Account System & Website Of Shuja Sons

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1- Collection of accounts - Computer software.
2- Accounting - " programs.
3- " - Data processing -
4- Finance services - Automation.

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Department of computer Science

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بسم الله الرحمن الرحيم

A dissertation submitted to the

Department of Computer Science,

International Islamic University, Islamabad

As a partial fulfillment of the requirements

For the award of the degree of

Master of Computer Science

Dedicated to

Our Parents
&
Kind Teachers

DECLARATION

We hereby declare that this project report, neither as a whole nor as a part thereof has been copied out from any source. It is further declared that we have developed this software for Shuja Sons (Pvt) Limited where we worked as team, and completed the report entirely on the basis of our personal efforts made under the sincere guidance of our teachers. If any part of this report is proved to be copied out or found to be reported, we shall standby the consequences. No portion of the work presented in this report has been submitted in support of any application for any other degree or qualification of this or any other university or institute of learning.

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We would like to pay special thanks to Mr. Rehmat Ali who motivated us to work hard and guided us through out the project on technical grounds to fulfill all the requirements. We are at the same time very thankful to our class fellows and seniors who encouraged us so that we are able to complete our project successfully.

And last but not least; we should like to acknowledge the support of our family members. We should like to admit that we owe all our achievements to our truly, sincere and most loving parents, brothers and sisters, who mean to us and whose prayers are a source of determination for us.

Sajida Noreen
Saher Noureen

PROJECT IN BRIEF

Project Title:	Account System and Website
Organization:	Shuja Sons (Pvt) Ltd
Undertaken By:	Saher Noureen Sajida Noreen
Supervised By:	Mr. Rizwan Khaliq
Tool Used:	Oracle 8i & Developer6 (For Account System) Microsoft Front page, Adobe Photoshop, ASP & Java Scripts (For Website)
Operating System:	Microsoft Windows 2000
System Used:	Pentium III
Date Started:	September 01, 2003
Date Completed:	March 30, 2004

ABSTRACT

In this modern era to keep the records, large number of files are used which are very difficult to manage. Answer to adhoc questions is impossible due to nature of the system. Employees have to perform manual searching in order to reply the adhoc queries which take hours or even days. This software provides an efficient computerized distributed solution which will fulfill their all requirements and even rectify the drawbacks of the confused and manual environment.

We have used oracle 8i at the back-end & developer 6 as a front-end tool for that accounting system, and Microsoft front page for development of website. We have achieved desired outputs which meet the company's requirement. We have succeeded in achieving high level of reliability, security and flexibility.

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Chapter 1

Introduction

1. Introduction

This era is known as computer era and efficient usage of computer technology can lead a company to prosperity. Every organization on the globe is willing to take advantage of this technology, whether it is a bank, industry or government organization, it is computerization. It not only improves efficiency of organization but also keeps its pace with the rapid development in the respected field.

1.1 The Organization

Shuja Sons is a trading company and it was established in 1982. The company manufacture computer paper and sale it to the various organizations of governments, semi governments and private sectors. The company also holds an IBM agency and sale IBM products like electric/electronic typewriters, their accessories, computers, printers and other computer stationary. It also deals with the printing of various books, forms/stationary being used in the government organizations.

1.2 Objectives

Aim of organization is to better serve the customers by providing all the required computer products on feasible cost, and better printed materials.
The main objectives are as follows:

- To Purchase the computer products and paper from different suppliers in bulk quantity
- To ensure quality of the products and printing
- To ensure affordable price both for buyer and the organization
- To facilitate the customer by providing products and printed materials at a lower price from market
- To keep track of the customers for giving them better services in future.

1.3 Modules of the System

The modules of the system are as follows:

1.3.1 Security

- Creating Users
- Changing Passwords
- User access is according to the access privileges

1.3.2 Accounts Management

Accounts Management module maintains the following accounts

- Creditors Account
- Debtors Account
- Purchase Account
- Sales Account
- Cash Account
- Bank Account
- Expense Account
- Tax Account
- Store Account
- Liability Account

It also generate the following reports

- Creditors Report
- Debtors Report
- Daily Cash Report
- Daily Bank report
- Balance sheet
- Profit And Loss Report

1.3.3 Inventory

- Supplier Record
- Product Record
- Receive Inventory
- Issue Inventory

1.3.4 Website

- Online Ordering
- Registration of Users/Customers
- E-Mail
- Product Information

1.4 Scope of the System

Due to great load of work it becomes very difficult to administer the whole system manually. So in order to keep pace with the technological developments in this age of computer technology and to eradicate the manual problems of maintaining account files, ledgers and inventory files. The company has decided to computerize the system of accounting, daily transactions and inventory. The company also requires a web site along with the feature of online ordering.

The automated system will maintain following information's

1) About the products.

2) About the orders placed by different customers.
3) About customers.
4) About daily sales, and expenses made through Cash.
5) About payments made to employees like salaries, overtime, bonus and other appreciation, utility bills & stationary used in office.
6) About debtors, securities, balance in cash & bank.
7) About creditors.
8) About the tax deduction made by various parties from company's bill.

About Website:

Website will be providing following services:

1) The information about Shuja Sons and its working will be fully described.
2) The information of the products, which are sold by Shuja Sons for e.g. computer paper, computer stationary etc, will be available on the web site.
3) The user can also place order for printing work.
4) The online ordering will be possible for the users. So that they can order for any product from anywhere.

1.5 Project Objectives

The objectives of the project describe that what is to be ultimately achieved from the development of the project. It is always essential and helpful before designing a computer based system, to understand all the objectives and requirements that a computer based system are expected to satisfy. In addition, the relative importance of each objective should also be understood.

The Proposed system is required to fulfill the following objectives:

- To increase the reliability of the system to an extent meeting the actual requirement of the organization.
- To provide a system with a user-friendly interface which is simple to understand and efficient to use.
- To assure the availability of the right information at the right time.
- To fulfill the incompleteness of the existing system into an efficient computerized system
- To remove the drawbacks of the existing system.
- To make the information storage, processing and retrieval efficient.

Despite all the facts mentioned above the user still has to be smart enough to handle the accounting because our software expect the user to be an accountant.

Chapter 2

Existing System

2. Existing System

2.1 Modules of the Existing System

With the passage of time, work load of employees increased. Due to this increase of work it becomes complicated and complex to administer the system. To manage this complex system properly whole system is divided into five major departments/sections which are as follows.

1. Administration Section
2. Accounts Section
3. Store Section
4. Production Section
5. Supply Section

2.2 Functionality of Modules

The functionality of the above said modules of the system under existing/manual system can be described as:

2.2.1 Account Maintenance

Account System is being operated manually here and creates many problems. The Account System is very complex which consists of the following sub accounts:

2.2.1.1 Purchases Account

This account deals with the purchasing of different products. When the company purchases goods/ products from different parties then entries are made to the purchase account. The entries are like name of the purchased product, its quantity, total amount etc.

2.2.1.2 Sales Account

This account deals with the daily sales of various products. The information of sold goods are recorded in the sales account. It also contains the information that either the product is sold on debt or on credit. It's a double entry system.

2.2.1.3 Debtors Account

It deals with sales made to various parties on debt. There are many customers to whom sales are made on debt. The entries of such customers are made to the debtors account on daily basis. When the customer makes payment against company's bill, then payment entries are made to the debtors account according to the payment.

2.2.1.4 Creditors Account

It deals with the purchases made on credit from various dealers by the company. The Related information is recorded into the creditors account. At the time of payment by the company to the dealers, creditors account is updated.

2.2.1.5 Bank Account

This account deals with the transactions occur through cheque and withdrawals. The entries of deposits of cheque are made to the debt side of the bank account and the entries of withdrawals are made to the credit side of the bank account.

2.2.1.6 Cash Account

This account deals with the daily sales in cash and expenses made through cash. When the cash sale is made, the entries of receipts of cash are made to the debt side of the cash account. When the cash payment is made to the cash purchases, the entries are made to the credit side of the cash account.

2.2.1.7 Expenses Account

It deals with the payments made to employees like salaries, overtime, bonus and other appreciation, utility bills & stationary used in office. When such expenses are made, related information like how much payment is spent, for which purpose etc, are recorded into the expenses account.

2.2.1.8 Store Account

It handles the daily sales and purchases, material taken from store for manufacturing purpose.

2.2.1.9 Assets Account

This account deals debtors, securities, balance in cash & bank.

2.2.1.10 Liability Account

Liability account deals creditors, shares floated in the market and capital.

2.2.1.11 Financial Statement

The financial statement is generated annually. It contains information like what are assets company has and what is their value. Financial statement is based on the following entities:

- Trial Balance

- Trading Account
- Trading Profit & Loss Account
- Balance Sheet

2.2.1.12 Companies Tax Account

This account deals with the tax deduction made by various parties from company's bill.

All of these sub accounts are interconnected with each other. At the time of entry in one account other accounts are affected accordingly. For example at the time of sale the entries are made to sales, debtors and store account.
The company make daily reports of cash & bank account and monthly reports of store , debtors & creditors account while the annual report is the Financial Statement.

2.2.2 Order Information

Orders/ tender quoted by any party, first of all goes to head office. Head office approves and evaluates the order. Evaluation is the process of determining the order type, whether it is for printing(books, letter heads, ledgers, forms, bill books, receipt books) or for computer stationary. The manager feeds the whole information regarding a particular order into the order book.

If the order is for computer stationary products then it is sent to the sales section. The store keeper separates the products according to the order for its delivery to the customers/parties and the supply section is informed to supply the ordered products. If the order is for printing, then it is send to the production manager. Manager evaluates the order that what is the size of paper which is required, its quantity and in which quantity the product is to be printed.

2.2.3 Inventory Maintenance

The stock which is kept in to the store is in three types:

- Paper purchased for printing
- Manufactured computer paper
- Computer stationary

The stock of paper is purchased from different manufacturers, which is accompanied by an invoice. The stock is stored in the store. Then the stock is checked against the received stock. All the information about received stock is fed into the store account.

The computer paper which is manufactured by the company and computer stationary products purchased from IBM dealers are also stored in the store. The information about these type of stocks is also recorded in the stock account. When transactions are made either through sale or purchase, the transactions are recorded in the transaction file.

For the evaluation of the stock two methods are applied. One is FIFO and the second is LIFO. According to FIFO method, the stock which is already in the store is used first and the new stock is used/sold later. According to the LIFO method, the stock which received recently is used/ sold first and then sold the old stock. The inventory file is maintained accordingly.

2.2.4 Drawbacks of the Existing System

There are number of drawbacks in existing system, which greatly affects the system and reduces it's efficiency and working

2.2.4.1 Bulk of Registers

The company had to handle loads of records in the form of registers which is obviously a difficult task in itself.

2.2.4.2 Inconsistency of Data

Same data is stored at multiple registers so inconsistencies are irresolvable.

2.2.4.3 Poor Data Security

The system is not secure. Any unauthorized person can easily access the data; he can change the names of accounts and customers. In the existing system no user authentication and rights are managed for the data security.

Chapter 3

Proposed System

3. Proposed System

The proposed system will be very efficient and secure then the existing system. Oracle is used at the back end and Developer6 is used at front end. For the Website Microsoft Front Page is used at Front end and ASP, JAVA SCRIPT are used for backend development.
The modules and the scope of the system are as follows.

3.1 Objectives of the proposed System

Currently the organization is working on manual system, keeping this thing in view , a simple yet well-equipped GUI based system with facilities of easy data entry, dynamic report generation and online ordering of the products will also be provided. Following objectives are kept in mind while proposing the system:

3.1.1 Simple GUI

The interface will be user friendly and will provide help where required.

3.1.2 Data Security

The data access should be provided to relevant users and data will be protected from non-related users and other persons.

3.1.3 Reliability

It will be error free and reliable, because validation checks will be provided in the system.

3.1.4 Flexible Design

The system will be flexible enough to maintain and process information. It is mainly because of the reliability-based system. It will provide complete database solution regarding insertion, deletion, and updating of records.

3.1.5 Reports

It will generate all required reports demanded by the organization. Such as daily Sale, Bank and Cash report, monthly Product report, annual Financial Statement

3.2 Project Overview

The project covers all the basic needs of the organization from their record management up to the security problems faced by them. The complete online information of the products, email facility and also the online ordering for the products is available on website of Shuja Sons.

The main modules are:

- Security
- Order Information
- Inventory Maintenance
- Accounts Management

3.2.1 Security

Security is an integral part of any system of this nature. Safety measures are needed to be taken because we only need authorized personnel to have access to sensitive data. The security level varies from organization to organization. In this case one cannot let data entry official fidget with accounts of the organization so this module will be applicable both at form level as well as operational level. Features of the Module are:

- Creating Users
- Changing Password
- User's access is restricted according to their access privileges.

3.2.1.1 Creating Users

The administrator can create new users of the system and assign rights to the user. Only administrator can create a new user.

3.2.1.2 Changing Password

User can change the password anytime he/she wants. Even then user must change his/her password every month. Here the security plays an important role because change password window has the username with which the user logged in and that cannot be changed.

3.2.1.3 Assignment of privileges

Privileges are assigned at the time of user creation. Privileges define the access of the user to various sections of the application.

3.2.1.3.1 Administrator

Administrator can create the users, assign privileges to the users and assign roles.

3.2.1.3.2 Accountant

Accountant can enter the payment transactions such as cash payment, bank payment, cash receipt, and Bank receipts. He can also maintain the accounts of debtors and creditors. He is also responsible to make entries in expense account.

3.2.1.3.3 Data Entry Operator

Data entry operator can enter the information about any order, can update, and delete an existing order. Can enter the information of any new product, customer, and supplier, also can update an existing record.

3.2.2 Accounts Management

To maintain record of the transactions which are done against any account we need Accounts Management. First transactions are recorded and then the processing of receipts and reports take place. Generation of Balance sheet and making of profit and loss report, all these things will be covered in the module of accounts management.

3.2.2.1 Purchase Account

This account deals with the purchasing of different products from different suppliers. When the company purchases goods/products from different parties then entries are made to the purchase account. A serial no is automatically assigned to each new transaction on a specific date, which is an incremented value of previous transaction on that date of a specific supplier. The quantity of products purchased is also stored, at that date.

3.2.2.2 Sales Account

This account deals with the sales of different products to different customers. When a customer purchases goods/products then entries are made to the sales account. A serial number is automatically assigned to each new transaction on a specific date, which is an incremented value of previous transaction on that date of a specific customer.

3.2.2.3 Creditors Account

It deals with the purchases made on credit from various dealers by the company. The Related information is recorded into the creditors account. At the time of payment by the company to the dealers, creditors account is updated.

Accountant has to provide the Supplier No and the Bill no for which he wants to make entries. A payment entry is made on the credit side of the purchase account and the current balance of the company to that specific supplier will be automatically updated, by subtracting the amount paid to the balance of previous transaction.

3.2.2.4 Debtors Account

It deals with sales made to various parties on debt. There are many customers to whom sales are made on debt. The entries of such customers are made to the debtors account on daily basis. When the customer makes payment against company's bill then according to the payment entries are made to the debtors account.

Accountant has to provide the customer No and the order no, against which he wants to make entries or just wanted to view the already done transactions. A payment entry is made on the debit side of the sales account. And the current balance of the customer to the company will be automatically updated, by subtracting the amount paid to the balance of previous transaction.

3.2.2.5 Bank Account

This account deals with the transactions occur through cheque and withdrawals. The entries of deposits of cheque are made to the debit side of the bank account and the entries of withdrawals are made to the credit side of the bank account.
An automatically generated serial no is assigned to every new payment. The Accountant has to give information about the customer who is paying the cheque or about the supplier to whom company is making payment.

3.2.2.6 Cash Account

This account deals with the daily sales in cash and expenses made through cash. When the cash sale is made, the entries of receipts of cash are made to the debt side of the cash account. When the cash payment is made to the cash purchases, the entries are made to the credit side of the cash account.
An automatically generated serial no is assigned to every new payment. The Accountant has to give information about the customer who is paying the amount or about the supplier to whom company is making payment.

3.2.2.7 Expenses Account

It deals with the payments made to employees like salaries, overtime, bonus and other appreciation, utility bills & stationary used in office. When such expenses are made, related information like how much money is spent, for which purpose etc, are recorded into the expenses account.

3.2.2.8 Tax Account

This account deals with the tax deduction made by various parties from company's bill. When a customer orders for products, then the tax amount form the total amount is deducted at the rate of 3%. And the amount of tax against that bill is saved in the tax account.

3.2.3 Inventory Maintenance

Information about the products is also necessary to maintain. The following tasks are done to maintain Inventory.

3.2.3.1 Suppliers Record

We have to take care of supplier records as well. We need this information because this information is very essential, especially when it comes to handling the Creditors account of different Supplier. Therefore such a mechanism is adopted which fulfills the accounting requirements as well introduce the synchronized bridge between accounting and inventory module. For example (Supplier no, Name, address, phone number, fax no)

3.2.3.2 Products Record

Product record just like Supplier Record is compatible with accounting module. We will be able to determine the company's profit based on this product record. Similarly Product list has the information about the products for example (product no, product name, unit price, description)

3.2.3.3 Receive Inventory

The inventory is received through a global mechanism which is intelligent enough to recognize the procedure and hit the product record and update the inventory contents accordingly.

3.2.3.4 Issue inventory

The inventory item is issued through a global mechanism which is intelligent enough to recognize the procedure and hit the product record and update the inventory contents accordingly. What happens is through this process we also find the Profit of our company which works efficiently.

3.3 Main Features of the proposed System

The proposed system has the following major features.

3.3.1 Efficiency

Efficiency of any system is concerned with the minimum transaction processing time as well as the optimal use of the system resources. In designing the proposed system, the efficiency factor has been taken well into consideration.

3.3.2 User Friendly interface

The interface of the system will be user friendly. The data retrieval, insertion , editing and deletion will be made easy and simple. For the same reason the interaction with the end user is kept through out the development.

3.3.3 Facilitated Data Input

The simple to use data entry forms will be provided to facilitate the user to enter the data in the database. The powerful data entry controls have been provided to view, add, modify and delete the fields of a record.

3.3.4 Data Security and Integrity

As Oracle8i is used for designing the back end data base which is a true relational data base tool. So all requests to insert data in an table or to update, delete or view data in a table must be routed through the RDBMS engine only. The privileges are assigned to the users at DBMS level and form level, so it provide excellent data security.

3.3.5 Reports Generation

The proposed system will generate a number of reports according to the requirements of the organization. Here the user security module system plays a very important role, because different users can generate different reports.

3.4 Data Flow Diagrams

The data follow diagrams graphically shows the flow of data. We used context level diagrams and level 1 and level 2 diagrams to show a system is working.

- Zero level DFD
- Level 1 DFD
- Level 2 DFD

3.4.1 Level 0 DFD

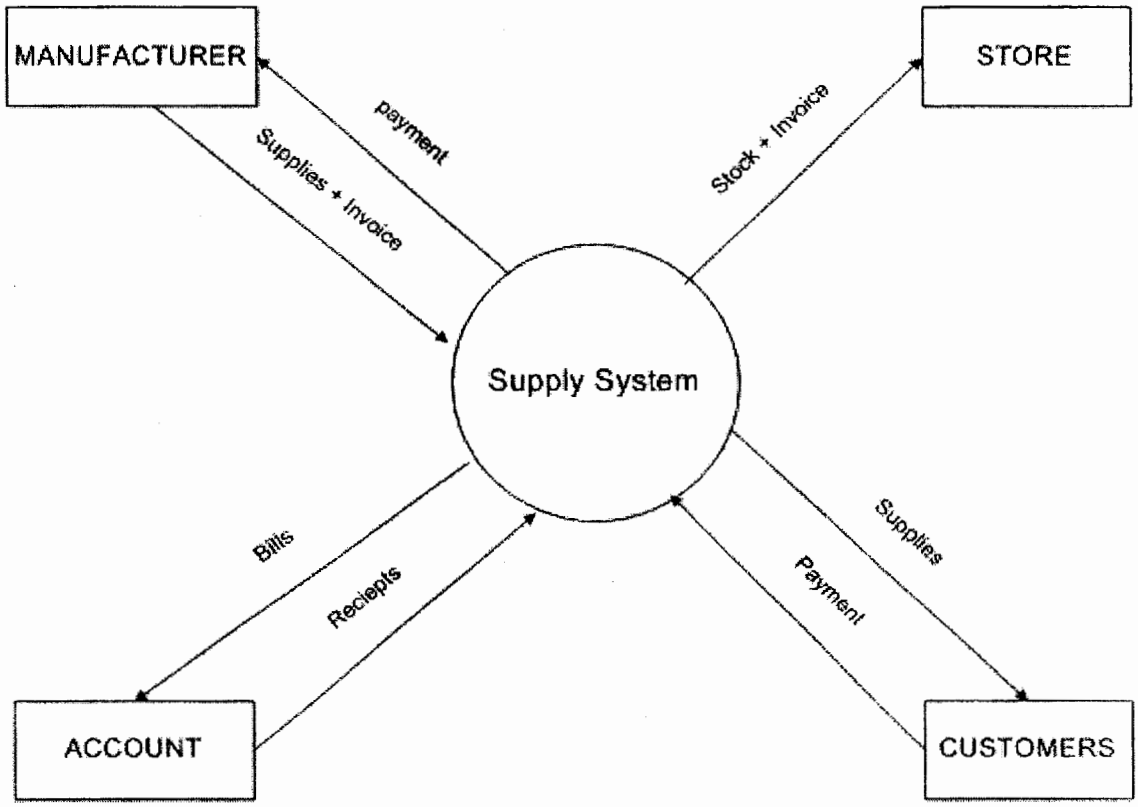

Fig 3.1 Level 0 DFD

3.4.2 Level 1 DFD

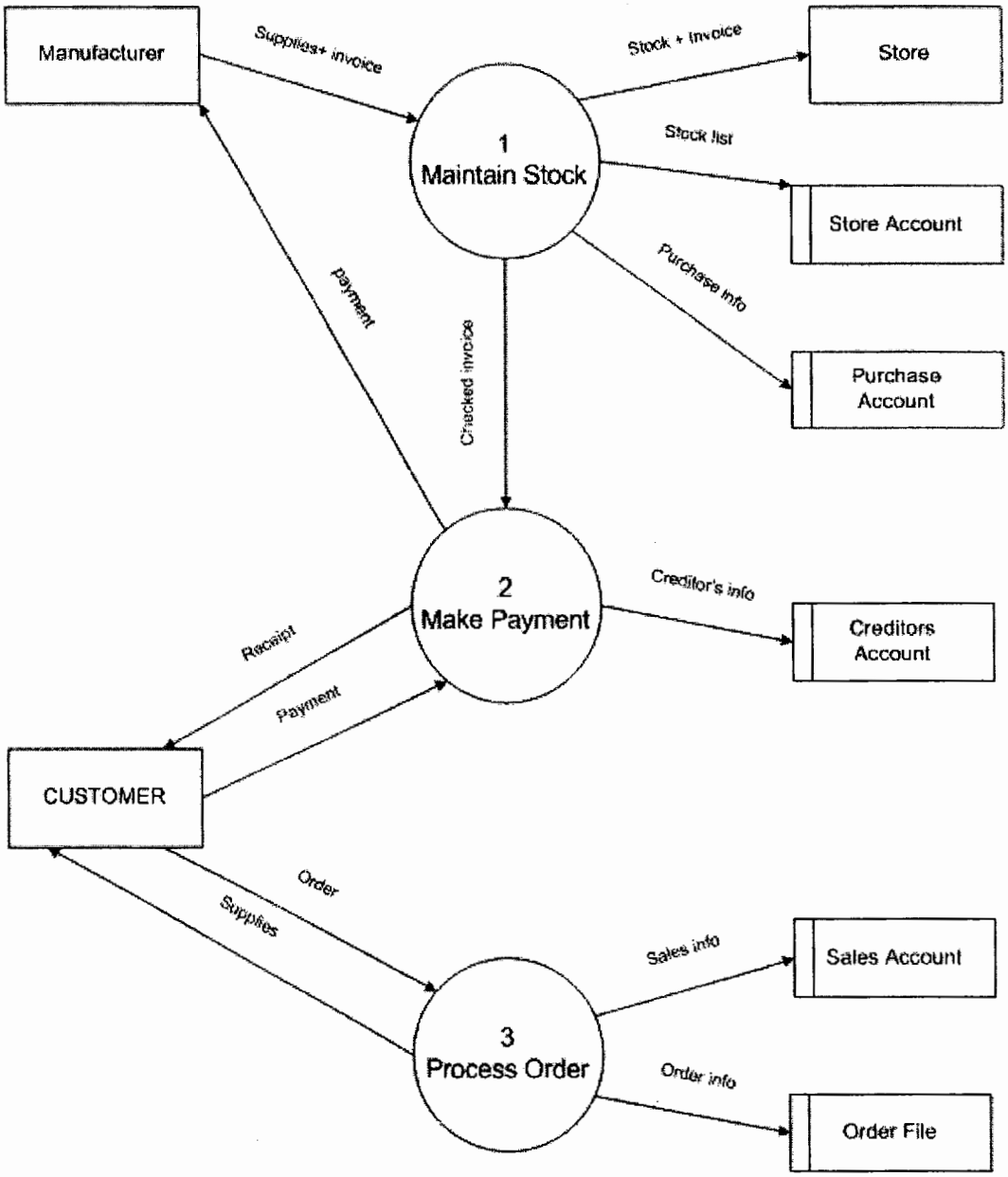

Fig 3.2 Level 1 DFD

3.4.3 Level 2 of Maintain Stock

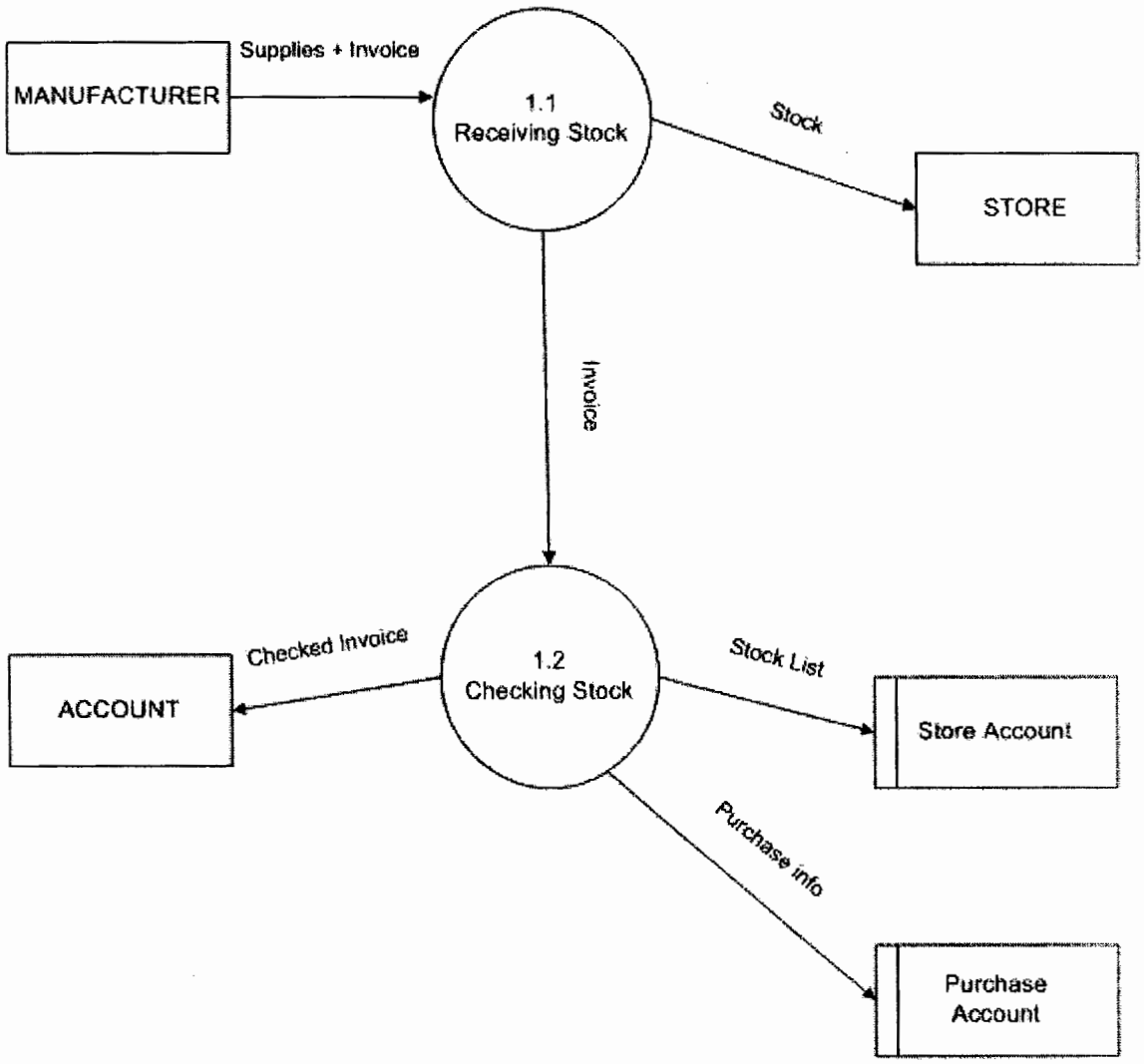

Fig 3.3 Level 2 of Maintain Stock DFD

3.4.4 Level 2 of Make Payment

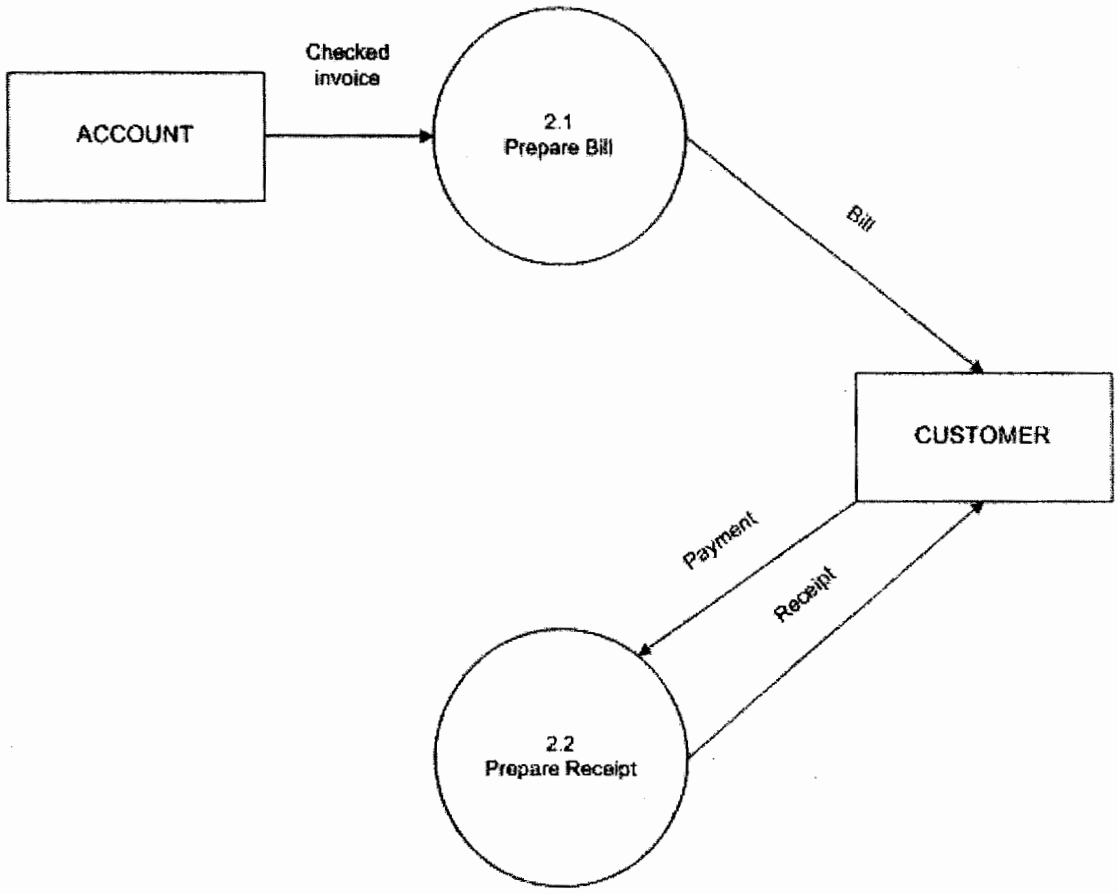

Fig 3.4 Level 2 of Make Payment DFD

3.4.5 Level 2 of Process Order

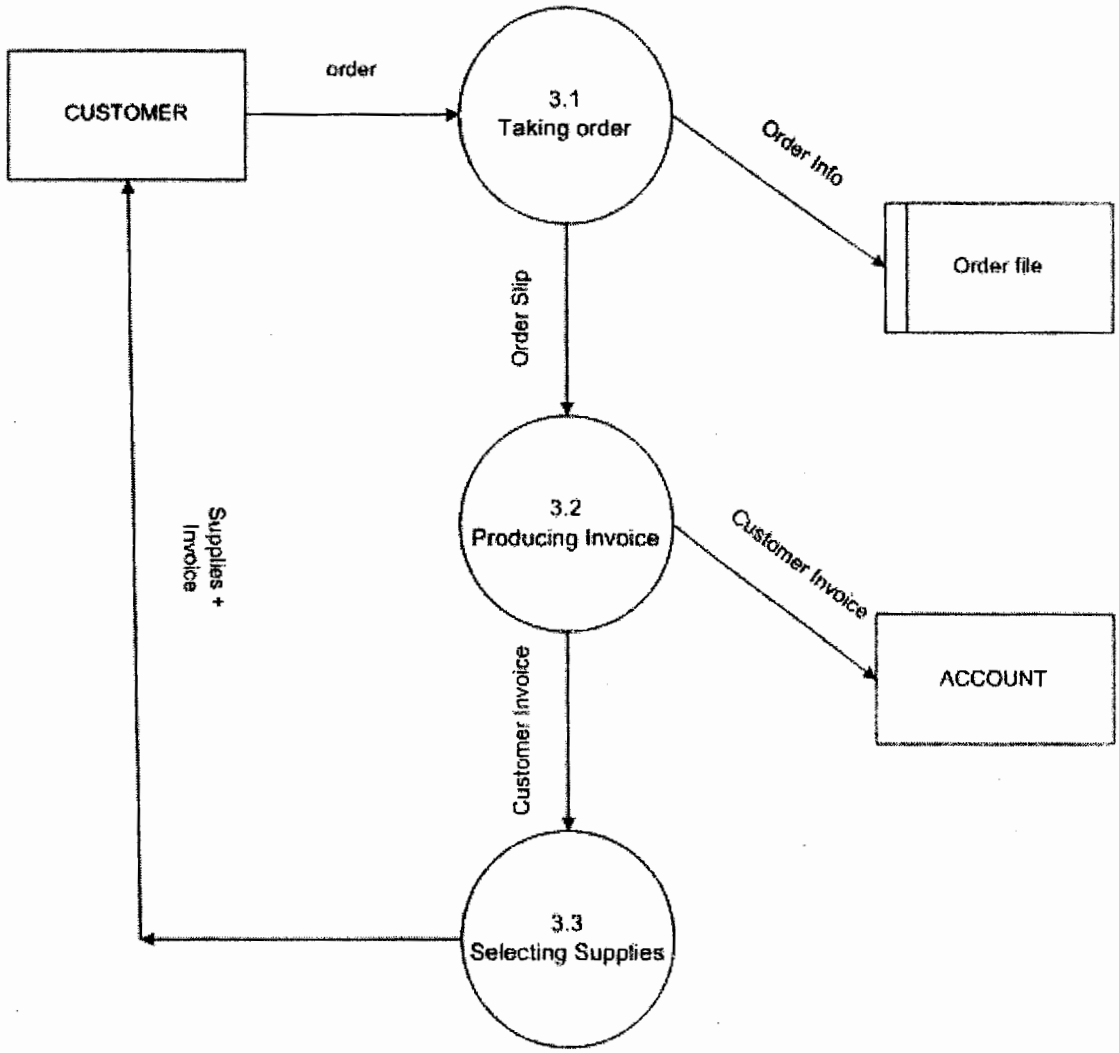

Fig 3.5 Level 2 of Process Order DFD

3.5 Feasibility Study

The main purpose of the feasibility study is to consider the proposed system with a view to decide whether the development of proposed system is feasible for the organization in the underlying circumstances. It is considered that whether the proposed system will meet all the requirements of the organization with lesser cost and with improved efficiency then the existing system. The feasibility of the system is considered from the following three aspects.

- Financial Feasibility
- Technical Feasibility
- Operational Feasibility

Each of the above is briefly explained below.

3.5.1 Financial Feasibility

The system is being developed as an M.Sc degree project so it is very affordable development, expenditures will be charged for the whole development and the organization will be free to use the system. The tool being used for the development is Oracle8i. No other peripheral devices, expensive tools software, hardware or consultancy is required so the project is very much feasible economically.

3.5.2 Technical Feasibility

System does not have any extraordinary technical requirement. So the project is technical feasible too.

3.5.3 Operational feasibility

The proposed system will be operationally feasible because it will be efficient, accurate and reliable and will provide more facilities then the existing system. The proposed system will be user friendly and easy to understand for an accountant and other end users who have been involved during the development of this project so there will not be any problem in operating the software and a short period of training will help the users to get acquainted with the applications and above all no special computer knowledge would be required for it.

3.6 System Requirements

The hardware/software limitations are the limitations applied to our system due to the hardware/software we used. Some of the hardware limitations imposed by the users on our system are:

- The system should use the Pentium III processor

- The operating system we used must be windows2000. The proposed system cannot run on the operating systems which are not compatible to the windows.
- Proposed system can only support the Oracle (8.0), JAVA SCRIPT, HTML language.
- The system will use the interface of Developer6i, and the FrontPage for the website.
- RAM should be of 128MB.

are not even real databases because they store the data in flat files. Storing data in this model is very cumbersome and makes the data difficult to access.

4.5 Legacy databases

This model used in minicomputers and mainframes. Still make use of the network and hierarchical database models.

4.5.1 Relational

A data model that represents data in the form of relations or tables. A relation is a named, two dimensional table of data. Each relation consists of a set of named columns and an arbitrary number of unnamed rows. Different DBMS are currently available in market which follow relational model i.e. Oracle, SQL Server etc.

4.6 Oracle and Accounts Automation

There are number of valid reasons for which we used the Oracle8 as our DBMS. Vendors such as oracle have improved upon traditional RDBMS by adding features to compete with smart interfacing models with other developing tools. These features include

- The ability to handle complex data types such as audio, video, text and spatial data.
- User-defined data types and objects.
- Fully compatible with relational database.
- Support of multimedia and large objects.
- High-quality database server features.

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Some applications such as behavioral science use highly indexed complex data that cannot be efficiently implemented in traditional RDBMS.
A relational table has several characteristics:

- Data stored in a cell is atomic.
- All data stored in a column is of the same data type.
- Each row is uniquely identifiable.
- Columns do not use any ordering.
- Rows do not use any ordering.
- Columns have unique names.
- Data integrity is maintained across tables.

4.7 Oracle Complete Solution

Oracle includes Oracle server and several tools intended to assist the users in maintenance, monitoring and actual use of the data.
The RDBMS handles tasks such as following:

- Managing the storage and definition of data.
- Controlling and restricting data access and concurrency.
- Providing backup and recovery.
- Interpreting SQL and PL/SQL statements.

4.8 Relations and Attributes of Accounts Automation and Website

Following is the database structure of the application:

4.8.1 Table Name: ssupplier

This table contains the information about the suppliers of Shuja Sons. Supno is a unique number assigned to a particular supplier for products to Shuja Sons. Supname is the name of company (supplier). Supaddress, supphone, supemail, supfax are the address, phone no, email address and fax no of the supplier respectively. Sup No is auto generated for a new supplier, which is incremented value of the previous supplier no.

Field name	Data type	Length	Not Null	Description
Supno	Number	10	Y	Supplier No
Supname	Varchar2	35	Y	Supplier Name
Suppaddress	Varchar2	35	Y	Supplier Address
Supphone	Number	15	N	Phone No
Supemail	Varchar2	35	N	Email Address
Supfax	Varchar2	20	N	Fax No

Table 4.1 Detail of Supplier table

4.8.2 Table Name: scustomer

This table contains the information about the Customers. custno is a unique number assigned to a particular supplier for products to Shuja Sons. custname is the name of customer .custaddress, custphone, custemail, custfax are the address, phone no, email address and fax no of the customer respectively. custno is auto generated for a new customer, which is incremented value of the previous customer no.

Field name	Data type	Length	Not Null	Description
custno	Number	10	Y	Customer No
custname	Varchar2	35	Y	Customer Name
custaddress	Varchar2	35	Y	Customer Address
custcity	Varchar2	35	Y	Customer city
custphone	Number	15	N	Phone No
custemail	Varchar2	35	N	Email Address
custfax	Varchar2	20	N	Fax No

Table 4.2 Detail of Customer table

4.8.3 Table Name: sproduct

This Table contains the information about the products, the no of items present at any time in the stock, the no of items on order, and the reorder level of a specific product. It deals with all the transactions related to products. And for each transaction, a serial no is generated. For this table a composite primary key exists, having fields sno, transdate and prodno. The column "receipts" is the number of items received from any supplier for the particular product of that transaction and the column "issued" is the number of items issued to any customer on that date of transaction for the product. "balance" column shows the balance of the product in database. "onorder" column shows the no of items that are on order , but are not delivered to customer yet.

Field name	Data type	Length	Not Null	Description
sno	Number	10	Y	Serial No
Transdate	Date	-	Y	Transaction date
Prodno	Number	10	Y	Product Number
Prodname	Varchar2	30	Y	Product Name
Receipts	Number	10	N	Products received
Issued	Number	10	N	Products issued

4. System Design

It is common during the designing phase to decide all things but not record half of them Therefore in designing phase of "Management information system" parts of these activities were recorded. Designing include many important aspects.

4.1 Developing a logical Data Model

This is probably the most important part of the designing phase. No matter how small the project entity relation ship diagram should be crested using a tool such as entity relationship diagrammed in Visio/2000 or logic work's Erwin. These tools can help creating the logical model, generate the database and document the data being stored in the database.

4.2 Developing a Relational Data Model

A relational database uses tables called "Relations" to store the information. A data table represents each entity. This data model has the following characteristics:

- The relational data model represents the data in form of tables consisting of rows and columns.
- The columns of data table represent the distinct attributes of an entity while the rows correspond to the records.
- Most database management system based on the relational model has a built in query support for query languages.

4.3 Database Management System (DBMS)

Often the terms database and DBMS are used interchangeably. However a database management system is a software product that manages database. The DBMS tool used in the development of "Management Information System" is Oracle, which follows the relational database model. Several important features are desired from a DBMS and most modern databases provide some mechanism for these features.

- It should be easy to store and retrieve data.
- It should provide security for the data stored.
- It should provide some method for concurrent access to the database and control of this concurrency.
- There should be some method to recover the database in case of a database crash.
- Data consistency and integrity should be retained.

4.4 Database Management System Models

Several database models have been commonly used but they all satisfy, in one way or other, the requirement to be a DBMS. The various database models are Flat-File. These

Chapter 4

System Design

Field name	Data type	Length	Not Null	Description
Balance	Number	10	Y	Balance
Onorder	Number	10	N	Products on order
Reorderlevel	Number	10	N	Reorder Level
Unitprice	Number	10	Y	Unit price

Table 4.3 Detail of sproduct table

4.8.4 Table Name: sorder

This table contains the general information about the orders given by different customers. Fields of this table are listed below; "orderno" a unique number is assigned to every new order of any customer. "startdate" denotes the date of the order placed. "requireddate" is the date mentioned by the customer, on which he wants to get his ordered items. "ordertype" defines the type of order means whether the order is placed for a computer product or for printing. "total amount" is the total amount for that given order.

Field name	Data type	Length	Not Null	Description
Orderno	Number	10	Y	Order No
Startdate	Date	-	Y	Order date
Requireddate	Date	-	Y	Date on ,ordered products are required.
Custno	Number	10	Y	Customer No
Ordertype	Varchar2	20	N	Type of order, Printing or purchasing
Totalamount	Number	10	N	Total amount of the order.

Table 4.4 Detail of sorder table

4.8.5 Table Name: sorderdetail

This table contains the detailed information of an order. The different products ordered in this order, their quantity, and description and in case of order for printing this table

contains the information of the required paper size, standard paper size, no of leaves to be printed and the amount for that specific product.

For each product, in an order different "itemno" is assigned. "orderdate" and "orderno" are foreign keys in the table sorderdetail, and these both fields ,along with itemno forms a composite primary key. "prodno" is also a foreign key showing the product for which the order is being palced. "Quantity" field will store the no of items. "Description" field stores the name and necessary description about the product. "Leaves" field stores the no of pages in a book, being ordered for printing. "req-pap-size" is the paper size for any printing book, form etc. "std-pap-sz" contains one of the select standard paper sizes by the customer. This field contains only three options available at run time and the customer has to choose between them. "reqrim" is a calculated field which shows how many rims of the selected standard size of the paper will be used , for that particular order for printing. "Amount" field is again a calculated field, use to store the amount of a transaction.

Field name	Data type	Length	Not Null	Description
Itemno	Number	10	Y	Item no
Orderdate	Date	-	Y	Date of order
Orderno	Number	10	Y	Order No
Prodno	Number	10	Y	Product No
Quantity	Number	5	Y	Quantity
Unitprice	Number	10	Y	Price of product
Description	Varchar2	50	N	Description of product
Leaves	Number	5	N	No of pages in a book to be printed
Req-pap-size	Number	10	N	Required paper size
Std-pap-size	Number	10	N	Standard paper size
Reqrim	Number	10	N	Required no of rims.
Amount	Number	10	Y	Amount

Table 4.5 Detail of sorderdetail table

4.8.6 Table Name: purchaseaccount

This table stores all the information about the purchases of products. "purno" is a unique number assigned to a purchase. "purdate" the date on which a product is purchased. "supno" is the supplier number from whom a product is purchased. "billno" is the bill no given by supplier. "Particulars" is description of the product being purchased. "Debit" field stores the total amount to be paid to the supplier. Any payment against any bill will be entered in the "credit" field. "Status" field shows whether the company's status is creditor or debtor, 'cr' denotes the creditor and 'dr' shows the debtor. "Balance" field stores the balance remaining after the transaction.

Field Name	Data type	Length	Not Null	Description
Purno	Number	10	Y	Purchase Number
Purdate	Date	-	Y	Purchase Date
Supno	Number	10	Y	Supplier Number
Billno	Number	10	Y	Bill Number
Particulars	Varchar2	50	N	Particulars
Debit	Number	25	N	Debit
Credit	Number	25	Y	Credit paid
Status	Varchar2	5	Y	Status
Balance	Number	25	Y	Balance

Table 4.6 Detail of purchaseaccount table

4.8.7 Table Name: Debtorsaccount

This table stores all the information about the sales of products. "salesno" is a unique number assigned to a purchase. "salesdate" the date on which a product is sold. "custno" is the customer number ,who purchases this product. "orderno" is the order no placed by the customer for this sale. "Particulars" is description of the product being purchased. "Credit" field stores the total amount to be paid by the customer. Any payment against any order will be entered in the "debit" field. "Status" field shows whether the customer staus is creditor or debtor, 'cr' denotes the creditor and 'dr' shows the debtor. "Balance" field stores the balance remaining after the transaction.

Field Name	Data type	Length	Not Null	Description
salesno	Number	10	Y	Sales Number
salesdate	Date	-	Y	Sales Date
custno	Number	10	Y	Customer Number
Orderno	Number	10	Y	Order Number
Particulars	Varchar2	50	N	Particulars
Debit	Number	25	N	Debit
Credit	Number	25	Y	Credit paid
Status	Varchar2	5	Y	Status
Balance	Number	25	Y	Balance

Table 4.7 Detail of Debtorsaccount table

4.8.8 Table Name: saccount

This table stores the information about the cash and bank account. Any payment made through cheque or cash , by the customer or supplier is stored in this table. "sno" is the unique number assigned to any transaction. "transdate" is the transaction date on which the payment is made. "actype" is the type of payment . either 'cash' or 'bank'. "particulars" field stores the necessary information about the customer or supplier. "debit" field is used when payment is made by any customer. And the entry in "credit" side is made when payment is done to the supplier by the company. "balance" is the remaining balance of a customer, or the company to a specific supplier.

Field Name	Data type	Length	Not Null	Description
Sno	Number	10	Y	Serial Number
transdate	Date	-	Y	Transaction Date
Actype	Number	10	Y	Account Type
Particulars	Varchar2	50	N	Particulars

Field Name	Data type	Length	Not Null	Description
Debit	Number	25	N	Debit
Credit	Number	25	Y	Credit paid
Status	Varchar2	5	Y	Status
Balance	Number	25	Y	Balance

Table 4.8 Detail of saccount table

4.8.9 Table Name: taxaccount

This table contains the information about the taxes made on different orders. Tax is added to an order at a rate of 3% of total amount. The fields in this table are: "invoiceno" issued against an order. "taxdate" is the date on which the tax is deducted. "Particulars" are the necessary information about the tax on that order. "Tax" is the amount of tax on an order. The table has taxdate and incvoiceno as a composite primary key.

Field Name	Data type	Length	Not Null	Description
Taxdate	Date	-	Y	Date of tax deducted
Invoiceno	Number	10	Y	Invoice Number
Particulars	Varchar2	50	N	Particualrs
Tax	Number	10	Y	Amount of tax

Table 4.9 Detail of taxaccount table

4.8.10 Table Name: Expenseaccount

This table contains all the information of all expenses of some specific types made by company. For example expenses made for cutting the paper, for refreshment etc. The "expdate" field is the date on which an expense is made. "Expense" is the name of expense. "Type" is one of some specific types of the expenses. "Charges" is the amount used for that specific type of expense.

Field Name	Data type	Length	Not Null	Description
Expdate	Date	-	Y	Expense date
Expense	Varchar2	50	Y	Description of expense
Type	Varchar2	50	Y	Type of expense
Charges	Number	20	Y	Amount for expense

Table 4.10 Detail of Expenseaccount table

4.8.11 Table Name: loginuser

This table contains the information about the various users of the system, Users who can interact the system, with different privileges. Their user name, password, and category of their login is stored in it. Category can have three choices, either 'Data entry operator", as an "Accountant" or as an "administrator". Along with this information general information about the user is also stored, for e.g. full name, father name, phone number and address of the user.

Field Name	Data type	Length	Not Null	Description
Username	Varchar2	30	Y	User name
Password	Varchar2	30	Y	Password
Category	Varchar2	30	Y	Category
Fullname	Varchar2	45	Y	Full Name of user
Fathername	Varchar2	45	Y	Father Name of user
Phone	Number	15	N	Phone Number
Address	Varchar2	45	Y	Address
Emailaddress	Varchar2	35	N	Email Address

Table 4.11 Detail of loginuser table

4.8.12 Table Name: webuser

This table is use to store the information of web users. The company provides the online ordering facility to its customers. To give online order a user has to register him. For this purpose he will provide necessary information about himself. After being registered he can enjoy not only the facility of online ordering but also email services. The information required is listed below. Username is a unique entry that will be chosen by customer himself and the company will further store information of this user using this name.

Field Name	Data type	Length	Not Null	Description
Name	Varchar2	40	Y	Name
Uname	Varchar2	20	Y	User Name
Password	Varchar2	20	Y	Password
Gender	Varchar2	8	N	Gender
Birthdate	Date	-	N	Date of Birth
Mstatus	Varchar2	20	N	Marital status
Address	Varchar2	35	Y	Address
Phone	Number	15	N	Phone No
Country	Varchar2	20	Y	Country Name
City	Varchar2	20	Y	City Name

Table 4.12 Detail of webuser table

4.9 External Design

4.9.1 The Login Screen

The Login Screen has following fields

- User Name
- User Password
- Category

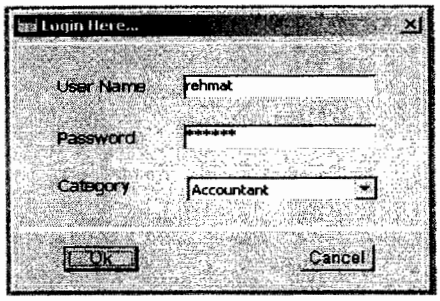

Fig 4.1 login form screen

Screen Purpose

The purpose of this screen is to connect the user to the system; user will give its login, password and select type assigned by the administrator.

4.12.1 Main Application Screen

Fig 4.2 Main Application Screen

Screen Purpose

When the user logged in this main application form will appear according to the rights assigned to the categories. The menus will de enabled or disabled.

4.9.3 Change Password Screen

Change Password screen has following fields

- User name
- Old Password
- New Password
- Confirm Password

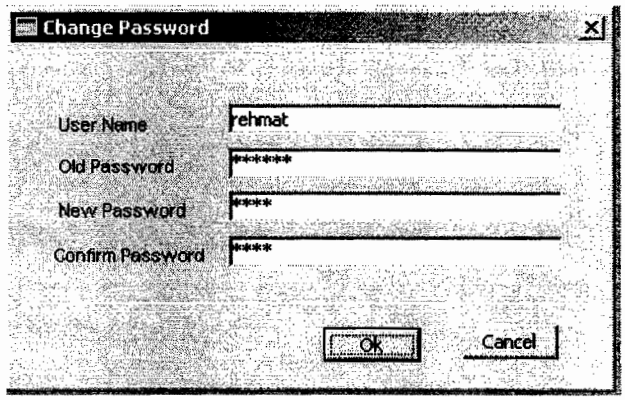

Fig 4.3 Change Password Screen

Screen Purpose

The purpose of this screen is to change the password of the user.

4.9.4 Create New User Screen

Create new user screen has following fields

- User Name
- Password
- Category
- Full Name
- Father Name
- Phone No
- Address
- E-mail Address

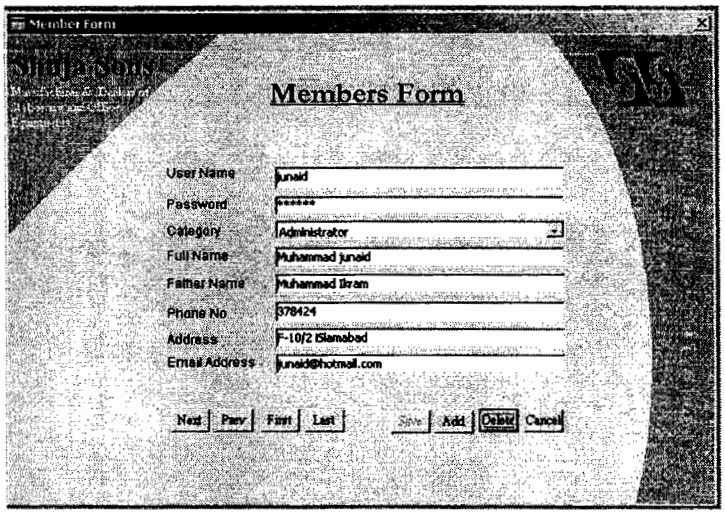

Fig 4.4 Members Form Screen

Screen Purpose

The purpose of this screen is to create the new user which can use the application. The access of the software is according to the category assigned.

4.9.5 Reset Tax Rate Screen

The Reset Tax Rate Screen has following fields

- Date
- Tax Rate

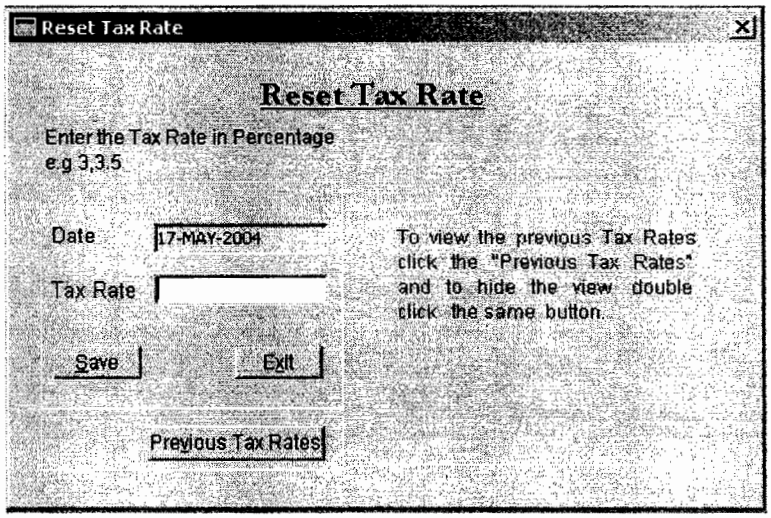

Fig 4.5 Reset Tax Rate Screen

Screen Purpose

The purpose of this screen is to reset the tax rate whenever it is changed.

4.9.6 Purchase Account Screen

The Purchase Account Screen has following fields

- Purchasing date
- Supplier No
- Name
- Bill No
- Particulars
- Amount
- Product No
- Product Name
- Quantity

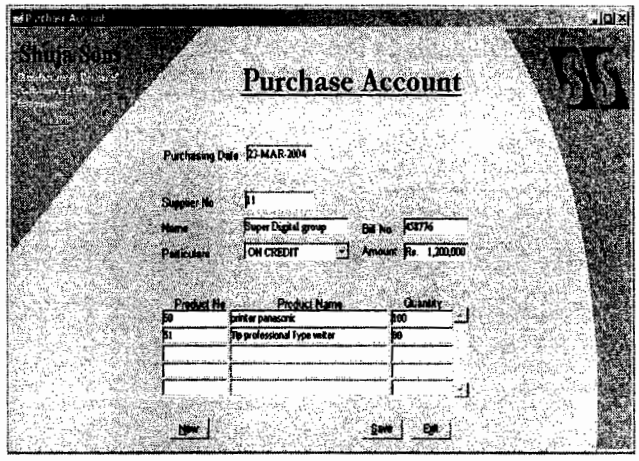

Fig 4.6 Purchase Account Screen

Screen Purpose

The purpose of this screen is to maintain the store account and creditors account when stock is purchased.

4.9.7 Creditors Account Screen

The Creditors Account Screen has following fields

- Select Supplier No from LOV (List Of Values)
- Account of (Supplier's Name)

- Show Details of the Supplier
- Serial # (S. No) Auto generated
- Date automatically take current date
- Enter the debit amount
- Dr/Cr and balance automatically computed

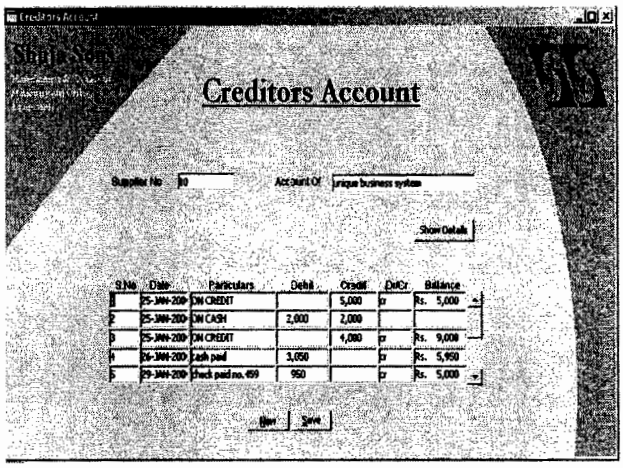

Fig 4.7 Creditors Account Screen

Screen Purpose

The purpose of this screen is to see the previous record of the creditor(supplier) and to enter the new record when the payment is made to the supplier.

4.9.8 Sales Account

The Sales Account Screen has following fields

- Sales Date
- Customer No
- Name
- Order No
- Particulars
- Amount
- Product No
- Product Name
- Quantity

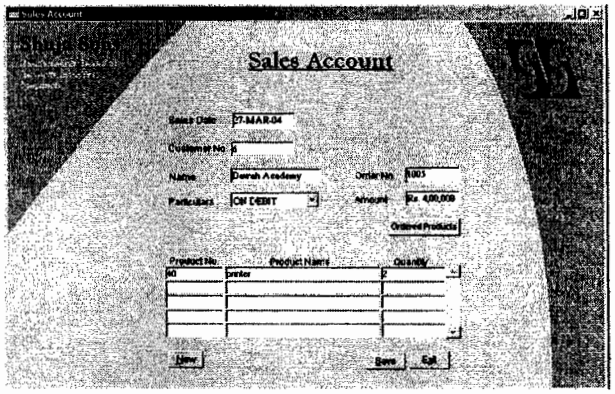

Fig 4.8 Sales Account Screen

Screen Purpose

The purpose of this screen is to maintain the store account and debtors account when products are sold.

4.9.9 Debtors Account Screen

The Debtors Account Screen has following fields

- Select Customer No from LOV (List Of Values)
- Account of (Customer's Name)
- Show Details of the Customer
- Serial # (S. No) Auto generated
- Date automatically take current date
- Enter the credit amount
- Dr/Cr and Balance automatically computed

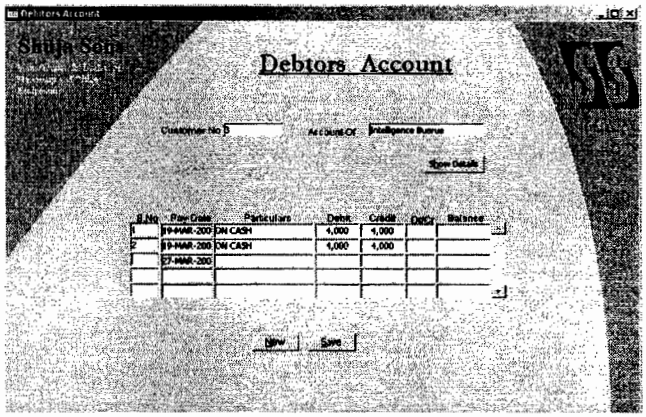

Fig 4.9 Debtors Account screen

Screen Purpose

The purpose of this screen is to see the previous record of the debtors (Customers) and to enter the new record when the payment is made by the supplier.

4.9.10 Expense Account Screen

The Expenses Account Screen has following fields

- Date
- Expenses
- Select expense type
- Charges

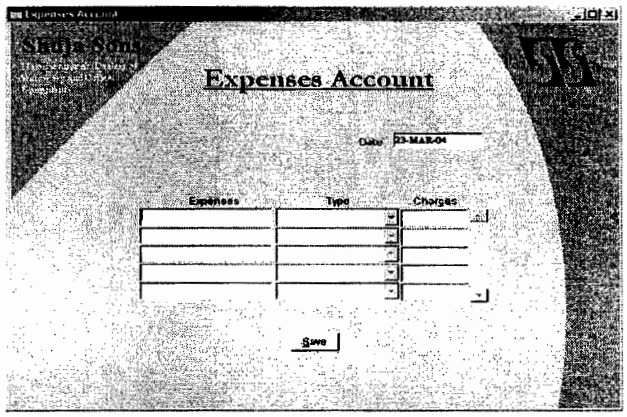

Fig 4.10 Expenses Account Screen

Screen Purpose

The purpose of this screen is to maintain the expenses account when expenses are made by the company.

4.9.11 Cash & Bank Account Screen

The Cash & Bank account has following fields

- Date
- Select Account type (Cash or Bank)
- Particulars
- Debit amount
- Credit amount
- Dr/Cr

- Balance

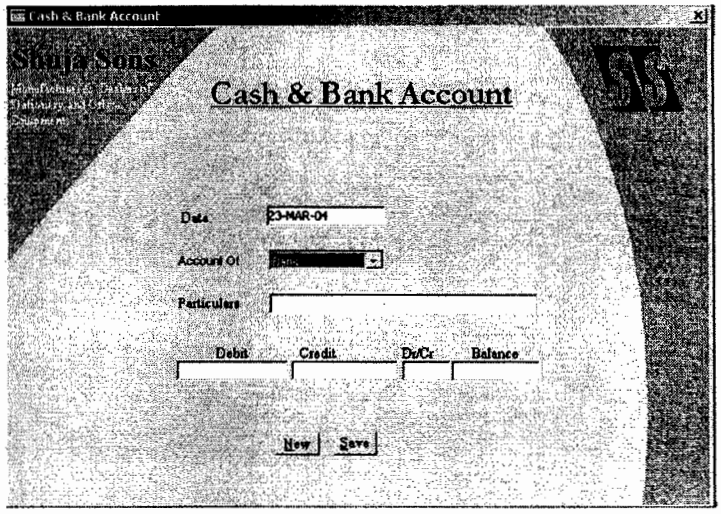

Fig 4.11 Cash & Bank Account Screen

Screen Purpose

The purpose of this screen is to the cash and bank account whenever transaction the transaction of money occurred.

4.9.12 Ordering Screen

The Order for computer product screen has following fields

- Order No
- Customer No
- Customer Name
- Order Date
- Item No
- Product No
- Description
- Unit Price
- Quantity
- Amount
- Total Amount
- Tax
- Payable Amount

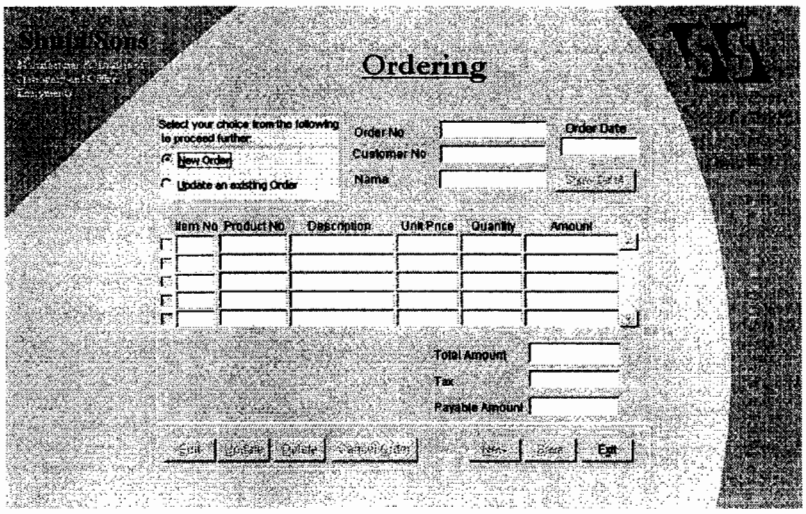

Fig 4.12 Ordering Screen

Screen Purpose

The purpose of this screen is to maintain the ordering process for the computer products and billing against the order and also to update an existing order.

4.9.13 Product Information Screen

The Product screen has following fields

- Product No
- Product Name
- Unit Price

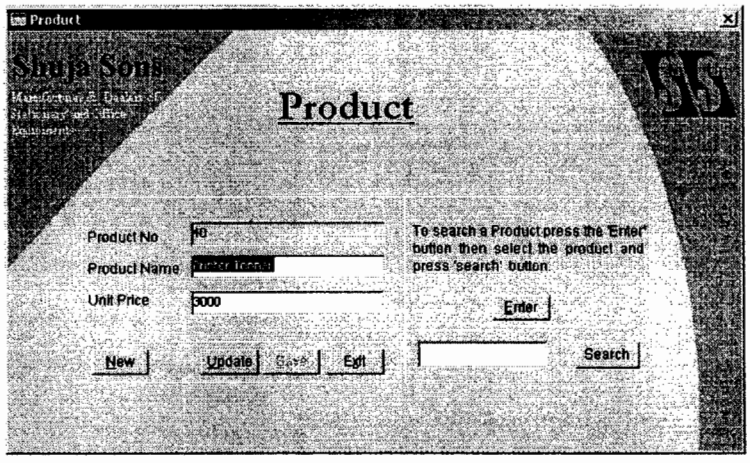

Fig 4.13 Product Information Screen

Screen Purpose

The purpose of this screen is to add new product.

4.9.14 Supplier Information Screen

The Supplier Information screen has following fields

- Supplier No
- Name
- Address
- Phone No
- E-mail
- Fax No
- Supplier Name for search

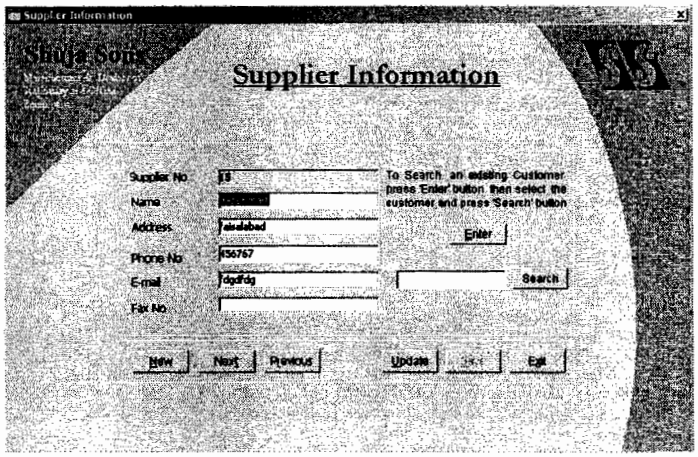

Fig 4.14 Supplier Information Screen

Screen Purpose

The purpose of this screen is to add new Supplier and to delete or update the existing Supplier's record.

4.9.15 Customer Information Screen

The Customer Information screen has following fields

- Customer No
- Name
- Address

- City
- Phone No
- E-mail
- Fax No
- Customer Name for search

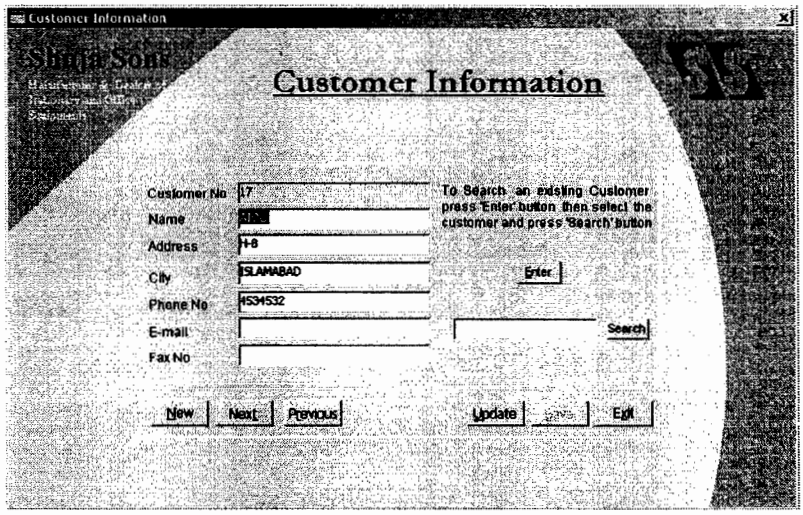

Fig 4.14 Customer Information Screen

Screen Purpose

The purpose of this screen is to add new Customer and to delete or update the existing Customer's record.

4.10 Web Site

4.10.1 Home Page

The Home Page screen has following links

- Home
- E-Mail
- Ordering
- Products
- About Us
- Registration

These links are also inherited by all Shuja Sons Website pages

The Home Page has following fields

- User Name
- Password

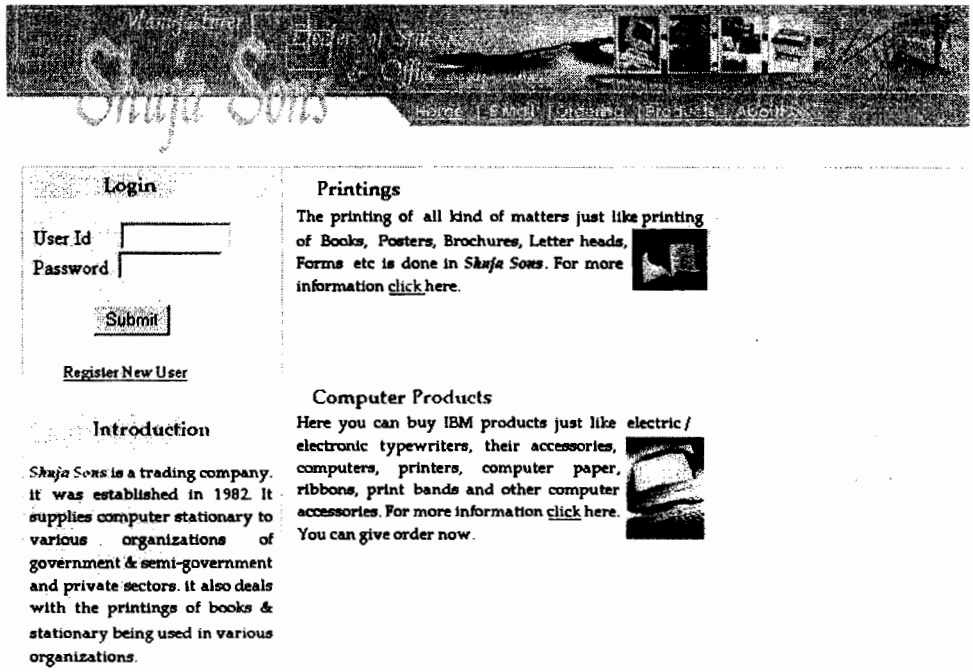

Fig 4.15 ShujaSons Home Page

Page Purpose

The purpose of this page is to introduce the company for the visiting users and to login the registered users.

4.10.2 E-Mail Page

This page has following fields

- User Name
- Password

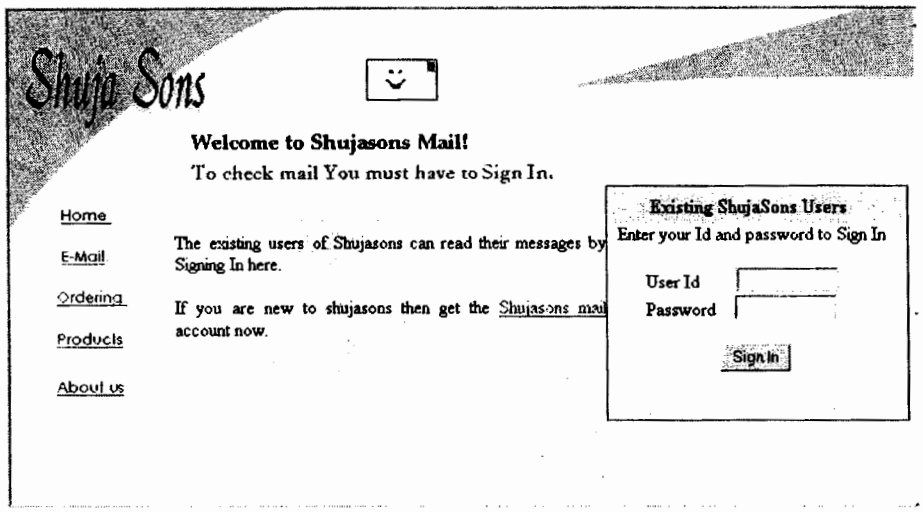

Fig 4.16 E-Mail Page

Page Purpose

When the user click the E-Mail link this page will be there to Sign In the user by entering its user name and password.

4.10.3 Ordering Page

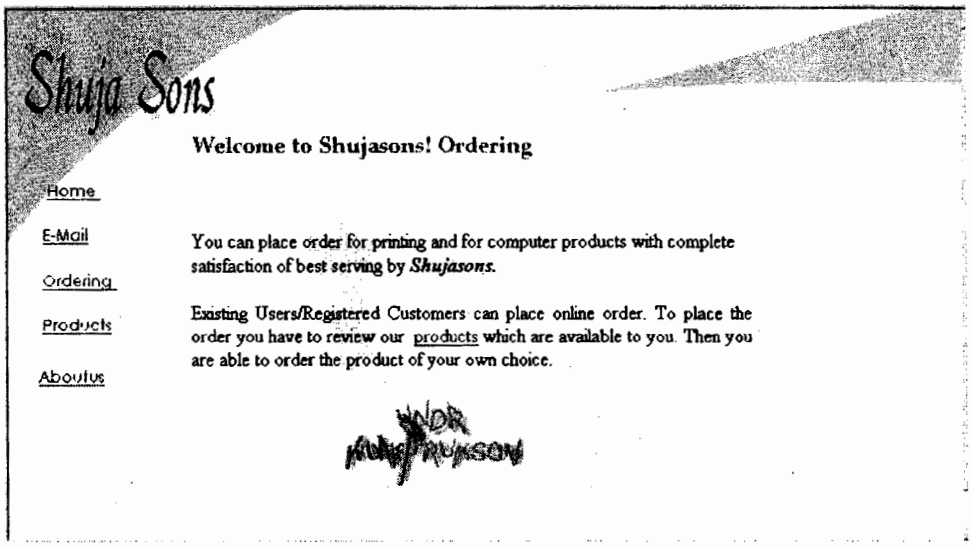

Fig 4.17 Ordering Page

Page Purpose

The purpose of this page is to welcome the user to online ordering and ask to review the products sold by the company.

4.10.4 Products Page

This page has following extra links of products

- Computers
- Printers
- Computer paper
- Computer Cables
- Electronic type writers
- Typewriter Ribbons
- Books Printings
- Brochures
- Forms
- Letter heads
- Posters

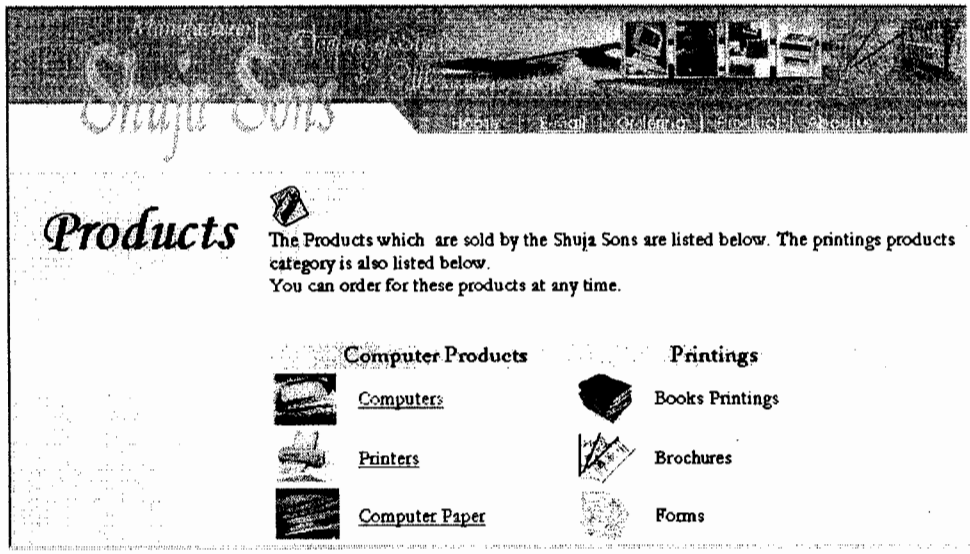

Fig 4.18 Products Page

Page Purpose

The purpose of this page is to let the user to review the products sold by the company and the links let the user to see the further kinds of the clicked product.

4.10.5 About us Page

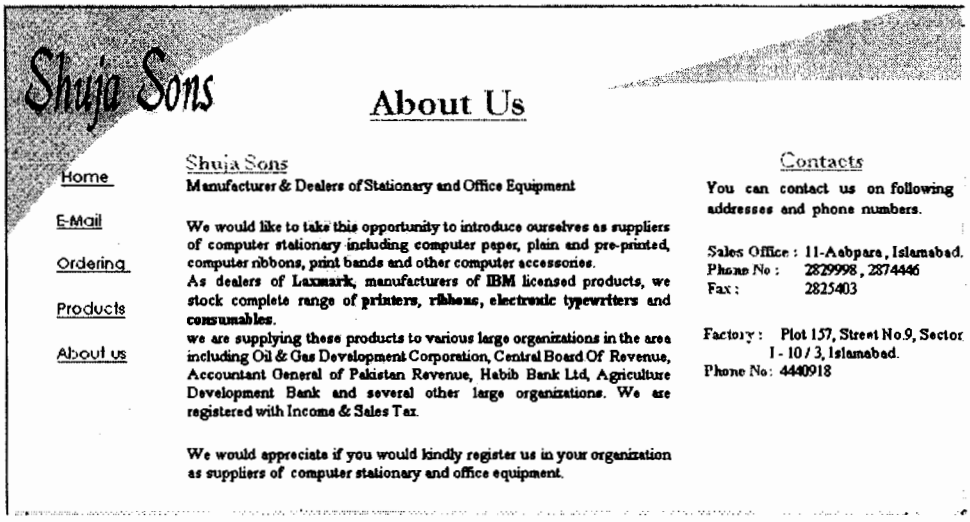

Fig 4.19 About Us Page

Page Purpose

The purpose of this page is to introduce the company more precisely with contact addresses and phone numbers of the company.

4.10.6 Registration Page

The Registration page has following fields

- Name
- User Name
- Password
- Confirm Password
- E-Mail
- Gender
- Date of Birth
- Martial Status
- Address
- Phone No
- Country

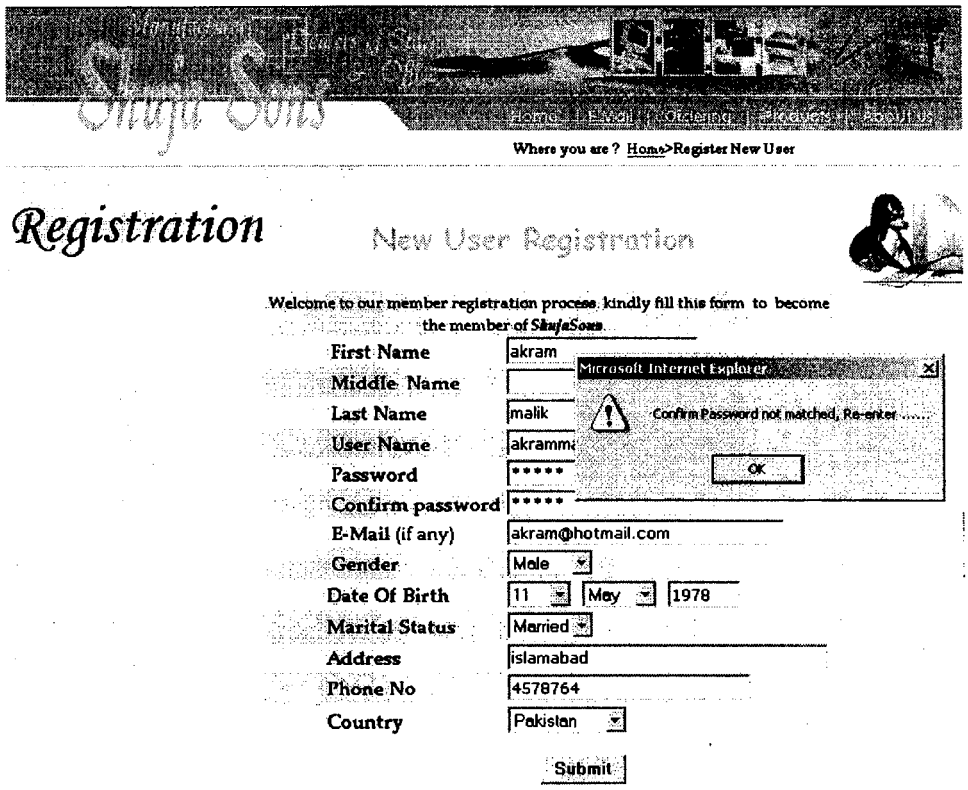

Fig 4.20 Registration Page

Screen Purpose

The purpose of this page is to register the user with the company and made the account of the user on the website.

4.10.7 Compose Mail Page

Compose Mail Screen has following fields

- To
- From
- Subject
- Message
- Attachments

Distinct Links are

- Compose Mail
- Log Out

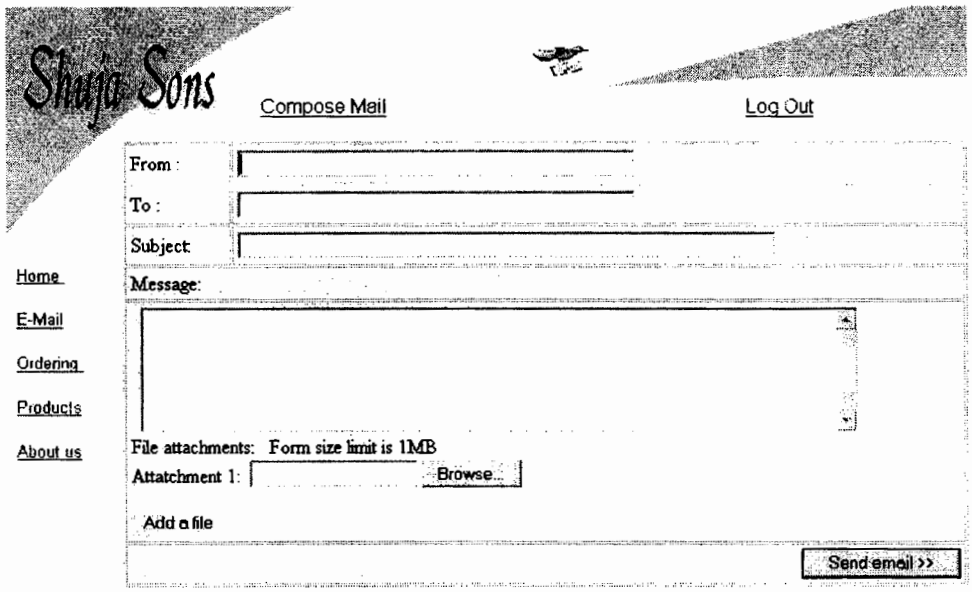

Fig 4.21 Compose Mail Page

Page Purpose

The purpose of this page is to write mail and send it to the person concerned with or without attachments.

Chapter 5

Implementation

5 Implementation

The tools used in the development of "Accounts automation of Shuja Sons" are Oracle 8i at the back end, Developer 6 at front end and for the development of "website of Shuja sons" Microsoft front page at front end was used. Beside these tools we have used number of other CASE tools (Computer Aided Software Engineering) and software like Microsoft Visio 2002, Adobe photo shop, Coral Draw etc.

5.1 Oracle 8i

Oracle8i is a high performance, high availability, scalable, general purpose, multi-user, database management system based on the relational model extended with objects that runs on a wide variety of computer operating systems. It supports a full set of utilities and an industry-standard SQL data definition and data manipulation language that lets you create, query, and maintain your Oracle8 databases. Oracle8 supports VLDB, high-end OLTP and data warehouse applications and contains enhanced management capabilities using the Oracle8 Enterprise Manager GUI and enhanced security using the Oracle Security Server.

Originally, the DBMS used in development are mostly Access or Fox pro. But in this case a powerful DBMS with efficient response was needed. So the company uses Microsoft for it's other Products. Oracle 8i is a powerful DBMS used at a large for managing huge databases.

Oracle provides a flexible RDBMS Oracle8 , using its feature you can store and manage data with all the advantages of a relational structure and PL/SQL, an engine that provides you with the ability to store and execute program units. The server offers the options of retrieving data based on optimization techniques. It includes security feature that control how a database is accessed and used.

Oracle application may run on the same computer as the oracle server. Alternatively, you can run applications on a system local to the user and run the oracle server on another system (client-server architecture). In this client server environment, a wide range of computing resources can be used.

5.1.1 Features

Many features have been provided by oracle, which are as follows.

5.1.1.1 OLAP & OLTP

Beyond the basic functionality, Oracle has new features for which most other database vendors charge extra. Online analytical processing (OLAP), such as better sharing of runtime data structures. Larger buffer cache, and deferrable constraints. Data warehouse applications will benefit from enhancement such as parallel execution of insert, update

and delete operations. Partitioning, and parallel-aware query optimization. Operating within the Network Computing Architecture (NCA) framework.

5.1.1.2 Dynamic Row level Locking

Oracle 8i has many new features that improve the product in terms of performance and usability. In the performance area, Microsoft has added dynamic row-level locking, a redesigned query processor and a number of profiling and tuning tools that make it easy to tune Oracle to a specific environment.

5.1.1.3 Reducing Lock Time Out

An Oracle server will wait indefinitely for lock conflicts between transactions to be resolved. You can limit the amount of time that an Oracle server will wait for locks to be resolved by setting the Oracle8 ODBC Driver's Lock Timeout entry in the oraodbc.ini file. The value you enter for the Lock Timeout parameter is the number of seconds after which an Oracle server will time out if it cannot obtain the requested locks

5.1.1.4 Data Transformation Services

There are also new utilities, such as Data Transformation Services, which let you easily import and export data to a wide variety of other formats. DTS provide all the tools necessary to move data in and out of Oracle database.

5.1.2 Features Not supported

The Oracle8 ODBC Driver does not support the following ODBC 3.0 features:

- Interval data types
- SQL_C_UBIGINT and SQL_C_SBIGINT C data type identifiers
- Binding parameters by name
- Multiple environment handles
- Shared connections
- Shared environments

5.2 Front End Pseudo Code

The pseudo code of the front end is:

5.2.1 Login screen Pseudo code

This screen authenticates the user so he can use the system.

- **Ok Button Pseudo Code**
  Input the user name
  Input the password

Select the user type

Open connection with the database on the basis of user type
Select username, password and category from database

If username, password and category are valid
Show splash screen
User type and user values are stored

Else if username is invalid
print "username does not exist"

Else if password is invalid
Print "password is invalid"

Else if category is invalid
Print "user has no authority to work in this category"
End if

- **Exit button Pseudo Code**
  Unload the Application.

5.2.2 Create User Screen Pseudo code

- **Form Load Pseudo Code**
  Get the recordset from the login users
  Set all the fields of the screen with that recordset
  Disable Save button
  Enable first, last, next, previous, delete, add and cancel buttons

- **Delete button Pseudo Code**
  Click delete button
  Delete selected user from database

- **Add button Pseudo Code**
  Click add button
  Set all fields to null
  Disable first, last, next, previous, delete buttons
  Enable Save button

- **Save button Pseudo Code**
  Select user name
  From login user
  Where username= user name field

  If user name is not null then

Print "This User name already exist"
Disable first, last, next, previous, delete buttons
Else user name is null then
If any field is empty
Print "Provide the corresponding field"
Else
Commit
End if
End if

- **Exit button click Pseudo Code**
Exit the current form.
Navigates to the main application screen

5.2.3 Reset Tax Rate Screen Pseudo Code

Set Date to System date
Input the Tax Rate

- **Save button click Pseudo Code**
If Tax Rate field is null then
Print "Provide the Tax Rate"
Else
Commit
End if

- **Exit button click Pseudo Code**
Exit the current form.
Navigates to the main application screen

- **Previous Tax Rate button click Pseudo Code**
If "Previous Tax Rate" button is Double Clicked then

Get the recordset from table tax
Fill all the fields for that recordset.
Else
Hide the displayed recorset
End If

5.2.4 Changing Password Screen Pseudo Code

Input the current password
Input the new password
Input the confirm password

Select password from database

If New password <> Confirm password
Print "New and Confirm password do not match"

Else if current password <> password
Print "Invalid password"
Else
Query the database to update the values into database file

Commit insertion
End if

5.2.5 Ordering Screen Pseudo Code

Make a choice between New order and Update an Existing Order

- **New Order radio button Pseudo Code**

Clear the form of ordering for purchasing product.
Set Order no field text
Set Order date field text
Fill customer No list
Fill product No list
Enable Save, New, Edit buttons

- **Customer No list F9 Pseudo code**

Get the recordset from the table when F9 pressed in the customer no list.
Fill the list with the recordset
Select customer no from list
Assign customer no to the customer no field

Set the Item no field
Get the recordset from the table when F9 pressed in the list.
Fill the list with the recordset
Select product no from list
Assign product no to the product no field
Assign description to the description field
Assign unit price to the unit price field

Fill the quantity field.
Set the amount field = quantity * unit price

Set total amount = 0;
For I =1 to max(item no)
Total amount = amount + total amount
Next

Set tax = (totalamount *3) / 100

Payable amount = totalamount – tax

- **Save button click Pseudo Code**

Enable all the buttons.
Enter data in fields.
Click the save button
Open connection with data base
If error occurred
Print "Error description"
Else if customer no was not entered
Print "Provide Customer no"
Else if product no was not entered
Print "Provide Product No"
Else if quantity was not entered
Print "Provide quantity"

Else
Query the database to INSERT the values into the database file
Commit insertion.
End if

- **Edit Button Pseudo Code**

Disable the fields orderno, startdate, itemno.
Disable the buttons save.

- **Update Button Pseudo Code**

Change the required fields.
Click Update button.
Open connection with the database
If error occurred
Print "Error description"
Else if customer no was not entered
Print "Provide Customer no"
Else if product no was not entered
Print "Provide Product No"
Else if quantity was not entered
Print "Provide quantity"

Else
Query the database to update the values into the database file
Commit Updation.

End if

- **Update an Existing Order radio button Pseudo Code**

  Clear the ordering form
  Get the recordset from the table order
  Enable the Show Detail, Update, Edit, Cancel Order, Delete buttons

- **Customer No list F9 Pseudo code**
  Get the recordset from the table when F9 pressed in the list
  Fill the list with the recordset
  Select customer no from list
  Assign customer no to the customer no field
  Assign order no to the order no field

- **Show detail Button Pseudo code**
  Click the button Show detail

  Get the recordset from table sorderdetail where orderno = orderno field
  Fill all the fields for that recordset.

- **Delete Button Pseudo Code**
  Check the check box against the record to be deleted
  Click the button "delete"
  Open connection with the database
  If error occurred
  Print "Error description"
  Else
  Print "Confirm Delete?"
  If confirmed
  Query the database to delete the values from the database file
  Commit Delete.
  Else
  No changes.
  End if
  End if

- **Exit button click Pseudo Code**
  Exit the current form.
  Navigates to the main application screen

5.2.6 Purchase Account Pseudo Code

Set Purchasing date to system date
Fill the Supplier No field

- **Supplier No list F9 Pseudo Code**
  Get the recordset from the table when F9 pressed in the list

Fill the list with the recordset
Select Supplier no from list
Assign Supplier no to the supplier no field
Assign Supplier name to the supplier name field

Fill the Bill No field

- **Particular type combo click Pseudo Code**
  Set particular type combo text

  Fill the Amount field
  Fill the Product No field

- **Product No list F9 Pseudo Code**
  Get the recordset from the table when F9 pressed in the list
  Fill the list with the recordset
  Select product from list
  Assign product no to the product no field
  Assign product name to the description field

  Fill the Quantity field

- **Save button click Pseudo Code**
  If particulars = ON CASH then
  Copy amount field value to credit side of the purchase account table
  Insert null value to balance of the purchase account table

  Else if particulars= ON CREDIT then
  Select balance
  From purchase account
  Where supplier no = supplier no field

  If balance is null then
  Copy amount of field value to balance and credit side of the purchase account table

  Else If balance is not null then
  Copy amount field value to credit side of the purchase account table
  Insert balance + amount into the balance of purchase account
  End if
  End If

  Select balance of product
  From product table
  Where product number = product numbers in data grid

Insert quantity into the receipt side of the product table
Insert balance + quantity into the balance of the product table
Copy other fields to the corresponding tables

Commit Insertion

- **New button click Pseudo Code**
  Set all the fields to null
  Set Purchase date to system date.

- **Exit button click Pseudo Code**
  Exit the current form.
  Navigates to the main application screen.

5.2.7 Creditors Account Screen Pseudo Code

- **Form Load Pseudo Code**
  Get the recordset from the table order

- **Supplier No list F9 Pseudo Code**
  Get the recordset from the table when F9 pressed in the list
  Fill the list with the recordset
  Select Supplier no from list
  Assign supplier no to the supplier no field
  Assign supplier name to the account of field

- **Show detail Button Pseudo Code**
  Click the button Show detail

  Get the recordset from table purchase account where supplier no = supplier no field
  Fill all the data grid for that recordset.

  Set Serial number to maximum (field) +1
  Set date to system date
  Fill the Particulars field
  Fill the debit field

- **Status Field Pseudo Code**
  Select balance
  From purchase account
  Where supplier no =supplier no field

  If balance is greater than debit field then
  Set Status = cr
  Else if balance is less than debit field then

Set Status = dr
Else If balance = debit field then
Set Status = null
End if

- **Balance Field Pseudo Code**
  Select balance
  From purchase account
  Where supplier no = supplier no field

  If balance is not null and debit field is less than balance then
  Set balance field = balance – debit
  Else if balance is not null and debit field is greater than balance then
  Set balance field = debit – balance
  Else if balance is not null and debit field is equal to balance then
  Print "Balance Cleared "
  End if

- **Save button click Pseudo Code**
  If particulars field is null then
  Print "Provide the particulars"
  Else
  Commit
  End if

- **New button click Pseudo Code**
  Set all fields to null

- **Exit button click Pseudo Code**
  Exit the current form.
  Navigates to the main application screen.

5.2.8 Sales Account Screen Pseudo Code

Set Sales date to System date
Fill the Customer no field

- **Customer No list F9 Pseudo Code**
  Get the recordset from the table when F9 pressed in the list
  Fill the list with the recordset
  Select customer no from list
  Assign customer no to the customer no field
  Assign customer name to the customer name field

  Fill the Order No field

- **Order No list F9 Pseudo Code**
  Get the recordset from the table when F9 pressed in the list
  Fill the list with the recordset
  Select order no from list
  Assign order no to the order no field
  Assign amount to the amount field

- **Particular type combo click Pseudo Code**
  Set particular type combo text

- **Show detail Button Pseudo Code**
  Click the button Show detail

  Get the recordset from table order detail account
  where customer no = customer no field
  Fill all the data grid for that recordset.

- **Save button click Pseudo Code**

```
If particulars = ON CASH then
    Copy amount of debtors account to debit side of the purchase account table
    Insert null value to balance of the debtors account table
Else if particulars= ON DEBIT then
      Select balance
      From debtors account
      Where customer no = customer no field
    If balance is null then
       Copy amount field value to balance and debit side of the debtors account
       table
    Else If balance is not null then
          Copy amount field value to debit side of the debtors account table
          Insert balance + amount into the balance of debtors account
    End If
End if

Select balance of product
From product table
Where product number = product numbers in data grid

Insert quantity into the issued side of the product table
Insert  balance - quantity into the balance of the product table
Copy other fields to the corresponding tables

Commit Insertion
```

- **New button click Pseudo Code**
  Set all the fields to null

Set Sales date to system date.

- **Exit button click Pseudo Code**
  Exit the current form.
  Navigates to the main application screen.

5.2.9 Debtors Account Screen Pseudo Code

- **Form Load Pseudo Code**
  Get the recordset from the table order

- **Customer No list F9 Pseudo Code**
  Get the recordset from the table when F9 pressed in the list
  Fill the list with the recordset
  Select customer no from list
  Assign customer no to the customer no field
  Assign customer name to the account of field

- **Show detail Button Pseudo Code**
  Click the button Show detail

  Get the recordset from table purchase account where customer no = customer no field
  Fill the data grid for that recordset.

  Set Serial number to maximum (field) +1
  Set date to system date
  Fill the Particulars field
  Fill the credit field

- **Status Field Pseudo Code**
  Select balance
  From debtors account
  Where customer no = customer no field

  If balance is greater than credit field then
  Set Status = dr
  Else if balance is less than debit field then
  Set Status = cr
  Else If balance = credit field then
  Set Status = null
  End if

- **Balance Field Pseudo Code**
  Select balance
  From debtors account

Where customer no = customer no field

If balance is not null and credit field is less than balance then
Set balance field = balance - credit
Else if balance is not null and credit field is greater than balance then
Set balance field= credit – balance
Else if balance is not null and debit field is equal to balance then
Print "Balance Cleared "
End if

- **Save button click Pseudo Code**
If particulars field is null then
Print "Provide the particulars"
Else
Commit
End if

- **New button click Pseudo Code**
Set all fields to null

- **Exit button click Pseudo Code**
Exit the current form.
Navigates to main application screen.

5.2.10 Cash and Bank Account Screen Pseudo Code

Set the Transaction date to System date

- **Account Of combo click Pseudo Code**
Set Account of field to combo text

Fill Particulars field
Fill Debit or Credit field

- **Status field Pseudo Code**
Select balance
From account
Where account type=account of field

If debit is not null and balance is greater than debit field then
Set Status field = dr
Else if credit is not null and balance is less than credit then
Print "There is no enough Balance in hand"
Else if credit is not null and balance is greater than credit then
Set Status field = null
End if

- **Balance field Pseudo Code**

```
Select balance
From account
Where account type=account of field

If Debit field is not null and Credit field is null then
   Set Balance field = balance + Debit field
Else if Debit field is null and Credit field is not null then
    If Credit field < balance then
      Set Balance field = balance - Credit field
    Else if Credit field > balance then
      Print "There is no enough Balance in hand"
    End if
 End if
```

- **New button click Pseudo Code**

Set transaction date to system date
Set all fields to null
Disable the Edit and Update buttons
Enable save button

- **Edit button click Pseudo Code**

Enable the particulars, debit or credit, status, balance fields for updation
Enable the Update button
Disable the New and Save buttons

- **Update button click Pseudo Code**

Change the required fields.
Click Update button.
Open connection with the database
Query the database to update the values into the database file
Commit Updation.

- **Save button click Pseudo Code**

If particulars field is null then
  Print "Provide the particulars"
If debit or credit field is null then
  Print "Provide the Debit or Credit amount"
Else
Commit
Enable New, Edit, Update buttons
End if

- **Exit button click Pseudo Code**

Exit the current form.
Navigates to main application screen.

5.2.11 Expenses Account Pseudo Code

Set the Date to System date
Fill the expense description
Fill the expense type

- **Expense type combo click Pseudo Code**
  Choose one of the text from type combo
  Set type field to combo text

  Fill the Charges field

- **Save button click Pseudo Code**
  If expense field is null then
  Print "Provide the expense description"
  If charges field is null then
  Print "Provide the Charges"
  Else
  Commit
  End if

- **Exit button click Pseudo Code**
  Exit the current form.
  Navigates to main application screen.

Chapter 6

System Evaluation

6 System Evaluation

While developing software, there is a tendency to push the end-product "out the door" as soon as possible. Most of the times, software projects are not estimated properly and tend to run behind schedule. When it comes to meeting the deadline, people seem to ignore a very important phase in the whole process testing. But the project "Accounts Automations of Shuja Sons" is thoroughly tested by the group of testers in the organization and us.

6.1 The Place of Testing in the SDLC

Testing has an important place in SDLC (Software development Life Cycle). The SQA (Software Quality Assurance) team should be involved in the early phases of the project. This will make them the aware of the requirements and techniques that are being followed enabling them to develop an appropriate test strategy.

- The marketing group will bring the customer requirement.
- The engineering group will access the feasibility.
- The engineering and SQA groups will work together during the design phase and generate the product specification.
- The developers will start implementing while the SQA team is developing the test plans and so on.
- While the developers are ready with the code, the SQA team will be ready for testing. The testing phase is no longer a bottleneck for product delivery because the SQA team has been involved since the start of the project.

6.2 Types of Testing

A well organizes testing strategy should include the following types of testing:

6.2.1 Functional Testing

This is also referred to as white box testing. It is done at a high level and takes individually tested features and places them together in small applications and test cases to test whether they work together in small application.

6.2.2 Stress Testing

This is the type of testing that is dreaded by developers because the kinds of bugs it reveals are difficult for them to simulate and fix. It involves the running of feature and methods randomly to simulate real word scenarios and determine whether they can sustain real world usage. Stress testing is useful in identifying memory leaks, garbage collection, thread execution, scalability and other issues that are not easy to reproduce.

6.2.3 Black Box Testing

A strategy in which software component is treated like an opaque box. This tests designer's focus on determining how well the component conforms to the published requirements for the component, instead of worrying about the implementation details.

6.2.4 White Box Testing

A strategy in which software component is treated as a transparent box. Test Designer can peek into the box and gain knowledge about the implementation. They can use this knowledge to build test cases covering different parts of the code and also follow different execution paths.

6.2.4 Unit Testing

The testing of individual units of the application in isolation for example, a single class.

6.2.5 Beta Testing

The process of distribution a pre-release version of a product to a subset of its intended audience for the purpose of obtaining feedback

6.2.6 Regression Testing

The process of testing the entire system to uncover defects. It tends to find problems due to resources, security and so on.

6.2.7 Integration Testing

The process of testing the integration and communication between the components that form the application.

6.2.8 Bottom up Approach

In bottom up approach testing starts at unit level and finishes with the testing of integrated system.

6.2.9 Acceptance Testing

In acceptance testing the software is checked for completeness that is ready. Normally the quality assurance department performs the acceptance testing that the software is ready and can be exported.

6.2.10 Specification Testing

Even if code testing is performed exclusively, it doesn't ensure against program failure. Code testing doesn't answers whether the code meets the agreed specifications documented in the requirements specifications document. It doesn't also determine whether all aspects of the design are implemented.

Therefore, specification testing is performed by examining specifications starting what program should do and how it should behave under various conditions. Test cases are developed to test range of values expected including both valid and invalid data. It helps in finding discrepancies between the system and its original objective, current specifications ad system documentation. During this testing phase, all efforts were made to remove programming bugs and minor design faults.

6.3 Testing Metrics

Most bugs are the result of poor design. It is important to realize that when you develop software, bugs will appear. Instead of trying to create a bug free product, your goal should be to achieve software of good quality. A handy rule of thumb is to expect 20 bugs for every 1,000 lines of code generated. Keeping such a realistic expectancy will enable you to have a quantifiable sense of software quality.

The easiest bugs are found in the early stages of testing whereas the difficult ones are found at the later stages under obscure situations. It is important to track the number of bugs found over time. In general, such a chart should rapidly rise during the early stage and then eventually level off. The leveling off indicates that the software quality is becoming stable. If the curve just keeps rising, this indicates that either the design is very poor or new bugs are being introduced as the old ones are being fixed.

Another metric to determine your software quality is the bug discovery trend. This technique is commonly used at Sun Microsystems. It involves determining the ratio of the number of hours it takes to find the next bug. In other words you keep track of the number of bugs found in say a day. The logic is that as the software quality gets better it should become more and more difficult to find new bugs. As a result the ratio obtained as the number of hours spent to find a new bug should keep rising all the time.

Code-coverage analyzers are important tools that can provide code-coverage metrics. The way these work is that you compile your software and then run all your test cases. The code coverage analyzer will capture all the methods statements and so percentage of your code was used. The remaining portion of your code was used. The remaining portion of your code is considered to be dead code because it indicates this code was not really tested. Let's say that during the testing, we found 50 percent of the target number of bugs. This means that we might have about 50 percent of the bugs in the untested 30 percent of code. As you can see, we need a more rigorous testing strategy.

6.4 Testing Of Accounts Automation & Website of Shuja Sons

The testing of Accounts Automation & website of Shuja Sons is under gone through all stages of black box testing and white box testing. In the evaluation phase the system is reviewed to see whether the objectives of the system are accomplished or not. A major factor during system evaluation is to evaluate the system with perspective of the user because he/she is eventually being the one who use it.

6.5 Important Test Cases & Scenarios

Some important test cases are shown in the table below with their description and results. These test cases are created after the completion of the software implementation and evaluate the functionality of the software.

6.5.1 Test Cases & Scenarios of Accounting System

TC#	Function	Description /Alternatives	Results
1)	Login	Invalid password given to connect from system.	Message box shown of invalid password.
2)	Login	If authenticated user of categories accountant or data entry operator try to connect as an administrator or vice versa.	Authorized person can only connect to its defined user type only else Error Message will be shown.
3)	Change password	If Administrator wants to change the password of any user then.	Message is displayed to fill all the fields, if all is done properly then password successfully changed.
4)	Old password	If Administrator enter the wrong password of the user then	An error message of invalid password displayed.
5)	Confirm password	If Administrator enter the confirm password that not match the new password then	A message displayed, informing that password entered does not matched.
6)	Create new user	When Administrator create user which already exist then	A message displayed, informing that this user has already be created. Try again.
7)	Form Level security	There are different users who are categorized by different categories and their access to menus is according to their assigned category.	Form level security is achieved.
8)	Exit Window	When the user clicks the exit window button, what happen?	An alert is displayed that do you really wants to quit.
9)	Add new Supplier	When the user try to add new supplier, without providing name and address of supplier.	An alert is displayed, that these fields are necessary.
10)	Add new customer	When the user try to add new customer, without providing name and address of supplier.	An alert is displayed, that these fields are necessary.

TC#	Function	Description /Alternatives	Results
11)	Quantity missing in order form	When the user is entering an order in order form, and misses the quantity field.	An alert is displayed, that quantity is necessary.
12)	Quantity	If the quantity of product entered is reached to reorder level then	An informative message displayed that product is about to finish reorder it.
13)	Debit /credit fields null	When user navigates to balance field without entering debit /credit amount then	An alert is displayed, that debit or credit amount must be provided to have a balance.
14)	Save Button click in all forms	If the user click save button without entering the entries Which are necessary then	An error message is displayed that please provide the necessary fields.
15)	Show Detail button click in debtors & creditors	If the user click show detail button without providing the customer/ supplier no/name then	An error message displayed that you must have to provide the customer/ supplier no to see details.
16)	Balance Cleared of any customer or supplier.	If by entering the entry in the field of Debit or credit side of debtors/ creditors account, then	An informative message is displayed that the balance to the customer/supplier is cleared.
17)	Order no in sales account	If the user enter the customer no that not exist and want to have an order no from list then	A message is displayed that this customer has not placed any order.
18)	Number fields	If the user enter characters in the number type fields then	An error message displayed that enter only valid numbers through 0-9.
19)	Calculated fields	There are some calculated fields. The users are not authorized to change them.	Calculated fields security is achieved
20)	Update button	If the user leave empty the necessary fields and click Update button then	A message displayed to fill the necessary fields.

6.5.2 Test Cases & Scenarios of Web Site

TC#	Function	Description /Alternatives	Results
1)	Login	Invalid User name or Password given to go to inbox then	An Retry Login page will be displayed giving the opportunity to re-login and to new registration.
2)	Registration character fields	If the user enter the numbers in character type fields of the registration form then	An alert displayed that only characters are accepted.
3)	Registration number fields	If the user enter the characters in number type fields of the registration form then	An alert displayed that only numbers are accepted.
4)	User name	If the user enter the user name that already exit then	An error page is displayed that this user name already exits. Try another user name.
5)	Confirm password	If the entered confirm password does not match with password then	An alert displayed that password does not matched. Enter it again.
6)	E-Mail	If user enter the email address having wrong format then	An alert is displayed that email address have not right format
7)	Submit button With empty form	If the user press the submit button without entering in the registration form then	The alerts are displayed to fill the necessary fields.
8)	Submit button With correct form entries	If the user press the submit button with correct form entries then	A congratulation page will be displayed with user name.

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&

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   By Chris Ullman, David Buser, Jon Duckett, Brian Francls, John Kauffman,Juan T.Llibre,David Sussman; Published By Wrox

6. http://www.chilkatsoft.com

7. http://www.scriptz.com

8. http://www.123aspx.com

Appendix -A

Project Outputs

Daily Bank Report

Report Date: *March 30, 2004 12:17 AM*

Sno	Particulars	Debit	Credit	Balance
1	check received from ikram	Rs 30,000.00		Rs 30,000.00
2	chexk received from ali	Rs 45,000.00		Rs 75,000.00
3	check paid to ibm		Rs 20,000.00	Rs 55,000.00
4	check paid to abc		Rs 5,000.00	Rs 50,000.00
5	check received from ahmed	Rs 55,000.00		Rs 105,000.00
6	check recieved	Rs 4,000.00		Rs 109,000.00
7	sdgdfg	Rs 1,000.00		Rs 110,000.00
		Rs 135,000.00	**Rs 25,000.00**	

Total Balance: 110,000.00

Received By : _____ **Issued By:** _____

Daily Cash Report

Report Date: March 30, 2004 12:56 AM

Sno	Particulars	Debit	Credit	Balance
1	cash received from ddad	Rs 5,000.00		Rs 5,000.00
2	cash received from ehsan	Rs 9,000.00		Rs 14,000.00
3	cash received from khan	Rs 40,000.00		Rs 54,000.00
4	cash received from Ikram	Rs 15,000.00		Rs 69,000.00
5	cash received from Dawah Academy	Rs 35,000.00		Rs 104,000.00
6	cash paid to intelligent systems		Rs 50,000.00	Rs 54,000.00
7	cash paid to IBM		Rs 35,000.00	Rs 19,000.00
8	cash receied from Allama iqbal uni	Rs 30,000.00		Rs 49,000.00
		Rs 134,000.00	**Rs 85,000.00**	

Total Balance: Rs 49,000.00

Received By : _____ **Issued By:** _____

Daily Bank Report

Report Date: *March 30, 2004 12:17 AM*

Sno	Particulars	Debit	Credit	Balance
1	check received from ikram	Rs 30,000.00		Rs 30,000.00
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6	check recieved	Rs 4,000.00		Rs 109,000.00
7	sdgdfg	Rs 1,000.00		Rs 110,000.00
		Rs 135,000.00	**Rs 25,000.00**	

Total Balance: 110,000.00

Received By : _____ **Issued By:** _____

Daily Cash Report

Report Date: March 30, 2004 12:56 AM

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7	cash paid to IBM		Rs 35,000.00	Rs 19,000.00
8	cash receied from Allama iqbal uni	Rs 30,000.00		Rs 49,000.00
		Rs 134,000.00	**Rs 85,000.00**	

Total Balance: Rs 49,000.00

Received By : _____ **Issued By:** _____

Creditors Report

Report Date: March 30, 2004 1:23 AM

Supplier No	Supplier Name	Balance
1000	khan traders	Rs 60,000.00
1001	Super Digital Group	
1002	Unique Business System	
1003	Digital systems	Rs 40,000.00
1004	O.G.D.C	Rs 75,000.00

Total Balance: Rs 175,000.00

Received By : _____ **Issued By:** _____

Debtors Report

Report Date March 30, 2004 2:28 AM

Customer No	Customer Name	Balance	
51	Food ministry	Rs	16,000.00
52	Al-shifa hospital	Rs	12,000.00
53	Dawah academy	Rs	30,000.00
54	Allama Iqbal open university	Rs	15,000.00
55	ahmed	Rs	12,000.00
	Total Balance	**Rs**	**85,000.00**

Received By : _____ **Issued By:** _____

Daily Sale Report (**On Cash**)

Report Date: March 30, 2004 3:03 AM

Customer Name	Order No	CustOmer No	Totalamount
Food ministry	110	51	Rs 10,000.00
Dawah academy	113	53	Rs 22,000.00
ahmed	115	55	Rs 6,790.00
hameed	116	56	Rs 4,850.00
Mr Hamid	117	57	Rs 19,400.00

Total Amount: **Rs 63,040.00**

Received By : _____ **Issued By:** _____

Daily Sale Report (On Debit)

Report Date: March 30, 2004 3:18 AM

Customer Name	Order No	CustOmer No	Totalamount
Al-shifa hospital	111	52	Rs 12,000.00
Allama Iqbal open university	114	54	
hameed	116	56	Rs 4,850.00
Mr Hamid	118	57	Rs 48,500.00

Total Amount: **Rs 65,350.00**

Received By : _____ **Issued By:** _____

Inventory Report

Report Date: March 30, 2004 3:44 AM

Date	Product Name	Reciepts	Issued	Balance
19-MAR-04	printer Ribbon		15	35
19-MAR-04	Fax rolls 100m		7	45
19-MAR-04	computer paper p-1 9 1/2x11	5		755
19-MAR-04	ibm printer	2		42
19-MAR-04	Fax rolls 100m	3	7	45
19-MAR-04	ibm printer	4		154
19-MAR-04	ribbons			
19-MAR-04	ibm printer	5		159

Received By: _____ **Issued By:** _____

Shuja Sons

Manufacturer & Dealers of
Stationary and Office
Equipments

Profit And Loss Report

Report Date: April 11, 2004 9:14 AM

Books / paper/ periodical	Rs	2,200.00	**Gross Profit**	**Rs: 190675**
Traveling Expenses	Rs	700.00		
Telephone Expenses	Rs	15,000.00		
Postage / Airmail	Rs	225.00		
Binding / water marking	Rs	4,000.00		
Loading / unloading	Rs	1,700.00		
Conveyance / Taxicharges	Rs	700.00		
Coolies and cartage	Rs	325.00		
Electricity	Rs	18,000.00		
Salaries	Rs	35,000.00		
Stationary / printing	Rs	2,400.00		
Freight Carriage	Rs	7,900.00		
Bank Charges	Rs	850.00		
Tender Fee	Rs	350.00		
Cutting and packing	Rs	8,300.00		
Repair and Mmaintenanc	Rs	425.00		
Commission	Rs	350.00		
Entertainment	Rs	4,725.00		
Publicity / advertisement	Rs	475.00		
Net Profit	Rs	107,800.00		
		Rs: 190675		**Rs: 190675**

Issued By: _____ **Received By:** _____

Shuja Sons

Manufacturer & Dealers of
Stationary and office
Equipments

Trading And Profit & Loss Account

Report Date April 11, 2004 9:31 AM

Binding/water marking	Rs	4,000.00	Tax Deducted	Rs	7,600.00
Opening Stock	Rs	145,000.00	Sales/Supplies	Rs	128,000.00
Loading/Unloading	Rs	1,700.00	Closingstock	Rs	107,625.00
Freight carriage	Rs	7,900.00			
Purchases	Rs	267,000.00			
Cutting and packing	Rs	8,300.00			
	Rs	433,900.00		Rs	243,225.00

Gross Profit **Rs: 190675**

Issued By: _____ **Received By:** _____

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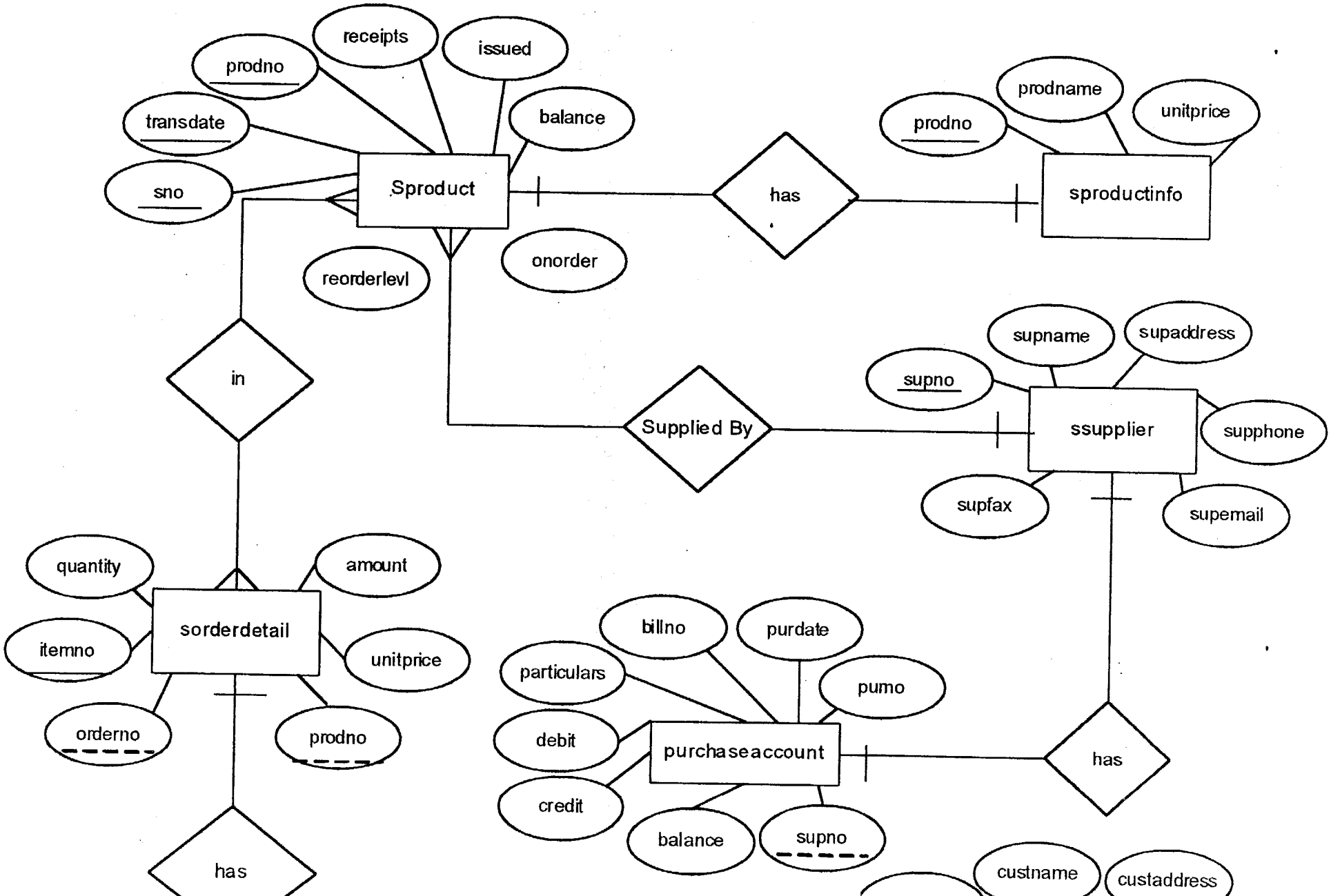
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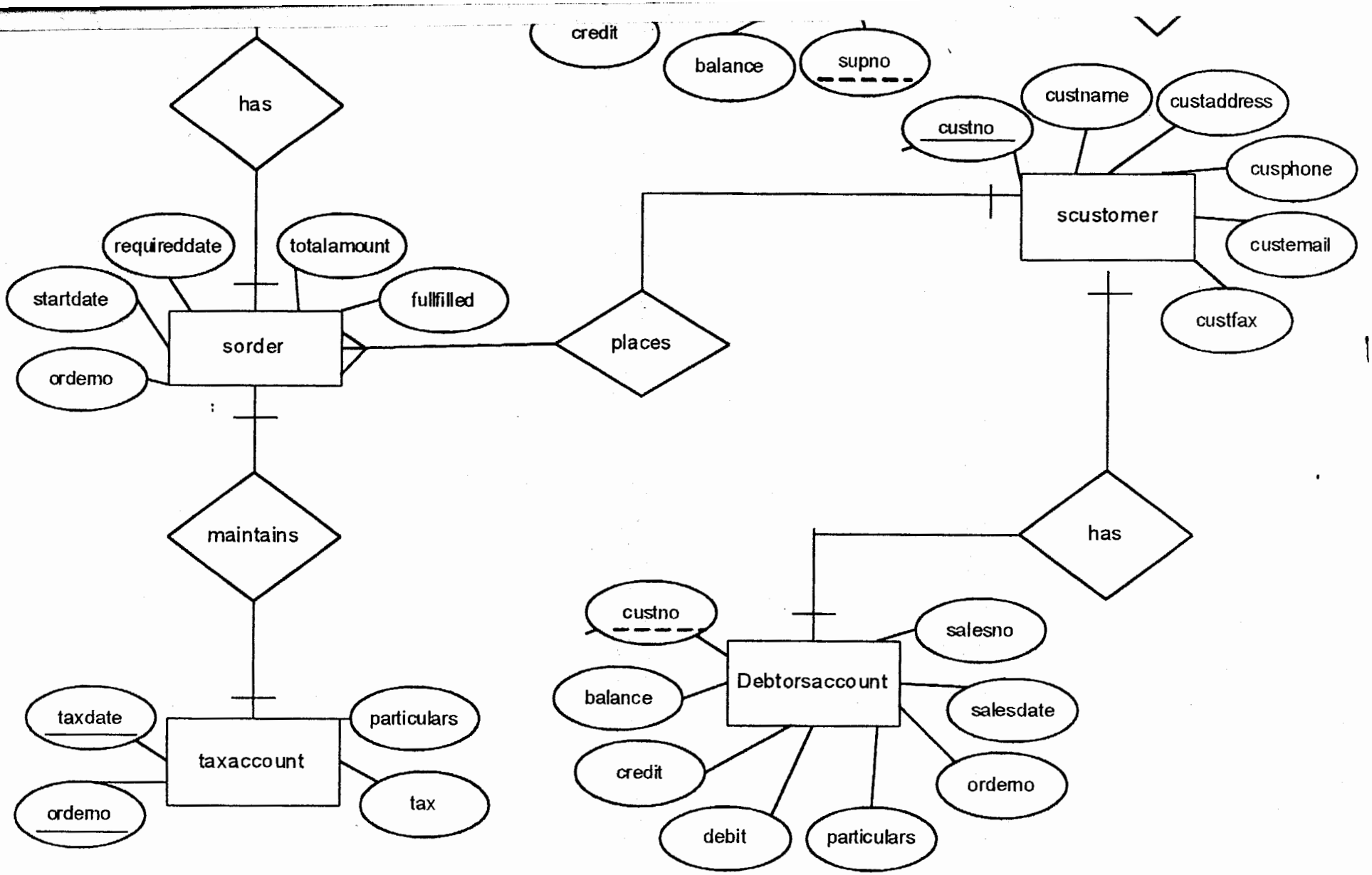
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