Chapter-1

INTRODUCTION

The Online Shopping is a web based application intended for online retailers. The main objective of this application is to make it interactive and its ease of use. It would make searching, viewing and selection of a product easier. It contains a sophisticated search engine for user's to search for products specific to their needs. The search engine provides an easy and convenient way to search for products where a user can Search for a product interactively and the search engine would refine the products available based on the user's input. The user can then view the complete specification of each product. They can also view the product reviews and also write their own reviews. The main emphasis lies in providing a user friendly search engine for effectively showing the desired results and its drag and drop behavior.

1.1 Need Of New System

Services from a store that serves both walk-in customers and online customers. The online shopping system presents an online display of an order cutoff time and an associated delivery window for items selected by the customer. The system accepts the customer's submission of a purchase order for the item in response to a time of submission being before the order cutoff time. The online shopping system does not settle with a credit supplier of the customer until the item selected by the customer is picked from inventory but before it is delivered. Therefore, the customer can go online and make changes to the order. In addition, available service windows are presented to the customer as a function of customer selected order and service types; and further, the order picking is assigned in accordance with a picker's preference.

1.2 <u>Detailed Problem Definition</u>

To develop a web-based application to improve the service to the customers and merchant which intern increases the sales and profit in "ONLINESHOPPING". The system is capable of maintaining details of various customers, vendors, Products and storing all the day to day transactions such as generation of shipment address bills, handling customers and product receipts, updating of stores.

1.3 <u>Visibility Of The System</u>

Quality problems. It may become clear during the project life cycle that the original quality expectations cannot be met. This can have an impact on the acceptability and hence the usability of the project's outputs by the end user. Changes to quality must be assessed against the benefits. Changes to specifications and scope. As projects progress changes to the plan or even the scope will inevitably be requested. These need to be carefully assessed against the continued ability to deliver the benefits. Time overruns. Some projects have to be delivered within a certain time frame to deliver benefits. Extending time may completely eliminate the benefits. Cost overruns. If the project is based on a rate of return on capital invested, then an increase in project costs can eliminate this.

1.4 Future Prospects

The process of online shopping will flourish in the coming years as well due to its capability of providing a larger platform for approaching our potential customers. These sites can help the online shopping and businesses to grow with greater speed and thereby earn more money. The content that company owners utilizes for online

shopping will be search engine friendly. These site will help the customers to buy goods directly by their credit cards. These site will use Bill Desk for the customers who can buy it directly by their cards.

A few points which speak in favor of e-commerce are:

- 1. Marketing is very important and it is generally believed that online people are easier to target. The savings in marketing costs can be passed on and prices can be reduced.
- 2. Now it is actually possible to get a product at less than what the manufacturer is selling it for.
- 3. FDI will help improving the efficiency in supply chain.
- 4. FDI will also help in boosting the confidence levels of the customers in which foreign players will play an important role.
- 5. The industry is still in the growth phase so profit margins are still likely to be high. The B2C e commerce is likely to be the main engine driving growth in the immediate future.
- 6. Spontaneous activity has reduced considerably and consumers now try to make better use of the time spent online.

2.1 Requirement Analysis

> Information Gathering

As the goal of the application is ease of use and to provide an interactive interface, extensive research has been done to gain an insight into the needs and behaviors of various users. The working of the application is made convenient and easy to use for the end user.

Users can be classified into two types based on their knowledge of the products that suit their needs. They can be classified as users who know about the product that would satisfy their needs and users who have to figure out the product that would satisfy their needs. Users who know about the product should be able to find the product easy with the click of a button. Such users can search for the product by using the product name as the search term. Users who have to figure out the product that would satisfy their needs could use a search term to find a list of products and then should be able to filter the results based on various parameters like product type, manufacturer, price range, platform supported etc.

The users should be able to view the complete specification of the product and various images at different Zoom levels. The user should be able to read the customer reviews for the product and the ratings provided. They should be able to write their own reviews. They should be able to print out the specifications for a product or email the product page to a friend's etc.

To increase the ease of use the user should be able to add a product to the shopping cart by dragging a product and dropping it in the shopping cart. A user should able to edit the contents of a shopping cart. They should be able to update the quantities of the products added to the cart and remove the products from the cart. The user should be able to remove the product from the shopping cart by dragging the product and dropping it outside the cart.

The application can be made interactive by pop up messages when a product has been dropped in to the shopping cart or out of the shopping cart. The user can be notified if the cursor enters a drop area and the object that could be dropped. Also users are impatient making it important to load pages soon.

2.2 Project Model

Incremental model in software engineering is a one which combines the elements of waterfall model which are then applied in an iterative manner. It basically delivers a series of releases called increments which provide progressively more functionality for the client as each increment is delivered.

In incremental model of software engineering waterfall model is repeatedly applied in each increment. The incremental model applies linear sequences in a required pattern as calendar time passes. Each linear sequence produces an increment in the work.

As from the diagram you can see that there are 5 phases(tasks) which are carried out in each increment. If you want to see what activity is carried out in each phase then check out this post: Phases of waterfall model as the phases are same.

The first increment is often a core product where the basic requirements are addressed and the supplementary features are added in the next increments. The core product is used and evaluated by the client. Once the core product is evaluated by the client there is plan development for the next increment. Thus in every increment the needs of the client are kept in mind and more features and functions are added and the core product is updated. This process continues till the complete product is produced.

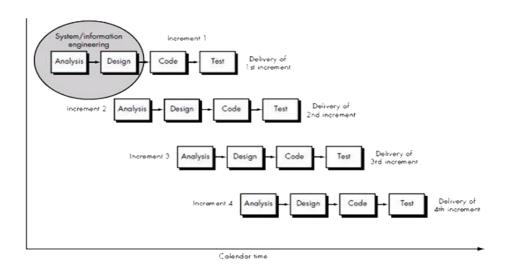


Figure 2.1 Incremental Model

The increments earlier to the main increment are called as "stripped down" versions of the final product. These increments form a base for customer evaluation. On this basis client can suggest new requirements if required.

If there are less number of employees to work on the project Incremental development model is very useful to complete the project before the deadline. In a project early increments can be done with less number of people. In case if the core product is well-defined and understood more employees can be added if needed in the future increments.

One of the benefits of Incremental process model is that it can be planned to manage technical risks.

2.3 Schedule Representation

ACTIVITY	START DATE	FINISH DATE
Requirement Analysis	20/08/2014	3/09/2014
System Analysis	04/09/2014	14/09/2014
System Design	15/09/2014	15/12/2014
System Coding	21/12/2014	10/03/2015
Testing and Integration	11/03/2015	04/04/2015

2.4 Feasibility Study

2.4.1 - System Feasibility

The system feasibility can be divided into the following sections:

2.4.2 - Economic Feasibility

The project is economically feasible as the only cost involved is having a computer

with the minimum requirements mentioned earlier. For the users to access the

application, the only cost involved will be in getting access to the Internet.

2.4.3 - Technical Feasibility

To deploy the application, the only technical aspects needed are mentioned below:

Operating Environment Win XP/7/8/8.1/10

Platform JAVA

Database JDBC

For Users: Internet Browser, Internet Connection

2.4.4 - Behavioral Feasibility

The application requires no special technical guidance and all the views available in

the application are self-explanatory. The users are well guided with warning and

failure messages for all the actions taken.

2.5 - Java Technology

Java technology is both a programming language and a platform.

Java Programming Language

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The Java programming language is a high-level language that can be characterized by all of the following:

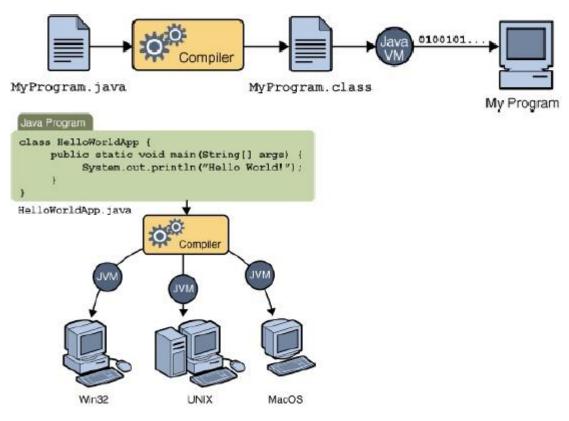


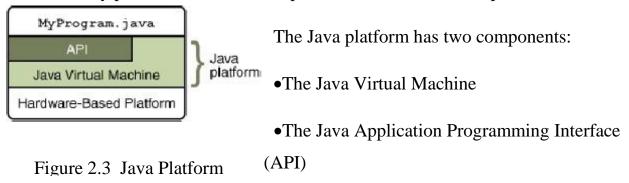
Figure 2.2 JVM

- Simple
- Object oriented
- Distributed
- Multithreaded
- Architecture neutral
- Portable
- High performance

In the Java programming language, all source code is first written in plain text files ending with the .java extension. Those source files are then compiled into .class files by the java c compiler. A .class file does not contain code that is native to your processor; it instead contains byte codes he machine language of the Java Virtual Machine1 (Java VM). The java launcher tool then runs your application with an instance of the Java Virtual Machine.

2.5.1 - The Java Platform

A platform is the hardware or software environment in which a program runs. Most platforms can be described as a combination of the operating system and under lying hardware. The Java platform differs from most other platforms in that it's a software-only platform that runs on top of other hardware-based platforms.



The API is a large collection of ready-made software components that provide many useful capabilities. It is grouped into libraries of related classes and interfaces; these libraries are known as packages.

Every full implementation of the Java platform gives you the following features:

Development Tools: The development tools provide means for compiling, running, debugging, and documenting your applications. The main tools are the java c compiler, the java launcher, and the java doc documentation tool.

- ➤ Application Programming Interface (API): The API provides the core functionality of the Java programming language. It offers a wide array of useful classes ready for use in your own applications. It spans everything from basic objects, to networking and security, to XML generation and database access, etc.
- ➤ **Deployment Technologies**: The JDK software provides standard mechanisms such as the Java Web Start software and Java Plug-In software for deploying your applications to end users.
- ➤ User Interface Toolkits: The Swing and Java 2D toolkits make it possible to create sophisticated Graphical User Interfaces (GUIs).
- ➤ Integration Libraries: Integration libraries such as the Java IDL, JDBC, JNDI, Java RMI, and Java Remote Method Invocation over Internet Inter-ORB Protocol Technology (Java RMI-IIOP Technology) enable database access and manipulation of remote objects.

2.5.2 Java - Exception Handling

An exception is an event, which occurs during the execution of a program, that disrupts the normal flow of the program's instructions. When an error occurs within a method, the method creates an object and hands it off to the runtime system. The object, called an exception object, contains information about the error, including its type and the state of the program when the error occurred. Creating an exception object and handing it to the runtime system is called throwing an exception. After a method throws an exception, the runtime system attempts to find something to handle it. The set of possible "something's" to handle the exception is the ordered list of methods that had been called to get to the method where the error occurred. The list of methods is known as the call stack.

2.5.3 Java Multithreading

Threads are called lightweight processes. Threads exist within a process every process has at least one. Threads share the process's resources, including memory and open files. This makes for efficient, but potentially problematic, communication.

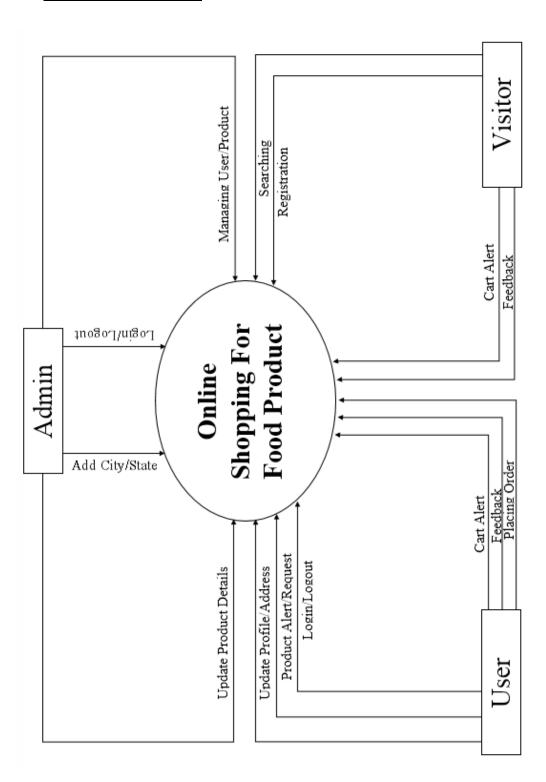
2.5.4 Java - JDBC

JDBC stands for "Java Database Connectivity". It is an API (Application Programming Interface) which consists of a set of Java classes, interfaces and exceptions and a specification to which both JDBC driver vendors and JDBC developers adhere when developing applications. JDBC is a very popular data access standard. RDBMS (Relational Database Management Systems) or third-party vendors develop drivers which adhere to the JDBC specification. Other developers use these drivers to develop applications which access those databases. The JDBC API is a Java API that can access any kind of tabular data, especially data stored in a Relational Database.

Other Feature needs consists study of:-

- 1) Java server pages
- 2) Java servlet Technology
- 3) Web components

3.1 Context Diagram



3.2 Data Flow Diagram

Data Flow Diagram For Admin(Level 1)

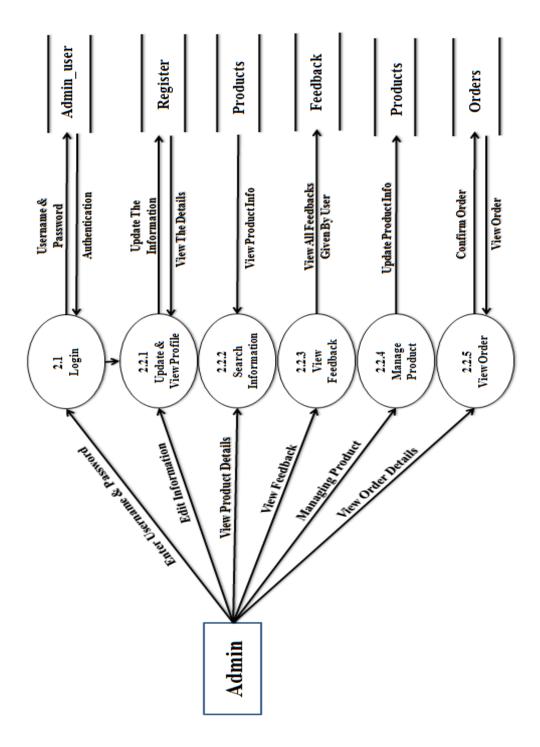
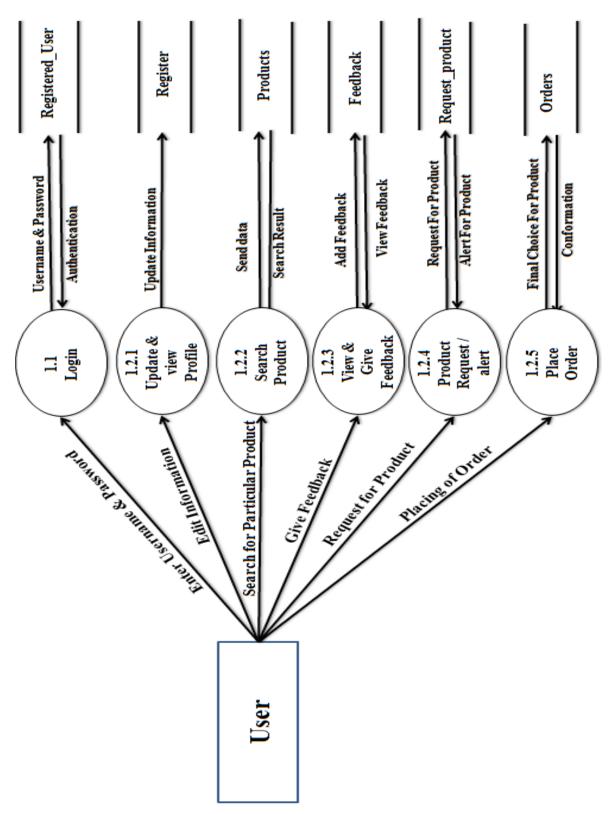


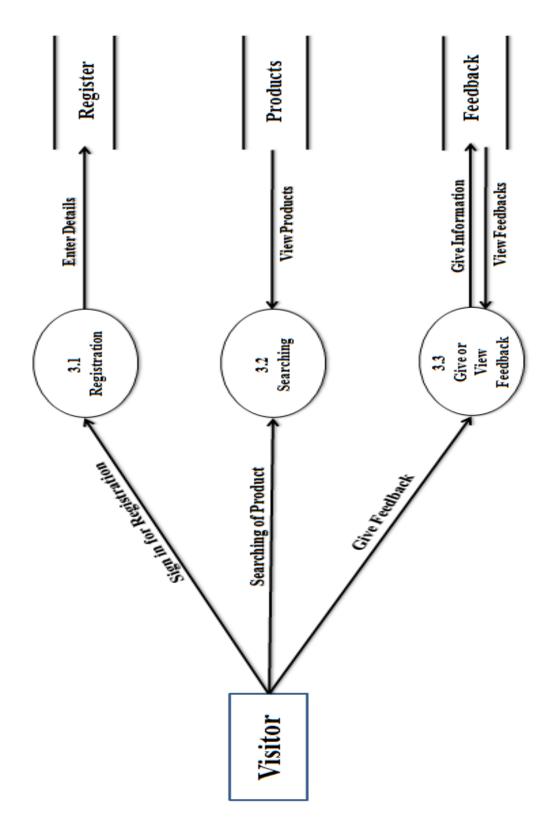
Figure 3.2 DFD Admin (level 1)

Data Flow Diagram For User (Level 1)



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Data Flow Diagram For Visitor



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Figure 3.4 DFD Visitor (level 1)

Data Flow Diagram For Admin (Level 2)



Figure 3.5 L-2 Admin-Login

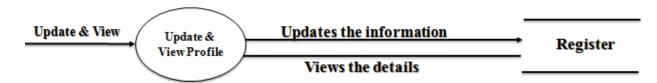


Figure 3.6 L-2 Admin-Update Profile

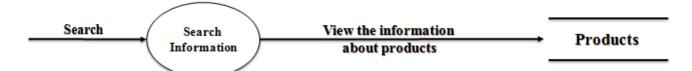


Figure 3.7 L-2 Admin-Search Information

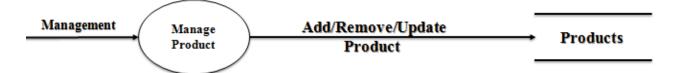


Figure 3.8 L-2 Manage Product

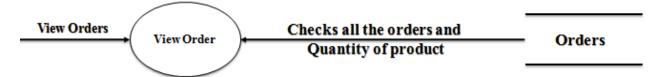


Figure 3.9 L-2 Admin-View Order

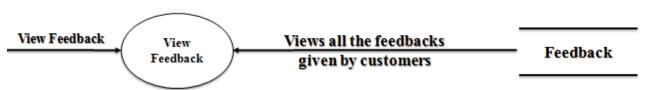
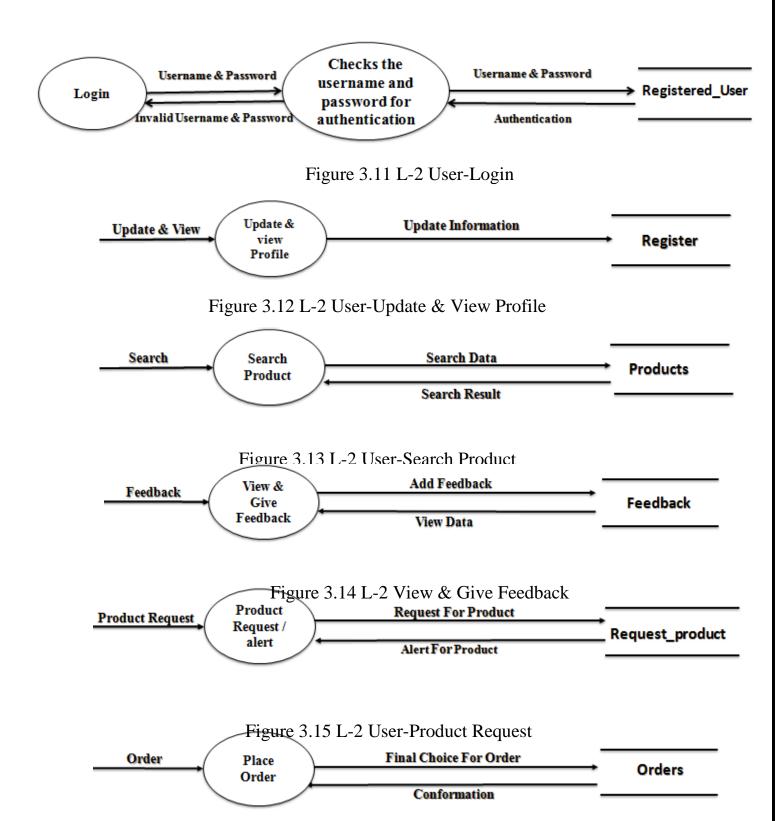


Figure 3.10 L-2 Admin-View Feedback

Data Flow Diagram For User (Level 2)



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Figure 3.16 L-2 User-Place Order

Data Flow Diagram For Visitor (level 2)



Figure 3.17 L-2 Visitor-Registration



Figure 3.18 L-2 Visitor-Searching

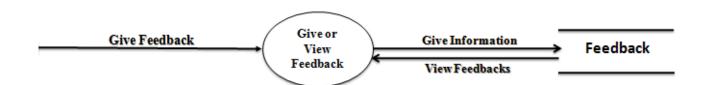


Figure 3.19 L-2 Visitor-Give or View Feedback

3.3 E-R Diagram

3.3.1 Notation :-

SYMBOLS	DESCRIPTION
	DATA OBJECT
	ATTRIBUTES
	RELATIONSHIP
	LINKS ATTRIBUTES AND ENTITY SET
1 — 1	ONE-TO-ONE MAPPING CARDINALITY
1 — M	ONE-TO-MANY MAPPING CARDINALITY
м — м	MANY-TO-MANY MAPPING CARDINALITY

3.2.1 ENTITIES

Entities are objects or concepts that represent important data. They are typically nouns, e.g. customer, supervisor, location, or promotion.

Strong entities exist independently from other entity types. They always possess one or more attributes that uniquely distinguish each occurrence of the entity.

Weak entities depend on some other entity type. They don't possess unique attributes (also known as a primary key) and have no meaning in the diagram without depending on another entity. This other entity is known as the owner.

Associative entities are entities that associate the instances of one or more entity types. They also contain attributes that are unique to the relationship between those entity instances.

3.2.2 RELATIONSHIPS

Relationships are meaningful associations between or among entities. They are usually verbs, e.g. assign, associate, or track. A relationship provides useful information that could not be discerned with just the entity types.

Weak relationships, or identifying relationships, are connections that exist between a weak entity type and its owner.

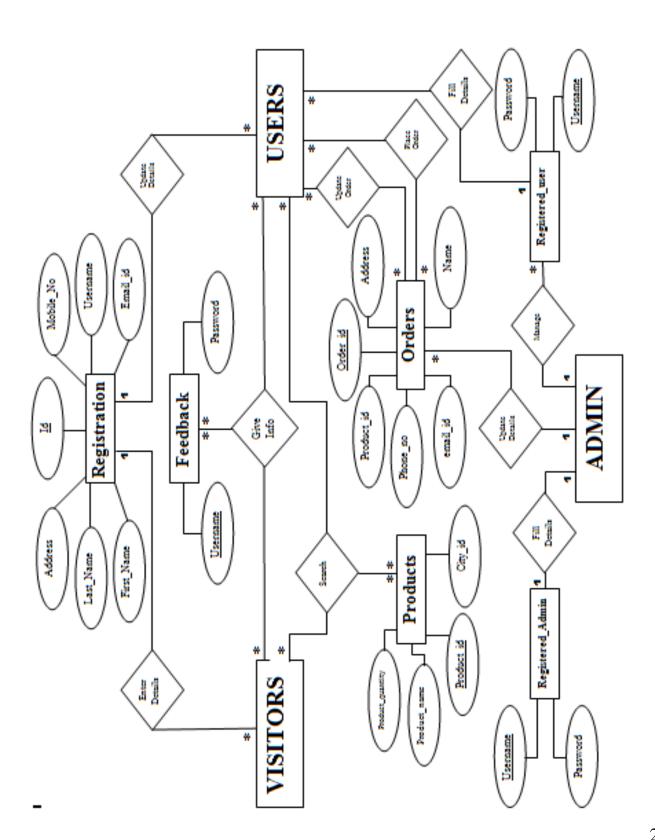
3.3.3 ATTRIBUTES

Attributes are characteristics of either an entity, a many-to-many relationship, or a one-to-one relationship.

Multivalued attributes are those that are capable of taking on more than one value.

Derived attributes are attributes whose value can be calculated from related attribute values.

3.3.4 DIAGRAM



Chapter-4

SYSTEM MODELING

4.1 <u>Database Design</u>

1) Table Name :- city

Primary Key :- city_id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
city_id	int (11)	Primary Key	Unique Id Of City
city_name	varchar (30)	Not Null	Name Of City
state_id	int (11)	Foreign Key	Uniquely Identifying State

2) Table Name :- feedback

Primary Key :- feedback_id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
feedback_id	int (11)	Primary Key	Identity Of User
feedback	varchar (500)	Not Null	Review
user_id	int (11)	Foreign Key	Uniquely Identifying User
username	varchar (30)	Foreign Key	Uniquely Identifying Username

3) Table Name :- orders

Primary Key :- order_id

FIELD	DATATYPE	CONSTAINS	DESCRIPTION
order_id	int (11)	Primary Key	Unique Id Of Order
product_id	int (11)	Foreign Key	Uniquely Identifying Product
user_id	int (11)	Foreign Key	Uniquely Identifying User
product_quantity	int (11)	Not Null	Quantity Of Products
name	varchar (30)	Not Null	Name Of Person
address	varchar (80)	Not Null	Delivery Address
state_id	int (11)	Foreign Key	Uniquely Identifying State
city_id	int (11)	Foreign Key	Uniquely Identifying City
pin	int (6)	Not Null	Pin code Of Area
mobile_no	bigint (12)	Not Null	Mobile Number Of Person
e_mail	varchar (40)	Not Null	E-mail Address Of Person
deliverytype_id	int (11)	Foreign Key	When Or How To Delivery
order_time	datetime	Not Null	Date & Time Of Order

4) Table Name :- state

Primary Key :- state_id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
state_id	int (11)	Primary Key	Unique Id Of State
state_name	varchar(30)	Not Null	Name Of State

5) Table Name :- product_image

Primary Key :- productimage_id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
productimage_id	int (11)	Primary Key	Unique Id Of Product
			Image
product_id	int (11)	Foreign Key	Uniquely Identifying
			Product
image_url	varchar(50)	Not Null	URL of image

6) Table Name :- products

Primary Key :- product_id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
product_id	int (11)	Primary Key	Unique Id Of
			Product
product_name	varchar (30)	Not Null	Name Of Product
product_price	decimal (11,2)	Not Null	Price Of Product
city_id	int (11)	Foreign Key	Uniquely
			Identifying City
product_quantity	int (11)	Not Null	Quantity Of
			Product
weight	int (11)	Not Null	Weight Of Product

7) Table Name :- register

Primary Key :- user_id

Field	Datatype	CONSTARINS	DESCRIPTION
user_id	int (11)	Primary ID	Unique Id Of User
first_name	varchar(30)	Not Null	First Name of user
last_name	varchar(30)	Not Null	Last Name Of user
address	varchar(255)	Not Null	User's Address
pin	int (8)	Not Null	Pin Code Of Area
country_name	varchar (6)	Not Null	Country Of User
state_id	int (11)	Foreign Key	Uniquely Identifying State
mobile_no	bigint (12)	Not Null	Contact Detail of User
birth_date	date	Not Null	Users Date Of Birth
e_mail	varchar(40)	Not Null	E-mail ID of user
gender	enum('Male', 'Female')	Not Null	Gender Of User
username	varchar(30)	Not Null	Unique Name Of User
password	blob	Not Null	Password For Login
role_id	int (1)	Foreign Key	Identify User Or Admin
fav_food	varchar (25)	Not Null	Favorite Food Of User
fav_sports	varchar (25)	Not Null	Favorite Sports Of User

8) Table Name :- invoice

Primary Key :- invoice_id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
invoice_id	int (11)	Primary Key	Unique Id Of Invoice
user_id	int (11)	Foreign Key	Uniquely Identifying User
order_id	int (11)	Foreign Key	Uniquely Identifying Order
product_id	int (11)	Foreign Key	Uniquely Identifying Product
time	datetime	Not Null	Time Of Invoice Generated
amount	decimal (11,2)	Not Null	Total Amount To Be Paid
address	varchar (255)	Not Null	Address Of User
mobile_no	bigint (12)	Not Null	Contact Details Of User
deliverytype_id	int (11)	Foreign Key	When Or How To Deliver

9) Table Name :- delivery type

Primary Key :- deliverytype_id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
deliverytype_id	int (11)	Primary Key	Unique Id Of Deliver
type	varchar (20)	Not Null	Delivery Type
amount	float(5,2)	Not Null	Amount Of Delivery

10) Table Name :- feedback_product

Primary Key :- feedback_product_id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
feedback_product_id	int (11)	Primary Key	Unique Id Of
			Products Feedback
product_id	int (11)	Foreign Key	Uniquely
			Identifying Product
product_name	varchar (30)	Foreign Key	Uniquely
			Identifying Product
			Name
user_id	int (11)	Foreign Key	Uniquely
			Identifying User
description	varchar (500)	Not Null	Feedback /
			Description About
			Product
date	date/time	Not Null	Date & Time Of
			Give Feedback

11) Table Name :- inquiry

Primary Key :- inquiry_id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
inquiry_id	int (11)	Primary Key	Unique Id Of Inquiry
name	varchar (30)	Not Null	Name Of User
email	varchar (50)	Not Null	E-mail Id Of User
Phone	int (12)	Not Null	Contact Details Of User
address	varchar (50)	Not Null	Address Of User
message	varchar (50)	Not Null	Inquiry Description

12) Table Name :- role_master

Primary Key :- role_id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
role_id	int (11)	Primary Key	Unique Id Of Role
rolename	varchar (30)	Not Null	Name Of Role (User/Admin)

13) Table Name :- user

Primary Key :- id

FIELD	DATATYPE	CONSTARINS	DESCRIPTION
id	int (11)	Primary Key	Unique Id Of User Login
username	varchar (30)	Foreign Key	Uniquely Identifying Name
password	blob	Not Null	Authentication
rolename	varchar(30)	Foreign Key	User / Admin Login Role

Chapter – 5

TCHNICAL PECIFICATION

5.1 Hardware Specification

➤ Operating System (Windows XP/7/8/8.1/Linux/mac)

Ram: 256MB & above

> Processor: Pentium 4

5.2 Additional Hardware Specification

➤ Printer (to generate bills)

5.3 Platform

> Java

5.4 **Programming Language Used**

- > JSP & SERVLET
- > Java script

5.5 <u>Software Tools Used</u>

- ➤ IDE (Integrated Development Environment) : ECLIPSE LUNA (4.4.0)
- ➤ Back End: SQLYOG (v10.00 Beta)

5.6 Screenshot's

1. Home Page

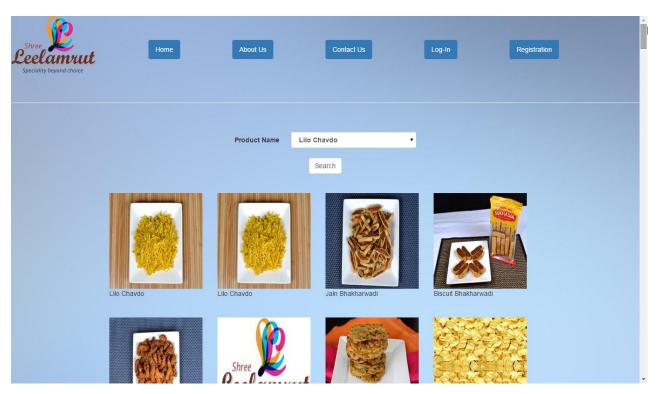
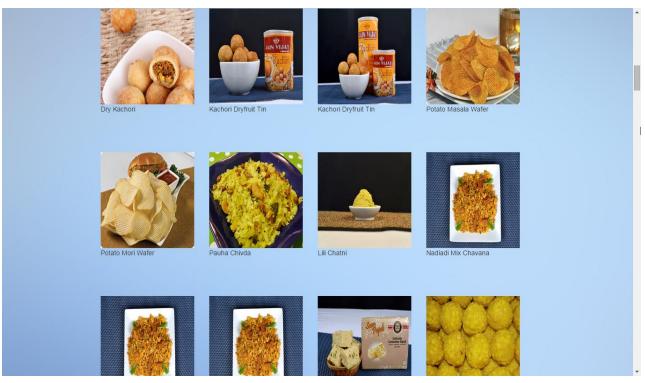


Figure 5.1 – Home Page



2. About Us



Figure 5.2 – About Us

3. Contact Us

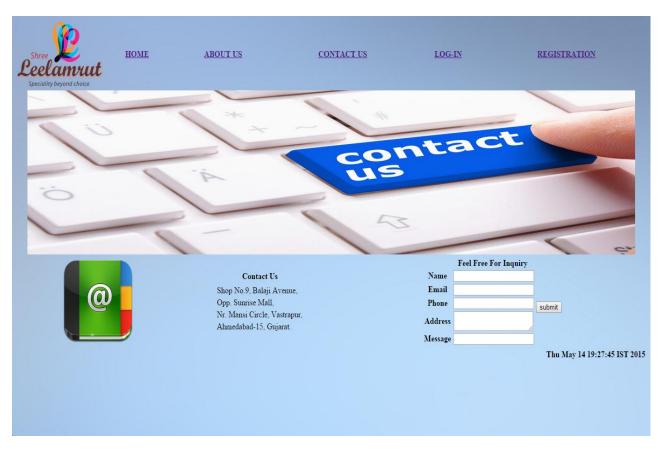
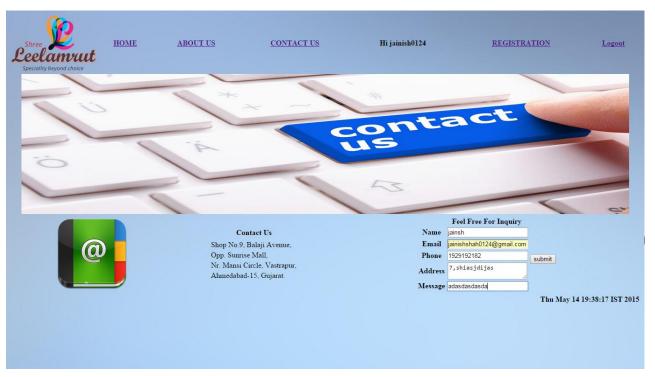


Figure 5.3 – Contact Us



4. Registration

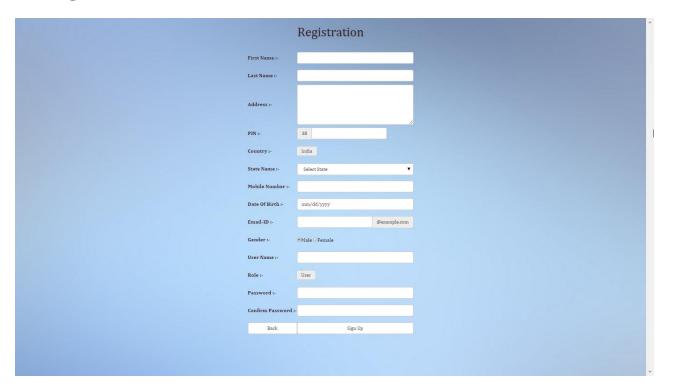
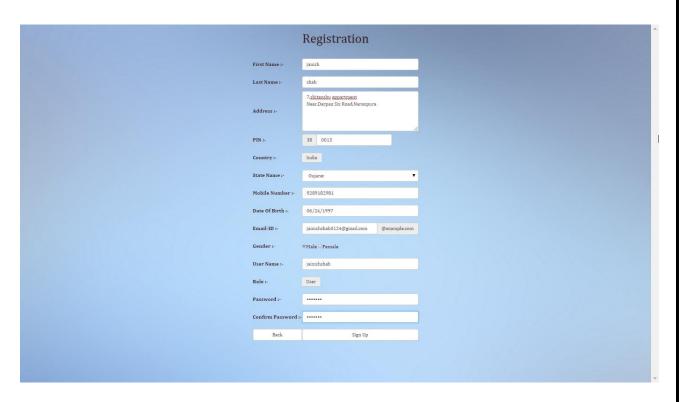


Figure 5.4 – Registration



5. Product



Figure 5.5 – Product

6. Sign Up



Figure 5.6 – Sign Up

7. Admin Panel

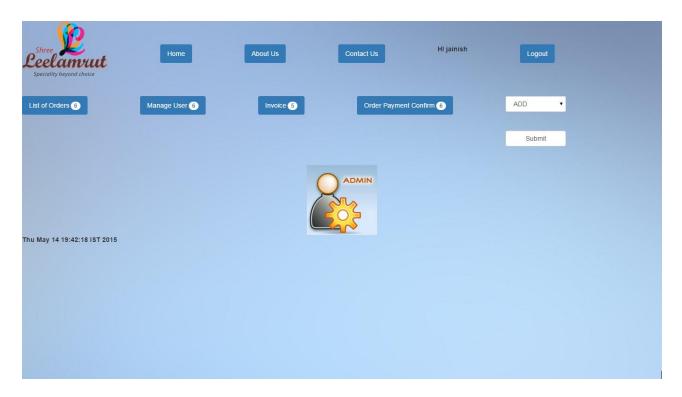


Figure 5.7 – Admin Panel

8. Add State

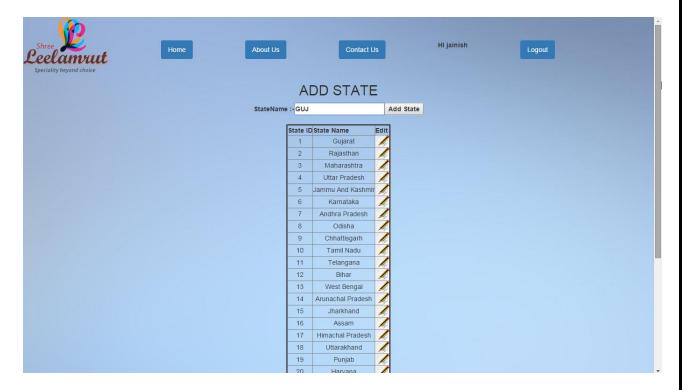


Figure 5.8 – Add State

9. Add City

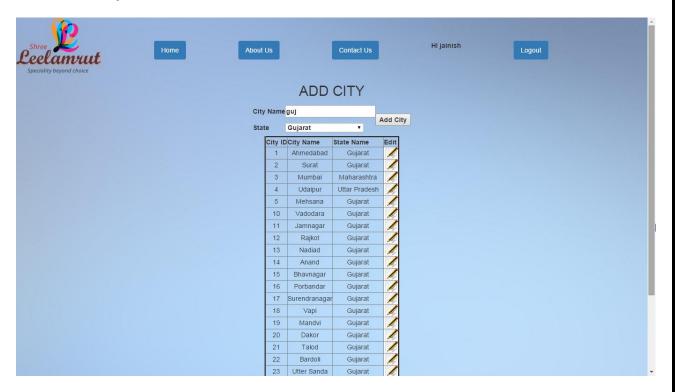


Figure 5.9 – Add City

10. Add Product

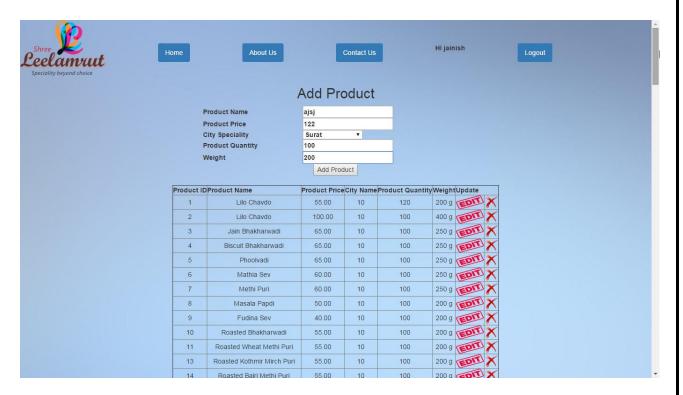


Figure 5.10 – Add Product

11. Edit Product Details

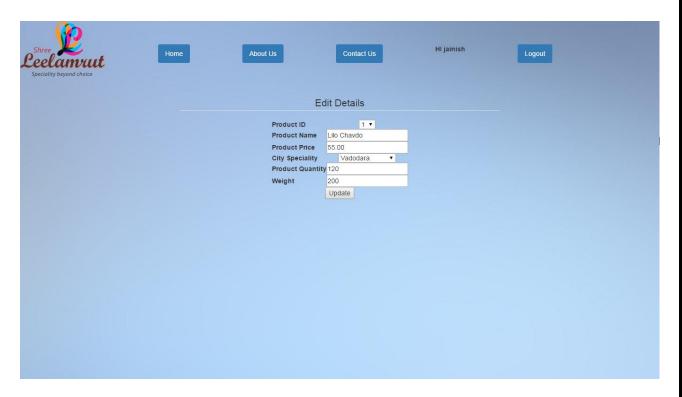


Figure 5.11 – Edit Product Details

12. Edit City

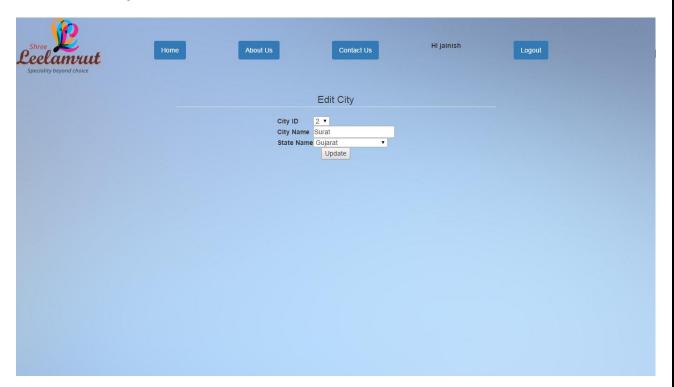


Figure 5.12 – Edit City

13. Edit State

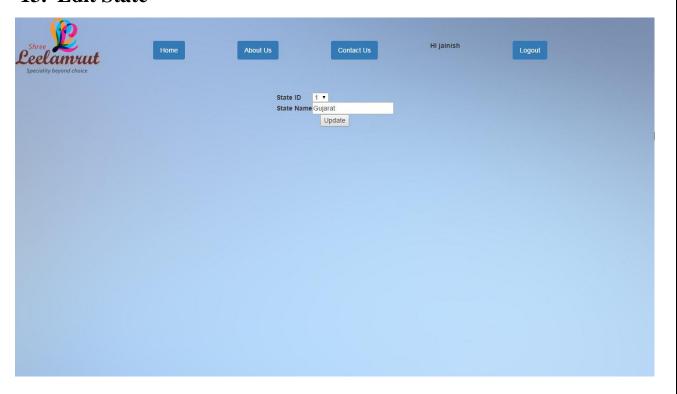


Figure 5.13 – Edit State

14. Manage User

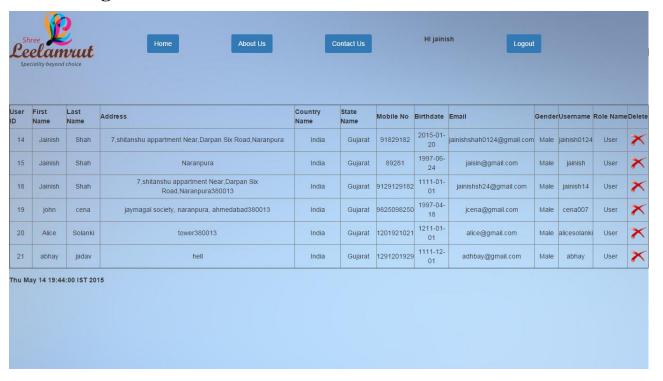


Figure 5.14 – Manage User

15. Order

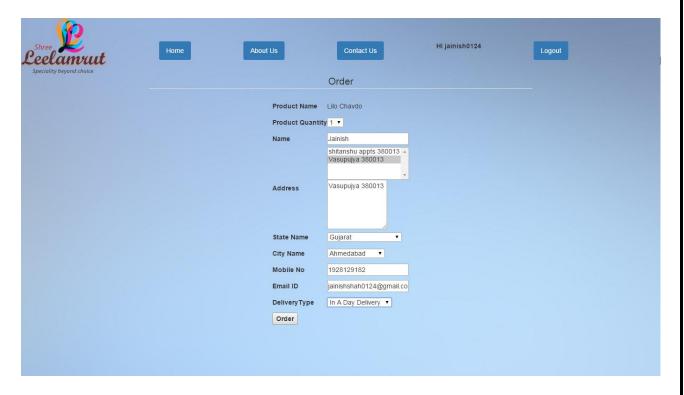


Figure 5.15 – Order

16. Edit Profile

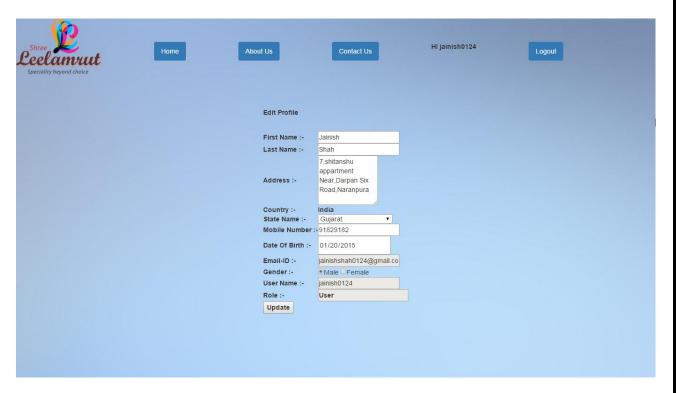


Figure 5.16 – Edit Profile

17. My Order



Figure 5.17 – My Order

18. Order Approval



Figure 5.18 – Order Approval

19. List Of Invoice

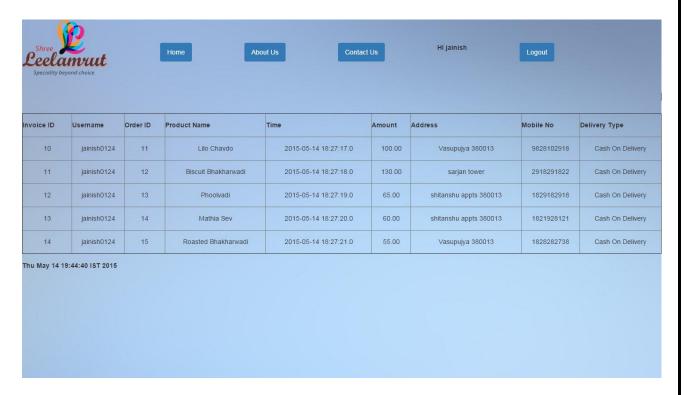


Figure 5.19 – List Of Invoice

20. Order Delivered

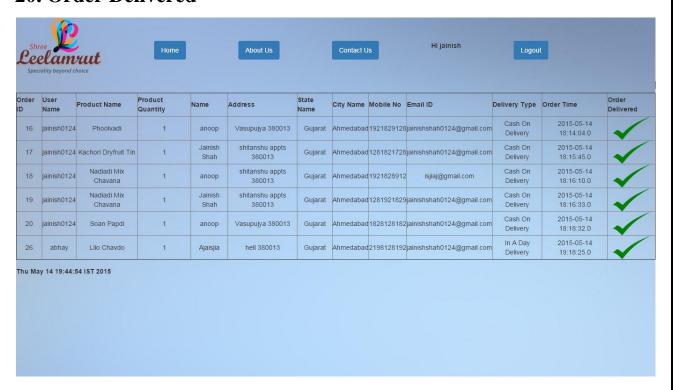


Figure 5.20 – Order Delivered

21. Invoice (PDF)

Leelamrut Invoice Speciality beyond ch

Order ID 11

Name Jainish Shah

Address Vasupujya 380013

Mobile No 9828102918

Quantity 1

Amount 100

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6.1 Unit Testing

In computer programming, **unit testing** is a software testing method by which individual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures are tested to determine if they are fit for use. Intuitively, one can view a unit as the smallest testable part of an application. In procedural programming, a unit could be an entire module, but it is more commonly an individual function or procedure. In object-oriented programming, a unit is often an entire interface, such as a class, but could be an individual method. Unit tests are short code fragments created by programmers or occasionally by white box testers during the development process. Ideally, each test case is independent from the others. Substitutes such as method stubs, mock objects, fakes, and test harnesses can be used to assist testing a module in isolation. Unit tests are typically written and run by software developers to ensure that code meets its design and behaves as intended.

6.2 Test Plan

White-box testing is a method of testing the application at the level of the source code. These test cases are derived through the use of the design techniques mentioned above: control flow testing, data flow testing, branch testing, path testing, statement coverage and decision coverage as well as modified condition/decision coverage. White-box testing is the use of these techniques as guidelines to create an error free environment by examining any fragile code. These

White-box testing techniques are the building blocks of white-box testing, whose essence is the careful testing of the application at the source code level to prevent any hidden errors later on. These different techniques exercise every visible path of the source code to minimize errors and create an error-free environment. The whole point of white-box testing is the ability to know which line of the code is being executed and being able to identify what the correct output should be.

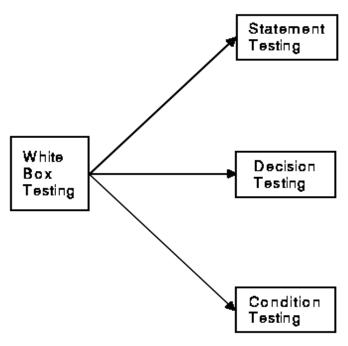


Figure 6.1 White Box Testing

White-box test design techniques include the following code coverage criteria:

- ☐ Control flow testing
- ☐ Data flow testing
- ☐ Branch testing

☐ Statement coverage		
☐ Decision coverage		
☐ Modified condition/decision coverage		
☐ Prime path testing		
☐ Path testing		
dvantages		
White-box testing is one of the two biggest testing methodologies used today. It has several major advantages:		
☐ Side effects of having the knowledge of the source code are beneficial to thorough testing.		
☐ Optimization of code by revealing hidden errors and being able to remove these possible defects.		
☐ Gives the programmer introspection because developers carefully describe any new implementation.		
☐ Provides traceability of tests from the source, allowing future changes to the software to be easily captured in changes to the tests.		
☐ White box tests are easy to automate.		
☐ White box testing give clear, engineering-based, rules for when to stop testing.		

Disadvantages

Although white-box testing has great advantages, it is not perfect and contains some disadvantages:

White-box testing brings complexity to testing because the tester must have
knowledge of the program, including being a programmer. White-box
testing requires a programmer with a high-level of knowledge due to the
complexity of the level of testing that needs to be done.
On some occasions, it is not realistic to be able to test every single existing
condition of the application and some conditions will be untested.

CONCLUSION

The Internet has become a major resource in modern business, thus electronic shopping has gained significance not only from the entrepreneur's but also from the customer's point of view.

We have designed the project to provide the user with easy navigation, retrieval of data and necessary feedback as much as possible.

This project helps in understanding the creation of an interactive web page and the technologies used to implement it, how it connect to the database to access the data and how the data and web pages are modified to provide the user with a online shopping application.

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