**COEN 6312: E-Commerce System**

**Deliverable 1**

**Submitted To:**

Prof. Abdelwahab Hamou-Lhadj

**Submitted By:**

**Group 10**

Hephzibah Pocharam - 40127128

Nikhil Verma - 40160264

Chirag Jhamb - 40169876

Divyaa Mahalakshmi Guruswamy- 40167923

Jayapriya Muthuramasamy - 40184587

Abdul Rahman Koleilat - 40086025

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# PART 1

## TEAM DESCRIPTION

| Team Member's Name | Team Member's ID Number | Expertise |
|---|---|---|
| Hephzibah Pocharam | 40127128 | Knowledge in Python, C++, HTML & SQL |
| Nikhil Verma | 40160264 | Worked one year as a DevOps engineer with a knowledge of Python , Linux, SQL , HTML , CSS, GIT |
| Chirag Jhamb | 40169876 | Knowledge in Python , SQL , HTML , CSS , C# , Java. |
| Divyaa Mahalakshmi Guruswamy | 40167923 | Knowledge in C++, python, HTML, SQL, GIT and Java (beginner) |
| Jayapriya Muthuramasamy | 40184587 | Knowledge in python, C++, HTML and SQL |
| Abdul Rahman Koleilat (**Team Leader**) | 40086025 | Worked for about two years as a backend developer with a knowledge in Java, Python, Golang, SQL, Linux, GIT |

**Table 1: Team Details**

# PART 2

## SYSTEM DESCRIPTION

The E–Commerce system is a website which provides a platform to the customers for buying their required products from the retailer.

The potential users of the E-commerce system include the customer and retailer and the administrator is also an actor in the system.

The customer has an option of adding all the required products to the cart before purchase. The customer has the option of choosing his payment method. If the customer wants to cancel the order (before or after delivery of the product) the required actions are taken, and a refund is processed from the retailer's end.  The customer can also rate and provide feedback on the purchased product.

The retailer can add the products to the website and can set a price, provide the description of the product. The retailer also has the responsibility to ship the purchased products to the customer. The retailer can view the feedback and the rating of the product from the customer.

There is also an administrator who manages the overall system, which includes proper functioning of the website with assured security and ensuring the privacy of the users. The data of the customer is shared only to the required seller. The administrator also categorizes the products provided by the retailer.

## FEATURES OF THE SYSTEM

**Customer**

- Login/ Signup
- Authentication
- View products
- Add products to the cart
- Order selected products
- Track order

- Cancel the order before delivery
- Cancel the order after delivery
- Request for refund
- Checkout and pay for the product
- Rate the purchased product and add feedback
- Contact retailer

**Retailer**

- Login/ Signup
- Authentication
- Add/ remove/ edit products
- Add product description
- Setting the price for each product
- Contact customers
- Refund customers
- Ship the product to customer's location
- View customer's feedback and rating

**Administrator**

- Categorize the product
- Manage overall system
    a) Maintain the privacy of the users
    b) Ensure secure communication between customer and retailer
    c) Ensure proper working of the website

## REQUIREMENTS

| NO. | FUNCTIONAL REQUIREMENTS |
|-----|-------------------------|
| 1. | The system should allow users to register by providing their details. |

| 2. | The system should allow users to login to their account using their username and password. |
|---|---|
| 3. | The system should allow users to view and edit their profile. |
| 4. | The system should allow customers to view and browse all the products. |
| 5. | The system should allow the customer to add products to the shopping cart. |
| 6. | The system should allow the customer to pay on checkout. |
| 7. | The system should allow the customer to choose the method of payment. |
| 8. | The system should allow the user to view the delivery details. |
| 9. | The system should allow the customer to track their order and view the current location of the order. |
| 10. | The system should allow the customer to rate a purchased product and add feedback. |
| 11. | The system should allow the customer to contact the retailer if they want to ask any questions regarding a certain product. |
| 12. | The system should allow the customer to cancel the order. |
| 13. | The system should allow the customer to request a refund. |
| 14. | The system should allow the customer to return the product after cancellation. |
| 15. | The system should allow the retailer to add a new product with its description. |
| 16. | The system should allow the retailer to remove an existing product. |
| 17. | The system should allow the retailer to edit the product details. |

| NO. | |
|---|---|
| 18. | The system should allow the retailer to contact the customer in case there is any problem with the order. |
| 19. | The system should allow the retailer to view the customer's address for shipping the purchased product. |
| 20. | The system should allow the retailer to refund the customer. |
| 21. | The system should allow the retailer to receive payment. |
| 22. | The system should allow the administrator to categorize the products provided by the retailers. |
| 23. | The system should allow the user to contact or chat with live support whenever there is an issue. |

**Table 2: Functional Requirements**

| NO. | NON-FUNCTIONAL REQUIREMENTS |
|---|---|
| 1. | The user's information should not be associated with third party services and their information should be protected. |
| 2. | The website should be available all the time. |
| 3. | The website should be stable and well-maintained. |

**Table 3 Non-Functional Requirements**

## USE CASE DIAGRAM
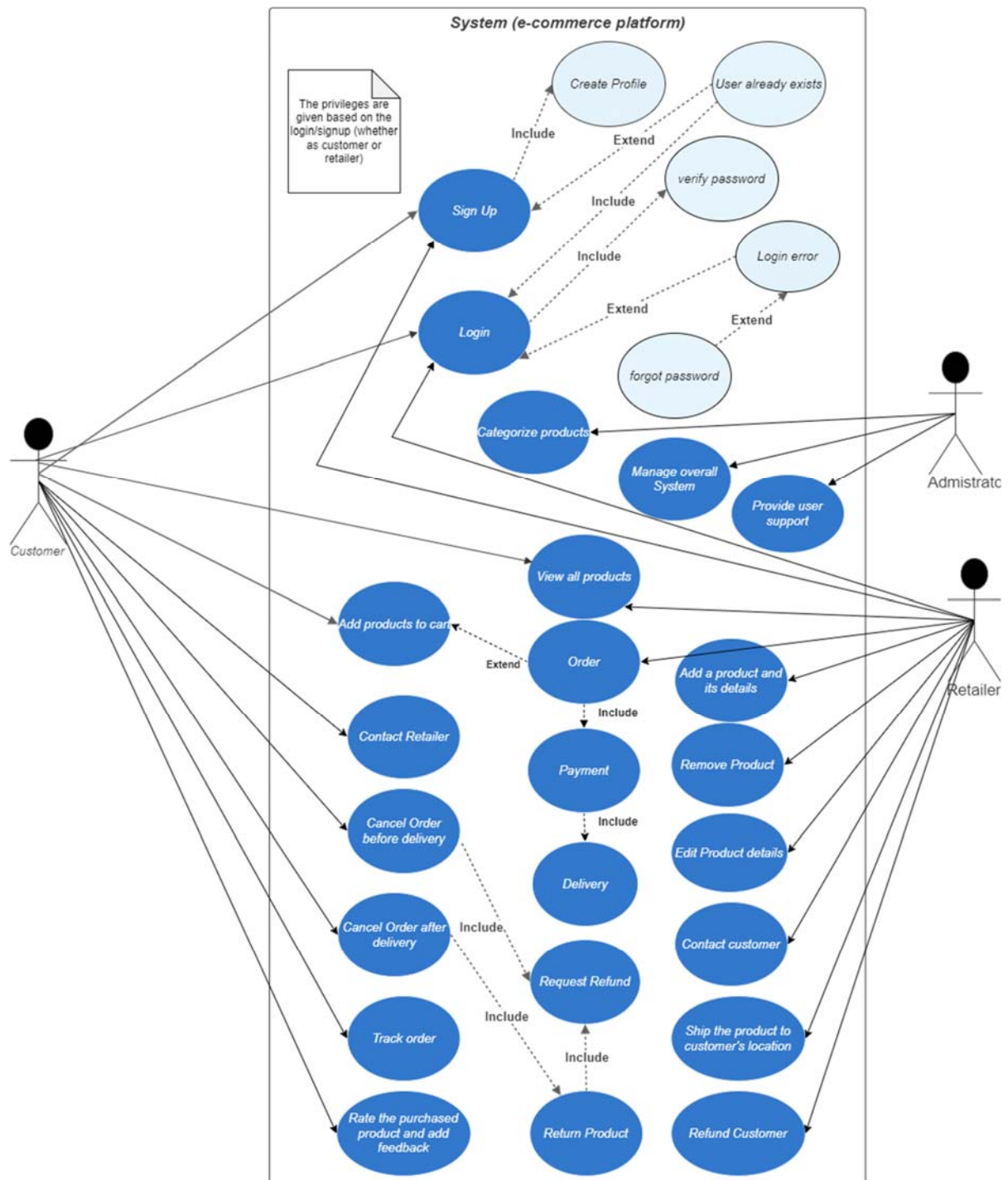


**Figure 1: Use case Diagram of the E-commerce website**

In the Use Case Diagram, there are three main actors which are -

1) **Customer:** The customer performs the following functions -

A) **Sign Up:** The customer can sign up by giving in their details and create a profile if he is visiting the website for the first time. If there exists a case where the user tries to sign up and create a profile using an email which is already registered. They will not be able to do it and a prompt will be given that the user already exists for that given email.

B) **Login:** If the User has already created a profile, then he/she can login to the website by providing the credentials (username and password) used during registration. If the customer forgets the password, he can request for password reset.

C) **View All Products:** The customers can view all the products which are available on the website provided by the retailers.

D) **Add Products to Cart:** The customer can add the products he wishes to buy to the cart.

E) **Payment:** After adding the products to the cart, the next step is payment. The customer can choose the method of payment that they are comfortable with and then proceed to pay for the products they wish to buy.

F) **Delivery:** The details of the delivery can be viewed by the customer, where it shows the status of the delivery (which includes Transit location and date of arrival).

G) **Contact Retailer:** The customer can be in contact with the retailer incase of any queries regarding the product.

H) **Cancel Order:**
   i) **Before Delivery:** If the customer changes their mind and doesn't want the product at any point in time before the delivery, they can cancel the order and request a refund.

ii) **After Delivery:** If the customer is not satisfied with the product, they can cancel the order and return the product to obtain a refund.

I) **Rate Product:** The customer can add rating and feedback for the product once purchased.

2) **Retailer:** The Retailer performs the following functions -

A) **Sign Up**: The retailer can sign up on the website just like the customers and if they try to sign up with an email that has already been registered, there will be a prompt that this email is already registered so that the retailer knows that he needs to use the log-in feature for that email.

B) **Login**: The retailer can Login using the email and password he used during the registration, in a certain case if he forgot his password. He can reset his password using the email address he used, and a password reset link would be sent on that email.

C) **View all Products**: The retailer can also view all the products that are being sold on the website and the products which he has added for sale.

D) **Payment**: The retailer will get to know whether the payment is made by the customer or not and the amount paid.

E) **Add products and its description**: The retailer can add new products along with its description to the website which he wishes to put up for sale.

E) **Remove product**: The user can also remove certain products which he previously added incase that product is out of stock or not available anymore.

F) **Edit product**: By this feature, the retailer can edit the details of the product like its price, size, color etc.

G) **Contact customer** : If there is a certain case where the retailer wants to contact the customer say for the verification of the customer's address, he can do it.

H) **Ship the product to the customer:** The retailer is responsible for the shipment of the product to the address provided by the customer.

I) **Refund customer**: If the customer is not satisfied with the product and wishes to return it and ask for a refund, then it is the retailers' responsibility to refund the customer and he can do it using this feature.

**3) Administrator:** The Administrator performs the following functions-

A) **Categorize the products:** The administrator can categorize the products added by the retailers.

B) **Manages the Overall System:** The administrator also manages the overall system and makes sure that the website does not crash.

C) **Provide User Support:** The administrator also helps in certain cases if there is any live support required to be provided to either the customers or the retailers.

# EXPECTED USER INTERFACE OF THE E-COMMERCE SYSTEM

Few of the User Interface are depicted below:

1) **The Register page**: The user can register in the E-commerce platform by providing the necessary details (as shown in Figure 2). There is an option given to the user to either be a customer or a retailer. The privileges are given based on the selected option.
For instance, the customer can only view and purchase the products whereas the retailer can add products and edit the details related to the product.
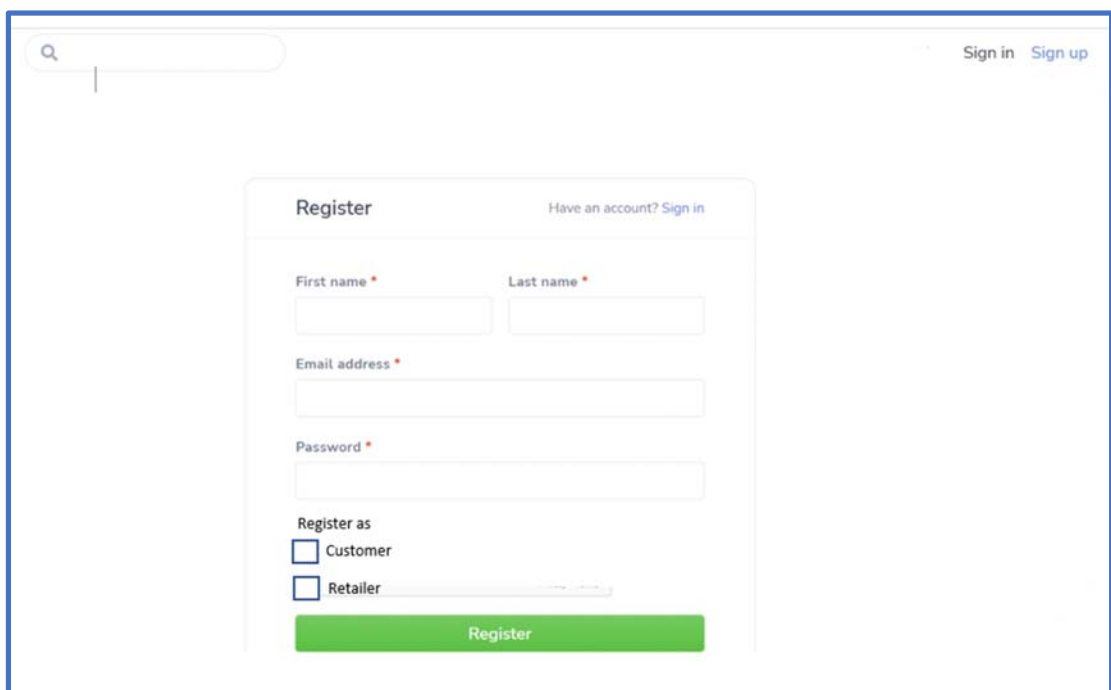


**Figure 2: Registration page of the E-commerce website**

2) **Login page**: The registered user can login by providing the necessary details. The user also selects if they are a customer or a retailer (as shown in Figure 3).

**Figure 3: Login page of the E-commerce website**

3) **View Inventory**: If the user is a customer, they will be able to view all the products in the ecommerce platform and add the products to the cart. As shown in the below figure (Figure 4) the user can view all the products of the category clothing.
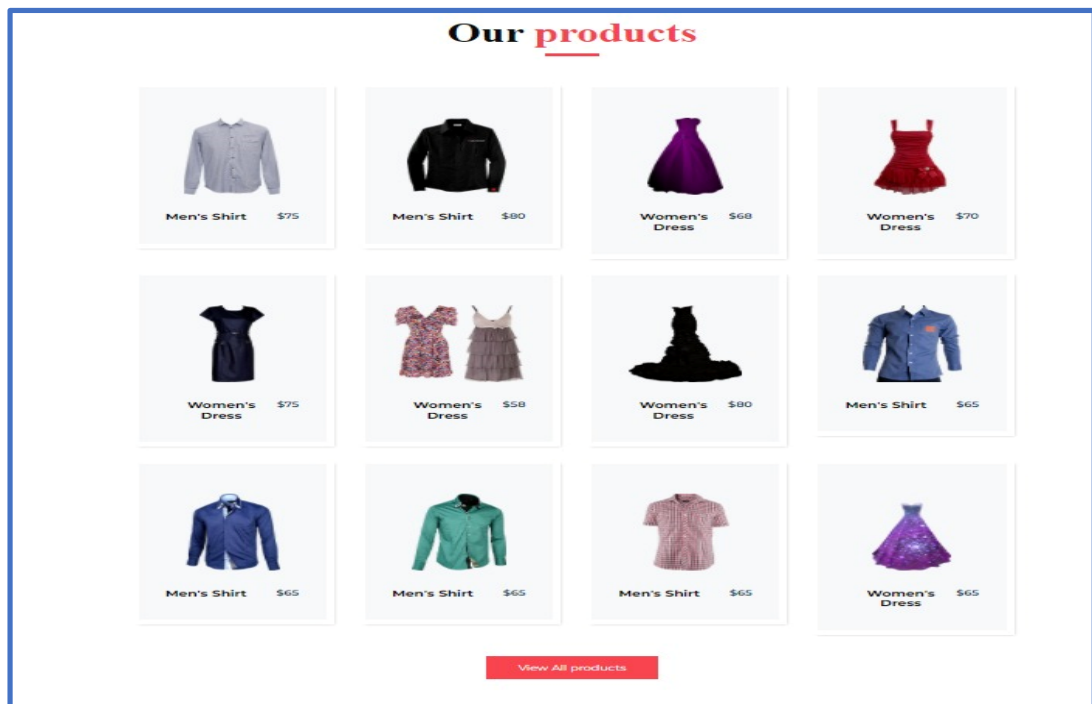
**Figure 4: Sample Inventory view of the E-commerce website**

4) **The Cart**: The products added by the customer from the inventory can be viewed in the cart before confirmation to checkout (as shown in Figure 5).
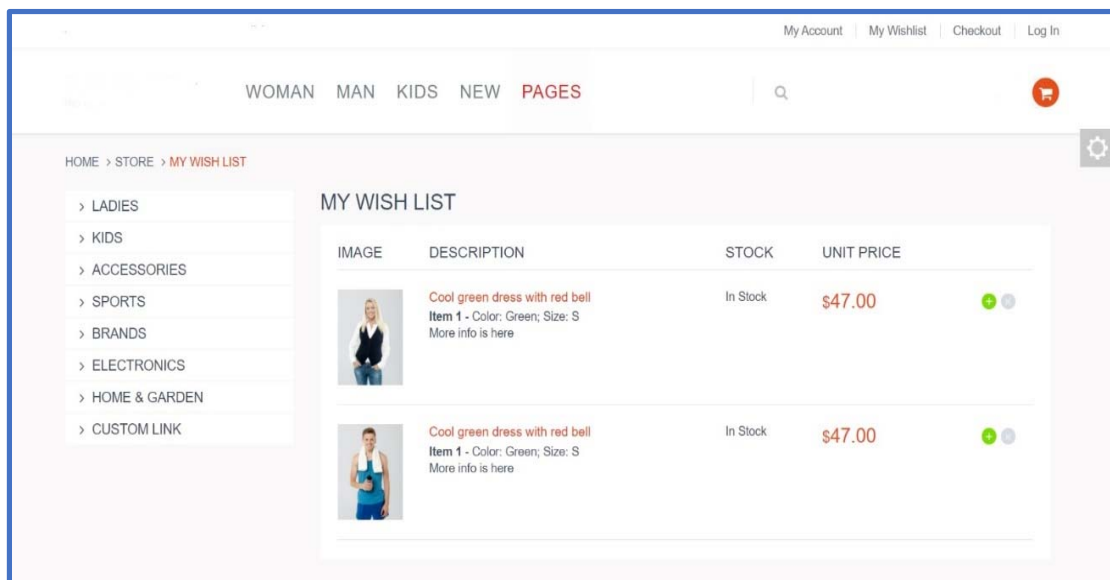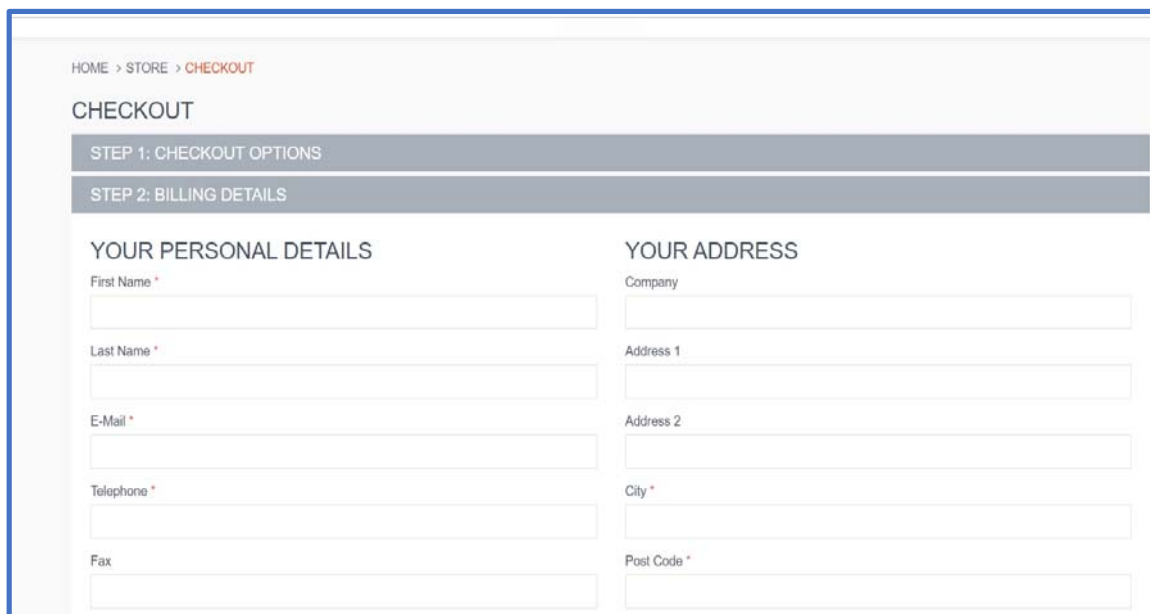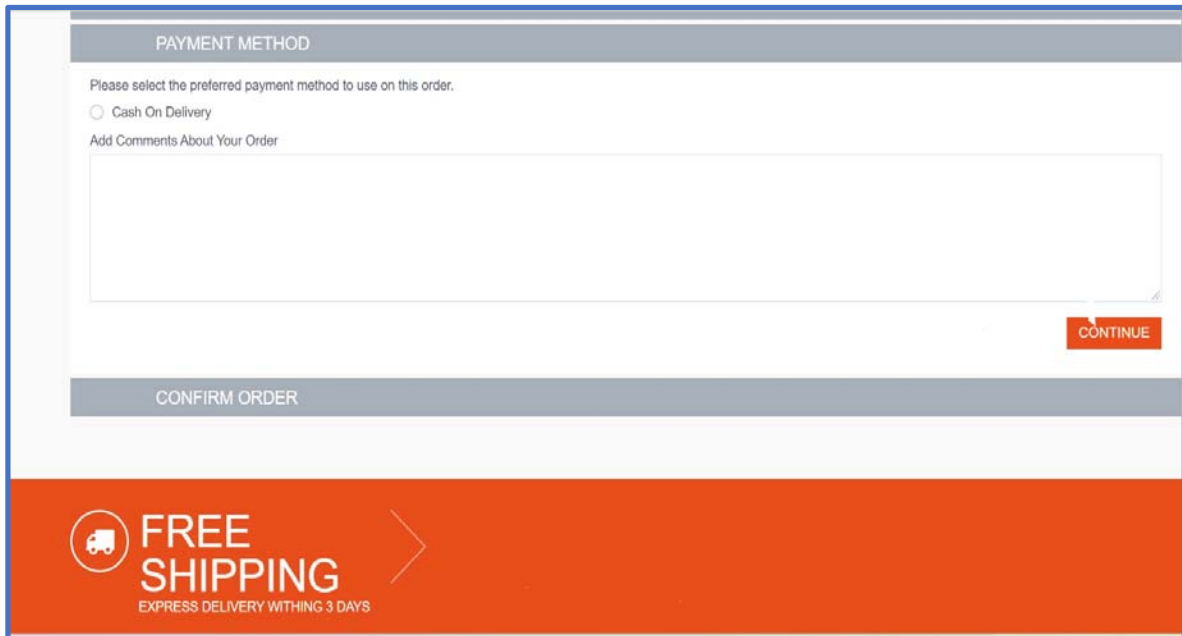


**Figure 5: The Cart page of the E-commerce website**

5) **The Checkout Interface**: The checkout page is displayed, where the billing address details are obtained from the customer to ship the products (as shown in Figure 6).
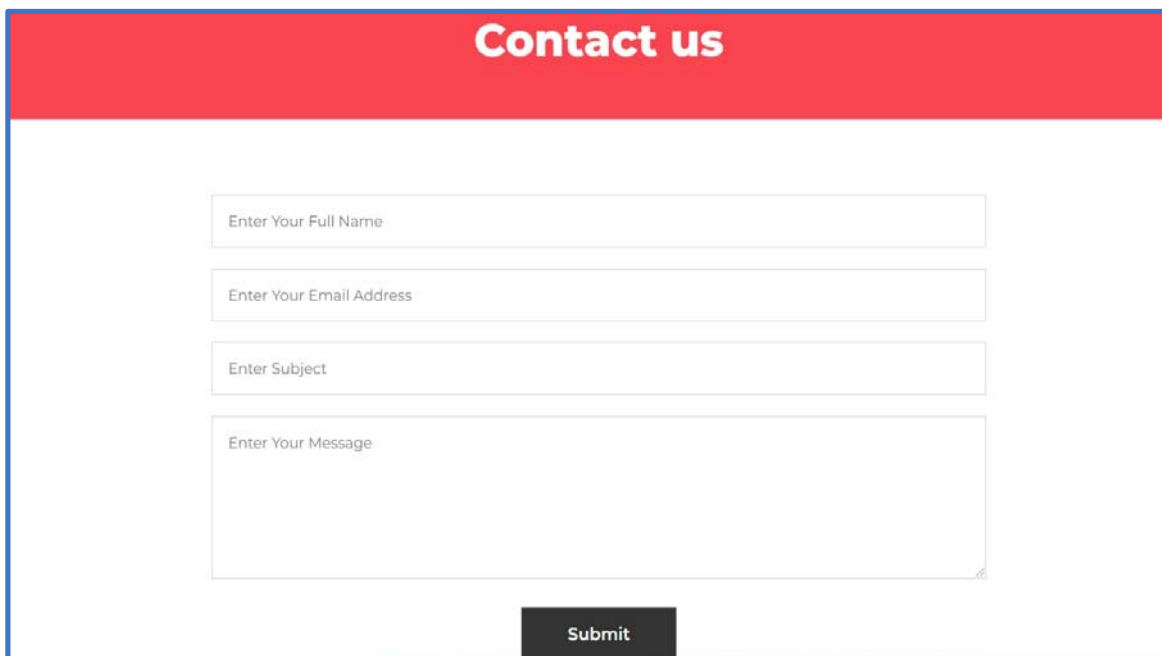


**Figure 6: Check-out Interface of the E-commerce website**

6) **The Payment Page Interface**: The payment information is obtained from the customer for confirming the order (as shown in Figure 7).

**Figure 7: Payment Interface of the E-commerce website**

7) **Contact Us Page**: The customer has an option to interact with the retailer as shown in the below figure (Figure 8), if he/she has any issues with the product or service.



**Figure 8: Contact-Us page of the E-commerce website**

# PART 3

## CLASS DIAGRAM (Developed in Papyrus Software)
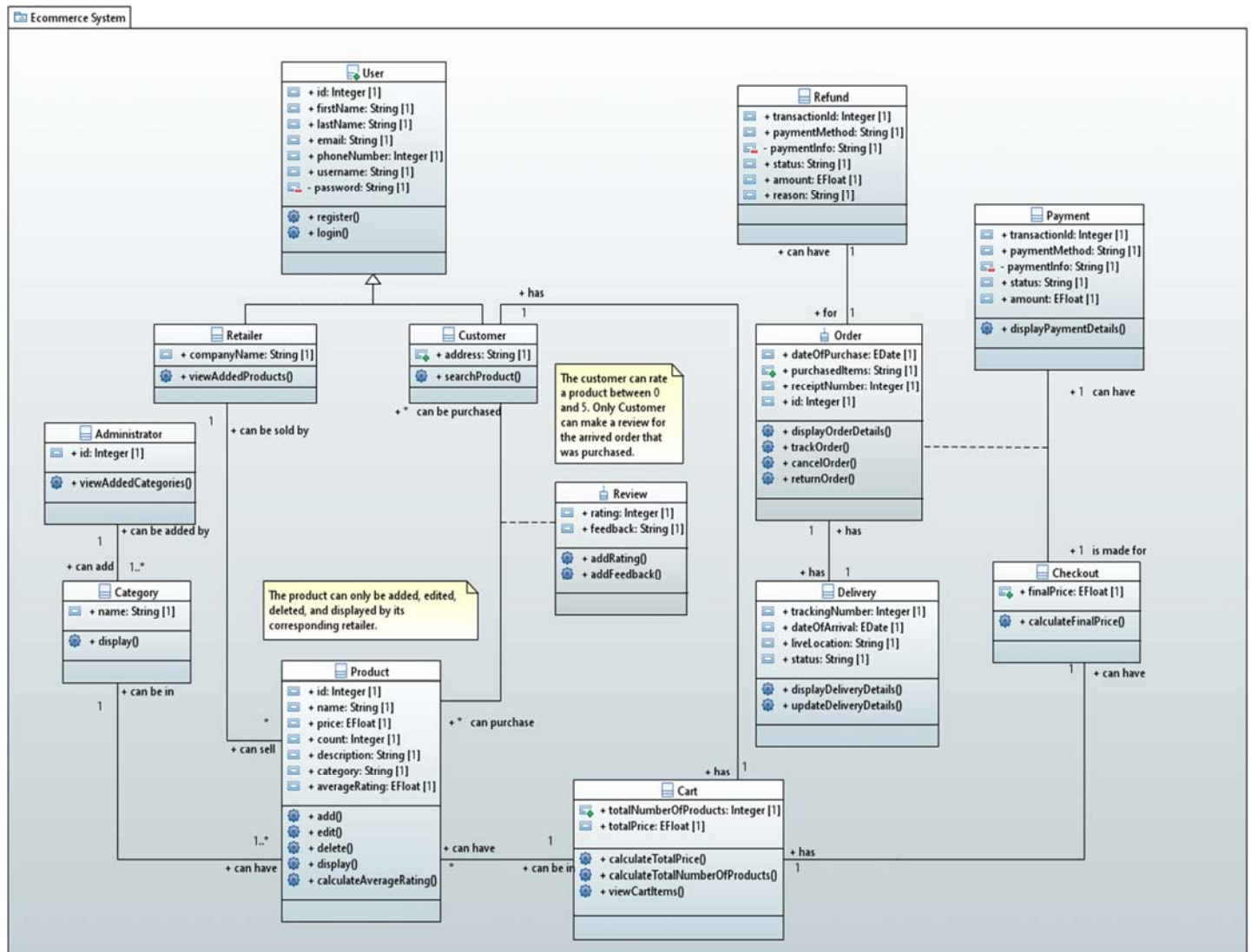


**Figure 9: Class diagram of the system developed in Papyrus software**

The class diagram consists of thirteen classes:

    a.  The User class is an abstract class which has two classes that inherit it which are the Retailer class and the Customer class. The User class has the following attributes: id, firstName,

lastName, email, phoneNumber, username, and password which is private. It has two functions: register() and login().

b. The Retailer class has companyName as an attribute and viewAddedProducts() as a function. It inherits the User class and is associated with the Product class whereby the retailer can sell zero or more products.

c. The Customer class has address as an attribute and searchProduct() as a function. It inherits the User class and is associated with the Product class and the Cart class. It also has an association class which is the Review class. The customer can purchase zero or many products and has one shopping cart.

d. The Review class is an association class that has two attributes: rating and feedback. It has two functions: addRating() and addFeedback(). The customer can rate the purchased product between 0 and 5 after their order arrives.

e. The Product class has the following attributes: id, name, price, count, description, category, averageRating. It has the following functions: add(), edit(), delete(), display(), calculateAverageRating(). It is associated with four classes: Retailer, Customer, Category, and Cart. The product can be sold by one retailer, can be purchased by zero or more customers, can be in one category, and can be one cart. The product can only be added, edited, deleted, and displayed by its corresponding retailer.

f. The Cart class has two attributes: totalNumberOfProducts and totalPrice. It has three functions: calculateTotalPrice(), calculateTotalNumberOfProducts(), and viewCartItems(). It is associated with three classes: Product, Customer, and Checkout. The cart can have zero or more products, has one customer, and can have one checkout.

g. The Checkout class has finalPrice as attribute and calculateFinalPrice() as a function. It is associated with Cart and Payment classes. Checkout has one cart and can have one payment.

h. The Payment class has the following attributes: transactionId, paymentMethod, paymentInfo which is private, status, and amount. It has displayPaymentDetails() as a function and it is associated with Checkout. Payment is made for one checkout.

i.  The Order class is an association class between Checkout and Payment. It has the following attributes: dateOfPurchase, purchasedItems, receiptNumber, id. It has the following functions: displayOrderDetails(), trackOrder(), cancelOrder(), returnOrder(). It is associated with two classes: Refund and Delivery. Order has one delivery and can have one refund.

j.  The Delivery class has the following attributes: trackingNumber, dateOfArrival, liveLocation, and status. It has two functions: displayDeliveryDetails() and updateDeliveryDetails(). It is associated with the Order class. Delivery has one order.

k.  The Refund class has the following attributes: transactionId, paymentMethod, paymentInfo which is private, status, amount, and reason. It is assoicated with the Order class. Refund is made for one order.

l.  The Administrator class has id as an attribute and viewAddedCategories() as a function. It is associated with the Category class. Administrator can add one or more categories.

m.  The Category class has name as an attribute and display() as a function. It is associated with two classes: Administrator and Product. Category can be added by one administrator and can have one or more products.

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