

PRODUCT STATUS MONITORING SYSTEM



ISO 9001:2000
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PROJECT WORK DONE AT
EUTECH CYBERNETICS PVT. INDIA LTD.,
CHENNAI

P-1112

PROJECT REPORT

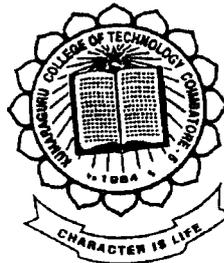
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT
FOR THE AWARD OF THE DEGREE OF
M.SC.(APPLIED SCIENCE) SOFTWARE ENGINEERING
OF BHARATHIAR UNIVERSITY, COIMBATORE

SUBMITTED BY
S. ABHISHEK
REG NO. 9937S0071

UNDER THE GUIDANCE OF

External Guide
Mr. Sathish
Eutech Cybernetics Pvt. India Ltd.,
Chennai

Internal Guide
Mr. R. Rajasehar -MCA
Lecturer-Dept. of CSE-KCT
Coimbatore



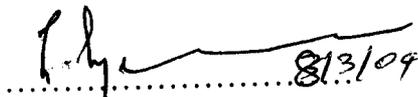
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KUMARAGURU COLLEGE OF TECHNOLOGY
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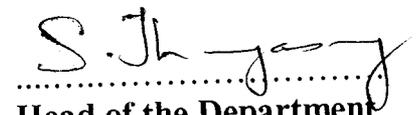
OCTOBER 2003 - MARCH 2004

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CERTIFICATE

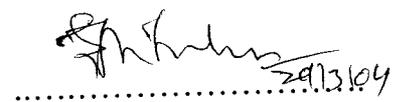
This is to certify that the project entitled “Product Status Management System” has been submitted by Mr. S. Abhishek in partial fulfillment of the award of the degree of Master of Science in Applied Science – Software Engineering of Bharathiyar University, Coimbatore during the academic year 2003 – 2004


.....8/3/04
Guide


.....
Head of the Department

Certified that the candidate was examined by us
in the Project Work Viva Voce examination held on 29/03/2004
and the University Register Number was 9937S0071


.....
Internal Examiner


.....29/3/04
External Examiner



2nd March 2004

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. S. Abhishek** (Roll No. 99SE02) who is undergoing M.Sc – Software Engineering in Kumaraguru College of Technology has successfully completed his project “ Product Status Monitoring System” as a part of his curriculum under the guidance of Mr. Sathish, project Leader between Oct’ 2003 to Mar’ 2004.

He had demonstrated good competency in his work, we observed that during his training period he was highly enthusiastic and took a lot of initiative in accomplishing what ever task assigned to him.

we wish him all the best for his future career.

For **Eutech Cybernetics (I) Pvt Ltd**

Devakumar Sanyasi
Vice President

Eutech Cybernetics (I) Pvt Ltd

5th Floor, “ The Rain Tree Place”, No 7(Old No.9), Mc Nichols Road, Chetpet Chennai – 600 031, Ph : 28223949, Fax : 28223747
www. ecyber.com

DECLARATION

I hereby declare that the project entitled "PRODUCT STATUS MONITORING SYSTEM" submitted to Bharathiar University, Coimbatore as the project work of Master of Science Degree in Software Engineering, is a record of original work done by me under the supervision and guidance of Mr. Sathish , Eutech Cybernetics Pvt India Ltd., Prof. K.R.Baskaran – Asst. Professor & Course Coordinator (Software Engineering) , Mr.R. Rajasehar – Lecturer, Department of Computer Science and Engineering, Kumaraguru College of Technology, Coimbatore and this project work has not found the basis of the award of any Degree / Diploma / Fellowship or similar title to any candidate of any University.

Place : COIMBATORE

Date : 29/03/04

S. Abhishek
Abhishek
Reg. No. 9937S0071
M.Sc. (Software Engineering)
Kumaraguru College of Technology

Acknowledgement

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I am bound to express my sincere and heartfelt gratitude to our esteemed **Dr.K.K.Padmanabhan B.Sc.(Engg.), M.Tech.,Ph.D.**, Principal of Kumaraguru College of Technology, Coimbatore, TamilNadu for his constant encouragement throughout my course.

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I admit my heartfelt thanks to my External Project Guides, **Mr.Sathish and Mr.MuthuVeerappan Project Leaders, Eutech Cybernetics Pvt. Ltd. India**, for being supportive throughout the tenure of my project.

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I thank my beloved parents and my friends who have extended their encouragement and help physically and mentally to complete and bring out this project successfully.

Synopsis

SYNOPSIS

Information is the backbone of any organization. Therefore, it has to be made available at all times to ensure proper decision-making and towards this end, information has to be accurate, current, timely, relevant and usable.

The project presented here is **Product Status Monitoring System**. This has been undertaken for **Eutech Cybernetics Pvt. Ltd., Chennai**. This project was developed in **Active Server Pages as Middleware and Oracle 8 as Back-End**.

The **Product Status Monitoring System** is an ERP based project. The whole ERP product is named as the **Integral Solutions**. The integral solutions totally consists of four different modules, they are Finance, HR, Sales and Distribution and Material Management. Among these four modules the important one that of Sales and Distribution involves the product status monitoring system which is covered in this project as the important part, other than that we have order fulfillment, maintenance of customer and item details.

The product status monitoring system consists of five different sub modules. They are Branch, Product, Quotation, Reports and Mail. The branch will take care of the maintenance of the branch details, sales and purchase. It will also take care of the status of the products available in the branch. The products will take care of generating the unique product code for the new products, status of all the products, details and make of the products and price of the products.

The Quotation part will take care of the branch or head office quotations sent to the corresponding suppliers in the particular date. The quotation part will make sure that it is been given in a format to take print out and send it to the suppliers. The Reports part of this product status monitoring system gives the Date wise, Month wise and Year wise sales and purchase reports. The last one of the sub modules involved in the product status monitoring system is the mailing part where it is used for an effective communication of

any department, branches or suppliers. The product status monitoring system is very efficient and easy to monitor the status of the products.

The order fulfillment is otherwise called as the **Order Cycle**. That is, the events that are covered between the producing of the order until the completion of the order processing is called Order Fulfillment are also done in this project. The important part of any organization is the customer relationship management by which you earn the customers and thereby improve the business is carried out in this project with effective maintenance of the customer and their product difficulties in a tactical manner.

This will really make everyone accept that how important this kind of project helps to run a better organization with lot of well planned activities in much easier way.

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1. INTRODUCTION

1.1 PROJECT OVERVIEW

The use of computers in the front office of any recognized company has become an absolute necessity in the current trend. They are used in many activities like accounts, payroll, contacts etc. The administrators of the company are faced with the challenge of utilizing the limited resources and provide quality service to the customers. The use of computers in companies for information processing and decision-making helps the authorized users like administrators in serving the customers better with least strain and more efficiency.

Now, this product status monitoring system is an ERP based project for any organization being done by Eutech Cybernetics Pvt. Ltd., Chennai and I am part of them in this product. The ERP product is named as **Integral Solutions**. Before going into the details of the project we must have a clear picture of what is ERP, and what are their uses.

What is ERP?

- ERP stands for Enterprise Resource Planning.
- ERP integrates all department and functions across an organization onto a single computer system.
- Each department has its own computer system, optimized for particular ways that the department does its work.
- ERP combines them all into a single integrated software program that runs off a single database.
- ERP calls for Accountability, responsibility and communication.
- The department usually covered in the ERP is Finance, HR, Sales & Distribution, Production and Purchase.

Who are the targeted persons in the market?

- The business market involves three categories. They are : 1) Small Scale Business, 2) Medium Scale Business and 3) Large Scale Business.
- The targeted persons for this ERP product are certainly the Large Scale Business peoples. Because the cost involved in these kinds of projects is very high that the other two categories can't provide it.

Abstract

The integral solutions totally consists of four different modules, they are Finance, HR, Sales and Distribution and Material Management. Among these four modules the important one that of Sales and Distribution involves the product status monitoring system which is covered in this project as the important part, other than that we have order fulfillment, maintenance of customer and item details and customer relationship management (CRM). So the details about the system is presented below:

Product Status Monitoring System is an advanced tool used within the organization. It will be very efficient and easy to monitor the status of products. The project has five divisions as the following:

- Branches
- Products
- Quotations
- Reports
- Mail

Each one of the divisions is explained in detail format of matter. These above five divisions form the whole product status monitoring system.

Branches

The first part of the product status monitoring system being the branch process is explained below in detail.

- The branch part is used to maintain the details regarding the branch that is the number of employees, address, their contacts etc.
- It should also take care of the products that are available in the branch and what is that they deal with.
- It should have separate stock maintenance for all the branches including the head office.
- The main branch operations include the sales and purchase. The purchase includes different categories between them that are branch-to-branch purchase and the supplier-to-branch purchase.
- Each and every transaction is recorded as the history in the log file. This will be helpful in the future operations.
- The status of all the products available in the branch is given very efficiently so that decision-making is very easy.

Products

- As the heading suggests, this part deals with the products, their details, price, company etc.
- The main operation here is that each time a new product is introduced the product details and the new product code is entered into the product master.
- The analysis of the products with the details such as sales%, purchase%, profit %, loss% etc.
- The comparison of the products as to how well they are moving in the market.

- The status of all the products that are available in all branches.

Quotations

- The quotation part will deal with preparing the quotation form in the text format which could be take printout and could sent it to the corresponding suppliers.
- The suppliers details are maintained along with the details quotation forms that are sent to the suppliers and their history are maintained.
- The quotations will generally help to get materials in an effective manner. With this process it should also check the status of the product and the updating of the stock level.

Reports

The following reports are generated for the product status monitoring system :

- Date wise Sales Reports
- Month wise Sales Reports
- Year wise Sales Reports
- Status of the Products

Mail

The mail part is used to communicate within the organization or outside the organization. Definitely there is lots of necessity to communicate with others hence this facility is much necessary and looks a very efficient way to reduce work load.

These are the five sub modules of the product status monitoring system which comes as the main operations under the Sales and Distribution part.

Order Fulfillment

The order fulfillment is otherwise known as the Order Cycle. That is, from producing the order form to the completion of processing the order. The order fulfillment process comes into play when the customers place their orders to the organization. The order form first must be transformed into the electronic format by entering the details of the order form.

Next, with the available details of the order filled the system will provide a feasibility report whether it is possible to process the order immediately or take sometime by the comparison with the available stock and resources. If it is below the reorder level then the products have to be purchased based on some criteria. The order form is generated according to the mode of the products like Normal or Urgent Mode.

Finally the order processing is completed then there should be some updating process to maintain the status and the stock of the products. Then there are facility to view the order in different format with the importance given to the date, products, quantity etc.

Maintenance of Customer and Item Details

The Customer and Item details are very important which should be maintained with great care and the Item details should be updated as the new products are introduced into the organization. Always the customers are the wealth of the company and hence importance to them is very much necessary.

This is the overview of the project, which would have given you a certain idea of what this project consists of and how efficient it will be in the situations of making decisions and information processing. The goal is achieved once the decision taken with the help of this system is accurate.

1.2 ORGANIZATION PROFILE :

EUTECH CYBERNETICS LIMITED is one of the well known software companies in Chennai. This is 100% software import and export unit. Eutech is one of the big corporate houses in India, which has annual turnover of Rs.400 crores. The organization carries forward 6 countries across the globe. It has strategic partnership with giants like **Microsoft, Ericsson, Oracle, Lotus and Echelon.**

Eutech is a leader in end-to-end network centric software solutions for Infrastructure Management, which includes Intelligent Buildings and Facilities Management. Established in 1990, Eutech Cybernetics has focused on software developments. Its flagship product, iviva.works, comprising a suite of Enterprise Management Applications, was developed to provide peer-to-peer networking infrastructure via Intranet, Internet and wireless media. The solution can easily integrate applications and/or systems together, and access applications through personal agents.

It is the leading exporter of software in India. Quality education and Training is imparted here, some of the important areas covered by Eutech Cybernetics are as follows:

- Energy Services
- Information Technology
- Buildings and Facilities
- Health
- Communications

Their humble beginning since a long time back illustrates, that success for them in their endeavors is a never ending journey and not a destination.

System Study & Analysis

2. SYSTEM STUDY AND ANALYSIS

Information is an integrated, user machine system for providing information's to support the operations, and management and decision-making function is an organization.

2.1 Need for the System

For the efficient and effective utilization of available resources, convenient availability of necessary as required information is very important. It is an ERP based project so when do we really go in for the ERP products. It is used only when there is some integration process involved between the departments. Because the departments may follow different format of reports and hence if you need an consolidated report it should be carried out manually. For this reason we go in for the ERP based products. 'System Analysis' is conducted with the following objectives:

- Identify the end-users need.
- Evaluate the system concept feasibility.
- Perform economic and technical analysis.
- Allocate functions to hardware, software and other system elements.
- Establish cost and schedule constraints.
- Create a system definition that performs the foundation for all subsequent engineering work.
- Perform the SWOT analysis and compare it to the feasibility report.

Both hardware and software expertise are required to successfully attain the objective listed above.

2.2 EXISTING SYSTEM AND ITS LIMITATIONS

Presently, the system is being done manually and has the usual problems associated with the manual systems. The amount of data generated in an office is immense and maintaining of these data through a manual system is quite cumbersome.

The present manual system depends on large-scale manual data. Processing methods, which bring about an ever-increasing pyramid of paperwork, time and resources. As a result of this, the possibility of flaws and failures are often very common be it at the preliminary entry level or at the transaction or processing side.

Inquiries of processing references have to be made to the paper records be it customer details, item details, stock details or even status details. In short much paperwork, manual work and search time office personnel have to work tediously to maintain these records in such a situation. Many more reasons prevail and as a result the management stresses on the need for the automation so that work is processed faster and flaws and errors are much more minimized.

Detailed view of the each system details is given below:

Product Status Monitoring System

Branches

- The present system regarding branches is carried out manually that is through phone they would have contact regarding the products available in the different branches.

Products

- The existing system has a register in which the details of the products are filled in and after any sales or purchase it is this register, which is taken for updating the master details.

Quotations

- The quotation form is filled in manually and hence there is no record of the past quotations made to the suppliers. This is certainly necessary to make future quotations.

Reports

- The reports are produced manually after a tedious paperwork with the register, which has keyed in all the details manually. This is certainly cumbersome work, which takes lot of time.

Order Fulfillment

The order forms are obtained through post or couriers. Even in this new system also it is done in same way because all the customers may not have computerized systems in their organization. After the arrival of the orders then the analysis of the order whether it is possible or not is done manually by comparing so many papers and registers and the real difficulty is that there is always the chance of making mistakes.

Currently the analysis and the processing of the order forms is done manually and hence the efficient and effective way of doing things is missing.

2.3 REQUIREMENTS OF NEW SYSTEM

Based upon the specification given by the users on various meetings and interviews and study of the problems of existing manual system following requirements have been identified:

Product Status Monitoring System

- Maintenance of the branch details.
- Maintenance of the status of the products available in the branch.
- Maintenance of the stock available and reorder level of the branch.
- Maintenance of the customer and supplier details of the branch.
- Maintenance of product details of the branch.
- Nomination felicities.
- Operation of reports.
- User specified password in operating the application.
- Maintenance of sales details of the branch and thereby check the reorder level of the product sold.
- Maintenance of purchase details of the branch and thereby update the stock details.
- The minimum period the make order in case of unavailability of products must be specified.
- Provision for transforming the quotation form into the text format to take print out.

Order Fulfillment

- Maintenance of details of the orders up to date.
- Maintenance of details of the feasibility study.
- Maintenance of details of the log file for each and every transaction, which will be useful for the future reference.
- Maintenance of acceptance reports made by higher authorities.
- Detecting the changes made to the order by the log file.
- Provision for the change in views.
- Provision for the advanced search.
- Operation of search with the fields involved in the application.
- Provision for transforming the order into text format to take printout.
- User specified password in operating the application.
- Nomination Felicities.
- Operation of reports.

Maintenance of Customer and Item Details

- Maintenance of the customer details up to date.
- Maintenance of the product details with the price and company make.
- Generation of new product code for the new item.

System Environment

3.PROGRAMMING ENVIRONMENT

3.1 HARDWARE CONFIGURATION

Processor	Intel Pentium MMX
Cache Memory	512 K
Monitor	14' SVGA Color
Hard Disk	2.1 GB
Keyboard	MS 104 Keys
Mouse	Logitech Mouse

3.2 SOFTWARE CONFIGURATION

Platform	Windows NT 4.0
Operating System	Windows 95
Back End	Oracle 8i
Development Tool	MS Visual Interdev
Middleware	ASP 3.0
Web Server	Internet Information Server

Software Overview

4.SOFTWARE OVERVIEW

SELECTION OF SOFTWARE:

This is an ERP based project which is been developed for any kind of organization. An integrated system or Windows'98 environment is ideal due to multi-user nature. ASP is flexible and application development is easy and is also portable. ASP is also more of the web nature. Hence ASP and Windows'98 environment is chosen for the project.

4.1 Active Server Pages 3.0 – An Overview

1. What is Active Server Pages?

ASP to many people, it has now become the natural and even the quintessential way to build the dynamic web pages, entire sites and web-based applications on a windows server platform.

Hardware

A machine with windows 2000 installed to act as a web server. Preferably this should be windows 2000 server or better. IIS and most of the associated services are included with windows 2000 Professional. For windows 2000server, you should aim for a machine with at least a 233MHz processor and at least 128MB of RAM.

A client machine connected to the windows 2000 machine via TCP/IP. While you can develop directly on the web server, it's better to use a separate client machine. All you need is something capable of running a web browser.

Software

Almost all of the software you will need is included in a full installation of the windows 2000 server. After the main OS installation has completed, and you reboot the server, Internet Explorer fires up with a page entitled windows 2000 cofigure your server.

The Origins of ASP

Markup Language

A markup language is simply a series of elements, each delimited with special characters that define how text or other items enclosed with the elements should be displayed. HTML is a markup language broadly based on the Standard Generalized Markup Language. SGML is a way of describing languages, and is not itself a language used to create pages.

Server-side Scripting Techniques

For a script to work with a web server there needs to be some kind of intermediate application, or add-in to connect the two. It has to be able to accept the request from the user, read and interpret the appropriate server based script file, and then create the output page and communicate to the web server where it is sent as the response to the client.

Dynamic Page Creation

Microsoft introduced their web server software with windows NT 3.51. IIS 1.0 was a fairly standard offering as far as features went, and it supported CGI. However Microsoft added aother interface to allow executables writte I compiled languages like c and c++ to operate more efficiently. This is the Internet Server Application Programming Interface, or ISAPI. It provides much broader access to the

web server than the simple stdin and stdout functions, upon which traditional Perl engines and many other technologies depend.

2. How ASP connects with IIS?

ASP itself consists purely of a single DLL named asp.dll , which is installed by default into your directory. This dll is responsible for taking an ASP page and parsing it for any server-side script content. This script is passed to the appropriate scripting engine, and the results of executing the script are combined with any boilerplate text and HTML in the ASP page. The complete page is then sent to the web server, where it is passed on to the client that originally requested it.

Processing an ASP File

The first step is to decide if there is any ASP server-side code that needs to be executed. If not, it can simply inform IIS of this fact, and allow IIS to send the page to the client. In fact, this is a new feature of windows 2000 that allows you to use the .asp file extension for all your pages – including those that contain no server-side script code without sacrificing performance.

When ASP receives a page from IIS that does contain server-side script code, it parses it line-by-line. Anything that is not server-side script, or does not require server intervention by ASP is sent back to IIS, and onwards from there to the client. As each section of script is reached, it is passed to the appropriate scripting engine. The results from the scripting engine are then inserted at the appropriate points into the page as it is sent to IIS.

Objects of ASP

Request Object

The request object makes available to our script all the information that the client provides when requesting a page or submitting a form. This includes the HTTP variables that identify the browser and the user; the cookies that they have stored on their browser for this domain; and any values appended to the URL as a query string or in HTML controls in a <form> section of the page.

Response Object

The response object is used to access the response that we are creating to send back to the client. It makes available to our script the HTTP variables that identify our server and its capabilities, information about the content we are sending to the browser, and any new cookies that will be stored on their browser for this domain.

Application and Session Object

The application and session object are not directly concerned with managing requests and responses, but more with managing the environment in which our ASP pages run. The application object is the one which is used to store the information or maintain the data throughout the application. The session is also a bit similar to it. The session object is used to hold the value throughout the session. For example, the user name and password can be maintained throughout the session.

Server Object

The server object provides access to methods and properties on the server. Most of these methods and properties serve as utility functions. The server object provides us with a way of extending the capabilities of our ASP pages, by instantiating

and using other external objects and components within our server-side script. In fact, many would say that this is the major factor for the growth of ASP.

ObjectContext

You can use the `ObjectContext` object to either commit or abort a transaction, managed by Microsoft Transaction Server (MTS), that has been initiated by a script contained in an ASP page.

4.2 Oracle 8

Introduction to Oracle

Oracle 8 is an Object Relational Database Management System (ORDBMS). It offers capabilities of both relational and Object-Oriented database Systems. An Object-Oriented database whose design is based solely on object oriented analysis and design is known as an Object Oriented database. The traditional Oracle system is a RDBMS. When the relational database is extended to include object oriented concepts and structures such as abstract data types, nested tables and varying arrays, it is known as Object Relational Database Management System. In general, objects can be defined as reusable software codes that are location independent and perform a specific task on any application environment with little or no change to the code. The features of Object-Oriented programming are Encapsulation, Inheritance and Polymorphism.

Oracle products are based on the concept known as the Client/Server Technology. This concept involves segregating the processing of an application between two systems. One performs all activities related to the database (server) and the other performs activities that help the user to interact with the application (client).

A client or front-end database application also interacts with the database by requesting and receiving information from the database server. It acts as an interface between the user and database. Further, it also checks for validation against the data entered by the user. The commonly used front-end tools of Oracle are SQL * Plus v8, Oracle Forms5.0 and Reports 3.0

The database server or back-end is used to manage the database tables optimally among multiple clients who concurrently request the server for the same data. It also enforces data integrity across all client applications and controls database access and other security requirements.

TOOLS OF ORACLE

The tools provided by Oracle are so user-friendly that a person with minimum skills in the field of computers can access them with ease. The main tools are

1. SQL * Plus
2. PL/SQL
3. Forms
4. Reports

SQL * Plus

SQL * Plus is a Structured Query Language supported by Oracle. Through SQL * Plus , we can store, retrieve, edit, enter and run SQL commands and PL/SQL blocks. Using SQL * Plus we can perform calculations, list column definitions for any table and can also format query results in the form of a report.

PL/SQL

PL/SQL is an extension of SQL. PL/SQL block can contain any number of SQL statements integrated with flow of control statements. Thus PL/SQL combines the data manipulating power of SQL with data processing power of procedural languages.

FORMS

Form is a graphical tool used for generating and executing form based applications. A form basically comprises blocks and fields. Multiple tables can be accessed over a single form, based on the application with the help of transaction commands. Oracle Form Builder is the design component of Oracle Forms. We can build, generate and run an Oracle Forms application from the builder.

REPORTS

Reports is an application development tool of Oracle for developing, executing, displaying and printing reports. We can create a wide variety of reports, which have various modes. Oracle Reports are powerful, easy to use.

INTRODUCTION TO SQL

SQL was invented and developed by IBM in early 1970's. SQL stands for Structured Query Language. IBM was able to demonstrate how to control relational databases using SQL. The SQL implemented by Oracle Corporation is 100% compliant with the ANSI/ISO standard. Oracle's database language is SQL, which is used for storing and retrieving information in Oracle. A table is a primary database object of SQL that is used to store data. A table holds data in the form of rows and columns.

In order to communicate with the database, SQL supports the following categories of commands:

1. DATA DEFINITION LANGUAGE :

Create, Alter, Drop commands

SYNTAX

Create

Create table <table name>(fieldname1 datatype1(width) <column constraint>,fieldname2.....,<table constraint>);

Alter

Alter table <table name>add(<column name> datatype(width),...);

Alter table <table name>add(<constraint>);

Alter table <table name>modify(column datatype/width/constraint)

Drop

Drop table<table name>;

2. DATA MANIPULATION LANGUAGE

Insert, Delete, Update and Select commands

SYNTAX

Insert

Insert into <table name>(fieldnames)values(values for each field name);

Delete

Delete from <table name><where condition>;

Update

Update <table name>set <column name>=value,..<where condition>;

Select

Select <fieldnames> from <table name> where <condition>;

3. TRANSACTION CONTROL LANGUAGE

Commit, Savepoint and Rollback commands

4. DATA CONTROL LANGUAGE

Grant and Revoke commands

SYNTAX

Grant

Grant privileges on <object name> to <user name>;

Revoke

Revoke privileges on <object name> from <user name>;

SQL vs SQL * PLUS

SQL is the standard language, common language to all relational databases. SQL is a database language used for storing and retrieving data from the database. Most Relational Database Management Systems provide extension to SQL to make it easier for application developers.

SQL * Plus is an Oracle specific programming which accept SQL commands and PL/SQL blocks and executes them. SQL * Plus enables manipulation of SQL commands and PL/SQL blocks. It also performs many additional tasks as well.

OBJECTS IN ORACLE 8

Oracle 8 supports different types of objects. The major object types include

- Abstract Datatype
- Object Views
- Varying Arrays
- Nested Tables
- Object Tables

ABSTRACT DATATYPE

Abstract datatype are datatypes that consist of one or more subtypes. These are not constrained standard Oracle datatypes. They can be more accurately describe the data. When an abstract data element is created, the reuse of the abstract datatype leads to the enforcement of standard representation for the data.

OBJECT VIEWS

Object view helps to overlay the object-oriented structures in the application such as abstract datatype on existing tables without rebuilding or recreating the entire application. View combines fields of more than one tables or abstracts datatypes into a single table. Any updating in view is reflected in the original tables as well.

VARYING ARRAYS

These help in storing repeating attributes of a record in a single row. Varying arrays have a fixed lower value of zero and a flexible upper value of any valid number. Varying array cannot be extended beyond the limit that was defined when the varying array was created. A varying array can be based on abstract datatype or on one of Oracle's standard datatypes.

NESTED TABLES

Varyig arrays have a limited number of entries, whereas nested tables have no limit on the number of entries per row. A nested table is a table within a table. A table is represented as a column with another table. Multiple rows can be presented in the nested table for each row in the main table. The data for nested table is stored apart from the main table. Oracle maintains pointers between tables. Nested table is created after declarig any abstract type as table using as table of keyword.

OBJECT TABLES

An object table is one that contains row object and column object. Every row is a row object in a object table.

A column object is one that is represented as a column in a table, example
– varying arrays.

Row objects are not embedded objects like nested tables. These are referenced as objects. These are accessible via references from other objects.



System Design & Development

5. SYSTEM DESIGN AND DEVELOPMENT

5.1 INPUT DESIGN

In input design user oriented inputs are converted to computer-based format. The use of inaccurate data will lead to various kinds of flaws; during processing commonly these mistakes are occurred at data entry level. These flaws if left uncontrolled and unchecked may lead to disastrous catastrophies like data collapse during execution which may prove fatal to the system. Such flaws can be scanned to some extent by accurate design of inputs. The core term of **PRODUCT STATUS MONITORING SYSTEM** has incorporated the following:

Input Objectives in the Project are:

- ↪ Minimize the number of input actions of the user.
- ↪ Validating user input.
- ↪ Maintain consistency between information display and data input.
- ↪ Customize the user input.
- ↪ Deactivate commands that are inappropriate in the context of current actions.
- ↪ Provide help to assist with all input actions.
- ↪ Handling errors and display error messages.

5.2 DESIGN METHODOLOGY

The system design is the last phase that indicates the final system and the process of the file system. In the design phase of the PRODUCT STATUS MONITORING SYSTEM, the database tables, input screen design and output record design etc. are designed.

- ↳ The database tables are designed by using all the necessary fields in a compact manner. The redundancy and duplication of fields are avoided.
- ↳ All input screens in this system are user friendly and are designed in an understandable format. The size of all screens is standardized.
- ↳ Menus are designed in this system, which are brief and self-explanatory. The menus are sharp and any novice user can invoice the system. Various sub menus are also used in this system.
- ↳ Reports generated here give the minute information, which helps manager to take vital decision.

The design is the solution, the translation of requirements into ways of meeting them. The design will determine the success of the system. The system design is the last phase that indicates the final system. In the design phase of PRODUCT STATUS MONITORING SYSTEM, the database tables, input screens etc. are designed.

The importance of software design can be stated with a single word-quality. Design is place where quality is fostered in software development. Design is the only way where the requirements are translated into a finished software product or system. On executing PRODUCT STATUS MONITORING SYSTEM, it prompts for the password and if it matches the control passes to the main menu, which consists of four sections.

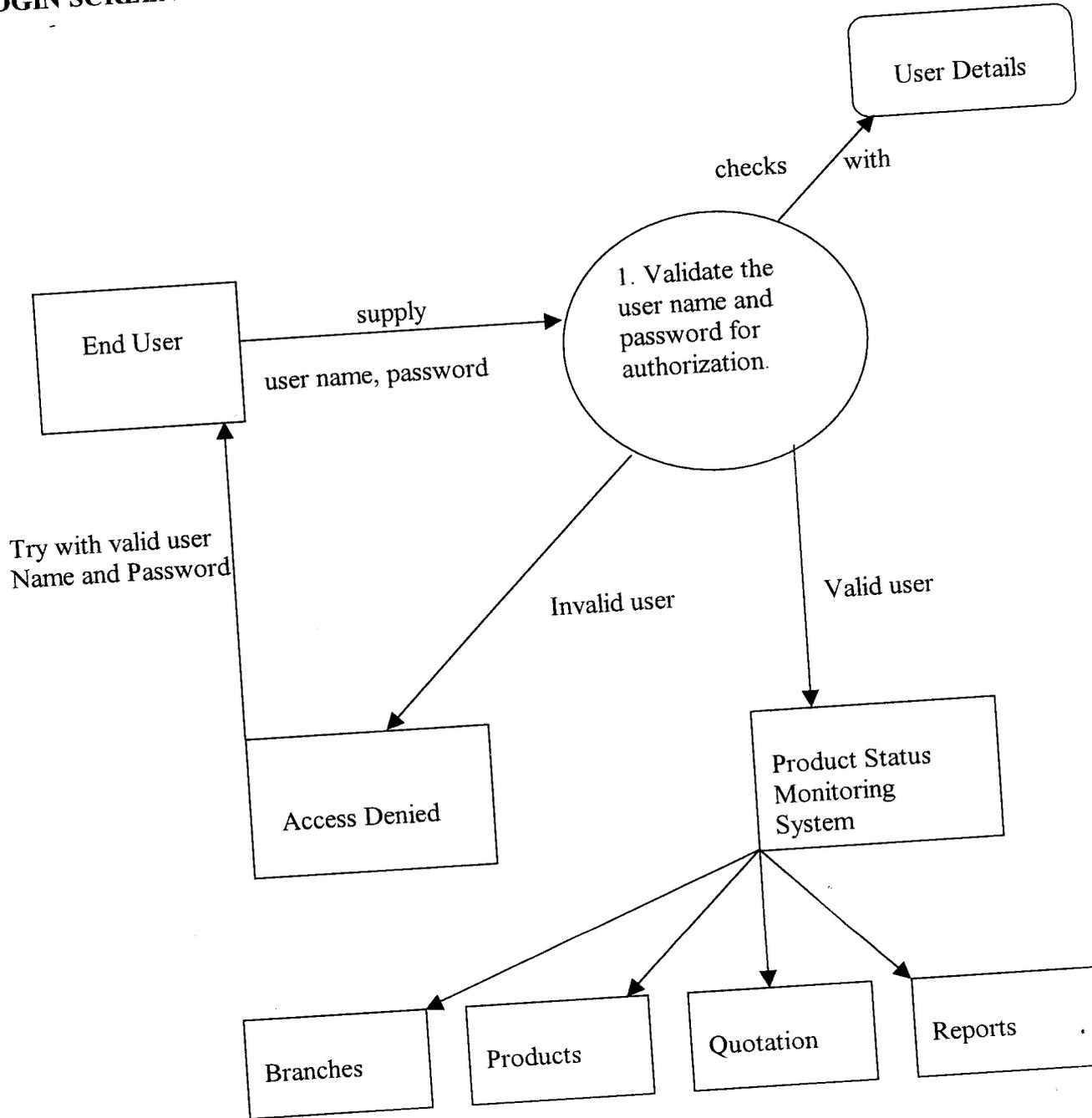
They are:

- PSM
- Maintenance of Customer and Item Details
- Order Fulfillment
- Customer Relationship Management

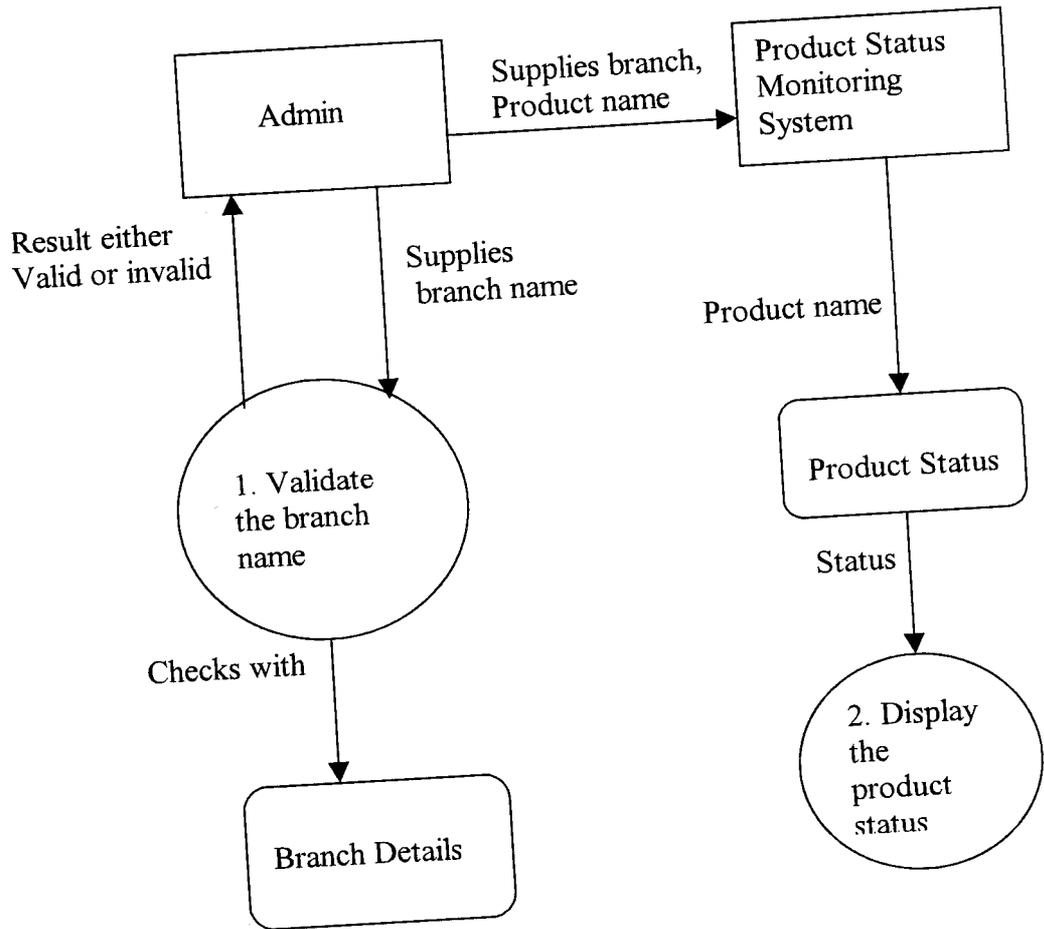
5.3 DATAFLOW DIAGRAMS

PRODUCT STATUS MONITORING SYSTEM

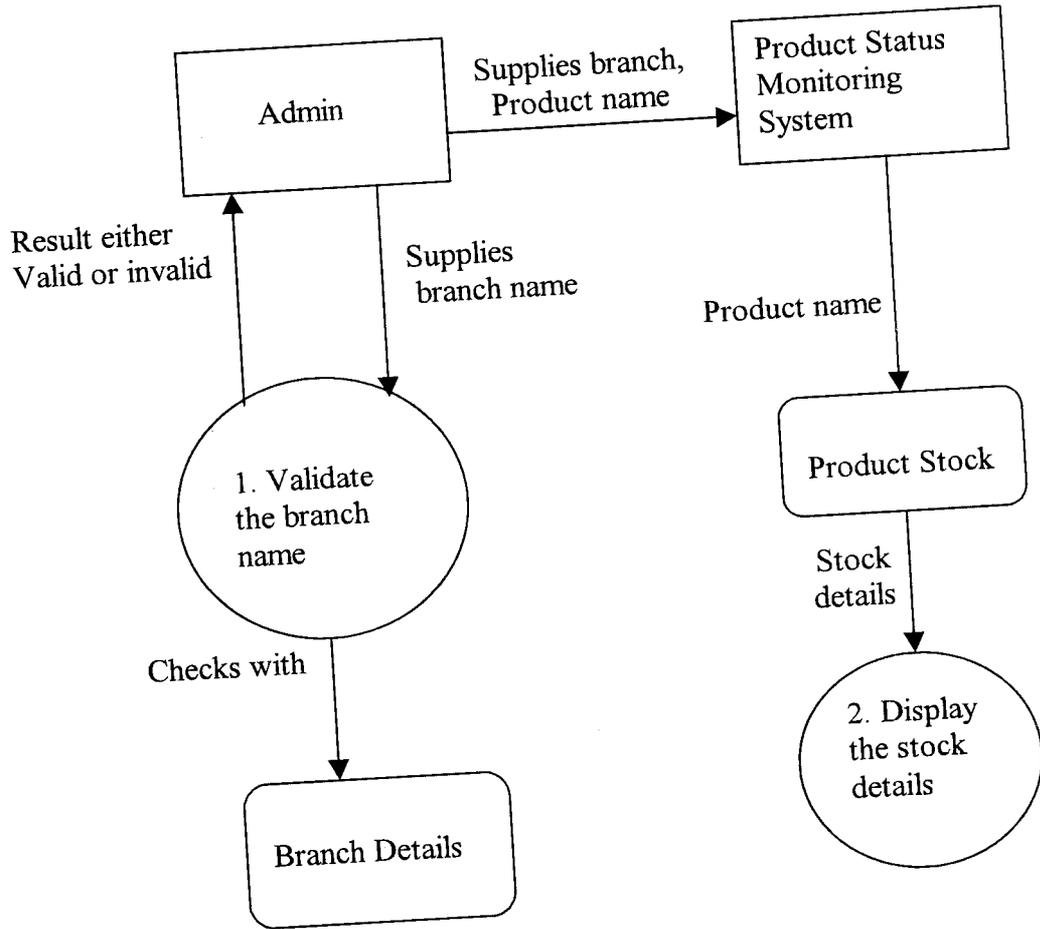
LOGIN SCREEN



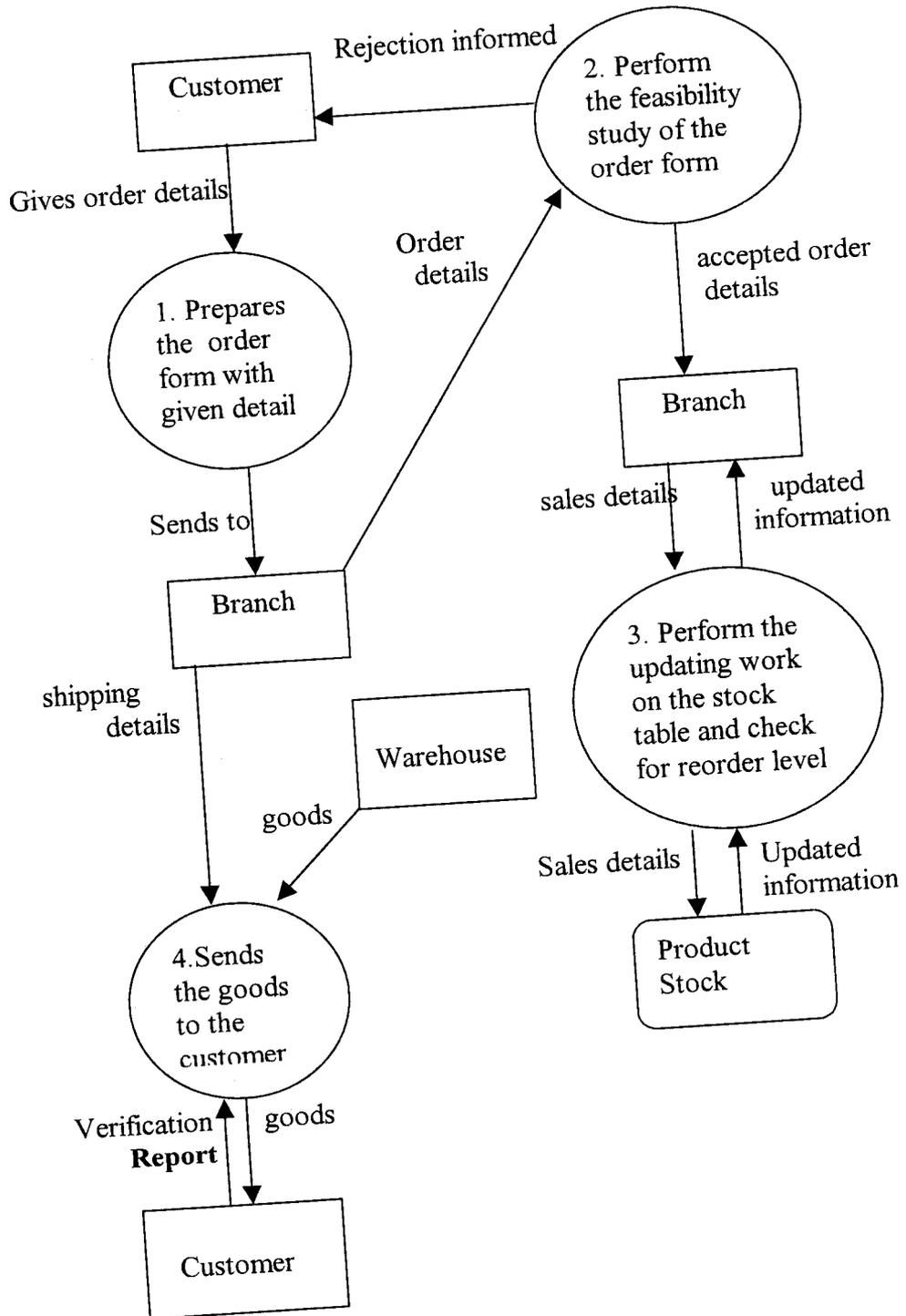
BRANCH-PRODUCT STATUS



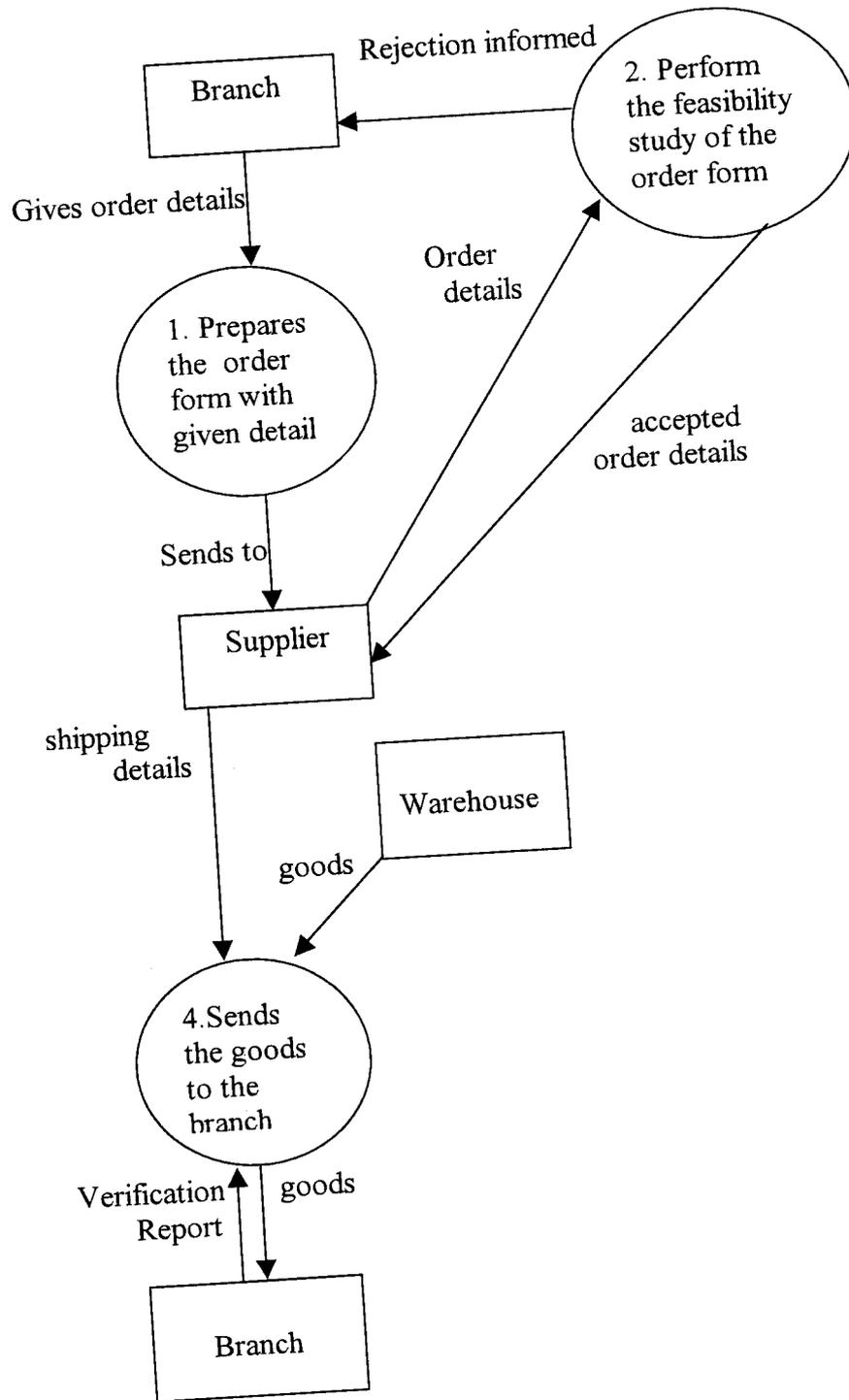
BRANCH-PRODUCT STOCK



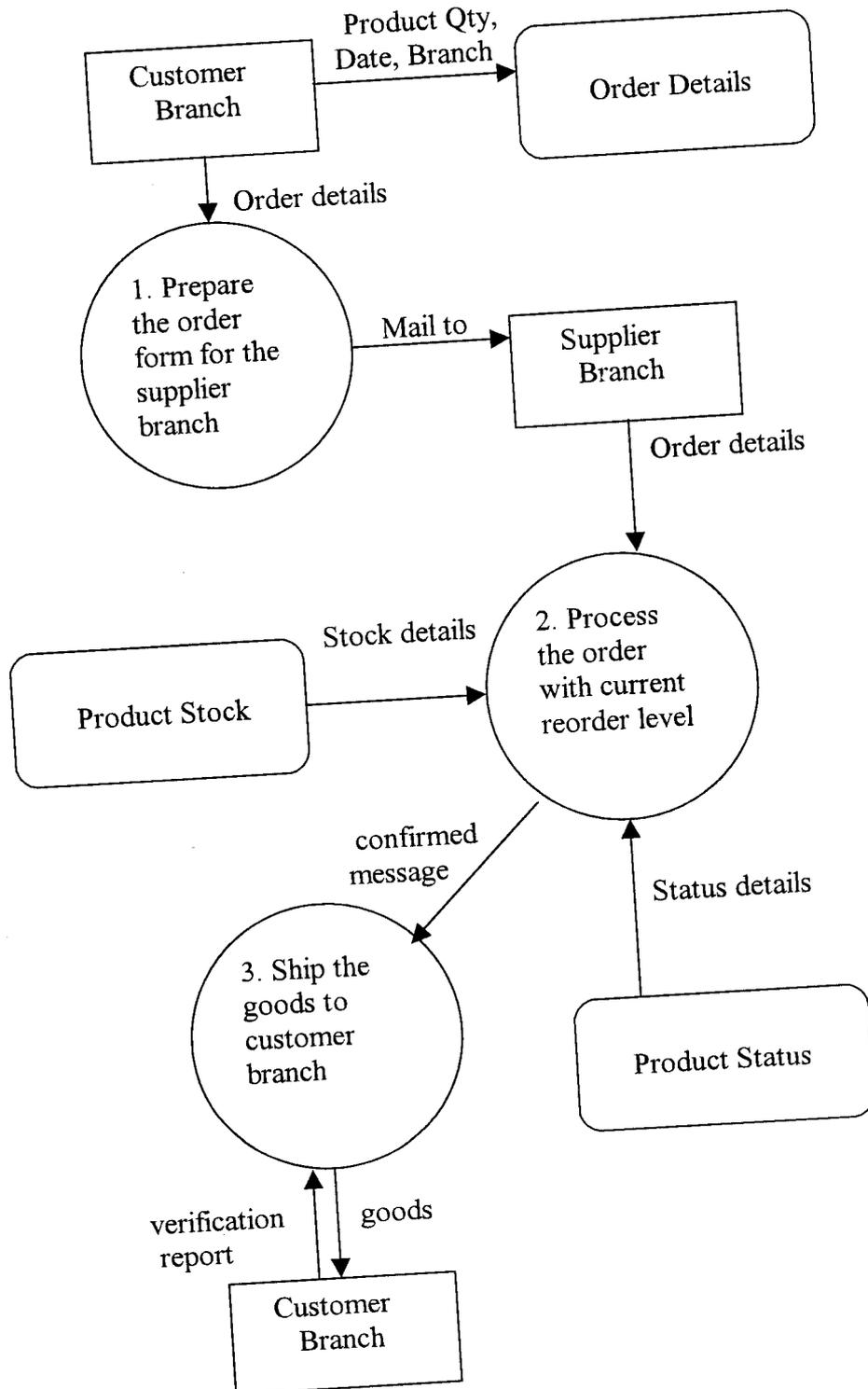
BRANCH SALES



BRANCH PURCHASE



BRANCH-BRANCH PURCHASE



5.4 OUTPUT DESIGN

In output design the emphasis is on producing a hard copy of the information or displaying the output. One of the most important reasons which haunts tempts the user to go for a new system is the output. The outputs generated by the system are often regarded to be the criterion for evaluating the system usefulness. Hence a predetermination of output requirements is required before going for actual system design.

Following reports are generated by the system for Product Status Monitoring System.

Date wise Sales Report:

These reports will generate the sales of the particular branch or all the offices on a particular given date.

Month wise Sales Report:

These reports will generate the sales of the particular branch or all the offices on a particular given month.

Year wise Sales Report:

These reports will generate the sales of the particular branch or all the offices on a particular given year.

Status Report:

These reports will generate the status of the particular product in a given branch or all the offices in the given date.

Stock Report:

These reports will generate the inwards, outwards and closing stock of a particular product in a branch or all the offices of a give date.

Purchase Report:

These reports are similar to the sales reports, but the difference is that here it is about the purchase in a given date, month or year.

Quotation Report:

These reports will generate the quotations made to the supplier in a given date, month or year.

Order Report:

These reports will generate the order forms made by the customers or other branches in a given date, month or year.

Product Report:

These reports will generate the list of all products that are available in the offices along with their respective prices and company make.

5.5 DATABASE DESIGN

Database designs are designed to manage large bodies to form information. The management of data involves both the definition of structure for the storage of mechanism for the manipulation. In addition, the database system must provide for the safety of the information solved despite system must crash or due to attempts by unauthorized, we have to fulfill certain condition such as controlled redundancy. Some of the successful criteria's are given below:

- Ease of use.
- Data Independence.
- Accuracy and Integrity.
- Recovery form failure.
- Privacy and Security.
- Performance.

For achieving the above-mentioned Criteria's, we have to make use of various features that are available by enforcing integrity constraints, we can ensure data integrity and reduce data inconsistence to a great extend.

- Recovery from failure using backup facility.
- By using table level locking facilities we can avoid concurrent access anomalies.
- To avoid data redundancy, we have used the concept of normalization extensively.

NORMALIZATION

Normalization is the process of simplifying the relationship between data elements in a record. Through normalization a collection of data in a record structure is replaced by successive record structure that are simpler and can be managed efficiently. Normalization is being carried out for four reasons. They are :

- To structure the data so that any pertinent relationship between entities can be represented.
- To permit simple retrieval of data in response to query and reports required.
- To simplify data maintenance procedures such as insertion, deletion and updation.
- To reduce the need to be restructure or reorganize data when new application requirements arise.

Major normalization strategies are

First Normal Form

First normal form is achieved when all repeating groups in a record are removed, so that the record is of fixed length. A repeating group, reoccurrence of a data item or a group of data item within a record actually forms another relation. Hence, it is removed from the record and treated as an additional record structure or relation.

Second Normal Form

Second normal form is achieved when a record is in first normal form and each item in the record is fully dependent on the primary key for identification. In other words, analyst seeks functional dependency. A data item is functionally dependent if its value is uniquely associated with a specific data item. To achieve second normal form every data item in record should be removed and used to form a relation.

Third Normal Form

Third normal form is achieved when all transitivity dependencies are removed from a record that is if A is functionally dependent on B and B is functionally dependent on C then A functionally dependent on C.

TABLES FOR MAINTENANCE OF CUSTOMER & ITEM DETAILS

TABLE: Customer

NAME	NULL?	TYPE	CONSTRIANTS
CustID	Not Null	Numeric(9)	Primary Key
DOB	Not Null	Date	
Remarks	Null	Varchar(1000)	

TABLE: CustomerName

NAME	NULL?	TYPE	CONSTRIANTS
CustnameID	Not Null	Numeric(9)	Primary Key
FirstName	Not Null	Varchar(50)	
MiddleName	Null	Varchar(50)	
LastName	Null	Varchar(50)	
CustID	Not Null	Numeric(9)	Foreign Key

TABLE: City

NAME	NULL?	TYPE	CONSTRIANTS
CityID	Not Null	Numeric(9)	Primary Key
CityName	Not Null	Varchar(50)	

TABLE: State

NAME	NULL?	TYPE	CONSTRIANTS
StateID	Not Null	Numeric(9)	Primary Key
StateName	Not Null	Varchar(50)	

TABLE: Country

NAME	NULL?	TYPE	CONSTRIANTS
CountryID	Not Null	Numeric(9)	Primary Key
CountryName	Not Null	Varchar(50)	

TABLE: CustomerDetails

NAME	NULL?	TYPE	CONSTRIANTS
DetailsID	Not Null	Numeric(9)	Primary Key
PerMailID	Null	Varchar(100)	
TelephoneNo	Null	Numeric(8)	
MobileNo	Null	Numeric(9)	
OffMailID	Null	Varchar(100)	
CustID	Not Null	Numeric(9)	Foreign Key

TABLE: Address

NAME	NULL?	TYPE	CONSTRIANTS
AddressID	Not Null	Numeric(9)	Primary Key
Address1	Not Null	Varchar(100)	
Address2	Not Null	Varchar(100)	
CityID	Not Null	Numeric(9)	Foreign Key
StateID	Not Null	Numeric(9)	Foreign Key
CountryID	Not Null	Numeric(9)	Foreign Key
Pincode	Not Null	Numeric(6)	
Type	Not Null	Varchar(1)	
CustID	Not Null	Numeric(9)	Foreign Key

TABLE: Prod_Mast

NAME	NULL?	TYPE	CONSTRIANTS
ProdID	Not Null	Numeric(9)	Primary Key
ProdName	Not Null	Varchar(100)	
ProdDesc	Not Null	Varchar(100)	
Company	Not Null	Varchar(100)	
Price	Not Null	Numeric(9,2)	
Reorder	Not Null	Numeric(5)	

TABLES FOR PRODUCT STATUS MONITORING SYSTEM

TABLE: Log

NAME	NULL?	TYPE	CONSTRIANTS
LogID	Not Null	Numeric(9)	Primary Key
TransactionTime	Not Null	Datetime	
Description	Not Null	Varchar(200)	
EmpID	Not Null	Numeric(9)	Foreign Key

TABLE: Login

NAME	NULL?	TYPE	CONSTRIANTS
LoginID	Not Null	Numeric(9)	Primary Key
LoginName	Not Null	Varchar(50)	
Password	Not Null	Varchar(10)	
RoleID	Not Null	Numeric(9)	Foreign Key
EmpID	Not Null	Numeric(9)	Foreign Key

TABLE: Role

NAME	NULL?	TYPE	CONSTRIANTS
RoleID	Not Null	Numeric(9)	Primary Key
Role	Not Null	Varchar(50)	

TABLE: Branch_Mast

NAME	NULL?	TYPE	CONSTRIANTS
BranchID	Not Null	Numeric(9)	Primary Key
BranchName	Not Null	Varchar(100)	
TelephoneNo	Null	Numeric(8)	
MobileNo	Null	Numeric(9)	
MailID	Null	Varchar(100)	
FaxNo	Null	Numeric(9)	
MgrName	NotNull	Varchar(50)	

TABLE: Address

NAME	NULL?	TYPE	CONSTRIANTS
AddressID	Not Null	Numeric(9)	Primary Key
Address1	Not Null	Varchar(100)	
Address2	Not Null	Varchar(100)	
CityID	Not Null	Numeric(9)	Foreign Key
StateID	Not Null	Numeric(9)	Foreign Key
CountryID	Not Null	Numeric(9)	Foreign Key
Pincode	Not Null	Numeric(6)	
Type	Not Null	Varchar(1)	
BranchID	Not Null	Numeric(9)	Foreign Key

TABLE: Prod_Stock

NAME	NULL?	TYPE	CONSTRIANTS
StockID	Not Null	Numeric(9)	Primary Key
InQty	Not Null	Numeric(9)	
InValue	Not Null	Numeric(9,2)	
OutQty	Not Null	Numeric(9)	
OutValue	Not Null	Numeric(9,2)	
CloseQty	Not Null	Numeric(9)	
CloseValue	Not Null	Numeric(9,2)	
BranchID	Not Null	Numeric(9)	Foreign Key
ProdID	Not Null	Numeric(9)	Foreign Key

TABLE: Prod_Status

NAME	NULL?	TYPE	CONSTRIANTS
StatusID	Not Null	Numeric(9)	Primary Key
StatusDesc	Not Null	Varchar(100)	
Action	Not Null	Varchar(100)	
BranchID	Not Null	Numeric(9)	Foreign Key
ProdID	Not Null	Numeric(9)	Foreign Key

TABLE: Sales

NAME	NULL?	TYPE	CONSTRIANTS
SalesID	Not Null	Numeric(9)	Primary Key
Date	Not Null	Date	
ProdID	Not Null	Numeric(9)	Foreign Key
Quantity	Not Null	Numeric(9)	
Discount	Not Null	Numeric(9,2)	
CustID	Not Null	Numeric(9)	Foreign Key
Tprice	Not Null	Numeric(9,2)	
BranchID	Not Null	Numeric(9)	Foreign Key

TABLE: Purchase

NAME	NULL?	TYPE	CONSTRIANTS
PurID	Not Null	Numeric(9)	Primary Key
Date	Not Null	Date	
ProdID	Not Null	Numeric(9)	Foreign Key
CbranchID	Not Null	Numeric(9)	Foreign Key
SbranchID	Not Null	Numeric(9)	Foreign Key
SuppID	Not Null	Numeric(9)	
Quantity	Not Null	Numeric(9,2)	
Discount	Not Null	Numeric(9,2)	
Tprice	Not Null	Numeric(9,2)	

TABLE: Quotation

NAME	NULL?	TYPE	CONSTRAINTS
QuotID	Not Null	Numeric(9)	Primary Key
Name	Not Null	Varchar(30)	
Address	Not Null	Varchar(150)	
ProdID	Not Null	Numeric(9)	Foreign Key
Quantity	Not Null	Numeric(9)	
Prange	Not Null	Varchar(30)	
Discount	Not Null	Numeric(9)	
Description	Null	Varchar(100)	
Cname	Not Null	Varchar(50)	
Cnumber	Null	Varchar(20)	
Mail	Null	Varchar(30)	
Qdate	Not Null	Date	
BranchID	Not Null	Numeric(9)	Foreign Key

TABLES FOR ORDER FULFILLMET**TABLE: Order**

NAME	NULL?	TYPE	CONSTRAINTS
OrderID	Not Null	Numeric(9)	Primary Key
Date	Not Null	Date	
Tpayment	Not Null	Varchar(30)	
Despatch	Null	Varchar(50)	
Dest	Not Null	Varchar(40)	
Address	Not Null	Varchar(100)	
ProdID	Not Null	Numeric(9)	
Qunatity	Not Null	Numeric(9)	
Discount	Not Null	Numeric(9,2)	
Price	Not Null	Numeric(9,2)	
Tprice	Not Null	Numeric(9,2)	
BranchID	Not Null	Numeric(9)	
Name	Not Null	Varchar(50)	
Type	Not Null	Varchar(1)	

System Testing & Implementation

6.SYSTEM TESTING AND IMPLEMENTATION

Implementation is the final and very important phase. It involves user training, system testing and successful running of the developed proposed system. The user tests the developed system and changes are made according to their needs. The testing phase involves the testing of developed system using various kinds of data.

An elaborate testing of data is prepared and the system is tested using that test data. While testing, errors are noted and corrections are made. The corrections are also noted for future use. The users are trained to operate the developed system successfully in future.

DEVELOPMENT

Development is one of the important steps in the design process and this is the only material that will show how the user should run the system. It gives the layouts of the various fields, their types and length in each of the file used by the system.

6.1IMPLEMENTATION

After the system analysis and design phase completion, coding for the project work is carried out. This was followed by the implementation phase,

The implementation phase is an important period where the project is tested for its validity and connection at real-time environment. There are three types of implementation like

- Implementation of a computer system to replace a manual system.
- Implementation of a new computer system to replace the existing one.

- Implementation of modified application to replace the existing one using the existing one.

The first type of implementation was undergone. The users, that is the crews were given an idea about the project works and how different it was from the existing one. Sample data were entered and tested for its validity. Thus the project was implemented to the user satisfaction.

6.2 TESTING

System testing is the stage of implementation, which is aimed at ensuring that the system works accurately and efficiently. Each module in the system is tested individually and then these modules are put together to form a subsystem. The subsystem is also tested. Then the subsystems are integrated to form complete system. Using test data the whole system is tested in order to verify that the programs link together in the way specified to produce the outputs specified. Test data is fed to the system and the output obtained is compared with the manually obtained results for verification. The reports are also tested.

Conclusion

7.CONCLUSION

The **Product Status Monitoring System** has been developed for the present requirements. This gives the user flexibility to maintain the data in a well organized manner and also to generate reports very easily. The developed system has succeeded in rectifying the problems that are present in the existing system.

Reports generated with live data have proved to be informative. The system can be further enhanced to accommodate a host of features that are currently not included in the system.

The newly developed system consumes less processing time and productivity is increased. All transactions are processed and posted immediately. Since screens provide help messages that are user friendly, any end users get familiarized with its usage.

The goals that have been achieved by the developed system are,

- It simplifies the operation.
- It reduces the processing time and increase productivity.
- User-friendly screens are there to enter data and enquire the database tables.
- Help messages to operate the system.
- Portable and flexible for further enhancement.

References

8.REFERENCES

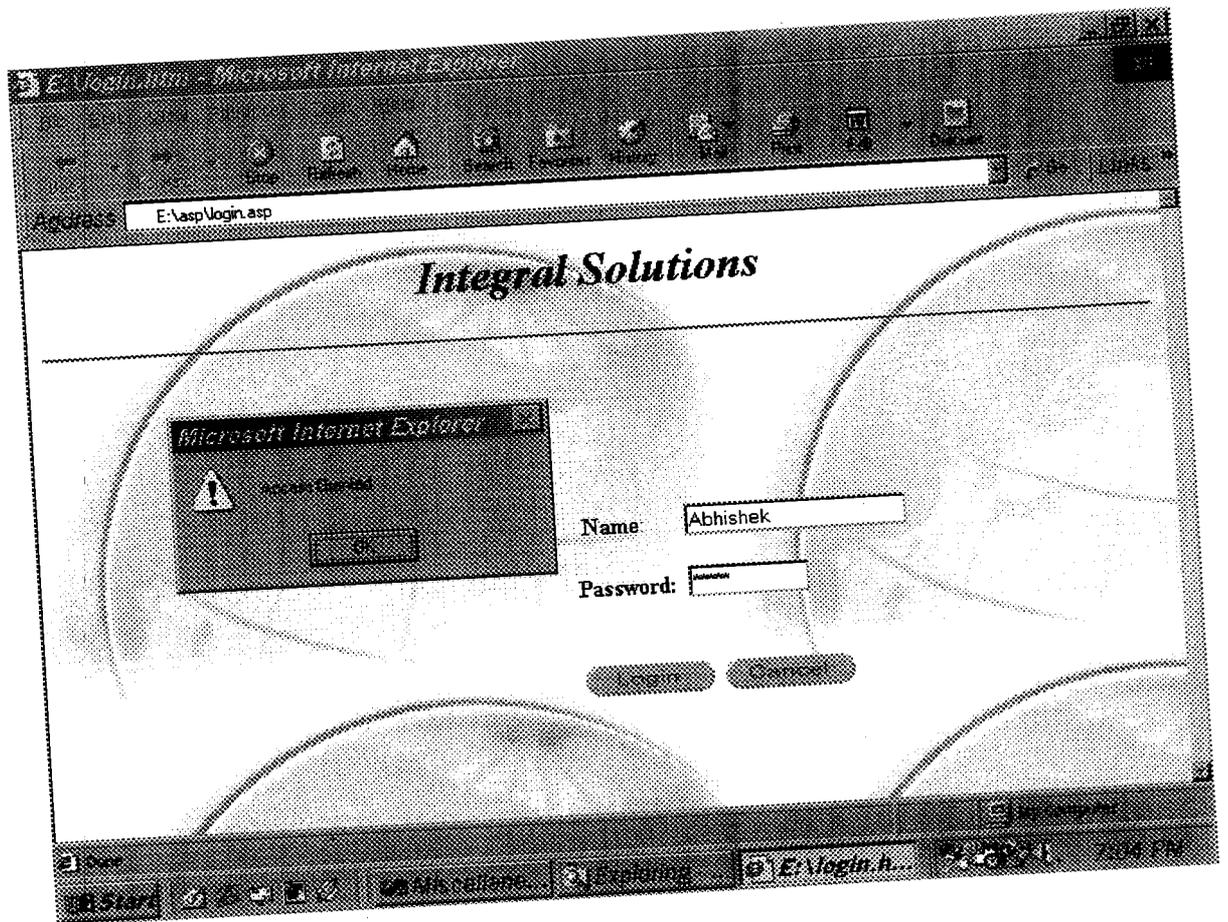
1. Alex Homer, "Professional ASP 3.0", Wrox Publications, 1999
2. Brain Francis, "ASP in a nutshell", Wrox Publications, 1999
3. Paul N. Weinberg, "Oracle Dummies", Tata McGraw-Hill, 2000

WEB LINKS :

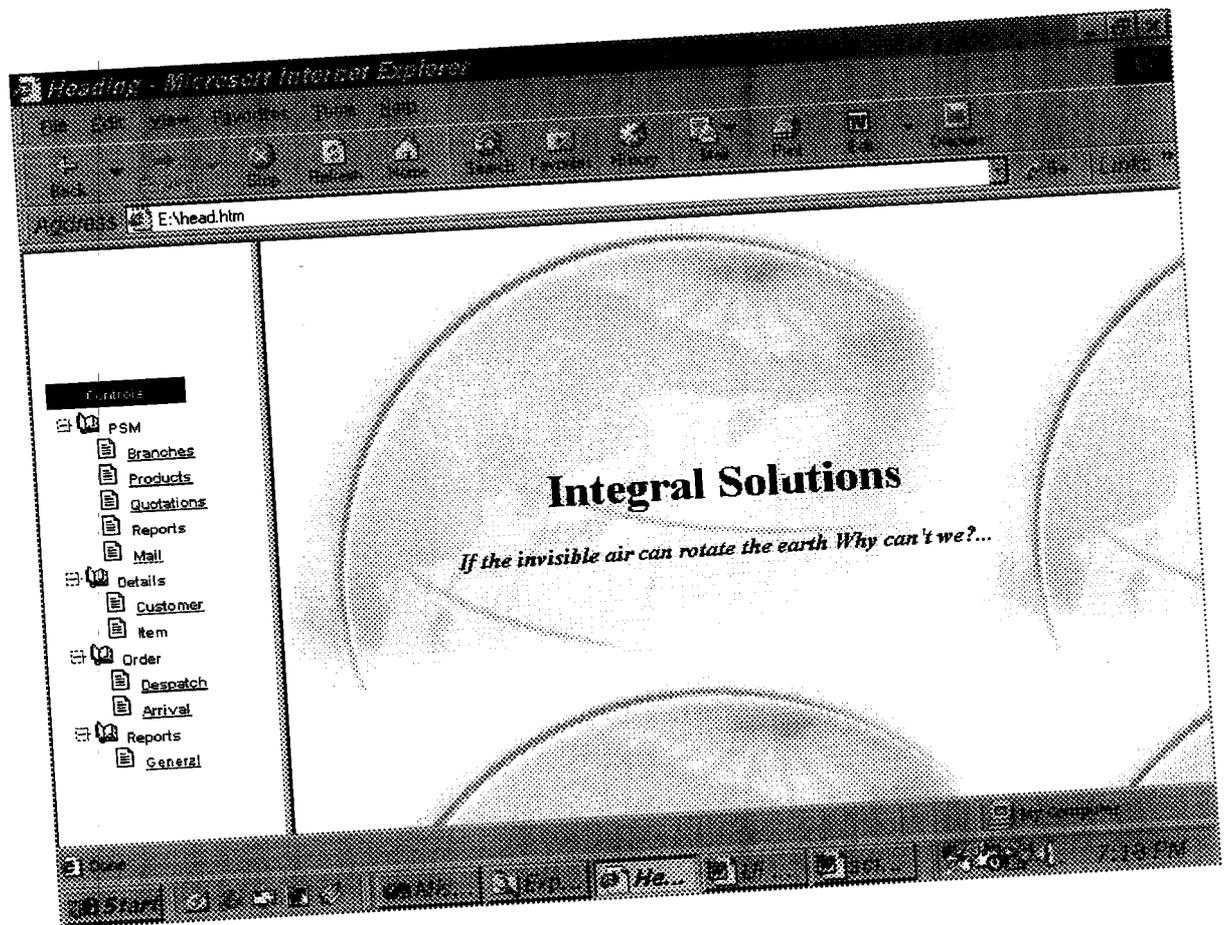
1. www.google.com Nov 2003 – Dec 2003
2. www.howstuffworks.com Dec 2003 – Jan 2004
3. www.altavista.com Dec 2003 – Jan 2004

APPENDIX

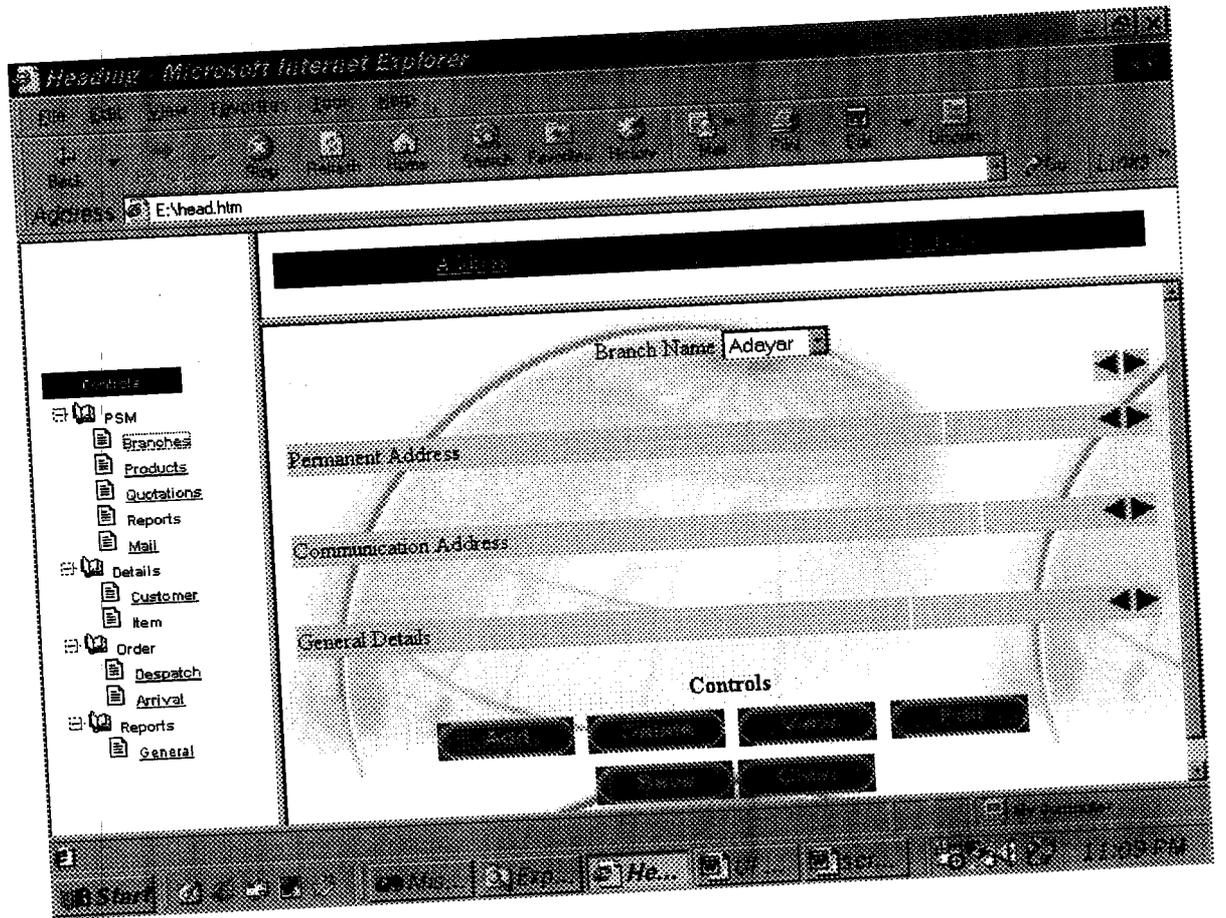
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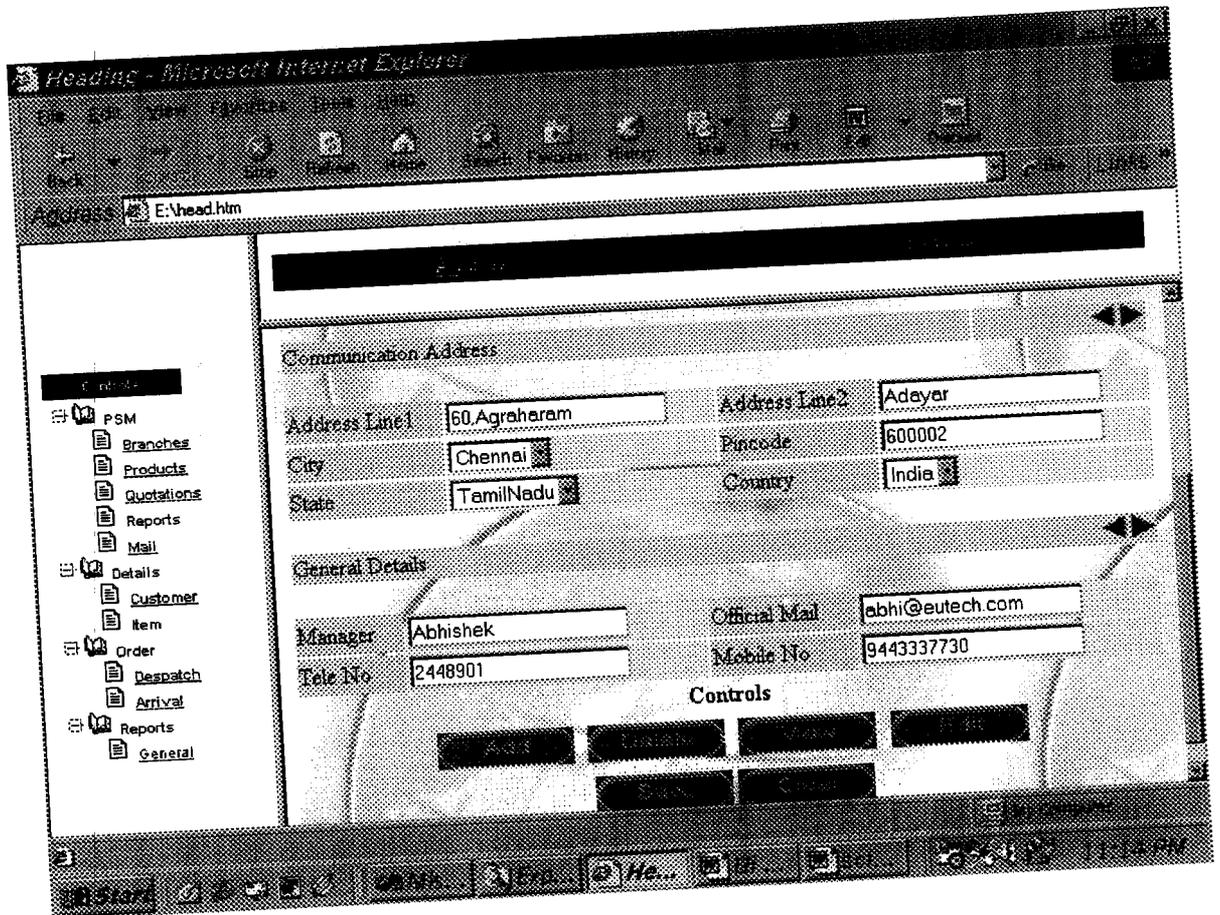


Introduction Screen:

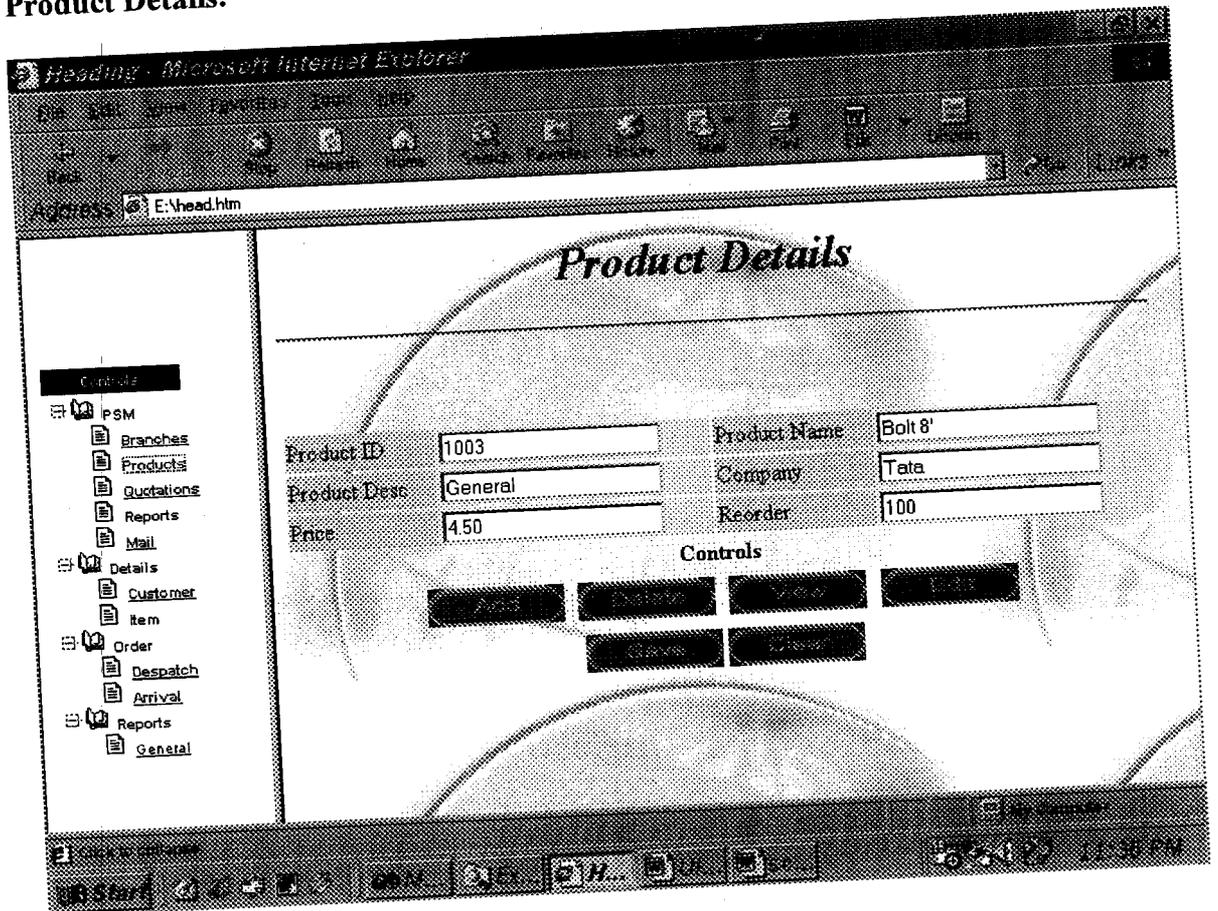


Branch Details





Product Details:



Customer Details:

Heading - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address: E:\head.htm

Cust ID	101	First Name	Abhishek
Middle Name		Last Name	

Permanent Address

Communication Address

General Details

Controls

PSM

- Branches
- Products
- Quotations
- Reports
- Mail

Details

- Customer
- Item

Order

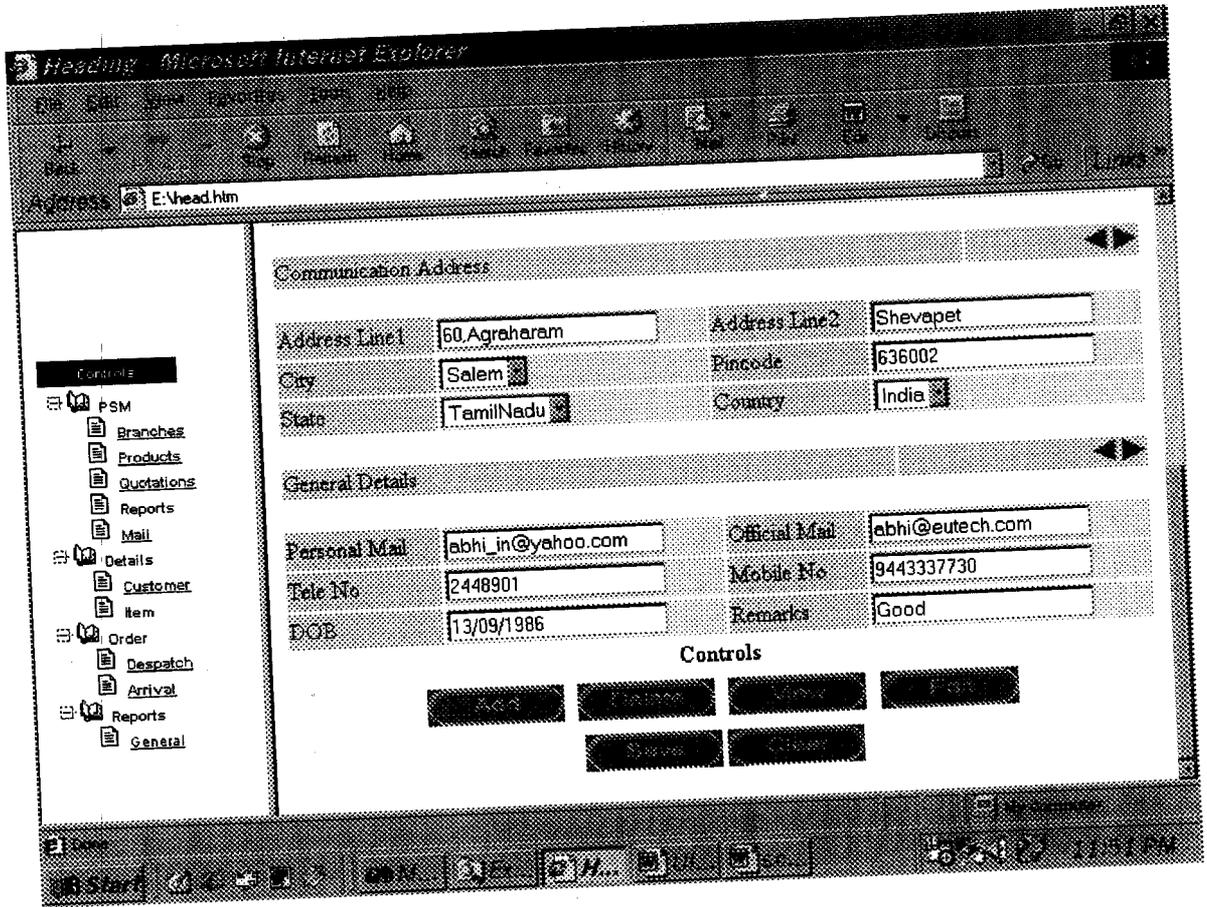
- Despatch
- Arrival

Reports

- General

Start

11:41 PM



Stock Report:

Heading - Microsoft Internet Explorer

Address: E:\head.htm

Stock Report

Branch: From: To:

Prod Name	In Qty	In Value	Out Qty	Out Value	Close Qty	Close Value
Bolt 6	12	24.00	6	12.00	6	12.00
Bolt 8	10	45.00	5	22.50	5	22.50
Bolt 10	10	50.00	6	30.00	4	20.00
Bolt 12	20	200.00	10	100.00	10	100.00

Navigation Menu:

- PSM
- Branches
- Products
- Quotations
- Reports
- Mail
- Details
- Customer
- Item
- Order
- Despatch
- Arrival
- Reports
- General

System Tray: 12:19 AM

Status Report:

Heading - Microsoft Internet Explorer

Address: E:\head.htm

Control

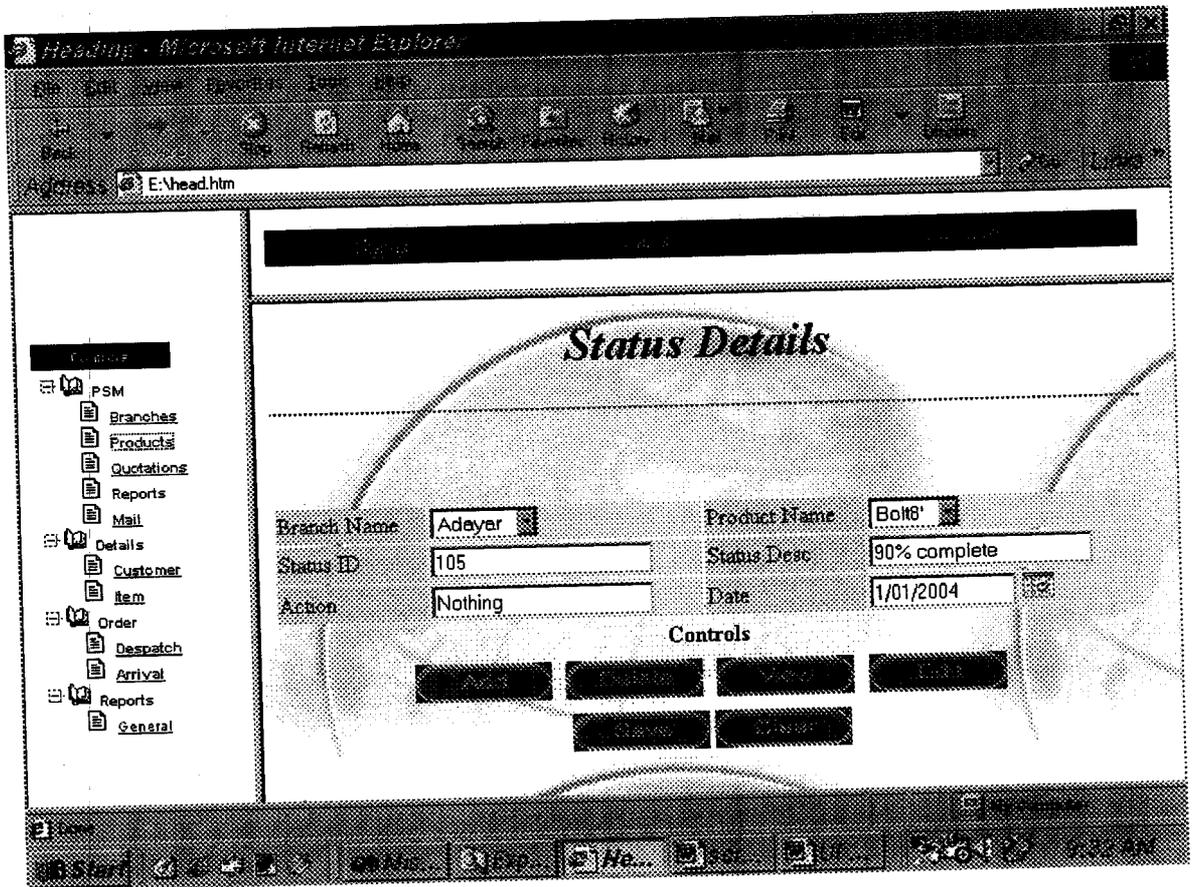
- PSM
 - Branches
 - Products
 - Quotations
 - Reports
 - Mail
- Details
 - Customer
 - Item
- Order
 - Despatch
 - Arrival
- Reports
 - General

Branch: From: To:

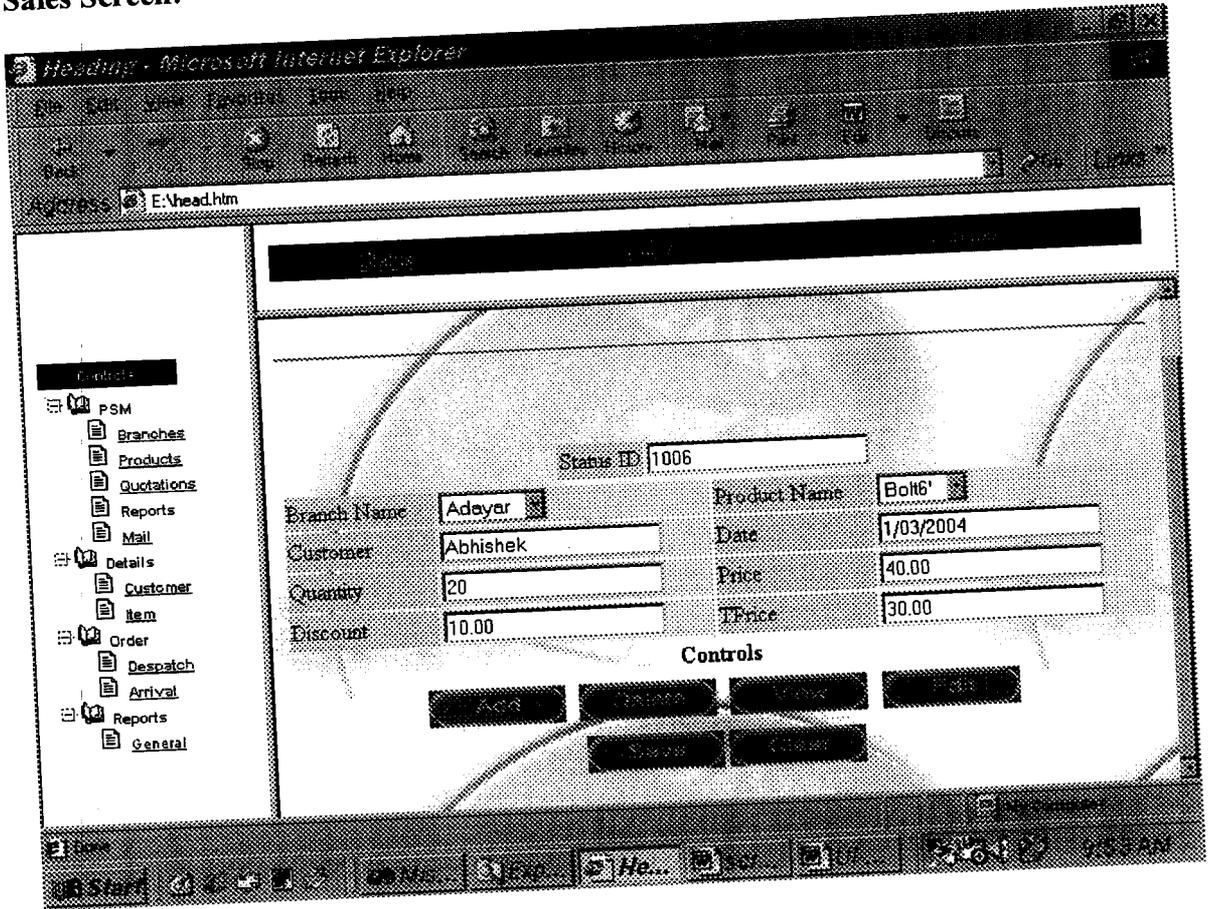
Prod Name	Status Desc	Action
Screw 6	20% Complete	more workers alloted
Rod 8	60% Complete	Nothing
Rod 10	50% Complete	more resources shared
Bolt 12	90% Complete	Nothing

Start [Taskbar icons] 12:00 AM

Status Screen:



Sales Screen:



Sales Report:

Heading - Microsoft Internet Explorer

Address: E:\head.htm

Control

- PSM
- Branches
- Products
- Quotations
- Reports
- Mail
- Details
- Order
- Reports

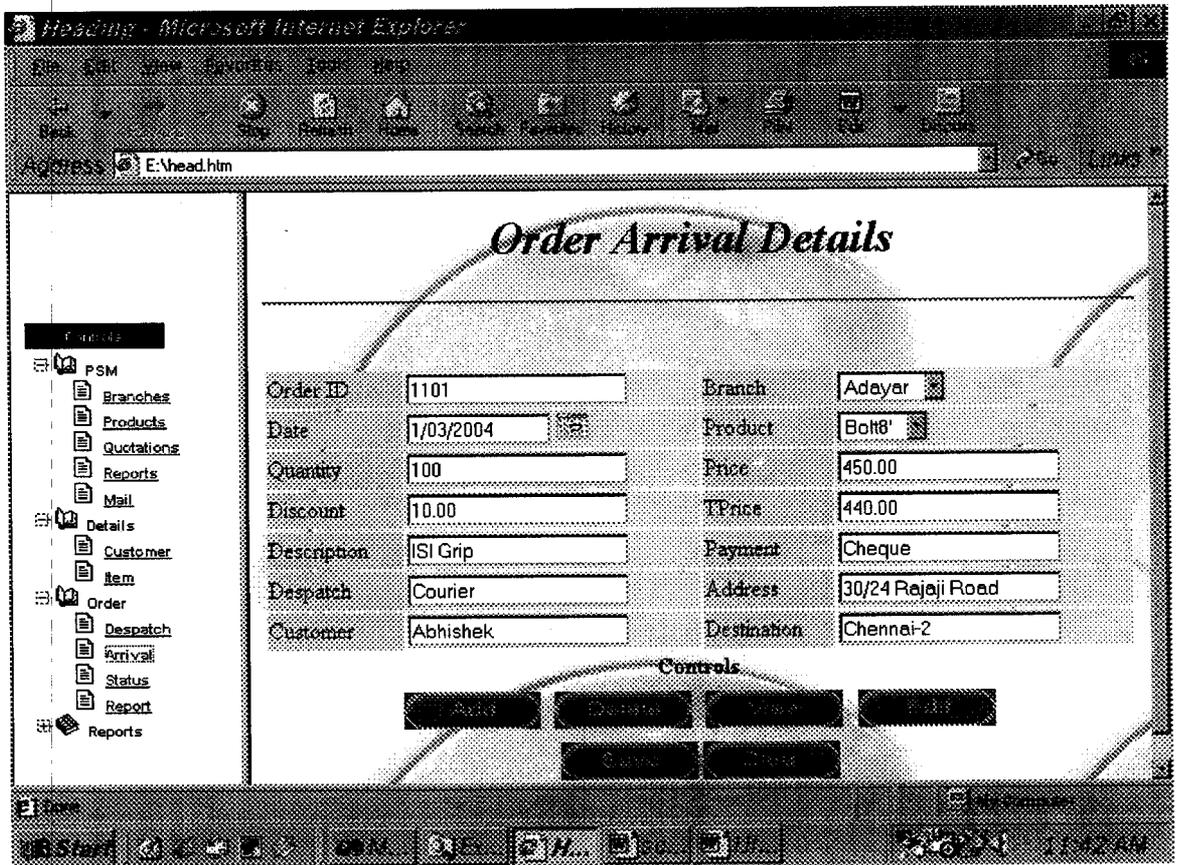
Sales Report

Branch: Product: From: To:

Date	Customer	Product	Quantity	Price	Discount	TPrice
1/02/2004	Abhishek	Bolt 8	6	27.00	5.00	22.00
3/02/2004	Raja	Bolt 8	5	22.50	5.00	17.50
4/02/2004	Abhishek	Bolt 8	6	27.00	5.00	22.00
29/02/2004	Raja	Bolt 8	10	45.00	5.00	40.00

Start | MSN | Exp | He... | 10:59 AM

Order Arrival Screen:



Order Report:

Heading - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Stop Refresh Home Search Favorites History Mail File Edit Print

Address

Controls

- PSM
 - Branches
 - Products
 - Quotations
 - Reports
 - Mail
- Details
 - Customer
 - Item
- Order
 - Despatch
 - Arrival
 - Status
 - Report
- Reports

Order Arrival Report

Branch Product From To

Date	Customer	Product	Quantity	Price	Discount	TPrice	Status
1/02/2004	Abhishek	Bolt 8'	6	27.00	5.00	22.00	Delivered
3/02/2004	Raja	Bolt 8'	5	22.50	5.00	17.50	Rejected
4/02/2004	Abhishek	Bolt 8'	6	27.00	5.00	22.00	Counered Yesterday
29/02/2004	Raja	Bolt 8'	10	45.00	5.00	40.00	Accepted

Start | Stop | Refresh | Home | Search | Favorites | History | Mail | File | Edit | Print | 11:54 AM