Value Added Sales Tax Information System (VAT)

Project Report submitted in partial fulfillment of the
requirement for the degree of

Bachelor of Technology

in

Computer Science & Engineering

under the Supervision of

Dr. Yashwant Singh

By

Amit kumar(111230)

to

Jaypee University of Information and Technology

Waknaghat, Solan – 173234, Himachal Pradesh

Certificate

This is to certify that project report entitled "**Value Added Sales Tax Information System (VAT)**", submitted by **Amit Kumar(111230)** in partial fulfillment for the award of degree of Bachelor of Technology in Computer Science & Engineering to Jaypee University of Information Technology, Waknaghat, Solan has been carried out under my supervision.

This work has not been submitted partially or fully to any other University or Institute for the award of this or any other degree or diploma.

Date: Dr. Yashwant Singh
                                                        Assistant Professor (Senior Grade)

Acknowledgement

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organization. I would like to extend my sincere thanks to all of them.

I am highly indebted to Dr. Yashwant Singh for his guidance and constant supervision as well as for providing necessary information regarding the project and also for his support in completing the project.

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Date: Amit Kumar

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Abstract

Value Added Sales Tax Information System is an IT Solution for the Value Added Tax (VAT) System. Value Added Tax 2005 is a tax that applies to all commercial activities involving the production and distribution of goods and provision of services. It is a consumption tax, borne ultimately by the final consumer. It is charged as a percentage of price. Vat is charged by State government and it is intra state sales tax (sales within the state).VAT is administered by HM Revenue and Customs. Each State and Union territory has formulated its VAT legislation except for "ANDAMAN & NICOBAR". VAT has been introduced in Indian Taxation System from April 1, 2005. The Value Added Sales Tax Information System is an application based intended for retailers. The main objective of this application is to make it interactive and its ease of use. It would make calculating tax process easier. VAT is a multi-stage tax levied at each stage of the value addition chain, with a provision to allow input tax credit (ITC) on tax paid at an earlier stage, which can be appropriated against the VAT liability on subsequent sale. Value Added Sales Tax Information System is an IT Solution for the Value Added Tax (VAT) System. Value Added Tax 2005 is a tax that applies to all commercial activities involving the production and distribution of goods and provision of services. It is a consumption tax, borne ultimately by the final consumer. VAT is intended to tax every stage of sale where some value is added to raw materials, but taxpayers will receive credit for tax already paid on procurement stages. Thus, VAT will be without the problem of double taxation as prevalent in the earlier Sales tax laws. Presently VAT is followed in over 160 countries. The proposed Indian model of VAT will be different from VAT, as it exists in most parts of the world. In India, VAT has replaced the earlier State sales tax system.

CHAPTER 1

INTRODUCTION

VAT is a multi-stage tax levied at each stage of the value addition chain, with a provision to allow input tax credit (ITC) on tax paid at an earlier stage, which can be appropriated against the VAT liability on subsequent sale. Value Added Sales Tax Information System is an IT Solution for the Value Added Tax (VAT) System. Value Added Tax 2005 is a tax that applies to all commercial activities involving the production and distribution of goods and provision of services [12]. It is a consumption tax, borne ultimately by the final consumer. VAT is intended to tax every stage of sale where some value is added to raw materials, but taxpayers will receive credit for tax already paid on procurement stages. Thus, VAT will be without the problem of double taxation as prevalent in the earlier Sales tax laws [2]. Presently VAT is followed in over 160 countries. The proposed Indian model of VAT will be different from VAT, as it exists in most parts of the world. In India, VAT has replaced the earlier State sales tax system. One of the many reasons underlying the shift to VAT is to do away with the distortions in our earlier tax structure that carve up the country into a large number of small markets rather than one big common market [2]. In the earlier sales tax structure tax is not levied on all the stages of value addition or sales and distribution channel which means the margins of distributors/ dealers/ retailers at large not subject to sales tax earlier.

Thus, the sales tax pricing structure needs to factor only the single-point levy component of sales tax and the margins of manufacturers and dealers/ retailers etc, are worked out accordingly. Internal trade and impeded development of a common market, prices by an amount higher than what accrues to the exchequer by way of revenues from it.

Also, there was the problem of multiplicity of rates. All the states, provided for plethora of rates. These range from one to 25 per cent. This multiplicity of rates increases the cost of compliance while not really benefiting revenue.

Heterogeneity prevailed in the structure of tax as well. Apart from general sales tax, most states used to levy an additional sales tax or a surcharge. In addition, the states levied luxury tax as also an entry tax on the sale of imported goods.

All these practices of heterogeneity in structure as well as rates cause diversion of trade as well as shifting of manufacturing activity from one State to another. Further, widespread taxation of inputs relates to vertical integration of firms, i.e., the earlier system of taxes militated against ancillary industries and encourages them to produce more and more of the inputs needed rather than purchase them from ancillary industries [12]. The earlier system of commodity taxes is non-neutral. It interferes with the producers' choice of inputs as well as with the consumers' choice of consumption, thereby leading to severe economic distortions [2].

1.1 Goal

Value Added Tax is a broad-based commodity tax that is levied at multiple stages of production. The concept is akin to excise duty paid by the manufacturer who, in turn, claims a credit on input taxes paid. Excise duty is on manufacture, while VAT is on sale and both work in the same manner, according to the white paper on VAT released by finance minister Chidambaram [2].The document was drawn up after all states, barring UP, were prepared to implement VAT from April. It is usually intended to be a tax on consumption; hence the provision of a mechanism enabling producers to offset the tax they have paid on their inputs against that charged on their sales of goods and services .Under VAT revenue is collected throughout the production process without distorting any production decisions.

1.2 Need of the application

VAT is collected fractionally, via a system of deductions whereby taxable persons (i.e., VAT-registered businesses) can deduct from their VAT liability the amount of tax they have paid to other taxable persons on purchases for their business activities.

This mechanism ensures that the tax is neutral regardless of how many transactions are involved. This project benefits the citizens with greater transparency, convenience, timeliness, responsiveness and lower overall costs. For the governments, the main benefits are the greater trust that the citizens will repose and the cost-savings achieved by these services. For the commercial organizations, the benefits will accrue from their effectively seizing the opportunity for some outsourced services and new

marketing opportunities. The following is a numerical example to help understand this better:

Suppose you have bought goods worth Rs 10,000 from a supplier and then sold them to customers for a total of Rs.15000. Let the VAT rate be 10%.

Input Tax= Tax paid by you on purchase of input goods = (0.1*10,000) =Rs .1, 000.

Output Tax = Tax charged by you from customers on output goods= (0.1* 15,000) = Rs.1, 500. So Net Tax payable to government= Output Tax − Input Tax = 1,500-1,000 = Rs. 500.

Notice that the value added by you to the input goods was Rs.5000. And (.1)*5000 =Rs.500 so, in this way, you have paid tax only on the value added to the input good.

1.3 Problem Statement

In the present system, VAT is calculated in an ad hoc manner and often results in miscalculations. This may affect customers ultimately. Moreover, the customers or consumers may not be able to comprehend the details of VAT and how it is computed.

1.4 Objectives

The Objectives of the System are:-

- To register the clients and display the client information.
- To list all the registered clients within the state.
- To store purchase and sales details of each client.
- To calculate VAT for each client and display the rules and various VAT forms.
- To display all the goods and services with tax rate applicable for VAT.

1.4.1 Scope

- This system gives us a VAT calculator
- Multiple Dealer can maintain their account
- We were having VAT rate list for different products
- We were having sales and purchase register of different Dealer
- Authentication is maintained in this project

1.5 Platform Specifications – Deployment

1.5.1 Hardware Specification

- Processor P IV
- RAM 250 MB
- Minimum Space Required 100 M
- Display 16 bit color

1.5.2 Software Specification

- Operating Environment: Win 2000/XP
- Platform: Netbeans7.0 (java)
- Database: SQL Server 2005

1.6 Organization of the report

This section describes the organization of the project. It includes six chapters to organize the project. Chapter 2 describes about the System Requirement Analysis of the project. It includes system feasibility and SRS (System Requirement Specification) of the project. Chapter 3 describes about the System Analysis. It includes various diagram of the system such as dataflow diagram, class diagram, Use case diagram. It also includes design goals of the system such as Architectural diagram. It tells about the three modules of the system. These modules are VAT payer, VAT body and VAT auditor. Chapter 4 describes about the implementation of the project. It shows the interface of the system. It also tells about the various modules of the system. Chapter 5 describes the testing of the system. It includes various testing such as unit testing, white box and black box testing, performance testing, and validation testing. Chapter 6 describes the conclusion and future work of the project.

CHAPTER 2

SYSTEM REQUIREMENT ANALYSIS

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 [8].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 easily 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 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 be 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. Other than this, a lot of research on various other methods of building the application which and was able to incorporate a few stronger features into the application. The tools and controls used in the application are recommended Netbens6.9 (java) controls which improves the navigation and usability and interactivity.

2.1 System Feasibility

The system feasibility can be divided into the following sections:

2.1.1 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.

2.1.2 Technical Feasibility

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

Operating Environment: Win 2000/XP

Platform: Netbeans7.0 (java)

Database: SQL Server 2005

2.1.3 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.

2.2 SRS (SOFTWARE REQUIREMENT SPECIFICATION)

A software requirements specification (SRS) is a comprehensive description of the intended purpose and environment for software under development. The SRS fully describes what the software will do and how it will be expected to perform [11].

An SRS minimizes the time and effort required by developers to achieve desired goals and also minimizes the development cost. A good SRS defines how an application will interact with system hardware, other programs and human users in a wide variety of real-world situations. Parameters such as operating speed, response time, availability, portability, maintainability, footprint, security and speed of recovery from adverse events are evaluated [14].

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1 Introduction

Value Added Sales Tax Information System is an IT Solution for the Value Added Tax (VAT) System. Value Added Tax 2005 is a tax that applies to all commercial activities involving the production and distribution of goods and provision of services. It is a consumption tax, borne ultimately by the final consumer. It is charged as a percentage of price. Vat is charged by State government and it is intra state sales tax (sales within the state).VAT is administered by HM Revenue and Customs. Each State and Union territory has formulated its VAT legislation except for "ANDAMAN & NICOBAR". VAT has been introduced in Indian Taxation System from April 1, 2005.

1.1 Purpose

Here Value Added Sales Tax Information System is developed. Basically, this software is developed for buyers and customers to see the transparent, accuracy and consistent flow of sales tax at different level [14].

1.2 Document Conventions

This SRS is developed in MS-Word with writing style ="Times New Roman" and font size="12". Basically no modern techniques are used in designing in this SRS. All the headings are typed in "Times New Roman" with font size="14". At some places where underlines are used indicates that some extra good feature is in this software. Here in this software every requirement statements have its own priority.

1.3 Intended Audience and Reading Suggestions

This document is intended for developers, project managers, users, testers, and documentation writers. This SRS contains about the information related to the Functional requirements and non- functional requirements. You can start reading from the purpose heading and proceed as further with no specific path needed.

1.4 Project Scope

The main purpose of this software is to provide benefits the citizens with greater transparency, convenience, timeliness, responsiveness and lower overall costs. For the

governments, the main benefits are the greater trust that the citizens will repose and the cost-savings achieved by these services. For the commercial organizations, the benefits will accrue from their effectively seizing the opportunity for some outsourced services and new marketing opportunities.

2 Overall Description [14]

Over all description of the product includes product perspective, product features, User classes and characteristics, Design and implementation, User documentation, Operating environment.

2.1 Product Perspective

The origin of the product is totally from scratch. It is completely a self sustained product.

2.2 Product Features

The major features of this products are- new user registration, user access login screen, authenticated taxable persons (i.e., VAT-registered businesses) can deduct from their VAT liability the amount of tax they have paid to other taxable persons on purchases for their business activities. This mechanism ensures that the tax is neutral regardless of how many transactions are involved.

2.3 User Classes and Characteristics

The features of user classes nature depends upon the usage of it. So the user login feature is used most.

2.4 Operating Environment

There is no specific environment needed for this product to run. However minimum hardware platform required is **Processor:-**Pentium and **RAM**:-1 GB. The version needed is 1.0.

2.5 Design and Implementation Constraints

The policies which are issued under government of India may vary from business to business when the user defines his details about business. But no need to worry about the generation of the signed policy. It may take few minutes**.**

2.6 User Documentation

A user manual which is downloadable will be provided to all the users who are accessing the website. A user should provide a signed soft copy of its any government identity.

3 System Features

The major features of this products are- new user registration, user access login screen, authenticated taxable persons (i.e., VAT-registered businesses) can deduct from their VAT liability the amount of tax they have paid to other taxable persons on purchases for their business activities. This mechanism ensures that the tax is neutral regardless of how many transactions are involved [14].

3.1 New user registration

It includes the registration of the new user to the system.

3.1.1 Description and Priority

It is of High priority. Risk factor=8

3.1.2 Stimulus/Response Sequences

In sequential order this will be displayed at the top level.

3.1.3 Functional Requirements

REQ-1: User name generator

REQ-2: Encrypted password generator.

3.2 Agreement signature

It includes description and Priority of the product.

3.2.1   Description and Priority

It is of High priority. Risk factor=4, penalty=9.

3.2.2 Stimulus/Response Sequences

In sequential order this will be displayed just after the first feature.

3.2.3 Functional Requirements

REQ-1: electronic signature generator

3.3 User access login screen

3.3.1 Description and Priority

It is of High priority, importance=9.

3.3.2 Stimulus/Response Sequences

In sequential order this will be displayed at any level.

3.3.3 Functional Requirements

REQ-1: user name text area

REQ-2: Encrypted password text area**.**

3.4 Authenticated User

3.4.1 Description and Priority

It is of low priority.

3.4.2 Stimulus/Response Sequences

In sequential order this will be displayed**.**

3.4.3 Functional Requirements

REQ-1: Authenticated soft copy of agreement.

3.1.3 Functional Requirements

REQ-1: transaction id generator.
REQ-2: Captcha generator.

3.5 Buyer

3.5.1 Description and Priority

It is of High priority. Risk factor=4, penalty=9, importance=4.

3.5.2   Stimulus/Response Sequences

In sequential order this will be displayed accordingly.

3.5.3   Functional Requirements

REQ-1: buyer id generator.

REQ-2: buyer basic details approved by Government of India**.**

4 External Interface Requirements

4.1 User Interfaces

The GUI standards described here are much enhanced due to the nature of product. All the GUI interfaces are building with all the new tools.

4.2 Hardware Interface

The nature of the product ensures correct information about the sales tax involving different transactions. Moreover, it has the data in form of simple text which also has to be stored in systematic way including all the users and the buyers, the transaction id(s) etc. the network here used should be very secured so that no leakage of transaction or credentials take place.

4.3 Software Interfaces

The database used here is Oracle 10g, technology used is Java and J2EE. The Web Technology used are HTML, JavaScript and CSS. The document reference is given in the user manual.

4.4 Communications Interfaces

A mail box of self created domain is provided to all the registered users. Basic network communication protocols are used here. High level of encryption is used when the transaction is going to take place.

5 Other Nonfunctional Requirements

5.1 Performance Requirements

The performance totally depends on the load on the website and moreover on the internet connection of client. Moreover it may also depend upon what version any browser you are using**.**

5.2 Safety Requirements

Safeguard should be taken by the user that if it sees any unidentified design appearing in black then the immediately unplug the connection and inform the admin of the product. Although the product is quite safe but still safety from client side is very important.

5.3 Security Requirements

Privacy issues are with the admin of the website. So user should not think about it and no tension has to be taken from user point of view.

5.4 Software Quality Attributes

This software contains all the latest quality attributes like adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability.

2.3 Conclusion:

This chapter concludes the system requirement analysis of the system. It includes the system feasibility and SRS (System Requirement Specification). System feasibility includes Economic feasibility, System feasibility and Behavioral feasibility of the system.

CHAPTER 3

SYSTEM DESIGN

After carefully analyzing the requirements and functionality of the application, we had some important diagrams by the end of the analysis phase. They are the Use Case Diagram, data flow diagram and class diagram which were the basis for finding out entities and relationships between them, the flow of information.

3.1 Use Case Diagram:

It represents the interaction of the user with the system. Client will login into the system for the further use of System. Admin will maintain the records of each client.
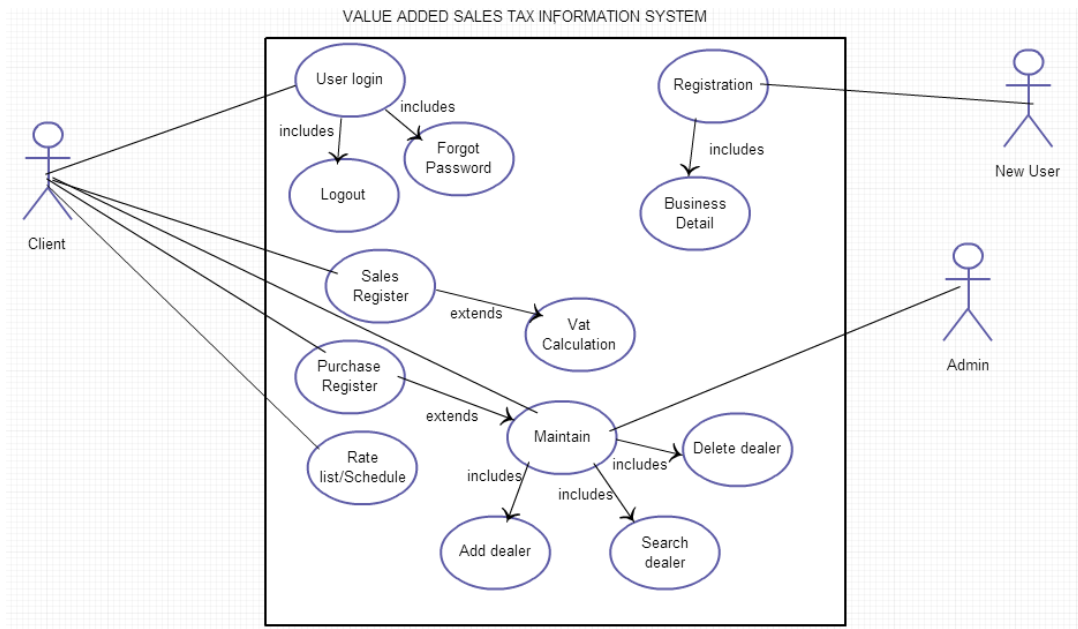

Fig:-1 USE CASE DIAGRAM

3.2 Data flow Diagram:

It represents the flow of data within the system. It shows how the data is flowing within the different parts of the system. Data is stored and it circulate between Vat body and Vat Auditor.
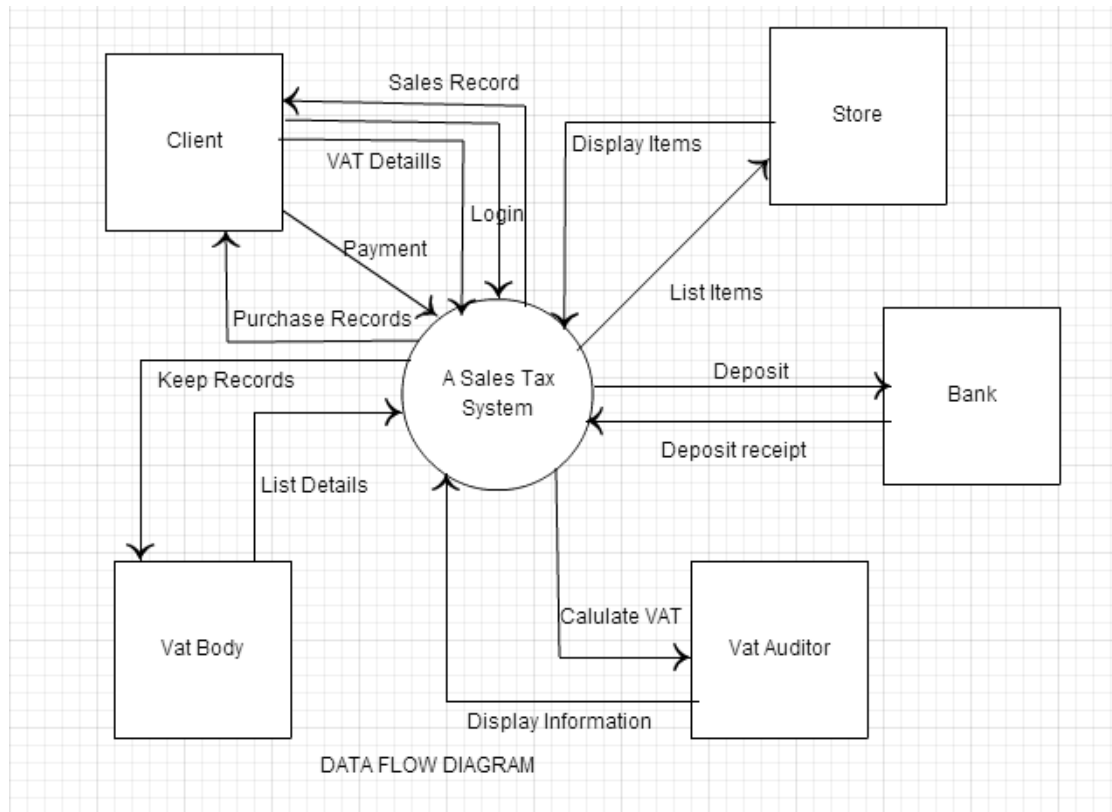

Fig:-2 Data Flow Diagram

3.3 Class Diagram:

It represents the different classes present in the system. It details the relationship between the classes. It also tells about the different data members and functions in the class.
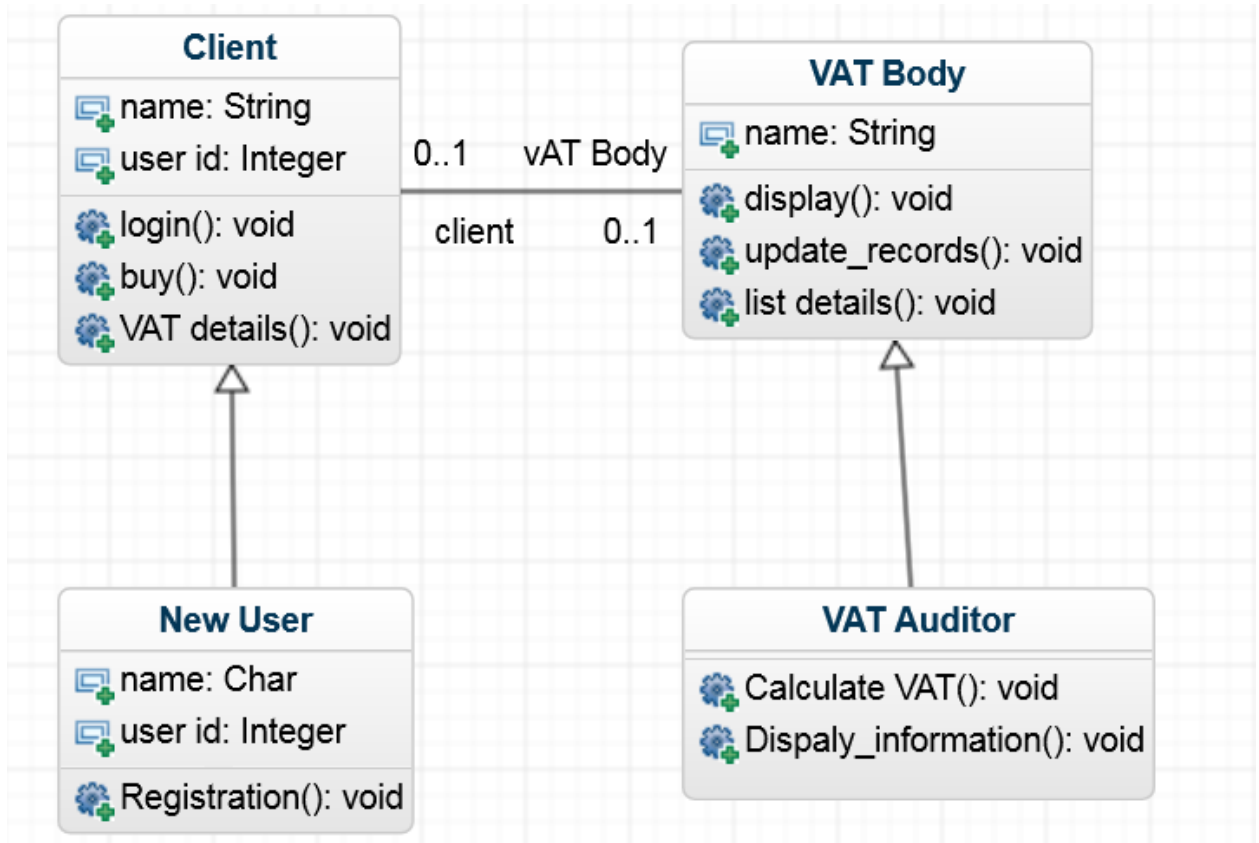

Fig:-3 Class Diagram

3.4 Design Goals

The design of the windows application involves the design of the forms for listing the goods on basis of their vat, search for products, display the complete specification for the product, and calculate final Vat paid customer [5]. Design of an interactive application that enables the user to filter the products based on different parameters. Design of an application that has features like scrolling.

3.4.1 Architectural Design:

An architectural drawing or architect's drawing is a technical drawing of a building (or building project) that falls within the definition of architecture.

3.4.2 Architectural Context Diagram:
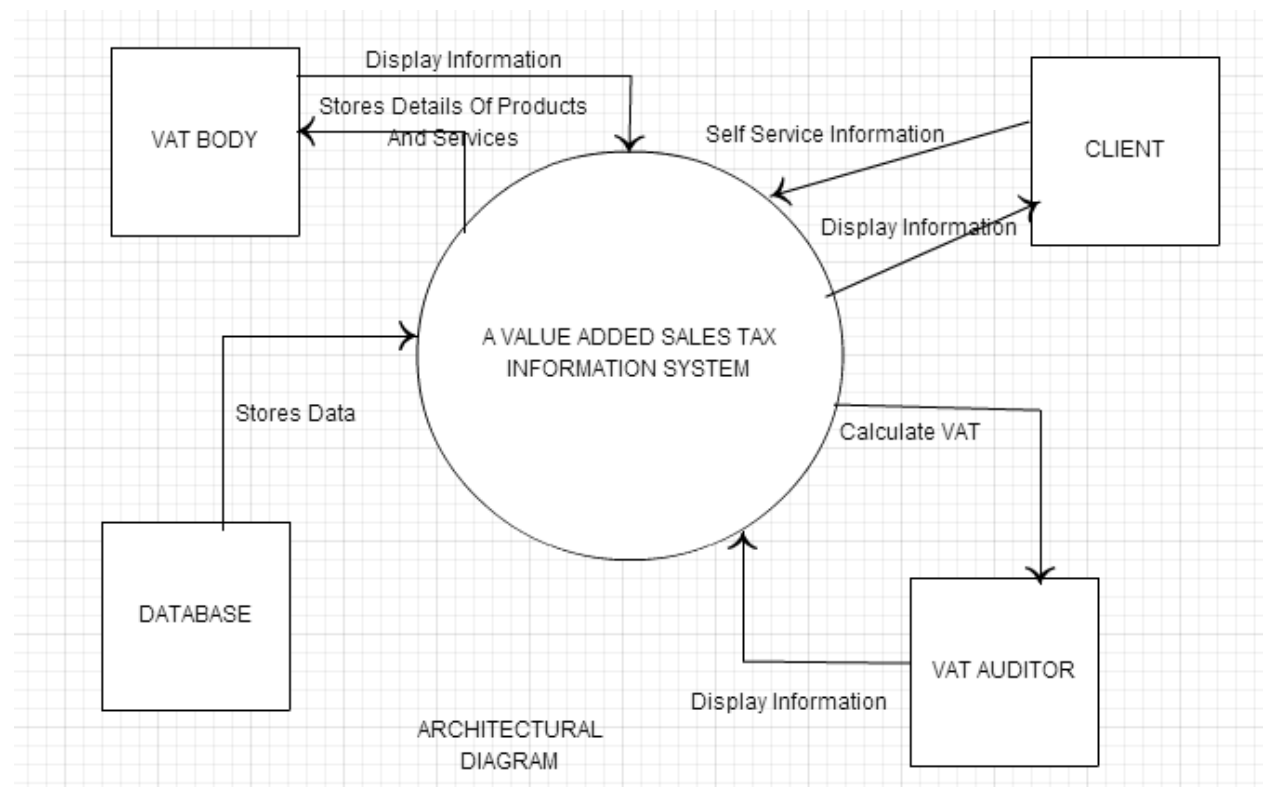
It represents the architecture of the system.

Fig:-4 Architectural Diagram

3.4.3 Description of Architectural Design

In this context diagram, the information provided to and received from the "Value Added Sales Tax Information System (VAT)" is identified. The arrows represent the information received or generated by the application. The closed boxes represent the set of sources and sinks of information. In the system, we can observe that the user interacts with the application through a graphical user interface. The inputs to the system are the Search and Filter criteria provided by the user and a new review written by the user. Also, the output is in the form of Repeater and grid views which present the users with list of Products available. The users can view complete specification, view Images and reviews by other users.

3.5 Procedural/Modular Approach

The system is proposed to have the following modules:
Vat Payer, Vat Body and Auditors

3.5.1 Vat payer module:

This module allows customers to purchase one or more items. The calculation of VAT For the purchased items is automatically calculated by the system.
There are 4 sub modules:
• Business detail
• Sales register
• Purchase register
• Vat module

3.5.2 Vat body module:

This module provides the details of all products and lists the price and VAT details. This module is accessed by officers who enter the details of products.
There are 2 sub modules:
- Vat calculator
- Vat % list for items

3.5.3 Auditors' module:

This module calculates VAT for the products and displays the information to both users and auditors.

There are:

- Report Making
- Add Dealer
- Delete Dealer
- Edit Dealer Information
- Search Dealer

3.6 Conclusion:

This chapter describes about the System Analysis. It includes various diagram of the system such as dataflow diagram, class diagram, Use case diagram. It also includes design goals of the system such as Architectural diagram. It tells about the three modules of the system. These modules are VAT payer, VAT body and VAT auditor.

CHAPTER 4

IMPLEMENTATION

Rebating, returns & billing under VAT:

In case of manufacturer:

(a) Input tax rebate is available only on the purchases made in the State of Karnataka and on the basis of 'Tax invoice' issued by the dealers selling goods to the manufacturers. Taxes or duties paid on other types of purchases namely: interstate purchases, interstate consignment receipt and International imports are not eligible for input tax rebate [12].

(b) Output tax is to be charged and collected on the sales made in the State of Karnataka. However, on the interstate sales taxes under CST Act could be collected separately or it could be included in the sale price also. In both these cases of sales, input tax rebate is available only on the purchases made in the State of Karnataka. On consignment transfer both in the State of Karnataka and interstate there is no levy of VAT or CST as there is no transaction of sale in either of them. (For interstate consignment of manufactured goods and the goods purchased from Karnataka and dispatched to outside the State the dealer would be entitled for input rebate paid in excess of 2% on the local purchase). In case of export of the goods (both direct and indirect) the output tax is zero and input tax rebate is available only on the purchases made in the State of Karnataka [12].

(c) In the monthly return prescribed under VAT Rules namely Form VAT 100, the above types of purchases and sales are itemized. The dealer has to extract the details from the books of account and fill the return form.
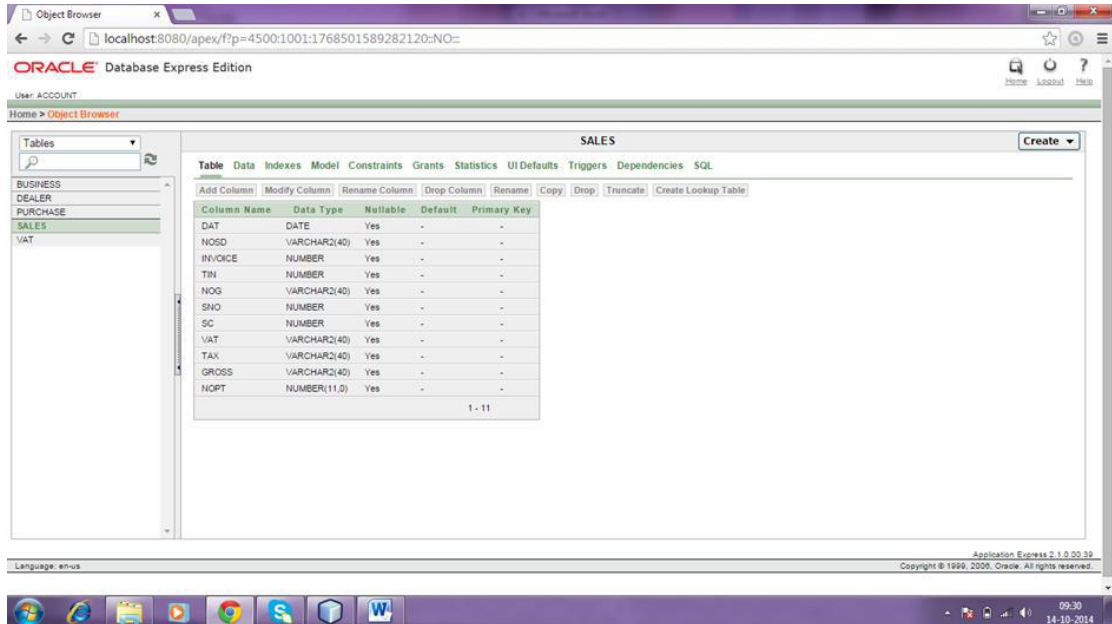
(d) The input tax rebate is taken while filing the VAT monthly return by reducing the output tax. For example: For a given month the input tax paid by a dealer is say Rs.10,000/- and the output tax payable is say Rs.20,000/-, then net-tax payable would be Rs.10,000/- (20,000 - 10,000). Please note that in the tax invoice, VAT is charged and collected on the entire output value. And in the bill of sale issued under interstate sales, CST could be collected separately or it could be included in the sale price also. In case of direct and indirect exports no taxes are collected but the VAT paid on the locally purchased inputs is fully rebatable. In case of distributors / wholesaler the conditions noted in para 1(a), (b), (c) &(d) above applies with the following

modifications: Under para 1(b) the "For interstate consignment of goods distributors / wholesaler would be entitled for input rebate paid in excess of 2% on the local purchase."

In case of retailers the conditions noted in para1 (a), (b), (c) & (d) above applies with the following modifications: Further the retailers within the turnover limit between 2-15 lakhs could opt for composition tax of 1% on their sales. The condition prescribed to remain under composition scheme is apart from turnover limit, such dealer must not effect any interstate purchases (except a dealer executing works contract with certain conditions), must not claim any input tax rebate and must not collect output tax.

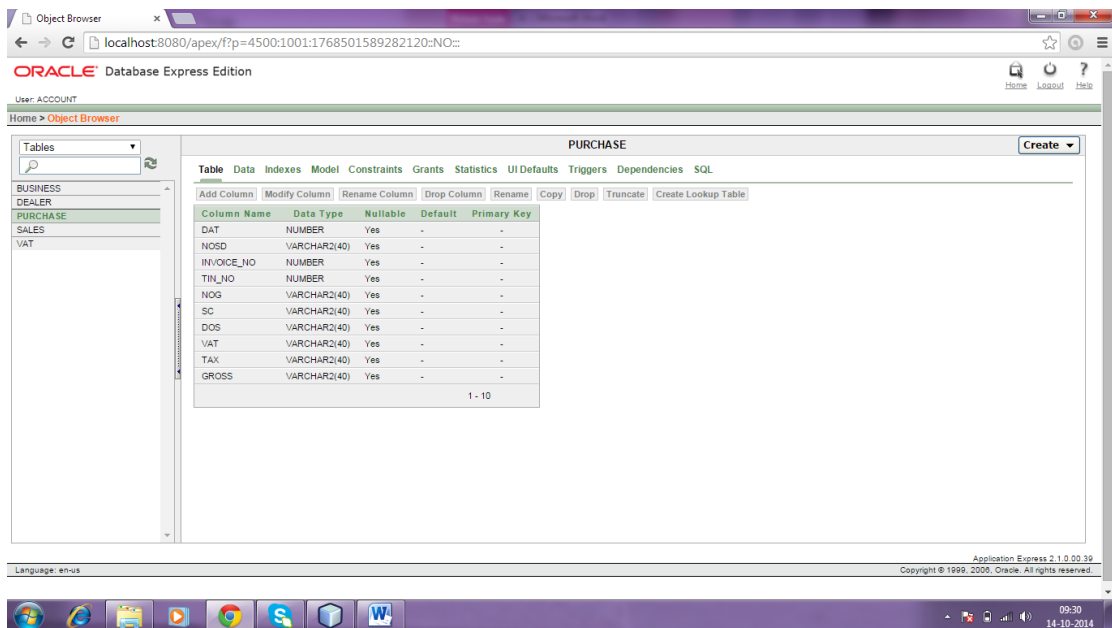## 4.1 Database Design and Implementation

The design of the database was similar to the analysis phase. The database has been developed using ORACLE 10g.

Fig:-5 Sales table

Fig:-6 Purchase Table

Fig:-7 Business Table
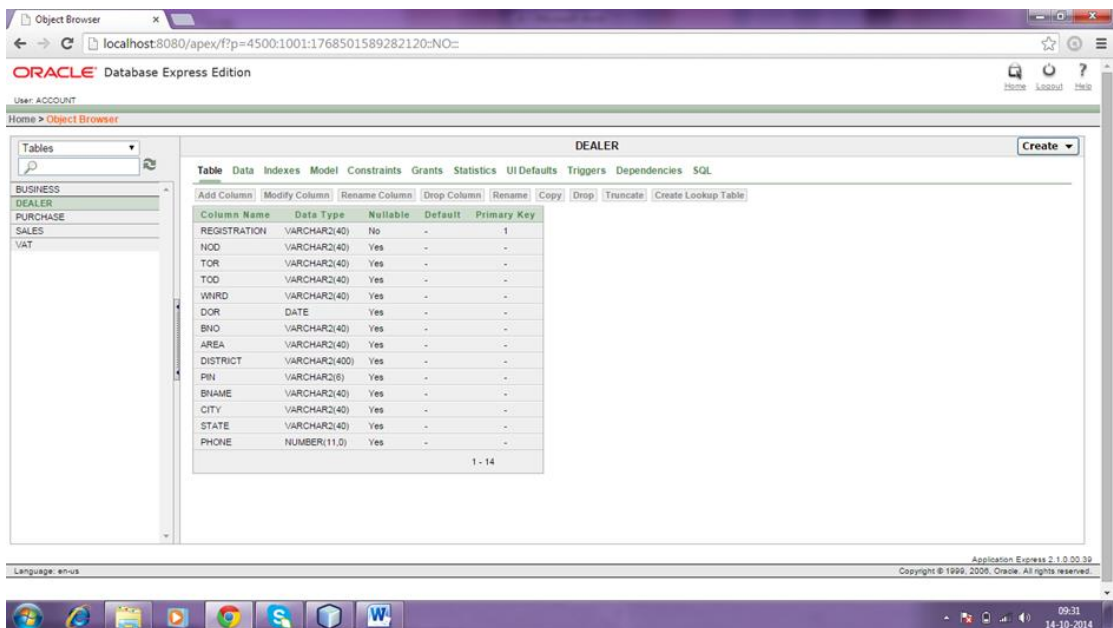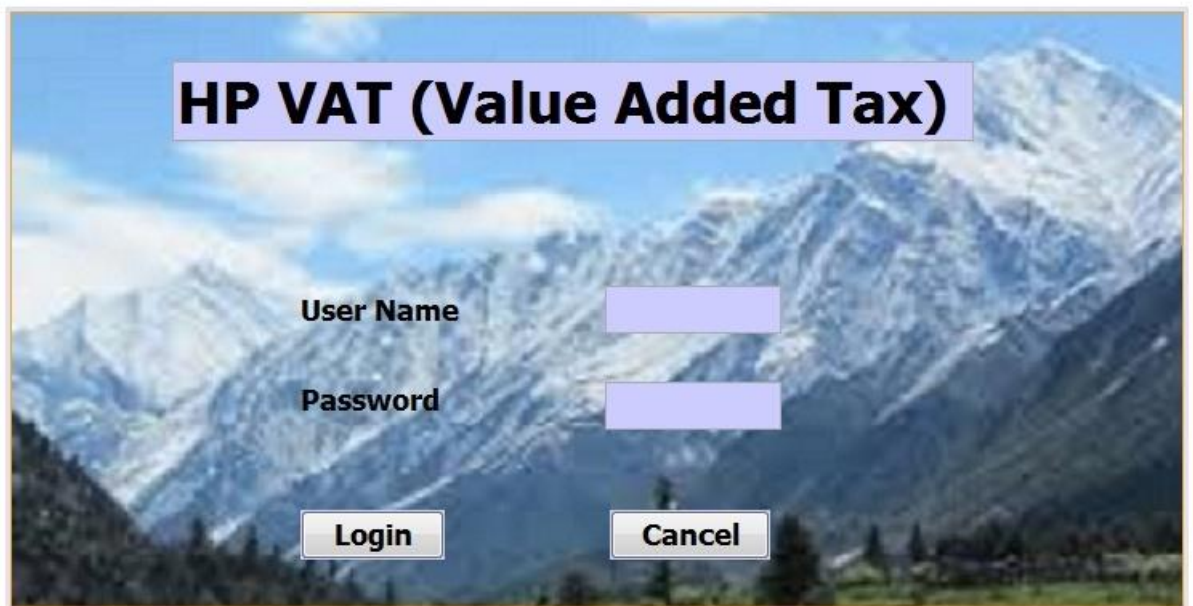
Fig:-8 Dealer Table

4.2 USER INTERFACE DESIGN AND IMPLEMENTATION

4.2.1 LOGIN FORM:-

This is the first page for login of VAT who is authenticated and has the authority to use to go through detail of various register dealer.

Fig:-9 Login Page

4.2.2 HOME PAGE:-

Those dealer who are register with our software ,can avail the service .They are able to maintain sales as well as purchase register, can calculate VAT as well as can get report.

Fig:-10 Home Page

After login into the application. User will see this page as home page. Here on clicking the menu bar user will enter into that part of the application.

4.2.3 CLIENT INFORMATION:-

With this client or dealer will able to see their account.

Fig:-11 Client Information

A client has to fill all the records. An auditor can delete the records and update the information. We can search any saved records from clicking on search details.

4.2.4 CLIENT REGISTRATION:-

This is for those dealer who want themselves to get register with our application ,so that they get service of our application.

Fig:-12 Client Registration

A client has to fill all the above records to be registered. They have to provide the Bank Account Information.

4.2.5 SALES REGISTER:-

This is one of service available to register user , by this he is able to maintain a record of daily selling with whom he sell the product ,what product and at which rate.

Fig:-13 Sales Register

A client can maintain his record of sales by using this form.

4.2.6 PURCHASE REGISTER:-

This is one of service available to register user, by this he is able to maintain a record of daily transaction with whom he purchase the product, what product and at which rate.

Fig:-14 Purchase Register

4.2.7 Blank Form:-

There are so many blank forms available for the purpose of HP VAT. Some of them are given in the system. Blank forms from FORMVAT II to FORMVAT XII are given which will be used by the registered client to fill the form.

Fig:-15 Blank VAT forms

4.2.8 Rate list/Schedule:

Registration and payment of taxes under VAT Act can be of two types. First type is the registration and payment of taxes under full VAT and second type is the registration and payment of taxes under composition [12].

The option should be exercised by a dealer, while applying for registration in the prescribed VAT Form 1. A dealer who is already registered under full VAT could also opt for composition subjected to certain condition mentioned hereunder:

Conditions prescribed for registration under composition:-

A dealer applying for registration under composition should fulfill the following conditions:

1) Dealer should either be a registered dealer under the Act or shall be making an application for registration under the Act.

2) The stock of the dealer shall not comprise of goods purchased from outside the state.

3) Dealer shall not be purchasing goods from outside the state.

4) Dealer should not have claimed input tax rebate on the transition stock.

5) Dealer shall not be selling liquor.

6) Dealer shall not make interstate sales (except a dealer executing works contract with certain conditions)

7) Dealer shall not effect export sales.

8) Dealer shall not be a casual trader.

9) Dealer shall not be a dealer who has taken voluntary registration under section 23

of the VAT Act [12] .

In order to avoid frequent changes from full VAT to composition there is a restriction of a minimum retention of 12 months as a registered dealer under full VAT; before exercising the option to go in for registration under composition scheme.

Category of dealers eligible for composition scheme:

Subject to the condition laid above, only the following dealers are eligible for composition scheme:

1) Dealer who is either a hotelier or restaurateur or a caterer and or a dealer running a sweatmeat stall or an ice cream parlour or a bakery

2) Dealer producing granite metal and other than granite metal by using stone crushing machinery.

The applicable rate of tax for the dealers under composition scheme and the ceiling of the turnover prescribed along with periodicity for filing the returns are indicated in the table below.

Features to be noted by composition dealer:

1) The Composition dealer will be provided with a certificate of composition called Form VAT 8. The dealer applying for Composition Scheme shall be collecting regular rate of tax under section 4 till he gets the certificate.

2) After service of 'Certificate of Registration' under composition such a dealer is barred from collecting the tax. This is clearly mentioned in the said certificate.

3) No 'tax invoice' meant for full VAT dealers can be raised by dealer under composition. They should raise sales invoice as prescribed under the VAT Rules.

4) The Composition dealer is barred from taking input tax credit. The input tax credit even on transition stock is also not allowed.

5) Dealer exceeding the turnover limit of Rs. 15 lakhs in a year [except dealers executing in Works Contract], Hotelier, restaurateur or caterers or a dealer running a sweatmeat stall or an ice cream parlour or a bakery and dealer producing granite metal by using stone crushing machinery], shall automatically enter into full VAT from the first day of the month succeeding the month in which he exceeds the threshold.

In such cases, the dealer shall file the final return under Composition Scheme upto the end of that month and shall start charging regular rate from the first of next month.

6) The dealer coming under the Composition Scheme becomes ineligible for the Scheme if he purchases goods from outside the state or if he imports the goods from outside the territory of India (except for a dealer executing works contract with certain conditions) and he shall start paying at regular rate of tax from the first day of the month in which he has made such purchases.

7) The dealer under Composition Scheme, other than a hotelier, restaurateur or caterer and a dealer producing granite metal by using stone crushing machine, shall be filing

within fifteen days after the end of the relevant month. Revised return can also be filed in Form VAT 120 only.

8) While moving from Composition to full VAT Scheme, he shall surrender his Form VAT 8 certificate file a final return in Form VAT 120 with full payment of tax.

9) For the dealers who have opted for full VAT or composition during 2002-03 and they have been allotted TIN during that period, have been given the option to modify the option from 1st April. The relevant Rule is extracted here under:

Rule 181: Transitional provisions:- Subject to these rules, any application made by a dealer for registration under the Act before the commencement of these rules shall be deemed to be an application made under rule 4 and such dealer shall be permitted to make any modification in the application made by submitting an application in Form VAT 1 [12].

Table:-1 Transitional Provisions

Sr. No.	Type of dealer	Turnover limit	Rate of taxes	Period for filing return
1.	Regular Composition dealer Trader/Manufacturer	Upto 15 lakh	1%	Quarterly
2.	Dealer executing works contract	No turnover limit	4%	Monthly
3.	Hotelier, restaurateur or caterer	No turnover limit	4%	Monthly

Table:-2 SCHEDULE 'A' [8]
(See clause (a) of sub-section (1) of section 6)
PART–I: GOODS TAXABLE @ 1percentum

Sr. No.	Goods
1	Gold, silver, other precious metals, precious stones and Ornaments thereof.

PART--II: GOODS TAXABLE @ 4percentum [8]

1	Agricultural implements not operated manually or not driven by

	animal.
2	All equipments for communication such as, Private Branch Exchange (P.B.X.) and Electronic Private Automatic Branch Exchange (E.P.A.B.X.) etc.

3	All intangible goods like copyright, patent and representative Licence etc.
4	All kinds of bricks including fly ash bricks, refractory bricks and asphaltic roofing earthen tiles.
5	All types of yarn other than cotton and silk yarn in hank and sewing thread.
6	Aluminium utensils and enamelled utensils.
7	Areca nut, betel nut and betel nut powder.
8	Bamboo, pulp of bamboo, bamboo paper, wood and its articles (other than those covered by item No. 5 of Schedule 'B').
9	Bearings.
10	Belting.
11	Betel leaves.
12	Bidi leaves.
13	Bicycles, tricycles, cycle rickshaws and parts.
14	Bitumen.
15	Bone meal.
16	Branded Bread.
17	Bulk drugs and other drugs, medicines and medical plant and equipment.
18	Capital Goods.
19	Castings.

20	Centrifugal, mono block and submersible pumps and parts thereof.
21	Coffee beans and seeds, cocoa pod, green tea leaves and
22	Chemical fertilizers and chemical fertilizer mixtures; Insecticides, pesticides, rodenticides, fungicides, weedicides, herbicides, plant regulators and plant growth nutrients.
23	Coir and coir products excluding coir mattresses.
24	Cotton and cotton waste.
25	Crucibles.
26	Declared goods as specified in section 14 of the Central Sales Tax Act, 1956 (Central Act, 74 of 1956).
27	Edible oils, oil cake and de-oiled cake.
28	Electrodes including welding electrodes and welding rods.
29	Exercise books (except those specified in item No. 25 of Schedule 'B'), graph book and laboratory note book.
30	Ferrous and non-ferrous metals and alloys; non-metals such as aluminium, copper, zinc and extrusions thereof
31	Fibres of all types and fibre waste.
32	Flour (atta), maida, suji, besan etc.
33	Fried grams.
34	Gur, jaggery and edible variety of rub-gur.
35	Hand pumps and spare parts.
36	Herbs, bark, dry plants or dry roots, commonly known as jari booti and dry flowers.
37	Hose pipes.

38	Hosiery goods.
39	Husk and bran of cereals.
40	Ice.
41	Imitation jewellery
42	Incense sticks commonly known as aggarbati, dhupkathi and dhup bati.
43	Industrial cables (high voltage cable, XL PE cables, jelly-filled cables, optical fibre cables).
44	IT products including computers, telephone (including mobile handsets and parts thereof, teleprinter and wireless equipments and parts thereof) and other products as may be notified.
45	Industrial input and packing materials as may be notified.
46	Leaf plates and cups (other than those specified in item No. 29 of Schedule 'B').
47	Murmuralu, pelalu, atakutu, puffed rise, muri.
48	Newars.
49	Napa slabs (rough flooring stones).
50	Ores and minerals.
51	Paddy, rice, wheat and pulses.
52	Paper and news print.
53	Pipes of all varieties including G.I. pipes, C.I. pipes, Ductile pipes and PVC pipes.
54	Plastic footwear.
55	Printed material including diary and calendar.

56	Printing ink excluding toner and cartridges.
57	Rail coaches, engines and wagons.
58	Readymade garments.
59	Renewable energy devices and parts thereof.
60	Safety matches.
61	Sewing machines.
62	Ship and other water vessels.
63	Silk fabrics (subject to abolition of rental agreement).
64	Skimmed milk powder.
65	Solvent oils other than organic solvent oil.
66	Spices of all varities and forms including cumin seed, aniseed, turmeric and dry chillies.
67	Sports goods excluding apparels and footwear.
68	Starch.
69	Sugar and khandsari.
70	Tamarind.
71	Textile fabrics.
72	Tobacco.
73	Tractors, threshers harvesters and attachments and parts thereof.

PART-III: GOODS TAXABLE @ 12.5 percent [8]

1	All other goods than those specified in Part–I, Part-II, Part-IV, Part-V and Part-VI of Schedule 'A' or in Schedule 'B' or in Schedule 'C' or in Schedule 'D'.

PART–IV: GOODS TAXABLE @ 20 percentum [8]

Sr. No.	Goods
1	Arms and ammunition
2	Lottery tickets

PART–V: GOODS TAXABLE @ 30 percentum [8]

Sr. No.	Goods
1	Lime-stone (L.D. grade)

Table:-3 SCHEDULE 'B' [8]
(See section 9)
GOODS EXEMPTED FROM TAX

Sr. No.	Goods	Conditions of Exemptions
1	Agriculture or horticulture produce, including herbs or saplings of trees sold by person or a member of his family, grown by himself or grown on any land in which he has an interest whether as owner or usufructuary mortgagee, tenant or otherwise.	-
2	Agricultural implements manually operated or animal driven.	-
3	Aids and implements used by handicapped persons.	-

4	Animal feed and feed supplements, namely, processed commodity sold as poultry feed, cattle feed, pig feed, fish feed, fish meal, prawn feed, shrimp feed and feed supplements and mineral mixture concentrates, intended for use as feed supplements including grass, hay and straw.	-
5	Articles made of bamboo-wood used for agricultural purposes.	-
6	Baan.	-
7	Books, periodicals and journals.	-
8	Charkha, Ambar Charkha; handlooms, Himachali handloom articles, Himachali handloom shawls, caps and handspun yarn, and Gandhi Topi.	-
9	Charcoal.	-
10	Coarse grains other than paddy, rice and wheat.	-
11	Condoms and contraceptives.	-
12	Cotton yarn in hank and silk yarn in hank.	-
13	Curd, lassi, butter milk and separated milk.	-
14	Earthen pots (unglazed).	-
15	Electric Energy	-
16	Fire wood.	When sold for domestic use
17	Fishnet, fish fabrics and fish seeds.	-
18	Food grains supplied free of cost by the Government of India.	-
19	Fresh fruits.	-
20	Fresh milk and pasteurised milk.	-

21	Fresh plants, sapling and fresh flowers	-
22	Fresh vegetables	-
23	Garlic, ginger, green chillies, onions, potatoes, sweet potatoes, tapioca and their seeds.	-
24	Glass bangles (including plastic shell and lac bangles).	-
25	Graphite pencils, writing chalk, crayons, sketch, pens, drawing colour eraser, sharpener, footrules, geometry boxes, ink tablets, exercise and drawing books of the type used in schools and takhties used by students.	-
26	Human blood and blood plasma.	-
27	Indigenous handmade musical instruments.	-
28	Kumkum, bindi, alta and sindur.	-
29	Leaf plates and leaf-cups (when not compressed).	-
30	Meat, fish, prawn and other aquatic products when not cured or frozen; eggs and live stock and animal hair.	Except when sold in sealed containers
31	National flag.	-
32	Non-Judicial stamp paper sold by Government Treasuries; postal items like envelope, postcard etc. sold by Government; rupee note when sold to the Reserve Bank of India and cheques, loose or in book form.	-
33	Organic manure.	-
34	Raw wool.	-
35	Seeds.	-
36	Semen including frozen semen.	-

37	Silk worm laying cocoon and raw silk.	-
38	Tender green coconut.	-
39	Toddy, Neera and Arak.	-
40	Unbranded bread.	-
41	Unprocessed and unbranded salt.	-
42	Water other than (i) aerated, mineral, distilled, medicinal, ionic, battery, demineralised water, and (ii) water sold in sealed container.	-
43	Writing slate and slate pencils. - 44.	-
44	Kerosene oil sold through Public Distribution System	-

Table:-4 SCHEDULE 'C' [8]
(See clause (b) of sub-section (1) of section 6)
GOODS SUBJECT TO PURCHASE TAX

Sr. No.	Goods
1	Resin (crude pine gum)
2	Khair, Eucalyptus and Popular trees when they have fallen or have been felled or agreed to be felled including their stumps, roots, fuel wood and other wood in all forms when purchased from the growers within the State.

Table:-5 SCHEDULE 'D' [8]
(See clause (c) of sub-section (1) of section 6)

Sr. No	Goods
1	Motor-spirit (Petrol including Aviation Turbine Fuel and Diesel).
2	Liquor.

4.3 Code

4.3.1 Coding of Login Page (Module 1):-

```java
import javax.swing.JOptionPane;

public class vatform extends javax.swing.JFrame {

mainform j1 = new mainform();

public vatform() {

    initComponents();

  }

private void LoginActionPerformed(java.awt.event.ActionEvent evt) {

final String name="amit";

final String pass="123";

if(name.equals(txt1.getText()) && pass.equals(String.valueOf(p.getPassword())))

 j1.setVisible(true);

else

 JOptionPane.showMessageDialog(this, "Invallid password or user name");

  }

 private void cancelActionPerformed(java.awt.event.ActionEvent evt) {

dispose();

  }

 public static void main(String args[]) {

    java.awt.EventQueue.invokeLater(new Runnable() {

      public void run() {

        new vatform().setVisible(true);

      }

    });

  }

private javax.swing.JButton Login;
```

```java
 private javax.swing.JButton cancel;

   private javax.swing.JLabel jLabel1;

   private javax.swing.JLabel jLabel2;

   private javax.swing.JLabel jLabel3;

   private javax.swing.JPanel jPanel1;

   private javax.swing.JTextField jTextField1;

   private javax.swing.JPasswordField p;

   private javax.swing.JTextField txt1;

}
```

4.3.2 Coding of Client Information(Module 2):-

```java
import java.sql.*;

import javax.swing.JOptionPane;

import javax.swing.JTextField;

public class Clientmaster extends javax.swing.JFrame {

GetConnection oGetConnection = new GetConnection();

 JTextField oJTextField = new JTextField();

void displayMessage(String s1)

   {

   JOptionPane.showMessageDialog(this, s1);

   }

   public Clientmaster() {

      initComponents()

}

private void ADDButtonMouseClicked(java.awt.event.MouseEvent evt) {

  try

     {

 Connection conn = oGetConnection.getConnection(
```

```java
    Statement stmt = conn.createStatement();

stmt.executeUpdate("insert                            into                    Client
values('"+t1.getText().toString()+"','"+t2.getText().toString()+"','"+t3.getText().toStri
ng()+"','"+t4.getText().toString()+"','"+t5.getText().toString()+"','"+t6.getText().toStri
ng()+"','"+t7.getText().toString()+"','"+t8.getText().toString()+"','"+t9.getText().toStri
ng()+"','"+t10.getText().toString()+"','"+t11.getText().toString()+"','"+t12.getText().to
String()+"','"+t13.getText().toString()+"','"+t14.getText().toString()+"','"+t15.getText(
).toString()+"','"+t16.getText().toString()+"','"+t17.getText().toString()+"')");

    JOptionPane.showMessageDialog(this, "Data Saved Succesfully");

        }

    catch(Exception ex)

    {

       ex.printStackTrace();

    }

    }

private void refreshMouseClicked(java.awt.event.MouseEvent evt) {

 t1.setText("");

      t2.setText("");

      t3.setText("");

      t4.setText("");

      t5.setText("");

      t6.setText("");

      t7.setText("");

      t8.setText("");

      t9.setText("");

      t10.setText("");

      t11.setText("");

      t12.setText("");

      t13.setText("");
```

```java
    t14.setText("");

    t15.setText("");

    t16.setText("");

    t17.setText("");

    }
  private void deleteMouseClicked(java.awt.event.MouseEvent evt) {

    String delete;

   int flag = 0;

   Object[] message = {"Enter PAN No", oJTextField.getText().toString()};//send text
of filename

    String option = JOptionPane.showInputDialog(null, message, "Delete Records",
JOptionPane.OK_CANCEL_OPTION);

    System.out.println(option);

   if (option == null)

      JOptionPane.showMessageDialog(this, "plese input any PAN NO");

      else

        {

      try{

     Connection conn = oGetConnection.getConnection();

   Statement stmt = conn.createStatement();

   ResultSet rs = stmt.executeQuery("select PAN_NO from client");

  while(rs.next())

   {

 delete = rs.getString("PAN_NO");

    System.out.println(t2);

    if(delete.equalsIgnoreCase(t2.getText().toString()))

    {

     System.out.println(t2);
```

```java
        flag =1;

      break;

      }

  else

     flag = 0;

   }

   System.out.println(flag);

  if(flag==1)

  {

     stmt.executeUpdate("Delete       from     client      where     PAN_NO   =
'"+t2.getText().toString()+"'");

     displayMessage("Records of enterd PAN NO is deleted.");

        }

     else

  {

   JOptionPane.showMessageDialog(this, "enterd PAN NO is not vallid");

  }

     }

  catch(Exception ex)

  {

     ex.printStackTrace();

  }

}

   }

 private void searchMouseClicked(java.awt.event.MouseEvent evt) {

 int flag = 0;

Object[] message = {"Enter PAN No", oJTextField.getText().toString()};//send text of
filename
```

```java
String option = JOptionPane.showInputDialog(null, message, "Search Records",
JOptionPane.OK_CANCEL_OPTION);

System.out.println(option);

    if (option == null)

       JOptionPane.showMessageDialog(this, "plese input any PAN NO");

       else

          {

try{

      Connection conn = oGetConnection.getConnection();

   Statement stmt = conn.createStatement();



   ResultSet rs1 = stmt.executeQuery("select PAN_NO from client");

   while(rs1.next())

   {


      if((t2.getText().toString().equalsIgnoreCase(rs1.getString("PAN_NO"))))

      {

   displayMessage("PAN NO is available ");

   flag=1;

   break;

      }

   }

 if(flag!=1)

   {

   JOptionPane.showMessageDialog(this, "PAN NO is not available");

   }

      }
```

```java
    catch(Exception ex)

    {

       ex.printStackTrace();

        }

        }

    }


    private void jButton1MouseClicked(java.awt.event.MouseEvent evt) {

dispose();

    }

    public static void main(String args[]) {

       java.awt.EventQueue.invokeLater(new Runnable() {

          public void run() {

             new Clientmaster().setVisible(true);

          }

       });

    }

    private javax.swing.JButton ADDButton;

    private javax.swing.JButton delete;

    private javax.swing.JButton jButton1;

    private javax.swing.JLabel jLabel1;

    private javax.swing.JLabel jLabel10;

    private javax.swing.JLabel jLabel11;

    private javax.swing.JLabel jLabel12;

    private javax.swing.JLabel jLabel13;

    private javax.swing.JLabel jLabel14;

    private javax.swing.JLabel jLabel15;
```

```java
private javax.swing.JLabel jLabel16;

private javax.swing.JLabel jLabel17;

private javax.swing.JLabel jLabel19;

private javax.swing.JLabel jLabel2;

private javax.swing.JLabel jLabel20;

private javax.swing.JLabel jLabel3;

private javax.swing.JLabel jLabel4;

private javax.swing.JLabel jLabel5;

private javax.swing.JLabel jLabel6;

private javax.swing.JLabel jLabel7;

private javax.swing.JLabel jLabel8;

private javax.swing.JLabel jLabel9;

private javax.swing.JPanel jPanel1;

private javax.swing.JTextField jTextField1;

private javax.swing.JButton refresh;

private javax.swing.JButton search;

private javax.swing.JTextField t1;

private javax.swing.JTextField t10;

private javax.swing.JTextField t11;

private javax.swing.JTextField t12;

private javax.swing.JTextField t13;

private javax.swing.JTextField t14;

private javax.swing.JTextField t15;

private javax.swing.JTextField t16;

private javax.swing.JTextField t17;

private javax.swing.JTextField t2;

private javax.swing.JTextField t3;
```

```
    private javax.swing.JTextField t4;

    private javax.swing.JTextField t5;

    private javax.swing.JTextField t6;

    private javax.swing.JTextField t7;

    private javax.swing.JTextField t8;

    private javax.swing.JTextField t9;

}
```

4.3.4 Coding of Sales Register(Module 3):-

```
import java.sql.*;

import javax.swing.JOptionPane;

import javax.swing.JTextField;

public class Sales extends javax.swing.JFrame {

GetConnection oGetConnection = new GetConnection();

 JTextField oJTextField = new JTextField();   /** Creates new form Sales */

   public Sales() {

     initComponents();

   }

private void SaveMouseClicked(java.awt.event.MouseEvent evt) {

try

    {

           Connection conn = oGetConnection.getConnection();

 Statement stmt = conn.createStatement();

 stmt.executeUpdate("insert                      into                  Sales_register
values('"+t1.getText().toString()+"','"+t2.getText().toString()+"','"+t3.getText().toStri
ng()+"','"+t4.getText().toString()+"','"+t5.getText().toString()+"','"+t6.getText().toStri
ng()+"','"+t7.getText().toString()+"','"+t8.getText().toString()+"','"+t9.getText().toStri
ng()+"')");

   JOptionPane.showMessageDialog(this, "Data Saved Succesfully");
```

```java
            }
  catch(Exception ex)
   {
      ex.printStackTrace();
   }        }
  private void RefreshMouseClicked(java.awt.event.MouseEvent evt) {
t1.setText("");
      t2.setText("");
      t3.setText("");
      t4.setText("");
      t5.setText("");
      t6.setText("");
      t7.setText("");
      t8.setText("");
      t9.setText("");
      ta.setText("");
   }
private void ExistMouseClicked(java.awt.event.MouseEvent evt) {
dispose();
   }
  private void ViewDetailsMouseClicked(java.awt.event.MouseEvent evt) {
String tin
 int flag = 0;
                     try{
     Connection conn = oGetConnection.getConnection();
   Statement stmt = conn.createStatement();
   ResultSet rs = stmt.executeQuery("select TIN_NO from Sales_register");
```

```java
   while(rs.next())

  {

   tin = rs.getString("TIN_NO");

   System.out.println(tin);

   if(tin.equalsIgnoreCase(t4.getText().toString()))

   {

    System.out.println(tin);

   flag =1;

    break;

    }

 else

   flag = 0;

  }

  System.out.println(flag);

  if(flag==1)

  {

  ResultSet          rs1          =          stmt.executeQuery("select
T_DATE,TIN_NO,INVOICE_NO,NAME_OF_GOODS,NAME_OF_PURCHASIN
G_DEALER,DESCRIPTION_OF_SALES,SERIAL_NO,TAX_RATE,AMOUNT
from Sales_register where TIN_NO"+"="+"'"+t4.getText().toString()+"'");

  while(rs1.next())

  {

 t1.setText(rs1.getString(1));

t2.setText(rs1.getString(2));

   t3.setText(rs1.getString(3));

   t4.setText(rs1.getString(4));

   t5.setText(rs1.getString(5));

   t6.setText(rs1.getString(6));
```

```java
            t7.setText(rs1.getString(7));

            t8.setText(rs1.getString(8));

           t9.setText(rs1.getString(9));

            }

             }

     else

       {

       JOptionPane.showMessageDialog(this, "enterd TIN_NO is not vallid");

      }

     }

       catch(Exception ex)

       {

          ex.printStackTrace();

           } }
private void TaxableAmountMouseClicked(java.awt.event.MouseEvent evt) {

float total_grossamount=0;

          int total=0;

        int flag = 0;

         String a,b;

    int tax,amount;

    try{

        Connection conn = oGetConnection.getConnection();

     Statement stmt = conn.createStatement();

      a=t8.getText();

      b=t9.getText();

      tax=Integer.parseInt(a);

      amount=Integer.parseInt(b);
```

```java
        total=tax*amount;

        total_grossamount=total/100;

    String str= ""+total_grossamount;

        ta.setText(str);

         }

         catch(Exception ex)

        {

            ex.printStackTrace();

        }    }

        public static void main(String args[]) {

            java.awt.EventQueue.invokeLater(new Runnable() {

                public void run() {

                    new Sales().setVisible(true);

                }

            });

         }

      private javax.swing.JButton Exist;

       private javax.swing.JButton Refresh;

       private javax.swing.JButton Save;

       private javax.swing.JButton TaxableAmount;

       private javax.swing.JButton ViewDetails;

       private javax.swing.JLabel jLabel1;

     private javax.swing.JLabel jLabel10;

       private javax.swing.JLabel jLabel11;

       private javax.swing.JLabel jLabel12;

       private javax.swing.JLabel jLabel2;

       private javax.swing.JLabel jLabel3;
```

```java
        private javax.swing.JLabel jLabel4;

        private javax.swing.JLabel jLabel5;

        private javax.swing.JLabel jLabel6;

        private javax.swing.JLabel jLabel7;

        private javax.swing.JLabel jLabel8;

        private javax.swing.JLabel jLabel9;

        private javax.swing.JPanel jPanel1;

        private javax.swing.JTextField t1;

        private javax.swing.JTextField t2;

        private javax.swing.JTextField t3;

        private javax.swing.JTextField t4;

        private javax.swing.JTextField t5;

        private javax.swing.JTextField t6;

        private javax.swing.JTextField t7;

        private javax.swing.JTextField t8;

        private javax.swing.JTextField t9;

        private javax.swing.JTextField ta;

        }
```

4.4 Technical Discussions

The products can be filtered based on various parameters like Manufacturer, Product Type, Operating System supported etc. Initially it was decided to have the various list items predefined. But with time new manufacturers and product types could be added. So the values for the list of manufacturers and product types are loaded dynamically by retrieving from the database. Also it was decided initially to have a drop down list for price range and the user could select a price range from the ranges available. But this would limit the user's ability to filter the products based on different price ranges. Instead providing two text fields so that the user can enter their price range would give them more flexibility. A product could be added to a shopping cart by dragging it and dropping it in the cart area. Items in the cart could be removed by clicking a button. To maintain symmetry and ease of use products could be removed from the cart by dragging the product out of the cart.

A product can be added to the cart by dragging it and dropping it in the cart. Initially it was decided that when a product is dropped in the cart the cart summary label could be updated on the client side without any call to the server and later the session variables (Shopping cart) could be updated. This would result in loss of information when the user loses internet connection. So when a product is dropped in the cart area a web service is called and this service updates the session variables for the shopping cart and the cart summary is recalculated and sent back to the client. This would improve the reliability of the application.

4.5 Conclusion:

This chapter describes about the implementation of the project. It shows the interface of the system. It also tells about the various modules of the system. It also shows different parts of the system. Whole system includes three modules. These modules are VAT Payer, VAT Body, VAT Auditors. It also include the coding part of the various modules of the system.

CHAPTER 5

TESTING

Software testing is a process of running with intent of finding errors in software. Software testing assures the quality of software and represents final review of other phases of software like specification, design, code generation etc [13].

5.1 Unit Testing

Unit testing emphasizes the verification effort on the smallest unit of software design i.e.; a software component or module. Unit testing is a dynamic method for verification, where program is actually compiled and executed. Unit testing is performed in parallel with the coding phase. Unit testing tests units or modules not the whole software. I have tested each view/module of the application individually. As the modules were built up testing was carried out simultaneously, tracking out each and every kind of input and checking the corresponding output until module is working correctly. The functionality of the modules was also tested as separate units. Each of the three modules was tested as separate units. In each module all the functionalities were tested in isolation [13]. In the Product Description Module it has been tested that all the images are displayed properly. Users can add review and the as soon as a user adds a review it is updated in the view customer review tab. It has been checked to see if the whole page refreshes or a partial page update happens when a user writes a review. In the table Details it has been tested that when a user edits a quantity or removes a product from the cart, the total price is updated accordingly. It has been checked to see if the whole page refreshes or a partial page update happens when a user edits the cart.Net beans 7.0 has in built support for testing the application. The unit testing can be done using visual studio 2008 without the need of any external application. Various methods have been created for the purpose of unit testing. Test cases are automatically generated for these methods. The tests run under the context which means settings from Software .config file are automatically picked up once the test case starts running. Methods were written to retrieve all the manufacturers from the database, strings that match a certain search term, products that match certain filter criteria, all images that belong to a particular product etc. Unit test cases were automatically generated for these methods and it can be seen in figure 6.1 that the

tests have passed.

5.2 Integration Testing

In integration testing a system consisting of different modules is tested for problems arising from component interaction. Integration testing should be developed from the system specification. Firstly, a minimum configuration must be integrated and tested. In our project I have done integration testing in a bottom up fashion i.e. in this project I have started construction and testing with atomic modules. After unit testing the modules are integrated one by one and then tested the system for problems arising from component interaction.

5.3 Validation Testing

It provides final assurances that software meets all functional, behavioral& performance requirement. Black box testing techniques are used.

There are three main components

- Validation test criteria (no. in place of no. & char in place of char)
- Configuration review (to ensure the completeness of s/w configuration.)
- Alpha & Beta testing-Alpha testing is done at developer's site i.e. at home & Beta testing once it is deployed. Since I have not deployed my application, I could not do the Beta testing.

Test Cases- I have used a number of test cases for testing the product. There were different cases for which different inputs were used to check whether desired output is produced or not. Addition of a new product to the cart should create a new row in the shopping cart.

1. Addition of an existing product to the cart has to update the quantity of the product. Any changes to items in the cart have to update the summary correctly.
2. Because same page is inserting data into more than one table in the database atomicity of the transaction is tested.
3. The state of the system after a product has been dragged in to the cart should be same as the state of the system if the same product is added to the cart by clicking a button.

5.4 White Box Testing

In white box testing knowing the internal working of the product, tests can be

conducted to ensure that internal operations are performed according to specification and all internal components have been adequately exercised. In white box testing logical path through the software are tested by providing test cases that exercise specific sets of conditions and loops [13].

Using white-box testing software developer can derive test case that

• Guarantee that all independent paths within a module have been exercised at least once.

• Exercise all logical decisions on their true and false side.

• Exercise all loops at their boundaries and within their operational bound.

• Exercise internal data structure to ensure their validity.

At every stage of project development I have tested the logics of the program by supplying the invalid inputs and generating the respective error messages. All the loops and conditional statements are tested to the boundary conditions and validated properly.

5.5 Performance Testing

Jakarta JMeter, a tool for testing applications was used to simulate the virtual users (clients) and test the performance of the system. It can be used to test performance both on static and dynamic resources (files, Servlets, Perl scripts, Java Objects, Data Bases and Queries, FTP Servers and more). It can be used to simulate a heavy load on a server, network or object to test its strength or to analyze overall performance under different load types. It can be used to make a graphical analysis of performance and test the server/script/object behavior under heavy concurrent load [13].

I have done performance testing to achieve an estimate of the peak and sustained load the application. This has done with few pages like the Shop Products (extensive Database access, business logic Intensive and more Images) and the Cart Details

(simple page). A few sample Screenshots of test results are shown below. The tests have been conducted by running the application (server) and JMeter on same machine. These test results do not include factors like network bandwidth etc as the server is running on the same machine.

5.6 Conclusion

This chapter concludes the testing of the system. It includes various testing such as unit testing, white box and black box testing, performance testing, and validation testing. Testing is an important part of the Software development life cycle. Testing of the system ensures that the system will work properly and accordingly to the requirement of the customer.

CHAPTER 6

CONCLUSIONS

This system will calculate the VAT for each registered client. System will prepare the VAT return for e-filling. System will be trustful to the client and VAT details of each stage is clearly visible. The 'VAT' is designed to provide a web based application that would make searching, viewing and selection of a product easier. 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. [8] The user can then view the complete specification of each product. They can also view the product reviews and also write their own reviews. Use of Ajax components would make the application interactive and prevents annoying post backs. Its drag and drop feature would make it easy to use.

This application does not have a built in check out process. An external checkout package has to be integrated in to this application. Also users cannot save the shopping carts so that they can access later i.e. they cannot create wish lists which they can access later. This application does not have features by which user can set price ranges for products and receive alerts once the price reaches the particular range.

6.1 Future work

The following things can be done in future.

- In future we want to make this web based application an online application.
- In future we want to cover Central Sales Tax (CST) also.
- In future we provide online payment for VAT and CST.

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