GreatBuyz AN ECOMMERCE WEBSITE

by

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DECLARATION

I, hereby, declare that the work presented in this Project is the outcome of the investigation performed by me under the supervision of Adnan Ferdous Ashrafi, Lecturer, Department of Computer Science and Engineering , Stamford University Bangladesh.

I also declare that no part of this Project and thereof has been or is being submitted elsewhere for the award of any degree or Diploma.

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ABSTRACT

GreatBuyz is mainly useful for who haven't enough time to go to shopping, those can just enter this website and buy whatever they want. In today's fast-changing business environment, it's extremely important to be able to respond to client needs in the most effective and timely manner. GreatBuyz is a lifestyle e-commerce web application, which retails various electronic products. This project allows viewing various products available enables registered users to purchase desired products by using Cash on Delivery (Pay Later) option. This project provides an easy access to Administrators and Managers to view orders placed. In order to develop an e-commerce website, a number of Technologies must be studied and understood. These include multi-tiered architecture, server and client side scripting techniques, implementation technologies, programming language and relational databases. This is a project with the objective to develop a basic website where a consumer is provided with a shopping cart application and also to know about the technologies used to develop such an application. This document will discuss each of the underlying technologies to create and implement an ecommerce website.

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CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

GreatBuyz is a website intended to provide automated solution and services to customer. This Project is very helpful where the customer can directly buy the products or items from home through internet connection on mobile or computer. This project reduces lot of work load for customer as well as owner.

1.2 PROJECT SUMMARY

This is an E-commerce website, which facilitates the user to shop online. The customer/user can browse through the categories/ brands and buy any product of his choice. Once the customer becomes a registered user, he can create his own account and manage it the way he likes it.

This application contains some easy navigational and silent features to guide the users while shopping. The search facility helps the users to find exactly what they desire without wasting much of their time. The shopping cart summary serves as a reference for the customer as they continue to browse for more products. The other facilities include advanced search, compare, and vote for particular product, discussion forum.

The application is made user-friendly and convenient to such an extent that the user is never required to type the same information more than once (except passwords).

The project also includes an administrative control center. From this area the administrator can fully manage every aspect of the entire store. He can view and process the orders placed by the customers and also edit all its aspects after the order has been placed. He can update the product details, brand and category name. He can add a new product, brand and category. In short; he has total control on all the features of the system.

1.3 PURPOSE

The goal of this project is to develop a generic website that can be deployed on a web server and purchase order for the desired products could be placed online. The convenience of being able to purchase anything from a car to a pencil in the comfort of

your home without having to travel has made online shopping a massive success. So convenience of the customer is one of the basic objectives of this website.

A user-friendly environment helps the user to carry on shopping with great ease and efficiency. Moreover it also helps the owners to attract more customers. So developing a user-friendly interface can also be considered as one of the goals. An effort has also been made to see that the customer gets the best quality products at a very reasonable cost.

In short the key goals are - bringing in the best visitors, promoting a strong brand and making buying easy.

1.4 MOTIVATION

- Reduce transaction costs.
- Reduce customer support costs.
- Meet customer's demand.
- Introduce new product and services.

1.5 TECHNOLOGY AND LITERATURE REVIEW

Software Requirements:

Operating System	:	Windows 7/8
User Interface	:	HTML, CSS
Client-side Scripting	:	JavaScript
Scripting Language	:	PHP
Database	:	My SQL

Hardware Requirements:

Processor	:	Pentium IV
Hard Disk	:	40GB
RAM	:	512MB or more

1.5.1 HTML

It is used to generate web page. HyperText Markup Language (HTML) is the predominant markup language for web pages. It provides a means to describe the structure of text-based information in a document-by denoting certain text as heading, paragraphs, lists and so on.

1.5.2 JavaScript

JavaScript is a high-level, dynamic, untyped and interpreted programming language. It has been standardized in the ECMAScript language specification. It is used for checking user information before sending to JavaScript. It is a scripting language most often used for client-side web development. JavaScript is prototype-based with first-class functions, making it a multi-paradigm language, supporting object-oriented, imperative and functional programming style.

1.5.3 PHP

PHP is a server-side scripting language designed primarily for web development but also used as a general-purpose programming language. PHP code may be embedded into HTML code.PHP code is usually processed by a PHP interpreter implemented as a module in the web server or as a Common Gateway Interface (CGI) executable. The web server combines the results of the interpreted and executed PHP code, which may be any type of data, including images, with the generated web page. PHP code may also be executed with a command-line interface (CLI) and can be used to implement standalonegraphical applications.

1.5.4 MySQL

MySQL is an open source relational database management system (RDBMS). MySQL is a central component of the "LAMP" open-source web application software stack. LAMP is an acronym for "Linux, Apache, MySQL, and Perl/PHP/Python". User may use the included command line tools or use Mysql "front end", desktop software and web applications that create and manage Mysql database, built database structures, back up data, inspect status and work

with the data records. MySQL is written in C and C++. Its SQL parser is written in yacc, but it uses a home-brewed lexical analyzer.

1.5.5 MySQLi

MySQLi Extension is known as MySQL improved or MySQLi which is a relational database driver that is used mainly in the PHP programming language and provides an interface to the already founded MySQL databases. MySQLi is an improved version of the older PHP MySQL driver, offering various benefits. The MySQLi extension comes equipped with many benefits that compliment as well as improve those that were provided by its predecessor, MySQL. The features that are meant to enhance the functionality of the MySQL are an object oriented interface, support for statements that have been previously prepared, support for a variety of statements, support for any kind of transaction that takes place, an enhanced level of debugging support, and an enhanced level of server support that sis already embedded in the infrastructure of the database.[1]

1.6 ADVANTAGES OF THE PROJECT

- Time saving.
- Low operational costs and better quality of services.
- Buying/selling 24/7.
- Faster buying/selling procedure, as well as easy to find products.
- It avoids a lot of manual work.
- User can easily access the system without much experience.

CHAPTER 2
PROJECT MANAGEMENT

2.1 PROJECT PLANNING AND SCHEDULING

2.1.1 PROJECT PLAN

The heart of the project is the project plan. It is part of project management, which relates to the use of schedules such as Gantt charts to plan and subsequently report progress within the project environment. The project plan gives an estimate of how much money, effort, resources and time will it take build the complete project. This project is divided into number of modules. Developing these modules needs high level of technical understanding and in depth knowledge of PHP. Risk factors can play major roles.

The objective of a project plan is to define the approach to be used by the project team to deliver the intended project management scope of the project.

At a minimum, a project plan answers basic questions about the project:

- **Why?** - What is the problem or value position addressed by the project? Why is it being sponsored?
- **What?** - What is the work that will be performed on the project? What are the major products/deliverables?
- **Who?** - Who will be involved and what will be their responsibilities within the project? How will they be organized?
- **When?** - What is the project timeline and when will particularly meaningful points, referred to as milestones, be complete?

2.1.2 PROJECT MILESTONES

Milestones are tools used in project management to mark specific points along a project timeline. These points may signal anchors such as a project start and end date, a need for external review or input and budget checks, among others. In many instances, milestones do not impact project duration. Instead, they focus on major progress points that must be reached to achieve success.

Milestones can add significant value to project scheduling. When combined with a scheduling methodology such as Program Evaluation and Review Technique (PERT) or the Critical Path Method (CPM), milestones allow project managers to much more accurately determine whether or not the project is on schedule. By constraining the dates associated with milestones, the critical path can be determined for major schedule intervals in addition to the entire project. Slack/float can also be calculated on each schedule interval. This segmentation of the project schedule into intervals allows earlier indication of schedule problems and a better view into the activities whose completion is critical.

Milestones are frequently used to monitor the progress, but there are limitations to their effectiveness. They usually show progress only on the critical path, and ignore non-critical activities. It is common for resources to be moved from non-critical activities to critical activities to ensure that milestones are met. This gives the impression that the project is on schedule when actually some activities are being ignored.

2.1.3 PROJECT DELIVERABLES

Deliverable is a term used in project management to describe a tangible or intangible product or service produced as a result of the project that is intended to be delivered to a customer. A deliverable could be a report, a document, a software product, a server upgrade or any other building block of an overall project. A deliverable may be composed of multiple smaller deliverables. It may be either an outcome to be achieved or an output to be provided.

A deliverable differs from a project milestone in that a milestone is a measurement of progress toward an output, whereas the deliverable is the result of the process. For a typical project, a milestone might be the completion of a product design, while the deliverable might be the technical diagram or detailed design report of the product. In technical projects, deliverables can be further classified as hardware, software, or design documents.

In this way many time-savings are possible, shortening greatly the whole project final supply term. This designing activity can be represented in the drawings with a "cloud" around a not yet designed part and means.

2.1.4 TIME SCHEDULE

In project management, a schedule is a listing of a project's milestones, activities, and deliverables, usually with intended start and finish dates. Those items are often estimated by other information included in the project schedule of resource allocation, budget, task duration, and linkages of dependencies and scheduled events. A schedule is commonly used in the project planning and project portfolio management parts of project management. Elements on a schedule may be closely related to the work breakdown structure (WBS) terminal elements, the Statement of work, or a Contract Data Requirements List.

2.2 RISK MANAGEMENT

Risk management is the process of measuring, or assessing, risk and developing strategies to manage it. Strategies include transferring the risk to another party, avoiding the risk, reducing the negative effect of the risk, and accepting some or all of the consequences of a particular risk. Traditional risk management focuses on risks stemming from physical or legal causes (e.g. natural disasters or fires, accidents, death, and lawsuits). Financial risk management, on the other hand, focuses on risks that can be managed using traded financial instruments.

In ideal risk management, a prioritization process is followed whereby the risks with the greatest loss (or impact) and the greatest probability of occurring are handled first, and risks with lower probability of occurrence and lower loss are handled in descending order. In practice the process of assessing overall risk can be difficult, and balancing resources used to mitigate between risks with a high probability of occurrence but lower loss versus a risk with high loss but lower probability of occurrence can often be mishandled.

Risk management also faces difficulties allocating resources. This is the idea of opportunity cost. Resources spent on risk management could have been spent on more profitable activities. Again, ideal risk management minimizes spending while maximizing the reduction of the negative effects of risks.

Risk always involves two characteristics:

- **Uncertainty –** the risk may or may not happen, that is, there are no 100% probable risks.
- **Loss** – if the risk becomes a reality, unwanted consequences or losses will occur.

When risks are analyzed, it is important to quantify the level of uncertainty and the degree of loss associated with each risk.

2.3 PROJECT DEVELOPMENT APPROACH

There are a number of approaches for managing project activities including lean, iterative, incremental, and phased approaches.

2.3.1 THE TRADITIONAL APPROACH

A traditional phased approach identifies a sequence of steps to be completed. In the "traditional approach", five developmental components of a project can be distinguished (four stages plus control):

- Initiation
- Planning and Design
- Execution and Construction
- Monitoring and Controlling Systems
- Completion and Finish point / closing

Initiation - The initiating processes determine the nature and scope of the project. If this stage is not performed well, it is unlikely that the project will be successful in meeting the business' needs. The key project controls needed here are an understanding of the business environment and making sure that all necessary controls are incorporated into the project. Any deficiencies should be reported and a recommendation should be made to fix them.

Planning And Design- After the initiation stage, the project is planned to an appropriate level of detail. The main purpose is to plan time, cost and resources adequately to estimate the work needed and to effectively manage risk during

project execution. As with the Initiation process group, a failure to adequately plan greatly reduces the project's chances of successfully accomplishing its goals.

Executing - The execution/implementation phase ensures that the project management plan's deliverables are executed accordingly. This phase involves proper allocation, co-ordination and management of human resources and any other resources such as material and budgets. The output of this phase is the project deliverables.

Monitoring And Controlling- Monitoring and controlling consists of those processes performed to observe project execution so that potential problems can be identified in a timely manner and corrective action can be taken, when necessary, to control the execution of the project. The key benefit is that project performance is observed and measured regularly to identify variances from the project management plan.

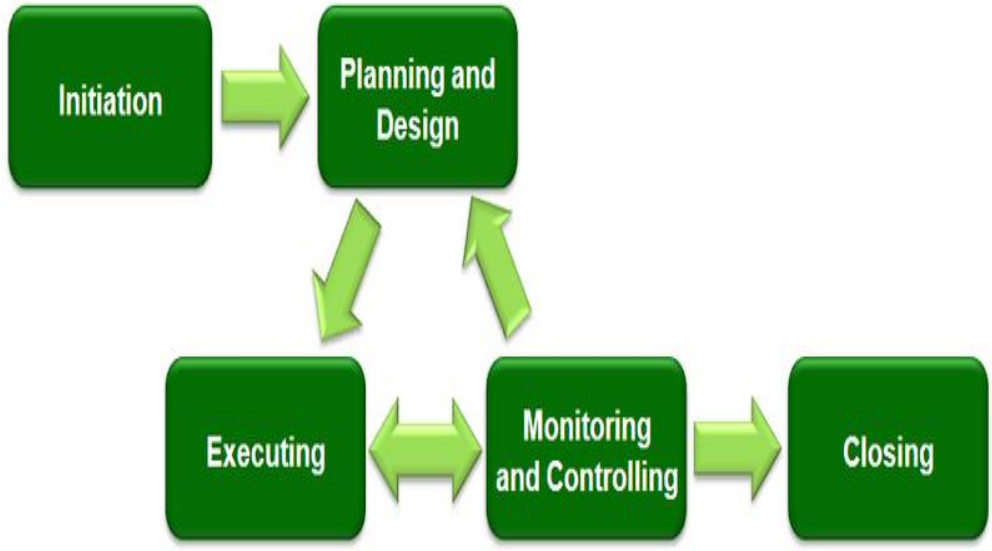


Figure 2.1: Typical development phases of a project

CLOSING - Closing includes the formal acceptance of the project and the ending thereof. Administrative activities include the archiving of the files and documenting lessons learned.

This phase consists of-

Contract closure: Complete and settle each contract (including the resolution of any open items) and close each contract applicable to the project or project phase.

Project close: Finalize all activities across all of the process groups to formally close the project or a project phase.

Also included in this phase is the Post Implementation Review. This is a vital phase of the project for the project team to learn from experiences and apply to future projects. Normally a Post Implementation Review consists of looking at things that went well and analyzing things that went badly on the project to come up with lessons learned.

CHAPTER 3
REVIEW OF ECOMMERCE SOLUTIONS

3.1 OVERVIEW

Open-source ecommerce shopping carts offer many advantages for small businesses which can be developed to fit the needs of the merchant and provide a nice combination of features at a minimal cost. In spite of the support options being more limited than proprietary or hosted platforms, open-source standalone solutions often have large communities of developers and partners to assist new merchants.

Here is a list of 9 open-source ecommerce solutions: [2]

- Magento
- OpenCart
- PrestaShop
- Zen Cart
- Spree Commerce
- Drupal Commerce
- osCommerce
- WooCommerce
- Joomla

3.1.1 Magento

Magento is an open-source e-commerce platform written in PHP. Magento employs the MySQL/MariaDB relational database management system, the PHP programming language, and elements of the Zend Framework applying the conventions of object-oriented programming and model–view–controller architecture. Magento uses the entity–attribute–value model to store data. On top of that, Magento 2 introduced the Model-View-View-Model pattern to its front-end code using the JavaScript library Knockout.js.

Magento provides three distinct platforms: Magento Community Edition, Magento Enterprise Edition and Magento Enterprise Cloud Edition. There were also two former platforms, Magento Professional Edition and Magento Go.

3.1.1.1 MAGENTO COMMUNITY EDITION

Magento Community Edition is an open-source e-commerce platform where developers can implement the core files and extend its functionality by adding new plug-in modules provided by other developers. Since the first public beta version was released in 2007, Community Edition has been developed and customized in order to provide a basic ecommerce platform.

The current release and each of the previous historical release versions of the 1.X and 2.X version branches of Magento Community Edition are available on the Magento Commerce, Inc. website for download as single-file downloads. Development of the 2.X version branch of Magento CE is coordinated publicly on GitHub.

The latest actively supported versions of Magento Community Edition are CE 1.9.3 and 2.1.2.

3.1.1.2 MAGENTO ENTERPRISE EDITION

Magento Enterprise Edition is derived from the Magento Community Edition having the same core files. This is not free like the Community Edition, but has more features and functionality. This edition is designed for large businesses that require technical support with installation, usage, configuration, and troubleshooting. Although Magento Enterprise has annual maintenance fees, neither Community nor Enterprise Editions include hosting. The Magento team develops Enterprise Edition by cooperating with users and third parties. Development on the 2.X branch of Magento EE is coordinated publicly on GitHub.

The latest actively supported versions of Magento Enterprise Edition are EE 1.14.2.4and EE 2.0.4released on March 31, 2016.

3.1.1.3 MAGENTO ENTERPRISE CLOUD EDITION (ECE)

It was released on April 11, 2016, as a service that enables rapid deployment of fully customizable, secure and scalable web store fronts, combined with leading hosting and managed infrastructure. It contains a full REST API and a scriptable command line interface ensures ease of integration with external systems and compatibility with existing code management workflows.

Included in ECE is: Fastly a real-time content delivery network that quickly diagnoses speed problems and can make automated changes and also migrates DDoD attacks. Blackfire.io performance monitoring of PHP code, which provides a visualization of how all your pages work together, enabling users to eliminate redundancies. Amazon Web Services a triple redundant cloud cluster with 99.99% uptime and best in class SLA benchmarks. Magento Enterprise Edition, which is an open platform with near unlimited options for campaign workflows, product attributes, customer segments, product pages, web pages, and checkout.

3.1.1.4 MAGENTO 2

Magento 2 has many new and improved features, developer tools. Its architecture is quite different from all the previous versions. Magento 2 was announced in 2010 though it was planned for release in 2011, and its merchant beta version was released in July 2015. Since then Magento 1 and Magento 2 have existed simultaneously.

Like previous platform, Magento 2 consists of both frontend and backend (or Admin Panel). The backend of Magento 2 is much more intuitive and friendly. The new flat type designed menu is vertical on the left instead of horizontal menu on the top in Magento 1. The Dashboard of backend now emphasizes more at Lifetime Sales and Average Order & highlights both Lifetime Sales and Revenue. Everything is bigger, much easier to click.The frontend has new features. The default theme is Magento 2 Luma Theme which is much better than Magento 1. Also, Magento 2 has responsive web design and faster performance theme. New 2-step checkout is not as complicated as default 6-step checkout of Magento 1.

3.1.2 OpenCart

OpenCart is a PHP-based online store management system. It uses a MySQL database and HTML components. Support is provided for numerous languages and currencies, and it is freely available under the GNU General Public License.

3.1.3 PrestaShop

PrestaShop is an open-source ecommerce solution, written in PHP with support for the MySQL database management system and based on the Smarty template engine. PrestaShop is currently used by 250,000 shops worldwide and is available in 60 different languages. PrestaShop has more than three hundred built-in features for managing product listing, payments, shipping, manufacturers and suppliers. PrestaShop uses a web template system which allows users to customize store themes and add new features through add-on modules. The PrestaShopAddons marketplace provides a platform for third-party developers to sell themes and modules to merchants.

3.1.4 Zen Cart

Zen Cart is an online store management system featuring more than 1,800 add-ons in 16 categories. It is PHP-based, using a MySQL database and HTML components. Support is provided for numerous languages and currencies, and it is freely available under the GNU General Public License.

3.1.5 OsCommerce

OsCommerce (open source Commerce) is an e-commerce and online store-management software program.It can be used on any web server that has PHP and MySQL installed. It is available as free software under the GNU General Public License.

3.1.6 Drupal Commerce

Drupal Commerce is open-source ecommerce software that augments the content management system Drupal. Within the context of a Drupal-based site, Drupal

Commerce presents products for purchase; walks customers through the checkout process; keeps track of invoices, receipts, orders, and payments; facilitates shipping and payment; and performs other functions needed by online merchants.

3.1.7 Spree Commerce

Spree Commerce (also known as Spree) is an open source e-commerce solution based on Ruby on Rails. The modular platform allows you to configure, supplement, or replace any functionality you need.

The following figure shows the CMS platforms as a percentage of online sites: [3]

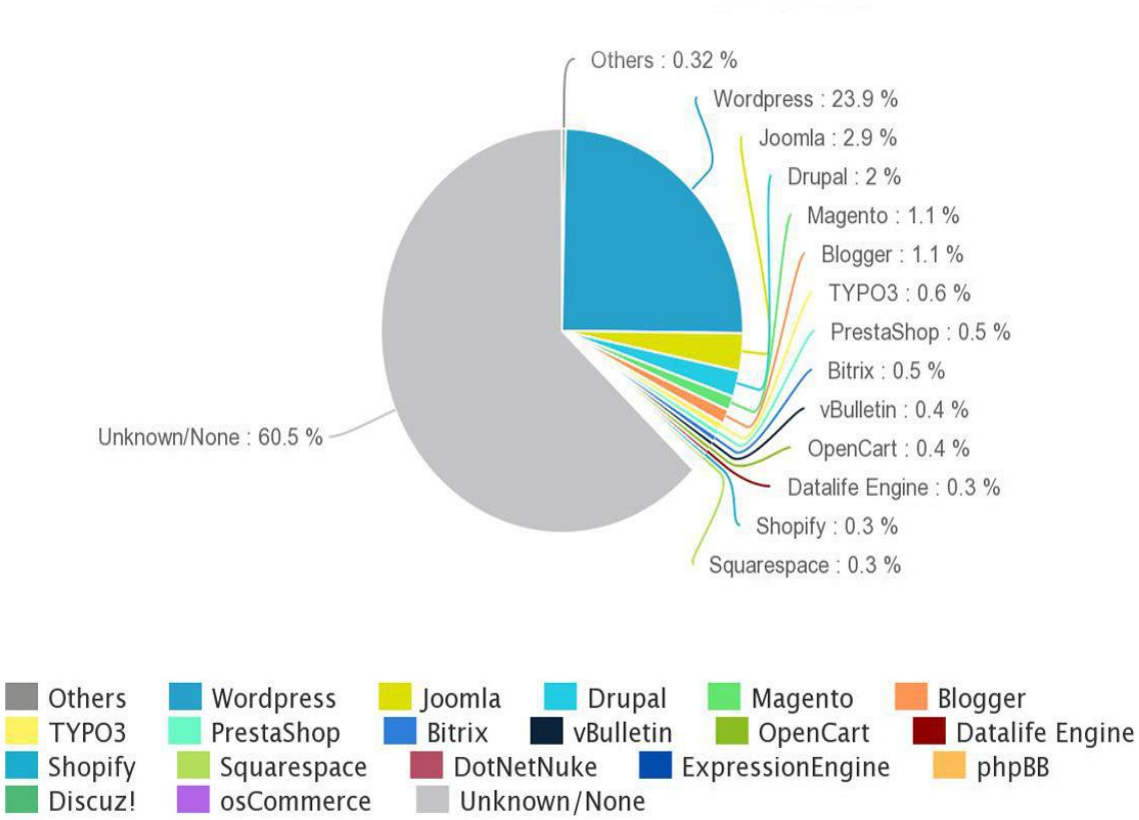


Figure 3.1: CMS platforms as a percentage of online sites

3.1.8 WooCommerce

WooCommerce is an open source e-commerce plugin for WordPress. It is designed for small to large-sized online merchants using WordPress. WooCommerce, developed by WooThemes from a fork of Jigoshop, has a large variety of plugins and themes from WooThemes, as well as third party sites like ThemeForest and CodeCanyon.

3.1.9 Joomla

Joomla is a free and open-source content management system (CMS) for publishing web content. It is built on a model–view–controller web application framework that can be used independently of the CMS.

Joomla is written in PHP, uses object-oriented programming (OOP) techniques and software design patterns, stores data in a MySQL, MS SQL (since version 2.5), or PostgreSQL (since version 3.0) database, and includes features such as page caching, RSS feeds, printable versions of pages, news flashes, blogs, search, and support for language internationalization. It is estimated to be the second most used content management system on the Internet, after WordPress.

3.2 USERS OF OPEN SOURCE ECOMMERCE

The following table shows the users of open source ecommerce: [4]

Table 3.1: Users of open source ecommerce

Name	User
Joomla	1. Harvard University - The Graduate School of Arts and Sciences 2. MTV Greece 3. United Nations Regional Information Centre for Western Europe UNRIC 4. linux.com
Drupal Commerce	1. Open Sesame 2. Lush Cosmetics 3. Cartier Jewelers
WooCommerce	1. Mystery Chocolate Box 2. Le Marzocco 3. Subaru 4. Airstream 5. New Balance
Spree Commerce	1. Chipotle 2. Puppet Labs
osCommerce	1. Ubuntu Shop 2. Melbourne Kitchen Renovations 3. SoundControl4Less 4. Parsiaco
Zen Cart	1. US Armorment 2. Health Cabin 3. The Hobby Shop 4. Pipe Divan
Open Cart	1. Cilantro: The Cook's Shop 2. British Red Cross
Presta Shop	1. Timefy 2. Zippo 3. Fashion Stork 4. Eleven Paris
Magento	1. Hello! Lucky 2. Brewshop 3. Hu2 4. Blik 5. Bonobos 6. Nestle 7.Coca-Cola

CHAPTER 4
SYSTEM ANALYSIS & DESIGN

4.1 STUDY OF CURRENT SYSTEM

As you all know E-Commerce is one of the fastest growing fields in Internet nowadays. In E-Commerce website there are four types, which are as follows:

- B2C (Business to Consumer)
- B2B (Business to Business)
- C2B (Consumer to Business)
- C2C (Consumer to Consumer) also known as P2P(Peer to Peer)

This E-Commerce website is of the type B2C (Business to Consumer). Here in this website the administrator will put the products to sell on this website. The administrator will work here as B of B2C. The Customers will browse the products and then if they like the product they will buy it. So, here customers will work as C of B2C.

The administrator will select which products to display and which not. The Administrator has all the rights of the System. If administrator wants he can cancel the order at any time, he can add, update or delete products. The administrator will track all the orders placed on the System.

Here the Customer is of two types, which are guest and registered customers. The guest can only browse products and watch them but he don't have any right to buy the product. If the guest wants to buy any product he must register himself on our System. The registered user can browse the products, watch them, buy them and can manage his personal details. The entire customers who are registered have their own Personal account. The customers can access their account anytime and they have a right to change the account settings and can update their personal information.

4.2 FEASIBILITY STUDY

Feasibility study is an assessment of the practicality of a proposed project or system. A feasibility study aims to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture, opportunities and threats present in the environment, the resources required to carry through, and ultimately the prospects for success. In its simplest terms, the two criteria to judge feasibility are cost required and value to be attained.

The acronym TELOS refers to the five areas of feasibility - Technical, Economic, Legal, Operational and Scheduling.

4.3 TECHNICAL FEASIBILITY

This assessment is based on an outline design of system requirements, to determine whether the company has the technical expertise to handle completion of the project. When writing a feasibility report, the following should be taken to consideration:

- A brief description of the business to assess more possible factors which could affect the study.
- The part of the business being examined.
- The human and economic factor.
- The possible solutions to the problem.

The technical feasibility assessment is focused on gaining an understanding of the present technical resources of the organization and their applicability to the expected needs of the proposed system. It is an evaluation of the hardware and software and how it meets the need of the proposed system.

4.4 ECONOMIC FEASIBILITY

The purpose of the economic feasibility assessment is to determine the positive economic benefits to the organization that the proposed system will provide. It includes quantification and identification. It is most frequently used for evaluation of the effectiveness of the system. More commonly known as cost/benefit analysis the procedure is to determine the benefit and saving that are expected from a system and compare them with costs, decision is made to design and implement the system. This part of feasibility study gives the top management the economic justification for the new system. This is an important input to the management, because very often the top management does not like to get confounded by the various technicalities that bound to be associated with a project of this kind. The economic feasibility is considered in terms of money/price value.

4.5 LEGAL FEASIBILITY

Determines whether the proposed system conflicts with legal requirements, e.g. a data processing system must comply with the local data protection regulations and if the proposed venture is acceptable in accordance to the laws of the land.

4.6 OPERATIONAL FEASIBILITY

Operational feasibility is the measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.

The operational feasibility assessment focuses on the degree to which the proposed development projects fits in with the existing business environment and objectives with regard to development schedule, delivery date, corporate culture and existing business processes.

4.7 SCHEDULE FEASIBILITY

A project will fail if it takes too long to be completed before it is useful. Typically this means estimating how long the system will take to develop, and if it can be completed in a given time period using some methods like payback period. Schedule feasibility is a measure of how reasonable the project timetable is. Given our technical expertise, are the project deadlines reasonable? Some projects are initiated with specific deadlines. It is necessary to determine whether the deadlines are mandatory or desirable.

4.8 USE CASE DIAGRAM

A use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well.[5]

4.8.1 USE CASE DIAGRAM FOR ADMIN

The following diagram shows the Use Case for the administration of this E-Commerce website:

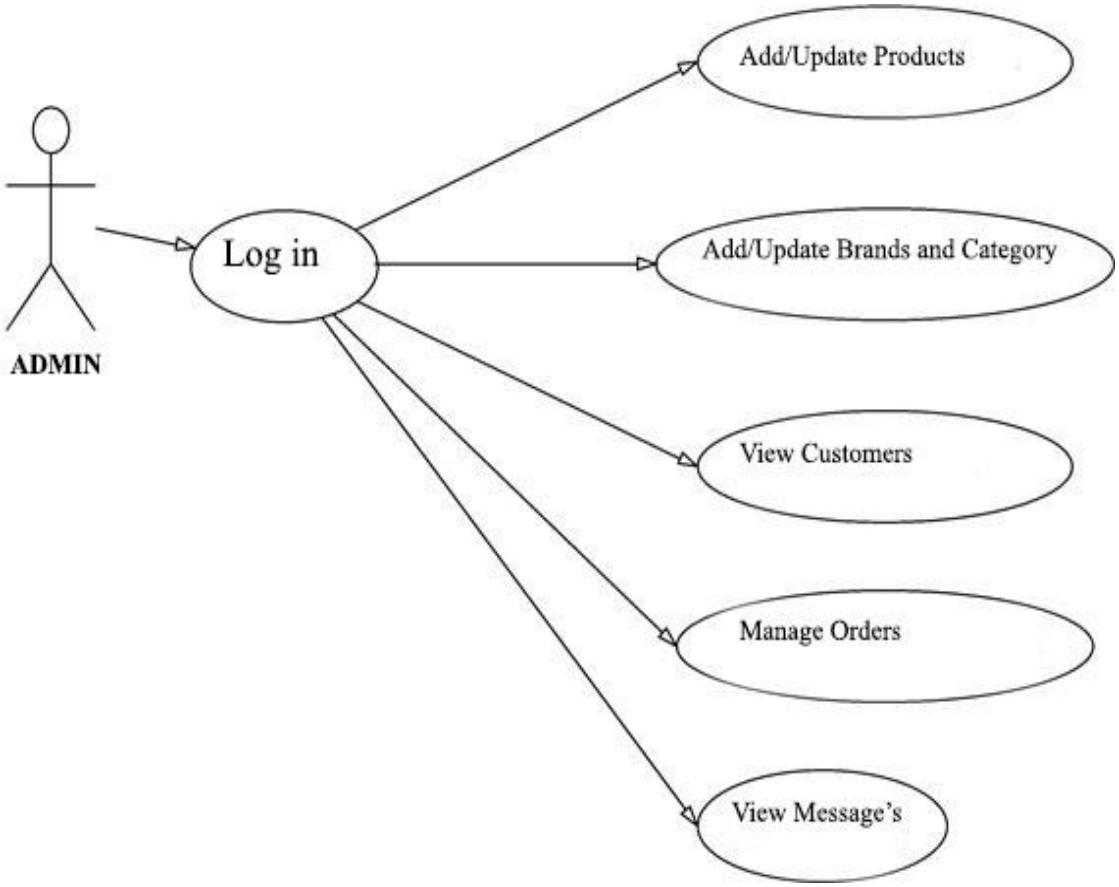


Figure 4.1: Use Case Diagram for Admin

With the help of this diagram any one can understand that what an admin can do at a glance. After login an admin can add a new product or update an existing product. He also can add new brand/category or update the brand and category. View orders, View customers and view messages option are also available for admin.

4.8.2 USE CASE DIAGRAM FOR CUSTOMER

The following diagram shows the Use Case for the customer of this E-Commerce website:

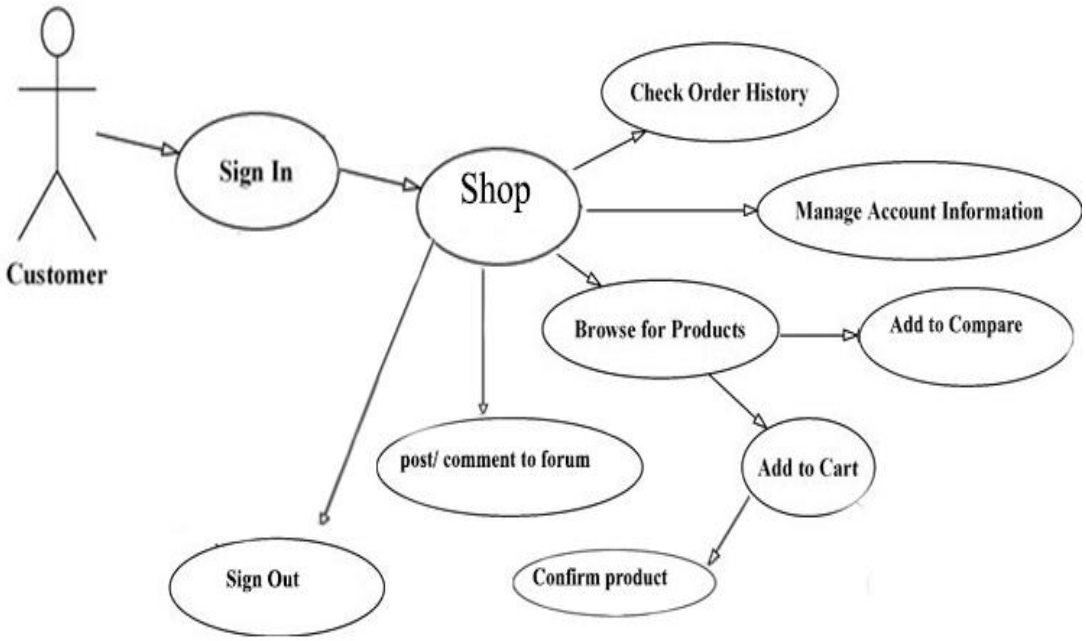


Figure 4.2: Use Case Diagram for Customer

After login an user can browse for his desire products, when find that product he can add it to the cart and after confirm the product he can get the product. From his account he can post/comment to the forum. He also can check his order history and manage his account.

4.9 FLOW CHART

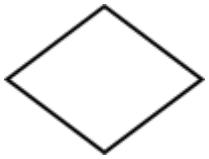
A flowchart is a type of diagram that represents an algorithm, workflow or process, showing the steps as boxes of various kinds, and their order by connecting them with arrows. This diagrammatic representation illustrates a solution model to a given problem. Flowcharts are used in analyzing, designing, documenting or managing a process or program in various fields. Flowcharts are used in designing and documenting simple processes or programs. Like other types of diagrams, they help visualize what is going on and thereby help understand a process, and perhaps also find flaws, bottlenecks, and other less-obvious features within it.

Flowcharts can be modeled from the perspective of different user groups (such as managers, system analysts and clerks) and that there are four general types:

- **Document flowcharts** - showing controls over a document-flow through a system.
- **Data flowcharts** - showing controls over a data-flow in a system.
- **System flowcharts** - showing controls at a physical or resource level.
- **Program flowchart** - showing the controls in a program within a system.

The following are some of the commonly used shapes used in flowcharts:

Table 4.1: Shapes Used In Flow Charts

Shape	Name	Description
	Flow Line	An arrow coming from one symbol and ending at another symbol represents that control passes to the symbol the arrow points to. The line for the arrow can be solid or dashed. The meaning of the arrow with dashed line may differ from one flowchart to another and can be defined in the legend.
	Terminal	Represented as circles, ovals, stadiums or rounded (fillet) rectangles. They usually contain the word "Start" or "End", or another phrase signaling the start or end of a process, such as "submit inquiry" or "receive product".
	Process	Represented as rectangles. This shape is used to show that something is performed. Examples: "Add 1 to X", "replace identified part", "save changes", etc....
	Decision	Represented as a diamond (rhombus) showing where a decision is necessary, commonly a Yes/No question or True/False test. The conditional symbol is peculiar in that it has two arrows coming out of it, usually from the bottom point and right point, one corresponding to Yes or True, and one corresponding to No or False.
	Input/Output	Represented as a parallelogram. Involves receiving data and displaying processed data. Can only move from input to output and not vice versa. Examples: Get X from the user; display X.

4.9.1 FLOW CHART FOR MANAGING THE USER ACCOUNT

The figure given below is the flow chart for this E-Commerce website:

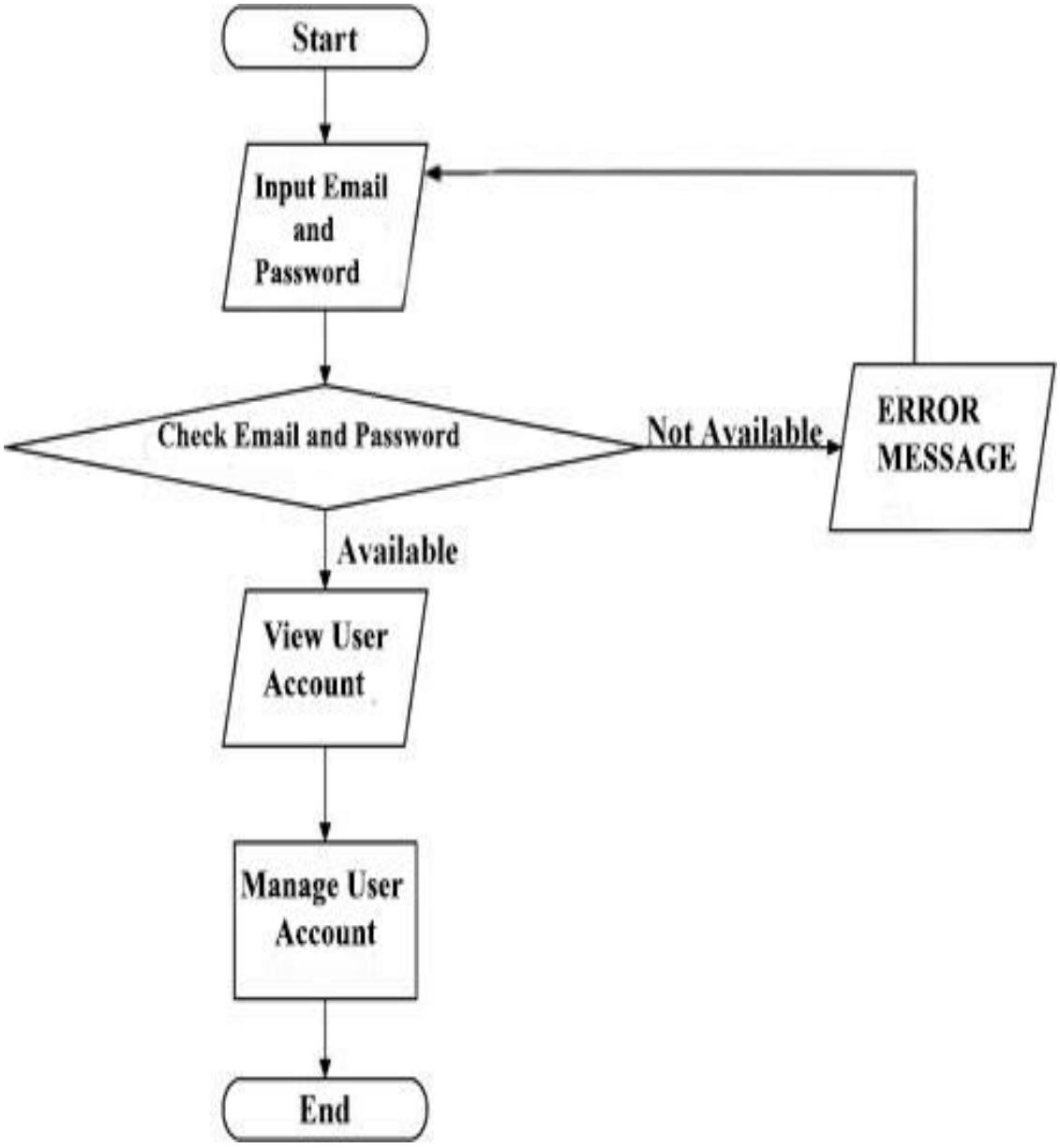


Figure 4.3: Flow Chart For Managing The User Account

4.9.2 FLOW CHART FOR ORDERING THE PRODUCT

The figure given below is the flow chart for ordering the product in this E-Commerce website:

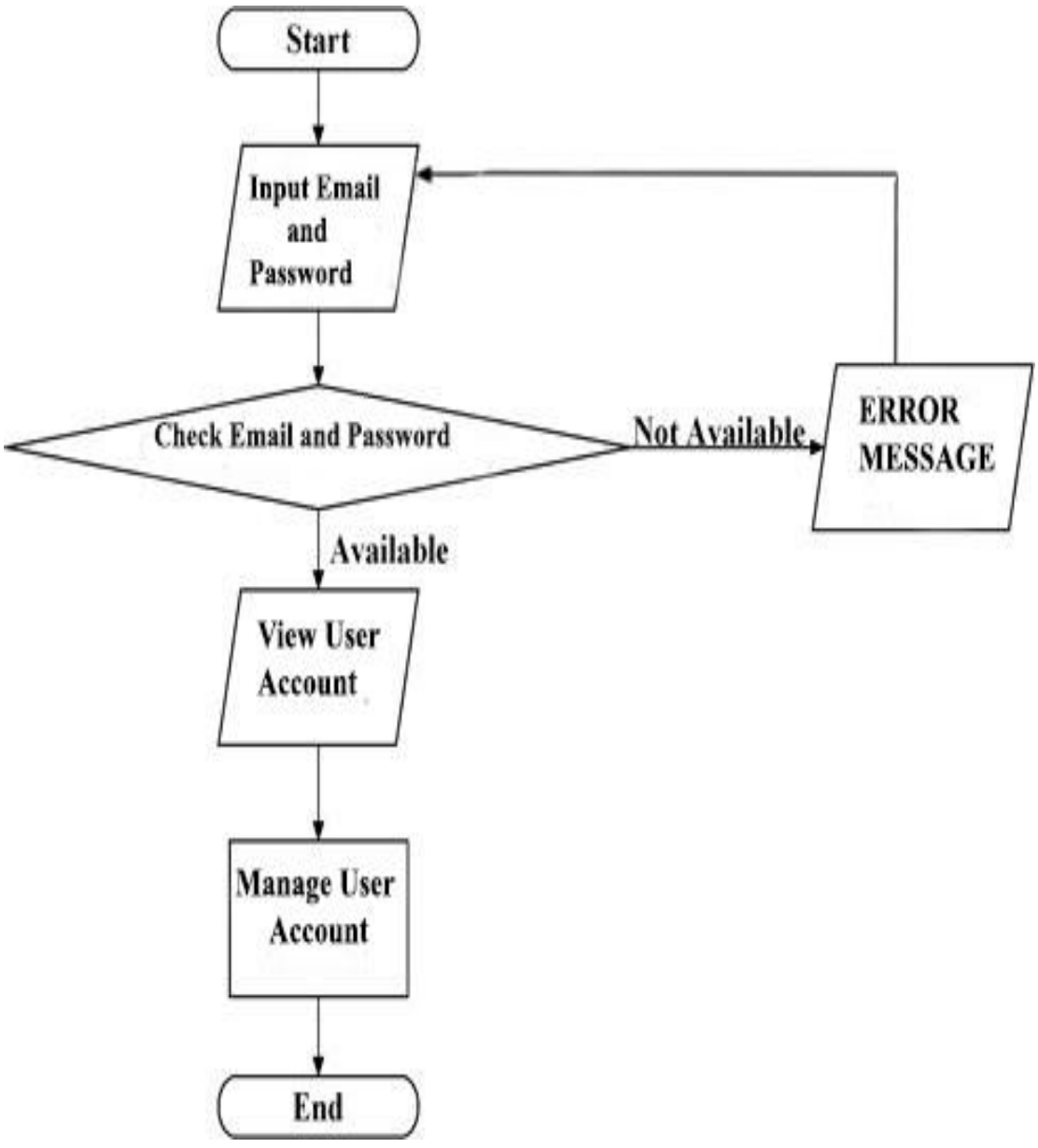


Figure 4.4: Flow Chart For Ordering The Product

4.10 DATABASE DESIGN

Database Design is the process of producing a detailed data model of database. This data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a data definition language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity.

The term database design can be used to describe many different parts of the design of an overall database system. Principally, and most correctly, it can be thought of as the logical design of the base data structures used to store the data. In the relational model these are the tables and views. In an object database the entities and relationships map directly to object classes and named relationships. However, the term database design could also be used to apply to the overall process of designing, not just the base data structures, but also the forms and queries used as part of the overall database application within the database management system (DBMS).

The process of doing database design generally consists of a number of steps which will be carried out by the database designer. Usually, the designer must:

- Determine the data to be stored in the database.
- Determine the relationships between the different data elements.
- Superimpose a logical structure upon the data on the basis of these relationships.

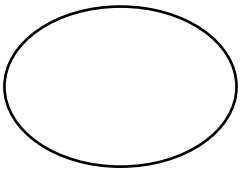
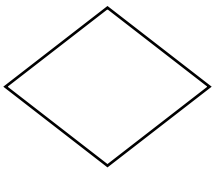
4.11 ER DIAGRAM

An entity–relationship model is also called entity-relationship (ER) diagram is usually the result of systematic analysis to define and describe what is important to processes in an area of a business. It does not define the business processes; it only presents a business data schema in graphical form. It is usually drawn in a graphical form as boxes (entities) that are connected by lines (relationships) which express the associations and dependencies between entities. An ER model can also be expressed in a verbal form, for example: one building may be divided into zero or more apartments, but one apartment can only be located in one building.

The relationships of entity sets stored in a database is shown by an entity relationship diagram (ERD) shows and an entity in this context is a component of data.“In other words, ER diagrams illustrate the logical structure of databases”.[6]

Symbols used in ER diagram are as follows:

Table 4.2: Symbols Used In ER Diagram

Shape	**Represents**
	Data Entity
	Attributes
	Relationship
	Connect two entities

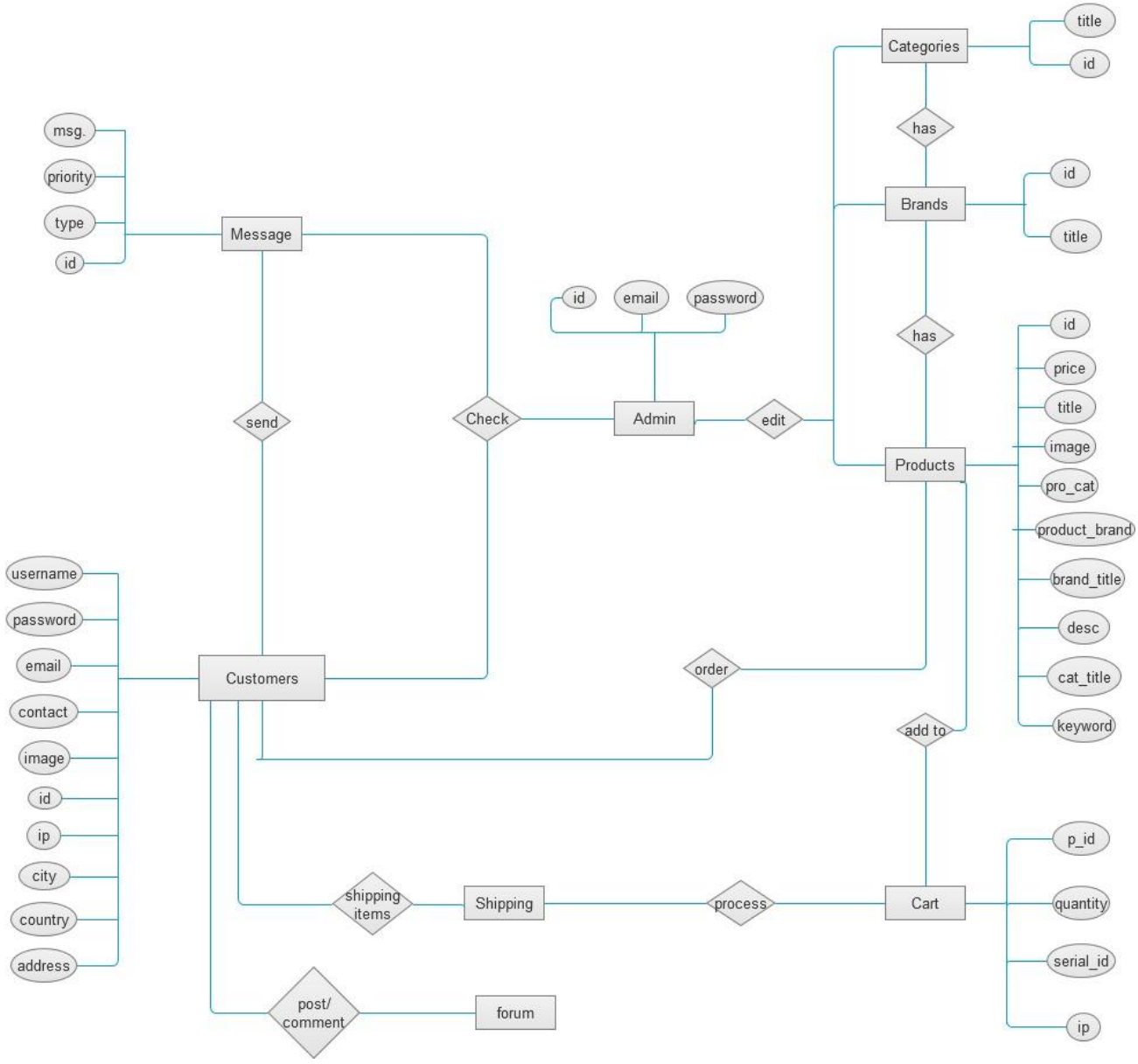


Figure 4.5: ER diagram of GreatBuyz Ecommerce Website

CHAPTER 5

IMPLEMENTATION PLANNING DETAIL AND TESTING

5.1 IMPLEMENTATION ENVIRONMENT

An E-Commerce website is an online web-store it can be accessed by any number of users at a time. Different customers from different places can purchase the same products from the site simultaneously. They can place order, view orders, update orders at the same time. There is no constraint for the number of user accessing the application. But updating on the admin side is allowed only one user at a time and only the administrator has the right to do it. It has fantastic user interface design and it's so user friendly that any unknown user can easily use it without any complexity.

5.2 MODULES SPECIFICATION

The entire E-commerce Website is divided into six modules as follows:

- Customer Tools
- Easy Navigation and Silent Features
- Administrative Control Center
- Product Management
- Shipping and Packing
- Payment Gateway

The modules which are currently covered are:

Customer Tools - This module deals with all the customer side controls. The customer can log in to their account by providing the Email and Password. The customer can update their billing/shipping address, their personal information, change passwords, view all the orders, view order status, post / comment into the forum, send feedback to the administrator etc. In short, the customer gets the complete freedom of managing his own account without any interference by anyone.

Easy Navigation And Silent Features - This module consists of the all the navigational features, which makes shopping very easy and efficient for the customer. The customer can browse any product according to its category / brand. The customer is free to select any product of his choice from these categories / brands. Clicking the name of any product opens a new page, which shows the detailed description that product. The user can add that product to the cart using the "Add to cart" button.

The search capability allows the user to search exactly what they desire. The user can search directly through the categories / brands or by entering the keywords.

Administrative Control Center - All the admin related controls are presented in this module. The web-based Administration Area allows the admin to configure every aspect of the e-store.

The admin can view and process the orders online. He can also edit all aspects of an order after it has been placed. He can also edit the products, brands, categories. He can also view the total customers. He can check the messages which is sent by the unregistered customers. In fact, he has total control over each and every functionality of the system.

Product Management - This module manages all the facilities featuring the products. It allows the admin to create a whole new category / brands of products with descriptions, price, keywords and images. New products along with their descriptions and images can be added very easily into it.

Payment Gateways - Once the customer completes shopping and checks out, the controls are transferred to the payment module. All the payment related functions are handled by this module. It offers different modes of payment and the customer can select anyone preferable to him. But in this project only one payment option is available (Cash on Delivery).

5.3 SECURITY FEATURES

Security is the condition of being protected against danger or loss. In the general sense, security is a concept similar to safety. So every application has to be secured against hackers or anonymous access of it. Our project contains two security features, of which one is password protection and the other is session state.

5.3.1 PASSWORD PROTECTION

Every user who is to be allowed to access the project is given his own email and password and given his own access rights so that only authorized and authenticated users can access the project.

5.3.2 SESSION STATE

The additional and the most efficient security feature that is added in this project is the session state. Every time a new user logs in, a new session is created. This session is specific for a particular user. All the transactions done by a user are found here. But once the user logs out, the session is cleared.

5.4 TESTING

Testing is the process carried out on website to detect the differences between its behavior and the desired behavior as stipulated by the requirements specifications.

Testing is advantageous in several ways. Firstly, the defects found help in the process of making the website reliable. Secondly, even if the defects found are not corrected, testing gives an idea as to how reliable the website is. Thirdly, over time, the record of defects found reveals the most common kinds of defects, which can be used for developing appropriate preventive measures such as training, proper design and reviewing.

5.5 TESTING PLAN

The testing sub-process includes the following activities in a phase dependent manner:

- Create Test Plans.
- Create Test Specifications.
- Review Test Plans and Test Specifications.
- Conduct tests according to the Test Specifications, and log the defects.
- Fix defects, if any.
- When defects are fixed continue from activity.

5.6 TESTING METHODS

Here are few of the basic testing techniques for web application testing: [7]

- Functionality Testing
- Usability testing
- Interface testing
- Compatibility testing
- Performance testing
- Security testing

Functionality Testing - The below are some of the checks that are performed but not limited to the below list:

- Verify there is no dead page or invalid redirects.
- First check all the validations on each field.
- Wrong inputs to perform negative testing.
- Verify the workflow of the system.
- Verify the data integrity.

Usability Testing - To verify how the website is easy to use with.

- Test the navigation and controls.
- Content checking.
- Check for user intuition.

Interface Testing- This checks if the web server and website server interface, website server and database server interface have proper interaction or not. This test ensures that the users do not see any error messages.

Compatibility Testing- Compatibility testing is performed based on the context of the application.

- Browser compatibility
- Operating system compatibility
- Compatible to various devices like notebook, mobile, etc.

Performance Testing - Performed to verify the server response time and throughput under various load conditions.

- **Load testing** - It is the simplest form of testing conducted to understand the behavior of the system under a specific load. Load testing will result in measuring important business critical transactions and load on the database, application server, etc. are also monitored.

- **Stress Testing -** It is performed to find the upper limit capacity of the system and also to determine how the system performs if the current load goes well above the expected maximum.

- **Soak Testing -** Soak testing also known as endurance testing, is performed to determine the system parameters under continuous expected load. During soak tests the parameters such as memory utilization is monitored to detect memory leaks or other performance issues. The main aim is to discover the system's performance under sustained use.

- **Spike Testing -** Spike testing is performed by increasing the number of users suddenly by a very large amount and measuring the performance of the system. The main aim is to determine whether the system will be able to sustain the work load.

Security Testing - This checks the security of the website. For security purposes, internal pages should not open if you are not logged into the website. Other statistics should not be seen even if the user is logged in.

After completing all the website testing, a live testing is necessary for web sites. Then upload the site and complete testing should be done. These days, websites are accessed from different kinds of devices like desktops, PDAs, iPhones, etc. It is very important to check whether the web application is compatible to these devices.

5.7 TEST CASES

5.7.1 TEST CASE FOR ADMIN SIDE

Table 5.1: Test Case for Admin Side

Sr. No	Test Case Description	Expected Result	Actual Result	Remarks
1.	Correct User Name and Password	The Admin Home page should be displayed.	Same as expected.	
2.	Incorrect User Name and Password	The error message telling incorrect username and password should be displayed.	Same as expected.	
3.	Fill the fields of Categories and then click on the Submit button.	The message-displaying category added successfully should be displayed and view categories page should be displayed	Same as expected.	
4.	Fill the fields of Brands and then click on the Submit button.	The message-displaying brands added successfully should be displayed and view brands page should be displayed	Same as expected.	
5.	Fill the fields of Products and then click on the Submit button.	The message-displaying product added successfully should be displayed and view products page should be displayed	Same as expected.	

Sr. No	Test Case Description	Expected Result	Actual Result	Remarks
6.	In the view brands page click on the delete icon.	The message-displaying one brand has been deleted should be displayed.	Same as expected.	
7.	In the view categories page click on the delete icon.	The message-displaying one category has been deleted should be displayed and view category page should be displayed.	Same as expected.	
8.	In the view products page click on the delete icon.	The message-displaying one product has been deleted should be displayed and view product page should be displayed.	Same as expected.	
9.	In the view category page click on the edit icon.	Edit Categories page should be displayed. After editing the category the message-displaying one category has been edited should be displayed and view category page should be displayed.	Same as expected.	
10.	In the view brands page click on the edit icon.	Edit brand page should be displayed and after editing one brand has been edited message should be displayed and redirect to view brand page.	Same as expected.	

Sr. No	Test Case Description	Expected Result	Actual Result	Remarks
11.	In the view products page click on the edit icon.	Edit products page should be displayed. After editing the product the message-displaying one product has been edited should be displayed and view product page should be displayed.	Same as expected.	
12.	Click on the view brands Item.	View brands page should be displayed.	Same as expected.	
13.	Click on the view Categories Item.	View categories page should be displayed.	Same as expected.	
14.	Click on the view Products Item.	View products page should be displayed.	Same as expected.	
15.	Click on the view Messages Item.	View messages page should be displayed.	Same as expected.	
16.	In the view Messages page click on the delete icon.	The message-displaying one message has been deleted should be displayed and view message page should be displayed.	Same as expected.	
17.	Click on the view customers Item.	View customers page should be displayed.	Same as expected.	
18.	In the view customers page click on the delete icon.	One customers has been deleted should be displayed and view customers page should be displayed.	Same as expected.	

Sr. No	Test Case Description	Expected Result	Actual Result	Remarks
19.	Click on the view orders Item.	View orders page should be displayed.	Same as expected.	
20.	In the view in progress orders page click on the complete order.	The message-displaying order has been completed should be displayed and view orders page should be displayed where he can find the pending order items.	Same as expected.	
21.	Click on the view completed orders Item.	View completed orders page should be displayed.	Same as expected.	
22.	Click on the menu's Log Out Item.	The Sign Out Page should be displayed.	Same as expected.	

5.7.2 TEST CASES FOR USER SIDE

Table 5.2: Test Case For User Side

Sr. No	Test Case Description	Expected Result	Actual Result	Remarks
1.	On Home Page click on Particular Category.	The Page showing all the product of selected Category should be displayed.	Same as expected.	
2.	On Home Page click on Particular Brand.	The Page showing all the product of selected Brand.	Same as expected.	

Sr. No	Test Case Description	Expected Result	Actual Result	Remarks
3.	On Home Page click on View Cart link.	The Shopping Cart should be displayed with contents if you are Signed In.	Same as expected.	If the user is signed in and there is no content then cart is empty message will be displayed.
4.	On Home Page click on checkout link.	The Shopping Cart with customer's address should be displayed with contents if you are Signed In.	Same as expected.	If the user is signed in and there is no content then "place some order" message will be displayed.
5.	On Home Page click on account/Sign In link.	The Sign In Page of user side should be displayed.	Same as expected.	If the user have no account he/she can register by clicking sign up button
6.	Enter Incorrect username and password.	Incorrect Username and Password should be displayed.	Same as expected.	

Sr. No	Test Case Description	Expected Result	Actual Result	Remarks
7.	Enter Correct username and password.	Index Page should be displayed.	Same as expected.	
8.	On Sign Up Page enter user details	The pop-up window should be displayed telling whether email address is available or not?	Same as expected.	
9.	On Advance Search Page select the name of the brand, category and price range.	All the products match those criteria should be displayed.	Same as expected.	
10.	On my order Page	The Order Details Page should be displayed with details of particular order.	Same as expected.	
11.	On the Products Page or details or SearchResults Page click on Add to Cart link.	The product should be added to the shopping cart.	Same as expected.	
12.	On the Products details Page click on Add to Compare link.	The product should be added for compare.	Same as expected.	
13.	Product Detail Page click on the Add to Cart button.	The product should be added to the shopping cart.	Same as expected.	

Sr. No	Test Case Description	Expected Result	Actual Result	Remarks
14.	On the Product Details Page.	The whole information of that particular product should be displayed.	Same as expected.	
15.	On View Cart Page click on Continue Shopping button.	The user should be Redirected to the index page.	Same as expected.	
16.	From Check Out Page go back to the View Cart Page.	The View Cart Page should display and showing that the shopping cart is empty.	Same as expected.	
17.	On Home Page click on Contact us.	The Page showing contact address and another option to send us message	Same as expected.	
18.	On details page click on add to forum.	The Page showing where a customer can post a question about that particular product.	Same as expected.	
19.	On details page if a user vote a product	The message-displaying you have voted.....should be displayed and redirect to the same page.	Same as expected.	
20.	On details page, forum option click view.	a new page will be displayed where a customer can discuss / post/ comment against that particular product	Same as expected.	

Sr. No	Test Case Description	Expected Result	Actual Result	Remarks
21.	On forum Page click on view.	a new page will be displayed where a customer can discuss / post/ comment against that particular product	Same as expected.	
22.	On forum Page click on post a question.	A new page should be displayed where a customer can post a question.	Same as expected.	
23.	On any page click on Sign Out link.	The Home page should be displayed and the session should be cleared.	Same as expected.	

CHAPTER 6
USER AND ADMIN INTERFACE

6.1 ADMIN AREA

Admin Login:

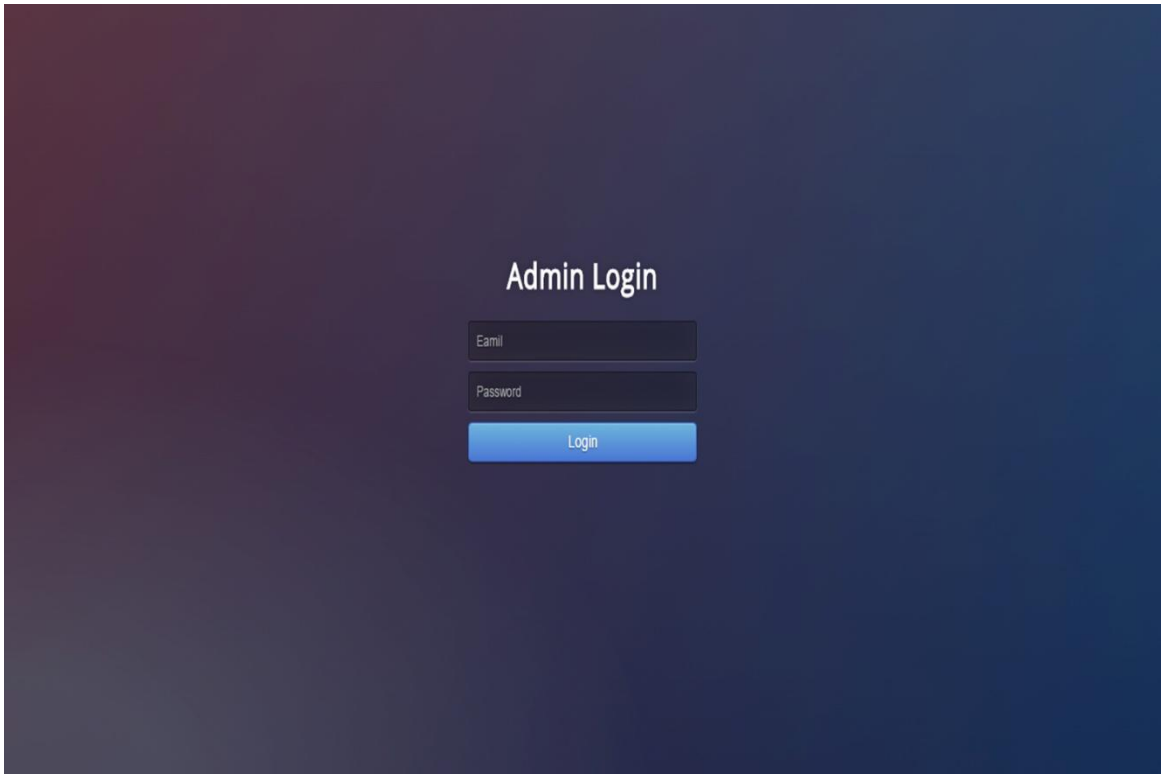


Figure 6.1: Login Page for Admin

This is the login page for admins. If an admin inserts correct Email and Password, admin index page will appear.

Admin Index:

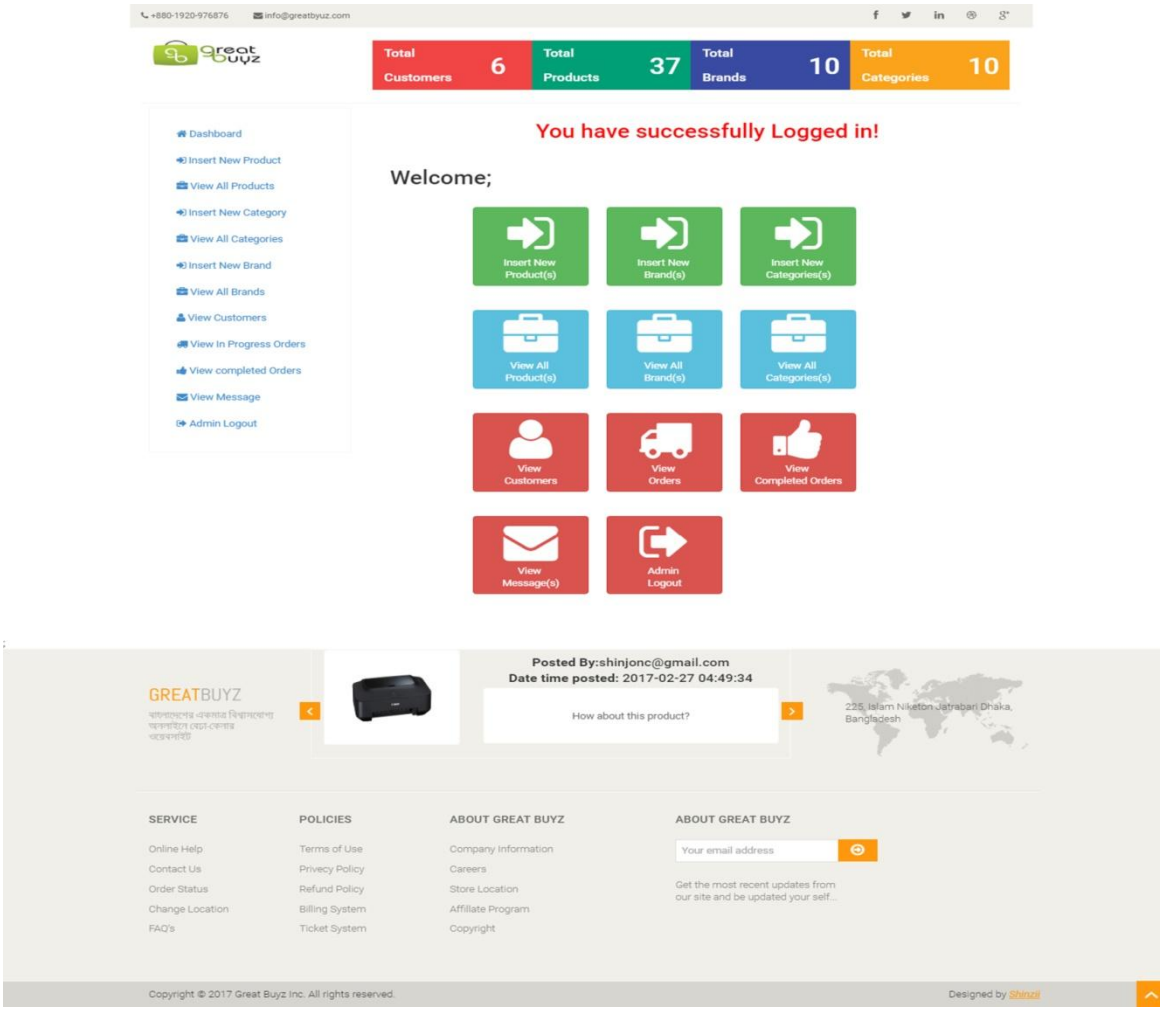


Figure 6.2: Admin index

This is the index page for admins where the admin can see the total number of customers, products, brands and categories at a glance. Besides the admin can go to any page from this page. For example, if the admin wants to insert a new product, he can do so by clicking ‘Insert new product’.

Insert New Category:

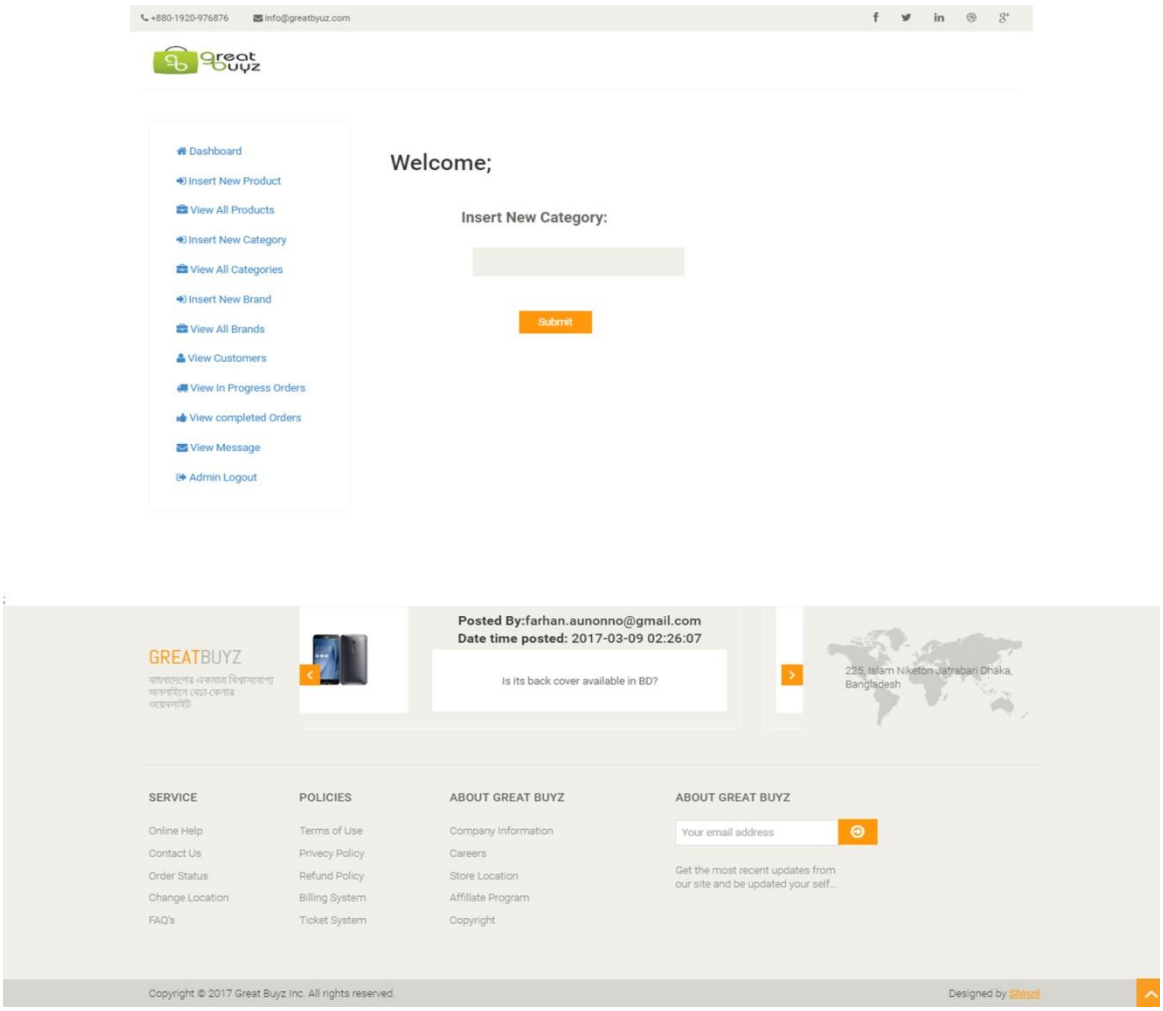


Figure 6.3: Insert Category

From this page an admin can insert a new category. Insert new brand page is similar as this page.

View All Categories:

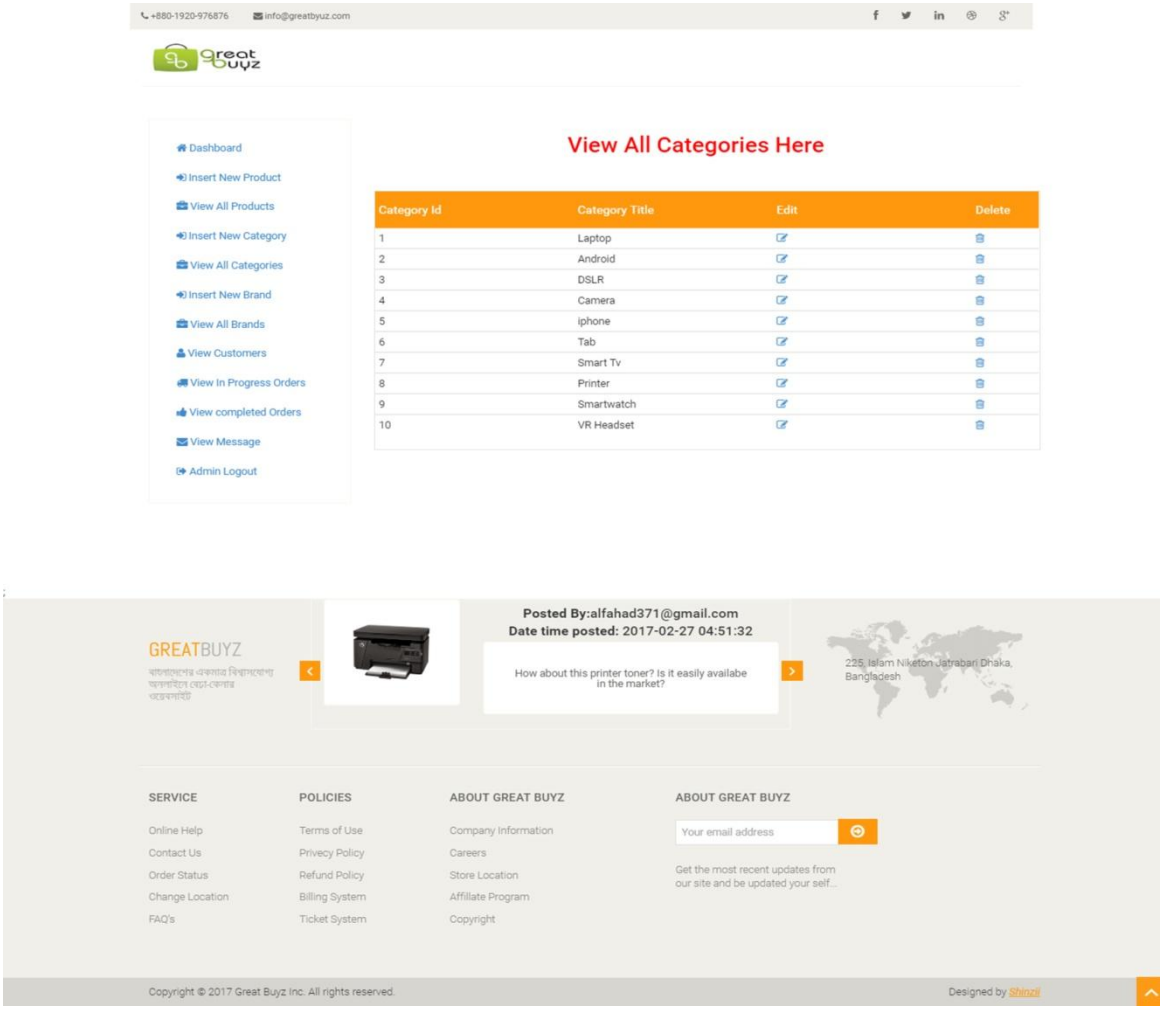


Figure 6.4: View Category

In this page admin can see the list of all categories. If he wants, he can either delete a category or edit the name of a category. View all brands is same as this page.

Insert New Product:

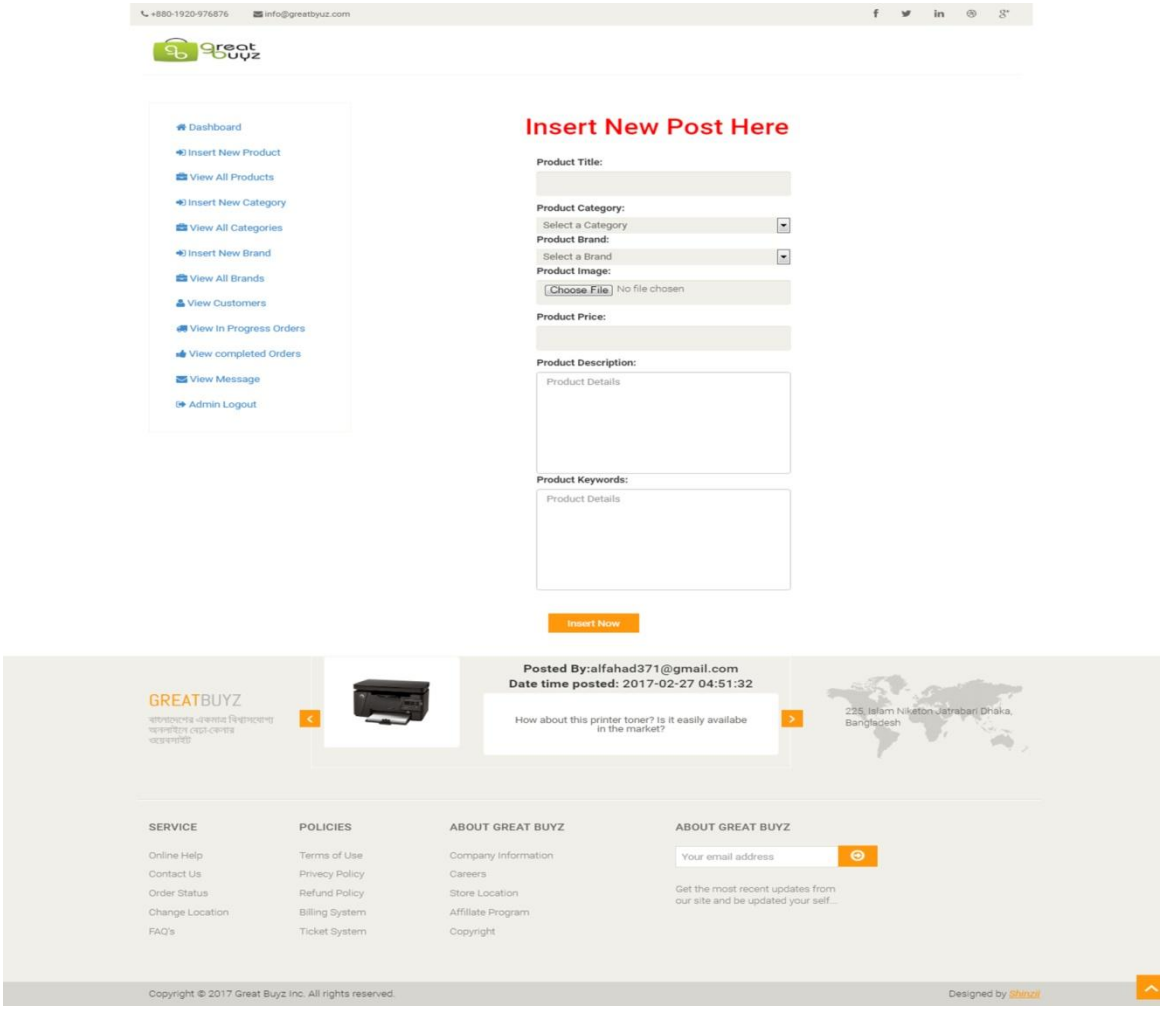


Figure 6.5: Insert New Product

In this page, an admin can insert a new product.

View All Products:

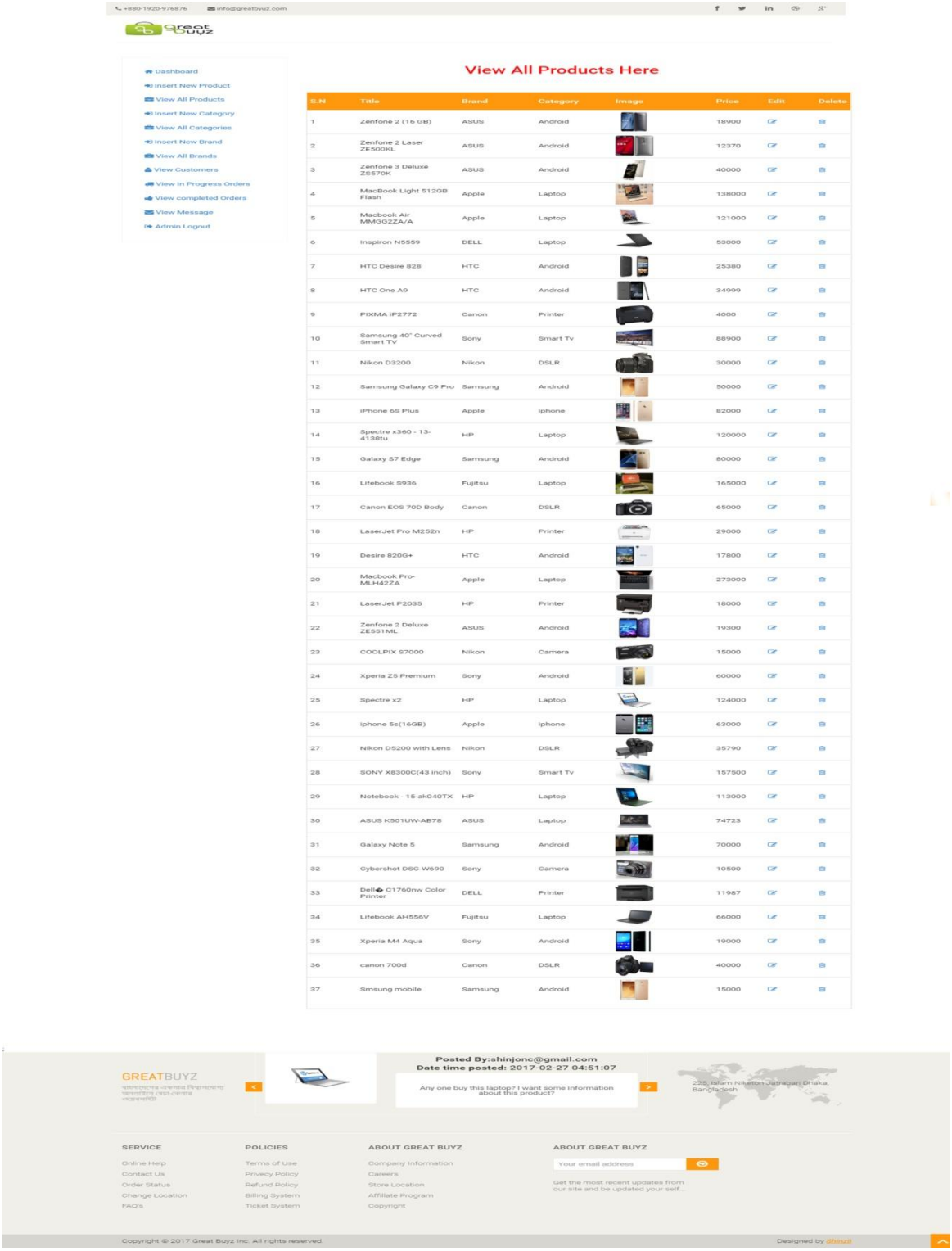


Figure 6.6: View All Products

In this page, an admin can see all the products' list where he can delete a product or edit a product.

6.2 CUSTOMER AREA

Login or Signup:

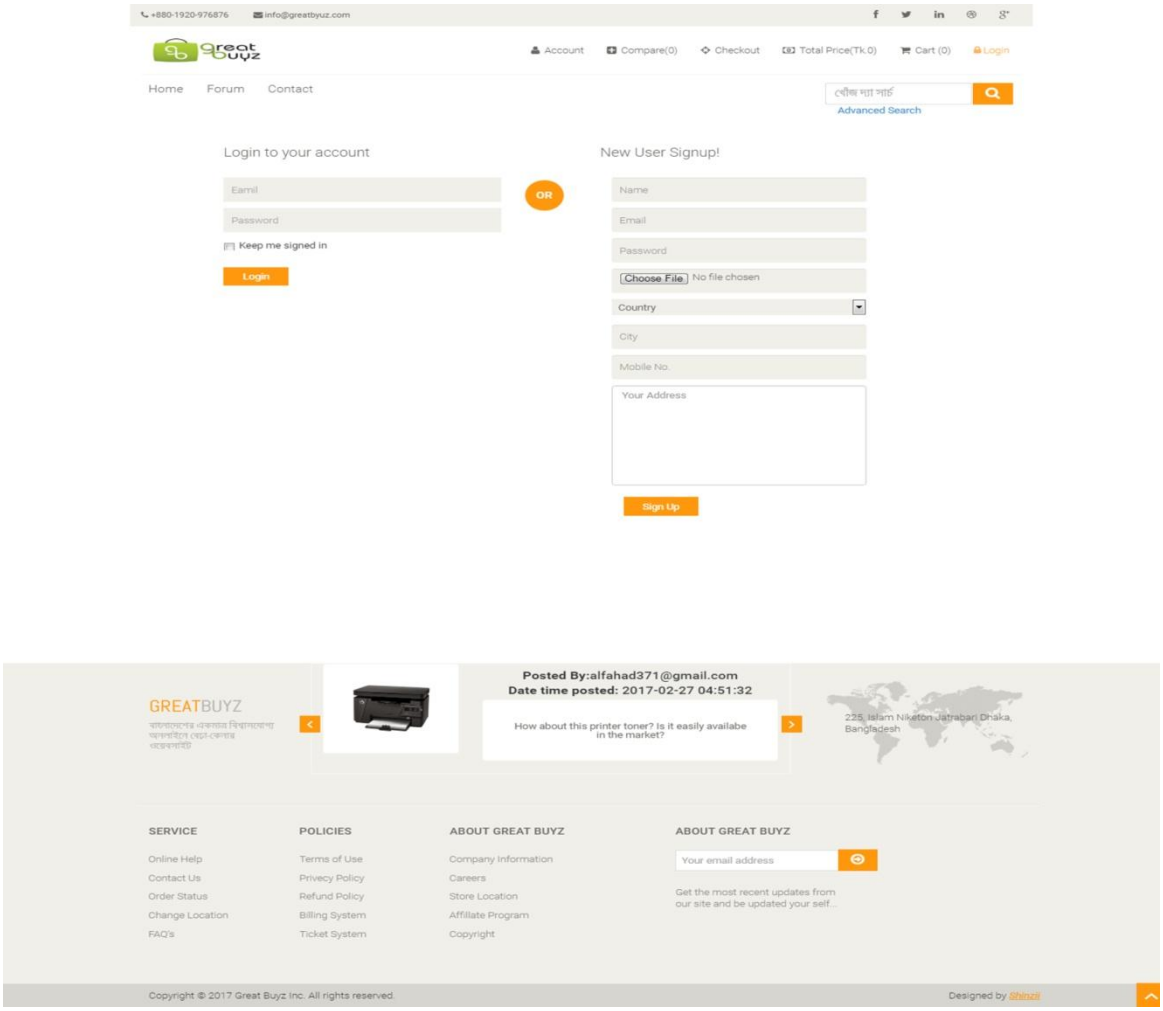


Figure 6.7: Customer Login/Registration

In this page a new user can register by inserting required information. Besides, an already registered user can log into his account from this page.

Home Page:

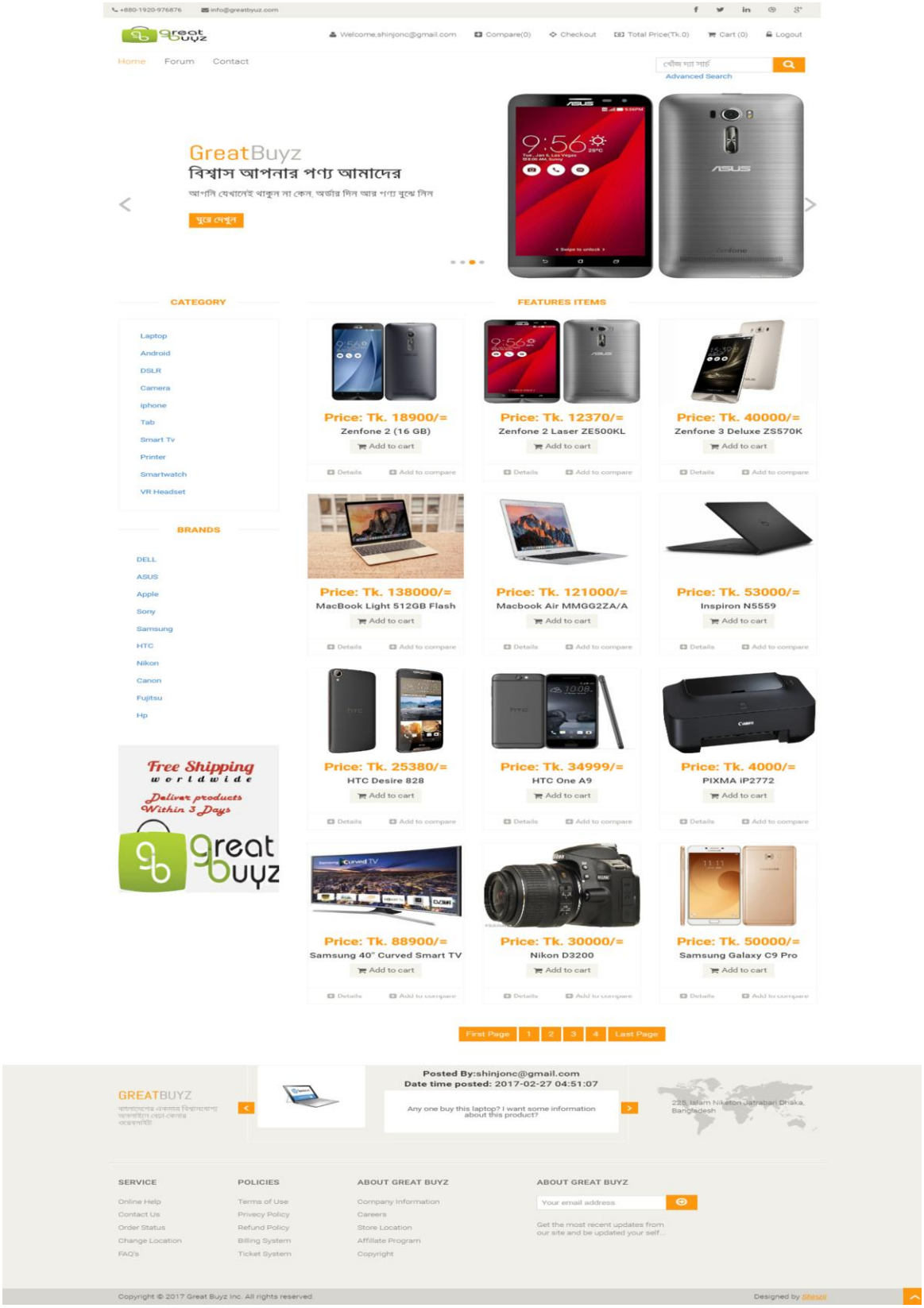


Figure 6.8: Home page of GreatBuyz Ecommerce Website

This is the home page of GreatBuyz website, where a customer can find his desired product. He can search any product by using the search box or he can use the advance search option. He can also search product by brand or category. For example, if he wants to see laptops of HP brand, he should click the HP under the brands tab.

Cart Page:

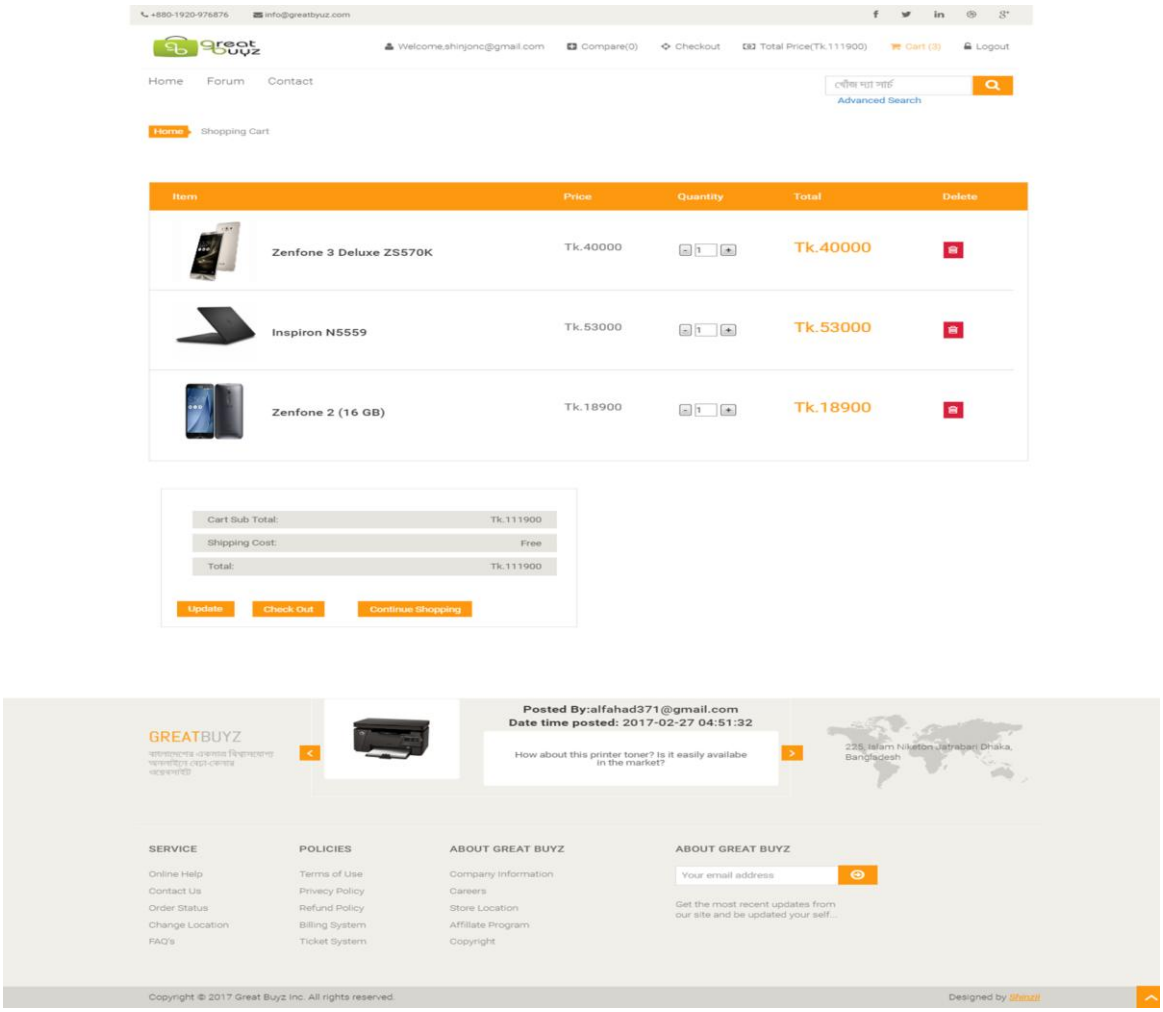


Figure 6.9: Cart Page

In this page a customer can see the product list which he ordered. He can also edit the quantity of the products or he can remove the unwanted product.

Checkout Page:

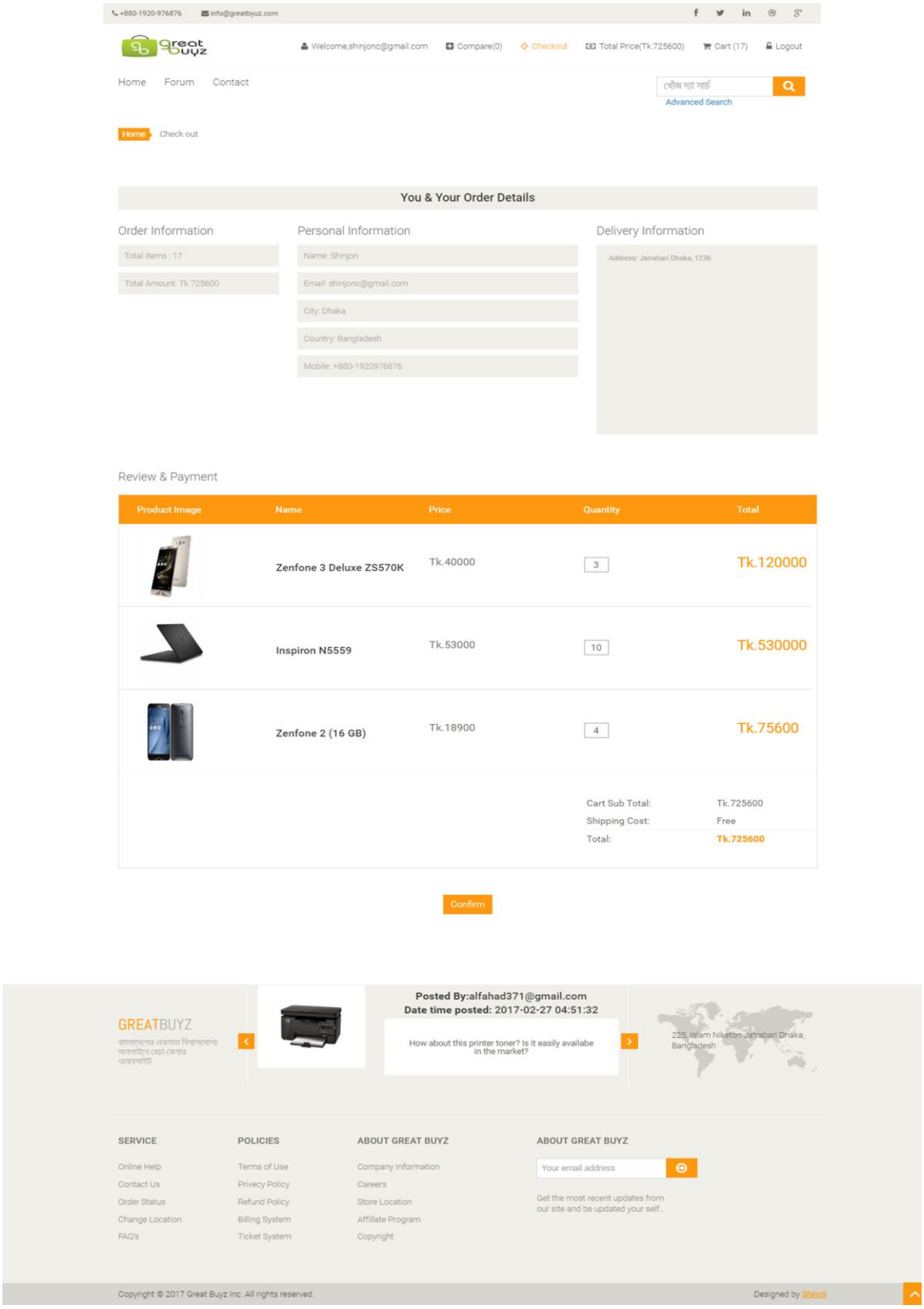


Figure 6.10: Checkout page

This is the checkout page where a customer can see his contact information and confirm the ordered product.

User Account:

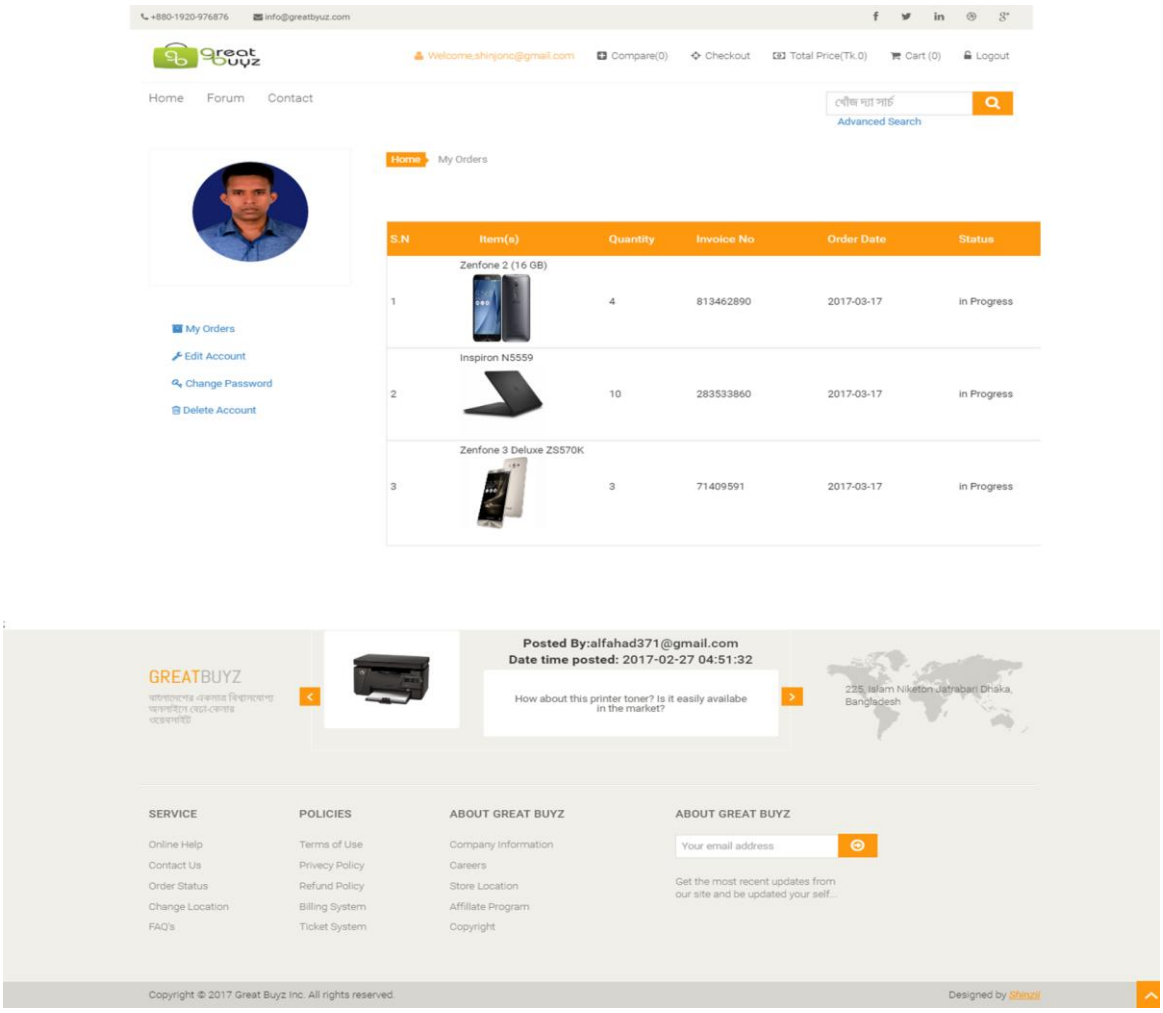


Figure 6.11: Customer Account

In this page the customer can see the order details. Or he can edit his account from this page by clicking the edit account tab.

Details Page:

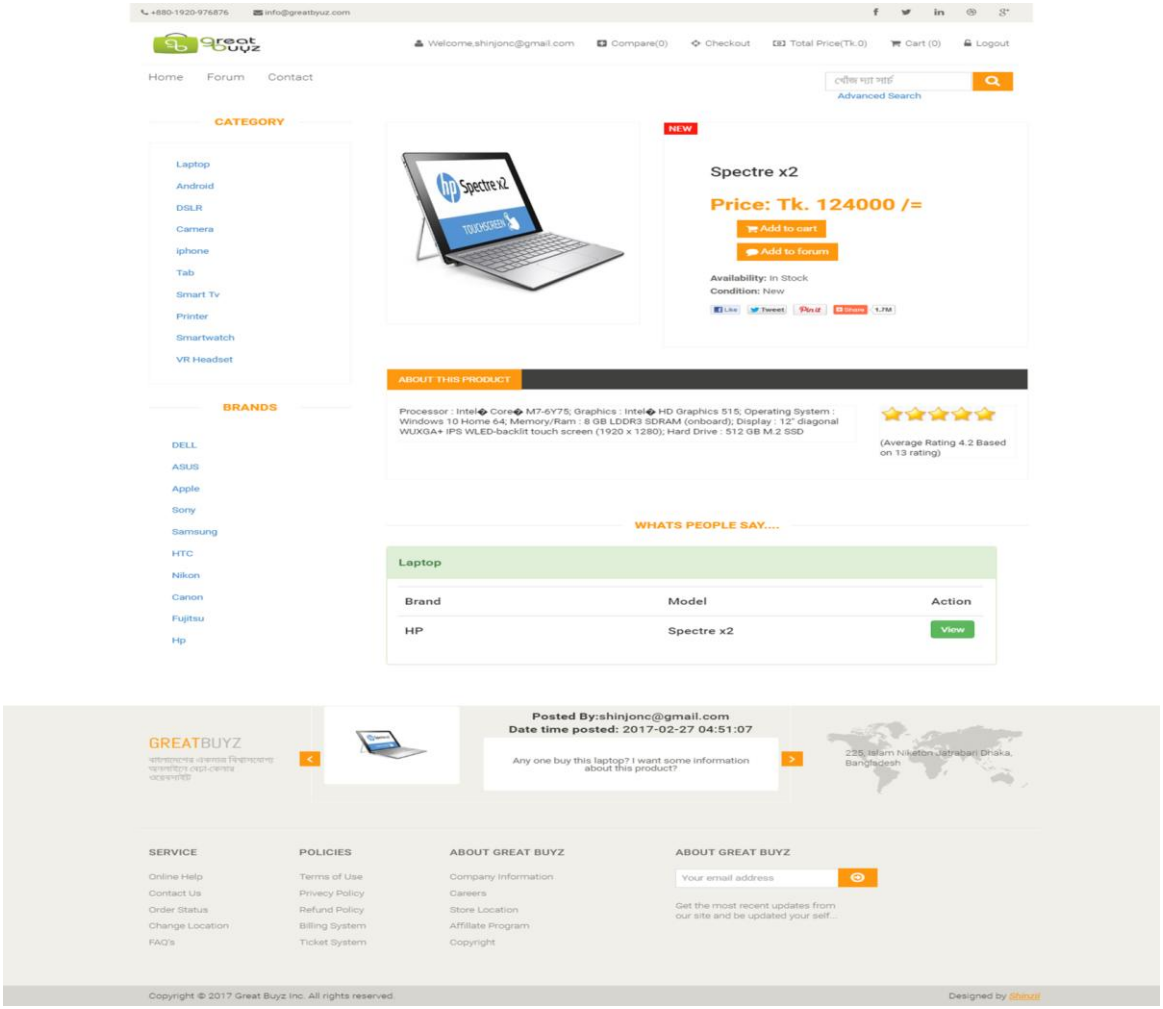


Figure 6.12: Product Details Page

This is the product details page where a customer can find brief information about a particular product. He can also post a question about the product from this page. In addition, he can see the previous questions about that product & can rate the product from this page.

Product Compare:

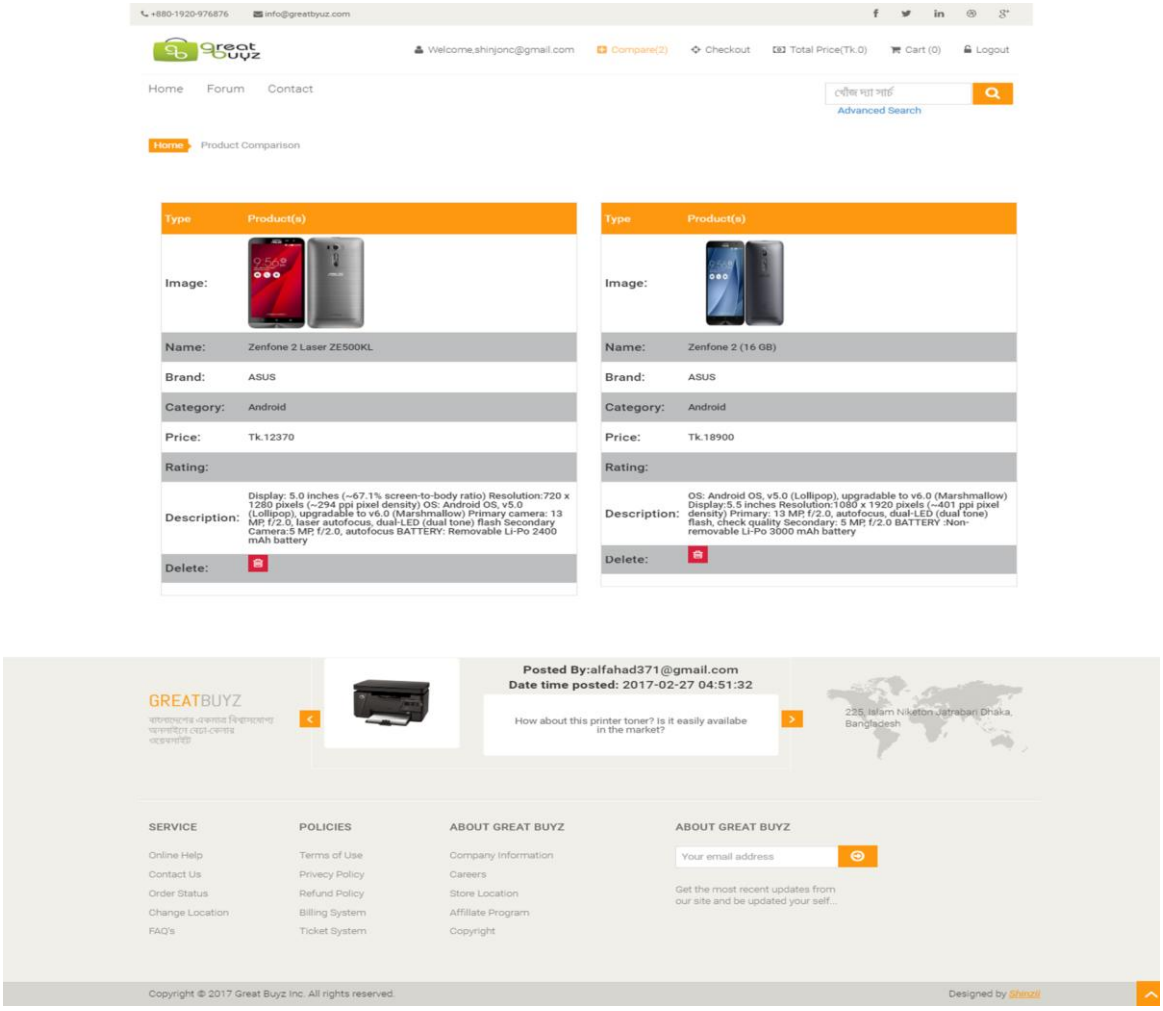


Figure 6.13: Product Compare Page

In this page a customer can see the comparison between the products which he selected.

Discussion Forum:

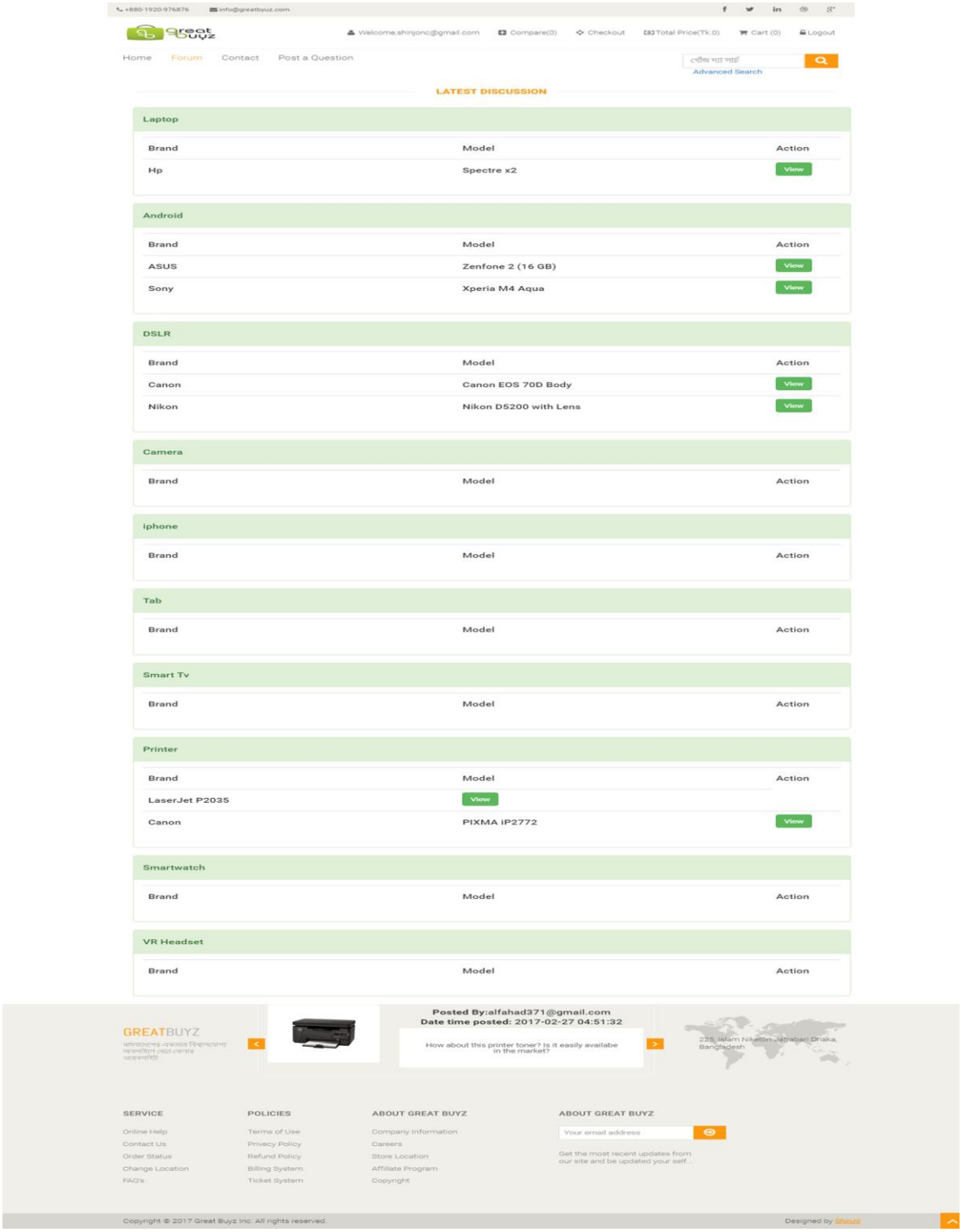


Figure 6.14: Forum Page

In this page a customer can post a question about a particular product or he can see the users' discussion by clicking the view button.

CHAPTER 7
CONCLUSION

7.1 LIMITATIONS

Each and every thing in this world has some limitations. Nothing is there in this world, which do not have any limitations. And it is also the case with E-Commerce website. E-Commerce has also its limitations. Let's discuss some of the limitations of this E-Commerce Application.

In this E-Commerce website it doesn't have the functionality of bidding/auctioning. Here user cannot make any bids and win the product in lower prices. If any user wants to cancel his order then he has to write the e-mail to the administrator to cancel his order. He cannot tell the administrator directly to cancel the order.

This project allows users to purchase desired products by using Cash on Delivery (Pay Later) option. But if user wants to pay before delivery by using visa card or master card what will he do? There is no option for that. Only Cash on delivery is available / he has to pay with cash on delivery.

In the term of product compare, a user should select two or more similar product for comparison. In this project, this is not possible. User can select as many products as he/she wants for compare. There are no limitations for selecting products and the most important thing is that, there is no option so that user can compare similar products. User can select the products those he wants to compare, in this case, he can compare Laptop vs. Android.

7.2 FUTURE ENHANCEMENTS

The website can be enhanced in the future to give much functionality, which has not been included yet. As you all know the E-Commerce is so wide an area there are so many things, which can come under it. It is not possible to provide all the functionality as per budget of the client and limitations of resources. So let's discuss some of the enhancements, which can be made to this application.

This E-Commerce website can enhance to sell the products of the user. The website can enhance so that user can upload his product with its specification and features. It will make the user happy that he can sell his product without moving out of his home easily.

Another enhancement, which can provide that, the user can auction the products. As per the rule the highest bidder will win the product. The auctioning makes the product sometime very cheap that a product of thousands of taka will be sold in hundred taka. So it will make the user very happy to buy the product at very lowest price.

The application can enhance to manage the advertisements to be displayed on the pages of the application. There can be a management panel for the advertisement, which selects the advertisements to be displayed. Because of the advertisement management panel the administrator can let others to advertise on the website and to earn the money.

7.3 CONCLUSION

The E-Commerce website is intended to sell the products online. With this E-Commerce solution user can now easily buy the products online on the click of a button. This website will make the online selling much easier than before. The GUIprovided is so simple that any novice can also learn to use it.

This E-Commerce Solution will also make the sellers happy because they need not to open a shop and make a big investment. The seller can easily manage the products and orders. The seller needs not to write the orders by hand and after that doing all the calculations. All the calculation will be done automatically and all the records will be saved so the management of the customer orders is made easy.

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APPENDIX

The Project Codes can be found in the Cd.