

## COURSEWORK 2: E-COMMERCE WEBSITE

# FINAL SUBMISSION



CST2120: WEB APPLICATIONS AND DATABASES

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## Project Description

The aim of this project was to create a fully functional e-commerce website using MongoDB as the database and server-side scripting (php).

The user can register and login on the website and the data will be stored in the database.

Navigating across the webpages, the user will have access to various information like the newest products, the best-selling products and the sales that are being offered by the shop.

The website aims to be as much user-friendly as possible and the user can get every required information he needs at the tip of his hands.

On the product page, the user will have every detail of the product like the colors available, the price (before and after discount if any) and also specific descriptions about the products.

For the purchasing of the product, a basket will be generated, and the user can edit his orders according to his wish, increasing quantity or removing a product itself.

Once the user proceeds with the checkout, he/she shall fill a form asking for specific details like address, phone number ...etc. of the user and this will be stored in the customer table.

The logged in user has the option to view his past orders if any and also gets the recommendation for other products.

In the product page the user can sort the products according to different criteria depending on his needs.

Screenshots of different pages:

Homepage (when user is not logged in):

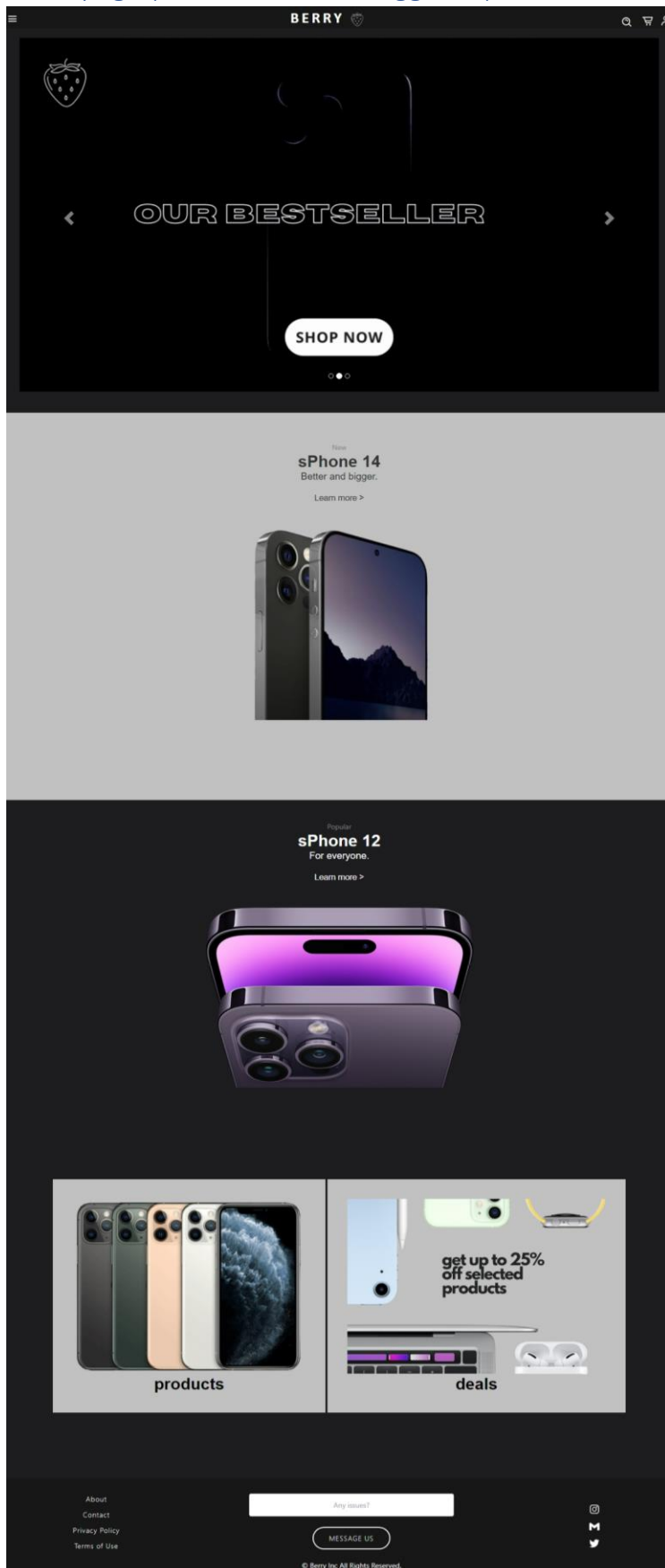


Figure 1:Homepage1

Nav bar when user is not logged in:



Figure 2:Navigation bar 1

Here the user icon is kept blank since no user is logged in.

Side nav bar:

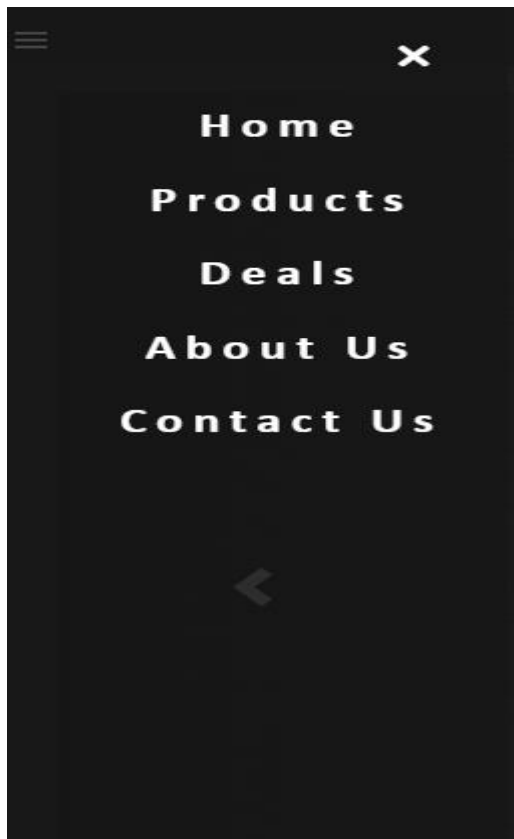


Figure 3:Side Nav bar

Here the user have access to different options across the website.

## Products page:

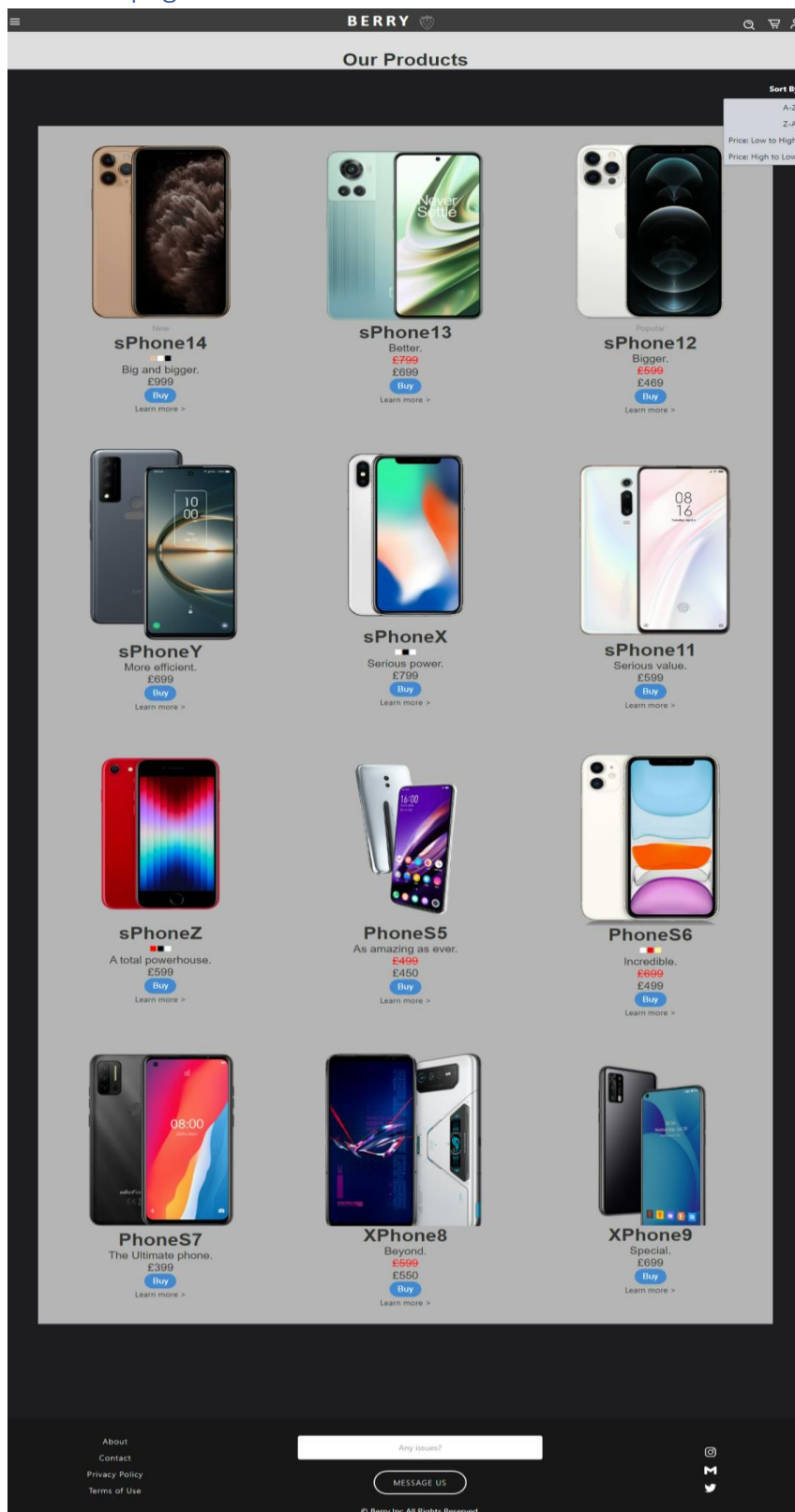


Figure 4:Product page

The product page offers the user a brief overview of the products, the price, the deals and also the products which are available in different colours.



Product description pages (with similar products -> using similar keywords in the description and tags)

Example 1:

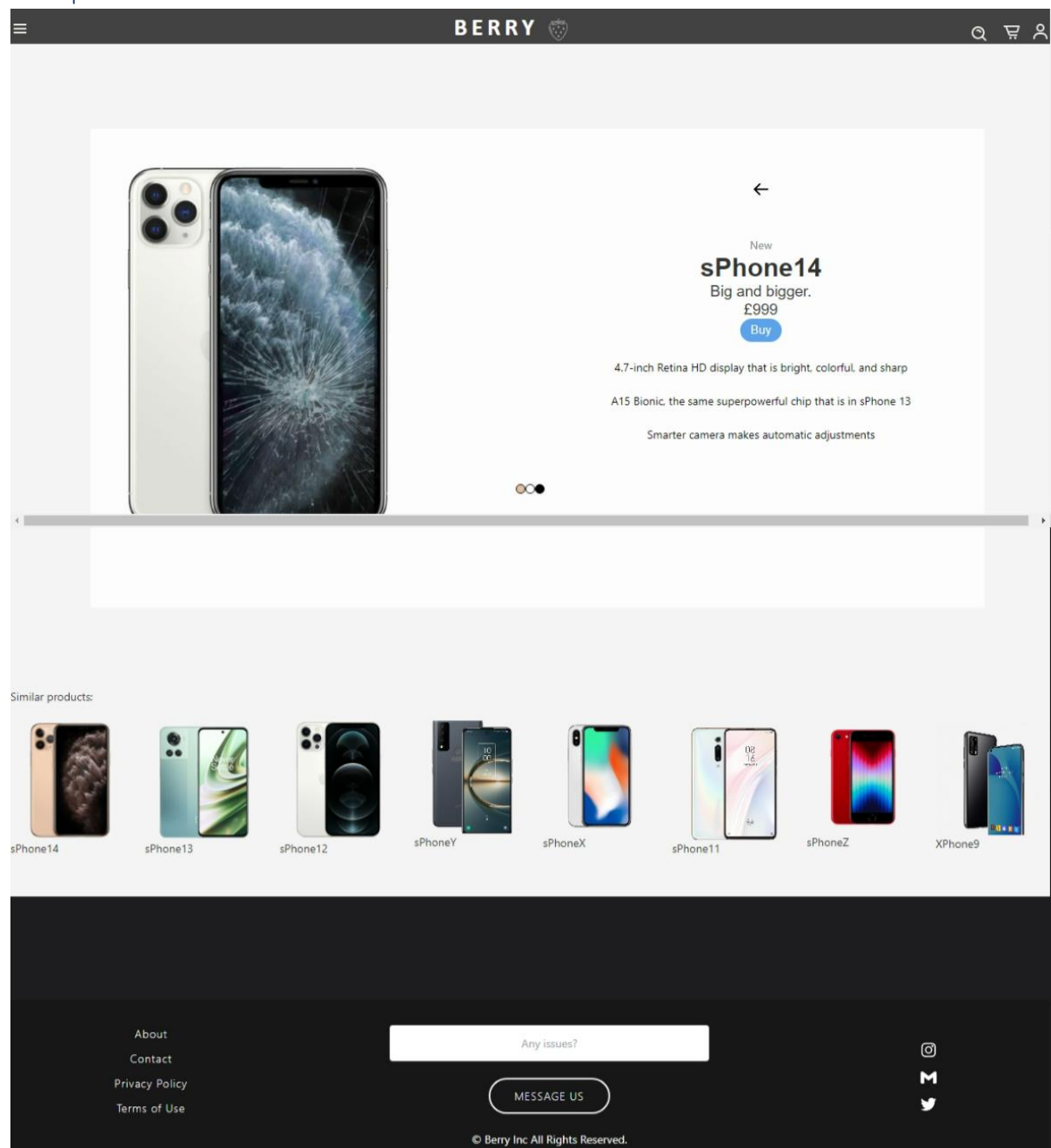


Figure 5:product description 1

This page provides the user with specific details about the product like the screen size, processor, memory and so on. Also it generates similar products for the user to be able to compare and find which products suits the best.

Example 2:

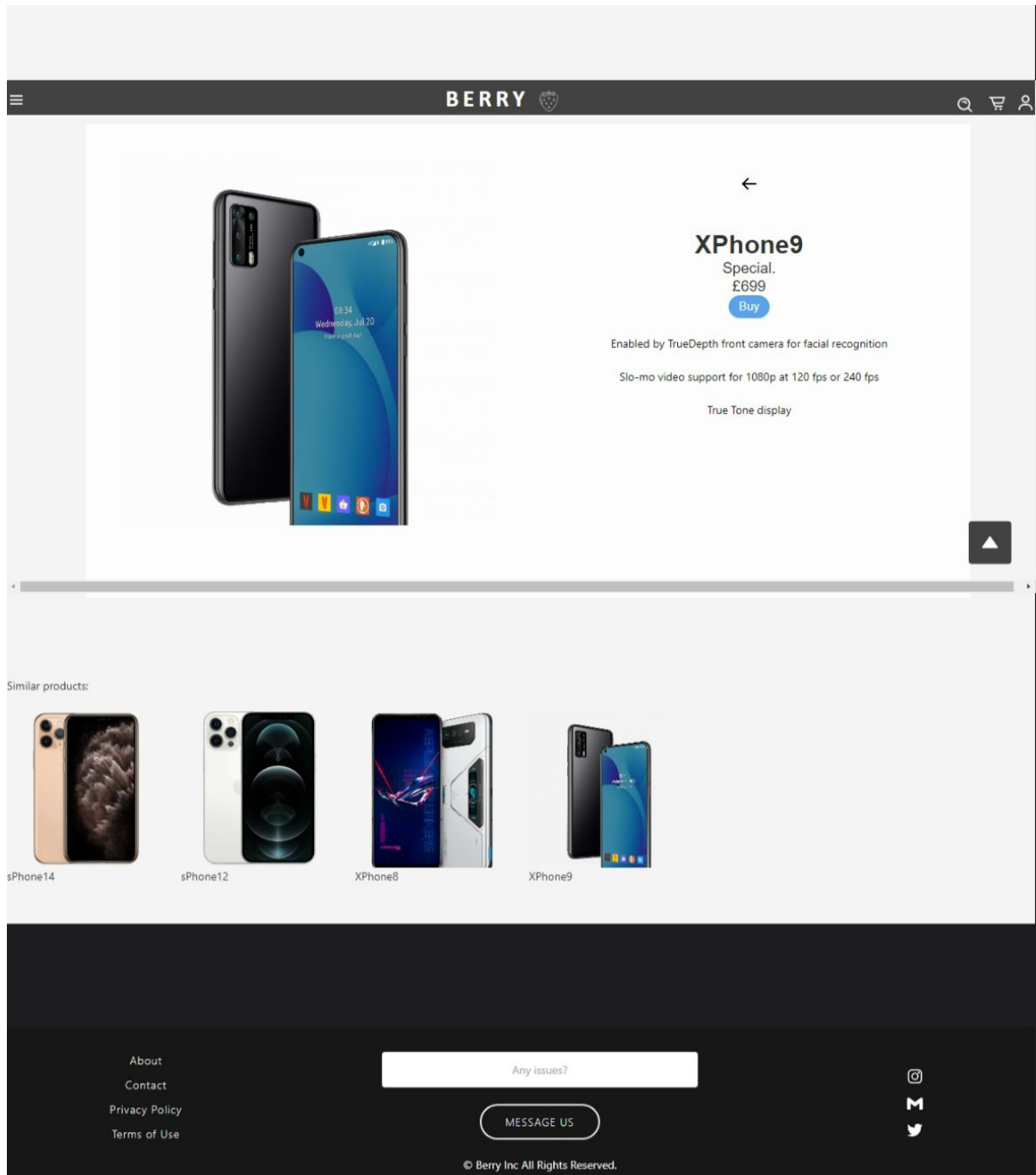


Figure 6:product description 2

Deals page:

The screenshot shows the 'DEALS' section of the Berry website. The header includes the Berry logo and navigation icons. A countdown timer indicates 'Time Left: 36d 21h 23m 8s'. A 'Sort By' dropdown menu is open, showing options: A-Z, Z-A, Price: Low to High, and Price: High to Low. Five smartphone deals are displayed in a grid:

- sPhone13**: Better. ~~£799~~ £699. Buy. Learn more >
- sPhone12** (Popular): Bigger. ~~£599~~ £469. Buy. Learn more >
- PhoneS5**: As amazing as ever. ~~£499~~ £450. Buy. Learn more >
- PhoneS6**: Incredible. ~~£699~~ £499. Buy. Learn more >
- XPhone8**: Beyond. ~~£599~~ £550. Buy. Learn more >

The footer contains links for About, Contact, Privacy Policy, and Terms of Use, a 'MESSAGE US' button, and social media icons for Instagram, Facebook, and Twitter. A copyright notice at the bottom reads '© Berry Inc All Rights Reserved.'

Figure 7: Sales page

Here the user has all the different products which are currently on sale.

About us page:

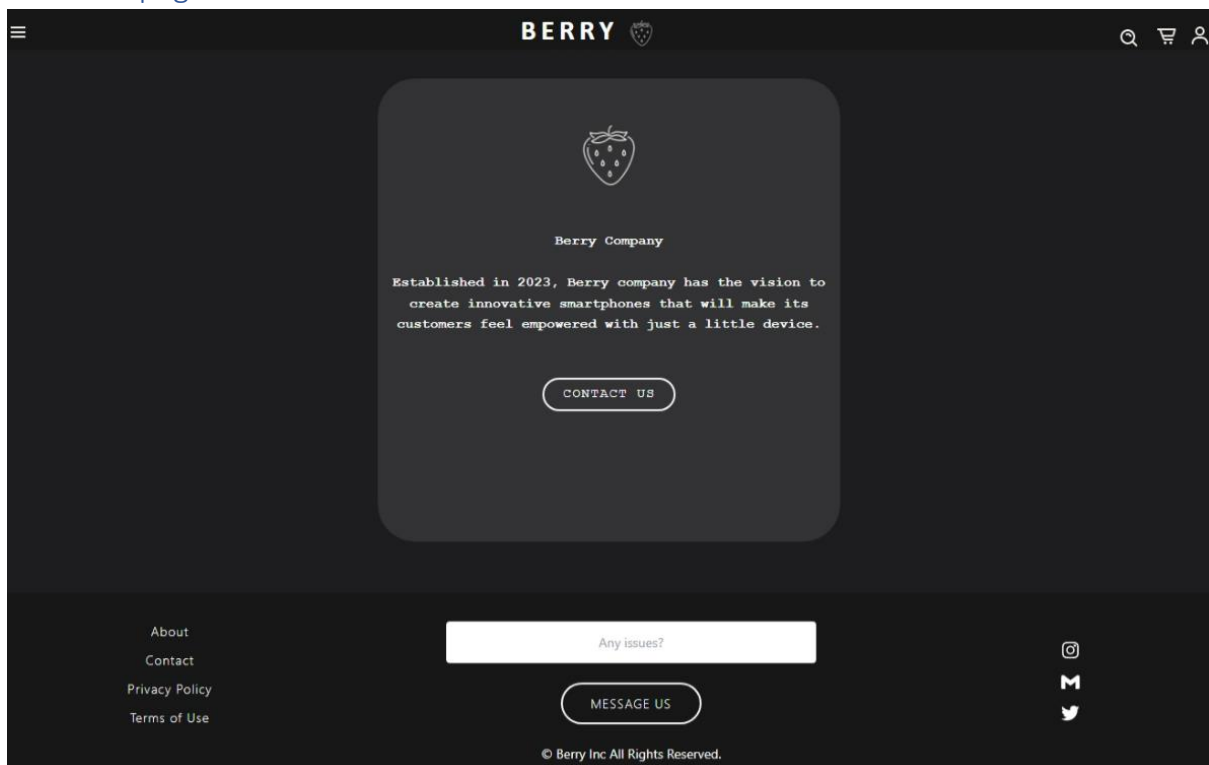


Figure 8: About Us page

Search functionality:



Figure 9: Search bar

If no results:

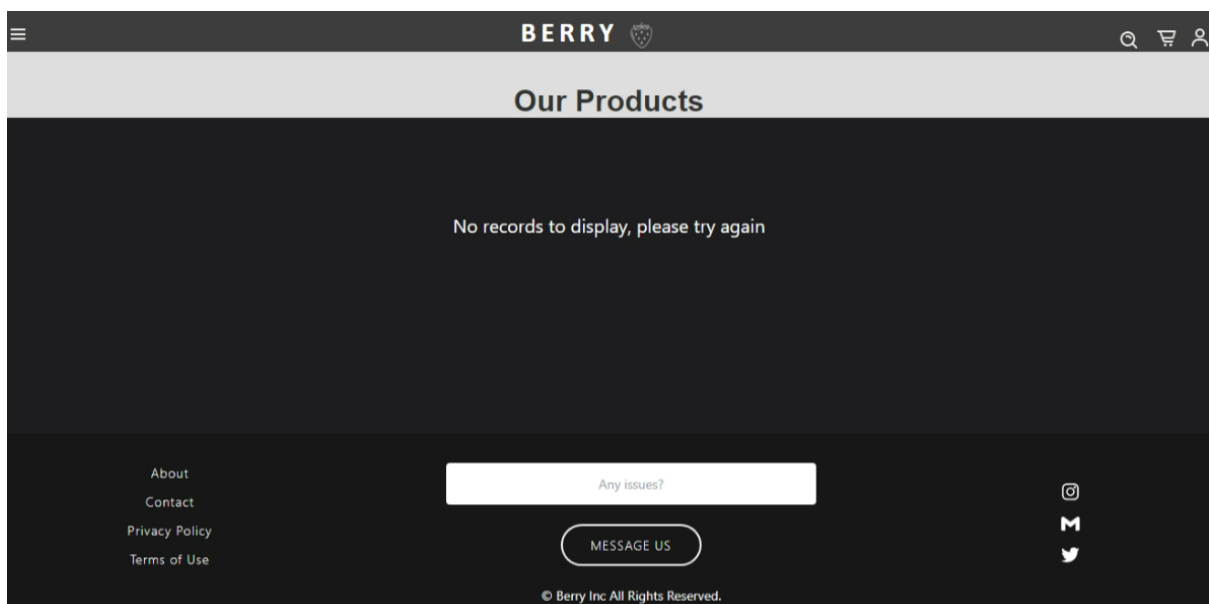


Figure 10: Displaying results from search 1

If results, display results:

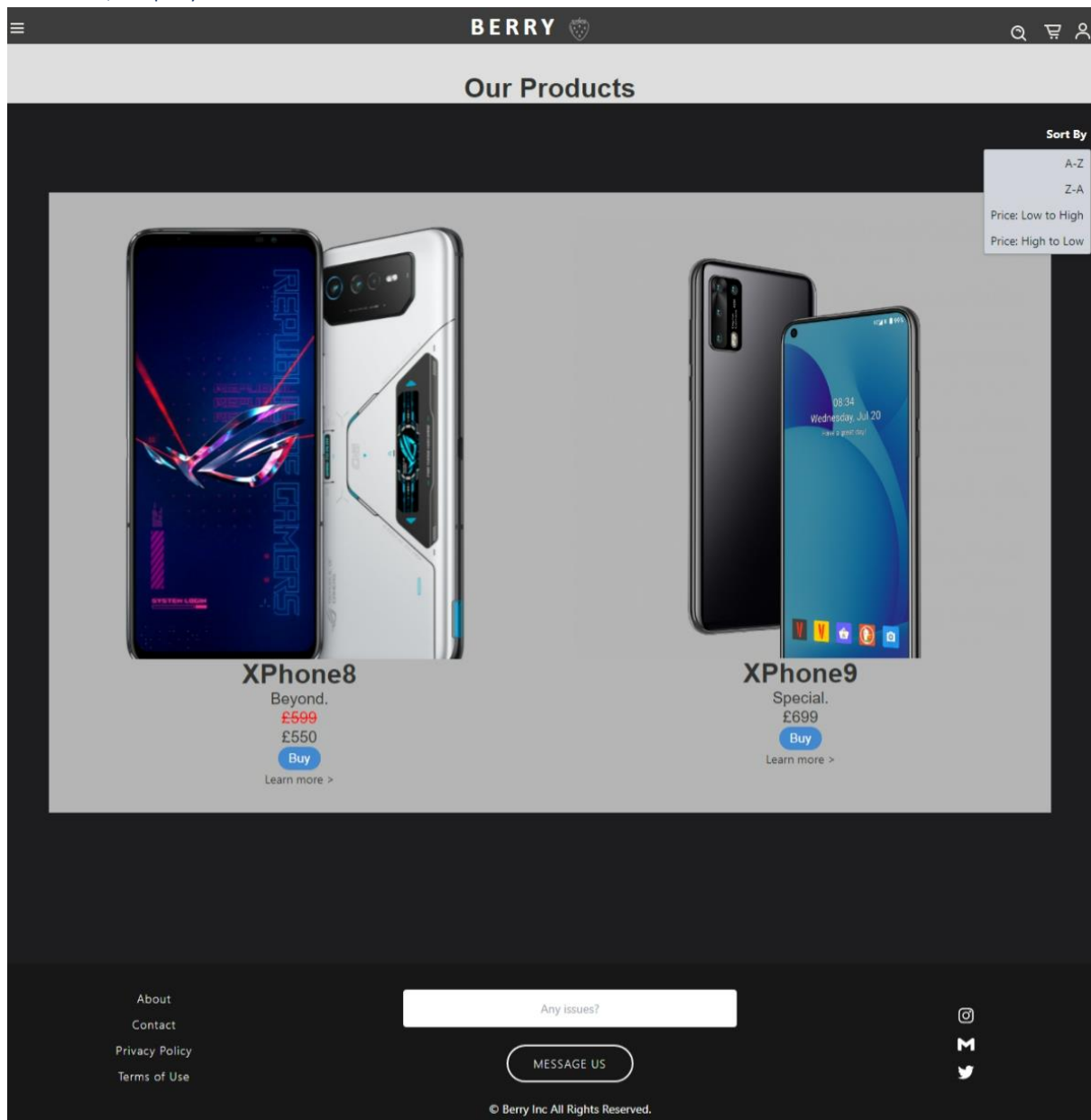


Figure 11: display results 2

Login menu:

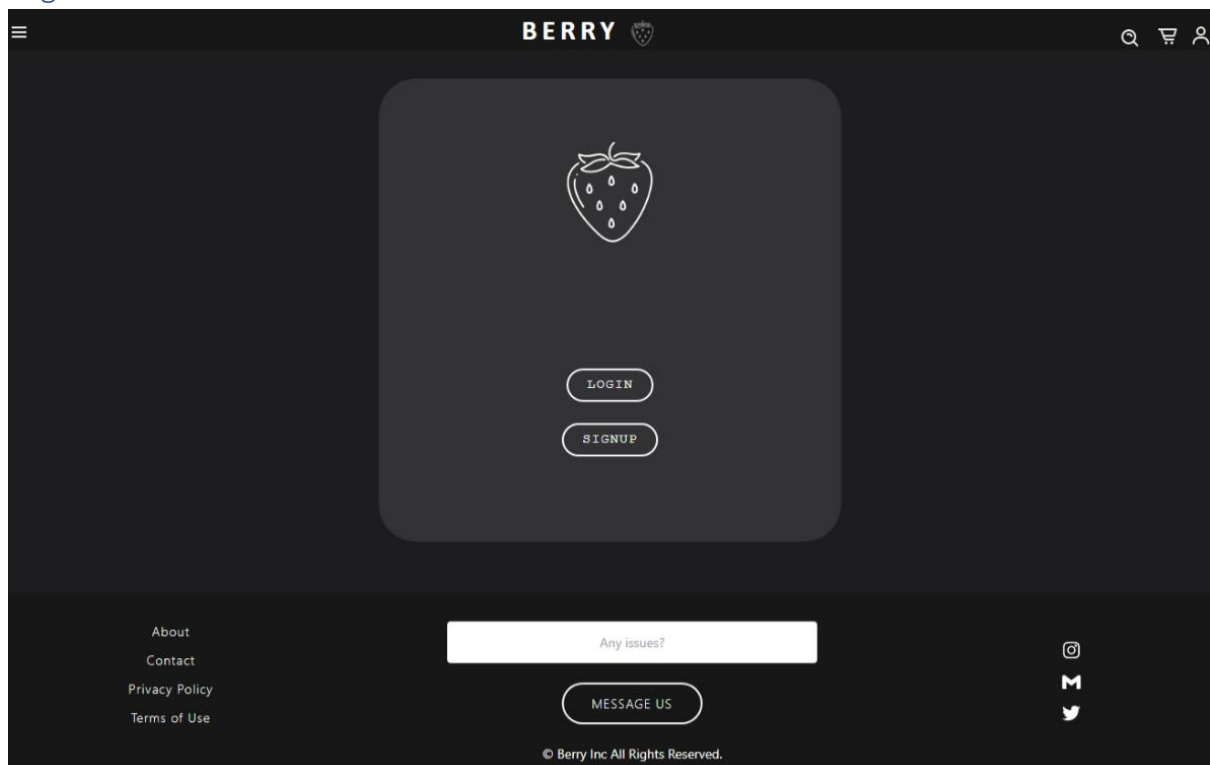


Figure 12: Login menu

For first time user: Sign Up

Else choose login.

Signup page:

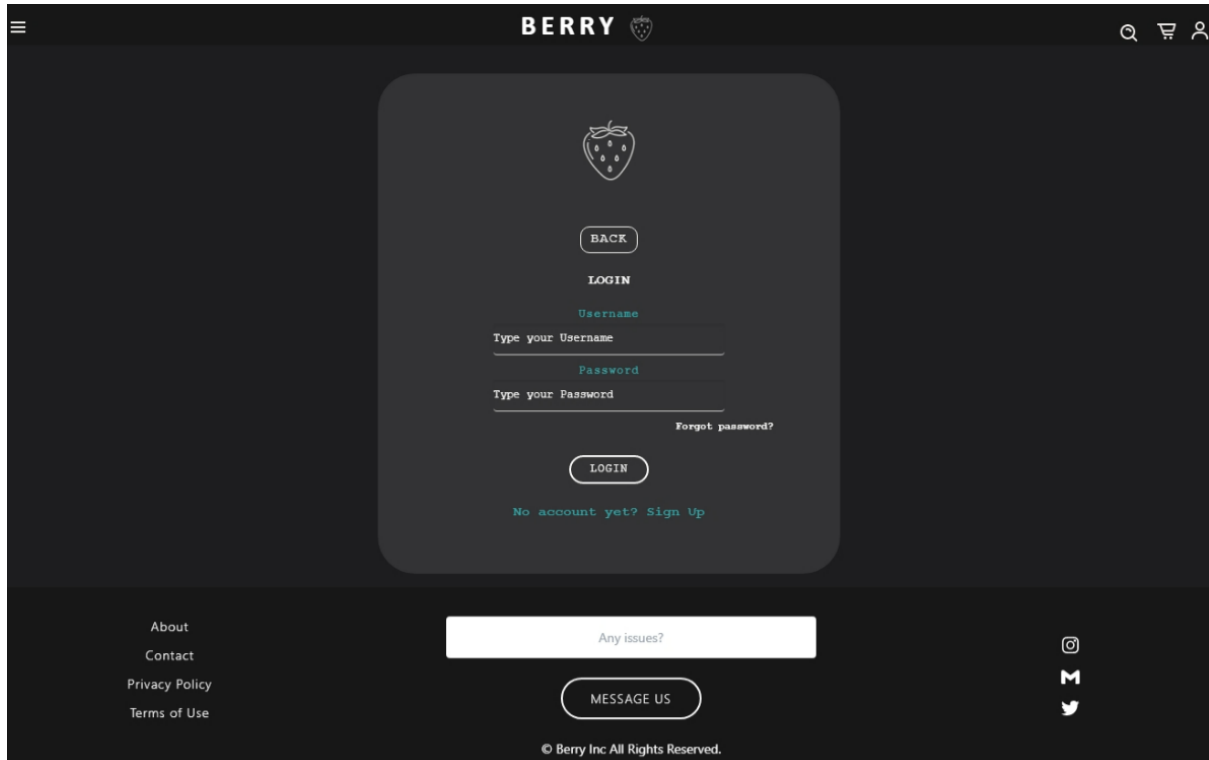
Sign Up page

Figure 13: Sign Up page 1

Sign Up page

Figure 14: Sign Up page 2

Login page:



The login page features a dark theme with a central light gray rounded rectangle containing the login form. At the top of the form is the Berry logo (a strawberry). Below it is a 'BACK' button, followed by the 'LOGIN' heading. The form includes two input fields: 'Username' with the placeholder 'Type your Username' and 'Password' with the placeholder 'Type your Password'. A 'Forgot password?' link is positioned to the right of the password field. A 'LOGIN' button is at the bottom of the form, with a link 'No account yet? Sign Up' below it. The footer contains a list of links (About, Contact, Privacy Policy, Terms of Use) on the left, a search bar and 'Any issues?' text in the center, a 'MESSAGE US' button, and social media icons (Instagram, Facebook, Twitter) on the right. The copyright notice '© Berry Inc All Rights Reserved.' is at the very bottom.

BERRY

BACK

LOGIN

Username

Type your Username

Password

Type your Password

Forgot password?

LOGIN

No account yet? Sign Up

About

Contact

Privacy Policy

Terms of Use

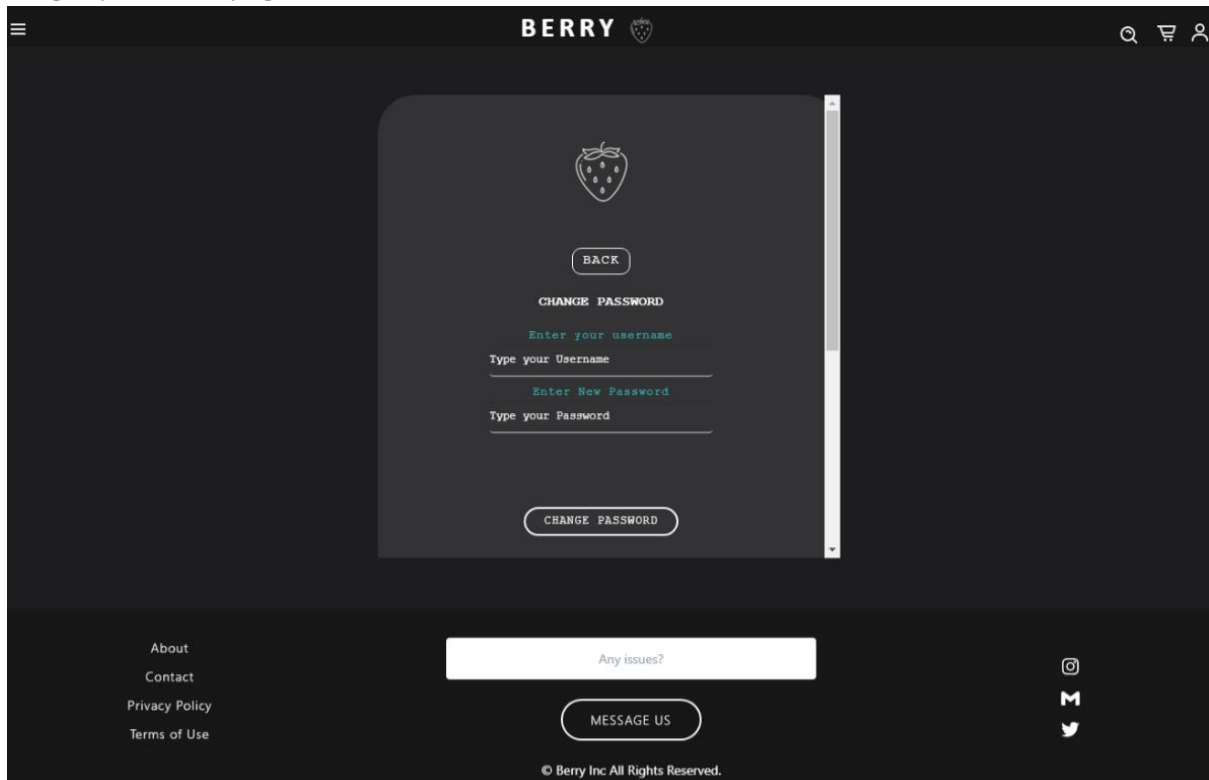
Any issues?

MESSAGE US

© Berry Inc All Rights Reserved.

Figure 15: Login page

Forgot password page:



The forgot password page has a similar layout to the login page. It features the Berry logo at the top of the central form, followed by a 'BACK' button and the 'CHANGE PASSWORD' heading. The form contains three input fields: 'Enter your username' with the placeholder 'Type your Username', 'Enter New Password' with the placeholder 'Type your Password', and a third field for 'Type your Password'. A 'CHANGE PASSWORD' button is at the bottom of the form. The footer is identical to the login page, including the navigation links, search bar, 'Any issues?' text, 'MESSAGE US' button, social media icons, and copyright notice.

BERRY

BACK

CHANGE PASSWORD

Enter your username

Type your Username

Enter New Password

Type your Password

CHANGE PASSWORD

About

Contact

Privacy Policy

Terms of Use

Any issues?

MESSAGE US

© Berry Inc All Rights Reserved.

Figure 16: Forgot password page



Nav bar when user is logged in:



Figure 17: Navigation bar when logged in

User with profile picture:



Figure 18: Profile picture of user

User without profile picture:



Figure 19: User with no profile picture

When hover on user's profile pic:

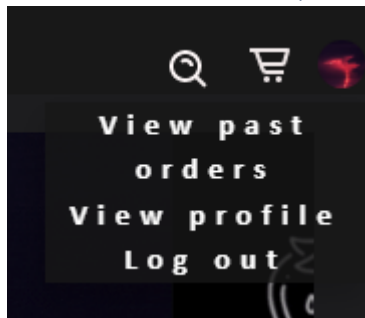


Figure 20: hovering on user icon

View past order page: take order from database.

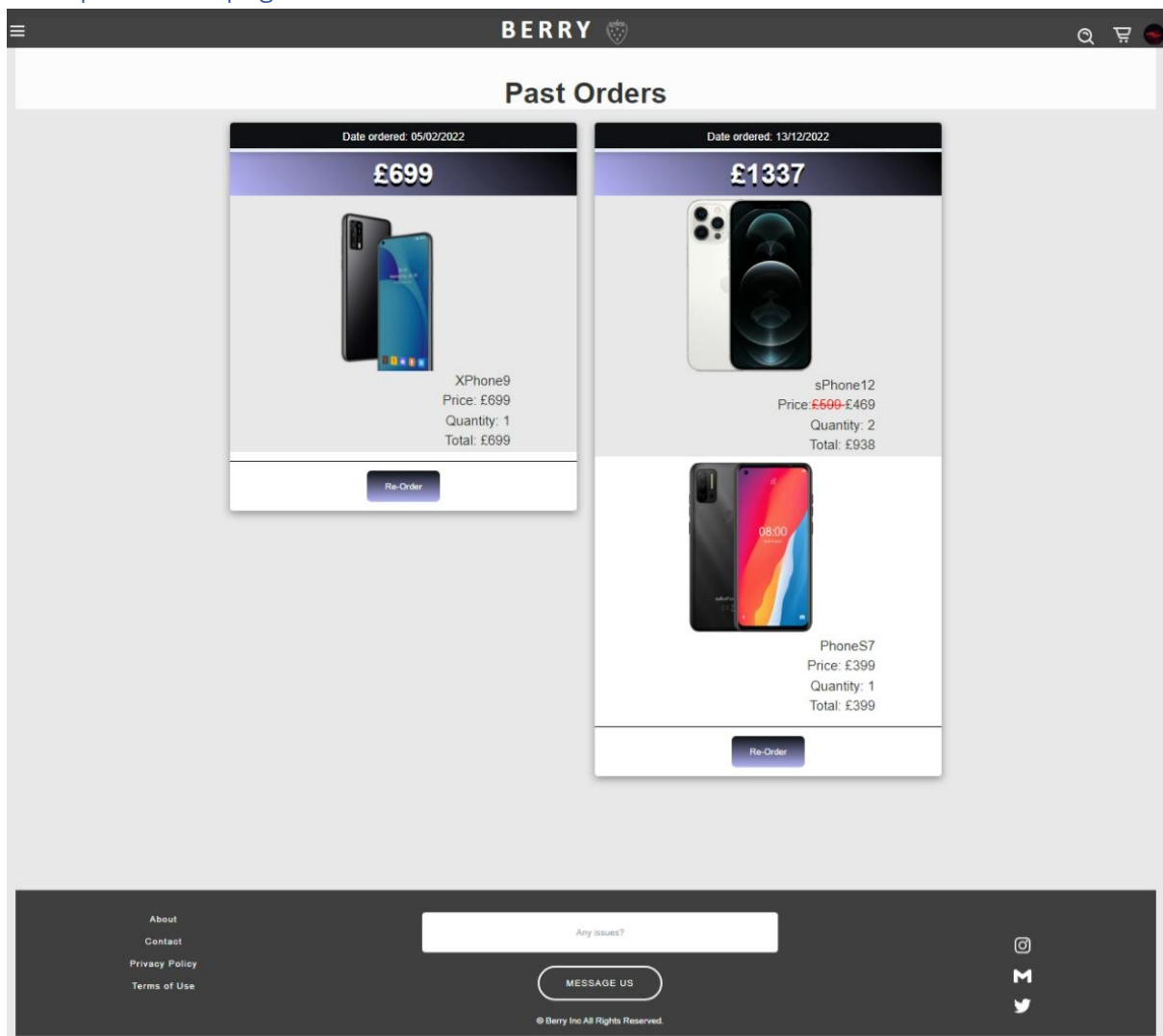


Figure 21: view past orders

Reorder function:

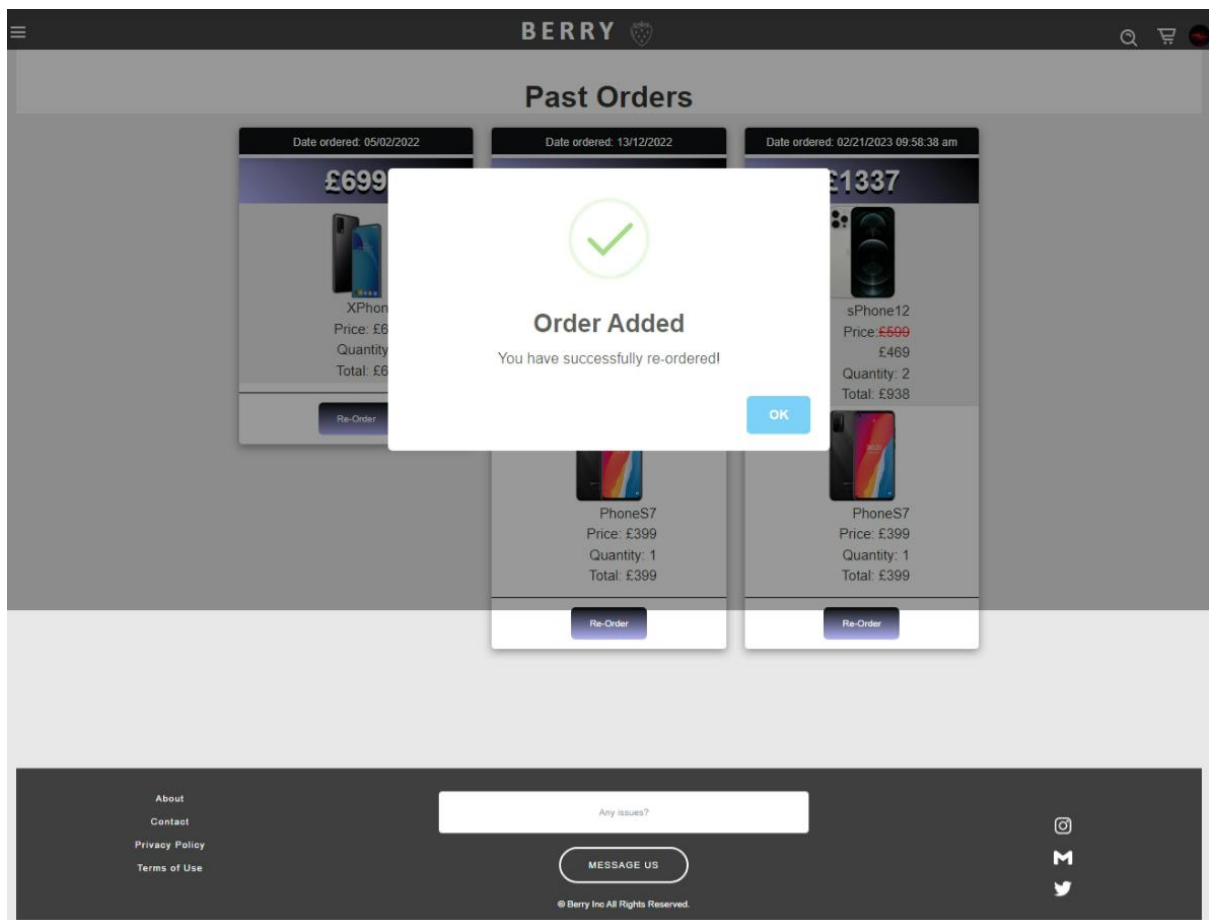


Figure 22: Adding another order

Adds the order in database and takes the current date:

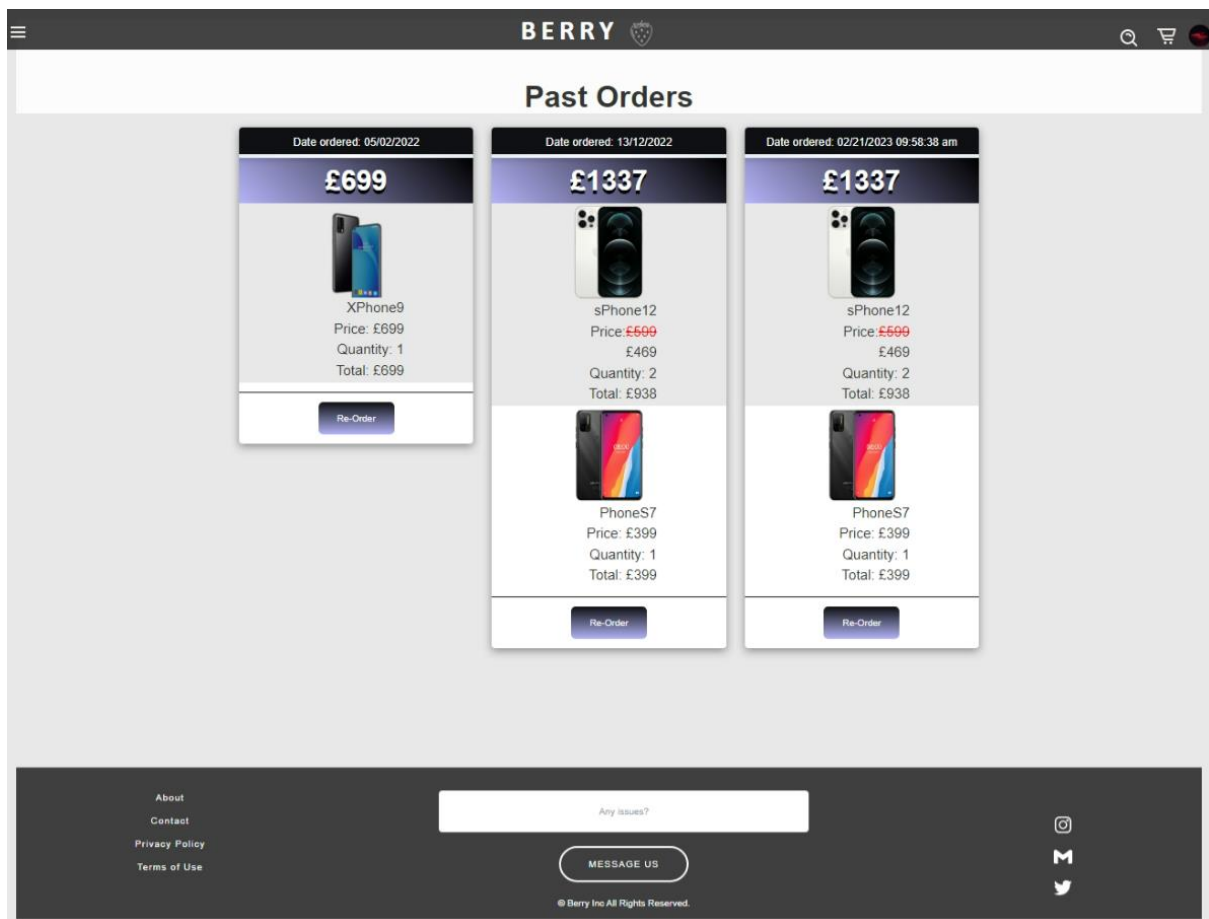


Figure 23: Updating order

View profile page:

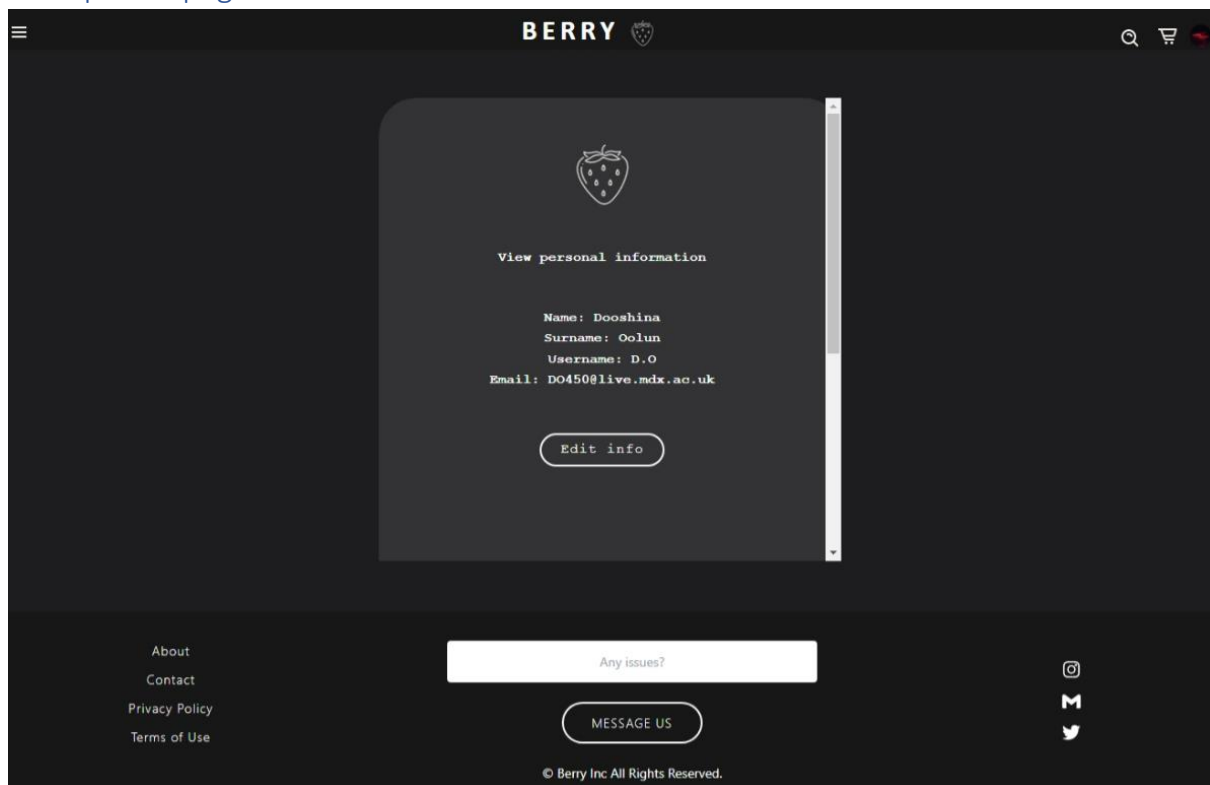


Figure 24:View profile details

Edit info:

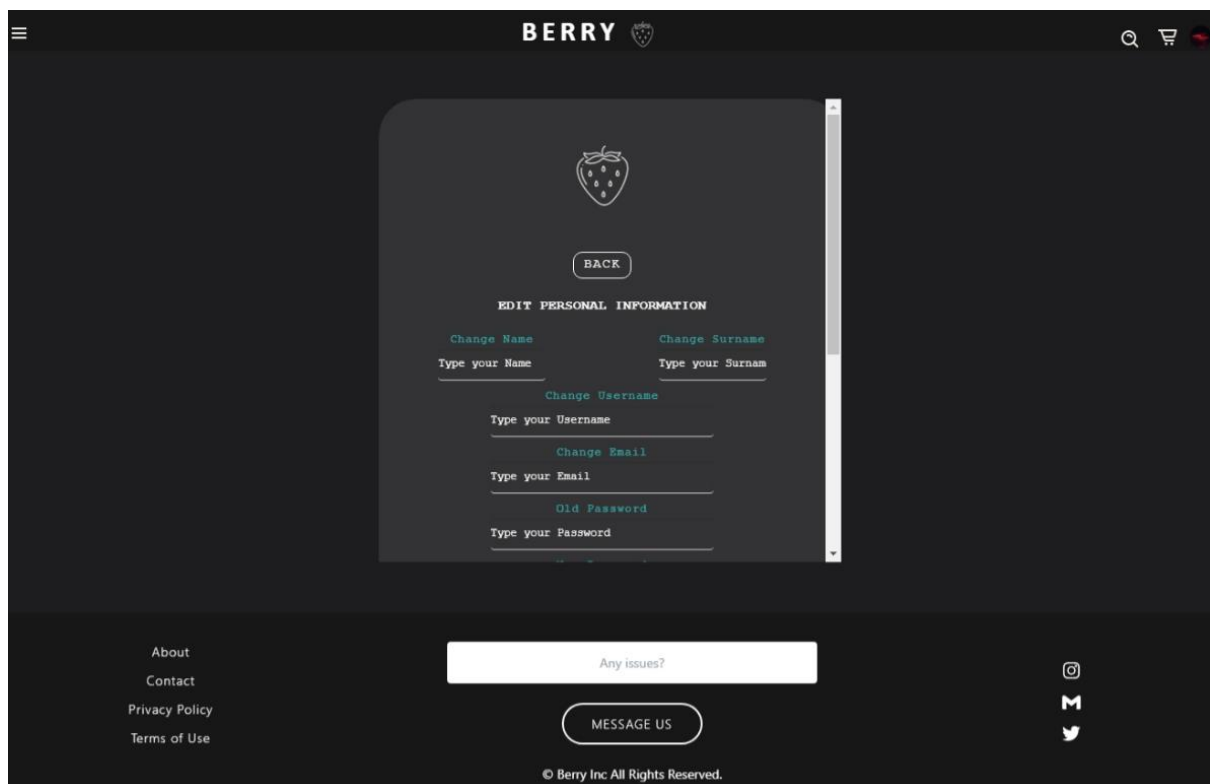


Figure 25: Editing info of the user 1

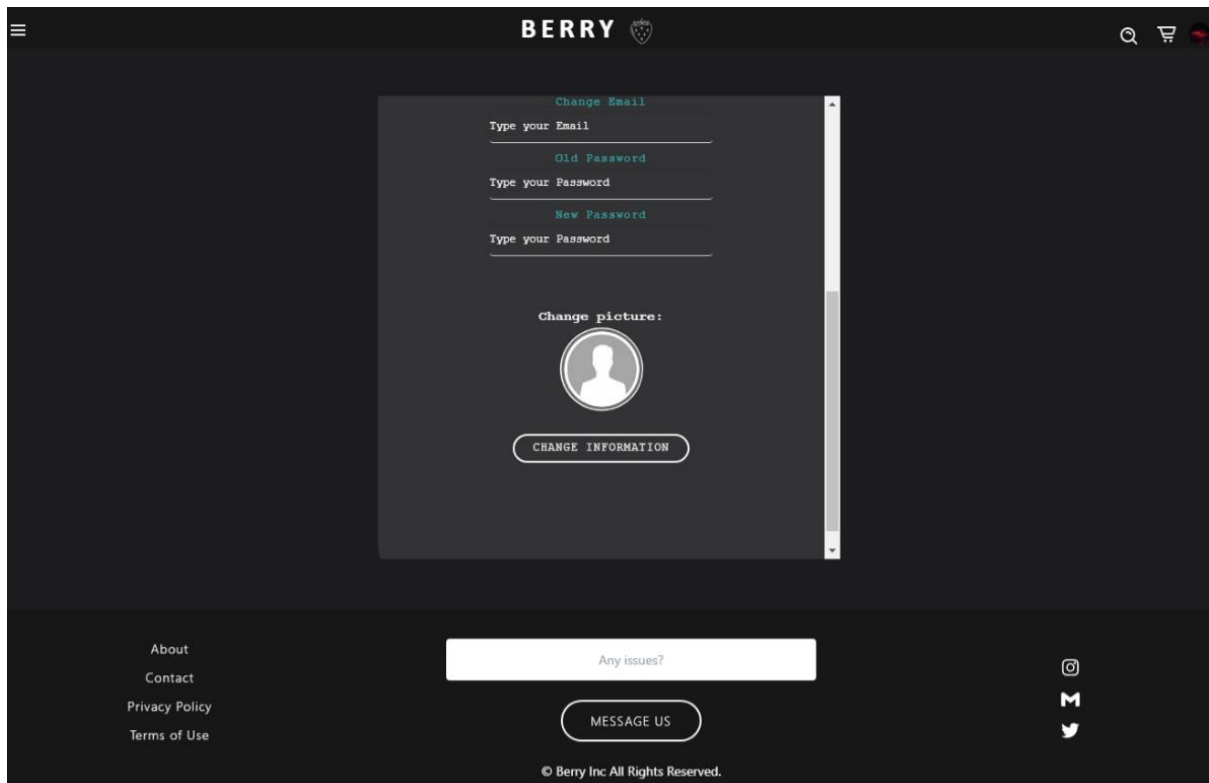


Figure 26: Editing info of user 2

Cart:

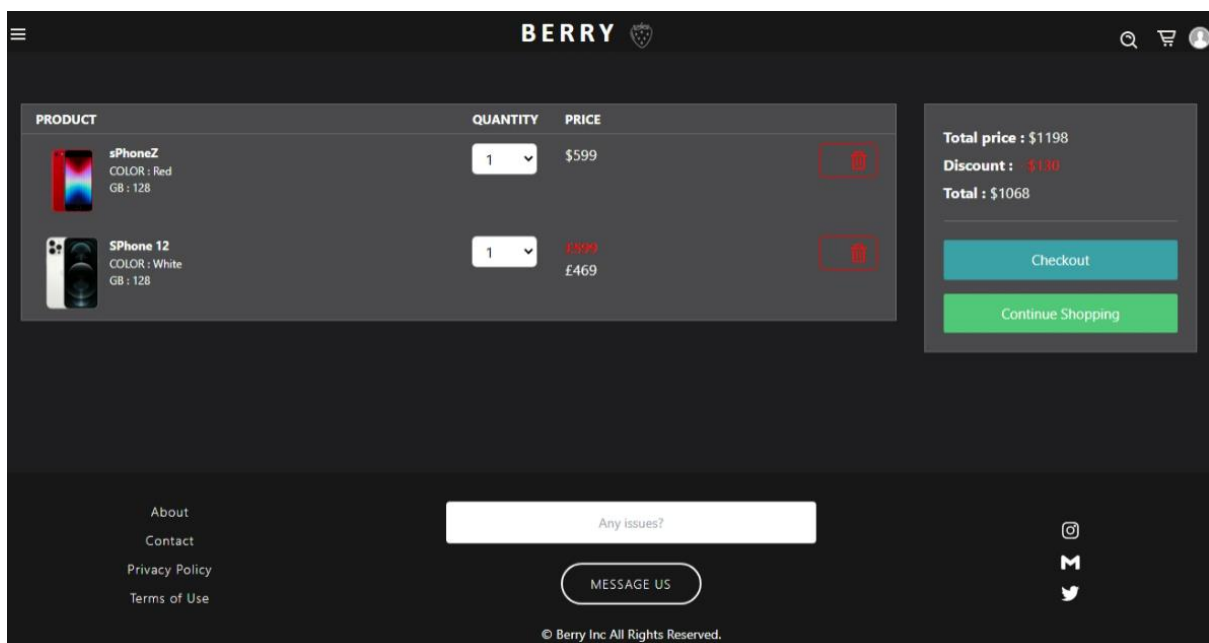
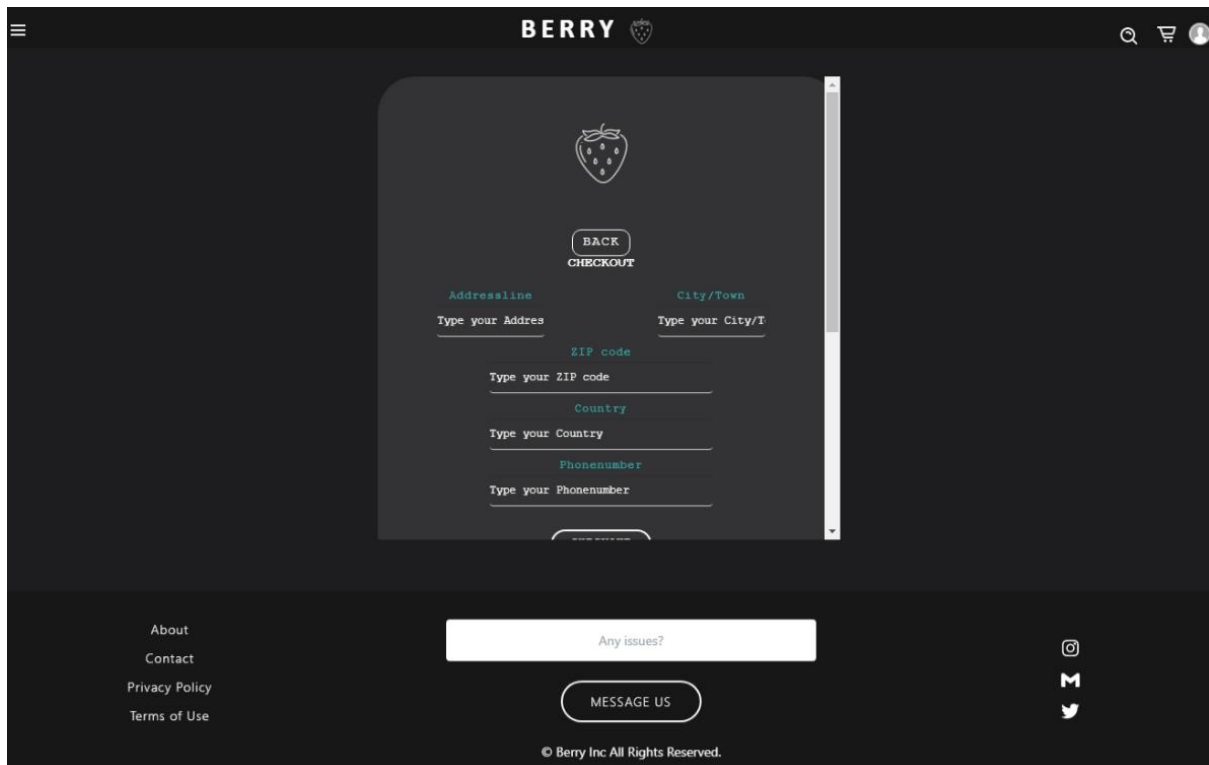


Figure 27: Cart page

Gets product details from products page and displays in basket.

## Checkout

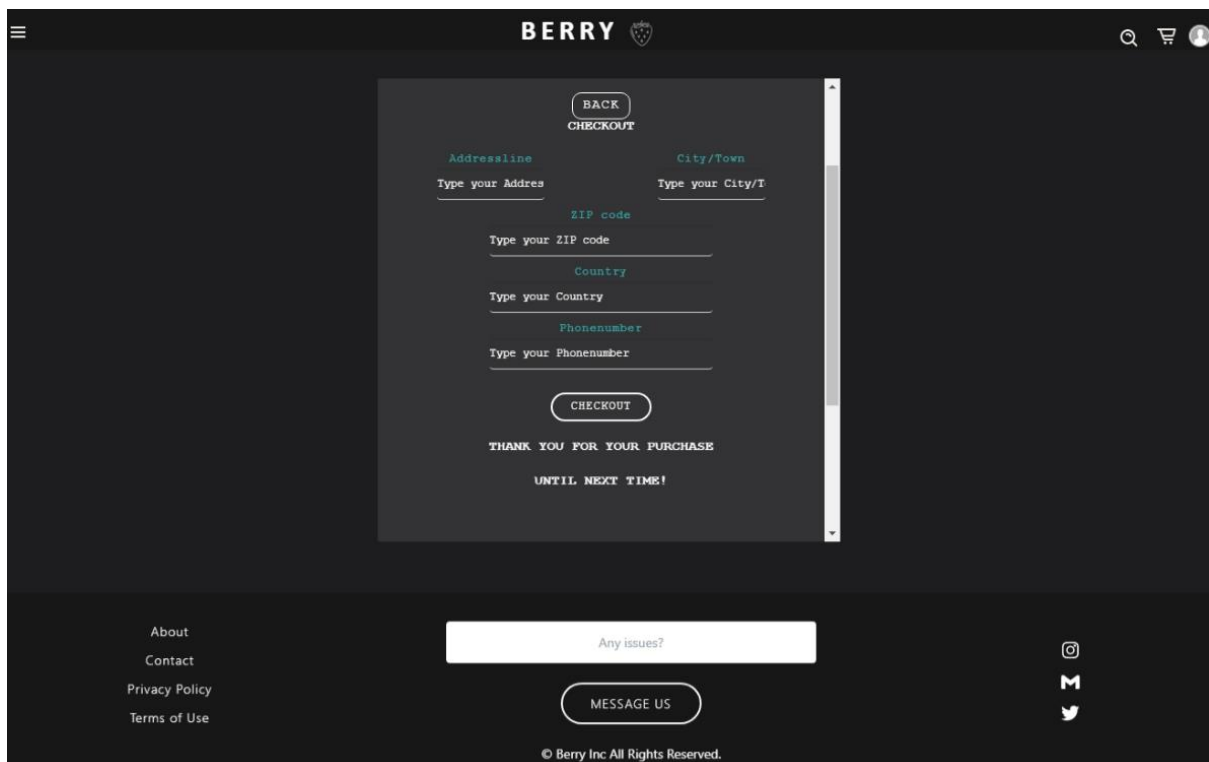


A screenshot of the Berry checkout form. The form is centered on a dark background. At the top, there is a Berry logo and a navigation bar with a search icon, a shopping cart icon, and a user profile icon. Below the logo is a strawberry icon. The form contains the following fields and buttons:

- BACK** button
- CHECKOUT** button
- Addressline** label
- City/Town** label
- Type your Address** input field
- Type your City/T** input field
- ZIP code** label
- Type your ZIP code** input field
- Country** label
- Type your Country** input field
- Phonenumber** label
- Type your Phonenumber** input field

At the bottom of the form, there is a **CHECKOUT** button. Below the form, there is a footer with the following links: **About**, **Contact**, **Privacy Policy**, and **Terms of Use**. In the center of the footer, there is a **Any issues?** link and a **MESSAGE US** button. On the right side of the footer, there are social media icons for Instagram, Facebook, and Twitter. At the very bottom, there is a copyright notice: **© Berry Inc All Rights Reserved.**

Figure 28: Checkout1



A screenshot of the Berry checkout form, showing the state after the checkout process. The form is centered on a dark background. At the top, there is a Berry logo and a navigation bar with a search icon, a shopping cart icon, and a user profile icon. Below the logo is a strawberry icon. The form contains the following fields and buttons:

- BACK** button
- CHECKOUT** button
- Addressline** label
- City/Town** label
- Type your Address** input field
- Type your City/T** input field
- ZIP code** label
- Type your ZIP code** input field
- Country** label
- Type your Country** input field
- Phonenumber** label
- Type your Phonenumber** input field

At the bottom of the form, there is a **CHECKOUT** button. Below the form, there is a footer with the following links: **About**, **Contact**, **Privacy Policy**, and **Terms of Use**. In the center of the footer, there is a **Any issues?** link and a **MESSAGE US** button. On the right side of the footer, there are social media icons for Instagram, Facebook, and Twitter. At the very bottom, there is a copyright notice: **© Berry Inc All Rights Reserved.**

Figure 29: Checkout2

## Privacy policy page:

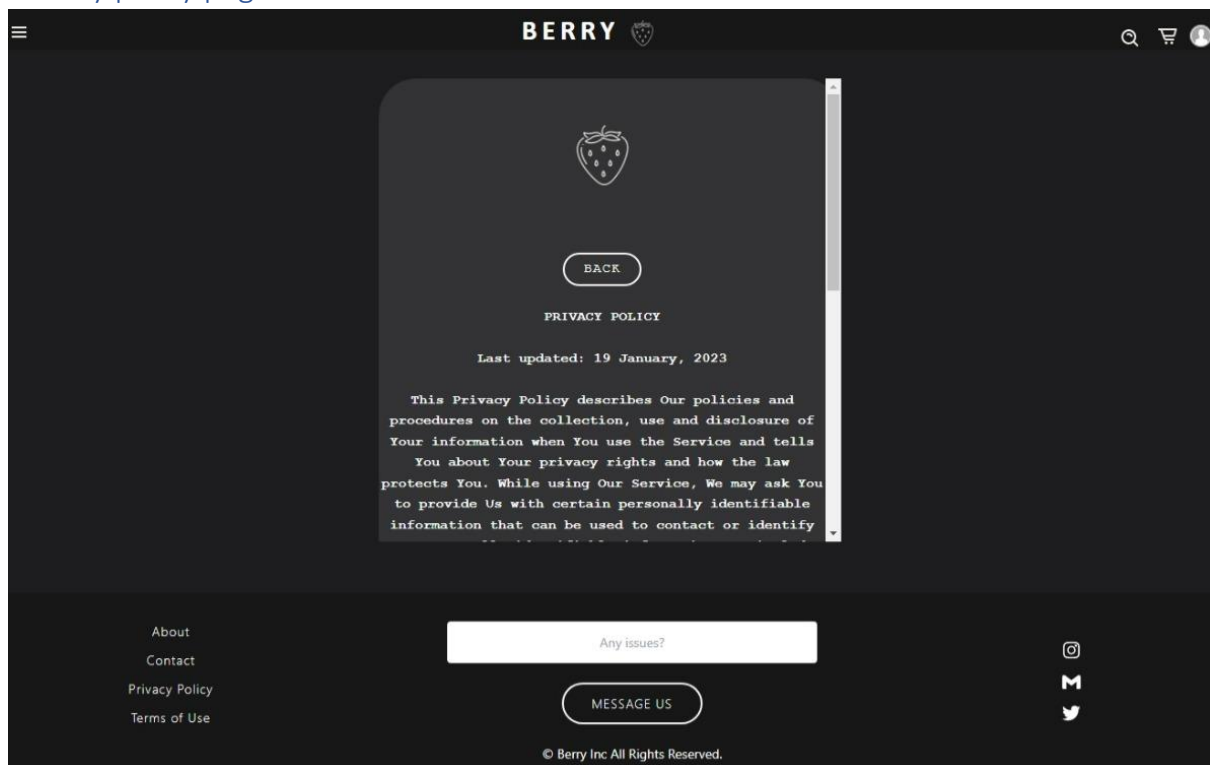


Figure 30: Privacy policy

## Terms of Use page:

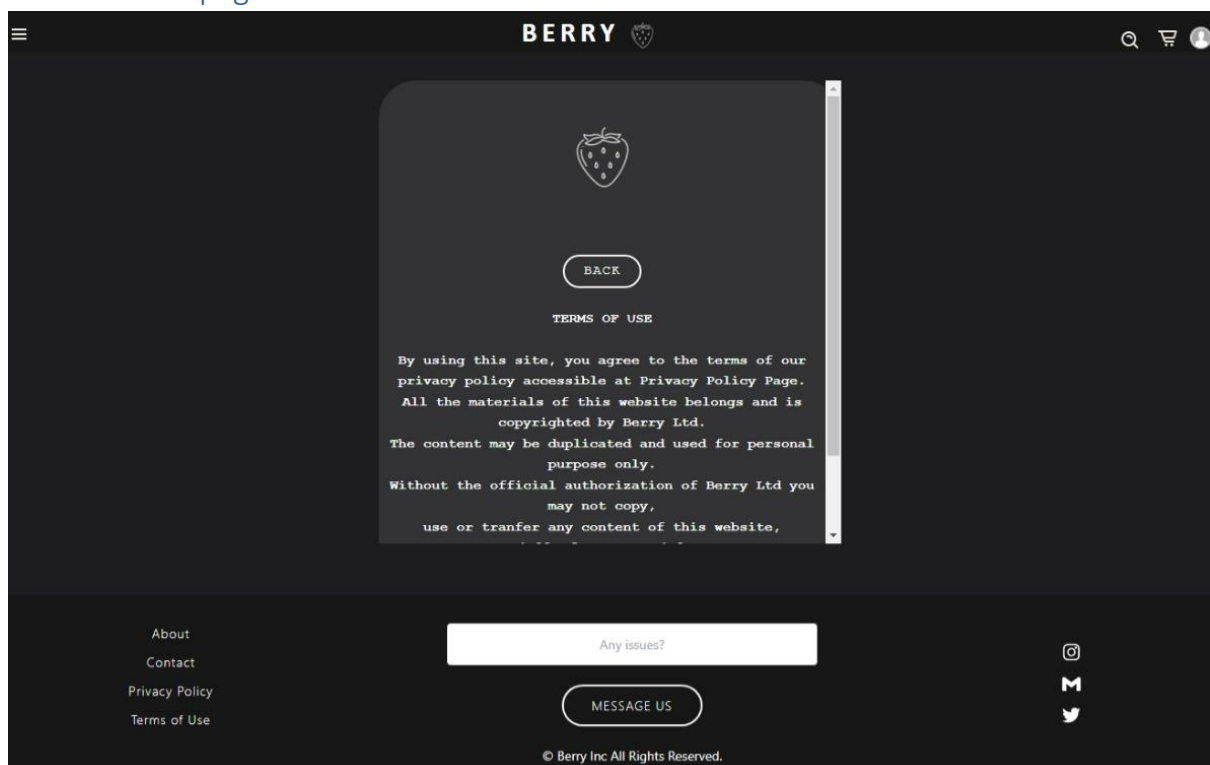


Figure 31: Terms of Use Page



Recommendation page (when logged in):

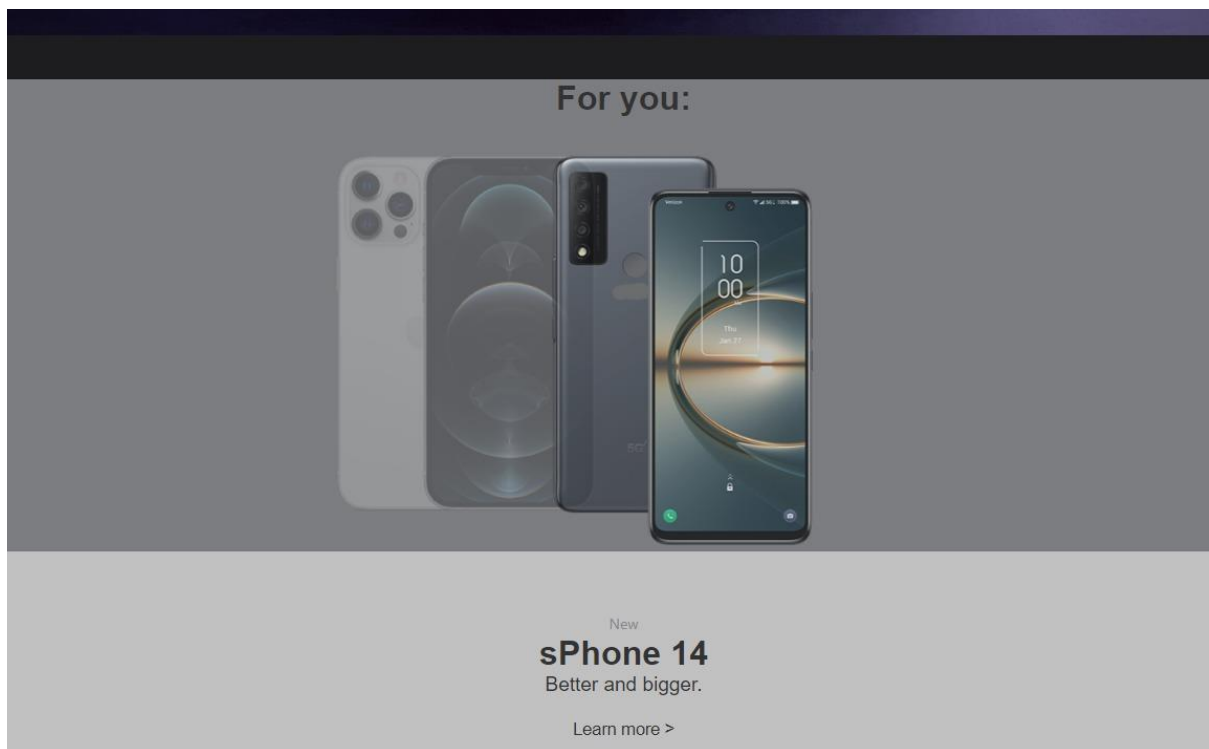


Figure 32: Recommendation page

Recommendation: displayed on homepage only when a user is logged in and only when the user previously searched for a product or visited a product description page

Screenshots of CMS:

Log in CMS:

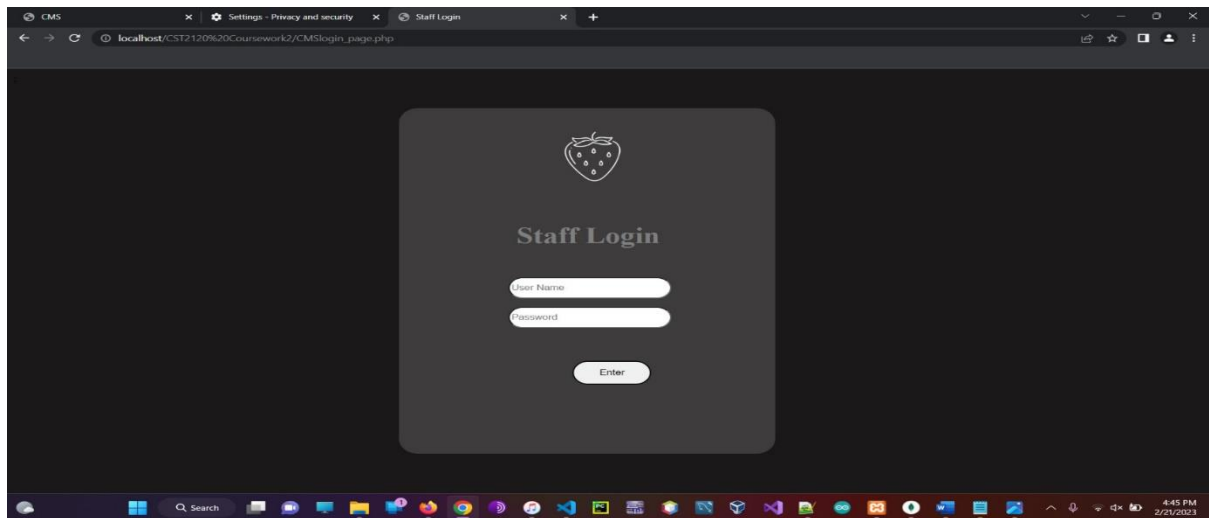


Figure 33: Staff login CMS

## Dashboard of CMS:

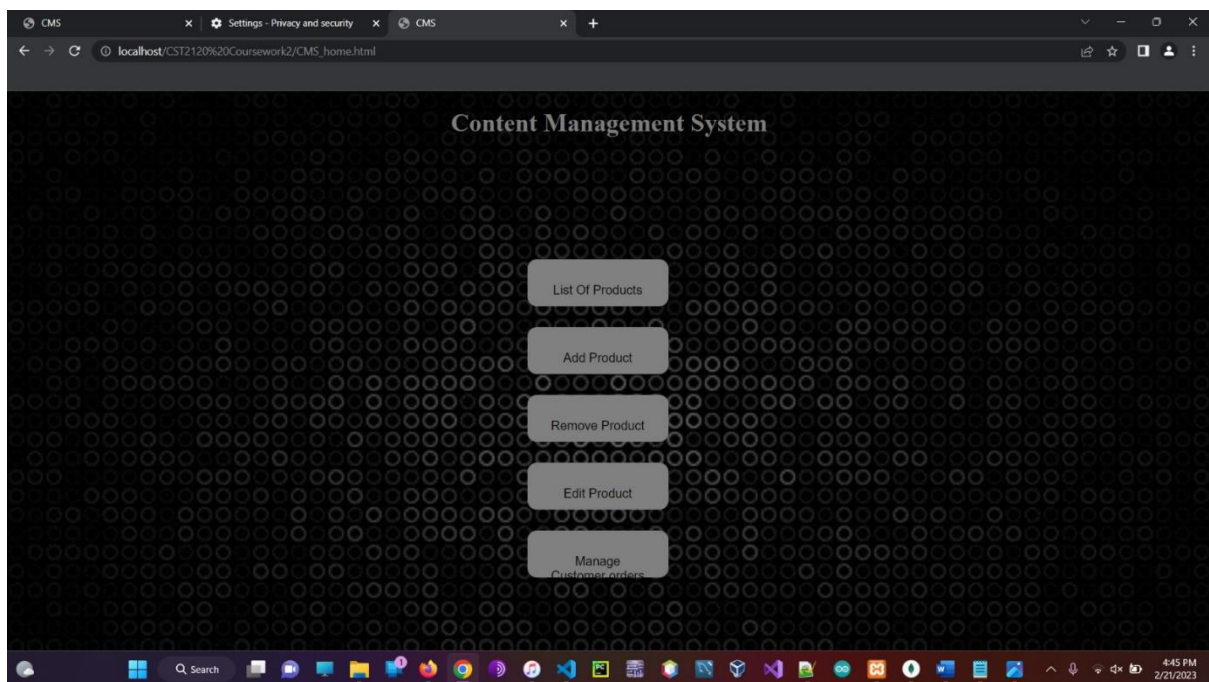


Figure 34: Dashboard CMS

The staff can choose among these options according to the task required.

## Listing of Products in CMS:

Orders

### Content Management System

Product ID	Name	Specs1	Specs2	Specs3	Image	Price	Quantity	Promo	Price before	Description	New Popular	Different Colors	Color 1	Color 2	Color 3	Color1 Pic	Color2 Pic	Color3 Pic
										Big and bigger.	New	1	#E1BFA5	white	black			
1						£799				Better.		Warning: Undefined array key "diffcolors" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 132	Warning: Undefined array key "color1" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 135	Warning: Undefined array key "color2" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 138	Warning: Undefined array key "color3" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 141			
1						£599				Bigger.	Popular	Warning: Undefined array key "diffcolors" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 132	Warning: Undefined array key "color1" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 135	Warning: Undefined array key "color2" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 138	Warning: Undefined array key "color3" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 141			
										More efficient.		Warning: Undefined array key "diffcolors" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 132	Warning: Undefined array key "color1" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 135	Warning: Undefined array key "color2" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 138	Warning: Undefined array key "color3" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 141			

Figure 35: Product list 1

CMS

Settings - Privacy and Security






</




Figure 36: Product list 2

CMS

Settings - Privacy and security

localhost/CST2120%20Coursework2/CMS\_list.php

A005	sPhoneX	Ceramic Shield front, tougher than any smartphone glass	Surgical-grade stainless steel	Water resistant to a depth of 6 meters for up to 30 minutes		£799	5				Serious power.	1	white	black	
B001	sPhone11	Compatible with MagSafe cases, wallets, wireless chargers, and more	Aerospace-grade aluminum	2778-by-1284-pixel resolution at 458 ppi		£599	10				Serious value.		Warning: Undefined array key "diffcolors" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 132	Warning: Undefined array key "color1" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 135	Warning: Undefined array key "color1" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 135
B002	sPhoneZ	6.1-inch (diagonal) all-screen OLED display	ProMotion technology with adaptive refresh rates up to 120Hz	2,000,000:1 contrast ratio (typical)		£599	9				A total powerhouse.	1	red	black	
B003	PhoneS5	Rated IP68 (maximum depth of 6 meters up to 30 minutes)	6-core CPU with 2 performance and 4 efficiency cores	16-core Neural Engine		£450	10	1	£499		As amazing as ever.		Warning: Undefined array key "diffcolors" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 132	Warning: Undefined array key "color1" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 135	Warning: Undefined array key "color1" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 135
B004	PhoneS6	Second-generation sensor-shift optical image stabilization	Portrait mode with advanced bokeh and Depth Control	HDR video recording with Dolby Vision up to 4K at 60 fps		£499	6	1	£699		Incredible.	1	white	red	
			Cinematic												



2:52 PM  
2/21/2022

Figure 37: Product list 3

CMS

Settings - Privacy and security

localhost/CST2120%20Coursework2\CMS\_list.php

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Figure 38: Product list 4

ID	Price	Description	Attributes
1	£499	As amazing as ever.	Warning: Undefined array key "diffcolors" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 132
1	£699	Incredible.	Warning: Undefined array key "color1" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 135
		The Ultimate phone.	Warning: Undefined array key "color2" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 138
1	£599	Beyond.	Warning: Undefined array key "color3" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 141
		Special.	Warning: Undefined array key "color1" in C:\xampp\php\www\CST2120 Coursework2\CMS_list.php on line 132

Figure 39: Product list 5

It displays the list of products to the staff.

## Add Products Page:

Content Management System

Price Before:

Description:

Product Id:

Product Name:

Product Price:

Product Quantity:

Normal Price:

Discount:

Specifications:

Enter 1st color:  Enter 2nd color:  Enter 3rd color:

Popular

Different Colors available

Figure 40: Adding Product

The staff needs to fill in all the information of the products being added.



## Remove Products Page:

Product ID:

Figure 41: Remove Product

## Edit Product Page:

Price Before:

Description:

Popular

Different Colors available

Product Id:

Product Name:

Product Price:

Product Quantity:

Choose File

Choose File

Choose File

Choose File

Normal Price:

Discount:

Specifications:

Figure 42: Edit Product1

Enter Previous Price:

Enter ID:

Description:

Product Name:

Product Price:

Product Quantity:

Normal Price:

Discount:

Specifications:

Enter 1st Specs:  Enter 2nd Specs:  Enter 3rd Specs:

Enter 1st color:  Enter 2nd color:  Enter 3rd color:

Choose File:

Choose File:

Choose File:

Choose File:

Enter Order ID:

Remove:

Figure 43: Edit Product2

## Managing Customer Orders:

Content Management System

Client	OrderID	Date	Total	Items
A.R	001	10/11/2022	£1168	Name: sPhone13 Quantity: 1 Name: sPhone12 Quantity: 1
A.R	002	14/02/2023	£1049	Name: sPhone11 Quantity: 1 Name: PhoneS5 Quantity: 1
J.M	002	10/09/2022	£798	Name: PhoneS7 Quantity: 2
D.O	001	05/02/2022	£699	Name: XPhone9 Quantity: 1
D.O	002	13/12/2022	£1337	Name: sPhone12 Quantity: 2 Name: PhoneS7 Quantity: 1
dolun	001	13/12/2022	£1198	Name: sPhoneZ Quantity: 2

Enter Order ID:

Remove:

Figure 44: Viewing and deleting order

## Security Issues

### 1) Social Engineering attack:

A berry shop employee receives an email from an individual who is impersonating the company's name without authorization. The email tells the employee that he needs to enter again his account name and password as there is an issue with his account. As a result, the employee's account will be stolen and the attacker might have access to the company's important information such as the customers' personal information. To prevent such attacks, Berry Shop has educated its employees that it will never ask by email to its employees to enter their accounts' details.

### 2)DOS – Network Flooding attack:

A DOS Network flooding attack makes Berry Shop's server crash by sending it lots of information. As a result, the company's legitimate users, the employees and the customers, will be able to access to Berry Shops' website. To prevent such kind of attack, Berry Shop performs a network vulnerability audit.

### 3)NoSQL Injection attack:

An attacker injects a code into commands for the Berry Shop database. As a result, the attacker might log in as an administrator which means that he will have an admin access to the database and can delete all the data. To prevent such kind such attack, Berry Shop checks with the server-side scripting language, PHP, if the website is receiving malicious inputs.

### 4)Rootkits recording keystrokes of users:

An attacker used a backdoor to install malicious software on Berry Shop's computer. As a result, the attacker will be able to record the keystrokes of the users, which he will help him to get login name and passwords of users. To prevent this, the Berry Shop will have to use firewalls, so that they block access to ports and prevent the software from communicating with the internet on certain ports.

## Privacy Issues

### 1)Tor:



One of Berry Shop customers uses Tor browser to protect his privacy. The problem is that Tor does not provide any protection against privacy issues when he logs in on the website to make an order. To prevent such kind of issue, the user must use Tor only to watch the contents of the website as a privacy protection and when he needs to order something he will have to login.

## 2)Credit Cards:

Most of Berry Shop's customers use credit cards to purchase a product. The problem is that every purchase that they make will be tracked. To prevent this, it is recommended that the customers purchase products using Bitcoin which is decentralized and will give them some privacy.

## 3)Cookies:

The Berry Shop is using cookies for tracking without the consent of their customers. As a result, this is illegal and will affect the customers' privacy. To prevent such issues, the shop asks its customers permission before tracking and will try to minimize the storing of customers' data for their privacy.

# Legal Issues

## 1)Personal Data:

The Berry Shop asks its customers to enter their statement of account when registering an account on the website. This is something irrelevant to the shop and might be illegal. As a result, the customers will lose their privacy and the company might get some penalties from the Information Commissioner. To prevent this, the Berry Shop will have to refer to the Information Commissioner's Office criteria for personal data before asking customers to enter any personal data.

## 2)Liability for Illegal Content:

One of the Berry Shop customers uploads an inappropriate profile picture which is not accepted by the law. As a result, the company might get held responsible for storing illegal data from customers. To prevent this, as soon as the company is aware that a customer has uploaded illegal information, the company must take actions immediately.

### 3)Transfer of data abroad:

Berry Shop is sending its customers' data in Australia. This is something illegal to move personal data from the EU to a non-EU country and Australia has inadequate data protection laws. To prevent this, the company must send its data to other EU countries if needed or if certain conditions are met, they can send it to a non-EU country.