Project Deliverable 2 – Documentation and Coding

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Module Code:	ITECA3-12
Module Name:	Web Development and e-Commerce
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Project Title	ITECA DELIVERABLE 2
Submission Date	2025-06-06

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2.1 Introduction

Click for -> Github

Click for -> ITECA_PLATFORM

This project entails the creation of a C-2-C (Customer-to-Customer) online commerce platform where users can purchase and exchange different goods online. The site includes two core components: the customer-facing website and the administrative backend used to manage users, product, and orders.

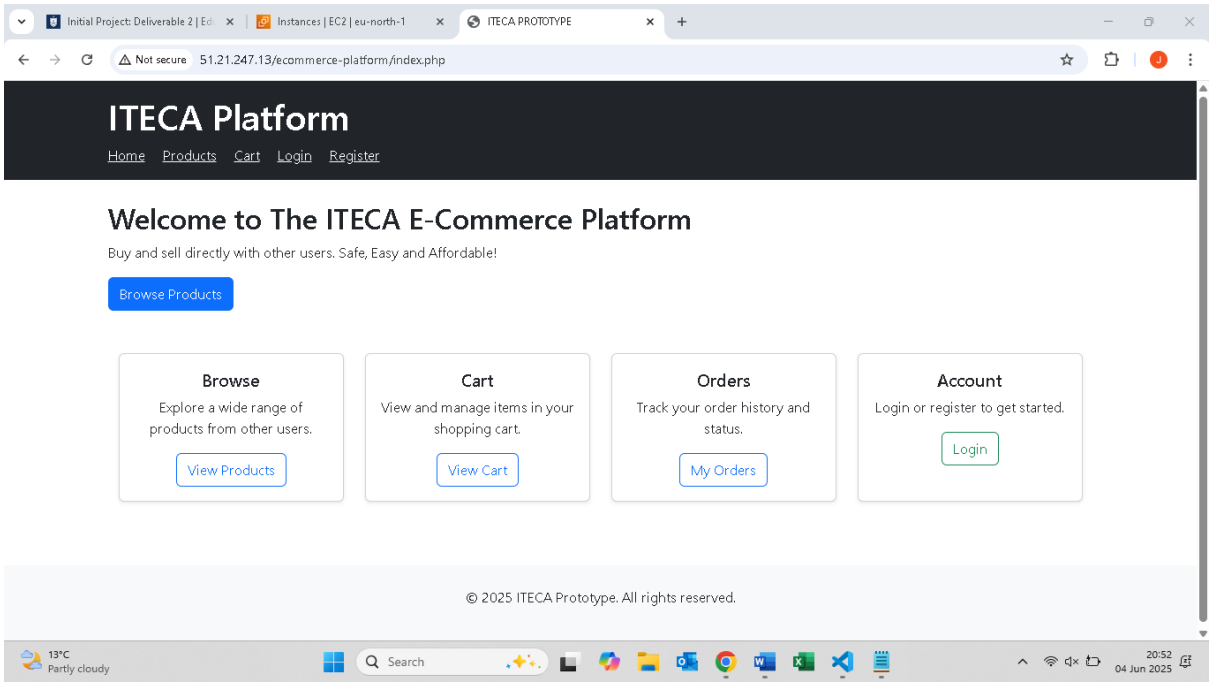
It has been implemented following the responsive design paradigm to be compatible with desktops, tablets, and mobile phones. The system includes functionality for customer registration, product browsing, shopping cart management, and dummy checkout. Sellers are able to add, update, and remove their own products, while administrators have full control over all users, products, and orders.

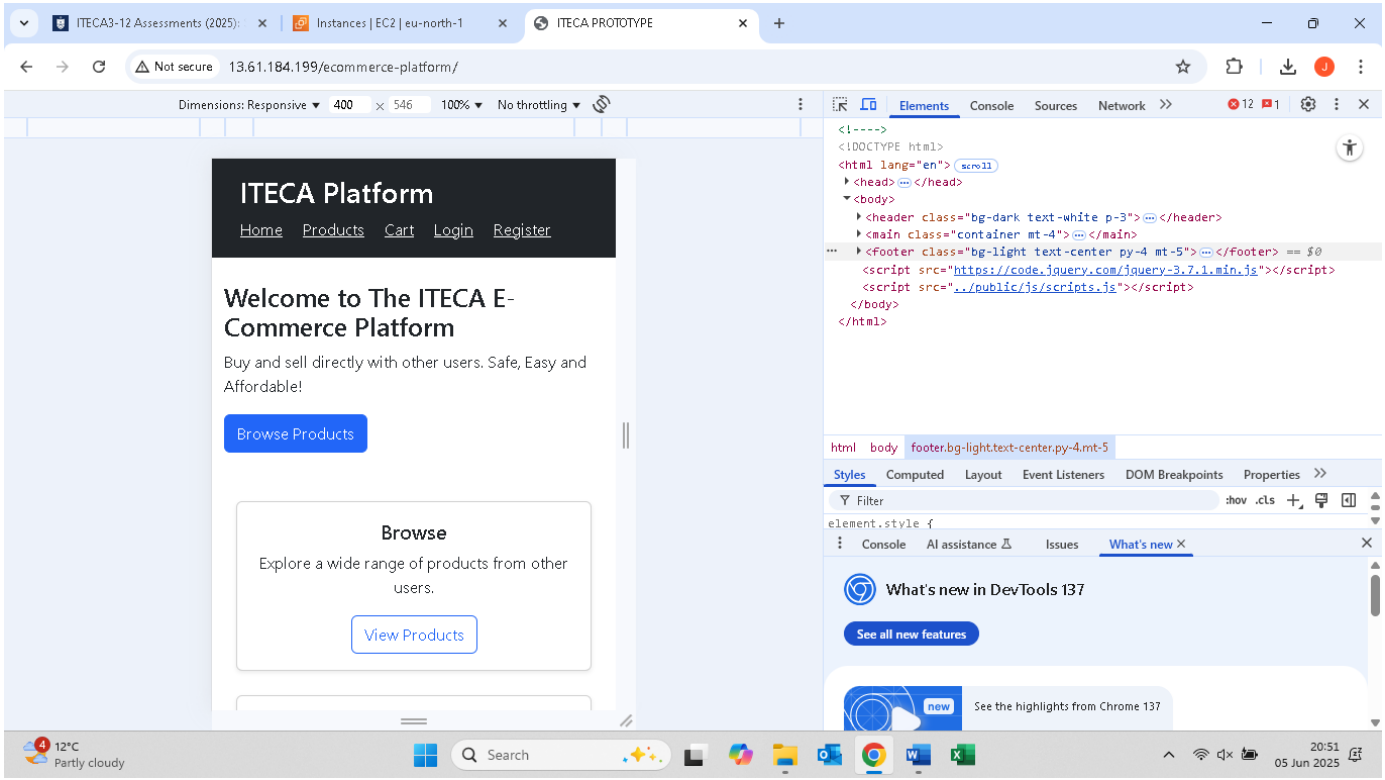
Proper role-based access control ensures that each user type can only access authorized functionalities. The platform was built using PHP and MySQL for the backend, with HTML, CSS, Bootstrap, and JavaScript (including jQuery) used for the frontend.

The final solution was deployed to an AWS EC2 instance, meeting the hosting requirement. In addition, visual artifacts such as CRC cards, EER diagrams, and use case diagrams were created to support the design and development process. The system was also populated with dummy data to demonstrate full functionality and reporting capabilities.

2.2 Prototyping

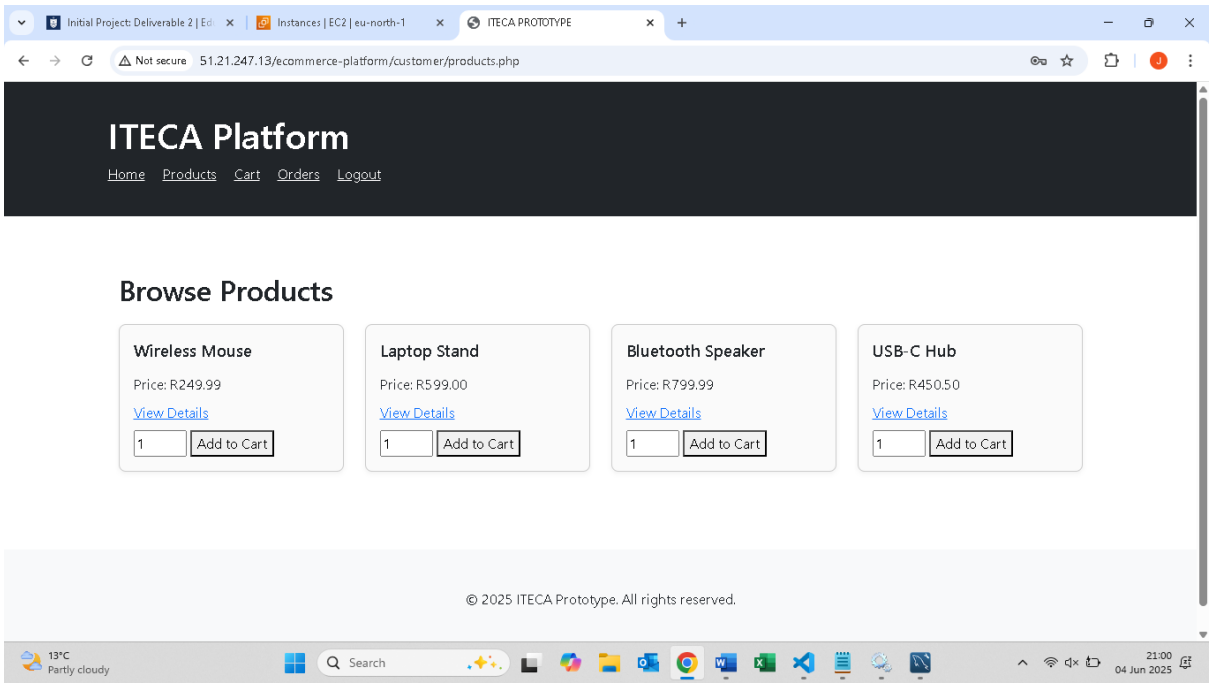
Home Page

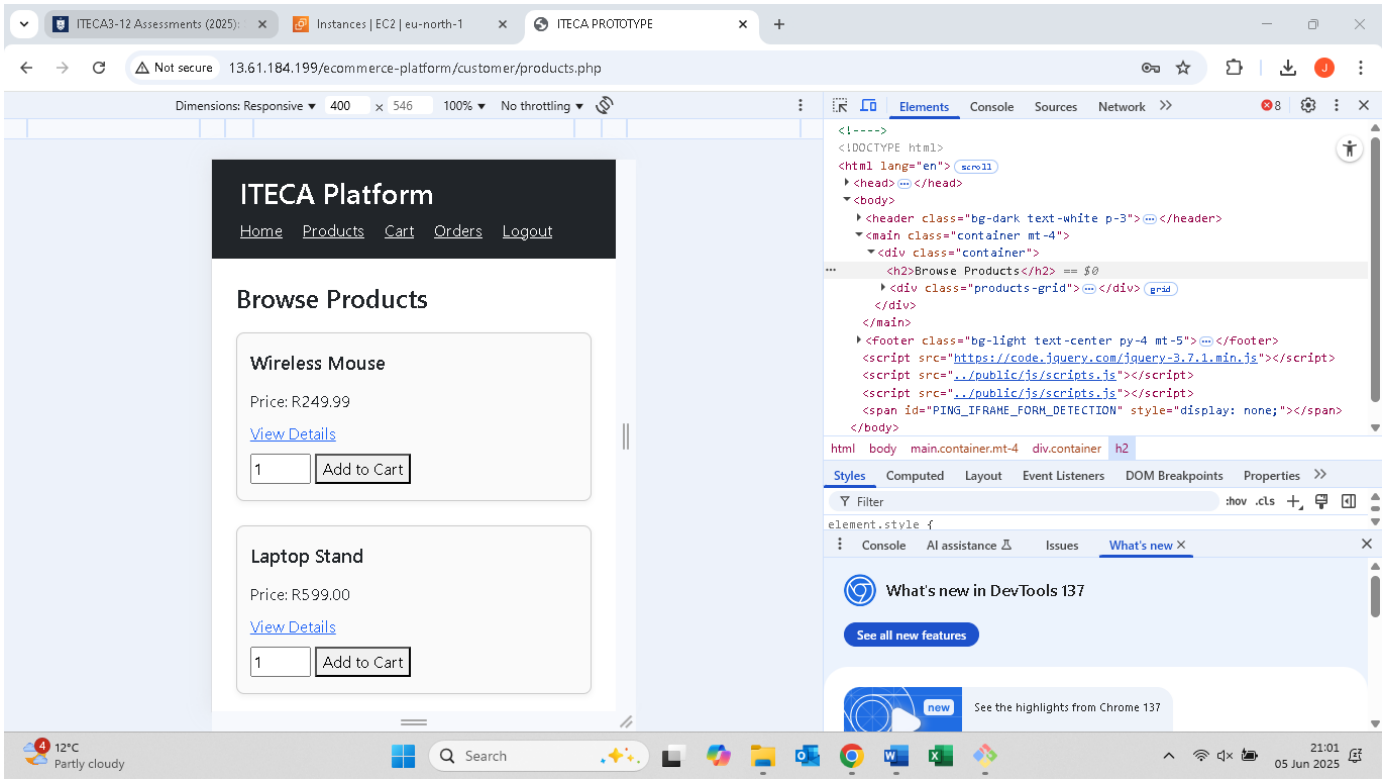




Customer Site

Browse





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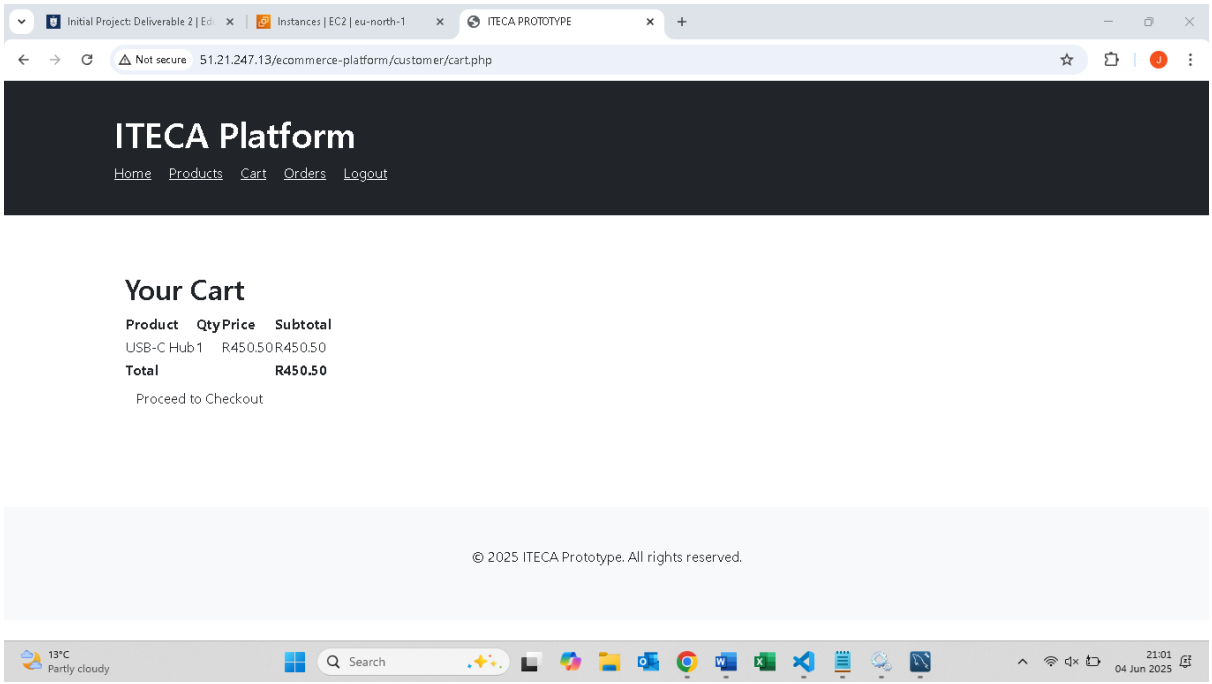
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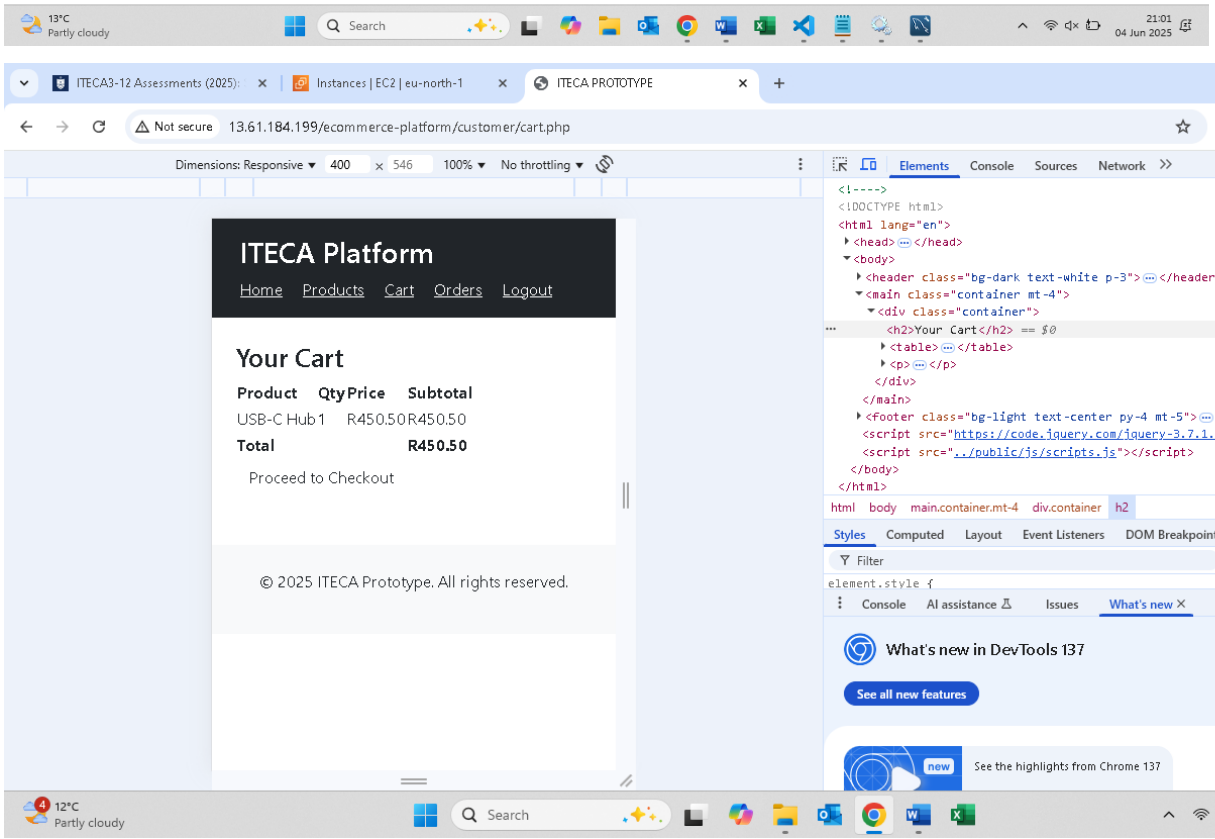
51.21.247.13/ecommerce-platform/customer/cart.php
ITECA Platform
Home Products Cart Orders Logout
Your Cart
Product Qty Price Subtotal
USB-C Hub 1 R450.50 R450.50
Total R450.50
Proceed to Checkout
© 2025 ITECA Prototype. All rights reserved.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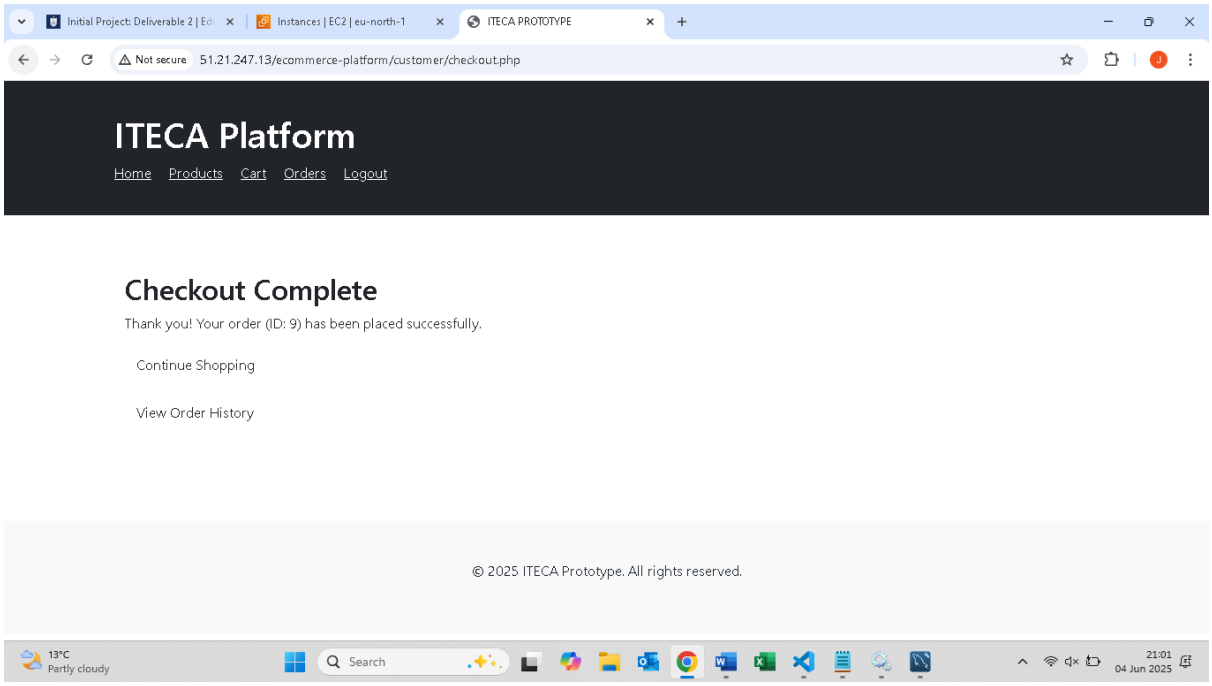
13.61.184.199/ecommerce-platform/customer/cart.php
Dimensions: Responsive 400 x 546 100% No throttling
ITECA Platform
Home Products Cart Orders Logout
Your Cart
Product Qty Price Subtotal
USB-C Hub 1 R450.50 R450.50
Total R450.50
Proceed to Checkout
© 2025 ITECA Prototype. All rights reserved.
Elements Console Sources Network
<!DOCTYPE html>
<html lang="en">
<h2>Your Cart</h2> == $0
Styles Computed Layout Event Listeners DOM Breakpoints Properties
Console AI assistance Issues What's new
What's new in DevTools 137
See all new features
See the highlights from Chrome 137

Checkout


Not secure 51.21.247.13/ecommerce-platform/customer/checkout.php
ITECA Platform
Home Products Cart Orders Logout
Checkout Complete
Thank you! Your order (ID: 9) has been placed successfully.
Continue Shopping
View Order History
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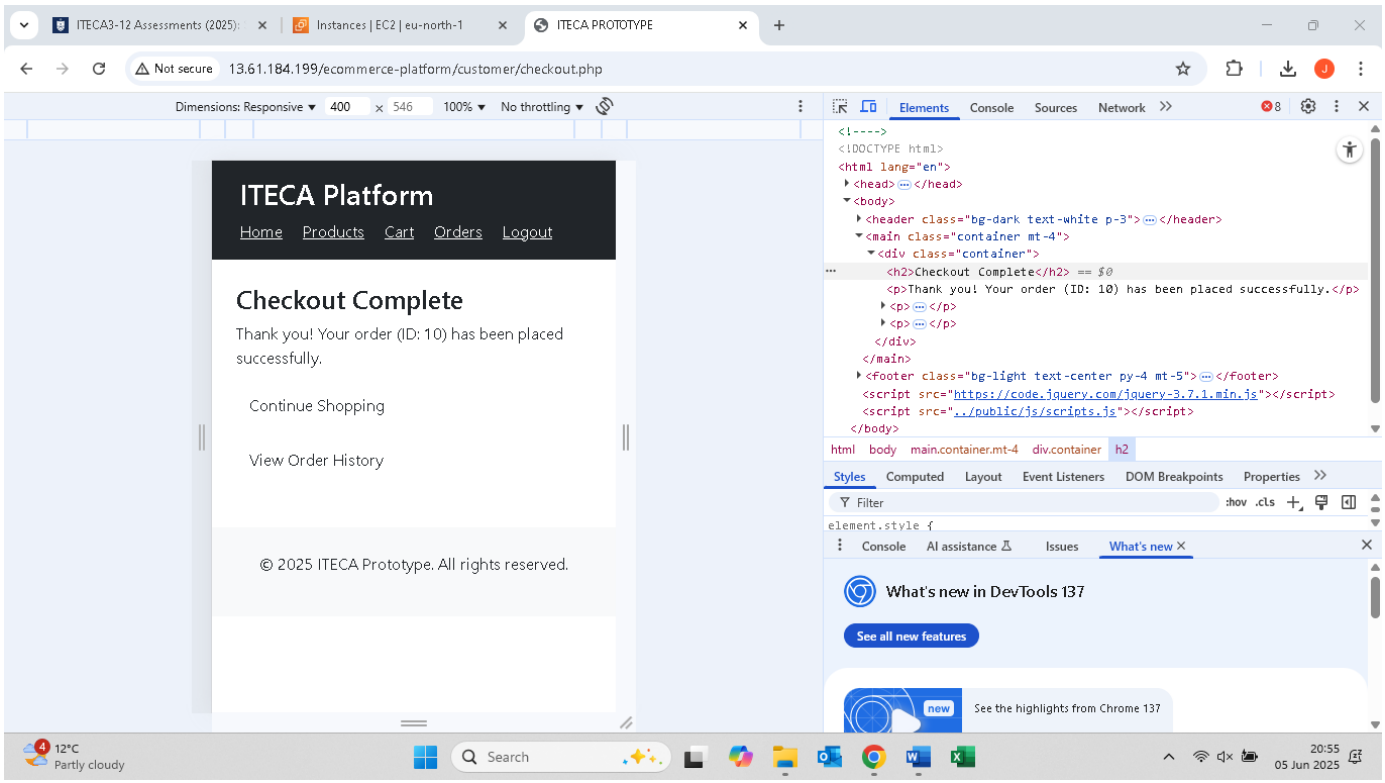
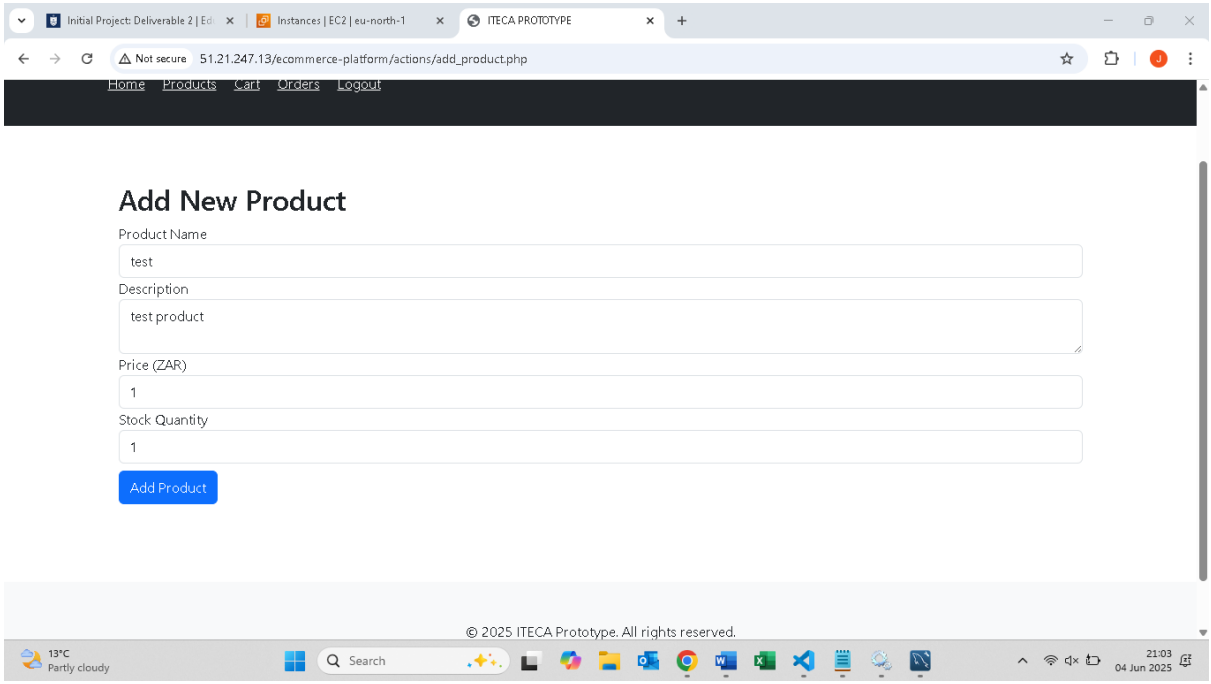
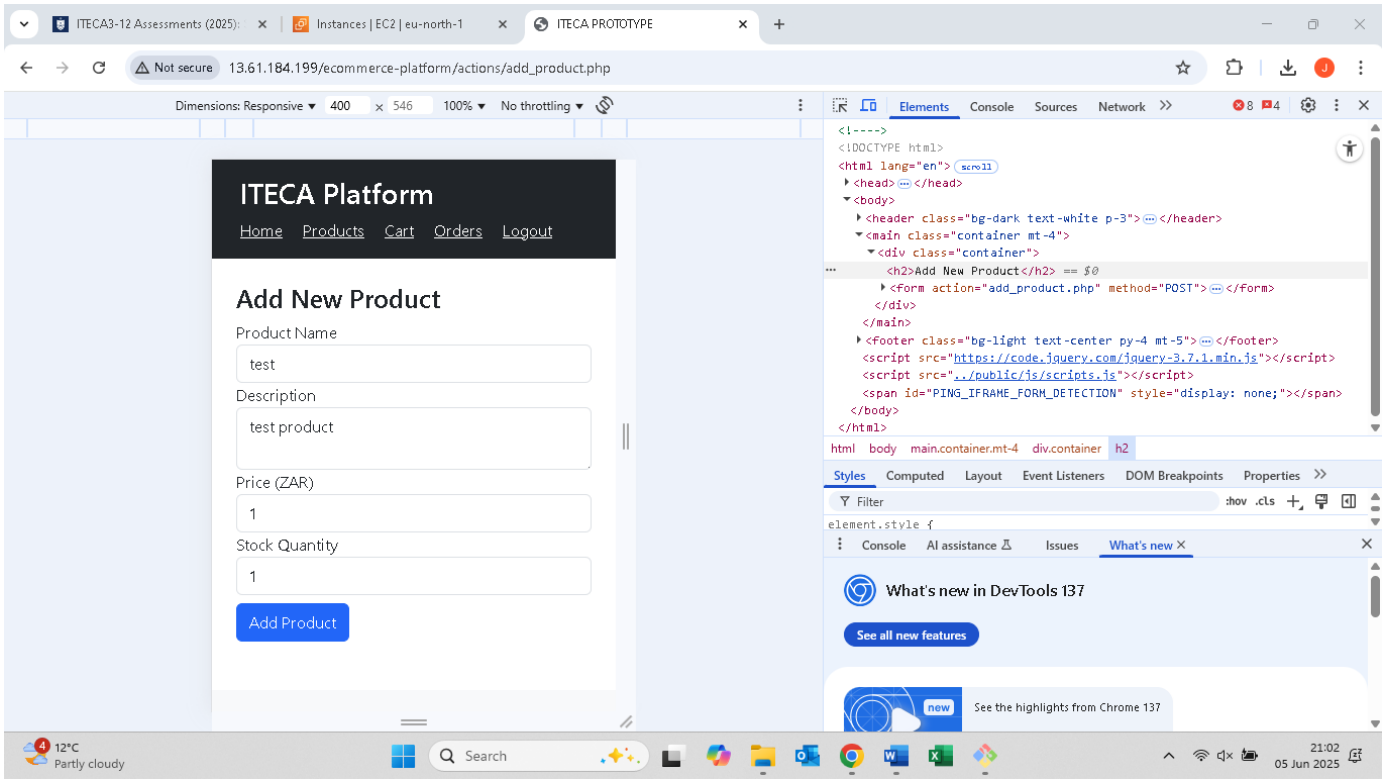
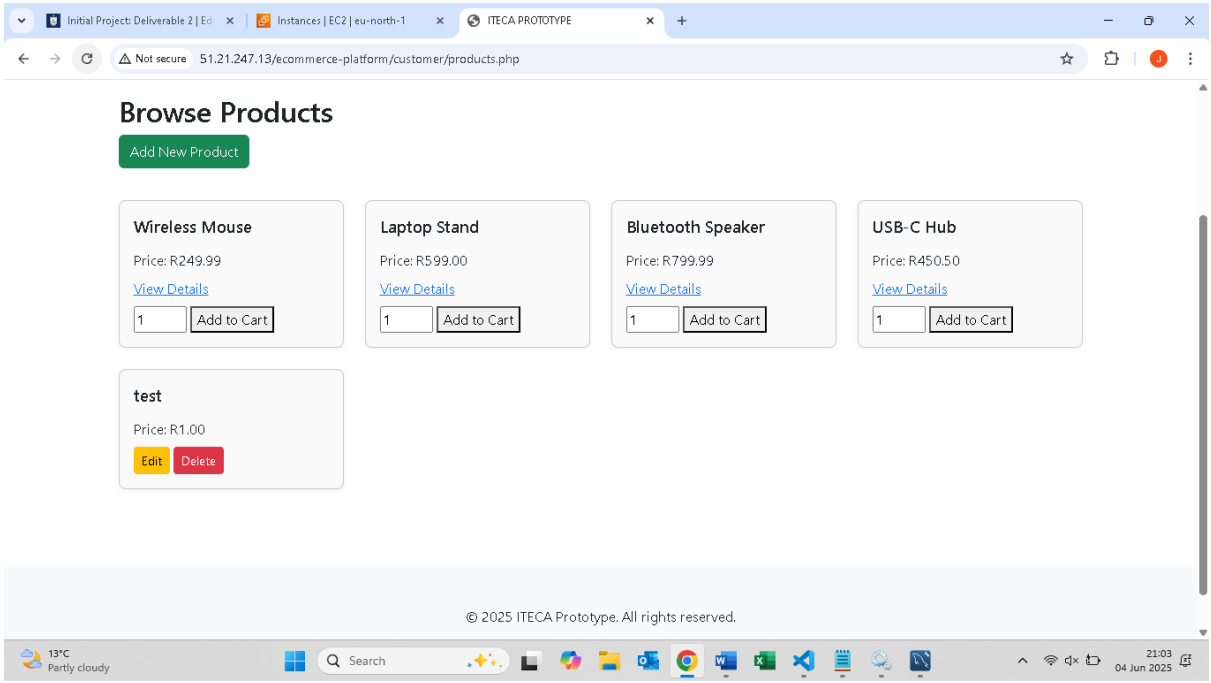

Not secure 13.61.184.199/ecommerce-platform/customer/checkout.php
ITECA Platform
Home Products Cart Orders Logout
Checkout Complete
Thank you! Your order (ID: 10) has been placed successfully.
Continue Shopping
View Order History
© 2025 ITECA Prototype. All rights reserved.
Elements Console Sources Network
What's new in DevTools 137
See all new features
See the highlights from Chrome 137

Seller Tools

Add Product



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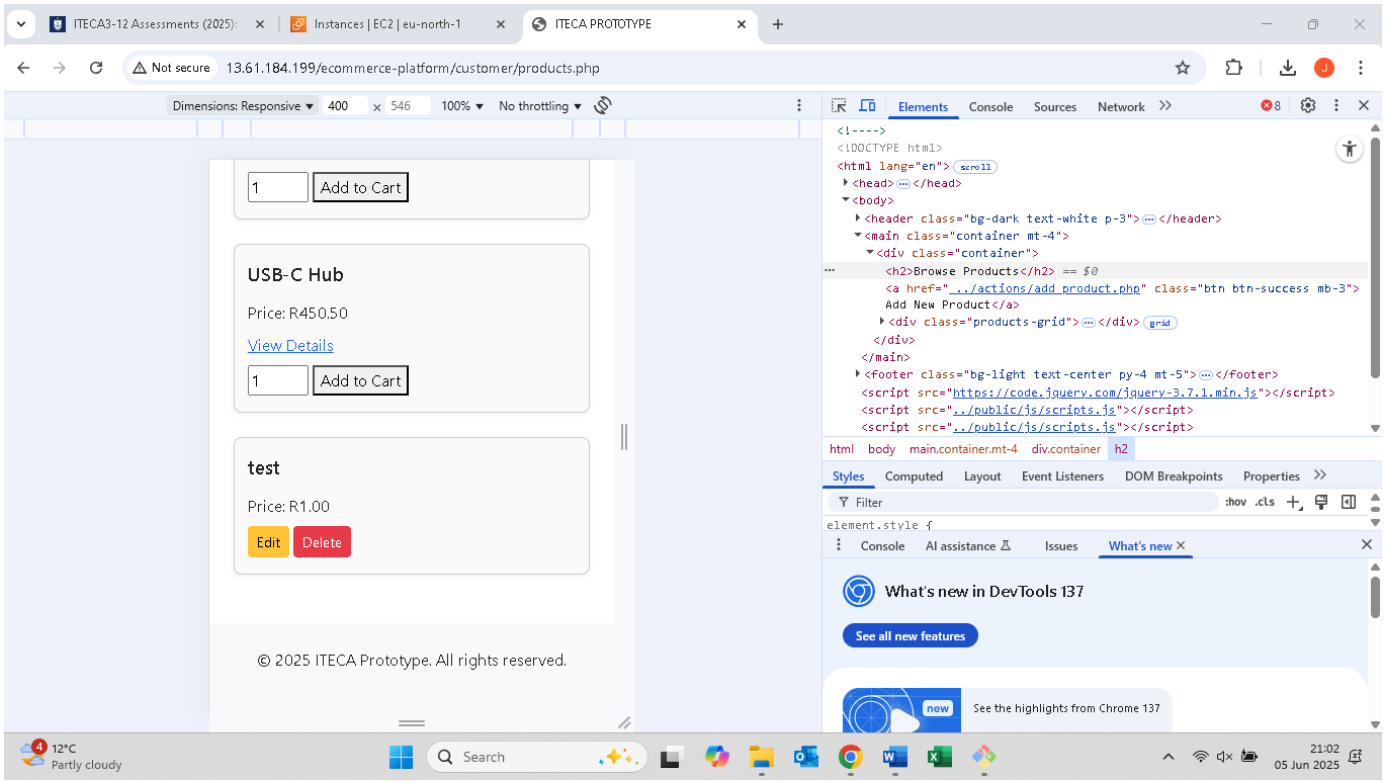
Instances | EC2 | eu-north-1
ITECA PROTOTYPE
Not secure
51.21.247.13/ecommerce-platform/customer/products.php
Browse Products
Add New Product
Wireless Mouse
Price: R249.99
View Details
1
Add to Cart
Laptop Stand
Price: R599.00
View Details
1
Add to Cart
Bluetooth Speaker
Price: R799.99
View Details
1
Add to Cart
USB-C Hub
Price: R450.50
View Details
1
Add to Cart
test
Price: R1.00
Edit
Delete
© 2025 ITECA Prototype. All rights reserved.
13°C
Partly cloudy
Search
21:03
04 Jun 2025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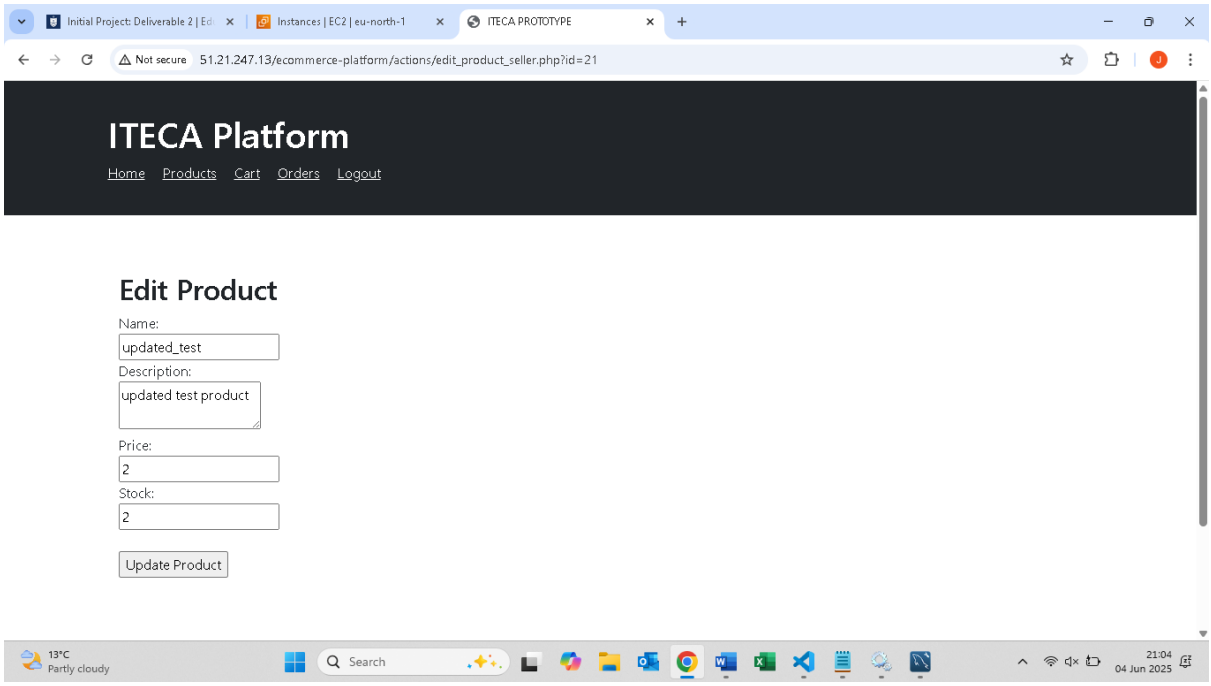
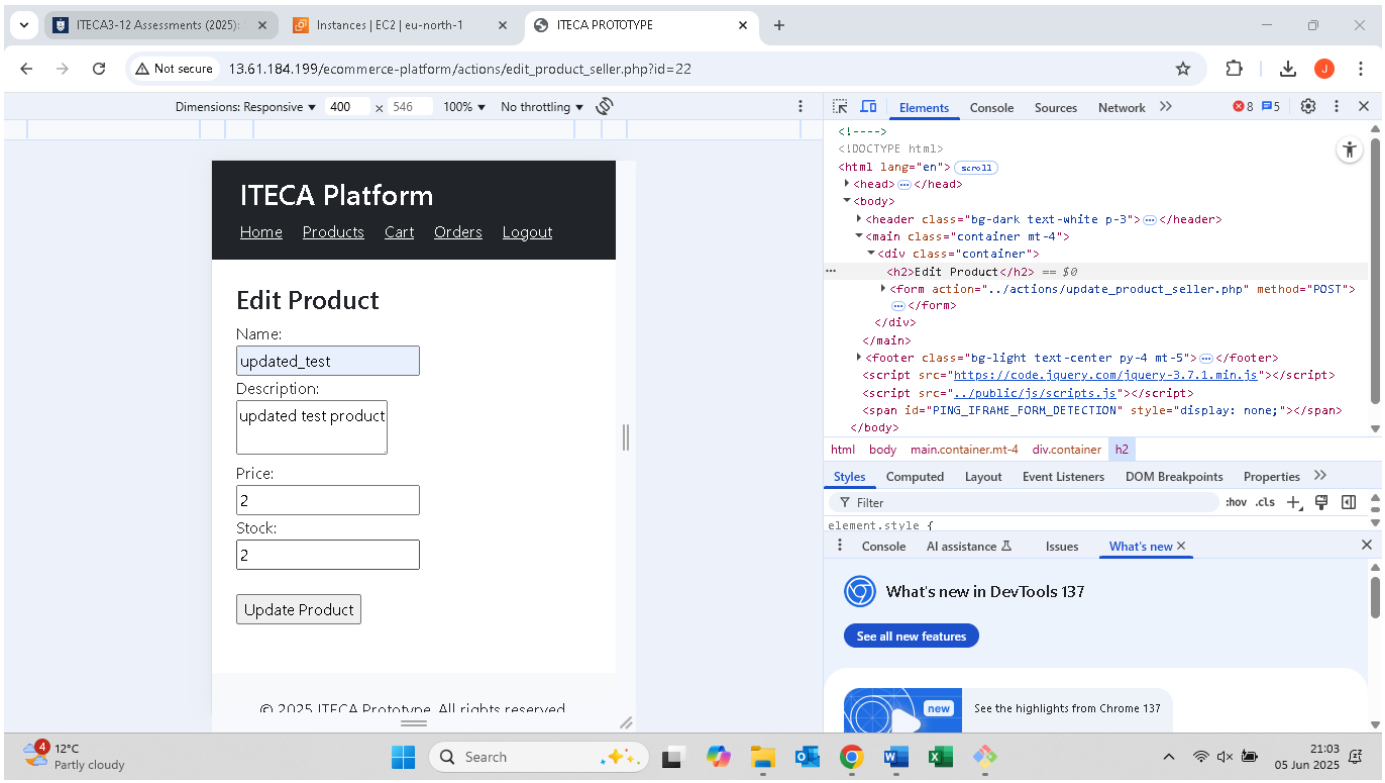
400
546
100%
No throttling
1
Add to Cart
USB-C Hub
Price: R450.50
View Details
1
Add to Cart
test
Price: R1.00
Edit
Delete
© 2025 ITECA Prototype. All rights reserved.
Elements
Console
Sources
Network
<!DOCTYPE html>
<html lang="en">
<head>
<body>
<header class="bg-dark text-white p-3">
<main class="container mt-4">

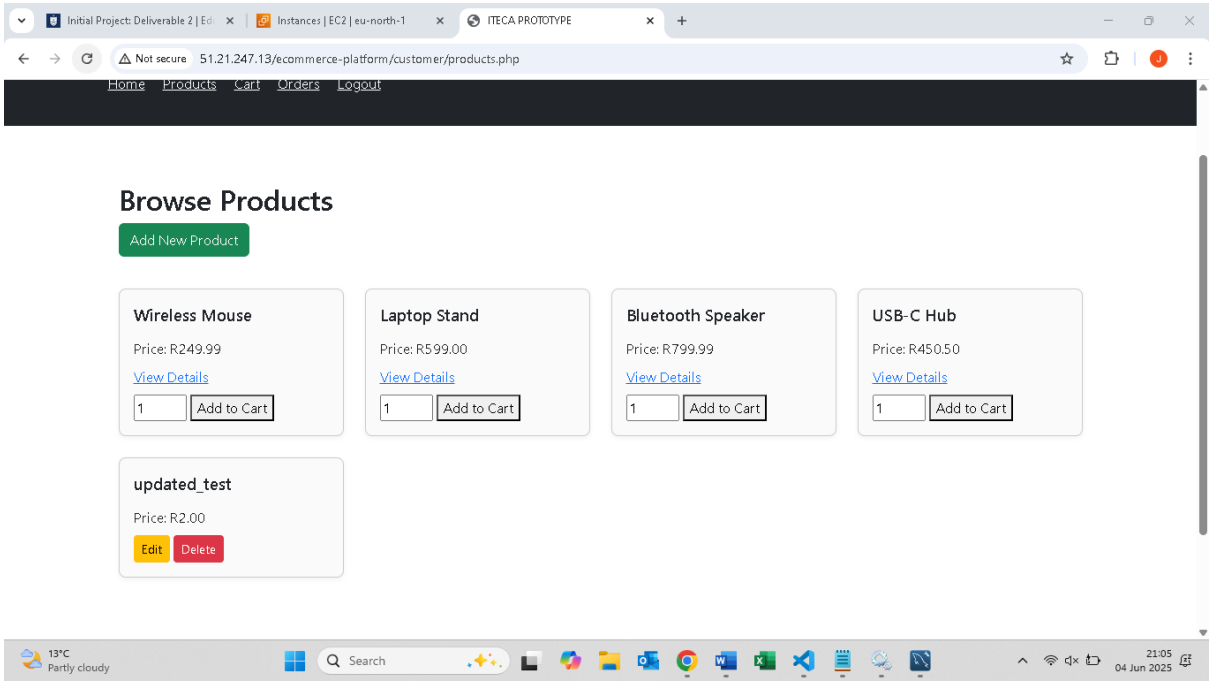
<h2>Browse Products</h2>
<a href="../actions/add_product.php" class="btn btn-success mb-3">
Add New Product</a>

<footer class="bg-light text-center py-4 mt-5">
<script src="https://code.jquery.com/jquery-3.7.1.min.js"></script>
<script src="../public/js/scripts.js"></script>
<script src="../public/js/scripts.js"></script>
html
body
main.container.mt-4
div.container
h2
Styles
Computed
Layout
Event Listeners
DOM Breakpoints
Properties
Filter
element.style {
Console
AI assistance
Issues
What's new
What's new in DevTools 137
See all new features
new
See the highlights from Chrome 137
12°C
Partly cloudy
Search
21:02
05 Jun 2025

Edit Product



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Not secure
51.21.247.13/ecommerce-platform/customer/products.php
Home
Products
Cart
Orders
Logout
Browse Products
Add New Product
Wireless Mouse
Price: R249.99
View Details
1
Add to Cart
Laptop Stand
Price: R599.00
View Details
1
Add to Cart
Bluetooth Speaker
Price: R799.99
View Details
1
Add to Cart
USB-C Hub
Price: R450.50
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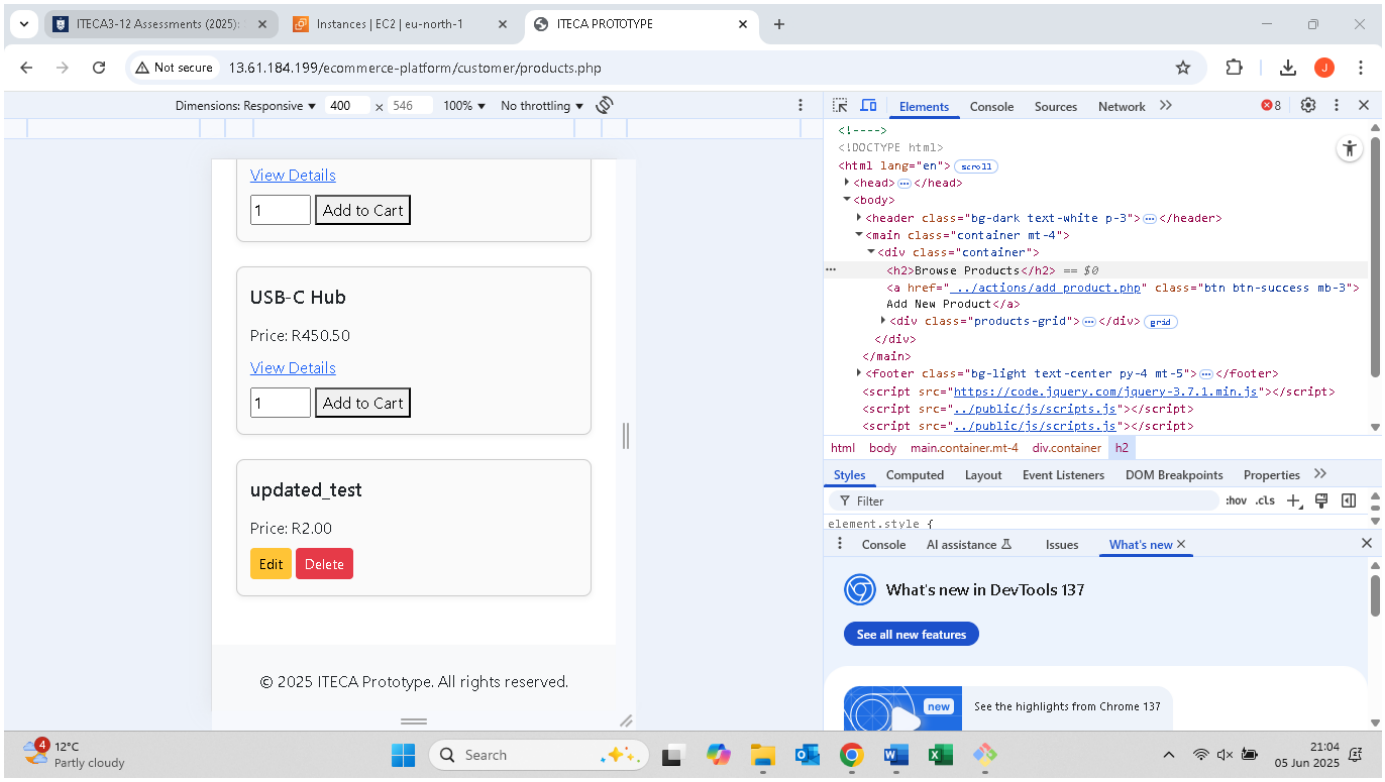
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Dimensions: Responsive
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No throttling
View Details
1
Add to Cart
USB-C Hub
Price: R450.50
View Details
1
Add to Cart
updated_test
Price: R2.00
Edit
Delete
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Elements
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<footer class="bg-light text-center py-4 mt-5">
<script src="https://code.jquery.com/jquery-3.7.1.min.js"></script>
<script src="../public/js/scripts.js"></script>
<script src="../public/js/scripts.js"></script>
html
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Filter
element.style {
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AI assistance
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What's new in DevTools 137
See all new features
See the highlights from Chrome 137
12°C
Partly cloudy
Search
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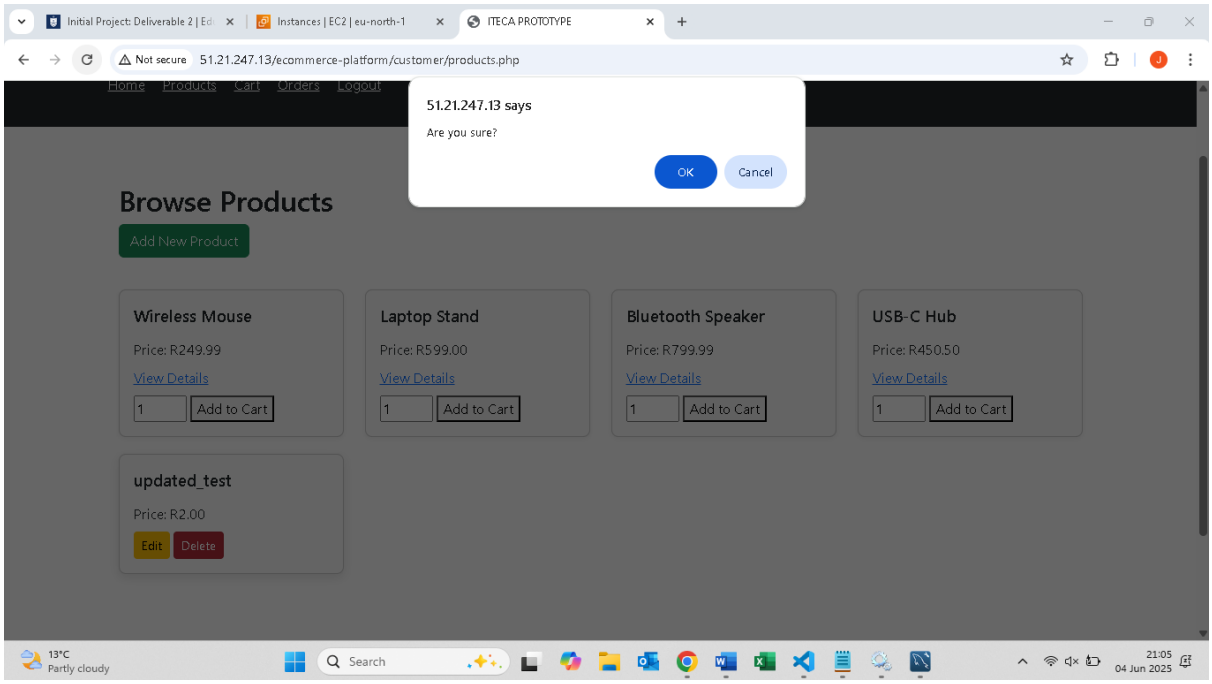
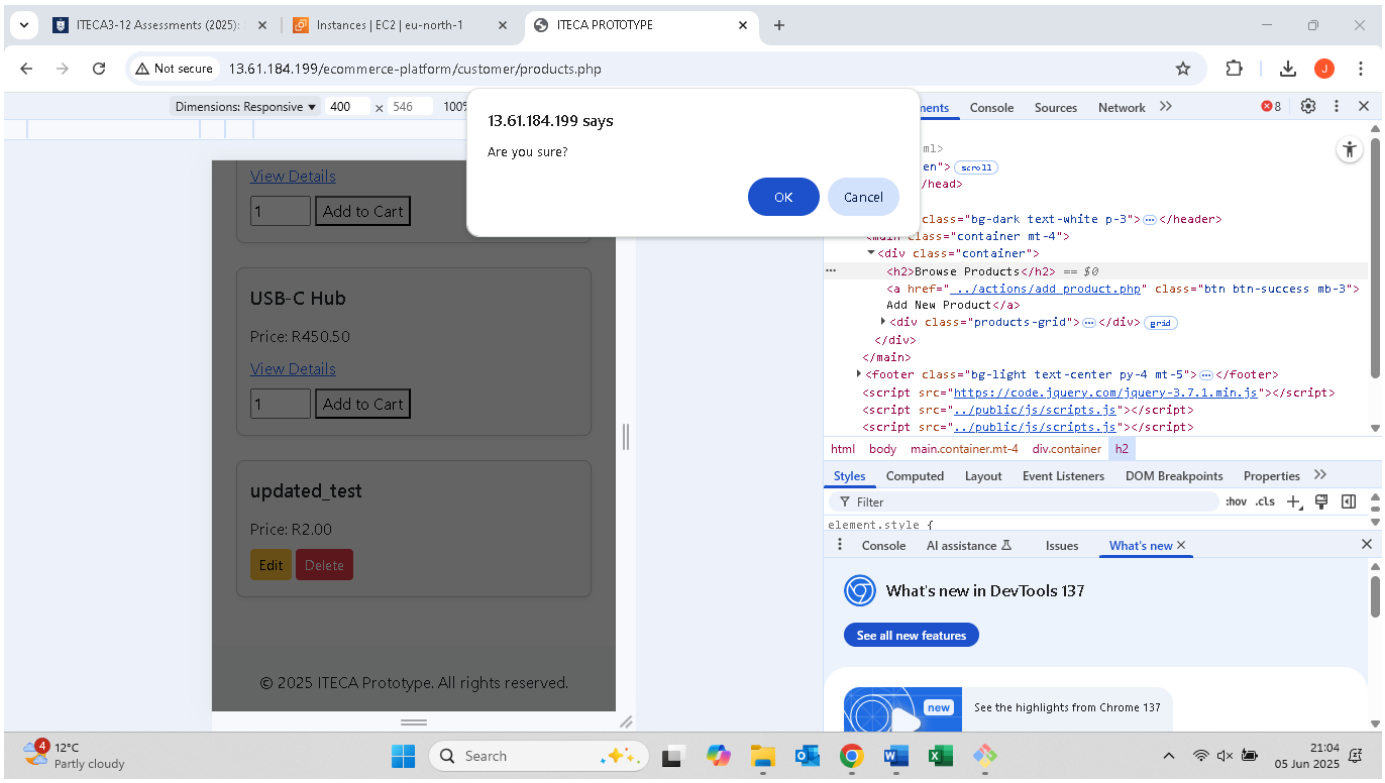
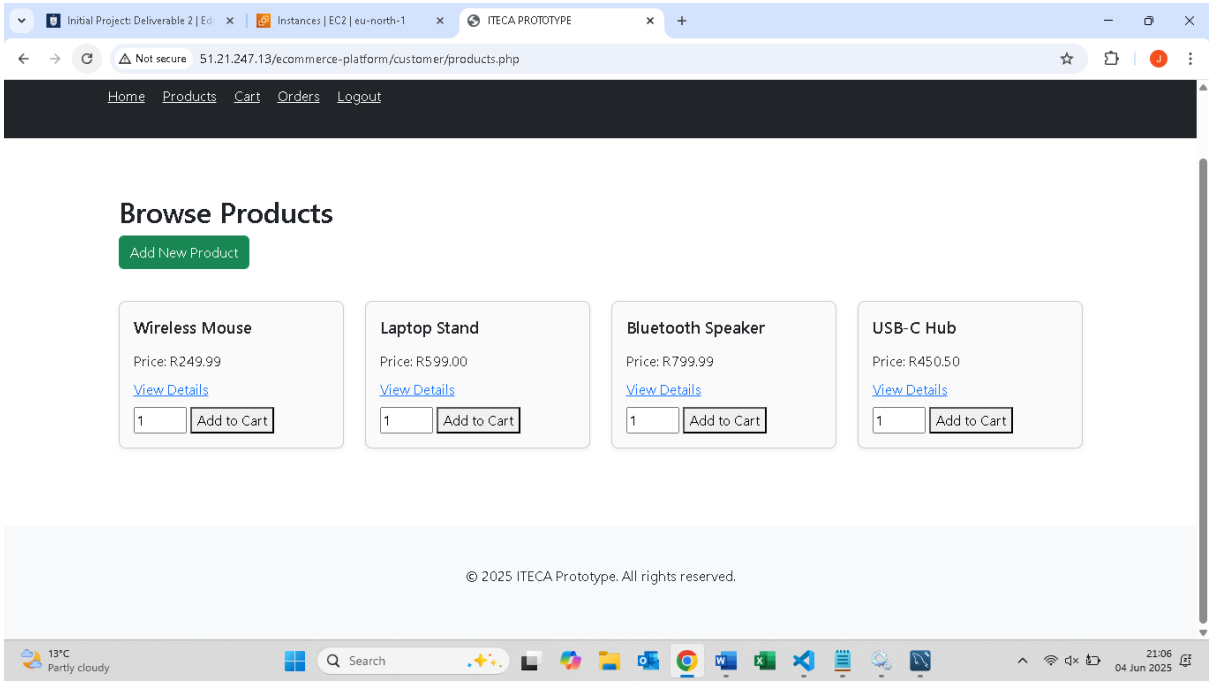
05 Jun 2025

Delete Product



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Add to Cart
Bluetooth Speaker
Price: R799.99
View Details
1
Add to Cart
USB-C Hub
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13°C
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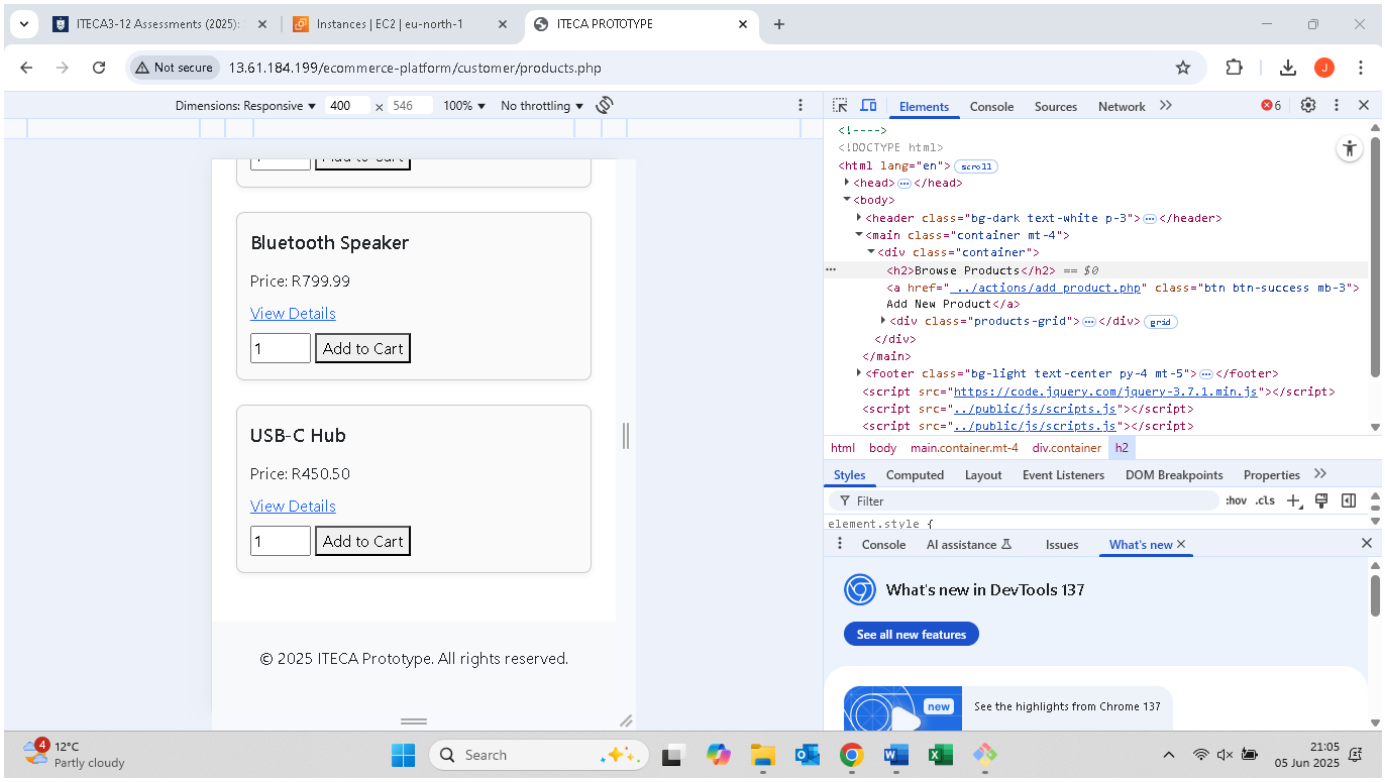
04 Jun 2025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100%
No throttling
Bluetooth Speaker
Price: R799.99
View Details
1
Add to Cart
USB-C Hub
Price: R450.50
View Details
1
Add to Cart
© 2025 ITECA Prototype. All rights reserved.
Elements
Console
Sources
Network
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<html lang="en">
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<header class="bg-dark text-white p-3">
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<a href="../actions/add_product.php" class="btn btn-success mb-3">
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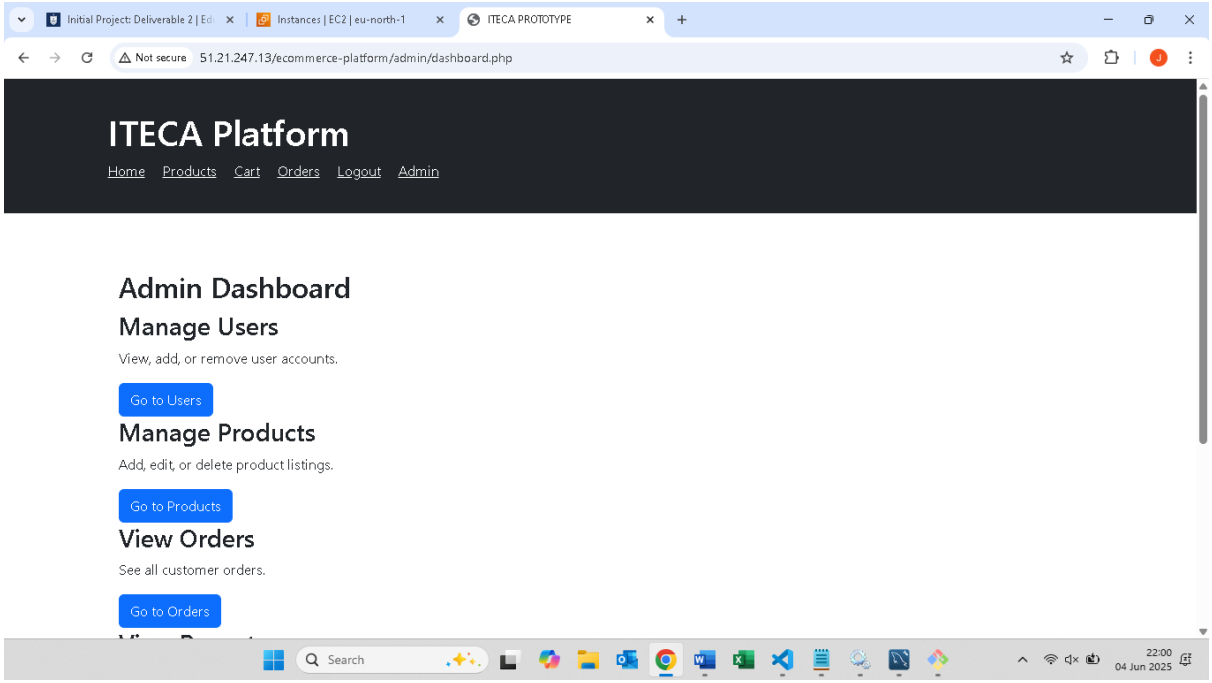
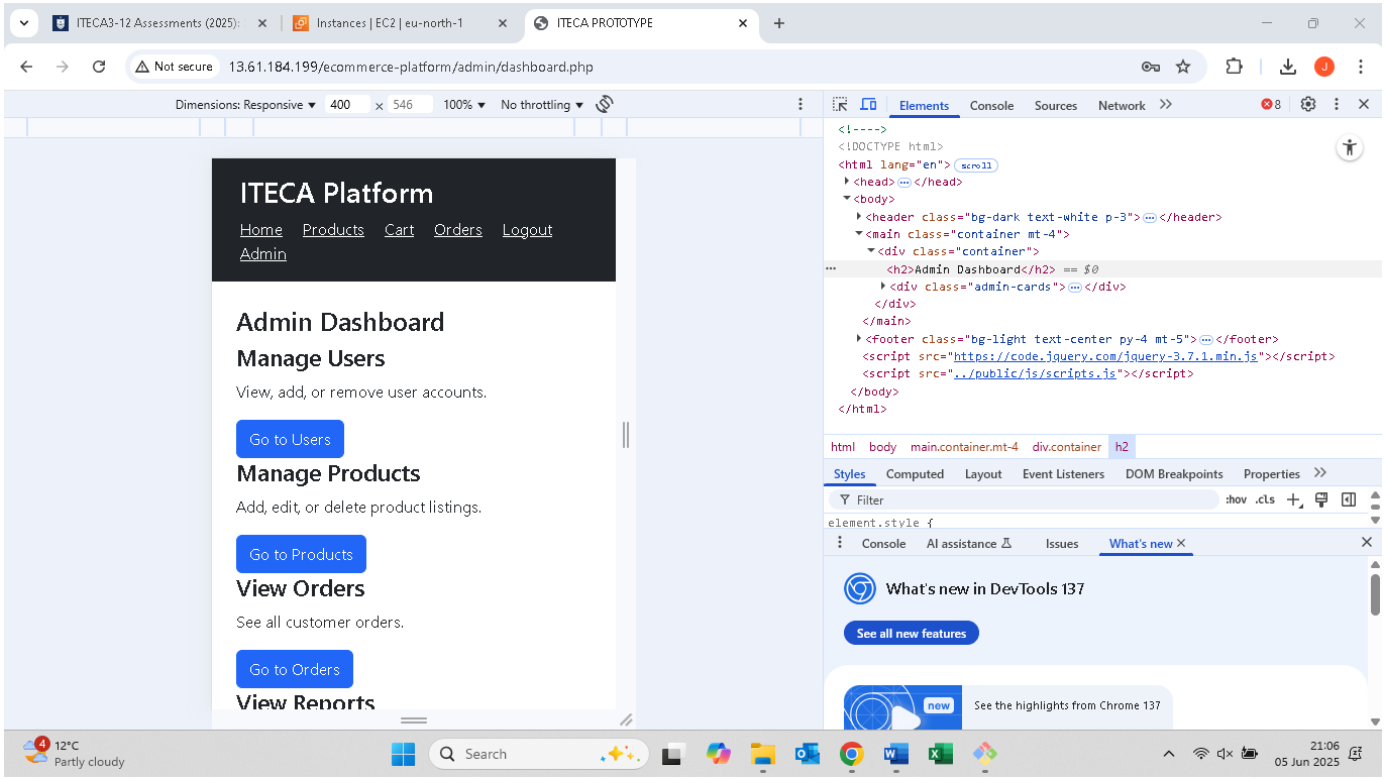
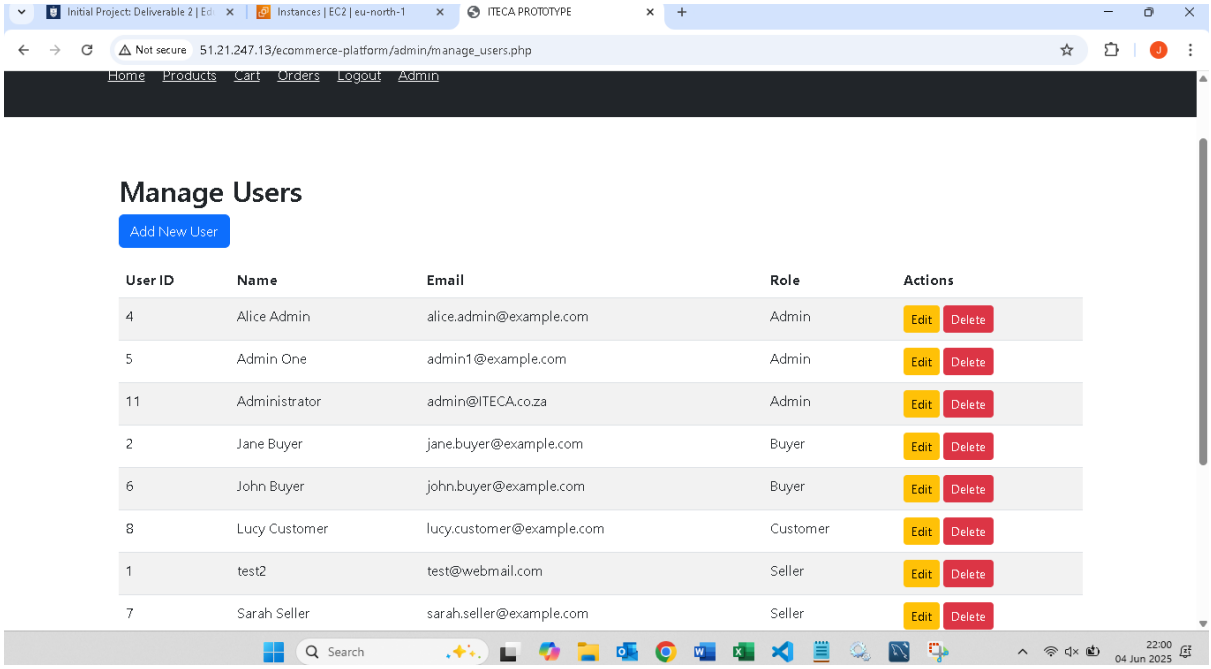
12°C
Partly cloudy
Search
21:05
05 Jun 2025

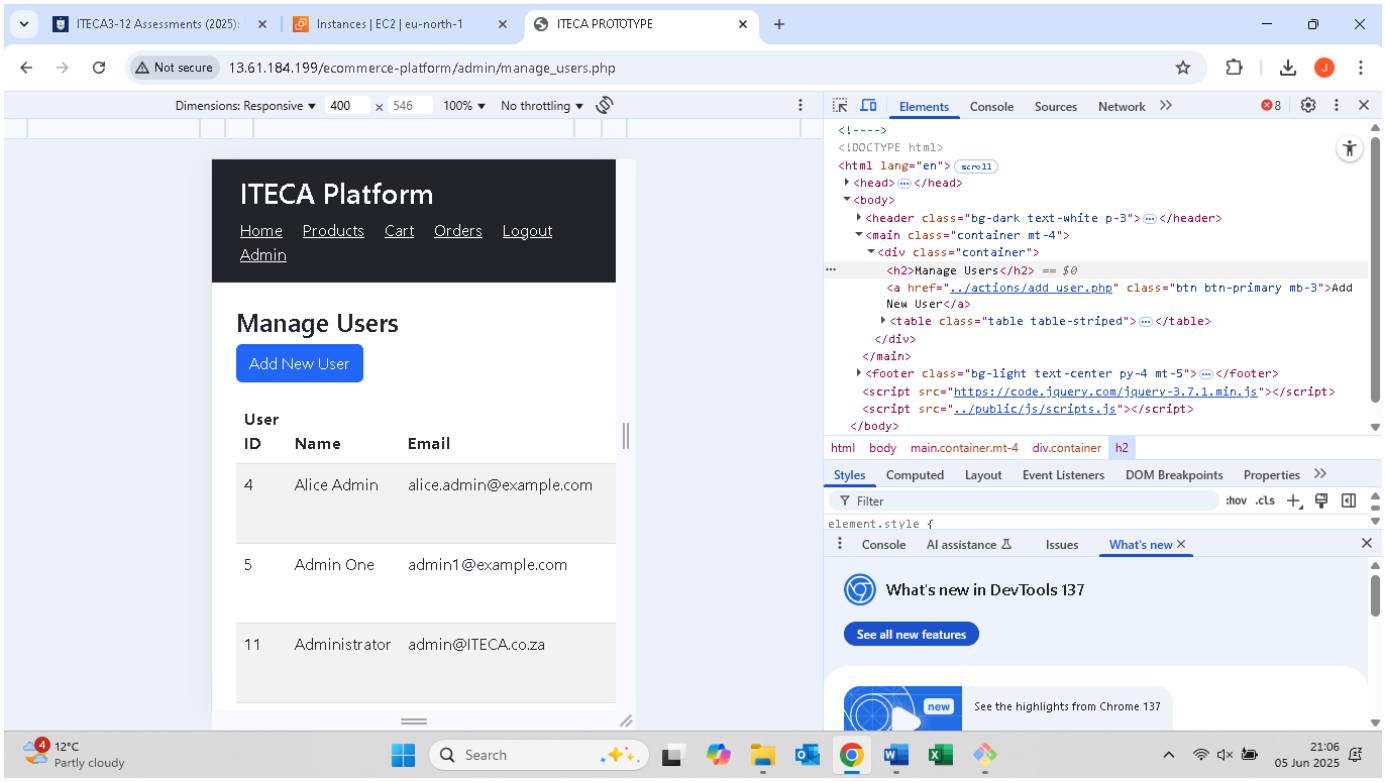
Admin Dashboard



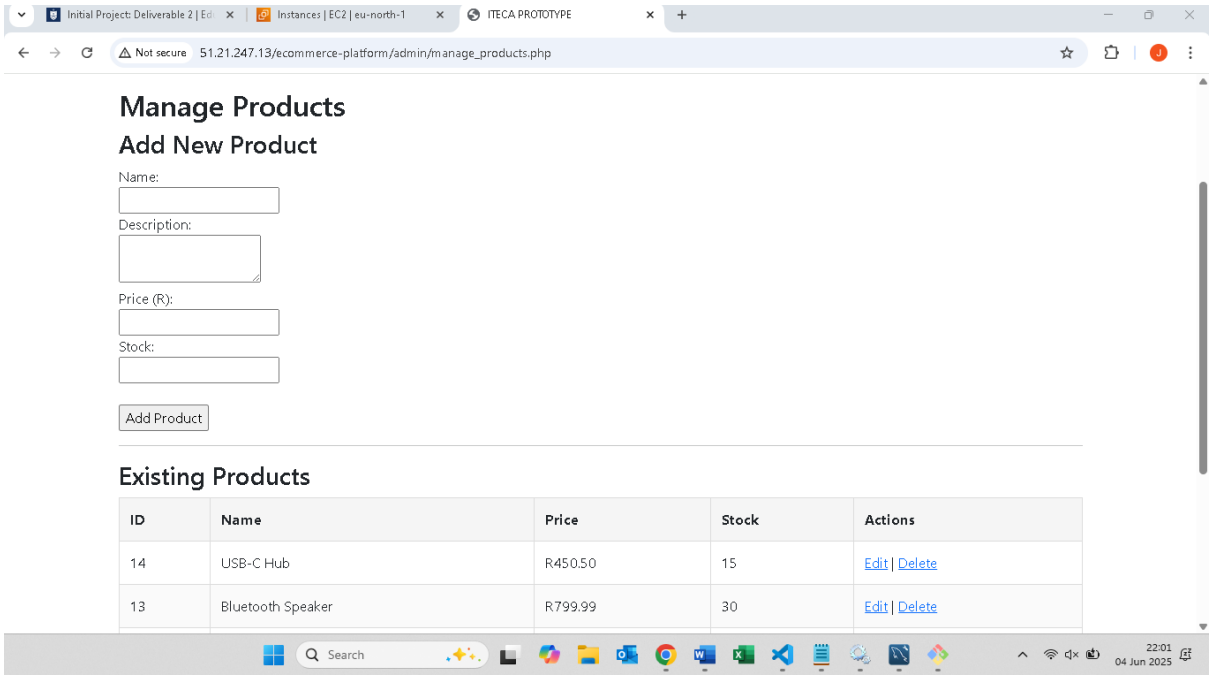


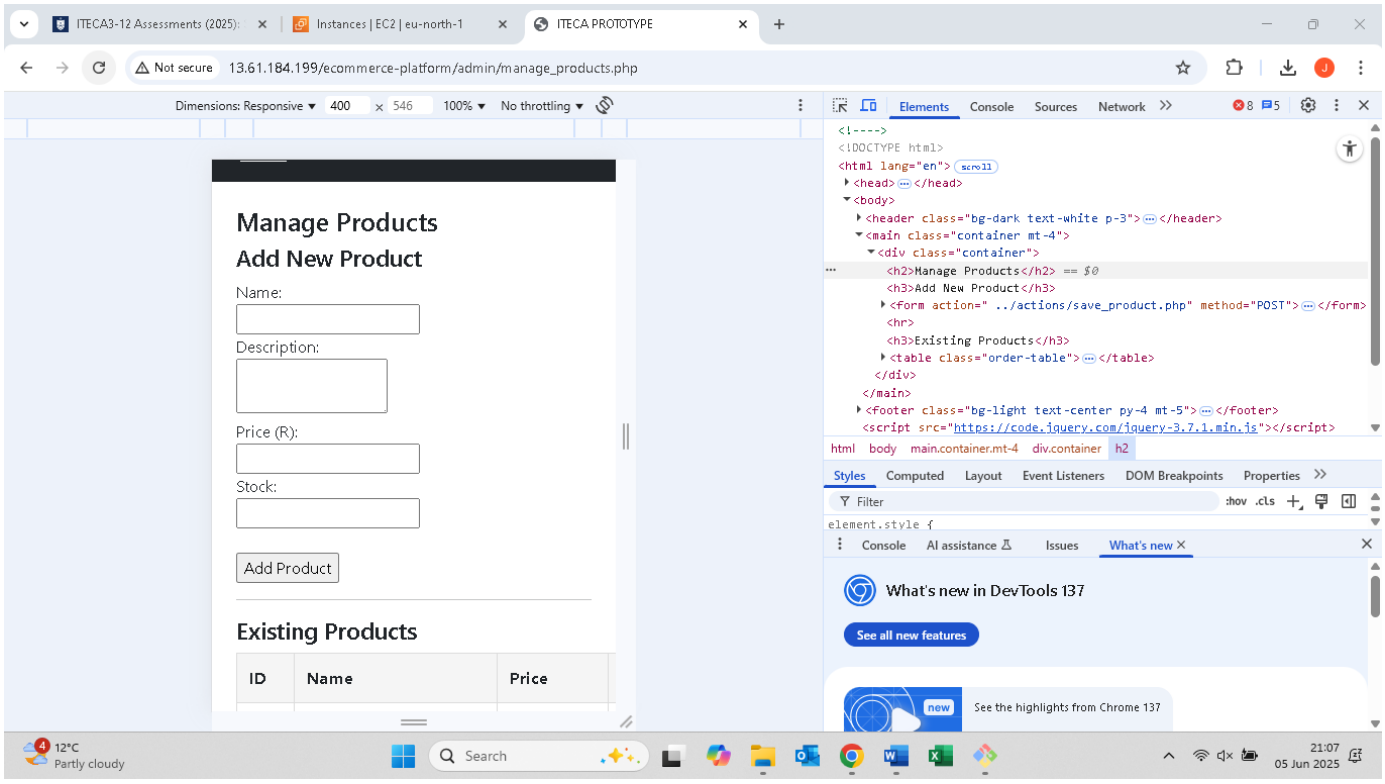
Manage Users



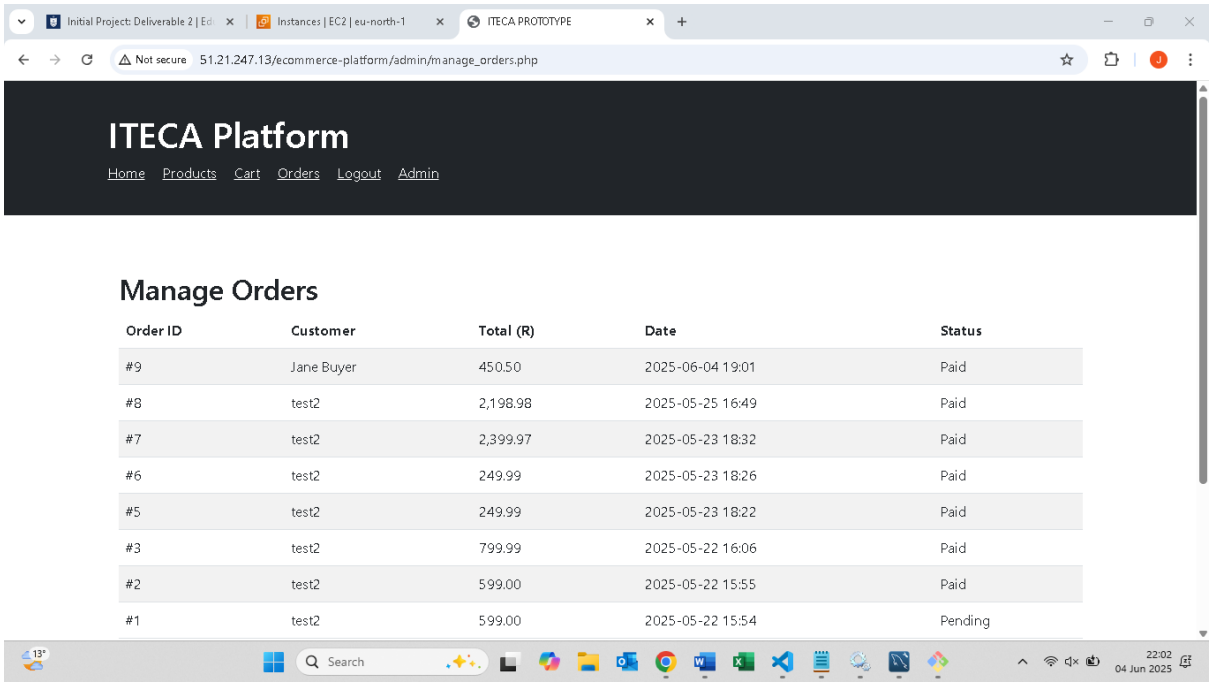


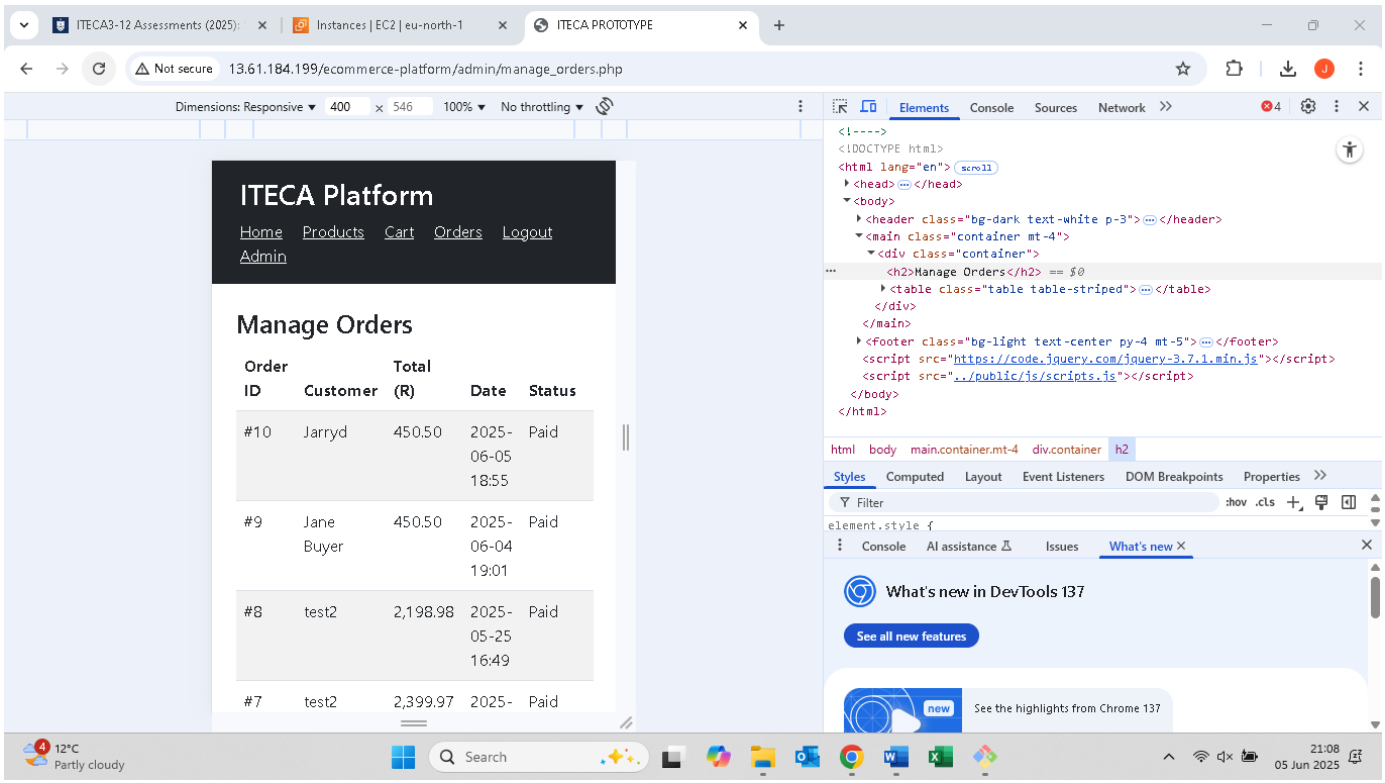
Manage Products



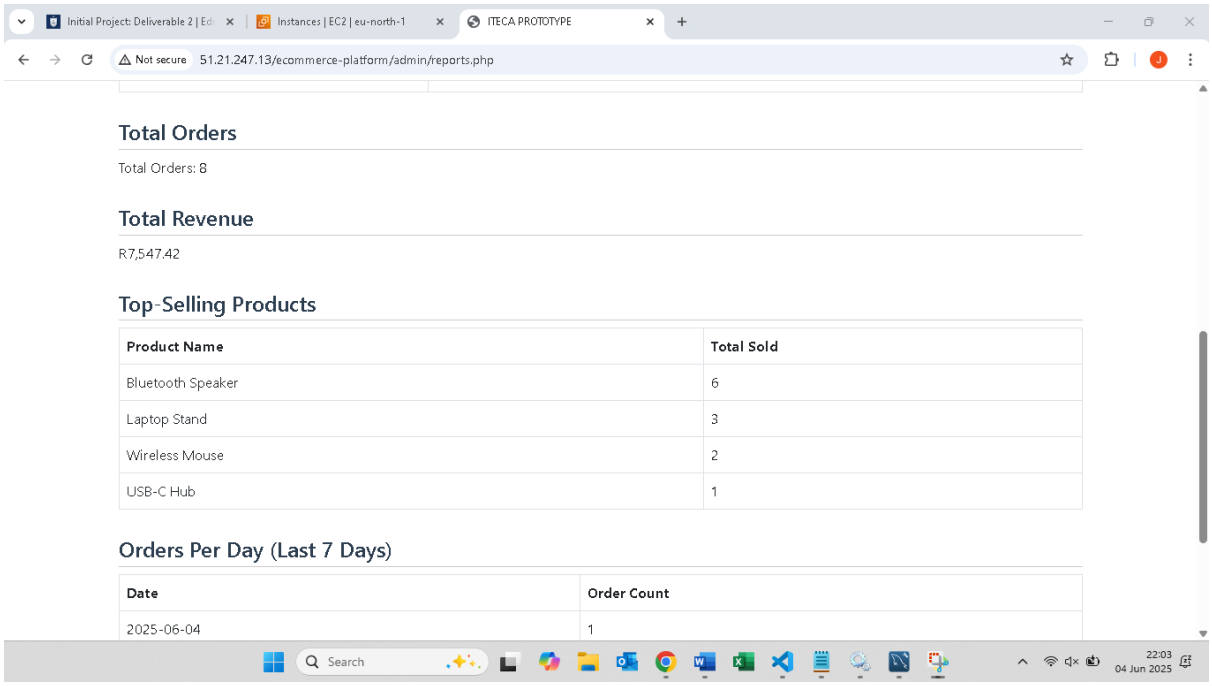


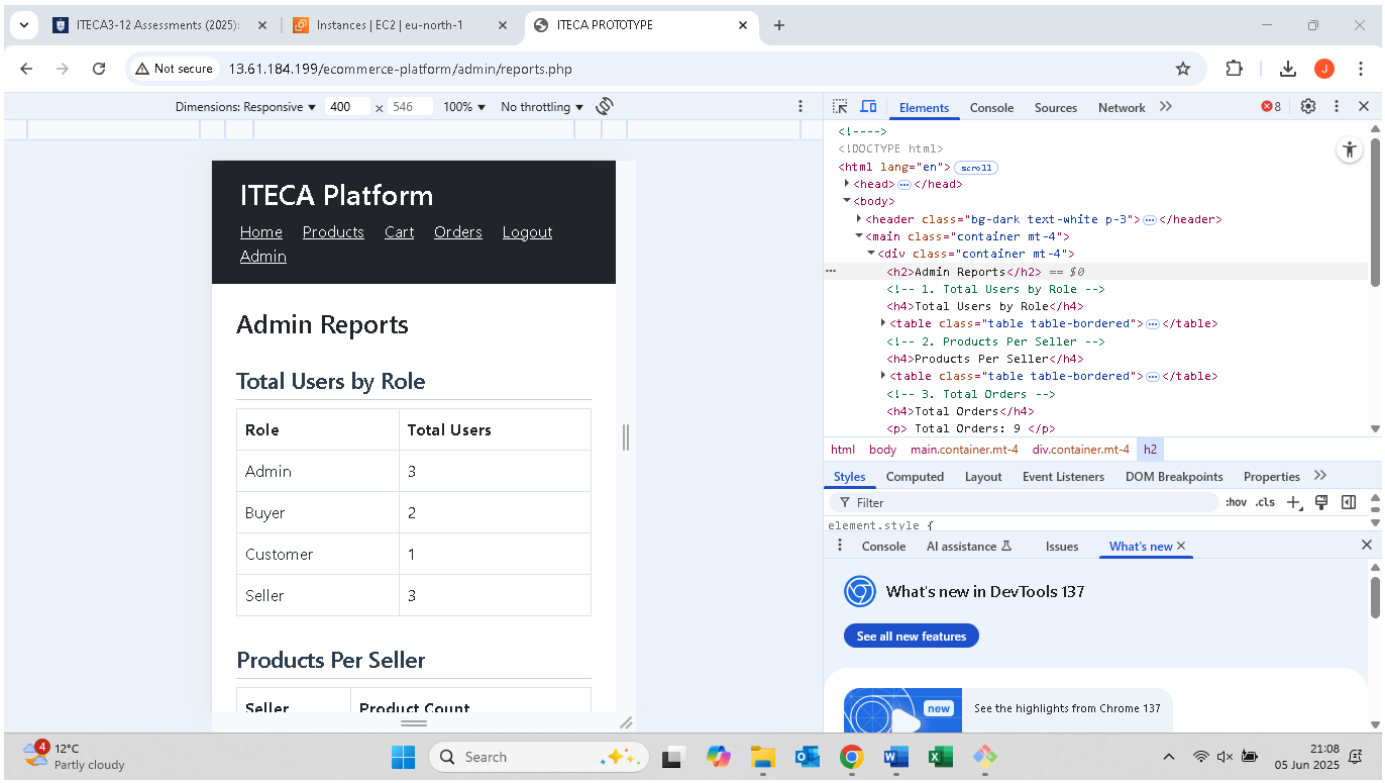
Manage Orders





View Report


Initial Project: Deliverable 2 | Ed
Instances | EC2 | eu-north-1
ITECA PROTOTYPE
Not secure
51.21.247.13/ecommerce-platform/admin/reports.php
Total Orders
Total Orders: 8
Total Revenue
R7,547.42
Top-Selling Products
Product Name
Total Sold
Bluetooth Speaker
6
Laptop Stand
3
Wireless Mouse
2
USB-C Hub
1
Orders Per Day (Last 7 Days)
Date
Order Count
2025-06-04
1
Search
22:03
04 Jun 2025


ITECA3-12 Assessments (2025):
Instances | EC2 | eu-north-1
ITECA PROTOTYPE
Not secure
13.61.184.199/ecommerce-platform/admin/reports.php
Dimensions: Responsive
400
546
100%
No throttling
ITECA Platform
Home
Products
Cart
Orders
Logout
Admin
Admin Reports
Total Users by Role
Role
Total Users
Admin
3
Buyer
2
Customer
1
Seller
3
Products Per Seller
Seller
Product Count
Elements
Console
Sources
Network
<!---->
<!DOCTYPE html>
<html lang="en">
<head>
<body>
<header class="bg-dark text-white p-3">
<main class="container mt-4">
<div class="container mt-4">
<h2>Admin Reports</h2> == $0
<!-- 1. Total Users by Role -->
<h4>Total Users by Role</h4>
<table class="table table-bordered">
<!-- 2. Products Per Seller -->
<h4>Products Per Seller</h4>
<table class="table table-bordered">
<!-- 3. Total Orders -->
<h4>Total Orders</h4>
<p> Total Orders: 9 </p>
html
body
main.container.mt-4
div.container.mt-4
h2
Styles
Computed
Layout
Event Listeners
DOM Breakpoints
Properties
Filter
element.style {
Console
AI assistance
Issues
What's new
What's new in DevTools 137
See all new features
new
See the highlights from Chrome 137
12°C
Partly cloudy
Search
21:08
05 Jun 2025

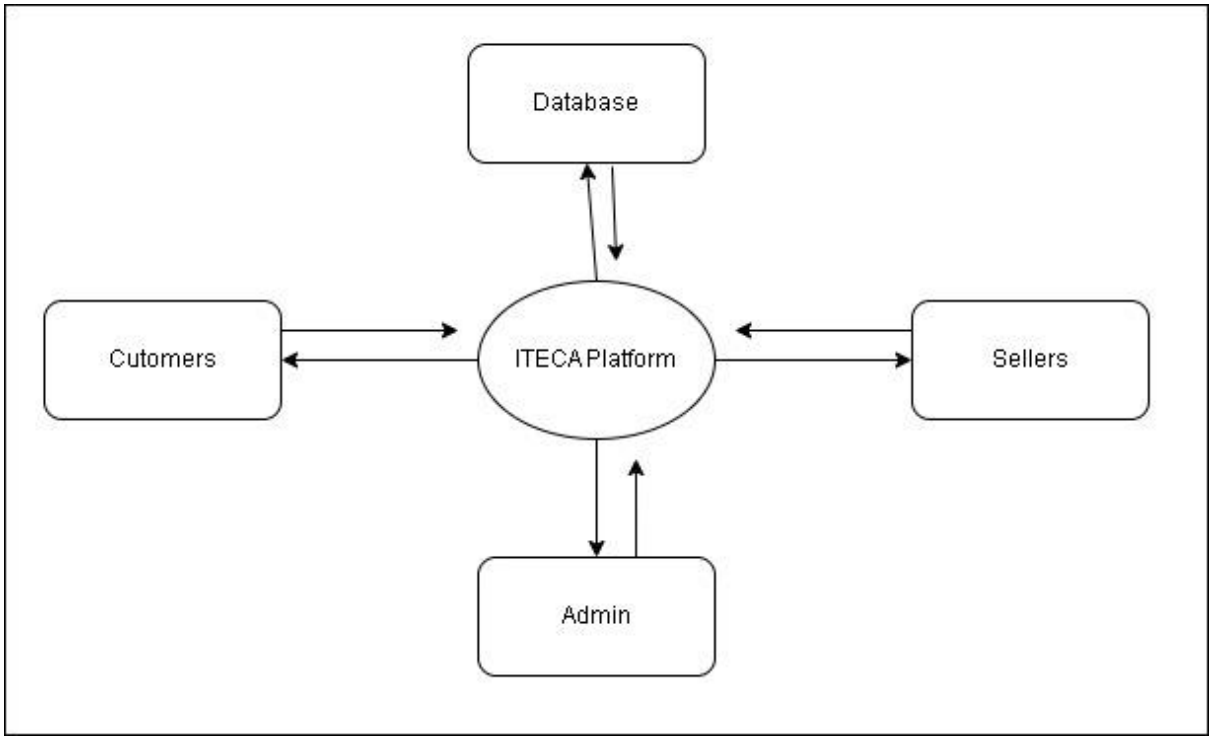
2.3 Designing

Class Responsibility Collaborator (CRC) cards

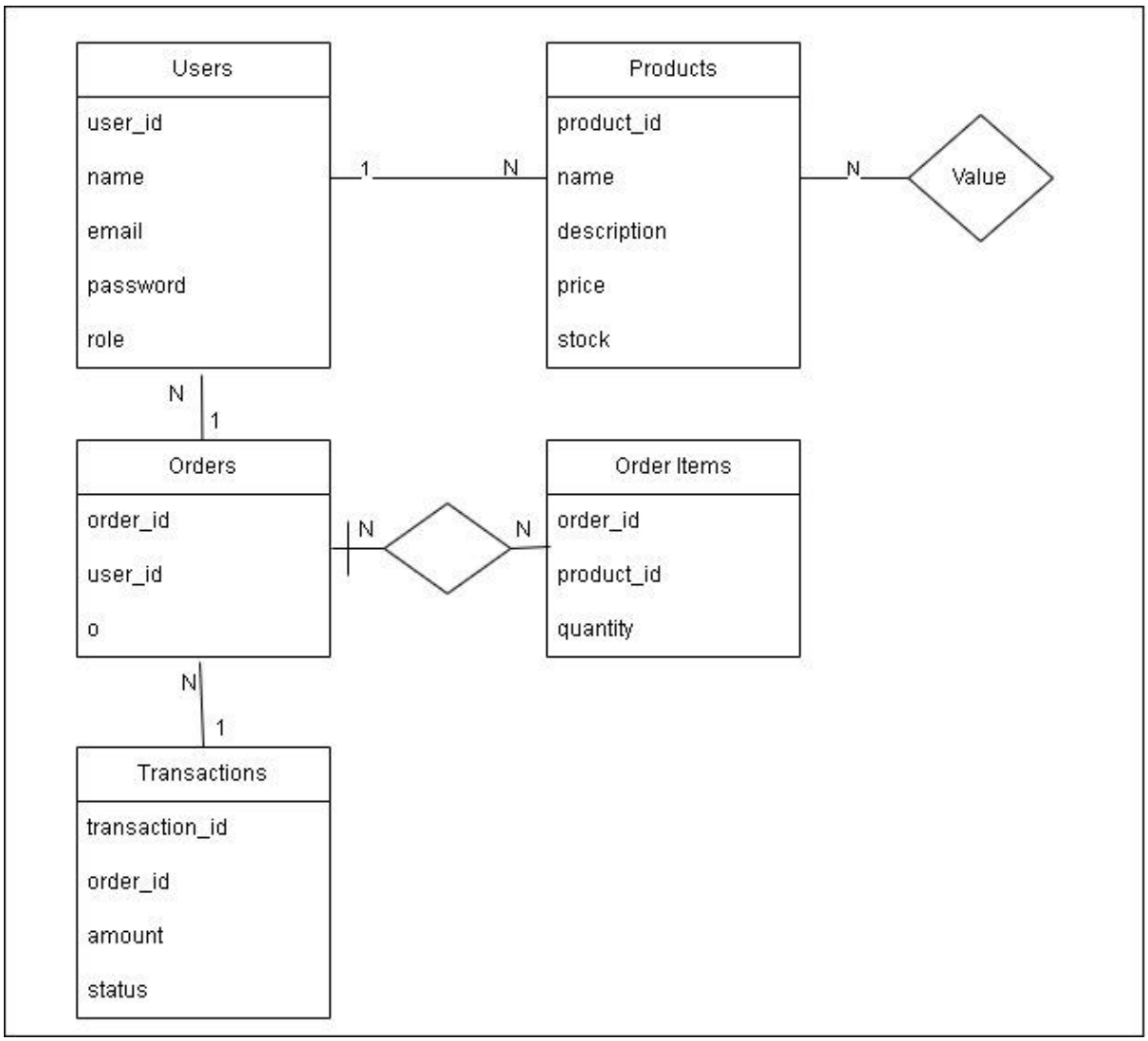
User	Product	Admin
Responsibilities: - Register and log in - Manage profile - Buy and sell products	Responsibilities: - Store product details - Link to seller - Handle product availability	Responsibilities: - Manage users - Manage products - View Reports
Collaborators: - Products - Orders - Transactions	Collaborators: - Users - Products - Transactions	Collaborators: - Users - Products - Orders - Transactions

Order	Transaction
Responsibilities: - Store order details - Track status - Link to transaction	Responsibilities: - Handle payments - Store Transaction - Link to order
Collaborators: - Users - Products - Transactions	Collaborators: - Users - Products - Orders

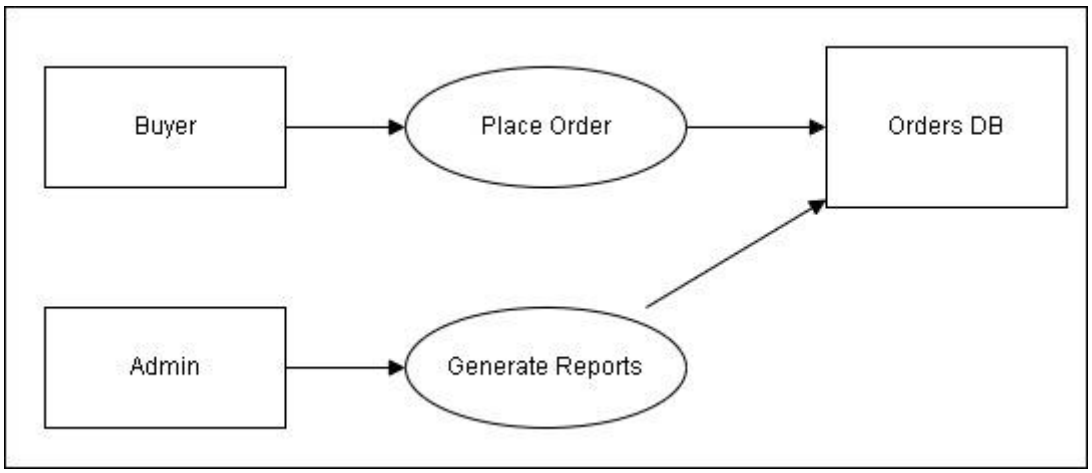
Context Diagram



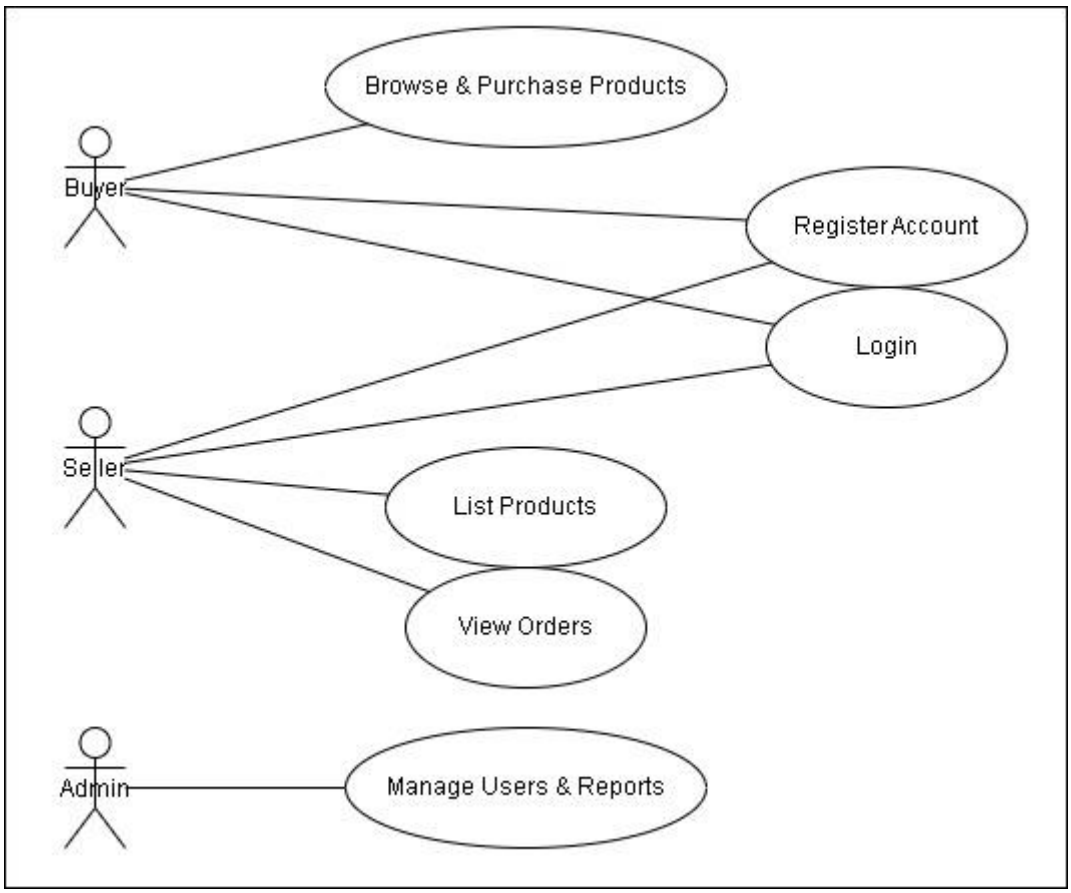
EERD



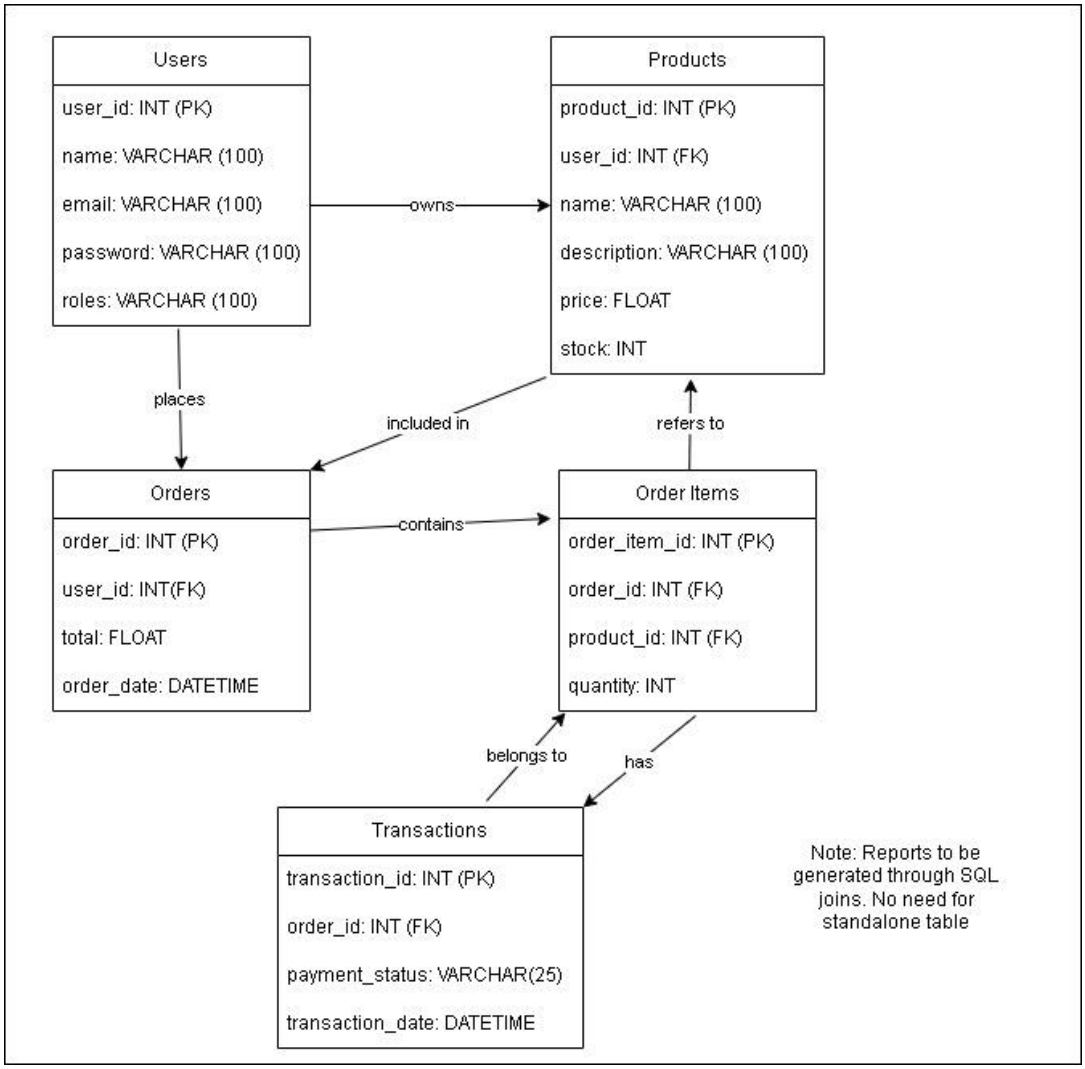
Data Flow Diagram



Use Case Diagram

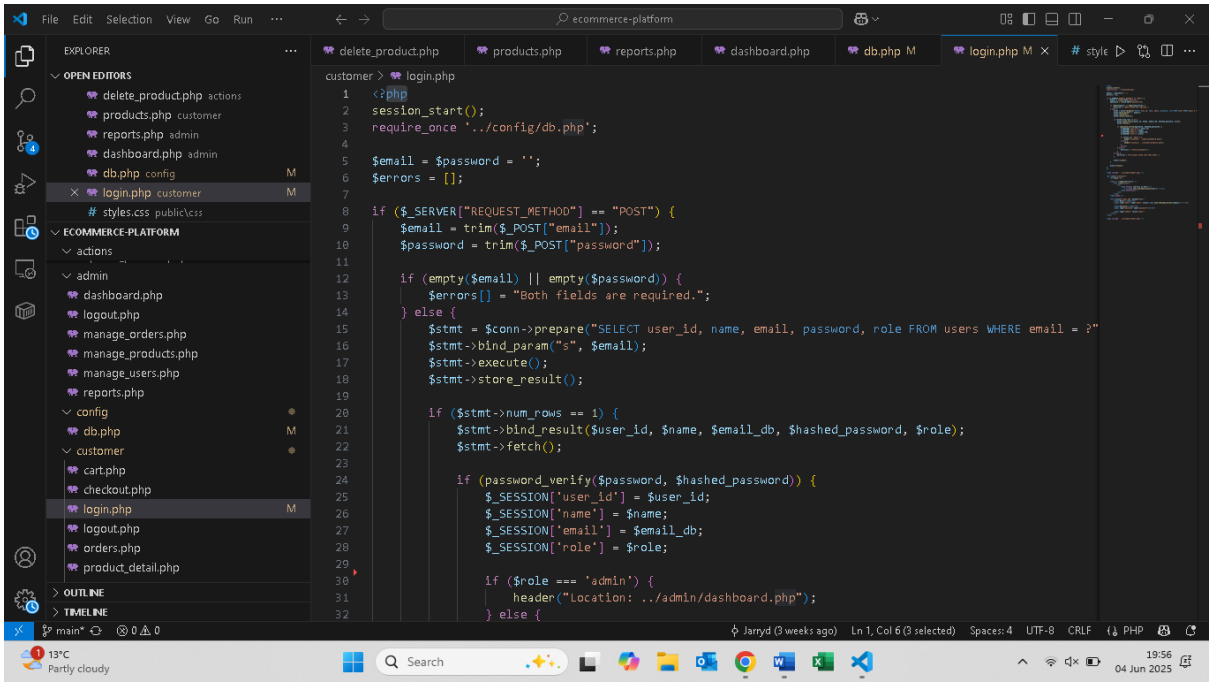


Database Design



2.4 Coding

PHP



Sample of the PHP code used to handle user authentication: It first initiates a session to allow tracking of user data between various pages. It then includes the database configuration file to connect to the database. The email and password are initialized as empty strings, while the `$errors` array is initialized as empty to hold validation errors. When the form is submitted in `POST` mode, the script grabs and sanitizes the input provided by users by removing unnecessary whitespaces. It then checks whether email or password is missing; in this case, an error is added in the `$errors` array. If both are present, the script prepares the query to look for a user with email as the input provided, with the email value safely bound to the query before execution and finally stores the result to be validated further.

```
<?php
session_start();
require_once '../config/db.php';

$email = $password = '';
$errors = [];

if ($_SERVER["REQUEST_METHOD"] == "POST") {
```

```
    $email = trim($_POST["email"]);
    $password = trim($_POST["password"]);

    if (empty($email) || empty($password)) {
        $errors[] = "Both fields are required.";
    } else {
        $stmt = $conn->prepare("SELECT user_id, name, email, password, role FROM users
WHERE email = ?");
        $stmt->bind_param("s", $email);
        $stmt->execute();
        $stmt->store_result();
```

HTML

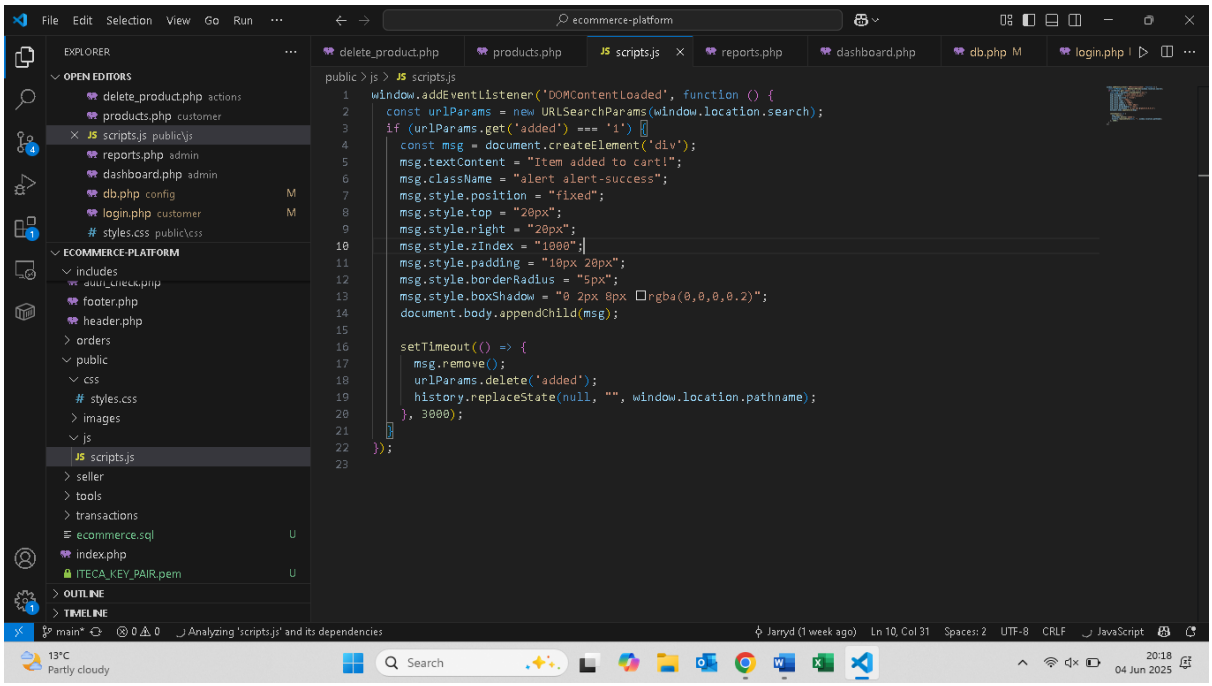
Sample of some HTML (with PHP) code: This creates a product card on the e-commerce site, showing product details dynamically. It first displays the product name, accounting for encoding to avoid security flaws. The price is kept to two decimals for uniformity. Depending on the user's role and whether he owns the product, various choices are presented. If the user is selling and

owns the product, he can edit or delete it using respective action links. If the user is a buyer, he only sees the "View Details" link and a form where he can add the product to his cart, mentioning the quantity.

```
<div class="product-card">
            <h3><?php echo htmlspecialchars($row['name']); ?></h3>
            <p>Price: R<?php echo number_format($row['price'], 2); ?></p>

            <?php if ($role === 'seller' && $row['user_id'] == $user_id): ?>
               <a href="../actions/edit_product_seller.php?id=<?php echo $row['product_id']; ?>"
class="btn btn-sm btn-warning">Edit</a>
               <a href="../actions/delete_product.php?id=<?php echo $row['product_id']; ?>"
class="btn btn-sm btn-danger" onclick="return confirm('Are you sure?')">Delete</a>
            <?php else: ?>
               <p><a href="/ecommerce-platform/customer/product_detail.php?id=<?php echo
$row['product_id']; ?>">View Details</a></p>
               <form action="../actions/add_to_cart.php" method="POST">
                  <input type="hidden" name="product_id" value="<?php echo $row['product_id'];
?>">
                  <input type="number" name="quantity" value="1" min="1" style="width: 60px;"
required>
                  <button type="submit">Add to Cart</button>
               </form>
            <?php endif; ?>
         </div>
```

JavaScript



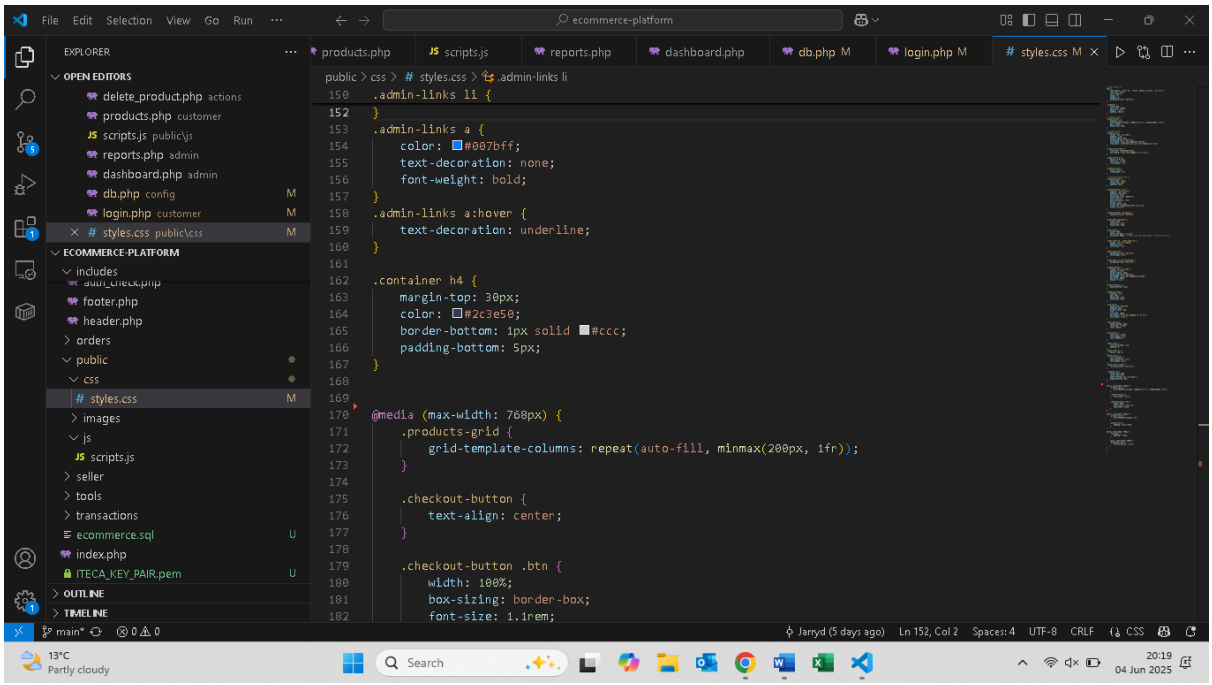
Sample of JavaScript code that listens for the DOMContentLoaded event so that it only executes after the page is fully loaded. Once an an item is successfully added to a shopping cart the script adds a dynamic notification message ("Item added to cart!") in the form of a success alert. It is placed in the top-right corner of the screen with a static position so that it is visible. After 3 seconds, the message is gone, and the 'added' parameter is removed from the URL with the help of history.replaceState(), so that the notification doesn't return upon reload. This provides a good user experience with a temporary confirmation without polluting the URL or having to be dismissed manually.

```
window.addEventListener('DOMContentLoaded', function () {
  const urlParams = new URLSearchParams(window.location.search);
  if (urlParams.get('added') === '1') {
    const msg = document.createElement('div');
    msg.textContent = "Item added to cart!";
    msg.className = "alert alert-success";
    msg.style.position = "fixed";
    msg.style.top = "20px";
    msg.style.right = "20px";
    msg.style.zIndex = "1000";
```

```
    msg.style.padding = "10px 20px";
    msg.style.borderRadius = "5px";
    msg.style.boxShadow = "0 2px 8px rgba(0,0,0,0.2)";
    document.body.appendChild(msg);

    setTimeout(() => {
      msg.remove();
      urlParams.delete('added');
      history.replaceState(null, "", window.location.pathname);
    }, 3000);
  }
});
```

CSS



Sample of CSS code starting with rule `.admin-links a:hover` that adds an underline on hovering over admin links to ensure improved visibility of navigation. The `.container h4` class is applied to the inner header elements of a container, adding a 30-pixel top margin and some text color. There is also a bottom border and bottom padding. See also the responsive code under the `@media (max-width: 768px)` block where the styles are modified for smaller screens. Inside this

rule, `.products-grid` scales the layout through a grid automatically adapting column numbers while having a minimum of 200 pixels. Also inside this rule, `.checkout-button` is horizontally aligned in cases of a 768 pixels or smaller width of the screen to provide improved alignment on mobile devices. In this manner, usability and appearance are both improved with different sizes of screens.

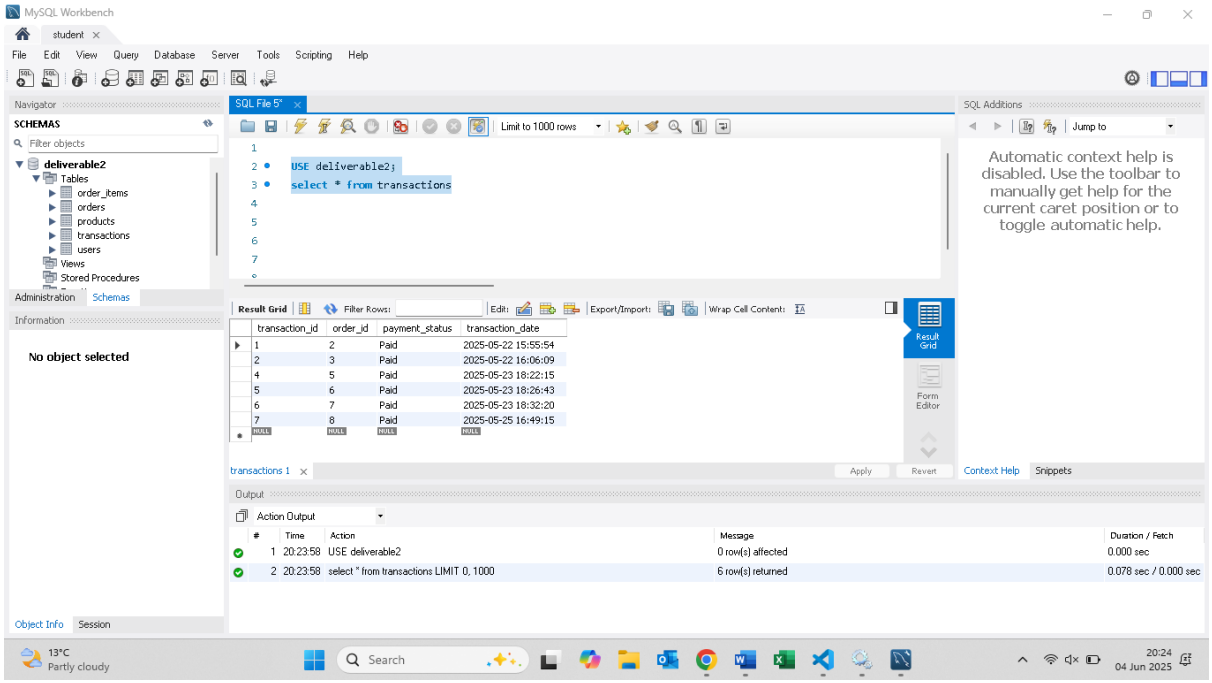
```
.admin-links a:hover {
    text-decoration: underline;
}

.container h4 {
    margin-top: 30px;
    color: #2c3e50;
    border-bottom: 1px solid #ccc;
    padding-bottom: 5px;
}

@media (max-width: 768px) {
    .products-grid {
        grid-template-columns: repeat(auto-fill, minmax(200px, 1fr));
    }

    .checkout-button {
        text-align: center;
    }
```

MySQL



Sample of MySQL query which is self-explanatory. The query is selecting all rows form the ‘transactions’ table for display under the deliverable2 database. *This is very short and simple code so I will just leave a screenshot and not paste the actual code text below.*

2.5 Conclusion

Development and implementation of the e-commerce site successfully accomodated the requirements laid out in the project brief. The site provides buyers and sellers with a secure and easy-to-use interface, as well as providing administrators with complete control over site operations. Major features such as user authentication, product management, and order management, as well as reporting tools, were implemented, along with responsive design across multiple devices.

The platform was efficiently and effectively created using appropriate software design methods, such as diagrammatic modeling and structured database design. The deployment using AWS EC2 makes it possible to remotely access the system to facilitate demo and testing. The project demonstrates the integration of front-end and back-end technologies effectively to deliver a resolution of the actual problem faced in digital business.