E Commerce Web Platform Development

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A Project

in

The Department

of

Computer Science and Engineering

Presented in Partial Fulfillment of the Requirements

For the Degree of Master of Science in Computer Science and Engineering

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Approval Certificate

This project titled "**E Commerce Web Platform Development**" submitted by **M. Nayeem Abdullah**, Student ID: 012153015, has been accepted as Satisfactory in fulfillment of the requirement for the degree of Master of Science in Computer Science and Engineering on 18/12/2017

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Declaration

This is to certify that the work entitled "**E Commerce Web Platform Development** " is the outcome of the research carried out by me under the supervision of Dr. Mohammad Nurul Huda, Professor & MSCSE Coordinator.

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In my capacity as supervisor of the candidate's project, I certify that the above statements are true to the best of my knowledge.

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Abstract

E-Commerce also known as Electronic Commerce, selling of service or products via the internet or computer network. E-commerce has been a revolutionized medium for both buyers and sellers. When E-Commerce emerged people were reluctant to use it but as time passed people got more used to it and now it is the most popular choice amongst people. The revolution of E-commerce wave has also hit Bangladesh. More companies are interested in investing online and creating an entity of their own in the World Wide Web. E-Commerce provides smaller business to go toe to toe with bigger organizations, it reduces friction between organizations in marketplace. E-Commerce provides hassle free shopping and delivery services, and the monetary transactions are all maintained in a secured way. E-Commerce websites greatly enhances a company's visibility in the market, hence it is easier to reach out to a larger audience base which previously would have been impossible. E-Commerce also reduces the marketing and advertising costs which benefits the company financially. Small entrepreneurs are often absent in e-commerce platform due to lack of technical skills, shortage of initial establishment fund to begin an e-commerce site, and inconveniences to maintain the system.

The barriers to entering in e-commerce for small business can be overcomes by taking the integrated approach where many small business entrepreneurs can collectively fund and start an E-commerce site that will facilitate e-commerce applications to all of them. In this project, we have designed and developed a collective e-commerce platform for small and medium business considering the context of a developing country like Bangladesh. We have developed "Ecom" as a model of e-commerce that can bring many small entrepreneurs close to the customer.

The project, "**E Commerce Web Platform Development**" has been developed for enabling a small business to use e-commerce to sell goods and service through online Shops of diversified business can create their online shop for their product such as cloth. Books, foods, fashion etc. It also provides the online customers a list of different available products in different stores. This project also supports through mobile banking transaction for the convenience of customers.

This system is implemented using a 3-tier approach, with a backend database (MYSQL). A middle tier of Apache web server and PHP and a web browser as the front end-user. It also discusses the way, how the underlying technologies used in the implementation. Extensive use and implementation of this system can make significant contribution, in the economic development of countries with emerging e-commerce fields.

Acknowledgement

This project "**E Commerce Web Platform Development**" was completed under the supervision of Dr. Mohammad Nurul Huda, Professor & MSCSE Coordinator of United International University, Dhaka. First and foremost, I wish to acknowledge his profound indebtedness for the guidance, valuable suggestion encouragement and cordial cooperation. Without his inspiration and valuable suggestion, it would have been impossible to complete the project. I would like to thank all the honorable teacher of this department for their help and kind cooperation for completion of the project. I would like to thank my parents, relatives and friends for their support. Finally, I would like to express my heartiest gratefulness to the almighty Allah. It would never possible for us to complete this project successfully without his divine blessing.

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CHAPTER 1 - INTRODUCTION

1.1 About E-commerce Industry

E-Commerce also known as Electronic Commerce, selling of service or products via the internet or computer network. E-commerce has been a revolutionized medium for both buyers and sellers. When E-Commerce emerged people were reluctant to use it but as time passed people got more used to it and now it is the most popular choice amongst people. The revolution of E-commerce wave has also hit Bangladesh. More companies are interested in investing online and creating an entity of their own in the World Wide Web. E-Commerce provides smaller business to go toe to toe with bigger organizations, it reduces friction between organizations in marketplace. E-Commerce provides hassle free shopping and delivery services, and the monetary transactions are all maintained in a secured way. E-Commerce websites greatly enhances a company's visibility in the market, hence it is easier to reach out to a larger audience base which previously would have been impossible. E-Commerce also reduces the marketing and advertising costs which benefits the company financially.

1.2 Project Objectives

- **Enhance customer service** - As the system is automated and online based customers will have less of problems and enjoy a hassle free shopping experience.
- **Advertising savings** - As the web platform provides greater reach it minimizes advertising and marketing cost.
- **Increase the level of customer service** by avoiding under stocking of products so that the store never runs out of stock. Easy to determine products which are understock and restocking them.
- **Impose Data Security** so that unauthorized individual cannot access sensitive data and cause mishaps which might disrupt the system.
- **Data loss is minimized** as data is saved in database and periodic backup is done. So in case of any disaster data can instantly be restored.
- **Maximize customer reach** – As the website is a global platform the potential customer base increases as more user access the website from anywhere around the world.

1.3 The Motivation of E-commerce

- E-commerce can help small business to reach global market and extend their customer reach, as a result more visibility and more sales.
- Many small businesses with promising ideas have to struggle to reach their intended market due to their absence in e-commerce, due to lack of proper guidance, training and understanding of this medium.
- They cannot connect to their prospective customer with their products as they do not have proper web platform to engage with the customer.
- Small entrepreneurs are often absent in e-commerce platform due to lack of technical skills shortage of initial establishment fund to begin an e-commerce site, and inconveniences to maintain the system.
- The barriers to enter in e-commerce for small business can be overcome by taking integrated fund start an e-commerce site that will facilitate e-commerce applications to all of them, which will benefit them greatly in the long run.

1.4 Contribution of E-commerce

- We have to design and developed a coactive e-commerce platform for small and medium business considering the context of a developing country like Bangladesh.
- We have developed “Ecom” as a kind of model of e-commerce that can bring many small entrepreneurs close to the customer, which will greatly benefit the business to draw more customers to their business venture.
- Provide the online customers with a list of different available products in different stores, as there is no warehouse or large showroom involved stocking and distribution of product is much easier.
- The project also gets supports through online and mobile banking transection for the customers, since they can order product and pay from their home.
- System is implemented using a 3-tier approach, with a backend database (MYSQL), a middle tier of Apache web server PHP and a web browser as the front end-user, as a result the system ensures maximum level of security.

1.5 Project Outline

The project is planned and organized using SDLC lifecycle. The project documentation is organized as followed: Chapter one discusses about the introduction. We discuss about the tools and language used in developing the website. How the proposed site is designed how the database is created. Present the Implementation of the project and final steps are conclusion and this with some future scope which we can work on.

CHAPTER 2 - ECOMMERCE IN BANGLADESH

2.1 Definition of E-commerce

Electronic commerce commonly known as E-commerce, has consist of the buying and selling of the product or service over electronic system such as the internet and other computer networks. The world tread organization defines e-commerce as, e-commerce is the production distribution marketing, sales or delivery of goods and services by electronic means electronic commerce or e-commerce refers to a wide range of online business activities for product and service e-commerce also pertains to "any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact" E- commerce is usually associated with the buying and selling over the internet, or conducting any transaction involving the transfer of ownership or rights to use goods or services through a computer mediated network. A more complete definition is: E-commerce is the use of electronic communications and digital information processing technology in business transactions to create. Transform. And redefine relationships for value creation between or among organizations. And between organization and individuals. [2] [3].

2.2 Scenario of E-commerce in Bangladesh

The internet users are increasing in Bangladesh day by day and all the mobile companies has already established their 3G network. As a result, many companies have already started doing their business online. The recent report says that there are 6.4 core people in Bangladesh have already access to the internet communication [4]. E-commerce website being popular day by day in Bangladesh. As the transaction is now easy in online system so the selling and buying is very easy through the e-commerce system. We want to make such a website which will be the best e-commerce websites in Bangladesh. From this e-commerce website we want to sell many kinds of products such as cloth, foods. Jewelers. Books etc. The most popular e- commerce website in Bangladesh are ekhanei.com, clickbd.com, bikroy.com, akoni.com, ajkerdeal.com, rokomari.com and etc. we want to share something about these popular e- commerce websites in Bangladesh.

2.3 Types of E-commerce

There are six type of e-commerce system that's serve different services.

1. Business -to-Business (B2B)

2. Business -to -Consumer (B2C)

3. Consumer -to-Consumer (C2C)

4. Consumer -to -Business (C2B)

5. Business-to-Administration (B2A)

6. Consumer-to-Administration (C2 A)

2.4 Summarized Table of e-commerce in Bangladesh

In Table-1: we showed different Business type and Service focused e-commerce website in Bangladesh and their Revenue Model

Name	Year	Service Focus	Business Type	Revenue Model
clickbd.com	**2005**	**Buy, Sell**	**B2B,B2C**	**Sells revenue**
ekhoni.com	**2006**	**Buy, Sell**	**C2C**	**Classified advertising**
Ajkerdeal.com	**2011**	**Sell**	**B2C**	**Sells revenue**
Rokomary.com	**2012**	**Sell**	**B2C**	**Sells revenue**
bikroy.com	**2012**	**Buy, Sell**	**B2C, C2C**	**Classified advertising**

Table 1: Popular E-commerce websites in Bangladesh

2.5 E-commerce Revenue Aspects

Major revenue modes:

- Subscription based revenue mode.
- Sales of service based revenue mode
- Sales based revenue mode
- Communication fee
- Transaction based revenue/fee
- Advertising based revenue mode
- Affiliate based revenue mode

2.6 Different aspects of E-commerce Security

- High level of Data security and integrity
- No reputation or established business needed
- Credibility and Authenticity of data.
- Confidentiality of sensitive information
- Privacy of personnel data from unauthorized access.
- Availability of website from anywhere in the world.

2.7 Common security threats for e-commerce environment

- Intellectual security threat
- Client computer threats
  - Malicious codes
  - Active contents
- Communication channel threats
  - Sniffer program
  - Backdoor
  - Spoofing
  - Denial-of-service
- Server Threat
  - Privilege setting
  - Server Side include (SSI)Common Gateway Interface(CGI)
  - File transfer
  - Spamming

CHAPTER 3 – Requirement Analysis of ECOM

3.1 Problem Findings in the Current System

While investigating the current system I found a number of problems there was vast transaction between customers and staffs of the company which was very difficult to manage. Storing and retrieving Information is a very lengthy process manually and is often prone to error. Since the data are stored and maintained manually searching for useful information is a hassle. The client sensitive data is often subject to unauthorized access which can be very problematic in some cases. The problems identified during the study are as follows:

- As data is not stored in a structured way it is difficult to manage and retrieve useful information out of these data.
- As the records are maintained manually it is difficult to obtain record of a particular client, because client information are maintained in several books. Merging these records to a unified output then becomes a laborious process.
- No security measures to restrict the unauthorized personnel from accessing the client sensitive records. The important files can be stolen or damaged which can hamper with the business.
- No back-up of record is maintained, hardcopies are stored in the office. So when it comes to finding record it is near impossible to retrieve the desired information.
- The hardcopy file can easily be damaged by water, fire or by other natural calamity.
- Since all the sales are shop based there is no provision for other mediums of sale.
- As searching and sorting through tons of paperwork is a laborious and time consuming process, so as a result reporting becomes a big hassle.
- Sensitive client or sales information is insecure in the system. Any staff with malicious intent can cause problems to business.

3.2 Selected solution to the problem and its justification

I prefer SDLC solution, as it follows a specific guideline on how a software has to be developed. Such as web based system will be used to collect client's information. Web based system can be helpful to collect order and validate and verify the order. On the other hand, full system will run by online based system as a result will be hassle free to the consumers. The clients will be able to shop from anywhere in Bangladesh as the system is internet based.

3.3 Planning of the proposed solution

After investigating and gathering requirement of the current manual system, I have to plan the proposed system carefully. I had to plan according to the user requirement and business requirement. The system should be scalable and would maintain high data integrity. Initially I have to carefully analyze whether the proposed system is feasibly cost effective for the organization. The proposed system will be comprised of three type of user same as in the current system such as desk user, staff, and administration. In the proposed system, registered user can browse/view product, add product to cart, place order and proceed to payment accordingly. System user with specific role will be able to check order into the system. System users with proper access level can view Client information and the admin users will have the provision to generate annual sales and delivery report. While investigating the current system I have identified the functional area which should be present in the proposed system:

- Ability to take orders from customers in an easy way.
- Provide the customers with variety of products
- Ability to take order by online ordering form, so that the consumers can order from anywhere in Bangladesh.
- Provide proper data integrity and security.
- Data should be stored in such manner that unauthorized personnel will not be able to access sensitive information.
- Provide hassle free service to the customers, so that users can easily get the desired service they need.

3.4 Advantages of the Proposed Solution

Since the proposed system is hosted in the internet it will allow customer from all over the world to access the system. The customers will face hassle free shopping as they do not need to be physically in the shop to buy a certain item. Since the payment is done online or cash on delivery it is more convenient for the consumers. The management and maintenance of the information in the system will be more efficient and effective as a result will be much more time effective. The proposed system will help system users to get desired information within a short period of time. Administrative authorities can efficiently get desired report about Clients, products, orders, payment and delivery.

3.5 Hardware and Software Specification

After analysis of the proposed system we have drawn out the software and hardware needed to run the system. Below is the list of minimum software and hardware specification.

Minimum Hardware Requirement :

Linux Dedicated Server with:

- Dual core, 2.7 GHz Intel® Processor
- 6 MB cache
- 8 GB RAM
- 1 TB HDD
- 10 TB/month

Minimum Software Requirement:

- PHP Version: 5.5
- Apache Version: Apache/2.4.4
- MySQL version: 5.5.3

"Ecom" needs product and inventory management and an online selling platform which will help their employees to keep record of clients order. The system should help them produce report about the inventory or stock currently available in their store in automatically. This will help the business owner in sale forecasting, taking decision about stock and which items to reorder and which items to discontinue.

CHAPTER 4 - System Diagram and Design

4.1 Use Case Diagram

A use case diagram is a graphic depiction of the interactions among the elements of a system. A use case is a methodology used in system analysis to identify, clarify. And organize system requirements in this context, the term "system" refers to something being developed or operated such as a mail-order product sales and service website. Use case diagram are employed in UML (Unified Modeling Language). A standard notation for the modeling of real-world object and systems. System objectives can include planning overall requirements. Validating a hardware design, testing and debugging a software product under development, creating an online help reference, or performing a consumer-service-oriented task. For example, use case in a product sales environment would include item ordering, catalog updating payment processing, and customer relations. A use case diagram contains four components.

- The system boundary, which defines the system scope or boundary in accordance to the real world around it.
- Use case actors are individuals or users involved in the system. Each actor has different roles or actions to perform in the system.
- The use cases specify the scenarios or possible outcome that can be performed by the actors in the system.
- The relationships between the actors and the use cases represents the possible scenarios and outcomes, it shows how system behaves according to different scenario and actor.

Use Case Diagram for Ecom Website

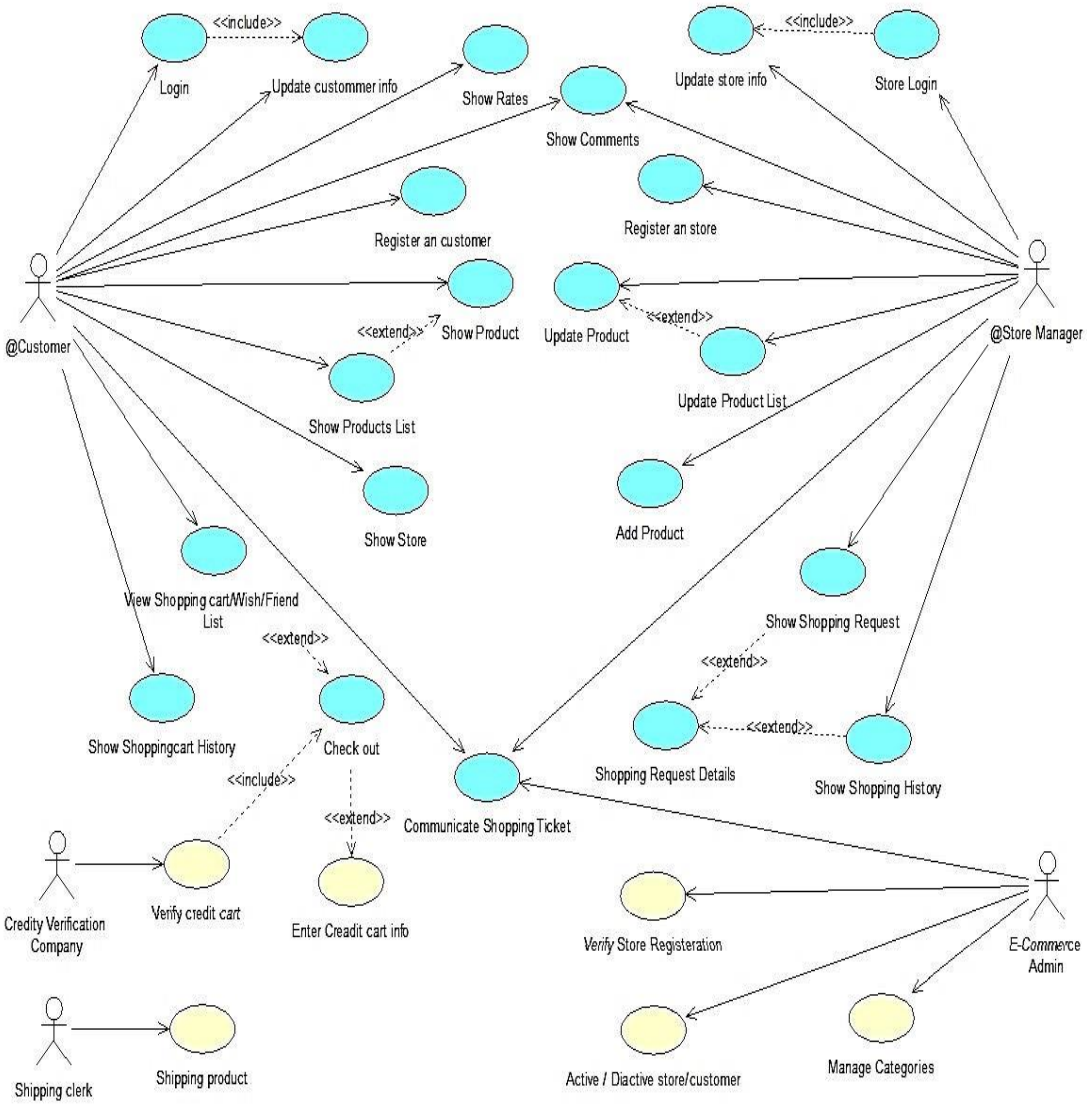

Figure 4.1: Use Case Diagram for Ecom : Online product selling platform

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4.2 Model-View-Controller (MVC) Architecture

Model-View-Controller (MVC) is a software architectural pattern that divides an application into three main logical components: Model, View, and Controller. All of these components are made to handle specific development scenario of an application. MVC is one of the most widely used industry-standard for web development. MVC framework is efficient to create scalable and extensible projects.

4.3 MVC Components

- **Model**: The Model based component interacts to all the system data related logic that the system user works with. Model can represent the data that is being transferred between the View and controller components. It can also represent any other business logic related data.

- **View**: The View component is used for all the User Interface based logic of the application. Checkbox, text box and all other UI related objects are good examples of components in the View.

- **Controller:** Controllers act as an interfacing medium between Model and View components. The controller processes all the business logic and incoming requests. The controller helps manipulate data using the Model component and combine with the Views to provide the final output.

4.4 MVC Architecture

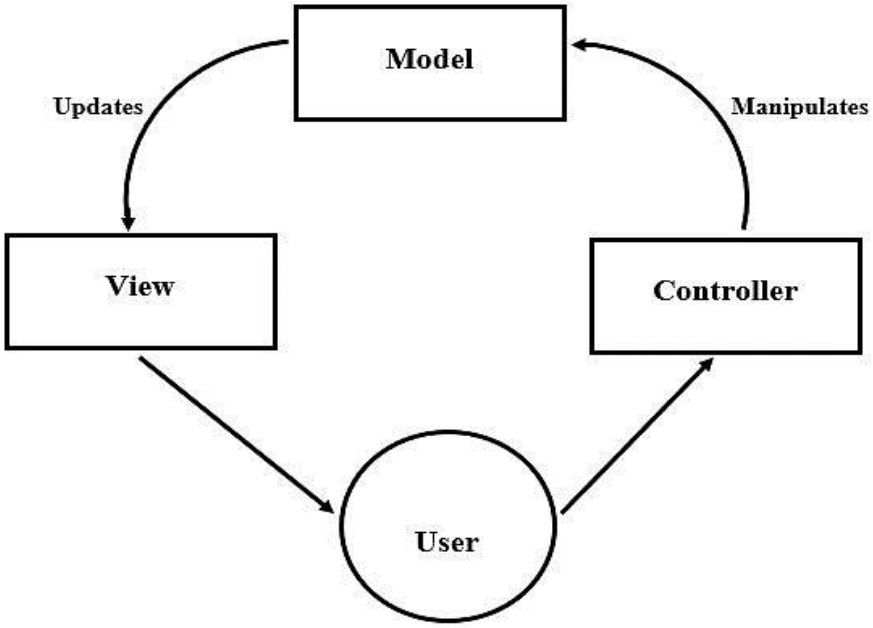

Figure 4.2: MVC Architecture implemented in Ecom

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- **Controller:** Controllers act as an interfacing medium between Model and View components. The controller processes all the business logic and incoming requests. The controller helps manipulate data using the Model component and combine with the Views to provide the final output.

4.5 Client-Server Architecture

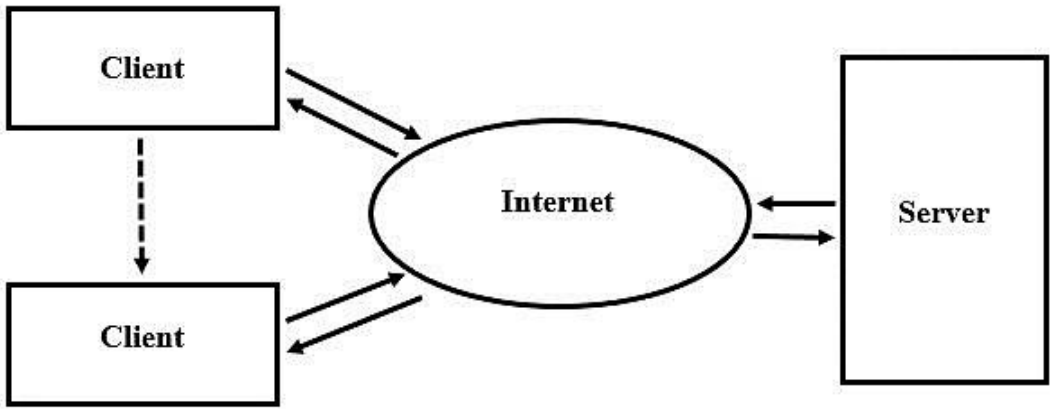


Figure 4.3: Client-Server Architecture implemented in Ecom

Client Machine

A client computer provides the user interaction-facility (interface) and some or all application processing. The client accesses the application though internet to get feedback or response from the server.

The Server Machine

The server computer might provide high-volume storage capacity, heavy data crunching, and/or high resolution graphics. The server serves data or processes data according to the needs of the client.

4.6 Sequence diagram for Ecom

Client registration Sequence diagram for Ecom:

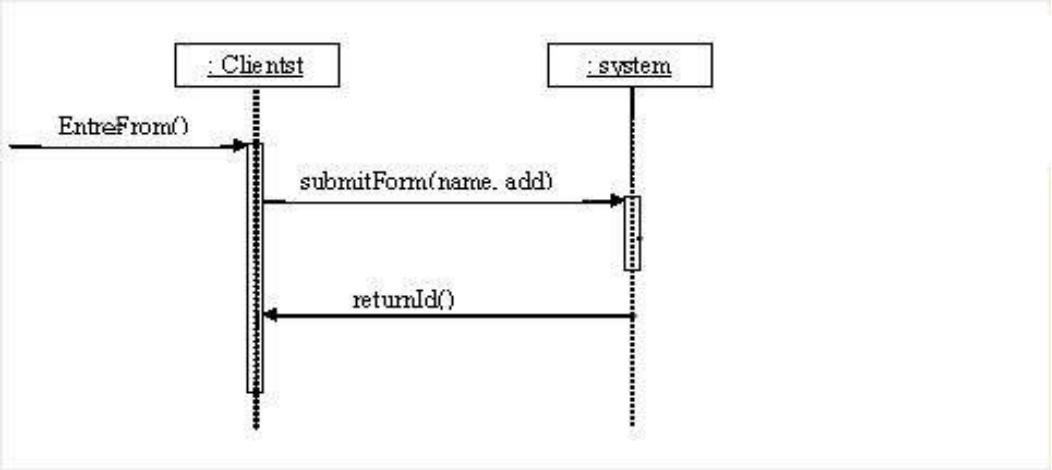


Figure 4.4: Client registration Sequence diagram for Ecom

The client enter information into the registration form and the information is passed onto the system. The system performs validation check and if everything is all right the system responds by sending a verification mail to the client.

Client order Sequence diagram for Ecom:

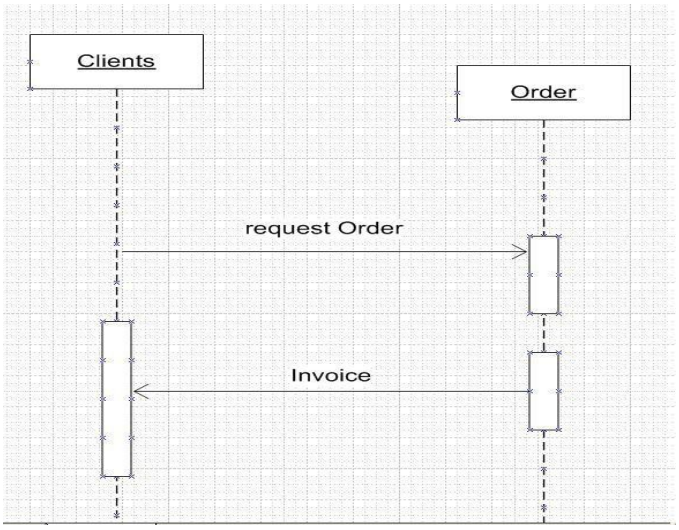


Figure 4.5: Client order Sequence diagram for Ecom

The client views products and adds those product to the cart , after adding product to the cart the client proceeds to checkout. When checkout has been done the system records the order in the system and sends an invoice to the client for that particular order.

Products delivery Sequence diagram for Ecom

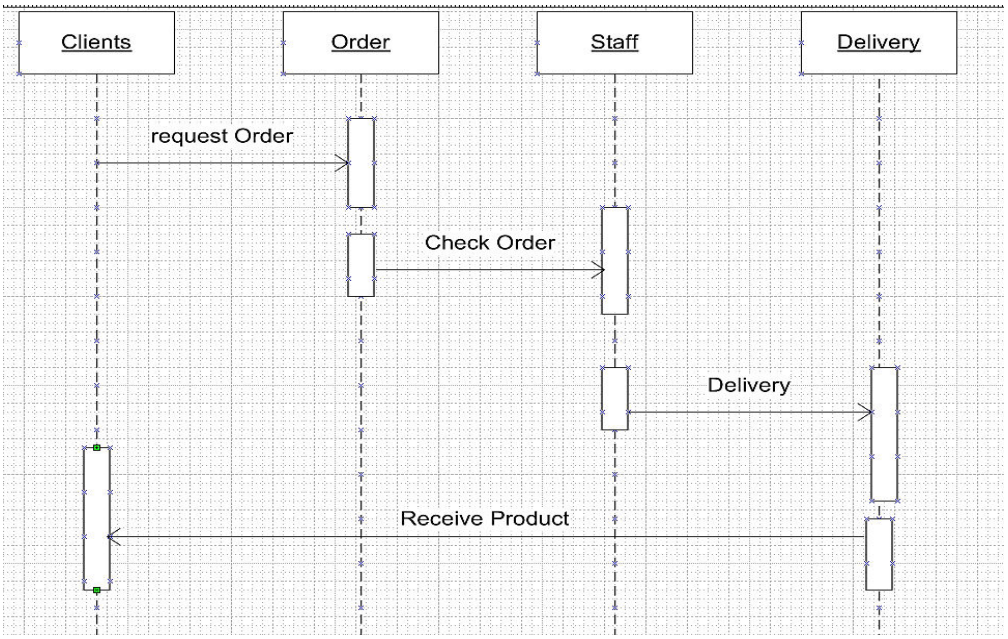


Figure 4.6: Product Delivery Sequence Diagram of Ecom

The client views products and adds those product to the cart , after adding product to the cart the client proceeds to checkout. When checkout has been done the system records the order in the system and sends an invoice to the client for that particular order. After invoice is sent product is delivered to the client the status of the order is changed to “Delivered” by the system user.

4.7 Entity Relationship Diagram for Ecom

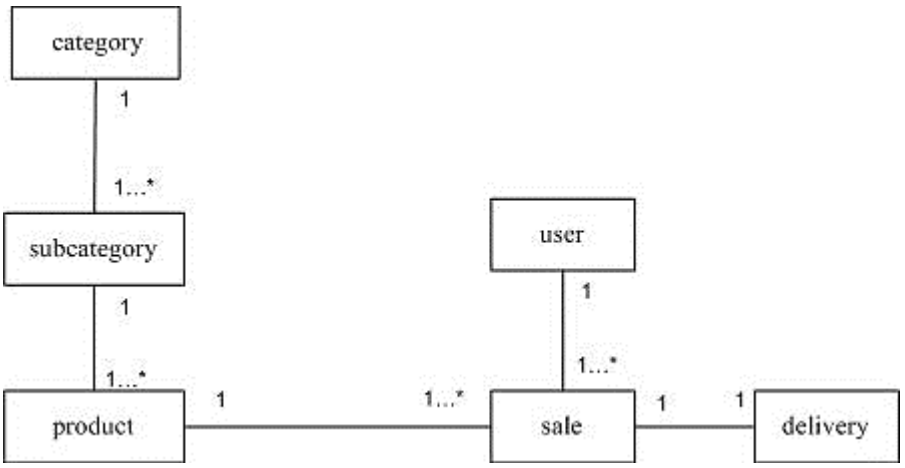
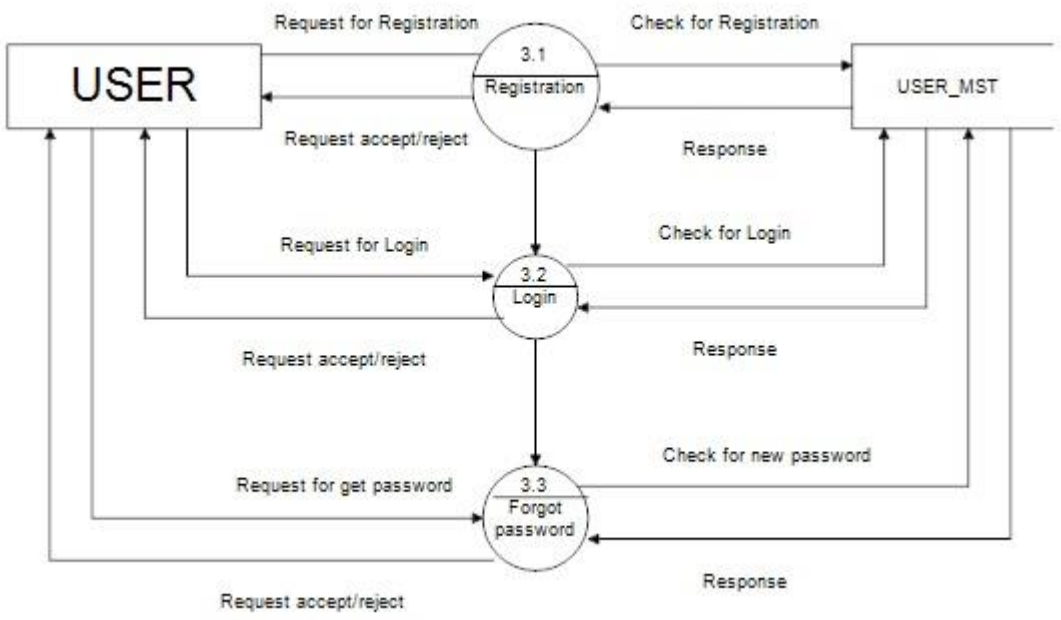


Figure 4.7: Entity Relation Diagram of Ecom website

After completing system design stage it will be now easy to physically design the system in order to make it workable in the operational environment according to the specification.

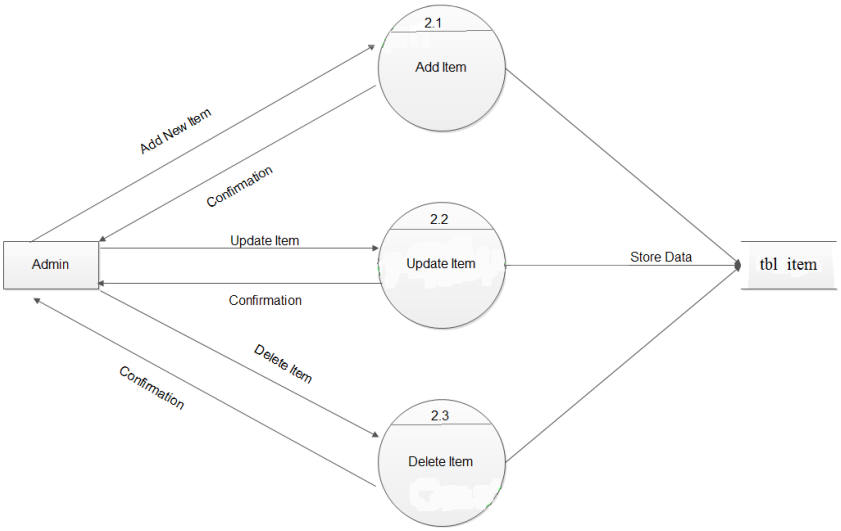
Category – Subcategory (One to Many Relationship)
Subcategory - Product (One to Many Relationship)
Product – Sales (One to Many Relationship)
User – Sales (One to Many Relationship)
Sale – Delivery (One to One Relationship)

4.8 Data Flow Diagram for Ecom



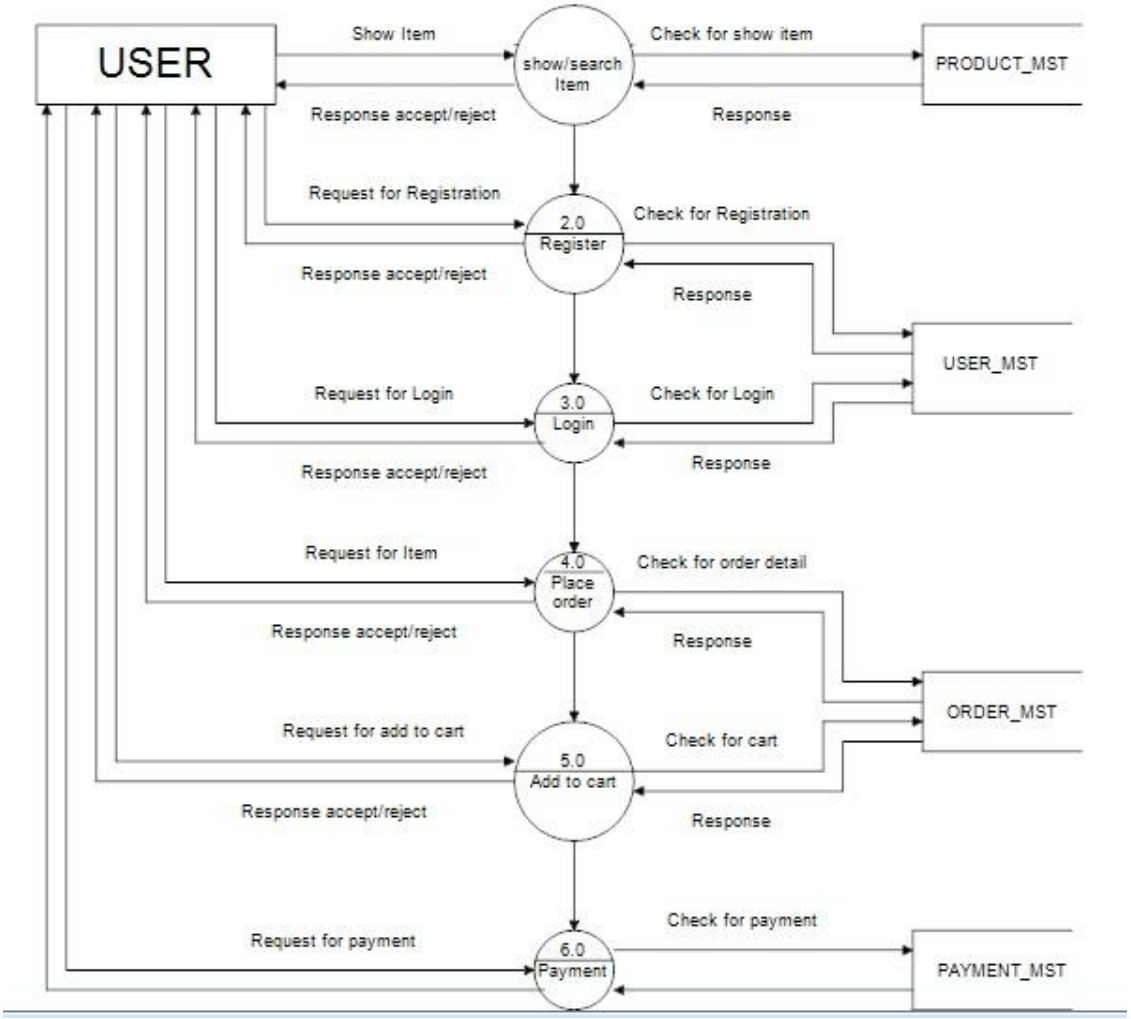
User Registration Data Flow Diagram for Ecom

The DFD shows how a user signs up in the system, the system checks whether the system has user with same credentials or email. If none is found the user is registered to the system and can login to the system with their user credentials. Existing users who has forgotten their password can reset their password by requesting for a new password. The new password will be sent to the users email address.



Data Flow Diagram for Adding Item in Inventory

This DFD show how an admin user can update or delete an existing product in the system. The admin can also add new products in the system.



Data Flow Diagram for Online Product Ordering

This DFD shows how product is ordered by the client by online. The client logs in to the system and browses through different product in the store. The client add product of their choice to the cart. After the client has done with the shopping, the client proceeds to checkout. While checking out delivery address is requested by the system. After that payment mode has to be selected by the client, our system provides options like cash on delivery and bkash. The client chooses from the options and confirms the order. After the order has been processed system sends a confirmation mail to the user stating that their order has been placed and will be delivered soon.

4.9 Database Design of Ecom Website

Database design is the main part of the structure of making a website. Similarly, our website also based on a database name ' ci_ecom'.

It contains six tables of total usage. Includes various fields.

- Admin
- Stall
- Ad install
- Stall item
- User
- Users

Admin: admin is the table containing all the ads that are post by different customer. This table Contains eleven fields 'category, Type, title, picture, Description, Price, Email, phone, location, Address.

Ad install: is the table that contains three field username, email, and password. After signup For creating a stall, the signup information first stored in the administall table.

Stall: is the table that contain three fields such as user name, email, and password. When admin Confirm the stall the information is transformed from the ad install table to the stall table.

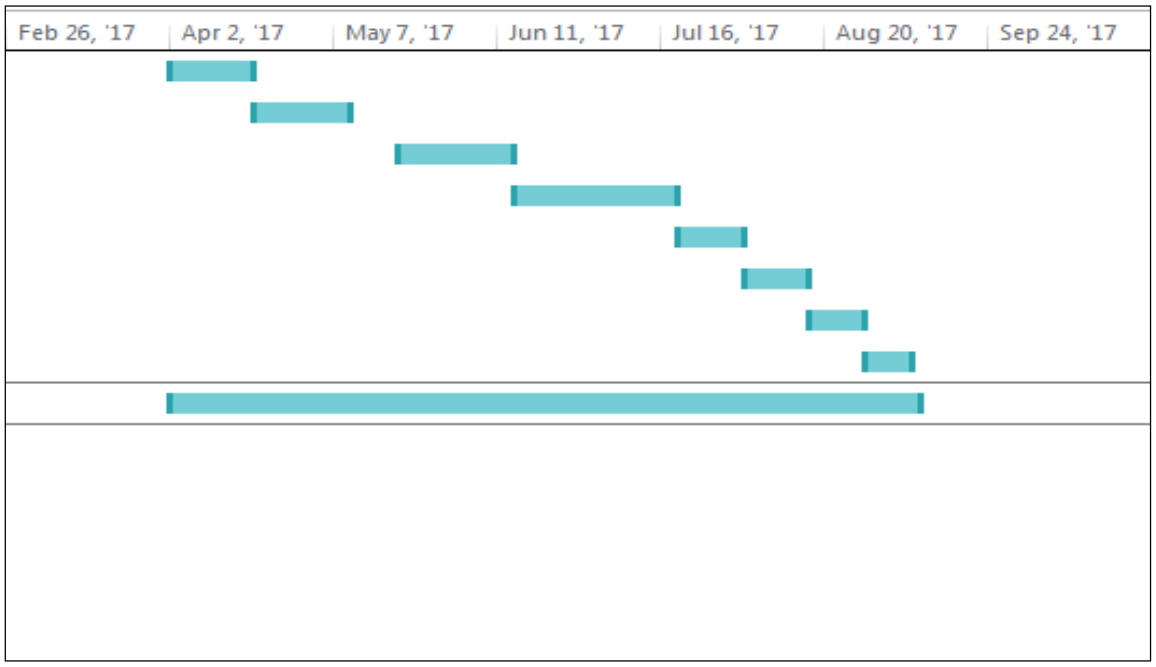
Stall item: is the table that contains different information's of the stall products.

User: Is the table containing the information of all users. This table contains three fields, username, email, and password.

Users: table contains details information of customer who will post add and also the details information of products after ads are published by admin" When it is shown in users table, it is removed from the admin table. This table contains then field's category. Type. Picture, description, price, mail, phone, location, address.

4.10 Gantt chart for completing the Project

Phase	Start Date	End Date	Days Needed
Initial study	2/4/2017	19/4/2017	14
Feasibility Study	20/4/2017	10/5/2017	15
Requirement Analysis	21/5/2017	14/6/2017	25
Requirement Specification	15/6/2017	19/7/2017	25
System Design	20/7/2017	2/8/2017	20
Coding	3/8/2017	16/8/2017	10
Testing	17/8/2017	28/8/2017	8
Implementation	29/8/2017	9/9/2017	8
Total	2/4/2107	9/9/2017	125 Days



Project Gantt chart (Project Timeline)

The project took about 125 days to complete, while planning for the project Friday and Saturday were omitted due to holiday.

CHAPTER 5 - SYSTEM DEVELOPMENT

5.1 Technologies / Languages used

To develop our website, "ecom.com", we have used following technologies.

- HTML5
- CSS3
- Java Script
- PHP
- Ajax
- Xampp

5.2 HTML5

Some of the most important HTML5 features are:

- HTML describes the structure of Web pages using different markup and tags.
- Elements are the building blocks of HTML pages which defines what to show in the webpage.
- Elements are represented by HTML tags.
- Tags label such as "heading", "paragraph", "Table". and so on Browsers do not display the HTML tags, but use them to render the content of the Page [14]

5.3 CSS3

Some of the most important CSS3 features are:

- Cascading Style Sheets (CSS) is a style sheet language used for describing the Presentation of a document written in a markup language.
- Selectors
- Box Model
- Backgrounds and Borders
- Image Values and Replaced Content
- Text Effects
- 2D/3D Transformations
- Animations
- Multiple Column Layout
- User Interface. [15]

5.4 JavaScript

- JavaScript is the programming language of HTML and the web.
- Programming makes computers do what you want them to do.
- JavaScript is easy to learn. [16]

JavaScript is used in web site development to do such things as:

- Change a formatted date on a Web page automatically.
- Allows popup window to appear after clicking a link.
- Allow text, image or animation to change or rollover with mouse over or mouse click events. [16]

5.5 PHP : Hypertext Preporcessor

- PHP is an acronym for "PHP: Hypertext Preprocessor"
- PHP is one of the most commonly used scripting language. It is open source scripting language in the world and developers from all over the world contribute to the community.
- PHP scripts are executed on the server and data is fetched back to the user through browser. [17]

5.6 Ajax

- AJAX stands for Asynchronous JavaScript and XML. AJAX is a new technique for creating better, faster, and more interactive web applications with the help of XML, HTML, CSS, and Java Script.
- Ajax uses XHTML for content, CSS for presentation. along with Document Object Model and JavaScript for dynamic content display'
- With AJAX, when you hit submit, JavaScript will make a request to the server, interpret the results, and update the current screen. In the purest sense, the user would never know that anything was even transmitted to the server.
- XML is commonly used as the format for receiving server data, although any format, including plain text, can be used.
- AJAX is a web browser technology independent of web server software.
- A user can continue to use the application while the client program requests information from the server in the background.
- Intuitive and natural user interaction. Clicking is not required, mouse movement is a sufficient event trigger.
- Data-driven as opposed to page-driven. [18]

5.7 Xampp

Xampp is a source cross Server solution package developed by Apache Friends consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming [3][4] Xampp stands for Cross-Platform (X). Apache (A), MariaDB (M), PHP (P), and Perl (P). It is a simple, lightweight Apache distribution that makes it extremely easy for developers to create a local web server or testing and development purpose Everything needed to set up a web Server - server application (Apache) database (MariaDB) and scripting language (PHP) is included in an extractable file XAMPP is also cross-platform, which mean it works quickly on Linux Mac and windows Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server extremely easy as well.

CHAPTER 6 – System Implementation and Evaluation

6.1 System Implementation

Implementation is the part of SDLC in which necessary tasks are performed to put the new system in effect.

Implementation is done after designing and coding stage. Implementation is comprised of the involvement of the efforts of the user department, who determines that the software is made as they wanted. The data processing department, inputs the previous data from the system in to the new system to get the new system running. Training of staffs who would use the system this is mostly done by conducting a training session where the system users are instructed on how to use the system. User manual or video tutorial provide a great resource which can later on be used by the system users when then have any query about the system.

The company might choose to implement the new system using various approach:

- Phase Implementation – Different modules are given to the client so that they can use and get used to the system. And finally when all modules are developed and integrated the finished product is given to the client.
- Overnight Implementation – New system is adopted and old system is discarded, all work is then done on the new system.
- Parallel Implementation – Both the old and the new system is used parallel, after a certain time when the users are comfortable with the new system old system is discarded.

Implementation of the new computerized system contains several tasks:

- Server and environment setup according to the software needs.
- Data Migration means converting or inputting manual data that was used previously in the system. This is mostly a data entry process as the previous data used in the system needs to be entered in the system to get best possible outcome. Previous data may have been kept in excel format in that case it can be exported directly to the database with simple data mapping.
- Training of staffs who would use the system this is mostly done by conducting a training session where the system users are instructed on how to use the system.
- User manual or video tutorial provide a great resource which can later on be used by the system users when then have any query about the system.

6.2 Human Computer Interaction Factors

Human Computer Interaction (HCI) is a major concern is today's world. Hundreds of researches are conducted related to HCI. HCI mainly deals with how humans interact to computerized system. HCI addresses factors related to accessibility and usability of a system. One of the primary concern is keeping the website or the interface simple and easy to use for the client. It is best not to include over the top graphics and animations and provide just enough information to make it interesting. Over use of colors is another issue that has to be addressed, as a large population suffers from eye related problems it has to be kept simple with use of basic colors so that they don't feel bothered by the design.

The website design has to be uniform throughout, because if different pages have different designs users might just get annoyed with the website and leave. Every page must provide menu or navigation bar so that the user can navigate or move to different part of the website. Commonly used buttons should be implemented in the system as most users are used to seeing these buttons regularly and know the functionality of it. Eg floppy disk button represents save button. Zooming in features of photos should be available as people with vision problem might not be able to see an image properly.

Use of text size and color should be well thought out, there should be a proper balance of the text size. If the text is too big the website might look odd, if the text is too small it might be unreadable for certain users. Text color is an important issue as it sometimes become difficult to read text from certain background. So it should be kept in mind which background to use and that text color goes with it.

Making the website responsive to different device is a great way to increase customer satisfaction. Smartphone and tablets are used by most people so if the website is responsive to different device it won't hamper with the clients viewing experience.

Making the website multilingual is a great way to improve customer satisfaction. Screen reader and zooming in features also make website much easier to use. Including customer feedback is a great way to interact with customers, which makes them feel that they are worth your time. Send weekly or monthly newsletters mail informing them what is happening in the business makes the customers happy and more involved in the system, but a fine balance has to be maintained between doing it and over doing it, overdoing just might make you lose a potential customer.

6.3 Website Layout

The website is comprised of two section, the client side and the admin side. Both sections are designed for the ease of user. Accessibility, usability and HCI features were kept in mind so that user do not feel troubled by the system.

6.4 Client Side Layout

The client side give access to the product listings menus and page contents, where the users can login to the system and do their shopping online. The client can add product to their cart and proceed to checkout by selecting a means of payment. The layout for the client side is similar all the pages have been designed in a similar pattern. The color choice and functionality were maintained according to the industry standard, so that the application is easy to use and requires less effort to learn.

6.5 Administrator Side Layout

The administrator side of the website is designed differently than the client side. The admin logs in using their credential. After logging in the admin get several setting by which he can make modification in the website. The admin can create, update and delete category, subcategory and product from the admin panel. The admin can also view payment and delivery report from the admin panel.

6.6 Home Page

Firstly, the user entered in the Home page, who wants to access the website, here we can search by the variety of the products. In ours. Website there is login option. For login one have to sign up, with user id, mail address and password, by, completed signup successfully he/she can login mail and password, which has already stored in database if they use an incorrect email id or password they will not be able to sign in the, website.

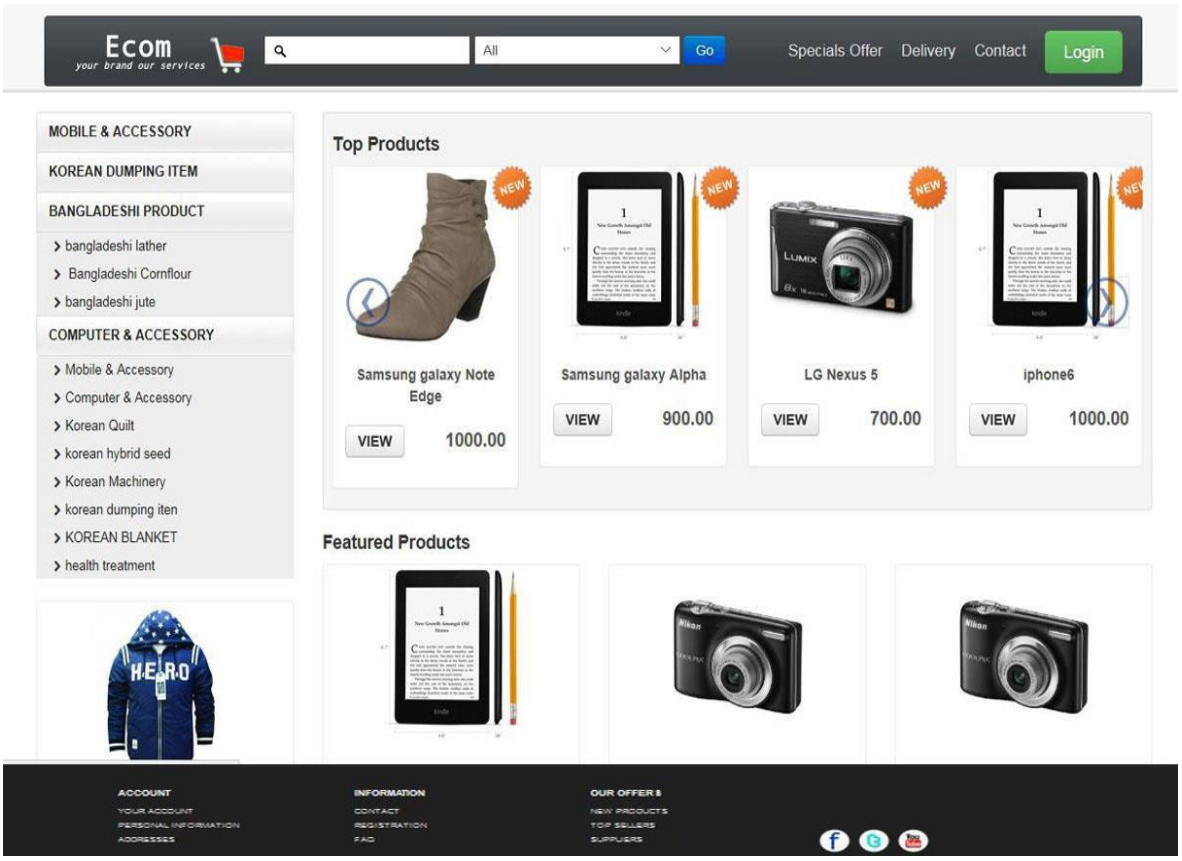


Figure 6.1: Home Page

Features:

- Any user can view the Homepage.
- The users can navigate to other pages from the home page.
- Users can view top products and featured products.
- Users can navigate to category and subcategory pages.

6.7 Administrator Page

Here admin can login by name and password is built in the code by the developer. Admin can publish or deleted ad by checking its requirements.

Figure 6.2: Admin Login Page

Features

- System user with administrative permission can login to the Admin Panel.
- The admin user has to provide proper credentials before logging in to the system.

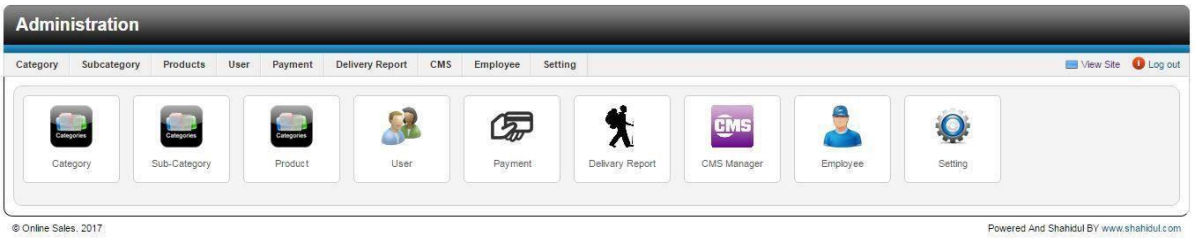


Figure 6.3: Admin Panel Page

Features

The admin can create:

- Category
- Sub category
- Product
- Users

The admin can view payment and delivery status of an order.

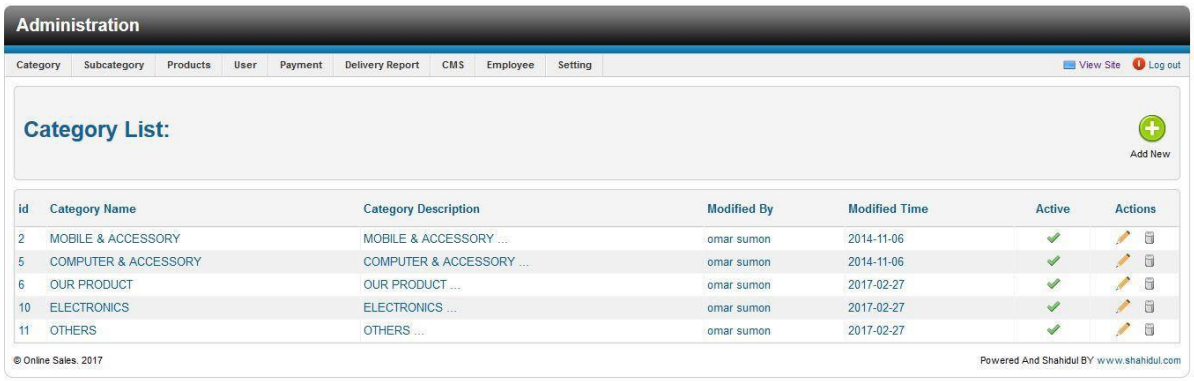


Figure 6.4: Category List Page

Features:

- The admin can view details of existing category in the system.
- The admin can add new category.
- Edit existing category.
- Enable disable existing category.
- Delete existing category.

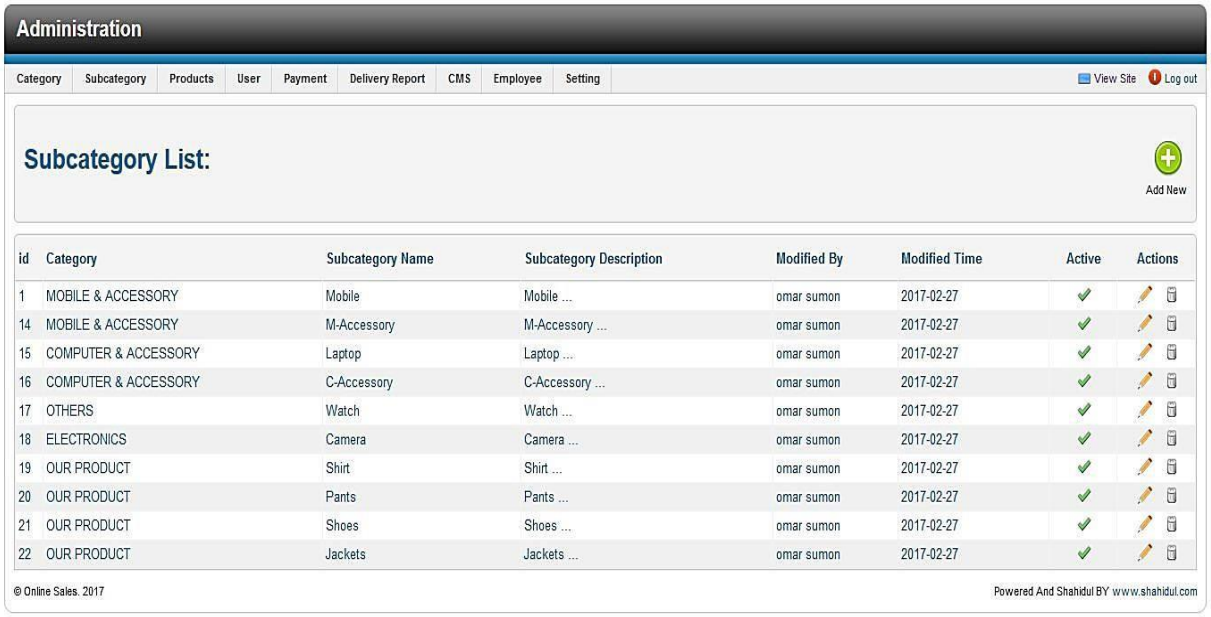


Figure 6.5: Subcategory List Page

Features:

- The admin can view details of existing subcategory in the system.
- The admin can add new subcategory.
- Edit existing subcategory.
- Enable disable existing subcategory.
- Delete existing subcategory.

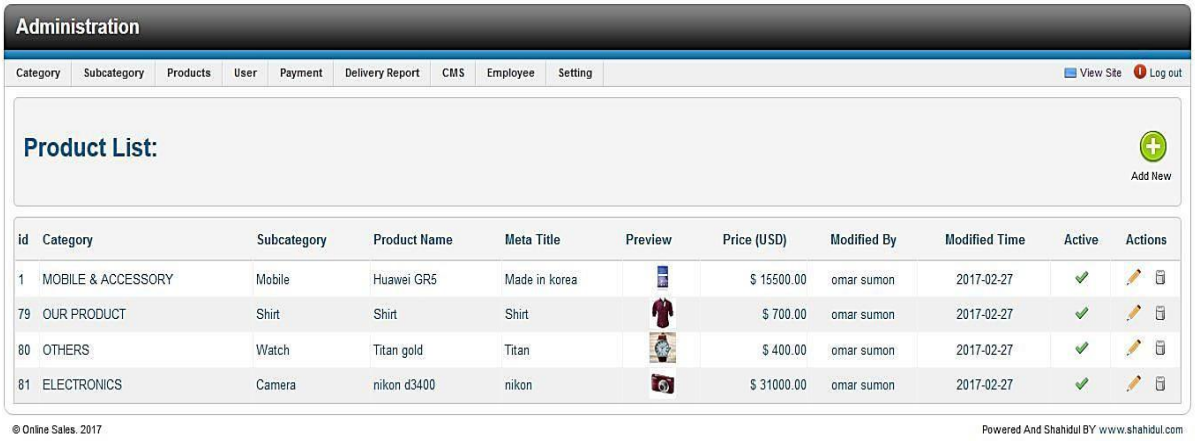


Figure 6.6: Product List Page

Features:

- The admin can view details of existing product in the system.
- The admin can add new product.
- Edit existing product.
- Enable disable existing product.
- Delete existing product.

6.8 Login (User)

For login one has to sign up with user name or mail and password, by completed sign up successfully can login mail and password, which are already stored in database. If they use an incorrect mail id or wrong password, then they cannot sign in the website. When one has to login by his password, this password will be encrypted by using MD5 algorithm.

Figure 6.7: User Login Page

Features

- System user with user role can login to the website.
- The system user has to provide proper credentials before logging in to the system.

6.9 Signup (User)

For creating an account firstly, one has to fill up the user name, e-mail, and password and confirm password field. And need to fill-up contact detail field for shipping your purchase goods.

Figure 6.8: User Signup Page

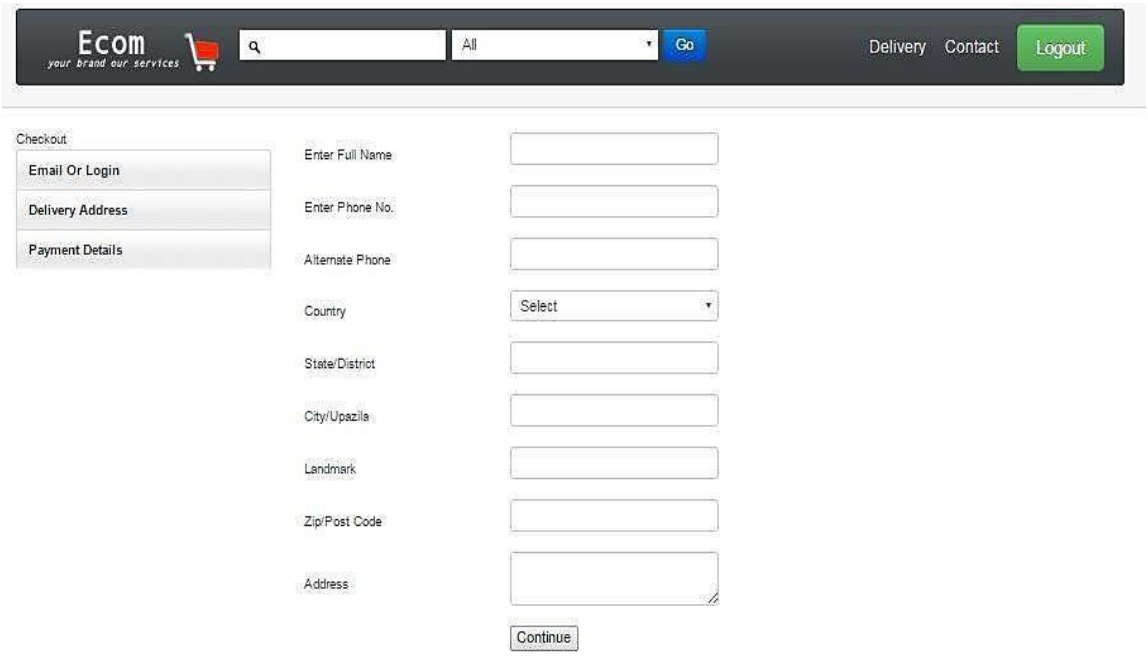


Figure 6.9: Contact Detail Page

6.10 Checkout

The checkout process is the process that a customer must go through when checking out the items in the cart. This is what the user sees at the frontend.

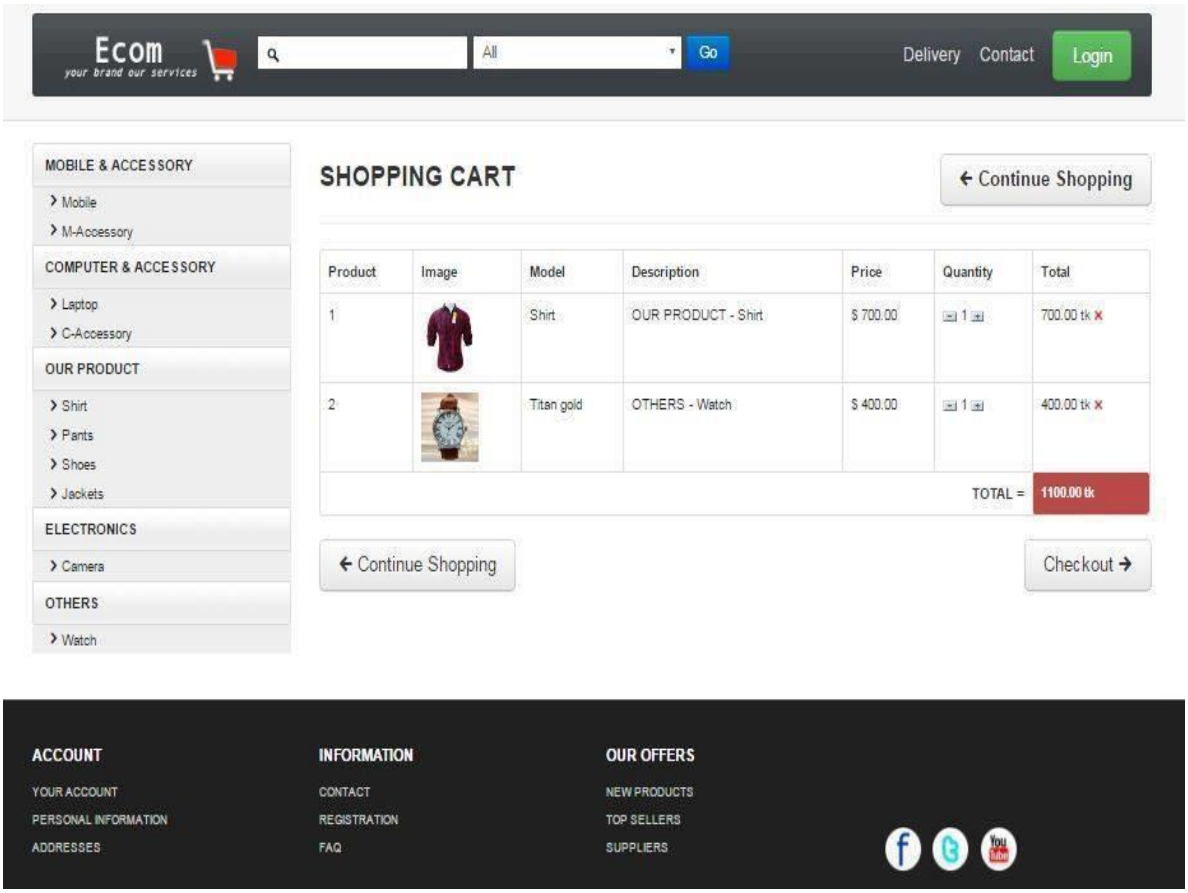


Figure 6.10: Checkout Page

Features:

- Items added in the cart is shown in this page.
- The user can add quantity or remove product from this page.
- The user can check out with as a system user or as a guest user.

6.11 Shipping Information

This page contains shipment information that's collect from user to product delivery.

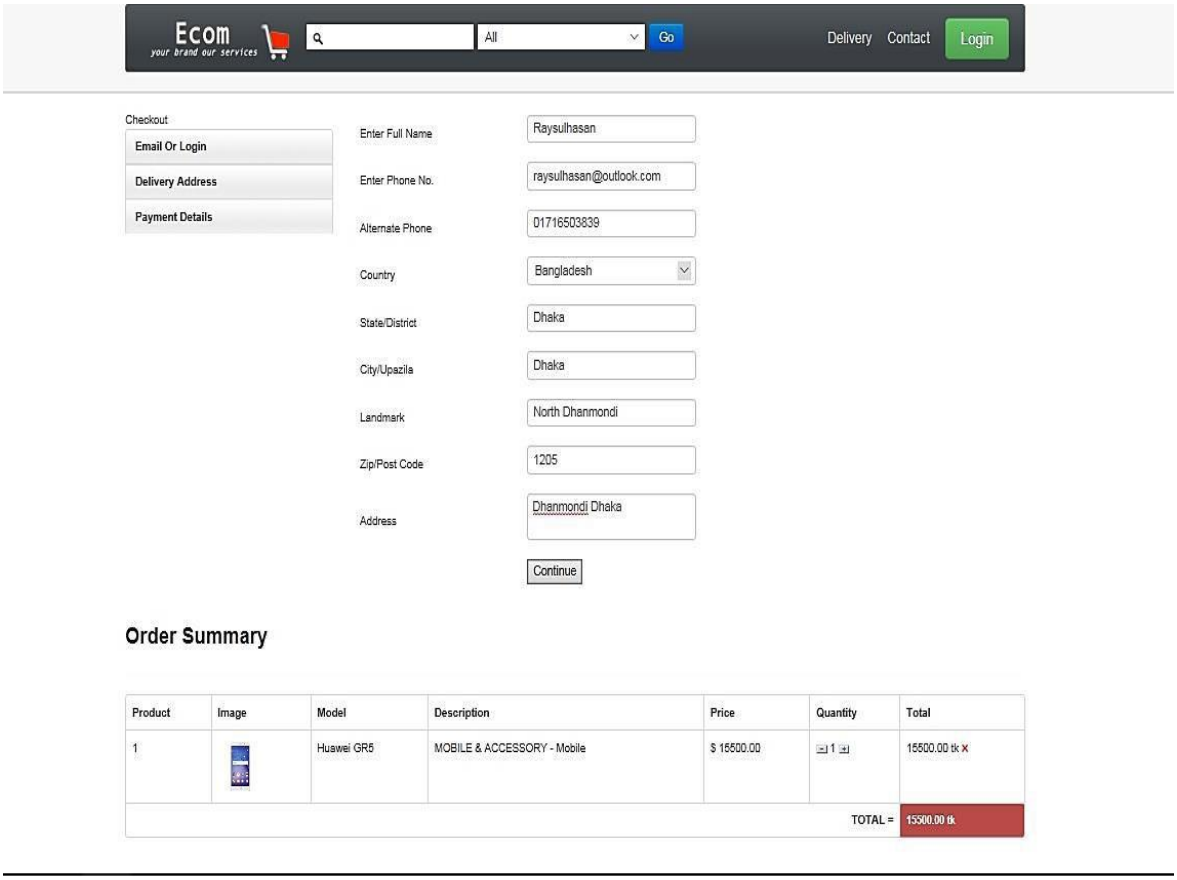


Figure 6.11: Shipping Information

Features:

- The user fills up the necessary contact details so that the product can be delivered to the client.
- The client can view the order details.
- The client can add or remove product from the cart.

6.12 Wish list

Wish lists are collections of desired products saved by customers to their user account signifying interest without immediate intent to purchase.

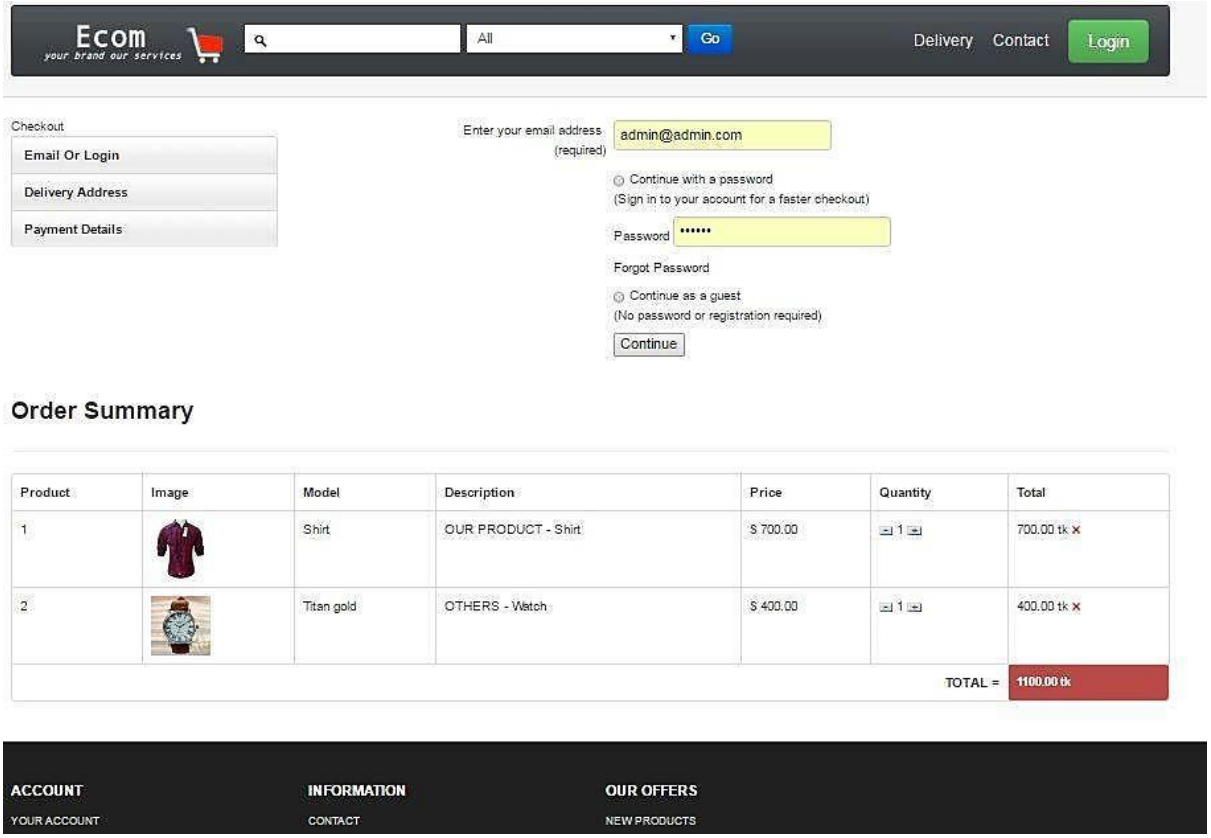


Figure 6.12: Wish List Page

CHAPTER 7 - SOFTWARE TESTING

7.1 Introduction of Testing

Testing phase is essential for any software system. Testing not only ensures meeting technical requirements but also it is used as a means of determining quality and providing that software is fit for its purpose. [12]

Before testing the system, a dedicated tester will perform several tasks. Various methodologies of testing must be maintained for ensuring quality. They are -Functional Testing, Regression Testing, UI Testing and Load Testing. Automation testing can also be introduced for saving time and more perfection.

Test planning must be set to proceed to test the system through testing strategy. Test cases must be described fully before they are carried out. Separate test cases of various modules of our system- customer, admin, sales, delivery, payment, order process must be documented. Bug tracking is essential as it hinders usual flow of system. We will use JIRA tool to report bug and track bug solving cycle.

Major testing types for our project are described as follows:

7.2 Unit Testing

This is the testing of small units of code, e.g. Programmers modules or procedures in order to ensure that they perform their intended functions. There are two types of testing strategy. They are:

- Black box testing
- White box testing.

Encapsulation redefines the context of unit. The smallest testable units are classes containing attributes and operations. Operations and state behavior drive class test in to the module algorithm and data parameter. We have performed the unit test.

7.3 Integration Testing

Integration testing is extremely important since different programmers may write code of different modules. This testing is used to identify situation such as:

- Data is being lost between modules as a result causes discrepancies in calculation and reporting.

- Code of one module creating a fault in another module due to code sharing between the modules.

- When several modules are combined together to produce a report or generate a data set undesired results might be seen.

Integration testing has to be performed early and incrementally on in the project. It is better to test related module regularly after changes has been made.

7.4 System Testing

System testing aims to check that new programs operate together as a working system and conform to the requirements specification. It is implemented as a large black box with examples of actual data and transaction being used to check that all the functions and features conform to the specification. This is the validation level, which ignores the subtle details of class connections. The emphasis is shifted to user's visible actions and user recognizable outputs from the system. Validation tests are derived from scenarios documented in dynamic model the scenario guides the user to uncover errors of requirements. Black-box testing can be applied to drive validation tests. Test cases can be derived from state diagram and event trace diagram.

7.5 User Acceptance Testing

This is the process of comparing the program to its initial requirements and the current need do its end users. The description of these test id defined in the initial requirements and it includes the form. The quantity and the quality do what is to be delivered. The user will carry out this entire testing, and will enter all real life data and check there correctness manually. Acceptance testing checks that the system meets the customer's requirements. At this level, we have performed the user leads testing and define the cases to be tested.

7.6 Cross-Browser Compatibility Testing

We tested the web platform in different web browsers. The compatibility, design and functionality looks similar on all the browsers. The cross browser compatibility testing is conducted on the most popular browsers in the market. The browsers in which tests were conducted are:

- Mozilla Firefox
- Google Chrome
- Microsoft Edge
- Opera
- Safari
- Netscape

The functionality of the website remains exactly the same as all of the programming and logic is dealt at the server side. However, as because each browser reads and views HTML and CSS differently so dissimilarities might occur.

CHAPTER 8 Conclusion and Future Improvements

8.1 Conclusion and Future Improvements

This project focused on computerisation of “E com” a local product reseller company. Our mission was to help the user to maintain and adopt to an automated system and to produce e commerce website which would increase the visibility of e com in the market. Our goal was to overcome the problems in the manual system and provide a solution which would make the business more efficient and effective.

The manual system was time consuming and extra laboring at times. Maintaining and keeping track of the record is difficult as a result searching for important information was a big hassle. Since the previous system mostly dealt with paper document, piles of documents were created large space were required to keep these documents which increased the overall business expense.

In our proposed online solution, it will be a lot easier to store a large volume of data in a single hard disk. The searching time of any information or particular record will take little time. Monthly/Quarter/ Yearly sales or purchase report can be generated easily with just the click of a button. Wrong information can be amended or any old record that is unnecessary can be deleted easily. The web platform provides a wider visibility towards to prospective clients as a result more clients are draws towards the shop.

Comparing both the present system and the proposed system, it can be safe to say that the proposed system is rather cost-effective and efficient in nature and is mostly likely to fetch better return for the company.

8.2 Further Improvements

Our future plan is improving the some steps for this site and customer can purchase our product very easily in a secured environment.

- Add other payment gateways.
- Product zoom facility with various size
- Advance payment security
- Add customer feedback regarding the service
- Make the website multilingual.
- Add accessibility features in the website so that more people can access the website.
- Add more HCI features so that the website is more usable for the users.

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