INFORMATION TRACKING SYSTEM

PROJECT WORK DONE AT

PRONET SYSTEM LIMITED, CHENNAI – 86.

PROJECT REPORT

Submitted in partial fulfillment of

the requirements for the award of the degree of

MASTER OF COMPUTER APPLICATIONS

OF BHARATHIAR UNIVERSITY, COIMBATORE.

Submitted by

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Coimbatore – 641 006

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Department of Computer Science & Engineering

Kumaraguru College Of Technology

(Affiliated to Bharathiar University)

Coimbatore – 641 006

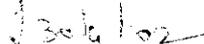# CERTIFICATE

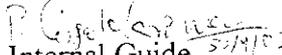This is to certify that the project work entitled

INFORMATION TRACKING SYSTEM

Done by

S.RAVIKUMAR
Reg. No: 9938MO629

Submitted in partial fulfillment of the requirements for the award of the degree of

Master of Computer Applications of Bharathiar University.

Professor and Head

Internal Guide

Submitted for the university examination held on 29/05/2002

Internal Examiner

External Examiner

DECLARATION

I hereby declare that the project entitled 'INFORMATION TRACKING SYSTEM', submitted to the Bharathiar University as the project work of MASTER OF COMPUTER APPLICATION Degree during May 2002, is a record of original work done by me under the supervision and guidance of **Mr. SHREENIVASAN, HR** Manager of **PRONET SYSTEM LIMITED** and **Mr. GOPALAKRISHNAN,** Lecturer of **Kumaraguru College of Technology** and this project work has not found the basis for the award of any Degree / Diploma / Associateship / Fellowship or similar title of any candidate of any University.

Place: COIMBATORE

Date: 30. 4. 2002
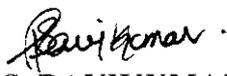
(S. RAVIKUMAR)

ONET

10th April 2002

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. S. Ravi Kumar, doing final semester, M.C.A., in Kumaraguru College of Technology has successfully completed the Project entitled, **"Information Tracking System"** assigned to him from 10/12/2001 to 22/03/2002.

N.R. PATNAIK
GENERAL MANAGER
PRONET SYSTEM LIMITED, CHENNAI.

10th April 2002

The Head of the Department,
Department of Computer Science and Engineering,
Kumaraguru College Of Technology,
Coimbatore-641 006

Dear Sir,

This is to inform you that **Mr. S.RAVIKUMAR** has successfully completed the project and implemented the project work on

"INFORMATION TRACKING SYSTEM"

The source code is confidential for our business operations. Hence we have not permitted reproduction of the source code in the project report.

Thanking you,

N.R. PATNAIK
GENERAL MANAGER

ACKNOWLEDGEMENT

ACKNOWLEDGEMENT

SYNOPSIS

The "**INFORMATION TRACKING SYSTEM**"(ITS), product is developed for the **PRONET SYSTEM LIMITED,** this product replaces the manual system, which was used in the organization. This gives the prompt information to the management people according to their hierarchical position. This product contains three modules. They are,

LIBRARY MANAGEMENT SYSTEM

Book Maintenance

This system is an alternative for manual book purchase, Categories, issue and maintenance. The Book issues / returns are maintained and are manipulated with the intranet. Whenever the purchase is made, the details about the vendor's are registered in the database.

Digital Library Maintenance

This system is an alternative for manual CD purchase, Categories, issue maintenance. The CD issues / returns are maintained and manipulated with the intranet. Whenever the purchase is made, the details about the vendor's are registered in the database.

POSTAL MAINTENANCE

This system deals about the inward and outward letters. Details like date of arrival /dispatcher, mode of arrival / dispatcher and place of arrival / dispatcher are stored in the database.

FILE TRACKING SYSTEM

This system is an alternative for manual record-keeping system. The files are stored in the database as per their category and are retrieved whenever needed. It also helps to circulate the files and messages to the employees through mailing tool.

This system has been designed as possible as user friendly, providing helps in necessary areas and is flexible to use.

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INTRODUCTION

1.1 PROJECT OVERVIEW

The **"INFORMATION TRACKING SYSTEM"(ITS)**, product is developed for **PRONET SYSTEM LIMITED** the product replaces the manual system, which is used in the organization for which the product is developed. This gives the prompt information to the management people according to their hierarchical position. The product contains three modules. They are,

FILE TRACKING SYSTEM

This module is an alternative for manual File maintenance. First the Files are categorized. Files inquiry details give the details of the files based on the categories. Files issue details are stored and manipulated, for example it can be known to whom the particular File was issued. File return details are also stored, files that are to be returned that are reminded when this module opens and closes. Files storage information is also maintained for example where the file has been stored. File contents are also indexed for easy search and retrieval. Mailing tool also provided.

LIBRARY MANAGEMENT MODULE:

Book Maintenance

This module is an alternative for manual book maintenance. First the books are categorized. The purchase details about the books are stored including the vendor details for easy purchase of selected titles. Books inquiry details give the details of the book based on the categories. Books issue details are stored and manipulated, for example it can be known to whom the particular book was issued. Book return details are also stored, for example the date of return and no of time the book has been renewed. Books that are to be returned on the current date are reminded when this module opens and closes. Book lost information is also maintained for book audit. Book storage

Information is also maintained for example where the book has been stored. Book contents are also indexed for easy search and retrieval.

Digital library maintenance

This module is an alternative for manual CDs maintenance. First the CDs are categorized. The purchase details about the CDs are stored including the vendor details for easy purchase of selected titles. CDs inquiry details give the details of the CDs based on the categories. CDs issue details are stored and manipulated, for example it can be known to whom the particular CD was issued. CD return details are also stored, for example the date of return and no of time the CD has been renewed. CDs that are to be returned on the current date are reminded when this module opens and closes. CD lost information is also maintained for CD audit. CD storage information is also maintained for example where the CD has been stored. CD contents are also indexed for easy search and retrieval.

POSTAL MAINTENANCE

The system deals about inward and outward letters. Details like date of arrival/dispatcher, mode of arrival / dispatcher and place of arrival / dispatcher are stored in database. The inward details give the details of the letters for example that are received by an employee. All the details regarding the mode of receiving and content are stored for future reference. This is done for so that the sender can't retrace on his word. The outward details give the details of the mode, which the employee uses to send information. The mode, which he selects for sending, is important for organization. The mode of sending is also dependent on the type of information, which to sent. The most urgent and reliable way of sending large amount is selected on the type of material sent. For each mode of transport the details of sending are stored. For example when a sample material is sent it is sent through courier or post and when documents are sent the fax or e-mail is used.

1.2 ORGANIZATION PROFILE

Pronet System Limited, located in the heart of Chennai, the upcoming silicon valley of India was established in 1997 with the primary goal of being "the ideal partner" for all types of Offshore / Onshore Software Development and Mass Data Processing activities. Pronet is the 'sister concern' of the Gem Group of Companies, which is a pioneer and a leader in the manufacturing and export of Granites and Tiles, and has diversified in to Sugar production, Spinning, Hotel & Resorts, Biotechnology, Property Development, etc.,

PRONET provides the best informative management and business solutions. PRONET can counter the challenges with thorough research and creativity by adopting appropriate business application solutions through information technology. Realizing the need of the hour, Mr.R.VEERAMANI Chairman GEM group of companies founded Pronet System Limited in 1997 to provide customized software solutions, especially the areas covering manufacturing, finance, purchase, inventory, sales management, Internet, Commerce and many more. The challenges and the demands of clients made Pronet to land on customer focus areas and generic business application software solutions. Pronet System Limited is one of the 'sister concerns' of the GEM group of companies, who are the leaders in the manufacture and export of granites and tiles in India. Already they ventured in other areas of business such as Textiles, Hotels, Resorts and Biotechnology etc. Pronet has unfolded business development tools, which aimed to boost your internal management efficiency and productivity, i.e. BNC Business next century A total integrated ERP solution Store 2000 A total solution for retail and super markets. Sales management system a total solution for retail shop Personal secretary - Automation tool for your secretary's office.

Past

Pronet has started its first operation from its Data Processing Division in April 1997. Now, it has four years of complete project life cycle experience. And has successfully executed more than 200 projects nationally and internationally, irrespective of the complexities of the nature of job, size, time, platform, methodology, etc.,

Present

At present, Pronet is having three main divisions (I) Software Development Center (PSDC), (ii) Software Training Center (PSTC), (iii) Data Processing Center (PDPC). PDPC, comprising of 1 project manager, 2 project coordinators, 10 qualified Supervisors, 20 Quality Control experts, 150 skilled operators, is well equipped for executing any complicated job with great ease and maximum quality. Our Data Processing output capacity is over 13 million error-free characters per day. We have successfully executed several time-bound and complicated projects for major clients in UK, USA, Germany and Singapore

Future

With it's vast experienced work force, committed manpower, state of the art infrastructure, uncompromising quality on commitments, strong client relationship moral & economic support from our parent company & sister concerns, Pronet aims to become one of the strongest IT service providers in India.

Services

High Volume keying of projects in SGML, ASCII formats in areas like Legal Cases coded in English, French, German, etc.

Word Processor based projects like conversion of Word Perfect to Word 6 format, for an USA based Companies

Optical Character Recognition projects (OCR) - includes cleaning, editing, realigning, and verifying for an UK based company

Micro Fiche project for a large financial organization based in Europe Record Type based projects like Insurance Claim Processing-UK

Cheque & credit card Processing activities in High Volumes- for Europe based financial organization

Market Survey Projects-France, Germany, England, Scotland

Recruitment Application Forms processing-Singapore

Organization Caliber:

Pronet System is one of the best gleaming data processing canter in the country It has a very spacious and posh working atmosphere measuring 6500 sq.ft. It has professional staff stuffed with a potential caliber of technical skills. Whatever the job it undertakes, it will perform with utmost creativity and aesthetic sense. By implementing latest technologies and software tools. Company keeps quality control mechanism in tact.

Approaches:

Evaluation of resource requirement

Software design and testing

Document preparation by splitting into batches

Instructions, Analyzing and Coding

Analysis of Sample Data Output to Client and Confirm the

Output and Confirm the Output status

Quality checking, Quality Editing Final Checking

SYSTEM STUDY
AND
ANALYSIS

2.1 EXISTING SYSTEM

Presently PRONET SYSTEM LIMITED, CHENNAI is using manual record for office management. Maintaining manual records for each employee is difficult. The manual record maintenance has the following drawbacks.

- Keeping individual file for each employee is time consuming and expensive.
- Maintaining different Books, CD, File for different types CDs, Library Books, Files.
- Regarding the data, there is less security.
- There is no accuracy of data values

With all these drawbacks we may not get proper result in a particular time period. So, the management has proposed automate to all these transaction.

2.2 PROPOSED SYSTEM

The proposed system consists of three modules. They are

1. File tracking system.

2. Library management system

3. Postal management system

Previously the above functions were done manually which consumed lot of time and was expensive. The proposed system tries to fully computerize the manual work done in the existing system. It reduces the workload of the office employees.

It offers an office management solution in a computerized way to the employees who were using the previous manual system.

File tracking system

It automates all account/ledger book based transaction and reduces the paper work needed. It has facilities for

- Front office file
- HR personal files (Employee information)
- HR general files (resume details)
- Client
- Purchase
- Maintenance
- Inter office memo/Circular
- Leave Slip

Library management system

It helps the librarian to maintain the library resources available and it has two modules. They are

- Book Maintenance
- CD Maintenance

Postal Management System

It helps the receptionist to maintain the postal system, which includes letters, Documents, parcels, and other communication details both from and to the company. It consists of two parts. They are

- Inward mail
- Outward mail

2.3 REQUIREMENTS ON NEW SYSTEM

Requirement Specification is focused specifically on functioning of the system. It allows the developer to understand the system, functions to bee carried out, performance levels to be obtained and corresponding interfaces to be established. Some of the attributes of the requirement specification are unambiguous, complete, verifiable, consistent and modifiable.

SCOPE

The requirement of the prompt information about its employee is growing on. This product does exactly that for the management. the purpose of the product is to give relevant information to each person in the hierarchy according to their requirements. It full fledged information system for the management.

PRODUCT PERSPECTIVE

The product replaces the manual system, which is used in the organization for which the product is developed. It gives prompt information to the management people according to their hierarchical position.

USER CHARATERSTICS

The users of the system are the employees of the organization for which the product is developed. The user has minimal computer operating knowledge. The user of the manual system will be trained the computerized system.

LIST OF INPUTS

File Tracking system

Forms are designed to get the content of each file. Each file has different information according to the person using it. The files are accessed according to the hierarchy of the management.

Library

Book/CD categories, Book/CD information, Employee Details, issue, receipt, lost are the inputs to the library management system.

Postal

It contains detail about Inward and Outward letters.

INFORMATION PROCESSING REQUIRED

Information processing is done in producing reports like calculation of number of available books and total numbers of inward and outward letters. In File tracking system processing is done to get periodic reports about the file used in the organization.

STANDARD COMPLIATION

The product is being developed according to the software development life cycle.

HARDWARE LIMITATION

Pentium II processor

64MB RAM

4GB Hard disk

HP Laser Jet-Printer

EXTERNAL INTERFACE REQUIREMENTS

Network Card

Modem

Telephone line

2.4 USER CHARATERISTISTICS

The users of the system are the employees in the organization who belong to various departments and have varying knowledge in using computer for their operations. The users are to a degree used to using a computer for their day-to-day operations. The project done assumes that the user has a minimum computer knowledge and users will be able to use the system with a minimum learning curve. The users are divided into various categories based on the level they use system. The major classification is administrator and normal user. The administer has all rights to view and change all of the data in the system. The user of the system are restricted by their domain area for example the file management user is restricted to the file management part of the system and any cross-over is considered as violation of security which is reported to the administrator.

PROGRAMMING
ENVIRONMENT

3.1 HARDWARE CONFIGURATION

Server

Name	: IBM Net Finity 3000
RAM	: 128 MB
Processor	: 1.5 GHz
HDD	: 40 GB
CD ROM	: 52 X
FDD	: 1.44 MB

Node

Name	: HCL Pentium II
RAM	: 64 MB
Processor	: 233 MHz
HDD	: 4 GB
FDD	: 1.44 MB

3.2 DESCRIPTION OF SOFTWARE & TOOLS USED

WINDOWS

Windows is an operating environment that sits on top of MS-DOS and provides a graphical user interface, multitasking capability, hardware independence and the flexibility of portable programs. The heart of the windows is the Software Development Kit (SDK), which contains approximately 350 library routines. These routines act as the bridge between any application and Windows. These routines constitute a new language with which the user must be thoroughly familiar when he develops an application to run under Windows.

Basic concepts of Windows
Multitasking

Multitasking is a capability under which different instances of the same application of different applications can run simultaneously.

Graphical Object Interface

A graphical object is a collection of data that can be manipulated as a whole entity and that is presented to the user as a part of the graphical interface. This reduces the amount of typing even that can be easily changed from one style to another.

Hardware Independence

Windows is more than an extension of MS-DOS. The programs written for windows have their own individually, these applications can run on current or new versions of MS-DOS and windows without programming.

1. The system menu box and system menu located at the top left corner. This helps the user to restore, move, maximize, minimize and close a window.

2. The title bar, containing the name of the window located at the top center.

3. The size box located at the window's right top corner. This helps the user to change the size of the window.

4. The menu bar located at the second line of the window that is below the title bar helps the user to develop the drop down menu.

5. The scroll bars, one horizontal and another vertical, are located at the bottom and the right side of the client area of a window respectively.

6. The client area, which is the main item of a window located at the center of all the items mentioned above.

VISUAL BASIC

A quick history of the VISUAL BASIC language

In 1991, Microsoft released Visual Basic. This led the programmers to visualize the design of User Interfaces effectively and then to concentrate on coding. Visual Basic is a high level, event oriented, high visual and complied or interpreted language. Visual Basic uses a large number of English words, waits for an event to occur before taking any action. Visual Basic's main characteristic is the encapsulation of the complexity of Windows into objects that are easily manipulated with simple coded instructions. Visual Basic is much easier than any other structured programming languages like Pascal, C. Not only the programmer could write the code faster, but also requires only less effort to develop the code.

Visual Basic provides the quickest and easiest way to create applications for MS-Windows. Visual Basic programming system allows the programmer to create attractive and useful applications that fully exploit the Graphical User Interface (GUI).

Visual Basic as A Front End Tool

Visual Basic is a GUI (Graphical User Interface) based Windows application development platform with a strong combination of a front-end tool and a programming language. The ease of the visual approach coupled with the power of programming and the straightforward BASIC language syntax makes programming easy. By using Visual Basic, the programmer can create powerful, full featured applications that exploit the key features of MS-Windows, including Multiple Document Interface (MDI), Object Linking and Embedding (OLE), Dynamic Data Exchange (DDE), Graphics and many more. Visual Basic can be extended by adding custom controls and by calling procedures in Dynamic Link Libraries (DLLs).

The Multiple Document Interface (MDI) allows the programmer to create an application that maintains multiple forms within a single container form. Application such as Windows Program Manager, file Manager, Excel and Word for Windows have Multiple Document Interfaces.

An MDI application allows the user to display multiple documents at the same time, with each document display in its own window. Document windows are contained in a parent window, which provides a workspace for all document windows in the application.

Using MDI in Visual Basic

Visual Basic application can have one MDI form, which contains all the applications child forms. A child form is an ordinary form that has its MDI-child property set to True. The application can include many MDI-Child forms. At run time, child forms are displayed within the internal area of the MDI form. When a child form is minimized, its icon appears on the instead of appearing on the desktop.

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Visual Basic is also supported by custom controls created by third party vendors and controls can be created specific use. The context sensitive help that is provided by Visual Basic and Windows, can also be obtained from the Visual Basic applications. Thus it stands as a cent percent real windows application with GUI.

Elements of Visual Basic

Visual Basic interface consists of the following elements:

Toolbar

Provides quick access to commonly commands in the programming environment. An icon in the toolbar can be clicked to carry out the action by that icon.

Toolbox

Provides a set of tools that can de used at design time to place controls on a form.

Menu bar

Display the commands that can be used to build an application.

Form

Serves as a window that can be used to customize the interface of an application. Controls, graphics and picture can be added to a form to create the visual effect required by the user.

Project Window

Lists the form, code modules and custom control files that make up the current project. A project is the collection of files that a programmer uses to build up his application.

Properties Window

Lists the property settings for the selected form or controls. A property is the value of an object, such as size, caption or color.

Debug Windows

The Debug window automatically opens at runtime. In break mode, one can use the debug windows to execute individual lines of code, view or change values of variables and properties and view watch expressions. At run time it can be used to display data or message as the program run. At design time, one can view previous output to the debug window, but code cannot be executed.

Steps to create a visual basic Application

- Create the interface.
- Set properties.
- Write code.

Date Time Picker

Visual Basic 6 has two controls that provide a new way to view and select dates: Month View and Date Time Picker, These controls help to view and select dates with in the context of a calendar. The Month View control presents a full calendar, which can traverse   from date to date or month to month. The Date Time Picker control is similar to the Month View Except that its calendar drops down when the user clicks the controls down arrow

Microsoft Flex Grid (MS Flex Grid)

The Microsoft Flex Grid (**MS Flex Grid**) control displays and operates on tabular data. It allows complete flexibility to sort, merge, and format tables containing strings and pictures. When bound to a **Data** control, **MS Flex Grid** displays read-only data.

One can put text, a picture, or both, in any cell of an **MS Flex Grid**. The **Row** and **Col** properties specify the current cell in an **MS Flex Grid**. It can specify the current cell in code, or the user can change it at run time using the mouse or the arrow keys. The **Text** property references the contents of the current cell.

MESSAGING APPLICATION PROGRAM INTERFACE (MAPI)

Controls

The messaging application program interface (MAPI) controls allow you to create mail-enabled Visual Basic applications. MAPI is a set of core system components that seamlessly connect any mail-enabled or workgroup application to MAPI-compliant information services. For example, the Microsoft Exchange messaging system can be connected to most private or public e-mail systems through the use of MAPI drivers.

In Visual Basic, the MAPI controls are used to interact with the underlying message subsystem. To use these controls, you must first install a MAPI-compliant e-mail system like Microsoft Exchange. The workgroup environment — the Microsoft Exchange Server running under Windows 95 or Windows NT, for instance, provides the underlying messaging services.

Using the MAPI controls involves two steps: establishing a MAPI session and then using various properties and methods to access and manage an individual Inbox. For example, create and send a message, include a file attachment, verify the recipient's address against the e-mail system's address book, etc.

Uses

- To add messaging functionality to your application.

- To create a full-featured electronic mail application.

MAPI Session Controls

The MAPI Session control is used to sign in and out of a MAPI session. Assuming that MAPI services are present, logging in with the MAPI Session control is merely a matter of providing a registered user name and password. The MAPI Session control will determine the electronic mail settings specified in the operating system and invoke the underlying message subsystem (the mail server).

Video Soft (VS) Flex Grid Pro 7.0

Video Soft VS Flex Grid Pro 7.0 is a powerful, lightweight data-aware grid control to give Visual Basic developers a comprehensive feature set for display and presentation of dynamic data.

VS Flex Grid Pro 7.0 features native support for ADO 2.0 and OLE DB as well as DAO. This gives developers the flexibility to easily migrate their applications to the newest generation of data access methods, or continue using existing methods, as individual needs dictate.

Built on the same code base as MS Flex Grid and Hierarchical Flex Grid, VS Flex Grid Pro 7.0 features additional timesaving features such as read and write support, in-cell editing and formatting, data input masking, and support for two billion database rows. Cell merging, Outlook-style sorting by column headings, advanced outlining capabilities, automatic and multiple totaling and subtotaling, and mouse-activated scroll tips maximize end-user customization capabilities so developers can quickly create great-looking, flexible database applications.

VS Flex Grid Pro 6.0 includes improvements such as support for comma- and tab-delimited files from Microsoft Access and Excel, support for 2D and 3D arrays, and grid-to-grid data binding to meet even the most sophisticated data access requirements.

Small in size, easy to implement and incredibly flexible, VS Flex Grid Pro 6.0 now is entirely dependency free, eliminating DLL versioning problems.

MS-Access

MS access is a relational database management system, which helps in creating great database application for system environment. It includes Visual Basic, a full feature programming language that not only enables to create powerful customer database application, but also make it easy to integrate database with other application through OLE automation.

DATABASE MANAGEMENT SYSTEM CONCEPT
Introduction

Data are raw facts that we use to represent information. Processed Data is information. Data must be manipulated (Organized, formatted, summarized, etc.) before it can be used as information.

Databases are used to store data in an organized fashion, which allows us to access and manipulate the data. The techniques and data structures used to organize and manipulate data in databases are collectively known as **Data Modeling.**

Data Base Management system (DBMS) serve to manipulate and maintain databases. When industry's need for information was small, databases tended to be simple and informal. But as the need for up-to-data

Information increased, automated DBMS were developed based on groups of formalized data modeling rules called **data models.**

Three data models that are available are:

- Hierarchical
- Network (CODASYL)
- Relational

Hierarchical Database model

The hierarchical database model is the oldest approach to databases. It evolved from sequential file structures in which little effort was made to isolate the logical data structures from the physical data structures on the storage media.

Network Database model

The network data model is similar to the hierarchical data model, except that its records are not limited to only one superior. A record may have many superior records and many subordinates that are linked to the record's superior.

Relational data model

The relation data model was first described by E.F code in 1970, one year after the Data Base Task Group (DBTG) published its first proposal. In the relational data model, entity types are referred to as relations. The relational model was an attempt to simplify database structure. It represents all data in the database as simplify row-column tables of data values and where all database operations work on these tables.

Relation

A relation is a formal term for a table. A relational database is defined as a collection of tables called relations. In relational terms, a record (table row) is called a tuple , and the fields (columns) are called attributes.

The number of tuples is called the cardinality and the number of attributes is called the degree. Ever table must some column or combination of columns that uniquely identify each row in the table. This column (or columns) is called the primary key of the table. A Domain is a cool of values from where one or more attributes (columns) draw out their actual values. I relations systems, missing or unknown information can be represented as null.

Relation Operators

The relational model is based on the solid foundation of relational algebra. Relational algebra consists of a collection of operators that operate on relations. Each operator takes one or two relations as its input and produce a new relation as its output. The main objective of relational algebra is data retrieval. The relational operators are project, Cartesian product, union, intersect, difference and join.

Relationships

Relationship refers to the mapping of relations. The various types of relationships are

- One- to-one
- One- to-many
- Many-to-one
- Many-to-many

Normalization

Normalization Is a step by step process for designing relations and relationships. Normalization reduce redundancy using the principle of non-loss decomposition. Non-loss decomposition is the reduction of the table to smaller tables without any loss of information. This enables manipulation of the database in a power full way, minimizes data anomalies and inconsistencies, improves data independence and helps create flexible designs.

A fully normalized record consists of:

- A primary key that identifies that entity.
- A set of attributes that describes that entity.

Normal Forms

Normalization results in the formations of tables that satisfy certain specified constraints, and represent certain normal forms. Several normal forms have been identified. The most important and widely used of these are,

- First normal form (1NF)
- Second normal form (2NF)
- Third normal form (3NF)
- Boyce-codd normal form (BCNF)

Functional Dependency

Given that A and B be composite attributes and R is a relation, attribute A is functionally dependent on B, if each value of A in R is associated with precisely one value of B.

First normal Form (1NF)

This is the lowest level of normalization. It states that data is in First Normal Form (1NF) if the pool of valid values that may appear in an attribute contains only atomic values. (Atomic values cannot be decomposed into smaller units.) Each column contains only one value in any row of a table.

Second normal Form (2NF)

Data is in Second Normal Form (2NF) if it is in 1NF and every attribute in the record is functionally dependent upon the whole key and not just a part of the key. (An attribute is a non-key if it is not part pf the primary key). The purpose of 2NF is to eliminate repeating groups and to ensure that the remaining attributes belong to this entity. An attribute is functionally dependent on a key if the attribute contains only one value, which depends on the key.

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Third normal Form (3NF)

Data is in Third normal Form (3NF) if and only if it is 2NF and every non-key attribute is non- transitively dependent on the primary key. The purpose of 3NF is to ensure that the attribute directly belongs to the entity.

Other Normal Forms

The other forms are Boyce Codd Normal Form (BCNF), Fourth Normal Form (4NF) and Fifth Normal Form (5NF). They are seldom used

CLIENT / SERVER ARCHITECTURE

Client/Server

In its simplest form Client/Server technology involves computers communicating across the network. This is a software architecture in which two processes interact as superior and subordinate. The **client** process always initiates request and the **Server** always responds. The server is any computer that provides services to other host computers. There are Network Servers, Database Servers, all participating in a Network.

Components of Client/Server System:

- A Database Server
- A client application
- A network

A Database server (or backend) focuses on efficient Ways in managing a resource, such as database information. The server's primary job is to manage its resource optimally among multiple clients who concurrently request the same resource from the server. A database server is intelligent, which locks and returns only the row that a client has requested, which ensures concurrency, minimizes network traffic and improves system performance.

Database server on task such as the following,

- Managing a single database of information among many concurrent users.

- Controlling database access and other security requirements.
- Protecting database information with backup and recovery features.
- Centrally enforcing global data integrity rules across all client applications.
- It represents the User Interface. This interface is the only means of gathering user queries for the purpose of data retrieval and analysis as well as means of presenting the result of one or more queries or commands. Typically Client presents the GUI to the user eg: -Microsoft Windows based Interfaces.
- It forms one or more queries or commands in a predefined language for presentation to the server. Eg: -SQL.

The client application in a Client / Server database system focus on jobs such as the following:

- Presenting an interface that the user can interact with to accomplish his work.
- Managing presentation logic, such as pop-up list on the data entry form or bar graph in a graphical data representation tool.
- Perform application logic, such as calculating fields in a data-entry form.
- Validation data-entry.
- Requesting and receiving information from the database server.

Characteristic of Client / Server:

- A server provides service to the client. The extent or nature of the service is defined by the business goal of a client/server system.
- A server merely respond to queries or commands from the clients. Thus the server does not initiate a conversation with the client. It merely acts either as repository of data (File Server), or Knowledge (DB Server), or as Service provider (Print server).

SYSTEM DESIGN
AND
DEVELOPMENT

4.1 INPUT DESIGN

Inputs that are required for the various processes, which are to be carefully analyzed and care has to be taken to avoid recurring of the same inputs. Input design is the processes of converting user originate inputs into the computer-based format. The goal of designing input data is to make data entry as easy as possible and error free. Well-designed inputs serve four purposes to control workflow, to reduce redundancies in recording data, to allow easier checking of data and to increase clerical accuracy. When data is keyed into the system, the operator must receive the data in a form that can be easily understood. It should be self-explanatory and provide the sufficient information to the user for ease of entry of inputs.

The database operations like Add, Modify, Delete, Save, Clear, View, Exit have been taken care of in all the forms. These are in the form of buttons. If the user clicks the Add button, he/she is prompted to enter the information. If the user clicks the Delete button, he/she is allowed to delete the existing information. The user is provided to cancel the form entry at any point of time.

File Tracking System
MASTER
File Master

Here the user enters the details about files. The lists of input in this form are File number, Department name, File category, sub-category, file name, location, remarks, date, content, mail ID, receiver code.

Category Master

Here the user enters the details about category. The user can create their own category. The lists of inputs in this form are Category Name, Category Name.

TRANSCATION

File Issue

Here the user enters the details of File during the issue of files. The lists of input in this form are File number, Filename, issued by, issued to, Issue date, and Purpose.

File Receipt

Here the user enters the details of during the return of File. The lists of input in this form are, issued number, Filename, Received From, Received by, Received Date, and Remarks.

Library Management System

MASTER

Library Details Input Form

Here the librarian enters the details of Books and CDs that are all available in the company library. For Books the lists of inputs in this form are Book code, book category code, Book category name, Book title, Authors, Publisher, Version Number, Content, Purchase Details and other details related to book. For CDs the lists of inputs in this form are CD code, CD category code, CD category name, CD title, CD key, CD license number, Content, Purchase Details and other details related to CD.

Employee Details

Here the user enters the details of employee for working in the company. The lists of input in this form are Employee name, Employee code

Vendor Details

Here the user enters the details of vendor of the Books and CDs in the library. The lists of input in this form are vendor code, vendor name, Address, and other details related to the vendors.

Request Form

This form is used to get the permission from higher authority to get the CD from the Library. The lists of input in this form are Form number, Division, Employee code, purpose, project name, System Number, CD category code, CD require on date.

TRANSCATION

Issue Form

Here the user enters the details of Book and CDs during the issue of Books and CDs after employee gives the request form. The lists of input in this form are Employee name, Book / CD code, Book / CD Category code, issued date, Return Date, Remarks.

Return Form

Here the user enters the details of Book and CDs during the return of Books and CDs. The lists of input in this form are Employee name, Books/CDs code, Books / CDs Category code, issued date, Return Date, Remarks.

Lost Form

Here the user enters the details of Book and CDs during the lost of Books and CDs. The lists of input in this form are Employee name, Book/CD code, Books / CDs Category code, Date, Remarks.

Postal Maintenance System

Here the user enters the details of Inward and outward mails

Inward Mail Form

This form is used to enter the Details About Received Letters. The lists of input in this form are Receiver code, Address, Destination, Mode of receipt, Type of mode, Employee Name.

Outward Mail Form

This form is used to enter the Details About letters sent from the company. The lists of input in this form are From address, To address, Mode of sending, Type of mode, Destination, price, weight.

4.2 OUTPUT DESIGN

The main ideas of developing this software system are to generate various outputs in necessary format, which will aid in planning and decision-making.

The primary objective of the output reports is to arrange the data in form that the user wants. There are various report considerations to be made for the example, whether the report will be displayed in computer screen or a printer.

All the reports are divided into three categories. They are detailed (single line of report), summary (information from a table), and selected reports. In this project all reports are selected reports, which takes information from more than one table.

The project contains three major report topics, which are library, postal and file tracking

File Tracking Reports

The various reports, which have been included, give the details about the files and the content of the files. The file issue report gives the details about the file that have been issued to other departments and also whether they have been received or not.

Library management Reports

The purchase report gives the details of the vendor and the books the vendor sold. In this section there are various reports such as category wise report, which gives the details of a particular book/CD's titles chosen. The request report gives the details of the employee and the books/CD's he want to complete the project. The Request report also shows whether the management approves it.

The other reports, which are given, include books issued report, which gives the details about the books issued, and the books returned report gives the details about the books returned and to be returned. Another main report is the lost report, which gives the details about the books lost.

Postal Maintenance Reports

The reports in the category are the inward and the outward report, which give the details about the letters/parcel, which a particular employee has sent or received.

4.3 DATABASE DESIGN

1.Table Name: Book Category

Field Name	Type	Size	Description
Code	Text	3	Category Code
Title	Text	50	Category Name
Remarks	Text	50	About Category

Primary Key Field: Code

2.Table Name: Book master

Field Name	Type	Size	Description
BookCatCode	Text	3	Book Category Code
BookCode	Text	10	Book Code
BookCatType	Text	50	Book Category Type
BookTitle	Text	100	Book Title
Author	Text	50	Author Name
Publisher	Text	50	Publisher Name
Versionnumber	Text	4	Version number
Year	Text	4	Year of published
Copies	Integer	2	Total number of books
Price	Text	15	Price
Attachment	Text	10	Attachment with book
Remarks	Text	50	About Book
Stock	Integer	2	Stock details
Content	Text	100	Content in the book
Vendorcode	Text	10	Vendor code

Primary Key Field: Book Code

3.Table Name: Employee Details

Field Name	Type	Size	Description
EmpCode	Text	7	Employee Code
Empname	Text	50	Employee Name

Primary Key Field: EmpCode

4. Table Name: Book issue

Field Name	Type	Size	Description
Serialno	Text	10	Serial Number
Employeecode	Text	7	Employee code
Bookcode	Text	10	Book code
Bookcatcode	Text	3	Book category code
issuedate	Date	8	Book Issue date
returndate	Date	8	Book Return date
issuercode	Text	7	Book Issuer code
Copies	Integer	2	Copies
Remarks	Text	50	Remarks about book
Status	Boolean	1	Used to make note about return Book

Primary Key Field: Serialno

5. Table Name: Book Return

Field Name	Type	Size	Description
Serialno	Text	10	Serial Number
Employeecode	Text	7	Employee code
Bookcode	Text	10	Book code
Bookcatcode	Text	3	Book category code
issueddate	Date	8	Book Issued date
returndate	Date	8	Book Return date
Receivercode	Text	7	Book Receiver code
Copies	Integer	2	Copies
Remarks	Text	50	Remarks about Book

Primary Key Field: Serialno

6. Table Name: Book Lost

Field Name	Type	Size	Description
Serialno	Text	10	Serial Number
Employeecode	Text	7	Employee code
Bookcode	Text	10	Book code
Bookcatcode	Text	3	Book category code
Lostdate	Date	8	Book Lost date
Copies	Integer	2	Copies
Remarks	Text	50	Reason

Primary Key Field: Serialno

7. Table Name: Vendor Details (Books / CDs)

Field Name	Type	Size	Description
Vendorcode	Text	10	Vendor code
VendorName	Text	50	Vendor Name
VendorAdd1	Text	50	VendorAdd1
VendorAdd2	Text	50	VendorAdd2
VendorAdd3	Text	50	VendorAdd3
Place	Text	20	Place
Pincode	Text	6	Pincode
Faxno	Text	20	Faxno
Phnoeno	Text	20	Phnoeno
MailID	Text	50	MailID
Discountoffer	Integer	2	Discountoffer
Creditdays	Text	3	Creditdays
Remarks	Text	50	Remarks

Primary Key Field: VendorCode

8. Table Name: Purchase Details (Books / CDs)

Field Name	Type	Size	Description
Vendorcode	Text	7	Vendor code
Bookcode	Text	10	Book code
Invno	Text	10	Invoice Number
invdate	Date	8	Invoice date
Price	Text	15	Price

Primary Key Field: Vendorcode

9. Table Name: Category

Field Name	Type	Size	Description
CDcode	Text	3	CD code
CDcatname	Text	50	CD category name
Remarks	Text	50	Remarks

Primary Key Field: Cdcode

10. Table Name: CD Master

Field Name	Type	Size	Description
CDcatcode	Text	3	CD category code
CDcode	Text	10	CD code
CDcatname	Text	50	CD category name
CDname	Text	100	CD name
Cdlicenceno	Text	50	CD license Number
Nouser	Text	7	No of user allowed
Cdkey	Text	50	CD key
CDcre	Text	100	CD creator
Copies	Integer	2	Copies
Price	Text	15	Price
Remarks	Text	50	Remarks about CD
Stock	Integer	2	Stock Details
CDcon	Text	100	CD content
Vendorcode	Text	10	Vendor code

Primary Key Field: Cdcode

11. Table Name: CD issue

Field Name	Type	Size	Description
Serialno	Text	10	Serial Number
Employeecode	Text	7	Employee code
Cdcode	Text	10	CD code
Cdcatcode	Text	3	CD category code
issuedate	Date	8	CD Issue date
returndate	Date	8	CD Return date
issuercode	Text	7	CD Issuer code
Copies	Integer	2	Copies
Remarks	Text	50	Remarks
Formno	Text	10	Request Form Number
Status	Boolean	1	Used to make note about return CDs

Primary Key Field: Serialno

12. Table Name: CD Return

Field Name	Type	Size	Description
Serialno	Text	10	Serial Number
Employeecode	Text	7	Employee code
Cdcode	Text	10	CD code
Cdcatcode	Text	3	CD category code
issueddate	Date	8	CD Issued date
returndate	Date	8	CD Return date
recivercode	Text	7	CD Receiver code
Copies	Integer	2	Copies
Remarks	Text	50	Remarks about CD

Primary Key: Serialno

13. Table Name Field: CD Lost

Field Name	Type	Size	Description
Serialno	Text	10	Serial Number
Employeecode	Text	7	Employee code
Cdcode	Text	10	CD code
Cdcatcode	Text	3	CD category code
Lostdate	Date	8	CD Lost date
Copies	Integer	2	Copies
Remarks	Text	50	Remarks About CDs

Primary Key: Serialno

14. Table Name Field: Request

Field Name	Type	Size	Description
Formno	Text	10	Request Form Number
Redate	Date	8	Current date
Employeecode	Text	7	Employee code
Cdcat	Text	50	CD category
Division	Text	50	Division
Projectname	Text	100	Project name
Cdneed	Date	8	CD Require on Date
Duration	Text	15	Particular/ Permanent
Fromdate	Date	8	From date
Todate	Date	8	To date
Systemno	Text	50	System Date
Remarks	Text	50	Remarks

Primary Key Field: Formno

15. Table Name: Inward

Field Name	Type	Size	Description
Serialno	Text	10	Serial Number
Recdate	Date	8	Received date
Reccode	Text	7	Receiver code
Subject	Text	50	Subject
Senadd1	Text	50	Senadd1
Senadd2	Text	50	Senadd2
Senadd3	Text	50	Senadd3
Place	Text	20	Place
Moderec	Text	20	Mode of received
Typemode	Text	20	Type of mode
Remarks	Text	50	Remarks
Destination	Text	20	Destination
HandDate	Date	8	Handover to Employee Date
Employeecode	Text	7	Employee code

Primary Key Field: Serialno

16. Table Name: Outward

Field Name	Type	Size	Description
Serialno	Text	10	Serial Number
POD	Text	8	POD Number
SendDate	Date	8	Send Date
Subject	Text	50	Subject
Senadd1	Text	50	Senadd1
Senadd2	Text	50	Senadd2
Senadd3	Text	50	Senadd3
Place	Text	20	Place
Modesend	Text	20	Mode of Letter send
Typemode	Text	20	Type of mode
Remars	Text	50	Remarks
Destination	Text	20	Destination
Modeoftran	Text	20	Mode of transport
Empcode	Text	7	Employee code
From	Text	50	From
To	Text	50	To
Couriername	Text	50	Courier name
Weight	Text	10	Weight
Price	Text	15	Price

Primary Key Field: Serialno

17. Table Name: Category Master

Field Name	Type	Size	Description
Categorycode	Text	5	File Category code
Categoryname	Text	50	File Category name

Primary Key Field: Code

18. Table Name: Dept

Field Name	Type	Size	Description
Dcode	Text	5	Department code
Dname	Text	50	Department name
shopcode	Text	2	Shop code

Primary Key Field: Dcode

19. Table Name: Sub Category

Field Name	Type	Size	Description
Category	Text	50	File Category
Sub	Text	50	File Sub-Category
Code	Text	2	Code

Primary Key Field: code

20. Table Name: File Master

Field Name	Type	Size	Description
Category	Text	50	File Category
SubCategory	Text	50	File Sub Category
Location	Text	100	File Location
Fileno	Text	6	File Number
Filename	Text	50	Filename
Deptname	Text	50	Department name
Remarks	Text	50	Remarks
Issued	Text	1	Issued

Primary Key Field: Fileno

21. Table Name: Content

Field Name	Type	Size	Description
From	Text	50	File From
To	Text	50	To Whom
Content	Text	100	File Content
Fileno	Text	6	File Number
Recivedby	Text	7	Received by
Dispatched	Text	50	Dispatched
IO	Text	50	IO
Mailid	Text	50	Mail ID
sdate	Date	8	Send date

Primary Key Field: Fileno

22. Table Name: TransactionIssue

Field Name	Type	Size	Description
Issuedby	Text	7	File Issued by
Issuedto	Text	50	File Issued to
Issueddate	Date	8	File Issued date
Filename	Text	50	File name
Purpose	Text	50	Purpose
Issueno	Text	6	Issue Number

Primary Key Field: Issueno

23. Table Name: Transactionreciept

Field Name	Type	Size	Description
recby	Text	7	File received by
recfrom	Text	50	File received from
recdate	Date	8	File received date
Filename	Text	50	Filename
Remarks	Text	50	Remarks
Issueno	Text	6	Issue Number
Recno	Text	6	File receive Number

Primary Key Field: Issueno and Recno

4.4 PROCESS DESIGN

The main idea of developing this software is to generate various outputs in necessary formats, which will aid in planning and decision-making. The outputs should include all the necessary details and the required information. The primary consideration in output design is to arrange the data in a form, which is convenient to the user.

File Tracking System

File Location

While we choosing the file location from the *reports menu*, we should select the File name, which will retrieves the data from the database and shows where the file was present

Content wise Search

While we choosing the Content wise Search from the *Reports menu*, we should submit our query. It Search in the database and if the query is present it shows the File name and its location.

File Issue Search

While we choosing the File issue Search from the *Reports menu*, it compares issued field in the database from file master table, if issued field is 'Y', the file name will appear in the pending file list details.

Mailing Tool

While we choosing the Mail ID from the File Master Form it will show a form we type the message and click the send button if the system is connected with internet that message will reach the particular account.

Library Management System
Book/CDs category wise

While we choosing the books/CDs category wise from the *Find menu*, we should select the book/CDs category code, which will retrieves the data from the database and shows the books/CDs in category wise.
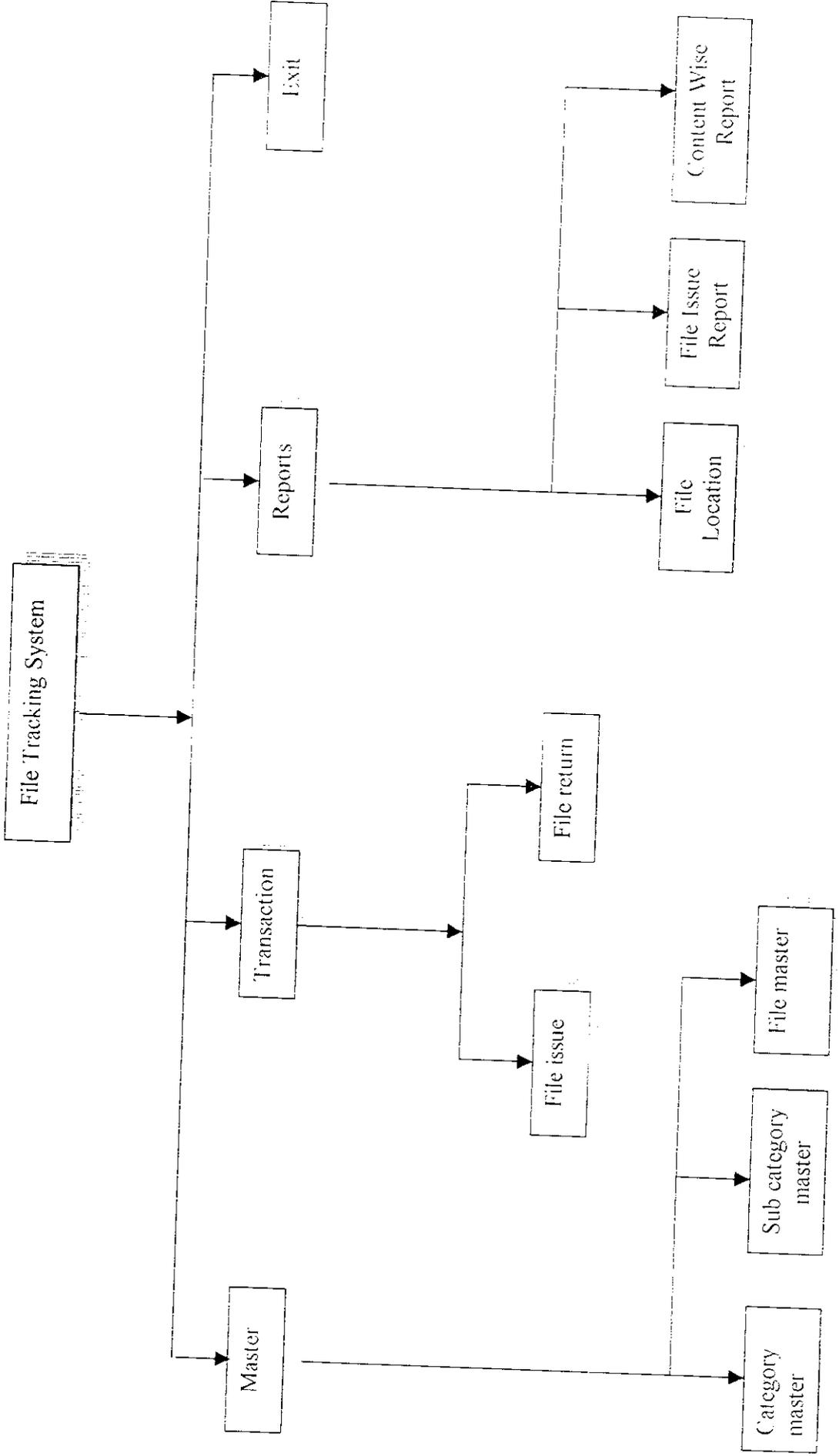
Books/CDs Search

While we choosing the books/CDs Search from the *Find menu*, we should submit our query. It Search in the database and if the query is present it shows the details of books/CD what he needs.

Purchase Details

While we choosing the Purchase Details from the *Find menu*, we should select the vendor name from the list, which will retrieves the data from the database and shows the purchase details of the books/CDs from that vendor.

Remainder Form

While we executing the file, remainder form will automatically reminds the user and displays the employee details those who have not returned the Books / CDs in time. Mean while it compares the book code and employee code in the database for issue and return table, if both are equal then the status field will become 'true', the name will not be shown in the remainder form, else if it will be shown in the remainder form. This can also be done by selecting the remainder from the menu.

```
                          File Tracking System
                                    |
        +---------------------------+---------------------------+
        |                           |                           |
     Master                    Transaction                   Reports          Exit
        |                           |                           |
  +-----+-----+            +--------+--------+          +-------+-------+
  |     |     |            |                 |          |               |
Category Sub   File      File issue      File return  File          File Issue
master  category master                              Location       Report      Content Wise
        master                                                                   Report
```

Categorization of File Master

Figure I

Issue Details for File

Requester Details

File Master

Sending Details

Check for File

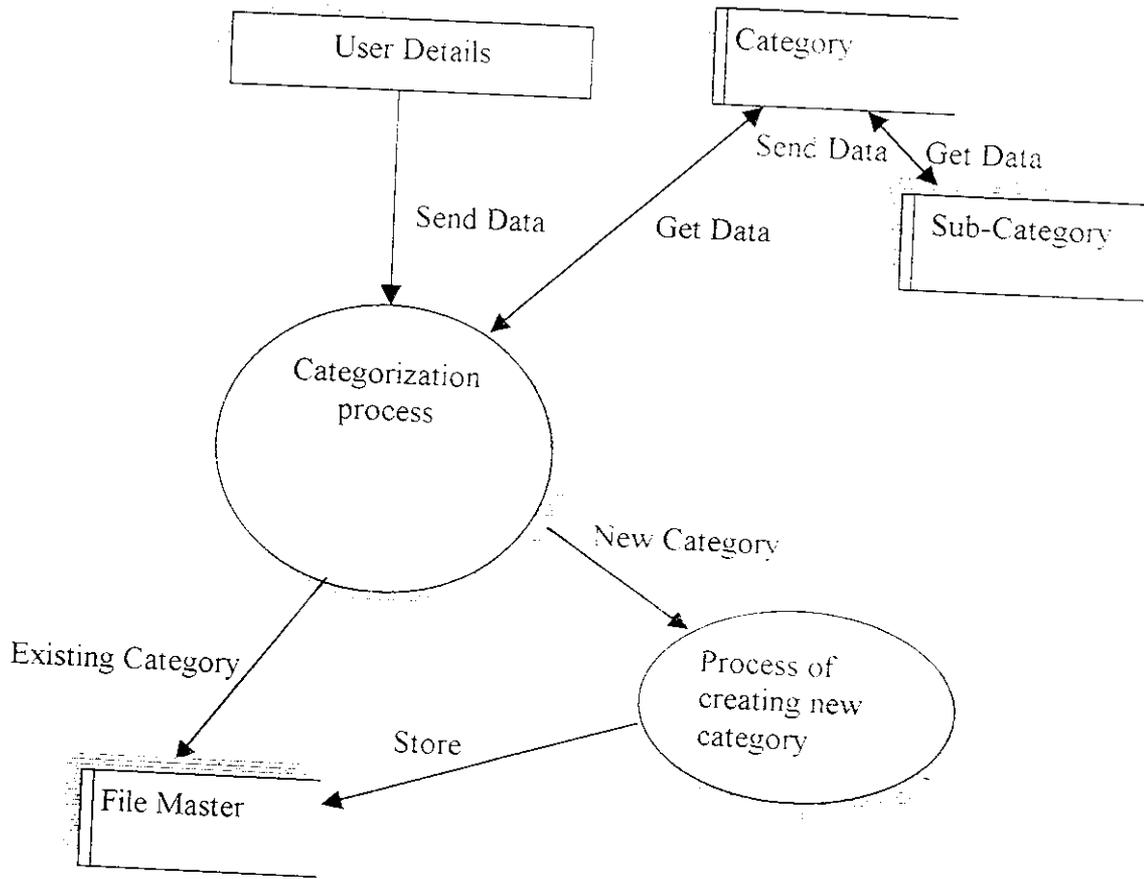Issue Process

Status 'N' (no)

Message

Store

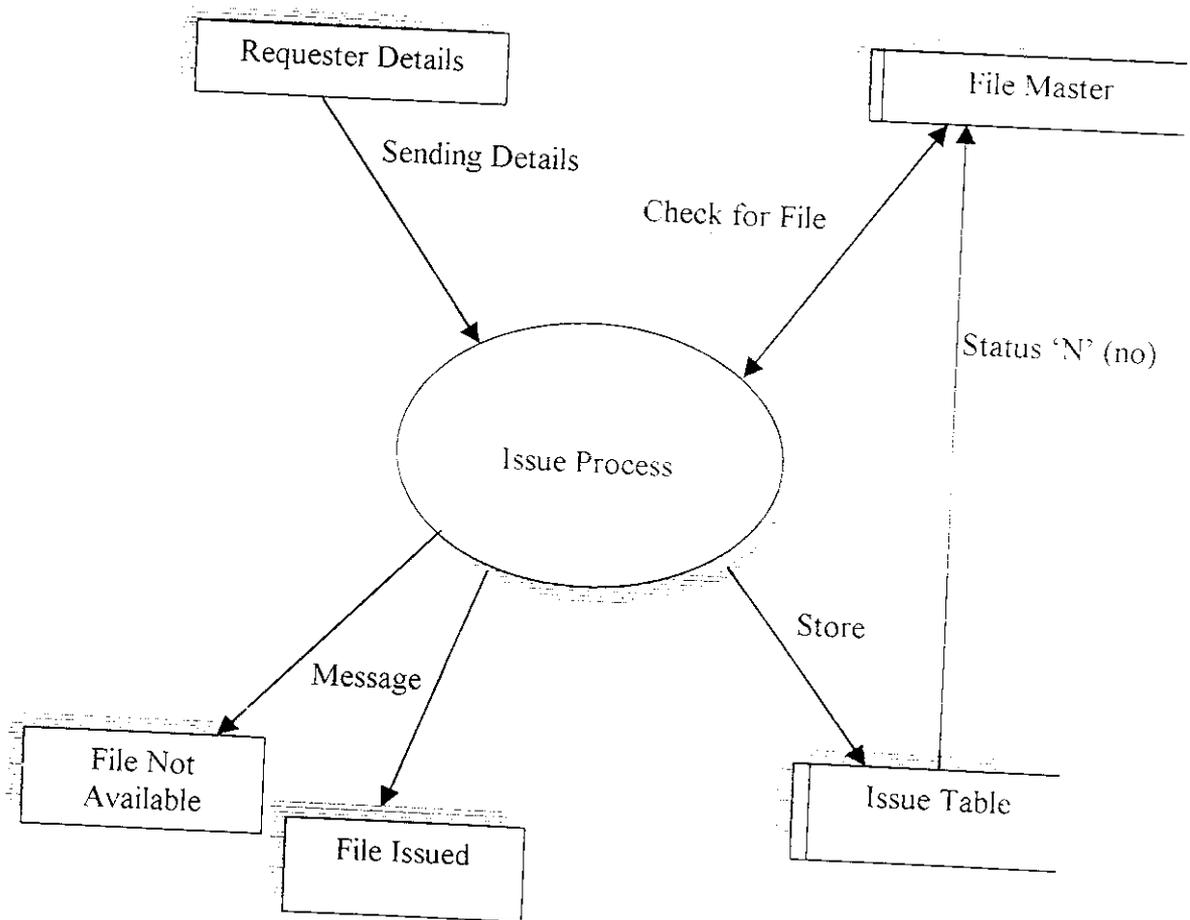File Not
Available

File Issued

Issue Table

Figure 2

Return Details For File

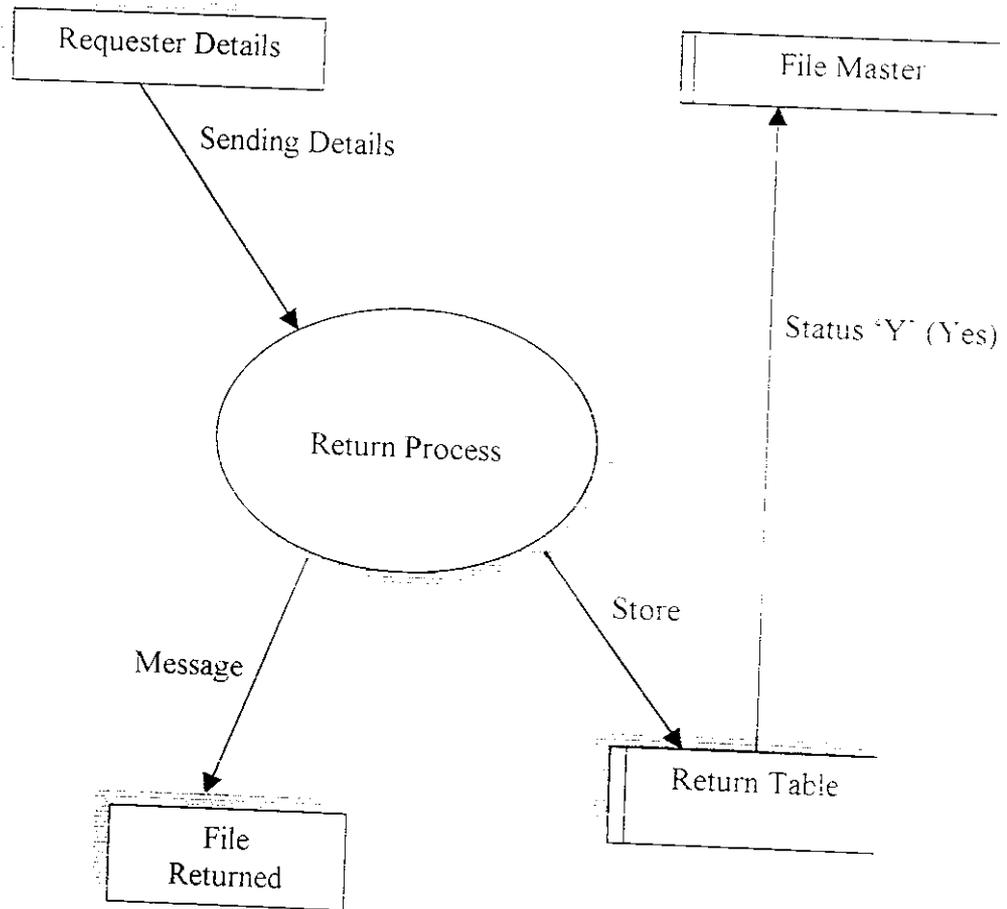Figure 3

Search Details For File

Requester Details

Content

Sending Details

Search For Data

File Location or
File Content Wise
Search Process

File Found

Message

File Not Found

Figure 4

```
                          Library Management
                                   |
   +--------+--------+--------+-----+------+--------+--------+
   |        |        |        |            |        |        |
 Master  Transaction  Find  Remainder    Request  Reports   Exit
   |                                |
   |                                |
 +---------+---------+        +-----------+-----------+-----------+
 |         |         |        |           |           |           |
Employee  Books/CDs  New entry  System No.  Publisher   Vendor
details   Categories  For                   details     details
                     Books/CDs
```
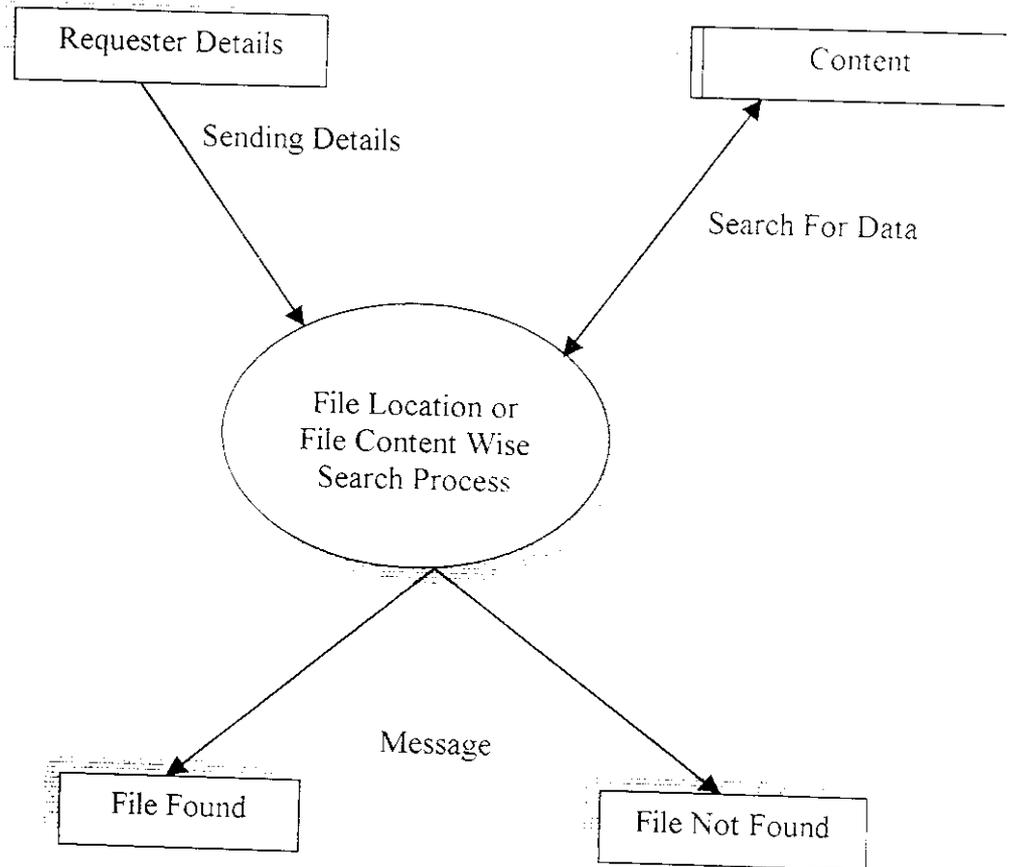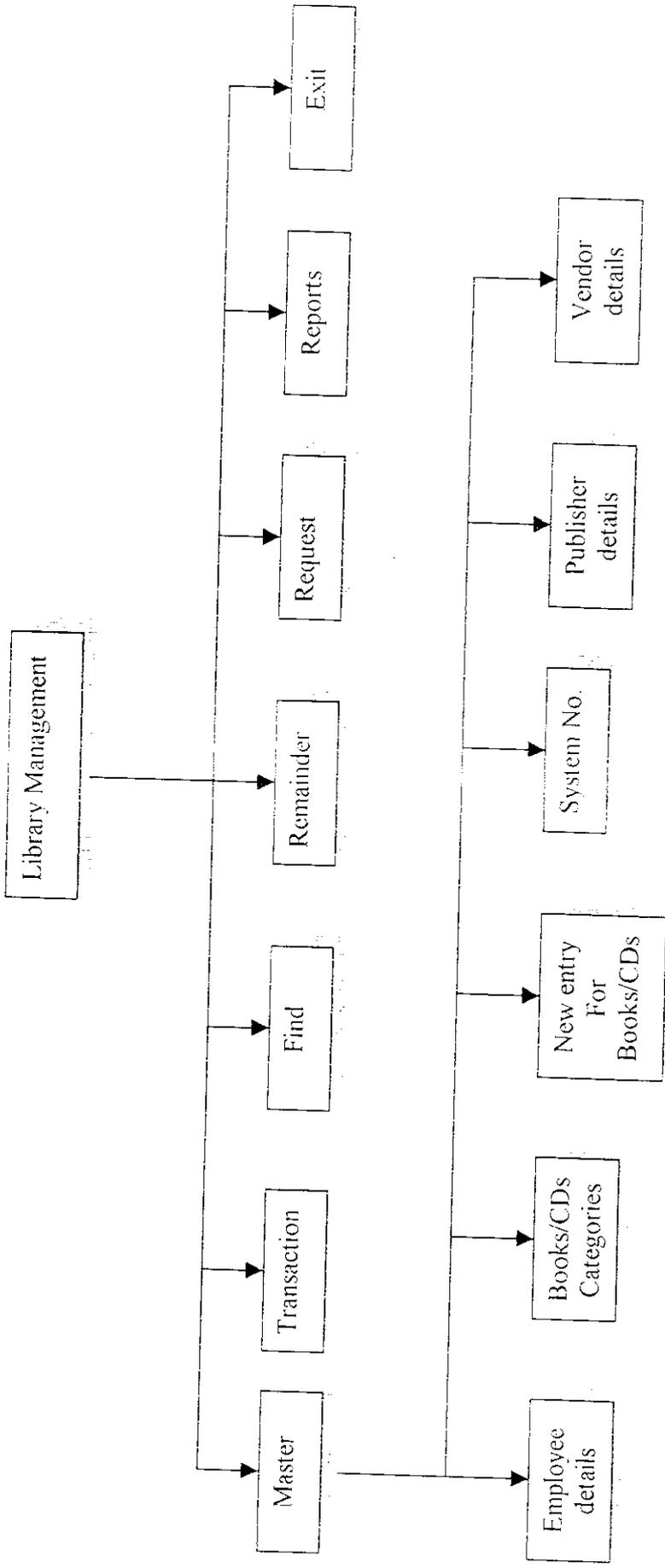
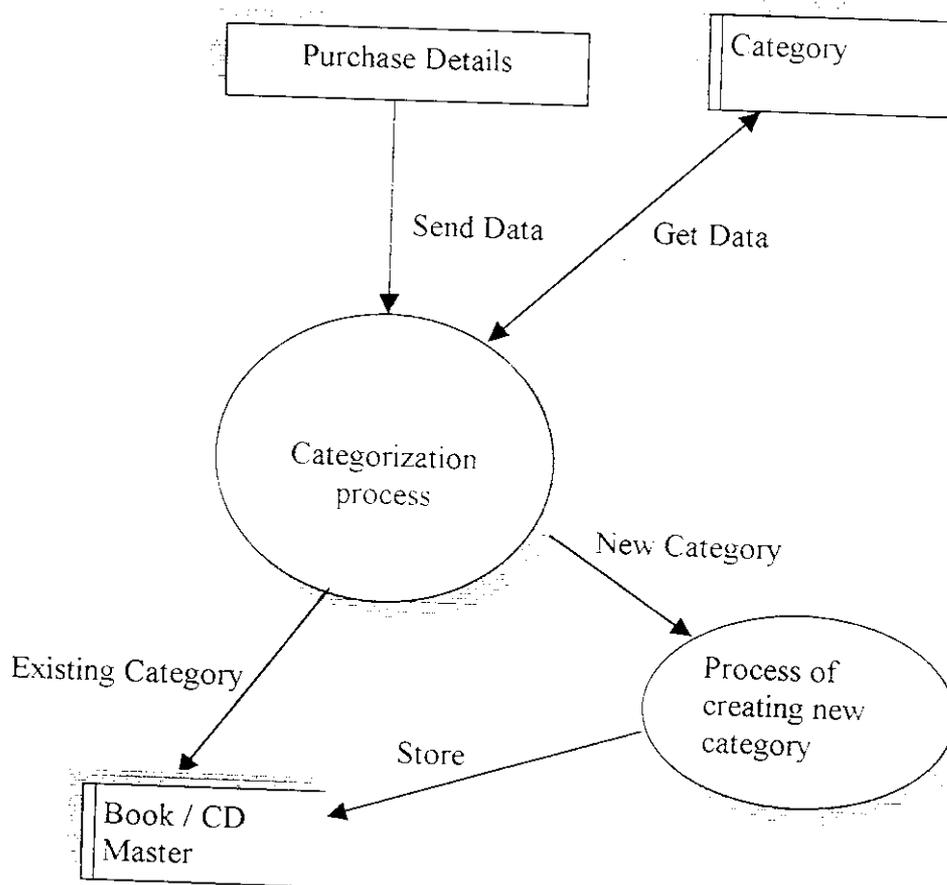## Categorization of Books and CDs

Figure 5

```
                    ┌──────────────────┐
                    │ Library Management│
                    └────────┬─────────┘
                             │
   ┌──────────┬──────────┬───┴──────┬──────────┬──────────┬──────────┐
   │          │          │          │          │          │          │
┌──────┐ ┌──────────┐ ┌──────┐ ┌──────────┐ ┌────────┐ ┌────────┐ ┌──────┐
│Master│ │Transaction│ │ Find │ │ Remainder│ │ Request│ │ Reports│ │ Exit │
└──────┘ └────┬─────┘ └──────┘ └──────────┘ └────────┘ └────────┘ └──────┘
              │
       ┌──────┴───────┬──────────────┐
       │              │              │
 ┌──────────┐  ┌──────────┐  ┌──────────┐
 │ Book / CDs│  │ Book / CDs│  │ Book / CDs│
 │   Issue  │  │  Return  │  │   Lost   │
 └──────────┘  └──────────┘  └──────────┘
```
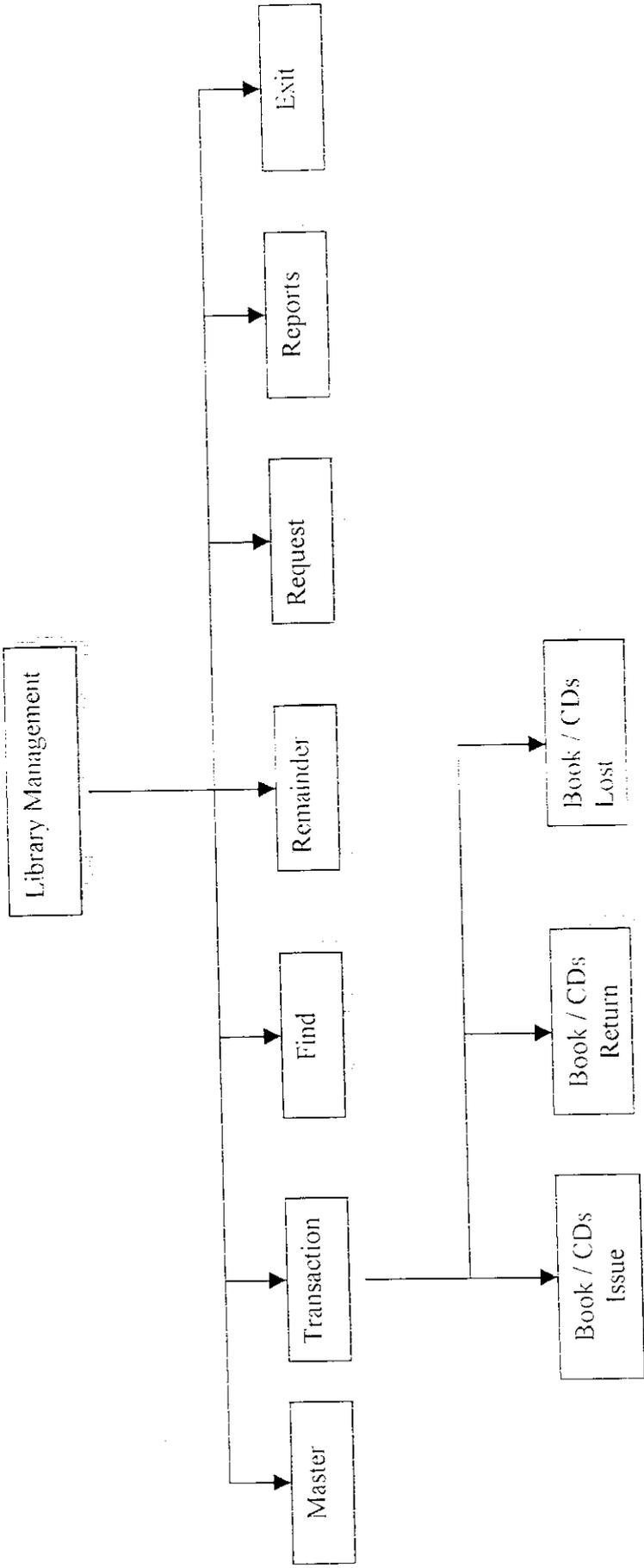
Issue Details For Books / CDs

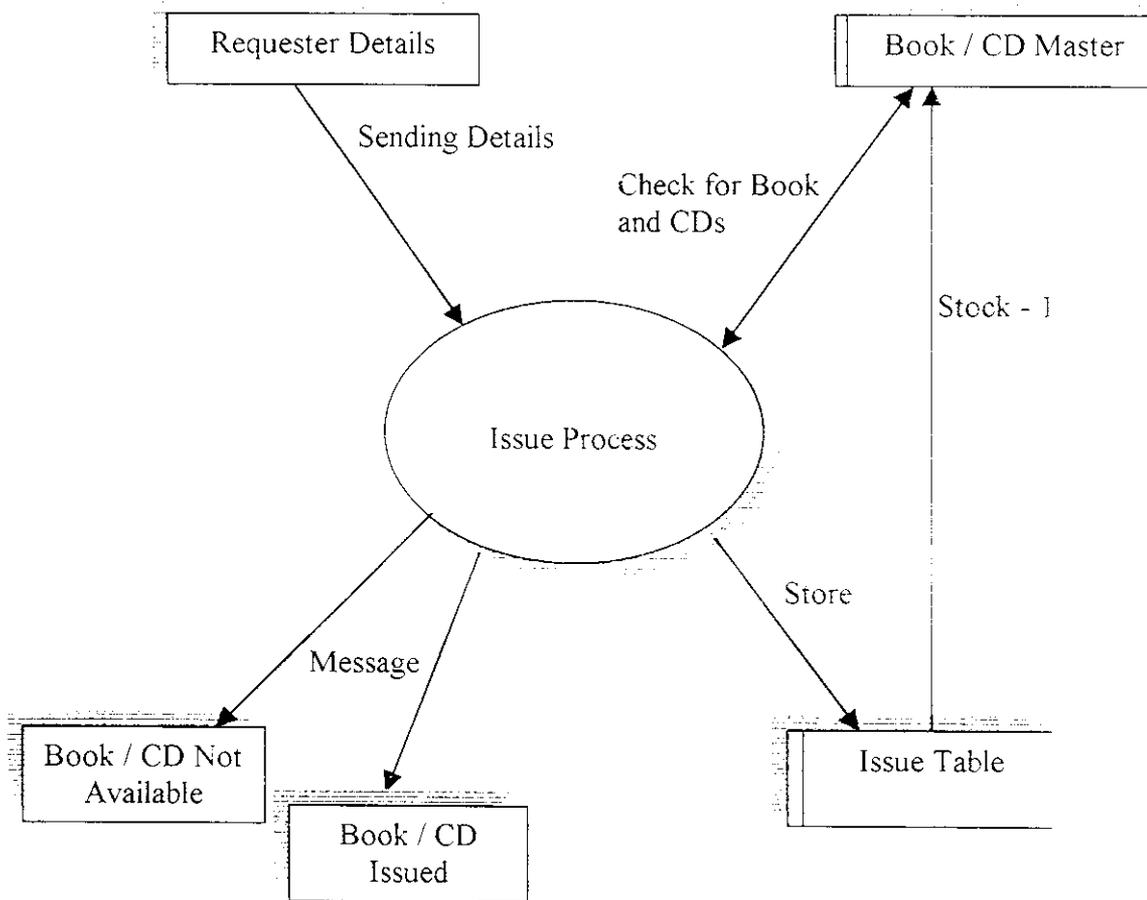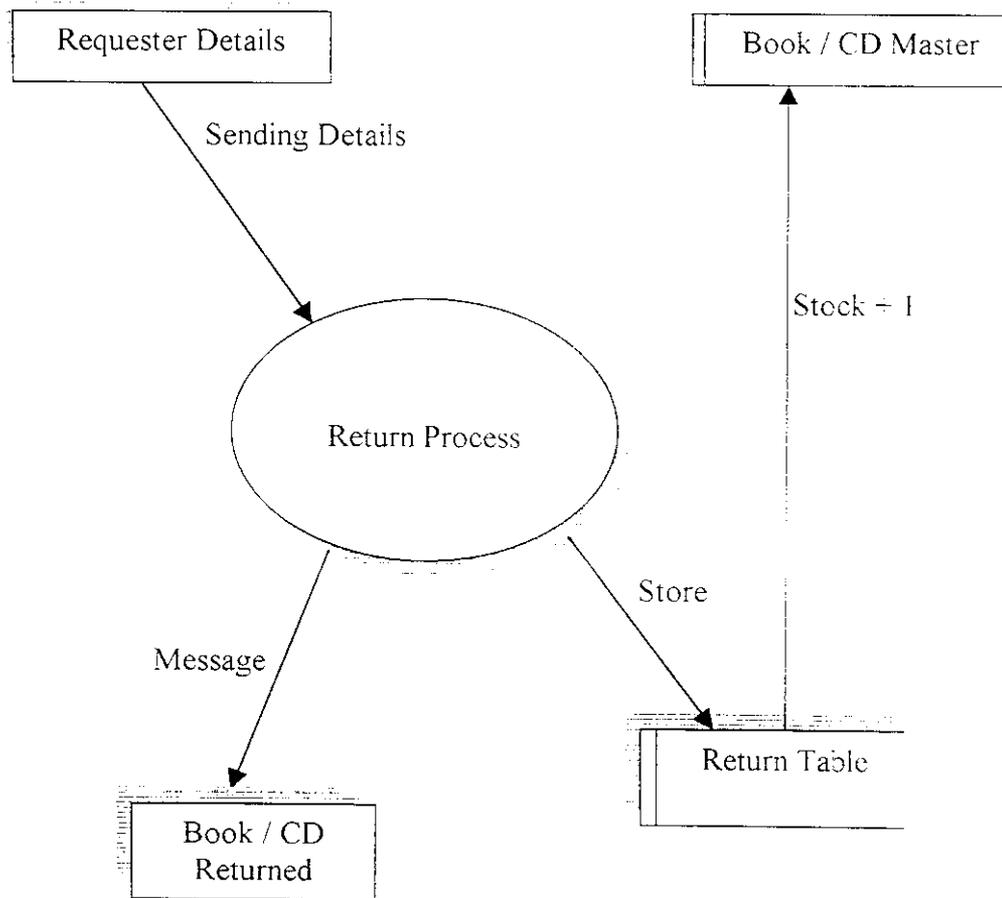

Figure 6

Return Details For Books / CDs

Figure 7

Lost Details For Books / CDs

Figure 8

```
                        Library Management
                               |
    +---------+---------+------+------+---------+---------+---------+
    |         |         |             |         |         |         |
  Master  Transaction  Find       Remainder  Request   Reports    Exit
                         |
            +------------+------------+
            |            |            |
       Book / CDs    Book / CDs    Purchase
      category wise    search      details
```
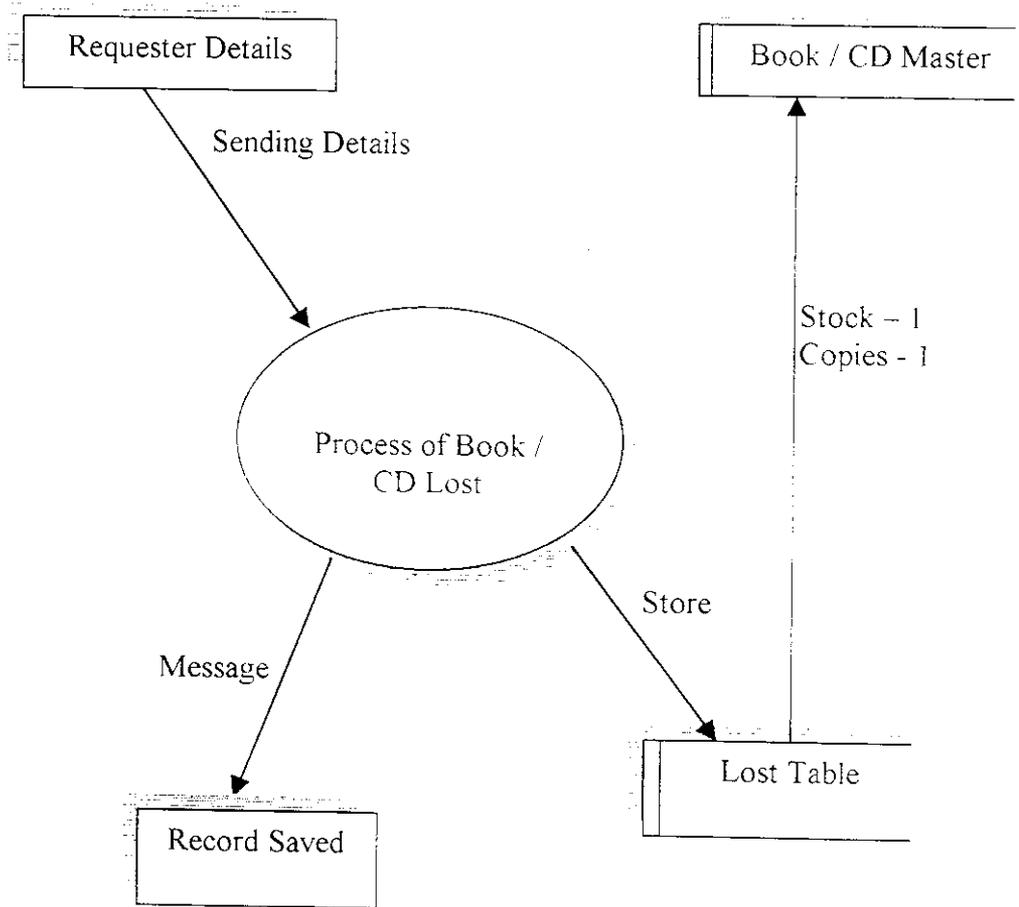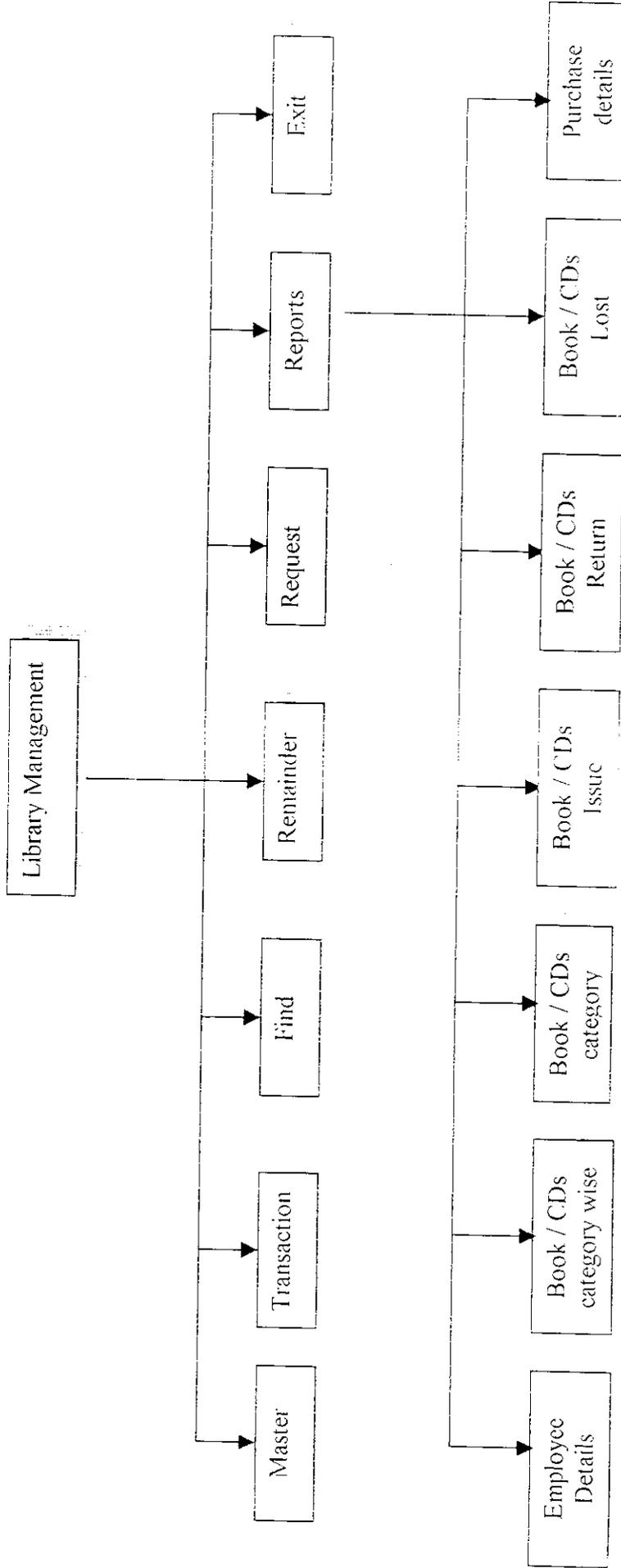
Search Details For Books / CDs

| Requester Details |
| Book / CD Master |

Sending Details

Search For Data

Category wise or
Content Wise
Search Process

Message

| Book Found |

| Book Not Found |

Figure 9

```
                              Library Management
                                     |
    +---------+---------+-------------+-----------+----------+---------+
    |         |         |             |           |          |         |
  Master  Transaction  Find      Remainder    Request    Reports    Exit
    |         |                                              |
    |         +-------------------+--------------+           +-------------> Book / CDs
    |         |                   |              |                             Lost
    |         |                   |              |
Employee  Book / CDs        Book / CDs      Book / CDs
Details   category wise      category         Issue
                                                 |
                                                 +--------------+------------------+
                                                                |                  |
                                                           Book / CDs        Purchase
                                                             Return           details
```

```
                        Postal Management
                                |
              +-----------------+-----------------+
              |                                   |
           Master                              Reports
              |                                   |
      +-------+-------+                   +--------+--------+
      |               |                   |                 |
Outward Mail     Inward Mail      Outward Reports     Inward Reports
```

Categorization And Searching of Received Letters

Received Letters

Inward

Send Data

Store

Categorization
Process

Search For Data

Requester Details

Sending Details

Search
Process

Message

Record Found

Record Not Found
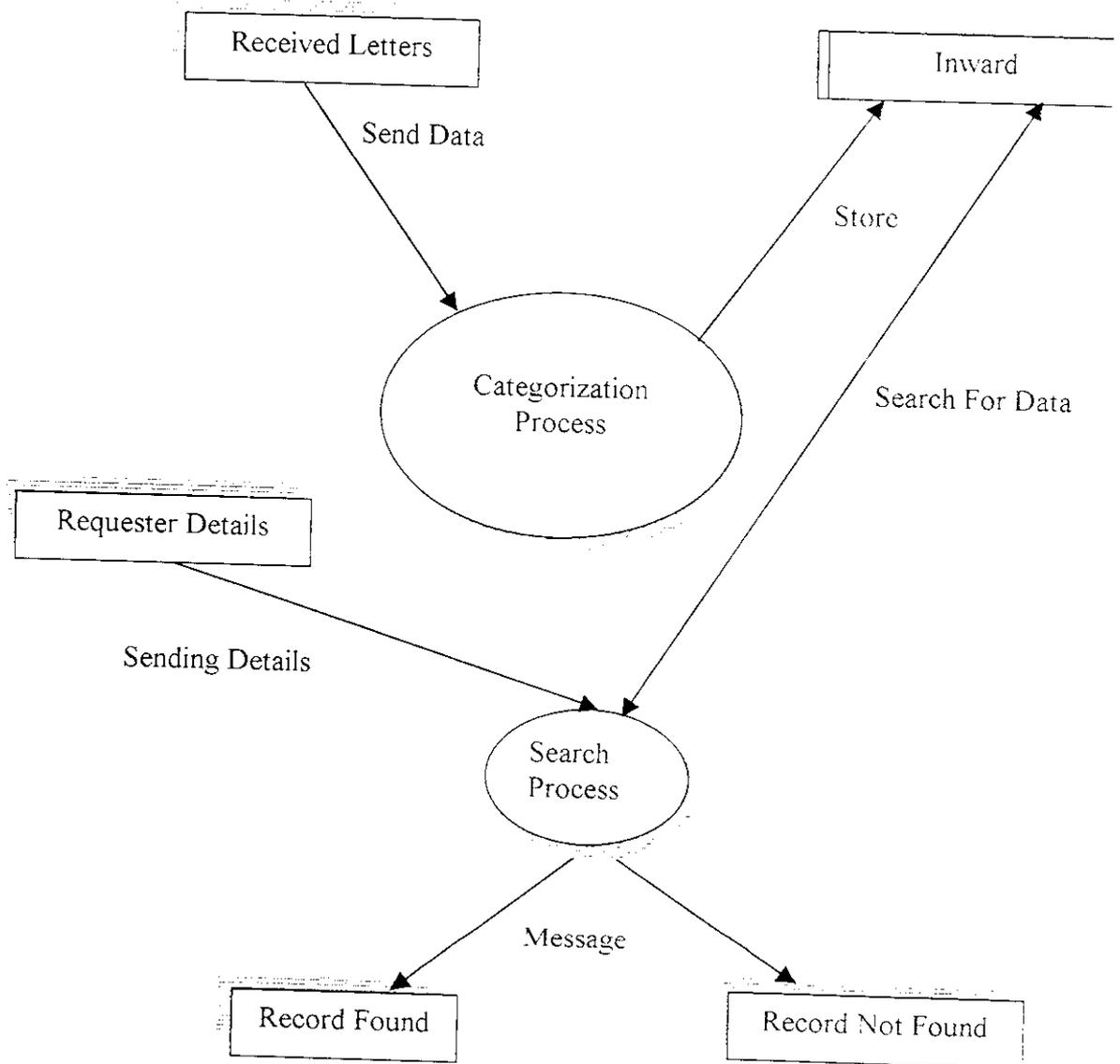
Figure 10

Categorization And Searching of Sending Letters
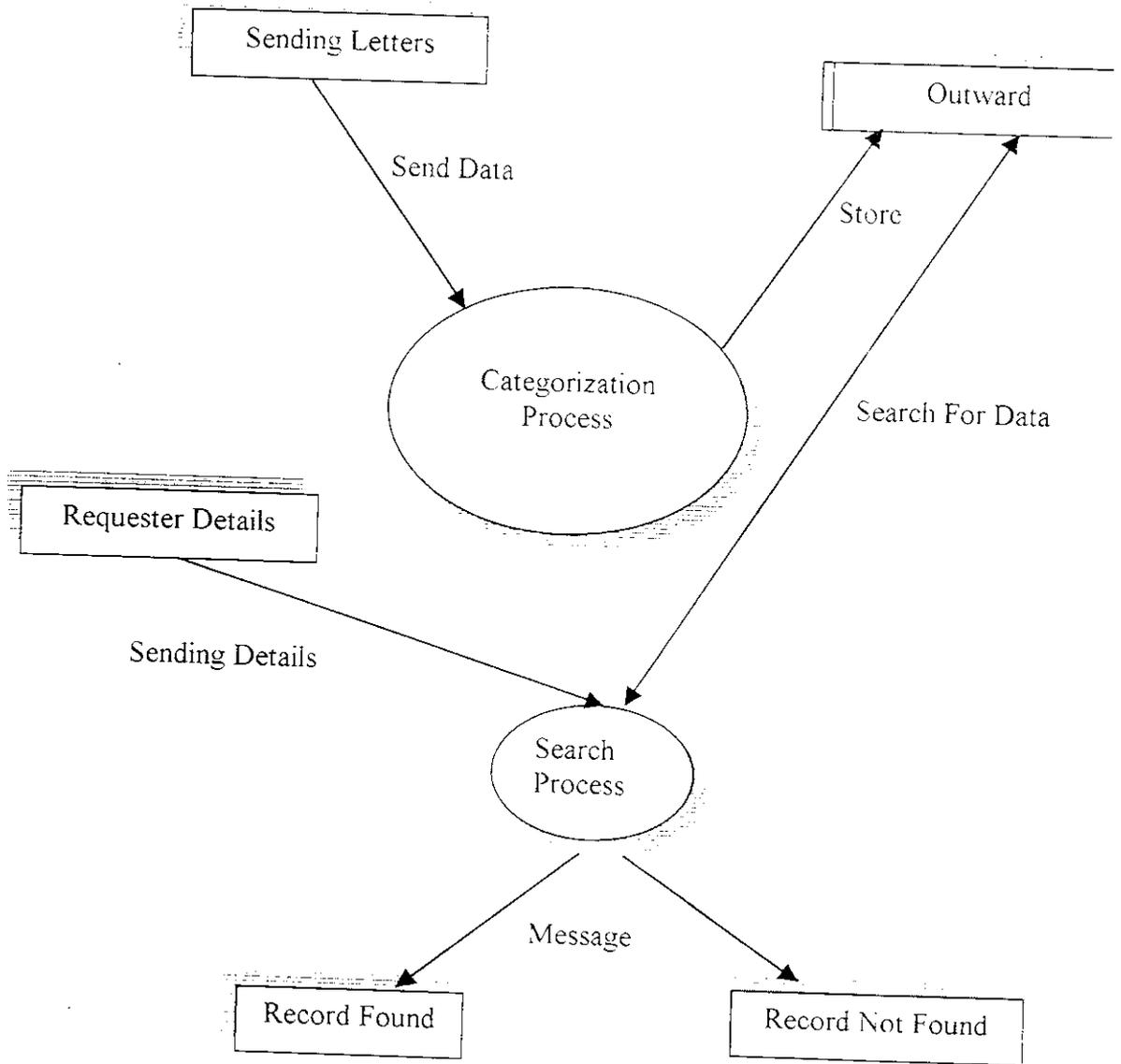
Figure 11

SYSTEM IMPLEMENTATION

AND

TESTING

5.1 SYSTEM IMPLEMENTATION

After proper testing and validation, the question arises whether the system can be implemented or not. Implementation includes all those activities that take place to convert from the old system to the new. The new system, or it may be a major modification to an existing system. In either case proper implementation is essential to provide a reliable system top meet organization requirements.

All the planning has now, be completed and the transformation to a fully operational system can commence. The first job will be writing, debugging documenting of all computer programs and their integration into a total system. The master and transaction files are decided, and this general processing of the system is established. Programming is complete when the programs confirmed to the detailed specification.

When the system is ready for implementation, emphasis switches to communicate the finance department staff. Open discussion with the staff is important from the beginning of the project. Staff can be expected to be concerned about the effect of the automation on their jobs and the fear of redundancy or loss of status must be analyzed immediately. During the implementation phase it is important that all the staff concerned be apprised of the objectives of overall operation of the system. They will need shinning on how their role relates to the system as a whole. An organization –training program is advisable, this can include demonstrations, newsletters, seminars, etc.,

The department should allocate a member of staff, who understands the system and the equipment, and should be made responsible for the smooth operation of the system.

Users should be informed about new aspects of the system that will affect them. The features of the system explained with the adequate documentation.

Existing documents such as Information Tracking System details should be entered in to the new system. Since these files are vary large, conversion of these may continue long after the system based on current files has been implemented. Hence we need to assigned responsibility for each activity.

The system may come into full operation via number of possible routes. Compute change over at one point time is conceptually the most tidy. But this approach requires careful planning and coordination, particularly during the changeover. A phased approach, possible implementing the system of the section relating to one operation or procedure first and processing to more novel or complex subsystems in the fullness of time. These likely to be less traumatic. A phased approach gives the staff time to adjust the new system. But depends on
being able to split the system, without reliance on it. The approach is sensible when the consequences of failure are disastrous, but will require extra staff time.

5.2 SYSTEM TESTING

Once the system study and design is over, the system has to be implemented. Implemented is concerned with coding, testing, debugging the programs.

Unit Testing:

All the programs in the project have been tested by both live and test data. The main tests that have been done are storing and retrieval of the data from the database

A programmer must test each condition in the program with test data. If, for example, a program calls for executing data with codes 1,2 or 3, the program must be tested to see how it handles each of these codes, as well as any code greater than 3 or less than 1.The programmer must eliminate the likelihood that surprises occur during the life cycle of the program. Often, data that are considered "impossible" at the time of programming mysteriously appear soon after the program is operable.

Test data are designed to yield predictable results. Sample input is prepared and the anticipated results are calculated manually. The results are then compared with computer output to verify the validity of the data.

Normal transactions and possible errors are checked with test data. Some data are created with deliberate errors to see whether or not the computer prints the proper error messages. Other transactions should contain multiple errors to see whether the programmer has anticipated these possibilities.

A program may be further tested with live data, this, data actually to be used in the proposed system. Usually, the systems analyst supplies these data by taking transactions being processed by the developing system.

Complex programs require live and test data. Testing with live data demonstrates that the program is designed to anticipate future contingencies.

This type of test may be used to demonstrate that the program can handle the volume of transactions necessary when the system is operable.

In addition to testing the program's ability to handle errors, the program test should verify that the program's counter capacity is sufficient for the volume of data it will process and that the program can perform the various mathematical functions required.

Integration Testing:

Virtually every program interacts with other programs. The output from one may be the input to another. As each program is completed and successfully passes the logical test prepared for it, it is tested to see that it conforms to related programs in the system. The systems analyst responsible for each portion of the system must test the entire modules with both test and live data before the entire system is tested.

System Testing:

The testing process culminates in the systems test. In systems testing the entire system is put through a dry run until it is considered operable. Operations and user personnel should participate actively in this phase to make conditions as realistic as possible.

Systems testing require careful preparation. First, the project leader, the systems analysts programmers and users must agree on the test objectives. They must determine specifically what the systems test is expected to demonstrate and what constitutes satisfactory performance.

Test cases, processed through the system from start to finish, are used for systems testing. All concerned should participate in selecting test cases. The project leader and staff also must provide a test procedure so that the operating staff can run each step without systems department help. Finally, the project leader must work out a test schedule that will provide time to perform and evaluate each step. The schedule also must take into consideration the normal activity peaks and valleys of the user and operating s departments.

A system may occasionally may be over tested, but that is are. Testing is insurance against future problems- when the insurance is too costly in proportion to the risk. Less insurance should be taken; the extent of testing is determined by the several considerations.

1. Complexity of the system

2. Importance to the system to the survival of the company

3. Life expectancy of the system

Systems testing are an extremely through process that requires extensive analysis and planning. Standard on what constitutes acceptable performance must be worked out and agreed upon in advance by users and management. The systems analyst must try to anticipate everything that could go wrong with the system and create procedures of re handling these occurrences. The systems analyst is not only responsible for testing all routines transactions, but must test the procedures for handling exceptions.

User management is responsible for determining whether or not the system is performing satisfactorily. System must satisfy users. A system that may be considered perfectly by a system analyst really is unsatisfactory if it is not acceptable to the user. Before testing begins. Users and systems personal must agree on acceptable standards of performance and establish parameters of accuracy if it not acceptable to the users.

Before testing begins. users and systems personal must agree on acceptable standards of performance and establish parameters of accuracy for data in the system.

The people responsible for each aspect of systems testing are:

- Users-validity of data
- Project Leader- Interaction of systems components
- Systems Analyst and Programmers- Program accuracy.

Gaining formal and realistic acceptance of a system by the users is important because they are in best position to determine whether the system is acceptable, especially when they have been involved from the beginning in the systems development process. The systems department does not have the right to impose unacceptable system upon users.

5.3 REFINEMENT BASED ON FEEDBACK

After the system has been successfully completed it is implemented in the client side (client network). The systems manager first tests the system and then it is given to users of the system to get used to the system. Users of the system get a feel for the system. The users give feedback on the system such as user interfaces.

In this project for example the remainder, which reminds the books to be returned, has been developed based on user feedback. First the remainder was kept in menu, so that   the user could select it when needed and get the books that need to be returned.

Users considered it as important and wanted the system to remind them of the books that   need   to be returned. The system was modified so that the remainder was called when the   user first logs on or logs out of the system. It was also kept in menu so that it could be called whenever needed by the user.

6 CONCLUSION

The Information Tracking System was successfully designed and developed. This was tested and implemented. This system was user friendly, with help screens and messages to self explain the procedures. The developed system speeds up the entry process and allows for easy storage and retrieval of data. An attempt has been made to perfect the process by incorporating validations at each level. A considerable effort has been made to succeed at a modest level.

The advantages of this system can be summarized as follows.
- Each of operation and on line help was provided as per need.
- Suitable error messages are displayed.
- With the best GUI facilities, the system was user friendly.
- The ITS, though developed for a particular client, can be generalized for multi clients with a few modifications

The system that was developed has satisfied the clients. It has achieved the required outputs as described by the system. This has effectively replaced the manual Information Tracking System process, which was followed and reduced the workload of the organization. Thus the system functions with the maximum effect ruling of the constraints that was faced previously.

Thus, a conclusion can be made that the developed was pretty sophisticated and caters to the requirements of the user.

SCOPE
FOR
FUTUREDEVELOPEMENT

7 SCOPE FOR FUTURE DEVELOPMENT

- Employee details with photograph and signature

- Enter of letter in the system can be done by Scanning of letters.

- Mailing list appears on the screen on arrival of new message.

- Inbox and outbox provision to view and read the message.

- Address for keeping, tracking of the e-mail Ids.

- A well-designed appropriate schedule tool was also included in ITS.

- To have an Internet mail communication system for the letter content and attachment making.

REFERENCES

BIBLIOGRAPHY

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3. Roger S.Pressman, Software Engineering, Galgotia Book Source Publishers, 1992.

4. Barry Lee, Introduction System Analysis And Design, Galgotia Book Source Publishers.

5 Gayle Coffman, SQL Server 7: The complete Reference, 1999

APPENDICES

SCREEN FORMATS

NAME: Main Screen for File Tracking System.
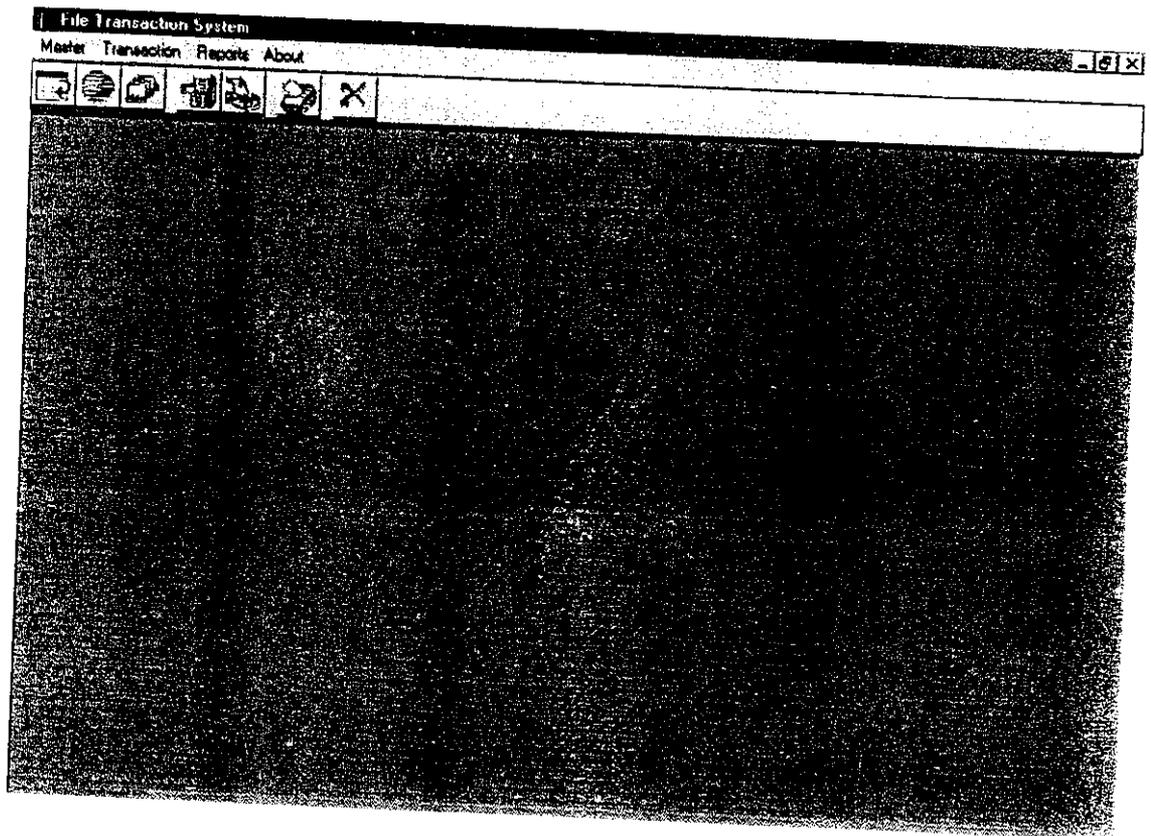
NAME: Category Master.

PURPOSE: This screen is used to create file category.

NAME: Subcategory Master for File Tracking System.

PURPOSE: This Screen is used to create sub category from main category.

SubCategory Master ☒

Main Category : [˅]
Sub Category : [   ]

Category	Sub Category

| New | Alter | Remove | Save | Cancel | Close |

NAME: File Master for File Tracking System.

PURPOSE: This screen is used to get the information of user.

File Master

File No :

Dept Name :

Category :

Sub Category :

File Name :

Storage Location :

Remarks :

Sl No.	Document Dated	Despatch Mode	Inward / Outward	From Whom

New | Alter | Remove | Save | Cancel | Close

NAME: File Issue for File Tracking System.

PURPOSE: This Screen is used to store the details of the issued files.

File Issue Transaction   ×

Issue No : [ ]	File Name : [▾]
Issued By : [▾]	Issued To : [▾]
Issued Date : [07/01/2002 ▾]	Purpose : [ ]

[New] [Alter] [Remove] [Save] [Cancel] [Close]

NAME: File Receipt for File Tracking System

PURPOSE: This Screen is used to store the details of the Receipt files

File Reciept Transaction   ☒

Issue No : [_____ ▼]   Reciept No : [_____]

File Name : [_____]   Recieved By : [_____]

Recieved From : [_____]   Recieved Date : [07/01/2002 ▼]

Remarks : [_____]

[🗋 New] [✎ Alter] [⊘ Remove] [🖫 Store] [✗ Cancel] [⏏ Close]

NAME: File Issue Report for File Tracking System.

PURPOSE: This screen gives the details of pending issued files.

File Issue Report

Pending Issued File Details

File Name	Issued Date	Issued By	Issue
NUMERIC	10/10/2000	SUNDAR	ARU
NUMERIC	07/01/2002	ARUNA SRIDHAR	SV R/
TELEPHONE NO 8260091	07/01/2002	A PREM KUMAR	ARUN
NUMERIC	07/01/2002	D. THANGAMANI	BV KF

✔ OK

NAME: Content Wise Search for File Tracking System.

PURPOSE: This screen shows the File name and its Location.

: : Content Wise Search   **⊠**

. Enter The Content Of A Document :

File Name	Location	▲

✔ **OK** | ✖ **Cancel**

NAME: E-Mail Box For File Tracking System.

PURPOSE: This Screen is used to send a Mail to Client

Recipient [

Subject [**Send**

Message

NAME: Main Screen for Library Book Maintenance
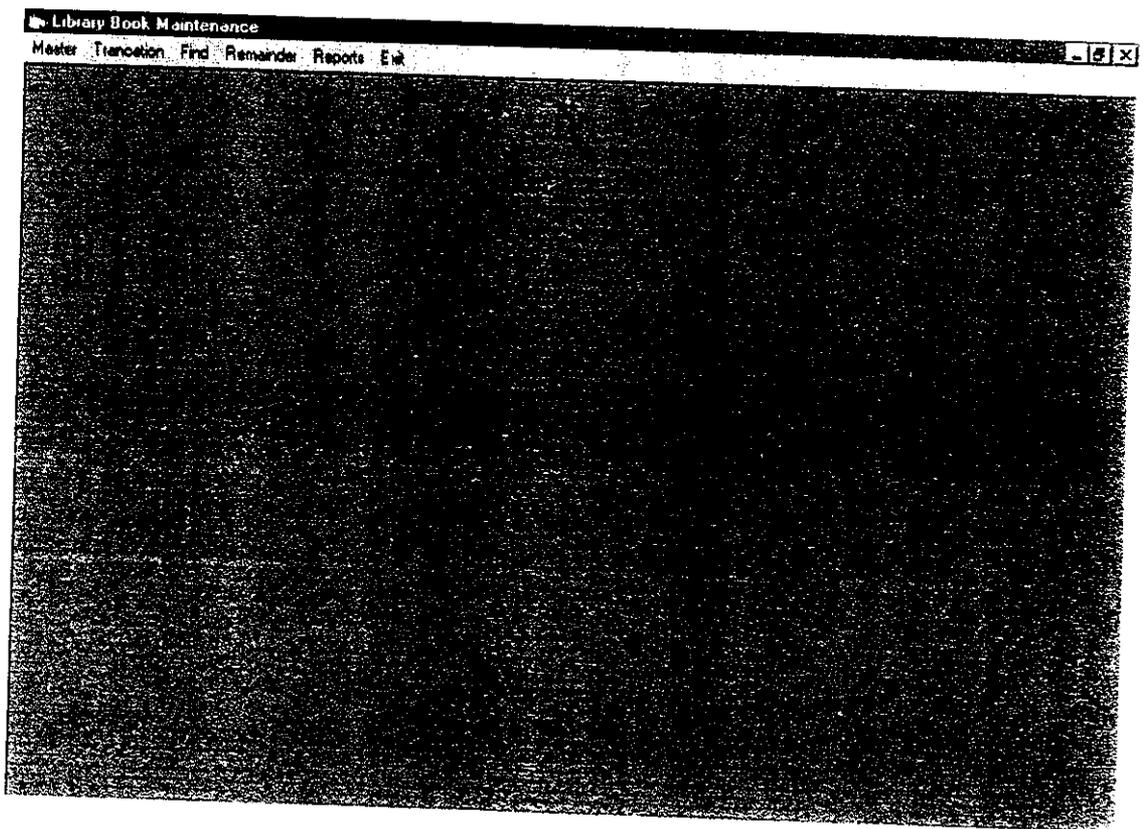
NAME: Book Master for Library Book Maintenance

PURPOSE: This screen is used to enter the details about Book.

Book Master

This form is Used to Enter the Details About the New Books

Book_Category Code

Book_Title   Author

Publisher   Attachment

Year   Version_No

Number of Copies   Price

Content   Remarks

InvoiceNumber   Invoice Date   26/02/2002

Vendor Name   cmbvencode

| Add | Delete | Modify | Save | Clear | View | Exit |

NAME: Book Issue for Library Book Maintenance

PURPOSE: This Screen is used to store the details of issued Book.

Issue details   [×]

This form is Used to note the Details About the Book And Employee,
Before Issue

Employee Code	[▼]	Employee Name [ ]
Book code	[▼]	Book Title [ ]
Book Category Code	[▼]	Book Category Type [ ]
Issue date	[26/02/2002 ▼]	Return date [26/02/2002 ▼]
Copies	[1]	Issuer Code [ ]
Remarks	[ ]	

| Add | Delete | Modify | Save | Clear | View | Exit |

NAME: Book Return for Library Book Maintenance.

PURPOSE: This Screen is used to store the details of return Book.

Book Return   ☒

This form is Used to note the Details About the Book and Employee,
at the time of Return

Employee Code	[▾]	Employee Name [ ]
Book code	[▾]	Book Title [ ]
Book Category Code	[▾]	Book Category Type [ ]
Issue date	[26/02/2002 ▾]	Return date [26/02/2002 ▾]
Copies	[ ]	Receiver Code [ ]
Remarks	[ ]	

| Add | Delete | Modify | Save | Clear | View | Exit |

NAME: Book Lost for Library Book Maintenance.

PURPOSE: This Screen is used to store the details of Lost Book.

Book Lost Details ☒

This form is Used to Enter the details about the Books and Employees which was lost by the Employee

Employee Code	▾	Employee Name
Book code	▾	Book Title
Book Category Code	▾	Book Category Name
Copies		Date 26/02/2002 ▾
Remark		

Add	Delete	Modify	Save	Clear	View	Exit

NAME: Category Wise Book for Library Book Maintenance.

PURPOSE: This screen shows the Books as its Category Wise

CategoryWiseBook		☒

This form Shows The Books as its Category Wise

Book Category Code |VB   ▾| **Exit**

bookcatcode	bookcode	booktitle
VB	VB_002_01	USING VISUAL BASIC 6.0
VB	VB_003_01	VISUAL BASIC 6.0

NAME: Main Screen for Digital Library management.

Digital Library Management

Master   Transaction   Find   Remainder   Request   Report   Exit
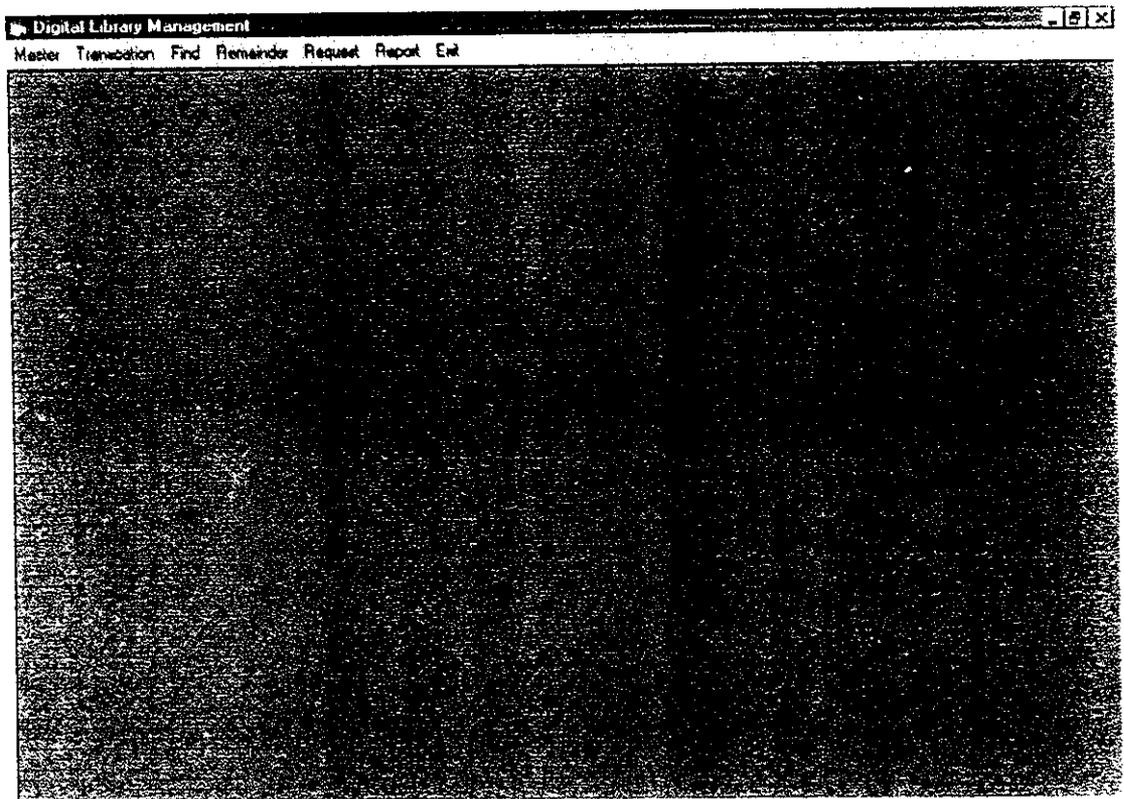
NAME: CD Master for Digital Library management.

PURPOSE: This Screen is used for Store the details about CDs

CD MASTER   ☒

This form is Used to Enter the Details about New CD

CD Code		CD Title	
CD Category Code	▾	CD Category Name	
CD Licence NO		No_Of_User	
CD_Key_NO		CD Creator	
CD Content		Price	
Copies		Remarks	

InvoiceNumber		Invoice Date	26/02/2002 ▾
Vendor Name	cmbvencode		▾

| **Add** | Delete | Modify | Save | Clear | **View** | **Exit** |

NAME: Category Form for Digital Library management.

PURPOSE: This screen is used to create CD category.

Category Form   ✕

This form is used to add the New CD Category Code for New CD Category Name

CD_Category
Code   [   ]

CD_Category
Name   [   ]

Remarks   [   ]

| **Add** | Delete | Modify | Save | Clear | **View** | **Exit** |

NAME: System Details for Digital Library management.

PURPOSE: This Screen is used to store the details of System Located.

System Details

This form Contain Details About the System Located

System Number [   ]   System Located [   ]

System Make [   ]   System Type [   ]

Remarks [   ]

Add | Delete | Modify | Save | Clear | **View** | **Exit**

NAME: Request Form for Digital Library management.

PURPOSE: This Screen is Used for Stored the details of get permission from higher authority

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Request Form   ☒

This form is used to get the permission from higher authority
to get the CD from the Library

Form Number	[ ]	Date	[27/02/2002 ▾]
Division	[ ]	Employee Code	[ ]
Employee Name	[ ]	Purpose	[ ]
System No	[ ]	Project Code	[ ]
CD Category	[ ]	Cd Required On Date	[27/02/2002 ▾]
Duration	☐ Permanent	From	[27/02/2002 ▾]
	☐ Particular Period	To	[27/02/2002 ▾]

Add   Delete   Modify   Save   Clear | **View**   **Exit**

NAME: Vendor Details for Books and CDs Maintenance

PURPOSE: This Screen is used to store the details of Vendor.

Vendor Details ⊠

This form is Used to Enter the Vendors Details

Vendor_Code		Phone_Number	
Vendor_Name		Fax_Number	
Vendor_Address 1		Email_ID	
Vendor_Address 2		Credit_Days	
Vendor_Address 3		Discount_Offer	
Vendor_Place		Remarks	
pincode			

| Add | Delete | Modify | Save | Clear | View | Exit |

NAME: Purchase Details for Books and CDs.

PURPOSE: This Screen shows the purchase details.

Purchase Details			☒

This Form Shows Purchase Details

Vendor Name | MICROSOFT ▾ | [Get Details]

End

vendorname	cdcode	invno
MICROSOFT	UTL_035_01	
MICROSOFT	SW_023_02	
MICROSOFT	OS_022_01	

NAME: Search for Books and CDs Maintenance

PURPOSE: This screen shows the Books and CDs as its Content Wise

NAME: Remainder for Books and CDs Library Maintenance

PURPOSE: This screen gives the details of pending issued Books and CDs.

Remainder   ☒

This form remains the return details

serialno	formno	employeecode	employeename
10000001	1010003	1010005	P BALAMURUGz
10000002	1010005	1010005	P BALAMURUGz

NAME: Main Screen For Postal Maintenance.

INFORMATION TRACKING SYSTEM
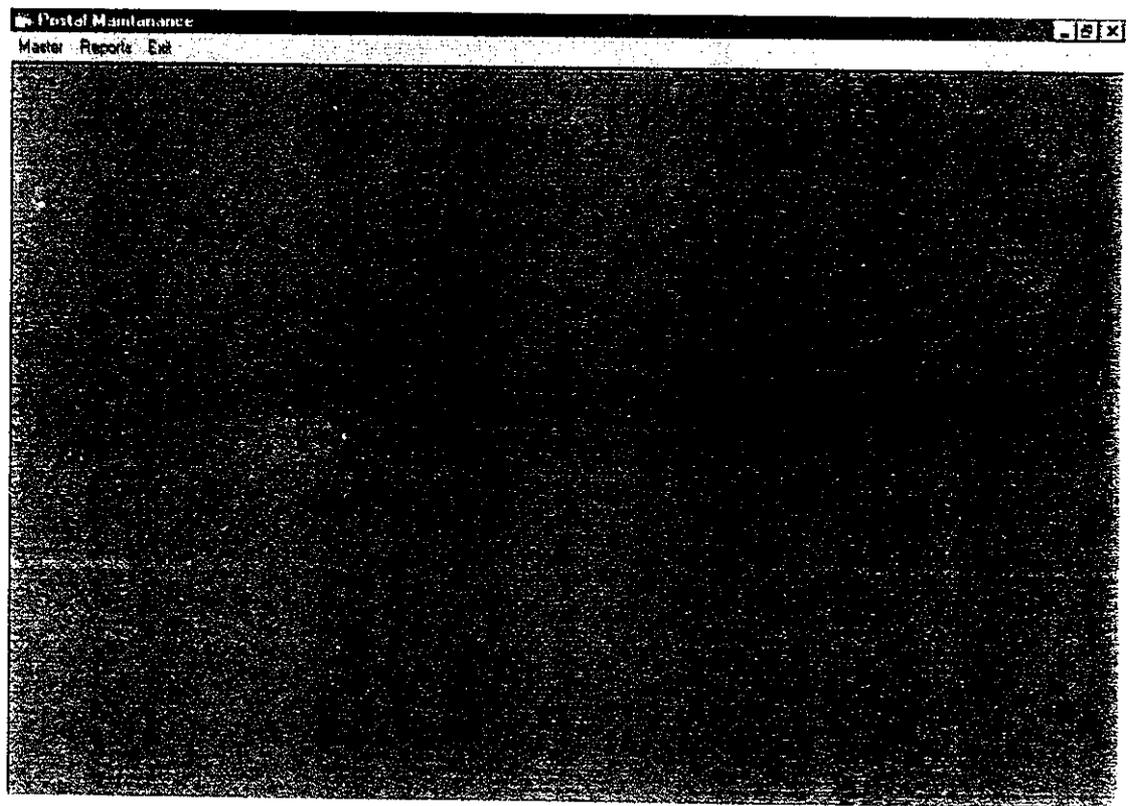
NAME: Inward For Postal Maintenance

PURPOSE: This Screen is used for store the inward mail details.

Inward

This form is Used to Enter the Details About Recived Letters

Serial_Number	Recived_Date 01/03/2002
Reciver_Code	Subject
Sender_Address1	Destination
Sender_Address2	
Sender_Address3	Mode_Of_
Place	Type_Of_Mode

Employee Name | cmbempcode | Date 01/03/2002

Remarks

Add | | | | | View | Exit

NAME: Outward For Postal Maintenance

PURPOSE: This Screen is used for store the Outward mail details

---

OutWard   ✕

This form is Used to Enter the Details About Dispatch Letters

Serial Number		POD Number	

Send Date	01/03/2002	Delivered Date	01/03/2002

From		To	

Subject		Employee Name	cmbempcode

Address1		Type Of	
Address2		Mode Of Transport	
Address3		Courier Name	
Place		Weight	
Destination		Price	
Mode		Remarks	

| Add | Delete | Modify | Save | Clear | View | Exit |

SAMPLE REPORTS

PRONET SYSTEM LIMITED

30/2,Conron Smith Road,GopalaPuram,
Chennai-600 086

Employee Details

Run Date 27/04/2002

Employee Code	Employee Name
1010001	V.PADMA
1010002	S MANIMARAN
1010003	G ARAVINDHA
1010004	"
1010005	P BALAMURUGAN
1010006	V MOHINEESWARI
1010007	SV RAJAGOPALAN
1010008	BV KRISHNARAJ
1010009	V SAKUNTALA
1010010	I VETRIVEL

PRONET SYSTEM LIMITED

30/2,Conron Smith Road,Gopalapuram,
Chennai-600 086,

Book Category Details

Run Date 27/04/2002

Category Code	Category Name	Remarks
ASP	Active Server Pages	Nil
CF	Cold Fusion	Nil
CL	Computer Language	Nil
ERP	Enterprenal Resource	Nil
FB	Finance Books	NIL
FP	Foxpro	Nil
GNS	Genral Non Study	Nil
GS	Genral Study	Nil
HR	HR Books	Nil
JB	Journals	Nil
JV	Java	Nil

PRONET SYSTEM LIMITED

30/2,Conron Smith Road,Gopalapuram,
Chennai-600 086

Book Categorywise Details

Book Code	Book Title	Book category Type	Author	Publisher
Version Number	Year	Price	Attachement	Remarks
Content				
VB_002_01	USING VISUAL BASIC 6.0	visual basic	BOB RESELMAN,RICHARD PEASLEY,WAYNE PRUCHNIA	PRENTICE-HALL
+	2000	395	With Out CD	NIL
ADO,DT PICKER				
VB_003_01	VISUAL BASIC 6.0	visual basic	GARY CORNELL	McGRAW-HALL
5	2000	300	With CD	NIL
RECURSION,GRAPHICS				

PRONET SYSTEM LIMITED

30/2,Conron Smith Road,Gopalapuram,
Chennai-600 086

Book Purchase Details

Run Date   27/04/2002

Vendor Name	Book code	Invoice Number	Invoice Date	Price
AKB Book Shop	FB_001_01	100092	26/02/2002	300
AKB Book Shop	CF_001_01	100156	05/03/2002	450
AKB Book Shop	ERP_001_01	100299	04/04/2002	699

PRONET SYSTEM LIMITED

30/2, Conron Smith Road, Gopalapuram,
Chennai-600 086

Book Issued Details

Run Date   27/04/2002

Employee Name	Book Code	Book Title	Issue Date	Remarks
S MANIMARAN	JV_001_01	JAVA SERVLET PROGRAMMING	26/02/2002	nil
S MANIMARAN	ASP_001_02	ACTIVE SERVER PG 5	03/03/2002	nil

PRONET SYSTEM LIMITED

30/2,Conron Smith Road,Gopalapuram,
Chennai-600 086

Book Return Details

Run Date:27/04/2002

Employee Name	Book Code	Book Name	Return Date	remarks
V.PADMA	SW_001_01	SOFTWARE ENGINEERING	26/02/2002	nil
V.PADMA	ERP_005_02	Materials Management	02/03/2002	Damage In Page 45

PRONET SYSTEM LIMITED

30/2,Conron Smith Road,Gopalapuram.

Chennai-600 086

Book Lost Details

Run Date 27/04/2002

Employee Name	Book Code	Book Title	Book Category Name	Date	Reason
U.RAJKUMAR	C 001 01	Fundamentals of Programming Languages	C	01/03/2002	nil

PRONET SYSTEM LIMITED

30/2,Conron Smith Road,Gopalapuram,
Chennai-600 086

CD Category Details

CD Category Code	CD Category Name	Remarks
MM	Multimedia	nil
SW	Software	nils
UTL	Utility	nil

PRONET SYSTEM LIMITED

30/2, Conron Smith Road,GopalaPuram,
Chennai-600 086

Categorywise CD Details

Run Date 27/04/2002

CD code CD Creater	CdName CD Content	CD Category Name	Licenceno Price	No Of User Remarks	CD Key Number
SW_003_02	MICROSOFT VISUALSTUDIO 6.0	SOFTWARE	1356748	25	QRT32 TY45U BN45M SD345
MICROSOFT	VB.VC++		500.00	nil	
UTL_002_01	HP SOFTWARE DISK	UTILITY	87611989065	25	QW345 R45TY Y1R56 987RH
HEWLETT PACKARE	SOFTWARE		450.00	Nil	

PRONET SYSTEM LIMITED

30/2,Conron Smith Road Ggopalapuram,
Chennai 600 086

System Location Details

Run Date 27/04/2002

System Number	System Located at	System Make	System Type	Remarks
1010001	Cabin + Firstfloor	IBM	PC	NIL
1010002	3rd FLOOR 2nd CABIN	HCL	PC	NIL
1010003	1st Floor Cab1	IBM	SERVER	NIL

PRONET SYSTEM LIMITED

30/2,Conron Smith Road.Gopalapuram.
Chennai-600 086

Purchase Details CDs

Run Date   27/04/2002

VendorName	CdCode	InvoiceNumber	InvoiceDate	price
MICROSOFT	UTL_035_01	18765	20/01/2002	900
MICROSOFT	SW_023_02	18823	19/02/2002	750
MICROSOFT	OS_022_01	19345	29/03/2002	1250

PRONET SYSTEM LIMITED

30/2, Conron Smith Road, Gopalapuram
Chennai-600 086

CD REQUEST FORM

Form no   10000001   **Date**   27/02/2002

Division   ACCOUNTS   **Employee code**   1010001   **Employee Name**   V.PADMA

System no   3rd FLOOR CABIN 1 SYSTEM NUMBER   **Project Code**   NiL

CD Category   SOFTWARE   **CD Required on**   01/03/2002

Purpose   TO INSTALL TALLY

INITIATED BY   **APPROVED BY**   **AUTHORIZED BY**   **ISSUED BY**   **ISSUED DATE**

Employee Signature   Project Leader/Manager   General Manager

PRONET SYSTEM LIMITED

30/2,Conron Smith Road,Gopalapuram
Chennai-600 086

CD Issued Details

Run Date   27/04/2002

Requestor Name	Form No	Cd code	Cd Name	Issueddate	Remarks
P BALAMURUGAN	1010003	UTL_002_01	MSDN LIBRARY	19/03/2002	NIL
P BALAMURUGAN	1010005	SW_010_02	VS FlexGrid Pro (Version 7.0)	23/03/2002	NIL

PRONET SYSTEM LIMITED

30/2, Conron Smith Road,Gopalapuram,
Chennai-600 086

CD Return Details

RunDate 27/04/2002

Employee Name	Cd Code	Cd name	Returndate	Remarks
P BALAMURUGAN	UTL_027_01	CD Lens cleaner	18/03/2002	NIL
P BALAMURUGAN	UTL_002_01	MSDN LIBRARY	21/03/2002	INDEX MISSING

PRONET SYSTEM LIMITED

30/2,Conron Smith Road,Gopalapuram,
Chennai-600 086

CD Lost Details

Run Date   27/04/2002

Employee Name	Cd code	Cd Name	Cd Category Name	Date	Reason
G ARAVINDHA	SW_025_03	Adobe PS 5.0	SOFTWARE	26/02/2002	NIL

PRONET SYSTEM LIMITED

30/2,Conron Smith Road,Gopalaouram,
Chennai-600 086

Mail Outward Details

Run Date 27/04/2002

From DepartMent Subject	EmployeeName ModeType	SendTo Send By	Date CourierName	Address Remarks
MARKETING	JAIKUMAR	GEM GROUP	19/03/2002	30/2 CONRON SMITH ROAD NEAR RESIDENCY DHELI
NIL	PARCEL	COURIER	DIIL	Nil