

E-Commerce Website

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ICT 4102: Artificial Intelligence Lab

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Declaration

This project report entitled “E-Commerce Website” is submitted to the Institute of Information Technology, Jahangirnagar University, Savar, Dhaka in partial fulfillment of the requirements for having the B.Sc. (Hons.) degree in IIT. This is also needed to certify that the project work is under the 3rd Year 2nd Semester course of the ‘ICT-3200: Project Work and Course Viva’. So, we are here declaring that this project report has not been submitted elsewhere for the requirement of any kind of degree, diploma or publication.

Abstract

E-Commerce plays a great importance in the modern business environment. It has opened the door of opportunity and advantage to the firms. This project analyzes different issues of online shopping. The aim is to provide a theoretical contribution in understanding the present status of online shopping. It also identifies the problems faced by the consumers when they want to accept internet shopping. E-Commerce is an expressive study based on the detailed review of earlier pertinent studies related to the various concepts of online shopping to discover the concept of online shopping. Solitude and safety risk emerge regularly as a reason for being cautious about internet shopping. The impossibility of product testing, problems with complaints, product return and misuse of personal data are the main doubts regarding E-Commerce. Using this Website, users can browse online shops, compare prices and order merchandise sitting at home on their PC. The user can also purchase online shopping instead of going out. In designing such a system HTML, CSS ,Java-script has been employed as a front-end development language and Django framework based on python used as an back-end development language.

Acceptance

This project report is submitted to the Institute of Information Technology, Jahangirnagar University, Savar, Dhaka in partial fulfillment of the requirements for having the B.Sc. (Hons.) degree in Information Technology.

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Chapter 1

Introduction

1.1 Background Study

E-commerce website enables customers to make direct purchases of products or services from a seller over the Internet. E-commerce Website are usually available 24 hours a day, and many consumers have Internet access both at work and at home. In contrast, visiting a conventional retail store requires travel and must take place during business hours.

E-commerce Website must describe products for sale with text, photos, and multimedia files, whereas in a physical retail store, the actual product and the manufacturer's packaging will be available for direct inspection. Some online stores provides supplemental product information, such as instructions, safety procedures, demonstrations, or manufacturer specifications. Some provides background information, advice, or how-to guides designed to help consumers decide which product to buy.[1]

One advantage of E-commerce Website is being able to quickly seek out deals for items or services provided by many different vendors. Search engines, online price comparison services and discovery shopping engines can be used to look up sellers of a particular product or service.

1.2 Motivation

The e-commerce website will feature the online shopping facility of various products under a single web space. The proposed web application will allow to do total business using it and increase their reach thousands of times more than today they have, over the internet. The motivation to create this E-commerce website project has many sources. One of the prime purposes behind building an E-Commerce website is to improve sales which will open new doors to connect and network with potential and interested clients. Often user tends to use web search to look for the relevant information and the right site ranking will improve the chance of getting the limelight. For ranking in search engines, E-commerce website is rightly optimized and has the quality information and relevant keywords. The prime reason behind establishing E-Commerce website should be adding comfort to buyers. A custom designed website will have the specific features and functionalities that will not just help the site to stand out but also add great user experience. Having an E-commerce website will make it easier for the business to update online store on available stocks and the addition of any new product, which will keep the buyer updated and aware of the services.[5]

1.3 Problem Statement

Despite having a user-friendly interface and a wide range of products, our e-commerce website is experiencing a high rate of cart abandonment and a low conversion rate. Customers are leaving items in their carts without completing the purchase. Delayed or no response to customer queries leads to frustration and potentially lost sales. The absence of an activation mail feature could make it difficult for customers to create and verify their accounts. The absence of an order confirmation mail feature could make it difficult for customers to track their orders or know the status of their purchases. It requires both the customers to physically visit the stores and browse the various shelves of merchandise as well as the store proprietors to stock, display, and transfer the items the customers need. To complete these tasks, labor, time, and space are required.

Due to the lockdown issues, large to small scale businesses that depends on the traditional suffer a lot of consequences. In E-Commerce there is a lot of competition among e-commerce firms. A user expects to locate what they need quickly and effortlessly when

visiting an online store. The brands and items that consumers desire to buy are also a source of confusion for many of these customers. A wide range of products are on their shopping list. Instead of visiting a specific e-commerce website, many shoppers these days use Google to find the things they need.[2]

1.4 Objectives

The objectives of increasing sales will always remain continuous and constant for an e-commerce business. These are mentioned objectives for our E-Commerce website

1. This website will help in maintaining the details of the profitable growth by expanding customer reach, reducing cost-to-serve, and creating differentiated customer experiences.
2. The main aim of this project is to create an E-commerce website that reaches maximum customers at the right time to increase sales and profitability of the business
3. There is a high scope of e-commerce in each aspect of business. Here are few objectives of our project:
 - a.) To placing the product order quicker.
 - b.) To provide automated responses to queries and perform specific tasks in a conversational manner, Chat-bots are designed.
 - c.) Minimizing costs
 - d.) achieving Two factor authentication by enabling activation mail
 - e.) Eliminating the travelling time and cost
 - f.) Provide comparison shopping by using shopping cart.
 - g.) Provide abundant information about the product
 - h.) Providing customer reliance through Order Confirmation Mail.
 - h.) It remains open all the time

1.5 Research Outline

The rest of the report contains Literature Review in Chapter 2, The literature review will review previous research on e-commerce website design and development, discussing what has already been researched and what has not been researched.

Chapter 3 contains Methodology, the methodology chapter will describe the software development method, software architecture model system designs.

Chapter 4 contains Results and Discussion where the features and UI Design of our proposed model will be shown.

The conclusion of the report contains in chapter 5 where it will draw conclusions and provide recommendations for improving the e-commerce website. Additionally, it will discuss the areas for future work. Finally, the conclusion will draw conclusions from the research and provide recommendations for improving the e-commerce website.

chapter 6 contains References, this section will list all sources used in the report, indicating where the information was obtained.

Chapter 2

Literature Review

The history of e-commerce began immediately after the World Wide Web, or WWW, became a major medium to communicate information around the world. E-commerce applications allow consumers to buy goods or services directly over the internet using a web browser. This online shopping evokes the business-to-consumer (B2C) process where a consumer buys directly from the business. The process where a business buys from another business is called a business-to-business (B2B) process. The best examples of e-commerce applications using B2B process are eBay and Amazon, both of which were launched in 1995. At present, most users of these online shopping-cart applications are people who have higher levels of education, have exposure to technological advancements, and are in a better income group. According to a study in December 2011, Equation Research surveyed 1,500 online shoppers and found that 87 of tablet owners made online transactions during the early christmas shopping season.[3]

Building a new successful e-commerce is simple because of high competition in the market, and the designer of a shopping-cart application must consider the information load, complexity, and novelty. A user friendly design is very critical to the success of any shopping-cart application because, unlike physical stores, consumers at online stores come from all ages, genders, and cultures. Logistics clearly says that, to have a successful and profitable online shopping application, businesses have to spend a significant amount of time and money for designing, developing, testing, and maintaining the application. A typical shopping cart should contain certain features such as adding items to the cart and checking out those items using the available payment methods. Most of these server-based applications require data related to the items added in the shopping cart to be kept in

a session object which can be accessed later and manipulated dynamically because the users can add or remove one or more items from the cart. Most simple shopping-cart applications do not allow checkout to be done before any items are added to the cart. There are many examples of online shopping applications developed in different languages. Choosing a development platform and language depends on policies set by the company for which the application is being designed. It also depends on several other factors which are very important when considering the platform to design an application, for example, how portable the application will be after being built or if the application is open sourced.[4]

The e-commerce website is experiencing cart abandonment and low conversion rate despite having a user-friendly interface and a wide range of products. Delayed or no response to customer queries is leading to frustration and potential lost sales. The absence of activation and order confirmation mail features are causing difficulties for customers in creating and verifying their accounts, tracking their orders, and knowing the status of their purchases and customers expect a quick and effortless shopping experience. To address these issues, we have proposed the project to learn about application design and development, featuring basic functions such as user login registering, activation mail, shopping cart, order confirmation mail, checkout, and chat-bot feature for instant communication. Future work may include adding more complex functionalities to the application.

Chapter 3

Methodology

3.1 Software Development Method

Waterfall model or plan based approach has been used here to improve code organization, modularity, and maintainability. for our e-commerce website. This model can be used e-commerce website development by following a step-by-step process to create the website. Here are the steps that can be followed:

Requirement gathering: The first step in the Waterfall model is to gather all the requirements for the website that involves the understanding of business goals, objectives, identifying the target audience, and documenting the features and functionalities required for the website.

Design: Once the requirements are gathered, the next step is creating wire frames, designing the user interface, and deciding on the look and feel of the website.

Implementation: After the design is finalized, the development team can start implementing the website based on the design specifications. This involves coding, integrating different components, and developing features and functionalities for the website.

There are also three steps of Waterfall model including Testing, Deployment Maintenance which will be implemented in our future work.

Testing: Testing implementation in the waterfall model ensures that the product meets the requirements and performs as expected. By testing each phase of the development process, issues can be identified and addressed early, reducing the risk of problems arising after release.

By following these steps an e-commerce website can be developed in a structured and

systematic manner. These methodologies allow for more flexibility and adaptability in the development process, which is especially useful for e-commerce websites that need to respond quickly to changing market trends and customer demands.[3]

3.1.1 Requirement Analysis

Requirement analysis is a critical step in the development of an e-commerce website. It involves identifying, gathering, and documenting the requirements that the website must meet to satisfy the needs of the business and its customers. Some of the key areas that should be considered during requirement analysis for an e-commerce website include:

User Requirements: Identify the needs of the users, such as ease of use, search ability, navigation, product information, and checkout process.

Functional Requirements: Identify the features and functionality that the website must have, such as product catalog, shopping cart, payment gateway integration, order tracking, and customer support.

Performance Requirements: Identify the performance metrics that the website must meet, such as page load times, up-time, and concurrent user capacity.

Overall, a comprehensive requirement analysis is essential to ensure that the e-commerce website meets the needs of the business and its customers.

3.1.2 Software Architecture

As a software Architecture Model we have used Model View Controller model here, In an e-commerce website, the MVC pattern helps to create a flexible and scalable architecture that separates the concerns of data management, user interface, and business logic.

The Model-View-Controller (MVC) is a software architecture pattern that separates an application's concerns into three interconnected components: the model, the view, and the controller. In an e-commerce website, the MVC pattern can be applied in the following way:

Model: The model represents the application's data and business logic. In an e-commerce website, the model might include data related to products, customers, orders, and inventory. The model provides a structured way to manage this data and provides interfaces for the other components to access and manipulate it.

View: The view is responsible for presenting the data to the user. In an e-commerce website, the view might include the user interface components such as product pages, shopping cart, checkout pages, and user account pages. The view provides a visual representation of the data from the model and allows users to interact with it.

Controller: The controller acts as an intermediary between the model and the view. It receives user requests from the view, processes them, and communicates with the model to perform the necessary operations. In an e-commerce website, the controller might include logic for adding items to the shopping cart, processing payments, updating order status, and managing customer accounts.

MVC architecture creates a semi-closed loop that relies on all components to function adequately. The following illustration demonstrates how MVC architecture operates[4]

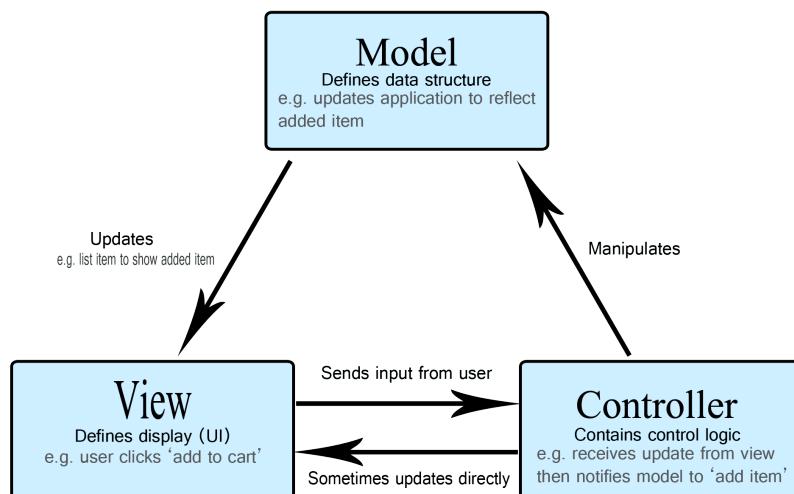


Figure 3.1: MVC Model

3.1.3 System Design

System design involves creating a detailed plan for the development and implementation of a software system. This can help to ensure a well-designed and efficient system that meets the requirements of the users.

3.1.3.1 ER Diagram

ER diagram can be a useful tool for understanding the structure of an e-commerce website and its various entities and relationships. It can also help in designing the database schema for the website. The explanation for each is provided below the diagram case in the figure.

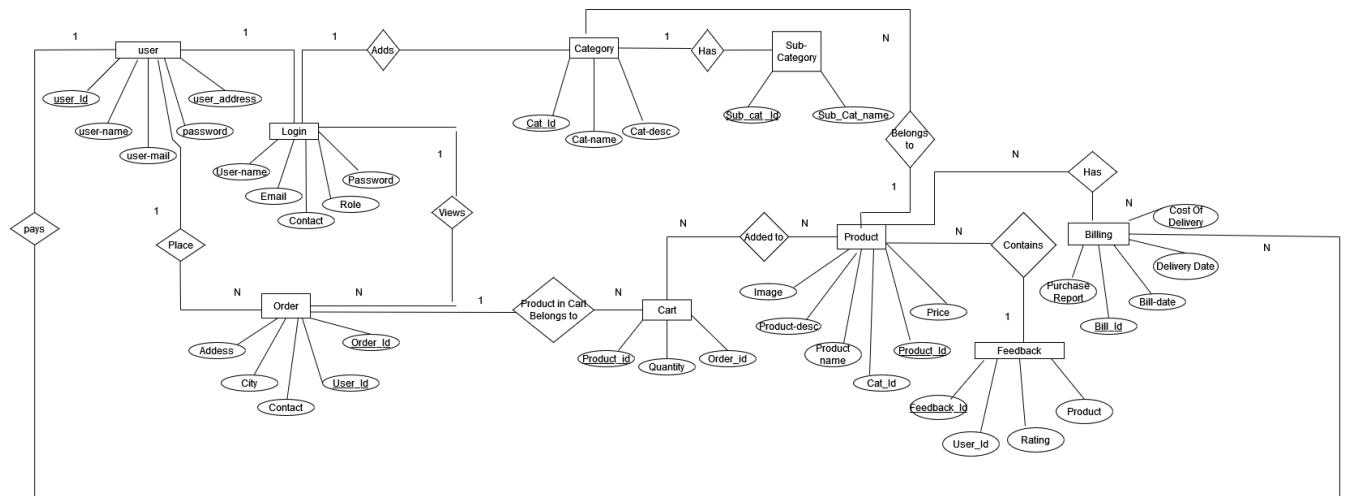


Figure 3.2: ER Diagram

3.1.3.2 Flow chart

Flow charts can be a valuable tool for e-commerce businesses to improve the processes, communicate effectively with team members, and track the performance. This can help e-commerce businesses identify areas for improvement and measure the impact of process changes. The explanation for each is provided below the diagram case in the figure.

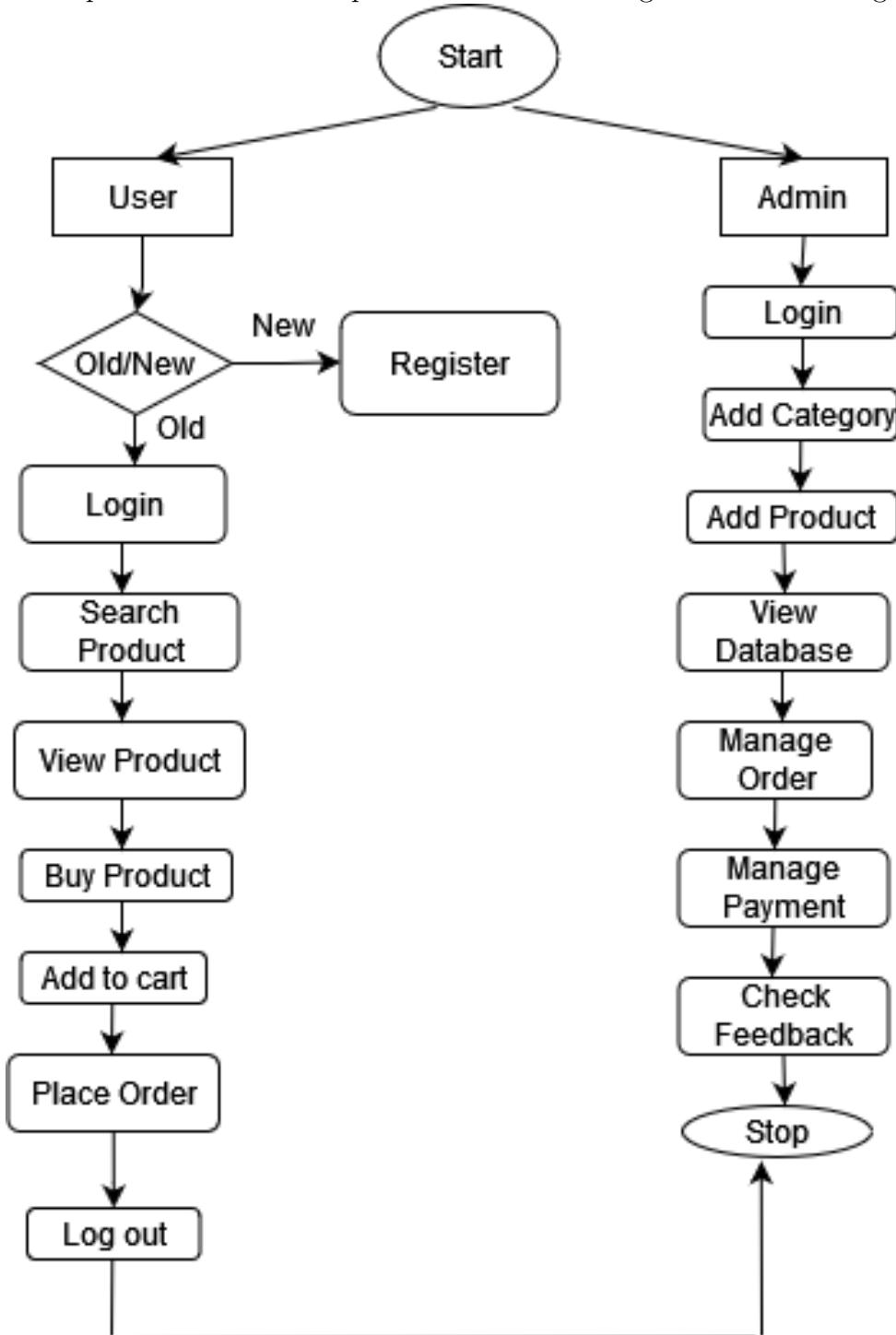


Figure 3.3: Flow Chart

3.1.3.3 Use Case Diagram

The system's use case shows the user a detailed view of the system and how the actors would interact with each other and with the system. The explanation for each use case is then provided below the system use case for the administrator (Figure 1) and the user (Figure 2).

Figure 1 demonstrates the use case of an administrator where he or she has access to the application. The administrator can access the home page, select a category, or add/delete items to/from the cart.

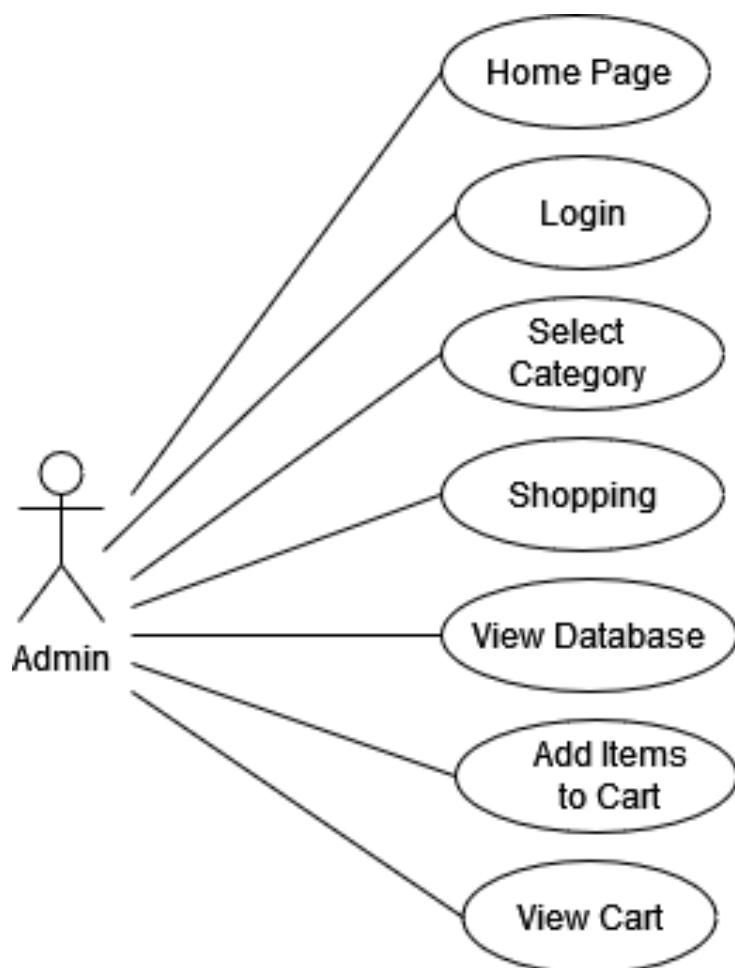


Fig. 1. Online Shopping Cart Application System Use-Case Diagram: Admin

Figure 2 demonstrates the use case for users where they have access to the online shopping-cart application. They can access the home page, select a category, add/delete items to/from the cart, view the shopping cart, and decide to either continue shopping or check out. They are required to go through the user-authentication form (login) which would only allow them to place an order for the items they selected.

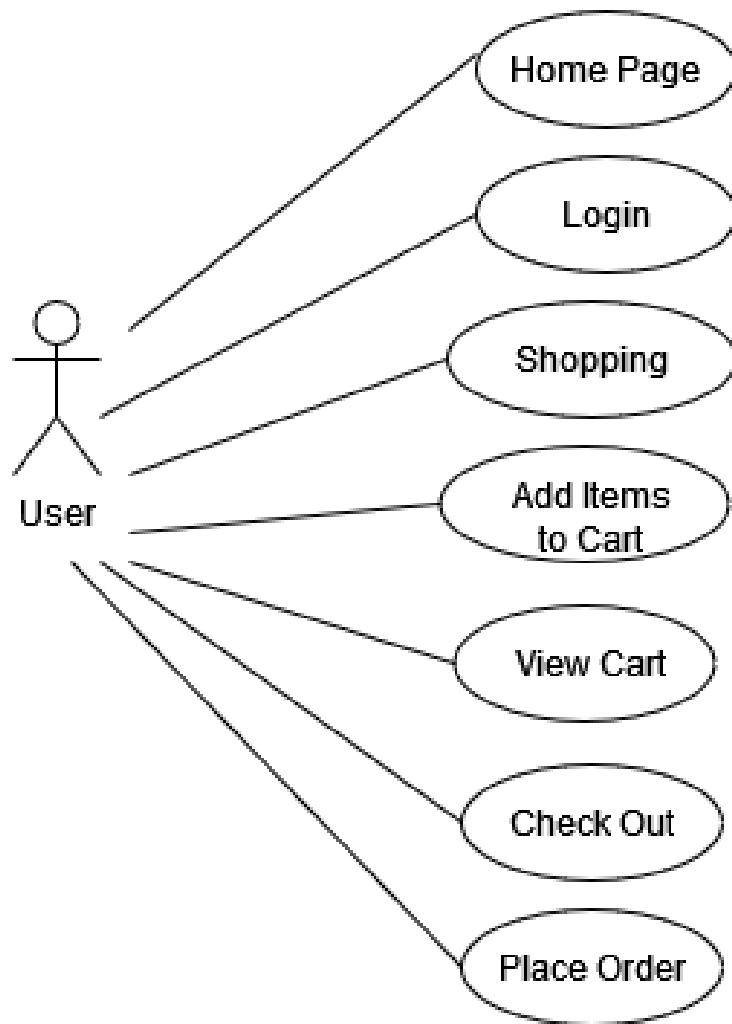


Fig. 2. Online Shopping Cart Application System Use-Case Diagram: User

3.1.3.4 Sequence Diagram

The system's sequence diagram shows the view of the system and how the system would interact with each other. The explanation for each is provided below the diagram case in the figure.

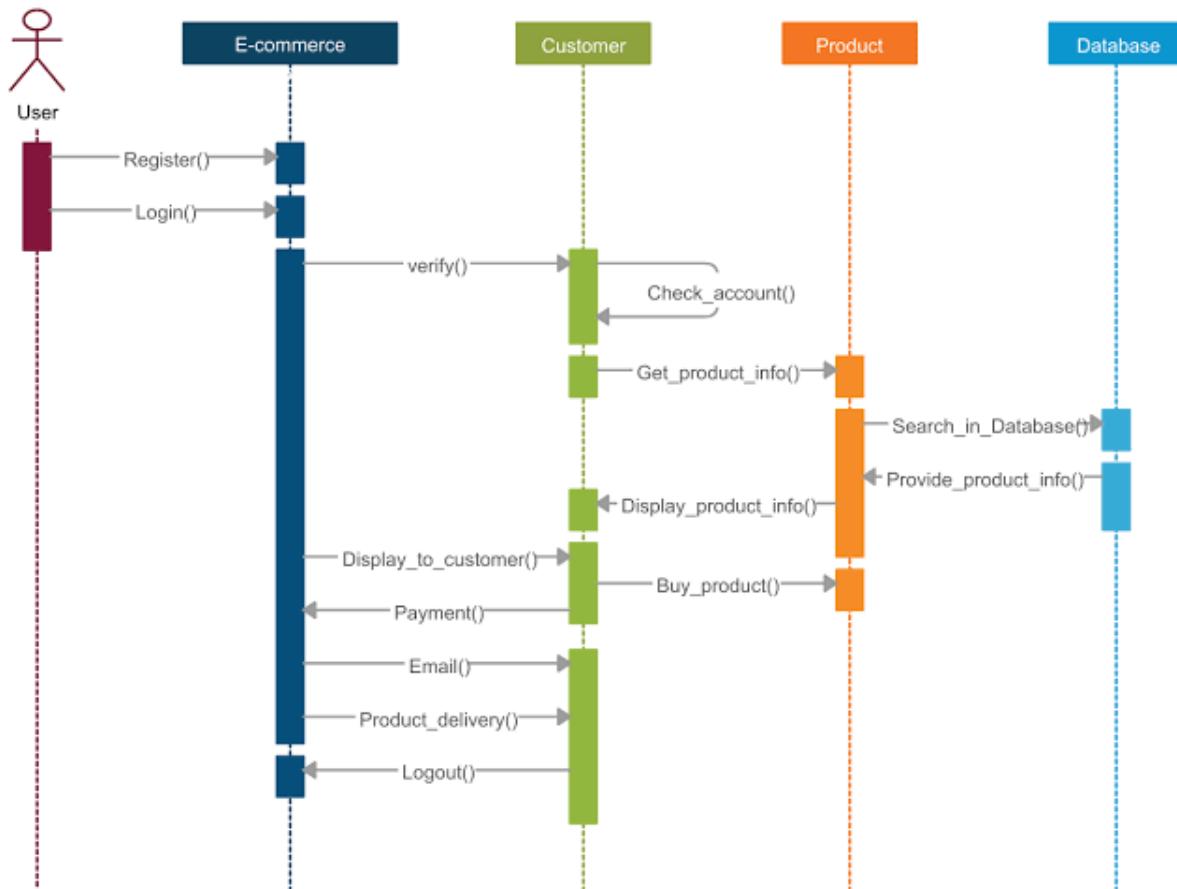


Figure 3.4: Sequence Diagram

3.1.3.5 Class Diagram

The system's class diagram shows a valuable tool for e-commerce businesses to design, develop, and maintain their software systems. By providing a clear and concise representation of the system's architecture, class diagrams can help streamline the development process and improve the overall quality of the system. The explanation for each is provided below the diagram case in the figure.

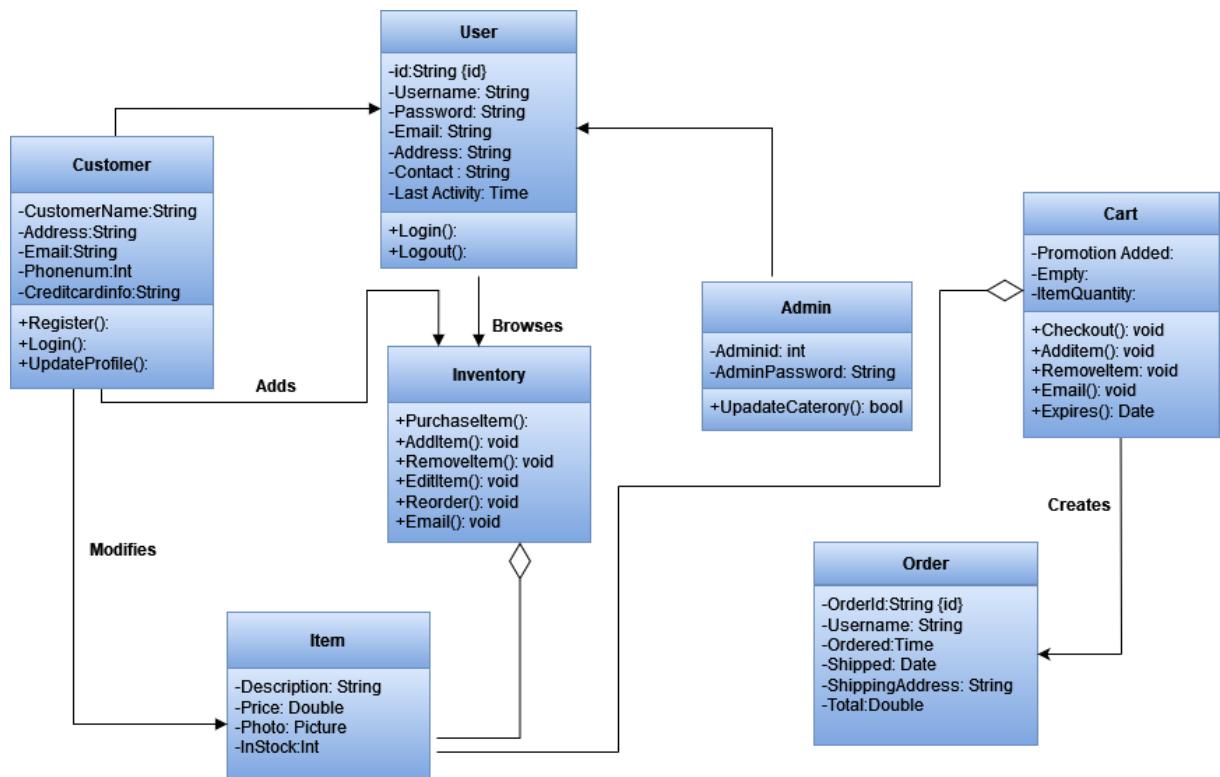


Figure 3.5: Class Diagram

Chapter 4

Result and Discussion

E-commerce website is an online platform that allows businesses to sell their products or services over the internet.

Our website will have a product catalog that customers can browse through, with each product listing including a description, price, and images. Customers can add items to their shopping cart and proceed to the checkout process to purchase the items. The checkout process typically involves entering shipping and billing information, selecting a payment method, and confirming the purchase.

In our project, customer can review and has search functionality to help customers find what they're looking for. They may also have features for managing customer accounts, tracking orders, and providing customer support.

Our project has a chat-bot too, chat-bot can provide quick and efficient customer support by answering common questions, providing product recommendations, and helping customers with their orders.

Overall, e-commerce websites have become an increasingly important part of the retail landscape, allowing businesses to reach customers anywhere in the world and providing consumers with a convenient way to shop online.

4.1 UI Design

The UI design is visually appealing interface that enhances the customer's shopping experience, through the use of clear navigation, consistent branding, and an aesthetically pleasing layout.

Features

The sign up feature in fig 4.1 allows customers to create an account on the website, typically by providing their name, email address, and creating a password.

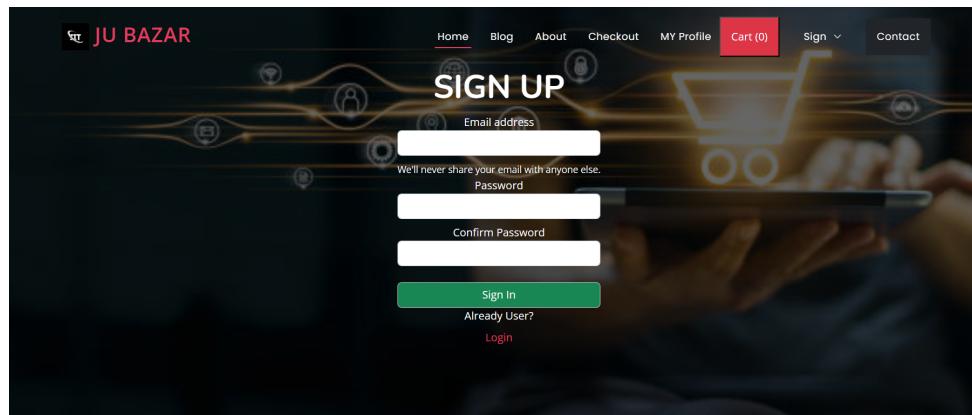


Figure 4.1: Sign Up option

The login feature of an e-commerce website is shown in fig 4.2 which allows registered customers to access their account by entering their email address or username and password.

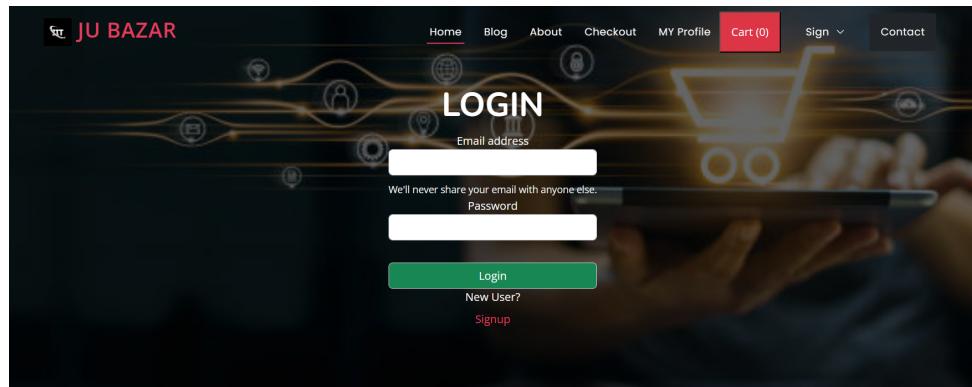


Figure 4.2: Log In option

To activate an account on our e-commerce website is shown in fig 4.3 where the user have to check their email inbox for a verification email and click the activation link provided. Once they have clicked the link, their account will be activated.

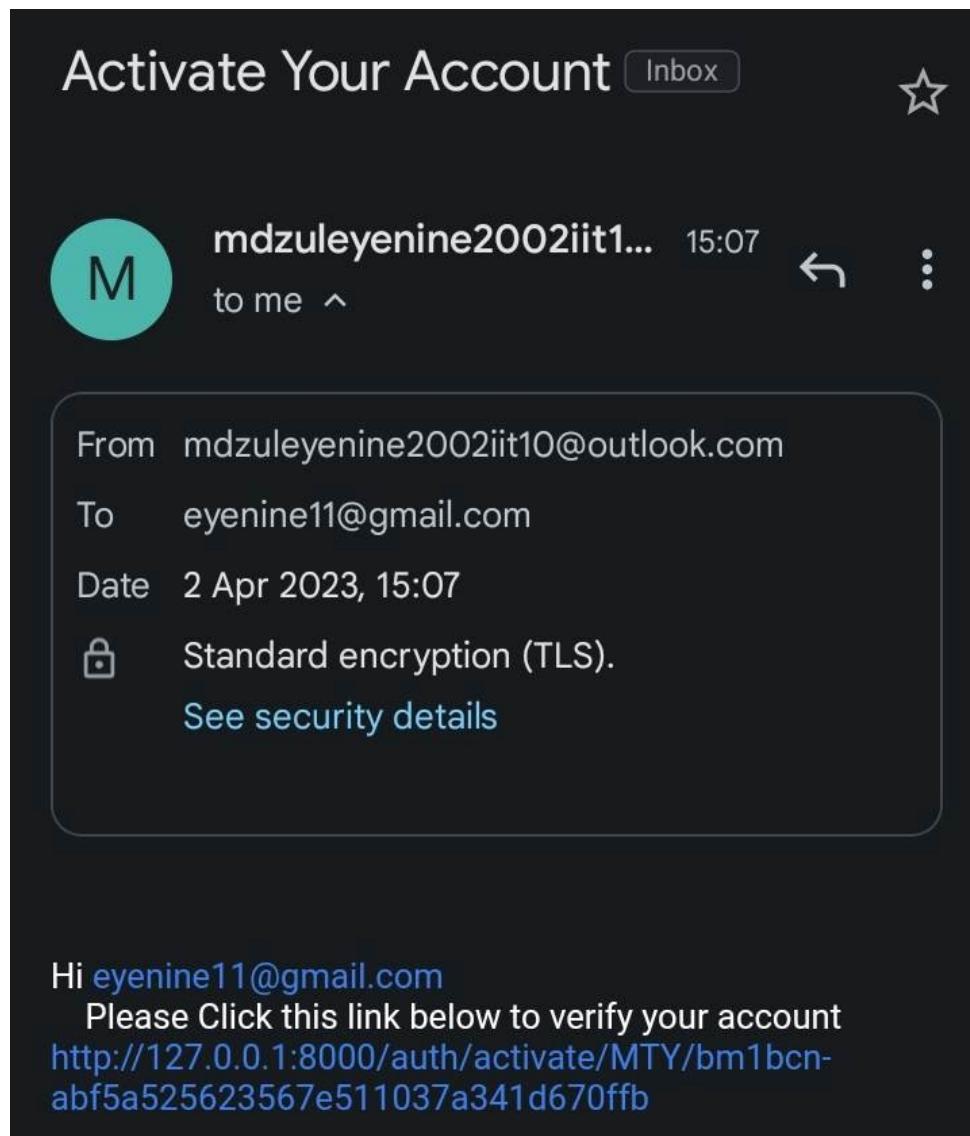


Figure 4.3: Activation Mail

The homepage shown in fig 4.4 is the first page that customers see when they visit the website. It serves as the gateway to the website's products and services, and is often the primary means of creating a good first impression on customers.



Figure 4.4: Home Page

Homepage shown in fig 4.5 with a chat-bot feature allows customers to quickly and easily engage with the business, get answers to their questions, and receive personalized recommendations and support.

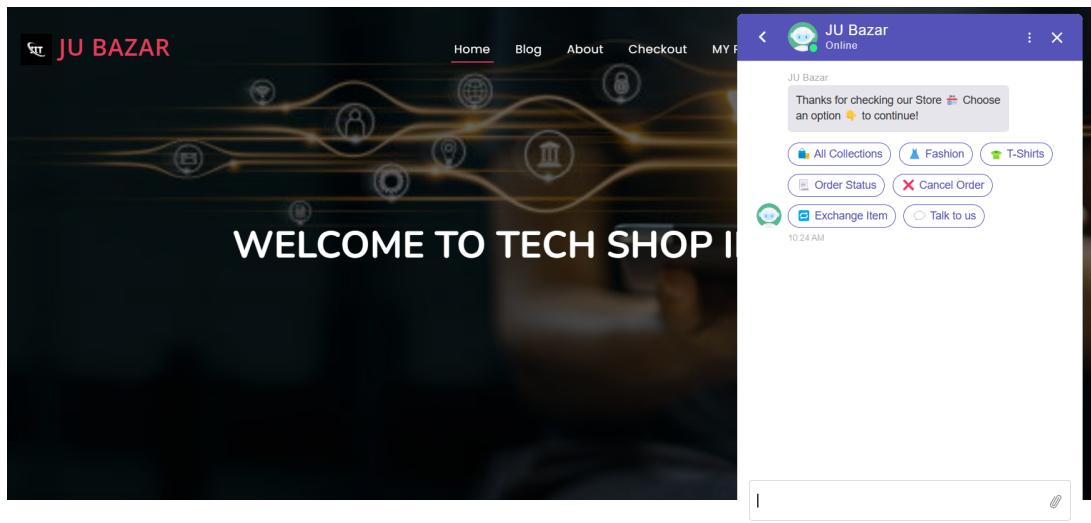


Figure 4.5: Home page with Chat-bot

A chat-bot shown in fig 4.6 on an e-commerce website typically works by analyzing customer messages, identifying the customer's intent, and providing appropriate responses using pre-programmed dialogue or machine learning algorithms.

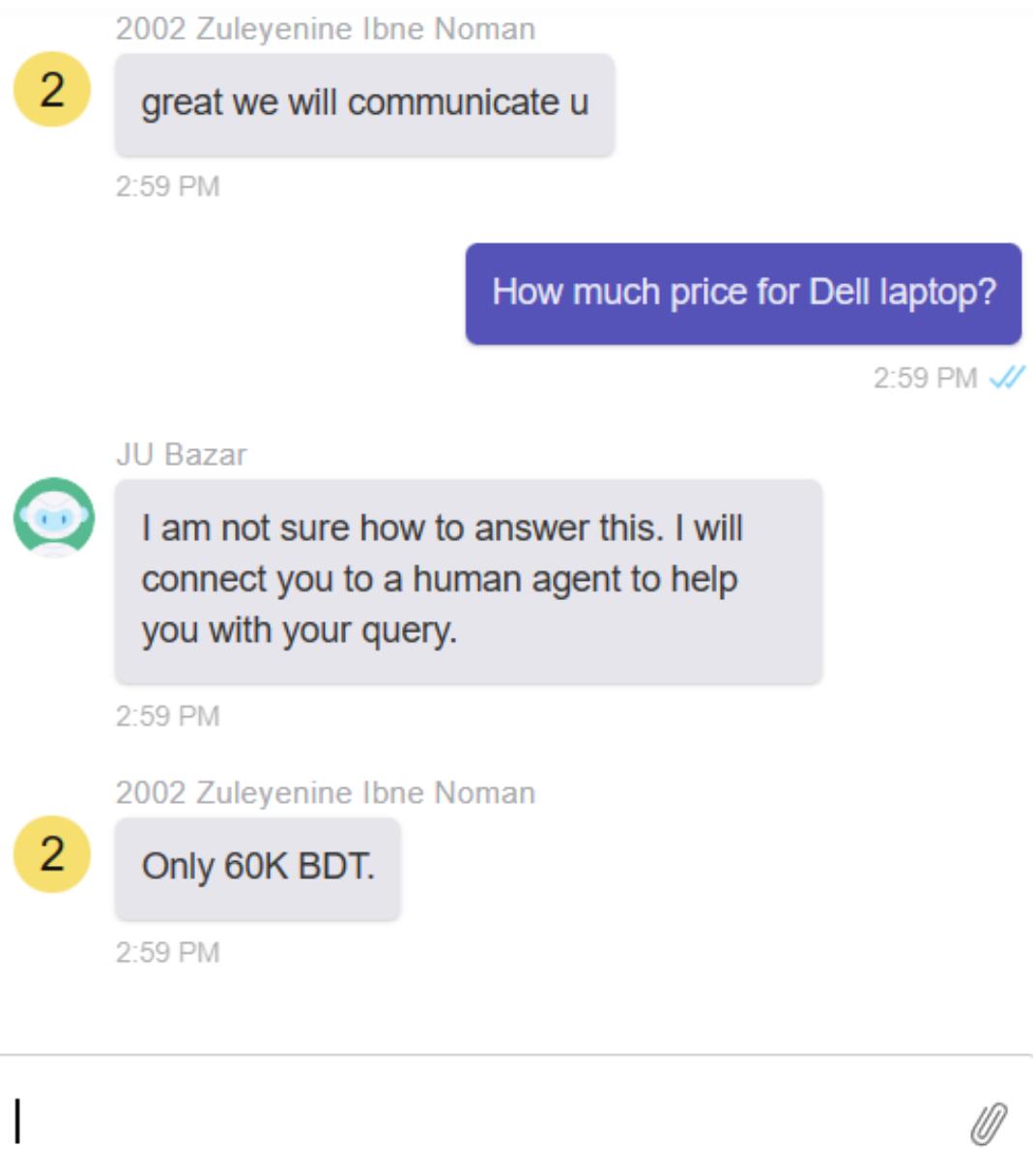


Figure 4.6: Chat-bot working procedure

Product descriptions shown in fig 4.7 provides customers with valuable information about the products they are considering purchasing.

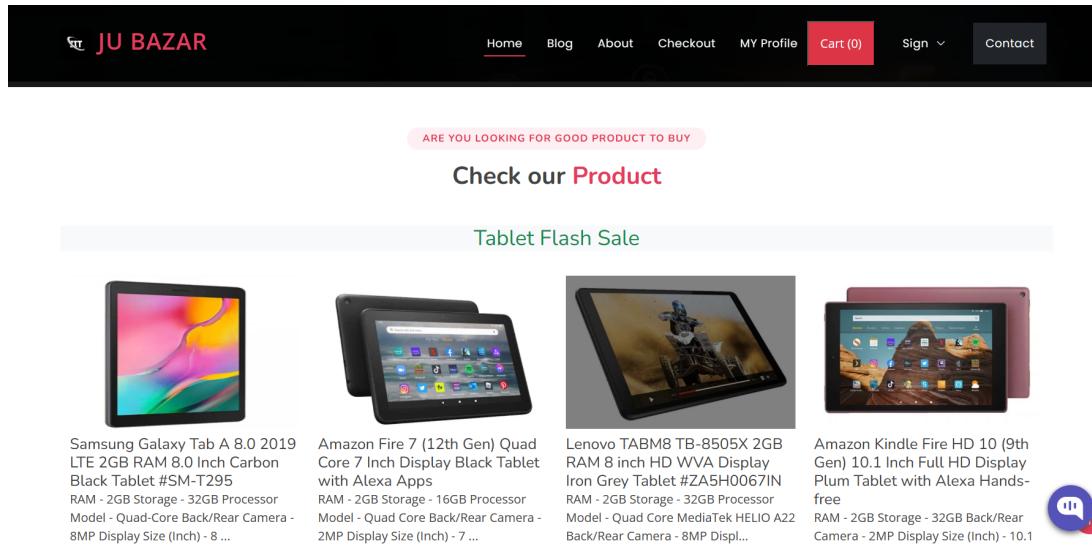


Figure 4.7: Product Page

The cart feature shown in fig 4.8 allows customers to add and review their selected products, adjust the quantity, and proceed to checkout, making the online shopping experience more convenient and streamlined.

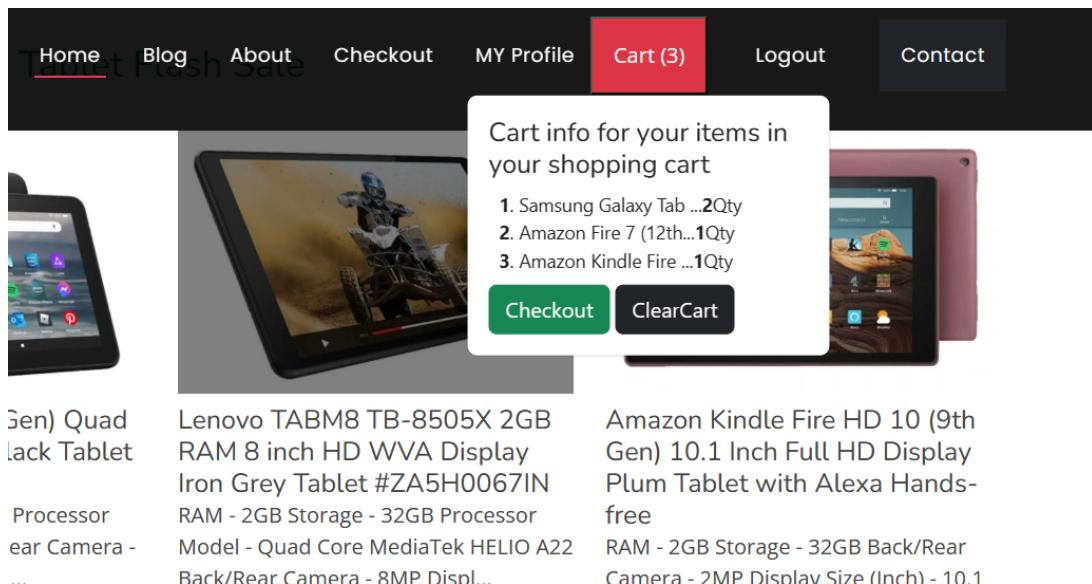


Figure 4.8: cart

The review cart item shown in fig 4.9 feature on an e-commerce website allows customers to view the products in their shopping cart, along with their quantity, price, and other details, to ensure accuracy and make any necessary changes before proceeding to checkout.

HAPPY BUYING

Checkout Page

Step 1 - My Awesome Cart Express Checkout - Review Your Cart Items

Amazon Fire 7 (12th Gen) Quad Core 7 Inch Display Black Tablet with Alexa Apps	Price : 10900
Lenovo TABM8 TB-850X 2GB RAM 8 inch HD WVA Display Iron Grey Tablet #ZASH0067IN	Price : 14800

Your Cart Total Is TK 25700 . Enter your details below & place your order. Thanks for using Shopping Cart

Figure 4.9: Review Cart

The clear cart feature shown in in fig 4.10 allows customers to remove all items from their shopping cart with a single click, providing an easy and efficient way to start over or make adjustments to their order.

JU BAZAR

Samsung Galaxy Tab A 8.0 2019
LTE 2GB RAM 8.0 Inch Carbon
Black Tablet #SM-T295
RAM - 2GB Storage - 32GB Processor
Model - Quad Core Back/Rear Camera -
8MP Display Size (Inch) - 8 ...
Price:TK 9500 [AddToCart](#) [View](#)

Amazon Fire 7 (12th Gen) Quad
Core 7 Inch Display Black Tablet
with Alexa Apps
RAM - 2GB Storage - 16GB Processor
Model - Quad Core Back/Rear Camera -
2MP Display Size (Inch) - 7 ...
Price:TK 10900 [AddToCart](#) [View](#)

Lenovo TABM8 TB-850X
RAM 8 inch HD WVA Display Iron
Grey Tablet #ZASH0067IN
RAM - 2GB Storage - 32GB Processor
Model - Quad Core MediaTek HELIO A22
Back/Rear Camera - 8MP Disp...
Price:TK 14800 [AddToCart](#) [View](#)

HD 10 (9th
HD Display
Lexa Hands-
free
RAM - 2GB Storage - 32GB Back/Rear
Camera - 2MP Display Size (Inch) - 10.1
Processor Clock Speed - 2...
Price:TK 16500 [AddToCart](#) [View](#)

Laptop Flash Sale

Lenovo IdeaPad Slim 3i 15ILL
Lenovo V14 Intel Core i3
Acer Extensa 15 EX215-54-
Dell Inspiron 15 3515 AMD

Figure 4.10: clear cart

The process for placing an order shown in fig 4.11 in fig 4.12 on an e-commerce website involves selecting the desired product, adding it to the shopping cart, entering shipping and payment information, and submitting the order.

Step 2 - Enter Address & Other Details:

Name

Email

Address

Address line 2

City

State

Figure 4.11: Place Order

1234 Main St

Address line 2

City

State

Pin Code

Phone Number

Place Order

Figure 4.12: Place Order 1

To confirm order on our e-commerce website, user will receive an email shown in in fig 4.13 and fig 4.14 saying order is successfully placed.

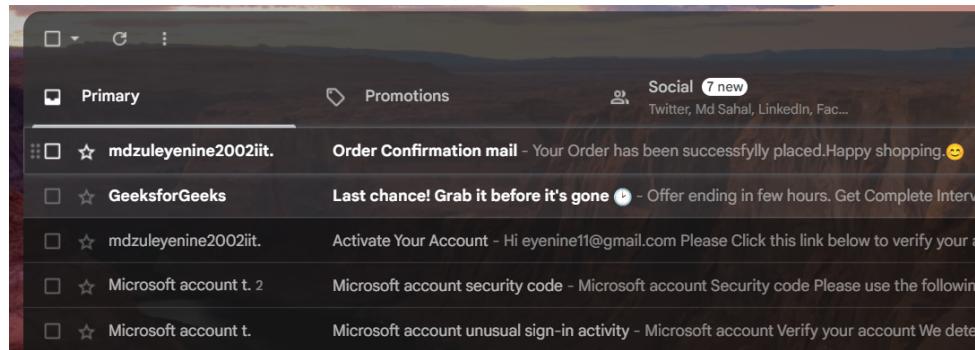


Figure 4.13: Order Confirmation

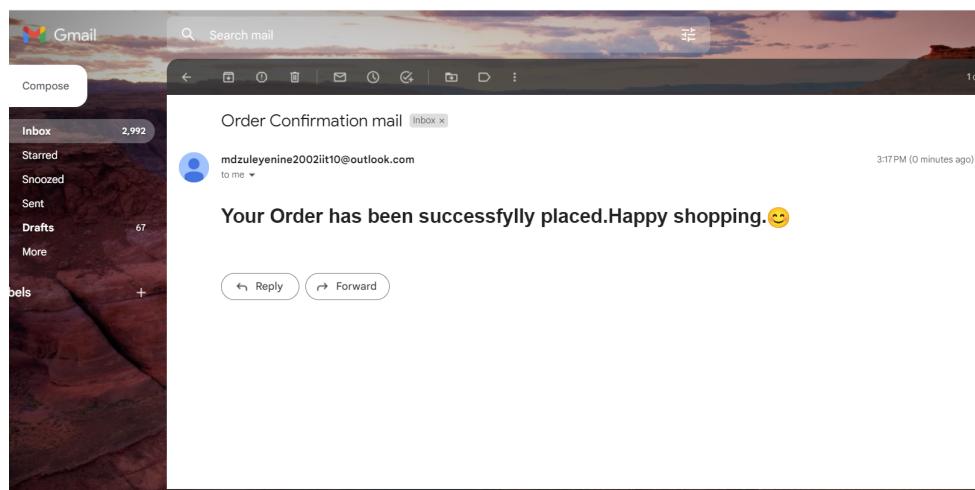


Figure 4.14: Order Confirmation2

The "About Us" shown in fig 4.15 page provides customers with information about the company behind the website, including its history, mission, values, and team members.

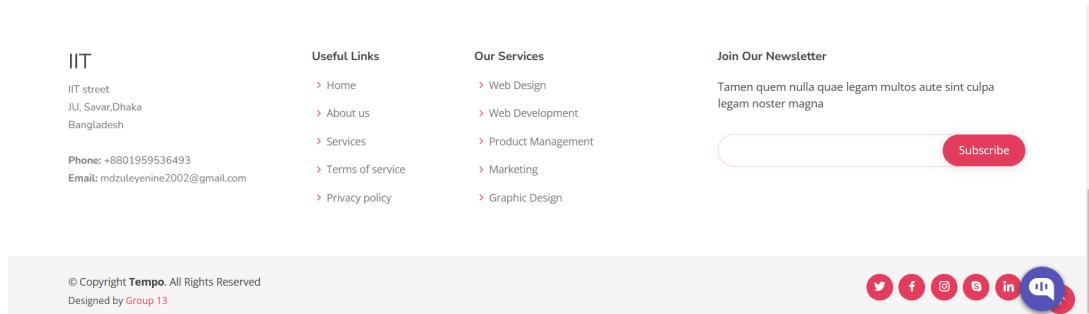


Figure 4.15: About

The contact option feature showing fig 4.16 provides customers with a way to reach out to the business with any questions, concerns, or feedback they may have, typically via email, phone, or a contact form.

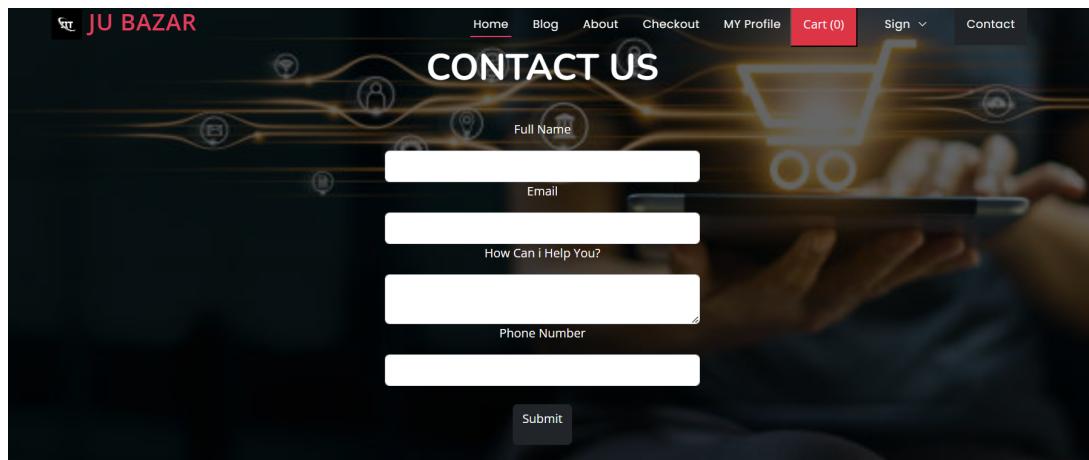


Figure 4.16: Contact

Chapter 5

Conclusion

Electronic shopping has gained significance not only from the entrepreneur's but also from the customer's point of view.

Hence we have designed the project to provide the user with easy navigation, retrieval of data and necessary feedback as much as possible.

In this project, the user is provided with an e-commerce web site that can be used to buy products online. This project helps in understanding the creation of an interactive web page and the technologies used to implement it.

The building of the project has given us a precise knowledge about how Python Django is used to develop a website, how it connects to the database to access the data and how the data and web pages are modified.

5.1 Future Work

There are several areas where our e-commerce websites can be improved. Some potential areas for future work include:

1. Integrate the payment gateway.
2. Implement security measures
3. Multiple Shopping carts can be allowed.
4. Refund Option will be added.
5. Leverage the technology that include personalized recommendations.

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