MIS FOR SERVICE CALLS

Done At

SIEMENS

Submitted By

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Register No : 98 MCT 09

Desertation submitted in partial fulfilment of the requirements for the award of the Degree of the Master of Science (Applied Science)Computer Technology of Kumaraguru College of Technology of Bharathiar University

Under the guidance of
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Kumaraguru College of Technology
Coimbatore
April - 2000

SIEMENS

DATE : 28-4-2000

FROM

SIEMENS LTD
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I FLOOR
GREY TOWN
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TO

THE HOD
KUMARAGURU COLLEGE OF TECHNOLOGY
COIMBATORE-641 006

SUB : COMPLETION OF THE PROJECT
OUR REF : PROJ/SL/CBE/KUM/PRAV/PROJ-COM

DEAR SIR

THIS IS TO CERTIFY THAT MR.PRAVEEN CHRISTOPHER OF FINAL YEAR Msc—CT OF KUMARAGURU COLLEGE OF TECHNOLOGY HAS SUCCESSFULLY COMPLETED THE PROJECT,WITH FRONT END JAVA AND BACK END ORACLE-8.

PROJECT TITLE :" MANAGEMENT INFORMATION SYSTEMS FOR SERVICE CALLS

THANKING YOU

YOURS FAITHFULLY
FOR SIEMENS LTD

AUTHORISED SIGNATORY

CERTIFICATE

This is to certify that this project work entitled **"MIS FOR SERVICE CALLS"** at **SIEMENS** is a Bonafide record of the work done by

PRAVEEN CHRISTOPHER.M

Register No. : 98 MCT 09

Under the Guidance of

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Submitted for Viva-Voce Examination held on 28-04-2000

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SYNOPSIS

The project entitled **"MIS FOR SERVICE CALLS"** is for "SIEMENS" to computerize the service reports and products. This project provides facility to enter the information of the customers, the machine details, fault call booked and the duration of time taken to finish the work undertaken from the customers.

The project confirms that the main aim is to computerize the FIELD SERVICE done by the Engineers for various customers. The company manufactures products for the customers and the products which get fault are being rectified by the Service Engineers according to the compliant number and fault code.

The company provides with the Service Engineer Master, Fault Master, System Master, Engineer Report. They are mainly used to take care of the products that are being manufactured, and if any fault in the machine, they see to the compliant given by the customers and the Service Engineer rectifies the fault.

The project provides the facility in noticing the arrival and departure time to the site, of the service engineers in undergoing the fault in the machine.

The Finalization of the project is that the company performs the detailed report from the service engineer the work that he has performed over the machine.

CONTENTS

8.1.3 References

8.2 General Description

8.2.1 Product Perspective

8.2.2 Product Functions

8.2.3 User Characteristics

8.3 Performance Requirements

8.3.1 Security

8.3.2 Availability

8.3.3 Capacity

8.3.4 Response Time etc

8.4 Design Constraints

8.4.1 Standard Compliance

8.4.2 Hardware Limitations

8.4.3 External Interface Requirements

User interfaces,

Screen formats,

Hardware interfaces

8.5 Table Structures

8.6 Sample Menus

8.7 Report Screens

9. Conclusion

10. Bibliography

ORGANISATION PROFILE

1. ORGANISATION PROFILE

SIEMENS is one of the Best Organization in Coimbatore. The company manufactures products such as mobiles, pagers, cell phones and electronic parts. The company provides facilities through the engineers for manufacturing and rectifying any fault in the machine.

Their Best Activities are

- Product Manufactures
- System Maintenance
- Fault Recovery

The Organization offers under one roof, an entire range of System Consultancy Services to

- Applied Control Equipment Systems, Coimbatore
- Elgi Electric Co, Ltd, Coimbatore
- Texmo Industries Ltd., Coimbatore
- LMW – I
- VSSC Trivandrum
- And Many more Companies.

They are specialized in UNIX and RDBMS. The packages used are:

- Unix
- Oracle with Developer 2000
- Visual Basic
- C and C++
- Java
- Power Builder etc.

The organization has a Managing Director supported by Product designer teams and System Maintenance team. The Organization is servicing the customers through the computerization of field servicing. The lab has the Following facilities.

- Windows NT and LAN
- Windows 98 as a client operating system
- Multimedia activities
- Hardware training

And the facility of an Internet Browsing. The company has it's own homepage. Any new user needs to contact he can use the email-id and get the details from the company.

2. SYSTEM ANALYSIS

2.1 Problem Description

The project is done for the company "SIEMENS" and is mainly titled as **"MIS FOR SERVICE CALLS".**

The problem description deals in the way such that, how the company performs the operations and manufacturing of the systems. The company provides Service Engineers for handling all the products to be viewed and rectifying the fault when occurred.

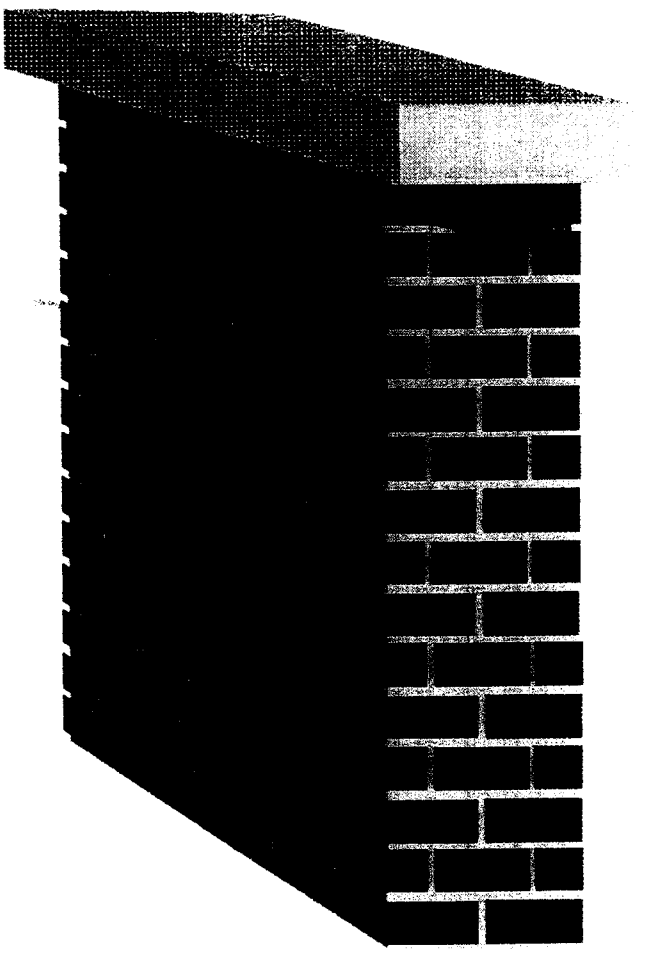
The project deals with two main tables Master and transaction. They have the various fields in to perform a specified report to the company. The company provides Service Engineer Master, Fault Master, Company Master, System Master, Engineer Report Master.

The transaction part handles the calculation such as call registration, call assign and Engineer Report. In these the master fields are being connected. In this according to the user control if required field is being clicked the other fields are to be presented in their reliable place.

The Service Engineers handle the fault machine according to the compliant number and fault code that are to being assigned by the customers. They perform the rectification according to the customer satisfaction. The Engineer details are being assigned in the Engineer master and if any compliant is been made they are accessed according to the job compliant number in the Engineer report. The work been done according to the compliant number and the arrival and departure time of the engineer are noted down. This is being used for the time taken by the engineers in their specified work.

The final declaration of the project deals with the service engineer who performs the work given to him.

DEVELOPMENT ENVIRONMENT



3. DEVELOPMENT ENVIRONMENT

SYSTEM CONFIGURATION

3.1 Hardware Specification:

SERVER

Processor	:	Intel Pentium II
CPU Clock Speed	:	350 MHz
Memory	:	128MB
Monitor	:	SVGA Color
Hard Disk	:	4.3 GB
FDD	:	1.44 MB
Cache Memory	:	512 MB

CLIENT

Processor	:	Intel Pentium II
CPU Clock Speed	:	333 MHz
Memory	:	64MB
Monitor	:	SVGA Color
Hard Disk	:	4.3 GB
FDD	:	1.44 MB
Cache Memory	:	512 MB

3.2 Software Specification

Front End	:	J builder
Back End	:	Oracle 8.0
Platform	:	Windows '98 as Client Windows NT as Server
Connectivity Tool	:	TCP/IP & ODBC

3.3 ABOUT SOFTWARE

3.3.1 ABOUT Windows NT 4.0

Microsoft Windows NT for Work Groups is based on Peer-to-Peer networking model. In this type of Network, each workgroup computer can directly offer resources to the other computers. Each member of the workgroup has its own security database that controls access to the computer and its resources. The concept of Windows NT is it can be accessed by Transmission Control Protocol / Internet Protocol (TCP/IP).

Though the advantages of Windows NT are large some of these are listed below.

1. Routing

Routing is used for communication from one computer to another computer or LAN or WAN. The communication can be accessed internal (within an Office) or external (Outside an office).

2. Remote Access and Dial-up Networking:

The remote access capabilities build into Windows NT enables a user to connect a network via a phone line. In a network the user can access any system if the access is permitted. Dial-up Networking in Windows NT is the program that enables a user to connect to the Internet.

3. User Accounts and User Groups:

In order to differentiate different types of users, Windows NT groups the user into a particular category like Guest, Domain, Administrator etc. We can also create groups like Finance, Marketing, Purchase etc., and the user can be created under the groups depending on the particular department.

4. Resource Sharing:

One of the main feature of Windows NT is the resource sharing. All the user of the system can share every resource. The users can logon at more than one location. The resource can also restricted for the particular user.

5. Directory Service:

The directory service enables greater application integration.

6. Data Replication:

Data can be replicated if it is needed by more than one user at a time.

3.3.2 About Windows '98

Windows '98 is an exciting, modern way to use the computer. It is an operating system in which opens the cars door of computer and lets even a layman to start moving immediately. Windows '98 is a user discoverable operating environment.

Features of Windows '98

Graphical User Interface

A computer environment that users little pictures and symbols is called a Graphical User Interface (GUI). These concepts supported by Windows '98.

Multitasking:

Windows '98 handles 32 bit applications. It can run more than one program at the same time. Since memory management is efficient, multitasking is performed easily.

Plug and Play:

Windows'98 automatically detects the goodies afforded by the owner. It automatically sets itself up to use those new goodies without the owner having to fiddle with the settings.

Network Facility:

Windows '98 has got network facility. Using 32-bit access method several network resources can be shared. It has compatibility to connect with Novel Network servers and Windows NT servers. It also supports Dial-Up Networking (DUN).

Dazzling Multimedia:

Windows '98 supports thrilling sound effects and video effects. This makes interactive environment by automatically playing sounds for several system events.

Other Features:

Clicking once on something with right mouse button will bring up menu that lists the things can be done with that item.

Using Quick View we can peek into files without opening them.

Much L-O-N-G-E-R filenames can be used.

Deleted files can be retrieved from recycled bin if deletion was performed through desktop or explorer.

3.3.3 ABOUT JAVA

JAVA REVOLUTION

Java is a language for programming on the Internet. It incorporates object-oriented programming concepts and is platform independent. It has caught the attention of one and all due to its applets – which enable creation of animation, multimedia presentations, and real-time games that can be downloaded over the net and executed inside a Web page by a Java-capable browser.

With the enormous enhancement in Information Technology and the modern trend of distributing passive information, several languages have acquired prominent focus, one among them is Java.

Java is an object-oriented, multi-threaded programming language developed by Sun Microsystems in 1991. It is designed to be small, simple and portable across both platforms as well as operating systems, at the source and binary level.

The popularity of Java is due to its radically unique technology that is designed on a combination of three key elements. They are the usage of applets, powerful programming language constructs and a rich set of significant object classes.

When a program is compiled, it is translated into machine code or processor instructions that are specific to the processor. In the Java development environment there are two parts: a Java compiler and a Java Interpreter. The compiler generates byte code(a set of instructions that resemble machine code but are not specific to any processor) instead of machine code and the interpreter executes the Java program.

The disadvantage of using bytecode is the execution speed. Since system specific programs run directly on the hardware, they are significantly faster than the Java bytecodes that must be processed by the interpreter. In order to write a Java program, an editor, a Java compiler and a Java Runtime Environment are needed. The easiest way to get a Java compiler and runtime environment is to download Sun's **Java Development Kit**. This provides system input and output capabilities and other utility functions in addition to classes that support networking, common Internet protocols and user interface toolkit functions.

WHAT IS NEW IN JDK 1.3?

JDK 1.3 succeeds JDK 1.1 as the current standard. It introduces a few changes to the language itself, adds a large number of new APIs (Application Programming Interfaces) and includes some tools. JDK 1.3 comes with a new set of packages- the **Java Foundation Classes** or JFC that includes an improved user interface called the **Swing** components.

The first version of JDK supported a graphical user interface through a package called the **Abstract Windowing Toolkit (AWT)**. The **Swing** package is introduced in the newer version that includes many more components than those in AWT so that sophisticated interfaces could be built. The swing components are the JFC's lightweight user-interface components.

Revolutionary Programming Language:

Java enables these wonderful applets which can be used by non-programmers, but how do they get created?. Each thing you see animating on a page is actually an object that was programmed in Java. Every behavior that the objects display is encoded in a logical program known as a Java class, which is used to define that object.

Since the days before Java ran its first program, it was designed to meet the real-world requirements summed up with a list of "buzz phrases." They are:

- Simple and powerful
- Safe
- Object oriented
- Robust
- Interactive
- Architecture neutral
- Interpreted and high performance
- Easy to learn

Simple and powerful:

In Java, there are a small number of clear ways to accomplish a task. This style of simplicity has often produced inefficient and non-expressive **"scripting languages". Java is not a** scripting language. Scripting languages take away your ability to innovate, assuming that every behavior you might want is already encapsulated in the built-in objects that merely need to be scripted.

Safe:

One of the key design principles of Java is safety and security. Java never had any unsafe features that now need to be covered up to make it safe. Most of the obvious ways to "hack" a system simply cannot be described as a Java program. Since Java programs cannot call global functions and gain access to arbitrary system resources, there is a measure of control that can be exerted by Java runtimes that cannot be approached by other systems.

Object Oriented:

It is amazing to see how many new dialects of old languages describe themselves as object oriented. It seems buzzword is being thrown around as often as "Internet enhanced" today. Java was designed from scratch.

Borrowing liberally from many seminal object software environments of the last few decades, Java manages to strike a balance between the purist, "everything is an object" model, and the hacker's, "stay out of my way" model. The object model in Java is simple and easy to extend, while numbers and other simple types are kept as high-performance non-objects.

Most other object-oriented systems have chosen to have rigid, hard-to-manage object hierarchies, or they use completely dynamic object models that give up a lot of performance and comprehensibility. Java again strikes a balance, providing a simple classing mechanism, with an intuitive dynamic interface model only where needed.

Robust:

Most programs in use today fail for one of two reasons: memory management or exceptional conditions. There are two very important issues since it is impossible to write a useful program without having to manage memory or generate exceptional conditions in some way. Memory management is a woeful task in traditional environments which forces the programmer to keep track of all memory allocated and be sure to free it back to the system when it is no longer needed. Exceptional conditions in traditional environments often arise in situations such as division by zero, or "file not found", and must be managed with clumsy and hard-to-read constructs. Java virtually eliminates both problems with advanced memory management called garbage collection, and integrated object-oriented exception handling.

Since Java is a very strict language when it comes to types and declarations, most common errors can be caught at compile time. This saves time when compared to having to run the program and exercise all parts of it before catching some dynamic runtime mismatch.

Interactive:

Java was designed to meet the real-world requirement of creating interactive, networked programs. Most systems have a hard time dealing with either one, let alone interactivity and networking at once. Java has several advanced features that allow you to write programs that do many things at once, while not losing track of what should happen, and when. The Java runtime comes with the most elegant solution yet devised for multi-process synchronization, and makes it possible to construct smoothly running interactive systems.

Architecture Neutral:

More important than the obvious religious wars between PCs and Macs is the issue of code longevity and portability. If you write a program today, there is no guarantee that it will run tomorrow, even on the same machine. Operating system upgrades, processor upgrades, and changes in core system resources can all collude to make a program cease to function. The Java designers made several hard decisions in the Java language and runtime, so you can truly "write once, run anywhere, anytime, forever." You simply worry about writing a good program and Java will make sure that it works on Macintosh, PC, UNIX and whatever the future platforms can offer.

Interpreted and High Performance:

Java, however, was designed to perform well on very low-power CPUs. While it is true that Java is interpreted, the Java byte-code was carefully designed

into native machine code for very high performance. Java runtime systems that do this "just-in-time" optimization lose none of the benefits of the platform-neutral code.

Easy to Learn:

While Java is more complicated than a scripting language, it is infinitely simpler to learn and write than any other full-fledged programming environment. At each step in the programming process you will be encouraged by the lack of surprise bugs and bad behaviors. Since the object model is both mandatory and simple, you will quickly become acquainted with the object-oriented style of programming.

OBJECT-ORIENTATION PROGRAMMING IN JAVA:

The fundamental mechanisms are known as:

- Encapsulation
- Inheritance
- Polymorphism

ENCAPSULATION:

All programs at the simplest level consists of two things: code and data. Encapsulation of the code that manipulates data with a declaration and storage of that data is the key to object-oriented design.

In Java the basis of encapsulation is a class. You create a class that represents an abstraction for a set of objects that share the same structure and behavior. An object is a single instance of a class that retains the structure and

behavior as defined by the class. These objects are sometimes referred to as instances of a class. The individual structure or data representation of a class is defined by a set of instance variables. A method is a message to take some action on an object.

INHERITANCE:

Inheritance interacts with encapsulation as well. If a given class encapsulates some attributes, then any subclass will have the same attributes plus any that it adds as part of its specialization. This is a key concept that lets object-oriented programs grow in complexity linearly rather than geometrically. A new subclass includes all of the behavior and specification of all of its ancestors. It does not have unpredictable interactions with the majority of the rest of the code in the system.

POLYMORPHISM:

Methods on objects are passed information as parameters to the method invocation. These parameters represent the input values to a function that the method must perform. In order to complete two different tasks in most functional programming languages, you need to have separate functions with different names. Polymorphism, meaning one object, many shapes, is a simple concept that allows a method to have multiple implementations that are selected based on which type of object is passed into the method invocation. This is known as method overloading.

JAVA NETWORKING:

Introduction to networking:

A network is a set of computers and peripherals, which are physically connected together. Networking enables sharing of resources and communication. Internet is a network of networks. Java applets can be downloaded from a Web site. This is one of the main attractions of Java. Networking in Java is possible through the use of java.net package. The classes within this package encapsulate the socket model developed by Berkeley Software Division.

Protocols:

Communication between computers in a network or a different network requires certain set of rules called protocols. Java networking is done using TCP/IP protocol. Some of the different kinds of protocols available are HTTP (Hyper Text Transfer Protocol–enables interaction with the Internet), FTP (File Transfer Protocol-enables transfer of files between computers), SMTP (Simple Mail Transfer Protocol-provides e-mail facility) and NNTP(Network News Transfer Protocol-acts as a bulletin board for sharing news).

Client/Server:

A computer, which requests for some service from another computer, is called a client. The one that processes the request is called a server. A server waits till one of its clients makes a request. It can accept multiple connections at a time to the same port number. Multithreading is used to server multiple users at the same time.

URL:

URL stands for **Uniform Resource Locator** and it points to resource files on the Internet. The term Web is often used when there is a discussion about the

Internet. The Web is a collection of higher level protocols and file formats. An important aspect of a Web is its ability to locate files on the Internet. The **URL** helps in locating such files using their addresses on the Net. Java provides **URL** class that provides an API to access information across the Internet.

Components of URL:

The URL has four components – the **protocol, IP address** or the **hostname, port number** and **actual file path**. The protocols may be **http, smtp, nntp, ftp** or **gopher**. The most commonly used protocol of the Web is the hypertext transfer protocol (HTTP). The IP address is delimited on the left by double slashes(//) and on the right by a slash(/) or a colon. The third component, port, is optional and is delimited on the left by a colon and on the right by a slash. The last component specifies the actual file path.

JDBC:

What is JDBC?

Assume that ABC Limited is an automobile spare parts manufacturing company that has many branches across the world. The Corporate Office at New York maintains Oracle databases for the sales details of various products, the stock with each branch, the personnel details, etc. The Regional Office in India at New Delhi wants to establish connection with the remote database and send in the above data to the Corporate Office. The regional office also wants to publish vital information obtained from the remote database on its web page. The solution for the above issues lies with JDBC.

Microsoft ODBC API offer connectivity to almost all databases on almost all platforms and is the most widely used programming interface for accessing relational databases. But ODBC cannot be directly used in Java programs due to

various reasons enumerated in the JDBC Vs ODBC section. Hence the need for JDBC came into existence.

JDBC is a set of Java API for executing SQL statements. This API consists of a set of classes and interfaces to enable programmers to write pure Java Database applications. It is possible to access various relational databases like Sybase, Oracle, Informix, Ingres, using JDBC API. Individual programs to connect to individual databases or one program that takes care of connecting to the respective databases can be written.

JAVA AND JDBC:

The combination of Java with JDBC is very useful because it lets the programmer run his/her program on different platforms. Java programs are secure, robust, automatically downloaded from the network and Java is a good language to create database applications. JDBC API enables Java applications to interact with different types of databases. It is possible to publish vital information from a remote database on a Web page using Java applet. With increasing inclination of programmers towards Java, knowledge about JDBC is essential.

Some of the advantages of using Java with JDBC are:

- Easy and economical
- Continued usage of already installed databases
- Development time is short
- Installation and version control simplified

JDBC does the following three things:

- Establish connection with a database
- Send SQL statements
- Process the results

There are two types of interfaces – low-level interface and high level interface. While high level interfaces are user-friendly, low-level interfaces are not. JDBC is a low-level API interface, i.e., it is used to invoke or call SQL commands directly. The required SQL statements are passed as strings to Java methods.

Introduction to HTML:

Text processing and word processing systems have information to describe how the text of the document is to be displayed. This information is called **markup**.

In 1980, a mark up language was developed to create documents that would be displayed consistently on computers using different hardware and operating systems. It was called the **Standard Generalized Markup Language or SGML.**

SGML is a **general-purpose tool** to describe documents of any kind. SGML documents are not restricted to a single application, formatting style, or processing system.

HTML or Hyper Text Markup Language is defined using the Standard Generalized Markup Language. It is a way of incorporating text, graphics, sounds and videos all in one document called a **Web Page**.

These documents can be displayed using **Web Browsers**. It provides links to other resources using hyperlinks. It also has the capacity to work with other Internet protocols and services on the Web like FTP, Gopher, Usenet, e-mail, WAIS, Telnet and HTTP.

HTML is based on two concepts:

- **Hypertext :**

  It provides a way to link between information in the same document as well as in different documents.

- **Markup Language :**

  Markup refers to the special tags that are a part of the HTML document. These tags specify how the document content should be displayed.

Benefits of HTML:

- HTML allows anyone to create Web pages.
- The Web pages can be linked together using links and Uniform Resource Locators. Thus a user has to just click on hyperlinks to get access to related information.
- Using URLs it is even possible to link documents through Telnet, WAIS, Gopher, FTP, Usenet newsgroups, or even email.
- HTML also allows for the incorporation of multimedia files in the HTML documents. If the browser has the capability to play the sound or movie files then the user can view just by clicking on them.

TCP/IP an Overview:

TCP/IP stands for Transmission Control Protocol and Internet Protocol. Computers connected to the Internet use these protocols to communicate with each other. Basically, they define how computer networks on the Internet exchange messages or data.

The TCP/IP suite of protocols was developed by Vinton Cerf and Robert Kahn in 1974.

Transmitting Messages:

Every node (computer) on the internet has an address made up of four numbers. Each number should be less than 256. Each machine has a unique address on the entire internet.

To send a message from one computer to another, we need to specify the address of the destination computer. Also, if the message is long it is broken up into multiple packets and each packet is sent individually and the whole message is reassembled at the receiving end.

Also on the internet are routers whose job is to send data along different paths so that it may reach its destination.

At the receiving end, the different packets are put together to form the complete message.

The process of sending across a message using TCP/IP is described below:

- The Transmission Control Protocol takes care of dividing the messages into packets. A packet is an electronic envelope which contains :

  ** The address of the source and the destination machine.

  ** Information about the size of the packet.

  ** Information about where it fits in the series of packets that make up a large message.
- The Internet Protocol addresses these packets and then mails them.
- The packet will be received by the computers called **routers**. Routers will then pass it on to other routers.

  ** The path travelled by the packet may not be the shortest possible one.

  ** All packets need not follow the same path.
- At each point, an attempt is made to locate the destination computer.
- Finally, the packets will reach their destination computer and not necessarily in the sequential order.
- While receiving, the IP receives the packets and gives them to TCP.
- TCP confirms that all the packets have been received.
- Finally it puts the packets together again.

3.3.4 About Oracle

Oracle is a relational database. This concept is an extremely simple way of thinking about managing the data used in a business. It is nothing more than a collection of tables of data. We all encounter tables every day: whether reports, stock charts, sports scores. These are all tables, with column headings and rows of information can be sophisticated and powerful enough for even the most complex of business. Even though the tables are independent, we can easily see that they are related. One column in one table can related to one column in another table. This relationship is the basis for the name relational database. This is the basic idea of a relational database. Tables are related to each other if they each have a column with a common type of information.

Unfortunately, the people who can benefit most from a relational database, the business uses, usually understand if developers, who must build systems that these users need to do their jobs, often find relational concepts difficult to explain in simple terms. A common language is needed to make this cooperative approach work.

ORACLE is most widely used database in the world. It runs on virtually every kind of computer from PCs and Macintoshes, to Minicomputers and giant Mainframes. It functions virtually identically on all these machines, so when we learn it one, we can use it on any other. This fact makes knowledgeable ORACLE users and developers very much in demand, and makes our ORACLE KNOWLEDGE AND SKILLS VERY PORTABLE.

ORACLE supports the following data types:

- CHAR(size)
- DATE
- LONG
- NUMBER(p, s)
- VARCHAR2(size)
- RAW
- LONG RAW

3.3.5 WHY JDBC And ODBC

JDBC Vs ODBC:

The most widely used interface to access relational database today is Microsoft's ODBC API. ODBC performs similar tasks as that of JDBC and yet JDBC is preferred due to the following reasons:

- ODBC cannot be directly used with Java because it uses a C interface. Calls from Java to native C code have a number of drawbacks in the security, implementation, robustness and automatic portability of application.
- ODBC makes use of pointers which have been totally removed from Java.
- ODBC mixes simple and advanced features together and has complex options for simple queries. But JDBC is designed to keep things simple while allowing advanced capabilities when required.
- ODBC requires manual installation of the ODBC driver manager and driver on all client machines. JDBC drivers are written in Java and JDBC code is automatically installable, secure and portable on all Java platforms from network computers to mainframes.
- JDBC API is a natural Java interface and is built on ODBC. JDBC retains some of the basic features of ODBC like X/Open SQL Call Level Interface.

4. SYSTEM DESIGN

4.1 Introduction

The system design of the "Software Task Handling & Superintendence" is focussed at satisfying the Software requirement specification. The system design is done at two phases as follows.

- External Design
- Internal Design (Detailed design)

External Design:

The external design, which is concerned with the observed characteristics of a Software Product, the same is done for "Software Task Handling & Superintendence" for the kinds of form & reports.

Doing the design of the format (interface) the following were taken into consideration:

- User friendliness
- Effectiveness
- Ease of use

Internal Design:

The internal Design is concerned with the detailed design of the software to be developed. The following are done to Compute the internal design.

- DB design
- Program definition
- Test plan

Design Methodology:

Design is concerned with identifying software components with identifying software components specifying relationships among component, specifying software structure and providing a blue print for the implementation phase Design consists of three types:

- ❖ Architectural Design
- ❖ Detail Design
- ❖ External Design

Architectural Design:

Architectural Design involves identifying the software components, de-coupling and decomposing them into processing modules and conceptual data structure and specifying relationships among the components.

The "Software Task Handling & Superintendence" is a user-friendly GUI based environment. The Context diagram represents the flow of project in the system.

Detailed Design:

Detailed Design is concerned with the details of how to package the processing modules and how to implement the processing algorithms, data structure and interconnection among modules and data structure.

External Design:

External Design of software involves conceiving, planning out, and specifying the external observable characteristic s of a software product. This includes reports, and display formats. External design begins analysis phase it continues into the design phase.

4.2 Database Design

A database is a collection of files and records maintained at one or more sited in an environment that allows an integrated use of its data Database enables one or more users to show the common data, thereby eliminating redundancy and maximizing the efficiency of data processing.

Database design is the process of logically arranging data, and establishing the relationships between them so as to provide applications using the database, easy access, manipulation and resorting of data into the database.

The tables needed for each module and the specification are designed. The specification of each and every column is given based on the records and details collected during record specification of each column was given based on the records and the details collected during record inspection during system study.

In general there are two ways in which the design of a database can be processed. Top-Down design and Bottom-Top design. Top-Down design involves designing the database first, more on an intuitive basis, rather than in a scientific one. Then applications processed in such a way that making use of this database generates any required output. However, here exists the danger that one or more user-required output may not be possible to be generated. Hence for applications such as this, Bottom-Up approach is preferred, so that system meets its ultimate aim of user friendliness and convenience for the end user.

In this design, the database designers first takes into consideration the requirements by the user, based on these outputs, he designs various tables of data as required by each of this inputs. These tables therefore correspond to different user views.

The organization of data in a database aims to achieve three major objectives namely.

(a) Data integration
(b) Data integrity
(c) Data independence

After finalizing the entries of the system and other attributes, after drawing E.R diagram and showing the relationship between the entities of the database structure that was designed, since as a relational database table structure and design have more importance.

Data Integration

In a database, information from several files is co-ordinates, accessed and operated upon as though it is single file. Logically, the information is centralized, physical, the data may be located on different devices, connected through data communication facilities.

Data Integrity:

Data integrity means storing all the data in a single place and allows each application to access it. This approach results in more consistent, one update being sufficient to achieve a new record status for all the applications that use it. This leads to less data redundancy; data items need not to be duplicated, a reduction in the direct access storage requirement.

Data Independence:

Data independence is the insulation of application programs aspects of physical data organization. This objective seeks to allow changes in the content and organization of physical data without reprogramming of applications, and to

allow modifications to application programs without reorganizing the physical data.

One of the important stages during the database is Normalization. It is the process, by which repeating groups of data items and functional dependencies between them are removes in order to overcome update anomalies.

Normalization:

Data structuring is refined through a process called Normalization. Normalization is a formal process of developing data structures in a manner that eliminates redundancy and promotes integrity. It is a step-by step decomposition of complex records into simple records to reduce redundancy, inconsistencies and remove anomalies.

There are several normal forms to be followed in normalization process. The most important and widely used are:

- First Normal Form
- Second Normal Form, and
- Third Normal Form

First Normal Form (1 NF)

A table is said to be in first Normal Form if the intersection of any column and row contains only one value.

Method: Identify a suitable identifier from the pool of unnormalized data. Remove any item that repeat with in a single value of this key to another relation bringing with them the identifier key to form part of a new composite key in the new relation.

Second Normal Form (2NF)

For a table to be in the second normal form, it should also be in the first normal form and the values in every column are functionally or transitively dependent on the complete primary key.

Method: Examine every column and section whether its value depends on the whole of the compound key or just some parts of it. Remove those that depend only on part of the key to a new table with that part as the primary key.

Third Normal Form (3 NF)

For a table to be in the third normal form, it should be in the second normal form and the values in every non-key column are not transitively dependent on the primary key.

Method: Examine every non-key column with every other non-key column. If the value of the non-key column depends on the other non-key column then remove the columns to separate table.

De Normalization:

The normalization process helps in reducing to a great extent but sometimes when information is required from more than one table, at a fast rate, it is desirable to have some degree of redundancy in table. This deliberate introduction of redundancy for a highly improved performance is referred to as "De normalization".

Partial dependencies are said to exist when a non-key data item depends, not on the whole key, but on a subset of the whole key.

Transitive dependencies are said to exist when a non-key items. The data structure of the tables used in the system-normalized.

4.3 Software Design

For the purpose of the development of the system, we divide SOFTWARE DESIGN into two parts.

- Logical System Design.
- Physical System Design.

One of the powerful, yet simple, tools for logical System Design is the Data is the Data Flow Diagram. Hence, in the design of the system, this tool is made of the data flow diagram as name suggests, indicates the flow of data between various entities in the system.

Physical System Design

Input Design:

Input design is the basic thing to be considered in the system design. In input design the screens are designed according to the requirements of the user. In Power Builder 6.0, forms are used to create the input screens for data entry. In such an interface design, the user inputs data by filling the blank spaces on the screen each field, on the screen, has a tab key, we can move from one field to another within the same form.

Each entry form has its own command buttons, which provides us the facility to insert a new record, delete & modify an existing record. The top portion of the entry form specifies the name of the form and the remaining portion is meant for the data entry. The input design also determines whether the user can interact efficiently with the system.

Input design features can ensure the reliability of the system and produce results from accurate data or they can result in the production of erroneous information.

The features of the Input Screens are,

- Well designed messages and prompts.
- Clear labels for menu items and fields.
- Clutter free screens.

The Process Design:

The process design gives insight into the way in which the processing is done in the system. Here the processing is done using menus and the application is completely event driven. A separate menu has been created for each main window in the application.

A detailed diagram, which shows the flow of control, is given. Power Builder provides an approach to flow of control in an application that puts users in charge. Power Builder applications are event driven, which means the application waits for an event to occur. An event that occurred in one module triggers another module.

The overall design can be summarized as:

- Trapping the system errors.
- Opening an application.
- Controlling application through events and menu.
- Closing the application.

Output Design:

Computer output is the most important and direct source of information to the user. In the developed system, the input data entry screens are also used as input screens. Efficient and intelligible output design should improve the system relationship with user and provides him with the required information. The output from the system can be displayed or hard copied. Hard copy is preferred since it is to be used by the management and become a document for further references.

The objective of the output design the controls and format of all printed documents and reports and of screens that will be produced by the system. Computer output is the most important and direct source of information to the user. For many end users output is the main reason for developing the system and basis on which they will evaluate the usefulness of the application.

Output, generally refers to the results that are generated by the system. The output of the system is designed so as to include a
Number of reports. Reports reflect the output design.

Objectives of Output Design:

- Design output to serve the intended purpose.
- Deliver the appropriate quality of output and on time.
- Choose the right output method.

4.4 Overview of the system:

Decomposition into System:

This subsection describes the decomposition of the systems. I/O Dependency, coupling and cohesion are some of the considerations for decomposition into subsystems. The decomposition will normally result in a hierarchical structure of subsystems that can be represented using a structure chart shown in given figure.

4.5 Data Flow Diagrams:

A DFD is a graphical representation depicting information flow as the data move from input to output. The information flow is represented by level-0 DFD. The directed arrows indicate the flow the data from input and output. System decomposition is represented by level-1 DFD.

5. SYSTEM IMPLEMENTATION

5.1 Detailed Description of the System

There are Four main modules are used to do this project. They are

- Masters
- Transactions
- Reports

MASTERS:

The Masters Module can have Five sub modules. They are

1. **Service Engineer Master:**

The module contains the details of the service engineer. This module also includes the service engineer code, name, designation and operative. The operative field deals whether the engineer is at present in the job or not. The module has the functions such as first, prior, next, last, insert, delete, cancel, save, refresh. Using these functions the user can view to the records needed which has been entered.

2. **Fault Master:**

This module contains the fault code, description1, description2, description3. The fault master deals with the fault according to the machine. First the fault code must be given then the description of the fault in the machine.

3. **Company Master:**

This module is used to store the company details such as the code, name of the company, address of the company, place where it is located, phone, fax no and e-mail address of the company.

4. System Master:

This module deals with the system code, system name, description of the system. The system master deals with the machine which the company manufacturers.

5. Engineer Report:

This module is used to maintain all the engineer report number, engineer code, compliant number, departure time, arrival time, job compliant number, departure time from site and arrival time to site.

All these modules have the functions such as first, prior, next, last, insert, delete, cancel, save, refresh.

TRANSACTIONS:

The Transactions Module can have three sub modules such as

1. Call_Registration:

This module can be designed and produced with the company master, system master, fault master.

The first transaction part has the three fields of master to have the connectivity to perform the calculation.

The company master has the fields such as the code, name of the company, address of the company, place, phone, fax no, e-mail address of the company.

The system master has the code of the system, name of the system and the description of the system.

This module maintains the details of these three entries for the performance of the transaction.

2. Call_Assign:

This part of transaction has the compliant number of the machine, engineer master and job compliant number.

The engineer master has the details such as the name and code of the engineer, designation of the engineer and the operative(whether he is in the job at present or not).

The job compliant number deals such as that the order in which the compliant has been taken into consideration.

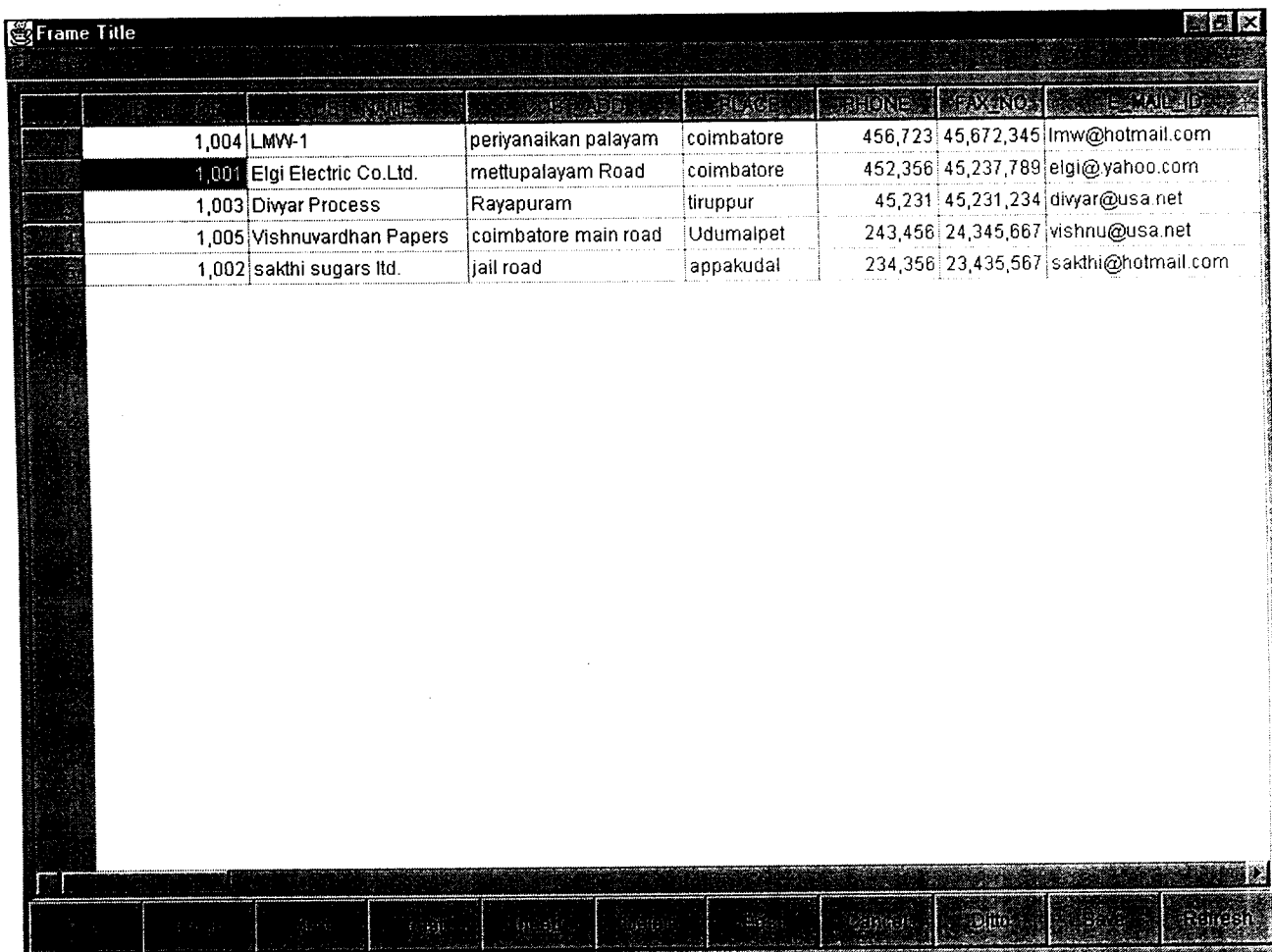
3. Engineer Report:

The engineer report deals and maintains the entries such as service engineer call, report number, engineer master.

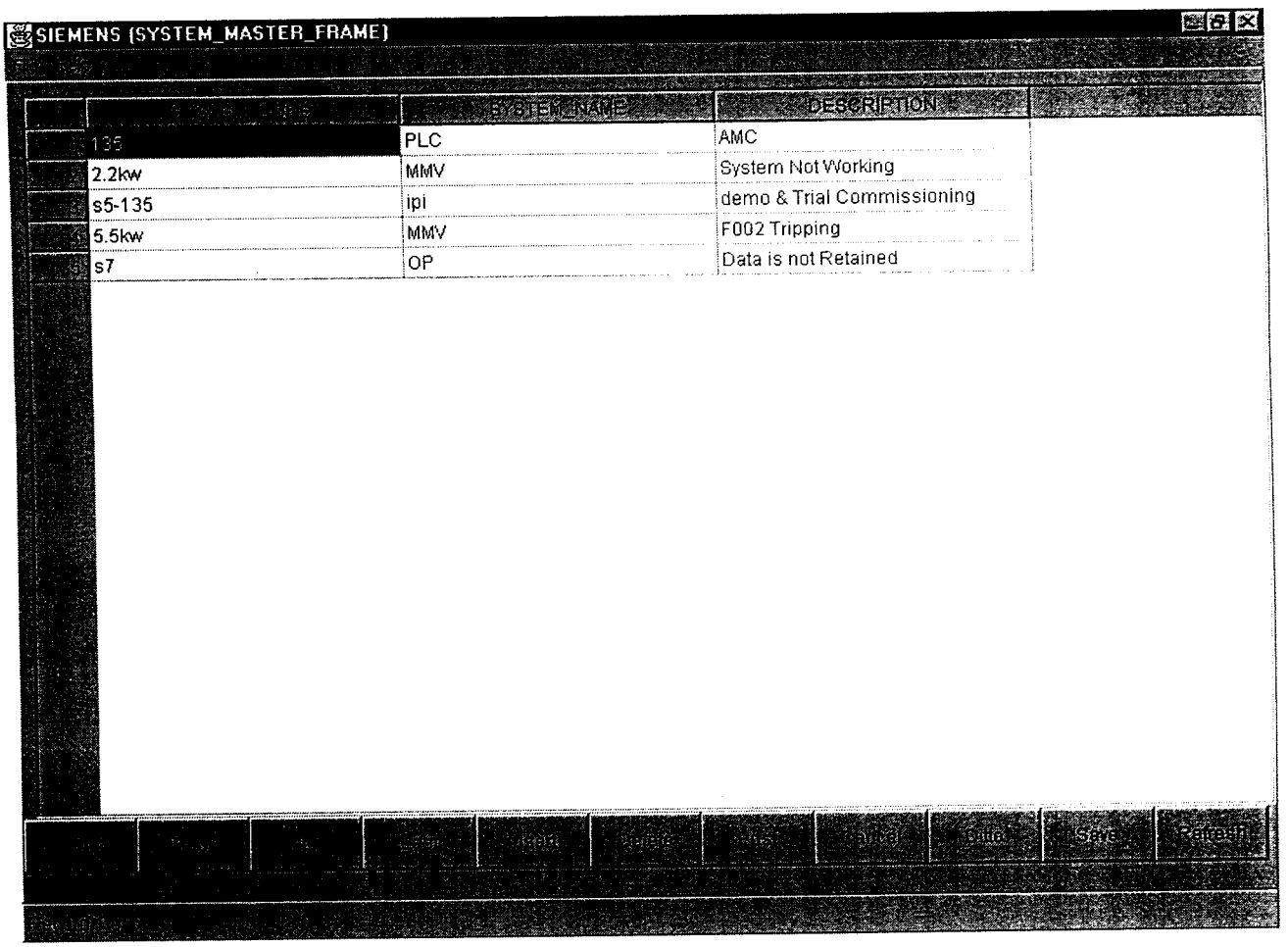
The engineer finds the fault in the machine where it had occurred and finalizes the result. The final result will be from the engineer after rectifying the fault in the machine. He finalizes the report of the machine after the rectification.

The service engineer finalizes the report of the machine.

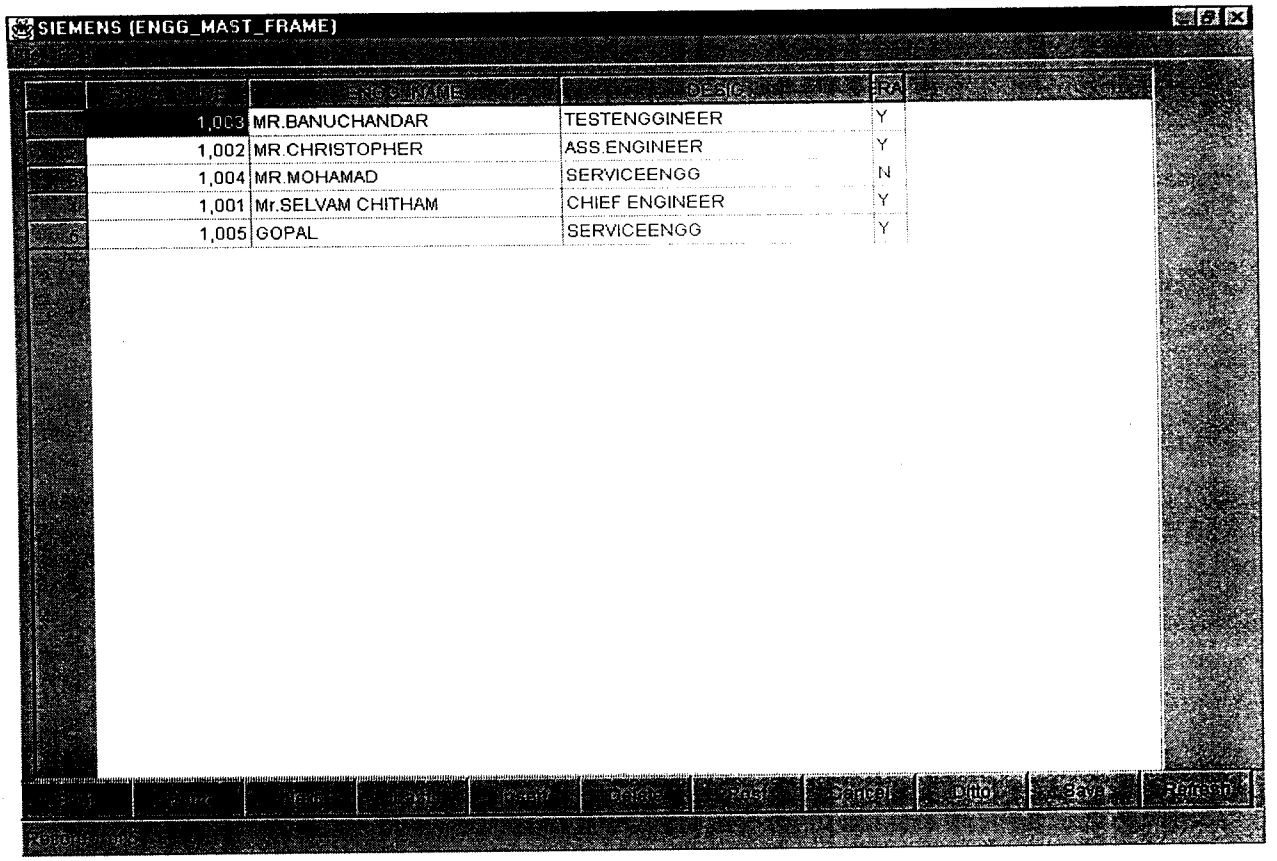
COMPANY MASTER



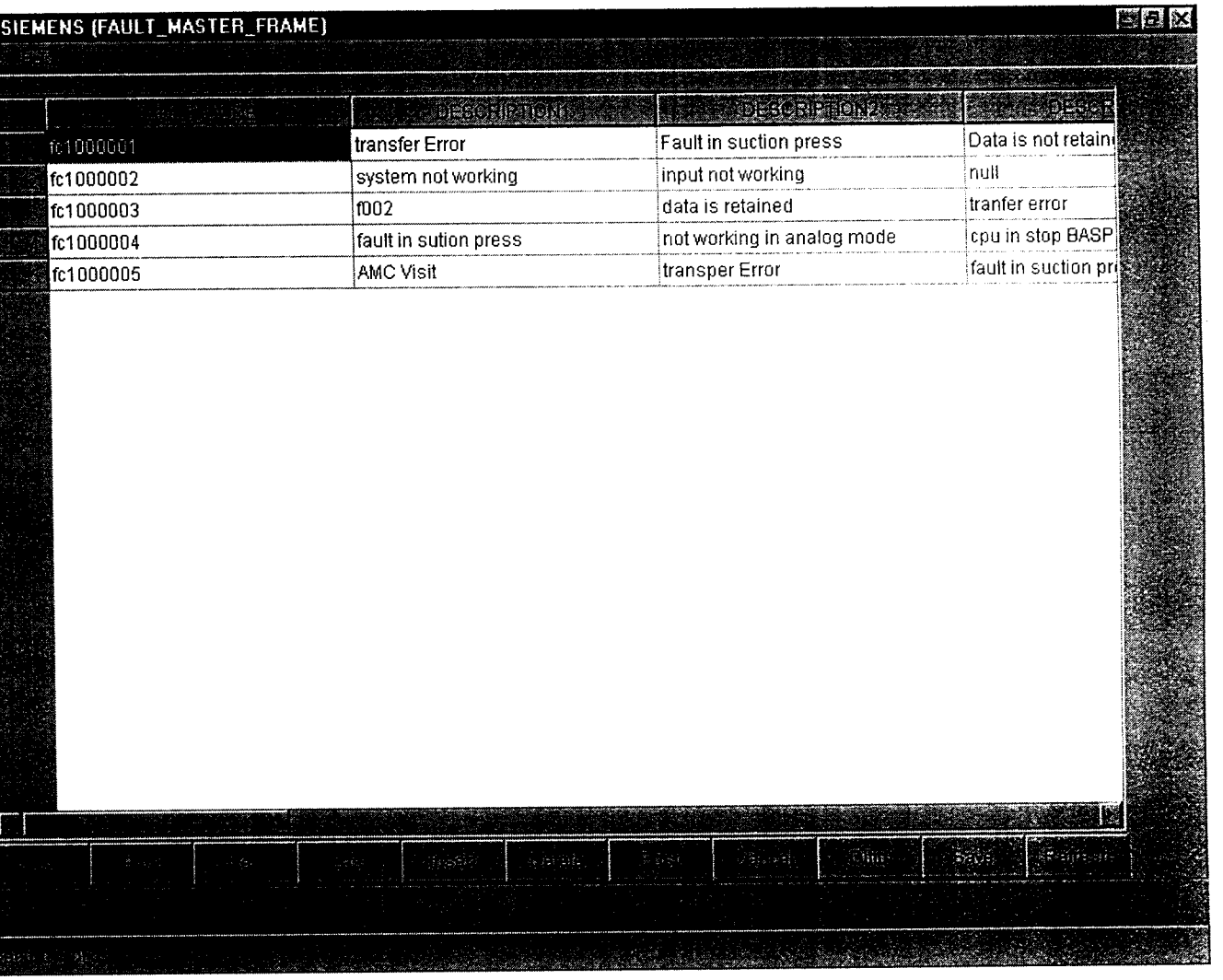
SYSTEM MASTER



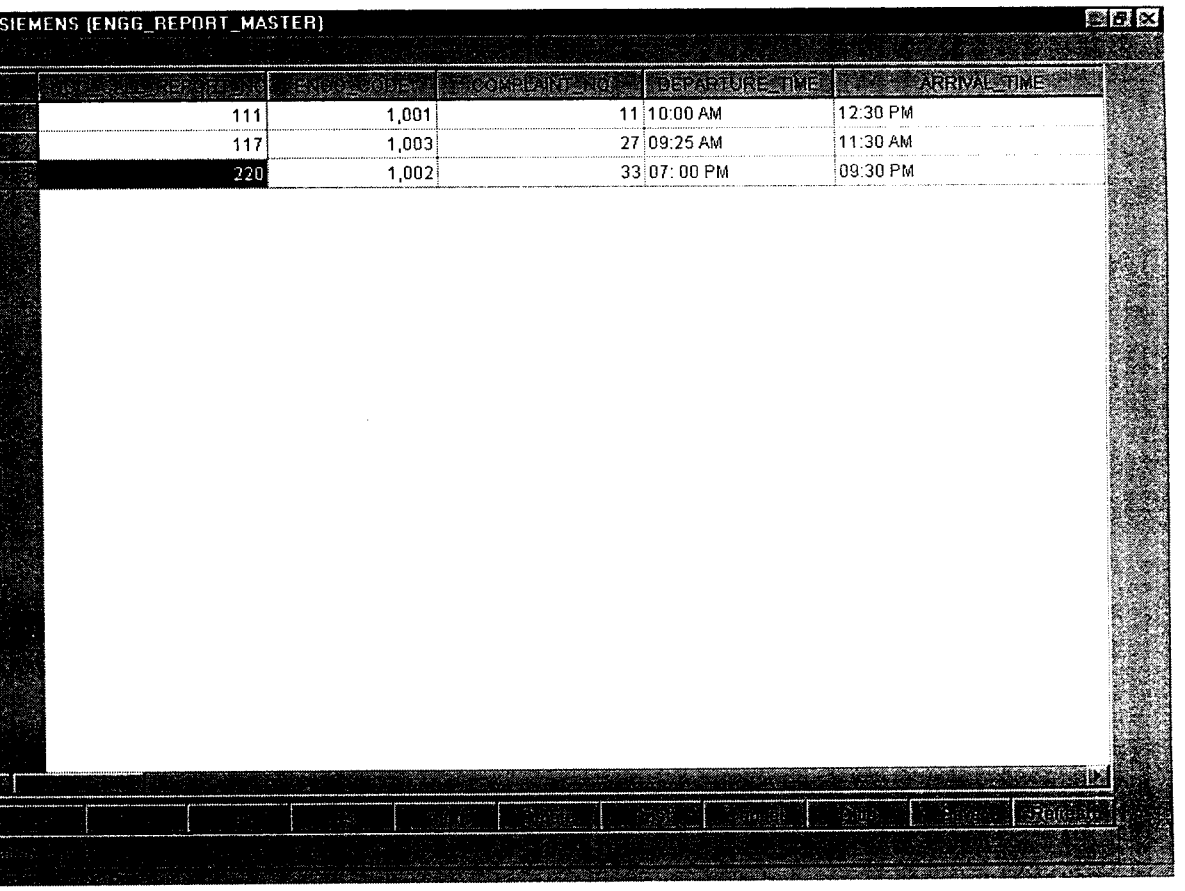
ENGINEER MASTER



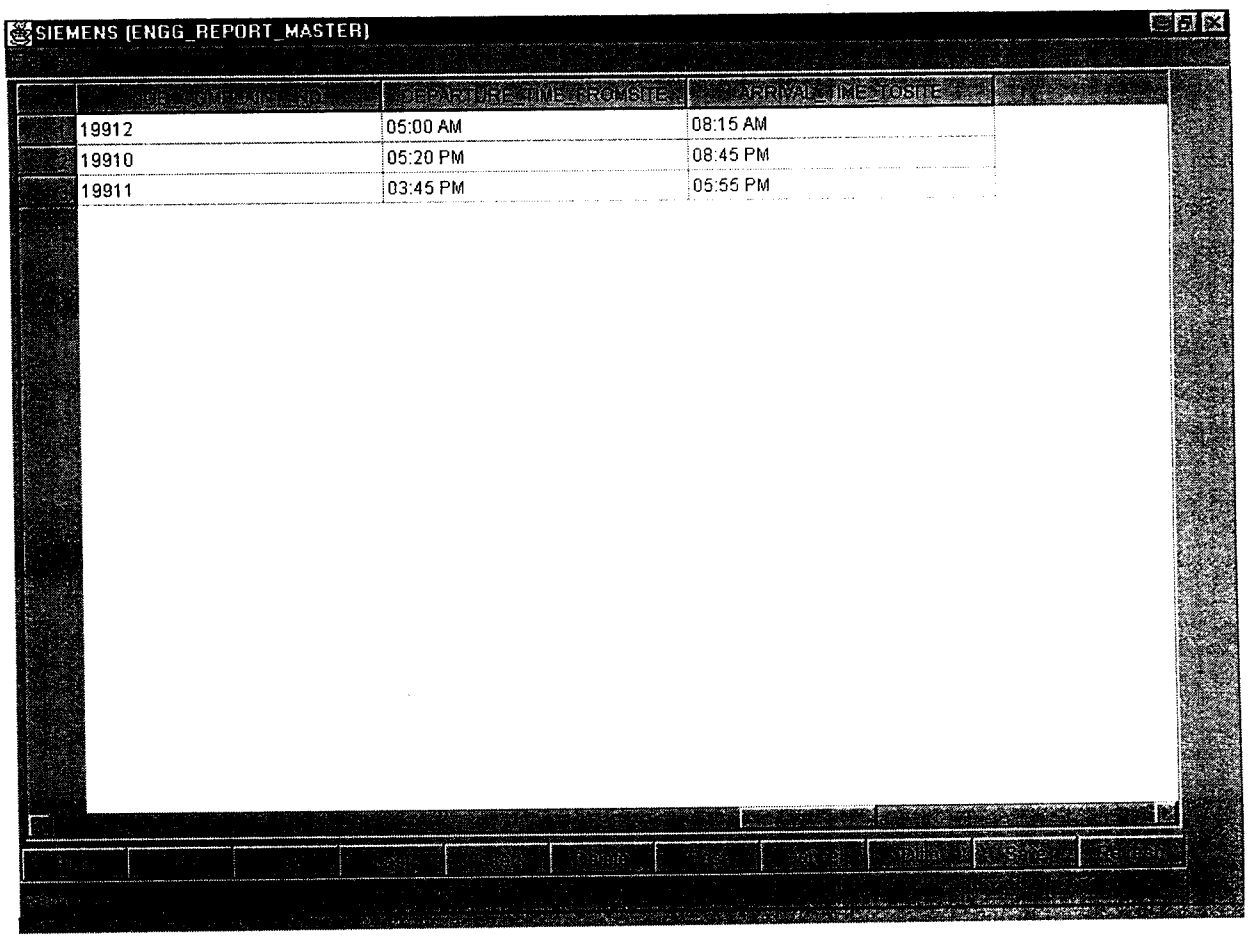
FAULT MASTER



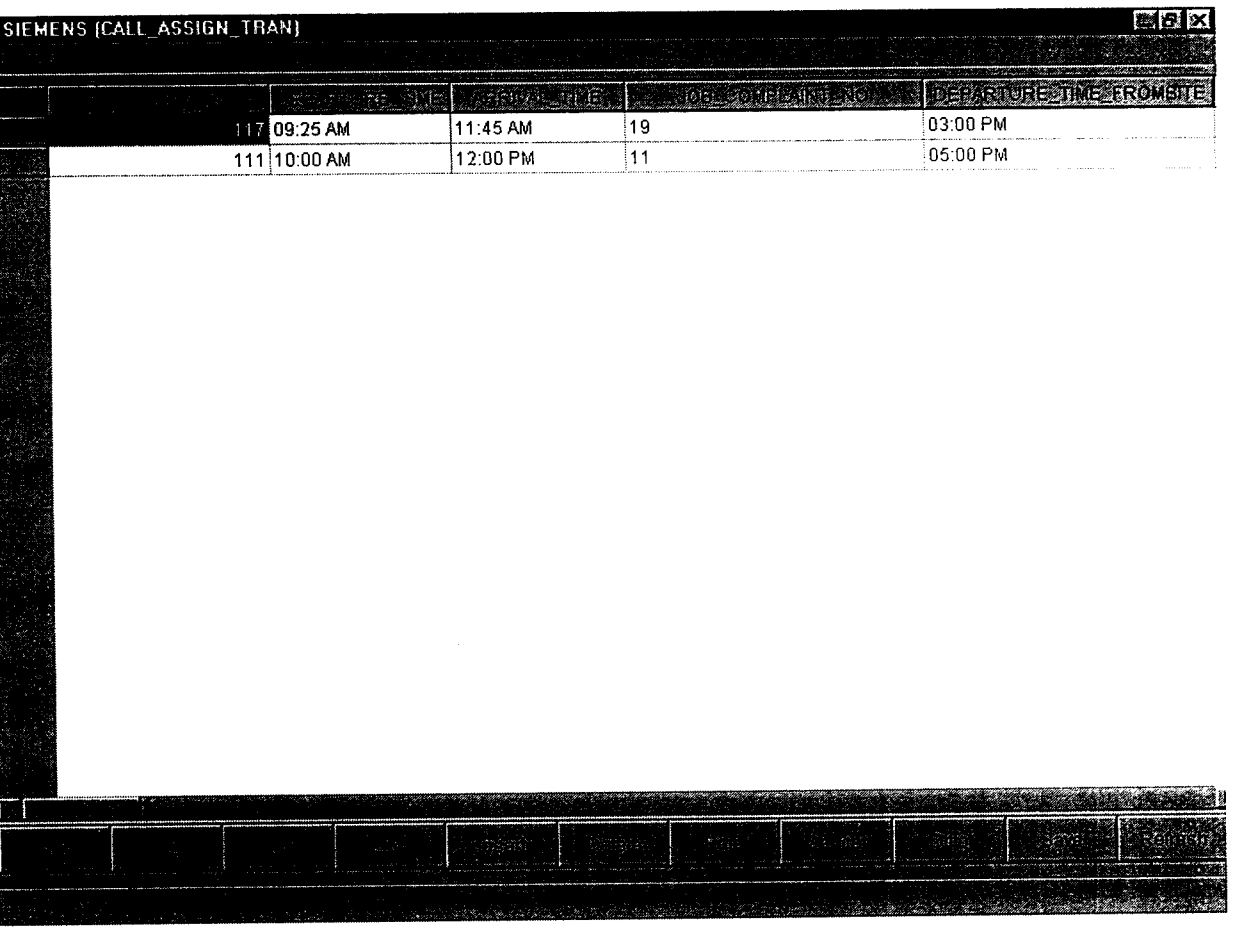
ENGINEER REPORT MASTER-1



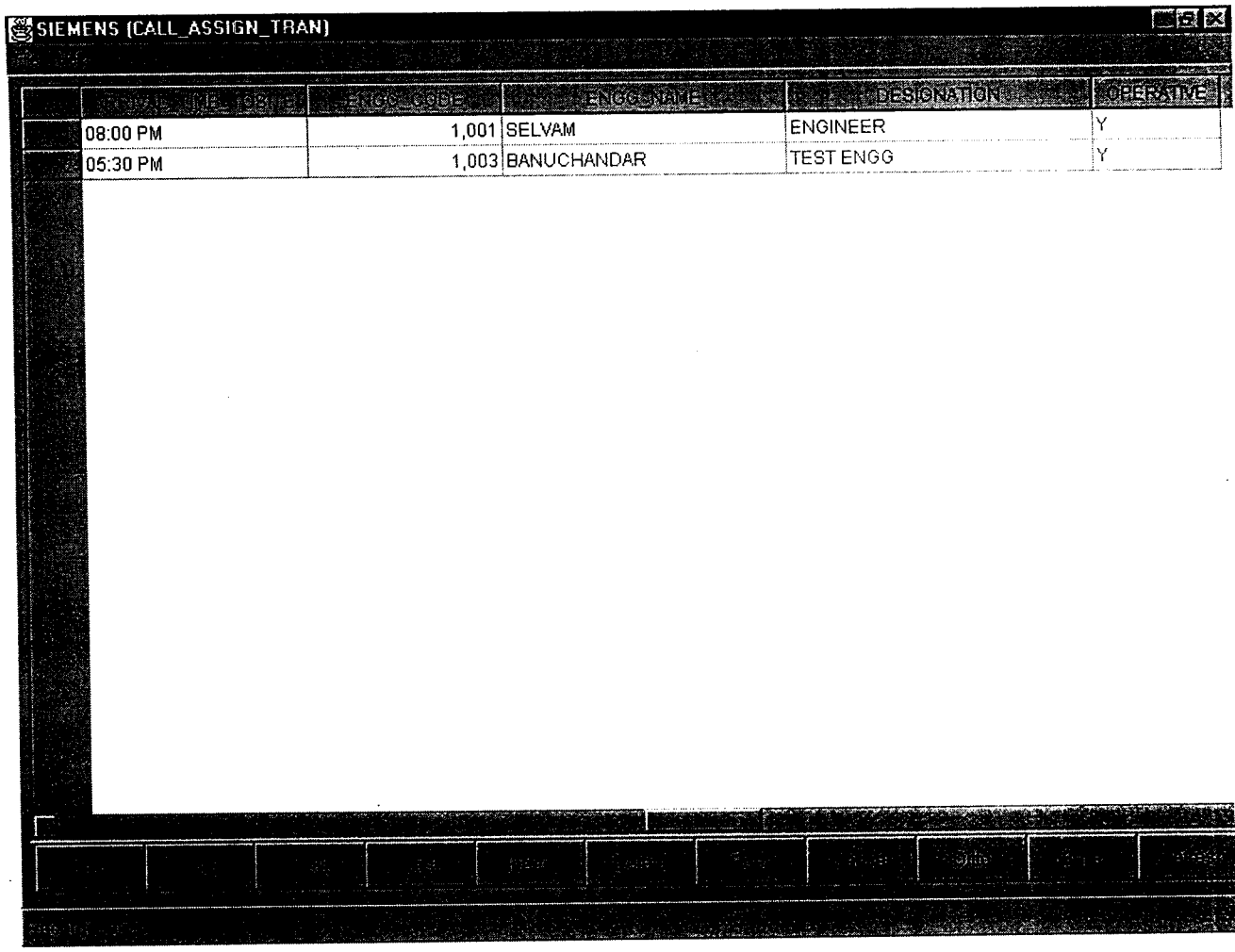
ENGINEER REPORT MASTER



ENGINEER CALL ASSIGN TRANSACTION-1



ENGINEER CALL ASSIGN TRANSACTION-2



ENGINEER CALL REGISTER TRANSACTION-1

SIEMENS (CALL_REGISTRATION_TRAN)

	1,003	DIVYAR PROCESS	RAJAPURAM	TRIPPUR	25,231	45,231,234
	1,002	SAKRTHI SUGARS	JAIL ROAD	APPAKUDAL	234,356	45,237,789
	1,001	ELGI ELECTRONICS LTD	PERIYANAIKAN ROAD	COIMBATORE	452,356	45,237,789

ENGINEER CALL REGISTER TRANSACTION-2

SIEMENS (CALL_REGISTRATION_TRAN)

MAIL_ID	SYSTEM_CODE	SYSTEM_NAME	DESCRIPTION	FAULT_CODE	DESCRIPTION
DIVA.USA.NET	S5-134	IPI	AERI&TRAIL COM	FC1000003	DATA IS RETAINED
SAKTHI@HOTMAIL.COM	2.2KW	MMV	SYSTEM FAILURE	FC1000002	F002
ELGI@YAHOO.COM	135	PLC	AMC	FC1000001	TRANSFER ERROR

ENGINEER REPORT TRANSACTION-1

SIEMENS (ENGG_REPORT_TRAN)

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
111	1,001	SELVAM	135	PLC	SIMCARD
220	1,002	CHRISTOPHER	S7	OP	CHIPSET
117	1,003	BANUCHANDAR	2.2KW	IPL	HANDSET

ENGINEER REPORT TRANSACTION-2

SIEMENS (ENGG_REPORT_TRAN)

FC1000001	TRANSFER ERROR	FAULT IN SUCTION	11
FC1000003	SYSTEM FAILURE	CPU IN TOP BASP	
FC1000002	F002	DATA IS REFAINED	19

FIELD SERVICE REPORTS-1

SIEMENS (FIELD SERVICE REPORT)

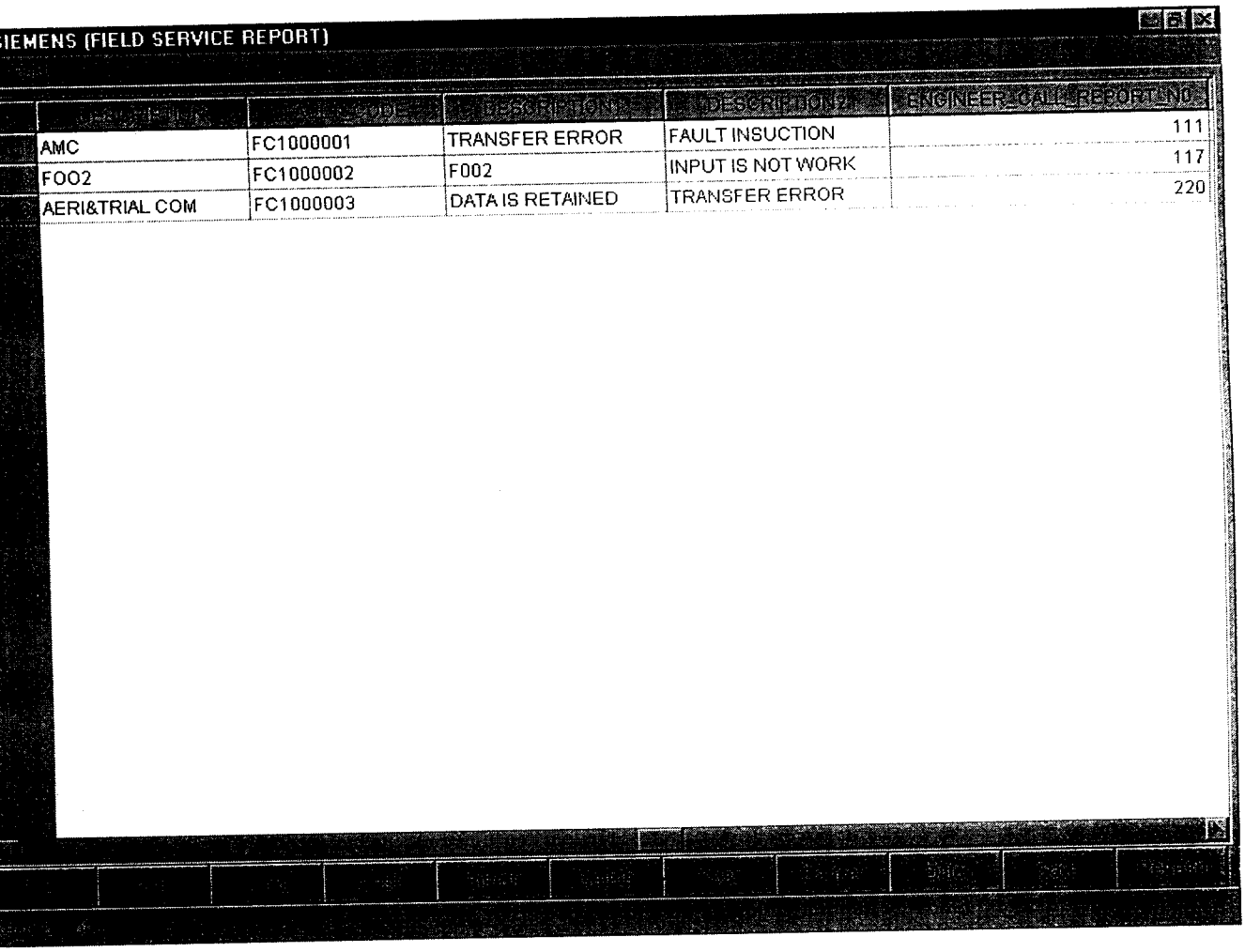
CUST NO	CUST NAME	CUST ADD	PLACE	PHONE	FAX NO	E MAIL ID
1,002	SAKTHI SUGARS LTD	JAIL ROAD	APPAKUDAL	234,356	23,435,567	SAKTHI@HOTMAIL.COM
1,001	ELGI ELECTRONECS	PERIYANAYAKKANPALYAM	COIMBATORE	452,356	452,237,789	ELGI@YAHOO.COM
1,003	DIVYAR PROCESS	RAJAPALAYAM	TRIPPUR	25,231	45,231,234	DIVA@USA.NET

FIELD SERVICE REPORTS-2

SIEMENS (FIELD SERVICE REPORT)

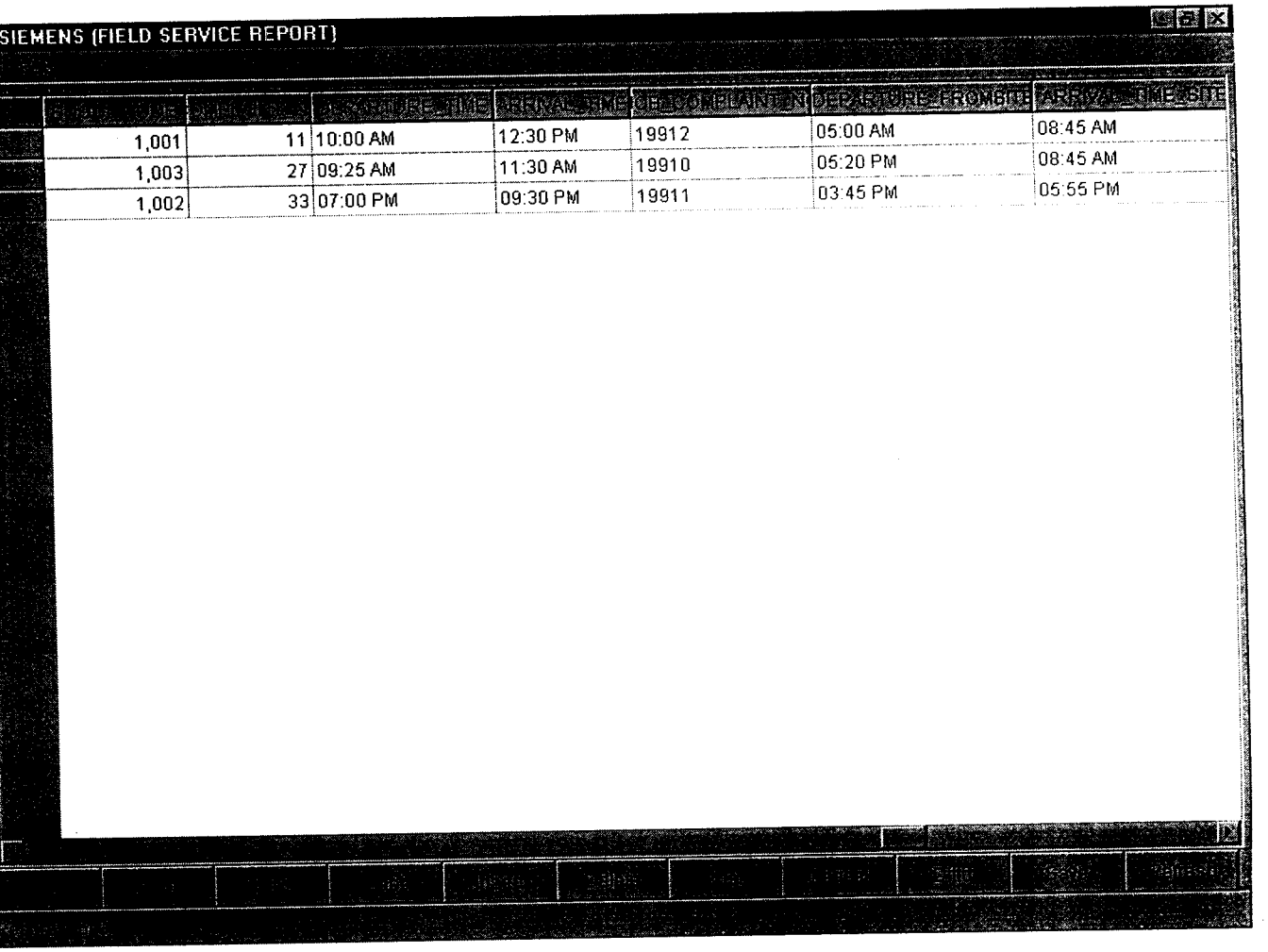
[illegible]	[illegible] NAME	DESIG	OPERATIVE	SYSTEM CODE	SYSTEM NAME
1,001	MR.SELVAM CHITHAM	CHIEF ENGINEER	Y	135	PLC
1,003	Mr.BANUCHANDAR	TEST ENGINEER	Y	2.2KW	MMV
1,002	CHRISTOPHER	ASSISTENT ENGINEER	Y	S5-134	IPI

FIELD SERVICE REPORTS-3



	CODE	DESCRIPTION	DESCRIPTION2	ENGINEER_CALL_REPORT_NO
AMC	FC1000001	TRANSFER ERROR	FAULT INSUCTION	111
FOO2	FC1000002	F002	INPUT IS NOT WORK	117
AERI&TRIAL COM	FC1000003	DATA IS RETAINED	TRANSFER ERROR	220

FIELD SERVICE REPORTS-4



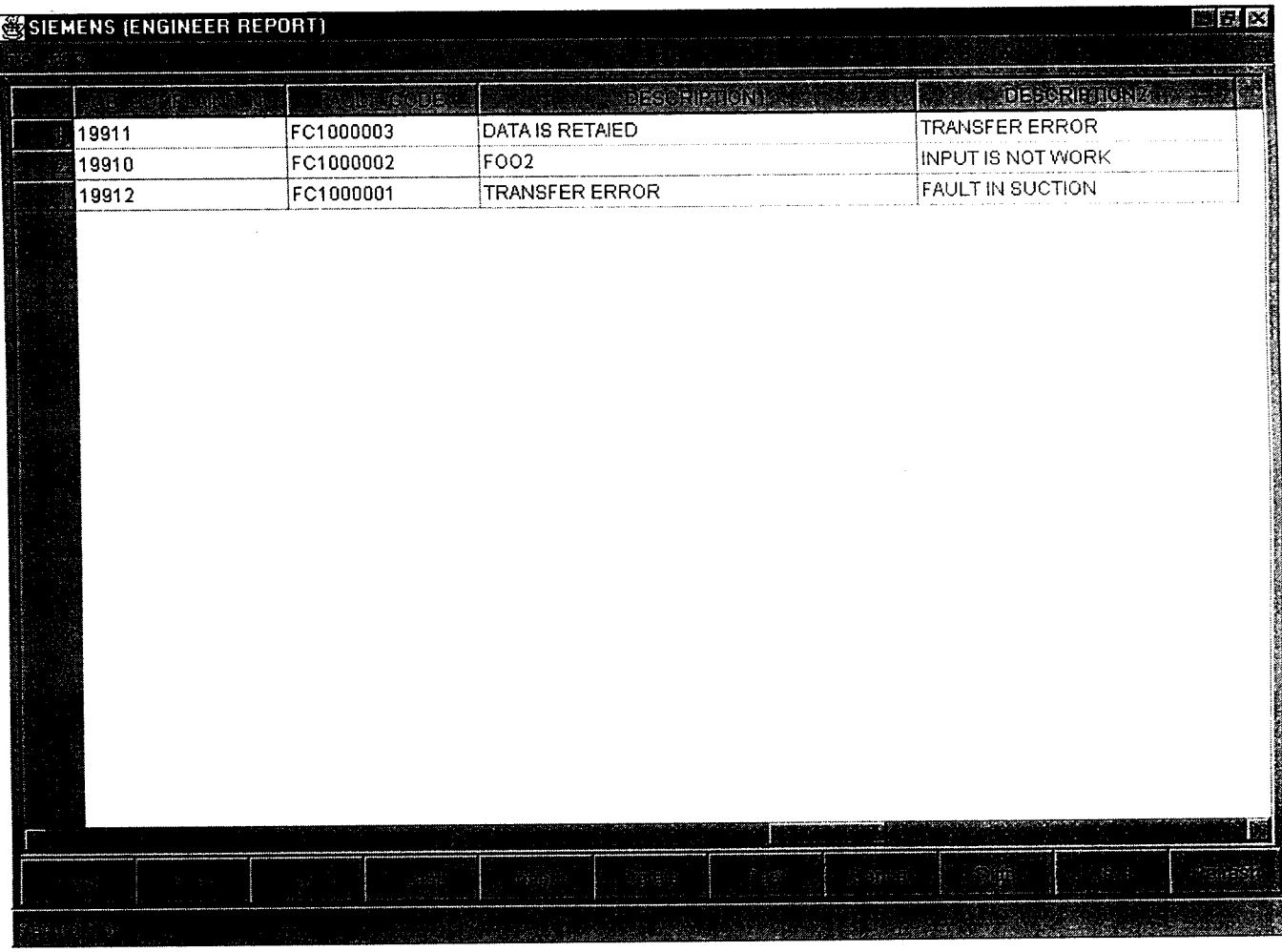
1,001	11	10:00 AM	12:30 PM	19912	05:00 AM	08:45 AM
1,003	27	09:25 AM	11:30 AM	19910	05:20 PM	08:45 AM
1,002	33	07:00 PM	09:30 PM	19911	03:45 PM	05:55 PM

ENGINEERS REPORTS-1

SIEMENS (ENGINEER REPORT)

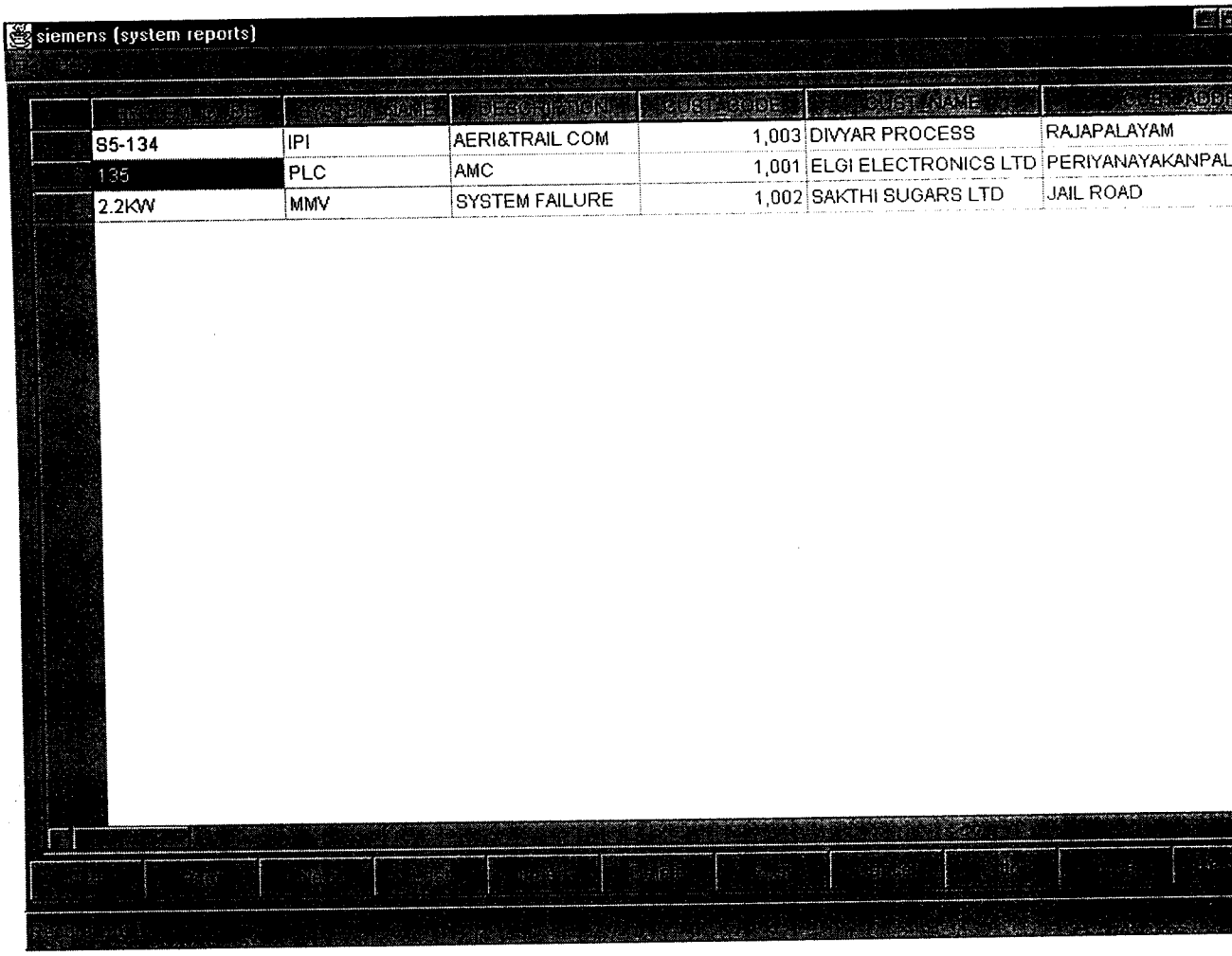
[illegible]	[illegible]	ENGG CALL REPORT NO	SYSTEM CODE	SYSTEM NAME	[illegible] DESCRIPTION
1,003	MR.BANUCHANDER	220	S5-134	IPI	AERI&TRAIL COM
1,001	MR.SELVAM CHITHAM	111	135	PLC	AMC
1,002	MR.CHRISTOPHER	117	2.2KW	MMV	SYSTEM FAILURE

ENGINEERS REPORTS-2

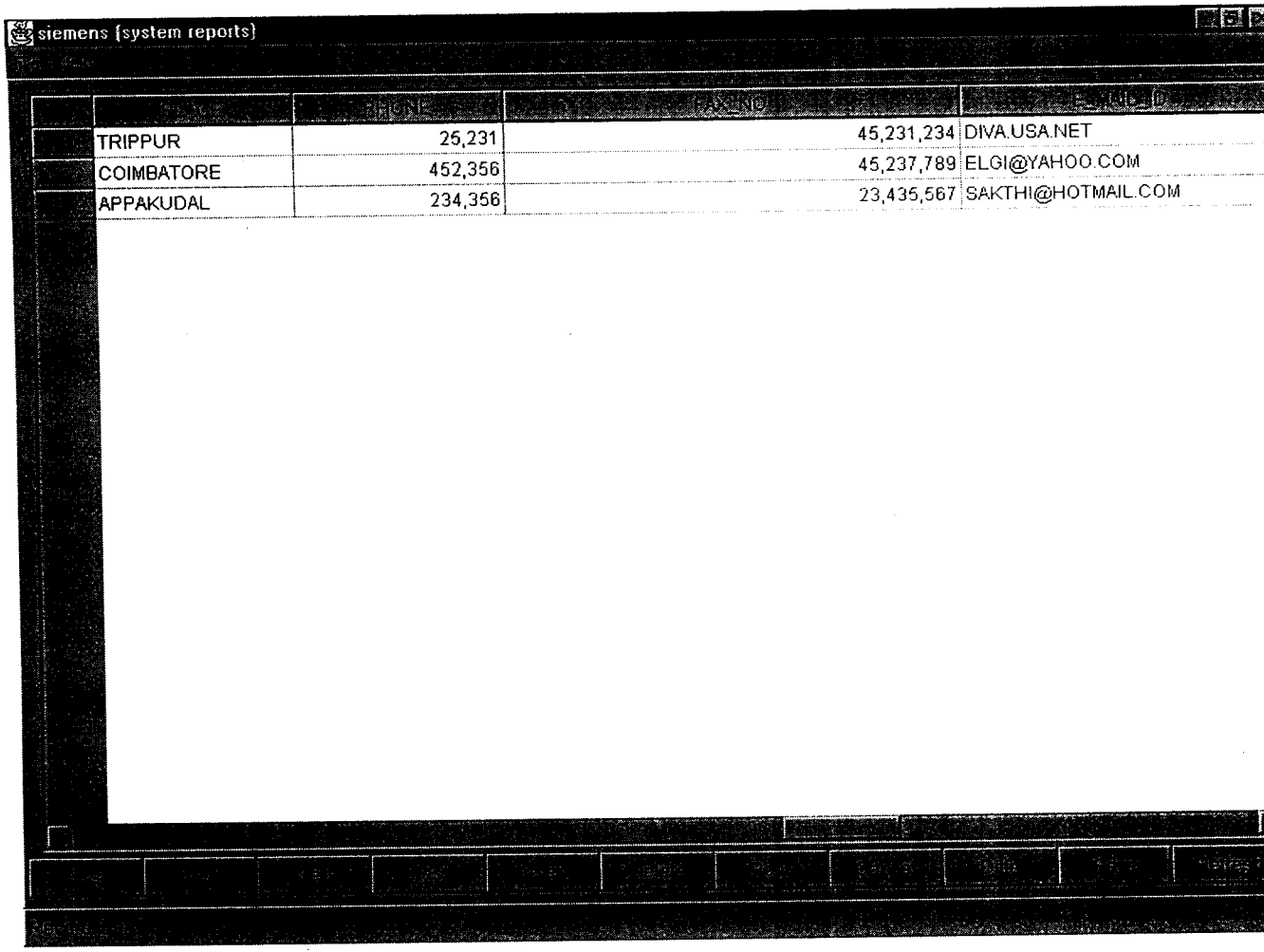


19911	FC1000003	DATA IS RETAIED	TRANSFER ERROR
19910	FC1000002	FOO2	INPUT IS NOT WORK
19912	FC1000001	TRANSFER ERROR	FAULT IN SUCTION

SYSTEM REPORTS-1



SYSTEM REPORTS-2



FAULT REPORTS-1

SIEMENS (FAULT REPORTS

[illegible]	DESCRIPTION	DESCRIPTION	NGINEER_CALL_REPORT_N	[illegible]
FC1000001	TRANSFER ERROR	FAULT IN SUCTION	111	1
FC1000002	F002	DATA IN RETAINED	117	1
FC1000003	INPUT FAILED	TRANSFER ERROR	220	1

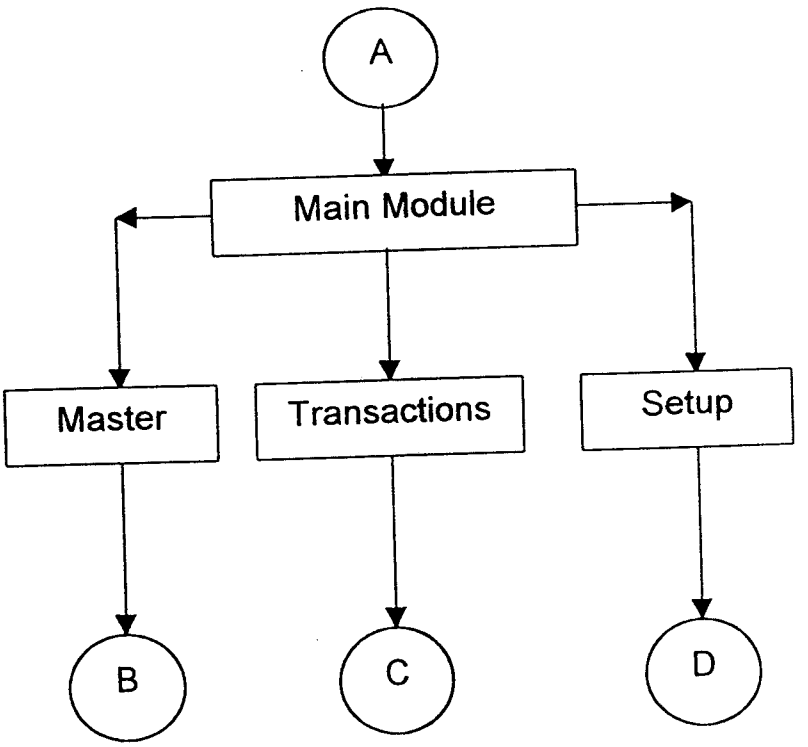
FAULT REPORTS-2

SIEMENS (FAULT REPORTS

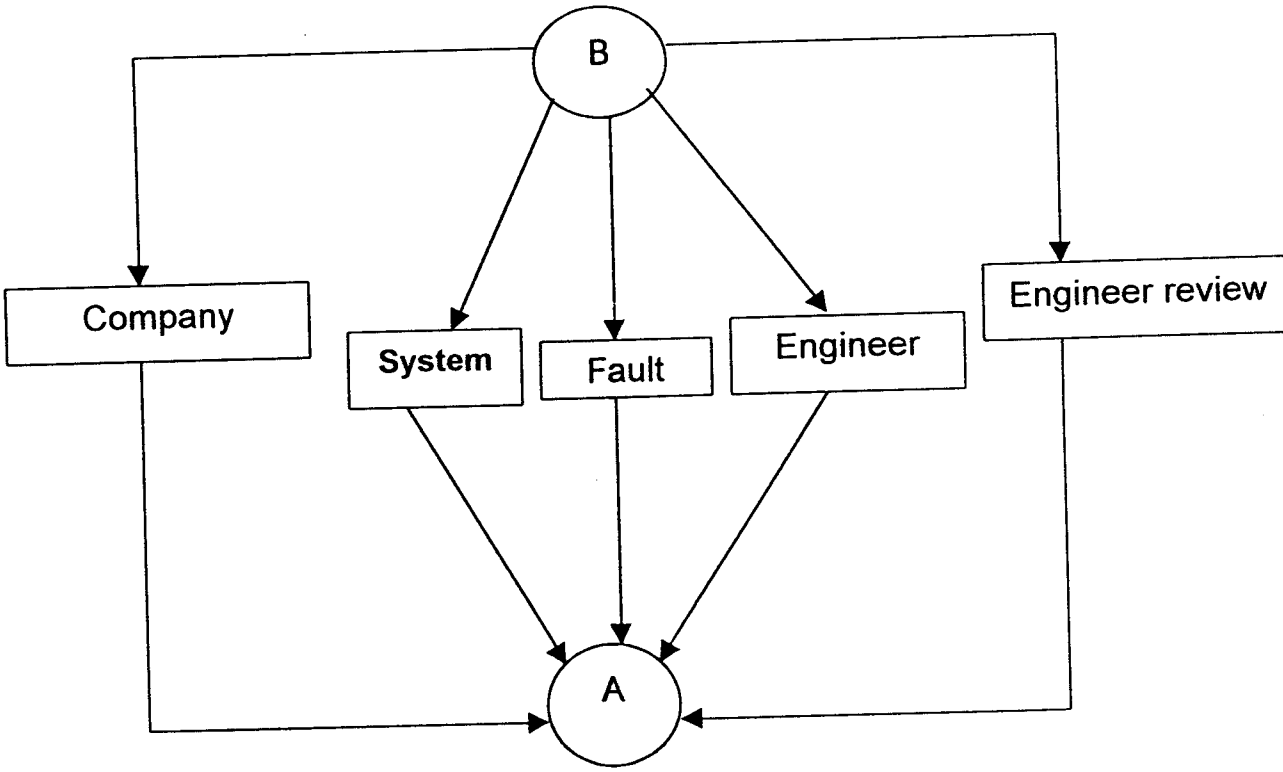
135	PLC	11	1,001	Mr.SELVAM
2.2KW	MMV	27	1,002	Mr.CHRISTOPHER
S5-134	IPI	AERI&TRIAL COM	1,003	Mr.BANUCHANDAR

1.4 DATA FLOW DIAGRAMS

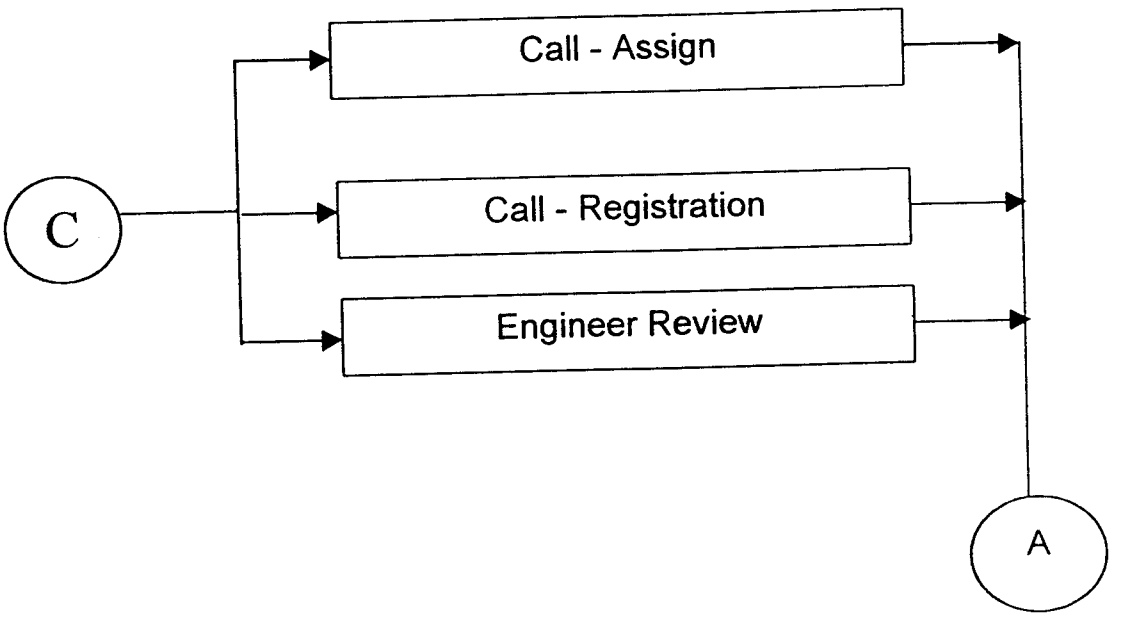
1.4.1 Main Data Flow Diagram



1.4.2 Master Data Flow Diagram



1.4.3 Transaction Data Flow Diagram



SYSTEM DATABASE SECURITY

Security is in important for the system to protect data from the unauthorized person Security is given to both the system and the database in the system. If there is no security privileges then the data will be changed by anybody and they even spoil he whole system Security privileges given the access permission to the users for the databases according to their designation.

There are two kinds of security. One is the External Security that secures the system and the next one is the Internal Security that secures the database.

Internal Security is provided to the system at three levels. At long level, Security is given by User ID and User Password to access the database. At program level, the system will provide read write, print and both read / write permissions to the users. This prevents the unauthorized entry usage into the system and ensuring safety of the data stored. At the field level, some fields are hidden for some users to protect the data value.

Adequate Security has provided so that unauthorized persons cannot operate the system.

6. SYSTEM TESTING

Objectives:

The objectives of testing are as follows:

- Testing is the process of executing a program with the indent of the finding a error
- A good test case is one that has a huge probability of finding as yet undiscovered error
- A successful test is one that uncovers an as yet discovered error.

System testing involves two kinds of activities. They are

1. Integration Testing
2. Acceptance Testing

Integration Testing:

A strategy for integrating software component into a functioning product includes the bottom-up, the top-down and the sandwich strategies.

Bottom-up integration consists of unit testing, followed be subsystem testing and followed by testing of the entire system. Unit testing has the foal of discovering errors in the individual modules of the system.

The primary purpose of the subsystem testing is to verify operations of the interfaces between modules in the system.

Top-down integration starts with the main routine and one or two immediately subordinate routines in the system structure. Top-down integration requires the use of program stubs to simulate the effect of lower routines that are called by those being tested.

Sandwich integration is predominately top-down but bottom-up techniques are used on some modules and subsystems. This solves many of the problems encountered in pure top-down testing and retains the advantage of top-down integration at the subsystem and system level.

The "Software Task Handling & Superintendence" is tested all of its modules. All the three levels of system have a proper communication and transfer of information between them.

This system works under multi user environment. Rights issued to them are restricted from accessing the screens of the higher authorities. So, accidental errors under this environment are avoided.

Acceptance testing:

Acceptance testing involves planning and execution of functional tests, performance tests and stress tests in order to demonstrate that the implemented system satisfies its requirements in addition to functional and performance tests, stress tests are performed to determine the limitations of the system.

Acceptance test will incorporate test cases developed during unit testing and integration testing. Additional test cases are added to achieve the desired level of functional, performance and stress. testing of the entire system.

Black Box Testing:

Black Box testing is done to find

- Incorrect or Missing functions.
- Interface error.
- Errors in external database access
- Performance error.
- Initialization and termination error.

White Box Testing:

Using this white box testing the following test cases are successfully tested for this application.

- Check whether all independent paths within a module have been exercised at least once
- Execute all logical decision on their true and false sides.
- Execute all loops at their boundaries and within their bounds.
- Exercise internal data structure to ensure their validity.
- All the possibly validity checks and validity look-ups have been provided to ensure valid data entry.

Test Data And Output:

The system has been verified and validated running

- Test data
- Live data

Run With Test Data:

The system is tested using sample data. Specification testing also done for each condition or combination of conditions. Modular approach is applied for testing independently and after interfacing the modules with the main menu.

Run With Live Data:

The system is tested with the data of the old system for a particular period and verified the old reports.

8.APPENDIX

8.1.1 PURPOSE

The Java facility has been set up by SIEMENS LIMITED, COIMBATORE to transact business with their superiors. The company manufactures products such as mobiles, pagers etc., which are being done in service to customers. The process of ordering and paying of products are done by computerizing means. The field service report delivers the final report of the project.

8.1.2 SCOPE

TRADING FOR SIEMENS THRU NET – MIS FOR SERVICE CALLS is the computerizing service reports.
The system works as follows:

- The company provides Service Engineers to handle all the products to be manufactured in a desired manner.
- The company provides facilities for rectifying fault machines which are given by the customers
- The engineers are main part of the company to view on the reliable parts of the machine for manufacturing
- The orders are taken according to the system engineer's view
- Any fault are handled by fault master

8.1.3 REFERENCES

HTML Third Edition 10 Minute Guide – Tim Evans

JAVA FOR BEGINNER'S

JAVA HANDBOOK A Division of The McGraw-Hill Companies

EVERYTHING YOU NEED TO KNOW ABOUT JAVA AND WEB PROGRAMMING – Louis Rossetto

8.2 GENERAL DESCRIPTION

8.2.1 PRODUCT PERSPECTIVE

The system has been set up to transact business with the suppliers over the Net. The products are being manufactured according to the parts that are supplied by the suppliers, they are taken in-charge by the engineers to overlook the parts are valid to the machine. The products that are manufactured such as mobiles, pagers etc., Incase the product gets fault the engineer handles the fault and rectifies it.

8.2.2 PRODUCT FUNCTIONS

CLIENT SIDE FUNCTIONS

The product starts with the homepage of the company.

In the homepage, the email address of the person to contact in the company is mentioned. If any new user contacts he has to use the email-id of the company.

In the menu screen, the functions available are:
Catalogue
System Report
Fault Report
View

Catalogue shows the product code, product name, description of the parts manufactured. In the catalogue the order measures are specified in detail for the customers, suppliers to get and send orders to the company.

System Report deals with the kind of system the company handles.

Fault Report shows the fault that affect the machine and are rectified by the engineers

View is used to view any orders and the status of the orders.

SERVER SIDE FUNCTIONS

This server side functions include the Updation of all the databases used.

8.2.3 USER CHARACTERISTICS

The product is very user friendly. The user can handle the product with the catalogue for further verifications of the product in-case of any doudts.

8.3 PERFORMANCE REQUIREMENTS

The system needs all database security. They are encrypted and decrypted back at the client side and then displayed to the user. The data's are thus protected from corruption.

The system can be operated by any number of users from any corner of the world.

The response time depends on the connection with the host computer.

8.4 DESIGN CONSTRAINTS

HARDWARE LIMITATIONS

The system has the processor with the intel pentiumII and the connectivity has the ODBC connection with the protocol.

USER INTERFACE AND SCREEN FORMATS

The screens are designed in a manner so that is user friendly. The data's are inserted using the functions of the insert, delete, first, prior, next, last, cancel, save. These functions are designed in the screen format so that the data's are entered and saved for future reference.

8 . APPENDIX

5.1. TABLE STRUCTURES:

COMPANY MASTER

FIELD NAME	FIELD TYPE	WIDTH	DESCRIPTION
CUST_CODE	NUMBER	5	CUSTOMER CODE
CUST_NAME	VARCHAR	20	CUSTOMER NAME
CUST_ADDRESS	VARCHAR	20	CUSTOMER ADDRESS
PLACE	VARCHAR	10	LOCATION OF THE COMPANY
PHONE	NUMBER	10	PHONE NUMBER
FAX_NO	NUMBER	10	FAX NUMBER
E_MAIL_ID	VARCHAR	20	MAIL_ID OF THE COMPANY

ENGINEER MASTER

FIELD NAME	FIELD TYPE	WIDTH	DESCRIPTION
ENGG_CODE	NUMBER	5	CODE OF THE ENGINEER
ENGG_NAME	VARCHAR	20	NAME OF THE ENGINEER
DESIG	VARCHAR	20	DESIGNATION OF THE ENGINEER
OPERATIVE	CHAR	1	WHETHER THE ENGINEER IS PRESENT IN THE JOB OR NOT

SYSTEM MASTER

FIELD NAME	FIELD TYPE	WIDTH	DESCRIPTION
SYSTEM_CODE	VARCHAR	10	CODE OF THE SYSTEM
SYSTEM_NAME	VARCHAR	20	NAME OF THE SYSTEM
DESCRIPTION	VARCHAR	15	DESCRIPTION OF THE SYSTEM

FAULT MASTER

FIELD NAME	FIELD TYPE	WIDTH	DESCRIPTION
FAULT_CODE	VARCHAR	20	CODE OF THE FAULT
DESCRIPTION1	VARCHAR	20	DESCRIPTION OF THE FAULT
DESCRIPTION2	VARCHAR	20	DESCRIPTION OF THE FAULT
DESCRIPTION3	VARCHAR	20	DESCRIPTION OF THE FAULT

ENGINEER REPORT MASTER

FIELD NAME	FIELD TYPE	WIDTH	DESCRIPTION
ENGG_CALL REPORT_NO	NUMBER	10	CALL REPORT NO TO CONTACT THE ENGINEER
ENGG_CODE	NUMBER	10	CODE OF THE ENGINEER
COMPLAINT_NO	NUMBER	10	COMPLIANT NO OF THE FAULT
DEPARTURE TIME	VARCHAR	10	DEPATURE TIME OF THE ENGINEER
ARRIVAL_TIME	VARCHAR	10	ARRIVAL TIME OF THE ENGINEER
JOB_COMPLAINT NO	VARCHAR	10	COMPLIANT NO ON THE JOB TO BE UNDERTAKEN

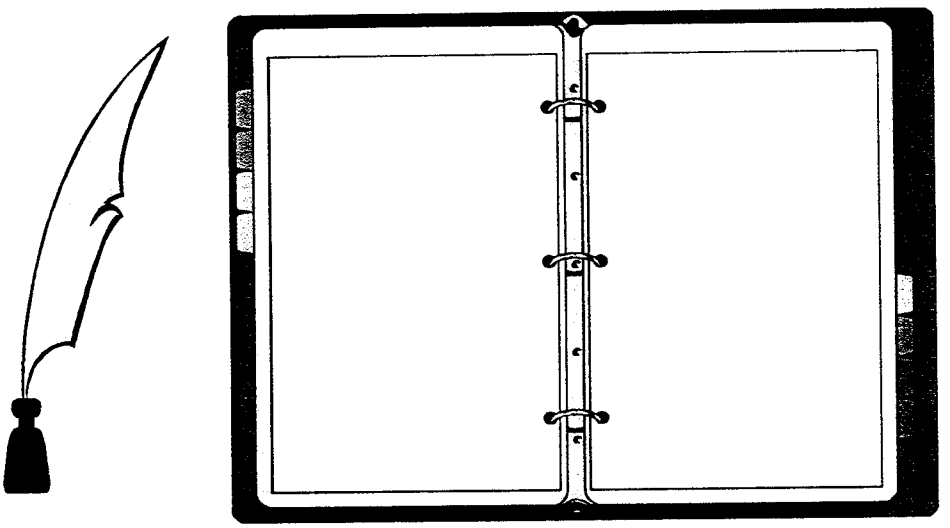
CALL ASSIGN

FIELD NAME	FIELD TYPE	WIDTH	DESCRIPTION
COMPLAINT_NO	NUMBER	10	COMPLIANT NO
DEPARTURE TIME	VARCHAR	10	DEPARTURE TIME OF THE ENGINEER
ARRIVAL_TIME	VARCHAR	10	ARRIVAL TIME OF THE ENGINEER
JOB_COMPLAINT NO	VARCHAR	10	COMPLIANT NO OVER THE JOB
DEPARTURE TIME_FROMSITE	VARCHAR	10	DEPARTURE TIME FROM SITE
ARRIVAL_TIME TOSITE	VARCHAR	10	ARRIVAL TIME TO SITE
ENGG_CODE	NUMBER	5	CODE OF THE ENGINEER
ENGG_NAME	VARCHAR	20	NAME OF THE ENGINEER
DESIGNATION	VARCHAR	20	DESIGNATION OF THE ENGINEER
OPERATIE	CHAR	1	WHETHER THE ENGINEER IS IN JOB OR NOT

ENGINEER REPORT TRANSACTION

NAME	FIELD TYPE	FIELD WIDTH	DESCRIPTION
ENGG_CALL_REPORT_NO	NUMBER	10	REPORT NO
ENGG_CODE	NUMBER	10	CODE OF THE ENGINEER
ENGG_NAME	VARCHAR2	20	NAME OF THE ENGINEER
SYSTEM_CODE	VARCHAR2	10	CODE OF THE SYSTEM
SYSTEM_NAME	VARCHAR2	15	NAME OF THE SYSTEM
FAULT_CODE	VARCHAR2	20	CODE OF THE FAULT
DESCRIPTION1	VARCHAR2	15	DESCRIPTION OF THE FAULT
DESCRIPTON2	VARCHAR2	15	DESCRIPTION OF THE FAULT
JOB_COMPLIANT _NO	VARCHAR2	10	COMPLIANT NUMBER OF THE JOB

REPORTS



REPORTS:

The following reports are prepared now and then whenever they are necessary. There are five reports are generated for this project. They are

1. **Engineer Report**
   a. Engineer Master
   b. Engineer Report Master

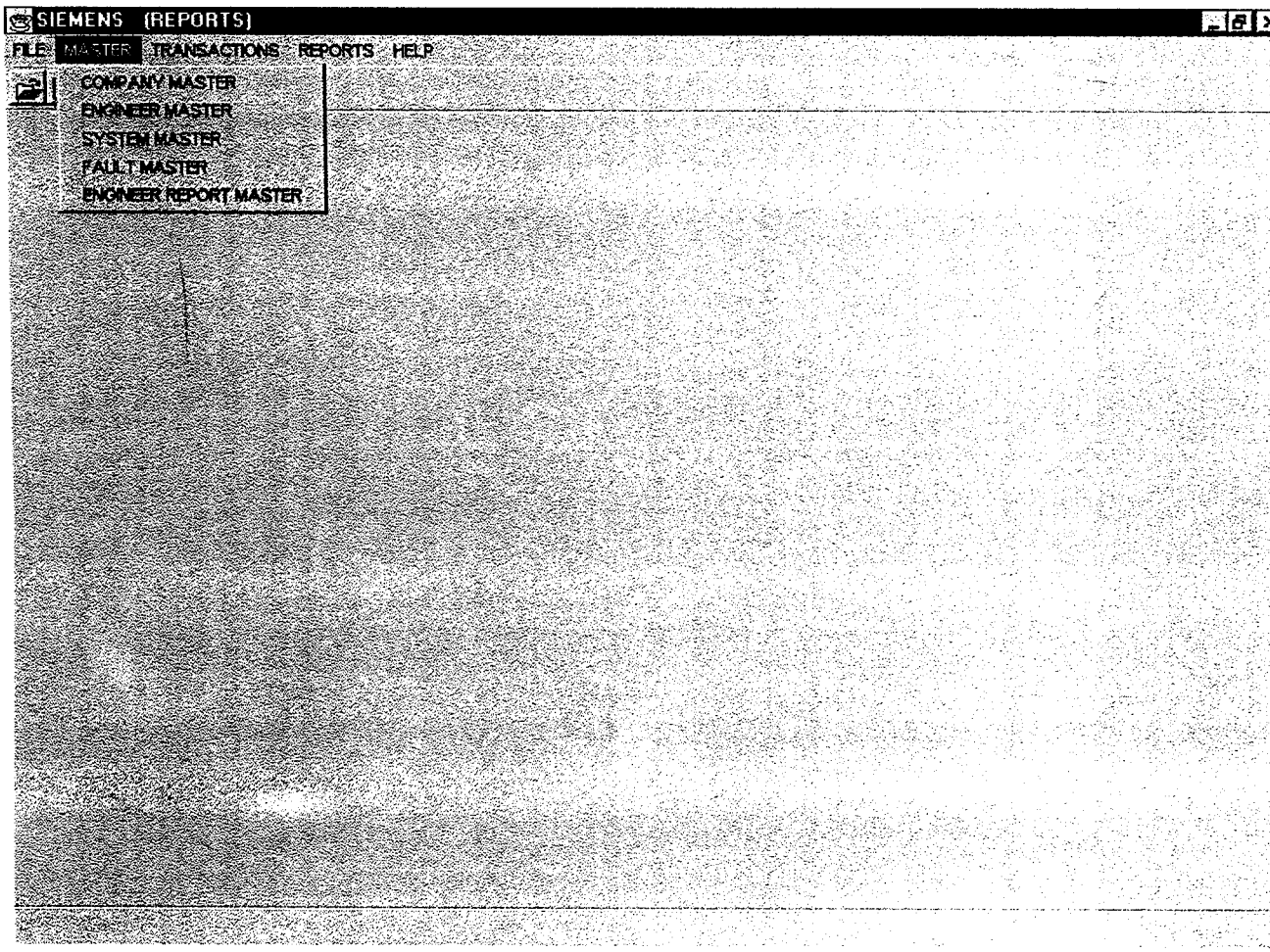
2. **Fault Report**
   a. Fault Master

3. **Company Report**
   a. Company Master
   b. System Master
   c. Engineer Report Master

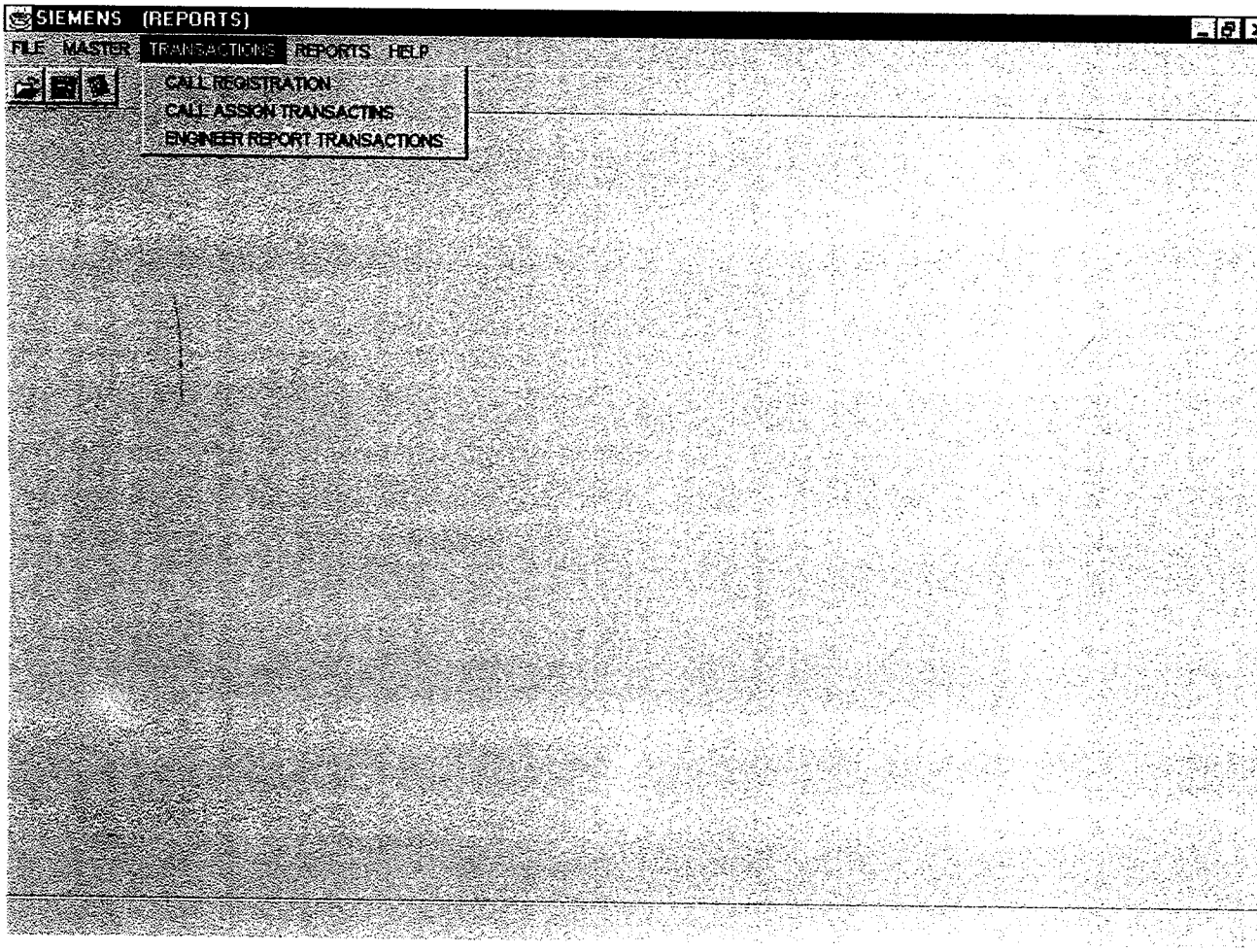
4. **System Report**
   a. System Master
   b. Fault Master

5. **Field service Report**
   a. Engineer Master
   b. Fault Master
   c. Company Master
   d. System Master
   e. Engineers Report
   f. Call Registration
   g. Call Assign

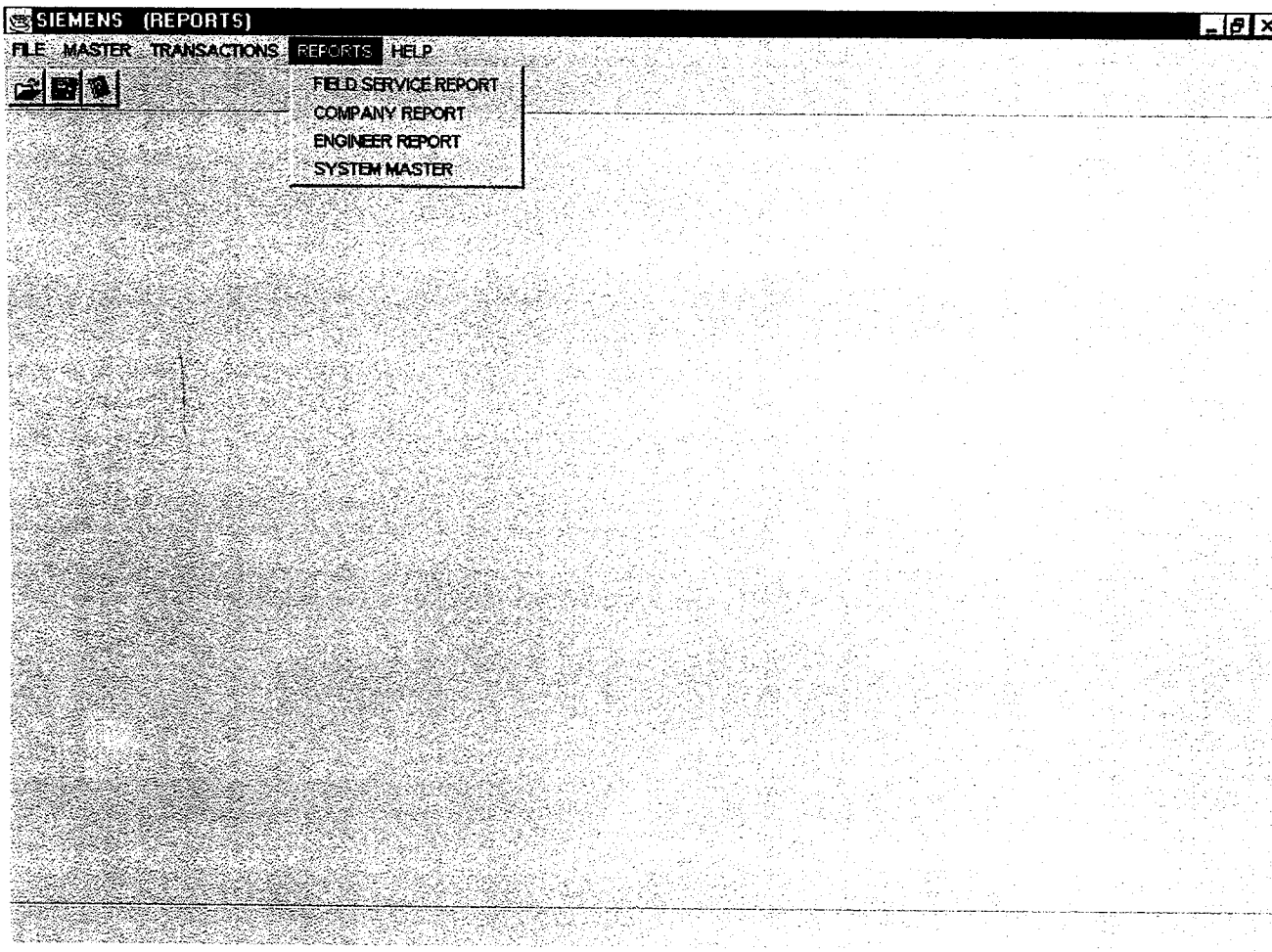
REPORTS


SIEMENS (REPORTS)
FILE
MASTER
TRANSACTIONS
REPORTS
HELP
COMPANY MASTER
ENGINEER MASTER
SYSTEM MASTER
FAULT MASTER
ENGINEER REPORT MASTER

REPORTS


SIEMENS (REPORTS)
FILE MASTER TRANSACTIONS REPORTS HELP
CALL REGISTRATION
CALL ASSIGN TRANSACTINS
ENGINEER REPORT TRANSACTIONS

REPORTS


SIEMENS (REPORTS)
FILE
MASTER
TRANSACTIONS
REPORTS
HELP
FIELD SERVICE REPORT
COMPANY REPORT
ENGINEER REPORT
SYSTEM MASTER

6. CONCLUSION

The project named "MIS FOR SERVICE CALLS" is used to COMPUTERIZE the FIELD SERVICE done by the engineers for various customers.

The project provides facility to enter the information of customers, machine details, fault calls being booked and the time taken to finish the call.

The system provides the engineers to maintain all the fields to be in a desired manner. This reduces the amount of manual work to a great extent.

The system is user friendly, interactive and cater to need of top-level management giving brief on screen display and also detail report.

The engineers perform their job apt to the satisfaction of the customers. Each entry in this system has separate fields that are utilized to an extent for giving connectivity to the system.

Services are done according to the insertion of codes to each and every compliant over the machine. The final report is been given by the engineer as the field service report having all calculations being tallied.

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