WEB BASED SALES
MANAGEMENT SYSTEM

Shahid Iqbal Tarar

Master Thesis
Computer Science
**DEGREE PROJECT**

**30 ECTS**

<table>
<thead>
<tr>
<th>Programme</th>
<th>Reg number</th>
<th>Extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters in Computer Engineering</td>
<td>800818</td>
<td>30 ECTS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of student</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shahid Iqbal Tarar</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supervisor</th>
<th>Examiner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frank Lüders</td>
<td>Frank Lüders</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company/Department</th>
<th>Supervisor at the Company/Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paramount Salt Handicrafts</td>
<td>Qaisar Nadeem</td>
</tr>
</tbody>
</table>

**Title**

WEB BASED SALES MANAGEMENT SYSTEM
Abstract

Paramount Salt Handicraft A wholesale Himalayan salt company was previously doing business in traditional way and was limited only to the local market. However from the start day management was planning to expand the business to more locations and to attract more customers. So to expand the business and to attract the international customers and customers from other cities of Sweden it was necessary to make it available over the internet so that customers can easily get knowledge about the company’s products and purchase them. So the need of an online web shop was realized to bring the company’s plan into reality. The online shop will be act as a medium of interaction between the customers and the company and it will enable the customers to buy products online and make payments electronically and after that the products will delivered to them. Throughout the process the customers can easily track the overall status of their orders.
Table of Contents

ABSTRACT ............................................................................................................................................. 3

CHAPTER 1: INTRODUCTION ............................................................................................................ 6

COMPANY INTRODUCTION .............................................................................................................. 6
OBJECTIVES ................................................................................................................................. 6
REASONS FOR THIS SYSTEM ........................................................................................................ 6
OLDER WEBSITE VS. NEW WEBSITE – A COMPARISON ............................................................ 7
OLDER VERSION .......................................................................................................................... 7
WEB SHOP ..................................................................................................................................... 9
SUMMARY ................................................................................................................................. 9

CHAPTER 2: TECHNOLOGIES .......................................................................................................... 10

INTRODUCTION ............................................................................................................................. 10
THE CIA TRIAD .......................................................................................................................... 10
CONFIDENTIALITY .................................................................................................................... 11
INTEGRITY ..................................................................................................................................... 11
AVAILABILITY .......................................................................................................................... 11
PHP ................................................................................................................................................ 12
PHP FEATURES .......................................................................................................................... 13
MYSQL ......................................................................................................................................... 14
MYSQL FEATURES .................................................................................................................... 15
HTML & CSS ............................................................................................................................. 16
TECHNOLOGIES, A CRITICAL REVIEW ..................................................................................... 17

CHAPTER 3: SYSTEM DESIGN AND FUNCTIONALITY .................................................................... 18

SYSTEM DESIGN .......................................................................................................................... 18
DESIGN GOALS .......................................................................................................................... 18
DEPENDABILITY ........................................................................................................................ 18
SIMPLICITY AND EFFICIENCY ................................................................................................... 18
MAINTENANCE .......................................................................................................................... 18
IMPLEMENTATION COST ............................................................................................................ 19
SCOPE .......................................................................................................................................... 19
THE ADMINISTRATOR .................................................................................................................. 20
REGISTERED CUSTOMERS ......................................................................................................... 21
NEW USERS .................................................................................................................................. 21
SYSTEM MODULES .................................................................................................................... 21
CUSTOMER END ........................................................................................................................ 21
ADMINISTRATOR END ................................................................................................................ 24
CHANGE SETTINGS SECTION .................................................................................................... 26
EDIT FILES SECTION ................................................................................................................. 27
INFORMATION SECTION .......................................................................................................................... 27
SYSTEM FUNCTIONALITY ......................................................................................................................... 28
COMPLETE LIFE CYCLE OF AN ORDER ................................................................................................. 28
SYSTEM DESIGN & FUNCTIONALITY, A REVIEW .................................................................................... 32

CHAPTER 4: SYSTEM BEHAVIORS ............................................................................................................ 33
INTRODUCTION ........................................................................................................................................ 33
BEHAVIORS FOR EVENTS IN ADMINISTRATION PANEL ........................................................................ 33
SYSTEM BEHAVIORS AGAINST CUSTOMER GENERATED EVENTS .......................................................... 36
SUMMARY ................................................................................................................................................ 37

CHAPTER 5: SUMMARY AND CONCLUSIONS ........................................................................................ 38
FUTURE WORK .......................................................................................................................................... 39

REFERENCES ........................................................................................................................................... 40
Chapter 1: Introduction

Company Introduction

Paramount Salt Handicraft is a wholesale Himalayan salt company started in 2008. The product range of the company consists of all sorts of the salt used in today’s life for instance edible salt, bath salt, salt handicrafts (Lamps & tea lights), road salt and salt used in building salt rooms. Since their establishment, they are selling as wholesaler but they also want to target the end customers to increase their sale as well as to set their brand name to compete their rivals.

Objectives

The objective of this work is to implement the vision of the company by creating an easy to use, interactive, user friendly, fully functional, fast, communicative and remarkable web shop, which could convey a convincing message to the visitors. By this way the company will be able to achieve their financial goals and establish their brand name at mass level. Since the product is health effective, it only needs to communicate the message and provide opportunity to buy. These purposes are achieved in a sufficient manner after the successful implementation of a web shop according to the company vision.

Reasons for This System

A very important question one may ask is why Paramount Salt Handicraft felt the need of this online web shop while previously the has a simple website which was sufficient to introduce the company’s products. He answer is very simple, because the previous system was not designed to serve as a web shop. It was just a static website and also it was not very easy to update that website. Also it was not possible for customers to buy products through the older version of website. This web shop was considered to be a very important element to expand the company’s business over the internet and it was proposed to be built in a professional way to carry out all the business tasks.
Older Website vs. New Website – A Comparison

Before exploring more about the newly built web shop it will be better to make a comparison of the two versions of website and explore the reasons that why the old website was bad enough to be changed with this new website and what will be the benefits of introducing this new web shop. So we will discuss both versions one by one.

Older version

✓ It was based on static html technology so updating a page was not very easy.
✓ It was not possible for users to buy products.
✓ The design was not user friendly.
✓ The website was not SEO (Search engine Optimization) friendly.
✓ This was not possible for users to search products.
New Version

- The website is built using the dynamic web technologies PHP and MYSQL.
- Users can make their accounts, buy products and track their orders.
- User can edit, delete their orders.
- Users can manage their accounts.
- Users can communicate with administrators via email.
- Administrators can add new products, delete or edit the existing products.
- Administrators can modify user accounts.
- Administrators can process orders and inform the customers about their order status.

Here is the screenshot of the latest system. The new system displays the product in a much better way giving the customers extra abilities to buy the products.
Web Shop

E-commerce is playing a vital role in today's business world. All companies from small to medium enterprises and large organizations have realized the importance of electronic trade to expand their business to nationwide. A major advantage while doing business over internet is that there are no distance limits and customers around the globe can access the products and place orders.

The purpose of this thesis was to implement a real web shop, which offer the visitors to order online using shopping cart by paying through different payment methods such as Visa, Master card, PayPal, invoice etc. The administration can manage orders, users, edit menus and edit products from administration control panel.

In this thesis the modern methods to develop web systems have been investigated and the performance of the web shop is the key factor in order to make it more efficient for visitors to indulge them to buy.

In fact, this project consists of many functionalities for instance, statistics, shipping methods, newsletters, inventory system, discounts, Summary (orders, users, products, shipping), profile modification and DB backup along with web shop which will be added latter but now the scope is limited to web shop because of the time constraint and length of the project.

Summary

Paramount Salt Handicraft is a company dealing with different type of salt products like edible salt, bath salt, salt handicrafts (Lamps & tea lights), road salt and salt used in building salt rooms. The management of company planned to launch the business over the web to attract more customers worldwide. Previously Paramount Salt Handicraft had a static website which was not able to meet the new business requirements so an online shop system is developed to carry out the business tasks. The newly developed web system is based on modern web technologies and it is secure, user friendly and has a lot of features. Through this system customers can buy products online and make payments electronically. This new system is very easy to manage and has ability for administrators to manage products and add new products easily.
Chapter 2: Technologies

Introduction

In today’s modern world when we plan to develop a software application a lot of acronyms come into our mind. It is very hard to decide which technology to choose for building an application which best meet the business goals keeping in view other factors like development cost and reliability. While cost is a very significant factor but most important is the reliability of system. A system which involve cheap development cost but do not meet the business goal may not be a good choice. So the system stability should be the first priority for any company deciding to launch their business on the World Wide Web where survival is only for fittest. So for this web shop the same thinking was in my mind to develop the system by using such technologies which are the best meeting the challenges of cost and stability. So the technologies used for this web application are PHP, MYSQL, HTML, and CSS. The overall business logic was implemented using PHP. MYSQL was used to provide the database functionality in the system to store user’s data including their account details order details and overall history of their buyings. HTML and CSS were used to design the front end of the system. These are the market proven technologies for building the attractive and reliable web application all over the world. By using the CSS(cascading style sheets) all the front end design settings are stored in a single CSS file and whenever there is need to make any change we don’t need to change it at every page so we change only on value in the CSS file and this change is made on whole website. For example we if want to change the background color of our website we don’t need to change the background color of every page we just edit the background color from CSS(cascading style sheet) file and by changing the single value the background color of all pages of website changes. So this is the benefit of using these technologies that these are so simple and have a great amount of features which make the whole process very easy to implement.

The CIA Triad

While we plan to start our business over World Wide Web a most important factor to consider is the security of your web business. While living in the cyber world
there are a lot of security challenges which should be addressed properly. Otherwise your business will not be available for your customers and this will result in a loss for company. A widely used model for security of a system is CIA (Confidentiality, Integrity, and Availability) model [5].

![CIA Model](image)

**Confidentiality**

It means to protect the information from being used illegally and to ensure that the data will be available only to the authorized users. It involves the protection of personal user data from unauthorized access.

**Integrity**

Integrity means to keep the data in its original form while it transmits between two points. Integrity can be ensured by protecting data from unauthorized access.

**Availability**

To be successful over the internet your business should remain available to you your customers all the time. It can be affected by technical system faults or denial of service (DoS) attacks which are very common in the cyber world.

Now we will discuss the technologies used in this particular web application in details.
PHP

The major technology used to develop this application is PHP [7]. What is PHP? Some people call it Personal Home Pages. Some people call it Hyper Text Preprocessor. It seems that there is no single name for it where all people agree but in the meantime daily hundred thousand of web applications are being built using PHP. PHP is an open source tool to develop dynamic web sites. PHP is a very old technology introduced in 1995 by Rasmus Lerdof. At that time its name was PHP/F1. However Rasmus did not introduced PHP/F1 for developing commercial websites. He just wrote some Perl Scripts to track his online resume. So we can say that Perl is the mother language of PHP. He gave these scripts name of Personal Home Pages. Latter on he added more features and make it capable to work with databases. At the time of its second release in 1997 PHP was successful to attract the web developers to use it to create dynamic web applications. The next version of PHP was a complete rewrite of previous version it was created by Andi Gutmans and Zeev Suraski in 1998. Soon after this release both these persons begun to work on the next version to add more features and to handle performance issues. The output of this hard work came in form on PHP4 and was released in 2000. It was based on Zend Engine and it had great new features to work with many other web servers, http sessions and user’s data handling techniques. The journey towards best was not stopped here and the next version PHP5 was introduced in 2004. It was based on Zend Engine 2.0 and had many new features. The main features of PHP5 were object oriented behavior, exception handling, working with MySQLi and many more. The need for PHP to be object oriented behavior was very high. Current version of PHP is 5.3. PHP has now a great community of developers and users. PHP is considered as the 3rd most popular programming language [6] and has it is working on millions on websites.
The official website of PHP is www.php.net. The website contains a huge amount of user submitted source codes which are available freely to all users to learn. PHP mailing lists are a great source for developers to discuss the ideas and to get help from others. For those who are new to PHP a lot of learning material is also available.

**PHP Features**

PHP has a long list of features. Some of them are given below:

- PHP is licensed under GNU/GPL which allows the users to use it free of cost for commercial uses. Unlike Microsoft technologies which are not free and users have to purchase them.
- PHP scripts can run on Linux, UNIX based servers and hosting cost for these servers is low as compared to windows hosting. So you don’t have any need to purchase costly web hosting for PHP based applications.
- PHP has any excellent ability to work with a lot of open source database management systems like MYSQL, MySQLi, firebird, Postgre SQL. In this application MySQL is used. These database management systems are also free so we don’t have any need to pay for using these tools.
• PHP can dynamically create PDF files and GIF images. These features enable the users to directly create images and PDF files.
• PHP scripts can run in safe mode.
• PHP applications are secure, reliable and efficient. There is no doubt about this statement because of millions of successful PHP applications running over the web.
• PHP has a big community consisting of experienced professionals all over the world and getting support is very easy. Every time you need any help you post your problem on PHP mailing lists and many people answer your queries free of cost.
• PHP can do anything that any other web development language can do. It is easy to write complex code in PHP. Learning PHP is also very easy. So it is a good option for those who want to create dynamic websites and become and professional web developers.
• Due to the open source nature of PHP and easy implementation, the development cost of PHP is also less so it makes it a best choice for companies to buy PHP products.

MySQL
Data is considered as a critical asset for organizations. To store the data in a proper shape is a challenge. A properly stored data can help organizations to keep track of visitor’s trends and to modify their products according to interests of customers. For this purpose a database management system is used to create database according to the requirements of organization. This database is then used to store personal information of customers, to store products details and customers buying details. There are a lot of database management systems available. In this project we have used MYSQL as database solution along its great friend PHP. These both are the industry’s best combination.

MYSQL [3] abbreviated as My Structured Query Language, is an open source database management system. MYSQL is written in C and C++.It has the ability to work
on different platforms. It is the most popular database management tool. It is designed, developed and supported by MYSQL AB. MYSQL AB is a commercial company founded by MYSQL developers and it is located in Sweden. MYSQL was started in 1995. Till now MYSQL feature list is continuously updating and it has proved itself as a perfect solution to meet the challenges of modern age. Current version of MYSQL is 5.1. In 2008 Sun Microsystems acquired MYSQL. MYSQL database server is reliable, fast and easy to use. It is widely used by large organizations having huge amount of traffic like Wikipedia, Flickr, YouTube, Facebook, Google as well as millions of small web applications. The usage popularity of MYSQL is closely tied with PHP because most PHP developers use MYSQL as database tool for their applications.

MYSQL Features
Here are some features of MYSQL out of a rich features list

Figure 5 - DBMS popularity [3]
• MYSQL is an Open Source Database Management System. So you can use it without any cost.
• Getting support is also very easy.
• MYSQL is a class platform server. It can work with different operating systems like windows, Linux, MAC etc.
• MYSQL has a high performance graph. It can execute quires very fast, this makes it very suitable for applications handling large amount of data.
• MYSQL performs the data storing and retrieving procedures very efficiently. So it the resources are used efficiently and this behavior ensure the availability of system to end users.
• MYSQL provides excellent security features. It has powerful data encryption and decryption functions.
• Database management is very easy with MYSQL. Third party software like PhpMyAdmin makes this process a fun even for non experienced people.
• MYSQL is compatible with several other technologies like PHP, Java, C++, Perl, and Asp.net etc.

**HTML & CSS**

Despite of the internal working of a web application the front end design plays a key role to earn the user attraction. A better representation of products to the users makes a positive impression which psychologically affects the users buying behavior. While doing business over the web it is very vital to choose the design of your web application because on the internet there is no personal contact between seller and buyer and only the way you present your products matters. A well designed and user friendly web application can boost the sales of a cyber business. Web applications lacking proper management of front end design often left negative impression on visitors. The most important asset for cyber businesses is the web traffic. Companies invest a lot to appear their websites in search engines and for other programs like Pay per Click or Pay per Impressions campaigns to drive traffic towards their websites. All these efforts will not be fruitful if the website design does not meet the search engines standards and also it will appeal the visitors to revisit your website.
While PHP and MYSQL were concerned with the implementation of overall back end logic HTML and CSS are used to design the front end layout of this web application. HTML abbreviated as Hyper Text Markup Language was introduced by Tim Berners Lee in 1990 [8]. HTML elements like tables, lists, forms and text boxes are an essential part of any web application.

CSS stands for Cascading Style Sheets. It was introduced by Hakon and Bert along with other group members in 1996. CSS is used to set the overall appearance of web pages. CSS is very simple. Each style sheet contains some rules which decide the appearance of elements of a specific type.

**Technologies, a Critical Review**

In last few pages we have discussed about the technologies we have used in this project. Now after this all discussion we are able to critically analyze our choice of selection whether the choice according to merits and it meet the requirements of company’s business.

All these technologies are open source so there is no extra cost attached with them for the company to implement their business plan. These technologies are easy to deploy so the overall development process was easy and was carried out within a project time frame. The technologies are reliable and secure and can work with any volumes of business so the risk of application crashes is very low.
Chapter 3: System Design and Functionality

System Design

The web system was built keeping in mind the simplicity and performance of the system. Because the system was built for online business and was supposed to be a medium to carry out all sales tasks between the buyer and the seller so it was very important to make the system user friendly. Therefore during the design phase the emphasis was to make this system more user friendly and more efficient. So that all business tasks can be done easily and error free.

Design goals

The design goals provide a consistent set of conditions which should be considered during the design phase. Below are some design goals which have to be achieved to mark the system as a successful system.

Dependability

- The system has the robustness to deal with the invalid order from the users.
- The system is reliable enough to carry out all business tasks without any bugs.
- The system has ability to meet any security risks for business.

Simplicity and Efficiency

- The system has been built as a user friendly both for end users and administrative staff.
- The system performs all tasks efficiently by using the available resources.

Maintenance

- The system was built keeping flexibility in mind so that new features can be added into it according to future business requirements.
- The system is highly modifiable. Text on pages and the messages displayed of each page can be easily changed from admin control panel.
Implementation Cost

- The system can run at any platform supporting PHP and MYSQL and have no extra hardware and software requirements.
- The system is very simple so no special training is required for the staff [1].

Scope

As is said, “A picture is worth a thousand words”, the scope of the system can best be displayed with the help of context diagram, which states clearly the boundaries of the system.
The context diagram clearly shows the tasks that can be performed by each stakeholder. There are three stakeholders involved as shown in the context diagram.

**The administrator**

The administrator is the person who manages the overall system. Administrator has full control over the system. Administrator can add, delete, change, and approve orders made by customers. Administrator can add new products, change products, add new categories or can change the existing...
categories. Administrator can also manage user accounts. Administrator is responsible to keep the system running and to respond the user support requests.

**Registered Customers**

These are the people who have registered their account and had placed an order. The options available for them are to view the status of their orders, to change their orders or to delete their orders. They can also alter their account details like email, password, address etc. They can made new orders also.

**New Users**

These are the first time visitors are those who had not created any account at web shop. They may browse the products and view product details but cannot made orders. To place an order they must have to create an account.

The context diagram shows the flow of information between different nodes of the system and how system responds the incoming requests. The interaction of all stakeholders with system can also be understood with this context diagram. It also tells us that what kind of jobs this system and other stakeholders can do.

**System Modules**

The overall web system is divided into two major modules having the options available to carry out the required tasks in order to successfully complete the business transactions. These modules include the customer End and the administrative End.

**Customer End**

This is the front page which is displayed when someone visits the web shop. This page contains a welcome message, products, company policies, guidelines, login and register buttons and link to “contact us” page. From here users can login to their account or if they are not registered yet then they can just browse the products. Here is the screenshot of the home page of web shop.
Each time when a user visits the web shop this home page is displayed to him/her. The welcome message can be edited from the admin control panel. All the product details are saved in a database and system loads them dynamically. Every time the system checks whether there are some special offers available and if there are some then it displays those items on the front page along with the price. All the items at the home page are well formatted and clearly visible so that the users don’t have any problem in locating their required item. The description of the home page elements and the links is given below.

- **Page Header:**
  - It contains company logo, slogan and a short description. This is displayed on all pages.

- **Welcome Message:**
  - Contains some text to welcome users at the web shop. This can be edited from the admin control panel.

- **Shopping Cart:**
✓ Shows the status of user’s purchases and account balance. It updates automatically when user selects some products to purchase.

• **Products:**
  ✓ Contains all the products available for users to purchase. Products are placed under different categories. Admin can add new categories also.

• **Search:**
  ✓ Provides the search facility to users. So that they can search for a product of specific type.

• **New Products:**
  ✓ Enables the users to view the newly added products. It contains the recently added products.

• **General Conditions:**
  ✓ Contains the terms and conditions which will be applied to all sales made by customers at web shop.

• **Shipping:**
  ✓ Contain shipping details, delivery time, shipping charges. These details can be easily changed from admin control panel.

• **Guarantee:**
  ✓ This page contains details about products guarantees and info about the process of returning a product in case of any problem. The information here is also editable from admin control panel.

• **About us:**
  ✓ This page contains the company information and information about the owners.

• **Contact:**
  ✓ This page contains the contact information like email, Phone numbers and a contact form. Users can contact the admin in case of any problem related to web shop or for general queries.

• **Page Footer:**
  ✓ Contains copyrights information.
**Administrator End**

The administrative end or the administrative control panel is the area for system administrators to manage the overall tasks of the system. Administrators can manage orders, accounts and other systems tasks. All system configurations can be altered from here. It facilitates the administrators to add new categories, add new products or to edit the existing products and categories. All these changes are saved in a database and the system use them dynamically. So there is no need to change every page and this is the beauty of the dynamic web applications. Below is the screenshot of the administrators control panel.
The administrator control panel is divided into 3 major sections named as Change settings, Edit files and Information. Related tasks are placed under the same sections. This improves the usability of the system. The description of each section and icons under it is given below.
Change Settings Section

This section is related to management of the orders and the system. Description of each item is given below

- **Orders:**
  ✓ Contains all orders processed, not processed or those waiting for approval. Administrator can process orders, change status of orders or can delete orders.

- **Customers:**
  ✓ Contains the list of all registered customers. It provides the administrator the options to add, delete or edit or view customer details, or to email customers.

- **Admins:**
  ✓ Contain the list of administrators. The root admin has the option to remove an admin from this list.

- **Products:**
  ✓ Contain the list of all products. Administrators can add, edit or delete the products from here.

- **Group and Categories:**
  ✓ Contains all the product groups and categories. These groups and categories serve as containers for products.

- **Payment Options:**
  ✓ It contains the options available for customers to pay against their purchases.

- **Shipping Options:**
  ✓ Contains the shipping options currently provided by the company for the delivery of products.

- **Settings:**
  ✓ It contains all the settings of the system related to its working and display. It is divided into four parts named as Finance, Store, Bank Details and
Layout. Each part has a list of related items. There is also an option to see all these settings on one page.

- **Discount:**
  - ✓ If the company wants to offer discount on some products then it can be applied from here.

**Edit Files Section**

These sections contain the modules which are used to change the text on different pages. The messages and text displayed on all pages can be changed from here. So there is no need to edit the files manually. The pages that can be edited from here are

- Shipping page
- Guarantee Page
- General Conditions
- Ban list
- About us
- Front page

Also administrators can add new pages and modify the list of countries where the company provides the shipping facility for products.

**Information Section**

This section contains the items containing the information gathered during the working of the system. Description of each item is given below.

- **Stock Management:**
  - ✓ Contain the current stock details. How many products are sold and how much remaining.

- **Access Logs:**
  - ✓ Enable administrators to view which users has logged in to system.

- **Mailing List:**
  - ✓ It contains the list of email addresses of all registered users. This list can be used to send emails to all registered users when there is any update or special offer by company.
• Error Logs:
  ✓ During the working of the system if there is any error occurred then its log will be shown here. It is helpful for administrators to resolve that error and to take necessary actions to prevent the occurrence of error in future.

System Functionality

So far we have discussed the design of our system now we will focus our discussion to the working of the system. How the system performs the business tasks and how the overall sales processes are carried out at every end. We will discuss the working of system from the user’s end and also from the administrator’s end. With the help of screenshots we will view the complete cycle of purchasing process. In previous chapter we have viewed the screenshots of the front page of the web shop and the administrator’s control panel. Now we will explore the internal working of these two modules and how the user and the administrator can perform their relevant tasks to complete the sales processes. The circulation of information between the different modules of the system will also be discussed.

Complete life cycle of an order

An order undergoes from different stages until its completion. When the user first visits the system following page is shown to him/her.

From this page the user has two options whether to browse the products having some kind of special offer or to browse the products categories. Based on the user decision the system shows the appropriate page to the user. A sample products page is give below
The products page contains the ID of the product, description of the product, image of the product, price of the product. It also contains a text box where user can specify the number of items he want to purchase and an order button. When the user click on the order button the system adds this product to the shopping cart of user and updates the shopping cart status. After this the user has option to continue shopping or to place the order. The user can go to the “Send Order” page anytime during the shopping
process by clicking the “Check Out” link on the top menu. When the user click the check out link in the top menu then the systems initiates a wizard which asks for some information from the user. The steps involved in this process are

- **Terms & Conditions**
  - System displays the terms and conditions of the company under which this buying process carried out. All the users must have to accept these terms and conditions to become eligible for purchasing goods from the web shop.

- **Shipping Methods**
  - The system displays all the available shipping methods currently used by the company for the delivery of products. Users can choose the method which suits them from a drop down list.

- **Payment Methods**
  - The system displays all the available methods used by the company for payments. Users can select the method of their choice from the drop down list.

- **Using Discount Coupons**
  - The system asks from users whether they have some discount coupons. If yes they can use their coupons but entering the coupon number.

- **Confirmation of Order**
  - At the end the system display a conformation message containing the text that the order has been completed successfully.

At the completion of the order wizard the system submit this order to the administrator for approval and shows the complete details of the order to the user. These details are also available in PDF format for printing or for download. A snapshot of this page is given here.
The system also sends a confirmation mail to the user and informs the administrators about the order. Now the user has to make payment and after receiving the payment administrators approve the order and deliver the products. After approval of administrator the users are informed about their order status by email. They can also check the status of orders by clicking the “My Personal Page” link available at the top menu. So this completes a life cycle of an order. Administrators can delete an order if the payment not arrives within the period specified by the company.
System Design & Functionality, a Review

This chapter was concerned with the design and functionality of the system. The design of the system is very user friendly and it is according to the modern web standards. The system was built by keeping in mind the requirements of company. The system is easy to use both for customers and the staff at company. System is working according to the requirements of company and also it is secure to use. System is highly flexible and adding new features and modules is very easy. Customers can easily view their orders status and they can easily manage their orders. The administrator control panel has options for administrators to manage orders and the overall system through a GUI and they don’t need to edit any code files. So changing the system setting and the look of pages is also very easy and require no high skills. So the system is very simple for customers and for the staff.
Chapter 4: System Behaviors

Introduction

In this chapter we will discuss the system behaviors under different circumstances. We will observe how the system responds differently against different events generated while performing business tasks. This also gives a detailed understanding of what is going on in the background while the users communicate with the system. These kinds of behaviors are very important for a system to work properly under and environment. Because this web shop system is a real world application and will operate in an environment where the company’s customers will communicate with the system and perform different tasks and generate requests for different types of information from the system. So it is very critical for the system to provide the required information and make sure that the request generated by the user was entertained. For every request generated by the user should be ended with the appropriate messages and also if there is any invalid request generated by the user then there should be a warning message to alert the user about it. One another thing to consider here is that in case of any invalid activity the system should not halt. In other words, the system should have the tolerance to meet these kinds of abnormal situations. So in short, this chapter is all about how the system responds to different requests initiated by either staff members or customers.

Our system has two main modules—one is the admin panel and one is the front end for customers. So we will discuss the system behaviors for these two modules one by one.

Behaviors for Events in Administration Panel

Event: Administrator Logged in.

Behavior: The system identifies the currently logged-on user as the administrator and redirects towards the admin panel. In case of a wrong username or password, the system displays a warning message and asks to again enter login details.

Event: The administrator clicks on an item in the “Change Settings” section of administrator control panel
**Behavior:** The system all the current settings to the administrator and also displays the required buttons to edit the settings. However as this section of admin control panel contains different type of items having different settings so the nature of information displayed by the system depends on the type of item selected. Currently there are 9 different items in this section so we will talk about them in nine different cases.

- **Case 1: Orders**
  
  In case of orders the system displays all the orders details to administrator with complete details. Administrator can change the status of any order from here and also delete orders. System also sends emails to customers about any change in their order status.

- **Case 2: Customers**

  The system display customer details to the administrator along with options to edit customer details.

- **Case 3: Admins**

  A list of all administrators is shown to the logged in administrator. But the options to edit these details are only shown to root admin.

- **Case 4: Products**

  List of all products along with their categories is shown by the system along with the controls to edit these details. Also a form to add new product is shown.

- **Case 5: Groups & Categories**

  The system displays all available group and categories and along with the controls to change settings and adding new groups and categories.

- **Case 6: Payment Options**
The currently implemented payment options are shown along with options to add, delete or edit any item.

✓ Case 7: Shipping Options

Show shipping options and controls to edit these settings.

✓ Case 8: Settings

All the global system settings are shown like currency settings, date and time format etc.

✓ Case 9: Discount

Displays the currently offered discount and options to add new discounts are to remove any discount.

**Event:** Administrator clicks on an item from “Edit Files” section of admin control panel.

**Behavior:** The system displays a text editor with all text formatting controls to the administrator along with a “save” button. This is the same behavior for any item chosen from this section of admin control panel.

**Event:** Administrator clicks on an item from “Information” section of admin control panel.

**Behavior:** This section also contains items having different natures and the system behaviors are also different for these items. These behaviors are described in 4 different cases.

✓ Case 1: Stock Management

The system displays the stock information to the administrator. This helps Admins to decide whether to add more items or to determine the users buying trends.

✓ Case 2: Access Logs
The system displays the history of all users who have logged in to the system.

✓ Case 3: Mailing List

Shows the email addresses of all the registered users at web shop.

✓ Case 4: Error Log

All the error logs data is shown to administrator.

**System Behaviors against customer generated events**

**Event:** User Logged in.

**Behavior:** The system displays the front page to the user containing special offers, shopping cart status and all other available options for customers.

**Event:** User clicks on a product’s category link

**Behavior:** The system shows the list of all products under that category along with their details and price.

**Event:** User clicks on “More Information” Button under a product.

**Behavior:** System displays complete product information along with price and placing order options.

**Event:** User clicks on the “Order” Button.

**Behavior:** System adds the current product to user’s shopping cart and display options for further operations e.g. To go for payment or to continue shopping.

**Event:** User clicks on the shopping cart button

**Behavior:** System displays all the items in user’s shopping cart with the options to remove any item.

**Event:** User clicks on the “checkout” button.

**Behavior:** The system initiates a wizard having some steps to make the payment for the items in user’s shopping cart. After successful completion of this wizard system send the order details to administrator and the customer through email.

**Event:** User clicks on “Personal Page” button.

**Behavior:** System opens the personal page of user containing the links for changing user’s account details, orders history, shopping cart details.
Event: User clicks on “Contact” button.

Behavior: System displays the contact us page containing the contact details. When user fill this form and hit the “send” button, an email containing the user’s message is sent to the administrator.

Summary

In this chapter we discussed the different system behaviors in details. We talked about how system behaves for different events generated by normal users and customers. The system was built by keeping all the possible inputs from users in mind and system responds to every event generated by the users and Admins. The system is intelligent enough to distinguish the normal users and the staff members and when a user log in to the system it redirects the normal users and the administrators to their appropriate sections so that each part can do their job easily. The system generates responses against each action performed by the users and also shows the information messages which help the users to interact with the system with ease. System also sends emails to users and administrators on important events.
Chapter 5: Summary and Conclusions

Paramount salt handicrafts are a wholesale Himalayan salt company. The product range of the company consists of all sorts of the salt used in today’s life for instance edible salt, bath salt, salt handicrafts (Lamps & tea lights), road salt and salt used in building salt rooms. The company was planning to launch its business over internet to target more customers. The task in hand was to build a web based shop system for Paramount salt handicrafts. This web based system was built while keeping in mind the business goals and to make the shopping process more easy for customers. Two important goals were the system development cost and the system performance. So the choice of technologies to develop the system was made very carefully to achieve the above mentioned goals. PHP and MYSQL were two main technologies used. These two technologies have several benefits and are considered as the best combination in the market. Despite of the technologies several other techniques were implemented to ensure the reliability of system. The system is built according to the modern web standards. The system is built in such a manner that it requires no special skills to manage the working of system and it is very easy to perform all business tasks for administrators as well as the customers. The system is compatible with any modern web server and it requires no additional hosting resources. The system has enough tolerance to handle the exceptions.
Future Work

Since the system is built according to current business needs. In future may be when company expands its business then there may be needed to add more features into this web shop system. In future this web shop system may be linked with PayPal or any to receive online payments. Also there may be facility to track the shipments directly from user accounts. In future there may be deployment of some other web technologies like Ajax, JQuery to maximize the customer experience. Also there may be an online live support chat system which enables the customers to communicate with the staff members.
References

1. Jing Zhang, Wei Peng, Erliang Zeng, Ramakrishna Varadarajan, Xiaosi Zhou, Fernando Farfán, **BANKING SYSTEM DESIGN DOCUMENT.**
   http://users.cis.fiu.edu/~xzhou001/SDD.pdf

2. **Cascading Style Sheets.** http://www.w3.org/Style/CSS *(Visited January 2010)*

3. **MySQL.** http://www.MYSQL.com *(Visited January 2010)*

4. **PHP usage Graph.** http://training.dmwtechnologies.com/images/phpstats.jpg *(Visited January 2010)*


8. **HTML.** http://www.w3.org/MarkUp *(Visited January 2010)*