ATTENDANCE MANAGEMENT SYSTEM USING SWIPE CARD

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DEPARTMENT OF COMPUTER TECHNOLOGY

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CERTIFICATE

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Department of Computer Technology

Certificate

This is to certify that this project entitled
ATTENDANCE MANAGEMENT SYSTEM USING SWIPE CARD

has been submitted by **Ms.** Meenakshi Kalla, Hridula Balakrishnan, Vidya

In partial fulfillment of the requirements for the award of degree of Bachelor of Science Applied Science Computer Technology of Bharathiar University, Coimbatore:641 046 during the academic year 2002-2003.

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Certified that the Candidate was Examined by us in the Project Work Viva-Voce Examination held on _____

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To whomsoever it may concern

This is to certify that the following students

1.MEENAKSHI KHANNA

2.MRIDULA BALAKRISHNAN

3.VIDYA. S

of III year B.Sc Computer Technology,Kumaraguru College of Technology have undergone a project titled "**ATTENDANCE MANAGEMENT SYSTEM USING SWIPE CARD**" at our concern for the period of 5 months. Their performance during the period of work was excellent and they have completed the project successfully.

For dacSoft Solutions,

Dharam Bir Nanda

Director

Coimbatore - 641011, India.

DECLARATION

I hereby declare that this project entitled Attendance Management System, submitted to the Bharathiar University as the project of the Bachelor of Science Degree, is a record of original work done by us under the Supervision and guidance of Mr.Karthik MCA , *Dacsoft* solutions., coimbatore, and Mrs. R.K. KAVITHA M.C.A., Lecturer, Department of Computer Technology, Kumaraguru College of Technology, Coimbatore. And this project work has not formed the basis for the award of any Degree/diploma/Associateship/Fellowship or similar tutle to any candidate of any University.

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With all humility and submissiveness I surrender myself at the "Divine Feet" of God and submit my foremost gratitude and indeptness of having gracefully blessed me with knowledge, skill enthusiasm.

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SYNOPSIS

Today in the shrinking world, Technology is grouping up like a giant. To keep at that speed, the current technology in use have to be updated periodically, otherwise we will stay behind. Keeping this in mind my project has come in to existence.

Our project work titled **"ATTENDENANCE MANAGEMENT SYSTEM USING SWIPE CARD"** is done for the benefit of *DACSOFT SOLUTIONS.* The concern's administration is efficient. But they apparently do all the management requirements manually and perhaps this is a tedious work.

Hence in order to overcome the manual maintenance of records, we decided to work on a project, that would give a complete solution to channelise the administrative criteria and thus the purpose of easiness and flexibility may be fulfilled to a wider extent.

The project requires data entry, processing and sorting of data. So we decided to do this project using a Front-end tool Visual Basic and a Back-end Oracle for the reason of user friendliness.

The project has been split into four modules to meet the various management requirements in the concern.

The first module, the Human Resource management system has been developed for employment of file for automating the various job vacancies.

The second module, the module relatively concentrates on the retrieval of the data from the swipe card interface.

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The third module, the module concentrates on the development of the application for maintaining the attendance management.

The fourth module, the payroll management totally is concentrated upon the attendance management and this module is mainly used for creating the payslip for an employee.

Hence it overcomes the difficulties of the existing manual methods and fulfill the needs of the administration with easiness and flexibility than before.

1.1 INTRODUCTION TO SWIPE CARD:

Swipe card interface is very useful for many companies, which involve many laborers for their daily routine. It is very much similar to your credit card giving you information about the security factors, attendance, and many more regarding the salary basis. Swipe card is very much useful for maintaining a paperless attendance register and the time factors in case of shift basis for the laborers.

The swipe card is a card like material, which holds the persons identity. When he/she swipes the card on the master device it registers the persons attendance and the time (in time). And vice versa it also holds the persons out time and also maintains a data of the person regarding the attendance. It also helps the companies to reduce the fear of trespassers.

It also maintains the in time, out time, on duty, and all the necessary details regarding the person's involvement in the company.

We can also maintain strictness in case of timings, in case of late comers' people are not allowed inside. We can also make arrangements for calculating the salary of the person too. We can also add many innovative things that are needed for the company.

INTRODUCTION

- The Project Leaders have managed several major software development and implementation of challenging innovative projects with guaranteed to deliver the product in the stipulated time assuring full satisfaction.
- The Software team may vary in Engineering stream, Master of Computer Applications/ Management cadre Center of Development of Advanced Computing, experts in Bio Informatics and also Graduates.

1.2 Organization Profile

dacSoft solutions was found in the mid of 2000 ,as a consolidation of Independent IT enabling units which were hitherto servicing the automation needs of immediate clients then in Textile and computerization requirements of Industries pertaining to various areas. The synergy achieved out of experience in the development and implementation of complex real time projects, has been refined to introduce a range of products and services.

We are also acting as consultants in providing Technical solutions to IT enabled units with efficient manpower recruitment according to the requirements of the company. The company's main objectives are

- Timely Response
- High Level Project Plan
- Improved Customer Satisfaction
- Lowest Maintenance cost

Status Quo:

1. Development Center

- Well Equipped Software development center with several branded machines packed in a network including Linux web and Mail Servers and also Windows 2000 Server.

2 Human Resource

- The Development Team is lead by experienced professionals.

1.3 Project Overview

Employee Attendance System using swipe card interface implements or rather carved the real implementation of modern Information technology with the real world. The tasks of an organization or an enterprise maintaining and increasing the time and cost effective system which fulfills the needs of an company by having the automated attendance system.

There may be a large number of employees working in a large-scale organization in different locations inside the company itself (different departments). There are different group of employees such as contract persons who schedule the job only for a particular period of time. The wages may be calculated daily, monthly, keeping into consideration the shift details, overtime, casual leave, emergency leave etc.

The main objective of the proposed system is maintaining the large collection of the data gathered in the domain and manipulation of the data according to the requirements of the company. The system can be subdivided into modules to decrease the development phase difficulties.

Functional Partitioning

You can add some features of Structured and Object oriented Programming to show that why we partition the problem domain into modules.

The problem can be further divided into four different Modules with equal weightage.

1) HR -M
2) Data Capture Interface
3) Attendance Management
4) Security, Leave and Payroll Management

2.1. HARDWARE REQUIREMENTS:

Processor	: Pentium III or Above
RAM	: 64 MB
1.1.1 Secondary Memory	: 40 GB
Floppy Drive	: 1.44 MB
Monitor	: Color
Keyboard	: Standard 101 Keys
Mouse	: 2 Button Scroll Mouse
Printer	: Inkjet

SYSTEM ENVIRONMENT

2.3 VISUAL BASIC

In Visual Basic The "Visual" part refers to the method used to create the graphical user interface (GUI). Rather than writing numerous lines of code to describe the appearance and location of interface elements, you simply add prebuilt objects into place on screen. If you've ever used a drawing program such as Paint, you already have most of the skills necessary to create an effective user interface.

The "Basic" part refers to the BASIC (Beginners All-Purpose Symbolic Instruction Code) language, a language used by more programmers than any other language in the history of computing. Visual Basic has evolved from the original BASIC language and now contains several hundred statements, functions, and keywords, many of which relate directly to the Windows GUI. Beginners can create useful applications by learning just a few of the keywords, yet the power of the language allows professionals to accomplish anything that can be accomplished using any other Windows programming language.

The Visual Basic programming language is not unique to Visual Basic. The Visual Basic programming system, Applications Edition included in Microsoft Excel, Microsoft Access, and many other Windows applications uses the same language. The Visual Basic Scripting Edition (VBScript) is a widely used scripting language and a subset of the Visual Basic language. The investment you make in learning Visual Basic will carry over to these other areas.

Whether your goal is to create a small utility for yourself or your work group, a large enterprise-wide system, or even distributed applications spanning the globe via the Internet, Visual Basic has the tools you need.

2.2 Software configuration

Operating System : Windows 9x

Front End : Visual Basic 6.0

Database : Oracle 8.0

Swipe Card Interface Simulation

- Data access features allow you to create databases, front-end applications, and scalable server-side components for most popular database formats, including Microsoft SQL Server and other enterprise-level databases.

- ActiveX™ technologies allow you to use the functionality provided by other applications, such as Microsoft Word word processor, Microsoft Excel spreadsheet, and other Windows applications. You can even automate applications and objects created using the Professional or Enterprise editions of Visual Basic.

- Internet capabilities make it easy to provide access to documents and applications across the Internet or intranet from within your application, or to create Internet server applications.

- Your finished application is a true .exe file that uses a Visual Basic Virtual Machine that you can freely distribute.

Visual Basic is an ideal programming language for developing sophisticated professional applications for client server based systems. One can also develop web based and COM based applications thru visual basic.

GUI Based

It makes use of graphical user interface for creating robust and powerful applications. Coding in GUI environment is quiet a transition to traditional, linear programming methods, where the user is guided thru a linear path of execution and is limited to a small set of operation. It makes it easy to create applications that are user friendly. It also gives an impression of good looking.. Unlike dos based programming languages where images are not possible to include easily and even if it is done the clarity

Printer object

Visual basic has many numbers of objects for programming tool. One among them being printer object. This object is used for printing the reports. This object provides facility for printing reports both in dos/windows based compatibility. It is also possible to print the data in a preformatted sheet thus proving versatility.

of the image will not be so good, in visual basic the images are shown with hundred percent clarity. Programming in visual basic is made easy by simply selecting the appropriate controls and dropping them on the form.

Native Code Compilation

Visual Basic 6.0 offers the ability to generate executable in native code format. Native Code is a code that can be executed directly by operating system without requiring the assistance of another layer of software known as the interpreter to carry out their instruction.

Database connectivity

Any programming language should be capable connecting the backend to store vital data. Visual basic has a powerful concept to connect to any backend tool. It also reduces pitfalls to connect to any backend. It uses ADO concept for this. Ado meaning ActiveX Data Objects considered being the powerful tool for connecting the RDBMS.

ADO makes it possible to fetch data which are not only relational like tables but also non relational like pictures, emails, texts etc., It also provides different types of cursor types to fetch data from the RDBMS.

Components

Visual basic provides countless components for programming. These components predefined thus reducing coding time. Apart from the components given in the visual basic software one can also create his/her own controls through programming in visual basic. These are called as ActiveX technology.

Miscellaneous Improvements

A non-updatable view (i.e., a joined view) can be updatable through the use of a new type of trigger, the INSTEAD OF trigger. This trigger allows you to replace INSERT, UPDATE, and DELETE operations on views with your own logic so that even views based on complex joins can be modified. Also, you can place subqueries in the select list of other queries to return result sets from an arbitrary list of detail tables without performing join operations. By placing a cursor expression in a select list, you can fetch rows from detail tables in a 3GL program without specifying complex join conditions in the FROM clause.

2.4 ORACLE

Introducing Oracle8

Oracle8 is intended for smaller implementations and provides cost-effective and easy-to-use functionality. Most importantly, because Oracle and the Oracle8 Enterprise Edition are based on the same code, it is easy to migrate an application from Oracle8 to the Oracle8 Enterprise Edition should you need that product's more powerful feature set and greater scalability. Also, Oracle8 and the Oracle8 Enterprise Edition can coexist in the same distributed environment and transparently communicate.

Oracle8 Enterprise Edition

With many high-end features, the Oracle8 Enterprise Edition is intended for larger systems. It can support tens of thousands of users, with virtually no limits on the type or amount of data stored. The Oracle8 Enterprise Edition can be deployed for local, line-of-business applications, or its new, high-availability features can be used to support 7x24x52 operations. It also supports applications based on both the relational and the object-relational models.

Greater Control Over Data

Administrators can specify storage attributes for each partition and the placement of the partition within the host file system, increasing the granularity of control for very large databases. Partitions can be individually taken off-line or brought on-line, backed up, recovered, exported and imported, and loaded-thereby limiting the time required for management operations. An individual index partition can be built for one table partition, reducing the time required for index maintenance operations. Partition operations can be performed in parallel. Partitions increase availability by isolating media and application failures-applications not requiring data from an inaccessible partition continue to run without impact.

RELATIONSHIPS:

A relationship refers to the mapping of Relations. The various types of relationships are:

One-to-One
One-to-Many
Many-to-One
Many-to-Many

NORMALIZATION:

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

NORMAL FORMS:

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

1. First Normal Form(1NF)
2. Second Normal Form(2NF)
3. Third Normal Form(3NF)
4. Boyce-Codd Normal Form(BCNF)

DATABASE MANAGEMENT SYSTEM:

INTRODUCTION:

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

Database Management Systems (DBMS) serve to manipulate and maintain databases. When industry's need for information was limited, database tended to be simple and informal. But as the need for up-to-date information increased, automated DBMS were developed based in groups of formalized data modeling rules called Data Models.

RELATIONAL DATABASE MODEL:

In the relational data model, entity types are referred to as relations. The relational model was an attempt to simplify Database Structure. It represents all data in the database as simple raw column tables of data values and where all database operations work on these tables.

RELATIONS:

A relation is a formal form of a table. A relational database is defined as a collection of tables and relations. In relational terms, a record (table row) is called a Tuple, and the fields (columns) are called Attributes. The number of tuples is called the Cardinality and the number of attributes is called the Degree. Every table must have some columns or combination of columns that uniquely identify each row in the table. This column is called the primary key of the table. A domain is a pool of values from where one or more attributes (columns) draw out their actual values. In relational systems, missing or unknown information can be represented as Null.

SYSTEM ANALYSIS

FUNCTIONAL DEPENDENCY:

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

FIRST NORMAL FORM:

It states that data is in First Normal Form (1NF) if the pool of valid values that may appear in an attribute contains only atomic values. Each column can contain only one value in any row of a table.

SECOND NORMAL FORM:

Data in Second Normal Form (2NF) if it is in 1NF and every attribute in the record is functionally dependant upon the whole key and not just a part of the key. The purpose of 2Nf is to eliminate repeating groups and to ensure that the remaining attributes contain only one value which depends on the key.

THIRD NORMAL FORM:

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

OTHER NORMAL FORMS:

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

maintain the daily reports and handover the record to the respective staff at the end of the day.

The staff in turn has to calculate the hours worked, leave dates etc. This proves to be tedious because it is difficult for the attender to maintain a separate record for the each employee .It involves a lot of paper work to maintain up to date reports, as they have to be given to the concerned users at regular intervals. Moreover reports of this type may require a lot of reference items.

Hence in order to overcome the above difficulties we use a **SWIPE CARD**.

3.1.1 EXISTING SYSEM

Initially when the organization is started transactions were carried out manually. This involves a much work. Books were maintained for all transactions which was tedious and lead to much of difficulties whenever it was necessary to get the details about the attendance for a company. Also there is a large chance of missing the complete details about the attendance record i.e., who has come, what time he/she has come inside the company, what time the person has left the company etc.,

During this period we noticed few disadvantages:

- Time consumption is more.
- As the detail to be recorded increases it becomes more tedious.
- Chance of loss of information.
- Work load increases.
- Change for wrong results due to miscalculations.
- Book work increases and maintenance becomes difficult.
- Insecurity.
- Finally remains as a long term process and results in waste of time.

The existing attendance management system is manual and almost a tedious task. The system needs a lot of manpower to do all sorts of manipulations starting from recruitment to preparation of pay slip and this in turn increases the overall cost of the system. The existing system requires the maintenance of a separate file for each employee i.e. starting from the date of collection of his/her resumes till the date of his/her appointment. Moreover separate files have to maintained to hold details regarding the selection of the candidates based on their experience and qualification, various stages of interview and whether a particular employee is selected, rejected or is in waiting list. The employee has to sign his/her in time i.e., the time the person enters the office and the out time i.e., the time the person leaves the office to the attender. It is up to the attender to

Accuracy, reliability and efficiency are greatly improved since the functionality of the proposed system excels the former one.

The advantages of proposed system are:

- Automated system (paperless work).
- Secured transaction and fault tolerance.
- Data mining.
- Data maintenance.
- Data sharing and integration.
- Friendly user interface.

3.1.2 PROPOSED SYSTEM:

The problem of the system is to eliminate the discrepancies of the existing system. Here in the proposed system we use a swipe card. Swipe card interface is very useful for many companies, which involve many labourers for their daily routine. It is very much similar to your credit card giving you information about the security factors, attendance, and many more regarding the salary basis. Swipe card is very much useful for maintaining a paperless attendance register and the time factors in case of shift basis for the labourers.

The swipe card is a card like material, which holds the persons identity. When he/she swipes the card on the master device it registers the person's attendance and the time (in time). And vice versa it also holds the persons out time and also maintains a data of the person regarding the attendance. It also helps the companies to reduce the fear of trespassers.

It also maintains the in time, out time, on duty, and all the necessary details regarding the person's involvement in the company.

We can also maintain strictness in case of timings, in case of late comers' people are not allowed inside. We can also make arrangements for calculating the salary of the person too. We can also add many innovative things that are needed for the company.

Hence the proposed system has the following advantages over the existing system.

Reducing error due to human factor as all the major manipulations are carried by the system itself. The time factor allows increasing the efficiency of the proposed system. Since less amount of time is taken to print the reports and to prepare the final statement,.

3.3 COST ESTIMATION AND SCHEDULING:

ESTIMATION:

Estimation estimates cost and resources used. Project complexity, Project Size and project structure are the factors that affect the accuracy and the efficiency of estimates. Here the project structure refers to the easy of modularizing the functions.

SCHEDULING:

The software project scheduling identifies the set if project tasks, establish interdependency among tasks, estimates and effort required, assign people and other resources and develops a time schedule.

3.2 REQUIREMENT ANALYSIS:

Determined the information about the users is a critical activity in developing a software application. This stage involves interacting with users, which determines the user requirements and the expectation of the proposed system.

Several discussions where conducted with the user to recognized their needs, problem and to arrive at a solution to the problems.

Facts were gathered using techniques such as observation, meetings, questionaries and discussions. The system was understood through the facts given by my guide, experienced software professionals and other concerned staff in DacSoft Solutions. Interaction with the people concerned with the activities pertaining to the information system helped in understanding the procedures clearly.

Analysis comprises information gathering fact finding, review of written documents on-site observation, interview and questionnaires facts, fact analysis and determination of feasibility. During analysis a great deal of relatively unstructured data was collected and through interview, on-site observation etc..,the traditional approaches to organize and to convert data through data flow diagram and program flowchart, which support future development of the system and simply communication with the user. Diagram brings up the importance of inputs, outputs and dataflow amount key points.

The preliminary versions of functional specification document was prepared, presentation to the concerned person were made, after that a series of discussion were made for any modification and scope of this proposed system was presented. Suggestion made by the user were documented and according to that, changes were made to the functional specification to proceed further.

DESIGN AND DEVELOPMENT PROCESS

4.1 FUNDAMENTALS OF DESIGN CONCEPTS:

The objective of the design is to get the program right, other that getting it work. The following concepts have considered while designing the software.

Levels of abstraction:

In module design, the levels of abstraction method are used in the highest level, the solution is stated and en each lower level, solution step is elaborated. At the lowest level, solution is stated in the manner that can be directly implemented.

Stepwise Refinement:

The architecture of the system can be procedural or object oriented. Decomposing a procedural abstraction in a stepwise fashion unit programming language statements are reached develops a hierarchy. Refinement is actually of elaboration.

Modularity:

Software can be divided into different modules that are integrated since the monolithic software is difficult to grasp, so the software is decompose them into modules. The special care has been taken when modularizing.

Documentation Strategies

The source code is generated the function of a module should be apparent without reference to a design specification. The coding is understandable. The coding style encompasses a coding philosophy that stresses simplicity and clarity. The elements of style included the following.

1. Code Documentation

2. Code Declaration
3. Statement Construction
4. Input/Output Style

4.2.1 DATAFLOW DIAGRAM:

Data flow diagram (DFD) is used as graphical tool to depict information flow. Data flow diagrams are an intuitive way of showing how data are processed by a system. Data flow diagrams re used to show how data flows thru sequential steps. The data is transformed at each step before moving one to the next stage. These processing steps or transformations are program functions when data flow diagrams are used to document a software design. When used for analysis, the processing may be carried out by people or by computers. This diagram can be used as aid in checking for duplication and as an index for more detailed documentation.

4.2.2 TABLE DESIGN:

The overall objectives in the development of the database have been to treat data as an organizational resource and as an integrated whole. Data base management systems allow data to be protected and organized separately from other resources.

The general theme behind a database is to handle information as an integrated whole with

- Controlled redundancy
- Data independence
- Accuracy and integrity

The main aspect of the table design involves data structuring which is refined thru a process called normalization.

The detailed Table design for masters and transaction are shown in the appendix

4.2.3. DATABASE DESIGN:

DFD helps us to identify all data for the system. Having identified all the data in the system, it is necessary to arrive at the logical database design. Database design involves designing the conceptual model of the database. This model is independent of the physical representation of the data before actually implementing the database; the conceptual model is designed using various techniques.

The various requirements of all the users are taken into account to decide the actual data that needs to be stored in the system. Two of the widely used approaches are entity relationship modeling and normalization.

Normalization is a technique used in designing Attendance Management System. Normalization is a process of simplifying the relationship between the data elements in a record. It is the transformation of the complex data stores to a set of smaller, stable data structures.

Purposes of normalization are:

- To structure the data so that there is no repetition of data, this helps in saving space.
- To permit simple retrieval of data in response to query and report requests.
- To simplify the maintenance of data through updates, insertions and deletions.
- To reduce the need to restricted or reorganize data when new application requirements arise.

Steps of normalization:

1. First normal form which decomposes all data groups into two dimensional records.
2. Second normal form which eliminates any relationship in which element do not fully depend on the primary key on the record.

2.2.4 INPUT DESIGN:

Once the table design is over the next step is to decide how the input design to be present. While making input design there are so many technical factors to be analyzed. For example what controls to use and for what purpose? In what way it affects the performance of the system? Is it user friendly? Etc.,

In Attendance System the distinction is made between the master table entries and transaction table entries. For master table entries there are basically four operations were given. Namely New, Save, Delete and Exit.

The New operation will allow the user to enter new set of data. By default the operation will be in the new mode. After entering data when the user presses save the details are saved after making validation. The delete operation will delete the data from the table. The exit operation will close the form.

For transaction entries there are more operation menus given. They include New Save, Delete, Cancel, Print, Email, Move First, Move Next, Move Previous, Move Last and Search. Move first will bring the first record from the transaction table to display. Move Next will bring the Next record to display. Move Previous will move to the previous record and Move Last will move to the Last record of the transaction. Upon moving to such records the user can edit these details and Save them.

The Print operation is printing the content to the desired format. Printing option were given for modules like sales, purchase return, payments, receipts and payments to doctor. Email operation just mails the content automatically to the relevant account from the transaction.

Pressing F1 key makes the entries for medicines in the transaction. On pressing F1 key the list medicines are displayed. From the list the user can pick the medicine for

which he wants to enter details shall enter. After entering data the user can Save these details by choosing Save operation.

The detailed input design for masters and transaction are shown in the appendix

4.2.5 PROCESS DESIGN:

The process design deals with the calculations carried out in each module.

The first module, the Human Resource management system has been developed for employment of file for automating the various job vacancies. Here, marks obtained by each employee in a cycle are compared with the minimum marks for that particular cycle. Then, the necessary calculations are done in order to proceed to the next level.

In the Attendance Management module, necessary calculations are done for comparing the in time and out time of a particular employee. Based on these calculations, the number of hours worked are calculated and sent to the next module.

The Payroll Management totally is concentrated upon the attendance management and this module is mainly used for creating the pay slip for an employee. The pay slip is calculated based on the hours worked and allowances. The net pay is calculated by deducting the allowance from the gross salary.

4.2.6 OUTPUT DESIGN:

In output design the report formats are decided. Here also some basic strategies are followed. That is each report should be capable of showing preview before printing. The reports should be user friendly. The user must be given lot of options to generate reports.

The output design is the most important and direct source of information to the user. Efficient, intelligible output design should improve the system relationship with the use and help in decision making. A major form of output is a hard copy from the printer. Printouts should be designed around the output requirements to the user. Special emphasis is laid for output layout since the report of the system will aid on understanding the report generated for output design are

1. Each output is given a specific name or title.
2. All the reports to be in clear format.

The objectives of output design are

- Design output to serve the intended purpose.
- Design output to fit user.
- Deliver the appropriate quantity of output.
- Assure that the output is where it is needed.
- Provide output on time.
- A sample of output layout, including areas.

  Where printing may appear and the location areas where printing may appear and the location of each field.

The quality of output is maintained using the **output design**

The detailed output design are shown in the appendix.

MODULE DESCRIPTION

5.1 FUNCTIONAL DESCRIPTION:

Module 1:

Human Resource Management System:

The Human Resource management system has been developed for employment of File for automating the various job vacancies. The Human Resource management system Aims to reduce the use of the manual work and report seeking. The system takes into consideration the requirements of Human Resource management system in terms of the applicant details and the vacancy details, which are related to the system. The main objective of the system is to computerize the activities carried out in the system.

Module 2:

Data Capture Interface:

The module relatively concentrates on the retrieval of the data from the swipe card interface. The methodology may be implemented for this proposed system in either of the below mentioned techniques.

a) Swipe card Interface: -

The interface may be jacked to the PC through the serial ports. The unique data identified by the interface from the card is converted into text files to form an input for the application.

The main objective of the software program development concentrates on the matter of Swipe card. This is the latest trend / logic in the field that is already successful with the proven performance. There is an in built or user made hardware that reads the data from the card interface that is provided for the employees who show the thing to the built module of the hardware or simply swipe down towards the fixed card reader interface. The hardware can be made with our user logic or can be obtained from the third party vendors who provide the accessories along with the software interface. The part of the software comes here in two ways, the total device drivers, the interface and the code reading software together as one or by ways of reading the interface that is already provided by the third party vendors. The latter option may be finalized as that of the requirement.

b) Software Simulation: -

Enhanced implementation is also under analysis, to provide simulation software that resembles the hardware functionality and with additional enhanced features. The software develops a text file that pertains to the data that are to form the input for the application. This is as similar to that of the above that includes the hardware part as well as the related software. Here the software does all the things and the real hardware part is shown as a simulation. Software Simulation is the technique by which the whole functionality is brought to one simple software where it can be of cost effective in case of implementation but comprises the functionality. On the other hand the coding logic of this may fall with lot of work and time. The simulation software are some the challenges of the world of the Software Technology.

c) Raw Text Files: -

The data may be captured directly from the text files. Coding logic is to be applied for sorting and arranging the data to put into the application perfectly. The input for the

process is the raw data captured and obtained from any form but passed through various set of processes for various holdings and information processing. Here there is much workings to be done by the Software programmers for the initial processing and further enhancements such as parsing of the tokens obtained, simple text reading of data, sorting and arranging of the data obtained which further adds up the function of inserting them in a proper manner into the application.

MODULE 3:

Attendance Management:

The swipe card is a card like material, which holds the persons identity. When he/she swipes the card on the master device it registers the persons attendance and the time (in time). And vice versa it also holds the persons out time and also maintains a data of the person regarding the attendance. It also helps the companies to reduce the fear of trespassers.

The module concentrates on the development of the application for maintaining the attendance management and Payroll management. The payroll management totally is concentrated upon the attendance management.

Attendance can be counted on the basis of the login time and the logout time and the number of working hours can be calculated accordingly. This may vary from one company to the other. Here overtime calculation of the working is also countable. When this can be generated as per the requirement further calculation of payment detail and the Management of Each employees working and their Payroll processing. The module is integrated with a number of entities of functionality that is retrieved from the other modules.

Module 4:

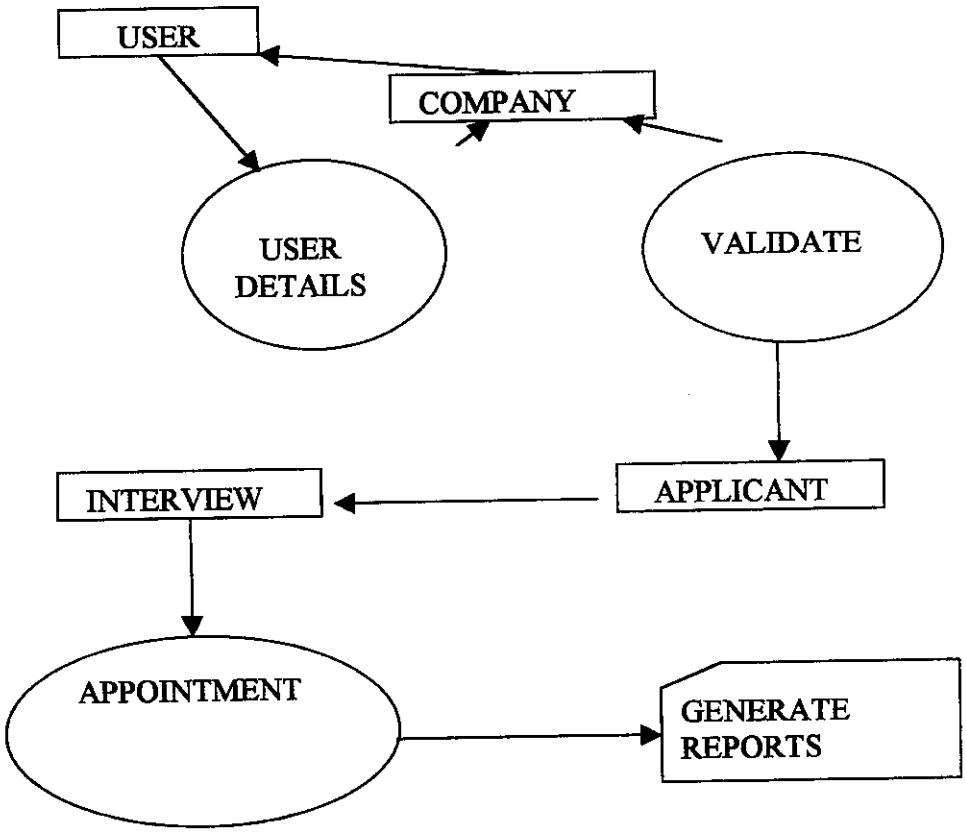
Security Leave Payroll Management:

The attendance module handles itself over the third module, which covers the Leave management, over time, Security features. It also maintains the in time, out time,

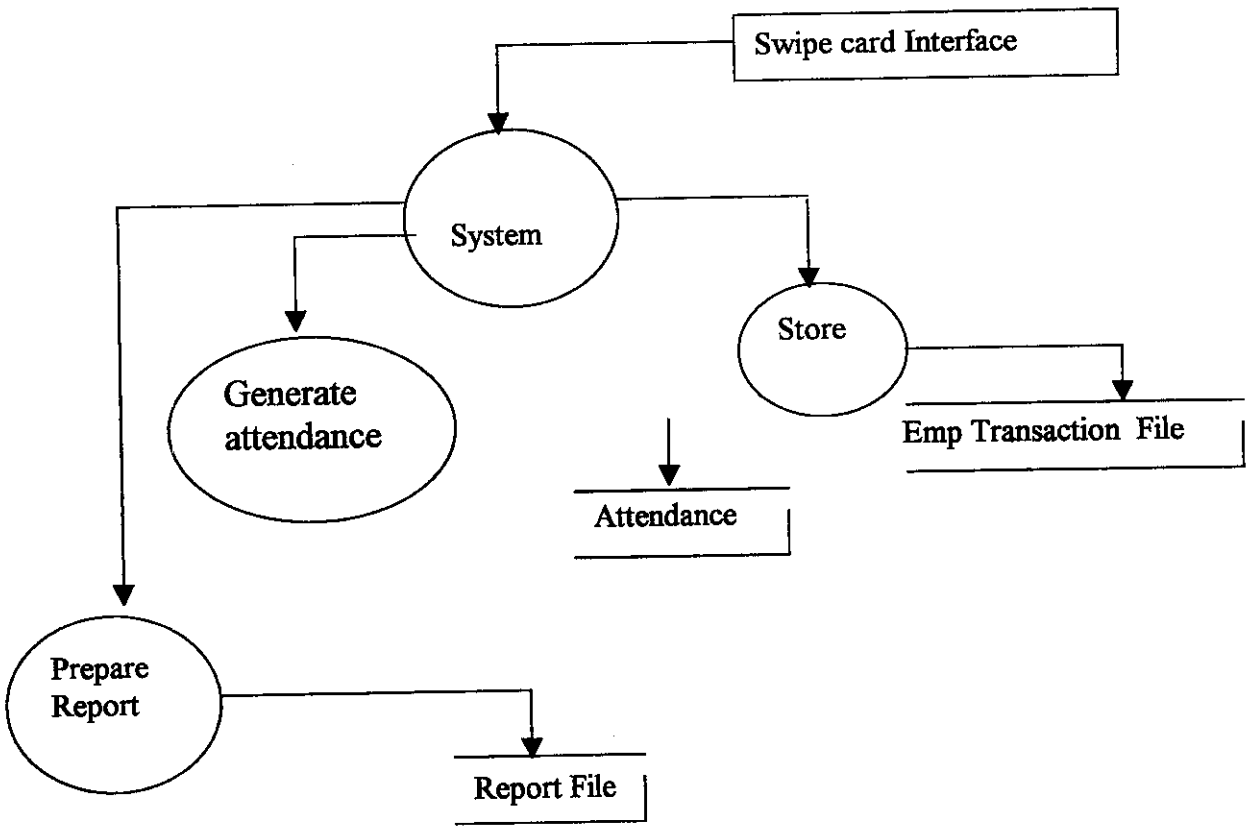
on duty, and all the necessary details regarding the persons involvement in the company. We can also maintain strictness in case of timings, in case of late comers' people are not allowed inside. We can also make arrangements for calculating the salary of the person too. We can also add many innovative things, which are needed for the company.

As per above, this is the enhanced module of the earlier things, which may fall necessary for the Employee Information System. Many cosmetic works and user defined logic for programming can be shown in this module.

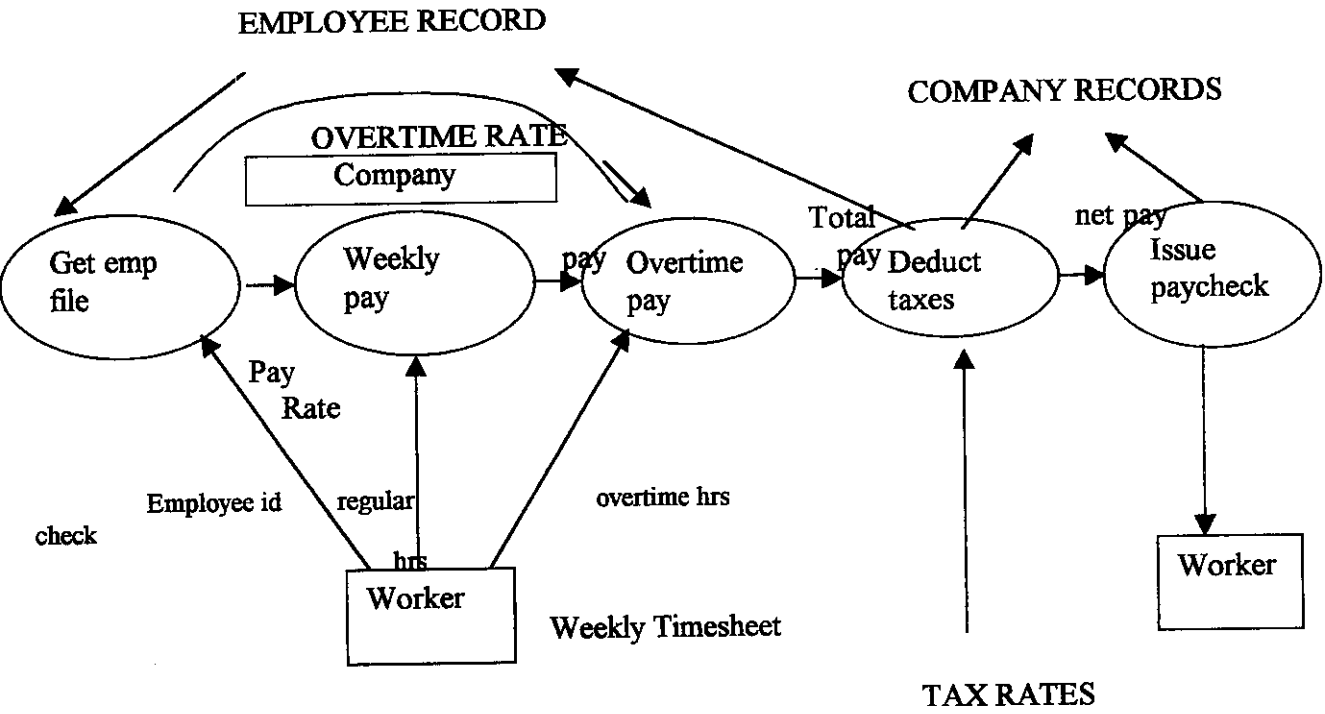
HUMAN RESOURCE DFD



ATTENDANCE MANAGEMENT DFD



PAYSLIP DFD


EMPLOYEE RECORD
COMPANY RECORDS
OVERTIME RATE
Company
Get emp file
Weekly pay
pay
Overtime pay
Total pay
Deduct taxes
net pay
Issue paycheck
Pay Rate
Employee id
regular hrs
overtime hrs
check
Worker
Weekly Timesheet
Worker
TAX RATES

TESTING AND IMPLEMENTATION

6 .1 SYSTEM TESTING:

The software and hardware are integrated and a full range of system tests are conducted in an attempt to uncover error at the software and hardware interfaces.

System testing involves a series of tests whose primary purpose is to fully exercise an automated system. Although each test has a different purpose, it should verify that all system elements have been properly integrated and they perform their allocated functions.

6.1.1 TESTING METHODOLOGIES:

The testing process begins with preparing a plan for the testing of the system. According to this plan, the other activities will be carried out. In this plan, discussions were made regarding the equipment, resources available and how to test the activities. Thus a clear plan has been prepared.

A number of software testing strategies has been proposed. All these strategies provide the software developer with a procedure for testing. They have the following characteristics:

- Testing begins at the module level and works outward towards the integration of the entire computer based system.
- Different testing techniques are appropriate at different stages such as unit testing, integration testing and acceptance testing.
- Testing is conducted by the developer of the software and by independent test group.
- Testing and bugging are different activities, but debugging must be accommodated in any testing strategy.

White Box Testing:

This test case design method that uses the control structure of the procedural design drives the test cases. Using the white box testing methods, the software derives the test cases with the following qualities:

- The test case guarantees that all independent parts within a module have been exercised.
- The exercises have tested all logical decisions on their true and false sides.
- All loops at their boundaries and within their operational bounds are tested.
- The internal data structure is tested to ensure its validity.

Black Box Testing:

The black box testing methods focuses on the functional requirement of the software. Therefore, black box testing enables the software engineer to derive the sets of input condition, as that will exercise all the functional requirements for the program. The black box testing is not an alternative to the white box testing, but it is a complimentary approach that is likely to uncover a different class of errors. The black box testing attempts to find errors in the following categories:

- Incorrect or missing functions have been tested.
- Interface errors are mostly focused.
- Errors in data structure or external database access are pointed.
- Performance errors are validated.
- Initialization and termination errors are also tested.

1) Unit testing

Unit testing is a verification effort made on the smallest unit of software design. The unit testing is always white box oriented and the step can be conducted in parallel for modules. Boundary conditions are tested to ensure that the module operates properly at boundaries established to limit or restrict processing.

Unit testing is considered an equivalent coding step. After, the source level code has been developed, reviewed, verified for the correct syntax. Unit test case begins since a module is not a stand-alone program.

The local data structures are examined to ensure that data stored temporarily maintains its integrity during all steps in an algorithm execution. All independent paths through the control structures are exercised to ensure that all statements in a module have been executed at least once. Finally, error-handling paths are tested.

2) Integration testing:

Integration testing is a systematic technique for constructing the program structure while at the same time conducting tests to uncover errors associated with interfacing. The objective is to take unit test modules and build a program structure that has been dictated by design.

3) Top -down integration:

This method is an incremental approach to the construction of the program structure. Modules are integrated by moving downward through the control hierarchy, beginning with the main program module. The module sub-ordinates of the main program module are incorporated into the structure in either a depth-first or breadth-first manner.

4) Acceptance testing:

Acceptance testing involves planning and execution of functional tests. Performance tests and stress tests to verify the implemented system satisfy its requirements. Acceptance tests are typically performed by the quality assurance and customer organizations. Depending on local circumstances, the development group may or may not be involved in acceptance testing.

In order to make our project effective, we have performed unit testing, integration testing and module testing.

6.2 QUALITY ASSURANCE:

There are three formal approaches in Quality Assurance,

1) Proof of correctness.
2) Statistical Quality Assurance.
3) The Lean room process.

All the above three approaches are taken care in this system for the Assurance of Quality.

6.2.1 GENERIC RISKS:

When the system is built, there are areas of uncertainty. Are the needs of customers really understood? Is there any hidden technical problem? Risk analysis is a series of risk management steps that enable us to attack generic risk identification, risk resolution and risk monitoring.

Modification of software is dangerous. The design documents have careful regression testing that helps to eliminate errors, but maintenance side effects will be encountered. When used in the context of software maintenance, the term side effect implies an error or other undesirable behavior that occurs as a result of modifications. There are three major generic risks, they are

1) Coding Risks.
2) Data Risks.
3) Documentation Risks.

6.2.2 SECURITY TECHNOLOGIES AND POLICIES:

As far as security is concerned, only authorized persons can access the system with the password provided for each user who work on the system. Here privacy is maintained in such a way that only the user who has *Supervisor* rights over the system can work through the system while others can only be able to work according to the permission limit given to them.

6.3 SYSTEM IMPLEMENTATION:

IMPLEMENTATION PROCEDURES:

After the management has given the approval of the design phase, report for this project, further the development activities are preceded.

The major activities done in this project are:

PRE-IMPLEMENTATION

- Planning
- Equipment acquisition
- Program preparation

POST-IMPLEMENTATION

- Change over plan
- Change over method

1. **Planning:**

In this plan, the details regarding availability or need for the equipment, resource available and how to test the activities are mentioned.

2. **Equipment Acquisition:**

According to the above plan, the necessary equipment and computer system installed.

3. **Program preparation:**

The most important development activity is preparation to computer program needed for the system.

The system flowchart, Input charts, Output charts are transferred into program. In each stage of preparation the program have been tested and errors are corrected if any. All necessary measures also fall into account while testing the program.

4. **Change over plan:**

The change over method is the process where the existing system is to be replaced by a new computerized system.

The following changes are made during the change over plan:

- ✈ Change over plan has to be made carefully so as to minimize the problem that may arise from human errors.
- ✈ The activities to be performed during the change over plan have to be identified and the responsibilities should be assigned to the individual in the organization.

5. **Change over method:**

Here the date from previous record has been run on the system. After the results are obtained, the result has been compared from the manual system results. The change is done after the approval from the System Analyst, Users, Operation managers and other members of the management.

The direct change over is suggested because

- ✈ It completely replaces the old system.
- ✈ No problem for employees.
- ✈ They are already installed.
- ✈ The new system is menu oriented and more user - friendly.

User Training:

As the system nears completion, the analyst must find the necessary materials for training and user during training all parties should learn how the system operates. They may bring major change to the users job – introducing new colleagues and equipment that may cause anger, anger resistance and sabotage to the new system. Small group seminars and one-on-one sessions work best for the training of the supervisors and managers.

Operational Documentation:

The data flow diagram, database design, coding standards and sample outputs are properly documented and prepared as a book. A user reference manual is also prepared so that the user, in case of any difficulties may refer it from his point of view.

6.4 SYSTEM MAINENANCE:

The System Maintenance activity occurs since it is irresponsible to assume that software testing will uncover all errors in a large software system. The process of including the diagnosis and correction of one or more errors is called Corrective Maintenance.

The Second activity that contributes to a definition of maintenance occurs since a rapid change is encountered in every aspect of computing. Therefore adaptive maintenance modifies software to properly interface with the changing environment.

The Third activity involves recommendations for new capabilities, modifications to the existing functions and general enhancements when the software is used. To satisfy requests effective maintenance is performed.

The Fourth Maintenance activity occurs when software is changed to improve further maintainability and reliability. This is called as Preventive Maintenance.

CONCLUSION

7. CONCLUSION

The Attendance Management System is successfully designed, developed, tested and implemented. The system is user friendly with user guide and messages to explain further procedures. An attempt has been made to perfect the process by incorporating validation at each level. A considerable effort has been made to succeed at a modest level.

With the exposure of technical knowledge of computer and its language whatever we gained is fully applied to the design of attendance management system. This is done to reduce the work load of the administrative side. This system has an added advantage of reliability and accuracy. The result is validated for accuracy by comparing the output result with the manual work and found to be excellent.

The main idea was to reduce the paper work and save time. The program is flexible and it can be used for attendance management system.

FUTURE ENHANCEMENTS

8. SCOPE OF FUTURE ENHANCEMENTS:

The project is developed depending upon the existing requirements of the user. This requirement may likely be changed in future. Accordingly certain enhancement may necessarily be made to the project. Currently this project is developed with an intention to satisfy a standalone system but in future, it is subject to change into a client/server model. In such situation, certain securities to access data are to be taken into consideration. Security may be provided by enhancing the existing project by allowing the user to main the username and password. Also the project may be customized according to the user requirements.

ANNEXURE

TABLE NAME: DEPARTMENT

NAME	DATA TYPE	CONSTRAINT
Deptid	Number	Primary key
Deptname	Varchar2(15)	Not null

TABLE NAME: DESIGNATION

NAME	DATA TYPE	CONSTRAINT
Desgid	Number	Primary key
Desgname	Varchar2(10)	Not null

TABLE NAME: INTERVIEW DETAILS

NAME	DATA TYPE	CONSTRAINT
Intid	Number	Primary key
Marks	Number	Not null
Typeid	Number	Not null

TABLE NAME: CYCLE DETAILS

NAME	DATA TYPE	CONSTRAINT
Cycle id	Number	Primary key
Type id	Number	Not null

TABLE NAME: JOBCODE DETAILS

NAME	DATA TYPE	CONSTRAINT
Jobid	Number	Primary key
Jobdesg	Varchar2(15)	Not null

TABLE NAME: VACANCY DETAILS

NAME	DATA TYPE	CONSTRAINT
Vacid	Number	Primary key
Vacseats	Number	Not null
Vacjobcode	Number	Primary key
Vacstatus	Varchar2(10)	Not null
Vacno	Number	Not null

TABLE NAME:ACTSHIFT

NAME	DATA TYPE	CONSTRAINT	DESCRIPTION
Shftcode	Varchar2(5)	Primary key	Shift code
Shftname	Varchar2(20)	Not null	Shift name
Starttime	Date	Not null	Starting of the shift
Endtime	Date	Not null	Ending of the shift

TABLE NAME:USER_DET

NAME	DATA TYPE	CONSTRAINT	DESCRIPTION
User_cd	Varchar2(5)	Primary key	User's code
Username	Varchar2(20)	Not null	User's name
password	Varchar2(20)	Not null	User's password

TABLE NAME:COMMPORT

NAME	DATA TYPE	CONSTRAINT	DESCRIPTION
Portno	Number	Not null	Port id of the comport
Speed	Number	Not null	Rate of transfer of bytes
Parity	Number	Not null	Parity bit 0 or 1
Databit	Number	Not null	Data bit

TABLE NAME:DAILY_DOWNLOAD_TEMP

NAME	DATA TYPE	CONSTRAINT	DESCRIPTION
Dwn_date	Date	Primary key	Date of download
Dwn_slno	Number	Primary key	Serial number of download
Emp_no	Number	Primary key(FK)	Employee number
Gate_no	Number	Not null	Gate number
Is_inout	Varchar2(2)	Not null	Record refers to inor out
Pin_no	Number	Primary key(FK)	Pin number
Shftcode	Varchar2(5)	Primary key(FK)	Shift code
Status	Varchar2(5)	Not null	Status
Time_inout	Date	Not null	In time or out time

TABLE NAME:EMP_ATTENDANCE

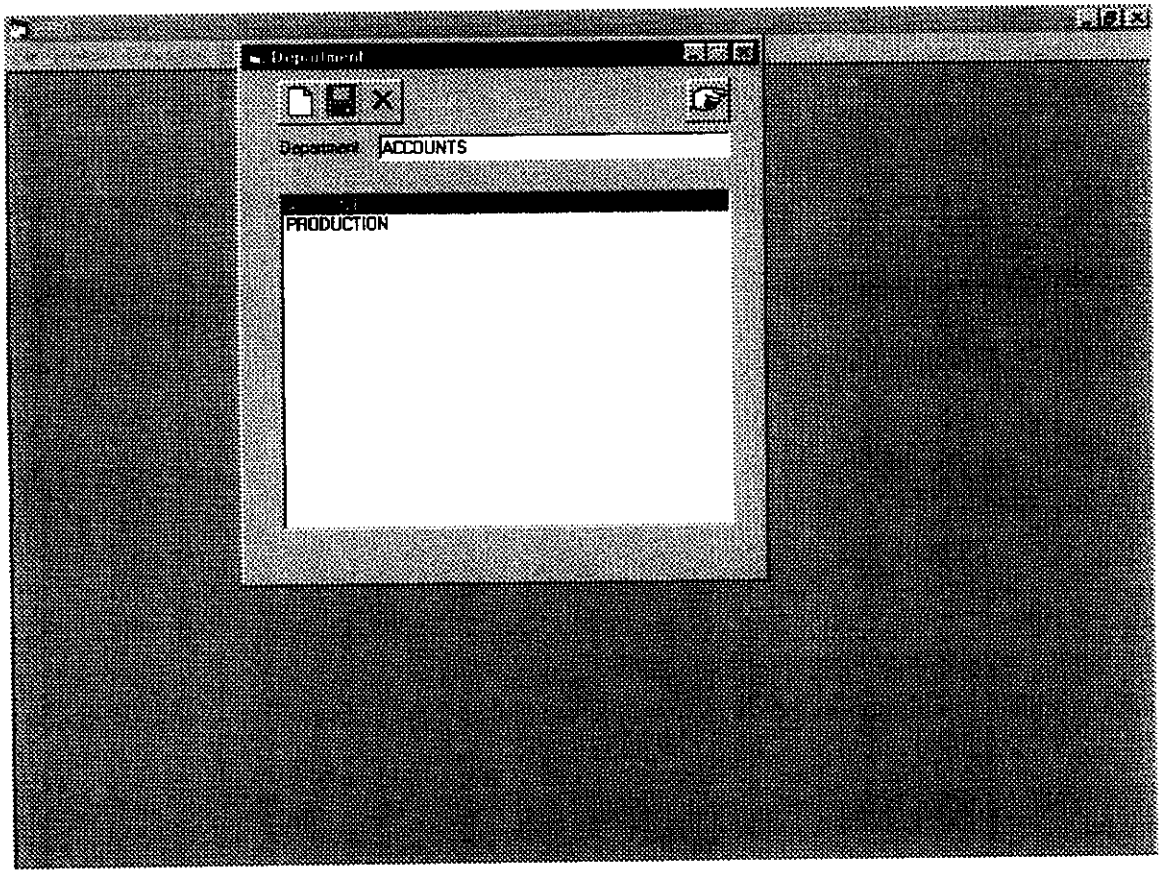
NAME	DATA TYPE	CONSTRAINT	DESCRIPTION
Dwn_date	Date	Primary key	Date of download
Dwn_slno	Number	Primary key	Serial number of download
Emp_no	Number	Primary key(FK)	Employee number
Gate_no	Number	Not null	Gate number
Is_inout	Varchar2(2)	Not null	Record refers to inor out
Pin_no	Number	Primary key(FK)	Pin number
Shftcode	Varchar2(5)	Primary key(FK)	Shift code
Status	Varchar2(5)	Not null	Status
Time_inout	Date	Not null	In time or out time
Update_by	Varchar2(20)	Not null	Employee's code who has updated
Update_dt	Date	Not null	Updated date

TABLE NAME:EMP_MASTER

NAME	DATA TYPE	CONSTRAINT	DESCRIPTION
Shftcode	Varchar2(5)	Primary key(FK)	Shift code
Emp_no	Number	Primary key	Employee number
Pin_no	Number	Primary key	Pin number
Emp_name	Varchar2(20)	Not null	Employee name
Desig	Varchar2(15)	Not null	Designation
Dept_cd	Number	Foreign key	Department code
Reg_dt	date	Not null	Register date
Wages	Number	Not null	Wages paid

TABLE NAME:DEPT_MASTER

NAME	DATA TYPE	CONSTRAINT	DESCRIPTION
Deptno	Number	Primary key	Department number
Deptname	Varchar2(20)	Not null	Department name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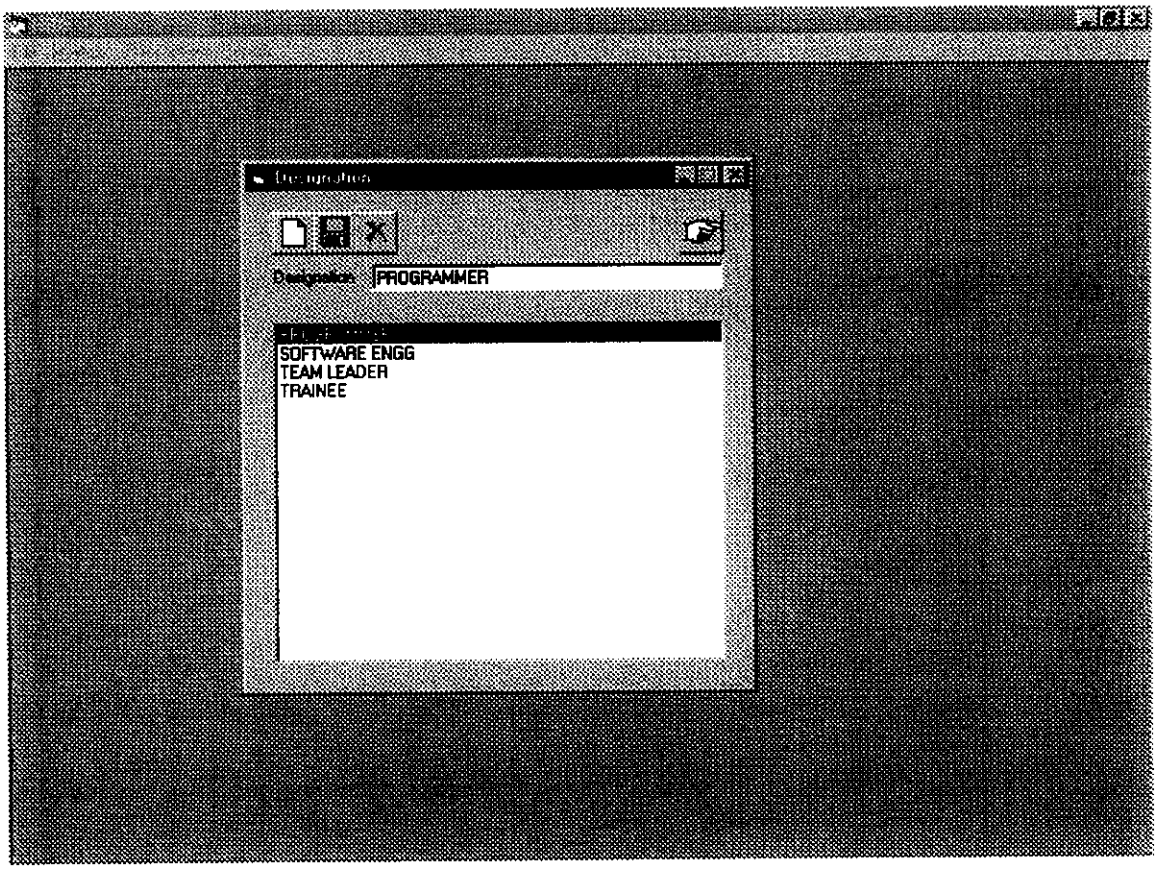
PRODUCTION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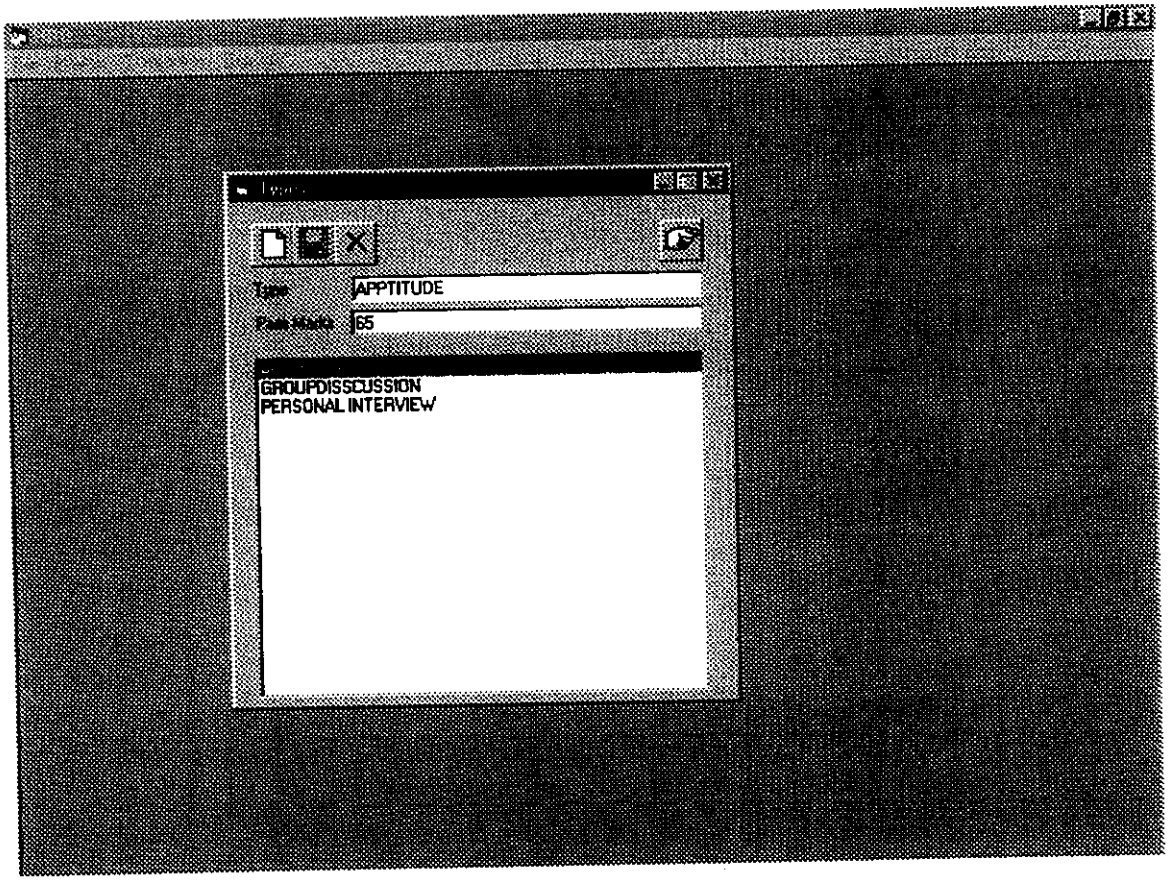
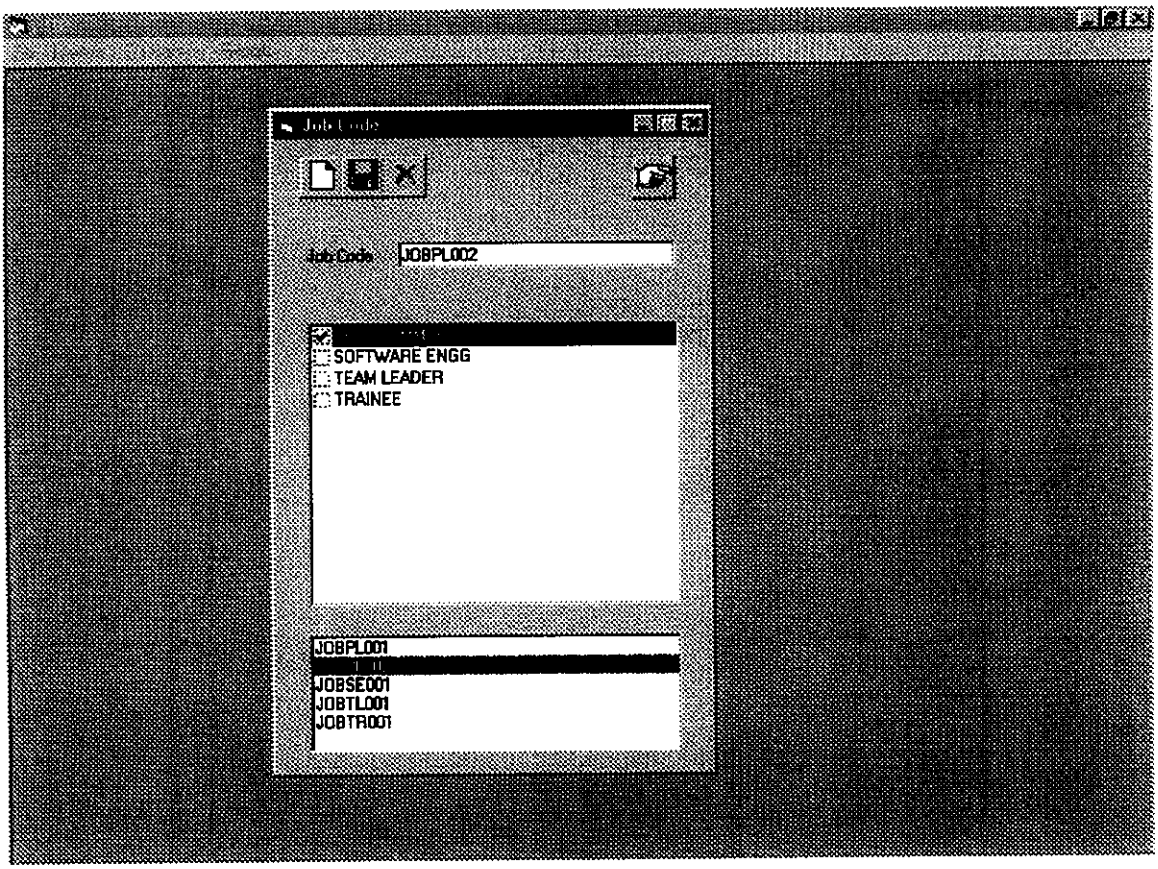
SOFTWARE ENGG
TEAM LEADER
TRAINEE


APPTITUDE
65
GROUPDISSCUSSION
PERSONAL INTERVIEW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TEAM LEADER
TRAINEE
JOBPL001
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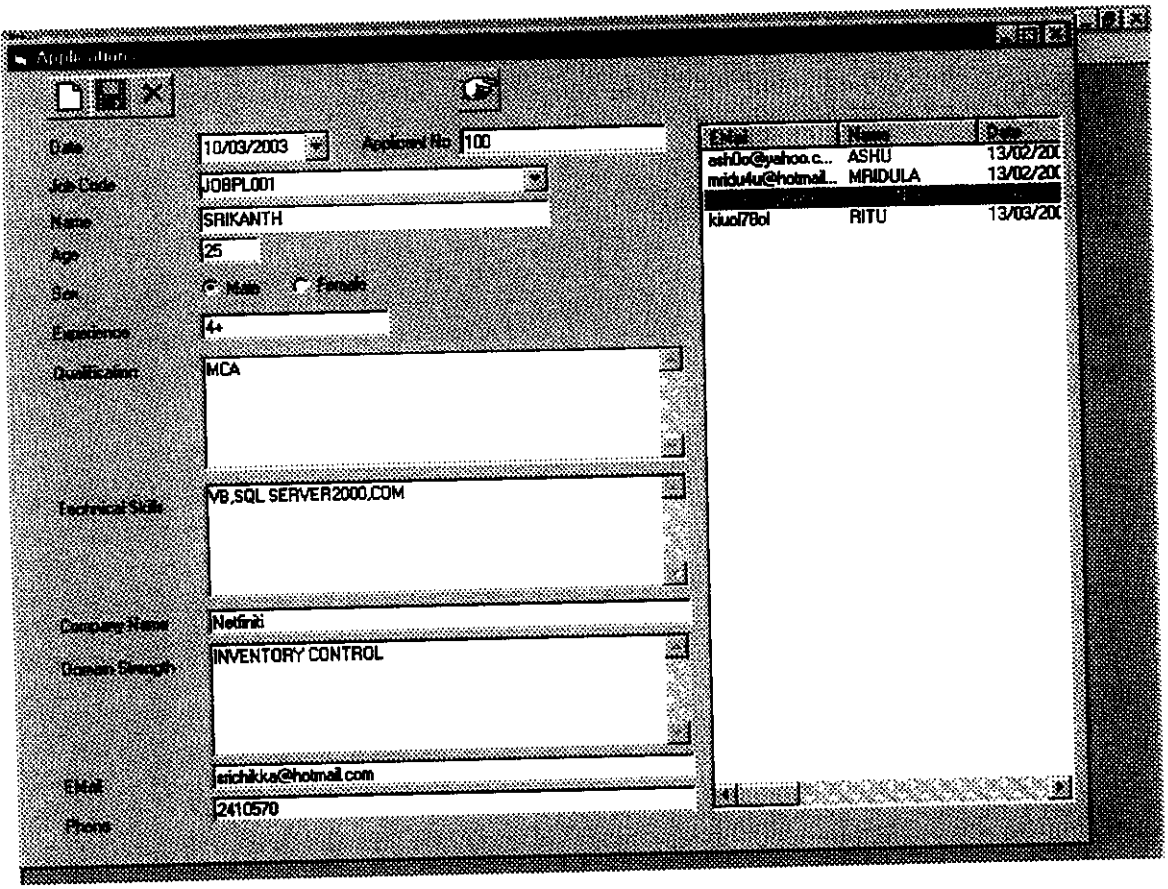
10/03/2003
Applicant No
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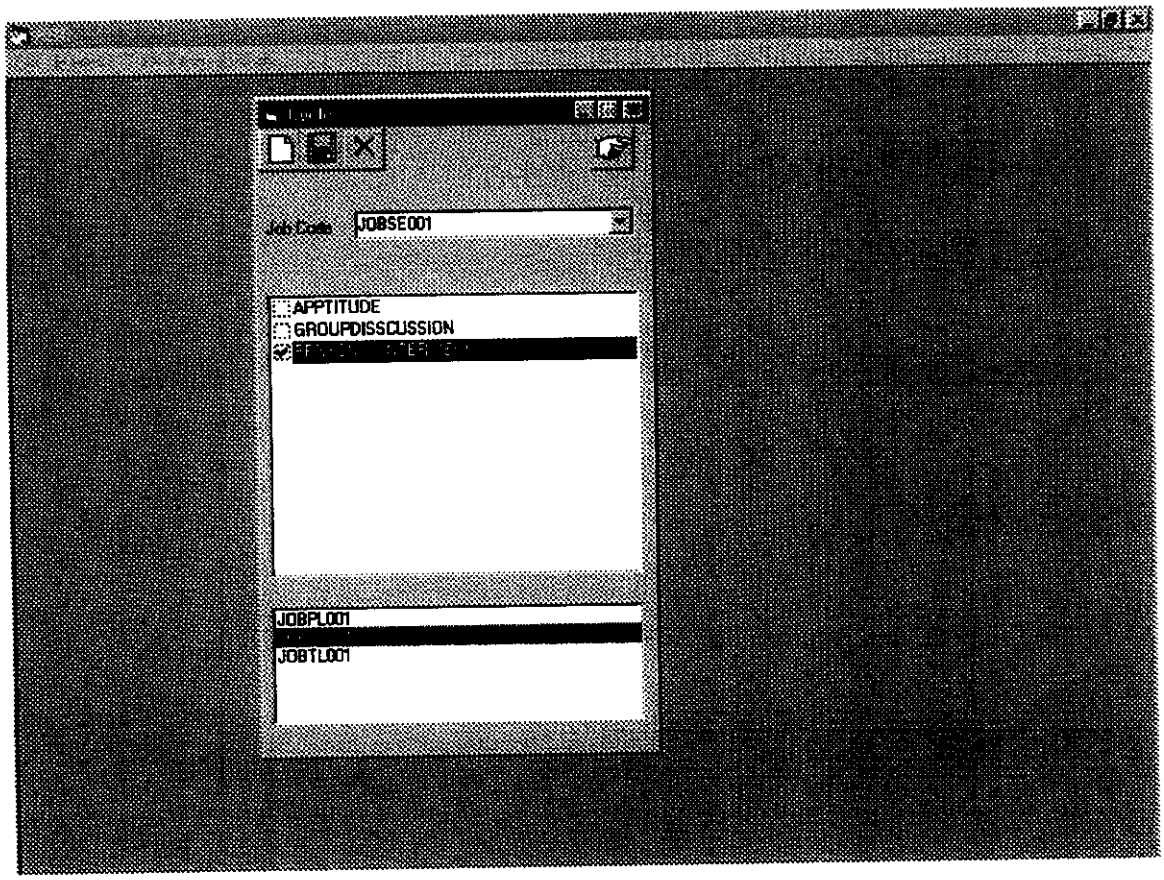
13/03/20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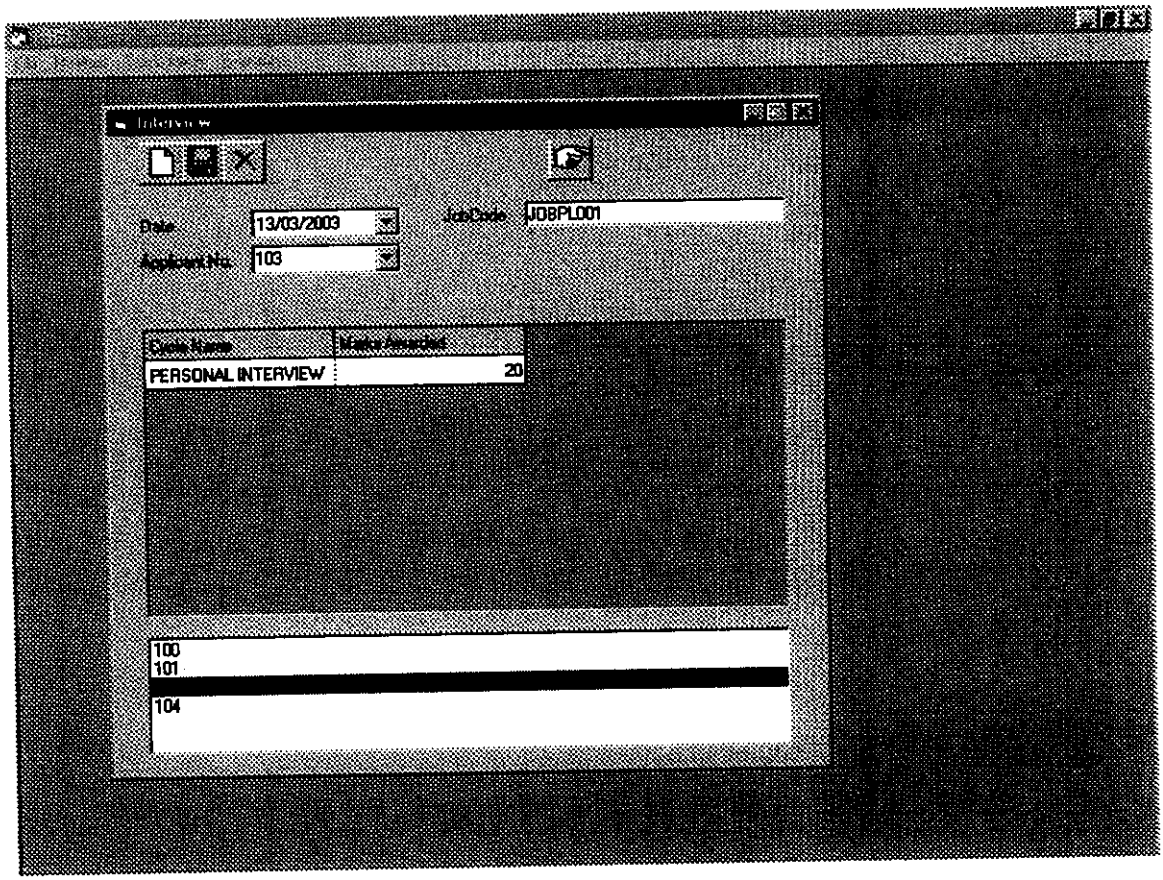
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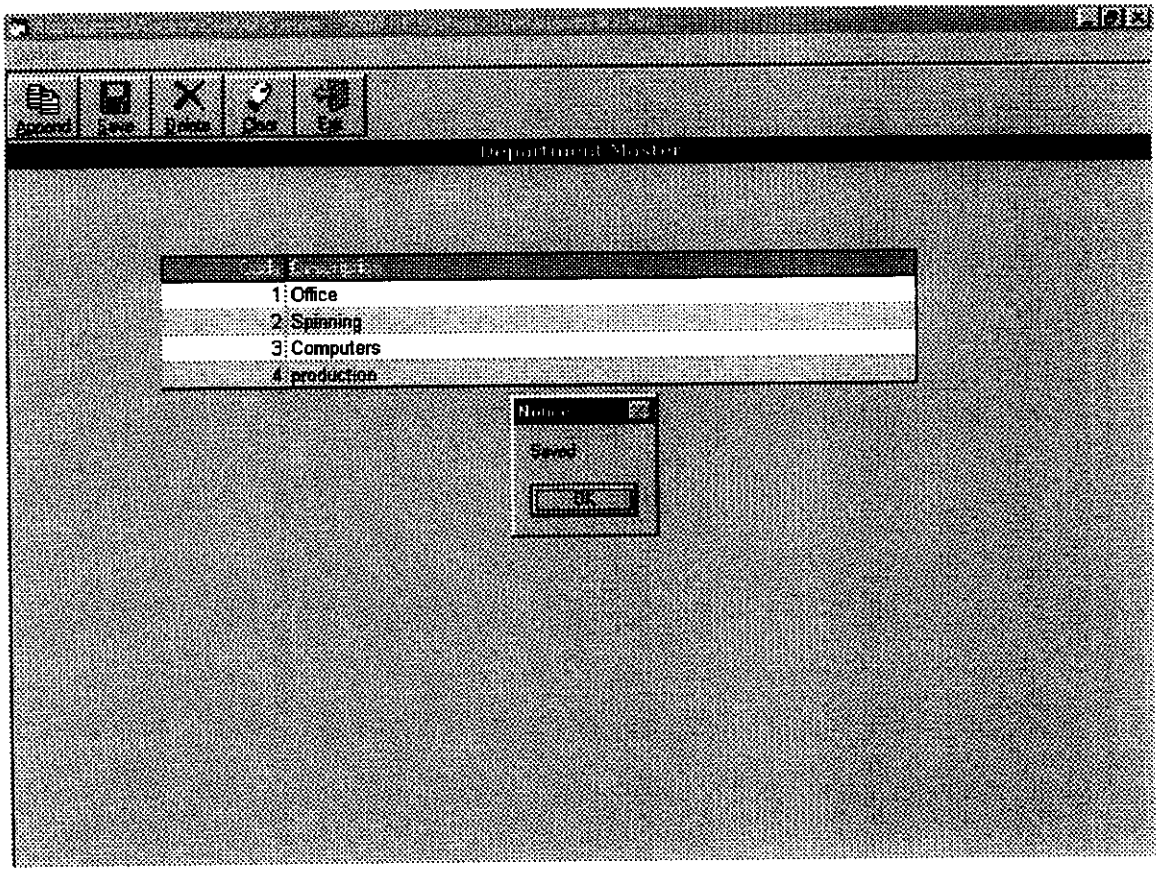
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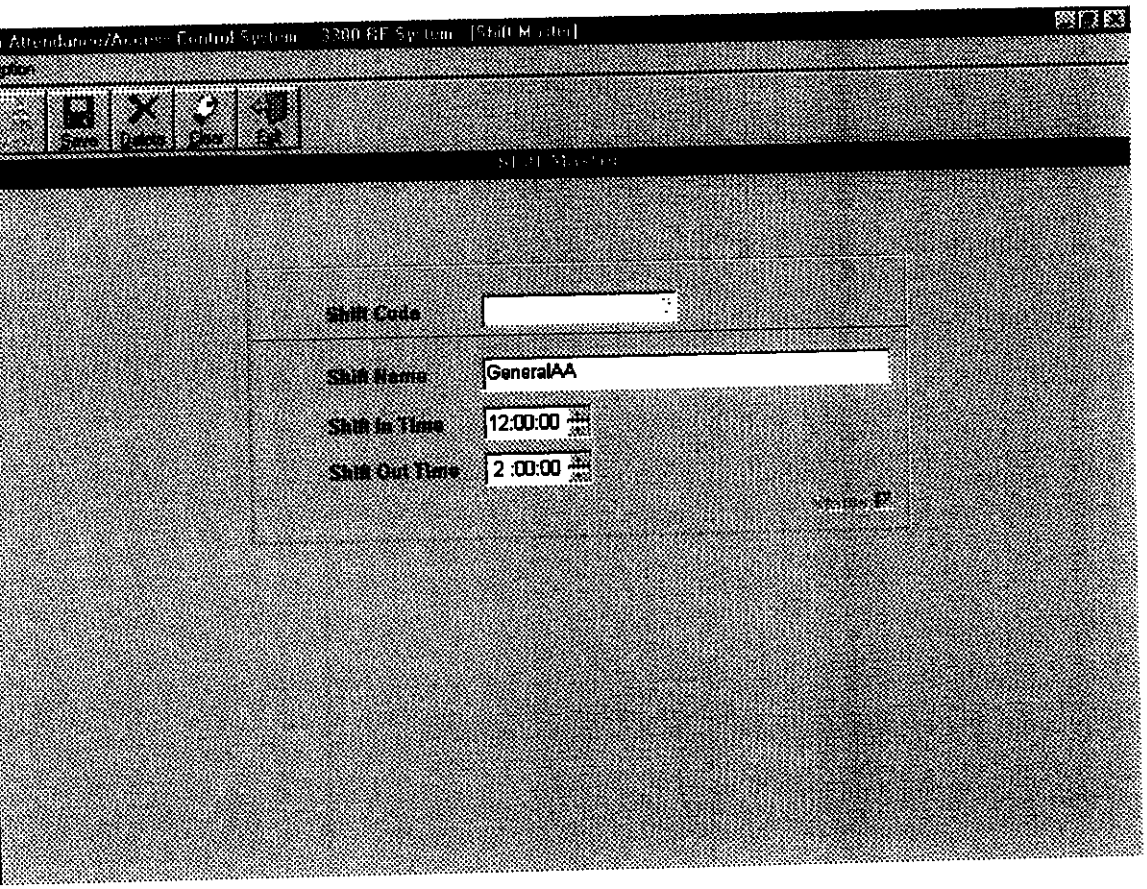
2 Spinning
3 Computers
4 production
Saved
OK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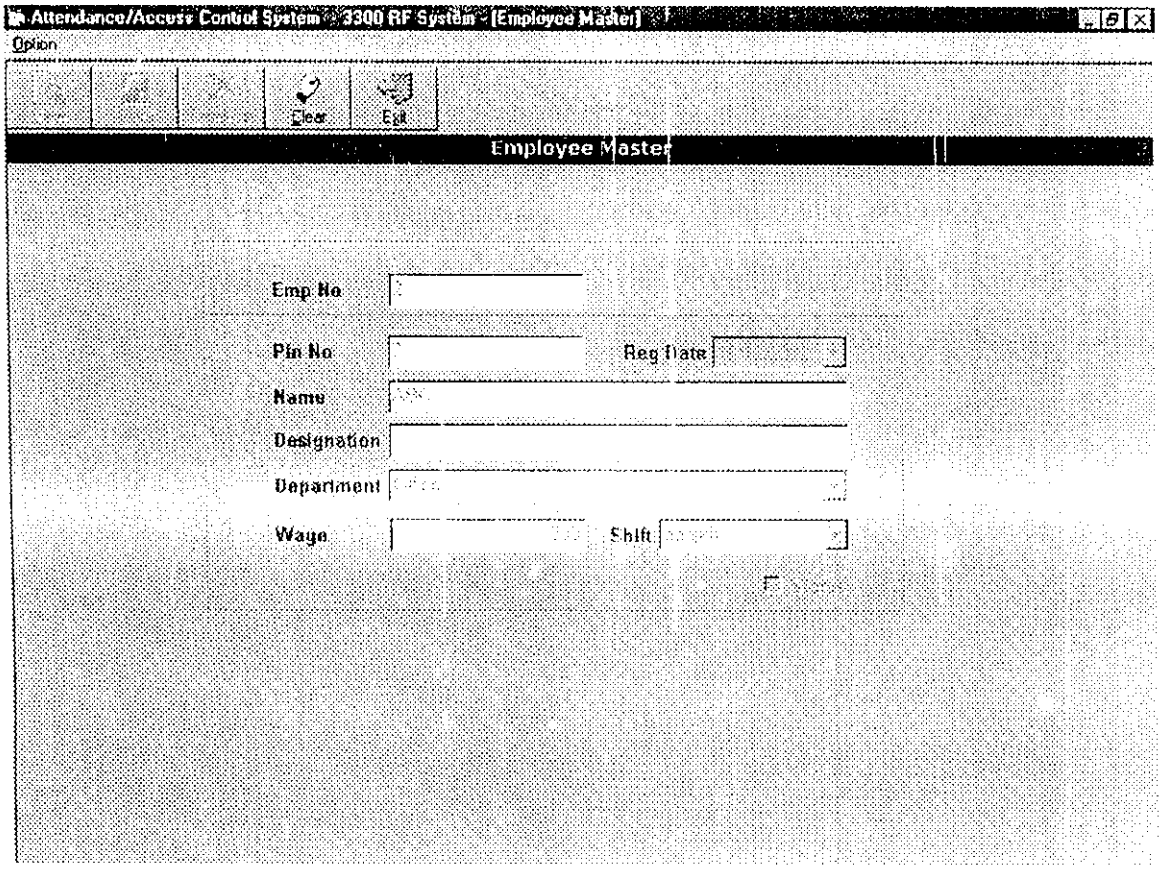
Shift Out Time
2 :00:00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Name
Designation
Department
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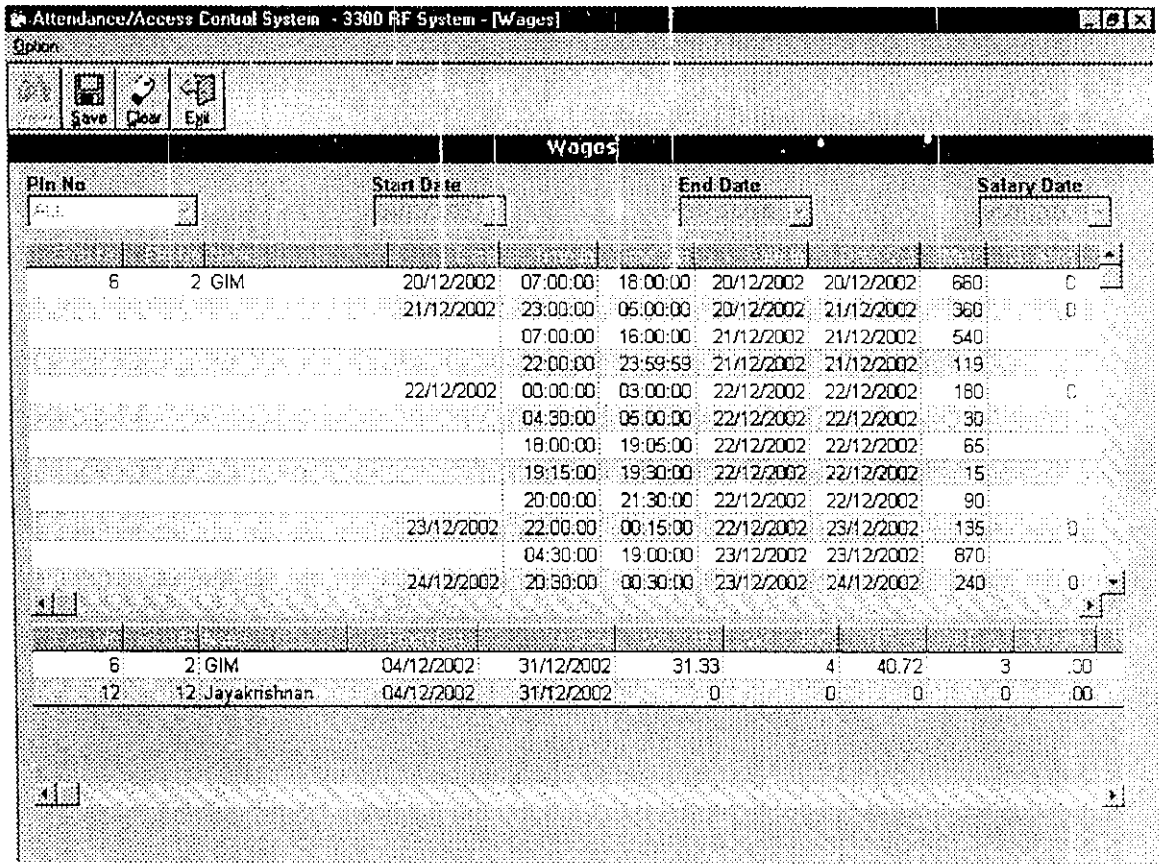
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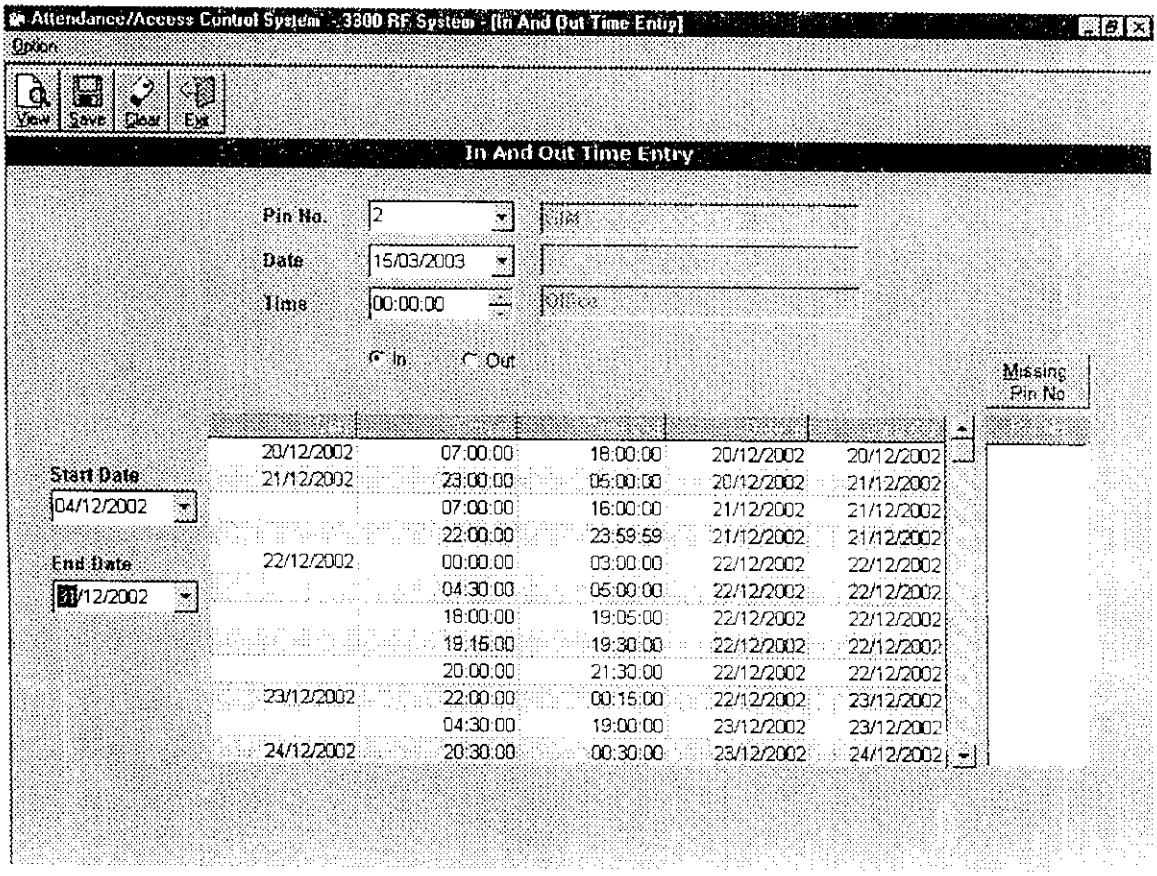
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View
Save
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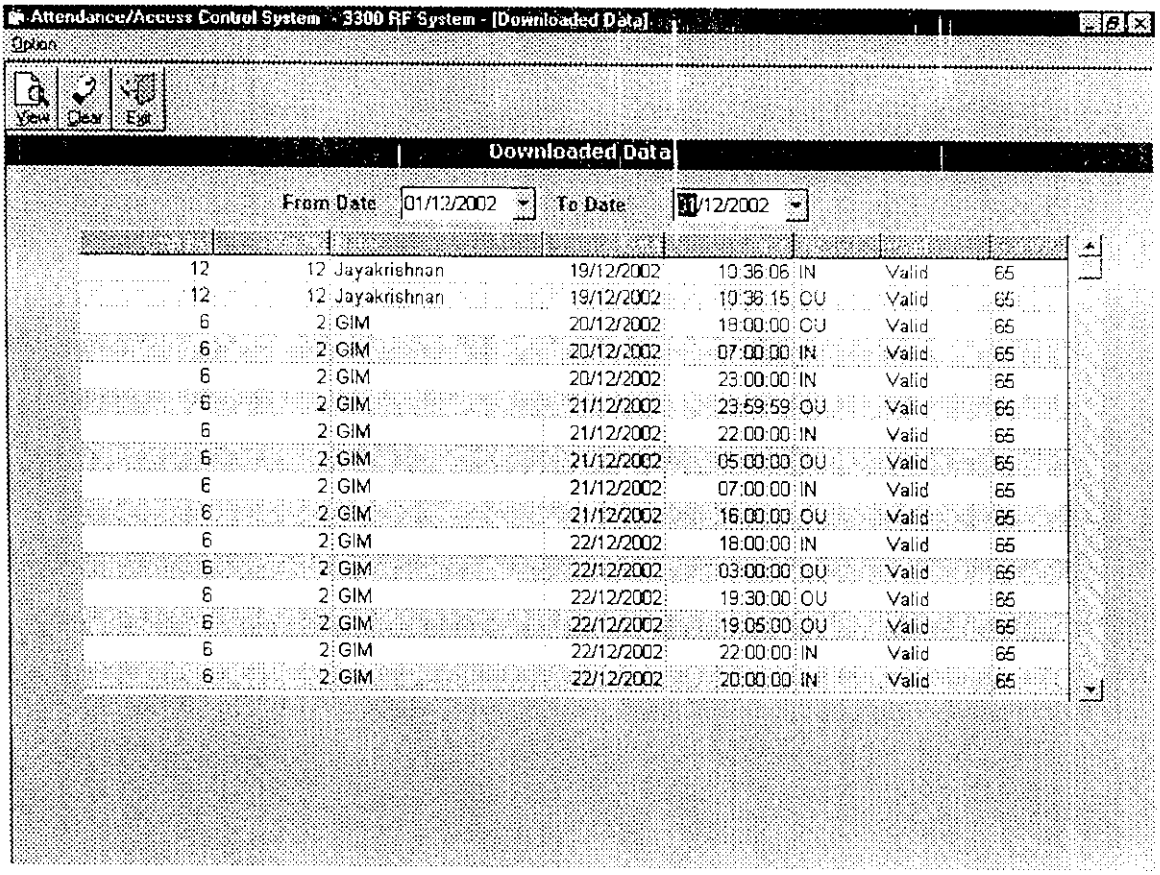
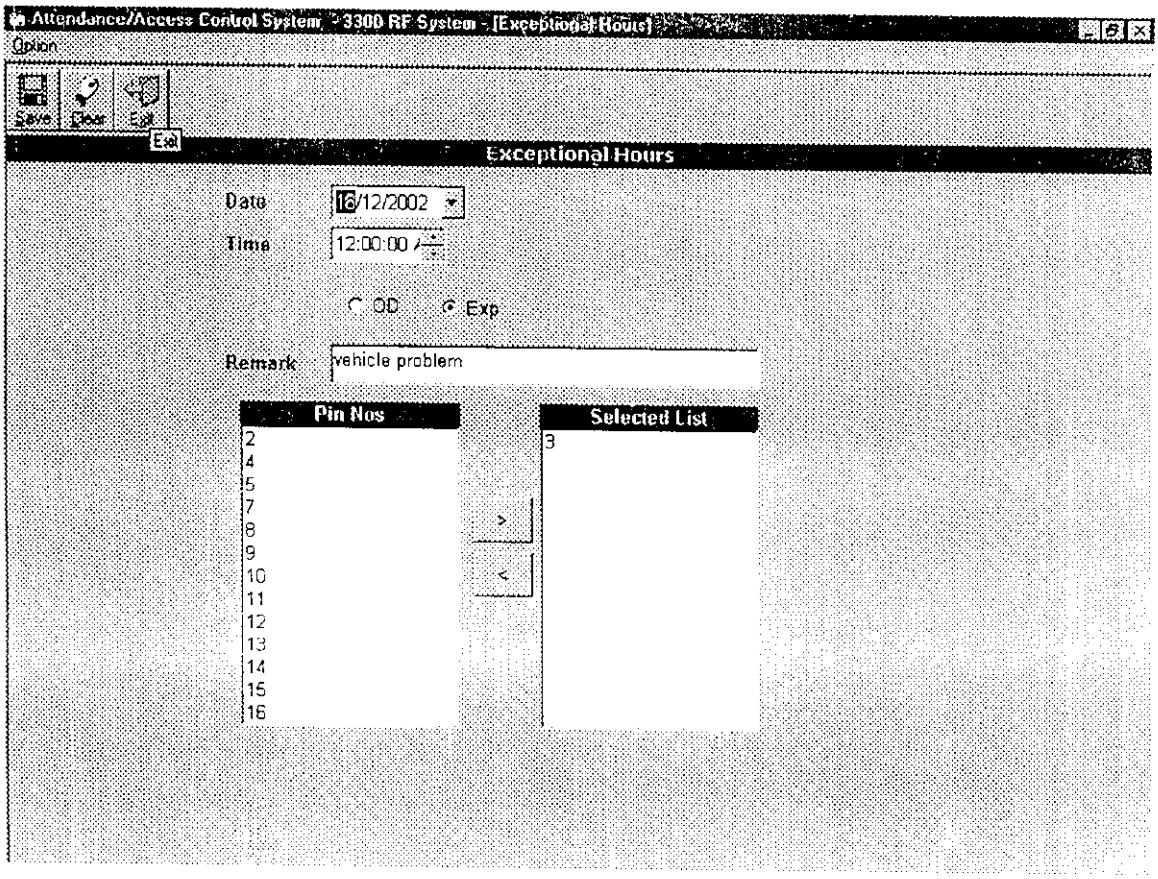
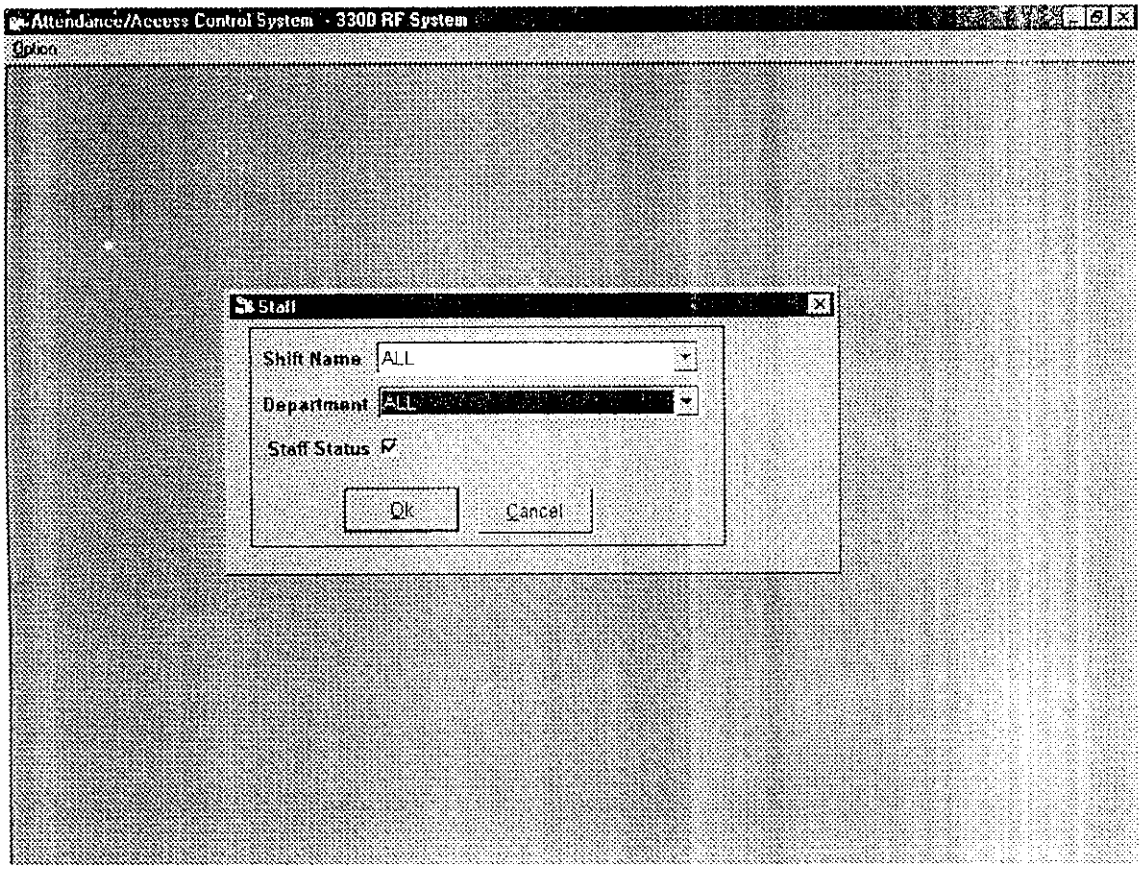
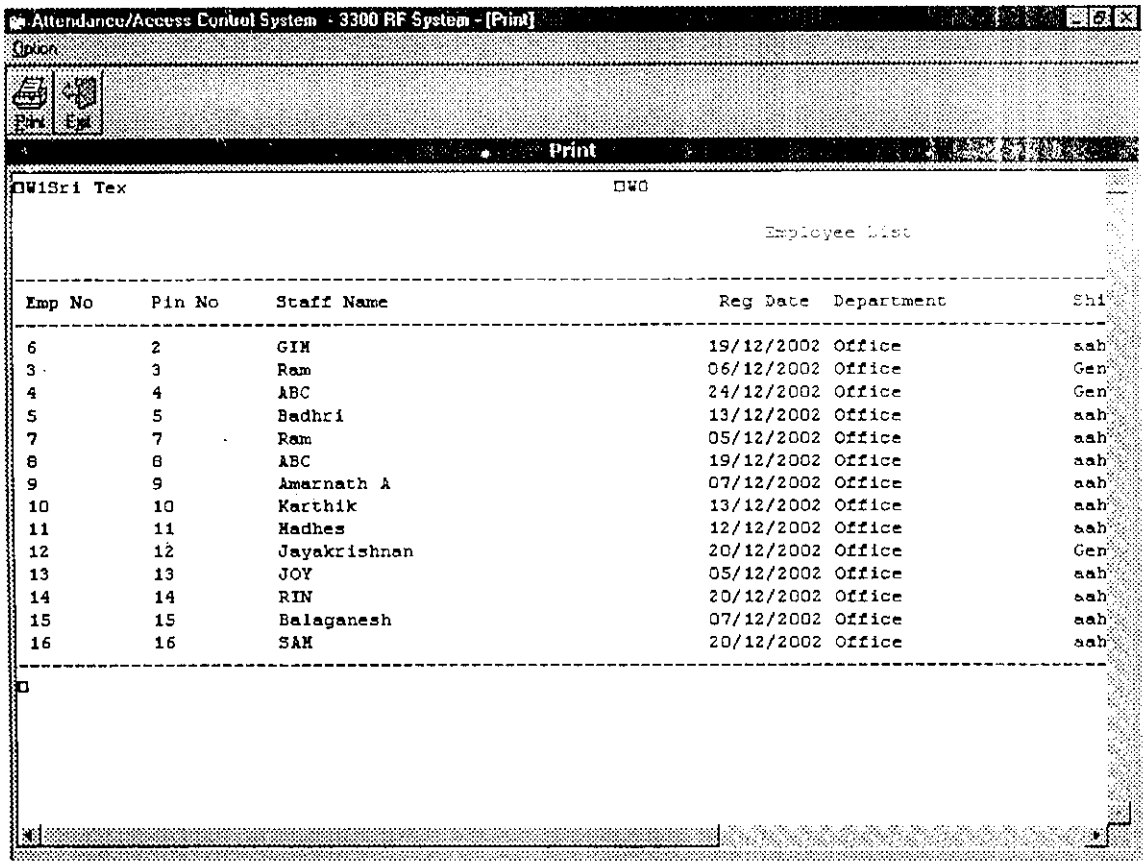
18:00:00 19:05:00 22/12/2002 22/12/2002
18:15:00 19:30:00 22/12/2002 22/12/2002
20:00:00 21:30:00 22/12/2002 22/12/2002
23/12/2002 22:00:00 00:15:00 22/12/2002 23/12/2002
04:30:00 19:00:00 23/12/2002 23/12/2002
24/12/2002 20:30:00 00:30:00 23/12/2002 24/12/2002

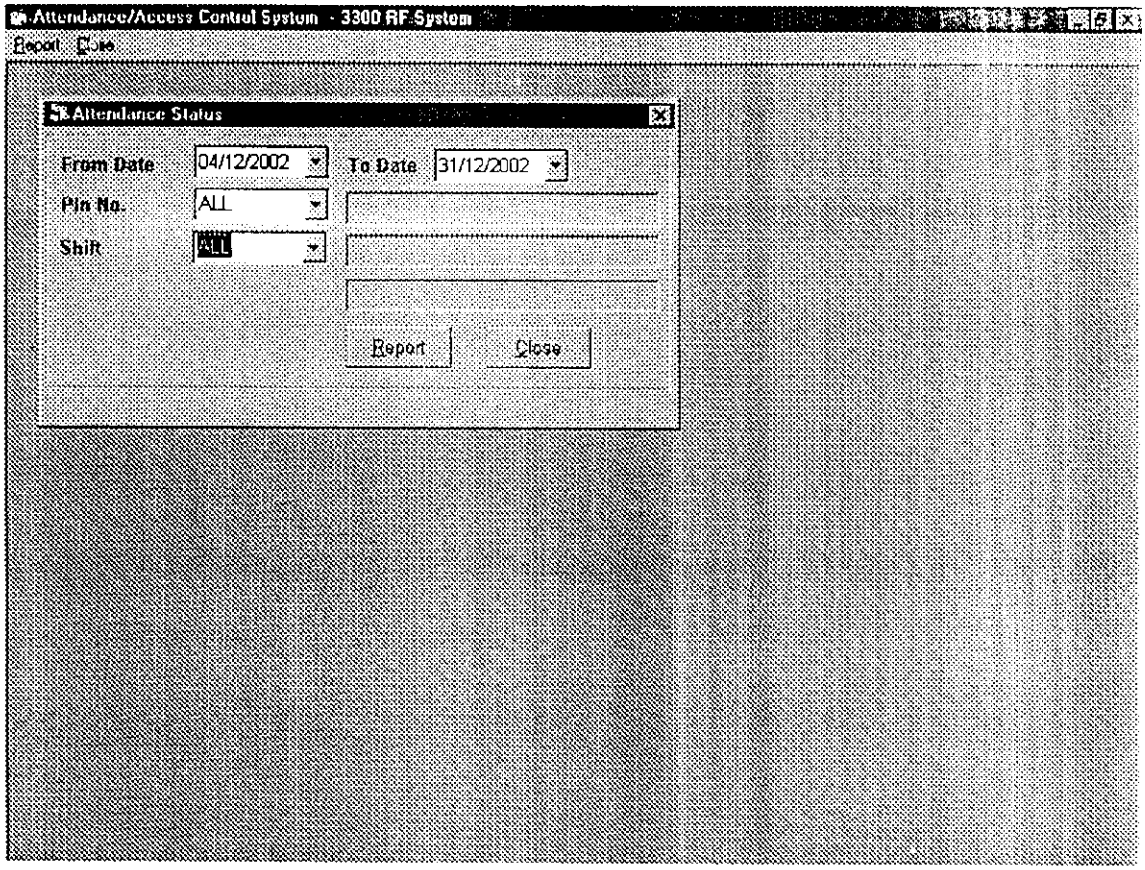

Attendance/Access Control System - 3300 RF System - [Downloaded Data]
Option
View
Clear
Exit
Downloaded Data
From Date 01/12/2002
To Date 31/12/2002
12 12 Jayakrishnan 19/12/2002 10:36:06 IN Valid 65
12 12 Jayakrishnan 19/12/2002 10:36:15 OU Valid 65
6 2 GIM 20/12/2002 18:00:00 OU Valid 65
6 2 GIM 20/12/2002 07:00:00 IN Valid 65
6 2 GIM 20/12/2002 23:00:00 IN Valid 65
6 2 GIM 21/12/2002 23:59:59 OU Valid 65
6 2 GIM 21/12/2002 22:00:00 IN Valid 65
6 2 GIM 21/12/2002 05:00:00 OU Valid 65
6 2 GIM 21/12/2002 07:00:00 IN Valid 65
6 2 GIM 21/12/2002 16:00:00 OU Valid 65
6 2 GIM 22/12/2002 18:00:00 IN Valid 65
6 2 GIM 22/12/2002 03:00:00 OU Valid 65
6 2 GIM 22/12/2002 19:30:00 OU Valid 65
6 2 GIM 22/12/2002 19:05:00 OU Valid 65
6 2 GIM 22/12/2002 22:00:00 IN Valid 65
6 2 GIM 22/12/2002 20:00:00 IN Valid 65

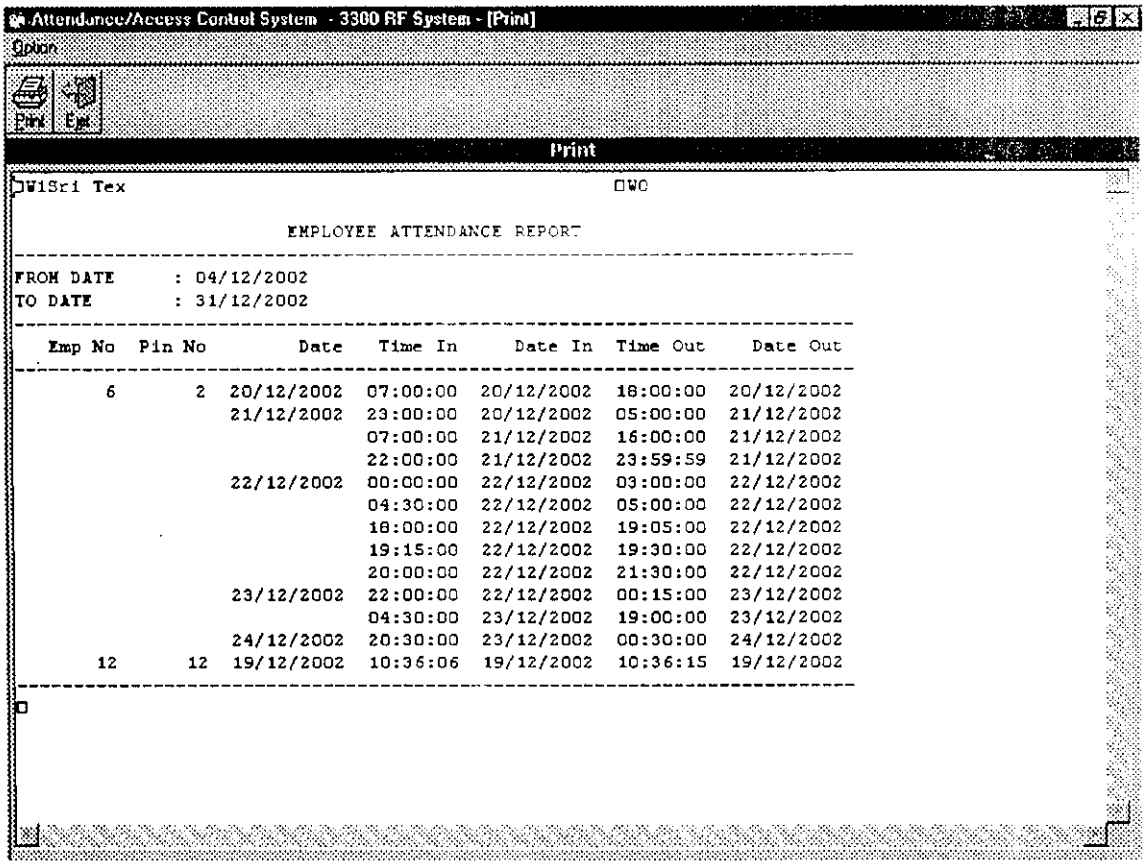

Attendance/Access Control System - 3300 RF System - [Exceptional Hours]
Option
Save
Clear
Exit
Exit
Exceptional Hours
Date
16/12/2002
Time
12:00:00
OD
Exp
Remark
vehicle problem
Pin Nos
2
4
5
7
8
9
10
11
12
13
14
15
16
>
<
Selected List
3

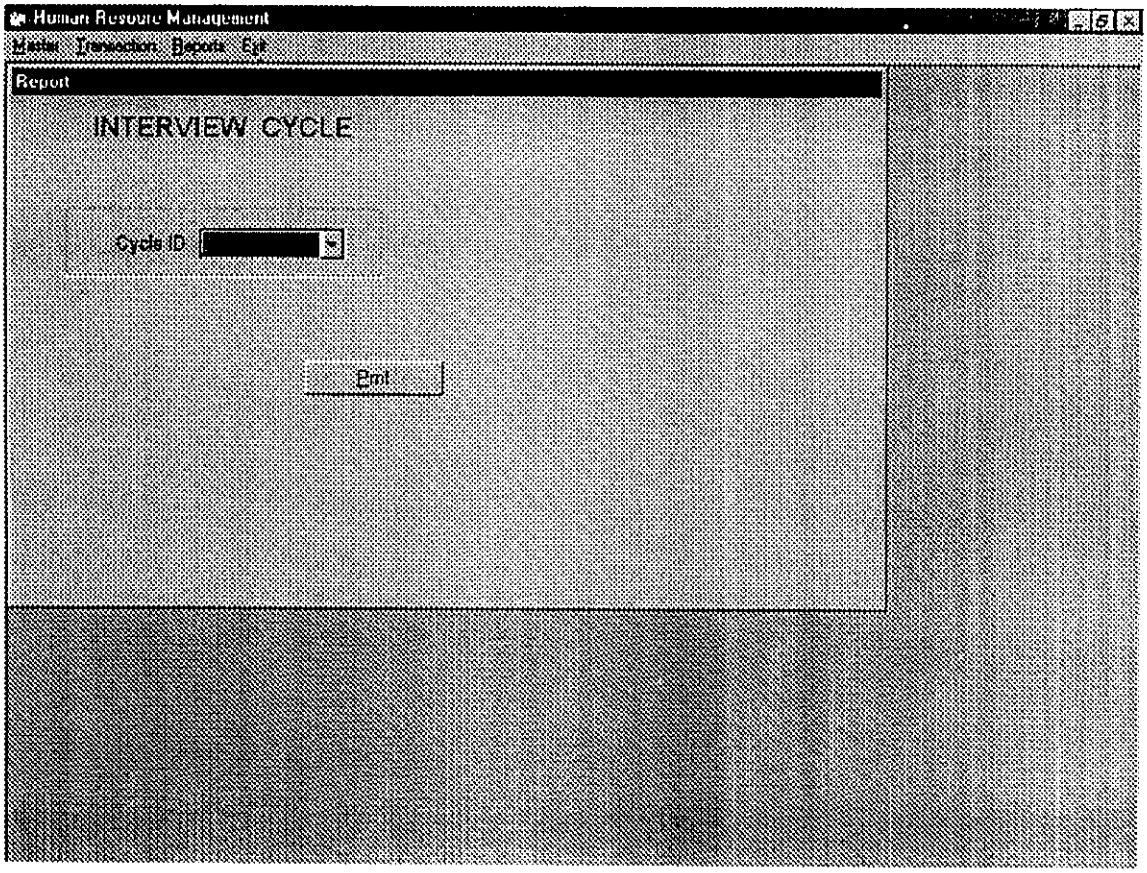

Attendance/Access Control System - 3300 RF System
Option
Staff
Shift Name
ALL
Department
ALL
Staff Status
Ok
Cancel

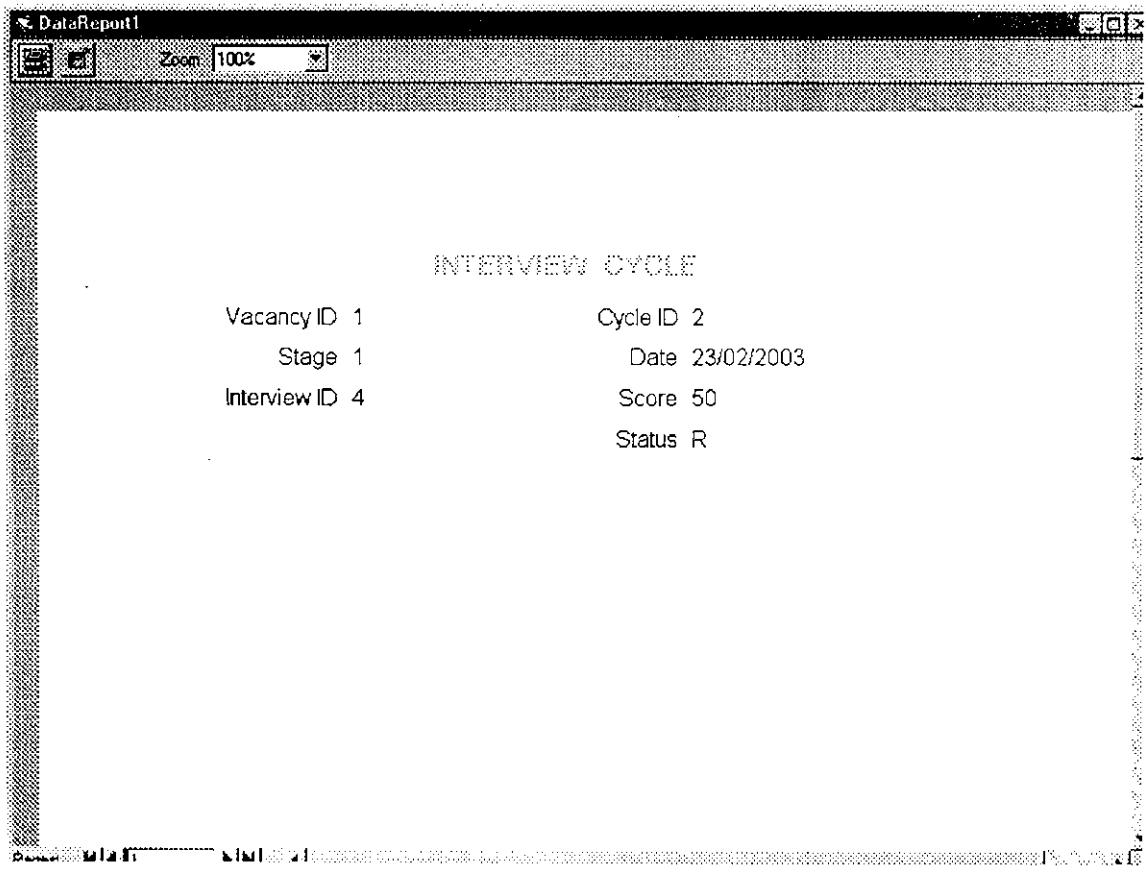


Emp No	Pin No	Staff Name	Reg Date	Department	Shi
6	2	GIM	19/12/2002	Office	aah
3	3	Ram	06/12/2002	Office	Gen
4	4	ABC	24/12/2002	Office	Gen
5	5	Badhri	13/12/2002	Office	aah
7	7	Ram	05/12/2002	Office	aah
8	8	ABC	19/12/2002	Office	aah
9	9	Amarnath A	07/12/2002	Office	aah
10	10	Karthik	13/12/2002	Office	aah
11	11	Madhes	12/12/2002	Office	aah
12	12	Jayakrishnan	20/12/2002	Office	Gen
13	13	JOY	05/12/2002	Office	aah
14	14	RIN	20/12/2002	Office	aah
15	15	Balaganesh	07/12/2002	Office	aah
16	16	SAM	20/12/2002	Office	aah


Attendance/Access Control System - 3300 RF System
Report Close
Attendance Status
From Date
04/12/2002
To Date
31/12/2002
Pin No.
ALL
Shift
ALL
Report
Close


Attendance/Access Control System - 3300 RF System - [Print]
Option
Print
Exit
Print
WiSri Tex
WO
EMPLOYEE ATTENDANCE REPORT
FROM DATE : 04/12/2002
TO DATE : 31/12/2002
Emp No Pin No Date Time In Date In Time Out Date Out
6 2 20/12/2002 07:00:00 20/12/2002 18:00:00 20/12/2002
21/12/2002 23:00:00 20/12/2002 05:00:00 21/12/2002
07:00:00 21/12/2002 16:00:00 21/12/2002
22:00:00 21/12/2002 23:59:59 21/12/2002
22/12/2002 00:00:00 22/12/2002 03:00:00 22/12/2002
04:30:00 22/12/2002 05:00:00 22/12/2002
18:00:00 22/12/2002 19:05:00 22/12/2002
19:15:00 22/12/2002 19:30:00 22/12/2002
20:00:00 22/12/2002 21:30:00 22/12/2002
23/12/2002 22:00:00 22/12/2002 00:15:00 23/12/2002
04:30:00 23/12/2002 19:00:00 23/12/2002
24/12/2002 20:30:00 23/12/2002 00:30:00 24/12/2002
12 12 19/12/2002 10:36:06 19/12/2002 10:36:15 19/12/2002


Human Resoure Management
Master Transaction Reports Exit
Report
INTERVIEW CYCLE
Cycle ID
Rmt


DataReport1
Zoom 100%
INTERVIEW CYCLE
Vacancy ID 1
Stage 1
Interview ID 4
Cycle ID 2
Date 23/02/2003
Score 50
Status R

```
  End If
End Sub

Private Sub cmdDelete_Click()
  If Actmode = 2 Then
    If Trim(txtDept) = "" Then
      MsgBox "Select the Department Name to Delete", vbCritical, "HRD"
      Exit Sub
    Else
      If MsgBox("Do you want to Delete this", vbYesNo, "HRD") = vbYes Then
        Cn.Execute "Delete * from tbldepartment Where fldDeptId=" & txtId & ""
      End If
    End If

  End If
   Call cmdNew_Click
End Sub

Private Sub cmdExit_Click()
  Unload Me
End Sub

Private Sub cmdNew_Click()
  Actmode = 1
  txtDept.Text = ""
  Call Fillup
End Sub
```

```
Private Sub Form_Load()
   Set Cn = New ADODB.Connection
   Cn.Open "DSN=HRD"
   Call cmdNew_Click
End Sub

Public Sub Fillup()
Dim rsDept As ADODB.Recordset
Dim sSQL As String
   sSQL = "Select fldDeptName from tblDepartment Order by fldDeptName"
   Set rsDept = New ADODB.Recordset
   Set rsDept = Cn.Execute(sSQL)
   lstDepartment.Clear
   While rsDept.EOF = False
      lstDepartment.AddItem rsDept(0)
      rsDept.MoveNext
   Wend
   Set rsDept = Nothing
End Sub

Private Sub Form_Unload(Cancel As Integer)
   Set Cn = Nothing
End Sub

Private Sub lstDepartment_Click()
On Error Resume Next
```

```
)im rsDept As ADODB.Recordset


    txtDept = lstDepartment.List(lstDepartment.ListIndex)

    Set rsDept = New ADODB.Recordset

    Set rsDept = Cn.Execute("Select fldDeptId from tbldepartment Where
ldDeptName='" & txtDept & "'")

    txtId = rsDept(0)

    Set rsDept = Nothing

    Actmode = 2

End Sub


Private Sub txtDept_KeyPress(KeyAscii As Integer)

  KeyAscii = Asc(UCase(Chr(KeyAscii)))

End Sub
```

BIBLIOGRAPHY:

BOOK NAME	AUTHOR
1. Introduction to system analysis and design	I.T.Hawryszkiewyz
2. Relational Databases: theory and practice	Val Occardi
3. Practical Visual Basic	Bob Reselman & Richard Peasly
4. Software Engineering	Roger S.Pressman
5. Introduction to Database Systems	C.J.Date