details.

## 12.9. Test case 9: Rating

<b>Test Case #9</b> <b>System: True-WellnessWay</b> <b>Designed by: Ms. Huynh Thi Tu Chi</b> <b>Executed by: Mr. Phan Nguyen Hoang Bao</b> <b>Short Description: Test "Rating" functionality</b>	<b>Test Case Name: Check the bill</b> <b>Subsystem: User</b> <b>Design Date: 23/11/2024</b> <b>Execution Date: 05/12/2024</b>
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**Pre-conditions:**

- Users have successfully logged into the True-WellnessWay - Fitness Caring E-commerce Platform.
- The user has completed a transaction or received a service that allows for rating.

Step	Action	Expected System Response	Pass/Fail	Comments
1	Access website	The website homepage is displayed.	Pass	
2	Navigate to completed transactions or services	The user's completed transactions or services page is displayed.	Pass	
3	Select the relevant completed transaction or service	Details of the selected completed transaction or service are displayed.	Pass	
4	Locate and click on the "Rating" option	The rating interface is displayed, allowing the user to rate the product or service..	Pass	

5	Provide a rating and optional comments	The system accepts the rating and comments without errors.	Pass	
6	Submit the rating	The system processes the rating, and a confirmation message is displayed.	Pass	

#### Post-Conditions

- The user has successfully provided a rating for the selected completed transaction or service.
- If applicable, the user's rating and comments are reflected in the system.

## CHAPTER 13: CONCLUSION

### 13.1. Reiteration of Key Achievements

The e-commerce area True-WellnessWay, which specializes in fitness supplies, has cemented its achievements, and come to exceptional turning focuses. Clients can easily see, channel, and find tall-quality fitness things much obliged to the platform's smooth and user-friendly arrange, which has ceaselessly emphasized moving forward users' obtaining experiences. This commitment to client delight raised the credibility of reiterate commerce and developing buyer steadfastness.

Additionally, True-WellnessWay has suitably facilitates a wishlist work, enabling clients to bookmark their favored stock a few time as of late selecting on the location. This innovative technique speeds up changing over a visitor into a enrolled client, extending client support and engagement in common. The platform's installment advantage is justifying of praise for its achievements in guaranteeing secure trade managing with. True-WellnessWay has completed a impressive number of trades without experiencing any security breaches since of its loyal commitment to data security, building client certainty, and supporting the insight of budgetary trades.

Surveys and overhauls for True-WellnessWay depend intensely on client input and forcefully empower clients to contribute their contemplations and encounters. Much appreciated to this input circle, the location has assembled numerous assessments from furniture proprietors, which has

moved forward the product's quality and expanded its notoriety. A positive impact on potential clients takes after, expanding deals and hoisting client bliss.

To outlines, True-WellnessWay has finished a extraordinary bargain by putting wants and inclinations of its clients to begin with, presenting inventive highlights, broadening the determination of items, ensuring secure exchanges, utilizing client input, working well with partners, and keeping up supportability and security.

### 13.2. Closing Remarks

In conclusion, True-WellnessWay has been appeared to have finished unimaginable deeds and is fruitful on the site of fitness products e-commerce division by our bunches. True-WellnessWay encompasses a solid and solid stage by putting client joy to begin with, presenting imaginative highlights, expanding item offers, ensuring secure exchanges, utilizing client input, and working well with providers. Our endeavors have protected the astuteness of the stage, advanced a solid work air, and delivered a immaculate shopping encounter. True-WellnessWay gives to convey an extraordinary client involvement, broadening its range of items, and reliably including new features because it moves forward. Although True-WellnessWay, may be a youthful and little site, we accept that it will be well situated to succeed within the quickly growing e-commerce fitness merchandise division.

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