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FACT

THE FERTILISERS AND CHEMICALS TRAVANCORE LIMITED

(A GOVERNMENT OF INDIA ENTERPRISE)

FACT MANAGEMENT DEVELOPMENT CENTRE

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KALAMASSERY-683 104

COCHIN, INDIA

20.5.1996

Certified that

Mr./Ms. RENJITH KUMAR.P.R.

Student of Kumaraguru College of Technology, Coimbatore

has successfully completed Project Work*/ ~~Inplant Training~~ at our Computer Services Centre(Head Office), Udyogamandal 683 501 during the period 3.1.96 to 20.5.96

*Title of Project Work SHARE ACCOUNTING SYSTEM.

(Office Seal)

CHIEF ADMINISTRATOR

SYNOPSIS

The project entitled **Computerised Share Accounting System (CSAS)** deals with every aspect regarding a Share Certificate. A systematic approach is made towards Share Transfer Registration, Share Certificate Maintenance and Folio Information Maintenance along with generating well formatted reports. This project work is done in INGRES RDBMS in UNIX environment.

The primary aim of the software development is the complete computerisation of Shares Accounting. The control numbers like Folio numbers, Certificate numbers, Transfer numbers and Distinctive series which are of prime importance are generated automatically. This will help to maintain unique control numbers.

The folio information module deals with the addition, modification and view details of a folio. The certificates are maintained in the certificate maintenance module with facilities to consolidate, split and replace certificates. Provision for the issue of additional shares to a share holder is also provided in this module. All aspects with regard to the transfer of a share certificate is processed in the module for the registration of transfer of share certificates. The marketable shares per year and annual initialization of folio number can be modified with the option, annual updation.

To support these activities, reports are generated. Letters to the investors like rejection letter, forwarding letter and acknowledgment letter are automatically generated along with the printing of share certificate and A.G.M. slips. The share register, the transfer register and the nil report are also generated.

CONTENTS

INTRODUCTION

INTRODUCTION

The Organization

The foundation stone for one of the largest public sector company, The Fertilizers And Chemicals Travancore Limited (FACT), Udyogamandal, Cochin, was laid by Sir C. P. Ramaswamy Iyer, the farsighted Diwan of the state of Travancore in 1944 on the banks of river periyar. The first plant (Ammonia plant) was established using a unique wood gasification process. It was then the first large scale fertilizer factory in the entire country.

FACT has since then grown, expanded and branched out in a fantastic manner so that today it is not merely one of the biggest fertilizer enterprises in the country but also a legend of the modern times and a triumph of the public sector.

The major divisions of FACT are Head Office, Udyogamandal division, Cochin division, FACT Engineering and Design Organization (FEDO), FACT Engineering Works (FEW), FACT Research and Development Centre, Petrochemicals division (PD) and Marketing Division.

FACT has a wide ranging varieties of premium products such as Straight Fertilizers (Ammonium Sulphate, Urea), Complex Fertilizers (Factamfos 20-20-0-15, Di-Ammonium Phosphate), Fertilizer Mixtures (NPK mixtures, Rosemix, Vegetable mixture, Garden mixture) and Chemicals (Anhydrous Ammonia, Sulphuric Acid, Nitric Acid, Soda Ash, Caprolactam).

Computer Services Centre

FACT has a fullfledged computer centre which commenced its operation in 1965. A new information network by name FACTNET incorporating Electronic Mail facility was introduced in FACT. In Computer Services Centre (CSC), computer hardwares ranges from PCs to Mainframe. The mainframe currently used is Series 39 running in VME operating system, supplied by ICIM, a subsidiary of ICL computers, U.K. The mainframe with its two level processing (Front End and Back End) provides excellent communication facilities in an ideal platform for data processing and related applications. The other resources include DRS-6000 (Distributed Resource Sharing) cluster controllers, Zeus/486 Mini Computers, Work Stations, Personal Computers and Terminals connected by LAN.

The milestones in Data processing and computerization in FACT can be briefed as follows,

1965 - Unit Record Machines for accounting applications.

1971 - IBM 1401 second generation computer for meeting additional data processing requirements.

1979 - Spectrum 7/31 of DCM data products for FEDO's design and detailed engineering activities.

1981 - IBM 1401 replaced with third generation TDC-316.

1986 - Olympia/32, a mini computer was introduced in Udyogamandal division for integrated materials and maintenance management.

1987 - Olympia/32 was introduced in FEDO and Cochin Division.

1988 - Introduction of CAD based PC-AT's at FEDO.

1989 - Commissioning of ICIM Series 39 fourth generation mainframe computer as the apex data processing support in the three tier information processing.

1990 - FACTNET (Network) introduced in all divisions.

1991 - Introduction of DCM Zeus-486 (Mini computer) at Udyogamandal Division with INGRES RDBMS.

1993 - Introduction of ICIM KRYPTON DRS 6000 L640 SPARC RISC (Super Mini) in the three production divisions with intercommunication facilities using the network.

SHARE APPLICATION

The Fertilizers And Chemicals Travancore Ltd., launched in 1944, first issued shares in 1943 and the then major share holders were the Maharajas and landlords. The company was declared as a public sector firm in 1962 and the Government of India became the major share holder. The other major Share holders were the four southern state governments of Kerala, Tamil Nadu, Karnataka and Andhra Pradesh.

FACT has an authorized Share Capital of Rs. 5,000 crores. In this, Shares for a maximum of Rs. 50 crores, each of face value Rs. 10.00 are allowed to be marketed. Till now, shares for Rs. 35.03 crores have been issued to approximately 7,200 share holders. Out of the total share holders, 98 % belongs to the category of private share holders. The private share holders include Nationalized Banks, L.I.C., Foreign nationals including NRI's and others.

The Company issues two types of Shares - Equity Shares and Preference Shares. The Share Capital is broken up into Distinctive numbers each having a face value of Rs. 10.00, which are grouped together to form Share Certificates. The number of distinctive numbers that can be grouped into a Share Certificate is governed by Company's Act as prevalant and Articles of Association of the Company.

A brief idea of the various share holders and the percentage shares held by each of them is illustrated with the help of the table below

No. Share Holder	Percentage	Share Value (in lakhs)
1. Govt. of India	97.405 %	34,119.450
2. Govt. of Kerala	0.614 %	214.716
3. Govt. of Tamil Nadu	0.072 %	14.711
4. Govt. of Karnataka	0.002 %	0.701
5. Govt. of A. P	0.042 %	25.220
6. G.I.C and Subsidiaries	1.477 %	516.648
7. P.N.B Mutual Funds	0.141 %	49.388
8. Private Share Holders	0.247 %	86.167
Total	100.000 %	35,027.001

SYSTEM ANALYSIS

EXISTING SYSTEM

Shares Accounting System in FACT is presently a manual procedure for keeping all the transaction registers regarding Share Registration, Certificate Maintenance, Folio informations etc.

Objective:

To computerize totally the Shares Accounting System with automatic generation of Transaction register, Nil Reports, Share Certificates, Acknowledgement Letter, Forwarding Letter, and Rejection Letter.

Manual Entry of Data

In the existing manual system, the data regarding with Share registration is captured in to two registers as follows:

1.Register(a) :- The data regarding informations of Share holders are maintained.

2.Register(b) :- The data regarding the day to day share transactions are maintained.

In Share transaction register, if a wrong entry is made, it will be very difficult to correct it, as it may contain many transaction details. Similar is the case with any addition and modification of share holders. To facilitate various sets of distinct share numbers for the same allotment, then separate registers should be maintained for alloting this.

But the disadvantage of this register keeping is that this manually entered serial number is not required later. Multiple transaction entry is also very tedious in this case.

The input requirements for manual Share Accounting System include,

a). Transfer deeds with manually controlled serial numbers.

b). New folio master data with manually controlled folio numbers.

c). Approved informations of transactions

d). Reasons for rejection if any, this includes:

(i) The transfer deed should be affixed with Share Transfer Stamps @ 50 paise per Rs.100/- and part thereof, calculated on the market value of shares on the date of presentation, or the amount of consideration, whichever is higher.

(ii) Transfer deed should be presented within 2 months from the date of presentation before the prescribed authority.

(iii) The following documents should be submitted,

a. Death Certificate of the share holder.

b. Original Share certificate of which transmission is required.

c. Letter of request duly completed and signed by all the legal heirs.

(iv) Declaration of loss of certificate.

(v) An advertisement regarding the loss of certificate in locally circulated English and Malayalam Newspapers is to be given.

Sequence of Activities

a. Acknowledgement Letter should be written for the transfer deeds and certificates for maintenance sent by the investor.

b. Rejection Letters should also be written in cases where the transfer deeds donot fulfill the requisite formalities.

c. Transfer deeds for a particular period should be entered manually and the transaction register should be taken to the board for approval. In cases where transfer deeds involves the investors.

d. Approved transactions by the board are modified by posting the approved status.

Certificate Maintenance

The folio and the trnsaction involving the certificate in question are identified and the transactions are modified by forcing the new certificate number allocated manually.

Problems with the existing system

The existing system is unreliable for the following reasons

a. Duplicate transactions.

b. Invalid folio numbers, Share Certificate numbers and Distinctive numbers.

c. Missing Share certificate numbers,folio numbers and transaction dates.

d. Multiple reference to same certificate number in a single transaction.

Limitations of the Existing System

(i) It is impossible to identify the distinctive series composition and corresponding valid share certificates at any stage.

(ii) Share Certificate maintenance is uncertain.

(iii) Share Certificates that ceases to exist and the consequent share certificates are not linked in any way.

(iv) The transactions are not validated for Share certificates

PROPOSED SYSTEM

The existing Shares Accounting system in FACT is presently a manual procedure . Significant changes have taken place especially after the liberalization policy of the Government of India. In the present system, certain important details are entered manually - the control numbers such as folio no, certificate number, transfer number and distinctive series which has resulted in duplication of data. This creates chaos and confusion with regard to the certificates, especially in the case of share register and transfer of shares. Thus it became inevitable that a new system be developed. The proposed system is to be developed in INGRES RDBMS in UNIX platform.

The new system is proposed to have four major modules which will cover the primary facilities needed by the system. The modules under consideration are as follows :

1. Folio Master
2. Certificate maintenance
3. Registration of Transfer
4. Report Generation
5. Annual Updation.

The proposed system is planned in such a way that all the modules of share application system are completely computerized. The control numbers are sequentially generated automatically. This will help to avoid duplication of the different control numbers.

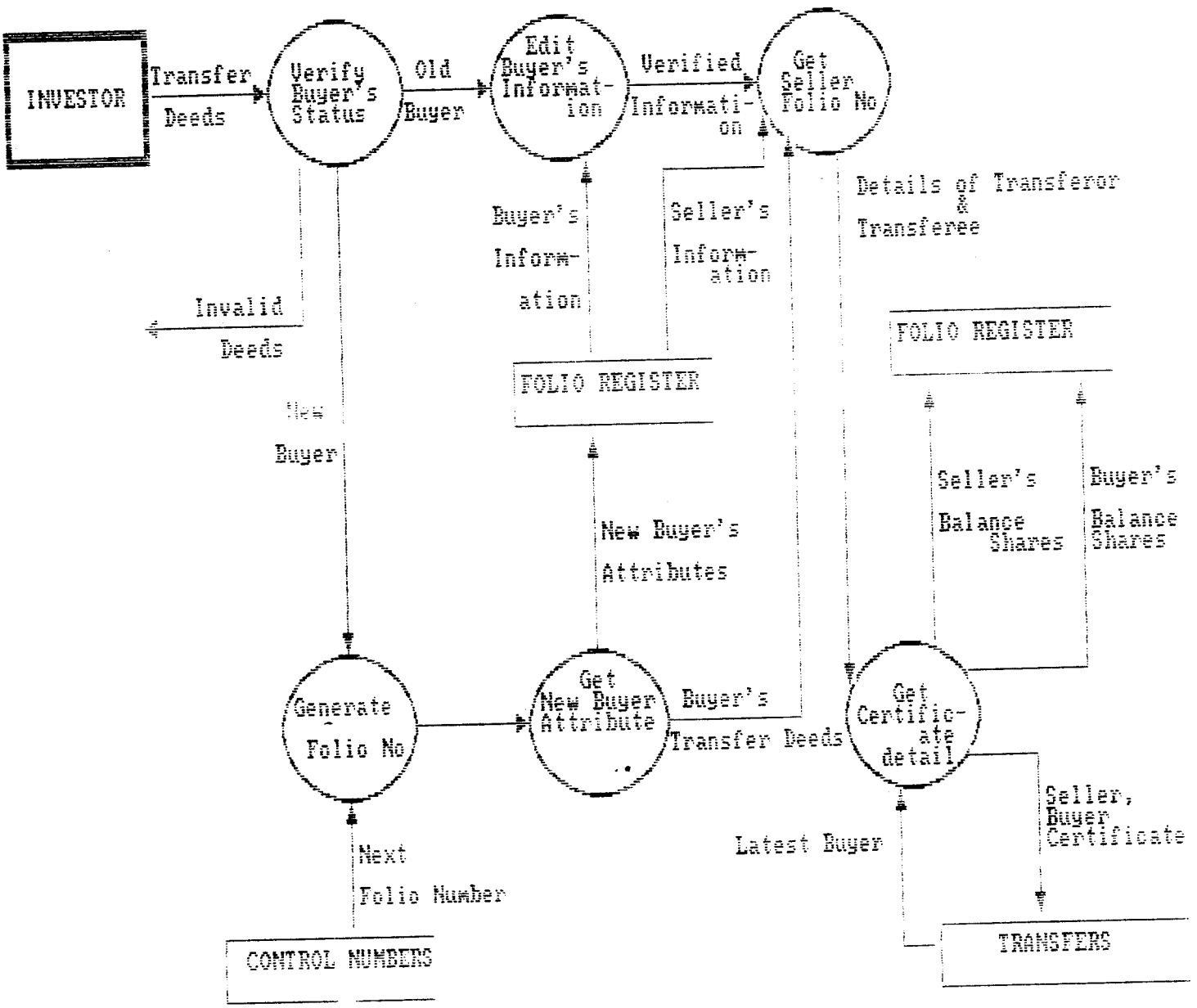
The Folio Master deals with the maintenance of the Folio Registers. Options for Addition of new investors, Modifying or Updating the existing registers and finally, to View a particular folio register have to be incorporated.

In the module for Certificate Maintenance, the share certificates should be maintained as and when the need arises. Many certificates could be easily consolidated into a single one or a single certificate could be split into multiple certificates. Option for renewing an old certificate or replacing a lost one should be provided in this module.

Registration of Transfer deals with the transfer of shares between two investors. A transfer deed is presented to the company and the company after a series of validation checks regarding the certificate will forward it to the sub-committee for approval. The transfer register is updated once the transfer is allowed. All the processes that come across during a transfer are automatically performed.

The report generation module has to be developed with a view to produce easy-to-read, user friendly formatted reports that include various types of letters, share register, transfer list, share certificate printing, nil reports and A.G.M slip. The report generation is considered to be of paramount importance.

The number of shares allotted for the issue in a year varies from year to year. Likewise the folio number, also need to be updated as the first two digits denotes the year of issue of the folio. The final module provide the option to change these two values as and when needed.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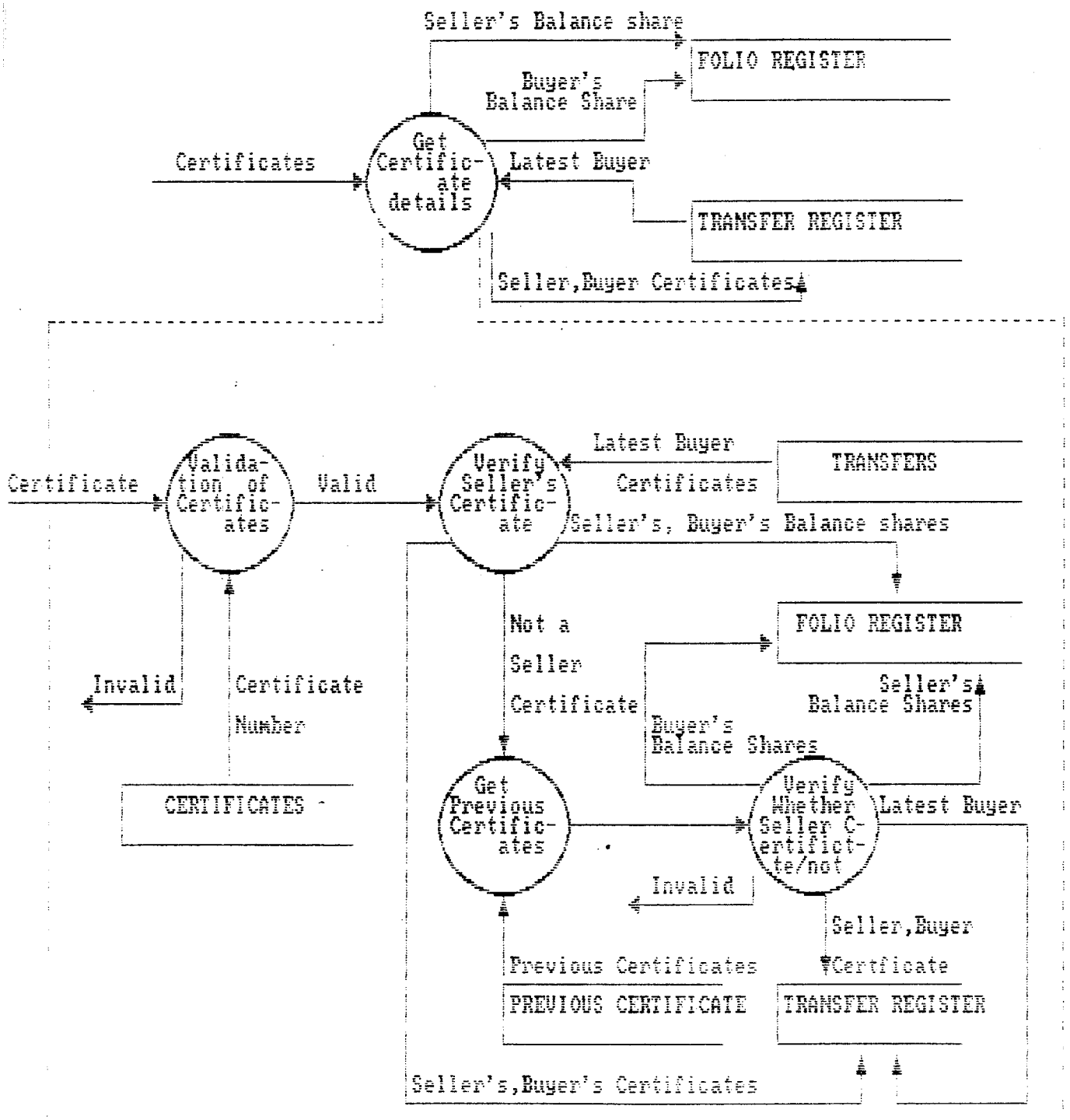
Seller's Balance share
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Seller's,Buyer's Certificates

PROGRAMMING ENVIRONMENT

SYSTEM CONFIGURATION

SOFTWARE

* INGRES Version 6.4

PLATFORM

* SVR4 UNIX Version 4.2

SOFTWARE CONFIGURATION

* Operating System UNIX SVR4 with unlimited user license

  = ANSI C Development System

  = TCP/IP with Utilities

  = Virtual File Supporting System V

  Berkeley UFS, NFS and RFS File types

  = Source Code Control system

  = Screen Editor Vi

  = Configuration Facilities

  = Libraries for frequently used functions

  = System Accounting Tools

  = Profiling Routines

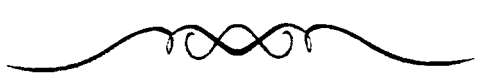
  = Xvision

* INGRES RDBMS Software Version 6.4 with application development environments ABF, Vision PRO, INGRES/NET, ESQL/C, TCP/IP and X.25 Software (16 User License)-1 No.

* INGRES RDBMS Software Version 6.4 with run time environments for 16 users with INGRES/NET, TCP/IP and X.25 Software - 1 No.

HARDWARE CONFIGURATION

* ICIM KRYPTON DRS 6000 L640
  - = SPARC RISC CPU @40 MHz
  - = 128 KB Cache Memory
  - = Floating Point Co-Processor
  - = 64 MB ECC Memory
  - = System Management Console
  - = SCSI 2 Character Controller (* 1)
  - = Ethernet Controller with OSLAN kit (* 1)
  - = 16 Port Asynchronous Controller (* 3)
  - = X.25 4 Port Controller(*1)
* 1.2 GB Fixed Disk Drive (* 2)
* 150 MB Cartridge Tape Drive (* 1)
* 650 MB Rewritable Optical Disk with Media (* 1)
* OSG X.25 Gateway with OSLAN and Network Configure or Monitoring kit (* 2)
* VT 220 Compatible direct terminals (* 44)
* PC-386 SX terminals (* 15)
* Terminal printer TVSE MSP-145 (* 12)
* Heavy Duty Dot Matrix Printer TVSE 9 Model CI-5000 (* 1)



SELECTION OF SOFTWARE

When the integrity and accessibility of a company's data resources are top priority, INGRES is the best relational database management system one can find. Acclaimed for its superior technology by major analysts, INGRES has been a RDBMS leader for over ten years introducing a pioneering breakthrough in SQL based database architecture, application development tools and open connectivity solutions.

INGRES supports all major software platforms including more than 40 versions of UNIX and DEC VAX/VMS. It is the most preferred database for open system strategies that includes UNIX, VMS, MVS and PCs. It also offers a complete array of highly efficient development and end-user tools specifically designed for use on IBM PCs and Macintoshes and larger systems.

With strong commitment to open system technology and industry standards, INGRES provides the most capable and comprehensive data management solutions available today, along with full protection of the existing investment in computer hardware and software.

There was no standard data access language prior to SQL. The SQL relational database interface was developed by IBM in the late 1970s. The ANSI and the ISO has adapted INGRES as the standard language for relational database management systems access. SQL is widely accepted as the standard language for data definition, data manipulation, data protection, data transaction and data control.

Applications written in SQL can be easily moved from one computer platform to another. Software vendors have added their own non standard extensions to the SQL definitions. It also supports 4GL and embedded C language for SQL codes.

INGRES includes several powerful application development and generation tools. These tools provide complete facility that system designers and developers can use to design, develop and test software products, whose engine is the INGRES relational management system.

Professionally, INGRES is a comprehensive operating system environment that packs the power of a mainframe RDBMS into a mini computer. It provides a set of functional programs that the user can use as a tool to build data structures and perform tasks. Because the applications developed on professional INGRES are completely portable to other versions of compilers, the user can create a complex application on a single user environment and then move it into a multiuser platform.

INGRES manages data in a database on the basis of relations. In INGRES, data are stored in tables equivalent to files in conventional programming languages. Each table consists of several related data and an application may contain more than one such table. INGRES consists of the following tools each of which may be accessed independently.

INGRES TOOLS

1. TABLES

2. FORMS

3. JOINDEF

4. REPORTS

5. APPLICATIONS

6. QUERIES

A table is a two dimensional structure made up of rows and columns. Each row in a single record column consists of fields. The number of rows are limited only by disk space. Tables can be created either using SQL or using the 'INGRES TABLE UTILITY'.

QBF is an acronym for Query By Forms. It is basically a forms based tool used to retrieve, update and append data in a particular table. The data manipulation capabilities of QBF are less powerful and also less wide ranging compared to those of SQL or QUEL. Forms can be created using 'VIFRED' tool of INGRES.

Forms created through JOINDEF can be run from QBF's various options. For data to be retrieved from multiple tables, it becomes necessary to establish a relationship between the tables. JOINDEF subsystem of INGRES QBF allows a relationship to be defined between tables.

Report By Forms (RBF) is an interactive visual oriented forms based module for creating reports from a database. A report can be designed in INGRES RBF for only a single table. For reports requiring data from more than one table, a view has to be defined using SQL. A view is a template which allows RBF to treat the fields occurring in different tables as they occur in a single table.

Application By Forms (ABF) uses standard INGRES forms and menus to access a database table and perform a series of operations. Applications are composed of a set of defined objects such as frames, forms, procedures and tables. An application in INGRES consists of one or more modules termed as Frames. A frame has two components : (i) a form and (ii) INGRES 4GL code containing the set of menu items.

Interactive Structured Query Language (ISQL) is a tool for organizing, managing and retrieving data stored in a data base. ISQL or SQL works with one specific type of database called Relational Database. When the need to retrieve data from the database arises, the SQL language makes the SQL request.

The RDBMS processes the SQL request, retrieves the requested data and returns it. Other query languages supported are QUEL and QBF.

INGRES IN MULTIUSER SYSTEM

If you are working with a local database, the INGRES tools and data manager as well as the database reside on the PC. Through the INGRES/NET the PCs sophisticated work station lets you retrieve and update data on other computers just as if that data were on the PC. In such cases, remote database is accessed using INGRES tools on the PC with data manager residing on another computer.

INGRES IN APPLICATION DEVELOPMENT

INGRES forms is an excellent user friendly tool for quickly creating forms. The user can start with extremely simple default forms or use the full screen painting function to create detailed screens for accessing and updating multiple tables for controlling and editing data as it is entered. Rather than forcing the user to program in the procedural language that comes with the product, INGRES provides pre-compilers that enable the user to incorporate SQL commands into their favourite procedural language. With the INGRES menu, the user can link all forms, queries and programs in an easily maintained secure menu structure. The user is free to include other package and operating system commands too.

ADVANTAGES OF INGRES

INGRES has more flexibility than any other RDBMS product. In contrast to 3GL which requires extensive programming experience, the INGRES 4GL allows the user to create forms based application with minimal knowledge. With INGRES 4GL, the user can design the overall flow of an application in a series of easy to use and consistent menus. Again, this 4GL application needs fewer lines of code than for conventional programs. INGRES stores the source file in a directory that we designate and incorporates it with compiled version into system catalogs. Any time we edit the source file, INGRES automatically recompiles it before the application is run again.

INGRES

Introduction

INGRES is one of the world's major Relational Data Systems. The original development work on the database was done at the University of California by Prof. Michael Stonebraker. INGRES is divided into two parts using Client-Server architecture. These were known as Front-Ends the Back-Ends in earlier INGRES releases. The Front-End constitutes the INGRES APPLICATION DEVELOPMENT SYSTEM and the Back-End is the INGRES DATA MANAGER. The receives instructions from the client in the form of statements. It decides how to execute the SQL using a built-in optimizer, reads the database and returns any data back to the client. Even when on the same machine, Client and Server are two different processes.

INGRES software is split into two types of processes : . .

The Client (application) which talks to the user and the Database Server which talks to the database. They communicate with each other using SQL. INGRES net is a facility which allows the client and server processes to run on different machines which may be running on different operating system.

INGRES offers a transaction undo facility. So all transaction takes place in a RAM buffer. It writes the content of this RAM buffer back to permenant storage media, when the user gives a 'commit'. Database consists of several operating system files. Each table is stored as a seperate operating system file. The application developer

can choose the access method such Heap, Hash, B-Tree, Isam etc. The operating system password restricts the access.

INGRES provides powerful concurrency control through locking. Locking is purely automatic. Deadlocks are detected automatically and one of the transaction involved is rolled back.

The data types supported in INGRES are Character, Varchar, Float (8 bytes or 17 decimal precision), Integer1 (1 byte), Integer2 (2 bytes), Integer4 (4 bytes / upto 10 digits), Date and Date-Time (12 bytes).

Definition

INGRES is called a **R**elational **D**ata **B**ase **M**anagement **S**ystem (RDBMS) because of the way it handles the information. the term "RDBMS" is individually taken, it can be explained as

* INGRES is "Realtional" because it stores the data in tables that makes it easier for user to see how various pieces of information relate to each other.
* A "DataBase" is a set of related informationthat INGRES stores in a computer. The basic unit of information that a database stores is termed as Data.
* "Management" means that INGRES takes care of the data. It puts the data into the concerned database.
* INGRES is a "System" because one can combine different components to organize and access their datain a way that works best.

Pros and Cons of RDBMS

Advantages :

1. Simplicity of data structure of change and of language.
2. Built-in data integrity.
3. Distribution of data.
4. Long term stability of systems and skills.

Disadvantages :

1. SQL is none of a communications protocol than an end user language. Need additional application development tools.
2. Recovery mechanisms have often been primitive.
3. Data integrity and key rules are not fully implemented.

Query and Forms Editing Systems

A choice of query by way of the Menu will give access to software which will make available the content of the table. A default form will be created and used while the system will offer options of Retrieval, Append or Update. This simple approach will handle basic online transactions, but can be extended very easily.

(a) A user designed form can be used. This is produced by the forms option of the menu, which allows data fields to be added to a form, removed, moved, coloured etc.

(b) Instead of handling just one table, Query can be persuaded to deal with the Join of several tables.

Application Development Environment

1. A query language based on form filling suitable for both data processing staff and end users. This should allow updating under suitable control.
2. A report writer.
3. An Interactive system builder including the ability to design forms through a painting process.
4. Simple use of a RDBMS.
5. Provides access to various application tools.

Producing Reports

In Report programs simple listings can be very easily produced. More complex listings including totals, sorting, counts etc. can be created using RBF.Greater variations of output can be obtained by writing a report writer program and if we require total flexibility, an embedded SQL program can be written.

Application Code

Simple transactions in an application system can produced using Query or Report, but more complex requirements will need user written code and indeed even the simple transactions may need linking together. There are two ways of achieving this :

a. ESQL which besides giving the full power of the 3GL and of SQL, can call Query or Report as required.

b. The 4GL applications-by-forms (ABF). ABF like ESQL can call Query and Report.

CHARACTERISTICS OF UNIX OPERATING SYSTEM

Operating System

The UNIX Operating System was poineered by Ken Thomson and Dennis Ritchie at Bell Laboratories in the late 1960s. One of the primary goals in the design of this operating system was to create an environment that is capable of promoting efficient program development. Also the operating system was small, memory efficient and easier to maintain.

While the first UNIX system was developed for a particular computer, the DEC PDP-7, it was shortly thereafter that a version was developed that could be easily ported to different computer systems. This was accomplished by designing the operating system with out making many assumptions about the particular architechture of the computer and also by writing most of the operating system in higher level programming language C. Today the unix system can be found running on a multitude of computer systems, ranging from small personal computers to large mainframe systems. The basic components of the unix operating system are :

* Kernal
* File System
* Shell

(1) The Kernal

This is a program that allows more than one person to use the computer at the same time. The Kernal shares the resources amoung these users, allowing each a small slice of processor time. It performs all the input/output operations.

(2) The File System

A file system is a collection of files stored on a strorage device, usually a disk. The organization of unix file system is hierarchical and has three types of files

* Directories
* Special Files
* Ordinary Files.

(3) The Shell

The shell is the unix system's command interpreter. It is a program that reads the lines typed-in at a terminal and performs various operations depending on what is typed in. The shell is the interface between the end user and the kernal.

There are different shell programs available today among which the most popular ones are the C- shell, the K-Shell, and the Bourne Shell.

(5) Time Sharing : Time sharing allow several users to run programs on different

simultaneously approach a problem on different levels, or at the same level, when the need arise.

(6) Security : The operating system invokes security that protects one user from another and the operating system from all users. Its main function is to make sure only authorised users can gain access to the computer and its data and that users do only things they are authorised to do. As time sharing is available in the operating system, a large degree of security is provided.

(7) Communication : Communication refers to the ability of one computer to comunicate with other computers and terminals to transfer programs and/or data.

(8) Window Manager : Window Manager that is available within the DRS enables the user to gain access to a system which is user friendly. This permits the user to perform the maximum possible functions within single screen. As four windows appear on a single screen, the user can thus move from one window to another, with each window offering various facilities which can be utilized to the hilt. The most distinct manipulations possible are the ones involving the menus - creation, deletion and edition of menus are done with ease.

UNIX SVR 4.0

Features :

* Unification and Convergence
* ABI (Application Binary Interface)

- Add/Remove a port moniter

- Start/Stop a port moniter

- Enable/Disable a port moniter

Service Access Facility (SAF) :

* Single, Consistent access mechanism to UNIX system services from outside the machine
* Initialization files provide consistency for port users
* New port moniters and services can be installed by users and applications

Directory Layout :

* Physical organization of files and directories
  - Facilitates sharing in networked environments
  - Seperates differing subtrees
  - Rationalize add-on package installation
* Logical organization of directory hierarchy is preserved for compatibility
* Three Categories - Machine Private, Architechture Dependent, Architechture Independent

* Command Subsets and Interfaces
* File Systems and Operations
* Process Management
* System Administration
* User Interface

Process Types :

* Time Sharing (Default)
* Real Time

Process Architechture :

* Multi-Tasking, Multi-User timesharing system
* Demand paged virtual address space
  - Efficient memory utilization
  - Supports process sizes exceeding physical memory
* Job control support
  - Ability to stop and restart a group of processes
* Mapped Files
* Upward compatible with previous System V releases

Service Access Controller (SAC) :

* Invokes and Manages all port moniters
* Allows administrator to

DISTRIBUTED RESOURCE SHARING SYSTEM (DRS)

Software Management

A number of DRS/NX tools were designed to make it easier to manage programs. "make" and "Source code control system" (SCCS) are two such main tools. "make" provides a method for maintaining up-to-date versions of programs that consists of a number of files that may be generated in a variety of ways. It keeps track of the commands that create files and the relationship software files. The basic operations of make is to

(1) find the target in the description file.

(2) ensures that all the files on which the target depends, the files needed to generate the targetexist and are up-to-date.

(3) (re)create the target file if any of the generaters have been modified more recently than the target.

The operation of "make" depends on its ability to find the date and time that a file was last modified. SCCS is a list of programs that we can use to talk evolving versions of files, text files as well as source files. It takes custody of a file and, when changes are made, identifies and stores them in the file with the original source code and/or documentation. As other changes are made, they too are identified and retained in the file.

A 'delta' is a set of changes made to a file under SCCS custody. To identify and keep track of a delta, it is assigned an SID (SCCS IDentification) number. The SID for any original file turned over to SCCS is composed of release number 1 and level number 1, stated as 1.1. By default SCCS assigns SID's automatically.

Program Development

Two tools are designed to make it easier to build C programs. 'lex' and 'yacc' generates C language modules that can be useful components of a larger application. 'lex' generates a C language module that performs lexical analysis of an input stream. The lexical analyser scan the input stream for sequences of characters (tokens) that match the regular expression specified. When the token is found, an action which is specified is performed. 'yacc' generates a C language module that parse the tokens that have been passed to it by a lexical analyzer. The parser describes the grammatical form of the tokens according to the rules specified. And when the particular grammatical form is found, the action specified is taken.

Data Validation Tools

DVT helps any administrative programs that are part of software package. They helps to standardize the appearence of administration interaction in the DRS/NX environment and also simplify development of scripts and program requiring administrative output.

There are two types of data validation tools,

* Shell commands.
* Visual tools.

The shell commands perform a series of tasks; the visual tools perform a subsection of full series. The tasks are,

(1) Prompting a user for input.

(2) Validating the answer.

(3) Formatting and printing a help message when requested.

(4) Formatting and presenting an error when validation fails.

(5) Returning the input of it passes validation.

(6) Allowing user to quit the process.

KRYPTON DRS 6000 - Fundamental Elements

- Operating System
- Processor
- Architecture Design

KRYPTON DRS 6000 - Development Tools

Languages

- C
- COBOL/2
- FORTRAN
- Pascal
- BASIC
- 4GLs/RDBMS
- Ingres
- Informix
- Oracle
- Others (Unify,Adabas,Accell,Seachamge).

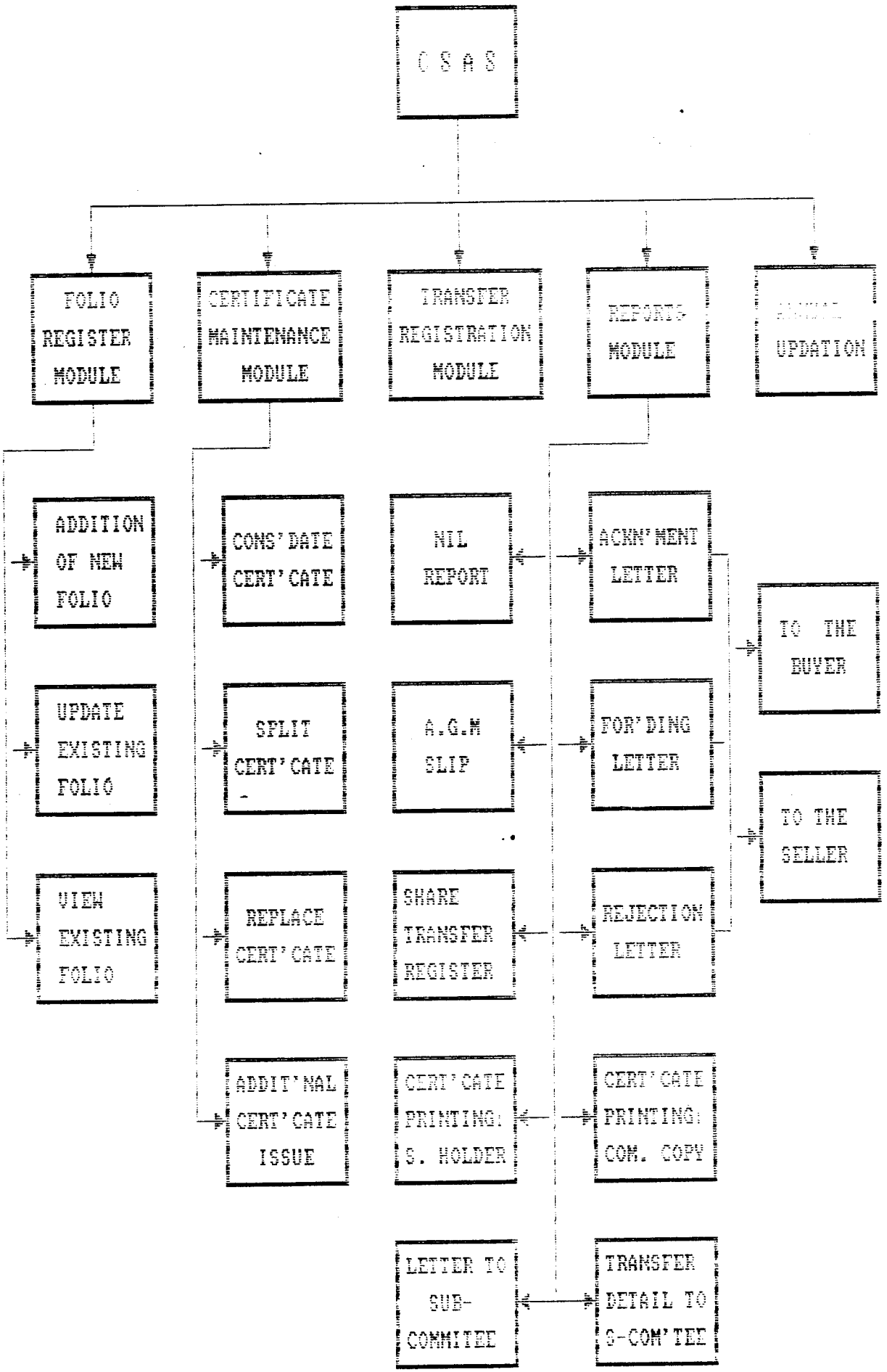
KRYPTON DRS 6000 - Networking & Communications

Facilities

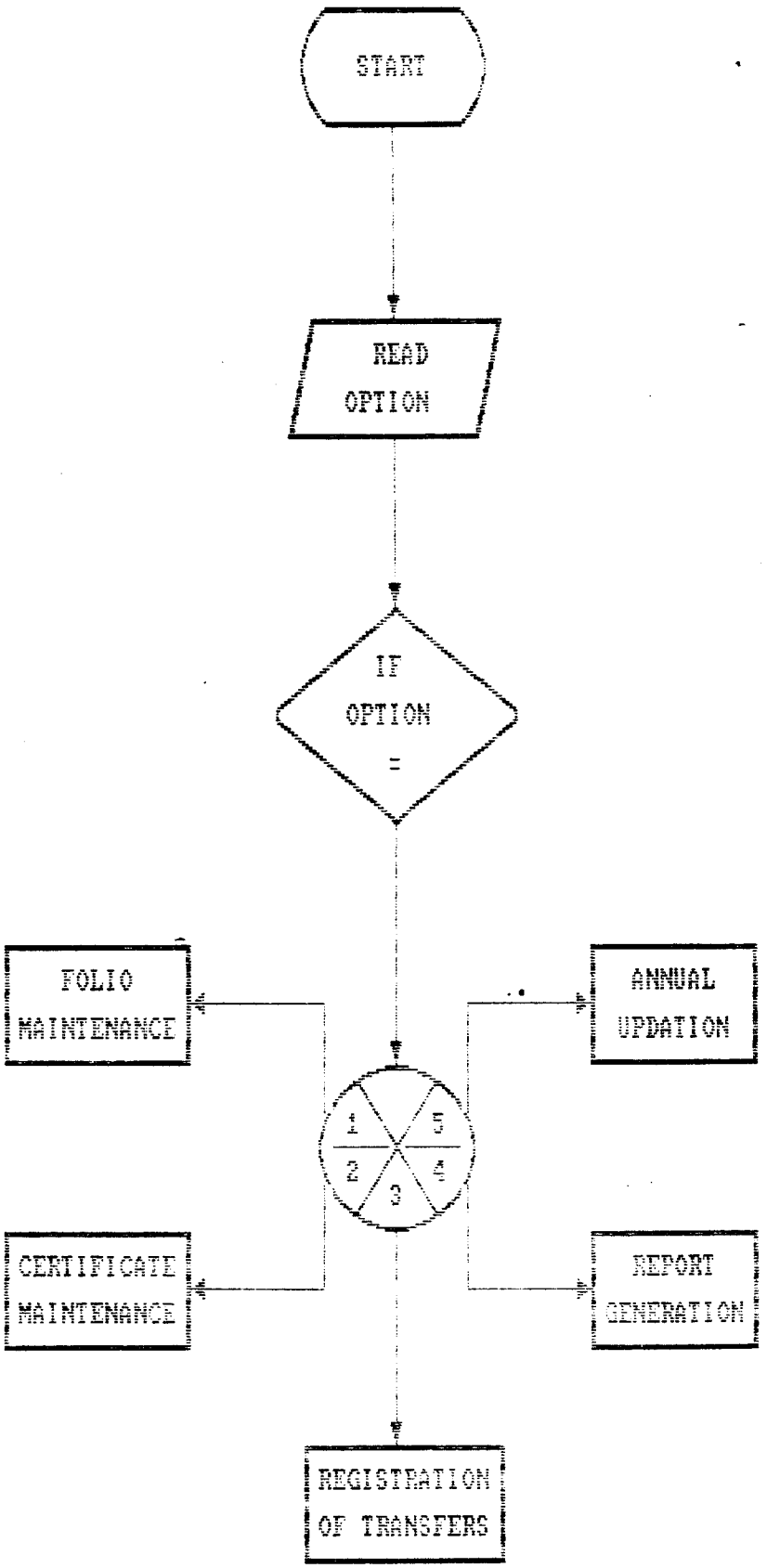
- TCP/IP (OSLAN & Ethernet)
- (1980 & 1984)
- ICL IPA (IVDP/FTF/ADI over OSLAN/X.25)
- IBM SNA 3270 (over SDLC / X.25)

SYSTEM DESIGN

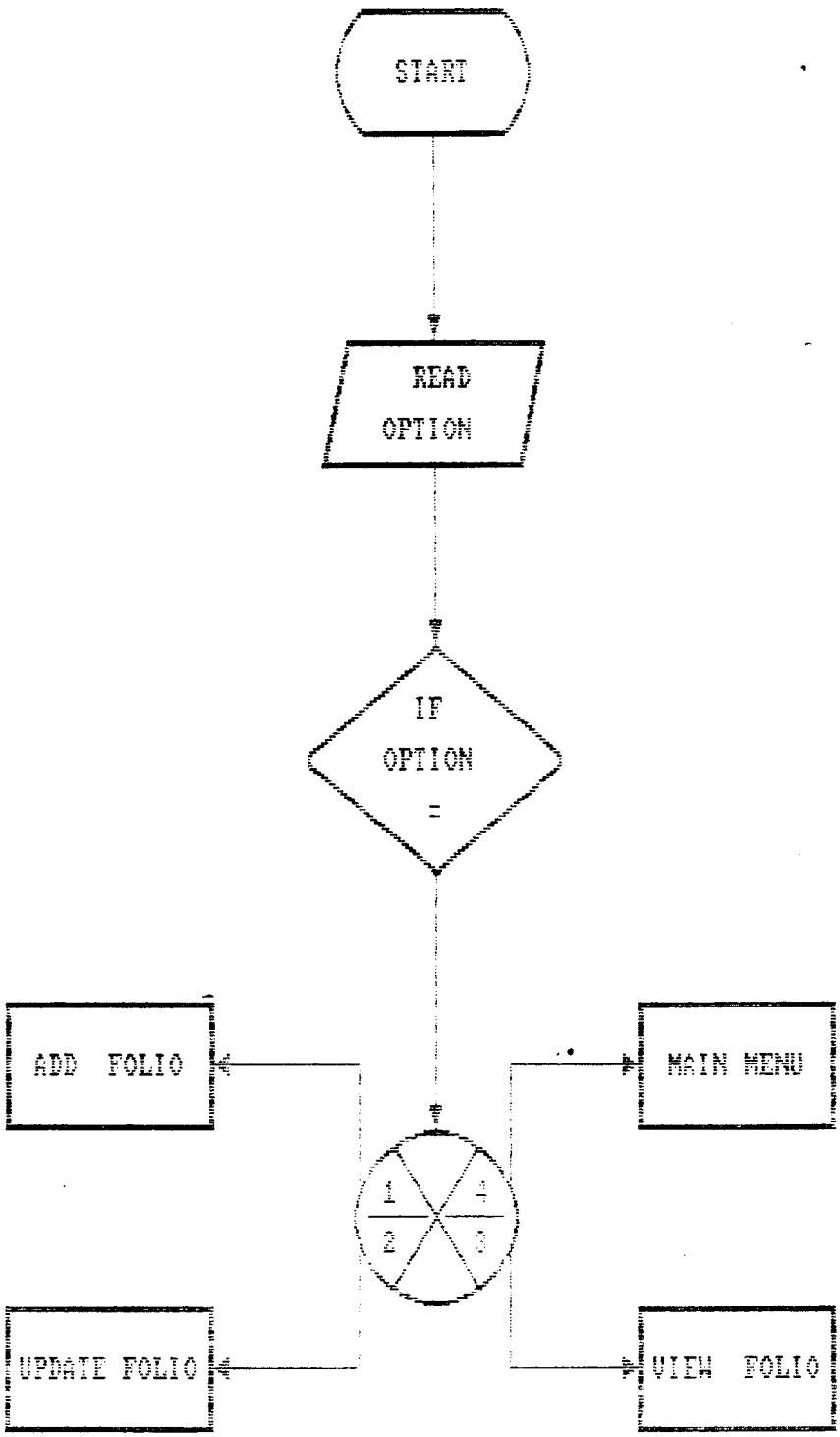
SYSTEM FLOW CHART



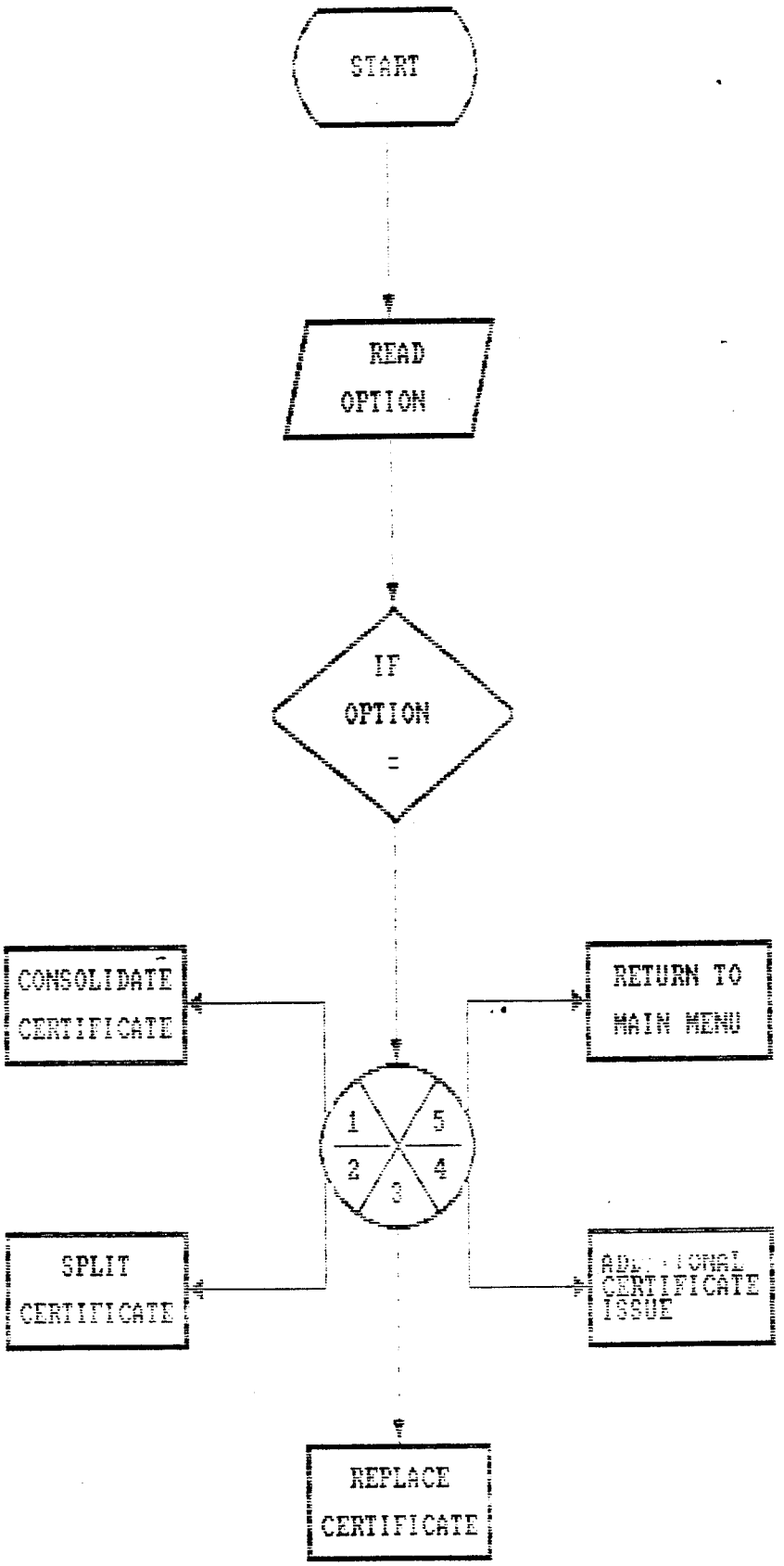
MASTER MENU


START
READ OPTION
IF OPTION =
FOLIO MAINTENANCE
ANNUAL UPDATION
1
5
2
4
3
CERTIFICATE MAINTENANCE
REPORT GENERATION
REGISTRATION OF TRANSFERS

FOLIO MENU


START
READ
OPTION
IF
OPTION
=
ADD FOLIO
MAIN MENU
1
4
2
3
UPDATE FOLIO
VIEW FOLIO

CERTIFICATE MAINTENANCE MENU



DATABASE DESIGN

A database is a collection of stored data organized in such a way that all the user data requirements are satisfied by the database. INGRES provides extra optional facilities aid and control each users access to use the database for adding, modifying and retrieving data and facilitates data independence, integrity and security. In the application to computerize the share accounting, the most important field is the certificate_no.

FILE DESIGN

In Computerized Share Accounting System, the following tables are used

Table Name: PROJ_FOLIO

Field Name		Description
folio_no	-	Folio Number
initial	-	Initial of Name
name	-	Name of Share holder
add1	-	Address of Share holder
add2	-	Street
add3	-	City
add4	-	State
add5	-	Pincode

jt1	-	Joint Share holder 1
jt2	-	Joint Share Holder 2
occupation	-	Occupation of Share Holder
father	-	Father/Guardian of Share Holder
zone	-	Zone(9 divisions)
factyn	-	FACT employee or not
balance_shares-		Balance Shares
start_date	-	Issue date
ceased_date	-	Date which no of shares ceases to 0

Table Name : PROJ_CERT_DIST_CERI

Field Name		Description
certificate_no	-	Certificate Number
distinctive_from	-	Distinctive series of numbers from
distinctive_to	-	Distinctive series of numbers to

Table Name : PROJ_CERTIFICATE

Field Name		Description
certificate_no	-	Certificate Number
issue_date	-	Issue Date
ceased_date	-	Date which no of shares ceases to 0
no_of_shares	-	Number of Shares

Table Name : PROJ_CONTROL_NOS

Field Name		Description
folio_no	-	Folio Number
certificate_no	-	Certificate Number
transfer_no	-	Transfer Number
balance_share	-	Balance Shares

Table Name : PROJ_PREVIOUS_CERTI

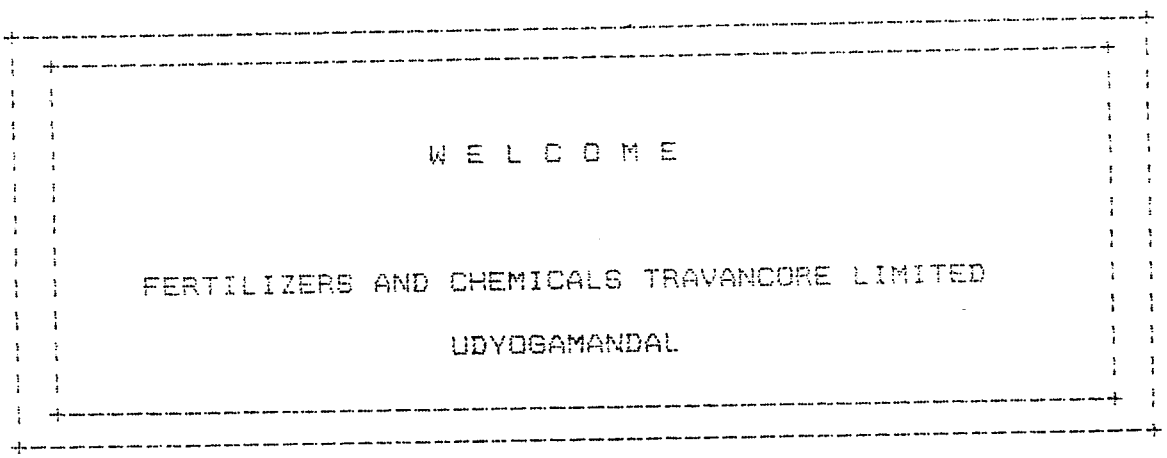
Field Name		Description
certificate_no	-	Certificate Number
previous_certificate_no	-	Previous Certificate Number

Table Name : PROJ_SEQUENCE

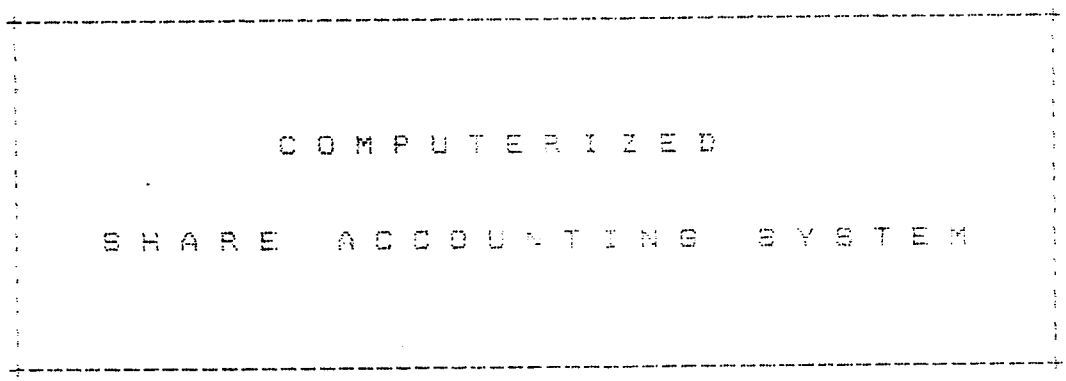
Field Name		Description
folio_no	-	Folio Number
certificate_no	-	Certificate Number

Table Name : PROJ_TRANSFERS

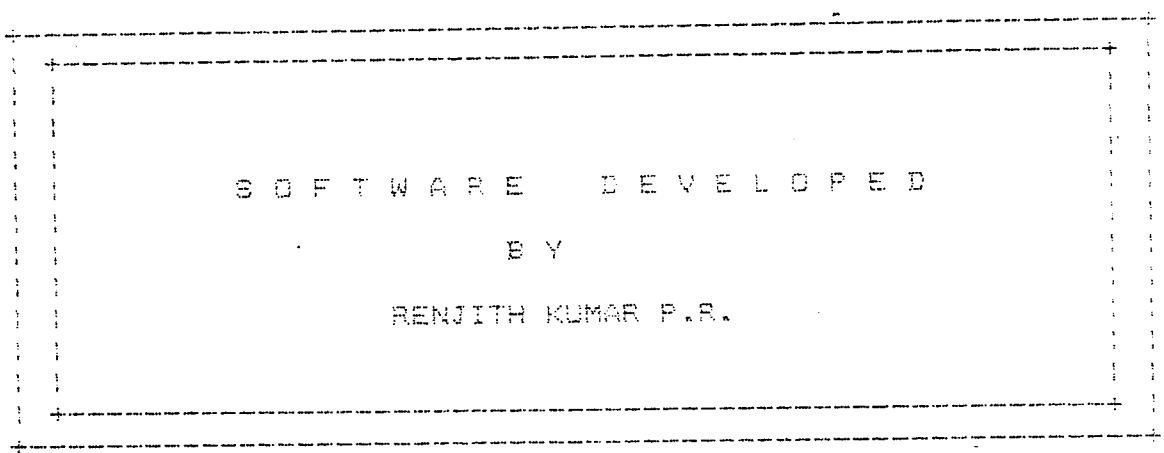
Field Name		Description
certificate_no	-	Certificate Number
transfer_no	-	Transfer Number
seller_folio_no	-	Seller Folio Number
buyer_folio_no	-	Buyer Folio Number
registration_date	-	Registration Date



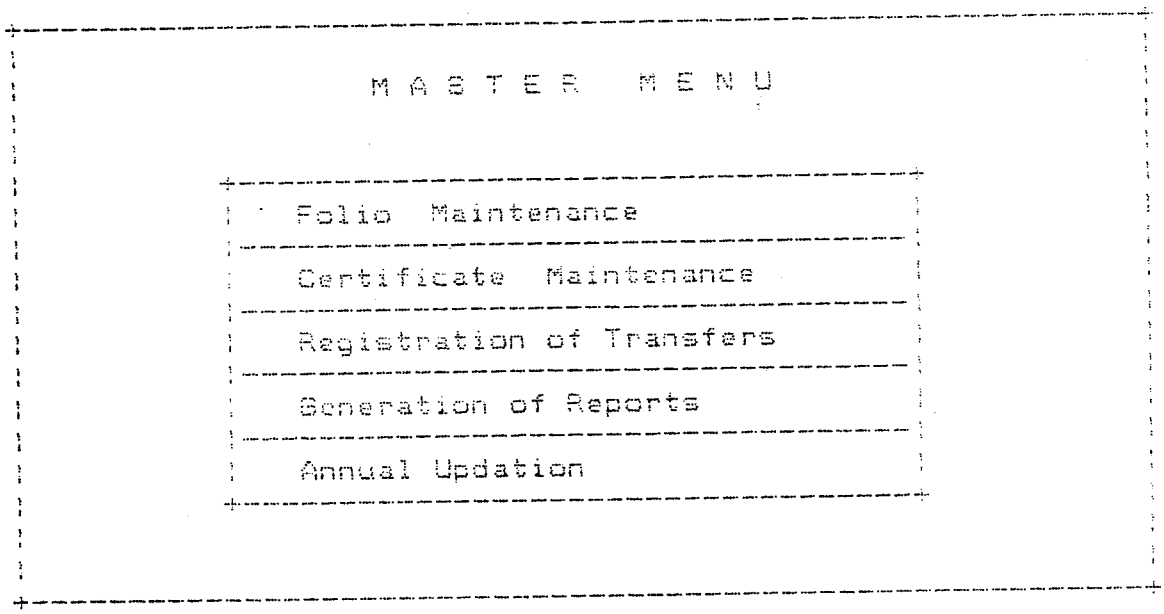
Form name: proj_welcome
Form owner: project
Number of fields: 0
Number of trim strings: 5
Date first created: 1996_03_23 03:44:21 GMT



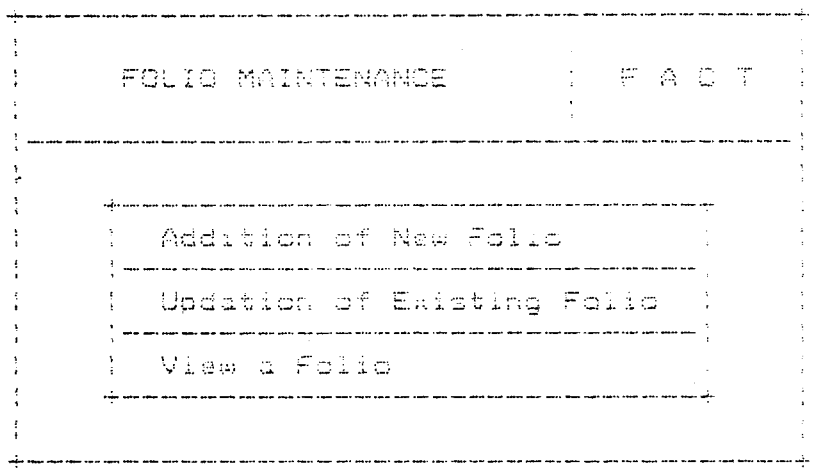
Form name: proj_welcome1
Form owner: project
Number of fields: 0
Number of trim strings: 3
Date first created: 1996_03_23 04:05:41 GMT



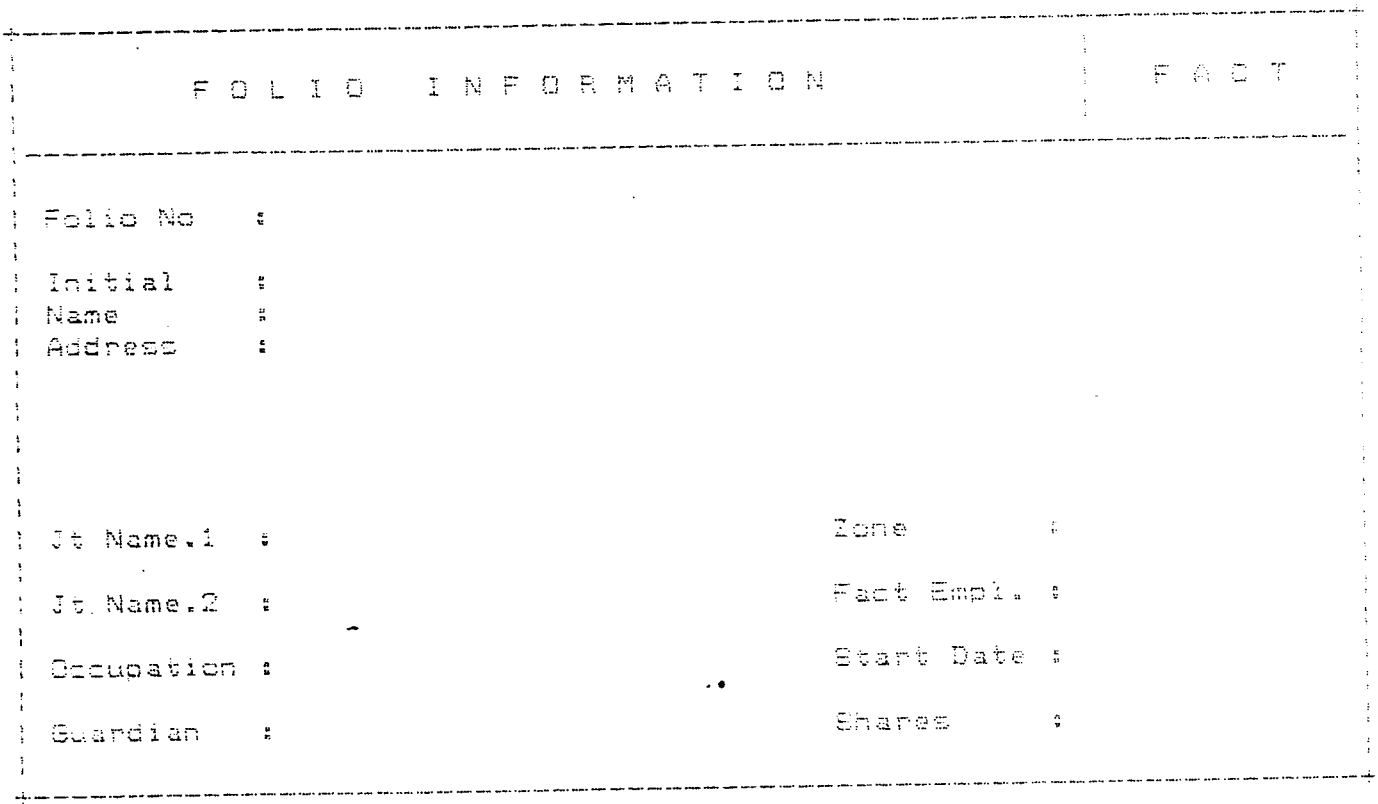

```
Form name: proj_welcome2
Form owner: project
Number of fields: 0
Number of trim strings: 3
Date first created: 1996_05_16.
```



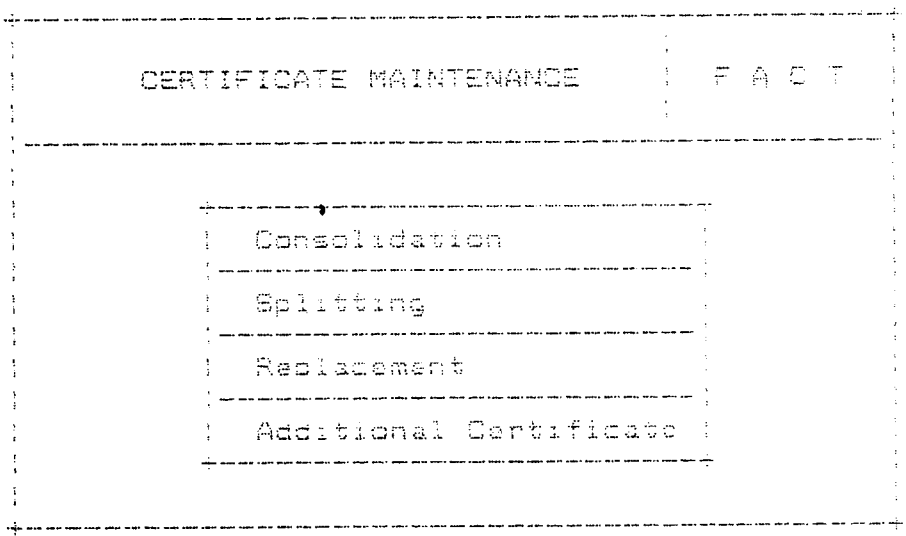
Form name: proj_mainmenu
Form owner: project
Number of fields: 1
Number of trim strings: 2
Date first created: 1996_03_22 04:32:53 GMT



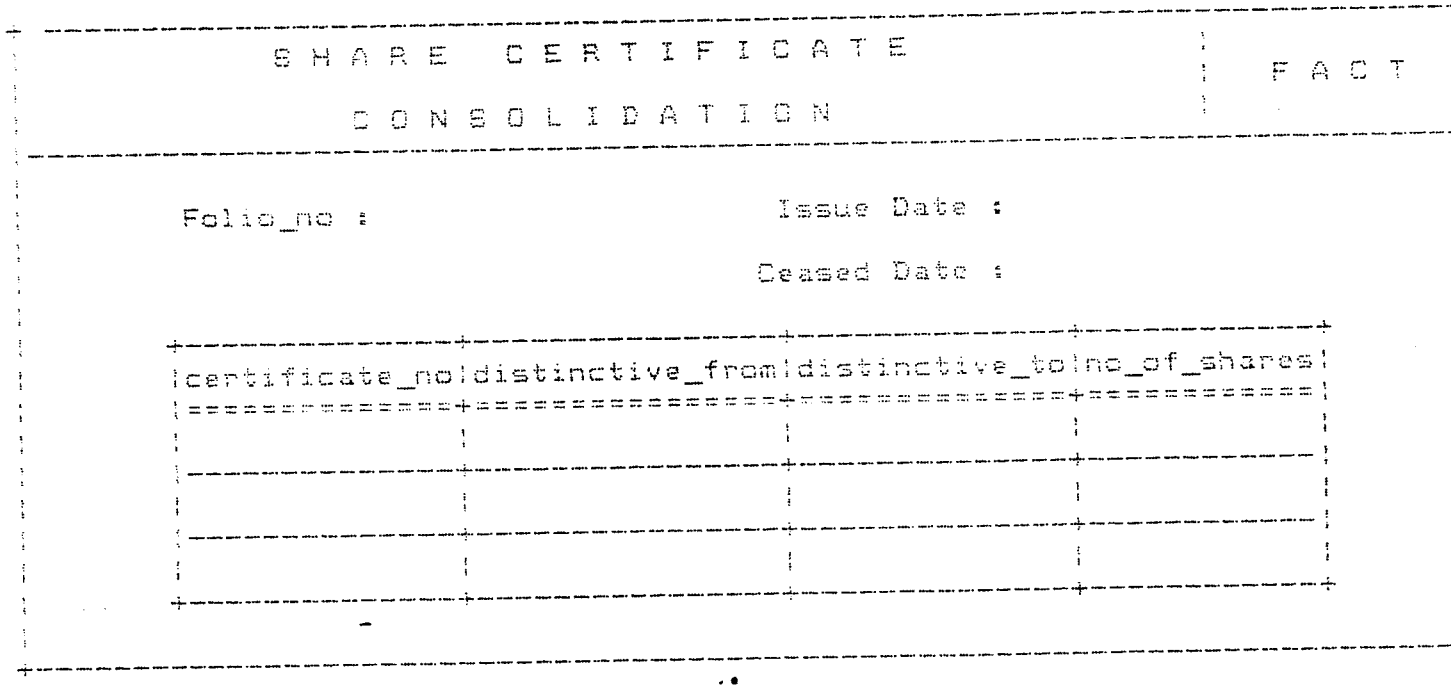
Form name: proj_menu2
Form owner: project
Number of fields: 1
Number of trim strings: 5
Date first created: 1996_03_29 08:27:40 GMT




```
Form name: proj1_frm
Form owner: project
Number of fields: 16
Number of trim strings: 17
Date first created: 1996_01_27 06:05:17 GMT
```




```
Form name: proj_menu3
Form owner: project
Number of fields: 1
Number of trim strings: 5
Date first created: 1996_03_28 08:30:32 GMT
```



Form name: proj2_frm
Form owner: project
Number of fields: 4
Number of trim strings: 9
Date first created: 1996_02_20 06:03:19 GMT

CONSOLIDATION OF SHARE CERTIFICATES | F A C T

Folio No :

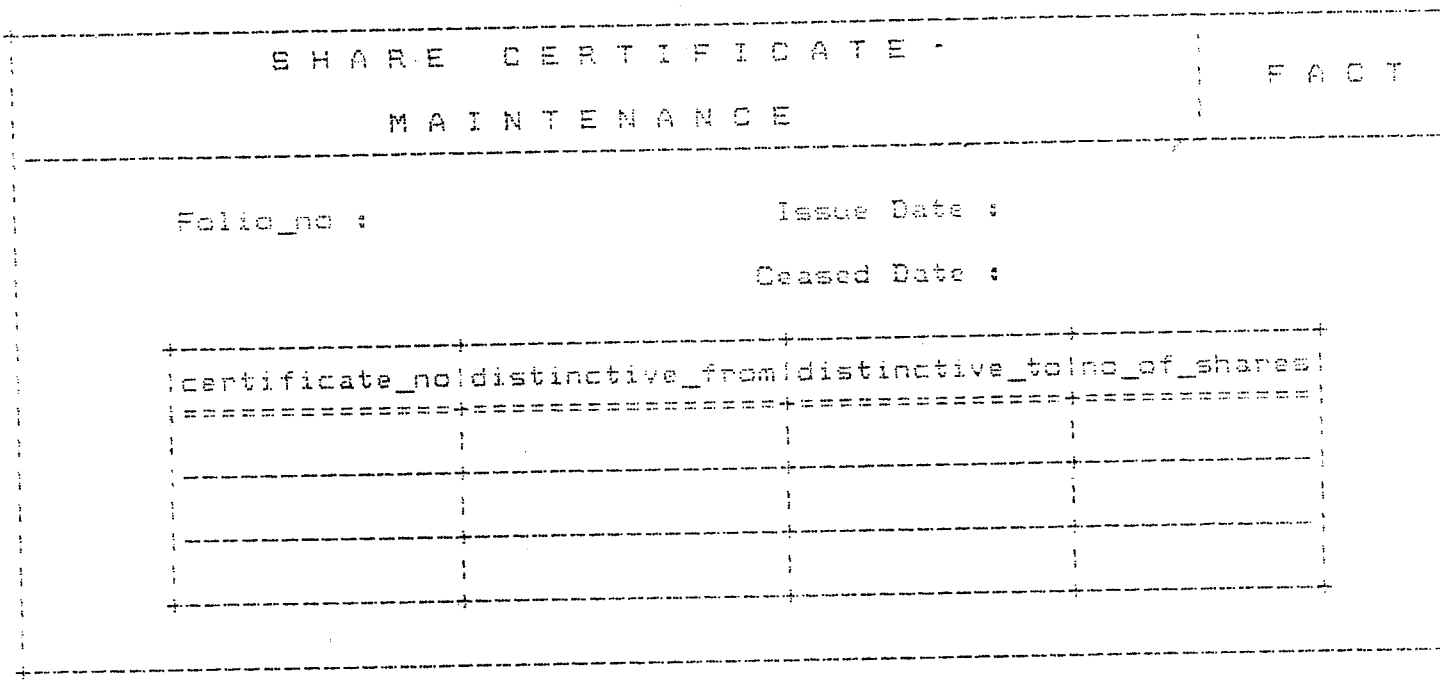
Issue Date :

Certificate No :

distinctive_from	distinctive_to

No Of Shares :

Form name: proj3_frm
Form owner: project
Number of fields: 6
Number of trim strings: 11
Date first created: 1996_03_02 06:41:33 GMT



Form name: proj4_frm
Form owner: project
Number of fields: 4
Number of trim strings: 9
Date first created: 1996_05_15 11:27:12 GMT

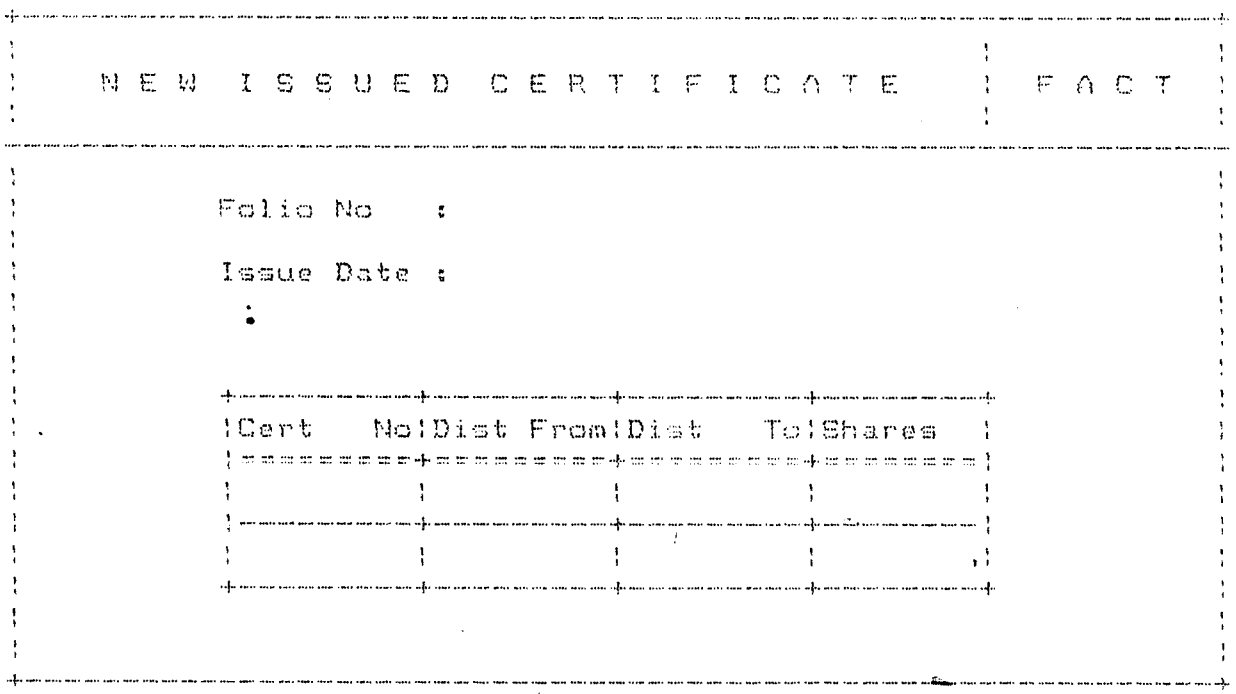
S P L I T T E D C E R T I F I C A T E	F A C T

Folio No :

Issue Date :

Cert No	Dist From	Dist To	Shares

Form name: proj_splitted
Form owner: project
Number of fields: 3
Date first created: 1996_05_20 09:29:16 GMT



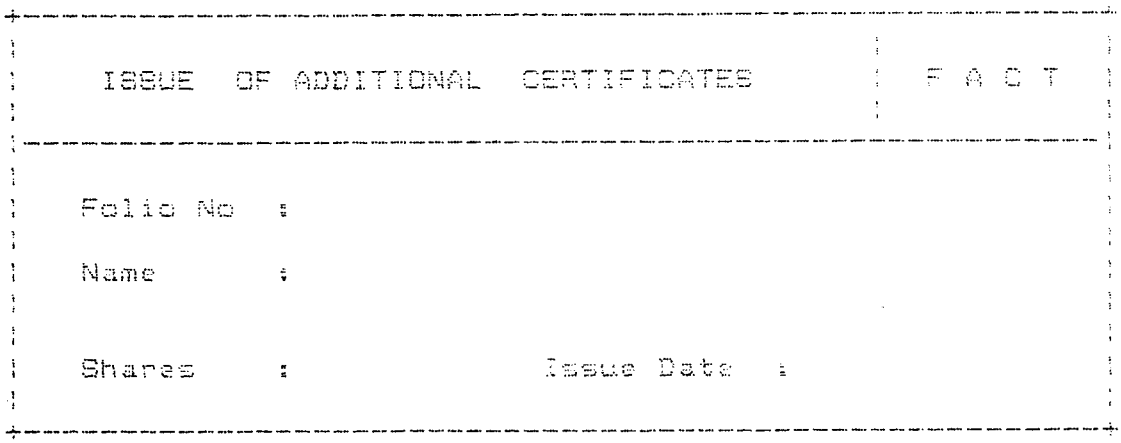
N E W I S S U E D C E R T I F I C A T E F A C T

Folio No :

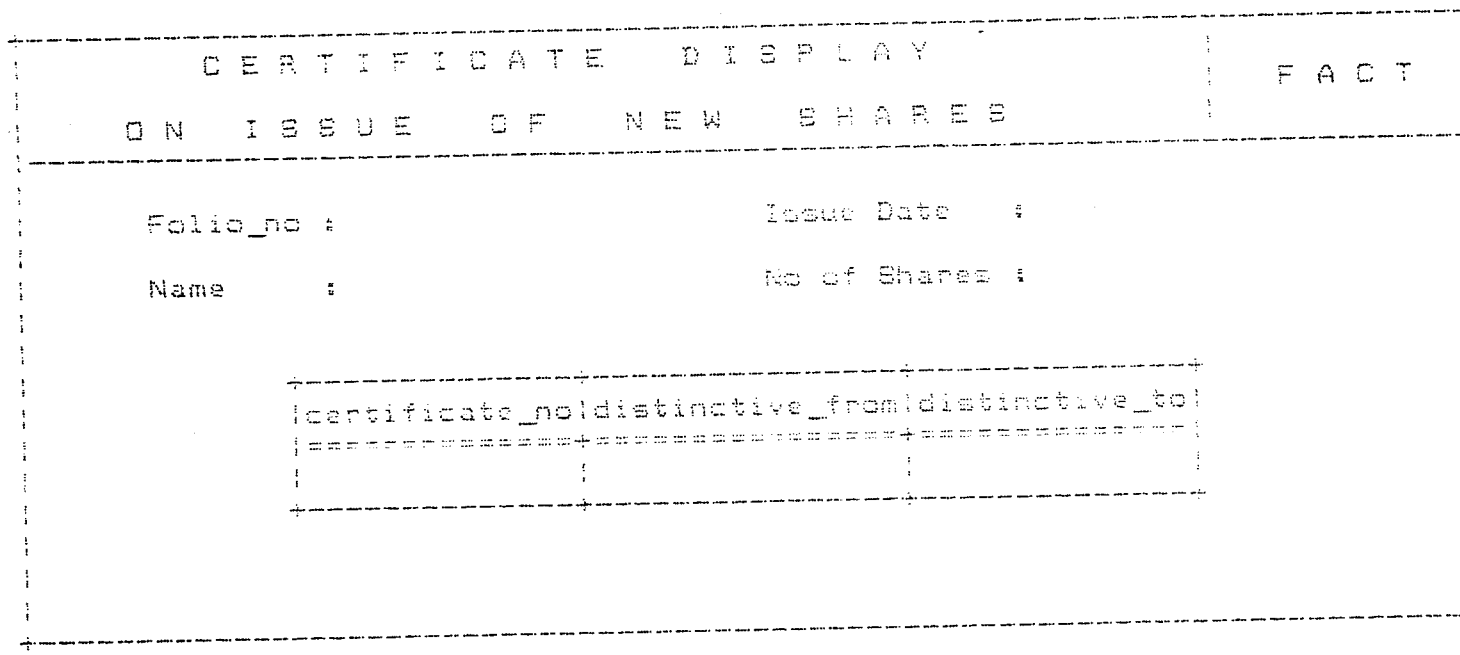
Issue Date :

Cert No	Dist From	Dist To	Shares

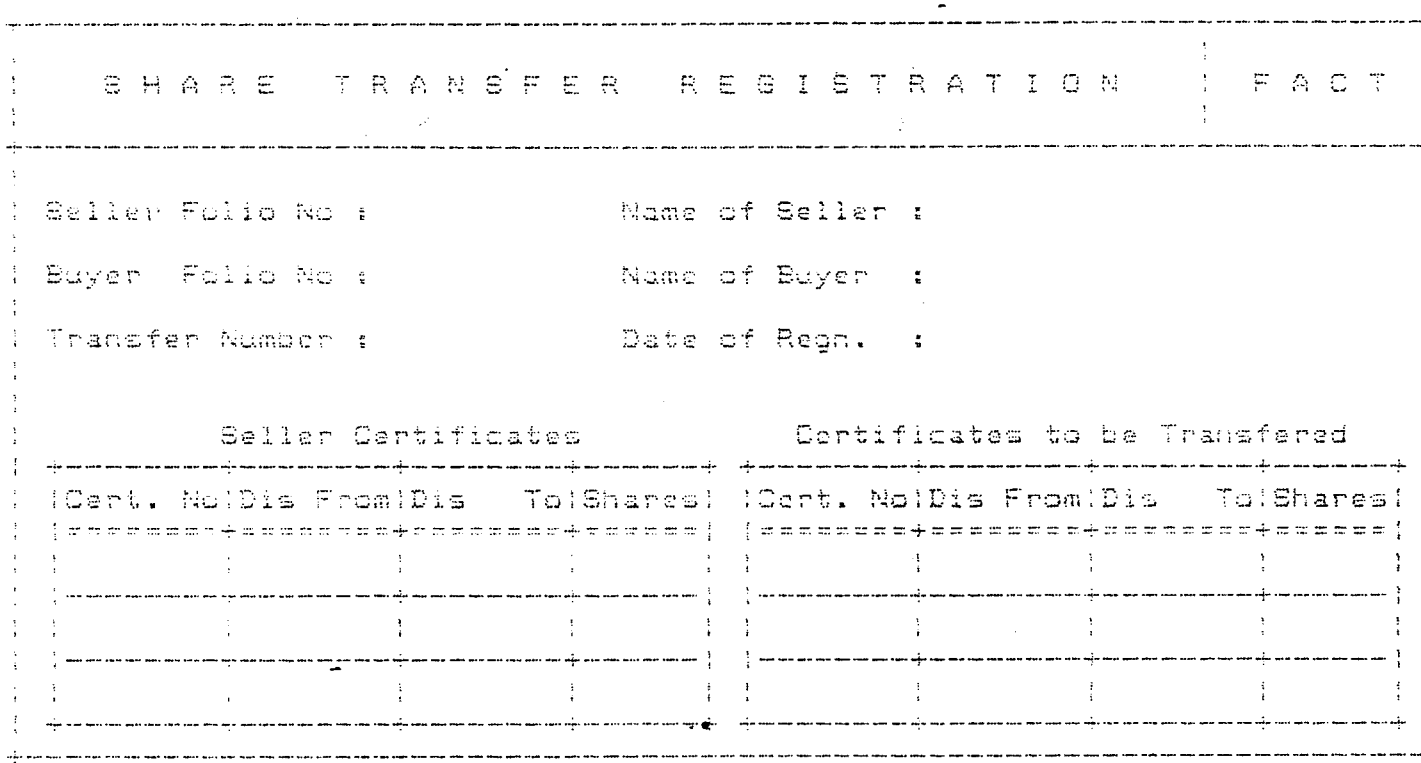
Form name: proj_replaced
Form owner: project
Number of fields: 3
Date first created: 1996_04_20 11:13:54 GMT



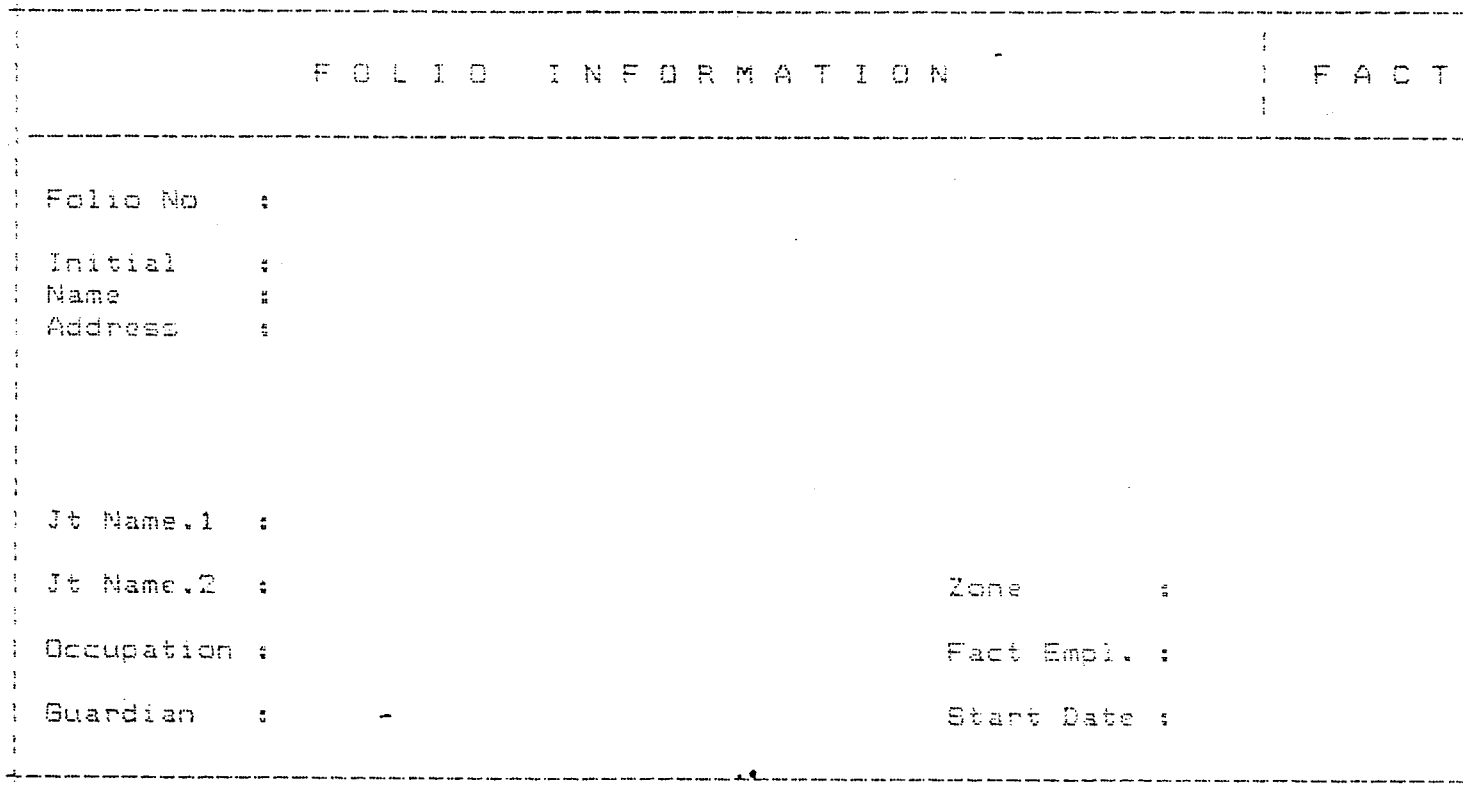
Form name: proj_add_cert
Form owner: project
Number of fields: 4
Number of trim strings: 9
Date first created: 1996_04_30 11:51:31 GMT



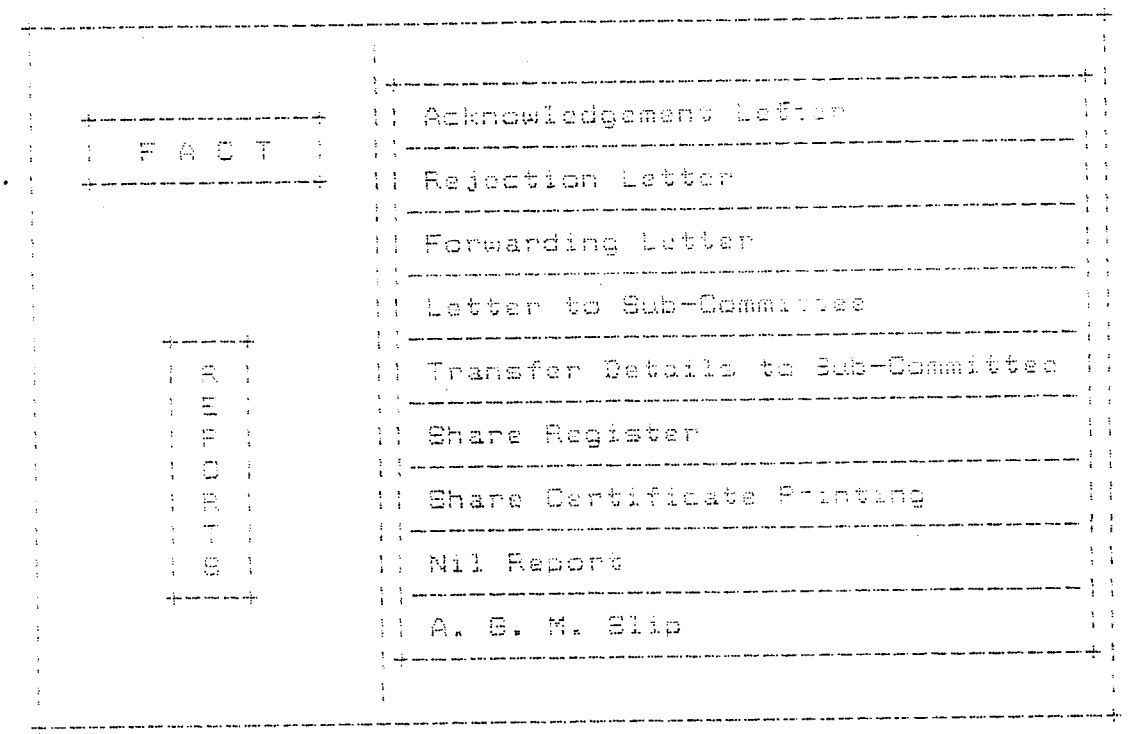

```
Form name: proje_frm
Form owner: project
Number of fields: 5
Number of trim strings: 9
Date first created: 1996_04_11 04:14:30 GMT
```



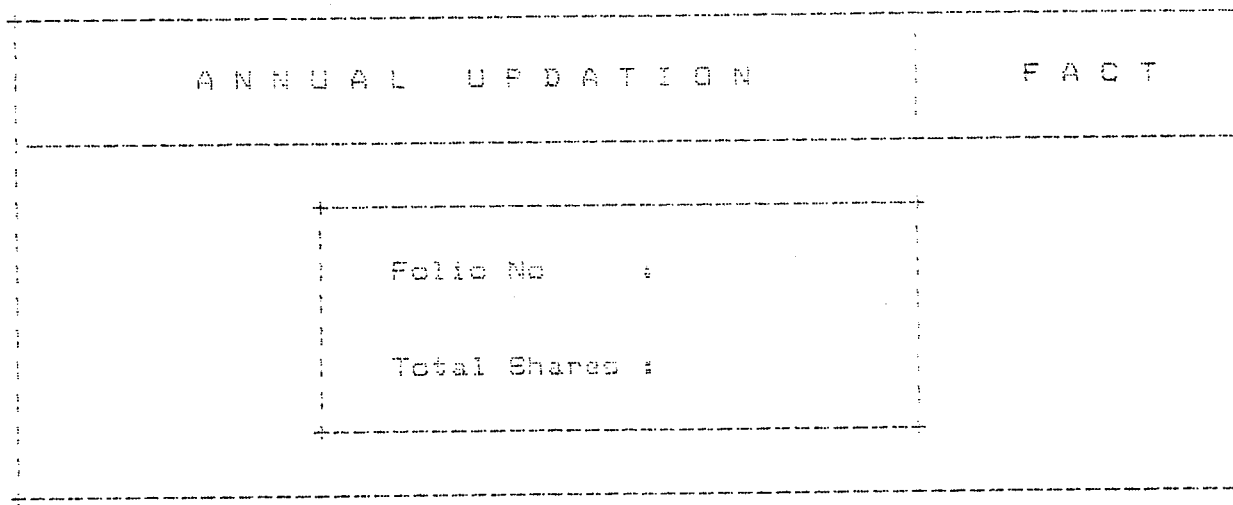
Form name: proj7_frm
Form owner: project
Number of fields: 8
Number of prim strings: 13
Date first created: 1996_05_15 08:43:12 GMT




```
Form name: proj_regn_add
Form owner: project
Number of fields: 15
Number of trim strings: 16
Date first created: 1996_04_16 05:29:11 GMT
```



Form name: proj_report_menu
Form owner: project
Number of fields: 1
Number of trim strings: 12
Date first created: 1996_05_11 05:56:25 GMT



Form name: proj_annual_updation
Form owner: project
Number of fields: 2
Number of trim strings: 6
Date first created: 1996_05_06 04:43:06 GMT

SYSTEM DEVELOPMENT

SYSTEM DEVELOPMENT

The Computerised Share Accounting System (CSAS) was developed with the aim of complete computerisation of the share application processes as proposed by the Office of Company Secretary, Head Office, Fertilizers And Chemicals Travancore Limited. As per the requirements, the main module of CSAS has five options, as follows

1. Folio Maintenance
2. Certificate Maintenance
3. Registration of Transfer
4. Report Generation
5. Annual Updations

From this Master Menu, an option can be selected by stroking the first letter of the options in the keyboard.

FOLIO MAINTENANCE

In the folio maintenance module, three operations can be carried out on the folio register. The options available in this module can be listed as follows. Selection of a particular option is, again, based on the keying of first alphabet in the option.

1. Addition of New Folio
2. Update Existing Folio
3. View a Folio

The option of addition of new folio provides facility to add new investor details, which can also be termed as a transfer of shares that takes place between the Government India and any another investor. In case of any modifications to be done on the folio register, that may be needed at any point of time, can be easily performed using the option to update an existing folio register. Only the viewing of folio details is possible in case of the view option. The tables conserned with this module will be updated as soon as any of the above processes are successfully completed.

A common form is used for all the three options of the the folio maintenance module. In case of addition of new folio, the folio number is generated automatically. The other input requirements of this form are : initial, name of the holder, address, joint share holders, one or two, if any, occupation, name of gaurdian, zone, whether FACT employee or not, issue date and number of shares issued. Apart from this initial form, addition uses yet another form. The certificate number and the distinctive series are generated automatically as per value accepted for number of shares inputed. This form is displayed soon after the first form is correctly filled up.

In case of update and view options of a folio register, only the folio number needs to be accepted as the input. All the other fields of the folio are retreived from the table and are displayed.

CERTIFICATE MAINTENANCE

The Certificates are likely to undergo various changes from time to time. Unless provision is made to maintain a certificate as and when needed, maintenance cannot be performed. In the module for certificate maintenance, the menu involves the following options :

1. Consolidation of Share Certificates
2. Splitting of Share Certificates
3. Replacement of existing Certificates
4. Additional Certificate Issue

There can be a possibility for a share holder to have more than one share certificate with him. If the share holder wants to combine all the different certificates he is holding into a single certificate, then the company can help him with the option for the consolidation of share certificates. The certificate for the given folio number will be automatically displayed along with the distinctive series. Once we opt for consolidation, a new certificate number will be generated and the entire distinctive series

will be transfered to the new certificate number. The previous certificate number(s) will be transfered to a table where all the previous certificate are stored.

A situation for splitting the share certificate when the share holder wishes to sell out only a few shares in a certificate. In such a case, the certificate is split on the basis of the number of shares. Once the splitting process is completed, new certificate numbers are generated and the distinctive series will be divided on the basis of the number of shares. Here also, the previous certificate number will be stored in the conserned table.

The existing share certificates may be replaced certain conditions ie., If a certificate is lost or damaged badly or if the endowment column is filled up completly. A new certificate with a fresh number and same details as in the old one will be issued to the share holder on inputting the folio number and the certificate number. Once again the tables are updated for the previous certificate number.

A share holder of the company may purchase more shares from the company at a later period. In that case, the new certificates and their distinctive series have to be updated along with the existing certificates. For this purpose the can avail of the option of Additional Certificate Issue. This will add the new certificates and the distinctive series to the already existing ones.

For the first three options - Consolidation, Splitting and Replacement of certificates - a common form is used. Folio number and cease date are the inputs for the option - consolidation of shares. In case of splitting shares, the number of shares to be splitted is accepted as input along with the folio number and the cease date. To

replace a certificate, the inputs required are the folio number, certificate number and cease date. The folio number, certificate number, distinctive series, total number of shares, issue date and cease date will be displayed in the form for the above three options. The issue date of the new certificate will be accepted as the cease date for the old certificate which was consolidated or splitted or replaced.

Issue of additional share certificate uses another form. When we add new certificates to the existing certificates of a share holder, the folio number, issue date and the number of shares should be given as input. The name, certificate number and the distinctive series will be displayed automatically. The neccessary tables will also be updated simultaneously.

REGISTRATION OF TRANSFER

The transfer registration module is a single modulewhich deals with the registration of share transfer between two of the investors. A well furnished transfer deed is forwarded to the company by the share holder who is selling his shares. The transfer deed includes the certificate numbers, distinctive numbers, seller's particulars and buyer's details. The transfer deed has to be checked for share transfer stamps and attestation for seller's signature. A detailed process of share transfer is attempted in the following section.

The investor (seller) will forward the transfer deed to the company. The folio number of the seller is accepted as the input. If it is not found in the table, then the

transfer deed will be rejected; otherwise the name and the certificate details will be taken from the tables and displayed on the screen. The certificate will be then checked for its validity, ie., whether it was issued by the company or not. The deed will be rejected in case of a negative response. If the response is positive, the fact that the seller is the owner of the particular certificate is verified. In some cases, the certificates might have undergone maintenance and the certificate number may have been changed. So, a previous certificate number for the present one is compared with that in the table where previous values for a particular certificate are stored. If the seller does not hold the certificate to be transfered, then once again the transfer deed will be rejected. The transfer process is continued if the seller owns the certificate in question.

The buyer's folio number is now accepted. The buyer can be an existing share holder or a new investor. If the buyer is a new investor, a new folio number is generated and all details regarding the buyer is sought. If the buyer is a share holder, the transfer can be permitted after considering three more conditions. The conditions to be satisfied are as follows -

(1) Whether the necessary share transfer stamp is affixed in the transfer deed or not,

(2) Whether the deed is duly signed by the seller and the buyer or not and

(3) Whether their signatures are attested or not. If all the conditions are satisfied, the transfer details are forwarded to the sub-committee in charge of transfer of shares, or else the deed will be rejected. The transfer process is completed as soon as the sub-committee sanctions the transfer. If the seller sells out all his shares and the balance

share become zero, the details except the folio number, name, and registration date will be automatically deleted by the system.

REPORT GENERATION

The reports that are generated automatically in this module can be listed as presented below.

1. Acknowledgement Letter
2. Forwarding Letter
3. Rejection Letter
4. Letter to Sub-Committee
5. Transfer List to Sub-Committee
6. Share Register
7. Share Certificate Printing
8. Nil Report
9. A. G. M. Slip

Many reports are generated to support the various activities that are performed during the different phases of share accounting system and are given equal importance as the other modules.

A share certificate has to be printed when an investor buys the share from the company or when the certificates issued are maintained or when they are transfered. Both the certificate and the duplicate (counterfoil) is produced automatically. An A. G. M. (Annual General Meeting) slip is also printed to mark the attendence of members attending the meeting.

Four types of letters are generated to support the registration activities. As soon as a transfer deed is received, the company sends an acknowledgement letter to the transferor and the transferee. After processing the transfer deed, there are chances for rejecting or accepting the deed. If the necessary criteria are not satisfied, a rejection letter is sent to the concerned parties and if the deed is accepted and transfer is permitted, then a forwarding letter is sent to both the seller and the buyer. During the course of registration of transfer, if the deed can be transfered, the details of the transfer deed is sent to the sub-committe along with a covering letter.

Share register is another report to be generated automatically. The share register is a detailed report of the requisition details and the transfer details along with some of the folio details which have to be filed after every share transfer. A transfer list is a list of various transfer requests that is to be sent to the sub-committee for the sanction of a share transfer. During a share transfer, if the transferor is selling all his shares and his balance share becomes zero, the folio number of the share holder is ceased. A nil report has to be prepared in such cases.

ANNUAL UPDATION

In this application, the folio number will denote which year the folio was issued with the help of its first two digits as these two digits represent the year of issue. Thus a need for an yearly updation of the folio number arises. The updation of folio is thus

one of the updation performed in this module. Another value that demands updation is the maximum number of marketable shares per year. The total shares that can be issued by the company per year is limited by financial agencies of government like SEBI. This maximum value changes annually. The number of shares issued is deducted from the total shares that can be issued. Care has been taken to prevent the excess issue of shares. Every year this maximum limit was fixed and was updated with the help of this module.

IMPLEMENTATION

IMPLEMENTATION

The **SHARES ACCOUNTING SYSTEM** has undergone the formal process of implementation in the same manner as every other system would undergo. The procedural aspects which were followed are :

1. Testing.
2. Training.
3. Documentation.

Following these standard and time tested tactics enabled the system to be implemented according to schedule.

1. TESTING

The first major hurdle in the process of implementation is the period of testing the system. The various steps of testing the system are given below:

(a) . Running the programs to identify any errors (whether syntax or semantic) that might have occurred while feeding the programs into the system.

(b) . Applying the screen formats to regular uses to gauge the extend to which the screen comprehensible to the user.

(c) . Presenting the formats to the administration for the purpose of obtaining approval and checking if any modifications have to be done or whether the proposed system serves their purpose adequately.

(d) . Obtaining the reports and submitting them for examination by the operators to test the level of readability of outputs.

2. TRAINING

The data entry operators of Computer Services Centre, (FACT) who would mainly be using the proposed system, were trained to handle the software. Explicit instructions were given above the working of the system. The operators were taught the following :

1. Data Entry.
2. On Screen Querying.
3. Report Generation.

3. DOCUMENTATION

After the jobs of testing and training were completed, the whole system was documented and presented in the readable matter. This was to ensure that if any corrections, manipulations or updations were to performed in the future the users would face no problem in performing those changes. A documentation of the source code, the report generation programs, the tables that were used to construct the base for the system, the forms used for the screen formats, the frames which bound the programs and the application which held the database was completed and handed over to the FACT authorities.

SYSTEM TESTING AND NORMALIZATION

SOFTWARE TESTING

For any software that is newly developed, primary importance is given to the testing of the system. It is the last opportunity for the developer to detect and correct the possible errors in the software. Testing is the process by which the programmers will generate a set of test data which gives the maximum probability of finding all types of errors that can occur in the software.

In the case of Computerised Share Accounting System, two types of tests - Unit Testing and Integrated Testing, were conducted. In unit testing, each indivudual program were tested using the test data. The output as compared with the requirements and was found satisfactory. Thus, it was possible to conclude that every program in the software was functioning correctly.

The indivudual programs were then combined together to form modules. Integrity tests were performed for each of the modules and again the validity was checked. After that, all the modules were brought under a single module to form an integrated system and the integrity testing was performed again. The result of the test was found to be successful.

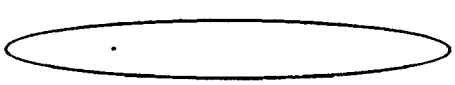
This system was validated in such a way that even the slightest deviation in inputting the data will invoke error messages and provide necesary guidelines regarding the input.

Finally, it can be concluded that the CSAS software is tested and validated to the customer satisfaction.

NORMALIZATION

The check for normality is the last stage of logical and design. Normalization reveals any redundancies and ambiguities that may be left in the software. The normalization process is designed to eliminate several pathological problems like redudant data, lost data and implied spurious connections that can creep into a database design. The normalization process consists of a series of stages which produces tables with different properties. The concept of joining tables is utilised in this application.

During the normalization process the same new tables may be created from more than one original table in general, the attributes of all these tables depend on the same keys and so they can be included in the same table. Properties of various normal forms are made use of in designing this software.



CONCLUSIONS & SUGGESTIONS

CONCLUSION

All the suggestions forwarded in the software proposal have been successfully completed and the final threshold of the application have been crossed. Weaving through the system developed, a brief idea can be given as follows

(1) Comprehending the problem

(2) Studying the existing system

(3) Building up the course of action to reach the goal

(4) Designing the problem

(5) Visualizing the solution as reports

(6) Preparing the screen outputs

(7) Testing the system with test data

(8) Achieving the required results

(9) Documenting the software developed

During the design phase of the share accounting system, many difficulties were encountered. Joining the different tables created many problems. The major one was faced during the design of the transfer registration module. Linking and updating various tables in this module created confusion. Splitting process in the certificate maintenance was another area of complexity as the source of the problem was the manipulation of the distinctive series. More errors, especially, logical errors were spotted during the system testing. The software faced problems while dealing with a large number of data.

This user friendly software successfully overcame strict and severe validation checks performed using the test data. The results attained were fully satisfactory from the user point of view. An attempt was made to attain maximum perfection in documenting the software in a simple, presice and self explanatory manner.

SUGGESTIONS

The package **"COMPUTERIZED SHARE ACCOUNTING SYSTEM"** has covered almost all aspects regarding the share accounting of FACT. This software is associated with the office of the Company Secretary, Head Office, FACT. There is scope for the improvement this system. The main two upgradation works that can be pointed out are Dividend Warrant and Transaction History.

At the end of every financial year, the company will announce dividend for its share holders based on its performance. The dividend percentage declared is distributed to the share holders as Dividend Warrants. The share holder is liable to pay income tax based on the dividend income. In certain cases, some share holders are exempted from paying income tax. This can be developed as a module in a later stage.

Another development that can be made is to prepare a report on the previous transactions that have already taken place. With the help of this, details of any past transaction can be examined easily at any time . This history of transactions can be regarded as an archive file.

Apart from these, there is scope for generating many more reports. New variations can be drawn up and various queries can be forwarded. I believe that this software can be extended easily without affecting the present structure.

This user friendly software successfully overcame severe and strict validation checks performed using the test data. The results attained were fully satisfactory from the user point of view. An attempt was made to attain maximum perfection in documenting the software in a simple, precise and self explanatory manner.

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BIBILIOGRAPHY

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APPENDIX

USER MANUAL

FOLIO MAINTENANCE

Options	Contents	Description
1.	Addition	Addition of new Share Holders.
2.	Updation	Corrections can be made.
3.	View	Viewing existing folio.

CERTIFICATE MAINTENANCE

Options	Contents	Description
1.	Consolidation	Join two or more certificates.
2.	Splitting	Splitting certificates when needed.
3.	Replacement	Replacement of Certificates.
4.	Additional Certificate	Issue of additional certificate for an existing share holder.

REGISTRATION OF TRANSFERS

No options for this module. This is just a single module of various key activations.

REPORTS

Options	Contents	Description
1.	Ack Letter	Acknowledgement Letter
2.	For Letter	Forwarding Letter.
3.	Rej Letter	Rejection Letter.
4.	Com Letter	Letter to sub committee.
5.	Trans Details	Transfer details to sub committee.
6.	A.G.M Slip	Annual General Meeting Slip
7.	Nil Reports	List of Share holders with balance
8.	Share Cert Prt	hare Certificate printing.
9.	Share Register & transferee details	Share register with transferor

ANNUAL UPDATION

Updating the total number of shares for each financial year. The serie folio number will also get updated.

Name : proj_control_nos
Owner : project
Created : 02/05/96 09:32:00
Type : user table
Version : INGRES 6.0
Storage structure : heap

Column Information:

Column Name	Type	Length	Nulls	Defaults	Key Seq
folio_no	integer	4	no	no	
certificate_no	integer	4	no	no	
transfer_no	integer	4	no	no	
balance_share	integer	4	no	no	

Name : proj_folio
Owner : project
Created : 01/04/96 10:34:00
Type : user table
Version : INGS.0
Storage structure : btree with unique keys

Column Information:

Column Name	Type	Length	Nulls	Defaults	Key Seq
folio_no	integer	4	no	no	1
initial	c	5	yes	no	
name	c	25	no	no	
add1	c	25	yes	no	
add2	c	25	yes	no	
add3	c	25	yes	no	
add4	c	25	yes	no	
add5	c	25	yes	no	
jt1	c	25	yes	no	
jt2	c	25	yes	no	
occupation	c	30	yes	no	
father	c	25	no	no	
zone	c	1	no	no	
factyn	c	1	no	no	
balance_shares	integer	4	no	no	
start_date	c	10	no	no	
ceased_date	c	10	yes	no	

Name : proj_certificate
Owner : project
Created : 28/02/96 11:42:00
Type : user table
Version : ING6.0
Storage structure : btree with unique keys

Column Information:

Column Name	Type	Length	Nulls	Defaults	Key Seq
certificate_no	integer	4	no	no	1
issue_date	c	10	no	no	
ceased_date	c	10	yes	no	
no_of_shares	integer	4	no	no	

Name : proj_cert_dist_ser1
Owner : project
Created : 15/03/96 14:16:00
Type : user table
Version : IN66.0
Storage structure : heap

Column Information:

Column Name	Type	Length	Nulls	Defaults	Key Seq
certificate_no	integer	4	no	no	
distinctive_from	integer	4	no	no	
distinctive_to	integer	4	no	no	

Name : proj_sequence
Owner : project
Created : 03/05/96 17:34:00
Type : user table
Version : ING6.0
Storage structure : heap

Column Information:

Column Name	Type	Length	Nulls	Defaults	Key Seq
folio_no	integer	4	no	no	
certificate_no	integer	4	no	no	

Name : proj_previous_certi
Owner : project
Created : 29/02/96 14:27:00
Type : user table
Version : INGRES 6.0
Storage structure : heap

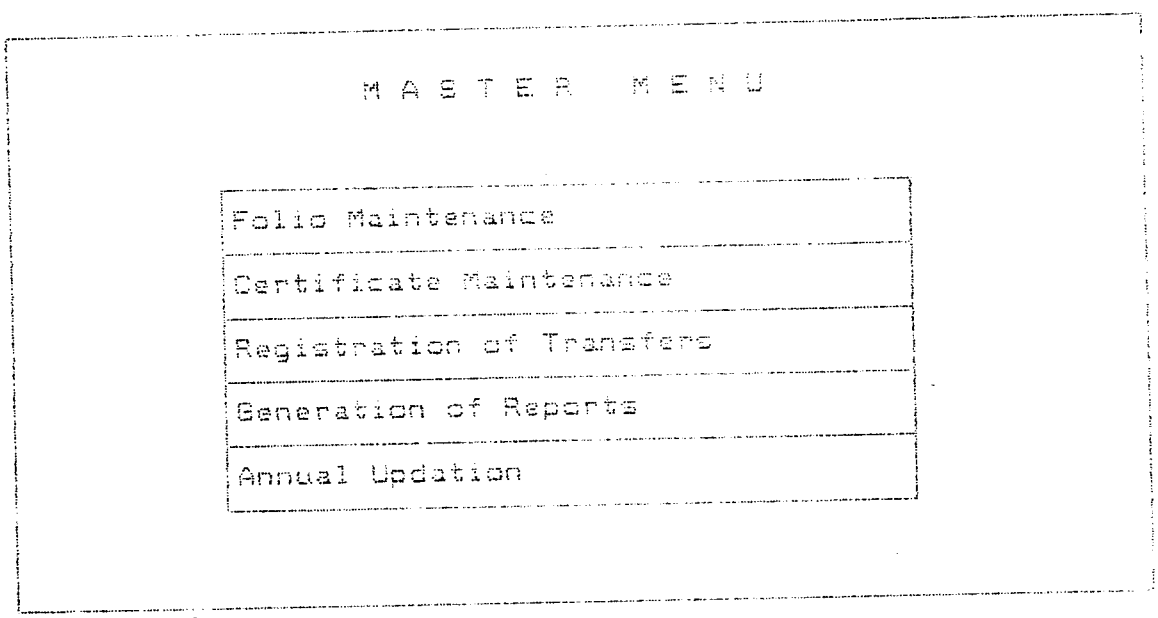
Column Information:

Column Name	Type	Length	Nulls	Defaults	Key Seq
certificate_no	integer	4	no	no	
previous_certificate_no	integer	4	no	no	

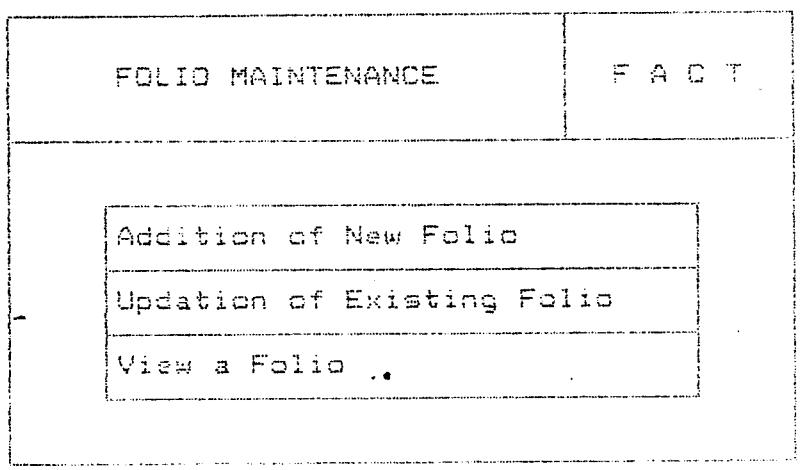
Name : proj_transfers
Owner : project
Created : 03/04/96 11:20:00
Type : user table
Version : ING6.0
Storage structure : heap

Column Information:

Column Name	Type	Length	Nulls	Defaults	Key Seq
certificate_no	integer	4	no	no	
transfer_no	integer	4	no	no	
seller_folio_no	integer	4	yes	no	
buyer_folio_no	integer	4	yes	no	
registration_date	c	10	yes	no	



SELECT(F4) END(F3)



SELECT(F4) END(F3)

F O L I O I N F O R M A T I O N			F A C T
Folio No	: 961007		
Initial	: T.M.		
Name	: Rajeev		
Address	: Thayil House Shady Line Thottakkattukara Aluva Kerala Pin:683 109		
Jt Name.1	: Sindhu Rajeev	Zone	: 2
Jt Name.2	: Manu Rajeev	Fact Empl.	: n
Occupation	: Lecturer	Start Date	: 16/02/1995
Guardian	: Madhavan T.K.	Shares	: 50

EDIT(F6) SAVE(F7) END(F3) :

C E R T I F I C A T E D I S P L A Y

O N I S S U E O F N E W S H A R E S

F A C T

Folio_no : 961007 Issue Date : 18/02/1995

Name : Rajeev No of Shares : 50

Certificate No	Distinctive From	Distinctive To
100005	10201	10250

GO(F9) ADDITION(F8) END(F3) :

FOLIO INFORMATION	FACT

Folio No : 961004

Initial : R.
Name : Senthil Murugan
Address : 29, Chinniah Road
Virudhunagar
Kamaraj
Tamil Nadu
Pin : 626 001

Jt Name.1 : Ponnusamy

Jt Name.2 : Nagammal

Occupation : Business

Guardian : Ramalingam

Zone : 1

Fact Empl. : n

Start Date : 30/03/1995

Shares : 50

UPDATION(F9) End(F3) :

F O L I O I N F O R M A T I O N | F A C T

Folio No : 961001

Initial : T.N.
Name : Rajesh
Address : Thoppil House
Deshabhimani Road
Ernakulam
Cochin
Pin : 686 101

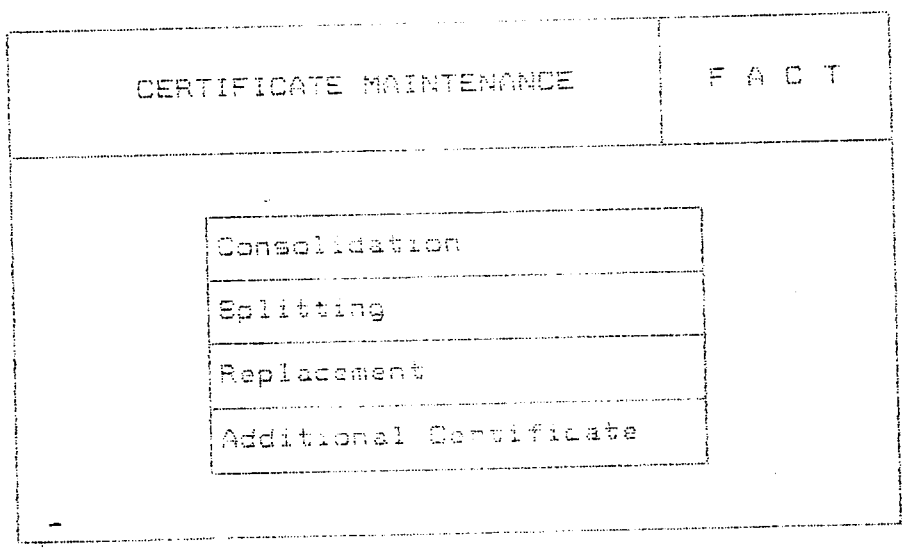
Jt Name.1 : T.N Ramesh
Zone : 1

Jt Name.2 : T.N.Rajeev
Fact Empl. : y

Occupation : Manager
Share Date : 18/01/1993

Guardian : Narayanan
Shares : 50

VIEW(F9) END(F3)



SELECT(F4) END(F3)

S H A R E C E R T I F I C A T E C O N S O L I D A T I O N	F A C T

Folio_no : 961001 Issue Date : 18/01/1995

Ceased Date : 16/05/1996

certificate_no	distinctive_from	distinctive_to	no_of_shares
100001	10001	10050	50
100006	10251	10300	50

BOTTOM(F7) MIDDLE(F8) TOP(F6) CONSOLIDATION(F4) END(F3)

CONSOLIDATION OF SHARE CERTIFICATES | F A C T

Folio No : 961001 Issue Date : 16/05/1996

Certificate No : 100008

distinctive_from	distinctive_to
10001	10050
10251	10300

No Of Shares :100

Consolidated Certificate

SD(F9) BOTTOM(F7) TOP(F1) END(F3)

SHARE CERTIFICATE MAINTENANCE	FACT

Folio_no : 961004 Issue Date : 20/03/1995

Ceased Date : 16/05/1996

certificate_no	distinctive_from	distinctive_to	no_of_shares
100004	10151	10200	50
-			

SPLIT(F10) END(F3) :

S P L I T T E D C E R T I F I C A T E | F A C T

Folio No : 961004

Issue Date : 16/05/1996

Cert No	Dist From	Dist To	Shares
100013	10151	10175	25
100014	10176	10200	25

GO(F9) END(F3)

S H A R E C E R T I F I C A T E

M A I N T E N A N C E

F A C T

Folio_no : 961001

Issue Date : 18/01/1995

Ceased Date : 17/05/1996

certificate_no	distinctive_from	distinctive_to	no_of_shares
100008	10001	10050	50
100008	10251	10300	50
-			

BOTTOM(F7) TOP(F8) MIDDLE(F6) REPLACE(F10) END(F3) :

N E W I S S U E D C E R T I F I C A T E	F A C T

Folio No : 961001

Issue Date : 17/05/1996

Cert No	Dist From	Dist To	Shares
100015	10001	10050	50
100015	10251	10300	50

GO(F9) END(F3)

ISSUE OF ADDITIONAL CERTIFICATES	F A C T

Folio No : 961001

Name : Rajesh

Shares : 50 Issue Date : 16/05/1995

EDIT(F8) ISSUE OF ADDL SHARES(F7) END(F3) :

C E R T I F I C A T E D I S P L A Y

O N I S S U E O F N E W S H A R E S

F A C T

Folio_no : 961001 Issue Date : 16/05/1995

Name : Rajesh No of Shares : 50

Certificate No	Distinctive From	Distinctive To
100006	10251	10300

GO(F9) ADDITION(F5) END(F3) :

SHARE TRANSFER REGISTRATION | FACT

Seller Folio No : 961006 Name of Seller : Joseph Mathew

Buyer Folio No : Name of Buyer :

Transfer Number : Date of Regn. :

Seller Certificates

Cert. No	Dis From	Dis To	Shares
100002	10051	10100	50
100007	10301	10400	100

Certificates to be transfered

Cert. No	Dis From	Dis To	Shares

Is Buyer New Investor(y/n)
ÿ

F O L I O I N F O R M A T I O N	F A C T

Folio No : 961008

Initial : P.G
Name : Dileep
Address : Vrindavan
Vazhakkala
Kakkanad West .P.O
Ernakulam
Pin:682 030

Jt Name.1 : Deepak

Zone : 2

Jt Name.2 : Arun

Fact Empl. : n

Occupation : Clerk

Start Date : 20/01/1996

Guardian : Gopalan P.N

SAVE(F7) EDIT(F10) END(F3) :

SHARE TRANSFER REGISTRATION

FACT

Seller Folio No : 961006 Name of Seller : Joseph Mathew

Buyer Folio No : 961008 Name of Buyer : Dileep

Transfer Number : 5003 Date of Regn. : 20/01/1996

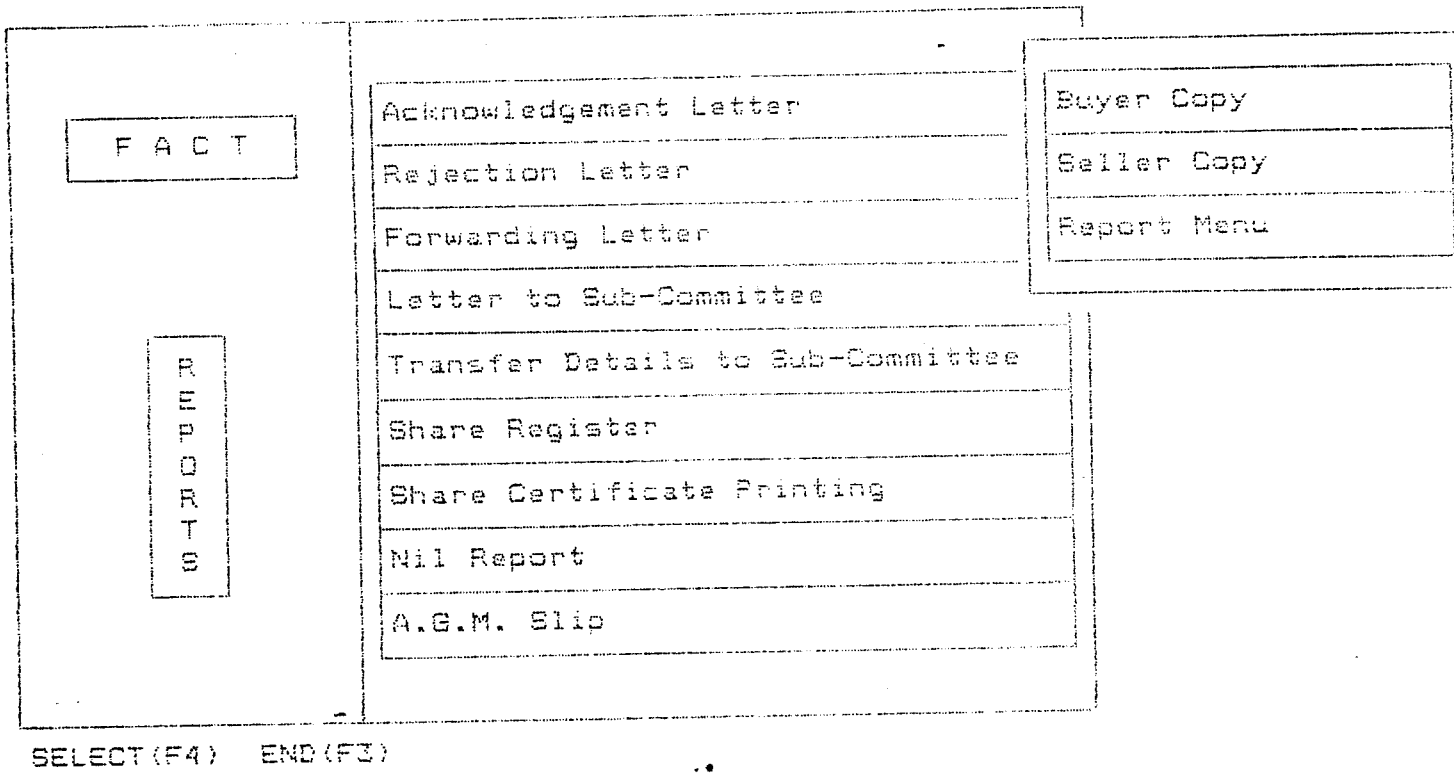
Seller Certificates

Cert. No	Dis From	Dis To	Shares
100002	10051	10100	50
100007	10301	10400	100

Certificates to be transferred

Cert. No	Dis From	Dis To	Shares
100002	10051	10100	50

Scroll MIDDLE(F7) SPLIT(F10) COMPARE(F6) Transfer(F9)



SELECT(F4) END(F3)

16/05/1996

CS:HO:RO:
Ramlal Patel
12,Santhi Nikethan
Near Gujarat College
Ahmedabad
Gujarat

Dear Sir/Madam,

Sub :
Ref :

We acknowledge with thanks your letter refered to above along with its enclosures. We,

* wish to advise you that the matter is receiving our attention and we shall revert in due course.
* have registered your revised address in our books and this communication is being sent to you as per the changed address indicated by you.

Yours faithfully,

(For FACT Ltd.)

Company Secretary
Copy forwarded to :

Abdul Rasheed
Navas Manzil
Santhi Nagar
Trivandrum
Kerala

NB : With the advise that the transfer of shares as refered to above and standing in your name at present will be effected, if we do not hear from you within Seven days from now.

CS:HO:RO:

16/05/1996

Abdul Rasheed
Navas Manzil
Santhi Nagar
Trivandrum
Kerala

Dear Sir/Madam,

Sub :

Ref :

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(For FACT Ltd.)
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Ramlal Patel
12,Santhi Niketan
Near Gujarat College
Ahmedabad
Gujarat

NB : With the advise that the transfer of shares as refered to above and standing in your name at present will be effected, if we do not hear from you within Seven days from now.

16/05/1996

CS:HO:RO:

Sobby P.V.
Vathyat House
Shankar Road
Mangalore
Karnataka

Dear Sir/Madam,

Ref :

With reference to the above, please note that the following requirements are to compiled with you. The documents are returned.

Requirements :

Thanking you,

Yours faithfully,

(For FACT Ltd.)

16/05/1996

CS:HO:RO:

S. Janaki Raman
Quarter No : 291/B
Aruppukottai
Madurai
Tamil Nadu

Dear Sir/Madam,

Ref :

With reference to the above, please note that the following requirements are to compiled with you. The documents are returned.

Requirements :

Thanking you,

Yours faithfully,

(For FACT Ltd.)

CS:HO:RO:

16/05/1996

Ramlal Patel
12,Santhi Niketnan
Near Gujarat College
Ahmedabad
Gujarat

Dear Sir/Madam,

We have pleasure in enclosing the undernoted share certificate(s) duly transferred.

SHARE CERT NO.	DISTINCTIVE NUMBERS FROM	TO	NO. OF SHARES
100003	10101	10150	50

Please acknowledge receipt.

Yours faithfully,

For FACT Ltd.

CS:HO:RO: 16/05/1996

Abdul Rasheed
Navas Manzil
Santhi Nagar
Trivandrum
Kerala

Dear Sir/Madam,

We have pleasure in enclosing the undernoted share certificate(s) duly transferred.

SHARE CERT NO.	DISTINCTIVE NUMBERS FROM	TO	NO. OF SHARES
100003	10101	10150	50

Please acknowledge receipt.

Yours faithfully,

For FACT Ltd.

Transfer List No : 1001 May 16th 1996

Sub :- Transfer of Shares

We place below a list of valid share transfer requests received from various Shareholders under Transfer Nos. 961003 to 961005 CMD may kindly approve the transfer request as listed in the enclosure.

COMPANY SECRETARY

CMD

Encl :

THE FERTILIZERS AND CHEMICALS TRAVANCORE LIMITED UDYOGAMANDAL

Share Transfer Register 5001 to 5002

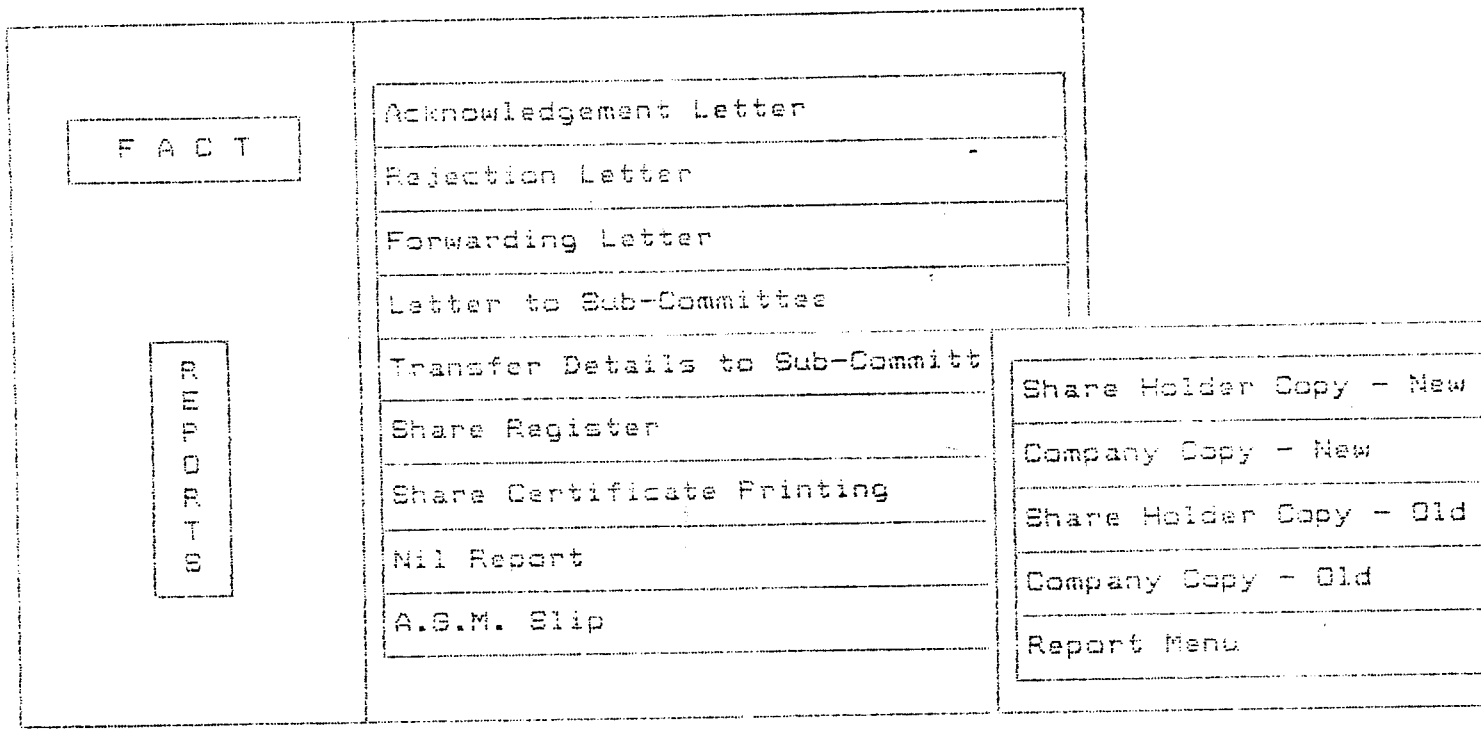
Tran. No.	Folio No.	Name & Address of Transferor	No. of Shares	Dist. Numbers From	To	Folio No.	Name & Address of Transferee
5001	961003	Abdul Rashee Navas Manzil Santhi Nagar Trivandrum Kerala	50	10101	10150	961005	Ramlal Patel 12,Santhi Niketham Near Gujarat College Ahmedabad Gujarat
5002	961002	Thomas Puttencherry Palarivattom Cochin Kerala	50	10051	10100	961006	Joseph Mathew House No : 208 Gandhi Nagar II Street Trivandrum Kerala

SHARE REGISTER

Folio No.	:	961003
Name	:	Abdul Rasheed
Jt Names	:	Zeenath
		Basheer
Occupation	:	Business
Father/Husband	:	Mohammed Pareedu
Date Entered	:	12/11/1995
Balance Shares	:	0
Address	:	Navas Manzil
		Santhi Nagar
		Trivandrum
		Kerala
		Pin : 695 010

Date of Regn.	Regn No.	No Of Shares	Distinctive Numbers From	To	Cert No.	Transferee / Transferor
* * * Acquisition Details * * *						
12/11/1995	5001	50	10101	10150	100003	18481
* * * Transfer Details * * *						
09/03/1996	5001	50	10101	10150	100003	961005

Net Balance 0



SELECT(F4) END(F3)

Reg. Folio No. 9&1005 Certificate No. 100003
Transfer No. 5001
Name(s) of Holder(s) Ramlal Patel
12,Santhi Nikethan
Near Gujarat College
Ahmedabad
Gujarat

No of Shares held 50
Distinctive No(s) 10101 to 10150

Director

Director

Secretary

Reg. Folio No. 961001 Certificate No. 100001

Name(s) of Holder(s) Rajesh
Thopil House
Deshabhimani Road
Ernakulam
Cochin

No of Shares held 50
Distinctive No(s) 10001 to 10050

Director

Director

Secretary

Reg. Folio No. 961006 Certificate No. 100002
Transfer No. 5002
Name(s) of Holder(s) Joseph Mathew
House No : 208
Gandhi Nagar II Street
Trivandrum
Kerala

No of Shares held 50
Distinctive No(s) 10051 to 10100

Director

Director

Secretary

Secretary