

## Project Deliverable 2 – Documentation and Coding

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## 2.1. Introduction

The goal of the e-commerce platform is to close the digital gap in South Africa by offering a solution that is both secure and tailored to the needs of consumers and informal traders. It allows users to trade, sell, and buy products while addressing challenges such as low digital literacy, lack of infrastructure, and the loss of revenue to platforms owned by foreign entities.

This initiative is designed to establish a responsive, and adaptive platform that serves multiple roles between seller, buyer, and admin featuring elements like a hybrid barter system, local payment gateways, and robust security measures. This report outlines the processes of prototyping, design, coding, and execution of the platform.

### Needs/Problems

#### Technological Barriers and Digital Exclusion

One of the main problems that have been identified is the enormous digital divide in South Africa such that the majority of the targeted users lack digital literacy and reliable technology. It is reported that it is hard for informal traders to manage complex e-commerce platforms, as reflected by the emphasis on creating simplified user interfaces through the prototyping phase.

The tablet, laptop, and smartphone prototypes all employ large buttons, unambiguous iconography, and minimal text - design techniques that are particularly suited to the accessibility demand from technically less-informed users. The User class on the CRC cards contains actions for easy login and registration management, showing careful consideration to beginners to digital platforms.

#### Economic Drain to Foreign Platforms

The paper highlights the key problem in which South African entrepreneurs lose much money to foreign e-commerce platform. This places the urgency for a locally-developed platform that keeps economic transactions within South African economy. The Payment CRC card itself mentions merging local payment gateways, while the database design includes columns for South African payment channels. These capabilities directly counter the challenge of economic leakage by providing alternatives to foreign payment mechanisms, which typically overwhelm e-commerce.

#### Insufficient Barter System Facilitation

The traditional e-commerce sites do not facilitate the cultural need for barter trade by South African informal traders. The documentation puts this down as one of the relevant gaps in

existing market offerings. The problem is addressed by the platform with specific features marked on the Barter CRC card, outlining functionality for swapping products without the exchange of money. The use case diagram also identifies how the bartering system will be used in conjunction with conventional buys, meeting the criterion of hybrid trading solutions which appeal to local business savviness.

### Security Issues in Online Transactions

Most of the potential customers are worried about online platforms because they are beset by repeated cases of fraud and violations in private data. The report identifies this adoption barrier and offers different solutions. The Admin CRC card depicts monitoring functionality on transactions, while the Order and Payment classes include security functionalities such as status tracking and confirmation processes

## Goals/Objectives.

### Reducing the Digital Divide in South Africa

The foremost significant goal is to make e-commerce accessible to population segments that have low degrees of digital literacy and negligible technological infrastructure. The introduction clearly indicates how the platform has been designed to be simple to use for those who are not comfortable with advanced technology. The prototypes demonstrate user-friendly interfaces for smartphone, tablet and laptop, in an effort to access individuals using different gadgets that are commonly employed by South Africans. That directly addresses the problem of digital exclusion highlighted in the project brief.

### Supporting Local Economic Development

The platform aims to keep commercial transactions in the South African economy using a foreign-owned e-commerce platform alternative. From the observation made in the introduction, the majority of local traders nowadays lose their revenues to foreign-owned platforms. Having local payment gateways and supporting local currency transactions helps in achieving this aim of retaining the economy. Circulation of money in local communities is enhanced by the structure of the platform.

### Secure Online Transactions

Building user trust through the use of effective security systems is another important goal. This is evidenced in the documentation by a number of features: Admin class on CRC cards monitors transactions, Payment class ensures secure processing, and the database structure

ensures protection of sensitive user details. These combine to prevent fraud and build confidence in users who are unfamiliar with online trading.

### Supporting Multiple Trading Modes

As the majority of South African traders use money and traditional bartering systems to trade, there is support for hybrid options by the platform. Use case diagram and Barter class in CRC cards sufficiently explain how the system supports non-monetary trading. This differentiation adds more accommodativeness to the various local forms of trading practices.

### Technical Development Objectives

The project has clearly defined technical objectives like the development of independent interfaces for buyers, sellers and administrators. The prototypes in Section 2.2 illustrate how the multi-role system will work across a variety of devices. The EERD diagram also shows how data will be transferred from these types of user. Another technical imperative is to be responsive in design, as illustrated by the different versions of interface for mobile and desktop in the prototyping section.

## 2.2. Prototyping

### Coding

Smart phone:



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18:36



Welcome, Lola Zulu (Buyer)

[Logout](#) | [View Cart](#)

## Search & Filter Products

Category (e.g., electronics)

All Payment Types

Filter

## Available Products



**2013 Sony Alpha 7R**

**R600.00**

Area: Pretoria

Quantity: 2

Category: Electronics

Barter Option: both

Add to Cart



**Used Mountain Bicycle**

**R1,050.00**

Area: Johannesburg

Quantity: 1

Category: Vehicle

Barter Option: cash

Add to Cart



**Traditional Zulu Beads**

**R200.00**

Area: Durban

Quantity: 15

Category: Fashion

Barter Option: both

Add to Cart



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18:35



## Login

Login

No account? [Register here.](#)


## Mzansi Marketplace

Choose Language Setswana


[Home](#) [Login](#) [Register](#)

Rea u amogela go Mzansi Marketplace!


Setšhaba sa borai sa mebaro sa Afrika Borwa.



**2013 Sony Alpha 7R**  
35.4MP Full-Frame Mirrorless Camera  
Legendary resolution in a compact body. Full-frame 35.4MP sensor, E-mount, fast autofocus, and lightweight for pros and enthusiasts. Great condition. Ready to shoot.  
**R600 or trade**



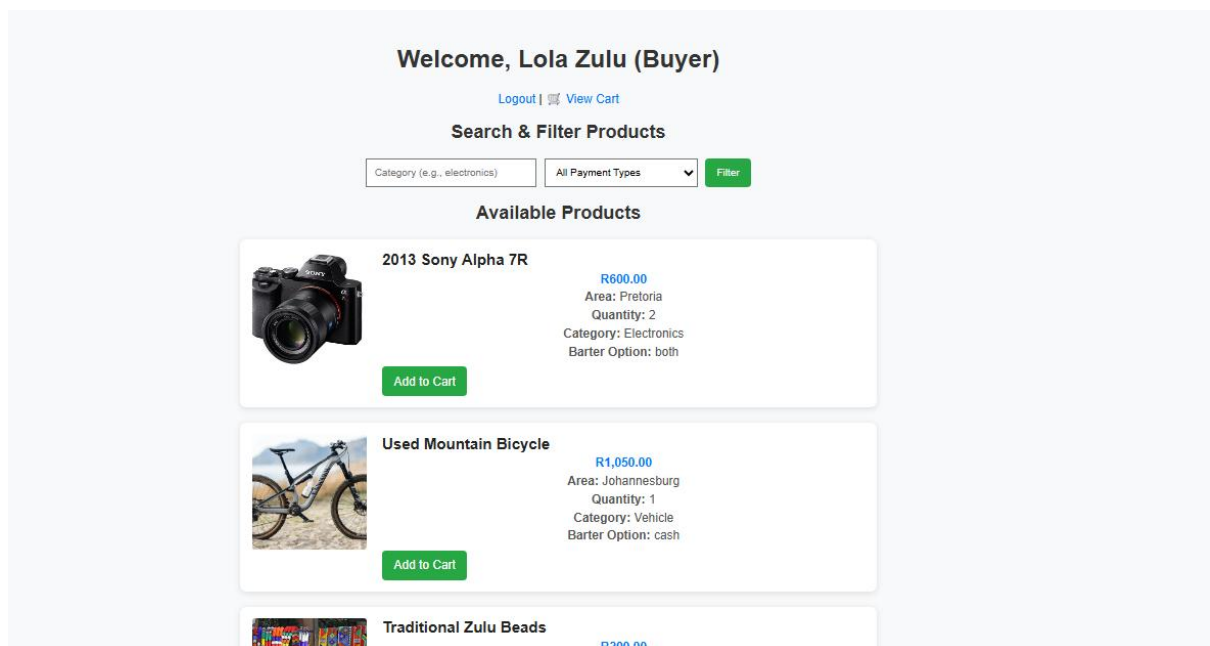
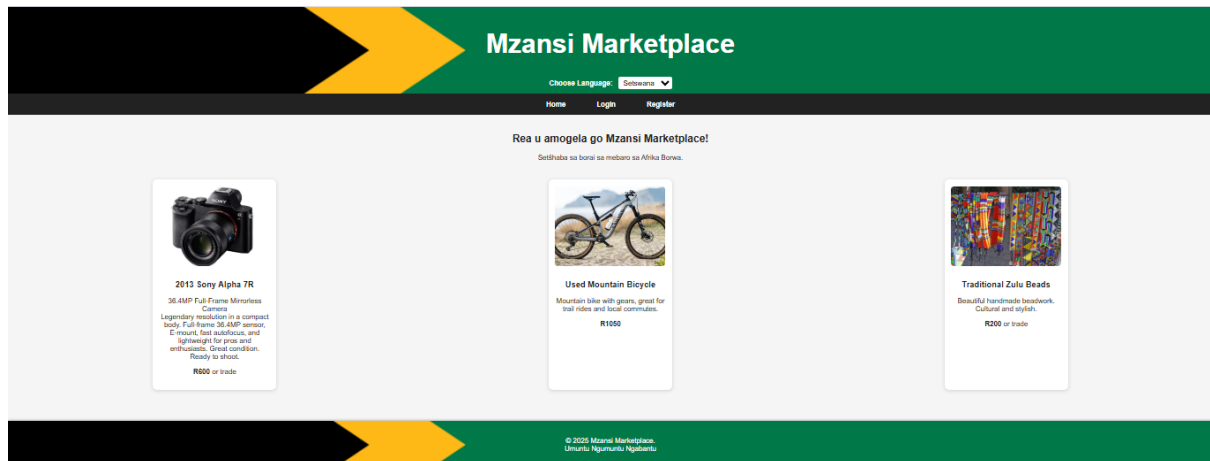
**Used Mountain Bicycle**  
Mountain bike with gears, great for trail rides and local commutes.  
**R1050**



**Traditional Zulu Beads**  
Beautiful handmade beadwork. Cultural and stylish.  
**R200 or trade**

© 2025 Mzansi Marketplace.  
Umuntu Ngumuntu Ngabantu

Laptop:







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Welcome, Thabiso (Seller)

[Logout](#)



## Upload New Product

Product Title
Description
Price (R)
Cash/Card
Quantity
Area/Location
Category (e.g., electronics, fashion)

[Choose File](#) | No file chosen

Upload Product

## Your Products

Image	Title	Price (R)	Quantity	Area	Barter Option	Category	Action
	2013 Sony Alpha 7R	600.00	2	Pretoria	both	Electronics	<a href="#">Delete</a>
	Used Mountain Bicycle	1,050.00	1	Johannesburg	cash	Vehicle	<a href="#">Delete</a>

Tablet:



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## Login

Login

No account? [Register here.](#)



# Eduvos

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## Register



Already have an account? [Login here.](#)



**Eduvos**  
Your Education. Your Future.

19:54 G



# Mzansi Marketplace

Choose Language

English



[Home](#)

[Login](#)

[Register](#)

## Welcome to Mzansi Marketplace!

A unified South African hybrid barter platform.



### 2013 Sony Alpha 7R

36.4MP Full-Frame Mirrorless Camera

Legendary resolution in a compact body. Full-frame 36.4MP sensor, E-mount, fast autofocus, and lightweight for pros and enthusiasts. Great condition. Ready to shoot.

**R600** or trade



### Used Mountain Bicycle

Mountain bike with gears, great for trail rides and local commutes.

**R1050**



### Traditional Zulu Beads

Beautiful handmade beadwork. Cultural and stylish.

**R200** or trade

f 25

and  
ber:

## 2.3. Designing

### a. Class Responsibility Collaborator (CRC) cards

Class	Responsibilities	Collaborators
1. User	Manage login and user registration.  Storing user details such as name, password, email, role.	Buyer  Seller  Admin
2. Buyer	Browse through products.  Adding products to the cart  Buying the product(s)	  Order  Payment
3. Seller	List of products for sale  Manage the product inventory.  Responding to the enquiries of buyers  Participating in money or barter exchange	Product    Buyer  Barter
4. Admin	Manage the user accounts of buyers, admins, and sellers.  Manage product listing.	User   Product

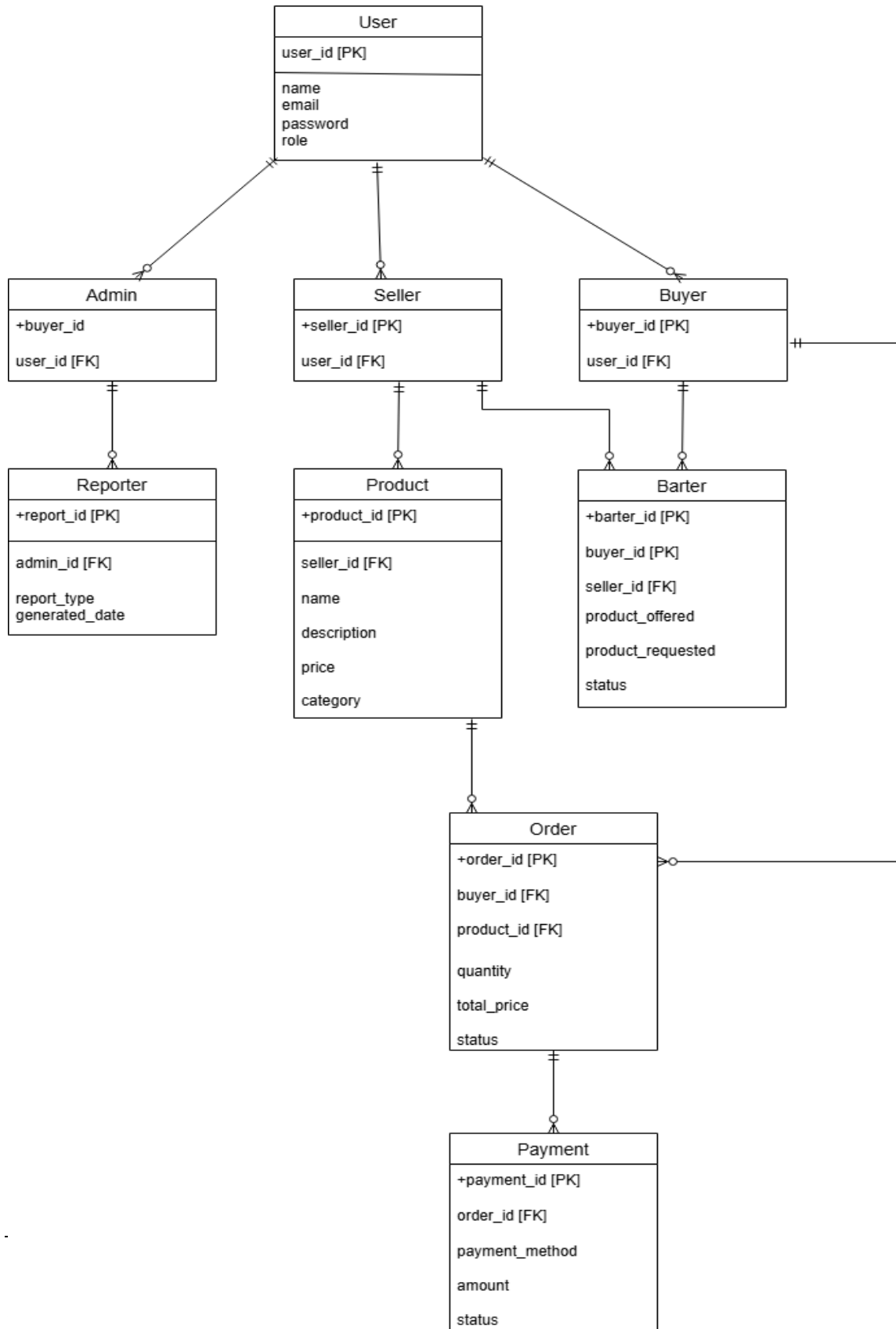


	<p>Generate reports on sales and user activity.</p> <p>Monitor transactions</p>	<p>Report</p> <p>Order Payment</p>
5. Product	<p>Stores the details of the products from name, description, price, and category.</p> <p>Display product information to buyers.</p>	<p>Seller</p> <p>Cart Order</p>
6. Cart	<p>Storing products that were added by the buyers.</p> <p>Calculate the total price of items in the cart.</p> <p>Allow buyers to proceed to check out to pay or trade.</p>	<p>Buyer</p> <p>Product</p> <p>Order</p>
7. Order	<p>Handling order creation</p> <p>Storing the details of the order from buyer, product, quantity, total price</p> <p>Tracking the order status whether it is pending, completed, or cancelled.</p> <p>Processing payments for orders</p>	<p>Buyer</p> <p>Product</p>



8. Payment	<p>Process payments for orders.</p> <p>Store payment details from payment methods, amount, and status.</p> <p>Managing the confirmation of payments</p>	
9. Barter	<p>Facilitate the barter transaction between the buyers and sellers.</p> <p>Store the barter details of the products offered and requested.</p>	<p>Buyer</p> <p>Seller</p>
10. Report	<p>Generate reports for admin.</p> <p>Store report details from report type, generated date, and all the necessary information.</p> <p>Provide insights into sales, user activity, and platform performance.</p>	Admin

## b. Enhanced Entity Relationship Diagram (EERD)

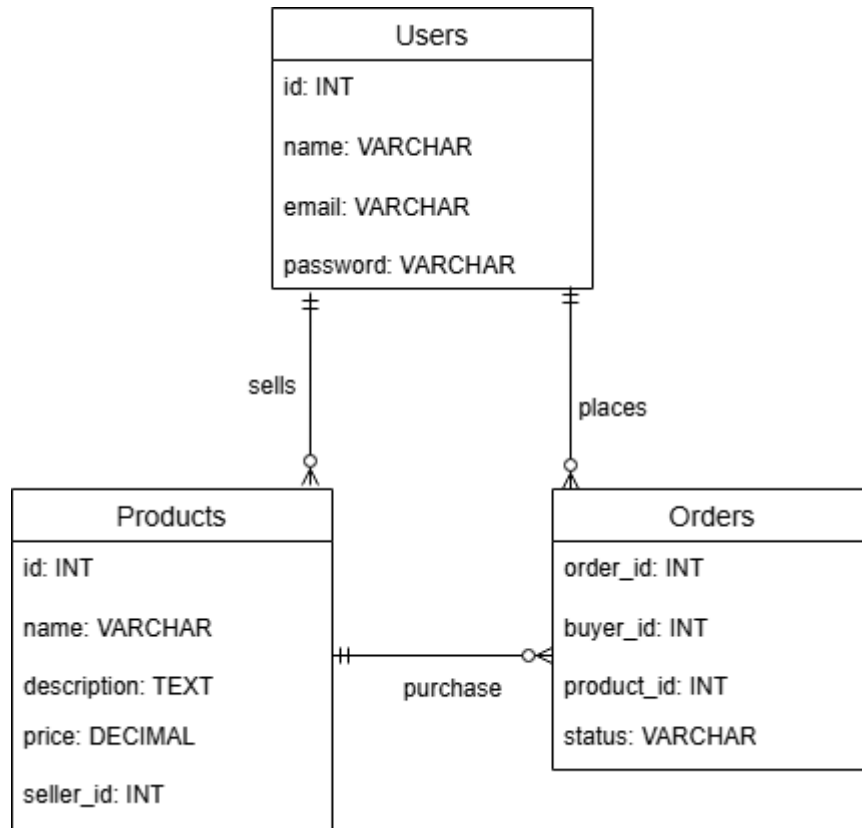




### c. Use Case Diagram



### d. Database Design



## 2.4. Coding

- Screenshots
- Sample PHP Code



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```
login.php
1  <?php
2  session_start();
3  require_once 'includes/db.php';
4
5  if ($_SERVER['REQUEST_METHOD'] === 'POST') {
6      $username = trim($_POST['username']);
7      $password = $_POST['password'];
8
9      $stmt = $conn->prepare("SELECT * FROM users WHERE username = ?");
10     $stmt->bind_param("s", $username);
11     $stmt->execute();
12     $res = $stmt->get_result();
13
14     if ($res->num_rows === 1) {
15         $user = $res->fetch_assoc();
16         if (password_verify($password, $user['password'])) {
17             $_SESSION['user'] = $user;
18             if ($user['role'] === 'admin') {
19                 header("Location: dashboard_admin.php");
20             } elseif ($user['role'] === 'seller') {
21                 header("Location: dashboard_seller.php");
22             } else {
23                 header("Location: dashboard_buyer.php");
24             }
25             exit();
26         } else {
27             echo "Invalid password.";
28         }
29     } else {
30         echo "User not found.";
31     }
32 }
33 ?>
```

```
db.php
1  <?php
2  $host = 'localhost';
3  $user = 'root';
4  $pass = '';
5  $db = 'mzansi_marketplace';
6
7  $conn = new mysqli($host, $user, $pass, $db);
8
9  if ($conn->connect_error) {
10     die("Connection failed: " . $conn->connect_error);
11 }
12 ?>
13
```

### c. Sample HTML Code



#### d. Sample JavaScript Code



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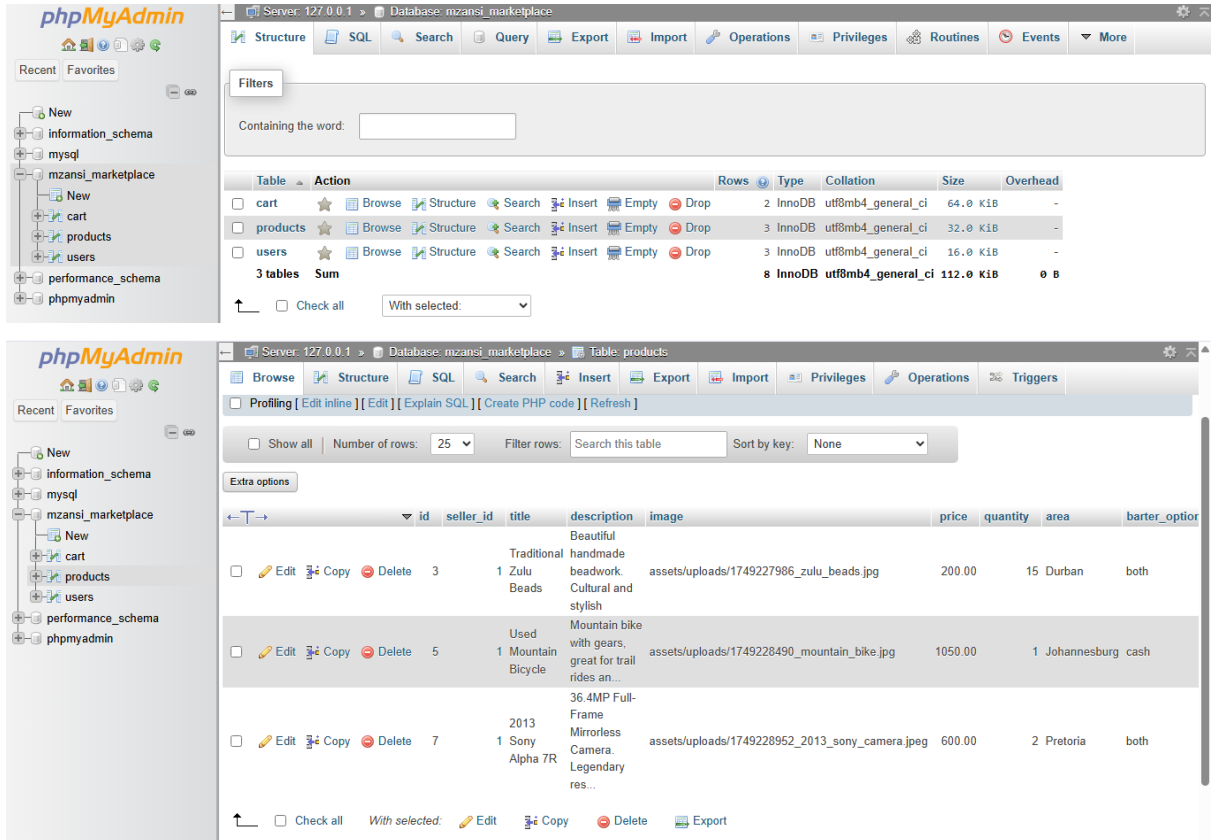
```
index.php
76  const translations = {
77    en: {
78      welcome: "Welcome to Mzansi Marketplace!",
79      description: "A unified South African hybrid barter platform."
80    },
81    zu: {
82      welcome: "Siyakwamukela eMzansi Marketplace!",
83      description: "Ipulatifomu ye-bhatha ehlanganisayo yeNingizimu Afrika."
84    },
85    xh: {
86      welcome: "Wamkelekile kwiMzansi Marketplace!",
87      description: "Iqonga lokutshintshiselana elidibeneyo laseMzantsi Afrika."
88    },
89    af: {
90      welcome: "Welkom by Mzansi Marketplace!",
91      description: "'n Verenigde Suid-Afrikaanse ruilplatform."
92    },
93    se: {
94      welcome: "Rea u amogela go Mzansi Marketplace!",
95      description: "Setšhaba sa borai sa mebaro sa Afrika Borwa."
96    },
97    ts: {
98      welcome: "U amukeriwile eMzansi Marketplace!",
99      description: "Xipulatifomo xa barter xa Afrika Dzonga lexi hlanganisiweke."
100    }
101  };
102
103  function setLanguage() {
104    const lang = document.getElementById("language").value;
105    localStorage.setItem("lang", lang);
106    updateText(lang);
107  }
108
109  function updateText(lang) {
110    const text = translations[lang] || translations["en"];
111    document.getElementById("welcome").textContent = text.welcome;
112    document.getElementById("description").textContent = text.description;
113  }
114
115  document.addEventListener("DOMContentLoaded", () => {
116    const lang = localStorage.getItem("lang") || "en";
117    document.getElementById("language").value = lang;
118    updateText(lang);
119  });
120
121
```

#### e. Sample CSS Code



```
style.css
37 .main-nav ul {
38     list-style: none;
39     padding: 0;
40     margin: 0;
41     background-color: #222;
42     display: flex;
43     justify-content: center;
44 }
45
46 .main-nav li {
47     margin: 0 15px;
48 }
49
50 .main-nav a {
51     display: block;
52     padding: 15px 20px;
53     color: white;
54     text-decoration: none;
55     font-weight: bold;
56 }
57
58 .main-nav a:hover {
59     background-color: #444;
60 }
61
62 .features {
63     display: flex;
64     justify-content: space-around;
65     flex-wrap: wrap;
66     margin-top: 30px;
67 }
68
69 .feature-card {
70     background-color: white;
71     border-radius: 10px;
72     padding: 15px;
73     width: 250px;
74     box-shadow: 0 2px 8px rgba(0,0,0,0.15);
75     margin: 10px;
76     transition: transform 0.2s ease-in-out;
77 }
```

f. Sample MySQL Table Screenshots



The top screenshot shows the phpMyAdmin interface for the 'mzansi\_marketplace' database. The left sidebar shows the database structure with 'mzansi\_marketplace' selected. The main panel shows the 'Structure' view of the database, listing three tables: 'cart', 'products', and 'users'. The 'products' table is highlighted.

The bottom screenshot shows the phpMyAdmin interface for the 'mzansi\_marketplace' database, specifically the 'Table: products' view. The left sidebar shows the database structure with 'mzansi\_marketplace' selected. The main panel shows the 'Table: products' view, displaying a list of products with columns: id, seller\_id, title, description, image, price, quantity, area, and barter\_option. The products listed are:

id	seller_id	title	description	image	price	quantity	area	barter_option
3	1	Zulu Beads	Beautiful handmade beadwork. Cultural and stylish	assets/uploads/1749227986_zulu_beads.jpg	200.00	15	Durban	both
5	1	Mountain Bicycle	Mountain bike with gears, great for trail rides an...	assets/uploads/1749228490_mountain_bike.jpg	1050.00	1	Johannesburg	cash
7	1	2013 Sony Alpha 7R	36.4MP Full-Frame Mirrorless Camera. Legendary res...	assets/uploads/1749228952_2013_sony_camera.jpeg	600.00	2	Pretoria	both

## 2.5. Conclusion

The e-trading platform is designed to suit the unique requirements of South African consumers and informal traders. With the added functionalities of a hybrid barter system, local payment gateways, and cutting-edge security features, the platform will be able to deliver a seamless and inclusive trading experience. The prototyping, design, and coding stages have laid a strong foundation for the platform's development in addressing the needs of users and fostering economic growth and digital inclusion.



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## References

geeksforgeeks, 2024. *geeksforgeeks: Class-Responsibility-Collaboration Card*. [Online]  
Available at: <https://www.geeksforgeeks.org/class-responsibility-collaboration-card/>  
[Accessed 16 March 2025].

Lucidchart, 2023. *What is an Enhanced ER Diagram?*. [Online]  
Available at: <https://www.lucidchart.com/pages/enhanced-entity-relationship-diagram>  
[Accessed 17 March 2025].

Lucidchart, 2023. *What is an ER diagram?*. [Online]  
Available at: <https://www.lucidchart.com/pages/er-diagrams>  
[Accessed 14 March 2025].

Lucidchart, 2024. *CRC cards*. [Online]  
Available at: <https://www.lucidchart.com/pages/templates/crc-cards>  
[Accessed 16 March 2025].

Lucidchart, 2025. *LucidChart: UML Use Case Diagram Tutorial*. [Online]  
Available at: <https://www.lucidchart.com/pages/uml-use-case-diagram>  
[Accessed 4 March 2025].

w3schools, 2024. *PHP: MySQL CREATE TABLE*. [Online]  
Available at: [https://www.w3schools.com/php/php\\_mysql\\_create\\_table.asp](https://www.w3schools.com/php/php_mysql_create_table.asp)  
[Accessed 18 March 2025].

w3schools, 2024. *PHP: MySQL DATABASE*. [Online]  
Available at: [https://www.w3schools.com/php/php\\_mysql\\_create.asp](https://www.w3schools.com/php/php_mysql_create.asp)  
[Accessed 13 March 2025].