



# CAMPIFY

**COMP4121**

**E-COMMERCE TECHNOLOGY AND APPLICATIONS**

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# 1. Introduction

Campify is a camping company based in Hong Kong. The team of Campify is also a camping enthusiast who is dedicated to providing our customers with high-quality camping products and services. Campify offers a wide range of camping products for sale and rent, including tents, sleeping bags, backpacks, camping stoves, and more. Campify believes everyone should have the opportunity to experience the great outdoors and enjoy the beauty of nature, which is why we offer affordable pricing for all of our products.

In this project, it will separate into two parts. The first part of Campify would be based on Shopify to develop a camping-selling e-commerce website. The website will contain basic product selling, discount, categories, and payment. The second part of Campify would be based on React + Next.js and MongoDB to develop a camping selling plus renting e-commerce website. The website not only contains what part 1 has but also product renting and admin dashboard features.

The following part will clearly explain those parts.



Fig. 1 - Campify Banner

## 2. Project Management and Teamwork

Our team members worked very well together. We distributed project tasks equally, ensuring each member understood their responsibilities and worked together effectively towards our common goal. Each team member contributed skills and knowledge, allowing us to leverage our collective strengths and successfully complete the project.

### 2.1 Part 1

Name	Student ID	Contributions	% of contribution
CHU Tsun Him	21018476D	Developed website layout and design.	20%
CHAN Tsz Ho	21028224D	Set up product pages.	20%
CHEUNG Tsz Lai	21018133D	Integrated payments and added products.	20%
LAM Tsoi Ching	21032407D	Optimized SEO and added products.	20%
WONG Kwan Lam	21018347D	Set up product pages and payment.	20%
			Total: 100%

Table 1: Work contributions for Part 1

### 2.1 Part 2

Name	Student ID	Contributions	% of contribution
CHU Tsun Him	21018476D	Set up the back-end	20%

		using TRPC, developed the API endpoints.	
CHAN Tsz Ho	21028224D	Set up the back-end, including payment and Amazon S3 (For image upload).	20%
CHEUNG Tsz Lai	21018133D	Designed and developed the website's front-end.	20%
LAM Tsoi Ching	21032407D	Developed and managed the website's content, including product descriptions and images.	20%
WONG Kwan Lam	21018347D	Designed and developed the website's front-end.	20%
			Total: 100%

*Table 2: Work contributions for Part 2*

### **3. Demonstration**

#### **3.1 Video Demonstration**

**Part 1 Demo Video Link:**

<https://www.youtube.com/watch?v=kJQaDp0NTqw>

**Part 2 Demo Video Link:**

[https://www.youtube.com/watch?v=sw251\\_Vzmlo](https://www.youtube.com/watch?v=sw251_Vzmlo)

## 3.2 Deployed Versions

**Part 1 Shopify Link:** <https://campifyhk.myshopify.com/>

**Password:** 0

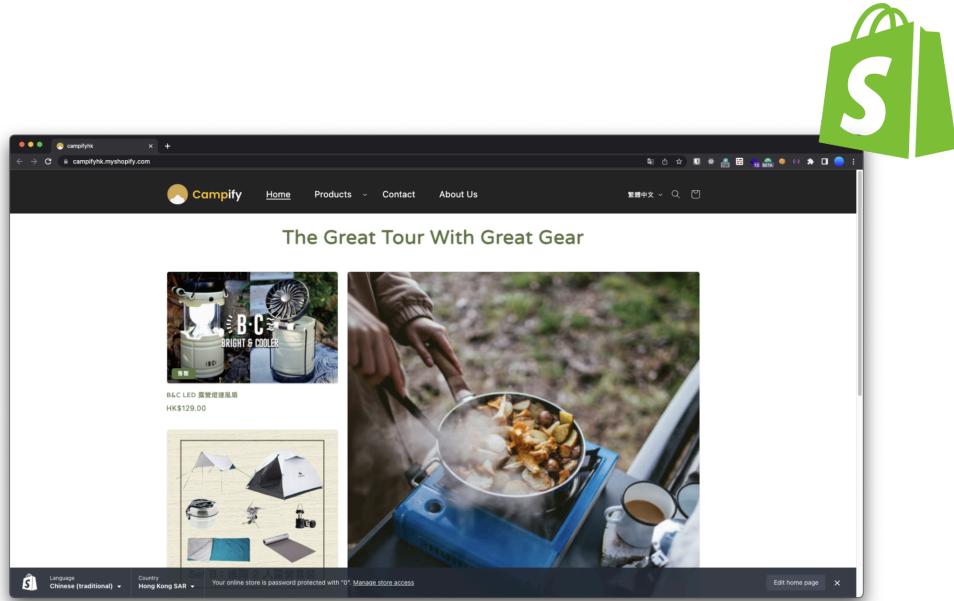


Fig. 2 - Campify Shopify Capture

**Part 2 React E-Commerce Link:** <https://campifyhk.netlify.app/>

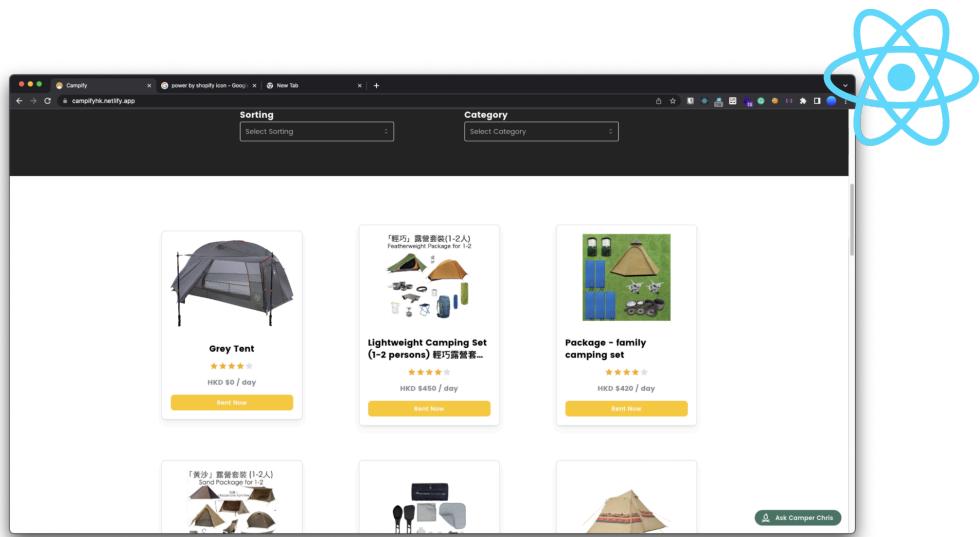


Fig. 3 - Campify React Capture

**Admin account:**

Username: [admin@admin.com](mailto:admin@admin.com)

Password: [admin@admin.com](mailto:admin@admin.com)

## 4. Part 1: Business Model

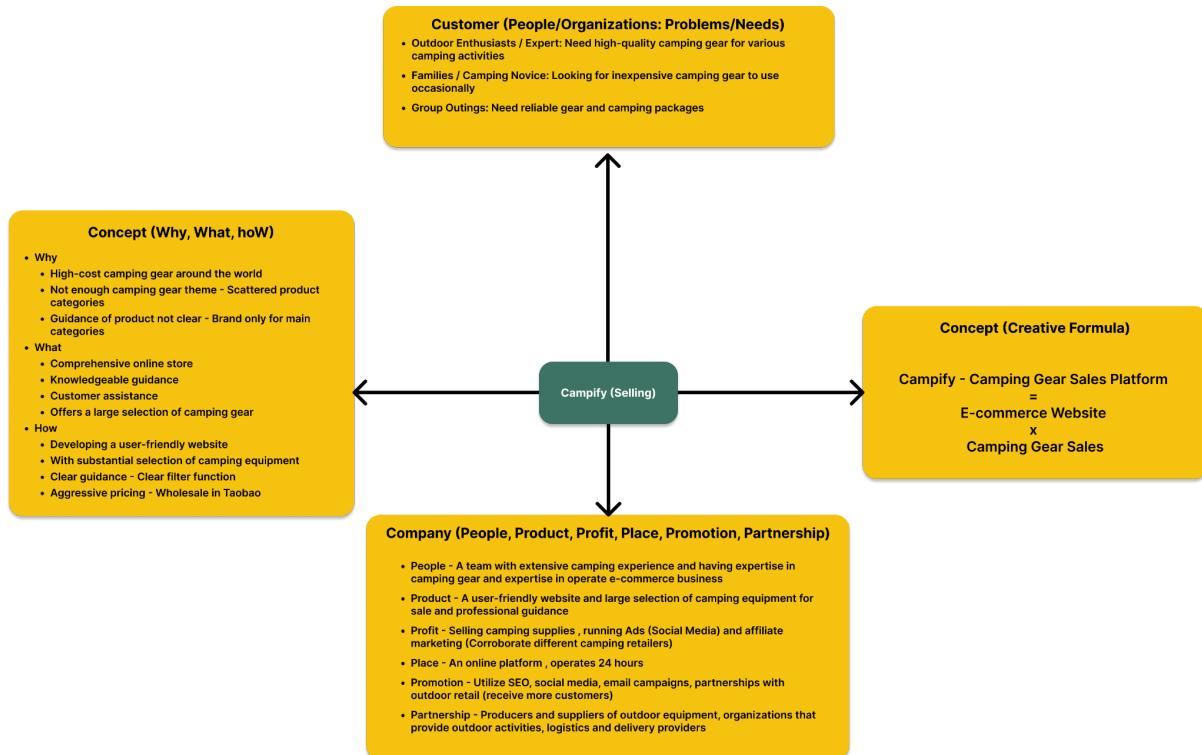


Fig. 4 - Part 1 C3 Model Map

### C3 Model Map:

#### Customer - People / Organizations: Problems / Needs

1. Outdoor Enthusiasts / Expert
  - a. Need high-quality camping gear for various camping activities
2. Families / Camping Novice
  - a. Looking for inexpensive camping gear to use occasionally
3. Group Outings
  - a. Need reliable gear and camping packages

#### Concept 1

1. Why
  - o High-cost camping gear around the world
  - o Not enough camping gear theme - Scattered product categories
  - o Guidance of product not clear - Brand only for main categories
2. What
  - o Comprehensive online store

- Knowledgeable guidance
- Customer assistance
- Offers a large selection of camping gear

### 3. How

- Developing a user-friendly website
- With substantial selection of camping equipment
- Clear guidance - Clear filter function
- Aggressive pricing - Wholesale in Taobao

## **Concept 2 - Creative Formula**

- E-commerce Website x Camping Gear Sales = Campify - Camping Gear Sales Platform

## **Company**

1. People - Our management team
  - A team with extensive camping experience and having expertise in camping gear
  - A team with expertise in operate e-commerce business
2. Product - What will offer the customers?
  - A user-friendly website
  - A large selection of camping equipment for sale and professional guidance
3. Profit - How do we make money to sustain?
  - Selling camping supplies
  - Running Ads - Social Media
  - Affiliate marketing - Corroborate different camping retailers
4. Place - How do we sell products?
  - An online platform
  - Global audience - 0 Geographical Boundaries
  - Operates 24 hours
5. Promotion - How do we promote products?

- Utilize SEO
- Social media
- Email campaigns
- Partnerships with outdoor retail - Receive more customers

## 6. Partnership - Who or what will partner with?

- Producers and suppliers of outdoor equipment
- Organizations that provide outdoor activities
- Logistics and delivery providers

## **Business Model Canvas:**

### **Customer Segments**

- Outdoor
- Enthusiasts
- Families
- Campers
- Hikers
- Backpackers

### **Value Propositions**

- Affordable pricing for camping products
- Wide range of camping products
- Opportunity to experience the great outdoors
- Connect with nature

### **Channels**

- E-commerce website
- Social media platforms
- Outdoor events and exhibitions

### **Customer Relationships**

- Personalized customer service
- Responsive customer support
- Loyalty programs

## **Revenue Streams**

- Sales of camping products
- Membership programs
- Affiliate marketing

## **Key Resources**

- Inventory of camping products
- E-commerce platform
- Social media accounts
- Marketing and advertising materials
- Customer support team

## **Key Activities**

- Sourcing and managing inventory
- Marketing and advertising
- Website development and maintenance
- Customer support
- Order fulfillment

## **Key Partnerships**

- Camping equipment manufacturers
- Outdoor events and exhibitions organizers
- Affiliate marketing partners

## **Cost Structure**

- Inventory and storage costs
- Website development and maintenance costs
- Marketing and advertising expenses
- Employee salaries and benefits
- Rent and utilities

<b>Key Partnerships</b> 	<b>Key Activities</b> 	<b>Value Proposition</b> 	<b>Customer Relationships</b> 	<b>Customer Segments</b> 
	<ul style="list-style-type: none"> <li>• Camping equipment manufacturers</li> <li>• Outdoor events and exhibitions organizers</li> <li>• Affiliate marketing partners</li> </ul> <ul style="list-style-type: none"> <li>• Sourcing and managing inventory</li> <li>• Marketing and advertising</li> <li>• Website development and maintenance</li> <li>• Customer support</li> <li>• Order fulfillment</li> </ul>	<ul style="list-style-type: none"> <li>• High-quality camping products for sale and rent</li> <li>• Affordable pricing</li> <li>• Wide range of camping products</li> <li>• Sustainable and eco-friendly camping options</li> <li>• Knowledgeable and experienced camping experts</li> </ul>	<ul style="list-style-type: none"> <li>• Personalized customer service</li> <li>• Responsive customer support</li> <li>• Loyalty programs</li> </ul>	<ul style="list-style-type: none"> <li>• Outdoor enthusiasts</li> <li>• Families</li> <li>• Campers</li> <li>• Hikers</li> <li>• Backpackers</li> </ul>
<b>Key Resources</b> 	<b>Channels</b> 			
<b>Cost Structures</b> <ul style="list-style-type: none"> <li>• Inventory and storage costs</li> <li>• Website development and maintenance costs</li> <li>• Marketing and advertising expenses</li> <li>• Employee salaries and benefits</li> <li>• Rent and utilities</li> </ul>		<b>Revenue Streams</b> <ul style="list-style-type: none"> <li>• Sales of camping products</li> <li>• Membership programs</li> <li>• Affiliate marketing</li> </ul>		

*Fig. 5 - Part 1 Business Model Canvas*

## **5. Part 1: Innovation and Critical Thinking**

In part 1 of Campify, it is an online shopping platform that aims to provide a variety of camping supplies to customers. In order to provide a centralized marketplace for camping enthusiasts, Campify helps simplify the buying process and gathers various camping equipment with package options. Customers can browse a variety of camping products, from tents and sleeping bags to cooking equipment and outdoor gear, all gathered on Campify's website.

Building a Campify website that facilitates shopping for customers requires careful planning and consideration of factors such as product categories, payment methods, and shipping options.

In the Campify development of part 1, the main key is to use the Shopify development platform to assist in the development of this website. Shopify provides a set of tools for the development of the Campify website to build and manage online stores, and set them up for different needs and situations.

# 6. Part 1 Technical Development and Prototype (Using Shopify)

## 6.1 Technical Development

### Payment

The implementation of Campify's payment options, by adding and activating some of the most commonly used payment methods through Shopify's "Payment providers", providing customers with a range of different online payment options, including Google Pay, PayPal, Mastercard.

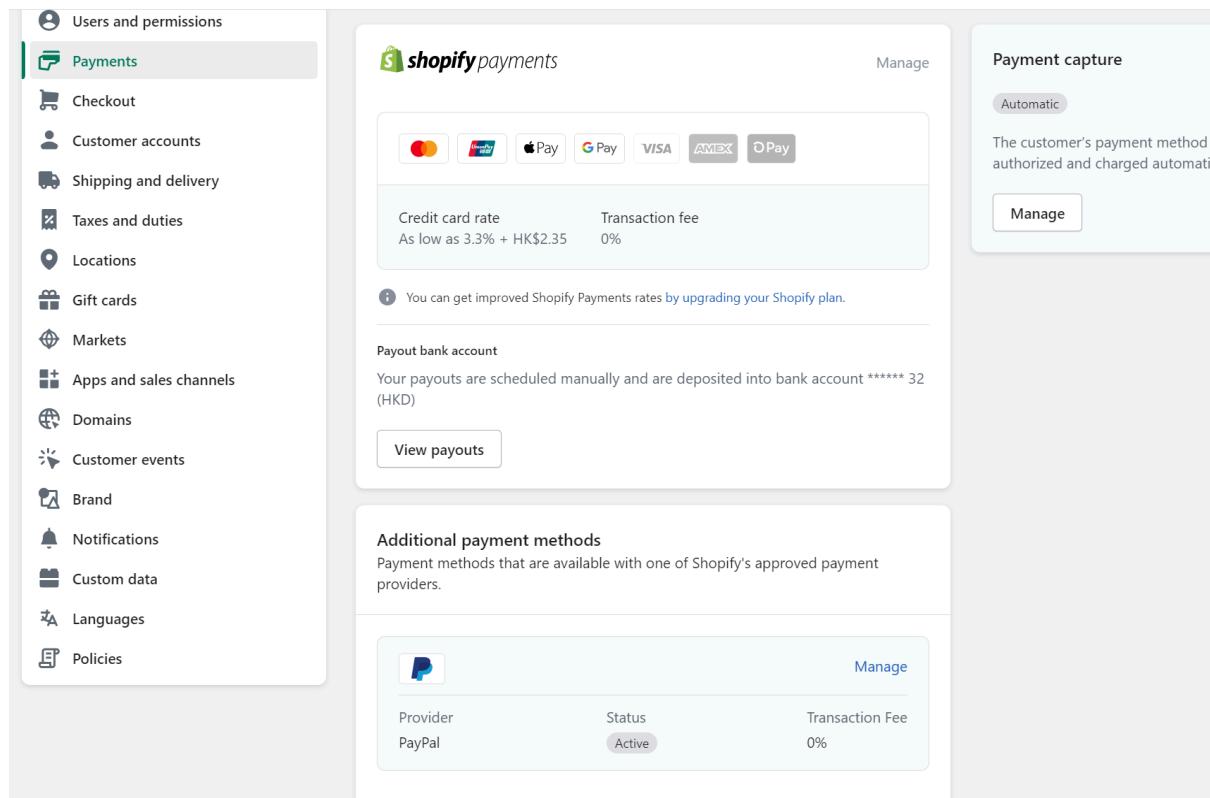


Fig. 6 - Admin Dashboard

In addition, it also supports the physical payment of cash on delivery. When customers place an order, they choose to pay after receiving the goods. Providing customers with more choices can increase customer trust and loyalty while allowing customers to pay more flexibly.

## Product Discount

Campify also offers regular product discounts to attract and retain customers. Making products more affordable and attractive to customers by offering discounts can help increase sales and customer loyalty.

## Product Categories

Moreover, Campify provides a wide range of product categories, cooking gears, sleeping gears, outdoor gears, etc., to ensure that the needs and preferences of campers can be met and users can easily search for supplies.

## Contact Us

This allows a link for users to email the site administrator or support team. Users can go to the "contact us" page to fill in the contact form, email address, etc., and the feedback will be sent to the admin email.

## 6.2 Prototype

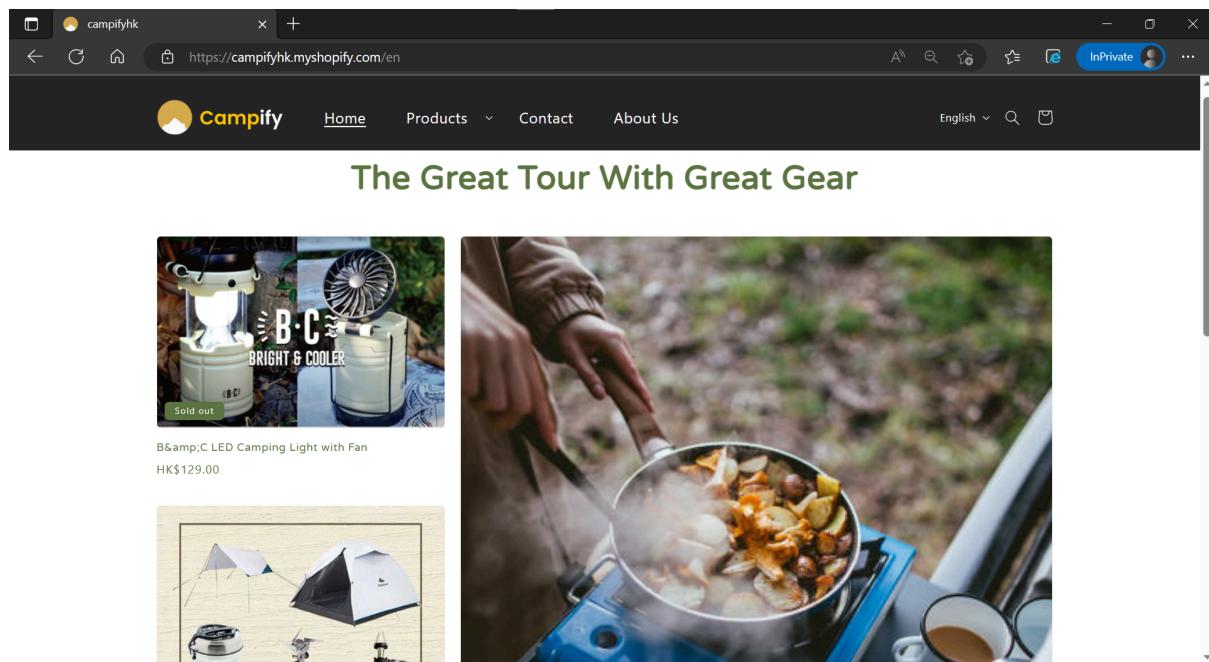
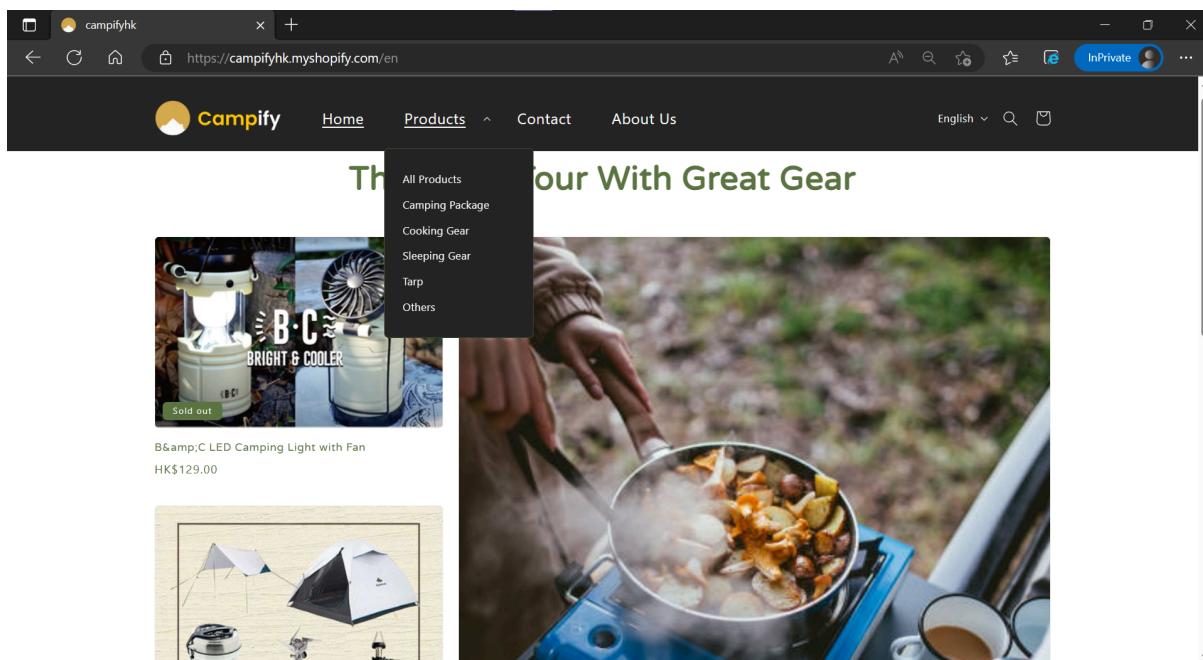
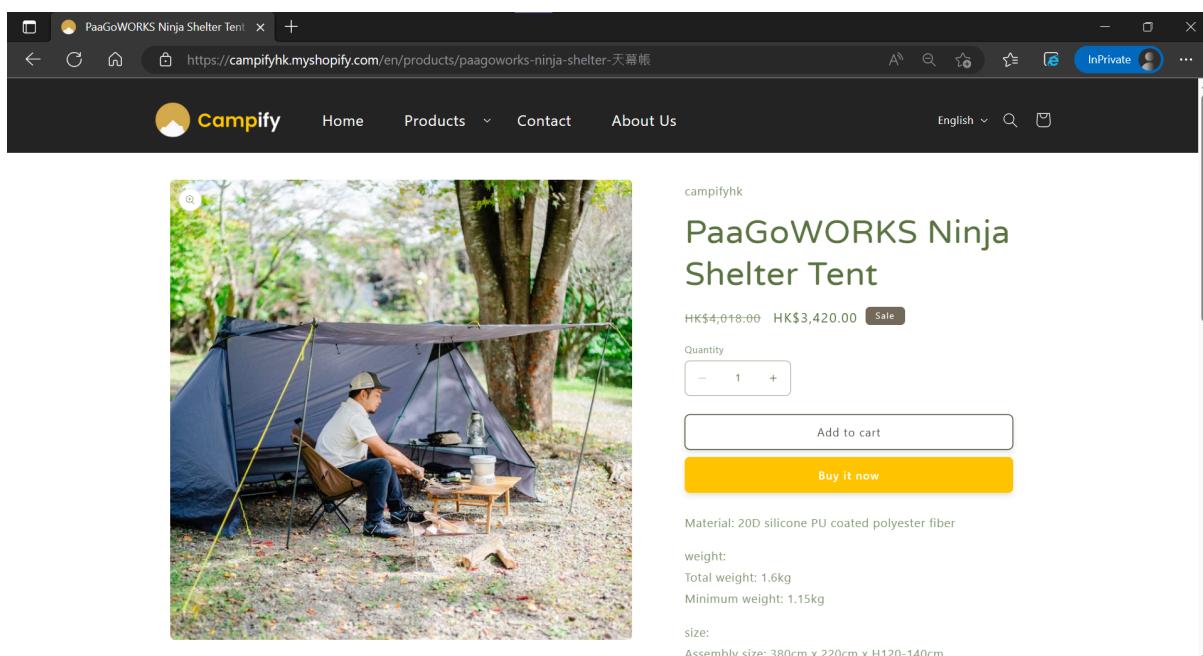


Fig. 7 - Home Page



*Fig. 8 - Product Categories Display*



*Fig. 9 - Product Detail Page*

The screenshot shows a Microsoft Edge browser window with the URL <https://campifyhk.myshopify.com/en/cart>. The page title is "Your Shopping Cart – campifyhk". The header includes the Campify logo, navigation links for Home, Products, Contact, and About Us, and language selection for English. A search bar and a user icon are also present. The main content area is titled "Your cart" with a "Continue shopping" link. It displays a single item: "PaaGoWORKS Ninja Shelter Tent" at \$3,420.00. The product image shows a person sitting under a tent. Below the item are columns for PRODUCT, QUANTITY, and TOTAL. The quantity is set to 1. The total amount is \$3,420.00. At the bottom, there is a "Subtotal" of HK\$3,420.00, a note about taxes and shipping being calculated at checkout, and a yellow "Check out" button. Below the button are payment method options: "PayPal" and "G Pay".

Fig. 10 - Cart Page

The screenshot shows a Microsoft Edge browser window with the URL <https://campifyhk.myshopify.com/checkouts/c/d47531723692e17e8231ec0ddbbee806/information>. The page title is "Information - campifyhk - Checkouts". The main content area shows the "campifyhk" logo and a "Cart" section with a "PayPal" button. To the right, a "Google Pay" modal is open, showing payment details: "Shelter Tent" at \$3,420.00, "CryBread" at \$5.99, and a total of HKD \$3,425.99. The modal lists payment methods: "Mastercard .... 8447", "LAM Tsui Ching" (Kowloon Bay, Hong Kong), and "Standard" (5.99 HKD). At the bottom of the modal, it says "商家亦會知道您的帳單詳情" and has a "支付 campifyhk" button with a blue "支付" button next to it.

Fig. 11 - Google Pay Demo

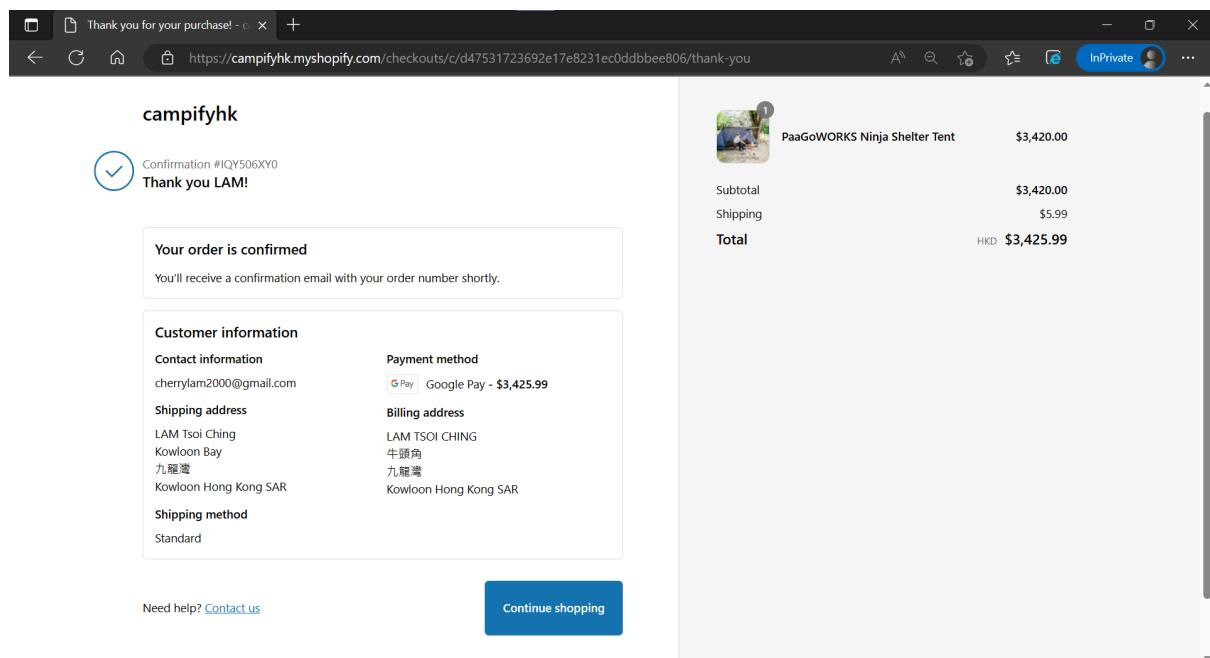


Fig. 12 - Order Success Page

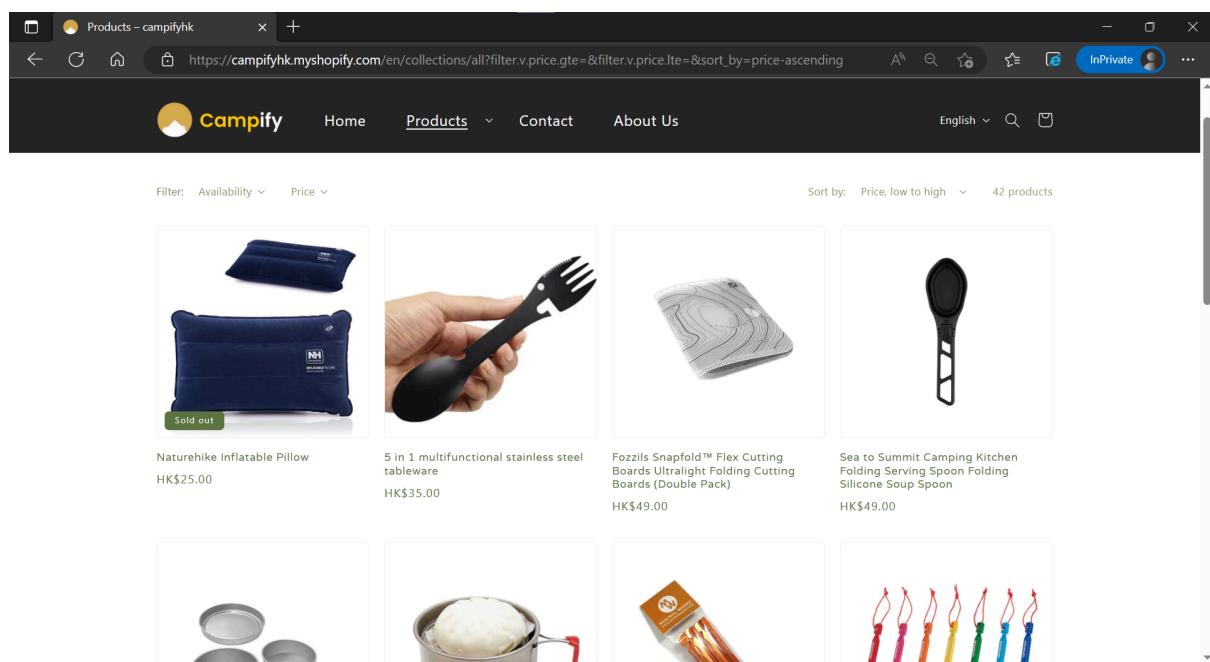


Fig. 13 - Product Page

## 7. Part 2: Business Model

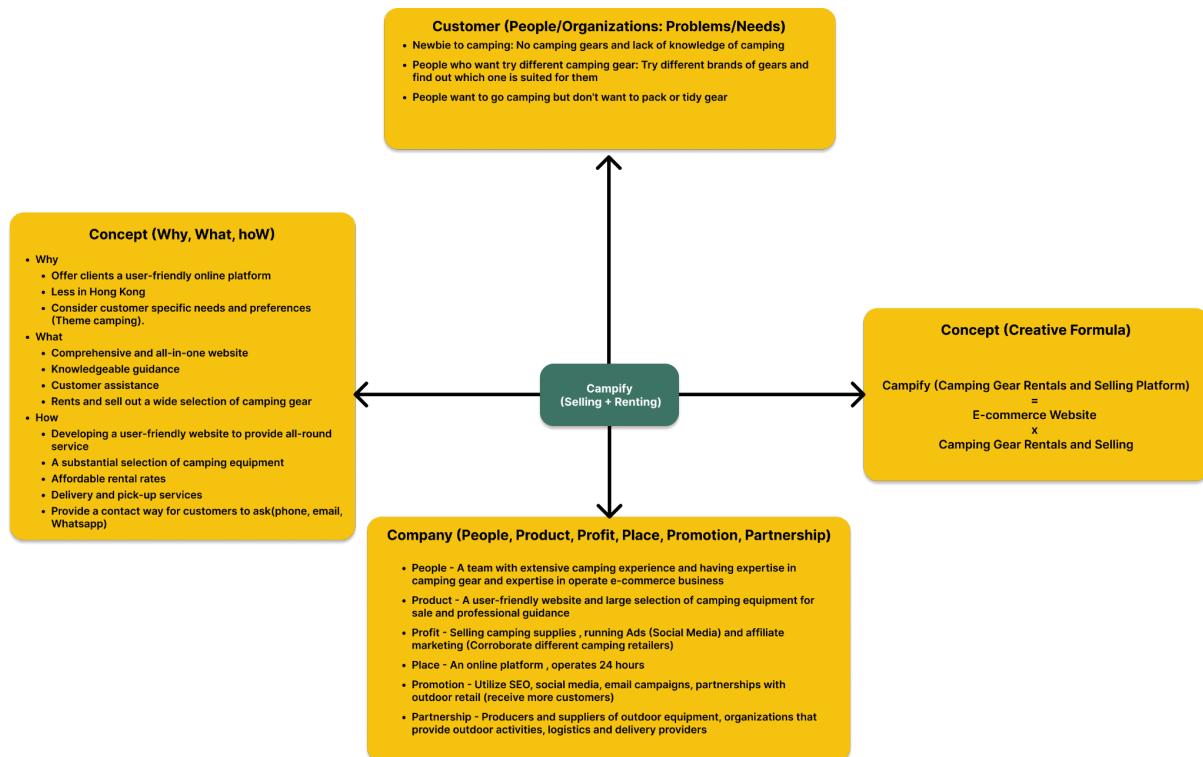


Fig. 14 - Part 2 C3 Model Map

### C3 Model Map:

#### Customer - People / Organizations: Problems / Needs

1. Newbie to camping
  - a. No camping gears
  - b. Lack of knowledge of camping
2. People who want try different camping gear
  - a. Try different brands of gears
  - b. Find out which one is suited for them
3. People want to go camping but don't want to pack or tidy gear

#### Concept 1

1. Why
  - Offer clients a user-friendly online platform
  - Less in hong kong
  - Consider customer specific needs and preferences (Theme camping).

## 2. What

- Comprehensive and all-in-one website
- Knowledgeable guidance
- Customer assistance
- Rents and sell out a wide selection of camping gear

## 3. How

- Developing a user-friendly website to provide all-round service
- A substantial selection of camping equipment
- Affordable rental rates
- Delivery and pick-up services
- Provide a contact way for customers to ask(phone, email, Whatsapp)

## **Concept 2 - Creative Formula**

- E-commerce Website x Camping Gear Rentals and Selling = Campify  
(Camping Gear Rentals and Selling Platform)

## **Company**

### 1. People - Our management team

- A team with extensive camping experience and having expertise in camping gear
- A team with expertise in operate e-commerce business
- A team with expertise customer support

### 2. Product - What will offer the customers?

- A user-friendly website
- Offering a large selection of camping equipment for renting and purchase
- Professional guidance

### 3. Profit - How do we make money to sustain?

- Renting out camping equipment
- Selling camping equipment

- Running ads (Social Media)
  - Affiliate marketing (Corroborate different camping retailer)
4. Place - How do we sell products?
- An online platform
  - Operates 24 hours for choosing product
  - Limited time delivery and pick up
5. Promotion - How do we promote products?
- Utilize SEO
  - Social media
  - Email campaigns
  - Partnerships with outdoor retail - Receive more customer
6. Partnership - Who or what will partner with?
- Producers and suppliers of outdoor equipment
  - Organizations that provide outdoor activities
  - Logistics and delivery providers

## **Business Model Canvas:**

### **Customer Segments:**

- Outdoor enthusiasts
- Families
- Campers
- Hikers
- Backpackers

### **Value Proposition:**

- High-quality camping products for sale and rent
- Affordable pricing
- Wide range of camping products
- Sustainable and eco-friendly camping options
- Knowledgeable and experienced camping experts

**Channels:**

- E-commerce website
- Social media platforms
- Outdoor events and exhibitions

**Customer Relationships:**

- Personalized customer service
- Responsive customer support
- Loyalty programs
- The educational content on sustainable camping practices

**Revenue Streams:**

- Sales of camping products
- Rental fees for camping gear
- Membership programs
- Affiliate marketing

**Key Resources:**

- Inventory of camping products
- E-commerce platform
- Social media accounts
- Physical store location and equipment
- Marketing and advertising materials
- Customer support team

**Key Activities:**

- Sourcing and managing inventory
- Marketing and advertising
- Website development and maintenance
- Customer support
- Order fulfillment

- Gear rental and maintenance
- Providing educational content on sustainable camping practices

### Key Partnerships:

- Camping equipment manufacturers
- Outdoor events and exhibitions organizers
- Affiliate marketing partners
- Sustainable and eco-friendly camping organizations

### Cost Structure:

- Inventory and storage costs
- Website development and maintenance costs
- Marketing and advertising expenses
- Employee salaries and benefits
- Rent and utilities
- Gear rental and maintenance costs

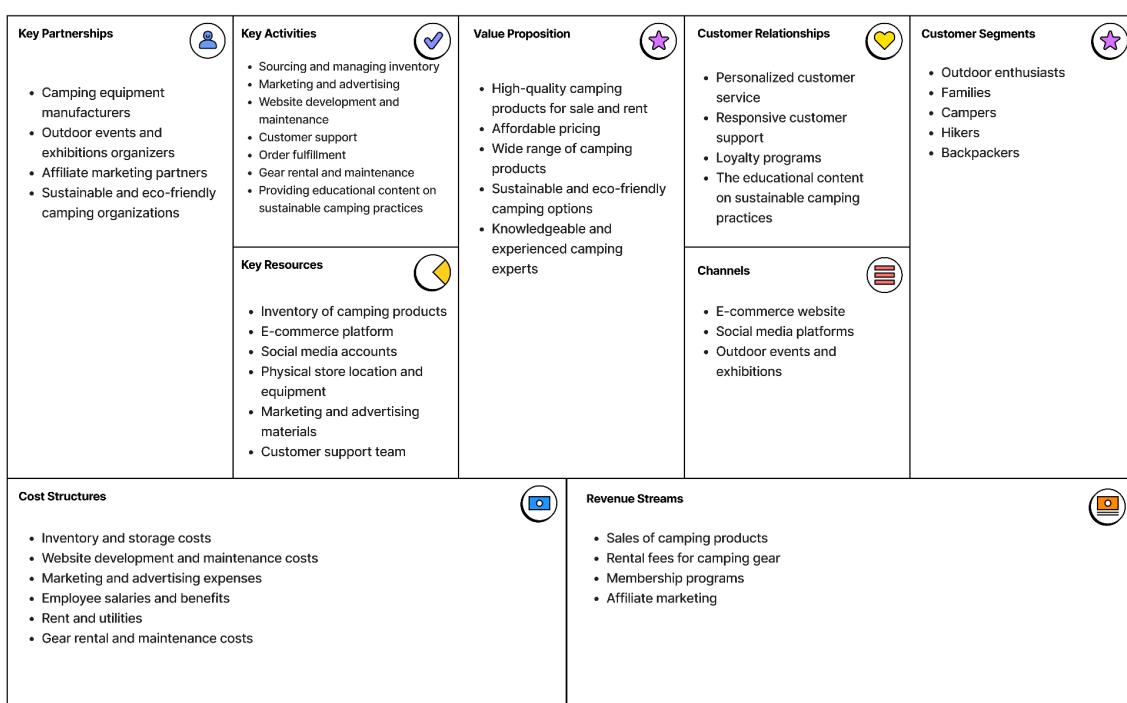


Fig. 15 - Part 2 Business Model Canvas

## **8. Part 2: Innovation and Critical Thinking**

In addition to its original business model, Part 2 of Campify's online shopping platform includes a rental option for clients who want to go camping without investing in equipment. Customers who only go camping once or twice a year and don't want to spend money on pricey gear will find this feature to be extremely helpful. By providing a rental option, Campify can increase its customer base by appealing to individuals who may not have tried camping due to the expense of buying supplies.

Campify also intends to add chatbot skills to offer a more customized and practical consumer experience in which the chatbot is using Open AI Chat GPT3.5. Customers will be able to use this tool to ask questions and get advice on selecting the best camping equipment for their requirements. Based on the customer's camping area, season, and level of experience, the chatbot will assist clients in selecting the appropriate gear. This functionality will streamline the lease and purchasing process and increase consumer accessibility.

Campify can improve client satisfaction and expand its customer base by providing rental features and chatbots. While a chatbot offers individualized assistance to clients to help them choose the ideal product for them, a rental feature offers them more economical options to experience camping. These features make it simpler for customers to enjoy nature while reducing their environmental effects, which is in line with Campify's commitment to supporting ethical and sustainable camping activities. Together, these developments will aid Campify in maintaining a competitive edge and expanding its clientele within the camping sector.

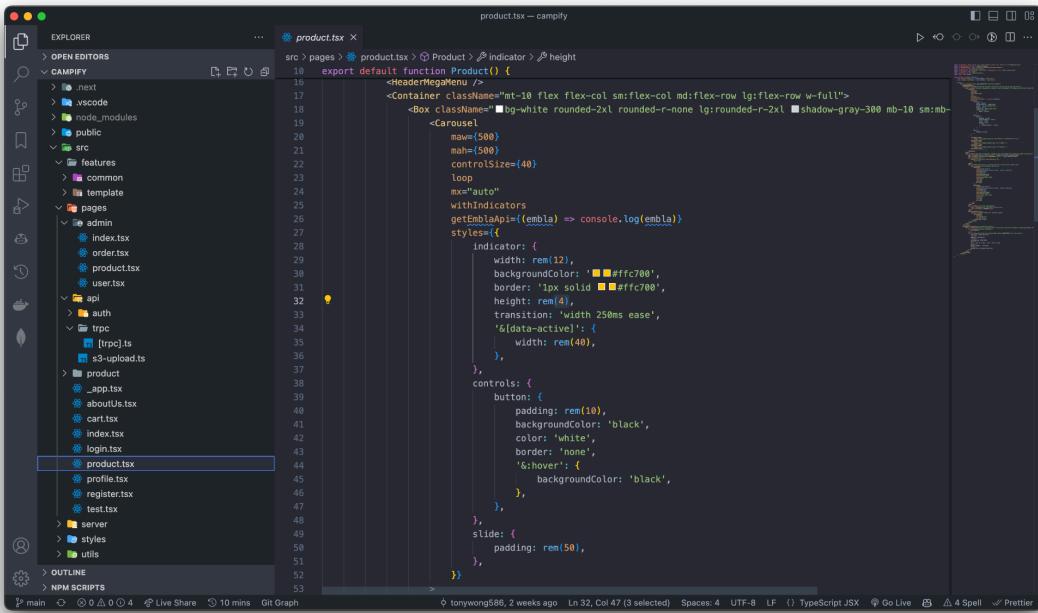
Additionally, Campify's website incorporates Stripe Payments so that users may pay for goods and services online safely and quickly. Customers can make transactions fast and effortlessly without being concerned about security thanks to the Stripe payments integration. Stripe is a well-known payment platform several companies and clients rely on globally. By incorporating Stripe into its e-commerce platform, Campify gave its consumers a simple and safe way to make payments, improving their overall experience and fostering brand loyalty. Overall, Campify's e-commerce

site is a practical and dependable choice for buying or renting camping equipment and accessories thanks to its user-friendly design and safe payment system.

## 9. Part 2 Technical Development and Prototype (Using Next.js + React + Node.js)

We used React.js, Next.js, and Node.js to make our site responsive, user-friendly, and efficient. React.js helped us create an interactive and fluid user interface, while Next.js improved our site's performance and search engine rankings using server-side rendering (SSR). For the backend, we have used Node.js and TRPC, which provides a robust back-end system. We have used TRPC for secure and type-safe communication between the front and back end. We write our code in TypeScript, which makes it easier to read, maintain, and prevent errors.

For the database, we chose MongoDB, a flexible and high-performance database to manage a large amount of data in the e-commerce platform. With Next.js and its SSR capabilities, our website loads pages quickly provides a better user experience, and ranks higher in search engine results. Those are all critical factors for a successful e-commerce website.



The screenshot shows a code editor with the file `product.tsx` open. The code is a component named `Product` that uses the `Camify` library. It includes imports for `HeaderMegamenu`, `Container`, `Box`, `Carousel`, and `Embla`. The component has a `getEmblaApi` method that logs the `Embla` object. The `styles` section contains CSS for the `indicator` and `controls` components, including styles for buttons and hover states. The `product` folder in the project structure also contains files like `_app.tsx`, `_aboutUs.tsx`, `cart.tsx`, `index.tsx`, `login.tsx`, `profile.tsx`, `register.tsx`, and `test.tsx`.

```
product.tsx - campify
export default function Product() {
  return (
    <HeaderMegamenu />
    <Container className="mt-10 flex flex-col sm:flex-col md:flex-row lg:flex-row w-full">
      <Box className="w-1/2 rounded-r-none lg:rounded-r-2xl shadow-gray-300 mb-10 sm:mb-0">
        <Carousel>
          <div>
            <img alt="Image 1" style={{ width: 500, height: 500 }} />
            <div>controlSize={40}</div>
            <div>loop</div>
            <div>max="auto"</div>
            <div>withIndicators</div>
            <div>getEmblaApi=(embla) => console.log(embla)</div>
          </div>
        </Carousel>
        <div style={{ margin: 10 }}>
          <div style={{ border: '1px solid #fff700', width: 'rem(12)', height: 'rem(4)', transition: 'width 250ms ease', '&[data-active]': { width: 'rem(40)' } }}></div>
          <div style={{ padding: 'rem(10)', background: 'black', color: 'white', border: 'none', '&:hover': { background: 'black', color: 'white' } }}></div>
        </div>
      </Box>
    </Container>
  );
}

const styles = {
  indicator: {
    width: 'rem(12)',
    backgroundColor: '#fff700',
    border: '1px solid #fff700',
    height: 'rem(4)',
    transition: 'width 250ms ease',
    '&[data-active]': {
      width: 'rem(40)',
    },
  },
  controls: {
    button: {
      padding: 'rem(10)',
      background: 'black',
      color: 'white',
      border: 'none',
      '&:hover': {
        background: 'black',
        color: 'white',
      },
    },
  },
  slide: {
    padding: 'rem(50)',
  },
};
```

Fig. 16 - Our project structure

## 9.1 Database

We chose MongoDB to efficiently manage the large amount of data generated in our e-commerce platform. MongoDB is a flexible, high-performance NoSQL database that allows us to store and manage data in a format that is easy to manipulate and scalable. We leveraged Mongoose, a popular MongoDB Object Data Modeling (ODM) library, to connect to the MongoDB database and create schemas for the data.

We designed six collections to store and organize data, they are CartItems, OrderItems, Orders, Products, Reviews, and Users. The CartItems collection records items in a user's shopping cart, while the OrderItems collection stores the individual items associated with a particular order. The Orders collection holds all orders placed by a customer and contains basic information such as order details, shipping address, and payment status. The Products collection contains detailed information about each camping product available for rent, such as its name, description, price, and image. The Reviews collection includes customer reviews and ratings of camping products, which helps other users make informed decisions.

Finally, the Users collection maintains data related to users, including their personal information and account credentials.

Collection	Storage size:	Documents:	Avg. document size:	Indexes:	Total index size:
cartitems	20.48 kB	1	178.00 B	1	36.86 kB
orderitems	20.48 kB	9	174.00 B	1	36.86 kB
orders	20.48 kB	7	324.00 B	1	36.86 kB
products	32.77 kB	22	1.00 kB	1	36.86 kB
reviews	20.48 kB	13	234.00 B	1	36.86 kB
users	20.48 kB	18	294.00 B	3	110.59 kB

Fig. 17 - Our MongoDB

```

src > utils > dbConnect.ts > ...
You, 2 weeks ago | 1 author (You)
1 import mongoose from "mongoose";
2
3 export const dbConnect = async () => {
4   if (mongoose.connection.readyState >= 1) {
5     return;
6   }
7
8   return mongoose.connect(process.env.MONGO_URI!, {
9     serverSelectionTimeoutMS:
10       process.env.NODE_ENV === "development" ? 500 : 30000,
11     });
12 };

```

Fig. 18 - The Mongoose connection

## 9.2 Security

Security is an essential aspect of any e-commerce platform, as it directly affects customer trust and the overall success of your online business. We have implemented the HTTPS protocol to provide a secure communication

channel between the user's browser and our website, effectively encrypting sensitive information such as login credentials and payment details.

In addition, we have integrated the NextAuth library for the Next.js application, implementing a robust JWT (JSON Web Token) login mechanism. This approach allows us to authenticate users and grant them access to specific resources, ensuring that authorized individuals can only access sensitive data and restricted operations.

Also, proper storage of user passwords is critical to maintaining the security of the e-commerce platform. We have used the Argon2 hashing algorithm to hash all the passwords stored in the database to mitigate the risk of password leaks.

```
74 | try {
75 |   // generate a hash of the password using argon2
76 |   const hash = await argon2.hash(user.password);
77 |
78 |   // replace the plain-text password with the hash
79 |   user.password = hash;
80 |
81 |   next();
82 | } catch (err) {
83 |   next(err as CallbackError);
84 | }
85 |});
```

Fig. 19 - Argon2 password hash

```
30 |   },
31 |   return session;
32 | },
33 | },
34 | },
35 | session: {
36 |   strategy: "jwt",
37 | },
38 | pages: {
39 |   signIn: "/login",
40 | },
41 | providers: [
42 |   // ...
43 | ]
```

Fig. 20 - NextAuth JWT strategy

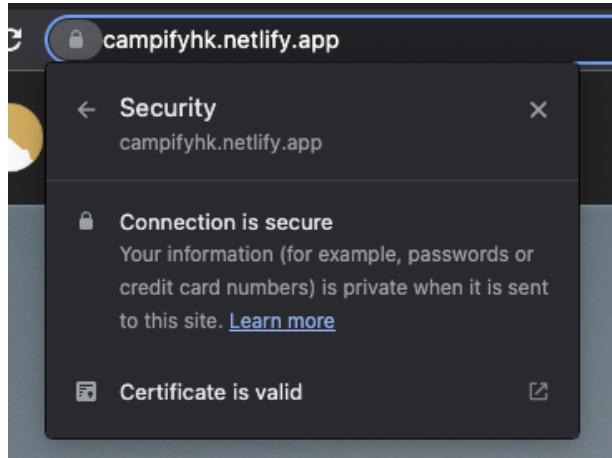


Fig. 21 - HTTPS of our Campify Website

### 9.3 Amazon S3

Storage and managing media files such as images and videos is essential when developing web applications. While many options exist for storing and serving media files, Amazon S3 is popular because of its scalability, durability, and low latency.

Amazon S3 is a cloud-based storage solution with high scalability, durability, and low latency. It is designed to handle large amounts of data and ensure that files are always available and accessible. A big advantage of using Amazon S3 is its durability. Amazon S3 is designed to provide 99.99% durability, which means data loss is extremely rare. Also, Amazon S3 is highly scalable, with low latency and high throughput, ensuring all users can quickly view the multimedia they need, improving user experience.

In this project, we use "next-s3-upload" to upload files to an S3 bucket. The "next-s3-upload" library is an npm package that simplifies uploading files to Amazon S3. Uploading files to Amazon S3 can be complex, especially for developers unfamiliar with S3. The "next-s3-upload" library abstracts the complexity of S3 and provides a simple and intuitive API to upload files, significantly reducing the difficulty and time of development.

```
96  const handleSubmit = async (v: ProductFormValues) => {
97    setLoading(true);
98
99    const images = await Promise.all(
100      v.imagesFile.map(async (file) => {
101        const { url } = await uploadToS3(file);
102        return url;
103      })
104    );

```

Fig. 22 - S3 Upload code

## 9.4 Stripe Payment

We chose Stripe as the payment gateway to provide our customers with a secure and seamless payment experience. Stripe is a widely recognized solution that simplifies the management of online transactions through its robust API and simple integration. Before initiating a payment, our platform verifies the inventory of the product and calculates the total price based on factors such as quantity and lease term.

Once the total price is determined, we create a Stripe payment intent to process the transaction, ensuring a smooth and secure process. Upon successfully creating a payment intent, our platform generates OrderItem files for each item in the shopping cart, storing critical information such as user, product, quantity, and rental details. This step allows for efficient tracking and management of orders within the system.

We provide a reliable and efficient payment process by using Stripe as our payment gateway and implementing a series of verification and order-tracking measures.

```

224 // Calculate total price
225 const totalPrice = calculateTotalPrice(cartItems);
226
227 // Create a Stripe payment intent
228 const paymentIntent = await stripe.paymentIntents.create([
229   amount: Math.round(totalPrice * 100), // Stripe requires the amount in cents
230   currency: "hkd",
231 ]);
232
233 // Create OrderItem documents
234 const orderItems = await Promise.all(
235   cartItems.map((cartItem) =>
236     OrderItemModel.create({
237       user: ctx.session.user.id,
238       product: cartItem.product._id,
239       quantity: cartItem.quantity,
240       rental: cartItem.rental,
241       rentDuration: cartItem.rentDuration,
242     })
243   )
244 );

```

Fig. 23 - Stripe payment code

The screenshot shows the Stripe Payments dashboard with the following details:

- Payments** tab selected.
- Overview** section visible.
- TEST DATA** button is active.
- Payments** table header includes columns: Date, Amount, Status, Payment method, Description, Customer, and Date.
- Status** column shows various outcomes: Succeeded (green checkmark), Incomplete (grey circle), Failed (red X), and Refunded.
- Description** column lists transaction IDs such as p\_3H18Ymk4tBak9y258rVKh1tM, p\_3H18Ymk4tBak9y254PB8C4eU, etc.
- Customer** column lists email addresses like boscocheung1234@gmail.com, tonie@gmail.com, admin@admin.com, etc.
- Date** column shows the timestamp for each transaction.
- There are 20 rows of payment data listed.

Fig. 24 - Stripe Dashboard

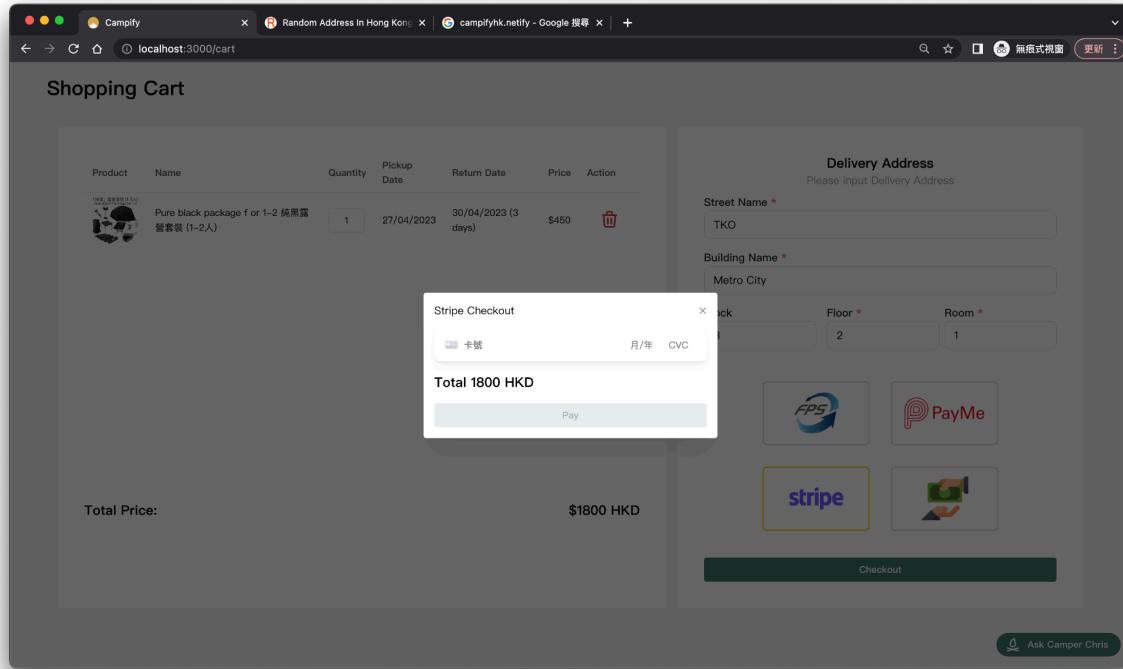


Fig. 25 - Stripe Credit Card Payment UI

## 9.5 Camper Chris - A OpenAI GPT Chatbot

We have added a chatbot called "Camper Chris," an OpenAI GPT-based chatbot integrated into our CAMPIFY e-commerce platform. The chatbot is a valuable resource for users, providing help and guidance related to camping products and rentals. By leveraging OpenAI's GPT technology, we have created a helpful and knowledgeable chatbot that is able to provide meaningful answers to user queries, improving the overall user experience on our platform.

Implementing "Camper Chris" includes using ChatGPTClient, which simplifies the process of interacting with OpenAI's GPT model. Upon receiving a message from the user, the chatbot engages in an initial conversation with the GPT model, providing the necessary context and informational content. The GPT model processes the user's query and returns an appropriate response,

then forwarded to the user. In the event of an error or unclear response, the chatbot provides a default message to ensure a consistent and user-friendly experience. the integration of "Camper Chris" not only adds value to our CAMPIFY platform but also demonstrates the power of cutting-edge AI technology in enhancing customer support and user engagement within e-commerce sites.

```
15 import ChatGPTClient from "./ChatGPTClient";
16 import { ChatCompletionRequestMessageRoleEnum } from "openai";
17
18 const chatGptClient = new ChatGPTClient();
19
20 const analyzeMessage = async (message: string): Promise<string> => {
21   try {
22     const chatGPTMessages = [
23       {
24         role: ChatCompletionRequestMessageRoleEnum.System,
25         content: "You are a helpful camping chatbot.",
26       },
27       {
28         role: ChatCompletionRequestMessageRoleEnum.User,
29         content: message,
30       },
31     ];
32
33     const response = await chatGptClient.respond(chatGPTMessages);
34
35     if (response.text) {
36       return response.text;
37     } else {
38       return "I'm not sure what you need. Can you please provide more information?";
39     }
40   } catch (error) {
41     console.error("Error while analyzing message:", error);
42     return "I'm having some trouble understanding your request. Please try again later.";
43   }
44};
```

Fig. 26 - The OpenAI GPT-based chatbot code

```

15     this.openAI = new OpenAIApi(configuration);
16 }
17
18 async respond(chatGPTMessages: Array<ChatCompletionRequestMessage>) {
19     try {
20         if (!chatGPTMessages) {
21             return {
22                 text: "No chatGPTMessages",
23             };
24         }
25
26         const request: CreateChatCompletionRequest = {
27             messages: chatGPTMessages,
28             model: "gpt-3.5-turbo",
29         };
30
31         const response = await this.openAI.createChatCompletion(request);
32         if (!response.data || !response.data.choices) {
33             return {
34                 text: "The bot didn't respond. Please try again later.",
35             };
36         }
37
38         return {
39             text: response.data.choices[0].message?.content,
40             messageId: response.data.id,
41         };
42     } catch (error: any) {
43         console.log("E: ", error);
44         throw new Error(error);

```

Fig. 27 - The OpenAI GPT-based chatbot code

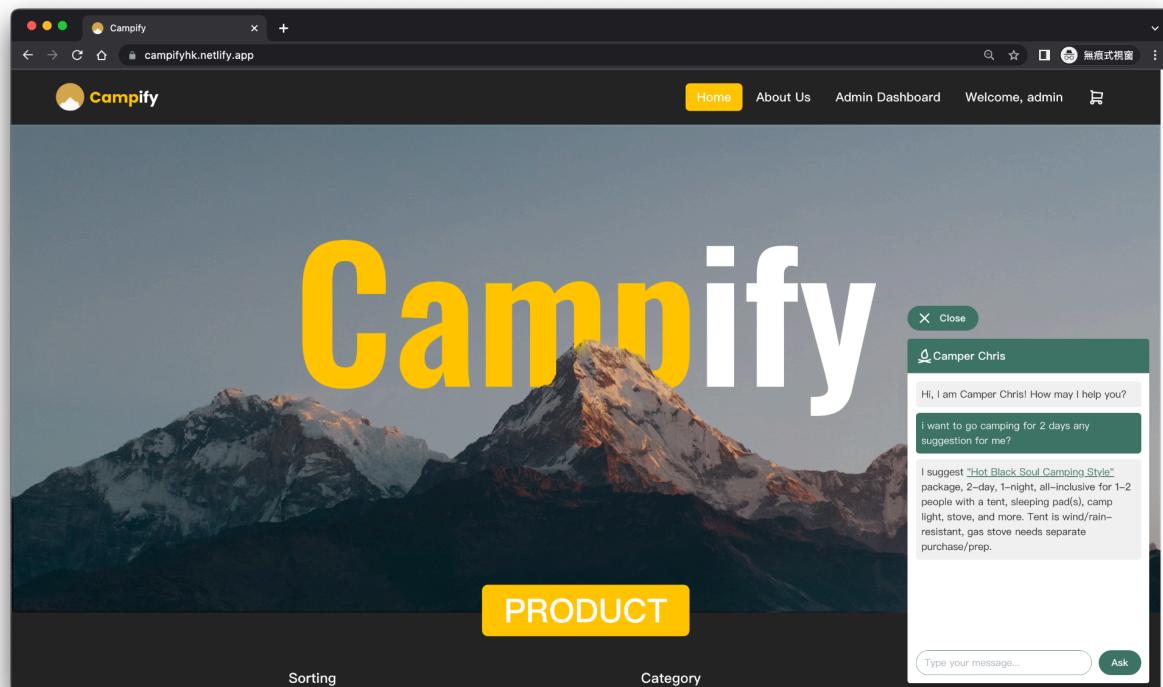


Fig. 28 - The OpenAI GPT-based chatbot Camper Chris

## 9.6 Selling and Renting Flow

The following would be the selling and renting flow of Part 2 Campify. First of all, when customers are on the home page, they can preview any product. If they are targeting a product, they can click the product card and go to the product detail page. This part would contain two different situations. The first situation would be a normal selling situation, customers just need to click add to cart and preview the selected product on the cart page. The second situation would be renting situation, customers need to select the rental periods before adding to the cart, and after that, they need to click add to cart and preview the selected product on the cart page. Then, after they confirm the targeted product, they can simply fill in the address information for shipping usage and select Stripe payment to check out. In the Stripe payment, they need to fill in their card information. Finally, they can preview the order on the order history page.

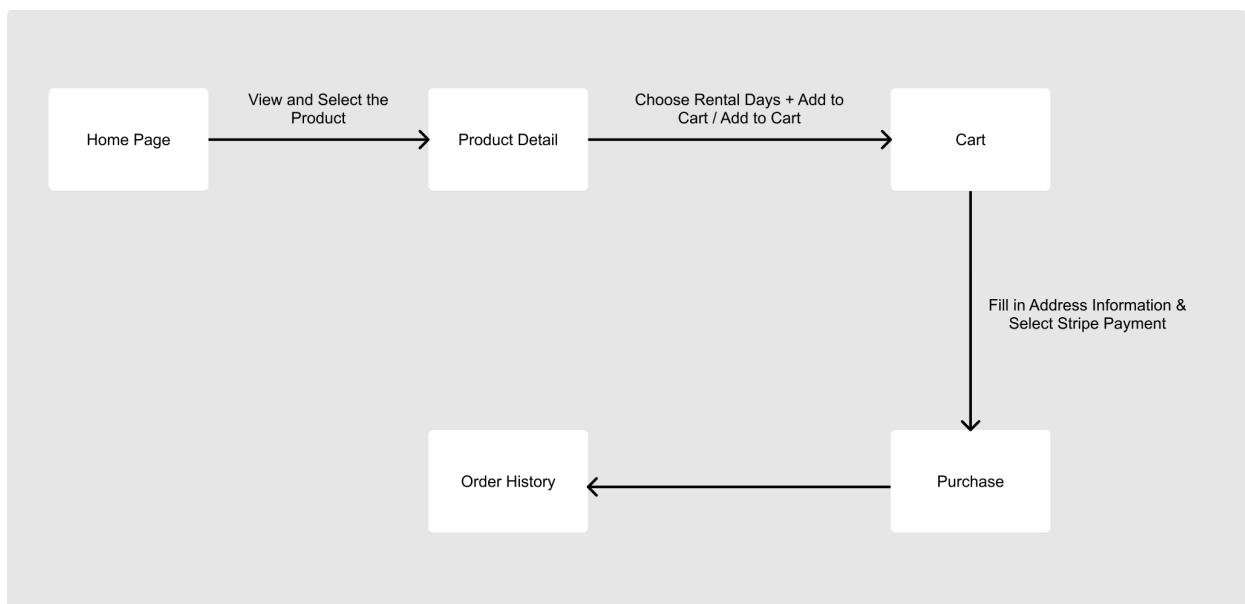


Fig. 29 - Selling and Renting Flow in Campify

## 9.7 User Interface

### For Normal User:

#### Home Page

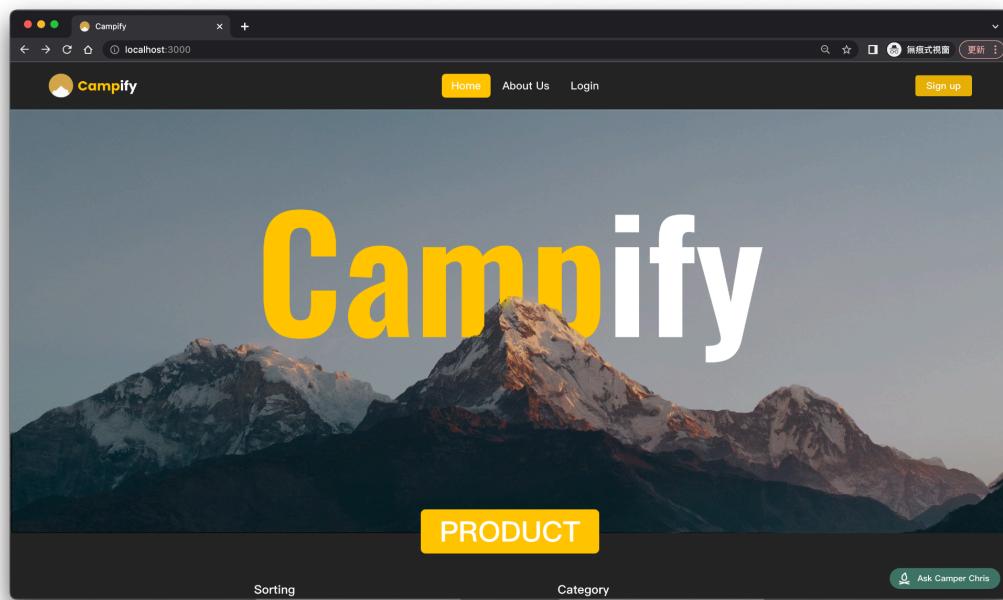


Fig. 30 - Home Page Before User Login

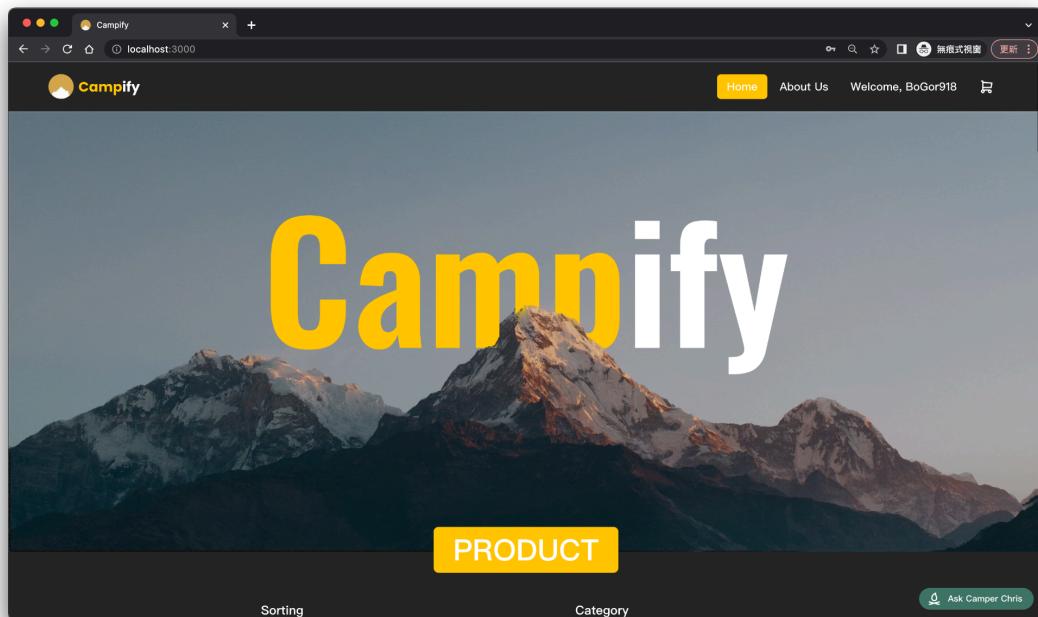


Fig. 31 - Home Page After User Login

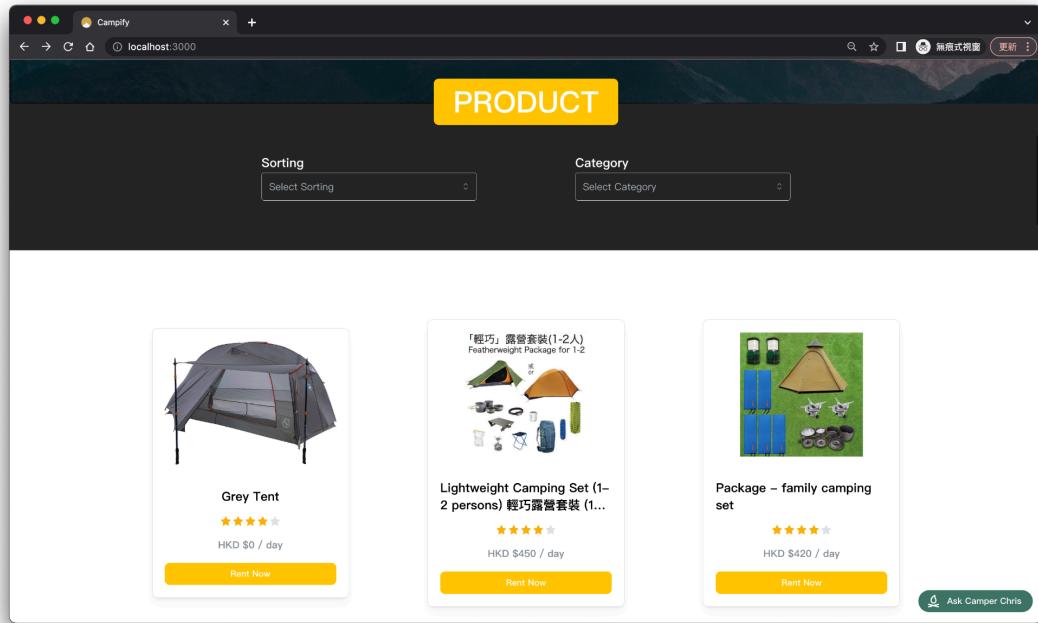


Fig. 32 - Product Section of Home Page

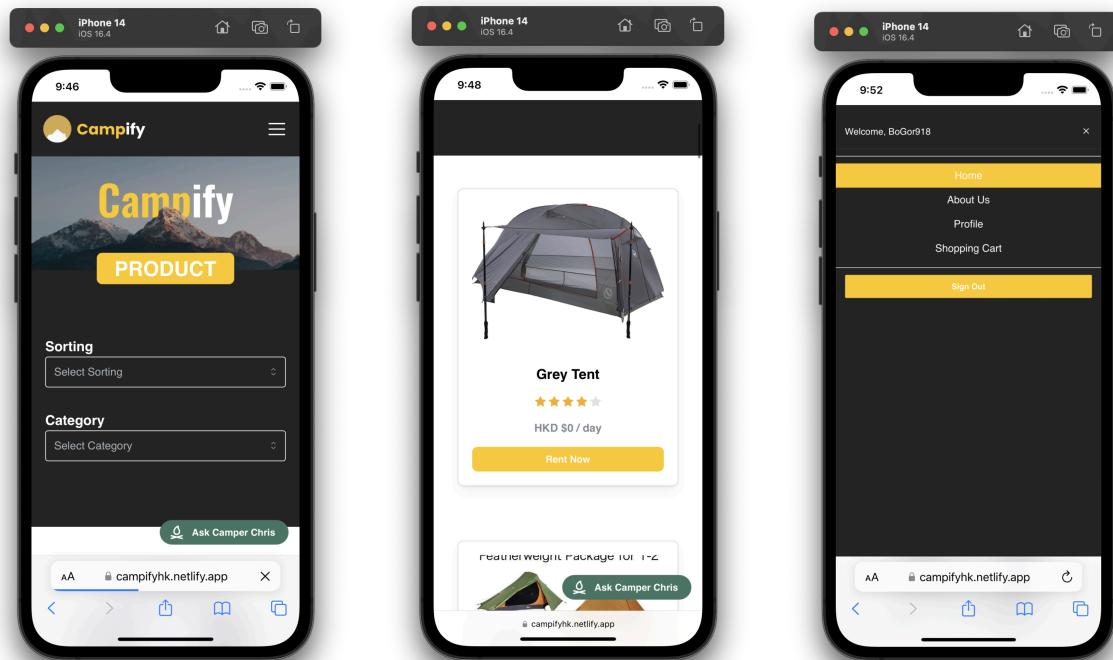


Fig. 33 - Mobile Version of Home Page

## Login Page:

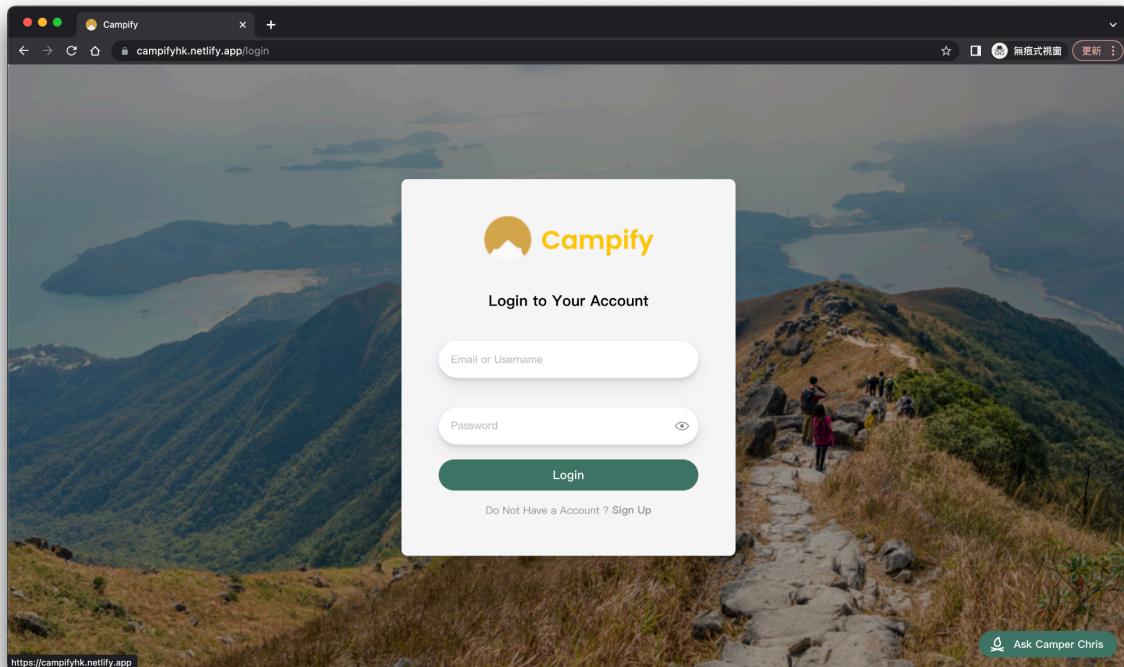


Fig. 34 - Login Page

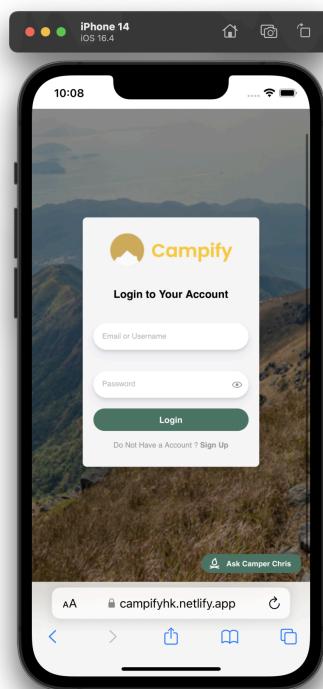


Fig. 35 - Mobile Version of Login Page

## About Us Page:

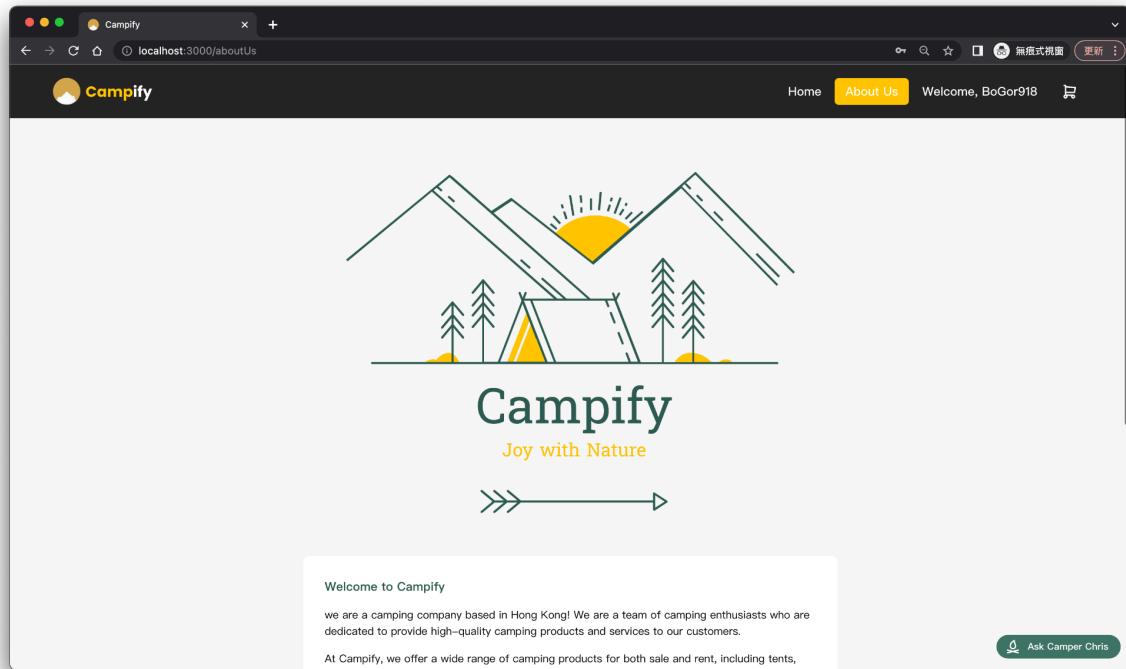


Fig. 36 - About Us Page Part 1

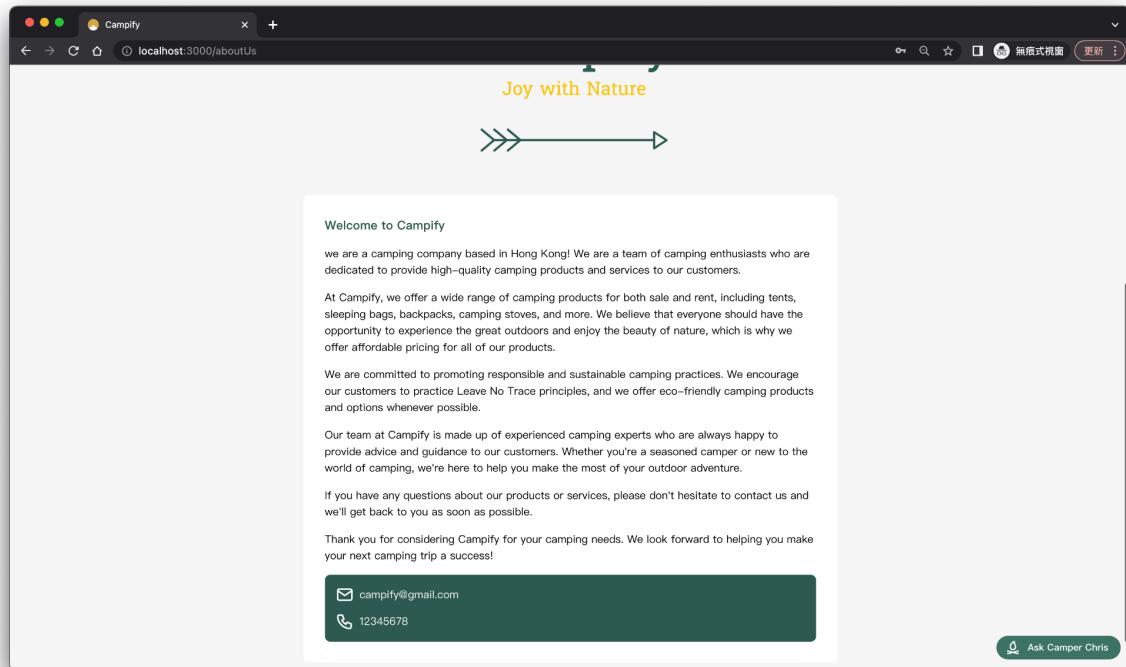


Fig. 37 - About Us Page Part 2

## About Us Page(Mobile Version):

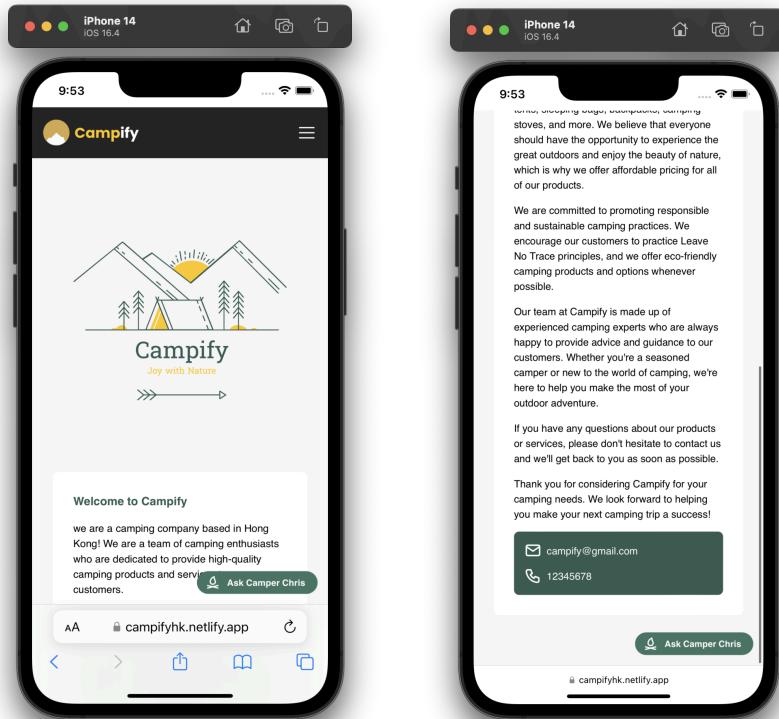


Fig. 38 - Mobile Version of About Us Page

## Product Detail Page:

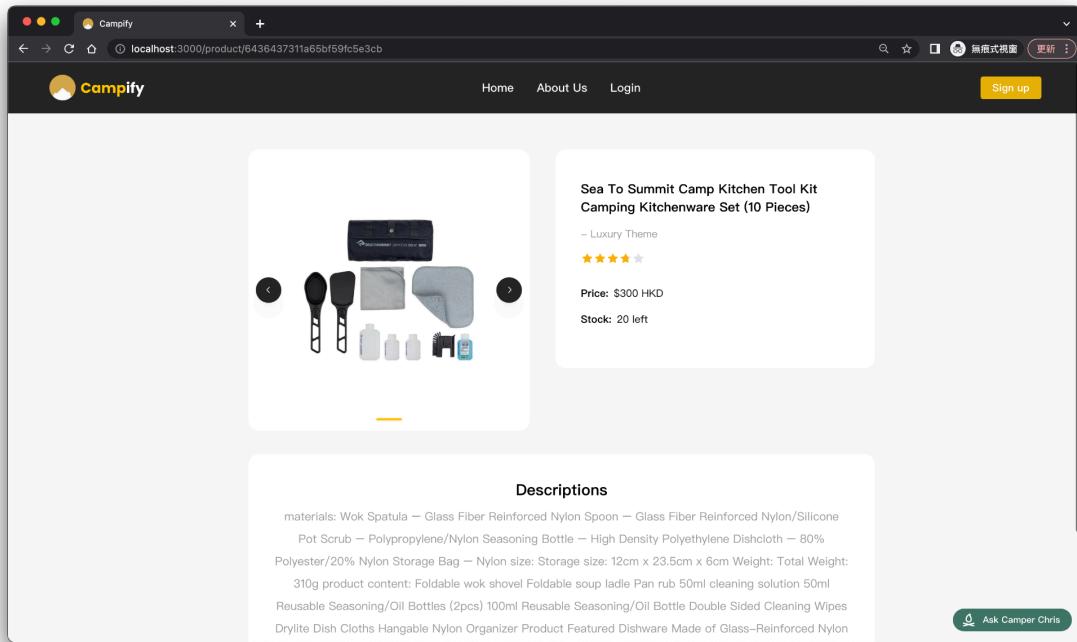
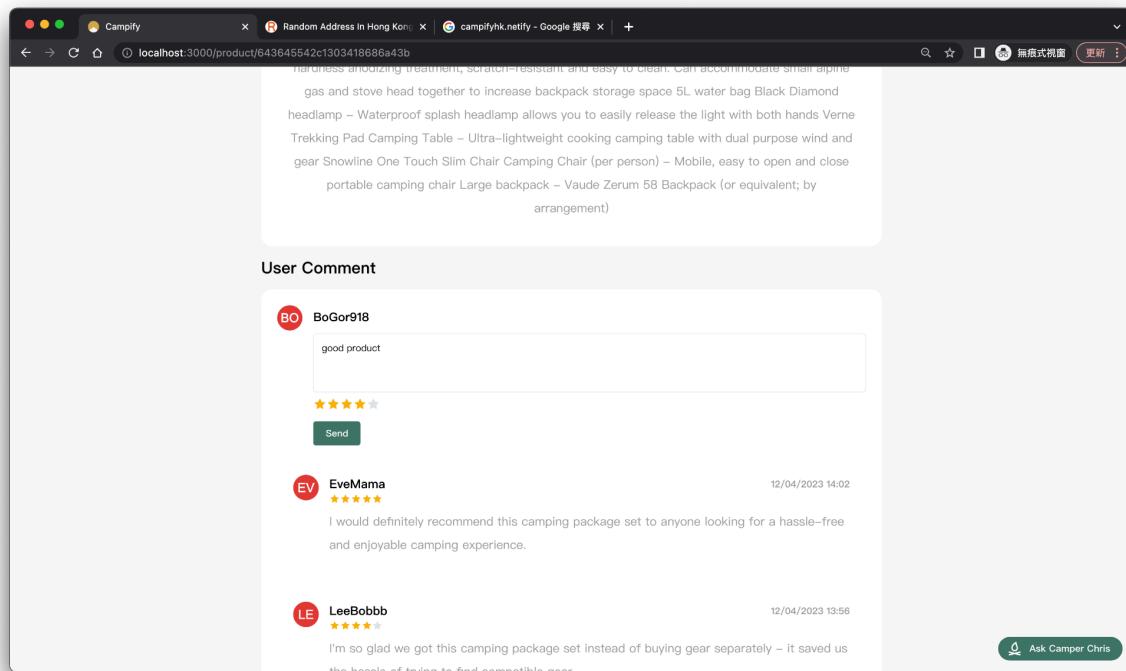
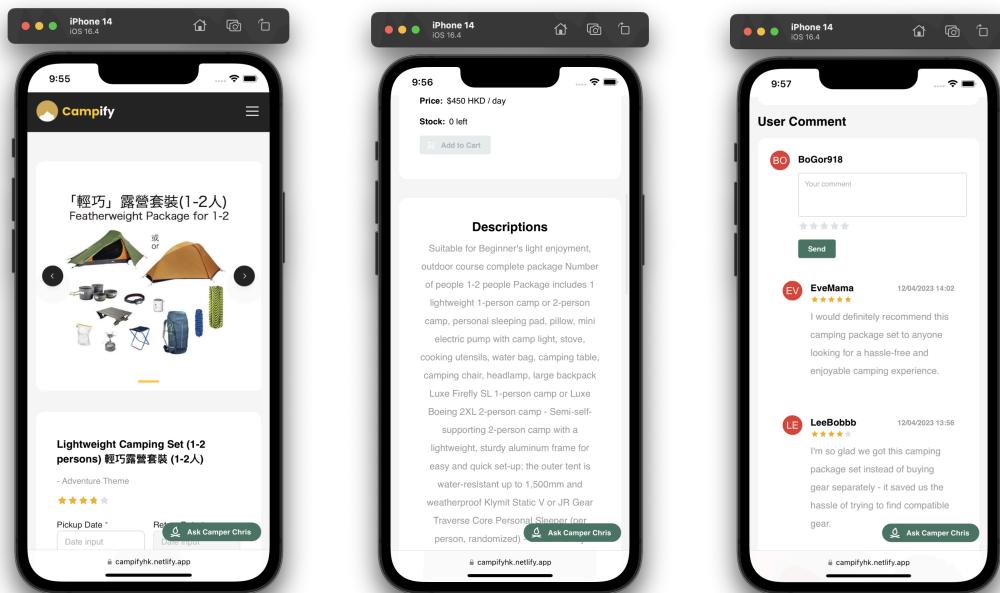


Fig. 39 - Product Detail Page



*Fig. 40 - Comment Section of Product Detail Page*

## Product Detail Page(Mobile Version):



*Fig. 41 - Mobile Version of Product Detail Page*

## Profile Page:

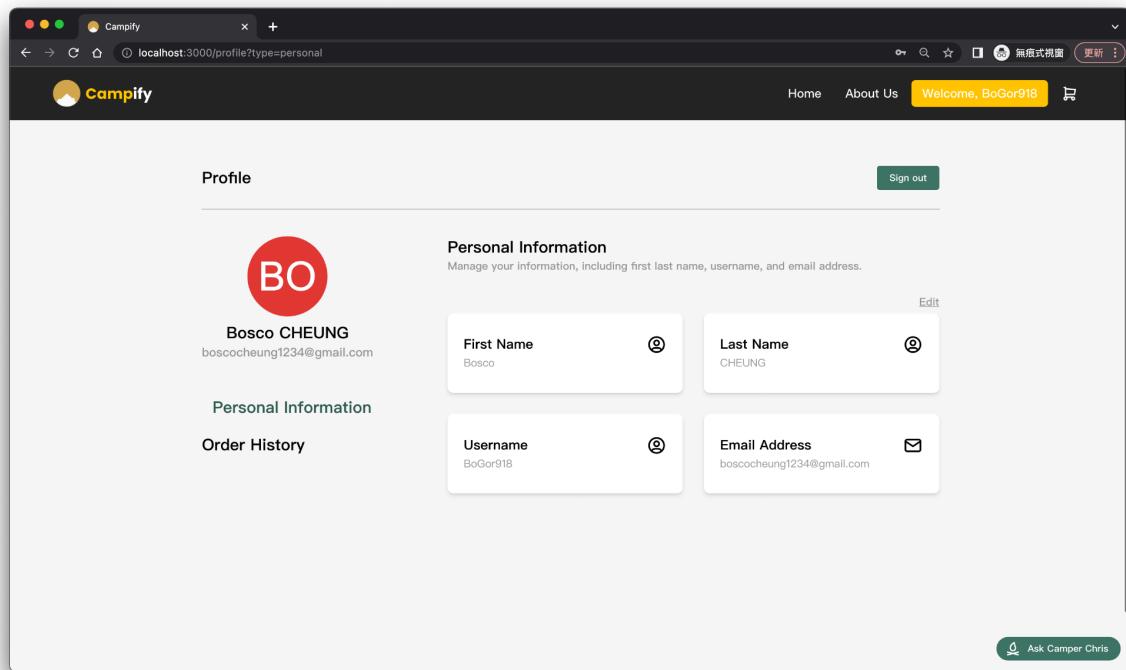


Fig. 42 - Personal Information Section of Profile Page

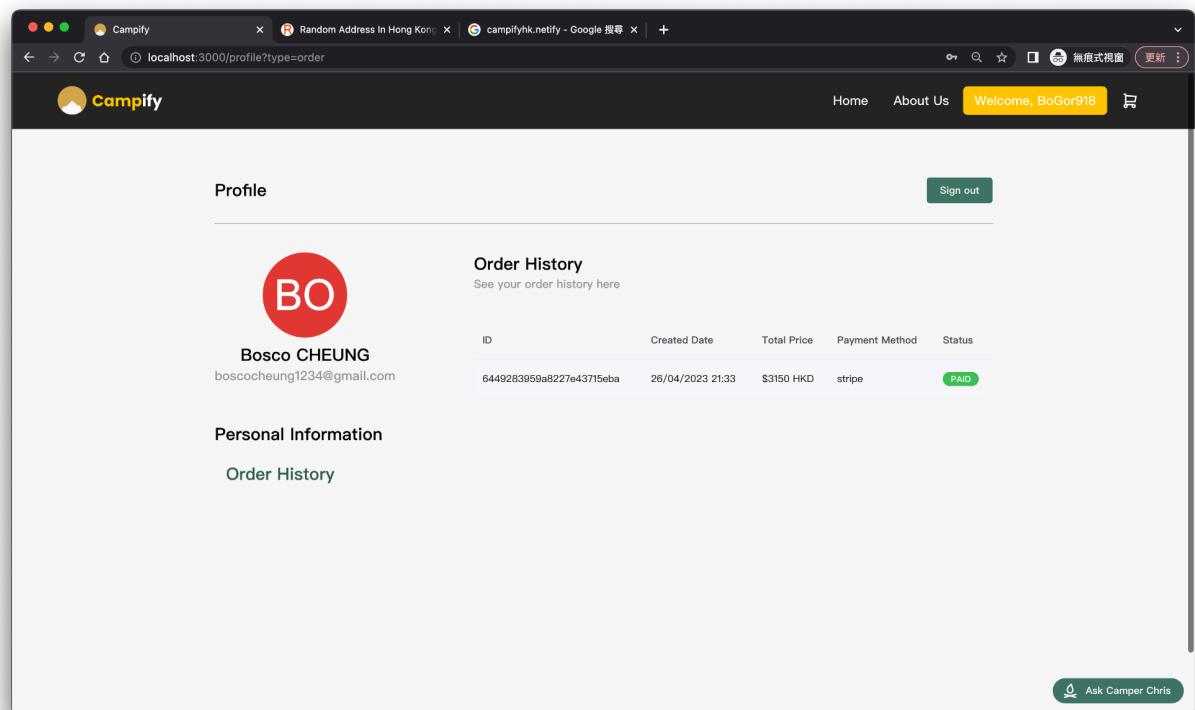


Fig. 43 - Order History Section of Profile Page

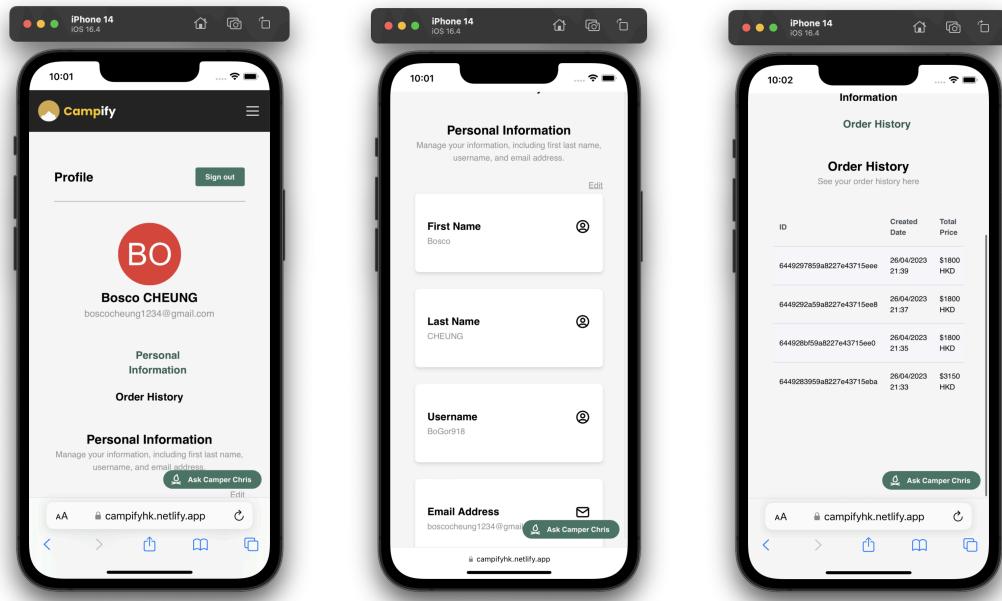


Fig. 44 - Mobile Version of Profile Page

## Shopping Cart Page:

Product	Name	Quantity	Pickup Date	Return Date	Price	Action
	Lightweight Camping Set (1-2 persons) 輕巧露營套餐 (1-2人)	1	28/04/2023	30/04/2023 (2 days)	\$450	
	Package - "relaxing" camping set	1	29/04/2023	30/04/2023 (1 days)	\$900	

Total Price: \$3150 HKD

**Delivery Address**  
Please input Delivery Address

Street Name \*

Building Name \*

Block  Floor \*  Room \*

[Checkout](#)

Fig. 45 - Shopping Cart Page Before Filling Information

The screenshot shows the 'Shopping Cart' page on a web browser. On the left, there is a table of items in the cart:

Product	Name	Quantity	Pickup Date	Return Date	Price	Action
	Lightweight Camping Set (1-2 persons) 輕巧露營套餐 (1-2人)	1	28/04/2023	30/04/2023 (2 days)	\$450	
	Package - "relaxing" camping set	1	29/04/2023	30/04/2023 (1 days)	\$900	

Total Price: \$3150 HKD

On the right, there is a 'Delivery Address' section with fields for Street Name, Building Name, Town City, Block, Floor, and Room. Below these are payment method icons for FAPS, PayMe, stripe, and a local payment method (represented by a hand holding money). A green 'Checkout' button is at the bottom.

Fig. 46 - Shopping Cart Page After Filling Information

The screenshot shows the 'Shopping Cart' page with a Stripe checkout overlay in the center. The overlay has fields for Card Number, Month/Year, and CVC. It displays a total of 'Total 1800 HKD' and a 'Pay' button. The background shows the same delivery address fields and payment method icons as Fig. 46, but they are dimmed due to the overlay.

Fig. 47 - Shopping Cart Page Stripe Panel

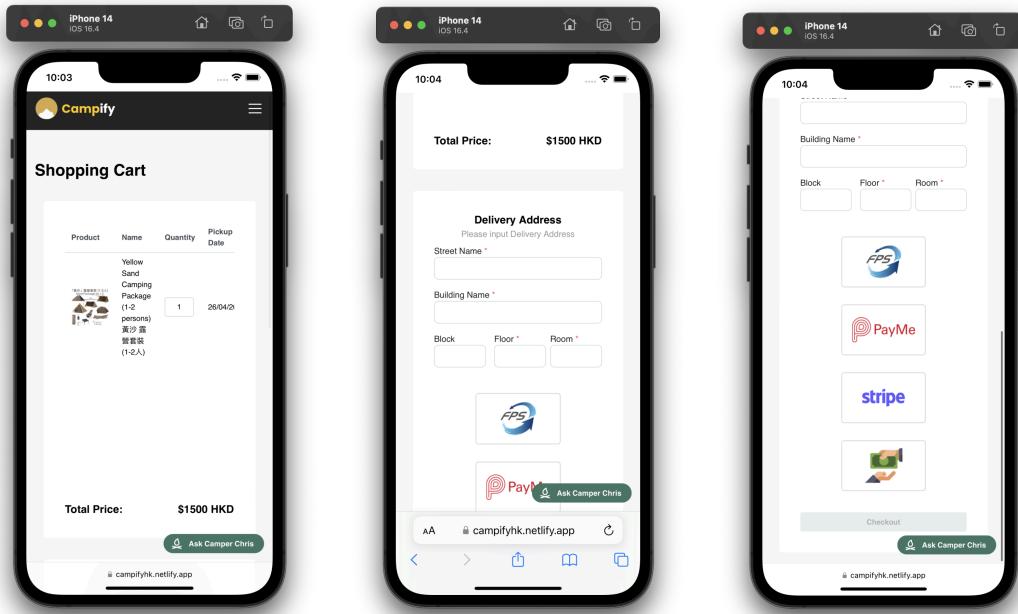


Fig. 48 - Mobile Version of Shopping Cart Page

## AI Chatbot Camper Chris:

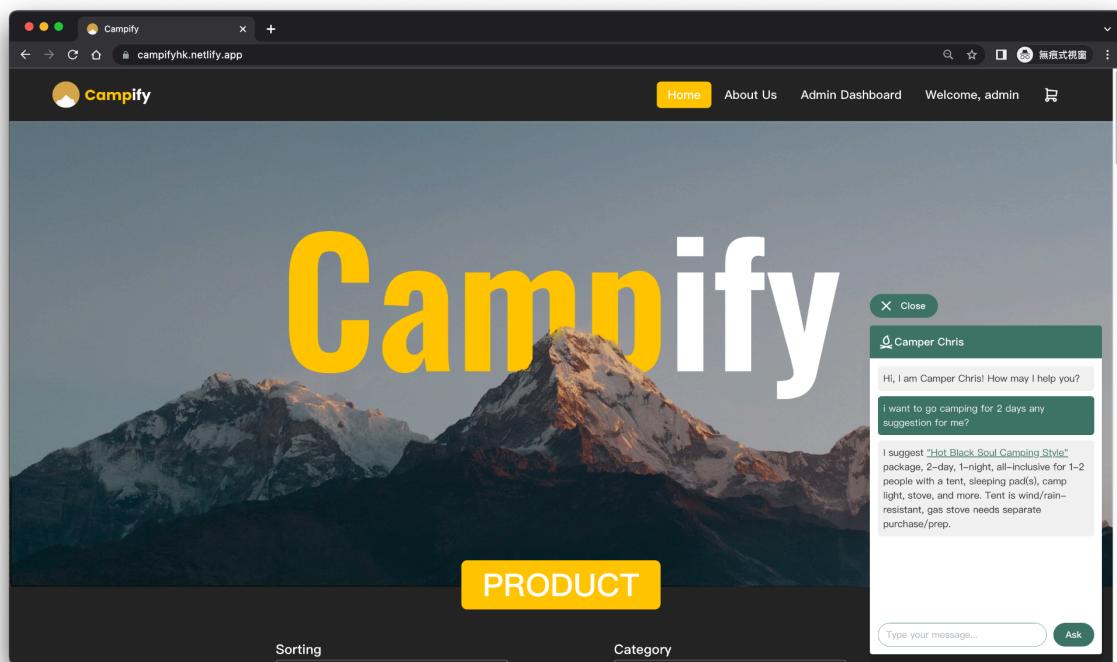


Fig. 49 - AI Chatbot of Campify



Fig. 50 - Mobile Version of AI Chatbot

## For Admin:

### Home Page:

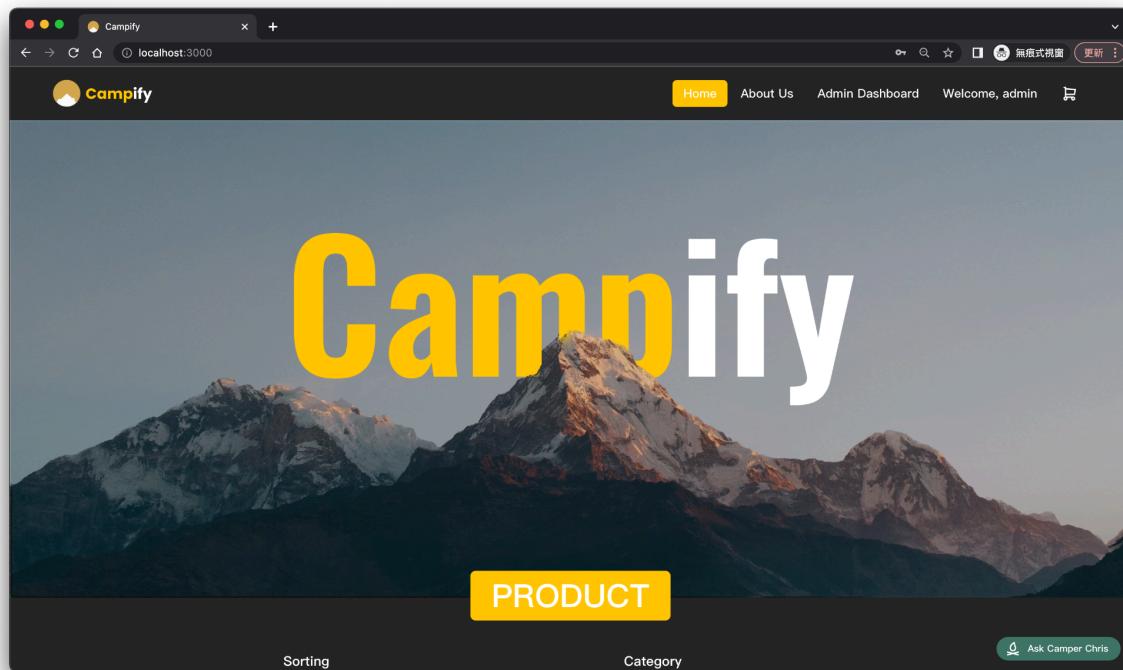


Fig. 52 - Home Page After Admin Login

### Admin Dashboard (Manage User Section)

A screenshot of the Admin Dashboard showing the 'Manage User' section. The page has a dark header with the 'campify' logo and navigation links for 'Home', 'About Us', 'Admin Dashboard', and 'Welcome, admin'. Below the header is a navigation bar with three tabs: 'Manage User' (highlighted in yellow), 'Manage Product', and 'Orders'. The main content area is titled 'User List' and contains a table with user data. The table columns are: ID, Email, First Name, Last Name, Username, Edit, and Remove. There are five rows of data, each with a unique ID and placeholder names. At the bottom of the table is a green 'Add User +' button. A small 'Ask Camper Chris' button is located in the bottom right corner of the table area.

Fig. 53 - Manage User Section of Admin Dashboard

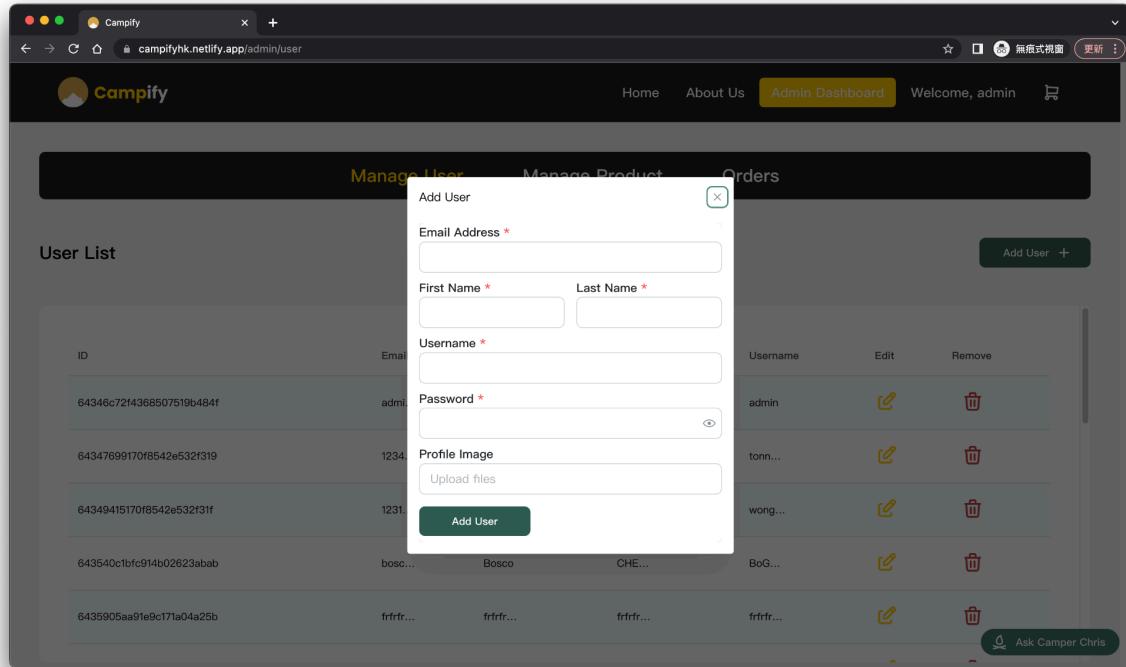


Fig. 54 - Manage User Section Add User Function of Admin Dashboard

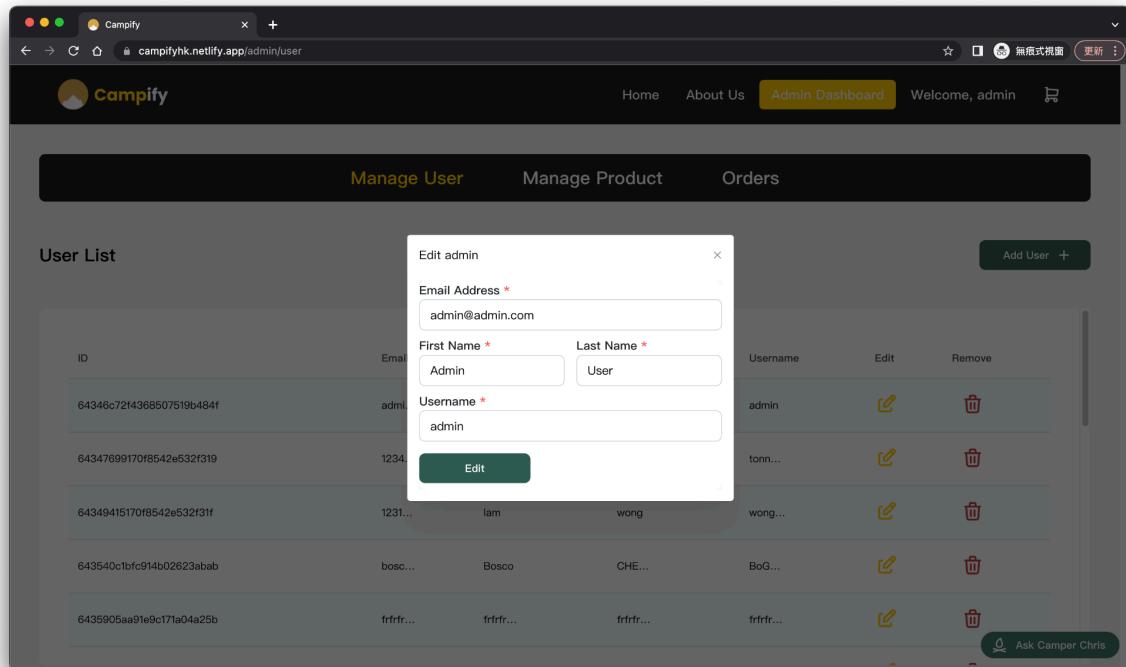


Fig. 55 - Manage User Section Edit User Function of Admin Dashboard

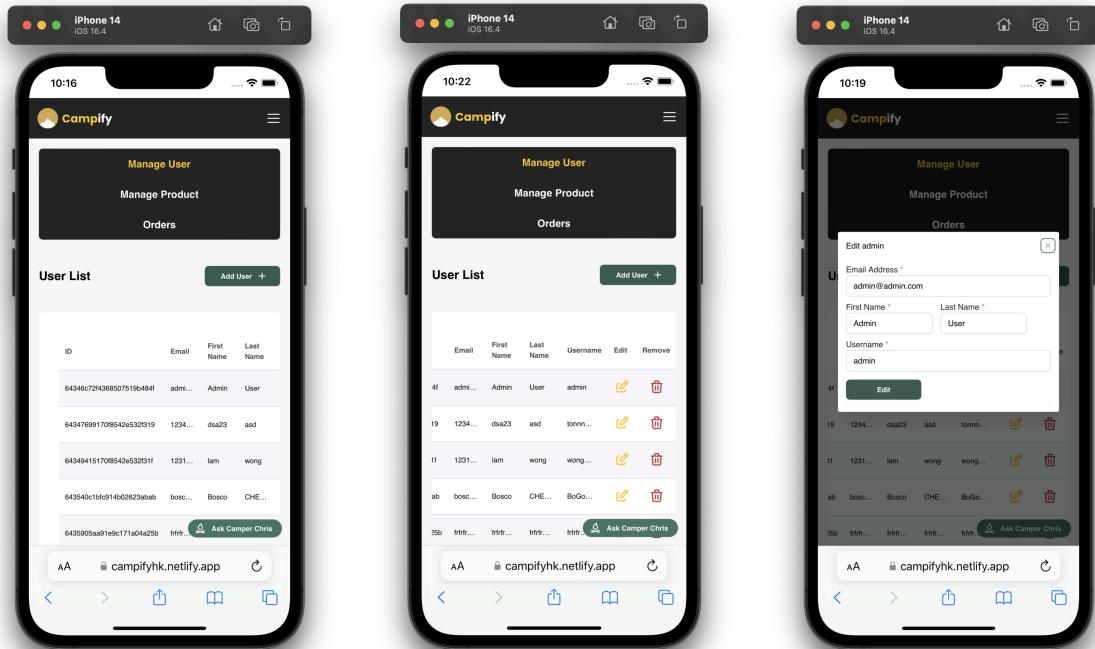


Fig. 56 - Mobile Version of Manage User Section

## Admin Dashboard(Product Manage Section):

ID	Image	Name	Description	Price	Quantity	Rating	Category	Rental	External Link	Edit	Remove
64364fb8f03acaae150b2d33		Grey Tent	This is a grey tent	\$0	1	5	Adventure Theme	Yes	<a href="#">Edit</a>	<a href="#">View</a>	<a href="#">Delete</a>
643645542c1303418686a43b		Lightweight Camping S...	Suitable for Beginner's light enjoyment, outdoor course complete package Number o...	\$450	0	5	Adventure Theme	Yes	<a href="#">Edit</a>	<a href="#">View</a>	<a href="#">Delete</a>
6436451921508c4e0c5ce98a		Package - family...	Indian Camp (details) Area 300cm x 350cm Quantity: 1 set Self-inflating floor mat (detail...	\$420	1	5	Family Theme	Yes	<a href="#">Edit</a>	<a href="#">View</a>	<a href="#">Delete</a>
643644cb2c1303418686a42e		Yellow Sand Camping...	Suitable for Blend in with the environment and get back to nature with a theme-based...	\$300	3	5	Warm Theme	Yes	<a href="#">Edit</a>	<a href="#">View</a>	<a href="#">Delete</a>

Fig. 57 - Product Manage Section of Admin Dashboard

## Admin Dashboard(Add Product):

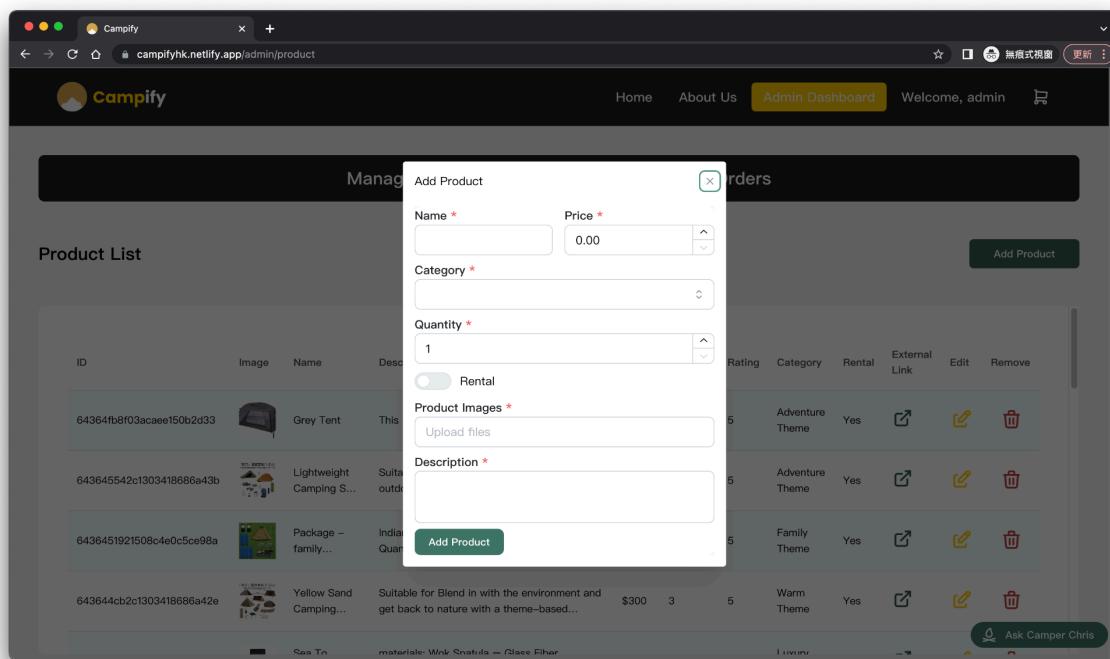


Fig. 58 - Product Manage Section Add Product Function of Admin Dashboard

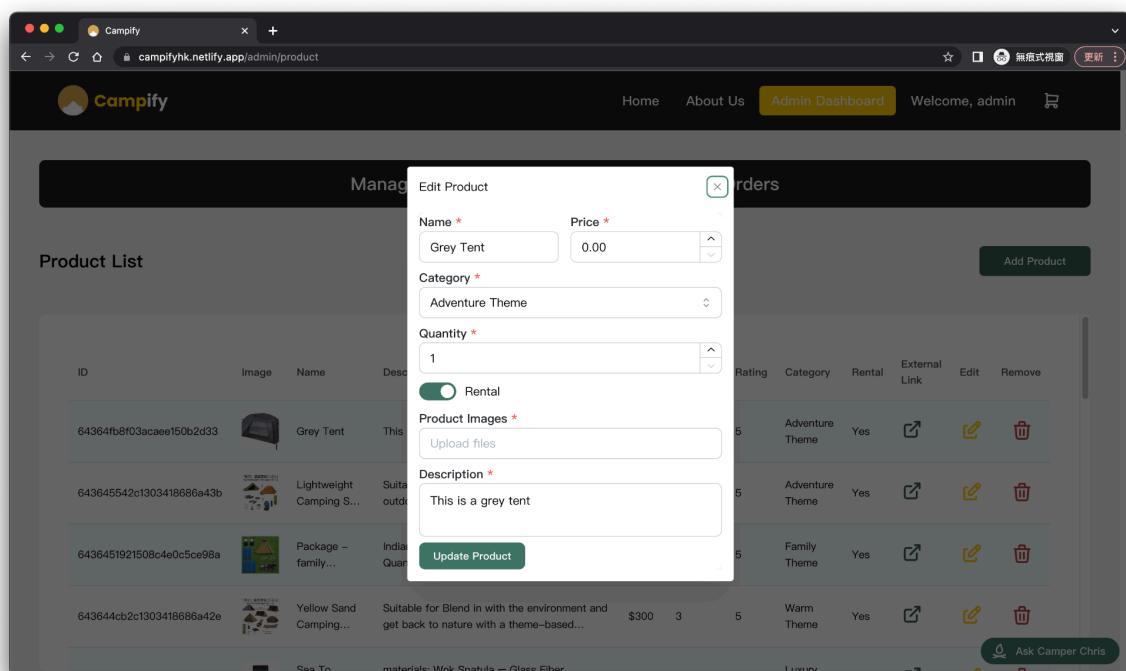


Fig. 59 - Product Manage Section Edit Product Function of Admin Dashboard

## Admin Dashboard(Product Manage Section Mobile Version):

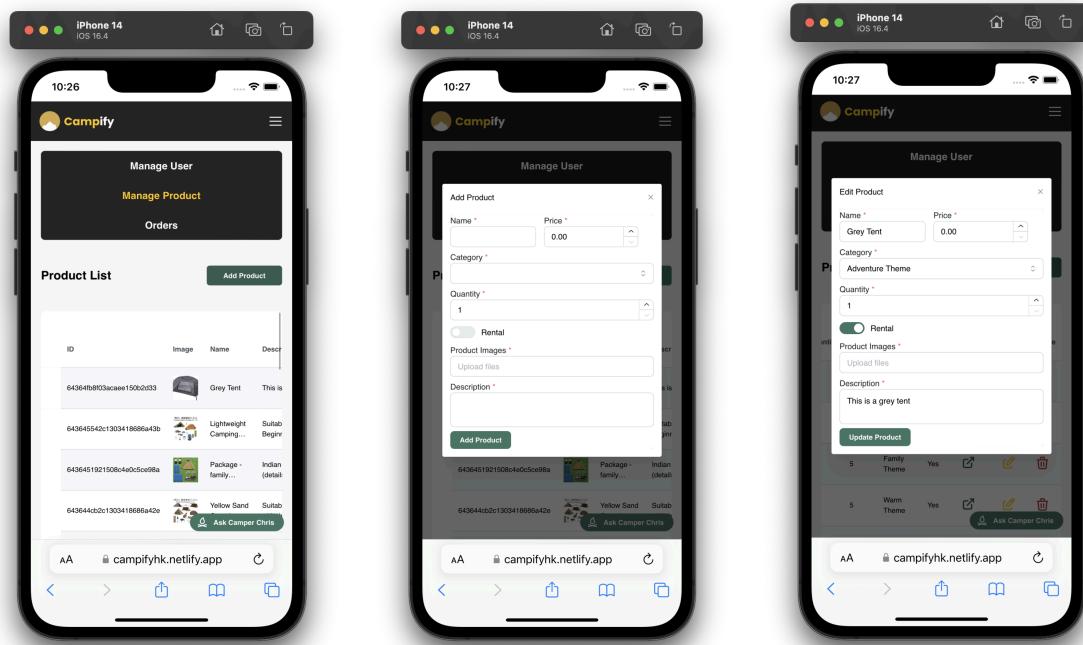


Fig. 40 - Mobile Version of Product Manage Section

## Admin Dashboard(Order Section):

A screenshot of a web browser window displaying the 'Admin Dashboard' of the Campify application. The URL is `campifyhk.netlify.app/admin/order`. The dashboard has a dark header with the Campify logo and navigation links for 'Home', 'About Us', 'Admin Dashboard' (which is highlighted in yellow), and 'Welcome, admin'. Below the header is a navigation bar with three tabs: 'Manage User', 'Manage Product', and 'Orders' (highlighted in yellow).

The main content area is titled 'Orders' and contains a table listing several orders. The table columns are: ID, Created Date, Total Price, Payment Method, and Status.

ID	Created Date	Total Price	Payment Method	Status
6449297859a8227e43715eee	26/04/2023 21:39	\$1800 HKD	stripe	PAID
644929a59a8227e43715ee8	26/04/2023 21:37	\$1800 HKD	stripe	PENDING
644928bf59a8227e43715ee0	26/04/2023 21:35	\$1800 HKD	stripe	PENDING
6449283959a8227e43715eba	26/04/2023 21:33	\$3150 HKD	stripe	PAID
64364f67f03acaee150b2d25	12/04/2023 14:27	\$1980 HKD	stripe	PAID
6436262021508c4e0c5ce909	12/04/2023 11:31	\$180 HKD	stripe	SHIPPED
643625c621508c4e0c5ce9f1	12/04/2023 11:30	\$35 HKD	stripe	PAID

At the bottom right of the table, there is a 'Ask Camper Chris' button with a magnifying glass icon.

Fig. 41 - Order Section of Admin Dashboard

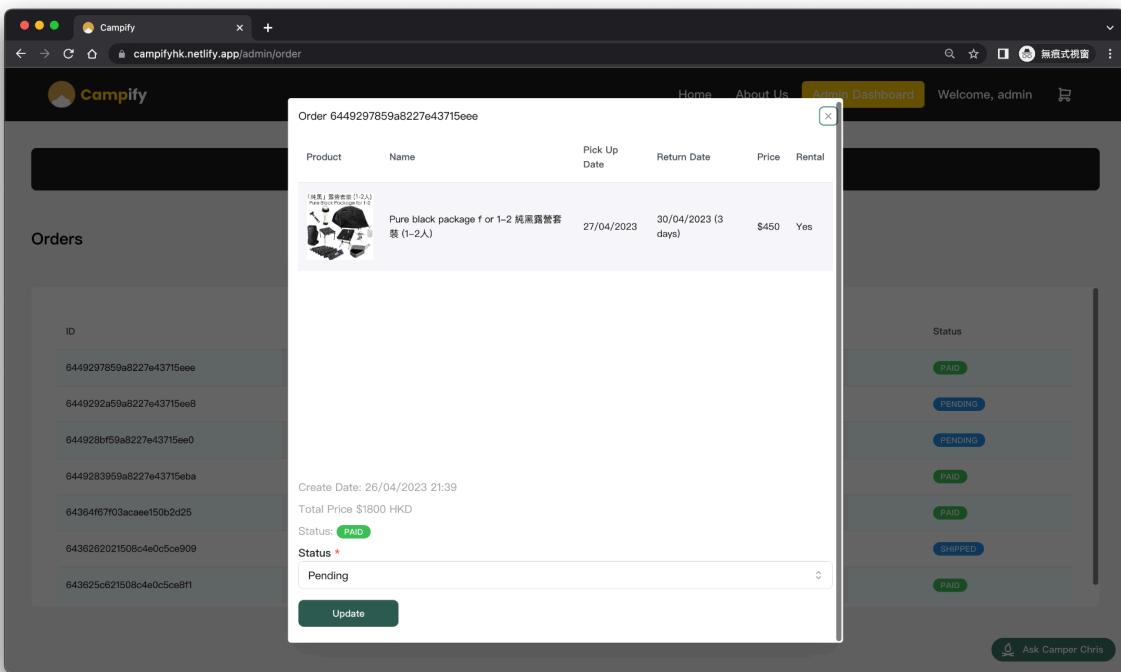


Fig. 42 - Edit function of Order Section

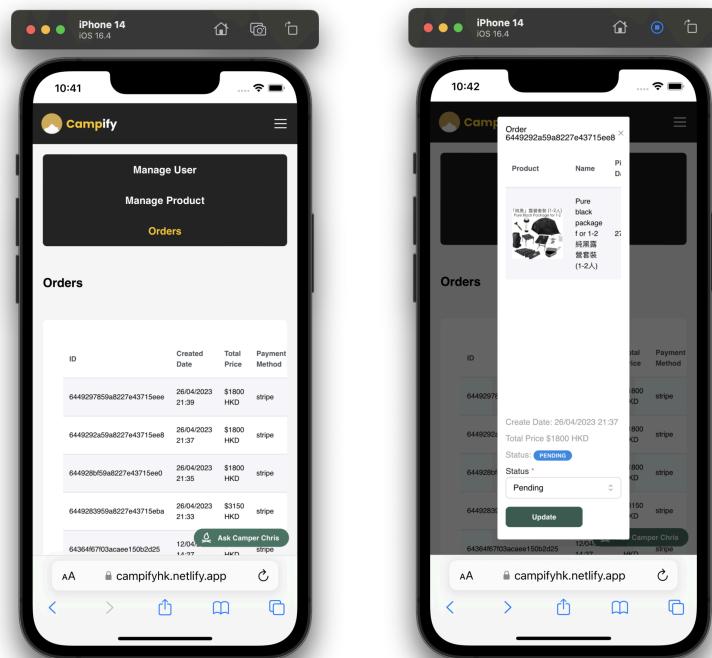


Fig. 43 - Mobile Version of Order Section

## 10. Learning Reflection

In this project, the project team has gained a wealth of new knowledge and skills across a range of critical areas. We have been able to continually improve our skills and approaches and apply our newfound knowledge to develop high-quality, impactful software products.

First, we gained a deeper understanding of the C3 Model Map. It is a powerful tool for understanding and analyzing our business idea before we start the project. With the C3 model Map, we were able to define more clearly who we were targeting and what we needed to do. This eliminates the possibility of doing non-essential work.

In addition to the C3 Model Map, we have also learned how to set up a Shopify website for e-commerce, which has provided us with valuable insights into the key features and functionality of the Shopify platform. By mastering these skills, we have developed more effective online presences for our clients and driven more significant sales and revenue.

Furthermore, we have gained a deeper understanding of web development technologies, including React, MongoDB, and Typescript. By honing our skills in these technologies, we have developed more dynamic, scalable web applications that meet the needs of our clients and users.

Lastly, we have learned how to distribute work effectively, focusing on developing clear communication channels, setting realistic timelines, and managing resources efficiently. This has enabled us to deliver projects on time and within budget while maintaining high quality.