Tribhuvan University

Faculty of Humanities and Social Sciences

"ElectroMart"

A Project Report

Submitted to

Department of Computer Application

Patan Nistha College Balkumari

In partial fulfillment of the requirements

for the Bachelor's Degree in Computer Application

by

Keshab Kc

Nishant Timalsina

22th May 2024

Supervisor

Subein Byanjankar

Tribhuvan University

Faculty of Humanities and Social Sciences

Patan Nistha College Lalitpur

Supervisor's Recommendation

I hereby recommend that this project report prepared under my supervision by **Keshab Kc** and **Nishant Timalsina** entitled **"ElectroMart"** in partial fulfillment of the requirements for the degree of Bachelor in Computer Application be processed for evaluation.

…………………………

Subein Byanjankar
Patan Nistha College Lalitpur
(Supervisor)

22th May 2024

Tribhuvan University

Faculty of Humanities and Social Sciences

Patan Nistha College Lalitpur

Student's Declaration

We hereby declare that we are the only authors of this work and that no sources other than those listed here have been used in this work.

....
Nishant Timalsina

22th May 2024

....
Keshab Kc

22th May 2024

Tribhuvan University

Faculty of Humanities and Social Sciences

Patan Nistha College Lalitpur

LETTER OF APPROVAL

We certify that we have read this project report and, in our opinion, it is satisfactory in scope and quality as a project in partial fulfillment of the requirement of a Bachelor's Degree in Computer Application.

Evaluation Committee

....

Keshab Dhami

Patan Nistha College

Balkumari Lalitpur

(Head of Department)

....

Subein Byanjankar

Patan Nistha College

Balkumari Lalitpur

(Supervisor Department)

....

External Examiner

....

External Examiner

ACKNOWLEDGEMENT

ABSTRACT

ElectroMart is an E-Commerce Platform for Electrical Instruments. This project report details the development and implementation of ElectroMart, an e-commerce platform designed to facilitate the online purchase and viewing of electrical instruments. The primary objective of ElectroMart is to provide a user-friendly, efficient, and secure online marketplace where customers can easily find, compare, and purchase a wide range of electrical products. This platform also aims to streamline the administrative tasks for the store's management through a robust admin interface.

In this project, everything is done from coding, but this requires solid knowledge of HTML5, CSS3, JavaScript, Bootstrap5, PHP, and MYSQL for database. This project is supposed to be beneficial for those people with less IT knowledge with the use of internet access. ElectroMart successfully delivers a comprehensive e-commerce solution for electrical instruments, combining user-friendly design with powerful administrative capabilities. This project demonstrates the effective use of web technologies to create an online platform that meets the needs of both customers and store managers, ultimately enhancing the online shopping experience for electrical instruments.

Table of Contents

LIST OF FIGURES

LIST OF Tables

CHAPTER 1

1.1 Introduction

In today's digital age, e-commerce has become a pivotal aspect of the retail industry, offering consumers unparalleled convenience and access to a vast array of products. The rapid advancement of technology and the increasing reliance on the Internet have significantly transformed the way people shop. Recognizing the need for a specialized platform for electrical instruments, ElectroMart is developed to cater to the specific requirements of customers seeking electrical products. However, for implementation purposes, this paper will deal with online shopping for Mobile, Laptop, Computer Television, etc.

The system we have built is made by using free technology available on the internet and these technologies include XAMPP server, MySQL, HTML, CSS, JavaScript, and VS-Code for code editor. An online store is a virtual store on the Internet where customers can browse the catalog and select products of interest. The selected items may be collected in a shopping cart. At checkout time, the items in the shopping cart will be presented as an order. At that time, more information will be needed to complete the transaction. Usually, the customer will be asked to fill out or select a billing address, a shipping address, and payment information such as cash on payment.

1.2 Problem Statement

The retail market for electrical instruments is vast and diverse, encompassing products ranging from household appliances to specialized industrial equipment. While trusted, often face limitations in terms of reach, inventory management, and customer convenience. As consumers increasingly turn to online platforms for their shopping needs, there is a growing demand for a specialized e-commerce solution that addresses the unique challenges associated with selling electrical instruments.

1.3 Objective

The main objective of this project is to provide information about essential information about electric products for the user. The design of the ElectroMart system performed the following activities and functions:

➢ To provide all the required details about the products.

➢ To provide Users to purchase products.

➢ To provide a secure system for purchasing products and to prevent overcrowding.

1.4 Scope and Limitations

Electro Mart's project scope encompasses the development, deployment, and maintenance of an e-commerce platform specifically designed for electrical instruments.

1.4.1 Scopes

The system that has been built can perform various tasks such as add to cart, purchase products, add products, etc., and their scopes are listed below:

➢ Reduce the burden of tension for purchasing products.

➢ You can get a product according to your preference.

➢ Any Authorized user can use this system.

The E-Commerce system meets the above-mentioned objectives and features in the earlier stages however, no system is perfect. It was quite difficult to design a system with full accuracy and efficiency.

1.4.2 Limitations

The project allows purchasing products, adding products to the cart, orders, payments, etc. However, there are some limitations which are listed below:

➢ Online web Application: The System is only supposed through internet access. Without access to the internet, users cannot use the protocol system.

➢ There is only one administrator to manage the entire system.

Also, ElectroMart might face challenges and must allocate resources to ensure the platform's long-term success and reliability.

1.5 Report Organization

➤ Chapter One: This describes the introduction of the built system.

➤ Chapter two: This defines and describes the Background study and Overview of related existing systems and their pros and cons.

➤ Chapter three: Presents the System Analysis and Design including Requirement Analysis and Feasibility Analysis.

➤ Chapter four: Presents the Implementation, Testing, and debugging.

➤ Chapter five: Conclusion, Limitations, and Future Enhancement are briefly explained.

CHAPTER 2

2.1 Background Study

In today's world, internet usage and access are remarkably high, with most people being occupied with their own work. To cater to this busy lifestyle, we have developed this module, allowing users to create and access their accounts via the internet. The general concepts and functionalities are outlined below:

➢ Create a New Account: Users can create an account through a registration process. This can be done whenever there is internet access, allowing users to utilize this module.

➢ Login: Once an account is created, users can log in with their details and access their e-commerce accounts through this module.

➢ Surfing: After successfully logging in, users can browse through various categories to find and buy the items they need.

➢ Add to Cart: Upon finding the desired items, users can add them to their cart and proceed to checkout.

➢ Checkout: After adding items to the cart, users can proceed to checkout, and the items will be prepared for final delivery.

2.2 Literature Review

E-commerce has revolutionized the way businesses operate, allowing consumers to purchase products online from anywhere at any time. According to [1], e-commerce platforms enable companies to reach a global audience, streamline operations, and offer personalized shopping experiences. The rise of e-commerce has been driven by advancements in technology, increased internet penetration, and changing consumer behaviors [2].

The behavior of consumers in the digital marketplace has been extensively studied. Research by [3] highlights the importance of website usability, security, and customer service in influencing online purchase decisions. Factors such as ease of navigation, secure payment options, and efficient customer support are critical in building consumer trust and encouraging repeat purchases [4].

The design and functionality of an e-commerce website significantly affect user experience. [5] asserts that intuitive navigation, responsive design, and aesthetically pleasing interfaces enhance user satisfaction and increase conversion rates. Electro Mart's use of Bootstrap ensures that the website is mobile-friendly and accessible across various devices, adhering to best practices in responsive web design [6].

Despite the opportunities, e-commerce platforms face several challenges, including competition, technological changes, and regulatory compliance. Research by [7] discusses the importance of agility in adapting to market trends and regulatory changes. ElectroMart must continually innovate and adapt to maintain its competitive edge and comply with evolving e-commerce regulations [8].

The literature review underscores the multifaceted nature of building and maintaining a successful e-commerce platform like ElectroMart. Key factors include understanding consumer behavior, investing in robust technological infrastructure, ensuring security, designing an intuitive user interface, implementing effective marketing strategies, and learning from industry leaders.

CHAPTER 3

3.1 System Analysis

Because this project involves the design and implementation of a software system regardless of whether it is web-based, it was necessary to mention and consider certain models used in software development and deployment. For this project, we are using an incremental model.

Incremental Model is a process of software development where requirements are divided into multiple standalone modules of the software development cycle. In this model, each module goes through the requirements, design, implementation, and testing phases. Every subsequent release of the module adds a function to the previous release. The process continues until the complete system is achieved.
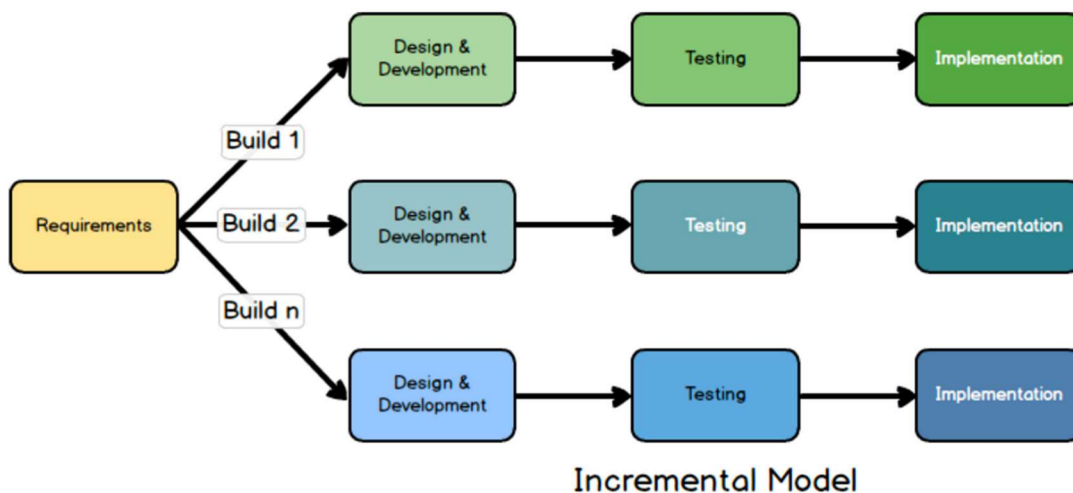

Figure 1 Incremental Development Model

3.1.1 Requirement Analysis:

Requirements analysis is a crucial step for determining the success of a system or software project. Requirements are split into two types:

    i.   Functional requirements

    ii.   Non-functional requirements

i.   Functional Requirement

This section provides the requirement overview of the system. Various modules implemented by the system are:

i.   Admin will be able to check the user and the user's information.
ii.   Users will be able to register and log in.
iii.   Users will be able to use the carts.
iv.   Admin will verify the user account and give them the right to access the right.
v.   Users will be able to order the products which they like.
vi.   Admin will be able to upload the products and their details.
vii.   Users will be able to delete or edit the products which they do not want to order.

ii.   Non–Functional Requirement

Non-functional requirements of the system are identified as availability, security performance, reliability, and implementation. The non-functional requirements included in the project are the non-functional requirements included in the project are:

i.   Availability: It will be available online.
ii.   Security: In every system, security is most important. So, this system will be secure to use and the information of the users will not be leaked or available to others for the user's privacy.
iii.   Performance: All users need better performance while using the system. So, this system will be designed for smooth performance with optimization and good response.
iv.   Reliability: It will be reliable for the users.
v.   Implementation: The process of turning strategies and plans into actions to achieve strategic objectives and goals is known as implementation. The front end was created using HTML, CSS, JS, and Bootstrap, with Laravel serving as the server-side programming language for database connectivity at the back end, i.e., MYSQL was utilized to develop the database.

3.1.2 Feasibility Analysis

A feasibility study is simply an assessment of the practicality of a proposed project plan or method. This is done by analyzing technical, operational, economic, and schedule feasibility factors.

   i. Technical Feasibility

   These include hardware, software, and technologies. The suggested system is technically possible because it requires access to the use of a browser and the internet. The system's user interface is also quite simple.

   ii. Operational Feasibility

   Reliability, maintainability, usability, and support ability are among them. The suggested system is operationally practical since it is reliable for all types of users, regardless of whether they are computer literate. For a small to large-scale organization, the proposed system is supported. It is to use.

   iii. Economic Feasibility

   The project was developed within the organization's budgetary constraints. The project resources were freely available, and no additional obligations were required. The creation of the system does not necessitate the use of expensive hardware or software. The platform is open source and the resources required for the project are also open source.

   iv. Schedule Feasibility

   This project is to be submitted before our board exam, which is very good as our college activities are passive and time should not be a problem. The working schedule of our project is described in the following GANTT chart.

GANTT CHARTS

A Gantt chart is a form of bar chart that shows the progress of a project. A Gantt chart, which is widely used in project management, is one of the most popular and useful methods for displaying activities against time. It can also be used to examine a project's start and finish dates in a single graph. Gantt charts were created in our project using Microsoft Excel, as seen in the picture below.
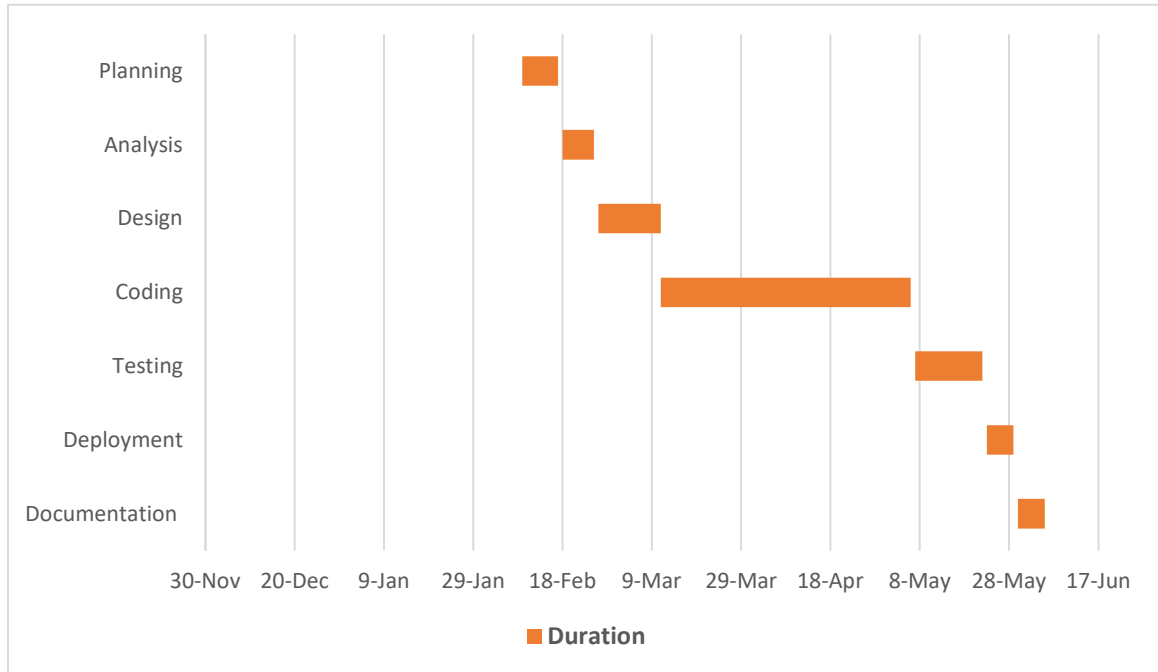

Figure 2 Gantt Charts

3.1.3 Data Modeling (ER-Diagram)

This ER (Entity Relationship) Diagram represents the model of the "E-Commerce System." The entity-relationship diagram of "E-Commerce System" shows all the visual instruments of database tables and the relations between the Admin, Users, and a list of products. It used structured data to define the relationships between structured data groups of E-Commerce System functionalities. The database system contains user and account entities which contain a primary key as a unique identifier for each entity and another attribute to show the properties of these entities.
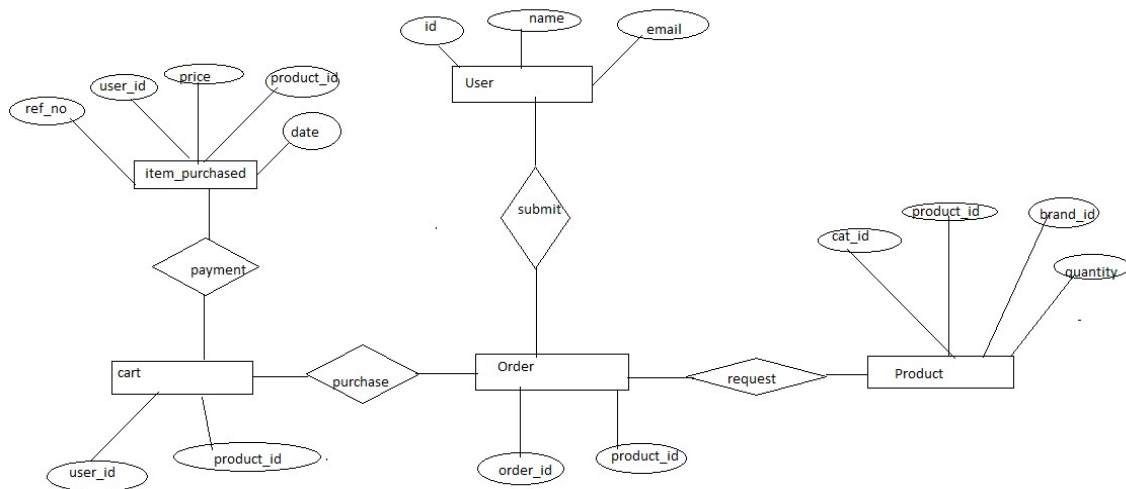
Figure 3 ER-Diagram

3.1.4 Process Modeling (DFD)

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles, and arrows, plus short text labels, to show data inputs, outputs, storage points, and the routes between each destination. Data flowcharts can range from simple, even hand-drawn process overviews, to in-depth, multi-level DFDs that dig progressively deeper into how the data is handled. They can be used to analyze an existing system or model a new one. Like all the best diagrams and charts, a DFD can often visually "say" things that would be hard to explain in words, and they work for both technical and non-technical audiences, from developers to CEOs. That's why DFDs remain so popular after all these years. While they work well for data flow software and systems, they are less applicable nowadays to visualizing interactive, real-time, or database-oriented software or systems.

Context diagrams:

Context diagrams show the interactions between a system and other actors (external factors) with which the system is designed to interface. System context diagrams can help understand the context in which the system will be part. They are used early in a project to get agreement on the scope and can be included in a requirements document. A context diagram shows the entire system as a single process.
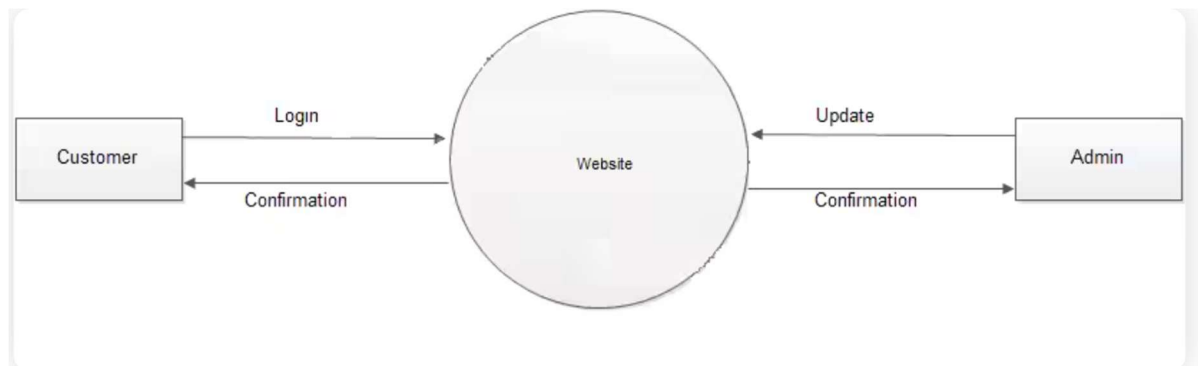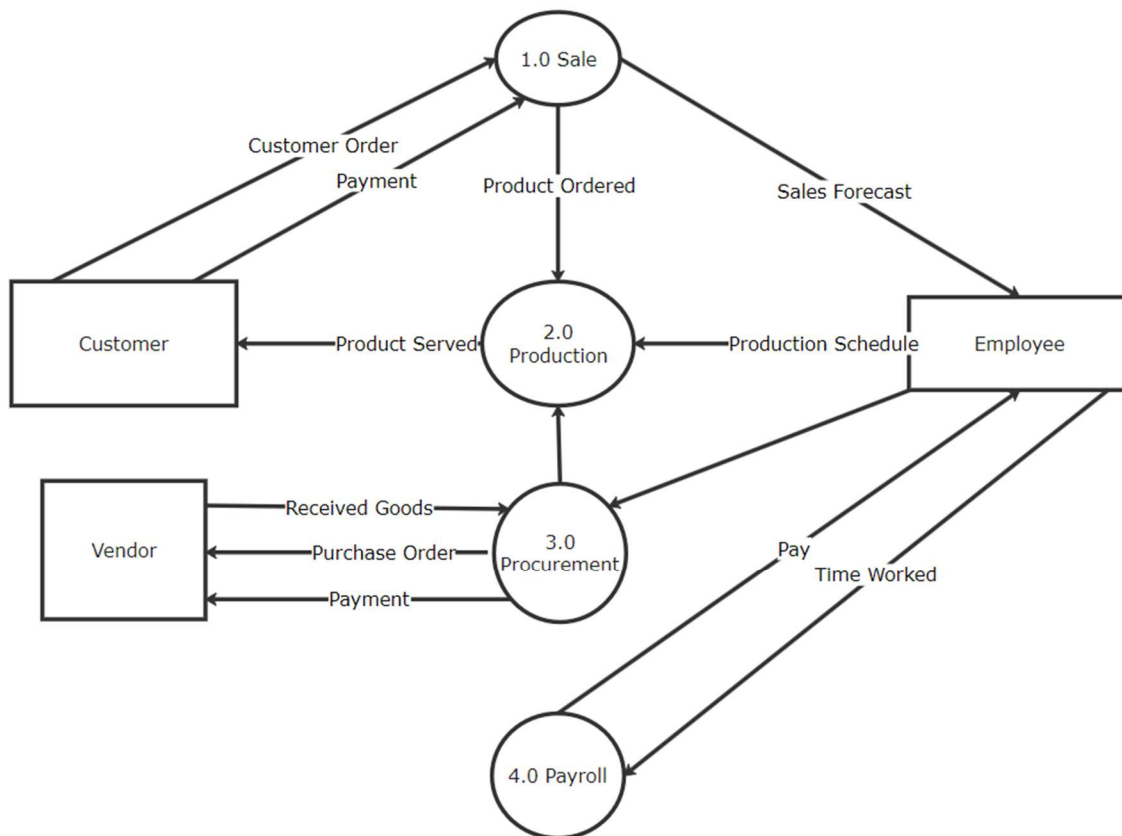

Figure 4 Context Diagram

1-level DFD:

1-Level provides a more detailed view of the system by breaking down the major processes identified in the level 0 Data Flow Diagram (DFD) into sub-processes. Each sub-process is depicted as a separate process on the level 1 Data Flow Diagram (DFD). The data flows and data stores associated with each sub-process are also shown.

In a 1-level Data Flow Diagram (DFD), the context diagram is decomposed into multiple bubbles/processes. In this level, we highlight the main functions of the system and breakdown the high-level process of 0-level Data Flow Diagram (DFD) into subprocesses.

Figure 5 1-Level DFD

2-Level DFD:

2-Level provides an even more detailed view of the system by breaking down the sub-processes identified in the level 1 Data Flow Diagram (DFD) into further sub-processes. Each sub-process is depicted as a separate process on the level 2 DFD. The data flows and data stores associated with each sub-process are also shown.

The 2-level Data Flow Diagram (DFD) goes one step deeper into parts of the 1-level DFD. It can be used to plan or record the specific/necessary details about the system's functioning.
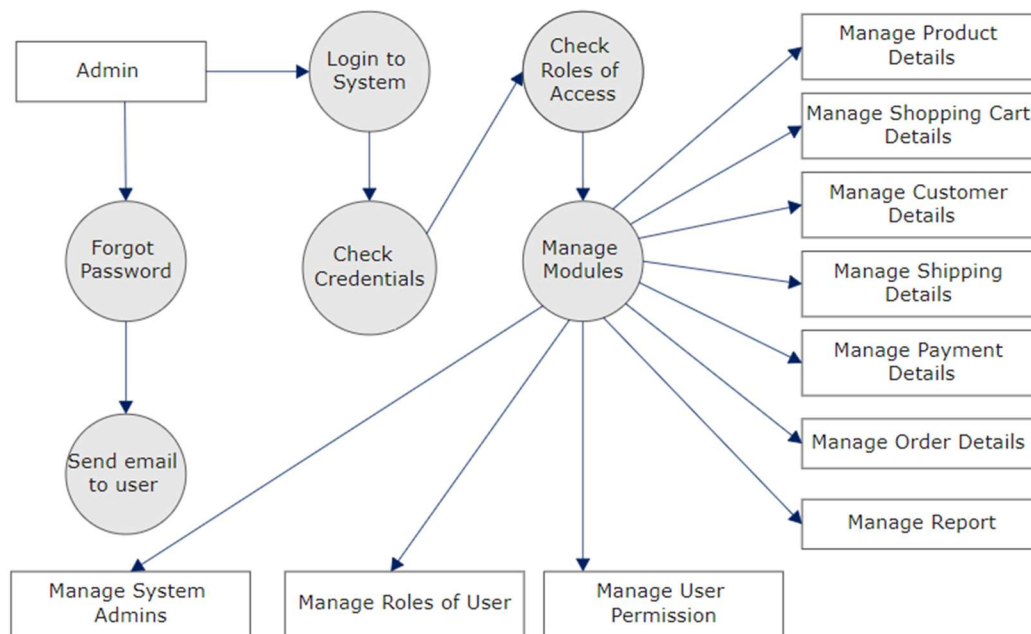
Figure 6 2-Level DFD

3.1.5 Flowchart

A flowchart is a diagrammatic representation of an algorithm. A flowchart can be helpful for both writing programs and explaining the program to others. In the developed E-Commerce system, the module is different for admin and students where data flows as:
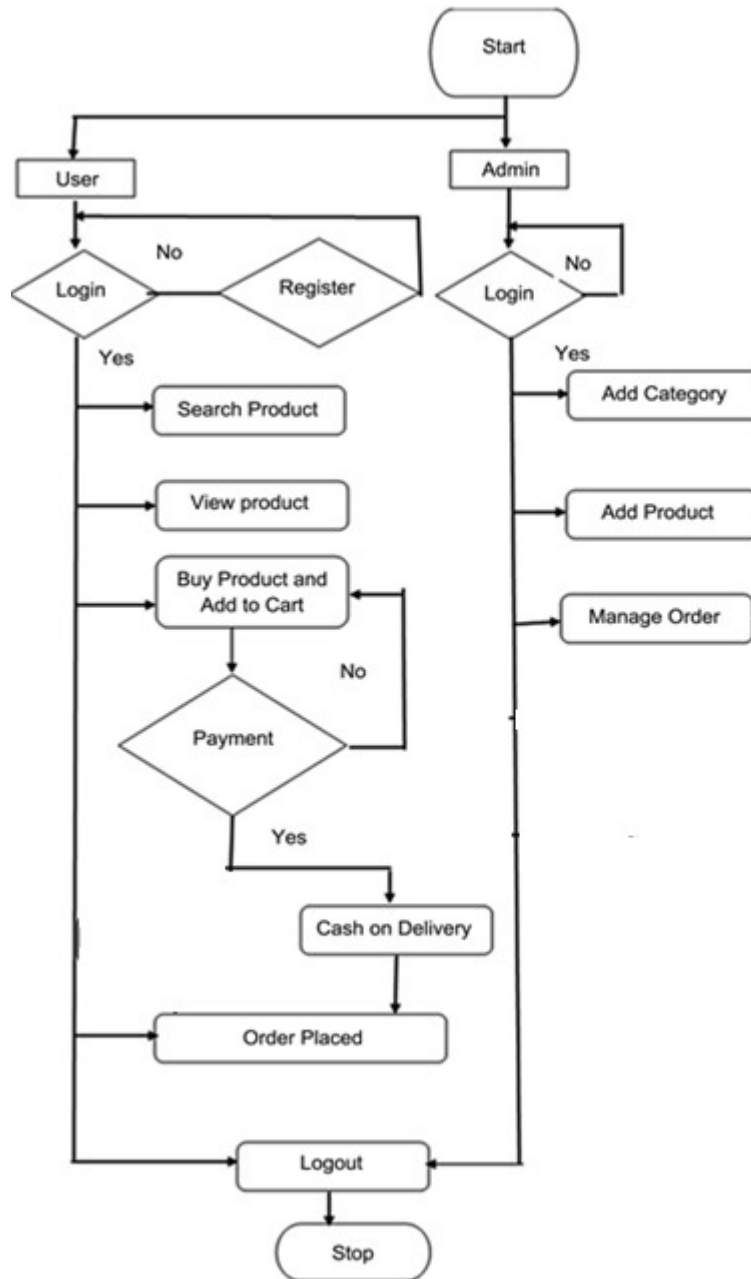
Figure 7 Flowchart Diagram

3.1.6 Use Case Diagram

Use-case diagrams describe the high-level functions and scope of a system. These diagrams also identify the interactions between the system and its actors. The use cases and actors in use-case diagrams describe what the system does and how the actors use it, but not how the system operates internally. Here the actors are administrators and students and the internal operation between them is described in the figure below:
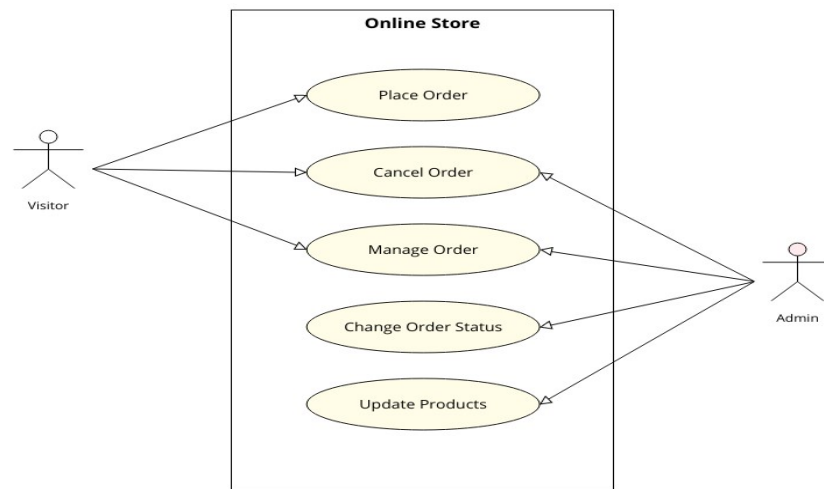
Figure 8 Admin Use Case Diagram
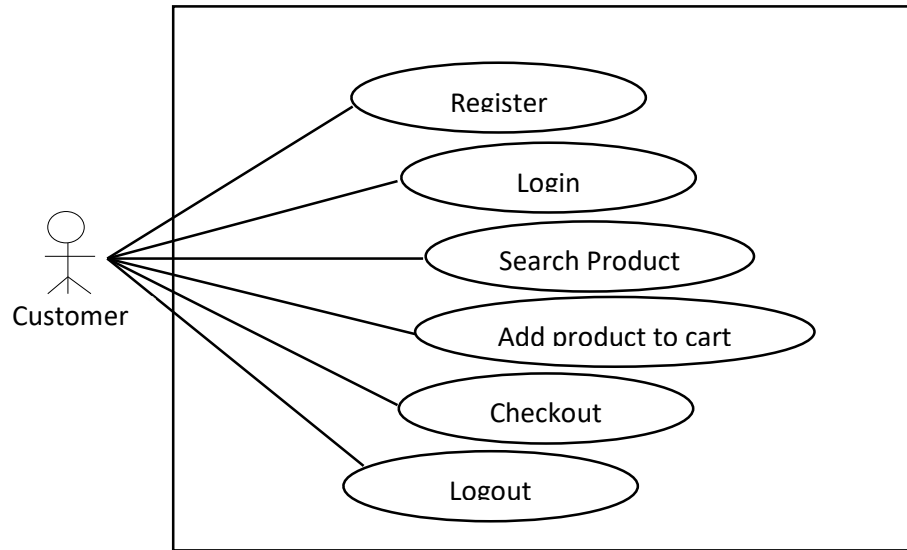
Figure 9 User Use Case Diagram

3.2 System Design

3.2.1 Architectural Design
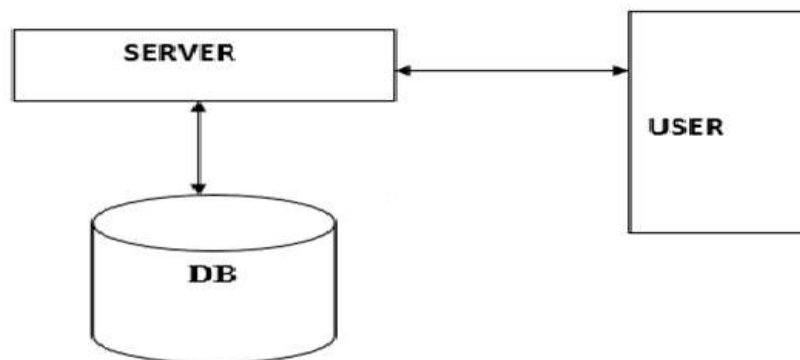
Figure 10 Architecture of ElectroMart

3.2.2 Database Schema

A database schema is the blueprint of your database, it represents the description of a database structure, data types, and the constraints on the database. Designing database schemes is one of the very first and most important steps to start developing any software/website. Users' logical schema has fields like id, email, password, confirm password, and table name which defines all the logical constraints that need to be applied to data stored in the physical schema. Similarly, the Order_Table logical schema has fields like id, address, full_name, and pay_mode. Order_Details logical schema has fields like id, item_name, price, and quantity. Similarly, the Admin logical schema has fields like id, email, and password. Admin can perform operations such as adding products and manipulating data. Similarly, the Product logical schema has fields like id, price, product_name, product_desc, category, and image. Admin using a foreign key and ID of each schema present in the proposed system is primary and unique.
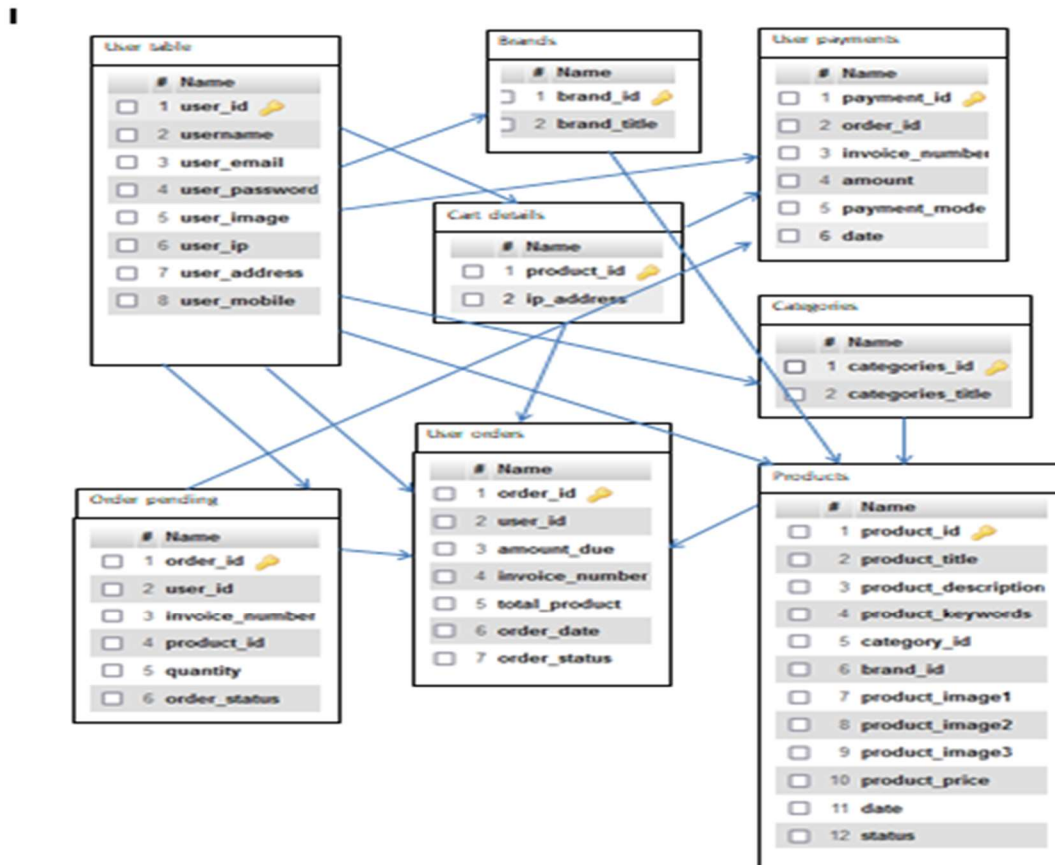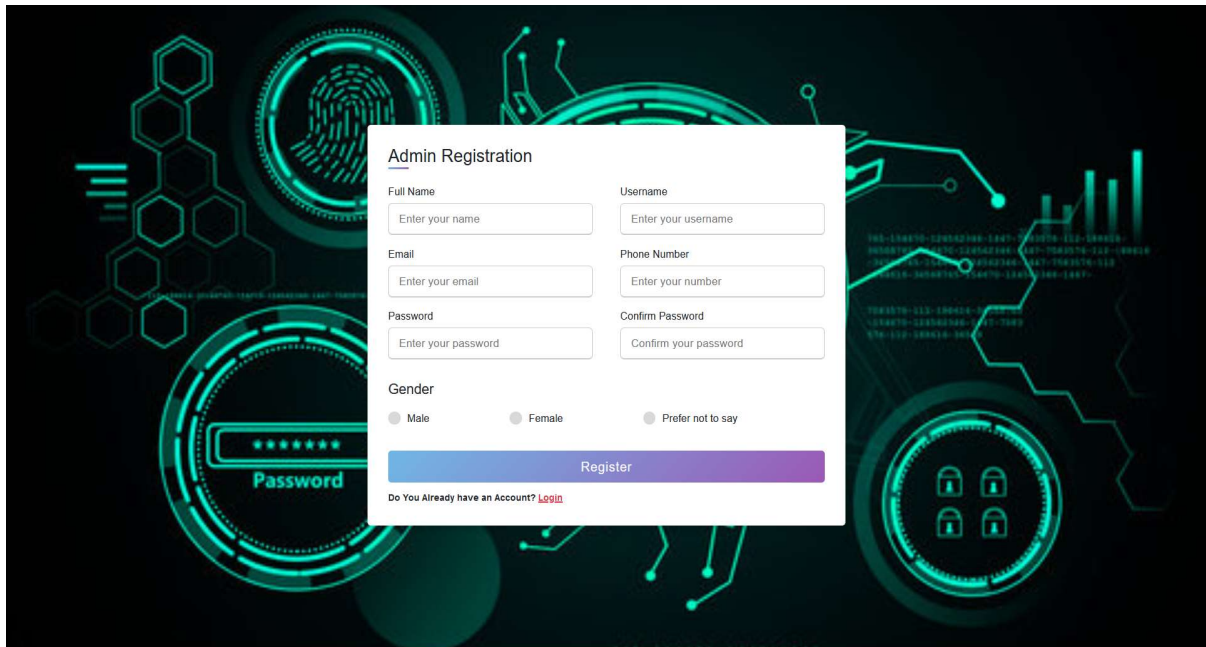
Figure 11 Database Schema Design(ElectroMart)

17

3.2.3 Interface Design (UI Interface / Interface Structure Diagrams)

A few user interface designs were created before the actual design of the project is implemented to visualize the user interaction with the system as they explore registration, login, and complete transactions. Our Functional Decomposition Diagram, which shows the early designs of the web pages, would be closely followed by the user interface design.

Figure 12 Admin Registration page Design
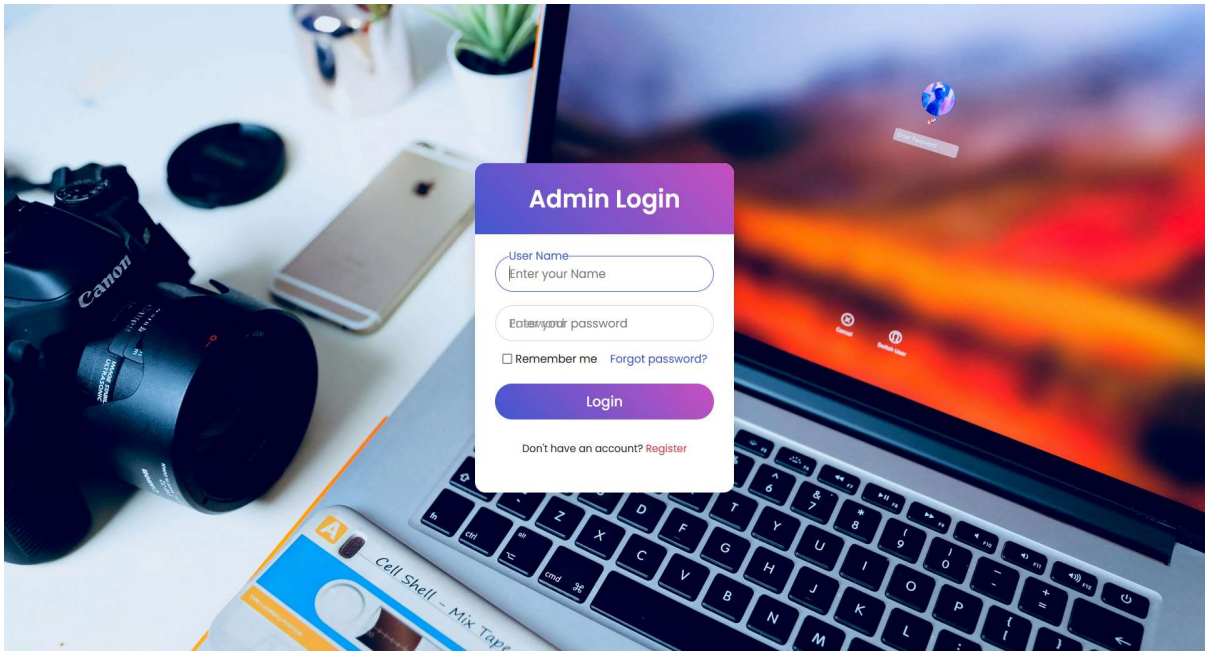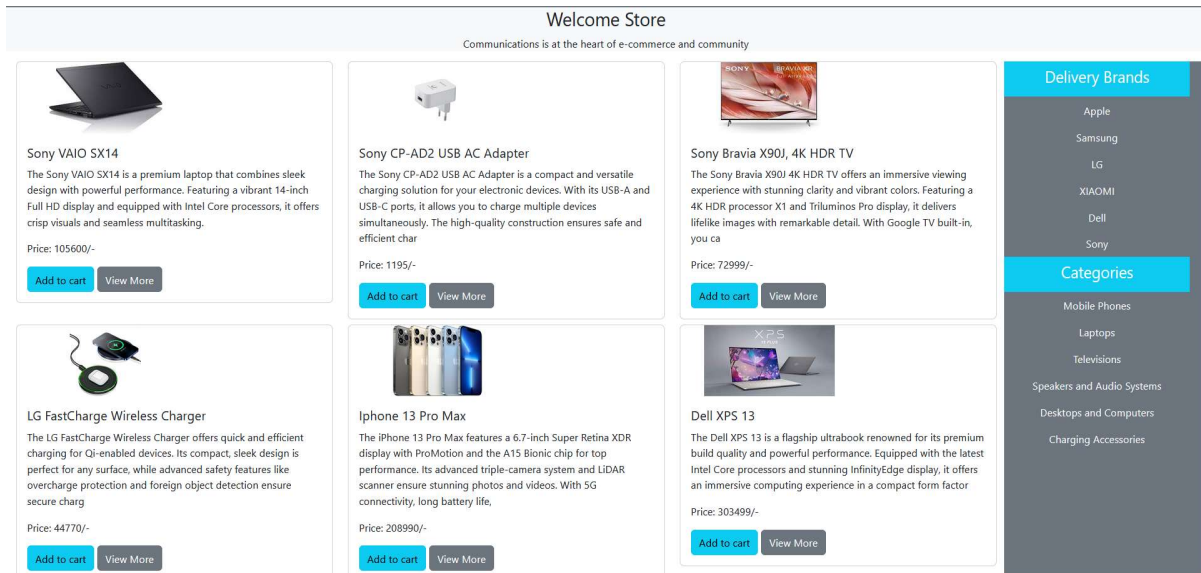
Figure 13 Admin Login Page Design

Figure 14 Add Product Page Design

Figure 15 Products list Design

All Products
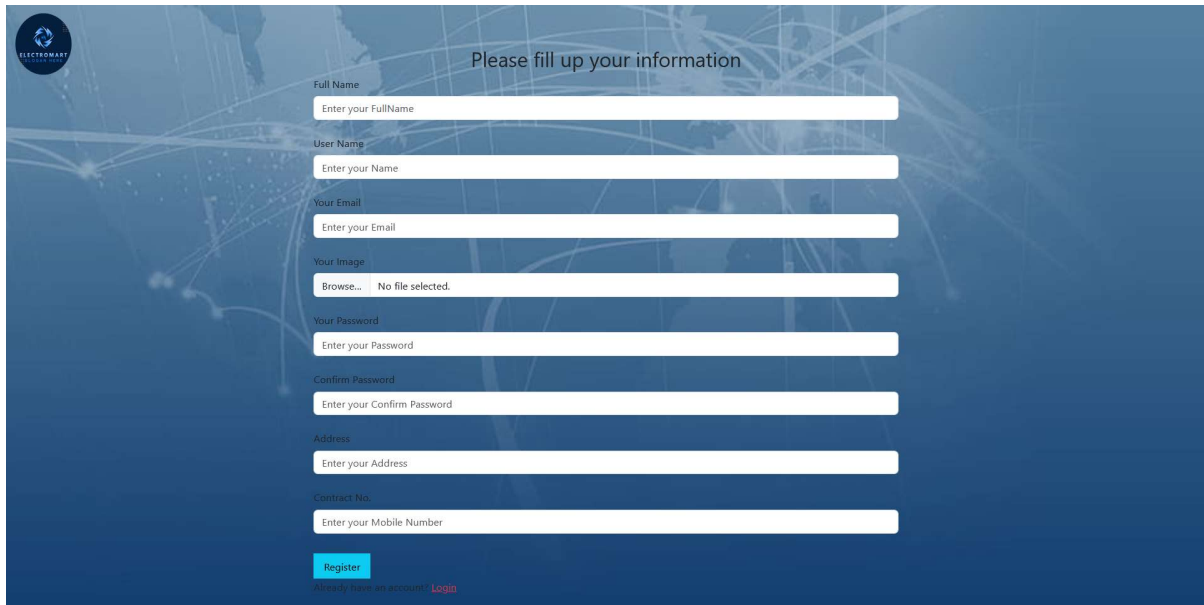
Product ID	Product Title	Product Image	Product Price	Total Sold	Status	Edit	Delete
18	Iphone 13 Pro Max		208990/-	1	true	✎	🗑
19	MacBook Pro 16-inch		325000/-	0	true	✎	🗑
21	iMac 24-inch		299000/-	0	true	✎	🗑
25	Samsung Sound Tower MX-T70		66999/-	0	true	✎	🗑
26	Samsung QN90A Neo QLED 4K TV		278990/-	0	true	✎	🗑
27	Samsung Galaxy Book Pro		215999/-	0	true	✎	🗑
28	LG FastCharge Wireless Charger		44770/-	0	true	✎	🗑
29	Xiaomi Mi 11 Ultra		125000/-	0	true	✎	🗑
30	Xiaomi Mi Notebook Pro		136999/-	0	true	✎	🗑
31	Dell XPS 13		303499/-	0	true	✎	🗑
32	Sony Xperia 1 III		97200/-	0	true	✎	🗑
33	Sony VAIO SX14		105600/-	0	true	✎	🗑
34	Sony Bravia X90J, 4K HDR TV		72999/-	0	true	✎	🗑

Figure 16 Display Product Page Design
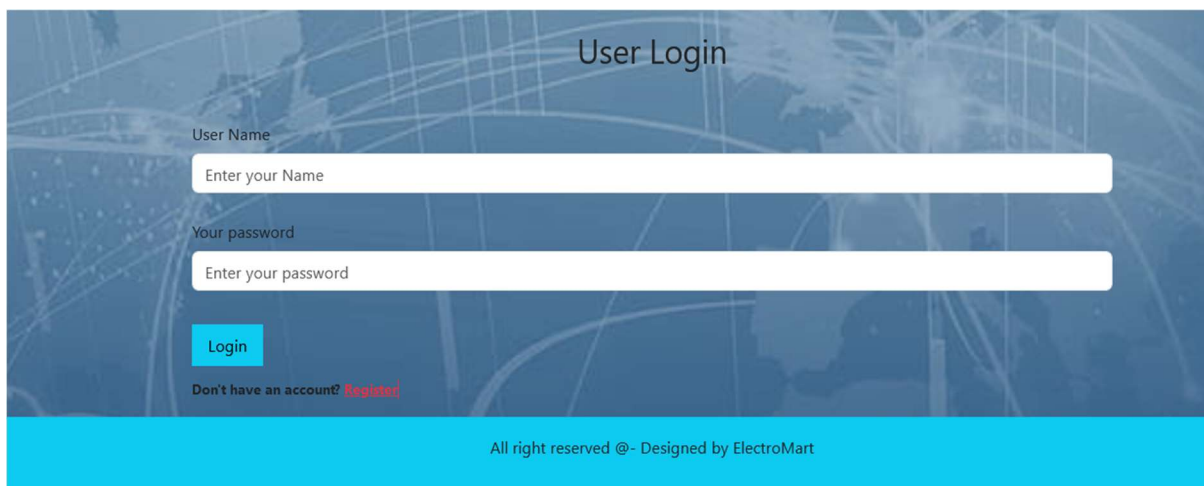
Figure 17 User Registration Design

Figure 18 User Login Design
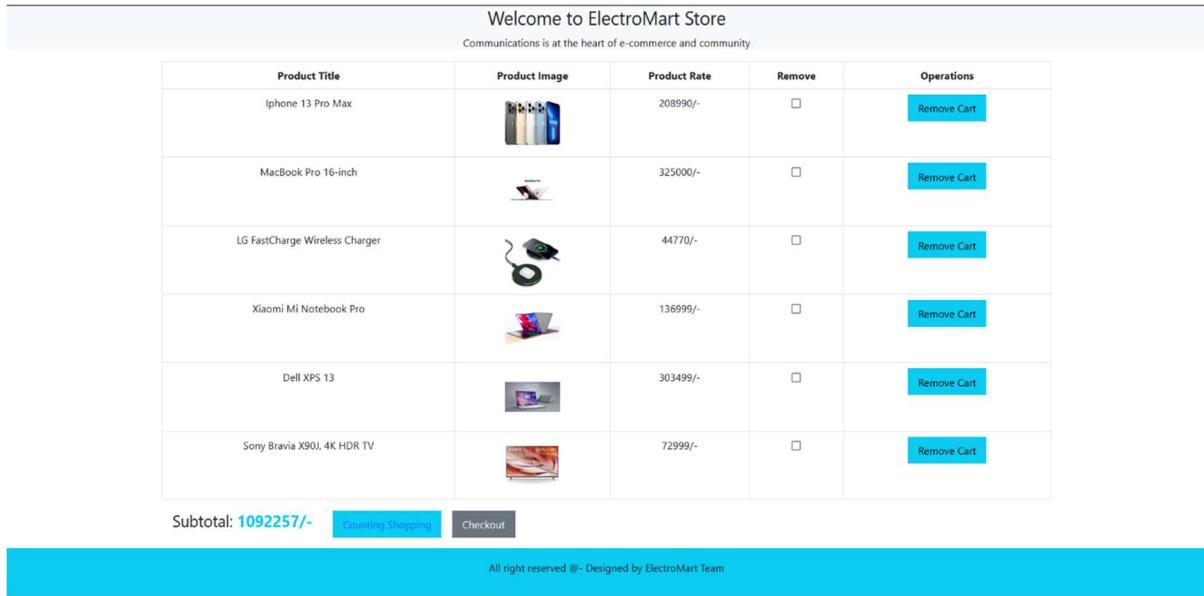
Figure 19 My Cart Page Design
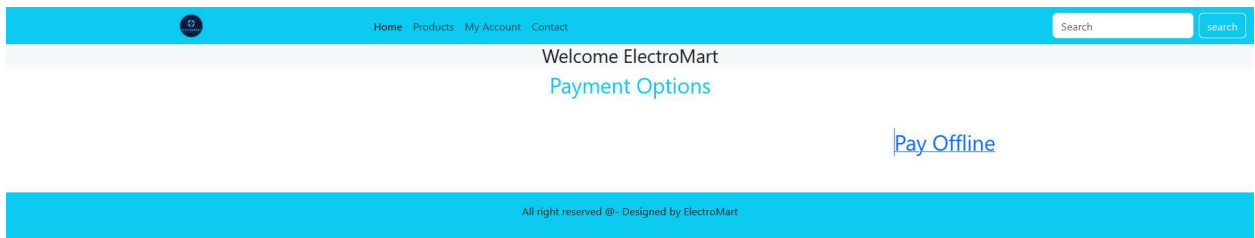
Figure 20 Order Checkout Page Design

Figure 21 Display Order Page Design

CHAPTER 4

4.1 Implementation

In the first phase, data was collected. Data collection took longer than another phase. It was a critical stage in the project's development. All the physical design of the project is turned into working computer code. Many tools and technologies that were utilized to develop the system were discussed in the preceding chapter.

4.1.1 Tools Used

The various system tools that have been used in developing both the front-end and back-end of the project are discussed in this chapter.

Front-end

Bootstrap, HTML5, CSS3, and JavaScript are used for developing the front end.

i.   **HTML5 (Hyper Text Markup Language):** HTML is used for structuring web page design in our project and it provides us with the overall skeleton structure of a web page. HTML is the main presentation language of our project because it helps us to show the structure of our page in the browser which helps us to debug easily and efficiently.

ii. **CSS3 (Cascading Style Sheets):** CSS is used to style the HTML document in our project. It is used to make our web pages responsive however bootstrap is used to make our web pages responsive.

iii. **JavaScript:** JavaScript is used to make our web pages interactive and many JavaScript functions such as dialogue boxes are used in this project to make web pages interactive and user-friendly.

iv. **Bootstrap:** Bootstrap is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first websites.

Backend

The backend is implemented using Laravel, and MySQL. MySQL is used to design databases.

i. **Laravel:** It is used to develop dynamic and interactive webpages. It is a PHP framework

ii. **MySQL:** It is used for databases.

iii. **XAMPP:** XAMPP is used for local servers.

4.1.2 Implementation Details of Modules

The proposed system is composed of different modules such as the user module, admin module, login module, and order module. In the user module user can register and log in to the system and perform transactions and can get logout from the system likewise admin also can login to the system and manage products and logout from the system in the login module, only registered users can login the system. In the transaction detail module user can see the detailed transaction after every successful transaction. In the remove user module admin can delete the user and it can be performed by admin only.

User Module:

In the user module, an account is created by filling in the form detail which includes the fields like username, email address, password, and confirm password. If the user enters an already registered email and username then the student cannot register themselves twice. While filling the input field the user must fill all data in the input field so that it would not throw an error message. After successfully creating an account, the user can login to the system and perform tasks like add to cart if you like the product, view products, view details of products, purchase the products, and so on.

Admin Module:

In the Admin Module authentication is done using the email and password given to the admin if the admin enters the correct email and password then the admin can access his dashboard. An admin manages users in the system and the admin module contains a home page or dashboard in which the admin can add, edit, and delete products and admin will be able to see the orders and the admin can logout of the system by clicking the logout button in the admin dashboard.

Login Module:

In the Login Module user can login to the system after successfully creating an account. The login module consists of two fields an email field and a password field. The user is only logged in to the system when the email and password entered by the user are matched with the database email and password. In this module user can login through email and password. Users must enter the correct email and password to log into the system. If a user enters the incorrect email and password, then it throws an error message and to login in to the system user must enter the correct email and password.

Order Module:

Users must log into the system to perform orders. Users cannot order the products if the user is not logged into the system. An order module tracks sales, orders, inventory, and fulfillment. In the order module user can track an order from the initial purchase transaction, through the entire fulfillment process, to the point a customer receives their goods. At each stage, data is collected, so the customer can order the product. Users can order the products by filling in forms that include the fields like full name, address, and contact number.

4.1.2.1 User Registration
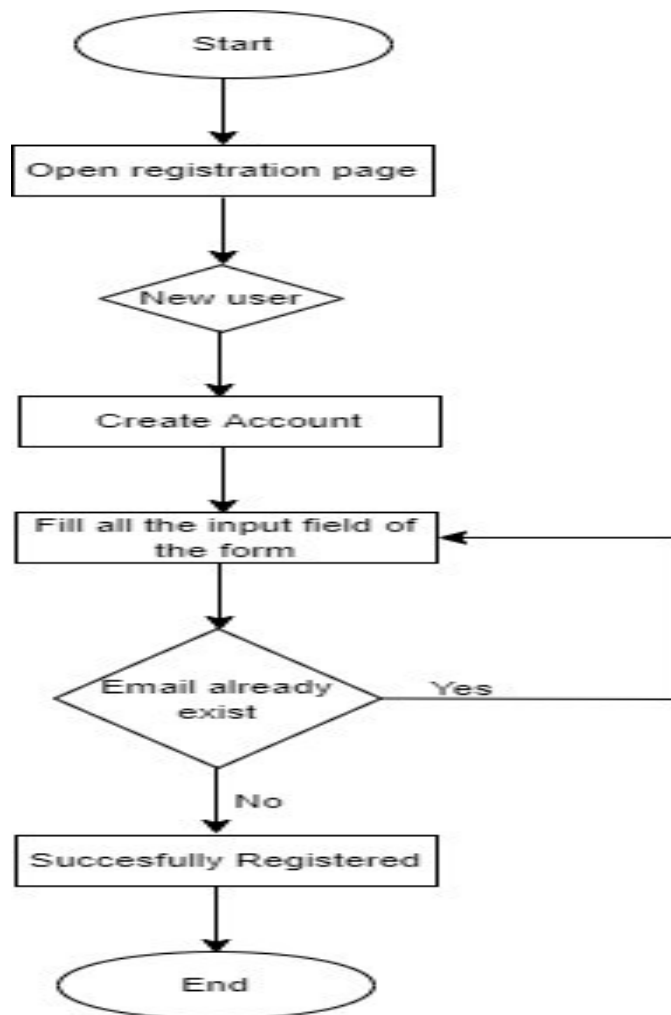

Figure 22 Creates Account of a User Flowchart

4.1.2.2 User Login
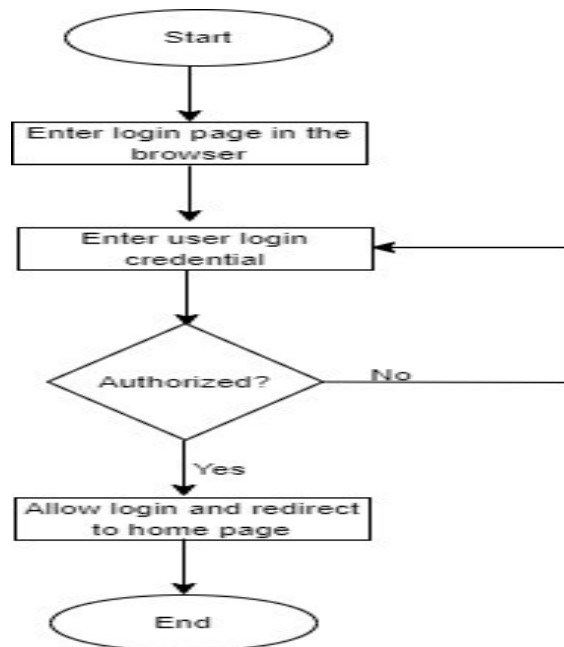
Figure 23 User Login Flowchart

4.1.2.3 Admin Login
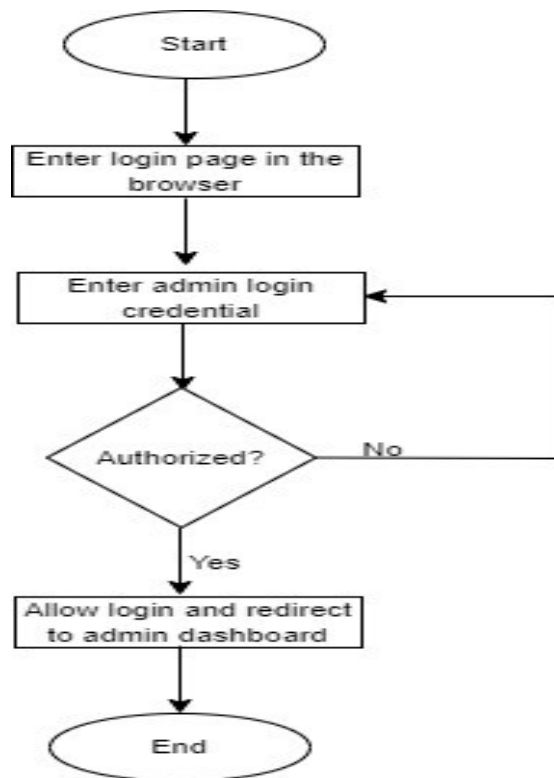
Figure 24 Admin Login Flowchart

4.1.2.4 Order product
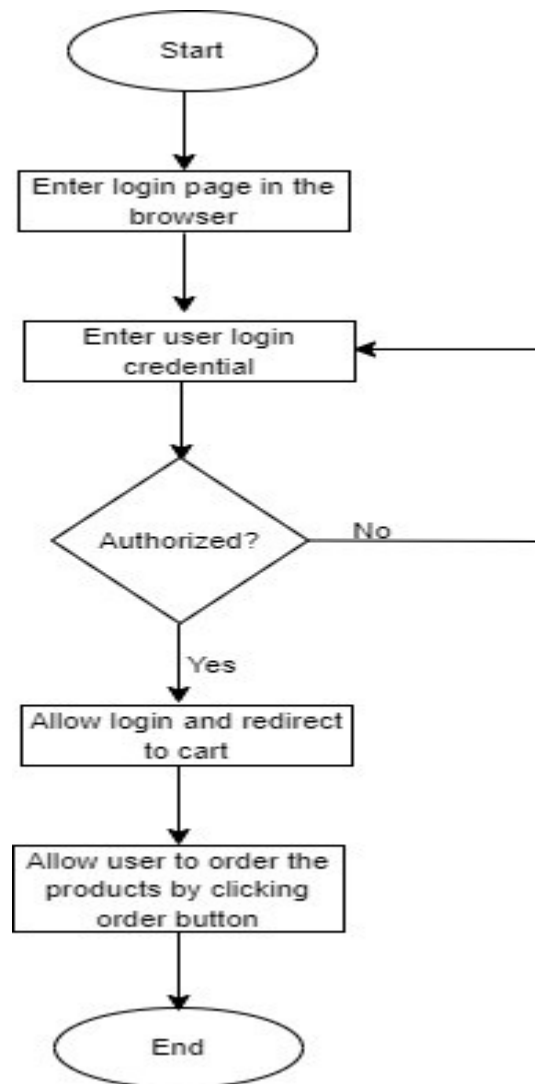
Figure 25 Order Product Flowchart

4.2 Testing

Based on the software requirement specification document, testing was performed to investigate and validate the behavior of a fully integrated software product. Before deploying an application or website, it must be thoroughly tested. As a result, this application's test cases were written. Some of the types of testing that we did are described below.

4.2.1 Test Cases for Unit Testing

4.2.1.1 Admin Login Table

Table 1Admin Login

ID	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
LOG-1	Admin enters a wrong email	email: root@gmail.org password: 1111	Display message **Email is invalid**	As expected,	Pass
LOG-2	Admin enters a wrong password	email: admin@gmail.com password: 1223334	Display message **incorrect password**	As expected,	Pass
LOG_3	Admin enters correct email and password	email: admin@gmail.com password: 1111	Logged into admin page	As expected,	Pass

4.2.1.2 User Login Table

Table 2 User Login

ID	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
ULOG1	User enters a wrong email id	email: user@wronmfg.com password: 1111	Display message **Invalid email**	As expected,	Pass
ULOG2	User enters a wrong password	email: user@gmail.com password: 12345	Display message **incorrect password**	As expected,	Pass
ULOG3	User enters correct username and password	email: user@gmail.com password: 1111	User logs in successful and redirected to the home page	As expected,	Pass

4.2.1.3 User Registration Table

Table 3 User Registration Table

ID	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
UREG1	User enters already existing email	Email: user@gmail.com Password:1234 ConfirmPassword:1234	Display message **Email already exist**	As expected,	Pass
UREG2	User enters all the details successfully	Email: user@gmail.com Password: user1234 ConfirmPassword:user1234	Redirect to Login Page	As expected,	Pass
UREG3	User forgets to enter a particular required field	Email: Password:user1234 ConfirmPassword:user1234	Display message **All Fields Need to be Filled**	As expected,	Pass
UREG4	User did not match the password and confirm password	Email: user@gmail.com Password:user1234 Confirm Password:user123	Display message **Password Do not Match **	As expected,	Pass

4.2.2 Test Case for System Testing

Check system behavior,

➢ If the site launches properly with all the relevant pages, features, and logo.

➢ If the user can register/login to the site.

➢ If the key features, such as add to cart, see product details, order products, and so forth, function as expected.

➢ If the site works properly in the newest versions of all major browsers.

➢ If the content of pages is properly aligned, well managed, and without spelling mistakes.

➢ If the session is working as expected.

➢ If a user is satisfied with the site after utilizing it, or if the user does not find it difficult to utilize it.

CHAPTER 5

5.1 Lesson Learnt / Outcome

With the completion of the project, it was possible to achieve the project's goal. The user will be able to register them in this web-based application and select products according to their preference. Users will be able to add the product to the cart and admin will be able to add, edit and delete the products. Users can subsequently review the product through any place. In this way, the user can save time and perform transactions from this website.

5.2 Conclusion

Overall, E-Commerce and the user will be done properly for the betterment of users. Users can rely on this website to choose their products. They will also be given proper feedback about choosing their products wisely. So, E-Commerce websites provide better facilities for the Users. E-commerce systems are successfully implemented using HTML5, CSS3, JavaScript, Bootstrap, and PHP which are open source and freely available on the internet and it successfully solves the problem of traditional E-commerce systems. The proposed system is useful for people with minimal IT knowledge of the use of the Internet. Towards the end of the project, it was discovered that the application might benefit from several improvements. Some of these suggestions came from the app's testers, while others came from both of us. Any more enhancements to the application can be made during future development.

5.3 Future Recommendation

Many things can be added in the future to improve this website such as user experience, and portability. There is more to be done, thus this application can be seen as a launching pad for something bigger to come. All of them will need more time and resources to complete, but they are still highly realistic and achievable goals.

- ➢ In addition to dark themes,
- ➢ Making a good user profile,
- ➢ Greater user experience,
- ➢ Online payment system

References

[1] E. O. J. K. D. L. J. K. L. T.-P. &. T. D. C. Turban, Electronic Commerce 2018: A Managerial and Social Networks Perspective, Springer, 2018.

[2] K. C. &. T. C. G. Laudon, E-commerce 2020: Business, Technology, Society, Pearson, 2020.

[3] H. W. R. &. P. J. Lim, "M-loyalty: Winning strategies for mobile carriers," *Journal of Consumer Marketing,* vol. 33, no. 3, pp. 208-218, 2016.

[4] N. P. A. G. M. N. &. C. V. Pappas, "Moderating effects of online shopping experience on customer satisfaction and repurchase intentions," *International Journal of Retail & Distribution Management,* vol. 42, no. 3, pp. 187-204, 2014.

[5] J. Nielsen, "Usability 101: Introduction to usability," Nielsen Norman Group, 2012. [Online]. Available: https://www.nngroup.com/articles/usability-101-introduction-to-usability/.

[6] E. Marcotte, "Responsive web design," A List Apart, 2010. [Online]. Available: https://alistapart.com/article/responsive-web-design/.

[7] W. Z. L. &. S. A. Zheng, "The impacts of information quality and system quality on users' continuance intention in information-exchange virtual communities: An empirical investigation," *Decision Support Systems,* vol. 56, pp. 513-524, 2019.

[8] E. B. &. R. N. C. Swanson, " Innovating mindfully with information technology," *MIS Quarterly,* vol. 28, no. 4, pp. 553-583, 2004.

[9] "Online Data Flow Diagram Maker," [Online]. Available: https://online.visual-paradigm.com/diagrams/features/dfd-maker/.

[10] J. More, "Software Development Model — Incremental Development," Bootcamp, 30 August 2023. [Online]. Available: https://bootcamp.uxdesign.cc/dlc-software-development-model-incremental-development-7598ae6500e6.