DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

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Report - Deliverable 1
on
E-COMMERCE SYSTEM

Course Instructor

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Introduction

E-Commerce system refers to the electronic commerce system which is a business model that allows various companies to sell and buy things over the internet. For instance, the goods such as mobile phones, TVs, books, plane tickets can be bought and sold online. This business is carried out over computers, laptops, mobile phones and other smart devices. In today's era, most of the things are purchased online over internet which reduces the need of manually going to the market and invest time in buying stuff from various shops.

Today, E-Commerce has proven to be beneficial to various small businesses and has helped them grow and establish a wider market in a less costly way. The main players of E-Commerce are buyers, sellers and producers. Buyers refer to the people interested in buying the goods and sellers refer to the people who offer goods and services to buyers whereas producers are the people who create the product and services which the seller offer to the buyer. E-Commerce operates in mainly 4 market segments:

1. Business to business (B2B) which is related to the direct purchase and sale of things between various businesses.
2. Business to consumer (B2C) which is related to the purchase and sale of goods between customers and businesses.
3. Consumer to Consumer (C2C) which allows the people to sell to one another through a third-party site such as eBay or Amazon.
4. Consumer to Business (C2B) which lets people sell to businesses such as licensing their work to be used by a different corporation.

Benefits of E-Commerce system

- Use of E-Commerce system can help overcome geographical limitations as a person can buy and sell through any place in the world.
- One of the main advantages of E-Commerce system is the lowered cost. The automation of payments, billing and other processes reduce the need of more employees which reduce the costs and these reduction in cost is passed on to the consumers in the form of discounts.
- E-Commerce eliminates the need to travel to various shops to buy the goods and thus saves time and cost.
- E-Commerce offers various deals, bargains and coupons which prove to be beneficial to the customers.
- These online shops remain open all the time. People can buy and sell 24/7.365 without any restrictions.

Our project is based on the one of the four major categories of E-Commerce system i.e., Business to Consumer model (B2C) which involves direct selling of goods between customers and sellers. So, there is no middle man between customers and sellers, therefore, this system is also called direct selling or retail selling E-Commerce system. B2C typically refers to the online retailers who sell the goods to the consumers through internet. Our website includes direct sellers and buyers who will be selling and buying the goods over internet. The main categories of the products sold and bought through our website are clothes, accessories, cosmetics, foods and electronic items.
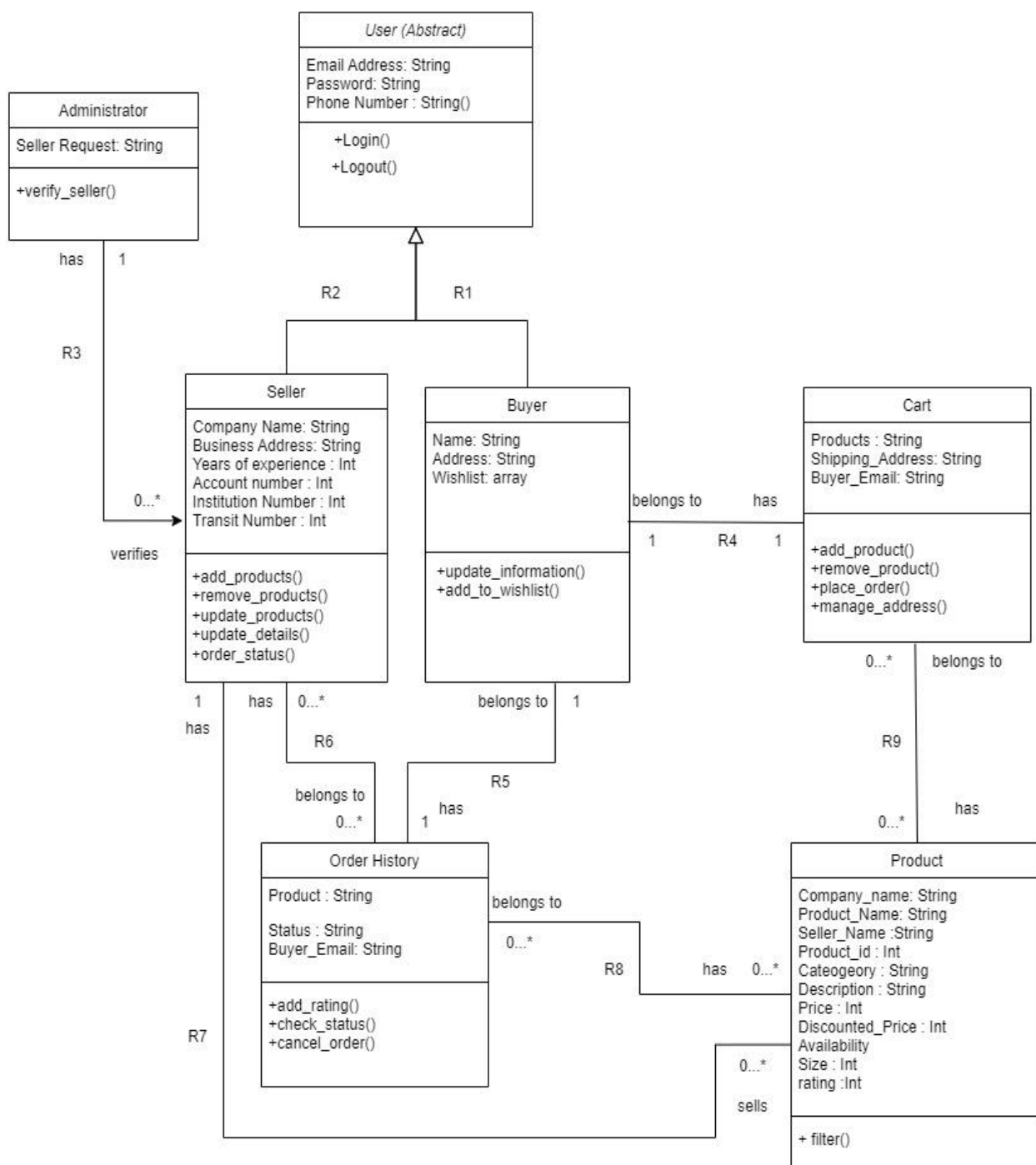
Class Diagram

Fig. 1 - Class diagram of the system

The above class diagram represents the initial structure of the Application. User Class represents the type of users who are going to use this application. Two type of users can login into the web application namely Seller and Buyer. The Buyer and Seller classes are being inherited from the main

User class. Buyer class has attributes like- Name, Address and Wishlist. Then, it also has two methods to update the wish list and personal information. This Buyer class is further associated with Cart and Order History classes and has one to one association with both of these classes. Coming to Seller Class, it has attributes like company name, business address, years of experience and seller bank details. These details are cross checked by the admin and hence the Admin class has attribute which contains all the seller requests received and a method to either approve or reject the registration requests. Seller class also have methods to modify the availability of products and to update the order status to the buyer. Seller Class is also associated with Order History class and the association is zero to many on both sides. Cart class which is associated with buyer class and has attributes for the Products that user is going to purchase and the buyer's shipping address for that order. Product Class has attributes related to the product information, availability and rating. The Product class is associated with the Cart, Order History and Seller classes and the kind of association is specified in the class diagram as well.

Application Features
- Any user might be registered or not can view products being sold on the website.
- Seller needs to register the business before any operation.
- User needs to register before purchasing any item on the website and the user can view and edit the details anytime on the website. User can save multiple delivery addresses linked to the same account.
- Products displayed on the website are categorised into different segments and buyer can search products accordingly.
- Buyer can maintain a wish list, which can be reviewed anytime later.
- Buyer can add, remove, change quantity of all the items in the cart. After placing order, buyer can give rating to the item purchased.
- Seller can add, remove, change availability, update price, give discount of the products offered to customer.
- Seller provides the order status to the customer of the item being purchased.

Functional Requirements
- A user should be able to register as a buyer/customer.
- Any unregistered user can also search products being sold on the website.
- Any business can request to register as a seller on the website.
- Admin must approve the business request to add as a seller on the website.
- Existing buyers or sellers can login to their account on the website.
- Buyers can search various products by product category offered by different sellers.
- Buyers can also filter their search based on options available.
- Buyers can update information like password, address, and phone number.
- Buyers can add multiple addresses linked to their account.
- Buyers must choose one address as the shipping address while placing an order.
- Buyers can add products in their Wishlist.
- Buyers can add products to their cart.

- Buyer can order all items which are added in their cart.
- Buyer can remove any item from the cart.
- Buyer can cancel an order within 24 hours of placing it.
- Seller can add or remove the products which are being sold by the business.
- Seller can update the availability of the product being sold on the platform.
- Seller can update the price of the product being sold on the platform.
- Buyer can add rating for the products purchased by him/her after the delivery.
- Seller can update the status of the order placed by the buyer.

Non-Functional Requirements

- A user must enter email, password (minimum 7 characters), name (minimum 3 characters and maximum 30 characters), address (minimum 15 characters and maximum 100 characters) and phone number while signing up as buyer and system should store all the details.
- A user must enter email, password (minimum 7 characters), business name (minimum 3 characters and maximum 30 characters), business address (minimum 15 characters and maximum 100 characters), bank account number, institution number, transit number and phone number while signing up as seller and system should store all the details.
- One-time password should be sent to verify the email when the buyer or seller sign up
- A user can only search for products while being logged of from account.
- Admin can see the registration requests from sellers after logging in and must click on approve button to approve the request.
- Once the seller registration request is approved an email should be sent to the seller and only then the seller should be able to login.
- Seller or buyer must enter the email and password for logging in and system should verify the details.
- After logging in buyer can see the highest rated products and seller can see the products which the business is offering at that time.
- Buyers can save up to 5 addresses linked to their profile.
- Buyers can filter their product search based on price range and the preferred size (if applicable).
- Buyers can add up to 5 products in the cart and up to 10 products in the Wishlist.
- While adding product seller must upload a picture of the product and enter details such as product category, product name, company name, size (if applicable), original price, discounted price (if applicable) and availability status.
- Seller can choose availability status as "in-stock", "will be out soon" or as "out of stock"
- Buyer can rate a product on a scale of 5 stars.
- Hashing should be used to secure sensitive user data.
- Buyers should not be able to order a product if it is out of stock.
- Sellers can update the product price, remove the product, and update the status of orders received only by logging in to their profile.
- The status of the order received can either be "in processing", "shipped", "order cancelled" or "delivered".

- The response time of the website (response time refers to the latency time while the system access, queries and retrieves the information from the database) should be less than 2 seconds.

User Stories

- As a user, I want to submit my details so that I can sign up to use the website.
- As a user, I want to search the products by category so that I can buy them.
- As a user, I want to login so that I can use the website.
- As a seller, I want to add products so that buyers can buy them.
- As a seller, I want to remove the products so that buyers can only see products which are currently being offered.
- As a seller, I want to update the price of the product so that buyers can see the updated price.
- As a seller, I want to update the status of the order so that the buyer can be aware of his/her order status.
- As a seller, I want to update the availability of the product so that buyers can see which product is out of stock or which one will be out soon.
- As a buyer, I want to filter my search so that I can choose from relevant products.
- As a buyer, I want to add a product to my cart so that I can order it.
- As a buyer, I want to place an order for products in my cart so that I can buy them.
- As a buyer, I want to remove a product from my cart so that I can only buy products which I want.
- As a buyer, I want to cancel my order so that the order is not delivered to me.
- As a buyer, I want to rate a product so that other buyers can take better decision before buying any product.
- As a buyer, I want to add new address so that I can select from multiple address while placing my order.
- As a buyer, I want to add items to my Wishlist so that I can quickly see through the products which I wanted to buy.

Expected User Interface

Before log-in

Fig.2 – Expected User interface before login

Login Page (Customer and Seller)

Fig.3 – Expected User interface for login page

Logo

Home   Cart   About Us   Login

Registration

E-mail

Password

Re-type Password

Full Name

Address

Mobile Number

Create Account

Fig.4 – Expected User interface for sign up page for buyer before

Logo

Home   Cart   About Us   Login

Registration

E-mail

Password

Re-type Password

Company Name

Company Address

Mobile Number

Years of Operation

Operating CIty

Submit

Fig.5 – Expected User interface for sign up page for seller
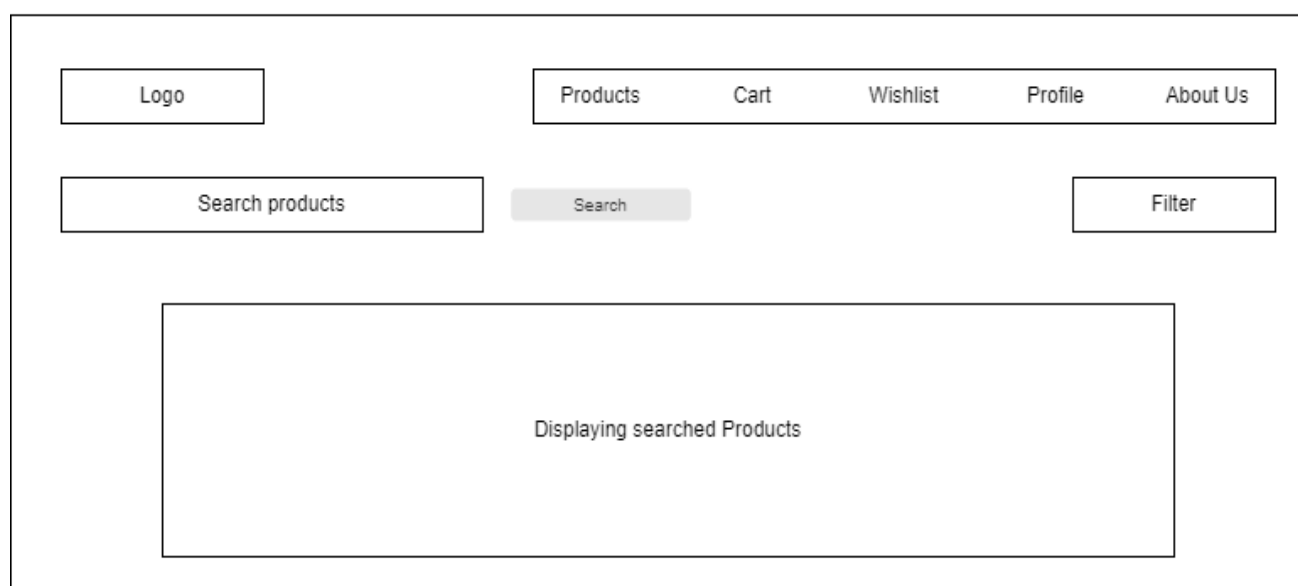
After Login as a Buyer

Logo		Products	Cart	Wishlist	Profile	About Us

Search products	Search		Filter

Displaying searched Products

Fig.6 – Expected User interface after login as a buyer before login

After Login as a Seller

Logo		Dashboard	Orders	Products	Profile	About Us

Display information according to the request

Fig.7 – Expected User interface after login as a seller

Adding Products to cart by buyer

Fig.8 – Expected User interface adding products to cart by buyer

Team Members and Expertise

Team Members	Expertise
Gurveen Kaur Baweja (Team Leader)	JAVA (Advanced), SQL, HTML, CSS, JavaScript, Bootstrap
Karanjot Singh Kochar	Python, Java (Beginner), C++, HTML, CSS, MongoDB, MySQL
Navdeep Singh	Python, Java (Beginner), C++, HTML, CSS, MongoDB, MySQL
Sri Harsha Vellaturi	Java (Beginner), HTML, CSS, Python, SQL, C++
Srinath Ananthula	Python, C, C++ (Beginner), JAVA (Beginner), SQL, HTML, CSS
Parul Maini	HTML, CSS, Python, MySQL, Bootstrap

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