



Masters Project Final Report

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Project Title	Web Based System for “Cafe Wee”		
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Web Based System for “Café Wee”

**A dissertation submitted for the Degree of Master of
Information Technology**

**W.T.P.S. Watagedara
University of Colombo School of Computing
2017**



Declaration

The thesis is my original work and has not been submitted previously for a degree at this or any other university/institute.

To the best of my knowledge it does not contain any material published or written by another person, except as acknowledged in the text.

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This is to certify that this thesis is based on the work of Mr. P.S. Watagedara, under my supervision. The thesis has been prepared according to the format stipulated and is of acceptable standard.

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Supervisor Name: Mr. G. Kapila. A. Dias

Signature:

Date:

Abstract

This thesis is an outcome of the final year project of the Master of Information Technology program being held by University of Colombo School of Computing. The project proposal was submitted as per the instructions and guidance of the Supervisor.

Client was selected solely based on the type of the business to match with the desired application. This web based application is developed for a restaurant which has few branches around Avissavella area. At present they do not use any software of this nature and initially they were not interested in implementing new software or any application, since they were comfortable with the manual processes carried out during the last 3 decades. After few discussions and presentations, they welcomed the idea of a web based system, as they were also studying the feasibility of venturing in to online ordering and home delivery business model. The features and functionalities available in the application were developed based on the extensive business process analysis carried out with the owners of the business and benchmarking with comparable application available in this domain.

This online system was done adhering to the Rapid Application Development approach which was well suited for this project. The online system was developed in .NET frame work 4 environment using C #, MS SQL, Bootstrap, Crystal Report, IIS web server, jQuery and JavaScript.

Evaluation and testing of the software was done to validate and verify the system both from engineering and user points of view. The user feedbacks were positive. The system was found to be easy to use and extremely helpful and saving valuable time and money over the previously used manual systems.

The system has a simple design which makes it a user friendly application. Though the system has simple design architecture, it has been developed in a way that could handle all its intended functionalities without requiring major infrastructure facilities. Post implementation of the application, it will significantly increase the sales of the Café and the customized reports will help the management for strategic decision making.

Acknowledgement

This thesis represents not only my final year project; it is a milestone in more than two years of hard work at UCSC to complete the Master Degree in IT.

First and foremost it is with immense gratitude that I acknowledge the support and help of my supervisor Mr. Kapila Dias, for guiding me throughout the entire process of this project. He has been supportive since the day I came up with my first project proposal, which he rejected immediately. But the one he advised me to do worked just fine for me and accepted by the panel.

Dozens of people have helped me to complete my project in many ways. As Mr. Kapila Dias advised me I used C# as my programming language and I take this opportunity to thank my friend Mr. Madhava Bandara who taught me C# which was new to me.

DGM (IT) of National Water Supply & Drainage Board, Mr. Johns Chandradasa did a great favor to me by putting me with programmers of the organization, for the developing of the new billing system, which they did using C# and MS SQL. That gave me hands on experience for my project; otherwise I wouldn't be able to learn a new language this fast. It was a great experience, since it allowed me to grab the most important points to develop my software.

And of course nothing will work properly if Microsoft Developer Network, YouTube and other web sites didn't have free helping for the amateurs like me.

Last but not least I must thank my friends who helped me out in many ways, and all of my family members for allowing me to concentrate on my studies and project work during last two years. Without their help I may haven't been able to finish it at this time.

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Chapter 1: Introduction

“Cafe Wee” is a Restaurant chain, with three branches around Avissawella area, which also has a bakery. It is very popular in Avissawella area for their Cakes along with other bakery items. Owners of “Cafe Wee” want to expand their business further with a Home Delivery facility, where the customer will call any branch and place the order via telephone and make the payment on delivery by cash or card. And they are planning to make facility to allow the customers make the order online and do the payment also online.

They are in search of a system which will facilitate the above given tasks along with their current functions, such as issue bills for the visiting customers, maintaining the stocks of the raw materials and their products, etc.

This Restaurant Management Software for Café Wee is a Powerful Web based Database Application which helps the restaurant management to manage the restaurant more effectively and efficiently by computerizing Meal Ordering, Billing, and Stock Maintenance & Accounting. This application is also designed for inventory control, menu, recipe, sales management. It includes the following Modules;

- User Management
- Menu Management
- Customer Management
- Billing and Printing
- Accountancy and Sales

These modules can be accessed by 5 types of users; namely Admin, Owner, Supervisor, Cashier and Online Customer.

Scope of the proposed system is given below in the Figure 1.

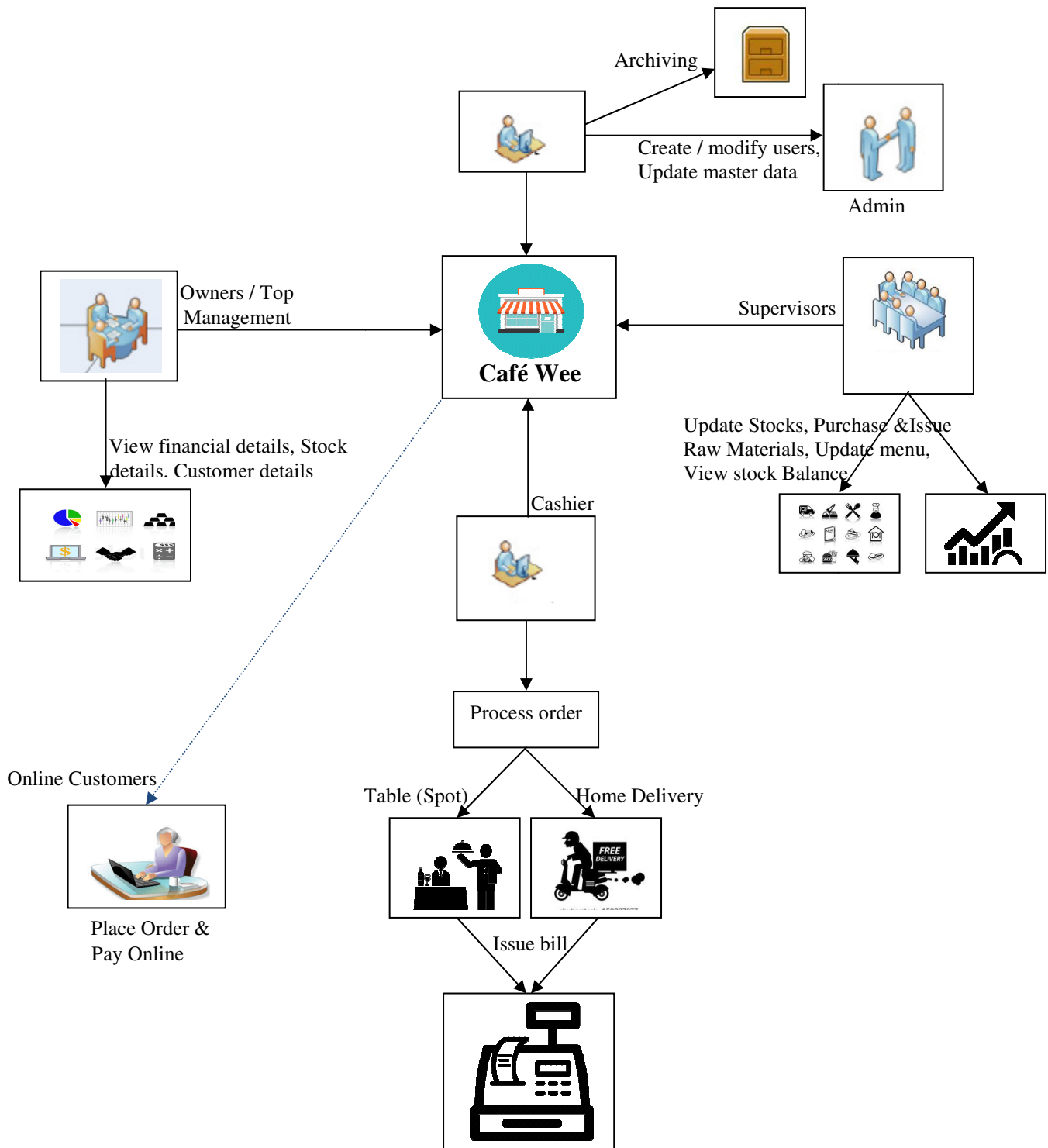


Figure 1 - Scope of the System

This project report covers all the concepts, approaches, technical details of testing and configurations, planning of key functional points in the web based system.

Chapter 2: Background

2.1 Problem & Requirement

Advancements in Information and Communication Technologies (ICT) has been identified and effectively used to face the challenges of business for many years by large number of organizations. Especially restaurant type businesses, like Pizza Hut, Dominos and Steam Boat are in the race to maximize their sales & revenue using ICT heavily with the effective man power.

With the busy life style of many people in and around Colombo and other major cities, online ordering or ordering via telephone is becoming more popular. Most of the people are tend to pay through their credit cards for their purchases. So it is naturally that the traditional businesses have to cope with the new technology available to survive and keep their market share.

2.1 Goal of the project

The goal of this project is to develop a website that can be used as an enrollment website with the features of interaction and problem solving. The whole project will be based on ASP.NET, C# with MS SQL as the database with certain security constraints added to it.

2.2 Fact Finding Techniques

Used the following three methods for fact finding;

- Interview (More details given in the Appendix 02)
- Onsite observation
- Prototyping (Paper prototype)

2.3 Similar Systems

As stated above in Sri Lanka Pizza Hut, Dominos and Steam Boat uses similar kind of software systems. However due to their business restrictions I was unable to have a server side look on those systems. Also I couldn't find similar open source software with the desired functional requirements. Hence basically this is developed from the scratch and had to make few assumptions based on the requirements stated by the stake holders.

Chapter 3: Analysis and Design/ Methodology

In system design, functions and operations are described in detail, including screen layouts, business rules, process diagrams and other documentation. The output of this stage will describe the new system as a collection of modules or subsystems.

The design stage takes as its initial input the requirements identified in the approved requirements document as shown in the **Figure 2 - System Design & Work plan**. For each requirement, a set of one or more design elements will be produced as a result of interviews, Questionnaires and Observations. Design elements describe the desired software features in detail, and generally include Diagrams such as Sequence diagram, Activity diagram, Use Case and a complete entity-relationship diagram with a full data dictionary. These design elements are intended to describe the software in sufficient detail that helps to develop the software with minimal additional input.

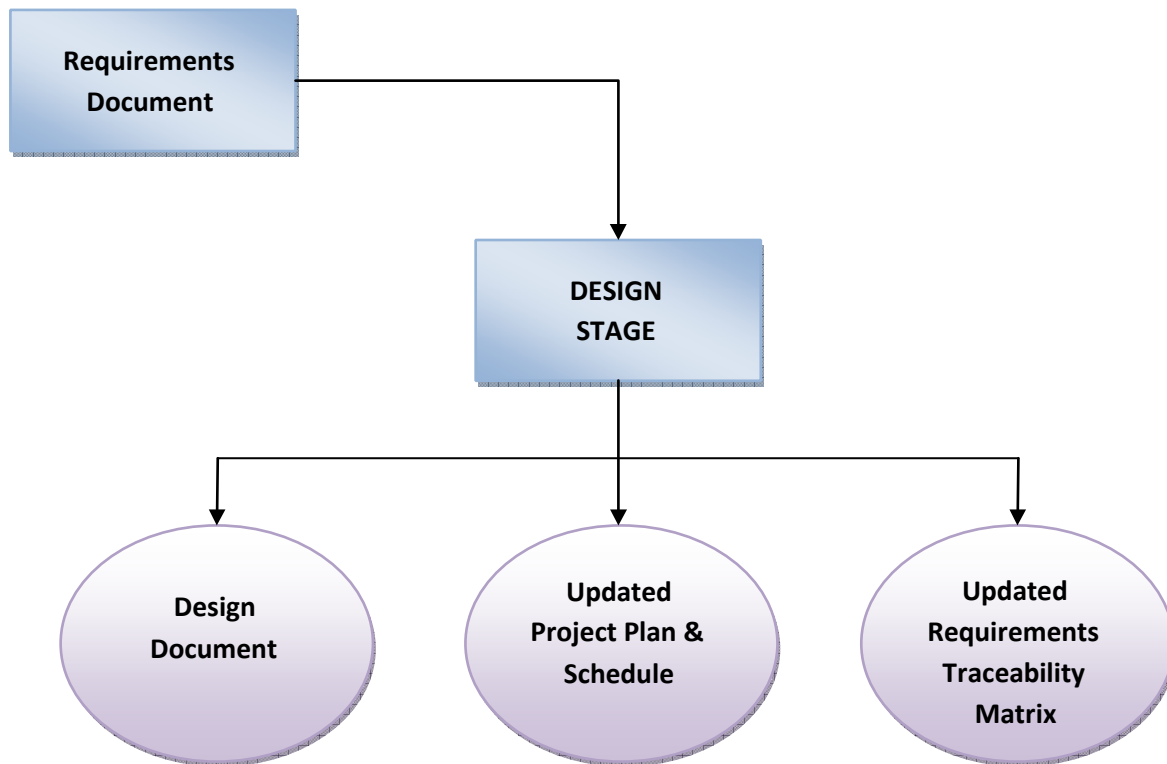


Figure 2 - System Design & Work plan

3.1 Problem Analysis

3.1.1 Applications

The main applications of the Online Shopping/ Placement System are the ability of the website to properly show enroll and manage information about the Café Wee. System should be developed to facilitate online ordering & online payments. Also it has to have the functional requirements given under the section 3.2.1

Computerized system was a new concept for the owners and the employees. Interviewed all the employees to find out their knowledge on new technology and the requirements they expect from a system. Major questions asked from them are given in the appendices section.

3.1.2 Challenges

One of the main challenges in Problem Analysis was the owners and other management staffs were not familiar with a computerized system. Hence no one knew their actual problem or the requirements.

3.2 Requirement Analysis

3.2.1 Functional requirements

A. Administrator

- Add, Modify & Remove Users
- Add, Modify & Remove Categories
- Add, Modify & Remove Products

B. Cashier

- Order placement & Issue food items
- Track & update online orders
- Payments & Issue bills

C. Supervisor

- Update daily stocks
- Track all the orders
- Issue raw materials to bakery

D. Owner / Top Management

- View Customer details
- View Financial details such as Sales & Purchasing
- View Product & Stock details
- Other MIS reports as requirement arises

3.2.2 Non-functional requirements

Performance

System should respond quickly for the requests made by the user. The data will be readily available as soon as the request is made and the information requests from the system will be readily accessible at a single click. Screens should load quickly.

Reliability

Online management system will be completely tested at the time of delivery.

Availability

The system will be available to the user on the internet for 24 hours a day, 7 days a week, even though the Café is closed at nights. A message can be displayed on the Main page about the business hours of the café.

Usability

The system should provide the necessary functions to the users, so they can accomplish their tasks. However, functionality alone is not enough. Make orders online should be as easy as ABC, otherwise customer will not feel comfortable in online purchasing.

3.2.3 Security Constraints

There need to be certain constraints which have to be implemented on the database as well as on the administrator in order to work properly the whole system, such as declaring the primary key, or such constraints in order to keep the database work properly.

Some of such constraints are as follows;

- Each user has a field called username which can be used to differentiate between different users
- The administrator has his own password known to no one else to access a unique page and only the administrator has the right to delete & modify users
- A new user cannot have same username as of some already registered user
- When user or administrator click on logout the session of the user ends and he has to again login using his/her username and password to access the same functionality
- Checks are implemented so that the mandatory fields are filled by users when the user is entering some information in the system
- Latest firewalls and other antivirus and anti-hacking modules are to be used with the website so as to protect the website from external attacks

3.2.4 Security Challenges

The challenges mainly lie in detecting attacks like viruses, hacking and also in the implementation of firewall. A virus can enter the system and can disrupt the working of the website. Hacking can be done by some people who want to access some restricted sections of the website (e.g. administrator's area) and to modify or taper some aspects of the website.

Scanning attacks may yield:

- i. The method used by viruses to enter the system
- ii. The types of database allowed through a firewall
- iii. The paths or ways used by hackers to enter the system
- iv. The loopholes remaining in the system (or website) which are used by attackers
- v. The server from where the viruses or hackers are gaining access to the system
- vi. Types of viruses able to affect the website

With the implementation of firewall and other security mechanisms that are designed for it, the On Line Order/ Placement System will be safe and secured.

3.2.5 User's Access Control

Table 1 to Table 6 shows the desired access control of different modules of the proposed system.

User Management

Forms	Administrator	Manager / Supervisor	Cashier
Create User	✓	✓	x
Users Outlook	✓	x	x
Edit User	✓	x	x
Delete User	✓	x	x
Change Password	✓	✓	✓
Sign Out	✓	✓	✓
Quit	✓	✓	✓

Table 1 - User Management Access rights

Billing Management

Forms	Administrator	Manager / Supervisor	Cashier
Billing	✓	✓	✓

Table 2 - Billing

Menu Management

Forms	Administrator	Manager / Supervisor	Cashier
Add Menu Items	✓	✓	×
View Full Menu	✓	✓	✓
Search Item	✓	✓	✓
Edit Item	✓	✓	×
Delete Item	✓	×	×

Table 3 - Menu Management rights

Customer Management

Forms	Administrator	Manager / Supervisor	Cashier
Add Customer	✓	✓	×
View All Customers	✓	✓	✓
Edit Customer	✓	✓	×
Search Customer	✓	✓	×
Delete Customer	✓	✓	×

Table 4 - Customer Management rights

Order Management

Forms	Administrator	Manager / Supervisor	Cashier
Add Order	✓	✓	×
View All order	✓	✓	×

Table 5 - Order Managements

Accountancy & Sales

Forms	Administrator	Manager / Supervisor	Cashier
View Home Delivery	✓	✓	✓
View Sales	✓	✓	×
View Sales Graph	✓	✓	×
View Tax Collection	✓	✓	×

Table 6 - Accounts & Sales

The design model must achieve the following primary objectives:

- To describe what the customer requires.
- To establish the basis for the enhancement of a software design.
- To define a set of requirements that can be validated once the software is completely enhanced. The main elements of the analysis model are briefly described below.
- At the core of the model lies the *data dictionary*, which is a repository that contains descriptions of all the data objects consumed or produced by the software. Three different diagrams surround the core.
- The **Use Case Diagram** in **Figure 3** issued to describe the set of actions (use cases) that the system should or can perform in collaboration with external users of the system (actors).
- The **Sequence Diagram** in **Figure 4** indicates how the system behaves as a consequence of external events.
- The **ER diagram** in **Figure 5** illustrates the logical structure of the caféwee database.
- The **Class diagram** in **Figure 6** describes the structure of the system by showing the system's classes, their attributes, operations, methods and the relationships among objects in the system
- The **Figure 7** shows some tables related to Users, Customers, Orders & Payment details of the caféwee database

3.3 Use Case Diagrams

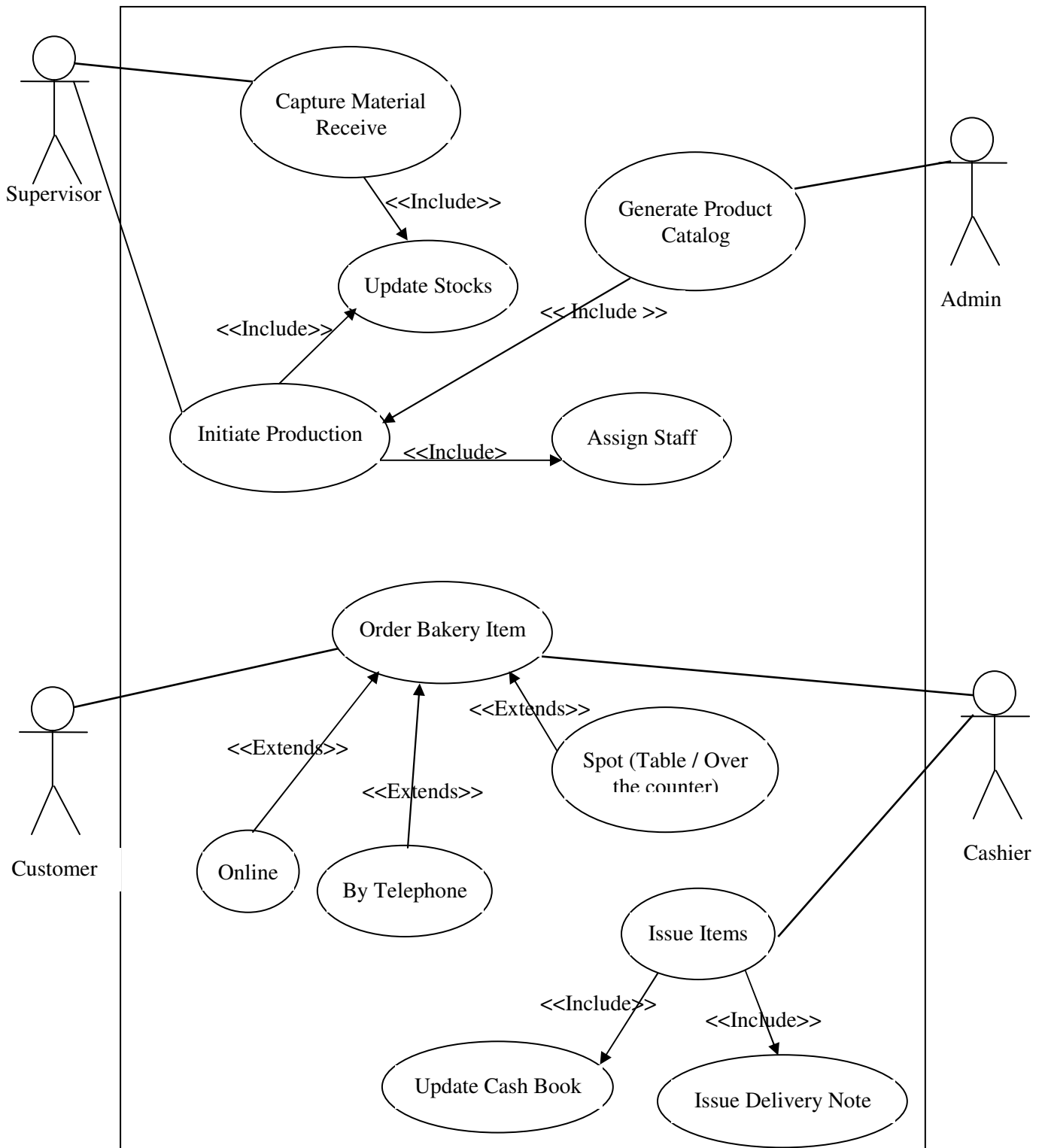


Figure 3 - use case diagrams for stock update & ordering processes

3.4 Sequence Diagram for User Registration and Ordering

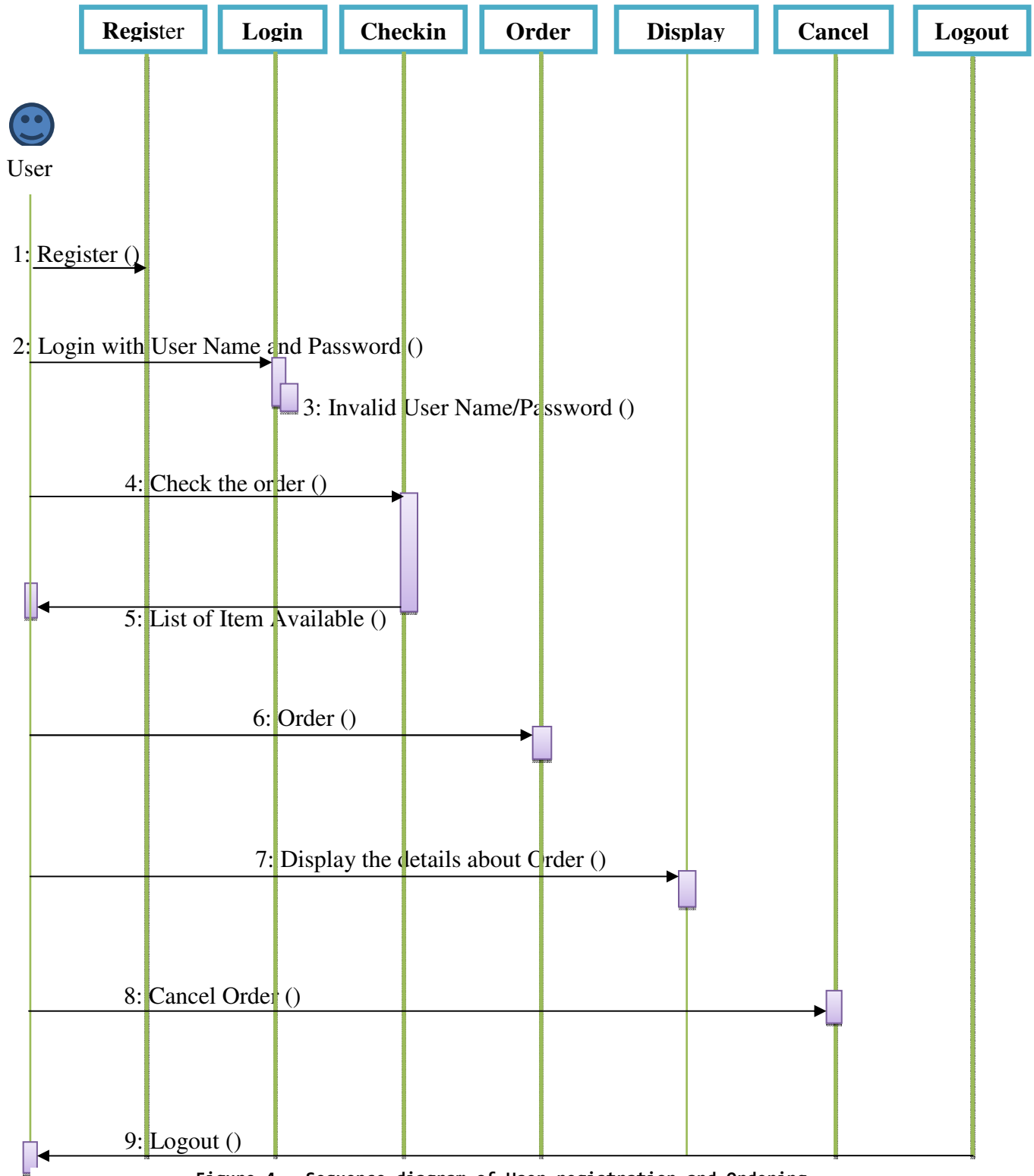


Figure 4 - Sequence diagram of User registration and Ordering

3.5 ER Diagram

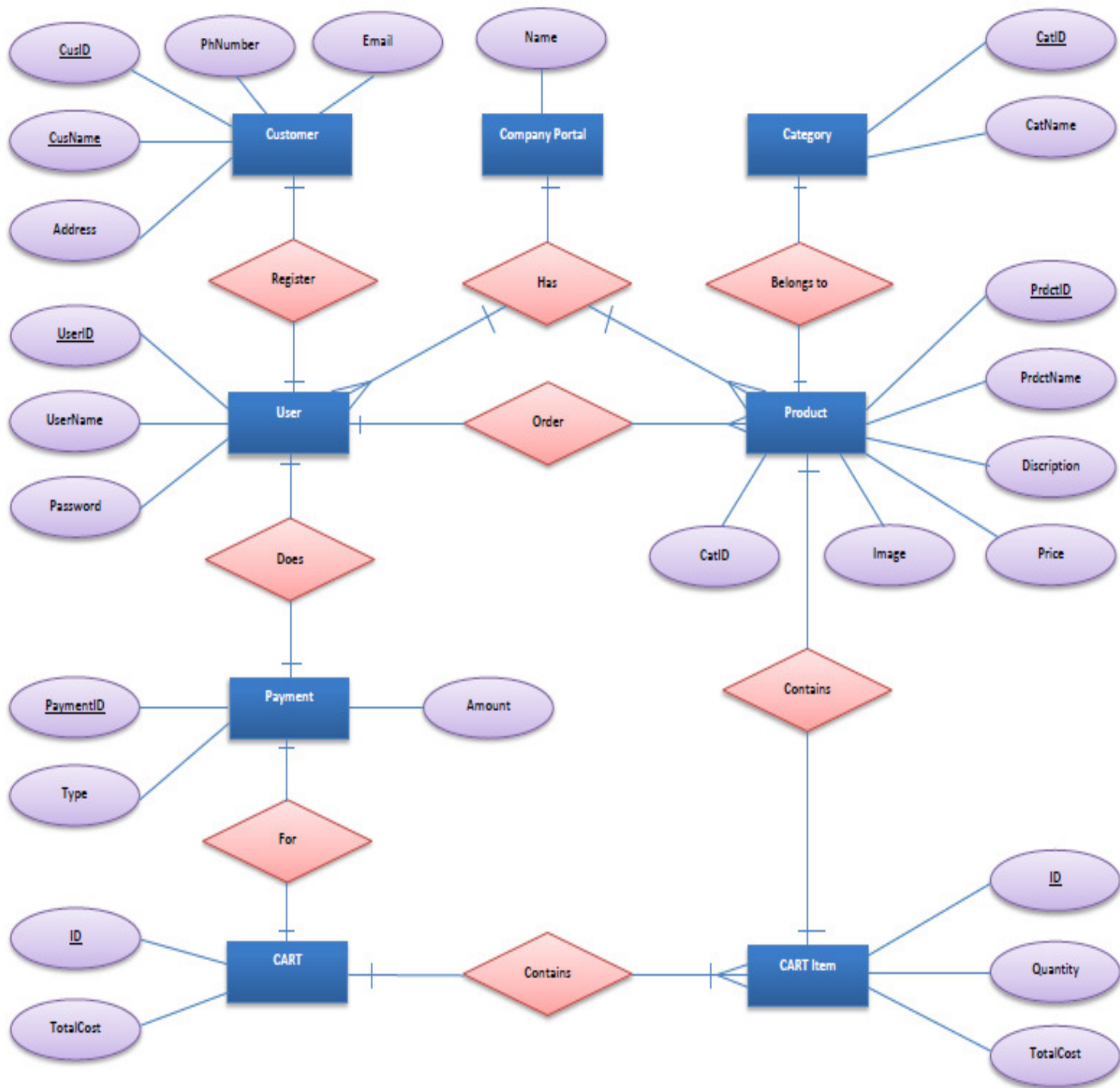


Figure 5 - ER diagram

3.6 Class Diagram

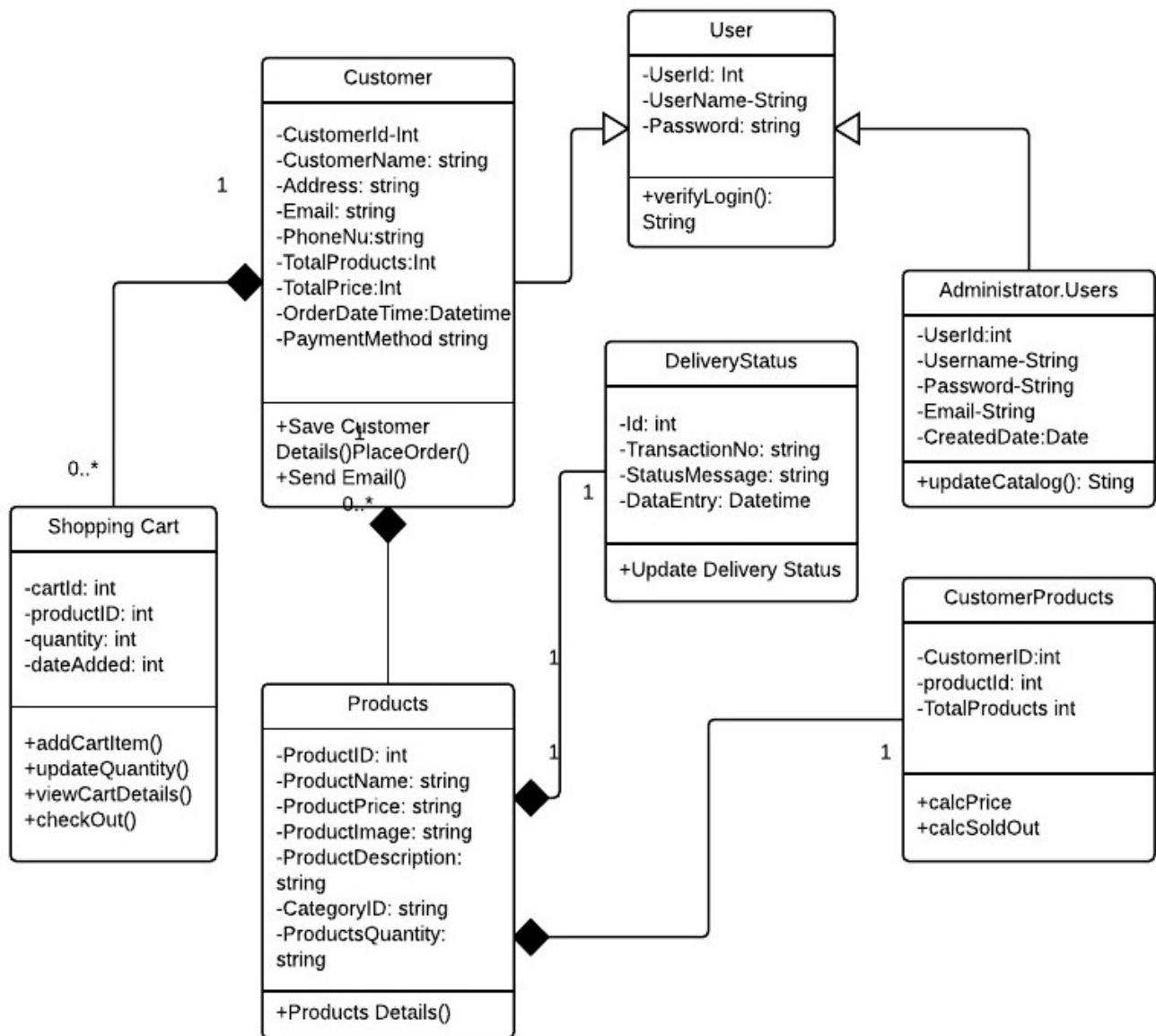


Figure 6 - Class Diagram

3.7 Table Structure for Customer, Product, Payment & User details

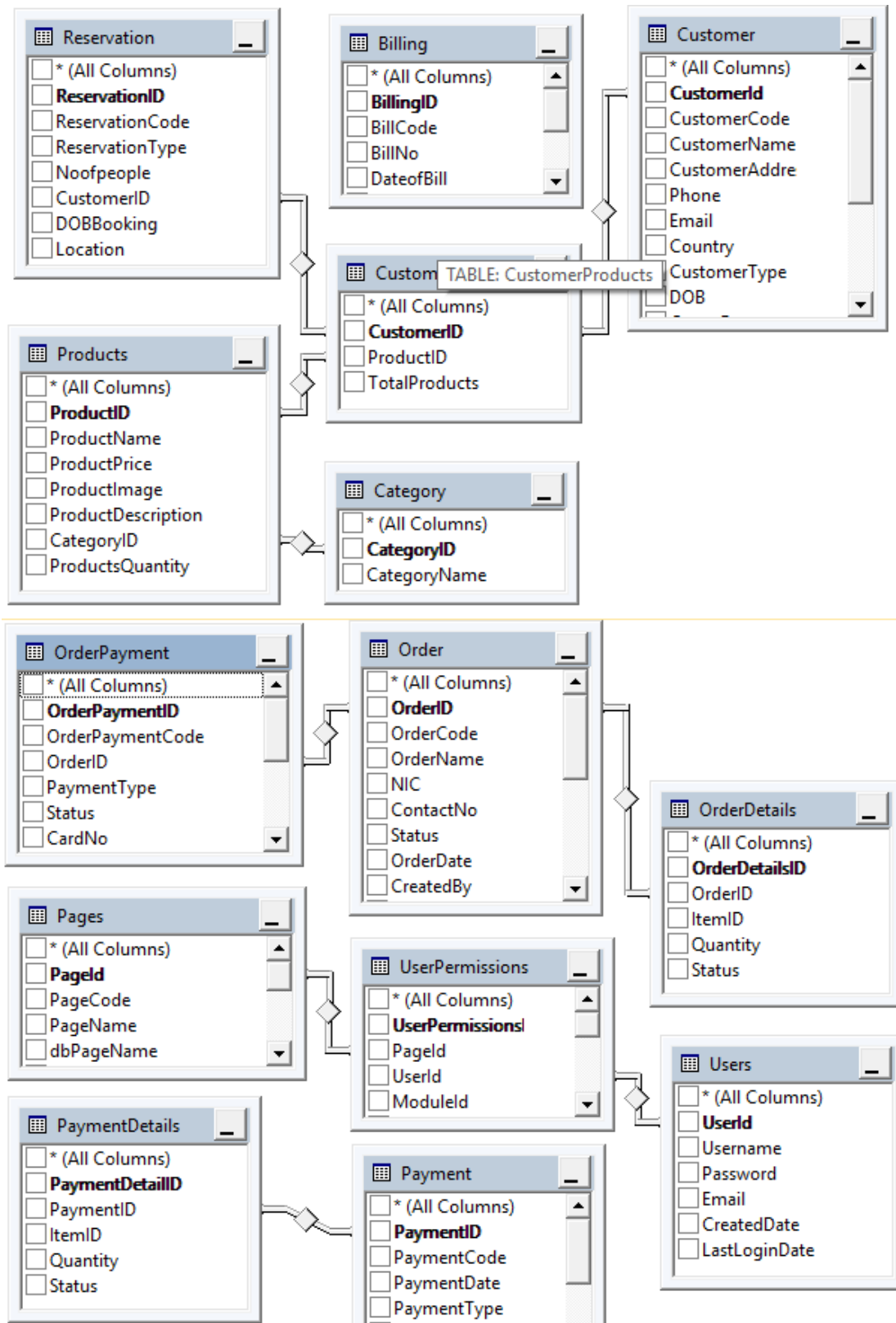


Figure 7 - Table structure for Customer, Products, Payment, Users

Chapter 4: Implementation

4.1 Implementation Requirements

4.1.1 Software requirements

Until the system is hosted on an external domain, it is hosted on a Windows 10 computer.

For the local hosting and future modifications

Windows Server 2012 (or higher version), SQL Server 2014, IIS 10, Crystal Reports, Visual Studio 2010, Dot Net Framework 4.6, Ajax, jQuery, Java Script, Adobe Photo Shop, Bootstrap

For the Customers

Windows XP or higher version, Internet Explorer 8.0 and above, Mozilla Firefox, Google Chrome

4.1.2 Hardware requirements (Minimum)

For Development

Core i3 2.0 GHz, 4 GB of RAM, 500 GB storage

For Internal Users

Dual Core 2.4 GHz, 1 GB of RAM, 80 GB storage

For the online users / customers

Pentium IV 2.0 GHz, 512 GB of RAM, 80 GB storage

4.2 Installation Procedure

4.2.1 Server Installation

This system was developed using C# Object Oriented Programming on .NET Frame Work 4.6. Frontend was designed using Bootstrap and for the Backend MS SQL Server 2012 and jQuery, Java Scripts were used. IIS 10 is used to publish on the local host.

The systems was designed and implemented by considering the portability as well. Hence the installation is straight forward in any compatible environment. This system runs on Windows environments and tested on Linux environments, such as Ubuntu 12.10.

Since the client had his own computer with Core i5 processor, running windows 10 operating system and other applications, only the application software installation was needed.

4.2.2 Client Installation

Since this is a web application, there is no need for a specific installation or deployment method. Internal users can access the system by accessing the URL <http://10.43.0.5/cafewee>. It is tested on Internet explorer, Firefox and Chrome browsers. Microsoft Internet Explorer is usually available in windows operating system. Mozilla Firefox browser or Google Chrome is freely available on the web. It is recommended to use either Firefox or Chrome on Windows 7 or newer. It works fine on Ubuntu 12.10 (Quantal Quetzal) with Firefox.

It is not yet opened for the external customers, since the owners of the café want to monitor the use of the new system. Once the management satisfies with the system they will go for a cloud system for hosting.

Chapter 5: Testing & User Evaluation

Software testing is the process used to measure the quality of developed computer software. Usually, quality is constrained to such topics as correctness, completeness, security, but can also include more technical requirements as described under the ISO standard ISO 9126, such as capability, reliability, efficiency, portability, maintainability, compatibility, and usability. Testing is a process of technical investigation, performed on behalf of stakeholders, that is intended to reveal quality-related information about the product with respect to the context in which it is intended to operate.

Here we have performed the following tests on the system.

5.1 Unit testing

Unit testing, sometimes called development testing, focuses on testing small snippets of code, such as a class, that a developer is writing. These tests are critical to help you make sure that the parts you build work as expected and will work properly when combined with other parts of the application. These tests help manage the application over time, ensuring that the changes you make do not inadvertently affect other parts of the system.

This chapter shows you how to start testing drives in both JavaScript and server code, but does not cover all aspects of unit testing. References to more detailed discussion of unit tests can be found at the end of this chapter. While unit tests for the Mileage Stats application were written using Test-First Development (or Test-Driven Development), this chapter will only cover test-oriented aspects of unit testing, not design aspects.

This chapter does not cover other important aspects of testing, such as performance, stress, safety, automation, deployment, localization, and globalization. Nor does it discuss other important aspects to consider when testing the client side, such as browser compatibility or usability. However, these areas are important for you to consider when testing your web application.

Most Web Applications share a general common theme and structure, e.g.:

- Home
- Product Details Page
- Order Page
- Login Page
- User Registration Page

These “front-end” pages most likely communicate with “back-end” web services, such as Product Search Service, Content Service, Payment Services, Accounts Services, etc. Therefore, it is important when testing Website, that we test individual services in isolation as well as integrated as a whole system.

5.1.1 Testing Shopping Cart

Shopping cart is one of the main features of Our website and thus form the centre piece of testing Website. It allows for customers to select and store multiple items in the cart and purchase them all at once.

Shopping carts have become “intelligent” in a sense that they remember what items you store in them so you can retrieve them at a later date or even from another device.

In most cases, cookies are used to store cart data or if the user has an active account and is logged in, a session id can be stored against the user in the database. Either way, there are some key test cases which should be part of testing a shopping cart

5.1.1.1 Add one item to the cart

The cart should be updated with the item with correct name, image and price.

5.1.1.2 Increase the quantity of item from the cart

The price should be updated to reflect the correct figure.

5.1.1.3 Add the same item multiple times

There should be one item in the cart, but the quantity should reflect the number of additions and the total price should reflect the sum of the price of each item.

5.1.1.4 Remove some items from the cart

The cart should update showing the existing items in the cart; total price should reflect the new sum.

5.1.1.5 Remove all items from the cart

Cart balance should be zero; no items should be displayed in the cart.

5.1.1.6 Click on an item in the cart

We should be able to see more information about the product we just clicked redirecting to product page.

5.1.1.7 Add item(s) to the cart, close the browser and reopen the same site

An ideally the cart should still hold your items.

5.1.2 Create Account and Login

Website allows you to purchase an item as a guest, i.e. without the need to create an account, and then an optional step to create an account when an order is placed.

When an account is created, the user can login at any stage during a purchasing journey. It is important that we test all these variations along the user journey when testing Website.

5.1.3 Purchase an item as a guest

If the site permits, test that you can purchase an item without having to create an account, Not Need the create Account

5.1.4 Existing and new accounts

Purchase an item with an existing account and with a newly created account.

5.1.4.1 Create account and login before purchase

This is to test that the item you purchase gets added and connected to the correct account. Also you should not be prompted to login again once you have already been logged in.

5.1.4.2 Login redirects

Check the behavior of login feature on different pages. Some sites redirect the user back to the same page where they clicked the login link and some sites redirect the user to the accounts pages. This should be tested thoroughly.

5.1.4.3 Login and Logout

When you are logged in, logout and make sure you are logged out and that you cannot access any of the accounts pages.

5.1.5 Payments

5.1.5.1 Payment types

Different payment types should all be tested, e.g. Credit Card, etc.

5.2 Verification & Validation

Software testing is used in association with verification and validation (V&V). Verification is the checking of or testing of items, including software, for conformance and consistency with an associated specification. Software testing is just one kind of verification, which also uses techniques such as reviews, inspections, and walkthroughs. Validation is the process of checking what has been specified is what the user actually wanted.

- Verification: Have we built the software right? (i.e. does it match the specification).
- Validation: Have we built the right software? (i.e. Is this what the customer wants?)

Test result of system validation is given in the Appendices section

5.2.1 Validation

5.2.1.1 Login

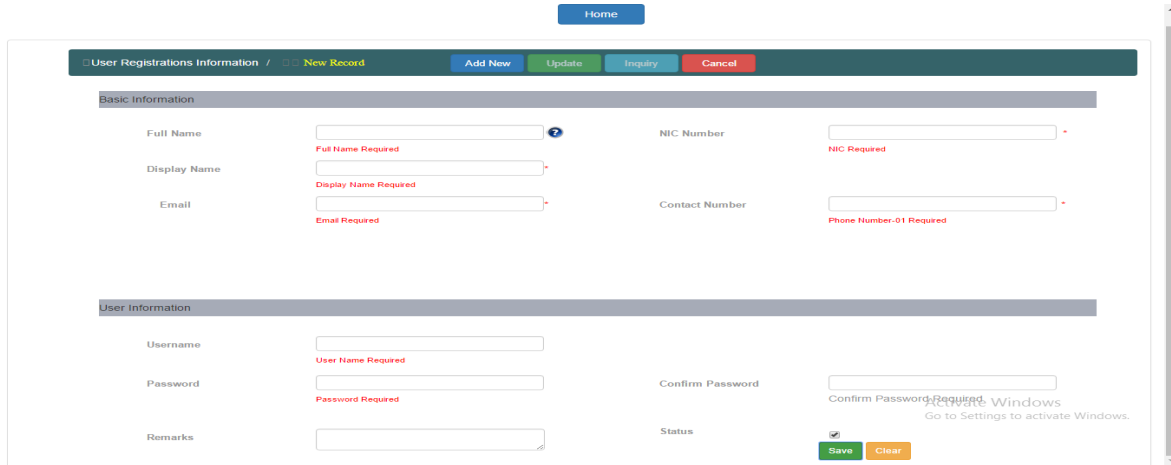
If the user enters a wrong User Name or Password, access will be denied.



Figure 8 - Login validation

5.2.1.2 User Registration

Form should be duly filled before saving; otherwise it will display an error message. Mandatory fields cannot leave in blank.



The screenshot shows a web application interface for user registration. At the top, there is a navigation bar with a 'Home' button and a breadcrumb trail: 'User Registrations Information / New Record'. Below this are buttons for 'Add New', 'Update', 'Inquiry', and 'Cancel'. The form is divided into two sections: 'Basic Information' and 'User Information'. In the 'Basic Information' section, there are four input fields: 'Full Name', 'Display Name', 'Email', and 'Contact Number'. Each of these fields has a red error message below it: 'Full Name Required', 'Display Name Required', 'Email Required', and 'Phone Number-01 Required' respectively. The 'NIC Number' field is empty and has a red error message 'NIC Required'. In the 'User Information' section, there are three input fields: 'Username', 'Password', and 'Confirm Password'. The 'Username' field has a red error message 'User Name Required'. The 'Password' field has a red error message 'Password Required'. The 'Confirm Password' field is empty and has a red error message 'Confirm Password Required'. There is also a 'Remarks' field and a 'Status' field with a checked checkbox. At the bottom right of the form, there are 'Save' and 'Clear' buttons. A Windows watermark is visible in the bottom right corner of the screenshot.

Figure 9 - User registration validation

5.2.1.3 Empty shopping cart

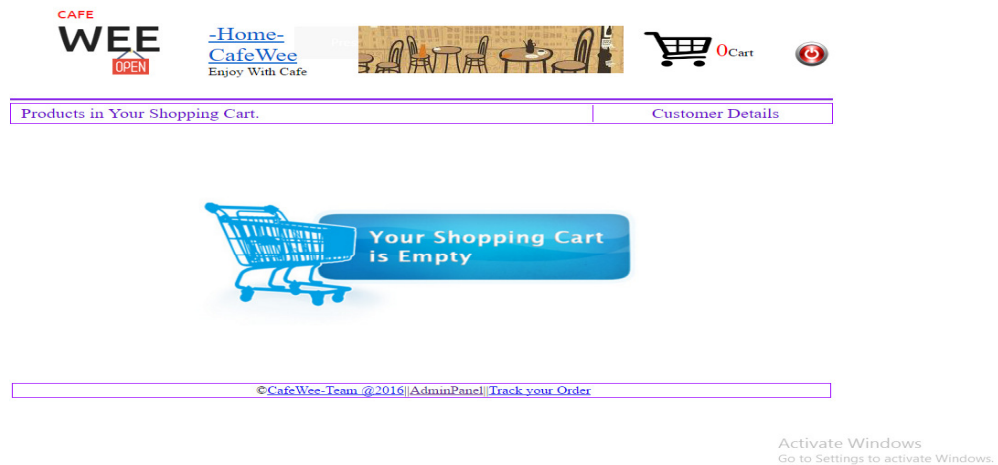


Figure 10 - Empty Shopping Cart

5.2.1.3 Number of items available to shopping cart

User will not be permitted to add more quantities than available stock. Requesting quantity always should be less than or equal to available stock. If someone tries to add more quantity than available, system displays an error message.

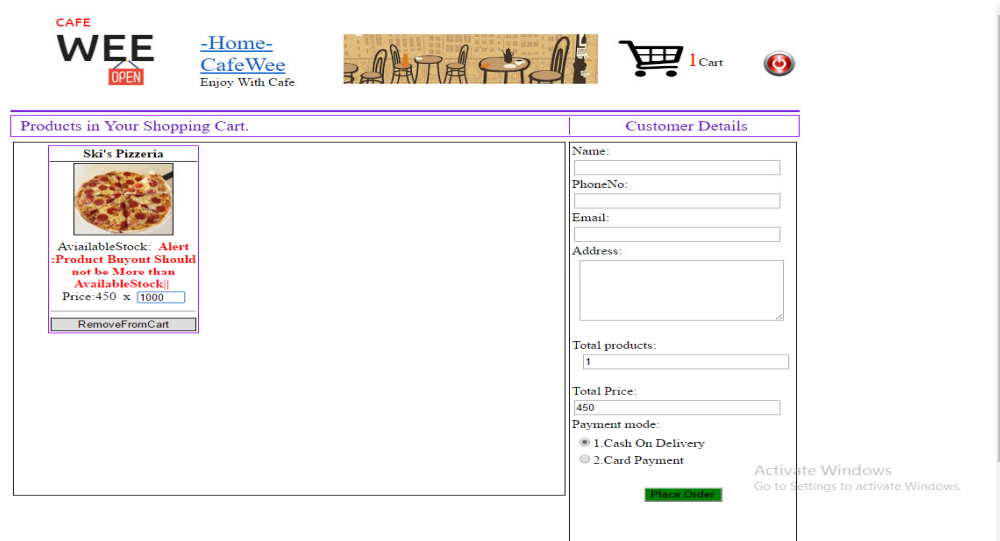


Figure 11 - Allowed quantity vs. Available stock

5.2.1.3 Customer details to place the Order

All the mandatory details must be filled in order to place an order.

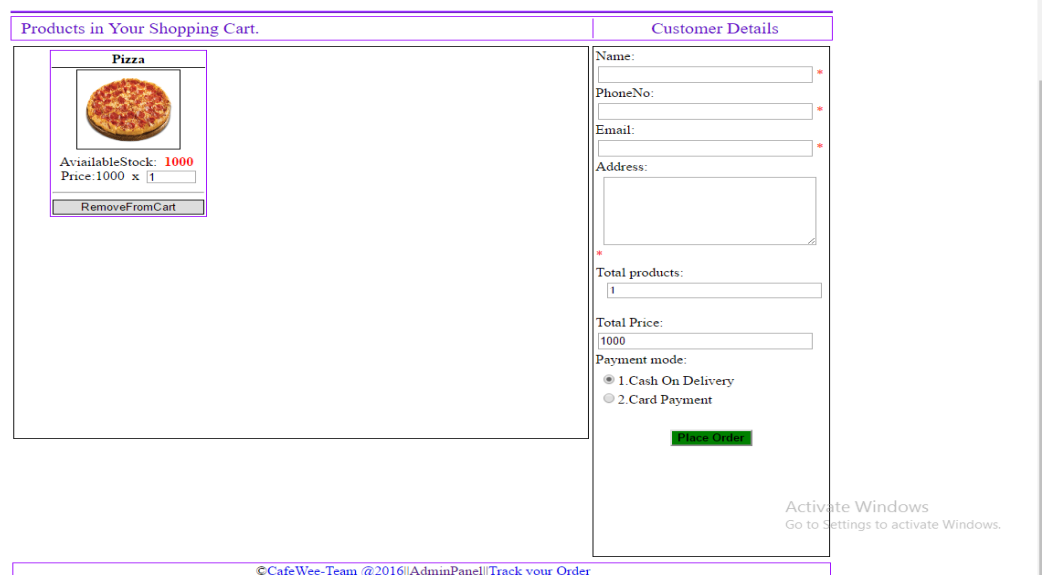


Figure 12 - Customer Details

5.2.1.6 Admin Panel

i. Login

As online user login, here also system validates the User name & Password

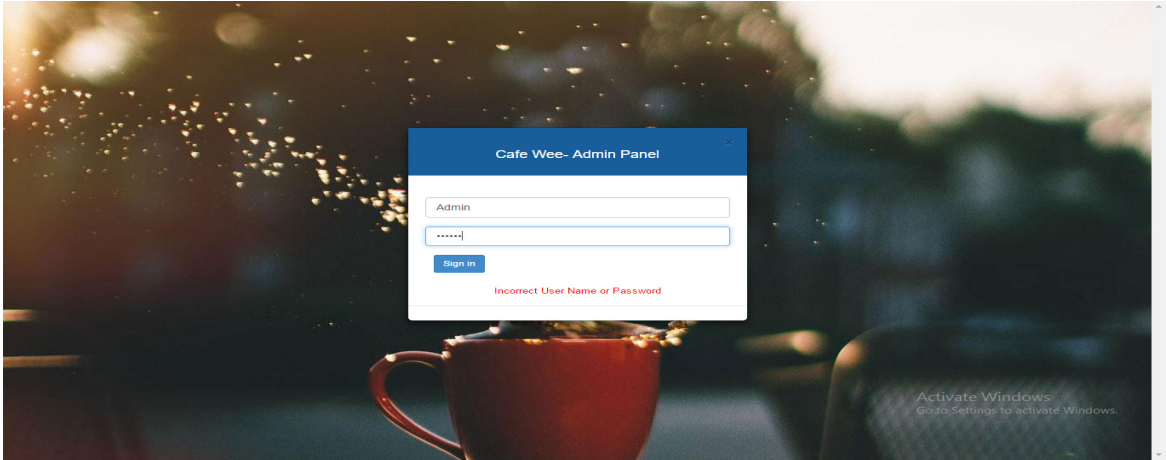


Figure 13 - Login validation

ii. In-house user registration – Detail validation



Figure 14 - In-house user registration

iii. In-house user registration – Avoid Duplicate user names

System doesn't allow save user name to be given to more than one user, to prevent errors & complications.

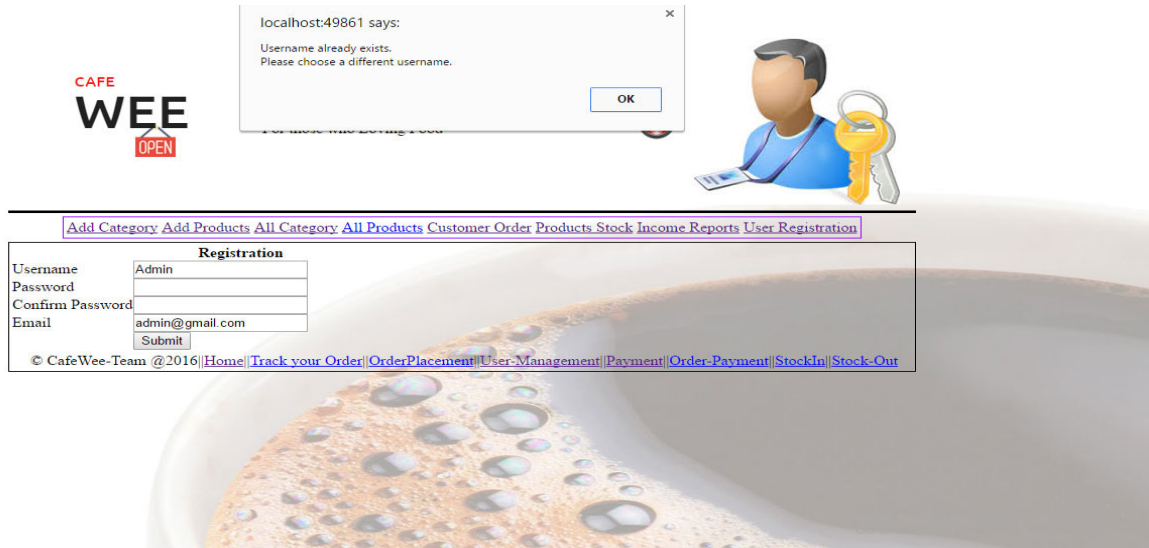


Figure 15 - Avoid Duplicate user Accounts

5.2.1.7 Cashier functions

i. Order Placement

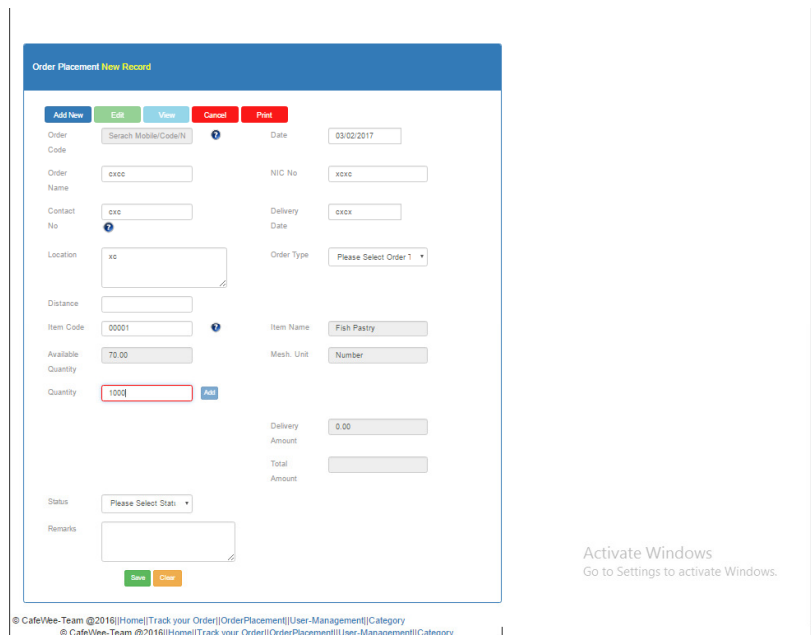


Figure 16 - Order detail validation

ii. Payment

All mandatory details must be filled before saving.

The screenshot shows the 'Order Payment New Record' form in the CafeWee Restaurant Shopping application. The form is titled 'Order Payment New Record' and has a blue header. Below the header, there are navigation links: 'Add Category', 'Add Products', 'All Category', 'All Products', 'Customer Order', 'Products', 'Stock', 'Income Reports'. The form itself contains several input fields and buttons. At the top left, there are buttons for 'Add New' (blue), 'Edit' (green), 'View' (light blue), and 'Cancel' (red). Below these are the following fields: 'Order Pay Code' with a 'System Generate' button and a help icon, 'Date' with a date picker showing '03/02/2017', 'Order Code' with a text input and a help icon, 'Owner Name' with a text input, 'Date' with a date picker, 'Contact No' with a text input, 'Location' with a large text area, 'Total Amount' with a text input, 'Payment Type' with a dropdown menu showing 'Select Payment Ty', 'Card No' with a text input, 'Status' with a dropdown menu showing 'Select Status', and 'Remarks' with a large text area. At the bottom of the form, there are 'Save' (green) and 'Close' (orange) buttons, and a red text label 'Select Payment Type'.

Activate Windows
Go to Settings to activate Windows.

Figure 17 - Cashier Payment Collection

Chapter 6: Conclusion & Future work

6.1 Conclusion

Almost all the functions requested by the “Café Wee” staff and the management works as per their requirements. Non-functional requirements such as user interface need some alterations and modifications. Not many reports were designed till now but the management has requested a few.

Until we purchased a domain and host the system, we will not be able to test the online working environment in a real world situation. Not much effort was put on the information web site, since the system development took a long time. Once it goes online, information on the website should be updated regularly.

Once the management and the other staff members get used to the system, we can put it online and can do the modifications and updating easily and regularly. Since the system already has necessary functions, they will take orders from their regular customers over the phone.

Since they do not have IT staff, they might need my assistant often. Have to train someone with sound computer knowledge to carry out administration duties, such as Add or Remove Users, Items and etc.

6.2 Future Work

Once the internal staff members get used to the system and when the owners feel it is the right time to move on, first thing in the list is to host the system on a cloud service. Cloud hosting is cost effective with compared to hosting it on own server.

For a monthly cost less than Rs.8,000.00 you get a sophisticated server space where you don't have to worry about the hardware purchasing, maintenance, software, electricity power and security.

Following are the other developments, planned to carry out in the future.

- Online payment facility on Café Wee
 - Visa / Master payment gateway integration
- SMS notification for customer their online purchasing
- Inventory Management System (IMS) for Café Wee
 - Part of an IMS is already in the system, where supervisors able to update raw material details. But the owners want to develop it further
- Application Programming Interface (API) for database integration
- Customer review system
 - Most of the websites, especially online business sites have this function. This is another way of letting the potential customers know about the business
- Mobile App for Android and iOS
 - Mobile app is a common tool used by most businesses today and it attracts more customers
- Outdoor Catering Service – Online booking
 - Café Wee owners are planning to expand their business to outdoor catering and they want to have a facility to let their customers to book online.

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Appendices

Appendix 01: Unit test results

Unit name	Test	System out put	Comments
Login screen	No password	Password field empty	Success
	No user Id	Please enter user ID	Success
	Correct user name, incorrect password	Incorrect user ID or password	Success
	Incorrect user name, Incorrect password	Incorrect user ID or password	Success
	Incorrect user name, correct password	Incorrect user ID or password	Success
	correct user name, correct password	System access	Success
User Registration	Existing user name	User Name Already exists	Success
	Correct user name, Blank Password	Error message	Success
Cashier Functions	Correct user id, incorrect password	Access Denied	Success
Add to Cart	Try to save an empty cart	Empty Shopping Cart	Success
	Try to add quantity more than available stock	Error message	Success

Table 7 - Unit Test Results

Appendix 02: Interview Questions

- Do you use computers regularly?
 - Yes or No
- Do you use Internet?
 - Yes or No
- Have you done any online purchasing?
 - Yes or No
- Do you use a smart phone?
 - Yes or No
- If you are not using computers regularly or if you haven't had a chance to use a computer, do you think that you will be able to learn basic computer skills?
 - Yes, No or May be
- Do you understand simple English words?
 - Yes or No
- What do you expect from a computerized system?
 - Any descriptive answer
- Do you think that a computerized system will help you?
 - Yes No or May be
- Any suggestions?
 - Suggestions or any alternative proposal

Appendix 03: Modules in Restaurant Management System

User Management

User management is a critical part of maintaining a secure system. Ineffective user and privilege management often lead many systems into being compromised. Therefore, it is important that you understand how you can protect your system through simple and effective user account management techniques.

This User Management encloses three categories of users i.e. **Administrator**, **Manager / Supervisor** and **Cashier**. Each of them had given different User Access Control facility. This Module will manage all the information about a user.

- **Create User**

Create a New User Account by assigning a unique User Name and Password to the user along with the User Type. It also comprises user's Bio-data which includes his Full Name, Address, Phone no, E-mail ID, etc. The access of creating a new user is given to Administrator and Manager / Supervisor.

- **User Outlook**

Users Outlook includes the display of the full information of all the users. It is a read-only operation, no editing can be performed.

- **Edit User**

Edit an existing user account if any of the information regarding the user is changed or incorrect. The task of editing the user can only be performed by the Administrator.

- **Delete User**

Delete any user account by using this option. Access is given only to the Administrator.

- **Change Password**

If any of the users wants to Change his/her Password then by using this feature, User can change his/her password. This access is given to all type of users.

Menu Management

In a **restaurant**, a **Menu** is a printed brochure or public display on a poster or chalkboard that shows the list of options for a diner to select. A good restaurant menu design is a key to any restaurant's marketing plan. It expresses your eatery's personality, focuses your overall operations, promotes profitability, establishes your budget and keeps your brand fresh in your customer's mind.

Menu management is done by using following features-

- **Add Menu Items**

In this we Add Items in a Menu by assigning a unique Item Code to each item. When we add any item; we give full description (ingredients), type, price, category for each item. The access of adding the items is given to Administrator and Manager / Supervisor.

- **View Full Menu**

As the name indicates, in this we display the full information of all the items in a menu. Only outlook of all the items is displayed, no editing is performed.

- **Search Item**

When we want to find a single item from a number of items this feature is very useful. Here searching is performed through item name, when we enter name of any item the full information of that item is displayed. This saves lots of time. Searching is performed for editing or deletion also.

- **Edit Item**

Any menu item can be edited as they get changed. After editing we can save the item again, the new changes are updated automatically. Editing is also performed by search also.

- **Delete Item**

By using this feature, we can delete any item from the menu. Deletion is performed by searching also. If we have large number of items and want to delete some item firstly we search that item from menu, item is displayed then we delete that item.

Customer Management

The Customer Management System is an application, which allows the users to store, manage, and exchange customer information for efficient and effective management. It is a broadly recognized, widely-implemented strategy for managing and nurturing a company's interactions with customers, clients and sales prospects.

Customer Management is done by using following features-

- **Add Customer**

In this we can make a New Customer Account which provides full information about the customer like Customer Name, Address, Customer Type, Phone no, etc. We also allot a unique Customer ID to each customer for future use. This customer ID is useful in the case of home delivery.

- **View all Customers**

It includes the display of the full information of all the Customers. It is a read-only operation, no editing can be performed. Only outlook of all the customers is displayed, no changes are performed.

- **Edit Customer**

If any information about the customer has been changed or incorrect then editing can be performed. If we have large number of customers then we can find the customer by using search operation. Then editing will be performed. This saves our lots of time.

- **Search Customer**

Here searching is performed either by customer name or phone number. When we enter customer name or phone number full information of the customer is displayed. Only customer's outlook is there, no changes can be performed in the displayed information.

- **Delete Customer**

We can delete the customer account by using this option. Deletion is also performed by searching, In case we have large number of customer.

Bill Management

User interface is carefully optimized for high speed entering of client orders. The system represents rich set of reports that shows whole picture about restaurant operations and life cycles.

In this module we can create a bill by assigning a unique bill number to each and every bill. Here we prepare bill for Home Deliveries & Walk In customers.

We also provide a facility of discount to our customer. Our bill includes Total Price, Total VAT and Payable Amount. At last bill is raised and we can print out a bill.

Accountancy & Sales

This module contains following features-

- **View Home Delivery**

This feature provides full information about all the Home Deliveries. The information includes Address of Customer, Phone Number, Customer Name, Home Delivery ID, Total Amount etc. It only provides outlook of home delivery, no editing can be performed. We can also find information by using searching operation. When we enter date of home delivery then the full information is displayed.

- **View Sales**

Total Sales of restaurant can be viewed using this feature. Sales can be viewed in three ways-per day, per month, per year. It only provides outlook of sales according to day. When we enter date of sales then full information of sales of that particular day is displayed.

- **View Sales Graphs & Reports**

In this we have the Graphical & Tabular Views of Sales for a selected period

Appendix 03: User Manual

Main page

This is what all the users see at first. Online users and the employees have two separate login places in the Main page. Online users can directly go to the shopping section without login. There is ‘Shop Now’ button for it.

For all the employees, there is a link called “Admin Panel” to login, in the bottom part of the Main page.

Online users can register or login to the system using the link displayed at the top of the screen.

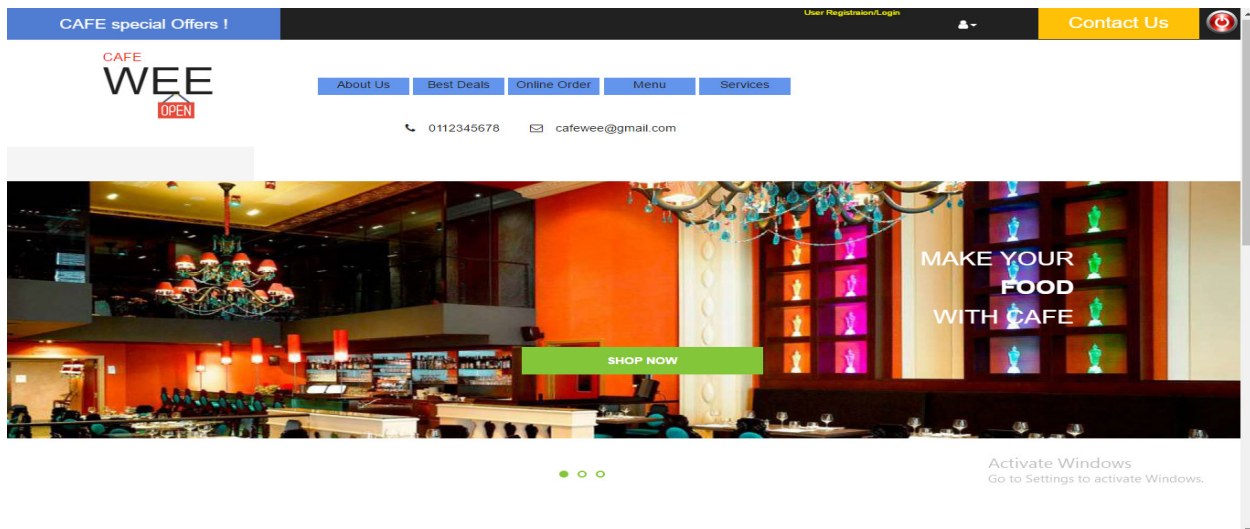


Figure 18 - Main page

Online Ordering page

Once the online user login or directly go to the “Shop Now” link, he will be redirected the page, which displays all the available items. In that grid users can move the mouse pointer on any item and see the available quantity of that particular item at that time.

Once the user clicks on “AddToCart” button, it will display the shopping cart with the selected item.



Popular Products at CafeWee			Products
<p>Pizza</p> <p>Price:1000 stock 1000</p> <p>AddToCart</p>	<p>Deep Dish Pizza</p> <p>Price:1500 stock 1000</p> <p>AddToCart</p>	<p>late night pizza</p> <p>Price:250 stock 100</p> <p>AddToCart</p>	Pizza Rice Beverages cake
<p>SriLankanPizza</p> <p>Price:500 stock 100</p> <p>AddToCart</p>	<p>Ski's Pizzeria</p> <p>Price:450 stock 100</p> <p>AddToCart</p>	<p>Traditional Pizza</p> <p>Price:2500 stock 100</p> <p>AddToCart</p>	

Figure 19 - Online order page

Shopping Cart page

Shopping card page is as shown in the below figure. There you can add or remove items. Once the desired items are selected user can enter his details and confirm the order.

Products in Your Shopping Cart.		Customer Details
<p>Deep Dish Pizza</p> <p>AvialableStock: 1000 Price:1500 x <input type="text" value="1"/></p> <p>RemoveFromCart</p>	<p>late night pizza</p> <p>AvialableStock: 100 Price:250 x <input type="text" value="1"/></p> <p>RemoveFromCart</p>	<p>Name: <input type="text"/></p> <p>PhoneNo: <input type="text"/></p> <p>Email: <input type="text"/></p> <p>Address: <input type="text"/></p> <p>Total products: <input type="text" value="2"/></p> <p>Total Price: <input type="text" value="1750"/></p> <p>Payment mode:</p> <p><input checked="" type="radio"/> 1. Cash On Delivery</p> <p><input type="radio"/> 2. Card Payment</p> <p><input type="button" value="Place Order"/></p>

Figure 20 - Shopping Cart page

User will receive an email like this when he confirm the order.

- Cafe Wee --- Your Order Details

infocafewee@gmail.com

To suchinthaka1@gmail.com

Cafe Wee Restaurant

Hello: **mihiri**,

We Have Received Your Order.

Your Order Number is: **6**


To Check Your Order Click on below link,

[Clcik here to Check your order Status](#)

Figure 21 - E-mail confirmation

In addition to that email, user has the facility to view the order details on the system.

Customer Details Products Details DeliveryStatus



Name:	Prabu
EmailId:	suchinthaka1@yahoo.com
PhoneNo:	0777800151
TotalPrice:	1500
TotalProducts:	1
Address:	<input type="text" value="651, Homagama"/>
PaymentMethod:	1.Cash On Delivery

Figure 22 - View order details

User Registration page

There are few mandatory fields in this page.

Eg. Username, Password, Email Address, NIC Number, Contact Number.

No two users will be allowed to have the same username. Online customers can register by themselves and the other employee registration will be done by the Admin user.

User Registrations Information / [New Record](#) [AddNew](#) [Update](#) [Inquiry](#) [Cancel](#)

Basic Information

Full Name ? NIC Number *

Display Name * DOB *

Email * Contact Number *

User Information

Username User Name Required

Password Password Required Confirm Password

Remarks Status

[Save](#) [Clear](#)

Figure 23 - User registration

Admin page

CAFE WEE OPEN

CafeWee-Restaurant Shopping
For those who Loving Food

[Add Category](#) [Add Products](#) [All Category](#) [All Products](#) [Customer Order](#) [Products Stock](#) [Income Reports](#)

Add New Products

Products Name :

Products Category :

Products Description :

Products Image : No file selected.

Products Price :

Products Quantity:

[Submit](#)

© CafeWee-Team @2016 [Home](#) [Track your Order](#) [OrderPlacement](#) [User-Management](#) [Payment](#) [Order-Payment](#) [Stock-In](#) [Stock-Out](#)

Figure 24 - Admin portal

Order Placement by Cashier

This is pretty straight forward. Just enter the required field. Cashier can move down with either “Enter” key or “Tab”. It will directly go to the print page after saving the details. System has the facility to search and select customers by contact number. This will reduce the time taken to enter same details again and again for frequent customers.

The screenshot shows a web-based form titled "Order Placement". At the top, there is a blue header bar with the title. Below the header, there are five action buttons: "Add New" (blue), "Edit" (green), "View" (light blue), "Cancel" (red), and "Print" (red). The form contains several input fields and dropdown menus:

- Order Code:** A text input field with a search icon and a help icon. The placeholder text is "Serach Mobile/Code/Nar".
- Date:** A text input field containing "01-22-2017".
- Order Name:** A text input field.
- NIC No:** A text input field.
- Contact No:** A text input field with a help icon.
- Delivery Date:** A text input field.
- Location:** A large text area with a search icon.
- Order Type:** A dropdown menu with the selected option "Please Select Order 1".
- Distance:** A text input field.
- Item Code:** A text input field with a help icon. The placeholder text is "ITEM CODE".
- Item Name:** A text input field.
- Available Quantity:** A text input field.
- Mesh. Unit:** A text input field.
- Quantity:** A text input field with an "Add" button next to it.
- Delivery Amount:** A text input field.
- Total Amount:** A text input field.
- Status:** A dropdown menu with the selected option "Please Select Stat".
- Remarks:** A large text area with a search icon.

At the bottom of the form, there are two buttons: "Save" (green) and "Clear" (orange).

Figure 25 - Order placement by cashier