ONLINE SYSTEM
FOR
EDUCARE INTERNATIONAL BOOK SHOP

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Online System for Educare International Book Shop

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DECLARATION

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S.Anushyanthan

Abstract

An online book shop for Educare International has been proposed with the intention of solving existing problems and for exploiting new opportunities. The organization is looking to expand its business. But for opening new branches, financially a large capital is inevitable. Simply client is very eager to grab the new customer base and ensuring that existing customers not switching to the competitor. Redundant manual work and extra overhead, poorly equipped decision making access for managers, very slow order processing abilities have been properly handled by this system.

The system provides an online shopping cart system with paypal payment gateway integrated, customer profile management with wish shelf feature for providing personalized book shelf experience to the customers. Online order processing, order tracking, even delivery status tracking facilities have been provided for faster order processing and better customer satisfaction. More importantly user analytical and management interactive reporting options have been provided for enriching the managers with accurate and timely decision making process. Customer book reviewing, prototypically implemented flip and see are some more features which are the icing on the system.

System has been implemented with creately an online tool and rational rose for modelling. MySQL WorkBench5.2.29 has been used with xampp php myadmin for database design and implementation. Netbeans and xampp server(appachi,), godaddy webserver, languages such as PHP,CSS,HTML,Mysql,AJAX,Javascript have been used for implementation.

The completed proposed system has carefully crafted for full filling the client's expectations including solving significant problems they have been facing now. Every functional and non functional requirements were thoroughly tested and passed through user acceptance test. Client is more than confident that they could get more customer base, speed up the order processing, be the leader in providing customer retaining features. Managers are confident and highly equipped for decision making process.

Acknowledgement

I wish to express my sincere appreciation and deeper gratitude to Mr.S.Anushyanthan for his proper guidance, advice throughout the development and the report writing. More over valuable comments of examiner also helps me to enhance the project work.

This would not have completed unless the great support of the client organization (Educare International Book shop staffs). I am more than happy to thank the director of the book shop for giving the opportunity for me to explore and experiences this.

Finally my gratitude to the UCSC – BIT and the course provider, Esoft Metro Campus for experiences and explore the real insight of project development with the professional manner.

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Chapter 1 - INTRODUCTION

1.1 Introduction

Educare International book shop is a private limited and they sell variety of books in many categories such as computer, law, cookery, ayurvedic. They have 10 to 12 staffs with manager and supervisor. They have been running this business nearly about a year since 2016. And they have good reputation among their loyal existing customers and they do have their physical show room in Colombo.

Educare International book shop is running with the mission of "enable our customers to offer the best selection of books in the friendly manner". And they are trying their level best for satisfying their customer needs.

1.2 Motivation for the Project

- The shop wishes to exploit a wider market available over the Internet in order to increasing customer base and sales.
- Facilitate the customers to reach their book needs with greater convenience.
- Create more advantages for the company by providing an online book showroom, efficient catalog management and Handle order placing system.
- The project work presents me with an excellent opportunity to practice the knowledge I have gained throughout the BIT programme.

1.3 Objectives

- **Primary objective of the system is to let the consumers to order via online.**
  -In a way customers can minimize the travelling cost and save their time. And whenever they need the product, they can simply order it from home with minimum of effort.

- **Providing convenient access for interacting with the system, in order to increasing loyalty of customers.**
  -Giving and gaining feedback to or from users and keeping them touch with the organization all the time. Easily they can get the up to date information about the products.

- **Effectively manage the catalog details up to date in order to serve the customers.**
  -Details and the information about the products should be accurate and up to date. New coming products have to be made available to the catalog as soon as they arrive.

- **Create competitive advantages and reduce some of the operational cost.**
  -Reducing the number of human resource needed and speed up the process and the cost involved in carrying out the operations, well minimized.
- **Information related to make quick decisions should be made available from the reports generators. And the information should be accurate.**
- **Providing awareness to the wide range customers about the valuable books and making them available**
- **Wider customer base and 24/7 convenience purchase**

1.4 Scope

In the needs of meeting the customer's order at the correct time and reducing the operational cost as well as the customers effort to buy the product and make them frequently interact with the organization, providing convenient features like wish shelf for retaining them with the organization are concern as scope of the proposed system. The scope of the system is justified in accordance with the budget, technology availability and the time factor.

The proposed system would provide for,

- Customer registration, login facility
- Administrator registration, login facility with discrete access rights
- Product catalog listing with the easy search facility

- Order placing
- Order tracking
- Shopping cart with the payment gateway
- User friendly help facility such as FAQ
- Customer profile management,
- Wish shelf (virtual book shelf) Management
- User review facility
- Catalogue management
    - Category management
    - Product management
- Book store management
- Information report generation for management
- Delivery Tracking.
- User Analytics.

Chapter 2 - ANALYSIS

2.1 Introduction

In software development life cycle analysis phase is the most important one. Initial and the significantly important task is clearly understand the domain that we are going to solve, as well as having an idea about what is really expected from the users from the new system

2.2 Fact Finding Techniques

We have to spend a lot of time here for finding out the actual requirements. Here we need the great amount of skills such as inter personal communication, interpersonal relation. Here building up the instant rapport with the users will boost up the effective communication and it will finally raise the accuracy of the requirement that analyst gathers. Anyhow as the initial stage, requirements could be unclear. But later on it will get its shape in clear view.

Why we need to spend lot of time and effort here? Here we have to think about delivering the system which is possibly not what the user/client is not expected. That will end up with the failure. It could be the best system with much of cutting edge technology has been used and very good functionalities, but if it is not fit for the purpose, finally that is not going to be accepted by clients. So the best system should fit for the purpose which it has been made for.

Studying the existing documents

- Study the existing company reports, invoices and other documents gave the initial knowledge of the domain and the system that we have to develop.

Interviews

- Interview has been chosen as the primary requirement gathering technique since less number of employees so it wouldn't consumed much time. And most of the unambiguous requirements have been gathered.

- It gave perfect platform for easy going with the staff and it's really helped to build the instant rapport with them.
- Then this has been followed up with structured interview, which helps to give the frame for the actual requirements to be covered. And it could be finished in considerably less time. So with the higher management and supervisors this type of technique was used for gathering some of the major features.

Prototype

- Some amount of prototyping has been carried out for making the unclearly defined few of the requirements to be cleared and for ensuring the better understanding of them. Specially, gathering user interface requirements from the operational staffs.

Existing System Reference

- Some existing well known web systems has been analysed such as sarasavi.lk, Amazon.com for grabbing new requirements

2.3 Existing System

Business is all about making money and has to exploit the opportunity or may be solve or possibly minimize the consequences of the problems. Problem could be a threat caused by competitor using cutting edge technology to grab the customer. Or you might try to exploit the new technology.

Currently the client is running the business without exploiting the online market. And the current manual system is not quite capable of providing various range of information for the decision makers to take effective decision. And it has very less support for tracking the trend of the market. As a threat for the business, slowly the existing customers also switch to some of the other businesses, since they are providing better convenience by the online system.

Further online system gives wide customer interaction and the customer satisfaction in effective way. Online catalogue navigation, product search facility, feedback Gathering mechanisms are few such example for it. Whereas current manual system is not effective in handing the customer pretty quick and not enough staffs for them to accommodate if the customer base get increase.

These are the main issues that the current business is having. Online business can consider as a separate business but it will give reach the goal more than anything. The current manual system process is really slow and the revenue it could bring is considerably less than the online proposed system. So the client wanted to carry on this online business as his strength with his physical store. Organisational structure has been shown below in Figure 2.1.

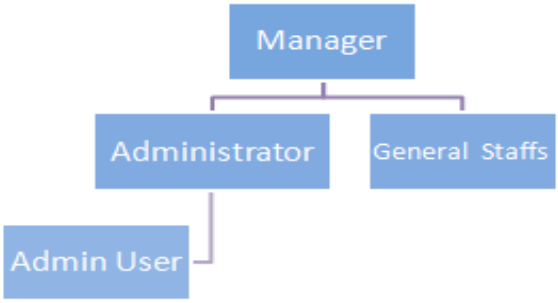


Figure 2. 1: Organisational structure of the Book Store

With various duties assigned to each role mentioned above, Educare International book store carry out its operation. The Figure 2.2 is a high level use case diagram for the current system.

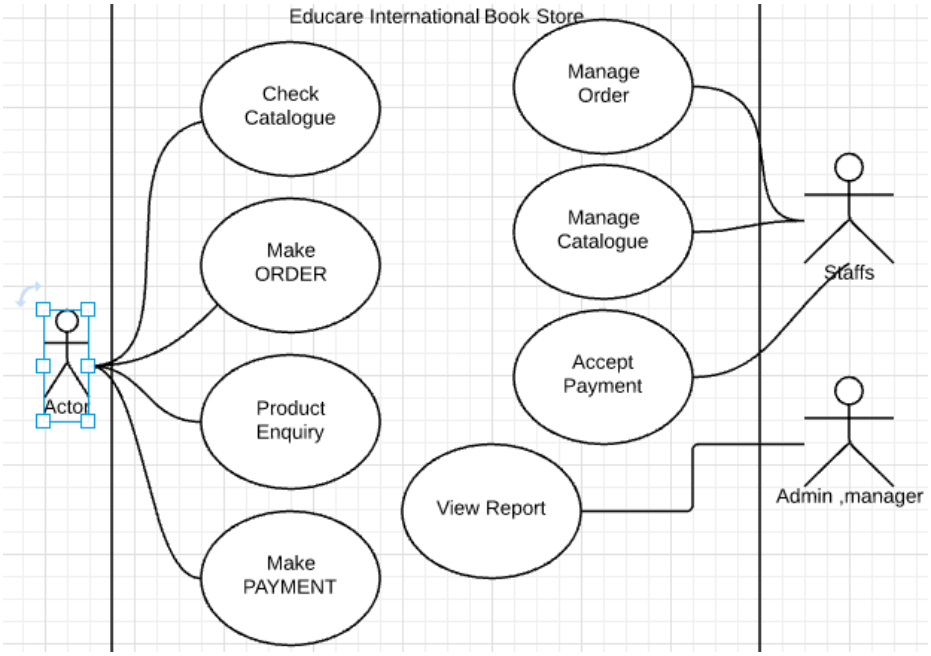


Figure 2. 2: Use case for current system

2.4 Drawbacks of the Existing System

In competitive business world, organization should be able to adapt to the technological changes and keep an eye on the competitor's new strategic movements such as adapting in to new technology. Here in the market, other similar organizations are moved their business in to online market. So the client organization also should make their service available online for retaining the existing customers and increasing their customer base.

The business should effectively keep on track and analyse the sales trend and what the customer really expects from them. For that business must have better information up to date and via generating well organized and informative reports, decision makers should be able take fast and effective decisions for their companies wellbeing.

Opening new branch costs much and it will increase the operational cost and maintaining them are the major issues here. Bring them into online will simply satisfy the same objective that they could open new branches to cover the wide customers and the resource and time availability in the context of handling customers effectively is another major issue for the organization. If we are not providing adequate service for satisfying them, they could simply switch to the other organizations.

2.5 Existing Similar Systems

Sample systems have been thoroughly analysed for exploring new ideas and making sure that the system complies with the current trends. For instance, Expographics site was over looked for the page flows and some of the foreign similar systems were analysed as well.

2.5.1 Expographics Online Book Store

Sample systems have been thoroughly analysed for exploring new ideas and making sure that the system complies with the current trends. For instance, Expographics site was over looked for the page flows, interface and it's functionalities. The figure 2.3 shows the main interface in Expographics .

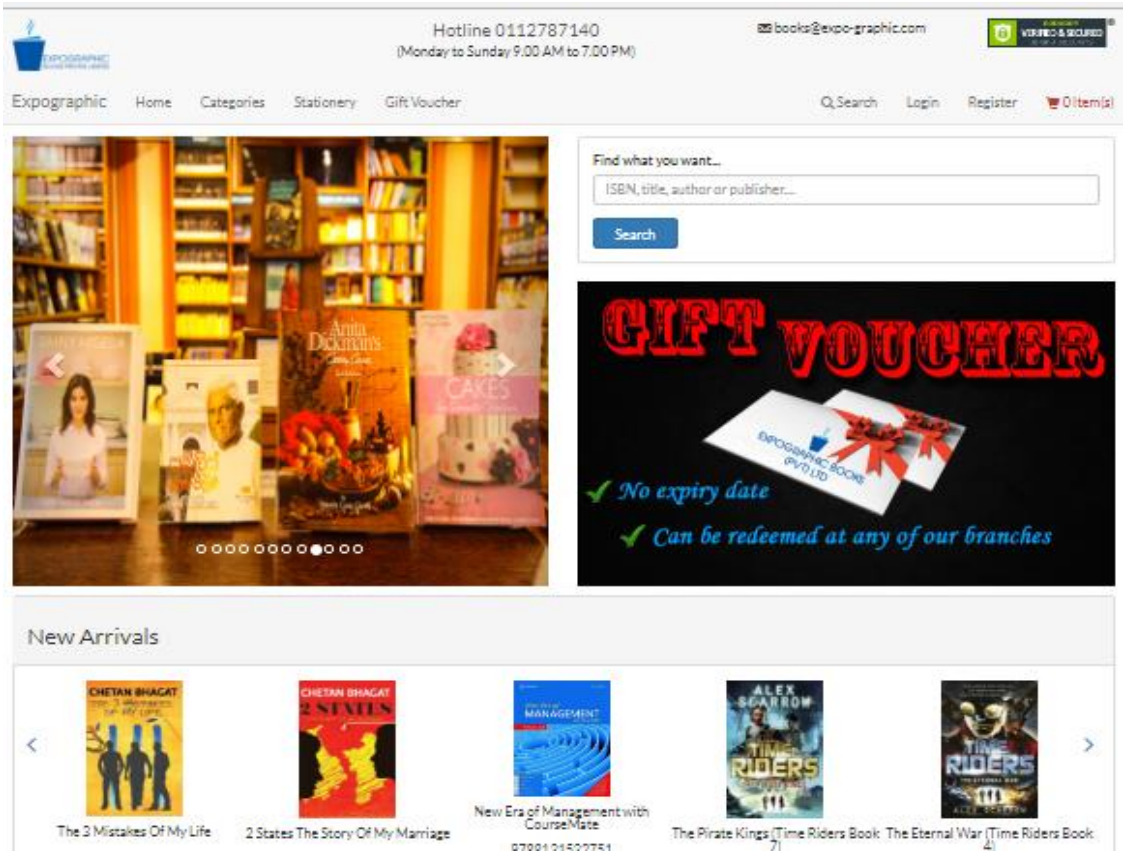


Figure 2. 3: Main interface in Expographics

The figure 2.4 shows the new arrivals of the books of Expographics.

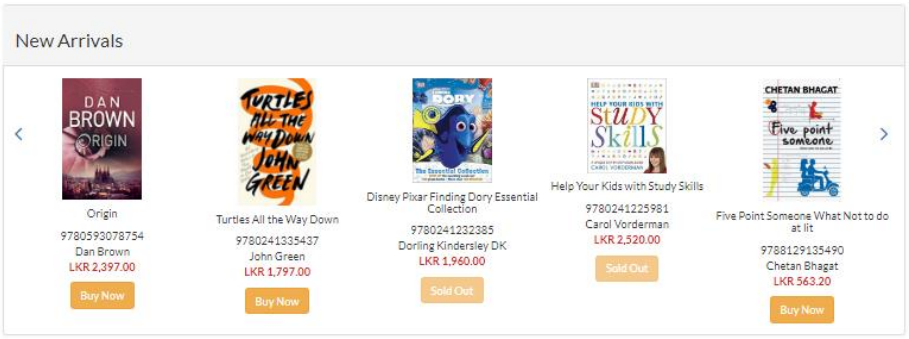


Figure 2. 4: New Arrival of Sarasavi Book Store

2.5.2 Online Book Store of Sarasavi

Sarasavi provides almost all the features for the customers. Wish list is one of the famous features which allow the users to pick their favourite books for the later reference. Below figure 2.5 shows the wish list feature from Sarasavi.

Figure 2. 5: Whishlist of sarasavi

2.6 Functional Requirements

Functional requirements depict what the system must do or the features of the system.

- Order Processing Module
  - Order Processing – The orders should be processed as fast as possible and staffs effort should be minimized. Shall be able to add/delete/view orders.
  - Send Order Feedback – After an order has been processed a feedback should be send to the customer via email.
  - Delivery Confirmation - After the delivery of products to the relevant destination, the customer should receive a note via email which the customer is asked to reply as a delivery confirmation.
- Login Module- Customers/Administrators should be able to login into the system
- Delivery tracking module – Administrators should be able to track the delivery status Filter the deliveries according to its status
- Stock Management
  Module
  - Track the availability – System should provide a facility to maintain the stocks in timely manner where the admin user should keep an eye on the availability of the products.
- Virtual display module
  - Customer should be able to search the book with multiple criteria
  - Customers should be able to view the book with those details and the comments
  - Customers should be able to see the latest book arrival.
- Product Catalogue Management - People can navigate through the products and view the prices.
  - Shall be able to add/delete/update new category and products
  - Shall be able to see the latest arrival books.
  - Shall be able to see the most selling books.

- Shopping Cart Module – Shall be able to add/delete books into the cart
  - Shall be able to update the quantity of the books in to the cart
  - Shall be able to empty the cart
  - Shall be able to check out for purchasing the cart items
- User review module – Login users shall be able to put the comments to the books
  - Administrators should be able to add/delete the comments
  - Administrators should have the control for displaying the most appropriate comments to be viewed by the other users.
- Customer Management Module
  - Customer Registration - Customers who wish to place orders, need to be register with the company by providing their personal details which will helps to contact them later and to maintain their profiles.
  - Maintains Customer Profiles – The system should provide a facility to add and edit customer details. Sessions will be maintained efficiently regarding the performed actions of customers.
- Management reports module – Various Management reports for quick decision making and track the trend of the sales and the market moves.
- Wish Shelf management – Wish Shelf – System should provide a virtual shelf for each and every registered customer for them to keep with them for later purchases.

  Wish shelf shall be able to rearranged according to the customer's desire (add/remove books)

2.7 Non-Functional Requirements

Non-functional requirements are very important aspect of the system which depicts the quality or the characteristics of the system.

- Reliability - Information that is present in the system should be accurate in the web site and managers have to use them for taking decisions.
- Performance - The processes should not take noticeable time laps for achieving a task. And it should load as fast as it can.
- Consistent - System should not give any complexity to the user, interfaces should be designed in a consistent manner.
- Security - Customer information should be handled in a safe and secure way.
- User Friendliness - Novice users should be able to use the system without hesitations and necessary help Facility and validation techniques and meaning full error messages should be provided.
- Availability - The server should up and running all the time 24X7, Days with the minimum down time of 30 minutes.

Chapter 3 - DESIGN

3.1 Introduction

System design is the specification or construction of the technical solution for the identified problem in the previous phase of the system development. Most of the models or diagrams evolve here. Then the design can be converted in to coding by programmers. Good design should be able to adapt to the changing requirements of the business. So the design phase should be carried out effectively

3.2 Process Models

A software development process or life cycle is a structure imposed on the development of a software product. There are several models for such processes, each describing approaches to a variety of tasks or activities that take place during the process.[1]

Traditional process model and RUP have been discussed below with the reason for choosing or not choosing the process models.

3.2.1 Waterfall model

This approach is also well known as water fall life cycle which categorize development activities in to a sequence of consecutive phases.

The diagram in figure 3.1 below shows a sample of the waterfall model.

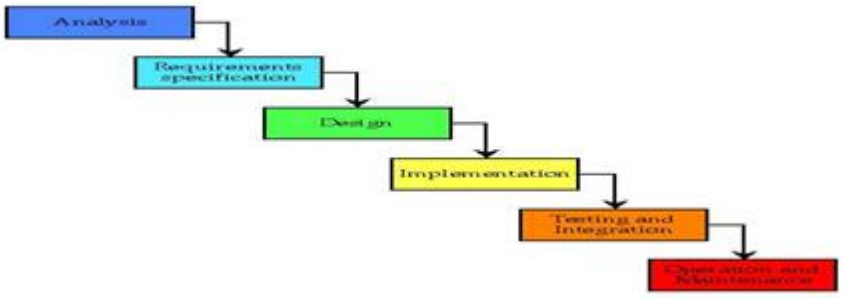


Figure 3. 1: The waterfall model

The reason for not choosing this as a model

Object oriented methodology approach will be the best suited one for the development of this system. Water fall model sticks in to the structured development. This model best suited for the projects which clearly identified requirements and defined Tracking the progress is really difficult and cannot loop back to retune the previous phase. And the over lapping (parallel phases) cannot be accommodated by this model. So clearly this model cannot be adopted for the development of this system.

3.3 Methodology for the Proposed System

The traditional process model approaches have been taken into account and evaluated for possibly applying for the proposed system. But with the identified problems of such models depicted in compatibility of using It.

RUP is an object-oriented and Web-enabled program development methodology. According to Rational (developers of Rational Rose and the Unified Modelling Language), RUP is like an online mentor that provides guidelines, templates, and examples for all aspects and stages of program development. [2]

It is an object oriented methodology for building the system. A cycle which has four phases: Inception, Elaboration, Construction and Transition. Every phase finishes with the release; there are also releases within a cycle.

Inception Phase: Business case is prepared and it should be discussed. Gathering user requirements by effectively interact with the users of the system. Risk assessment, estimation cost, time will be calculated.

Elaboration Phase: During this phase, 80%-90% of the Use Cases are mentioned in detail and the architecture of the system should be designed. We identify significant risks and mitigate the effect of it.

Construction Phase: The construction of software takes place in this phase. Core function is coding the proposed system.

Transition Phase: Goal of this phase is checking whether the requirements of the users are met by testing such like user acceptance test. Beta release of the system often goes here. Further, user training, manual completion such activities carried out here.

Pictorial description of the RUP (Phases and the disciplines)

The figure 3.2 below illustrates Rational Unified Process.

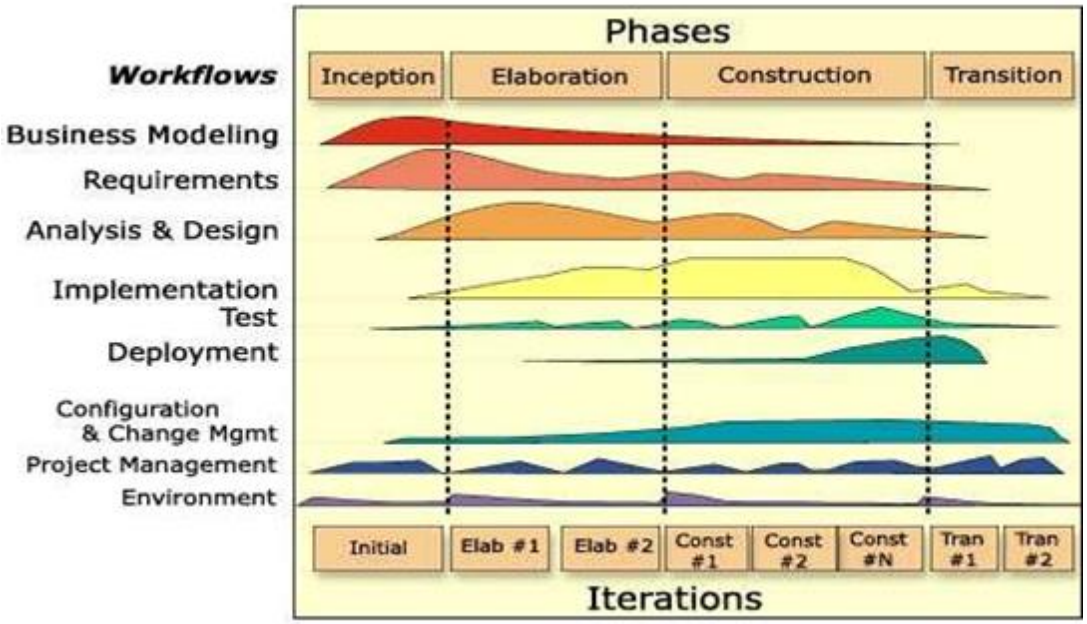


Figure 3. 2: Rational Unified Process

Reason why this model been chosen for the proposed system

Features of RUP well support for adopting this methodology into our system. It is an object oriented methodology for building the system. UML has been used as the modelling technique. Object oriented way of building the system will be much easier and concern of the constrains and issues like unclear requirements enhances the chance of choosing this approach. And it is clearly solve the entire drawback of the previously stated approach.

The Prototype, other approach been used for the system is also well supported for RUP methodology specially for designing the user interface of the system.

3.4 Alternative Solutions

3.4.1 Buying a pre developed packaged web system

Disadvantage of going for the packaged pre developed web system; they are not customized for the purpose of solving the problem that has been identified in the system. It might have other enriched features which might not be needed for the operation that the organization needed to carry out. Still the features are enriched; there might be a question in cost effectiveness.

Some of the special customized features might not be included, for an instance wish shelf where the customers can place their books in their own virtual book shelf; here they can simply refer them for the later purchase. And some of the major functionality of the system might be missed out.

3.4.2 Component based integration

Component based integration could be a fast and easy design solution. But finding the appropriate components to full fill the unique and sensitive requirements were always challenging task. And relevant legal problem in modifying the existing components and exclusive rights for the software are in question.

3.5 High Level Use Case Diagram

The figure 3.3 below shows the use cases designed for the proposed System.

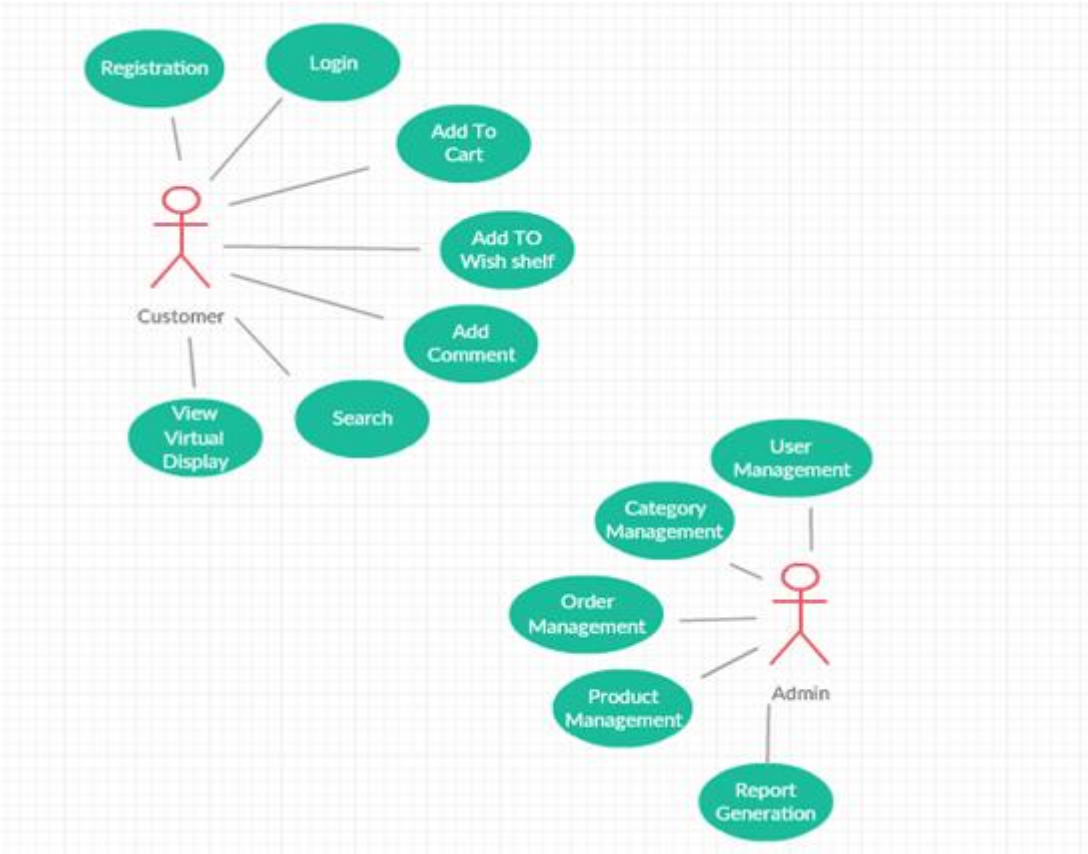


Figure 3. 3: High level Use Case of the Proposed System

3.6 Module Design

3.6.1 Registration Process

Applicant will be filling the online registration form and submit, once the Educare International Book shop receives the application he / she will verify the applicant's data and changes the statues to Approved, and then submits the form. Then the applicant will receive an email with user name and password to login to the Educare international Book shop online.

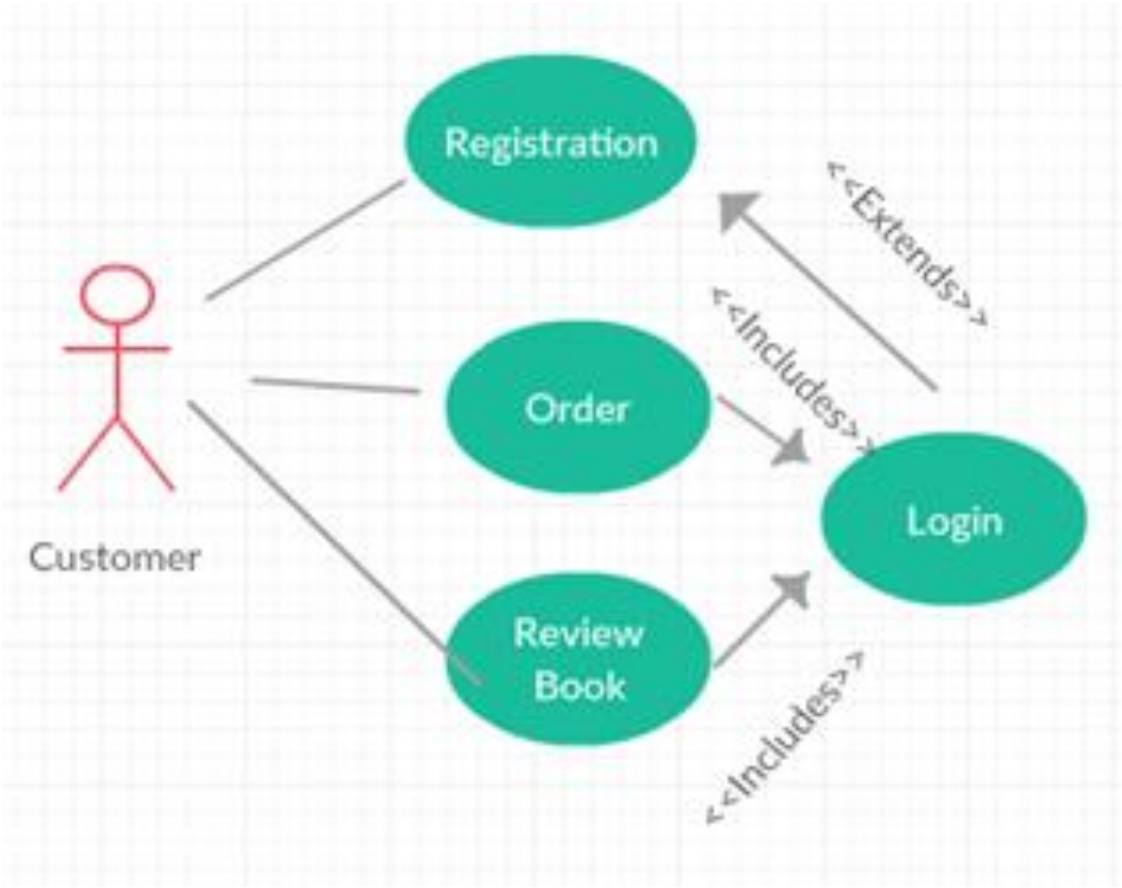


Figure 3. 4: Use Case diagram for customer registration

Use Case Name	Customer Registration
Actor (s)	Customer
Overview	
Customer wants to register into the system for making order	
Preconditions	
Customer should have valid information	
Flow of events	
1. Customer fills the necessary information 2. System should validate the information and notify the customer	
Post Conditions	
The Customer get registered to the system	

Table 3. 1 Use Case description for customer registration

3.6.2 Search books

All the available books are displayed on the screen for the logged in users. They can use pagination to navigate to the different pages of available books. In addition to the search the users can search their preferred books by category or by books name. Also the users can view more details of each and every book by clicking on view more option. Figure 3.5 shows the search use case below.

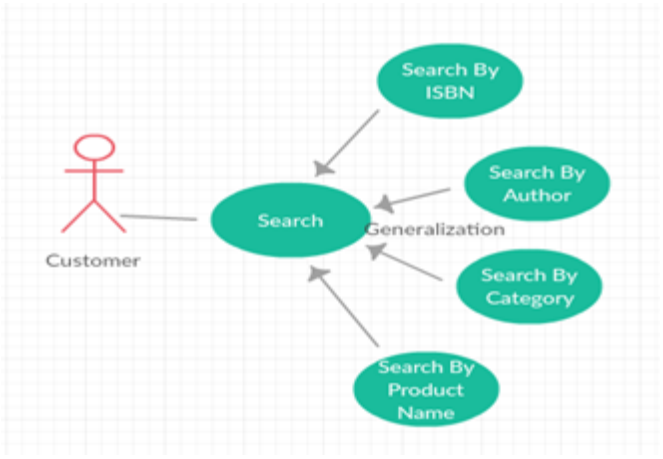


Figure 3. 5: Searching books

3.6.3 Placing Comments for the book

Logged in users can comment on each and every books which have been shown below in figure 3.6 The comments will be verified by the system admin and approved for users display.

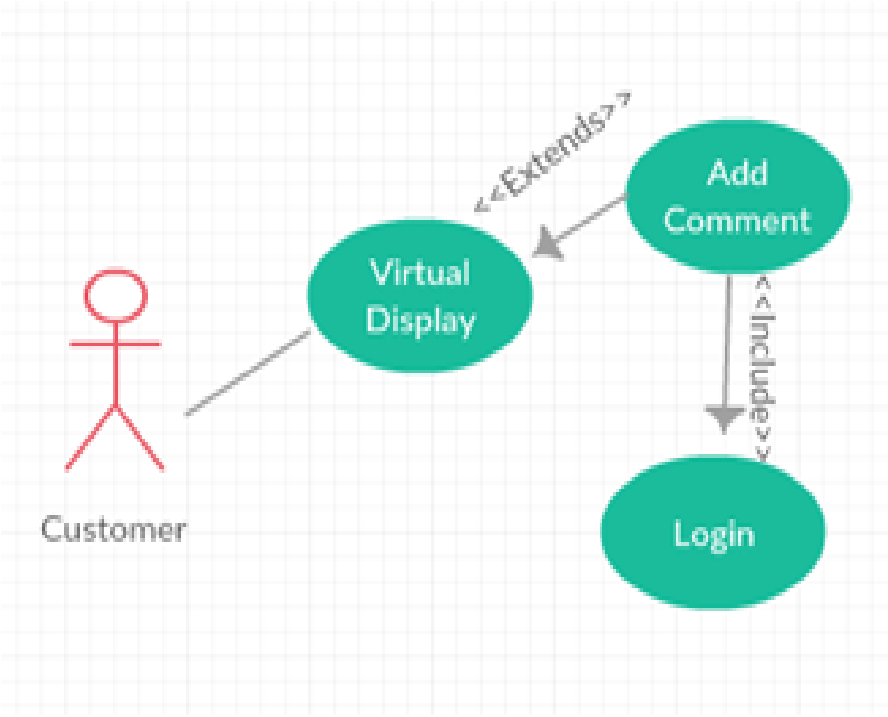


Figure 3. 6: Placing Comment For the Book

Use Case Name	Placing Comment
Actor (s)	Customer
Overview	
Customer Places the comment for a book that he likes	
Preconditions	
Customer must login	
Flow of events	
1. Customer login into the system 2. Customer has to navigate or search for the book to be commented 3. Customer has to place the comment and click comment 4. Comment is stored. 5. Customer can view the comment.	
Post Conditions	
Customer successfully places the comment	

Table 3. 2: Use Case description for Commenting the book

3.6.4 Invoice

Users can print their invoice for their each transaction from the cart options. The sequence diagram for this scenario can be given as follows figure 3.7

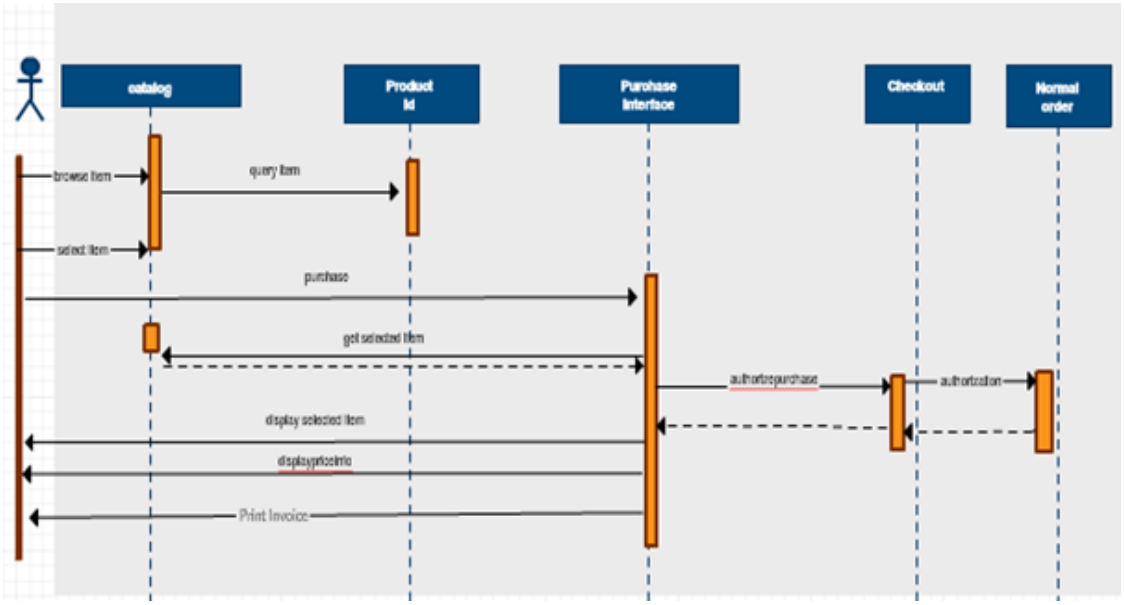


Figure 3. 7: Sequence diagram for print invoice

3.6.5 Login

The customer should be able to login to do certain customized actions. And they can have the wish shelf which is a virtual book shelf for keeping selected book for the later purchase. And Administrator can login with the appropriate rights level to do back end processes. The below class diagram in figure 3.8 shows the login classes and the relationship.

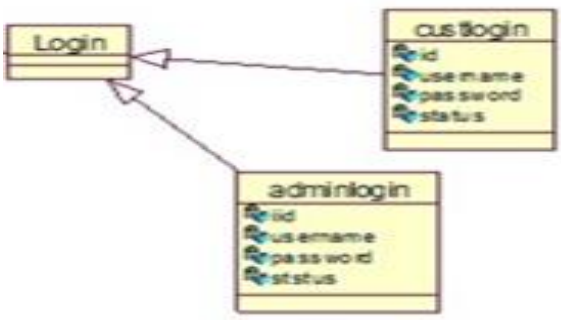


Figure 3. 8: Class diagram for login

3.7 Class Diagram

The following figure 3.9 shows the overall class structure of the system.

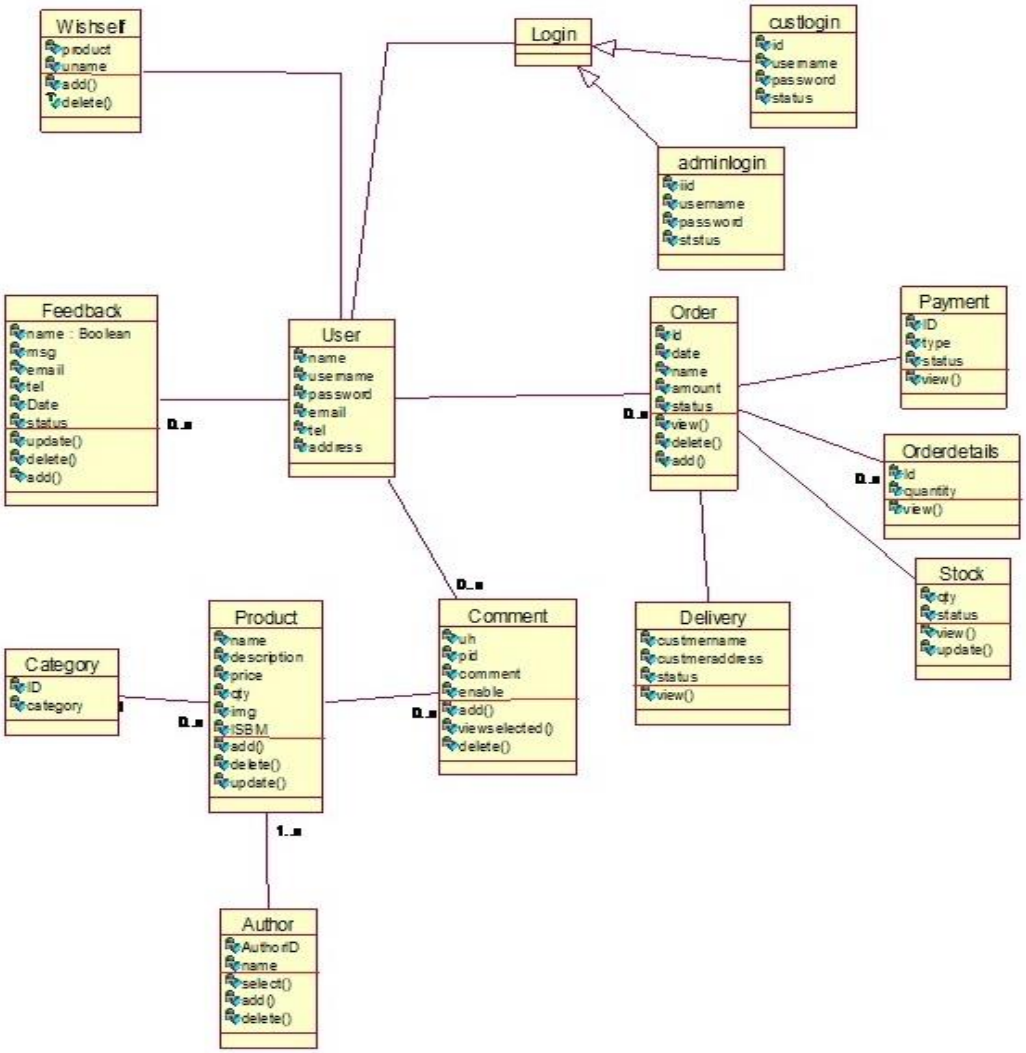


Figure 3. 9 The overall class diagram

3.8 Database Design

Crucial aspect of the design process is to design the appropriate database. The proposed solution makes use of MySQL databases and the figure 3.10 below shows the table structure of the database.

Database structure of the system

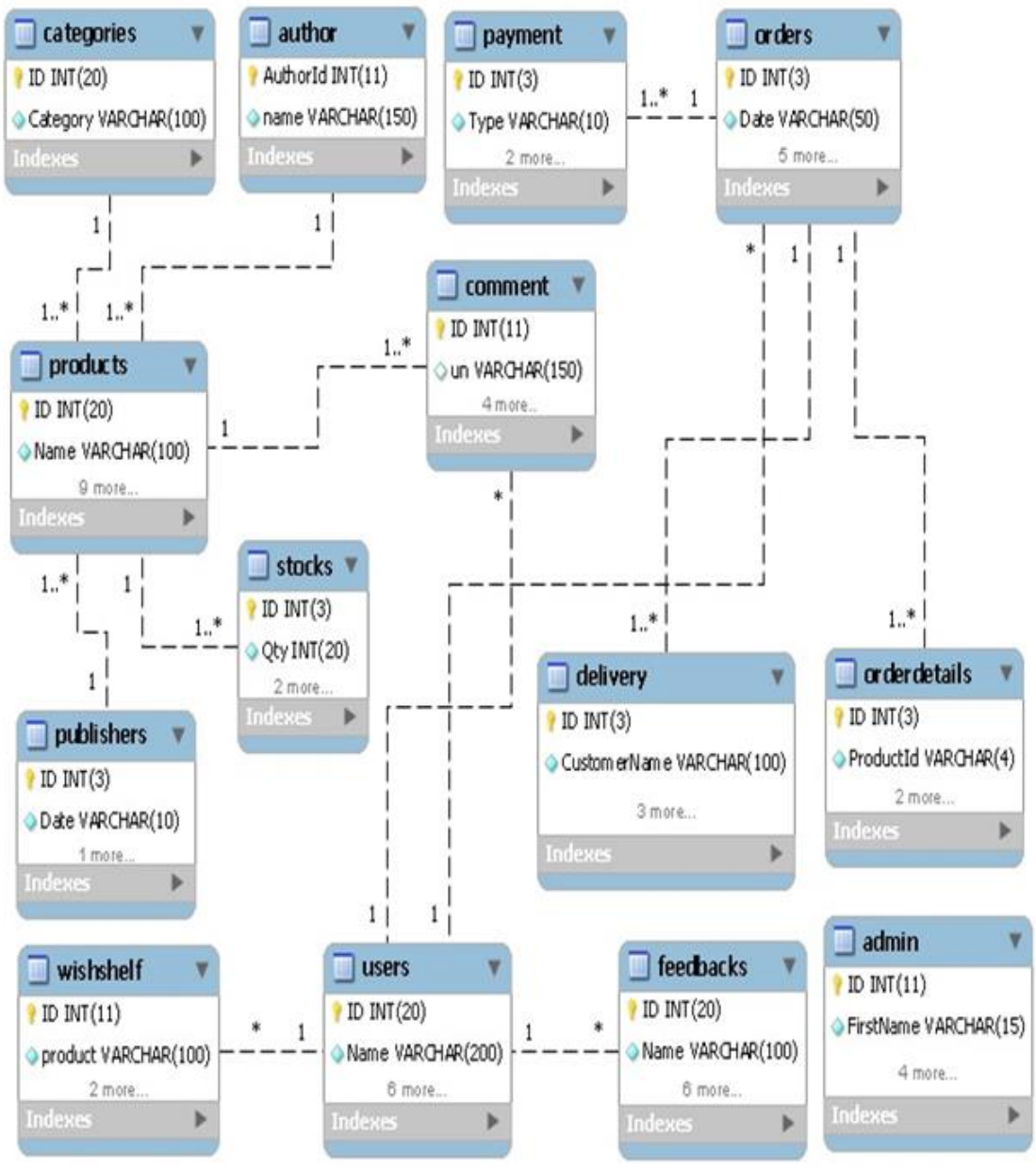


Figure 3. 10 Database structure of the system

3.9 User Interface Design

User interface design is very important part in any kind of a system. Because the system that we are developing for users. Users are ultimately going to use the system. So they are the community who is going to decide the success of the system.

Users directly interact with the system via user interface which has to be friendly to them. And it should be elegant as well as useful for the users for tempting the users always stick with the web site.

In extra, the back end (Admin management area) of the system should also design in a way where the staffs should be able to manage and use the system effectively and productively.

3.9.1 Home page design

This is the first interface users get to see whenever come to the system. Interface has been carefully designed without changing the legacy theme of the book store. The figure 3.11 shows the front view of the home page.

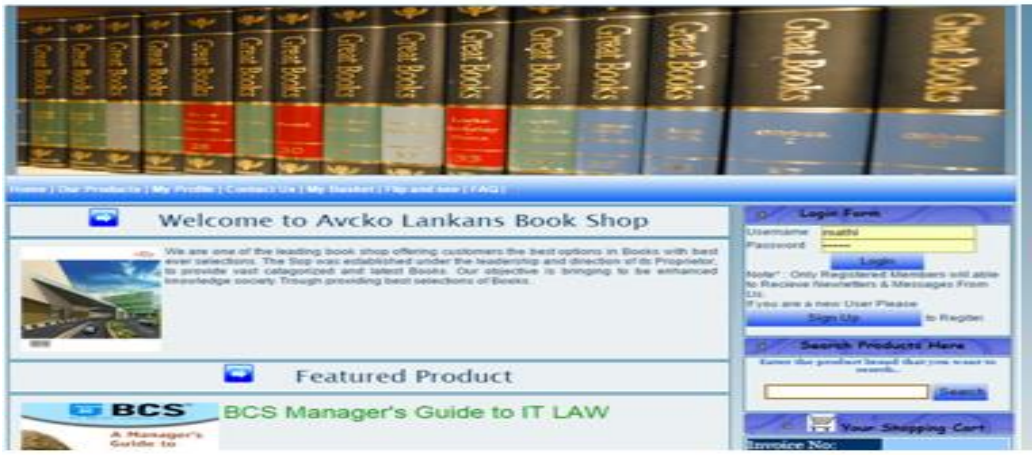


Figure 3. 11: Homepage

Chapter 4 - IMPLEMENTATION

4.1 Introduction

Implementation is the stage which transforms the design solution in to executable working product and systematically integrates into the workflow of the organization.

Furthermore this chapter covers the real implementation of the software solution into the real live client environment with the required chosen software and hardware platform. Training should be followed by this in order to fulfil the implementation for the effective operation.

Educare International online book shop has been completed with the great support of tools, development environment and third party software modules. Great amount of progress tracking facility has been given to the clients.

For making the system more effective and eye catchy, couple of third party tools and software modules has been used. Client requirements have been met with the full satisfaction of the client side including the owner and the users.

4.2 Implementation Environment

The Hardware and Software requirements of the implementation environment are listed in the table 4.1.

Hardware	Software
Intel Pentium IV 3.0 GHZ Processor 2 GB RAM 120 GB Hard Disk Printer Go Daddy Application Server with 1GB Space and 512 Ram and I3 Processor ADSL Internet Access of more than 128 Kbps.	Netbeans 7.0 XAMPP Server Apache 2.2.14 MySQL 5.1.41 (Community Server) with PHP 5.3.1 XAMPP Control Version 2.5.8 (Apache Friends Edition) Google Chrome. FileZilla FTP Server 0.9.33

Table 4. 1: Implementation Environment

4.2.1 Net Beans IDE 7.0

A net bean is an integrated development environment which gives more productivity in development. Integrated environment with database makes the development more flexible.

4.2.2 PHP MyAdmin

PHP My Admin has been an integral part in development. The database implementation and very important database functionalities can be done with PHP MyAdmin.

4.2.3 Google Chrome

In modern website development more often chrome being used for making temporary design changes without actually affecting the changes via inspect element option. And even colour extension as well as ruler extension of the chrome increases the productivity of the developers.

4.2.4 Apache server

Appachi is the well-known web server which provides loads of built in functionalities such as php sending email module and many more.

4.3 Language

The combination of PHP, HTML, CSS, JavaScript and AJAX technologies has been used in implementing the system. PHP has been used as a server side script to write application logic of the system and the presentation has been implanted by HTML, CSS, and JavaScript technologies.

4.4 Design Pattern

Real architectural environment for actual implementation of the targeted system is client server three tier architecture. Where the application logic has to be communicating with the database server and retrieve the result and send back to the requested client in a way which could be processed by the browser. The figure 4.1 shows an illustration for MVC design pattern.

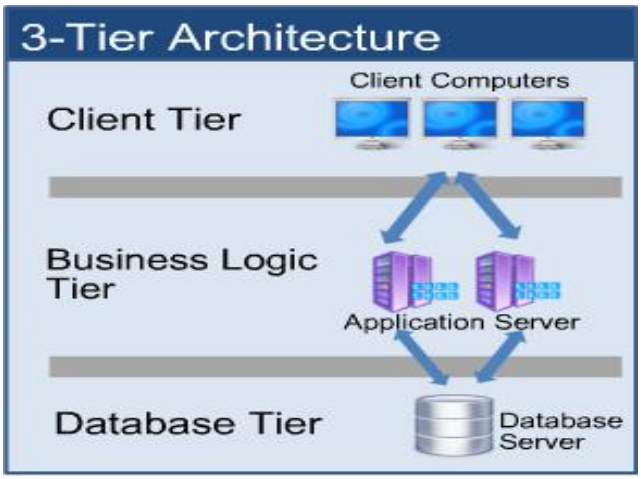


Figure 4. 1: MVC Design Pattern

4.5 Major Code Segments

In this section extensively reused and important code fragment has been given.

4.5.1 Database Connection Code

Class dbcon establishes the connection with the Database by defining appropriate credentials and if the connection establishment failed, the error message should be indicated to the interface for further action.

Connect.php

```
// Class dbcon establishes the connection with the Database and try catch for the error handling

<?php

class dbcon

{

	function query($sql)

	{

		try

		{

			define("DB_HOST", "localhost");

			define("DB_USER", "root");

			define("DB_PASSWORD", "");

			define("DB_NAME", "book");

		$dbc=@mysql_connect(DB_HOST,DB_USER,DB_PASSWORD) OR die('Could not connect to MySQL:' mysql_error());

		mysql_select_db(DB_NAME) OR die('Could not select the database:' mysql_error());
```

4.5.2 In controller layer, necessary coding for user relevant handlers

If the action is for login, assign the user entered values into variables for sending the values to the model layer for the username, password validity checks and if credentials are valid, direct the user to the logged in user relevant page. Else, direct the user to the new user login Page.

If the action is log off, this part should trigger the logout method and complete the logout.

```
<?php
session_start();
require_once('../models/connect.php');
require_once('../models/users.php');
require_once('../models/login.php');
require_once('../models/wishshelf.php');
$userid = $_SESSION['UID'];
if($_SERVER["REQUEST_METHOD"] == "POST" || $_SERVER["REQUEST_METHOD"] == "GET"){
   $action = $_REQUEST['action'];
   if($action=='addwish')
   {$book = $_POST['img'];
   $un = $_SESSION['username'];
   }
   if($action=='dlt')
   { $book = $_POST['book']; $un = $_POST['un'];
```

```
//setting actions if it is login
if($action=='login')
{   $result = $uslog->login($username,$password);
   if($result==true {
      $_SESSION['pw']=$password;
      header("location:../views/index.php");
   }
   else
   {
      $result1 = $uslog->sublogin($username);
      if($result1==true)
      {
         header("location:../views/index.php?un=".$username."");
      }
      else
      {
         header("location:../views/info.php?msg=The username or Password is wrong!");
      }
   }
}

// if action is logout clear the session

if($action=='logout')
{
   session_start();
   $result = $log->logout();
   header("location:../views/index.php");
}
```

4.5.3 In model layer of the system, add to basket database coding

Category insertion statement coding as below, Add function should insert the data into the category table of the book database, as per the admin user request. And if any exception (error) occurred in the insertion process, catch method will handle it and indicate the appropriate error message in the user interface.

// add function should insert the data into the category table of the book database, as per the admin users request.

```
function add($category)
  {
    try
    {
      $sql = "INSERT INTO $this->tbl(ID,Category) VALUES(NULL,'$category')";
      $obj = new dbcon(); // creating the connection object
      $result=$obj->query($sql);
      return $result; // successful insertion should be indicated to the controller via return
    }
    catch(Exception $e)
    {
      $result = $e->getMessage();
      return $result;
    }
  }
```

4.6 Reused Codes and Plugins

- The components listed below are open-source plugins and libraries and hereby acknowledged.

- For better home page attraction, third party flash code from jquary class library and page-ination module of pagination class have been used

- Flip flash module has been used for page flipping facility to make the user flip and see environment.

- PayPal sand box module has been used for payment option

- For PDF invoices and reports third party Adobe PDF code module has been used

Chapter 5 - EVALUATION

5.1 Introduction

Very good testing process in system development is important for the system which should be ensured to be work as expected of both functional and non-functional requirements defined by the clients. For ensuring that various type of testing has to be performed before delivering the system to the hands of client. It is very important to keep in mind that system with significant error can cause severe damages. So carrying out adequate evaluation is inevitable part in software development.

5.2 Testing Stages

Unlike large system development, smaller systems, or for systems that are developed through scripting or reuse, there are often fewer distinct stages in the process. Depends on the development stages, testing stages must be decided.

5.3.3 Unit testing

The aim of the component testing stage is to discover defects by testing individual program components.

5.3.4 Integration testing

The modules which has been tested individually must be integrated together in order to check whether connected modules communicates among them without problem. In other words, integrated modules works together as expected.

5.3.5 System testing

During system testing, these components are integrated to form sub-systems or the complete system. At this stage, system testing should focus on establishing that the system meets its functional and non-functional requirements, and does not behave in unexpected ways. Inevitably, defects in components that have been missed during earlier testing are discovered during system testing.

5.3 Test Strategies

An array of testing strategies available but the right combination of the strategies must be chosen. Among Black box, White box, Regression Testing strategies, few of them have been discussed below.

5.4.3 Black box testing

Black-box testing is a method of software testing that examines the functionality of an application without peering into its internal structures or workings. This method of test can be applied virtually to every level of software testing: unit, integration, system and acceptance. It is sometimes referred to as specification-based testing. [3]

5.4.4 White box testing

White-box testing (also known as clear box testing, glass box testing, transparent box testing, and structural testing) is a method of testing software that tests internal structures or workings of an application, as opposed to its functionality (i.e. black-box testing). In white-box testing an internal perspective of the system, as well as programming skills, are used to design test cases. The tester chooses inputs to exercise paths through the code and determine the expected outputs. [4]

5.4 Test Plan

The test plan is the plan for testing out the required features of the system to work as intended with the expected output. Effective test plan ensures the system which will be released with the expected quality. The test plan including test cases and test results has been given below.

Table 5.1 shows the test cases for user (customer) login.

Test Case ID		1	
Module Name		User Login	
Tested Components		Credentials, User Levels	
Test No	**Test Case Description**	**Steps to test**	**Expected Results**
1	Insert Invalid Username	User has typed invalid Username and a valid password	Show Error Message
2	Insert Invalid Password	User has typed a valid Username and an invalid password	Show Error Message
3	Unauthenticated access via URL	Entering the URL of a known module without providing credentials	Redirect to the Login page
4	Grant relevant User Level	Authenticated successfully and set the correct authorization	Dashboard loads depends on the authorization level
5	Unauthorised access via URL	Entering URL of a module which the user has no privileges for	System does not load module content

Table 5. 1: Test cases for User Login module

Table 5.2 shows the test cases for customer registration.

Test Case ID		2	
Module Name		Customer Registration	
Tested Components		Valid data inputs	
Test No	**Test Case Description**	**Steps to test**	**Expected Results**
1	Leaving Name fields blank	Submit the form with blanks in name field	Customized error messages below compulsory fields
2	Leaving username fields blank	Submit the form with blanks in username field	Error Message prompting for correct value
3	Leaving country fields blank	Submit the form with blanks in country field	Error Message prompting for correct value
4	Phone number entered with text	Type characters	Error Message prompting for correct value
5	Email entered out of format	Type in without @ symbol	Error Message prompting for correct value
6	Leaving password fields blank	Submit the form with blanks in Password field	Error Message prompting for correct value
7	Miss match retype password	Enter miss match password in retype password field.	Error Message prompting for correct value
8	Leaving address fields blank	Submit the form with blanks in address field	Error Message prompting for correct value
9	Entering password	Entering password with	Error Message

	with less number of characters	less than 8 of characters	prompting for correct value

Table 5. 2: Test cases for customer registration

Table 5.3 shows the test cases for user profile management.

Test Case ID		3	
Module Name		Profile management	
Tested Components		Valid data inputs, Auto load fields	
Test No	**Test Case Description**	**Steps to test**	**Expected Results**
1	Auto load name field	Submit the form with blanks in name field	Load correct name
2	Auto load username field	Submit the form with blanks in username field	Load correct username
3	Wrong old password insertion	Submit inappropriate old password	Error Message saying user update fail
4	Empty password field	Submit the form with blanks password field	Error Message prompting for correct value
5	Wrong retype password insertion	Enter miss match password in retype password field	Error Message prompting for correct value
6	Empty telephone number	Submit the form with blanks telephone no field	Error Message prompting for correct value
7	Telephone number in wrong format	.Type character Type inappropriate format	Error Message prompting for correct value
8	Email address empty	Submit the form with blanks in email field	Error Message prompting for correct value

9	Email typed with wrong format	Type in without @ symbol	Error Message prompting for correct value

Table 5. 3: Test cases for user profile management

Table 5.4 shows the test cases for product management

Test Case ID		4	
Module Name		Product Management	
Tested Components		Valid data inputs, Auto load fields	
Test No	**Test Case Description**	**Steps to test**	**Expected Results**
1	Auto load category field	Click dropdown button	Load correct categories
2	Auto load Author field	Click dropdown button	Load correct authors
3	Auto load Publisher field	Click dropdown button	Load correct publishers
4	Empty product name insertion	Submit with blank product name field	Error Message prompting for correct value
5	Empty description insertion	Submit with blank description field	Error Message prompting for correct value
6	Empty price insertion	Submit with blank price field	Error Message prompting for correct value
7	Empty quantity insertion	Submit the form with blanks telephone no field	Error Message prompting for correct value
8	Empty ISBN no insertion	. Submit the form with blanks ISBN field	Error Message prompting for correct value

9	Only allow numbers in price field	Type character in price field	Not allow to type character
10	Only allow number in quantity field	Type character in quantity field	Not allow to type character

Table 5. 4: Test cases for product management

Table 5.5 shows the test cases for user management via admin dashboard.

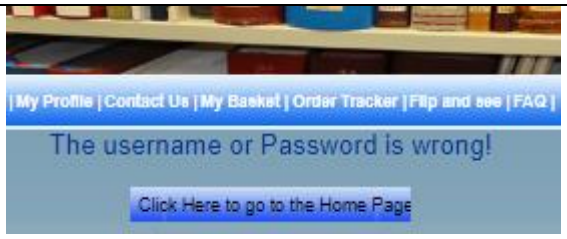
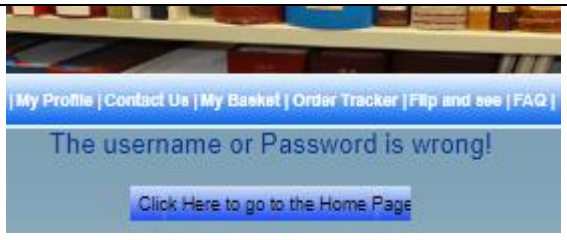
Test Case ID		5	
Module Name		User management (Admin dashboard)	
Tested Components		Valid data inputs	
Test No	**Test Case Description**	**Steps to test**	**Expected Results**
1	Update one record at a time	Click edit button	Update button visible only one record
2	Delete record only after confirmation message	Click delete button	Confirmation message to reconfirm the deletion
3	Empty name insertion	Submit with blank name field	Error Message prompting for correct value
4	Empty username insertion	Submit with blank username field	Error Message prompting for correct value
5	Empty password insertion	Submit with blank password field	Error Message prompting for correct value
6	Empty email insertion	Submit with blank email field	Error Message prompting for correct value

7	Empty Telephone no insertion	Submit the form with blanks telephone no field	Error Message prompting for correct value
8	Enter password with minimum character	. Submit the form with less than 8 character length in password field	Error Message prompting for correct value
9	Only allow numbers in Telephone field	Type character in telephone field	Not allow to type character

Table 5. 5: Test cases for user management

5.5 Test Results

Test results were observed and necessary actions were taken for all components of the system so that the system will function properly and efficiently. The following tables display the test results for the test cases carried out. Please refer Appendix – E for the complete set of test results.

Test Case ID		1	
Module Name		User Login	
Tested Components		Credentials, Account status, User Levels	
Test No	**Test Case Description**	**Actual Output**	**Status**
1	Insert Invalid Username		Pass
2	Insert Invalid Password		Pass

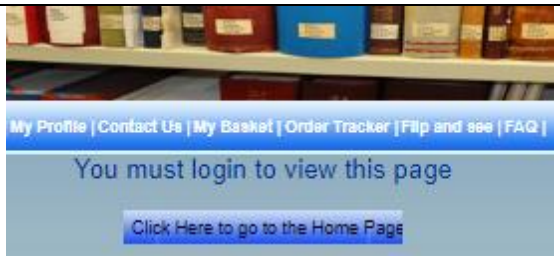
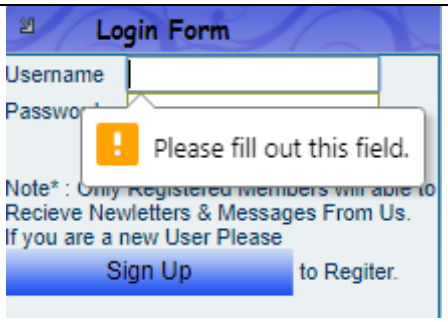
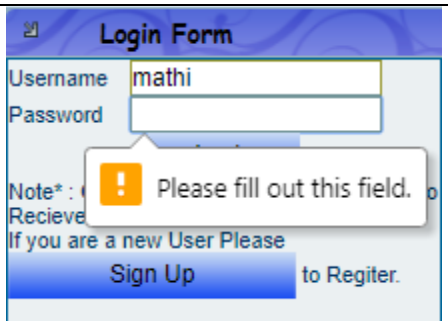
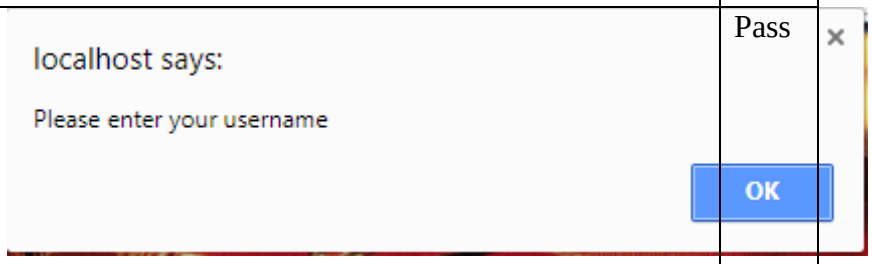
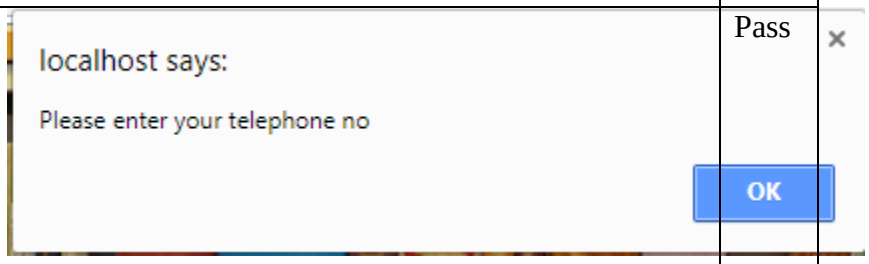
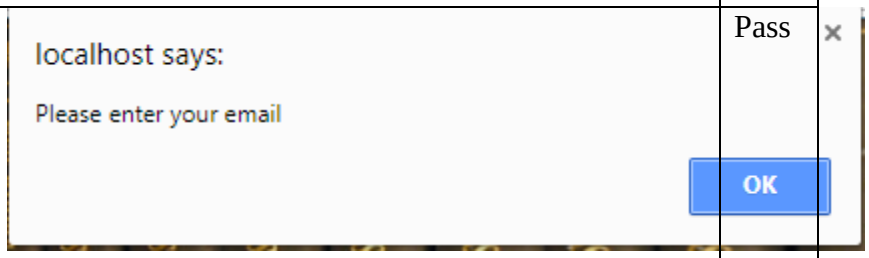
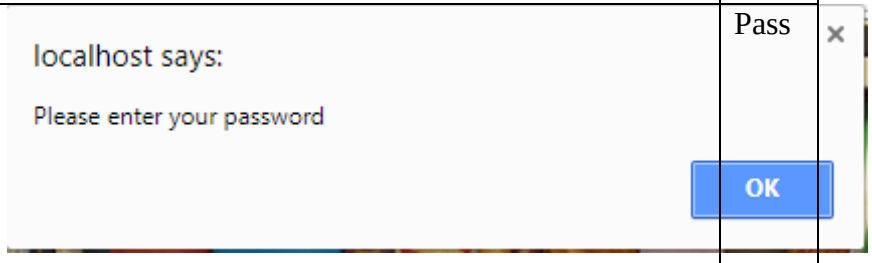
3	Unauthenticated access via URL		Pass
4	Insert empty username		Pass
5	Insert empty password		Pass

Table 5. 6: Test results for User login module

Test Case ID	2		
Module Name	Customer Registration		
Tested Components	Valid data inputs		
Test No	**Test Case Description**	**Actual Output**	**Status**

1	Leaving Name fields blank		Pass
2	Leaving username fields blank		Pass
3	Leaving country fields blank		Pass
4	Phone number entered with text		Pass
5	Email entered out of format		Pass
6	Leaving password fields blank		Pass

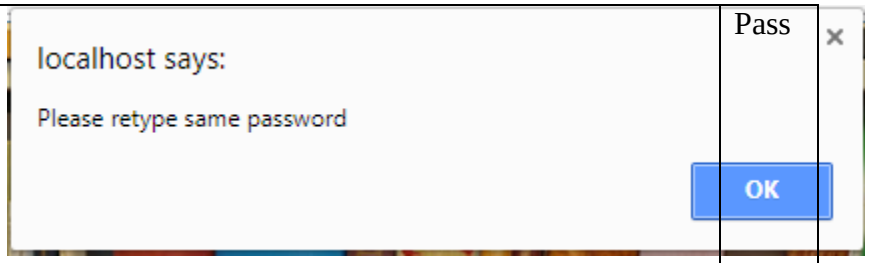
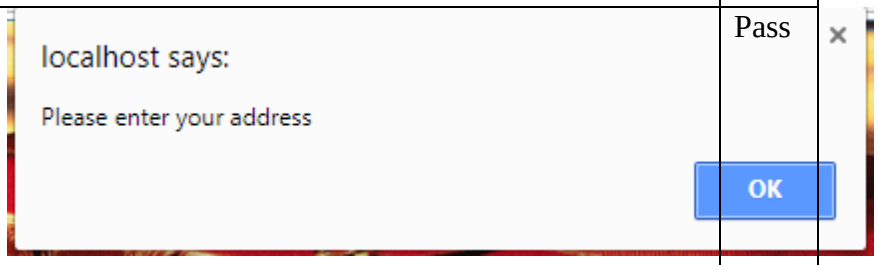
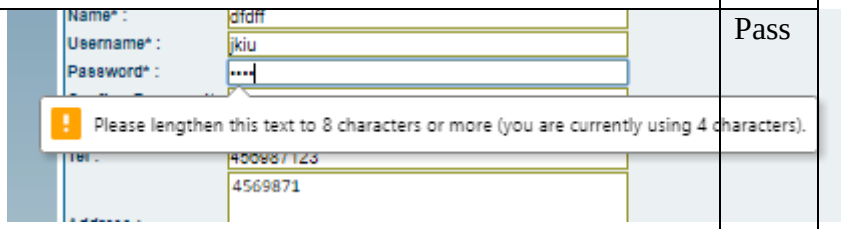
7	Miss match retype password		Pass
8	Leaving address fields blank		Pass
9	Entering password with less number of characters		Pass

Table 5. 7: Test results for Customer Registration module

5.6 User Acceptance Testing

User acceptance testing should be carried out once the system implementation had completed. This test is extremely important and inevitable because this is the decider for accepting the system at last. Different user set including representing customers, representing staffs, and representing managers were participated in the anonymous survey in order gain the feedback from them. The scale from 0-5 has been given and 5 is more favourable choice and 0 is the least favourable choice. A chart based on the obtained average scores from 12 users is displayed in figure 5.1

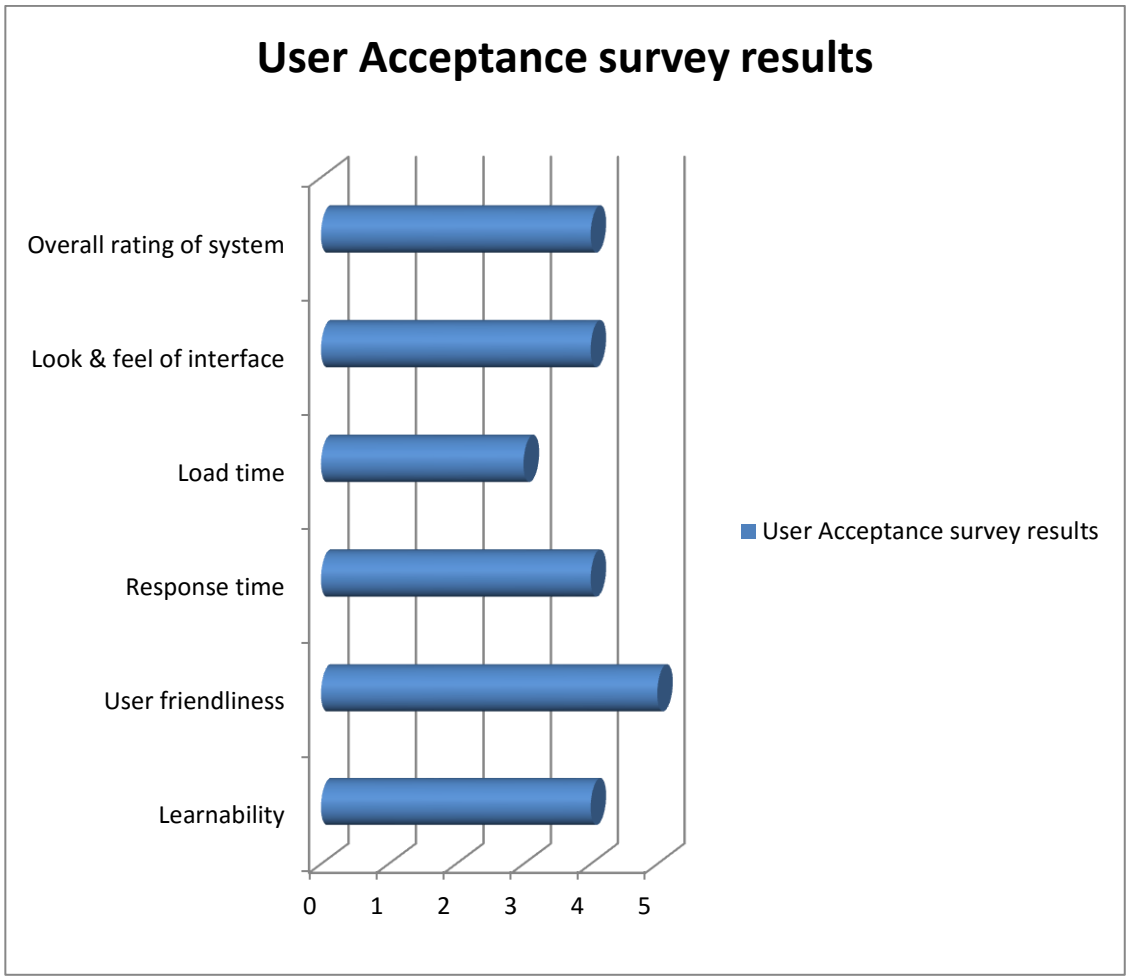


Figure 5. 1: Overall feedback from users

Chapter 6 - CONCLUSION

6.1 Introduction

Educare International Book shop is a known traditional book selling business which is not much popular in book shop market in Sri Lanka. After the business analysis about the market owner has found few critical facts which could be the reason that they could not shine in the market. Few important facts such lack of popularity and the shop awareness among people, not adopting the technology benefits like online stores, not much advertisements as promoting the business. And the heavy competition among local market as well as few well known international online book stores is very familiar for the people.

Owner has decided to provide a new look for the business with the technology advancement. And his belief is so the shop can compete with the local market by keeping an online store which can grab the new customers as well as having few interesting features to keep the current loyal customers exist. Building out new physical branches like very big book shops in the local market for expanding the coverage of access to the people is not feasible with the financial status of the business. So with the online existence will cover the entire wide space of market and the awareness to the customers.

With this motivation system has been developed with the full support of the client side and evaluated with the satisfaction. All the critical functionalities that they have expected were implemented and evaluated. System is capable of handing the full back end support such as user management, order processing and handling, report generation, product and category management etc. With that front end with has to interact with the customers has been implemented with the concern of keeping the customers exist and with the user friendliness such as help facilities and customers shall be able to select the book online where they can see the full details of it. And they shall be able to order and pay. Other than that enhancing features like wish shelf which can strongly suggests a customer to stay with us where they can select and keep their

books within their own shelf. And the flip and see functionality for the customers to see the selected books with the nice flipping pages.

6.2 Critical Assessment of the Project

Critical appraisal is the process which evaluate the system as a solution for the defined problem whether it is fit for the purpose and relevant. The process analyses the value of the system with the right arguments.

Educare International Book shop was developed with the intension of automating the routing task which has been accomplished manually up to now. And reaching the wide audience all around the world by exposing its services (book catalogue) in the wide internet market space. This could only be possible with the web presence of the book shop.

In critical appraisal identifying the strengths and weaknesses of the system and the processes is an inevitable part. This information submitted was based on the evidence of test and the user's feedback. Though the system has been developed and tested with the intention of error free and best fit for the purpose, this is not true every instances of the system. These problems head up with the continuous usage of the system. Until the system not producing any failure with its critical functions, proper maintenance with the bug fixes would ensure the continuous smooth operation of the system.

The following strengths have been acquired by the web system:

- User friendly interface for the customers, where they can easily accomplish their goals.
- User friendly and consistent design for the staffs to carry out their works with more productivity
- Attractive front end design optimized load time, increases the convenience of users and grab more non existing customers
- Existing customers may stay in touch with the system with the help of attractive features such as "add to shelf".
- Model view controller approach increases the adaptability of changes and the reusability.

- Report generation and invoice printing features enhances the convenience to the users.
- User commenting feature enhances the convenience where this is well experienced via user testing. With the utilization of AJAX technology, brings the interactive comments by the users without the reloading of the page.

Weaknesses

- An external web system security audit has not been carried out for examining security thoroughly
- Usability of online purchases is always on question with the local customers, because of the security concerns and less awareness.
- Inability to test the system for more longer with the live server, due to the financial limitation.
- Training process was not very much effective, which require additional workshop based training.
- More modern technologies would have been used to attract the users such as live chat facility.
-

6.3 Lessons Learned

Though we have learnt system development throughout the study hours in syllabus, did not have a practical application sufficiently. But while doing this individual project gave the real platform for apply and experience the reality of system development life cycle and the methodology of development. It has boost up the practical knowledge and the confident level for developing any kind of industrial system in future.

Following the right design and coding principles helps the development and it becomes handy. Analysing and gathering requirements from user community efficiently and effectively would be the basement of any system's success. Design must be flexible enough to enhance the system for its future amendments and needs.

6.4 Future Improvements

- Fully implementing the flip and see (utilized a third party module) feature for almost all the categories available for bringing the real physical shop read and feel environment (sample page visibility).

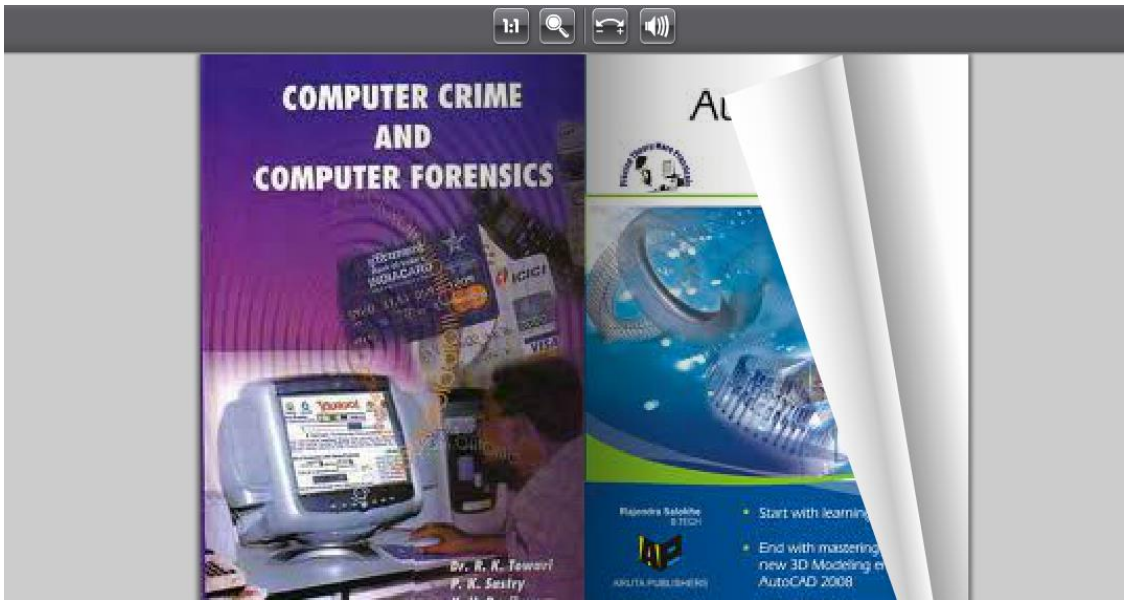


Figure 6. 1 Flip and See

- SMS facility has to be implemented according to the client request and after analysing the financial feasibility for getting the sms modem and the gateway.

SMS – Short Messaging Service, Implementing a facility to let the system automatically sends the order confirmation to the users who have registered with the system by providing a valid mobile number. And for the sales manager a sms should be sent automatically, whenever a customer places an order from the system.

These features will increase the intangible benefits of the organization by increasing the order awareness, speed of processing and which leads ultimately the customer satisfaction. Though implementing this facility legally has to go through a thorough economical and legal feasibility analyses and the top managers/owner has to support financially.

Reference

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Appendix A- System Documentation

Software documentation is written text or illustration that accompanies computer software or is embedded in the source code. It either explains how it operates or how to use it, and may mean different things to people in different roles. [5].

Table A.1 shows the hardware and software requirements.

Hardware	Software
▪ Intel Pentium IV 3.0 GHZ Processor ▪ ADSL Access with speed of 128Kbps or more ▪ 2 GB RAM ▪ 120 GB Hard Disk ▪ Printer ▪ Web Application Server (Godaddy of 1GB space and 512MB Memory)	▪ Windows XP or latest ▪ Mozilla Firefox/Google Chrome ▪ XAMPP version 1.7.3 ▪ FileZilla FTP Client.

Table A. 1: Software and Hardware requirements

1. Filezilla configuration

- Start Filezilla client and set ;
  - Host – ftp://ftp.educarelk.com
  - Username-educare
  - Password-Pa$$@12805
  - Port-21
- Click Connect
- Server and the Client folders should be visible.

2. Host Software In to The Hosting Server

- Access the folder Online System For Educare International Book Shop/Software/Educare.
- Browse above folder from Filezilla client.
- Select Educarelk folder as the destination folder in the server end.
- Click upload.
- Wait for the upload to finish.

3. Database installation

- Go to the Control Panel via this link - https://www.Godaddy.com:2083/cpsess8140152139/frontend/paper_lantern/index.htm
- Set the credentials.
    - Username-Educare
    - Password-Pa$$@12805
- In Database Section, select existing Database option
- Browse Online System For Educare International Book Shop/Database/Book.sql
- Finally Click install option.

4. System Launching

- In Google chrome browser, access already registered and correctly pointed domain http://Educarelk.com/index.php for customer access.
- For Administrator access for the below link
  http://Educarelk.com/TempSampleShopping5/manager/index.php
  And enter the test login provide below,
  Username – Test
  Password - 123

(Note- This login account will be deleted once system get going)

A guide to the System Interfaces and usage can be found in Appendix C.

Appendix B- Design Documentation

A software design description (a.k.a. software design document or SDD) is a written description of a software product, that a software designer writes in order to give a software development team overall guidance to the architecture of the software project. [6]

This section includes design diagrams and descriptions which have not been covered in Design chapter.

The figure B.1 shows the detail design of how admin login system works in the system.

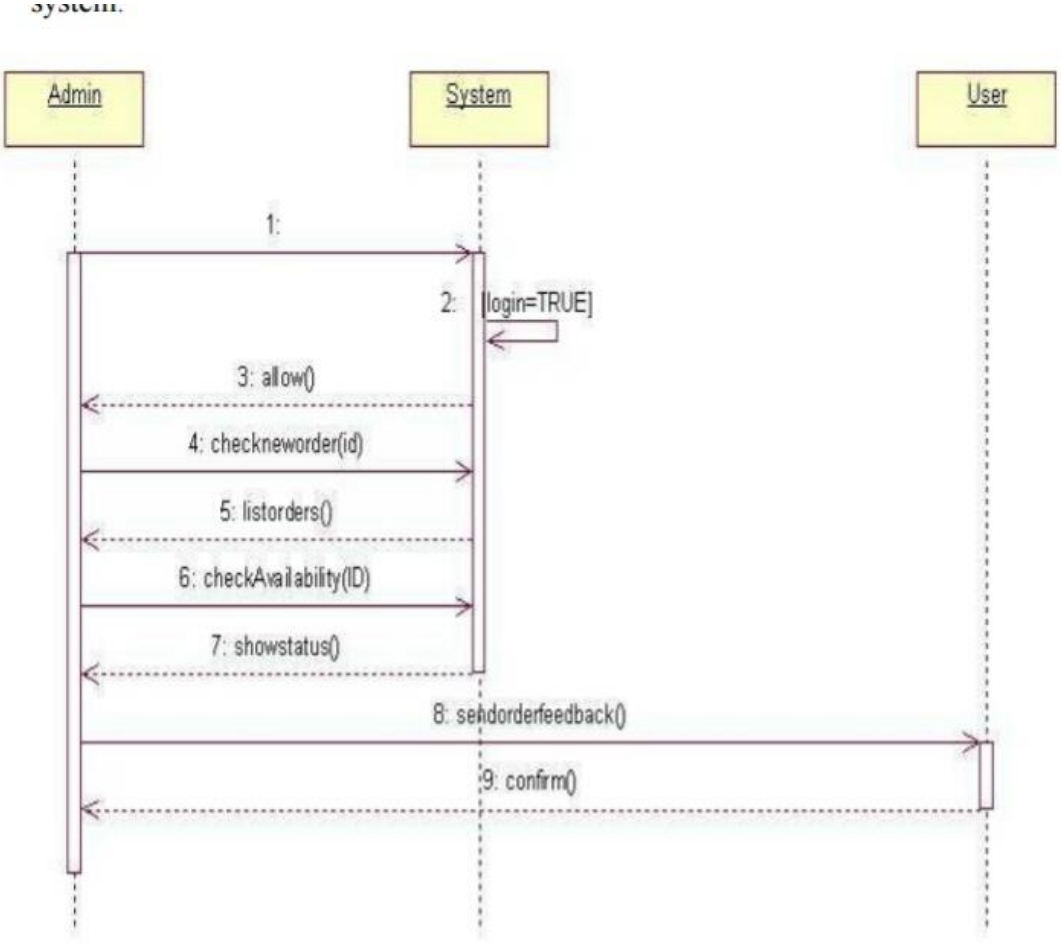


Figure B. 1: Sequence Diagram for Admin Login

Use Case Name	Check Payment
Actor (s)	Student, Office Assistant
Overview	

Table B. 1 Shopping experience process table

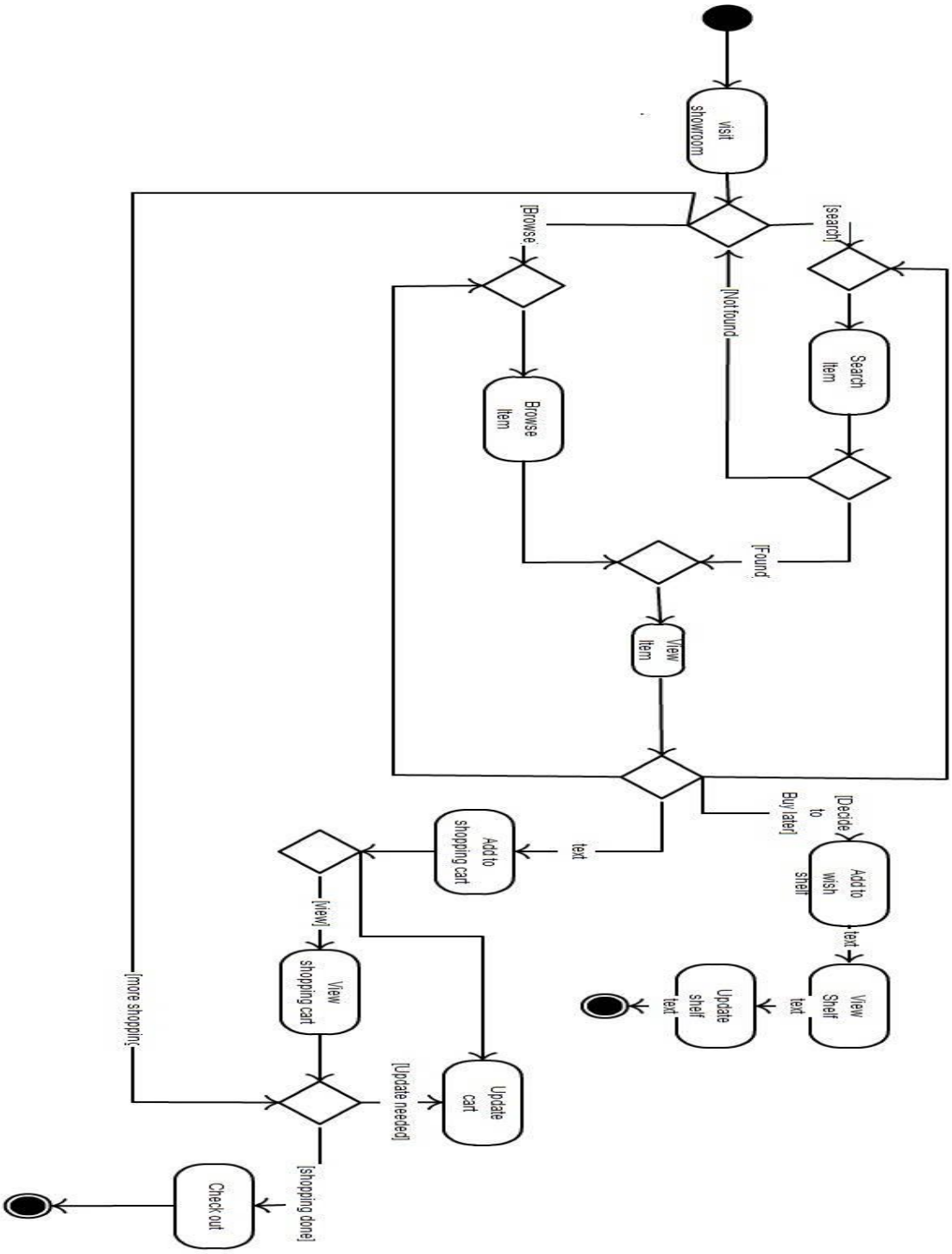


Figure B. 2: Activity diagram for shopping

Detailed Usecase diagram for the system has been shown in figure B.3

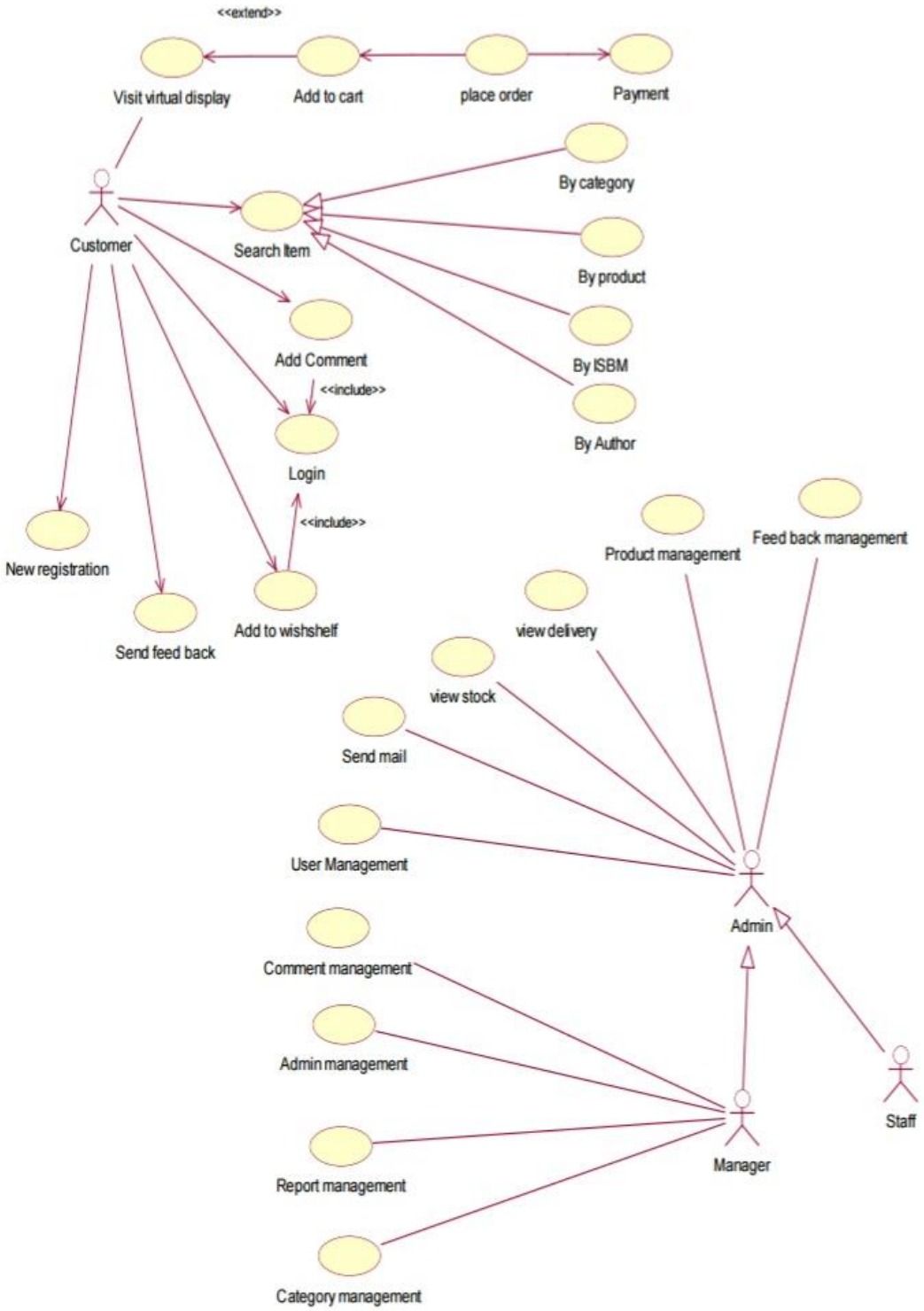


Figure B. 3: Detail Use case diagram for the system

After the review of the cart when user clicks on checkout button the system will navigate to the PayPal account for payment. The activity diagram in Figure B.4 Shows that below.

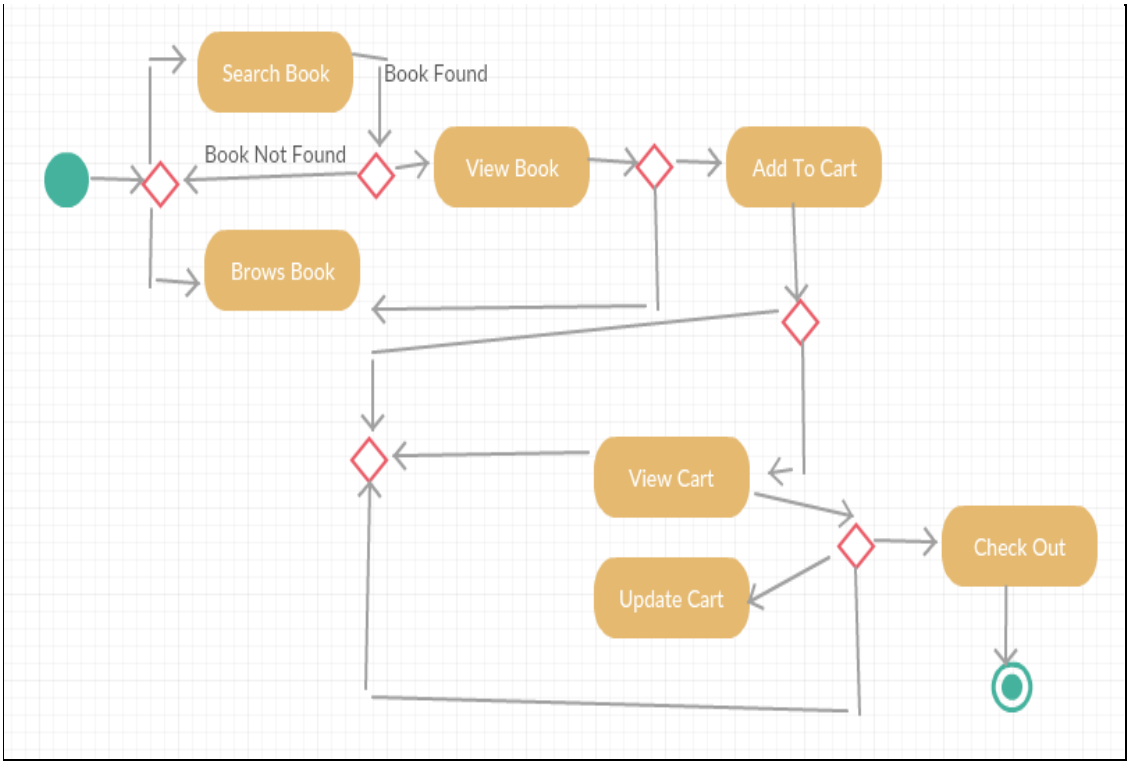


Figure B. 4: Activity diagram For Check Out

Completed Entity Relationship Diagram has been shown below in figure B.5

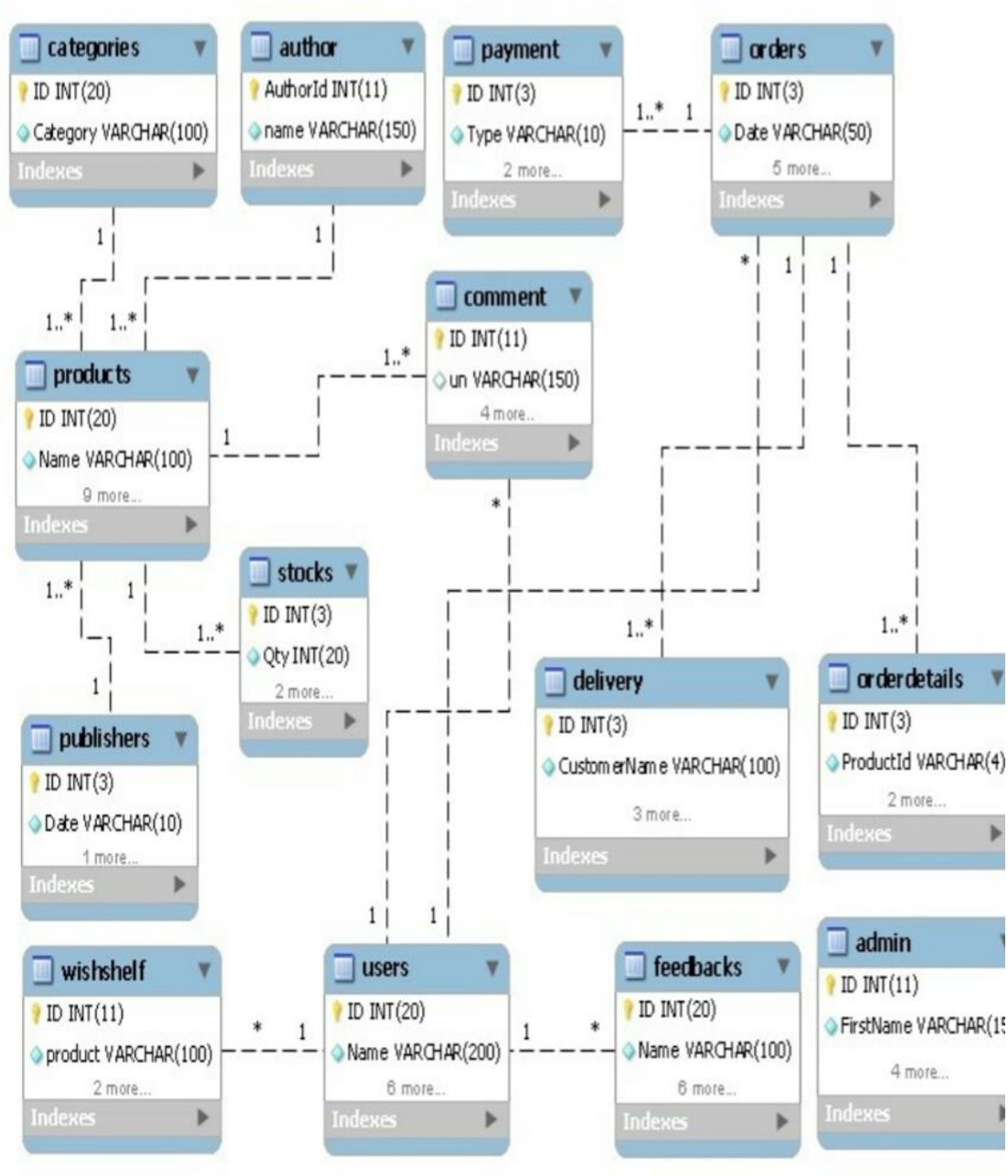


Figure B. 5: Complete ERD of Database Design.

Appendix C- User Documentation

User Document also known as user documentation.

A user guide or user's guide, also commonly known as a manual, is a technical communication document intended to give assistance to people using a particular system. [7]

- In Google chrome browser, access already registered and correctly pointed domain http://Educarelk.com/index.php for customer access.
- For Administrator access for the below link
  http://Educarelk.com/TempSampleShopping5/manager/index.php
  And enter the test login provide below,
  Username – Test
  Password - 123

C.1 Login

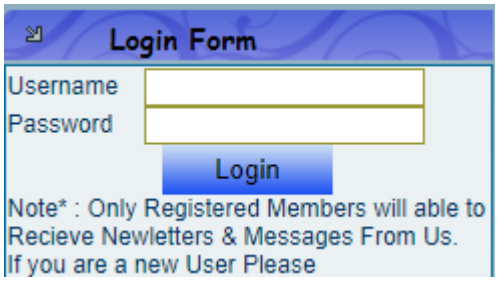


Figure C. 1: Customer login

C.2 Admin login

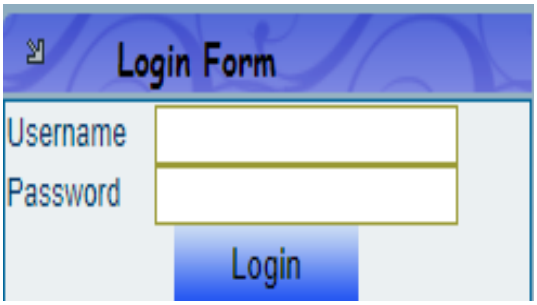


Figure C. 2: Admin login

Users must enter the right credentials in order to achieve the successful login. In case of entering wrong username or wrong password or wrong combination of them will lead in to the login failed state. Above Figures C-1 & C-2 shows the customer and Admin logins respectively.

C.3 User Menu

Navigation Menus for Customer view and Admin views have been given below with Figures C.3 & C.4 respectively below.

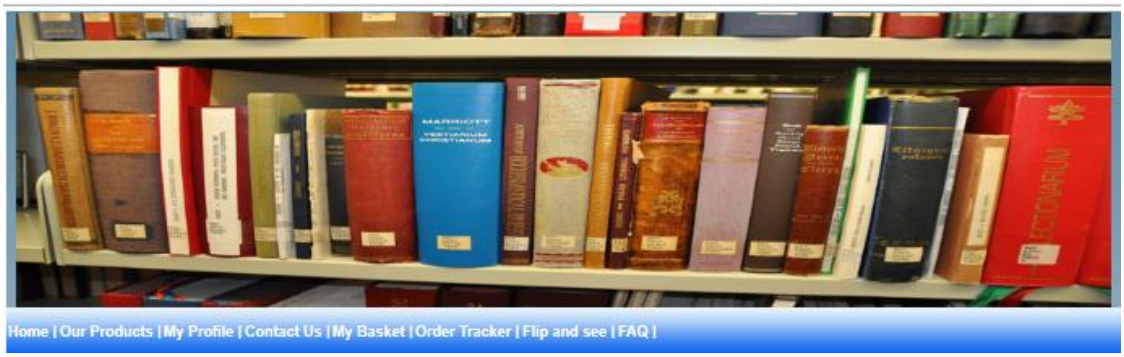


Figure C. 3: Customer Menu Bar

Figure C. 4: Admin Menu Bar

C.4 Customer Registration

If customer does not has account, then he or she should register using the form below shown in figure C.5

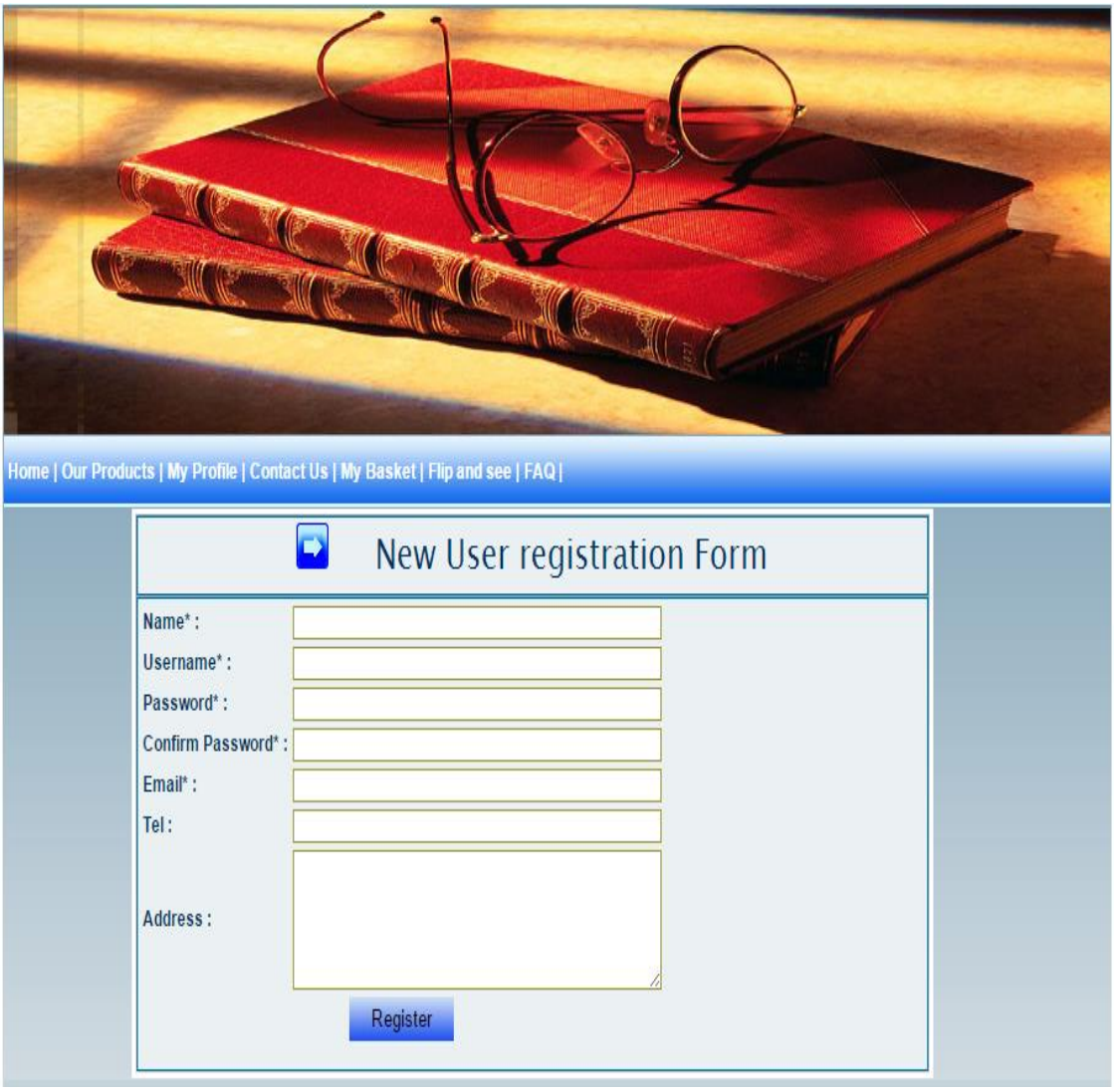


Figure C. 5: Customer Registration Form

C.5 Product Showcase

Products show case for the site where all the available books will be displayed. Customers can filter the books by category or even they could be able to search by book title. The figure C.6 shows this below.

Figure C. 6: Book Showcase with filter

C.6 Comment

Registered users should be able to comment on their thoughts about the books.

User account registration is mandatory for having the great control over comments. Figures C.7 and C.8 shows the commenting option and viewing the comments which are already placed by customers respectively.

Figure C. 7: Commenting option

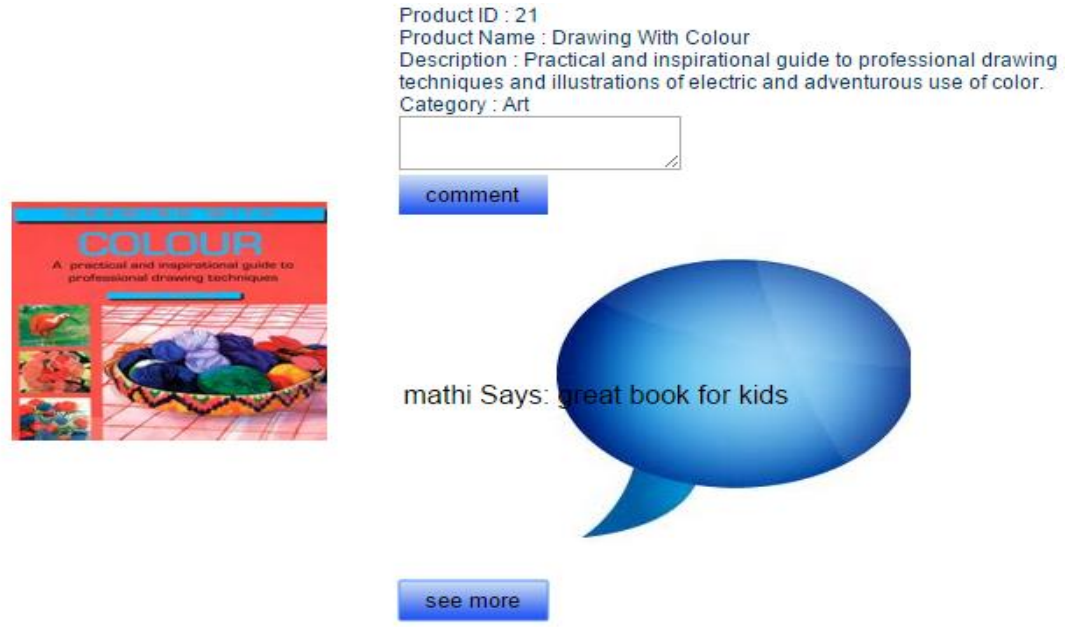


Figure C. 8: Comment viewing option

C.7 Add To Cart

Once add to cart button has been clicked, a confirmation message will be given to make sure the addition. Only Registered customer can make purchases through the system. Once the user has confirmed the addition into the cart, system will direct the customer to the shopping cart. The figures C.9 and C.10 show this respectively.

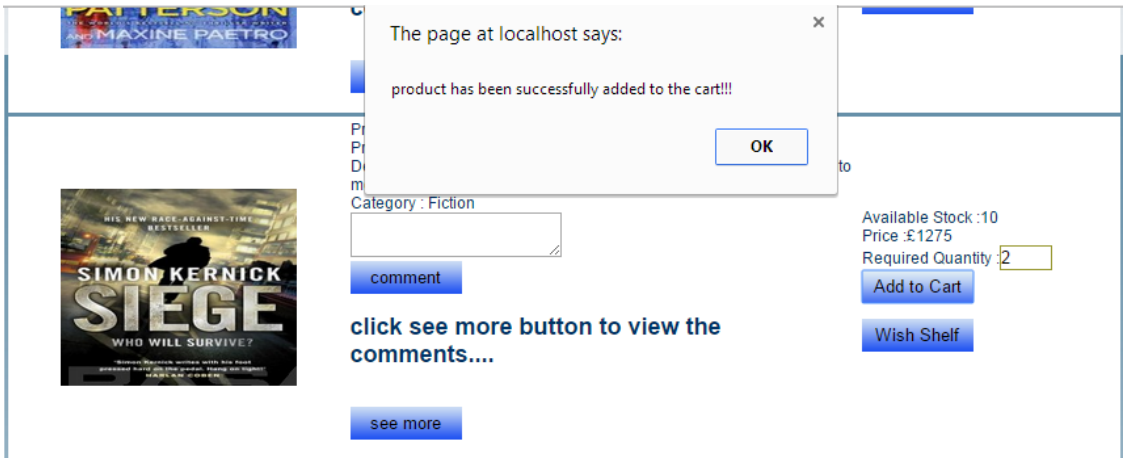


Figure C. 9: Add to cart confirmation

Figure C. 10: Add to cart

C.8 Checkout and Paypal Gateway

Once the checkout button pressed, message will be show to the customers. The checkout will ultimately lead towards the PayPal with secure payment mechanism. Then Customers will be authenticated by their paypal credentials for the payment process. The figures C.11 and C.12 shows the paypal direction message and payment form.

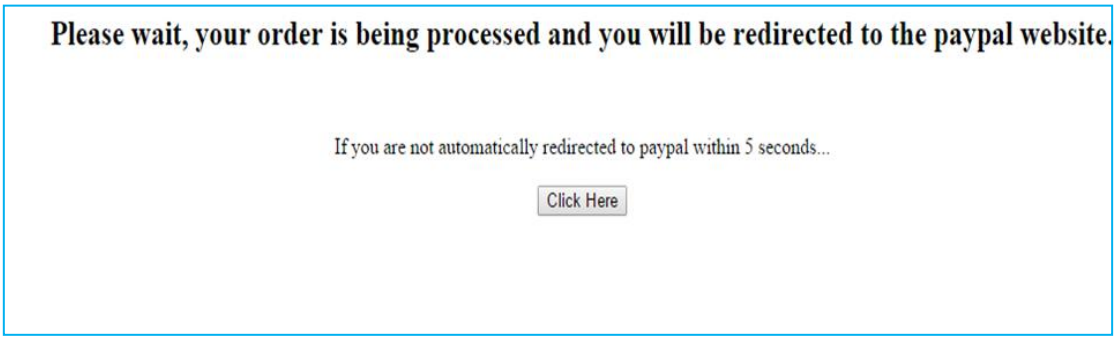


Figure C. 11: Paypal Redirection Message

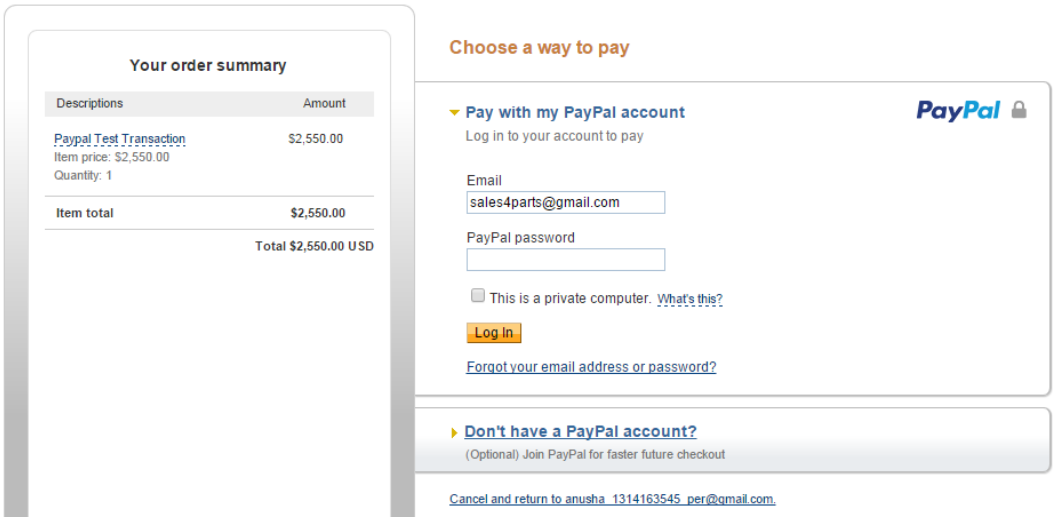


Figure C. 12: Paypal Payment Form

C.9 Profile Management and Wish shelf Feature

Customers could be able to manage their profile once they achieve the successful login. And they could place and arrange their favourite books. Wish shelf is the feature where users should be able to keep their books nicely arranged in a virtual track for the registered users for their later reference. The figures C.13 and C.14 below show this respectively.

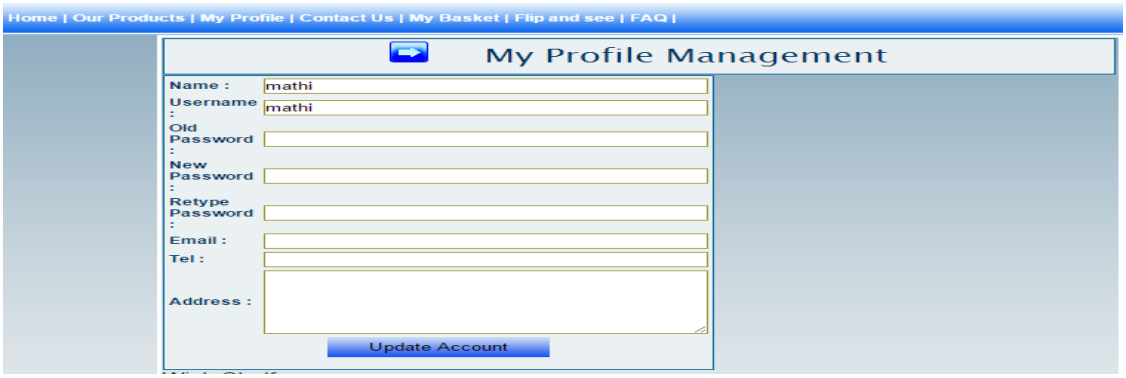


Figure C. 13: Profile Management

Figure C. 14: Whish Shelf

C.10 Admin Privileged Dashboards

For admin managers and admin users dashboard with different options given. Admin users have restricted access to the system. For instance they cannot make deletion of users or product or catalogue. Admin managers can enjoy the full privileged access to the system. The figures C.15 and C.16 show the admin manager's and admin user's dashboards respectively.

Figure C. 15: Admin Manager's Dashboard

Figure C. 16: User's Dashboard

C.11 Review Management and Controlling

Review management functions can be done by the relevant panel for checking out the comments and thoughts of the books which they have read. Especially the reviews can be control using 0/1 where 0 to disable and 1 to enable the comment for other customers to see them. The figures C.17 and C.18 show this below.

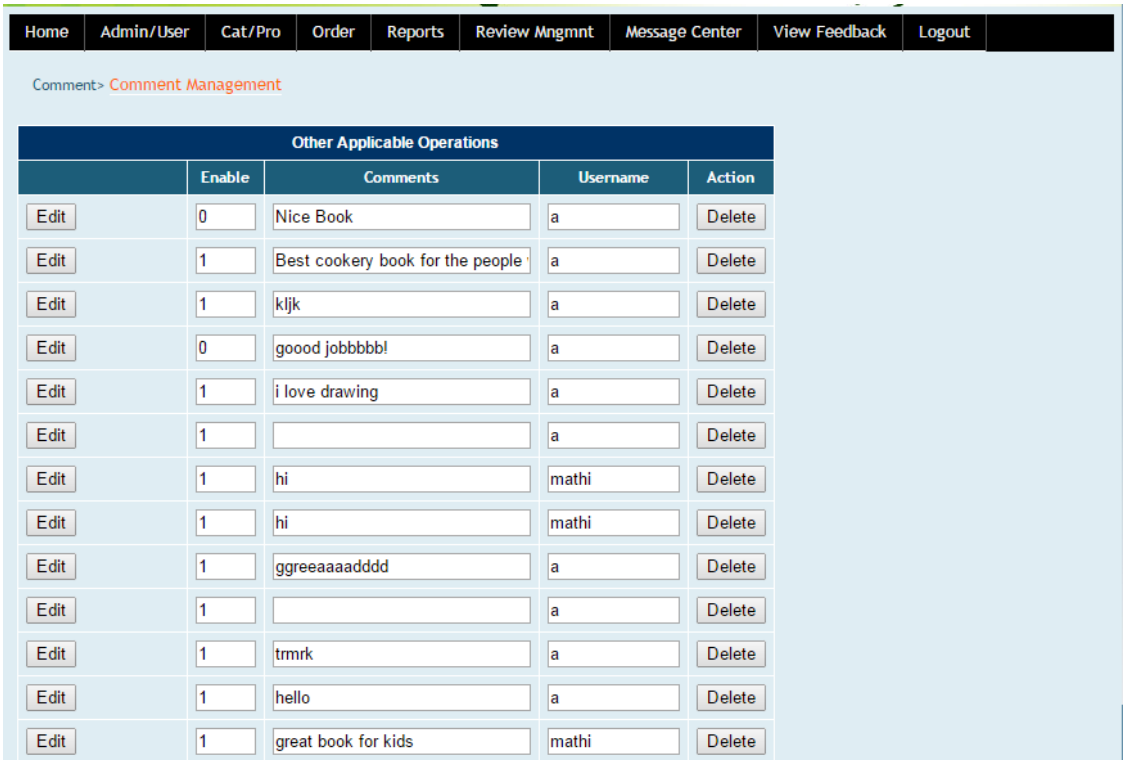


Figure C. 17: User Review on Books Dashboard

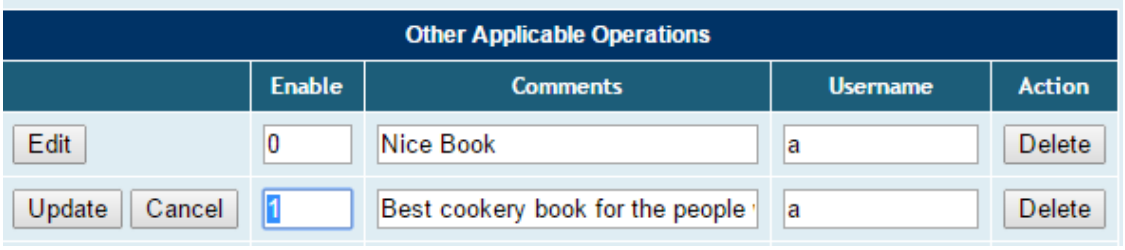


Figure C. 18: User Review Controller

C.12 Category Management

Category management could be able to perform via category management panel which can be only done by the admin manager. Using this panel admin manager can add, delete and update the category. Figure C.19 shows the manipulation such as edit, delete category and figure C.20 shows the addition of new category.

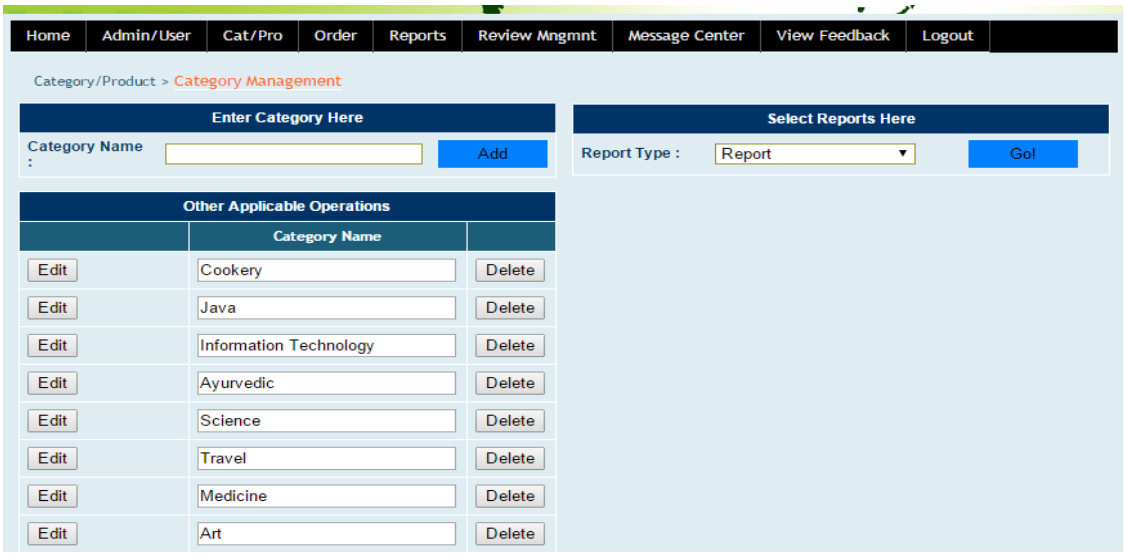


Figure C. 19: Category Management Dashboard

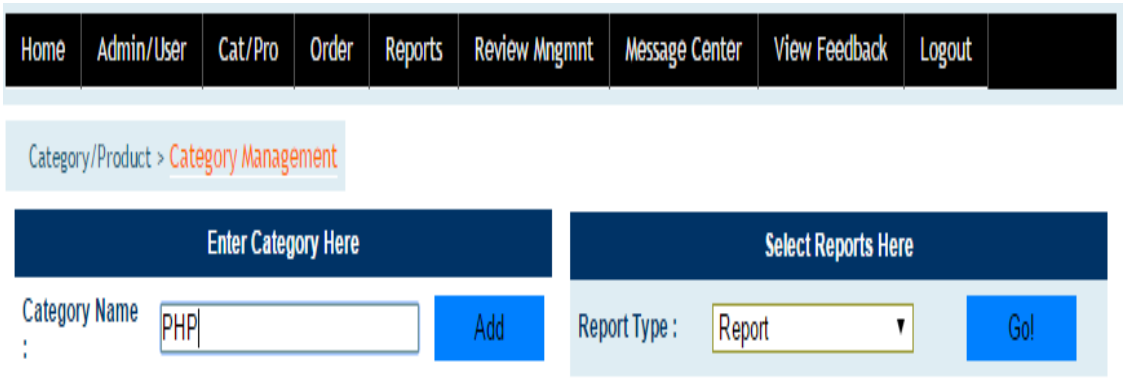


Figure C. 20: Category Addition

Appendix D– Management Reports

Aiding managers and decision makers to take effective decision is an integral part of computerized system. Enabling mangers to see transactions and raw data in to a very much meaning full manner through the reports of various kinds including user analysis has been discussed in this section.

D.1 Users By Age Group

The report below shown in the figure D.1 graphically shows the different age group customer base for Educare International via doughnut chart.

GO BACK

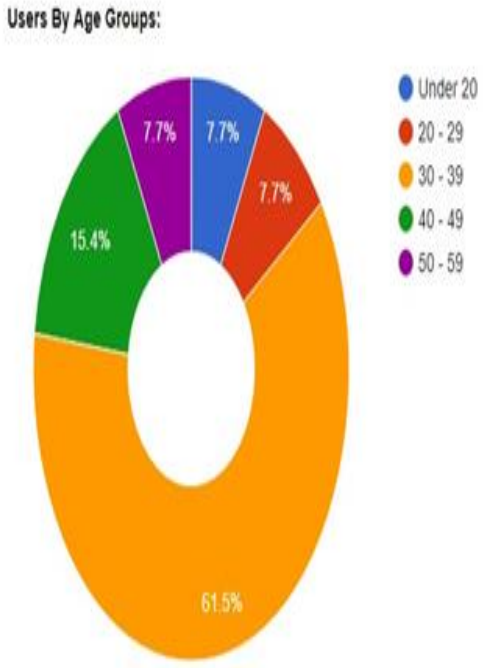


Figure D. 1: Customers by Age Groups

D.2 Users by Country

The report below in figure D.2 shows the customer base in various countries. This report can be effectively used for a country based targeted marketing.

GO BACK

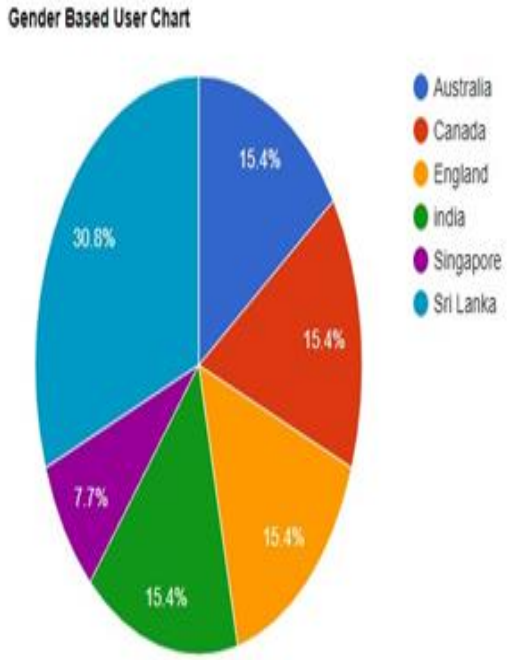


Figure D. 2: Customer Base by County Report

D.3 Order Details by Status

The report below in figure D.3 shows the order detailed report based on the order status. Order status such as pending and accepted should dynamically load pending orders and accepted orders respectively.

Name	Amount	Modified Date	User	Date	Status
hkjjk	16250	29-07-2012	1	29-07-2012	Accepted
test mathi paypals	1625	29-07-2012	2	29-07-2012	Accepted
mathi	1815	10-10-2017	3	10-10-2017	Accepted
mathi	1815	10-10-2016	3	10-10-2017	Accepted
mathi	5105	10-10-2017	3	10-10-2017	Accepted
mathi	5105	10-10-2017	3	10-10-2017	Accepted
mathi	5105	10-10-2017	3	10-10-2017	Accepted
mathi	4672	10-10-2017	3	10-10-2017	Accepted
Dilan	7145	24-10-2017	12	24-10-2017	Accepted
Dilan	1815	24-10-2016	12	24-10-2016	Accepted
indiaka	2960	24-09-2017	11	24-09-2017	Accepted
indiaka	330	24-09-2016	11	24-09-2016	Accepted
hari	330	24-10-2017	13	21-07-2016	Accepted
hari	1072	24-10-2017	13	24-07-2017	Accepted

Figure D. 3 Order Details by Status

D.4 Top Five Books in Wish Shelf

The report below in figure D.4 shows the most favourite books which has been selected by most time by users dynamically loads. This report can be referred for making decision such as product bundling.

GO BACK

	Name	Count
1	Drawing Index	3
2	100 Countries, 5,000 Ideas	2
3	Pastels Made Easy	1
4	Sketch, Draw And Paint	1
5	The Essential Man Ray	1

Figure D. 4: Top Five In Wish Shelf

D.5 Customers by Gender

Figure D.5 shows the customers by gender.

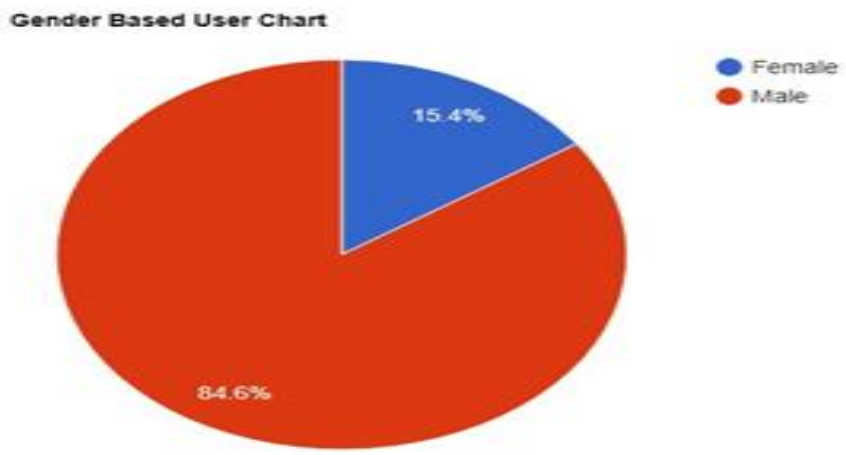


Figure D. 5: Customers by Gender

D.6 Monthly Sales Total and Sold Quantity

The report below in figure D.6 shows the total sales amount by month based. This report allows decision makers to take decision and draft marketing strategies based on different month.

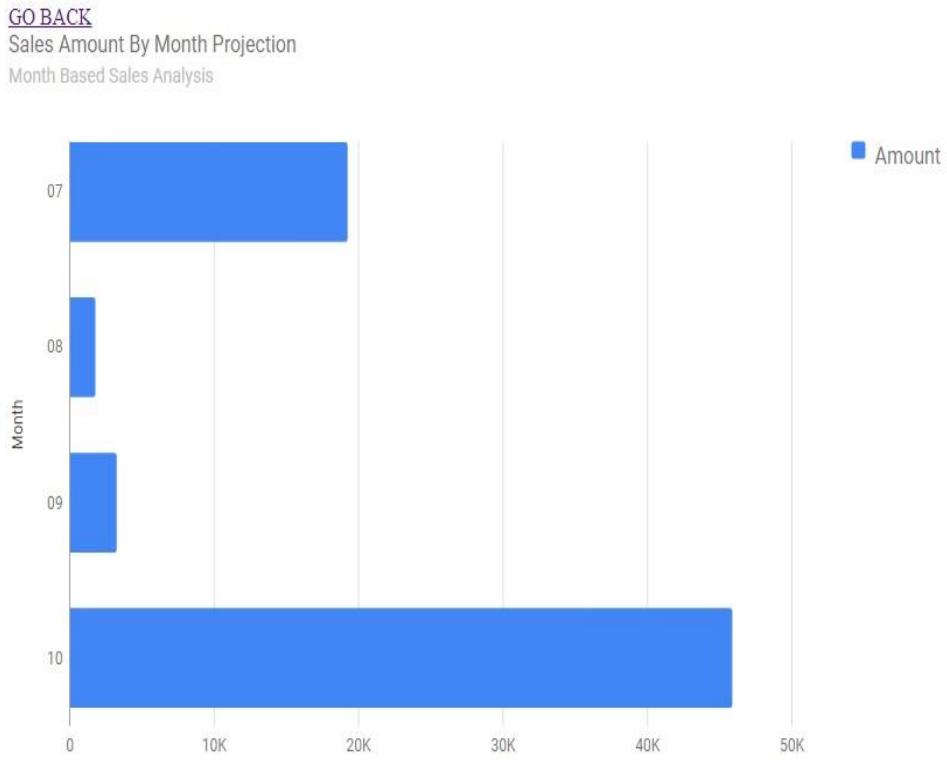


Figure D. 6: Total sales Based on Months

D.7 Pending Delivery Report

The report below in figure D.7 shows the pending delivery report which enables the operational managers to take corrective actions by coordinating third party courier companies.

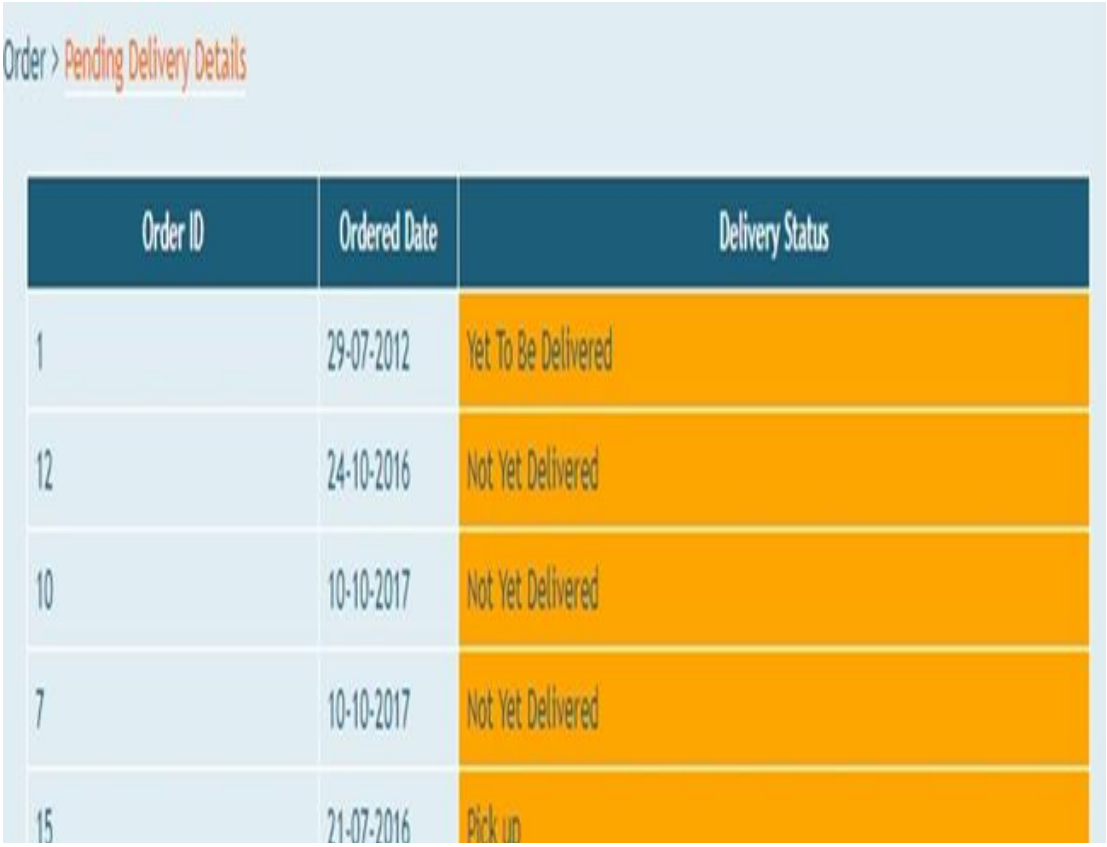


Figure D. 7: Pending Delivery Report

D.8 Most Purchased Customers

The report below in figure D.8 most purchased customers

Order > Most purchased custmoer

Customer Name	Telephone No	Value
mathi	64789585658	23,617
anushan	077777	16,250
alsas	61986582545	13,335
Dilan	0773354789	8,960
indiaka	0773358135	3,290
hari	0773358965	3,217
gayan	91773325223	1,625

Figure D. 8: Most Purchased Report

D.9 Monthly Sales Total and Sold Quantity by Year

The report below in figure D.9 shows the total sales amount and the total sold quantities by month and respective year. This report allows decision makers to take decision and draft marketing strategies based on different month and respective year.

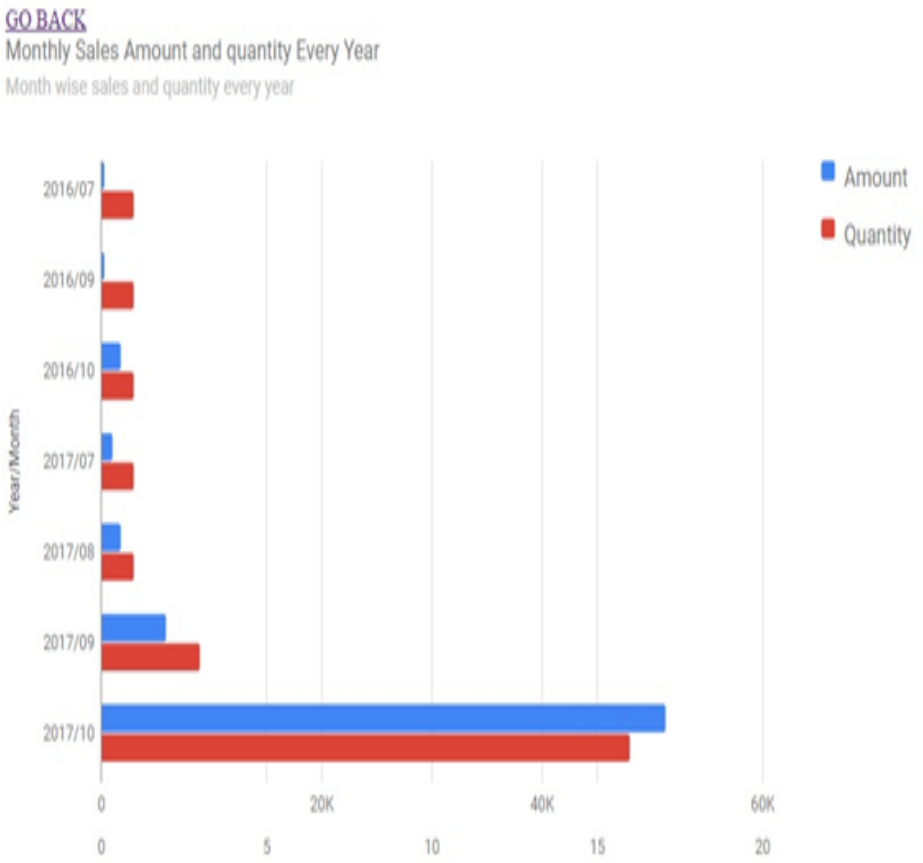


Figure D. 9: Total sales and Quantity Based on Months by Year

D.10 Sales Geo Map

The report below in figure D.10 shows the total sales amount in interactive heat map by country. The extreme dark green fills the country in world map. And grey colour fills the countries. When user hover on top of filled country, a tool tip will show the total sales by that country.

Figure D. 10: Sales Geo Map

D.11 Sales by Year

The report below in figure D.11shows the total sales amount and total quantity sold in each year. This report enables managers to compare the sales performance of the current year at a glance.

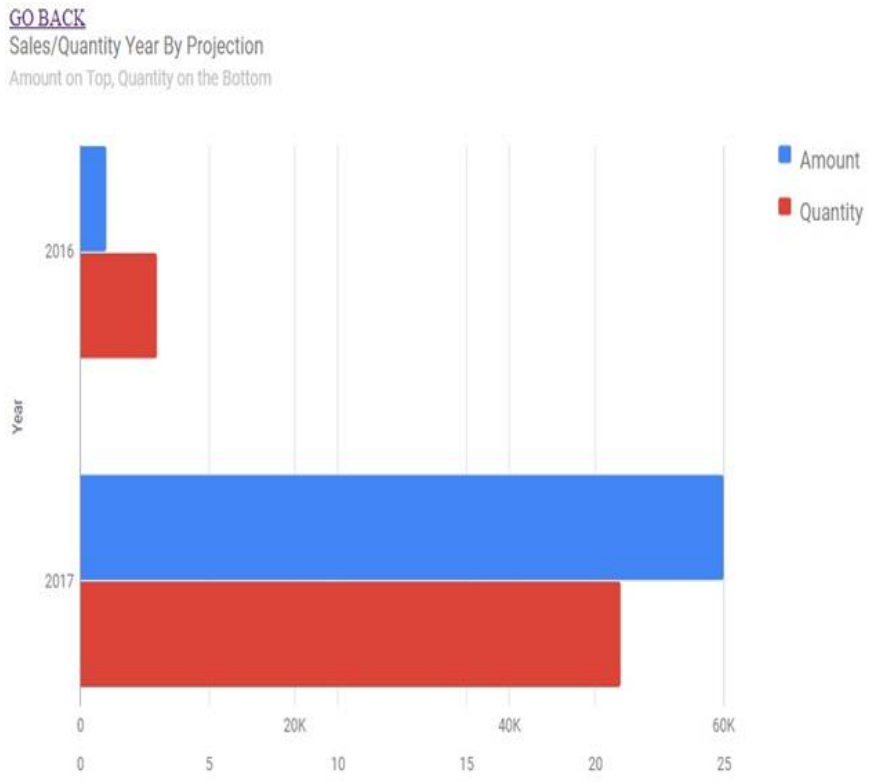
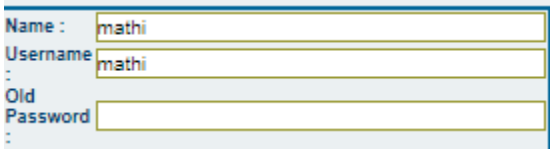
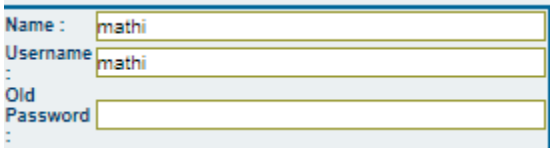
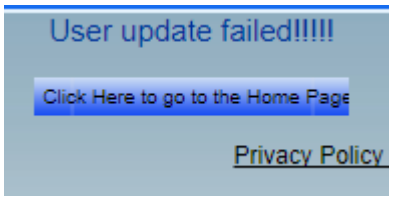
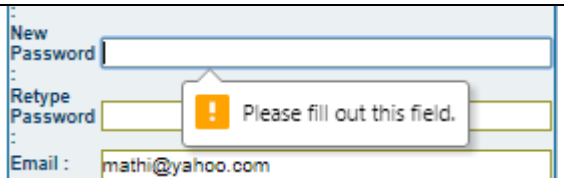
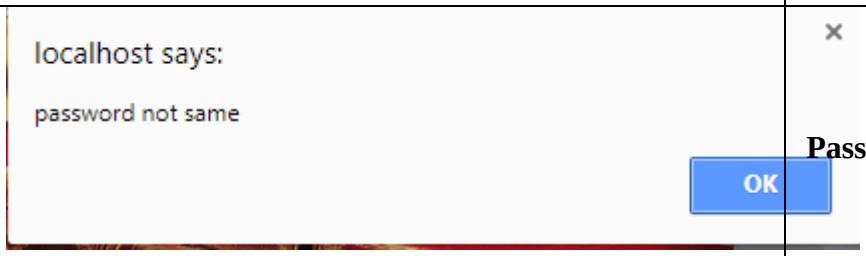


Figure D. 11: Sales by Year

Appendix E- Test Results

Test Case ID		3	
Module Name		Profile management	
Tested Components		Valid data inputs, Auto load fields	
Test No	Test Case Description	Actual Output	Status
1	Auto load name field		Pass
2	Auto load username field		Pass
3	Wrong old password insertion		Pass
4	Empty password field		Pass
5	Wrong retype password insertion		Pass

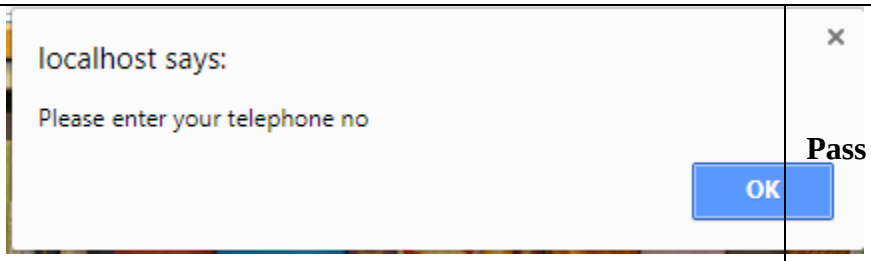
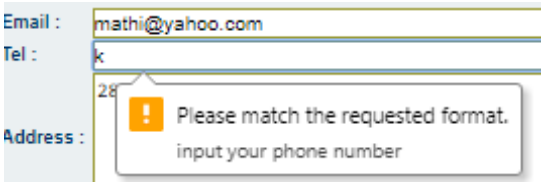
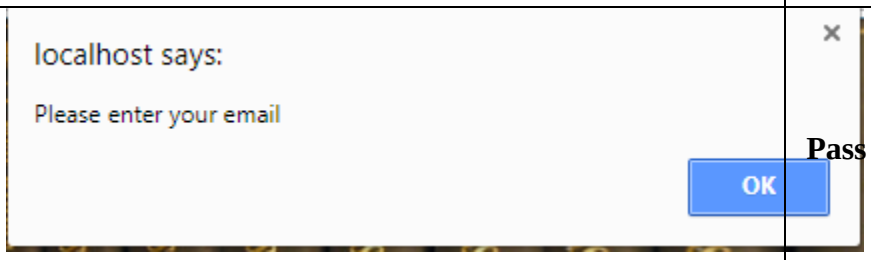
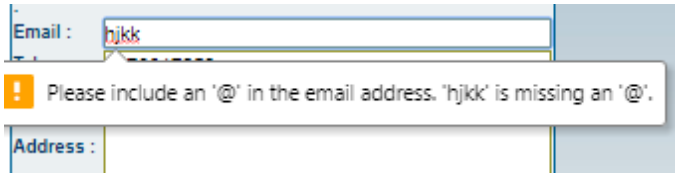
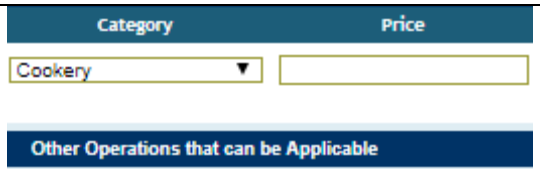
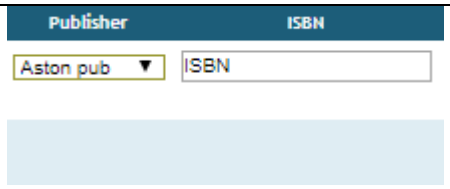
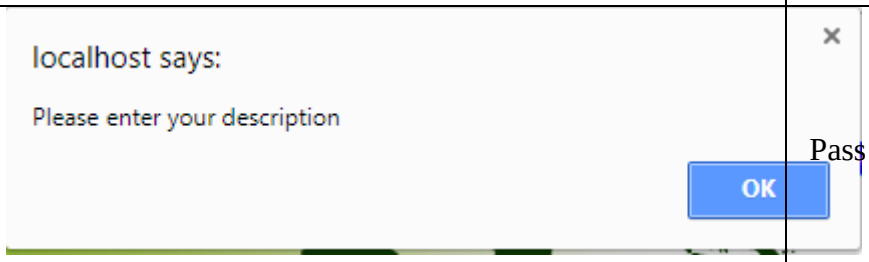
6	**Empty telephone number**		**Pass**
7	**Telephone number in wrong format**		**Pass**
8	**Email address empty**		**Pass**
9	**Email typed with wrong format**		**Pass**

Table E. 1: Test results for profile mangement

Test Case ID		4	
Module Name		Product Management	
Tested Components		Valid data inputs, Auto load fields	
Test No	Test Case Description	Actual Output	Status
1	Auto load category field		Pass
2	Auto load Author field		Pass
3	Auto load Publisher field		Pass
4	Empty product name insertion		Pass
5	Empty description insertion		Pass
6	Empty price insertion		Pass

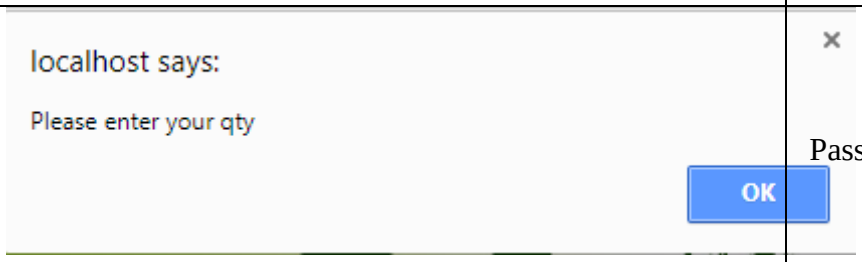
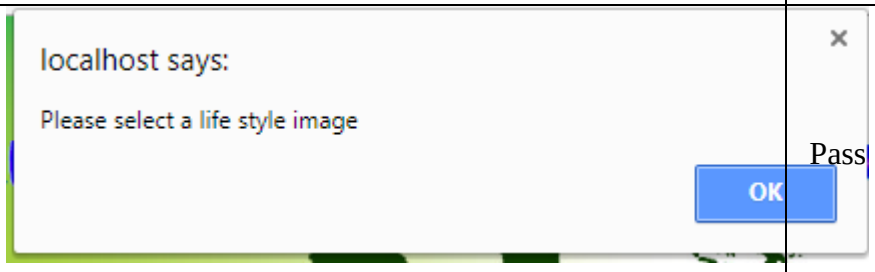
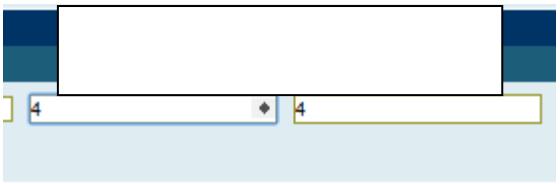
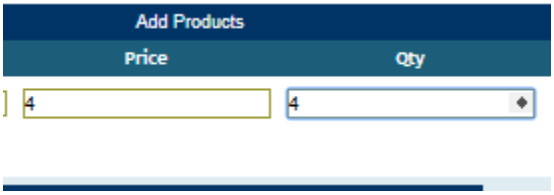
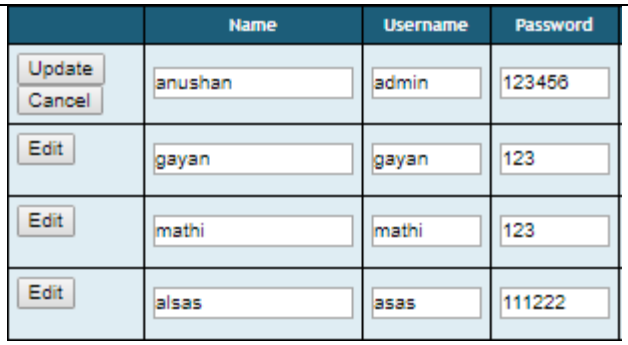
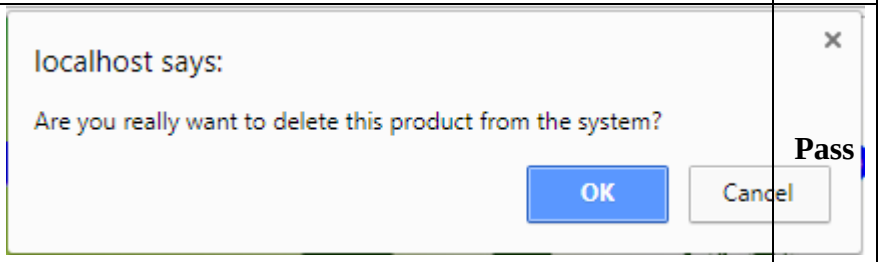
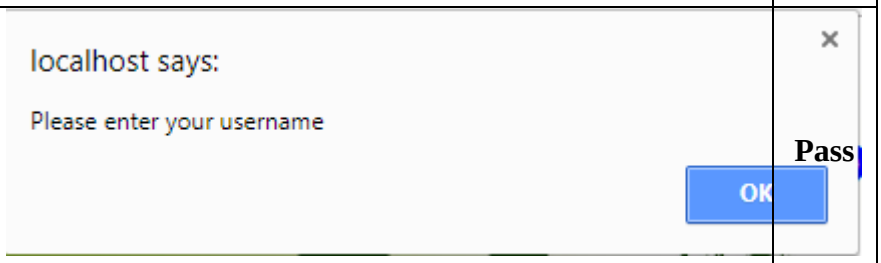
7	Empty quantity insertion		Pass
8	Empty image insertion		Pass
9	Only allow numbers in price field		Pass
10	Only allow number in quantity field		Pass

Table E. 2: Test Results for Product management

<table>
<tr><td colspan="2">Test Case ID</td><td colspan="2">5</td></tr>
<tr><td colspan="2">Module Name</td><td colspan="2">User management (Admin dashboard)</td></tr>
<tr><td colspan="2">Tested Components</td><td colspan="2">Valid data inputs</td></tr>
<tr><td>Test No</td><td>Test Case Description</td><td>Actual Output</td><td>Status</td></tr>
<tr><td>1</td><td>Update one record at a time</td><td> 
</td><td>Pass</td></tr>
<tr><td>2</td><td>Delete record only after confirmation message</td><td> 
</td><td>Pass</td></tr>
<tr><td>3</td><td>Empty name insertion</td><td> 
</td><td>Pass</td></tr>
<tr><td>4</td><td>Empty username insertion</td><td> 
</td><td>Pass</td></tr>
</table>

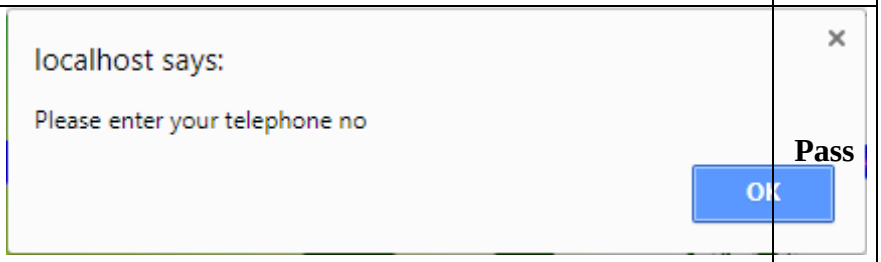
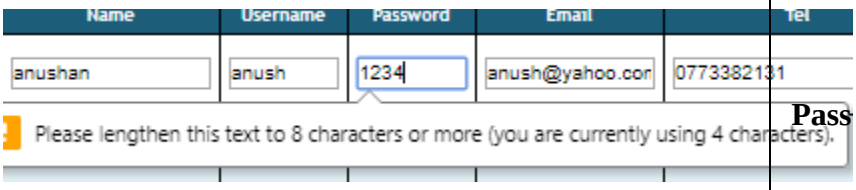
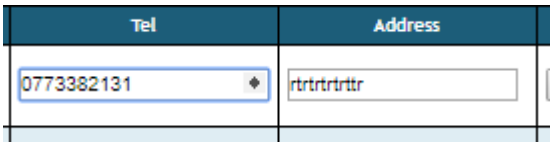
5	**Empty password insertion**		**Pass**
6	**Empty email insertion**		**Pass**
7	**Empty Telephone no insertion**		**Pass**
8	**Enter password with minimum character**		**Pass**
9	**Only allow numbers in Telephone field**		**Pass**

Table E. 3 :Test Results for user management.

Appendix F– Code Listing

Code fragments of important modules were given in implementation chapter. Further few code fragment listed below in this section. The complete source code will be given with the final dissertation is a compact disk.

Header file of the system which has javascript functions for searches and confirmation messages.

```
<?php
include('../configs/globalvars.php');
?>
<html>
<head>
  <title><?php echo $global_title; ?></title>
  <link href="styles/style.css" rel="stylesheet" type="text/css">
  <!-- start for newuser.php, myprofile.php -->
                                        // for views/index.php
    // searching from index->this->prd.php
    function searchname(name)
    {
       window.location="products.php?name="+name;
    }
```

```
// This function double confirm the reset of shopping cart
function confirmsubmit()  {
        var msg;
        msg ="Are you really want to empty your shoping cart?";
        var agree=confirm(msg);
        if (agree)
           return true ;
        else
           return false ; }
```

```
// for views/info.php load page
    function loadpage() {
       window.location="index.php";
    }
```

```
//Load page by category code
// for views/products.php
     function loadPage(cat){ window.location="products.php?cater="+cat;
        //document.getElementById("set").innerHTML=cat;
     }
```

```
// Load product page by product name
    function searchname(name) {
       window.location="products.php?name="+name;
    }
```

Add to cart button press should trigger a confirmation message

```
// confirm code for addition of new product in cart

function addtocart()

      {

         alert("product has been successfully added to the cart!!!");

      }
```

```
  <?php

//the main menu loads from global file

            if (file_exists($global_navHeader))

            {

               $menu = simplexml_load_file($global_navHeader);

               foreach($menu->item as $menuitems)

               {

                  ?>

            <td id="plink"><a href="<?php echo $menuitems->link; ?>" id="plink"><?php
echo $menuitems->name; ?> |</a></td>

            <?php  } }

      else

      {      die ("Loading Menu Items Failed");

      }  ?>
```

View Footer file

```
// This loads the global front system footer
<tr id="footerbg">
   <td align="center" colspan="2"><!--Foorter Goes Here -->
      <table>
         <tr>
            <?php
            if(file_exists($global_navFooter))
            {
               $menu2 = simplexml_load_file($global_navFooter);
               foreach($menu2->item as $menuitems)
               {
                  ?>
            <td>
               <a href="<?php echo $menuitems->link; ?>" class="footerfont"><?php echo
$menuitems->name; ?> </a>
            </td>
            <?php
         }
      }
      ?>
         </tr>
      </table>
```

In controller layer product.php- Assigning the session variable and recognizing the action triggered by the users in the view.

```
session_start();
$usr=$_SESSION['username'];
$uid = $_SESSION['UID'];


if(!isset($_SESSION['adminusername'])&&($action=="add" || $action=="update" ||
$action=="delete"))
{
   header("location:../manager/index.php?msg=Please login to perform this action");
}


//getting variables
if($_SERVER["REQUEST_METHOD"] == "POST" || $_SERVER["REQUEST_METHOD"] ==
"GET"){
   $action = $_REQUEST['action'];
    if($action=='comment'){
       $comment = $_GET['com'];
       $pcid = $_GET['pid'];
       $_SESSION['com']=$comment;
$userid = 1;


     }
```

Adding Images for product

```
//image adding
if ((($_FILES["image"]["type"] == "image/gif")
   || ($_FILES["image"]["type"] == "image/jpeg")
   || ($_FILES["image"]["type"] == "image/pjpeg"))
   && ($_FILES["image"]["size"] < 20000000))
    {
      if (file_exists("../views/pics/products/".date('U')."_".$_FILES["image"]["name"]))
       {header("location:../views/info.php?msg=File Already Exisit on the Database.");}
      else{
       $img="../views/images/products/".$_FILES["image"]["name"];
        move_uploaded_file($_FILES["image"]["tmp_name"],
        "../views/images/products/".$_FILES["image"]["name"]);
        //echo "Stored in: " . "../views/images/thumbs/" . $_FILES["image"]["name"];
        }
    }
```

Appendix G - Client Certificate

Educare International
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4th November 2017.

Project Examination Board,

University Of Colombo School Of Computing

2A, 221 Srimath Anagarika Dharmapala Mawatha,

Colombo 00700.

Certification of Educare International Book Shop System

Mr. T. Mathivathanan Has implemented the system for Educare International Book Shop successfully as his BIT final year project.

I would like to use this certification for appreciating his genuine work which includes Requirement gathering, designing, implementation and testing with the regular attendance and meeting with myself and my staffs for feedback and confirmation.

I am glad to inform that the final product that has been resulted through his work is aligning very well with the all set of requirements and passes beyond the satisfactory level. So we are more than happy to adopt this system for our organization.

Faithfully,

Edu-Care International (Pvt) Ltd. PV 107369

Managing Director

Educare International Book Shop