Skills Inventory for Human Resources Management in a Software Company

PROJECT REPORT

Dissertation Submitted in partial fulfilment of the requirements for the Degree of

MASTER OF COMPUTER APPLICATIONS

of the Bharathiar University

By

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CERTIFICATE

This is to certify that this project work entitled

"TRAINING INFORMATION AND SKILLS INVENTORY MANAGEMENT SYSTEM "

submitted to Kumaraguru College of Technology, Coimbatore (affiliated to Bharathiar University) in partial fulfillment of the requirements for the award of the degree of Master of Computer Applications is a record of the original work done by Mr.Mathew Kuriakose, Reg. No. 9438M0198 during his period of study in the department of Computer Science and Engineering, Kumaraguru College of Technology, Coimbatore under my supervision and guidance and this project work has not formed the basis for the award of any Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any university.

Professor and Head

Staff in-charge

Submitted for University Examination held on 3 / 6 / 1997

Internal Examiner

External Examiner

CERTIFICATE

This is to certify that the project work entitled ***SKILLS INVENTORY FOR HUMAN RESOURCES MANAGEMENT IN A SOFTWARE COMPANY*** *was carried out successfully for the HRD at MASCON Technical Services, Madras by* ***Mr. Mathew Kuriakose*** *in partial fulfilment of the requirements for the award of the degree of Master of Computer Applications of Bharathiar University, Coimbatore.*

V. Kameshwari 25/4/97

Ms. V Kameshwari

Chief, HRD

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BONAFIDE CERTIFICATE

Certified that this Project report is the Bonafide Work of **MATHEW KURIAKOSE** who carried out the research under my supervision from **January 1997** to **May 1997**. Certified further that to the best of my knowledge, the work reported herein does not form part of any other project or dissertation on the basis of which a degree or diploma was conferred on an earlier occasion on this or any other candidate.

K.SRIDHARAN,
General Manager(Operations),
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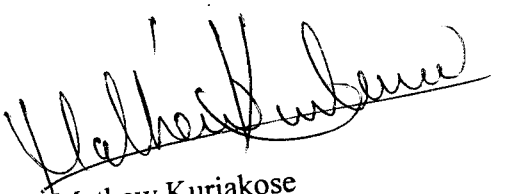
DECLARATION

I hereby declare that this dissertation submitted by me for the award of degree of Master of Computer Applications has not formed the basis for the award of any other degree, diploma, association or fellowship of similar titles and this dissertation was done independently by me under the guidance of Mr. S Ramanathan and Mr. D Ramesh.



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Contents

ANNEXURES

Annexure I - About PAMS

Annexure II - Training Procedure Details

Annexure III - Data Collection Formats

APPENDICES

Appendix A - Sample Reports

Appendix B - Operation Guidelines

SYNOPSIS

SYNOPSIS

1.1 MASCON Technical Services Ltd.

MASCON Technical Services Ltd., is a software company, which specialises in IT Solutions for the manufacturing industry. The company has its operations in India and abroad. Two of its most popular products are IMAS (Integrated Manufacturing Automation Software) and AIMS (Advanced Integrated Manufacturing Software).

1.2 Background

This project entitled **SKILLS INVENTORY FOR HUMAN RESOURCES MANAGEMENT IN A SOFTWARE COMPANY** is intended to manage information about the various aspects of skill and experience of employees at MASCON. The need for establishing a proper Quality system for any service organisation, especially for a software company like MASCON cannot be over emphasised. MASCON being an ISO 9001 certified company, the various procedures followed in human resources management is in line with the ISO 9001: 1994 requirements laid down in the Quality System Procedures Manual. The various skills inventory reports generated as part of this project conform to these standards.

1.3 Inputs for Skills Inventory Management

The inputs required for skills inventory management can be classified into two types:

- Exposure of each employee in various skills (In manyears and manmonths)
- Information about the technical training programmes attended by each employee.

1.4 Validation and Storage of Inputs for Skills Inventory Management

PAMS (Project Activity Monitoring Sheet Software) was a software conceived and developed in the latter half of 1996 with the intention of making it the spade work for the future development of a robust and reliable skills inventory management system. A new database called SIF database was created and this was used to store the data that would be fed into and validated by the various screens (submodules) of the PAMS software.

1.4.1 About PAMS

The objectives of PAMS are:

- To have a detailed account of the work activities of individual employees in the organisation to be used for various purposes including the preparation of skills inventory.
- Making various estimates as in the case of assessing the time required, manhours, cost of production, level of skill required etc, of a project prior to making a quotation to a client.
- Making several other management decisions.
- The data for the updation of information about exposure of employees is to be collected through Daily Log Sheet.

Detailed Information relating to PAMS is given in Annexure I

1.4.2 About Training Information Management System

As the first part of this project, the Training Information Management System was conceived, designed and developed to computerise the already existing data and for the continued updation of information relating to training activity. It was also intended to be used along with PAMS and SIF (and later preferably integrated with PAMS) to form the comprehensive Skills Inventory Management System. For this reason, the tables used to store the data fed into and validated by Training Information Management System, were designed and created in the SIF database itself.

Thus the major objectives of Training Information Management System can be stated as:

* To plan, implement and review training in the organisation to ensure constant updation of technical skills. This is acheived through the various Human Resources management procedures of the company as enumerated in the MQS.
* The relevant details regarding training activities in the MQS is given in Annexure II.

1.5 Need for the project

The SIF database was created and the system of filling in Daily Log Sheets by the technical employees came into use with effect from 25-11-1996. The relevant information with regard to training programmes held since April 1996 was available from the accurate attendance register being maintained by the HRD.

The HRD was convinced that it was quintessential to capture the information about the exposure of employees in various skills acquired both in MASCON and other organisations they may have previously worked in, prior to the above mentioned date. The Training Information Management system was to be developed to validate, store and manage the information obtained from the data residing in the attendance register.

Outputs from the Skills Inventory Management system

⇒ Reports containing list of employees experienced in one or more skills and their experience indicated in manyears and manmonths.

⇒ Reports containing list of employees unskilled in one or more specific skills for the purpose of preparation of training plan.

⇒ Report giving the skill profile of specified employees.

⇒ Quarterly and annual reports on the training programmes conducted.

⇒ Quarterwise and annual reports giving the list of the employees who attended the various training programmes.

⇒ Reports giving the details, including the list of employees who were trained, of specified training programmes.

→ Report giving the review of training plan for the year in terms of number of days of technical training and non-technical training attended by each employee of MASCON.

1.6 About the user

The Chief, HRD or a person appointed by the Chief of HRD will be the primary user of the Skills Inventory Management System. The domain specific knowledge needed for the development of the system was entirely supplied by the Chief of HRD during the course of this project. Being fortunate to be able to discuss the various aspects of the project with the user constantly, every attempt was made to meet the user requirements and incorporate modifications whenever it was found to be necessary.

1.7 About the development tool used

- The GUI used for program development is Gupta SQL Windows.
- The RDBMS used at the back end is SQL Base.
- The reports were designed using SQL Report Windows.

These are products of the Gupta corporation. The various features of these tools are dealt with at length in the report.

1.8 Recommendations

- Considering the highly interlinked nature of the information being processed by the various modules ie. PAMS, Training Information Management System and the Skills Inventory Management system, it is recommended that the three be integrated.
- Towards achieving the dream of total automation of HRD operations, it is recommended that a more comprehensive HRD package be developed which includes

1) Recruitment Information Module

2) Performance Appraisal Module

3) Compensation Module

4) General Information Module

in addition to PAMS,Training Information Management System and Skills Inventory Management System.

It is expected that this project work will take MASCON at least some way towards the not-too-distant goal of fully automating all the HRD operations.

INTRODUCTION

2.1 ORGANISATION PROFILE

MASCON TECHNICAL SERVICES

MASCON is an IT solution provider of repute with clients spread across four continents and is a name to reckon with in the field of 'manufacturing industry automation software'.

Over a period of sixteen years, MASCON has offered state of the art solutions for diverse manufacturing / processing requirements. MASCON is one of the leading software houses in the country with a wealth of expertise in

- DATABASE MANAGEMENT SYSTEMS
- ON-LINE APPLICATIONS
- DECISION SUPPORT SYSTEMS

MASCON's services cover total information system requirements like

- INFORMATION SYSTEMS STRATEGY
- REQUIREMENT DEFINITION STUDY
- SYSTEMS DESIGN
- APPLICATIONS DEVELOPMENT & INSTALLATION
- MAINTENANCE

MASCON's OPERATIONS:

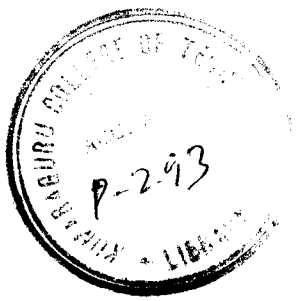
INTERNATIONAL

- ON-SITE SERVICES
- OFF-SHORE DEVELOPMENT

MASCON professionals have earned impeccable reputation in on-site services provided to large software houses in U.S.A . Some of their prestigious sites are:

- Cambar Software, Charleston
- Triwell Marketing and Refining ,White plain

- Systems Collins, Los Angeles
- CAI ,Allenton
- Prime Computers ,Natick
- HBO Company ,Atlanta
- Datalogix International , Valhalla
- American Turnkey Solutions,Irvine
- British American Insurance Company
- Korpershoek, Netherlands



OFF-SHORE DEVELOPMENT

With access to advanced configurations and software environments of several international manufacturers, MASCON has made inroads into the software market in the U.S.A.

To name a few of their clients:

- Sanzone Associates ,New Jersey
- Ergodyne Corporation ,New Jersey

CUSTOM SOLUTION

Though their niche market is manufacturing industry, they have extensive expertise in many specialised applications. To name a few Design support systems ,Finance & Costing systems and Maintenance management systems,Distribution & warehousing etc.

They adopt data the latest in case tools and their Analysis / Design / Prototyping / Documentation methodologies conform to international standards.

PRODUCT

Consistent efforts at understanding the changing business needs and constant innovations have resulted in the creation of two versatile and feature rich products.

#1 AIMS: Advanced Integrated Manufacturing Software

GUI based comprehensive ERP solution in Gupta SQL Windows for the small to medium sized corporate in Client-Server environment.

#2 IMAS: Integrated Manufacturing Automation Solution

A robust and detailed ERP solution in ORACLE for the demanding corporate.

INFOTECH STRATEGIES

This works with customers to identify their critical success factors and formulate strategies to achieve them.

TEXTILE CAD

The software enables design and simulation of fabric on the computer and provides complete manufacturing documents . The system can also be interfaced with their Jacquard card punching machines. The software will soon be enhanced to include solutions for printing and knitting.

ENGINEERING CAD

This provides total design services. This is equipped with state of the art design software and infrastructure such as digitizers, scanners, plotters besides a large number of CAD workstations.

QUALITY

Since its inception, MASCON's software development efforts have been guided by quality software engineering principles. Over the years, the organisation has evolved its own standards which have been institutionalised as part of its program for company-wide excellence program (PACE). Today MASCON is an **ISO 9001** Certified company . This focus on quality has translated into high standards of workmanship and consistency in performance.

2.2 HARDWARE CONFIGURATION

- MACHINE : BEAN STALK
- MANUFACTURED BY : HCL
- PROCESSOR : PENTIUM75Mhz

The following is the minimum and recommended system configuration:

- **CLIENT**

  MINIMUM :
  - 486
  - 4 MB RAM
  - 500 MB HD

  RECOMMENDED :
  - PENTIUM 75 MHz
  - 16 MB RAM
  - 500 MB HD

- **SERVER**

  MINIMUM :
  - PENTIUM 75 MHz
  - 32 MB RAM
  - 1 GB HD

  RECOMMENDED :
  - PENTIUM 133
    64 MB RAM/1 GB HD

- NETWORK OPERATING SYSTEM : NOVELL NETWARE OR WINDOWS NT WITH A WINDOWS 3.X OR WINDOWS 95 FRONT END
- TOPLOGY : ETHERNET
- RDBMS : SQL BASE
- FRONT END : SQL WINDOWS

2.3 SOFTWARE ENVIRONMENT

2.3.1 RDBMS

The database management systems (DBMS) called as relational database management systems should satisfy the following 12 rules posted by the father of RDBMS, Dr. E.F.CODD. No RDBMS till date satisfies all of Codd's 12 rules.

RULE 1 : INFORMATION RULE

All information in a relational database is represented explicitly at the logical level and in exactly one -way by values in R-table.

RULE 2 : GUARANTEED ACCESS RULE

Each and every datum in a relational database is guaranteed to be logically assessable by resorting to a combination of R-table name , primary key value and column name.

RULE 3 :SYSTEMATIC TREATMENT OF NULL VALUES

Indicators (distinct from the empty character string or a string of blank characters , and distinct from zero or any other number) are supported in fully relational DBMS for representing at the logical level,the fact that the information is missing in a systematic way-independent of data type.

RULE 4 : DATA DESCRIPTION RULE

The database description is represented at the logical level just like the ordinary data, so that authorized users can apply the same relational language to it,s interrogation as they apply to the regular data.

RULE 5 : COMPREHENSIVE DATA SUBLANGUAGE RULE

A Relational DBMS must support at least one language (1) whose statements are expressible per some well defined syntax as character strings and (2) which is comprehensive in supporting all of the following terms.

- DATA DEFINITION
- VIEW DEFINITION
- DATA MANIPULATION
- CONSTRAINTS
- AUTHORISATION
- TRANSACTION BOUNDARIES.

RULE 6 : VIEW UPDATING RULE

The DBMS includes an algorithm at least as powerful as VU-1 for determining whether that view is tupel -insertable and tupel-deletable and whether each of its columns is updatable.It records the result of this investigation in the catalogue

RULE 7 : INSERT, UPDATE AND DELETE

The capability of handling a base relation or a derived relation as a single operand applies not only to the retrieval of data but also to the insertion, updation and deletion of data.

RULE 8 : PHYSICAL DATA INDEPENDENCE RULE

Application programs and terminal activities remain logically unimpaired whenever any changes are made in either storage representation or access methods.

RULE 9 : LOGICAL DATA INDEPENDENCE RULE

Application programs and terminal activities remain logically unimpaired when information - preserving changes of any kind that theoretically permit unimpairment are made to the base tables.

RULE 10 : INTEGRITY INDEPENDENCE RULE

Integrity constraints specific to a particular relational database must be definable in the relational data.

RULE 11 :DISTRIBUTION INDEPENDENCE RULE

A RDBMS has distribution independence.

RULE 12 : NON SUBVERSION RULE:

If a relational system has a low-level language ,that low level cannot be used to subvert or bypass the integrity rules and constraints unexpressed in the higher level relational language.

FEATURES OF RDBMS

- MINIMAL REDUNDANCY
- ACCURACY
- RELIABILITY
- FAST PROCESSING
- USER FRIENDLINESS
- CODE REUSABILITY
- FLEXIBILITY
- SECURITY
- DATA INTEGRITY

2.3.2 INTRODUCTION TO GUPTA SQL WINDOWS

SQL BASE: It is a relational database management system which runs on main frame to micro computer. It is a portable object oriented fourth generation language so that the application developed on one system can easily be transferred to other systems.

Here everything is stored and displayed in tables. A table consists of rows and columns. A single row of data is called a record.

It has several tools. These tools do four major tasks.

* DATABASE MANAGEMENT
* DATA ACCESS AND MANAGEMENT
* PROGRAMMING
* CONNECTIVITY

Object Oriented Programming

Object-oriented programming (OOP) gives you the ability to:

* Define classes
* Derive new classes based on existing classes
* Create objects that belong to a class

Objects

An object is a software entity that combines:

* Data that represents the object
* Procedural code that retrieves or changes the object's data

An object can represent:

* A tangible concept such as a window
* An intangible concept such as a checking account

Class

A class is a blueprint for making objects. In a class, you define a shared data structure and behaviour for objects that you later create as instances of the class. You define the same data and behaviour for a

set of objects duplicating the code for that data and behaviour in each object.

Inheritance

Inheritance lets you define new classes in terms of existing classes. A new class that you derive from a base class inherits data and behaviour from its base class. Also, a derived class can:

* Extend the base class by adding new data and behaviour. New data and behaviour that you add becomes part of the derived class in addition to the data and behaviour inherited from the base class.
* Modify the base class' behaviour by redefining inherited behaviour.

SQLWindows uses the extended or modified data and behaviour for the derived class, but the original data and behaviour remain valid for the base class.

There are two main steps in writing an application that uses classes and objects:

1. Create classes in the class definitions section under global declarations in the outline.
2. Create objects that are instances of the classes. This is like creating standard window objects.

SQLWindows Application Language (SAL)

SQLWindows Application Language (SAL) is a procedural language used for writing SQLWindows actions (procedures) that one wants one's application to execute when events take place.

One adds SAL statements to:

- The Application Actions section of an outline.
- The Actions section of an Internal Function.
- The Menu Actions section of a menu item.
- The Message Actions section of an object.

Windows Messages, Events, and SQLWindows

There are three types of messages:

* Windows (WM_*)
* SQLWindows Application Messages (SAM_*)
* Programmer Assigned Messages (PAM_*)

Event driven applications

All Windows applications including SQLWindows applications, are event-driven. Events activate the sending of messages.

Messages are triggered by:

* Keyboard actions
* Mouse actions
* Timers
* Applications

SQLWindows Application Messages (SAM)

SQLWindows has its own set of messages, prefixed by 'SAM_' (SQLWindows Application Messages).

They take the form of:

Number: SAM_* = WM_USER + (a number)

Some SAM messages are all built on top of the WM_USER constant. WM_USER is the constant upper boundary of all Windows Messages provided by Microsoft. This means that if you add WM_USER + 1 then you get a number that will not be used as the constant for any other

Windows message.

These take the form of:

Number SAM_* = WM_*

Other SAM messages are equal to a WM_* message. Such as SAM_Click which is the same as WM_LBUTTONDOWN.

Programmer Assigned Messages (PAM_*)

Programmer Assigned Messages (PAM_*) are constants defined in the User section of Constants in Global Declarations.

The constants you define with the PM_* or PAM_* prefix appear automatically in the Outline Options dialog box. The constants you define for messages must be greater than the SAM_User constant.

The SAM_User constant is the upper boundary of SAM messages and is analogous to the WM_USER constant SQLWindows uses in defining SAM messages.

SQLWindows QuickObjects

QuickObjects are a group of pre-defined objects commonly used by SQLWindows applications developers. These objects let you develop applications in a quick and easy manner by providing a family of smart visual and non-visual objects that provides powerful declarative development.

QuickObjects are classes defined in a SQLWindows class library to be used in any SQLWindows application. Since QuickObjects are built upon the standard object oriented programming features of SQLWindows, you can use them together with other user-defined classes and with procedural SAL code.

Each time you create a class, they appear in the outline. Therefore, QuickObjects are fully extensible since they can be sub-classed (extended) to create new classes with behaviour the user customizes.

Quest windows

Quest is a graphical data access tool you can use to access SQL databases - without learning SQL. Quest allows easy Windows access to SQL databases anywhere in your organization, from mainframe and minicomputers, to client-server LAN systems. All you need is Gupta's SQLRouter or SQLNetwork connectivity software for the appropriate database engine.

SQLWindows can include Quest Table and Query activities as part of a SQLWindows application that you build. It does this by including Quest as either a top level or child window in the SQLWindows Form.

QuestWindows lets you build fully functional database applications with SQLWindows without having to write a single line of SQL code. It lets you become productive very quickly if you are building client-server, SQL database, or graphical applications.

The QuestWindow lets you use all the standard commands in the full Quest application. You can use the Table activity in your Quest window to provide update capabilities to your users. You can use the Query activity in your QuestWindow to let your users browse through the results of complex queries quickly.

Reports

Reports is a "what you see is what you get" report writer that runs in the Microsoft Windows environments. It is a key component of the SQLWindows environment. Reports is available as a standalone application which you access from the Tools menu, or you can use it in Quest.

The online Help for both Quest Reports and standalone Reports is the same. Reports simplifies the report building process by providing a graphical interface that lets you "point and click" to define fields, lines, boxes, pictures, blocks, and break groups. You can include graphic images, and

format all text elements using a variety of font types, styles, type sizes, justification, and borders.

The report template you design contains all the information Reports needs to format and present the data you provide.

It is important to remember that what you create and save with Reports is a report template. This report template contains scriptions of the type of fields, lines, boxes, and pictures you want to include in your report. It does not contain the actual report data.

Reports plays an important role in the development of SQLWindows applications. They provide an easy, powerful tool for developing reports for the SQLWindows developer. These reports can be accessed, viewed, and printed from your SQLWindows application. Because Report is a free - standing application, you can develop your report template independently of your SQLWindows application.

Your report template can be defined from a number of locations:

* Reports
* SQLWindows
* Quest Report Activity

System Analysis

3.1 INTRODUCTION

A proper system analysis is absolutely essential to the development of an efficient management information system which has acceptable levels of user satisfaction.It is at this stage of the project that all the planning takes place. In this phase one tries to put down on paper the requiurements of the user, the information and the resources available and the salient features of the existing system.

This section is divided into ~~three~~ 2 subsections. In the first, Problem Definition, the problem is clearly defined and the user's requirements (what the user expects from the MIS) are stated. In ~~the second~~ subsection, System Study, the features of the existing system are described. In the ~~third~~ 2, System Objectives, the objectives that were formulated after the system study are stated.

3.2 PROBLEM DEFINITION

MASCON has been growing at a fast pace in the last couple of years. Unlike in other industries where educational qualification is the main indicator of an employee's skills and which remains constant over a long periods of time, in the software industry the skills of employees are indicated by their exposure to specific skills that are used everyday in IT and the level of which changes constantly with each completed project and each passing month. Due to the vastness of the field and the mind boggling number of skills in which the software industry needs to give services, training of employees in new skills is a common feature of any software company throughout the year. This is a major function of HRD in software companies.

In mid 1996, MASCON's HRD decided it necessary to develop a management information system to manage information regarding employees, projects being done at MASCON, group activity details of employees, leave authorisation, project activity monitoring, daily log, skills inventory and training information. With these objectives in mind, a software called PAMS was developed. PAMS achieved several of the objectives mentioned.

Training activity management was decided to be done later. Though the screens for entering, validating and storing the data on skills inventory was present in PAMS, it did not poses this information and generate the reports required by HRD for skills inventory management. With the circumstances being as described above, the chief of HRD stated the problem definition as follows:

- Prepare a comprehensive skills list from the one that is already existing with unique codes, so as to be able to capture the skill information of each and every technical employee of MASCON completely.

- Develop a Training Information Management System to capture, validate, store and manage the training information. The skill (and Code) list was to be used as the training codes also since they are in reality identical.
- Develop the programs required to generate the various kinds of skills inventory reports which would facilitate human resource management in an efficient way.

3.3 SYSTEM STUDY

Once the problem was defined, the existing system was studied at length to comprehend all its existing features and to identify the objectives to be set.

The significant features of the existing system were :

- One module of PAMS, called Daily Log captures the exposure of employees in a specific skill each day. For example: If an employee say E001, is working on an ORACLE based project, at the end of the day he feeds in one man day under the unique code of ORACLE, RD-3 and under specific project name through the daily log screen.
- The recording of experience of Daily Log of PAMS started on 25-11-1996.
- The exposure of employees in various skills(whether in MASCON or previous organisations) prior to the above mentioned date, was collected on Skills Inventory Forms from the employees. The format used for this data collection is given in Annexure III .
- In the skill list present in the skills inventory forms, the employees wrote down new skills in which they had experience but the skill name was not present. This indicated the necessity for the preparation of a more comprehensive list of skills by which the entire experience of each employee could be captured.
- The existing system does not manage the data generated by the training activity. MASCON being an IT Company, the constant updation of technical skills of employees through the various training procedure as enumerated in MQS (Annexure II) is a very important function of the HRD.

- Accurate information on all the training programmes conducted since April 1996, was available in the attendance register maintained by the HRD.

- To conform to the procedures laid down in the MQS, a survey was to be conducted to ascertain the preferences of employees with regard to skills in which training is required. The skill list prepared was to be used here as the training codes list. Details of the various kinds of training information like Surveyed, Planned and Actual are available in Annexure II.

3.4 SYSTEM OBJECTIVES

A Training Information Management System is to be developed to plan, implement and review training in the organisation to ensure constant updation of technical skills. This is to be achieved through various human resources management procedures of the company as enumerated in the MQS. The objectives of Training Information Management System can be stated as :

1) To develop a program to accept, validate, store and retrieve information generated by survey of training preferences among employees and planning of training programmes by the chief of HRD.

2) To develop a program to accept, validate, store and retrieve information regarding training programmes 'Actually' conducted.

3) Generate the various reports required by the HRD regarding training activity.

The objective of the comprehensive skills inventory management system as a whole (which will include Training Information Management also) is to develop programmes which process data which has been validated and strored in the database and generate the reports required for human resources management. The following reports constitute the output required from the Skills Inventory Management System:

- Reports containing list of employees experienced in or more specified skills and their experience indicated in manyears and manmonths.
- Reports containing list of employees unskilled in one or more specified skills for the purpose of preparation of training plans.
- Report giving skill profile of specified employees.

- Quarterly and Annual Reports on the training programmes conducted.
- Quarterwise and Annual Reports giving the list of employees who attended the various training programmes and the no of days they attended.
- Reports giving the details, including the list of employees who were trained, of specified training programmes.
- Report giving the review of training plan for the year in terms of the number of days of technical training and non-technical training attended by each employee of MASCON.

System Design & Development

4.1 INTRODUCTION

This section contains the documentation of the system design phase of the project. The structure of the tables which includes, the field names, their type & length and whether they can hold null value or not, is given in the sub-section '4.2 Data Dictionary'. The details of the validations, screen formats, program names and a lot of other useful information is given in the '4.3 Program Specification'. The preparation of the Program Specification is an important part of system design which makes the work systematic and easy in the program coding phase.

The data flow diagrams are given under subsection 4.4. Some sample screen and sample reports which show the formats clearly have also been included in this section.

4.2 DATA DICTIONARY

DATABASE : SIF

TABLE NAME : SIF_TRG_MAST

Column Name	Data Type	Length	Nulls
TRG_CODE	CHAR	10	No
TRG_ST_DATE	DATE	4	No
TRG_END_DATE	DATE	4	Yes
FACULTY	VARCHAR	30	Yes
FAC_TYPE	SMALLINT	2	Yes
QUARTER	CHAR	8	Yes
CATEGORY	SMALLINT	2	Yes

TABLE NAME : SIF_TRG_TRAN

Column Name	Data Type	Length	Nulls
TRG_CODE	CHAR	10	No
TRG_ST_DATE	DATE	4	No
EMP_CODE	CHAR	10	No
NO_DAYS	NUMBER		Yes

TABLE NAME : SIF_TRG_PLAN

Column Name	Data Type	Length	Nulls
TRG_CODE	CHAR	10	No
EMP_CODE	CHAR	10	No
SP_DATE	DATE	4	No
NO_DAYS	NUMBER		Yes
PLAN_FLAG	CHAR	1	No

TABLE NAME : EMPLOYEE

Column Name	Data Type	Length	Nulls
EMP_CODE	CHAR	10	No
EMP_NAME	CHAR	30	No
ABBR_NAME	CHAR	10	Yes
EMP_ADDR1	CHAR	30	Yes
EMP_ADDR2	CHAR	30	Yes
EMP_TYPE	CHAR	2	Yes
CITY	CHAR	30	Yes
STATE	CHAR	2	Yes
SEX	CHAR	1	Yes
ZIP_CODE	CHAR	10	Yes
PHONE_NO	CHAR	14	Yes
FAX_NO	CHAR	14	Yes
POSITION	CHAR	20	Yes
EMP_DOJ	DATE		Yes
EMP_DOR	DATE		Yes
STATUS	SMALLINT		Yes
COMMENTS	LONG VARCHAR		Yes

Table Name : SIF_EMP_EXP

Column Name	DataType	Length	Nulls
EMP_CODE	CHAR	10	No
ORG_CODE	CHAR	10	No
CODE	CHAR	10	No
ORG_FLAG	CHAR	1	Yes
MAN_MONTHS	DECIMAL	4,0	Yes
MAN_YEARS	DECIMAL	4	Yes
EMP_ROLE	LONG VARCHAR		Yes

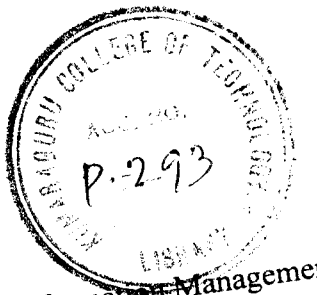
Table Name : SIF_SKILL_MAST

Column Name	DataType	Length	Nulls
SKILL_CODE	CHAR	4	No
SKILL_NAME	VARCHAR	55	No

Table Name : SIF_SKILL_TRAN

Column Name	DataType	Length	Nulls
SKILL_CODE	CHAR	4	No
CODE	CHAR	10	No
NAME	VARCHAR	55	No

4.3 Program Specifications



PROGRAM SPECIFICATION

A. General Details

Spec Type :
Work Order No :
Module Name : TRG001.APT
Program No :
Function (Briefly) :

Prog Spec Id :
ProjectName : Training Information Management
Name : Training Information (Actual)

B. Tables Handled

Table Name	Insert	Update	Delete	Select
SIF_TRG_MAST	*	*	*	*
SIF_TRG_TRAN	*	*	*	*
SIF_SKILL_TRAN	---	---	---	*
EMPLOYEE	---	---	---	*

C. Rules For Insertion

C.1 Table Name : SIF_TRG_MAST
Primary key (trg_code,trg_st_date) must not be present in SIF_TRG_MAST
Foreign key (trg_code) must be present in SIF_SKILL_TRAN

C.2 Table Name : SIF_TRG_TRAN
Primary key (trg_code,trg_st_date,emp_code) must not be present in SIF_TRG_TRAN
Foreign key (trg_code) must be present in SIF_SKILL_TRAN
Foreign key (emp_code) must be present in EMPLOYEE

D. Rules For Updation

D.1 Table Name : SIF_TRG_MAST
Primary key (trg_code,trg_st_date) must be present in
SIF_TRG_MAST
Foreign key (trg_code) must be present in
SIF_SKILL_TRAN

D.2 Table Name : SIF_TRG_TRAN
Primary key (trg_code,trg_st_date,emp_code) must be
present in SIF_TRG_TRAN

E. Rules For Deletion

E.1 Table Name : SIF_TRG_MAST
Primary key (trg_code,trg_st_date) must be present in
SIF_TRG_MAST
Primary key (trg_code,trg_st_date) must not be present in
SIF_SKILL_TRAN

E.2 Table Name : SIF_TRG_TRAN
Primary key (trg_code,trg_st_date,emp_code) must be
present in SIF_TRG_TRAN

F. Rules For Query

F.1 Table Name : SIF_TRG_MAST
Primary key (trg_code,trg_st_date) must be present in
SIF_TRG_MAST

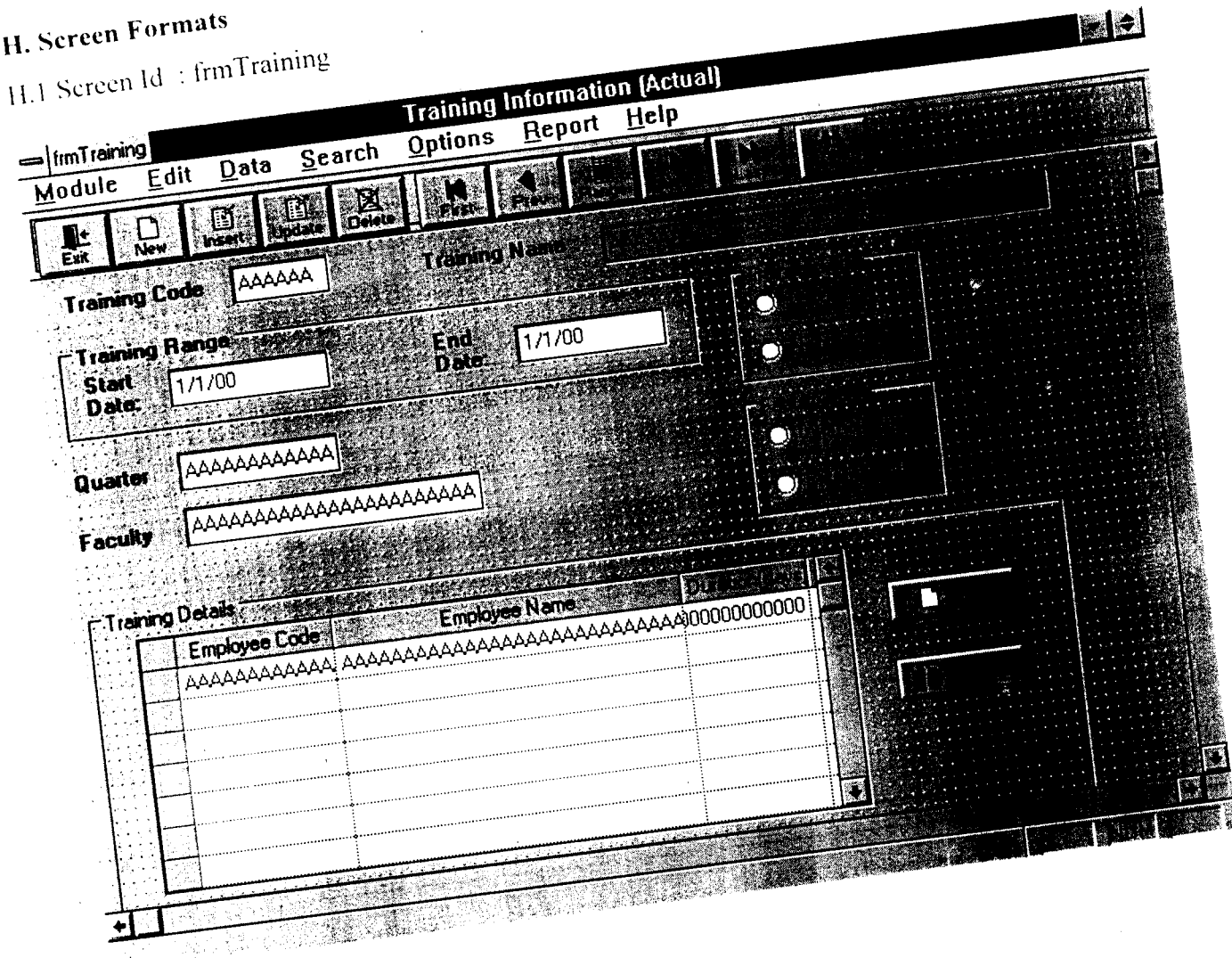
F.2 Table Name : SIF_TRG_TRAN
Primary key (trg_code,trg_st_date,emp_code) must be
present in SIF_TRG_TRAN

G. Navigation Logic

- Based on the tab order set, the navigation takes place (i.e. left to right)
- The details can be typed in and on clicking the 'Insert' push button. a record is inserted provided it passes the validations.
- For modifications the screen can be recalled.

H. Screen Formats

H.1 Screen Id : frmTraining



H.1.1 Screen Validation Chart

Field Name as in Screen	Source Table Name	Source TableField Name& Datatype	Attribute /Item	Validation Criteria	Destination Table	DestnTableFieldname &Datatype	Message to be displayed
Training Code	SIF_SKILL_CODE	Code Char(10)	Datafield DEM	1.Mandatory 2.Should not exist in SIF_TRG_MAST 3.Modification not allowed	SIF_TRG_MAST	trg_code Char (10)	Enter a training code
Start Date :			Datafield DEM	1.Mandatory 2.Date format to be followed 3.Should not exist in SIF_TRG_MAST for same value of trg_code 4.Modification not allowed.	SIF_TRG_MAST	trg_st_date Date	Enter a training start date
End Date :			Datafield DE	1. Optional 2.Date format to be followed	SIF_TRG_MAST	trg_end_date Date	Enter a training end date
Technical			Radio Button DE	1.Optional	SIF_TRG_MAST	category Small Int	Select training status
Non Technical			Radio Button DE	1.Optional	SIF_TRG_MAST	category Small Int	Select training status
Internal			Radio Button DE	1.Optional	SIF_TRG_MAST	fac_type Small Int	Select faculty type
External			Radio Button DE	1.Optional	SIF_TRG_MAST	fac_type Small Int	Select faculty type

Field Name as in Screen	Source Table Name	Source TableField Name& Datatype	Attribute /Item	Validation Criteria	Destination Table	DestnTableFieldname &Datatype	Message to be displayed
Employee Code	EMPLOYEE	emp_code Char(10)	Column DEM	1.Should exist in EMPLOYEE 2.Should not exist in SIF_TRG_MAST for the same values of trg_code & trg_st_date	SIF_TRG_MAST	emp_code Char(10)	
Employee Name	EMPLOYEE	emp_name Varchar(30)	Column DNE	1. Cannot be modified.			
Duration(Days)			Column DEM	1.Should not be greater than the difference between trg_st_date - trg_end_date + 1	SIF_TRG_MAST	no_days Number	

H.1.2 Push Button Logic (If Applicable)

Push Button	Screen/Field Level	Field Name as in Screen	Enabled	Disabled
Search	Field Level	Training Code	When cursor is in the field Training Code	When the cursor is not in the field Training Code
Search	Field Level	Employee Code	When cursor is in the column Employee Code in the child table	When the cursor is not in the column Employee Code
Range	Screen Level		Always	

I. Brief Program Logic

This program caters the following to the package :

- Accept data SIF database about training programmes conducted.
- Validates the data.
- Generates reports on training programmes conducted.

J. Standards

K. Acronyms

Data Field Type	Key Value
Error Message	ERM
Status Bar Message	SBM
Display,Non Editable	DNE
Display,Editable,Mandatory	DEM
Display,Editable,Not Mandatory	DE
Non Display,Non Mandatory	ND
Entry,Non-Editable,Mandatory	EnNM

L. Remarks

M. Reference(If Any)

Prepared By :
Name & Signature :
Date :

Approved By :
Name & Signature :
Date :

PROGRAM SPECIFICATION

A. General Details

Spec Type :
Work Order No :
Module Name :
Program No : TRG002.APT
Function (Briefly) :

Prog Spec Id :
ProjectName : Training Information Management
Name : Training Information (Plan/Survey)

B. Tables Handled

Table Name	Insert	Update	Delete	Select
SIF_TRG_PLAN	*	*	*	*
SIF_SKILL_TRAN	---	---	---	*
EMPLOYEE	---	---	---	*

C. Rules For Insertion

C.1 Table Name : SIF_TRG_PLAN
Primary key (trg_code,emp_code,sp_date,plan_flag) must not be present in SIF_TRG_PLAN
Foreign key (trg_code) must be present in SIF_SKILL_TRAN
Foreign key (emp_code) must be present in EMPLOYEE

D. Rules For Updation

D.1 Table Name : SIF_TRG_PLAN
Primary key (trg_code,emp_code,sp_date,plan_flag) must be present in SIF_TRG_PLAN

E. Rules For Deletion

E.1 Table Name : SIF_TRG_PLAN
Primary key (trg_code,emp_code,sp_date,plan_flag) must be present in SIF_TRG_PLAN

F. Rules For Query

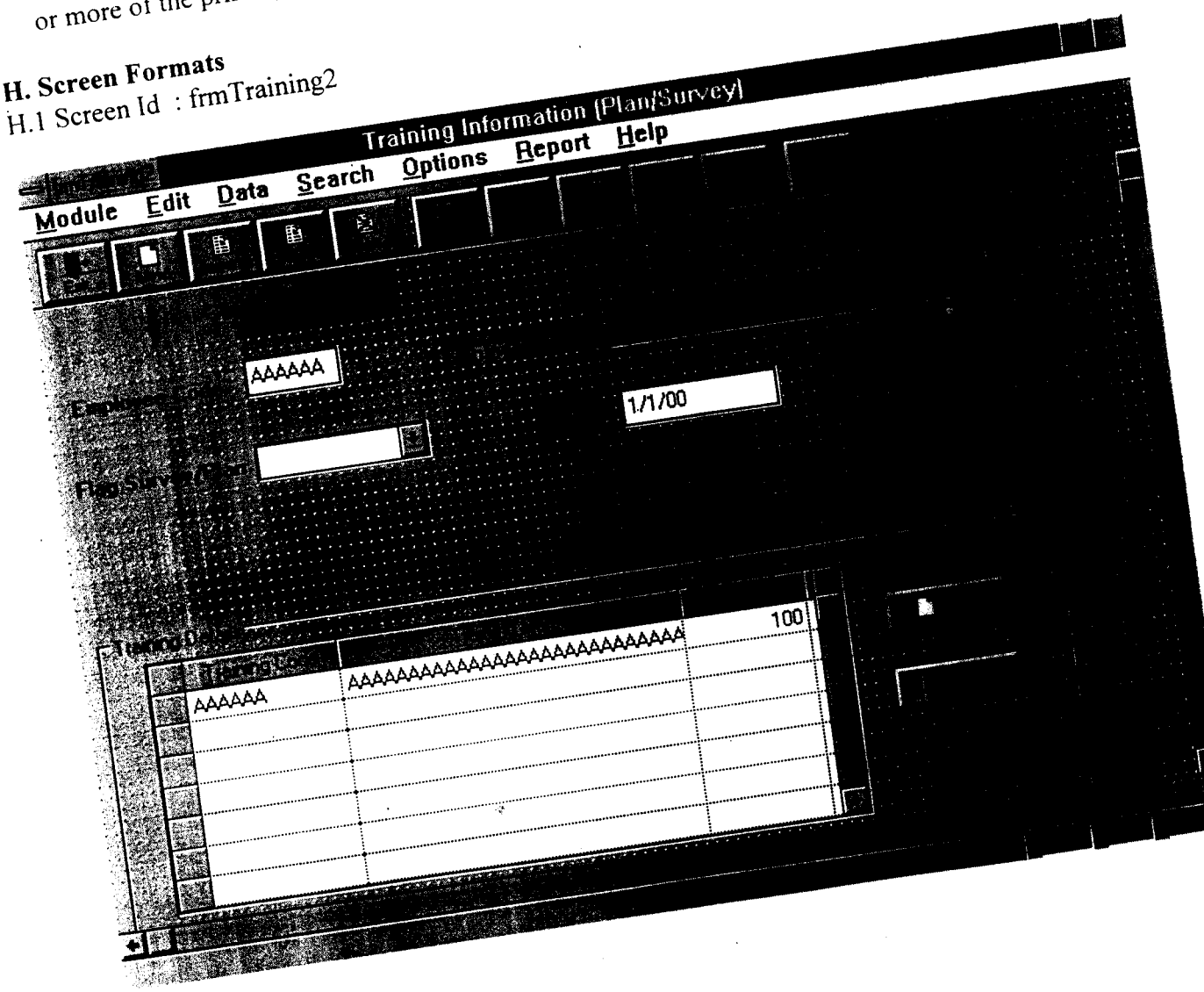
F.1 Table Name : SIF_TRG_PLAN
Primary key (trg_code,emp_code,sp_date,plan_flag) must be present in SIF_TRG_PLAN

G. Navigation Logic/ User Interface

- Based on the tab order set, the navigation takes place(ie. left to right)
- The details can be typed in and on clicking the 'insert' push button, a record is inserted provided the validation checks are passed.
- On tabbing out of the last field taking part in the primary key, if a record with same values for primary key is existing in the table, the user is given the option of displaying the record and modifying it or continuing with editing after changing one or more of the primary key values.

H. Screen Formats

H.1 Screen Id : frmTraining2



H.1.1 Screen Validation Chart

Field Name as in Screen	Source Table Name	Source TableField Name& Datatype	Attribute /Item	Validation Criteria	Destination Table	DestnTableFieldname &Datatype	Message to be displayed
Employee Code	EMPLOYEE	emp_code Char(10)	Datafield DEM	1.Mandatory 2.Should not exist in SIF_TRG_PLAN 3.Modification not allowed	SIF_TRG_PLAN	emp_code Char (10)	Enter the employee code
Employee Name	EMPLOYEE	emp_name Varchar(30)	Datafield DNE	1.Modification not allowed.			
Flag Survey/Plan			Combo Box DEM	1.Mandatory 2.Should not exist in SIF_TRG_PLAN for same values of trg_code, sp_date, emp_code	SIF_TRG_PLAN	plan_flag Char(1)	Select the infkormation type - Planned/Surveyed
Date			DataField DEM	1. Should not exist in SIF_TRG_PLAN for same values of trg_code,plan_flag, emp_code	SIF_TRG_PLAN	sp_date Date	
Training Code	SIF_SKILL_TRAN	code Char(10)	Column DEM	1. Should not exist in SIF_TRG_PLAN for same values of sp_date,plan_flag, emp_code	SIF_TRG_PLAN	trg_code Char(10)	
Training Name	SIF_SKILL_TRAN	Name Varchar(30)	Column DNE	1.Modification not allowed.			
Duration			Column DEM	1. Should be an integer	SIF_TRG_PLAN	no_days Number	Enter the number of days of training.

H.1.2 Push Button Logic (If Applicable)

Push Button	Screen/Field Level	Field Name as in Screen	Enabled	Disabled
Search	Field Level	Employee Code	When cursor is in the field Employee Code	When the cursor is not in the field Employee Code
Search	Field Level	Training Code	When cursor is in the column Training Code in the child table	When the cursor is not in the column Training Code
Range	Screen Level		Always	

I. Brief Program Logic

This program caters the following to the package :

- Accept data SIF database about the surveyed and planned information regarding training.
- Validates the data.

J. Standards

K. Acronyms

Data Field Type	Key Value
Error Message	ERM
Status Bar Message	SBM
Display,Non Editable	DNE
Display,Editable,Mandatory	DEM
Display,Editable,Not Mandatory	DE
Non Display,Non Mandatory	ND
Entry,Non-Editable,Mandatory	EnNM

L. Remarks

M. Reference(If Any)

Prepared By :
Name & Signature :
Date :

Approved By :
Name & Signature :
Date :

PROGRAM SPECIFICATION

A. General Details

Spec Type :
Work Order No :
Module Name :
Program No : NEWREP.APT
Function (Briefly) :

Prog Spec Id :
ProjectName : Skills Inventory Management
Name : Skillwise Experience Report

B. Tables Handled

Table Name	Insert	Update	Delete	Select
SIF_SKILL_MAST	---	---	---	*
SIF_SKILL_TRAN	---	---	---	*
SIF_EMP_EXP	---	---	---	*
EMPLOYEE	---	---	---	*

C. Rules For Insertion

Not Applicable

D. Rules For Updation

Not Applicable

E. Rules For Deletion

Not Applicable

F. Rules For Query

F.1 Table Name : SIF_SKILL_MAST
Primary key (skill_code) must be present in SIF_SKILL_MAST

F.2 Table Name : SIF_SKILL_TRAN
Primary key (code) must be present in SIF_SKILL_TRAN

F.3 Table Name : SIF_EMP_EXP
Primary key (emp_code,org_code,code) must be present in SIF_EMP_EXP

F.4 Table Name : EMPLOYEE
Primary key (emp_code) must be present in EMPLOYEE

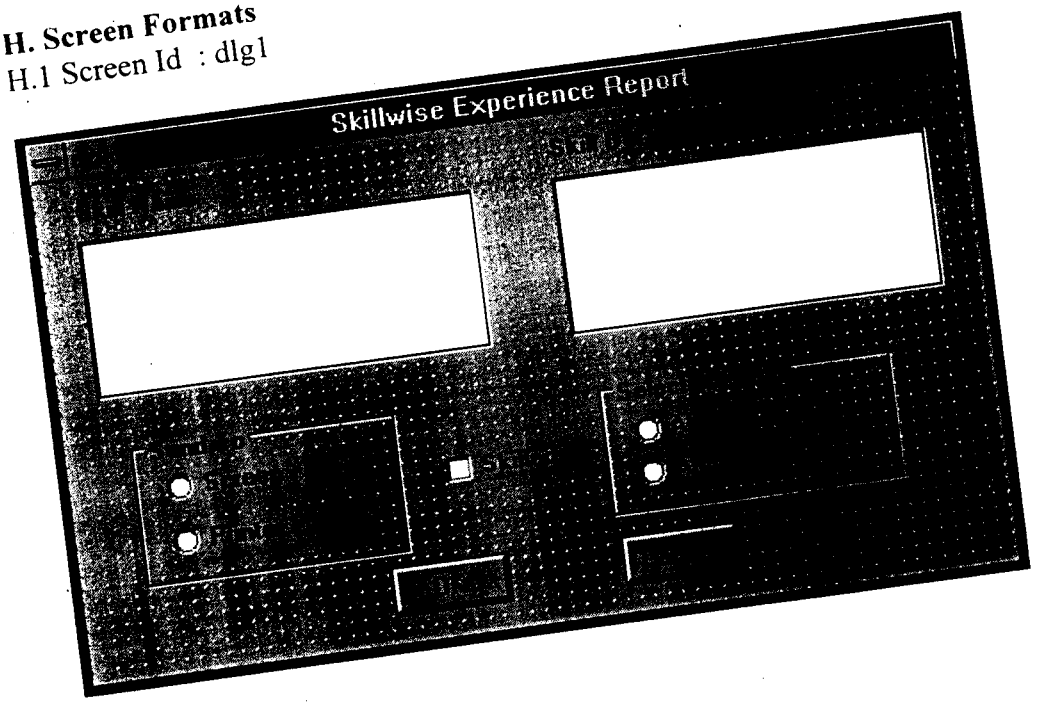
G. Navigation Logic/ User Interface

- One or more of the (general) Skill Names in the list box on the left is selected.
- On clicking in the Skill Details (specific) list box (on the right), that list box is populated with the specific skill details which correspond to the Skill Names selected.

- 'Selection Type' is to be specified as 'All' or 'Any' by clicking the appropriate radio button.
- Check box 'Skilled' is to be set to TRUE or FALSE based on whether the report required is about skilled employees or unskilled employees.
- Whether the report is to be sent to the screen or to the printer is to be indicated by clicking the appropriate radio button
- Clicking 'OK' push button will start generation of the report
- Clicking 'Cancel' push button will enable the user to exist from the program.

H. Screen Formats

H.1 Screen Id : dlg1



H.1.1 Screen Validation Chart

Field Name as in Screen	Field Name as in Table	Table Name	Data Type and Length	Item Type/LOV	Validation Criteria
Skill Name		SIF_SKILL_MAST		List box	One or more can be selected by clicking once Retreived from SIF_SKILL_MAST
Skill Details		SIF_SKILL_TRAN		List box	Retrieved from SIF_SKILL_TRAN One or more can be selected.
All				Radio button	Enabled only when more than one skill detail are selected.
Any				Radio button	Enabled only when more than one skill detail are selected.
Skilled				Check box	Set to TRUE indicates skilled & set to FALSE indicates unskilled.
Screen				Radio button	Setting to TRUE will send report to screen

I. Program Logic

Report Item	Table	Field	Selection Criteria
Combination Indicator			Based on whether 'All' or 'Any' radio button was selected
Skill Code	SIF_SKILL_TRAN	Code	Based on the skill details selected in the list box.
Emp Code	SIF_EMP_EXP	Emp_Code	Based on whether the emp_code is present in table for values of skill details selected.
Emp Name	EMPLOYEE	Emp_name	Based on emp_code selected from SIF_EMP_EXP
Skill Details	SIF_SKILL_TRAN	Code	Based on the skill details selected by the user.
ManYears	SIF_EMP_EXP	man_years	Based on the values of man_years for selected values of skill code and emp_code
ManMonths	SIF_EMP_EXP	man_months	Based on values of man_months in SIF_EMP_EXP corresponding to selected values of code and emp_code.

J. Standards

K. Acronyms

NIL

L. Report Formats

M. Reference(If Any)

Prepared By :
Name & Signature :
Date :

Approved By :
Name & Signature :
Date :

PROGRAM SPECIFICATION

A. General Details

Spec Type :
Work Order No :
Module Name :
Program No : EMPREP.APT
Function (Briefly) :

Prog Spec Id :
ProjectName : Skills Inventory Management
Name : Employee Skill Profile

B. Tables Handled

Table Name	Insert	Update	Delete	Select
SIF_SKILL_TRAN	---	---	---	*
SIF_EMP_EXP	---	---	---	*
EMPLOYEE	---	---	---	*

C. Rules For Insertion

Not Applicable

D. Rules For Updation

Not Applicable

E. Rules For Deletion

Not Applicable

F. Rules For Query

F.1 Table Name : SIF_SKILL_TRAN
Primary key (code) must be present in SIF_SKILL_TRAN

F.2 Table Name : SIF_EMP_EXP
Primary key (emp_code,org_code,code) must be present in SIF_EMP_EXP

F.3 Table Name : EMPLOYEE
Primary key (emp_code) must be present in EMPLOYEE

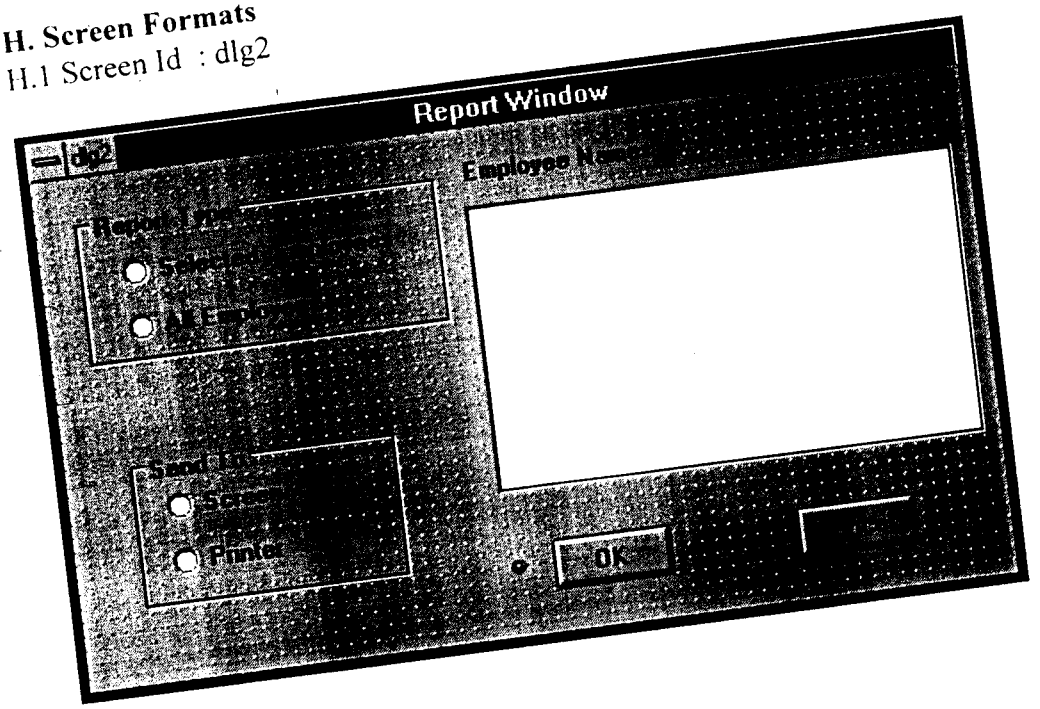
G. Navigation Logic/ User Interface

- Report Type is indicated as either 'Selected Employees' or 'All Employees' by clicking the appropriate radio button..
- If Report Type is 'Selected Employees', the 'Employee Names' list box is populated with all the names of all employees existing in table EMPLOYEE.
- One or more of the employee names can be selected which will enable the 'OK' push button.

- If Report Type selected is 'All Employees' the list box 'Employee Names' will be empty and 'OK' push button will be enabled.
- The indication of sending report to printer or screen can be made by setting the appropriate radio button in the 'Send to' group box.
- Clicking 'OK' push button will start generation of the report
- Clicking 'Cancel' push button will enable the user to exit from the program.

H. Screen Formats

H.1 Screen Id : dlg2



H.1.1 Screen Validation Chart

Field Name as in Screen	Field Name as in Table	Table Name	Data Type and Length	Item Type/LOV	Validation Criteria
Selected Employees				Radio button	To specify report type
All Employees				Radio button	To specify report type
Employee Names	emp_name	EMPLOYEE	Varchar(30)	List box	Fetched from EMPLOYEE table if not resigned.
Screen				Radio button	Indicates the report to be sent to the screen
Printer				Radio button	Indicates the report to be sent to the printer

I. Program Logic

Report Item	Table	Field	Selection Criteria
Report Date			Based on system date
Code	EMPLOYEE	Emp_Code	Based on selection by user.
Employee Name	EMPLOYEE	Emp_name	Based on selection by user.
Skill Code	SIF_SKILL_TRAN	Code	Based on its presence in SIF_EMP_EXP for selected value of emp_code.
Skill Name	SIF_SKILL_TRAN	NAME	Based on the code selected from SIF_EMP_EXP .
ManYears	SIF_EMP_EXP	man_years	Based on the man_years corresponding to emp_code,code values in SIF_EMP_EXP
ManMonths	SIF_EMP_EXP	man_months	Based on the man_months corresponding to emp_code,code values in SIF_EMP_EXP

J. Standards

K. Acronyms

NIL

L. Report Formats

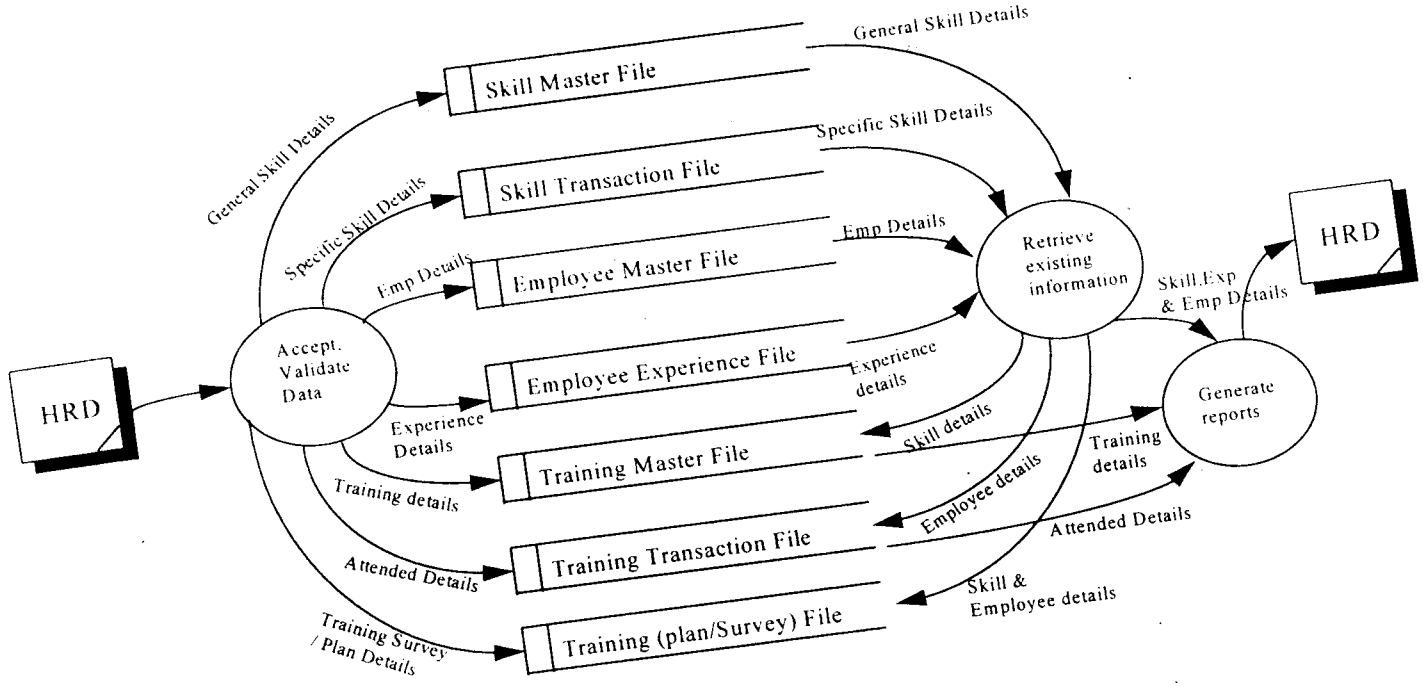
M. Reference(If Any)

Prepared By :
Name & Signature :
Date :

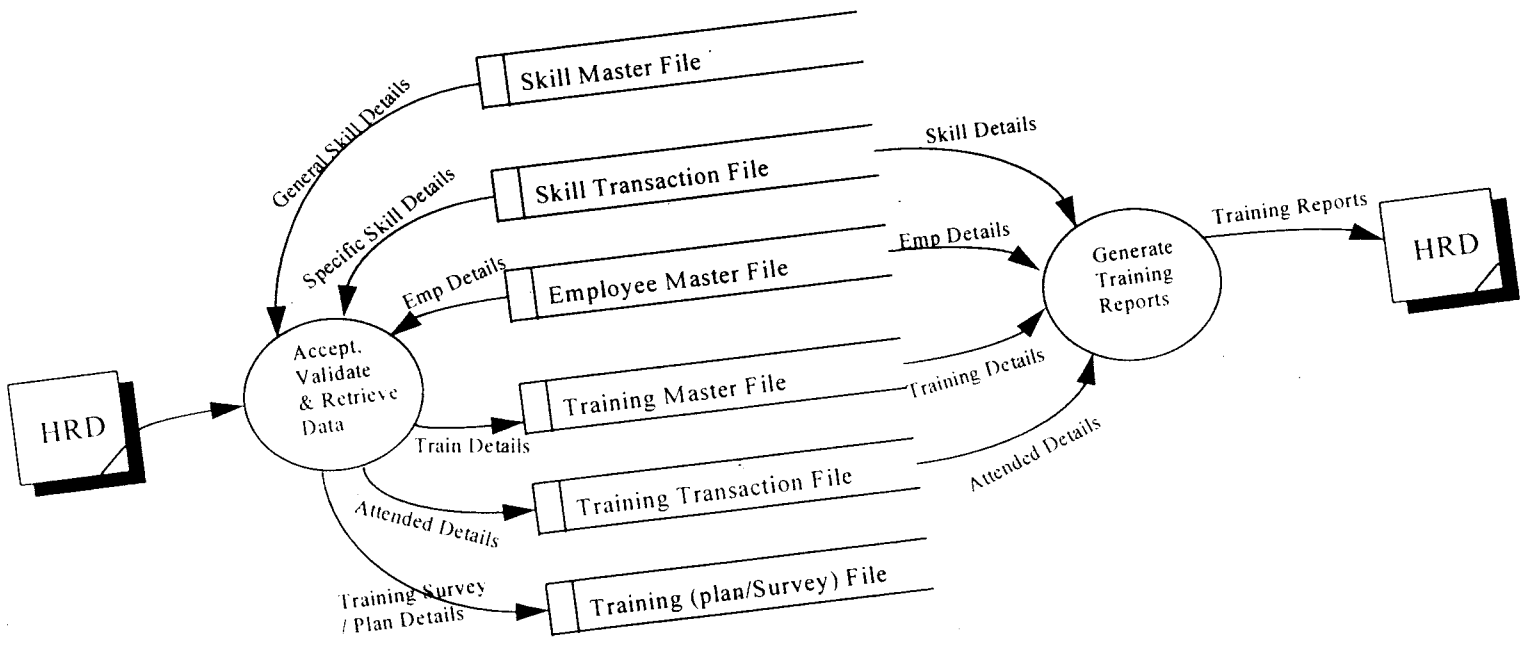
Approved By :
Name & Signature :
Date :

4.4 Data Flow Diagrams

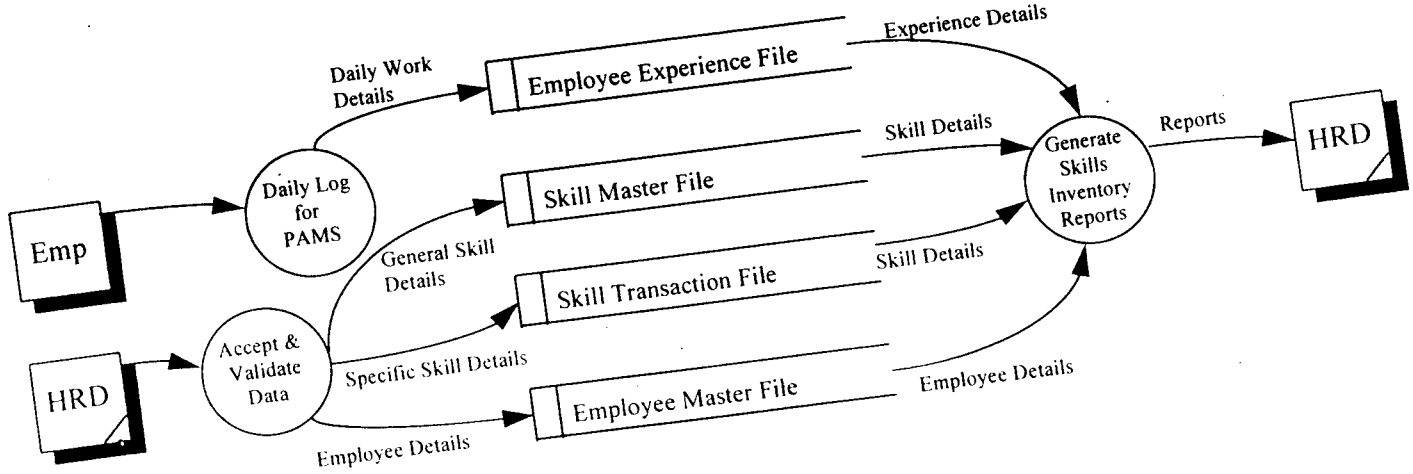
DFD for Skills Inventory Management



DFD for Training Information Management

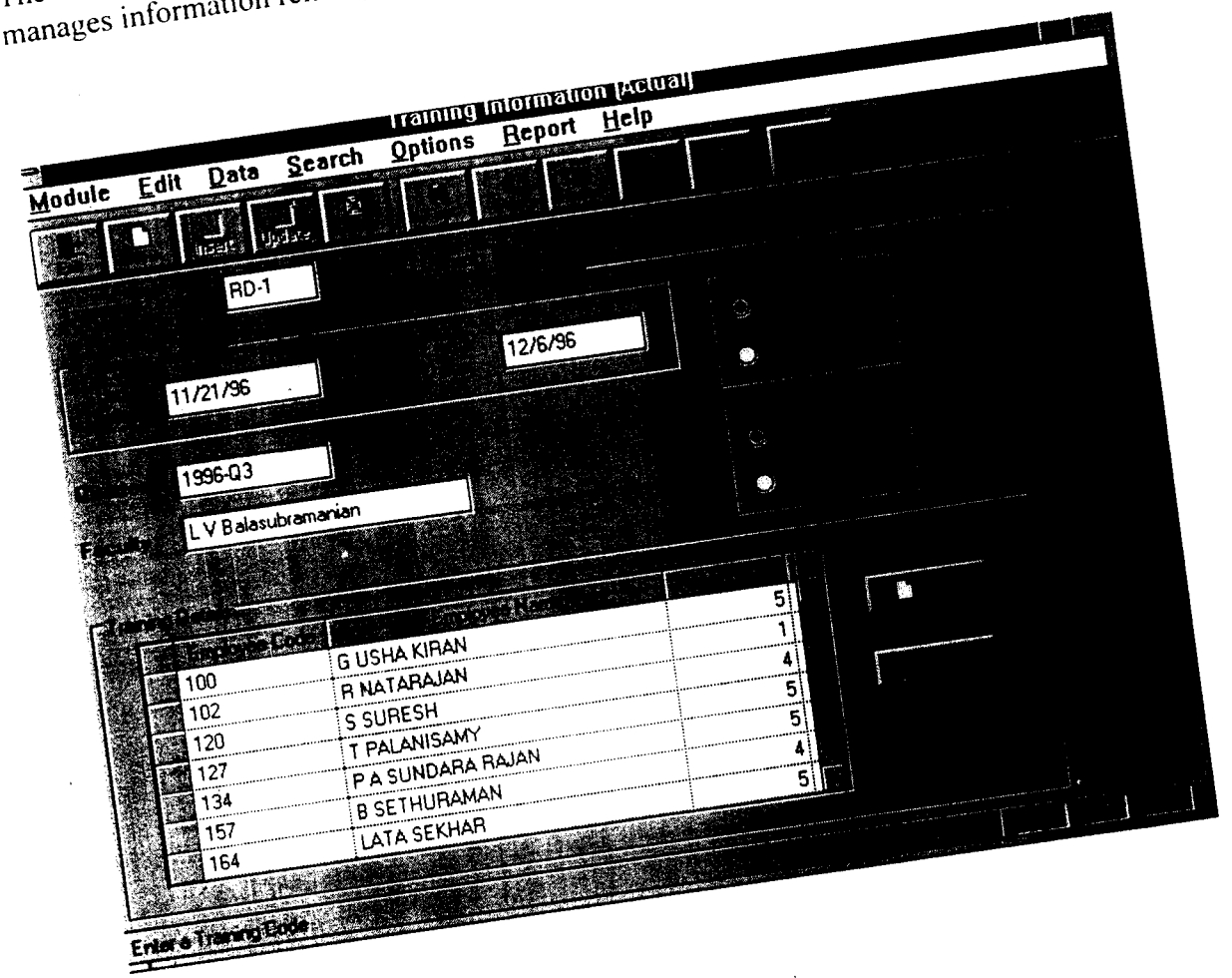


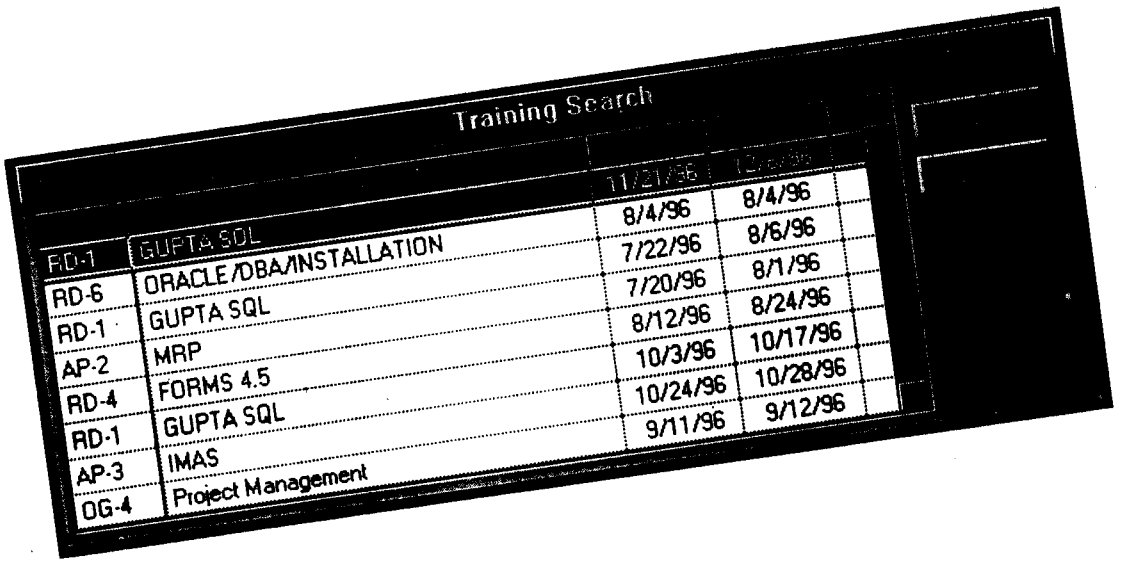
DFD for PAMS

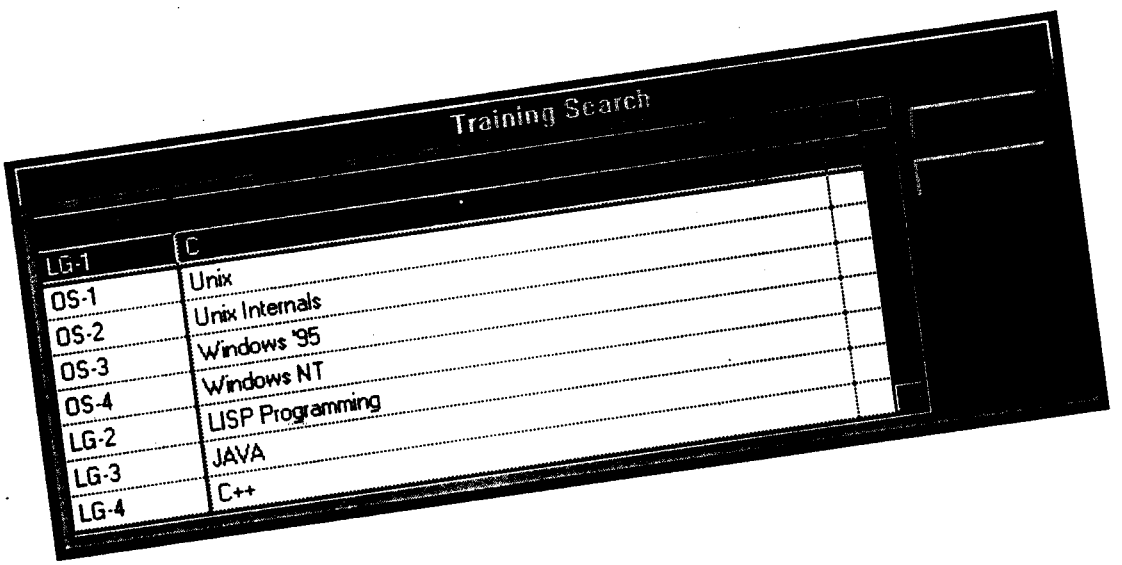

Emp
HRD
Daily Log for PAMS
Accept & Validate Data
Daily Work Details
General Skill Details
Specific Skill Details
Employee Details
Employee Experience File
Skill Master File
Skill Transaction File
Employee Master File
Experience Details
Skill Details
Skill Details
Employee Details
Generate Skills Inventory Reports
Reports
HRD

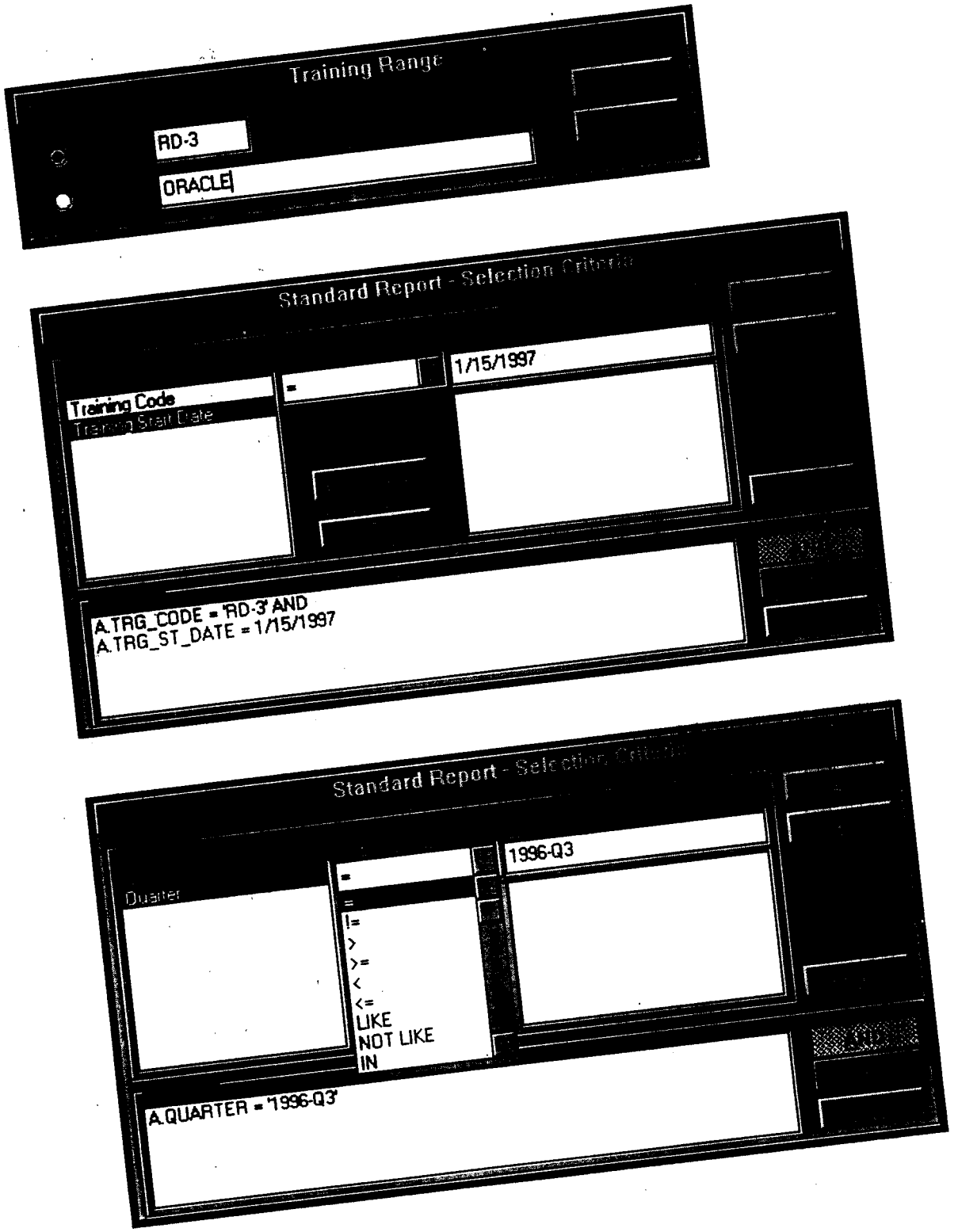
4.5 Sample Screens

The screens of TRG001..APT of Training Information Management System which manages information relating to training programmes (Actual).

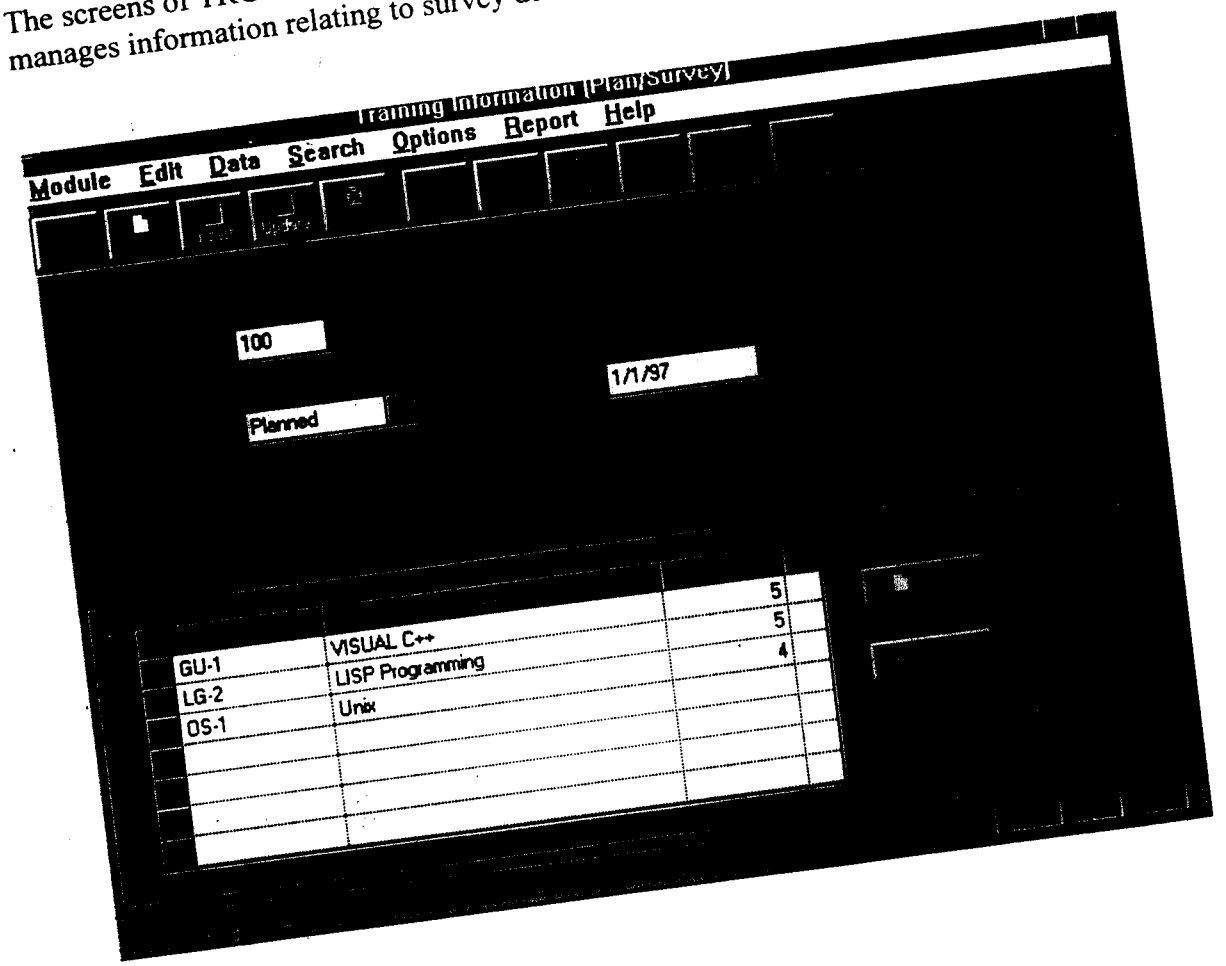


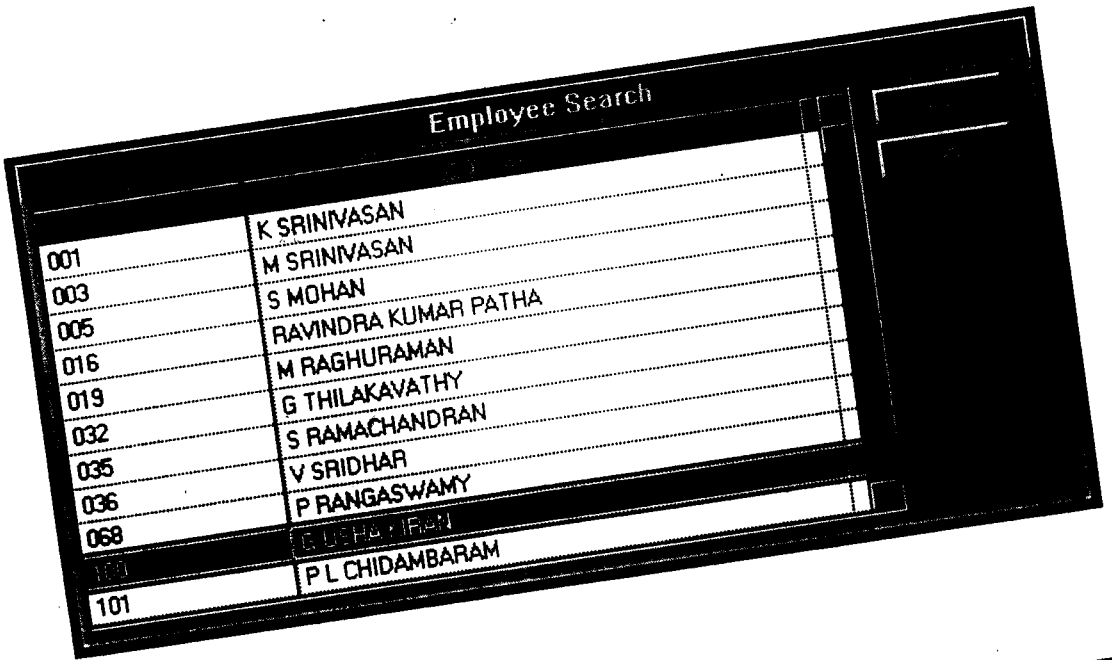

Training Search
RD-1
GUPTA SQL
RD-6
ORACLE/DBA/INSTALLATION
RD-1
GUPTA SQL
AP-2
MRP
RD-4
FORMS 4.5
RD-1
GUPTA SQL
AP-3
IMAS
OG-4
Project Management
11/21/96
8/4/96
7/22/96
7/20/96
8/12/96
10/3/96
10/24/96
9/11/96
8/4/96
8/6/96
8/1/96
8/24/96
10/17/96
10/28/96
9/12/96

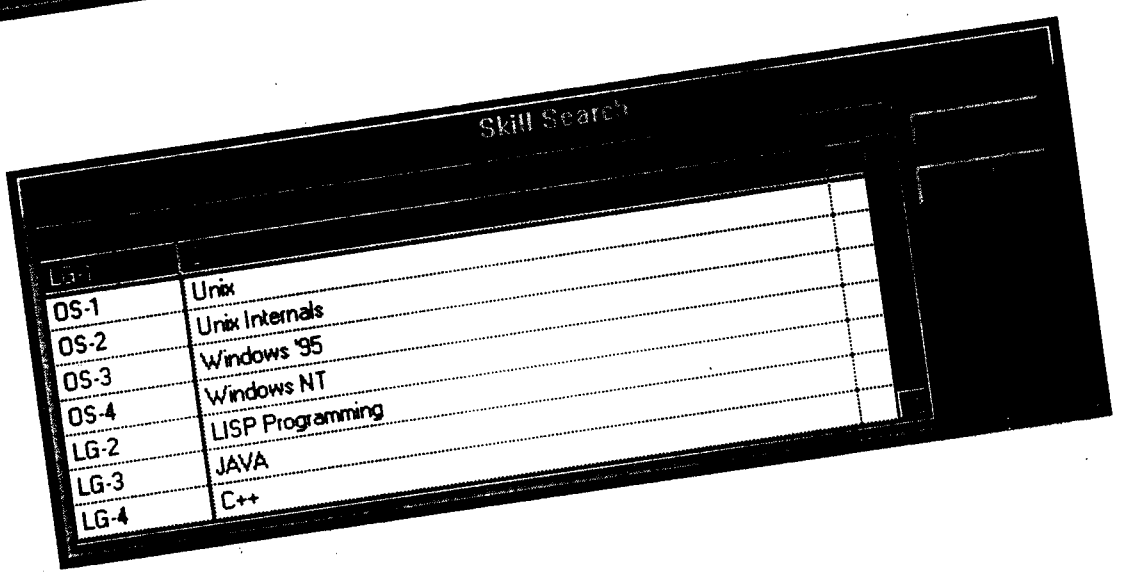

Training Search
LG-1
C
OS-1
Unix
OS-2
Unix Internals
OS-3
Windows '95
OS-4
Windows NT
LG-2
LISP Programming
LG-3
JAVA
LG-4
C++


Training Range
RD-3
ORACLE
Standard Report - Selection Criteria
Training Code
Training Start Date
=
1/15/1997
A.TRG_CODE = 'RD-3' AND
A.TRG_ST_DATE = 1/15/1997
Standard Report - Selecting Criteria
Quarter
=
!=
>
>=
<
<=
LIKE
NOT LIKE
IN
1996-Q3
A.QUARTER = '1996-Q3'

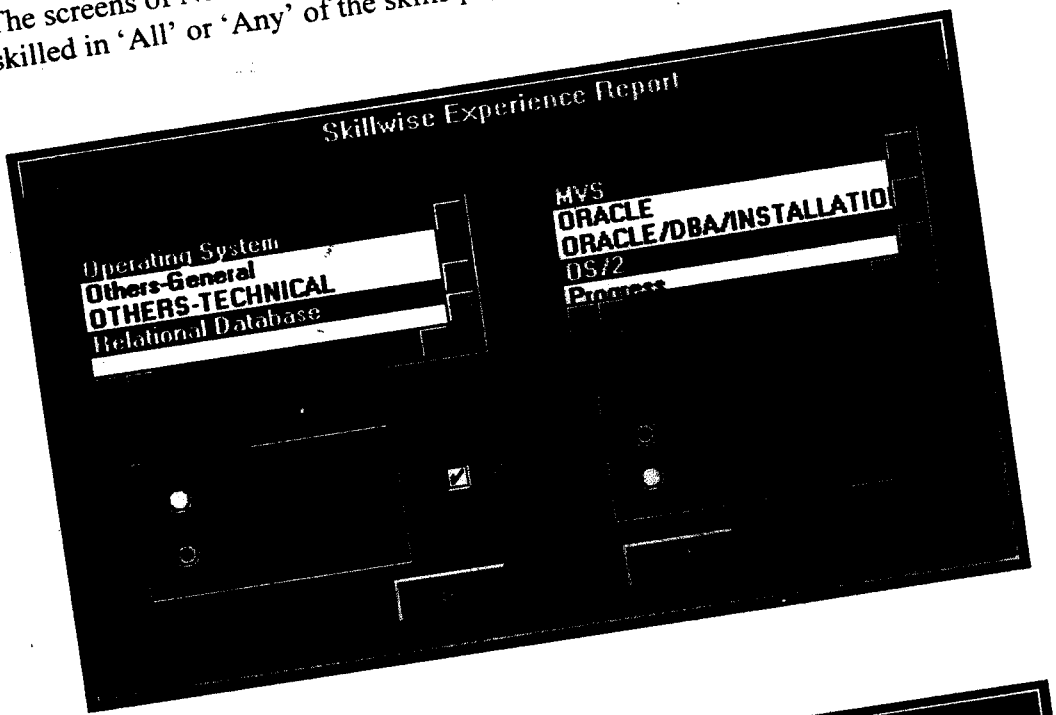
The screens of TRG002..APT of Training Information Management System which manages information relating to survey details and planned training programmes.

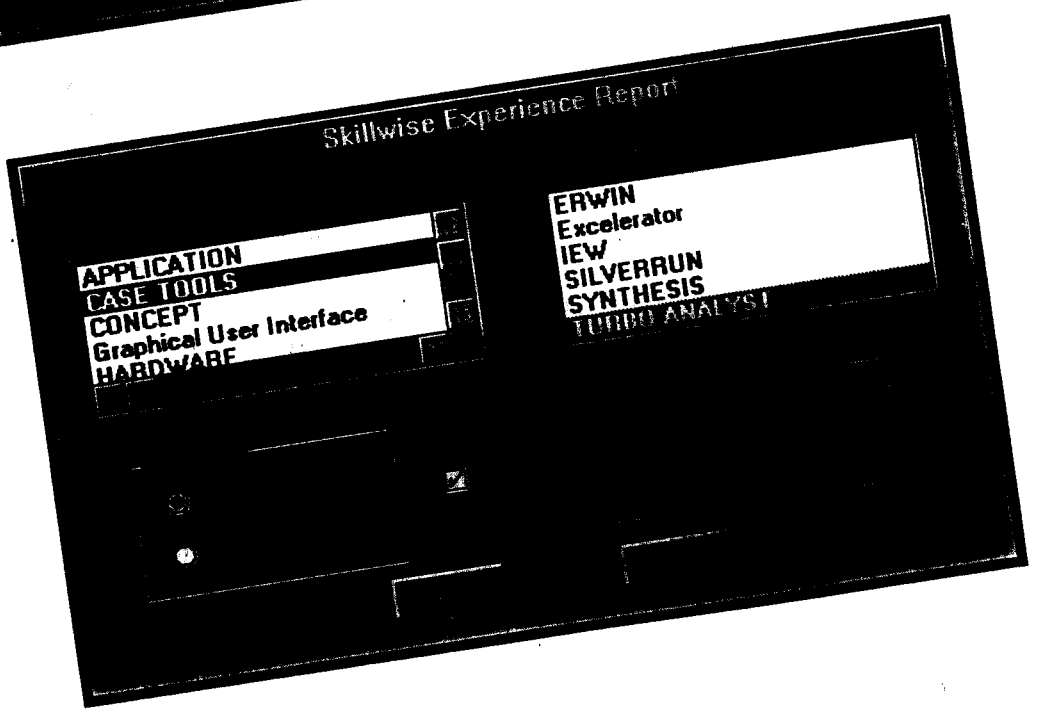



Employee Search
001 K SRINIVASAN
003 M SRINIVASAN
005 S MOHAN
016 RAVINDRA KUMAR PATHA
019 M RAGHURAMAN
032 G THILAKAVATHY
035 S RAMACHANDRAN
036 V SRIDHAR
068 P RANGASWAMY
101 P L CHIDAMBARAM

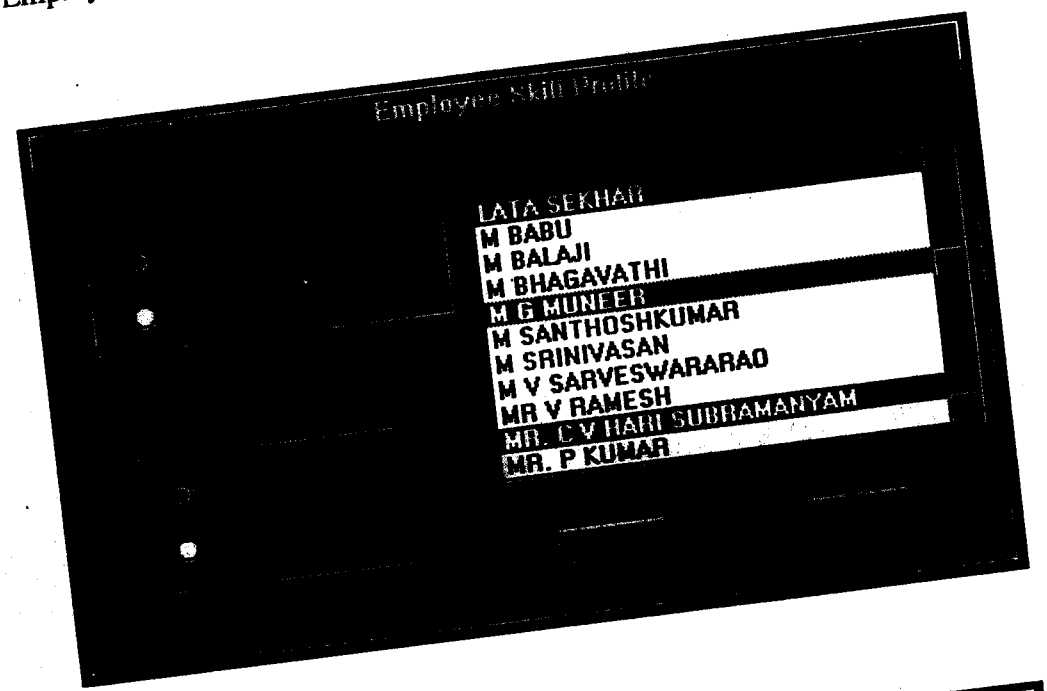

Skill Search
OS-1 Unix
OS-2 Unix Internals
OS-3 Windows '95
OS-4 Windows NT
LG-2 LISP Programming
LG-3 JAVA
LG-4 C++

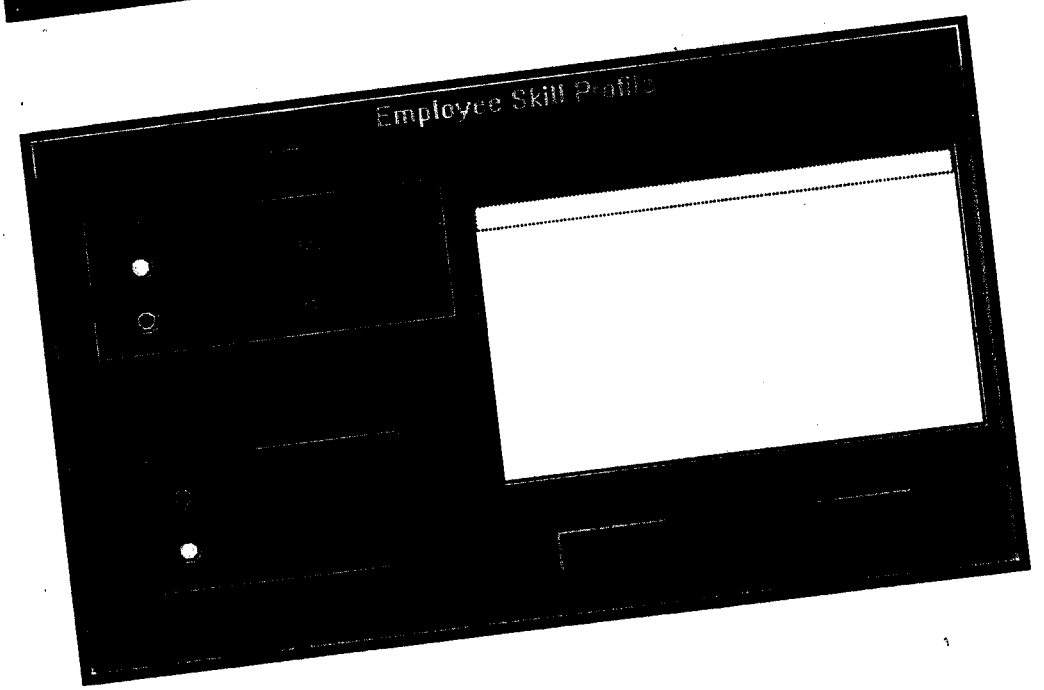
The screens of Newrep.apt which lets the user prepare lists of employees who are skilled in 'All' or 'Any' of the skills populated in the multiselection listbox.





The screen of Emprep.apt where the user can opt for skill profile of either 'All Employees' or 'Selected Employees' :





Conclusion

CONCLUSION

This project was done for the HRD Department of MASCON and the domain specific knowledge required for the development of the system was supplied by the chief of HRD. Being constantly in touch with the user so as to ascertian and incorporate various suggestions and modifications, is a rare privilege that a system designer can have. This was fully made use of and every attempt has been made to meet the stated user requirements. It is acknowledged that the Skills Inventory Management System is only a skeleton of a package (to be developed in future) that can fully automate the HRD operations at MASCON. This project is expected to take MASCON (if only by a little distance) towards achieving that goal.

Recommendations :

1. Considering the highly interlinked nature of the information being processed by the various modules i.e. PAMS, Training Information Management System and Skills Inventory Management System, it is recommended that the three be integrated.

2. Towards achieving the dream of total automation of HRD operations, it is recommended that a comprehensive HRD package be developed which includes :
   - Recruitment Information Module
   - Performance Appraisal Module
   - Compensation Module
   - General Information Module

   in addition to PAMS, Training Information Management System and Skills Inventory Management System.

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SQL Windows Quick Start - Gupta Corp.

SQL windows Developer's Reference Manual - Gupta Corp.

Developing SQL Windows Applications - David Gugick

Power Programming with SQL Windows - Rajesh Lalwani

Database System Concepts - Abraham Silberschatz and Henry F.Korth

Systems Analysis and Design - Elias M. Awad

Annexure I
About PAMS

Project Activity Monitoring Sheet Software (PAMS)

The following are the various programs (screens) in PAMS :

1. Employee Master

- Employee details like code, name, date of joining etc are captured through the Employee Master screen.

2. Project Employee Master

- The Project details (like project code, project name, software and operating system code etc.) and details of employees allocated to the project (like employee code, date of induction etc.) are entered through this screen.

3. Skills Inventory Master

- Skill details like skill code, skill name are entered through this screen.
- These skill details are used to categorise employee's experience in the various platforms.

4. Group Activity Master

- Group details and activity details are captured through this screen.
- These codes are used to categorise the type of work done by employees.

5. Organisation Master

- Organisation details are entered through the screen.
- This detail is used for capturing the employee's experience in other organisations

6. Project Activity Monitoring

- An account of work done by each employee everyday is captured through this screen.

7. Leave Authorisation

- The authorisation for the leave taken by the employees is done through this screen.

8. Employee Skill Details

- The experience acquired by the employee in various organisations is captured through this screen.

Annexure II
Training Procedure Details

PROCEDURE QSSA-PR009
[4.18 in ISO 9001, 6.9 in ISO 9000-3]

Section No : 6.9
Version No : 3
Revision No : 0
Page No : 1/10
Volume : 1

Title : TRAINING

Purpose : To establish and maintain procedures for identifying the training needs in a situation where training is need based and needs change constantly and provide for the training of all personnel performing activities affecting quality.

Scope : Majority of persons in functions dealing with Operations, Marketing ,SEPG & HRD.

Responsibility : Chief (HRD)

Procedure :

1. **Qualification requirement**

Qualification requirement indicating the skills required for an individual performing a job along with minimum educational background and experience necessary is maintained by the Human Resources department.

2. **Identification of Training Needs**

2.1 The Chief (HRD) consults the respective Heads of the department about the training needs of the function concerned.

2.2 Training & Development Needs survey would also be conducte once in a year. The information would give additional inputs fo taking various decisions on training.

3.0 Training Plan & Review

3.1 The Annual Training Plan will be prepared which will indicate the type and number of days of training planned for different cadres of employees. This will indicate training in functional and other areas. To highlight the relative importance of subjects, the plan will also indicate the Minimum Training and Additional training recommended in the format given below.

Category	Functional area	Other areas
MTP*		
ATP*		

* MTP - Minimum Training Plan - Training which is absolutely essential
ATP - Additional Training Plan - Training desirable

3.2 The Annual Training Plan and the Individual Training Plan is reviewed once a quarter by the Human Resources Department. Training programmes conducted will be compared with the plan and updated in the Review of Training Plan format.

4.0 Faculty for training

4.1 Training will be conducted by either internal or external faculty and may be done either in-house or outside. Faculty members for the in-house programmes will be selected based on their facilitation skills and expertise/knowledge on the subject.

4.2 In case of external programs, various reputed organisations/institutions will be approached for sending their annual training calendar to enable us to do external nominations. It is assumed that the faculty engaged by such institutions will be competent persons.

5.0 Feedback on Training

5.1 Participants who have attended the training programme are required to fill up the 'Participant Feedback on Training' form. The feedback forms are analysed for assessing the effectiveness of the programme and to plan for improvements.

References : Nil

Records :

GEN	Reading/Training material
GEN	Programme-wise details
GEN	Employee-wise training details
GEN	Annual Training Plan
GEN	Individual Training Plan
QSSA-FM016-1	Training and Development Needs
QSSA-FM017-1	Review of Training Plan
QSSA-FM018-1	Participant Feedback on Training.

PROCEDURE QSSA-PR009

Section No : 6.9
Version No : 3
Revision No : 0
Page No :4/10
Volume : 1

[QSSA-FM017-1]
Page: 1/1

REVIEW OF TRAINING PLAN

Part A - Quantitative Analysis

Planned
Functional (same as technical) : minimum of _____ days
Others (same as non-technical) : minimum of _____ days

Actual

Employee Name	Quarter 1 T	Quarter 1 NT	Quarter 2 T	Quarter 2 NT	Quarter 3 T	Quarter 3 NT	Quarter. 4 T	Quarter. 4 NT

T - stands for technical NT - stands for non-technical

Part B - Qualitative Analysis

Employee Name	Training Needs/Requests	Training Prog. Planned	Training Prog. Conducted

Signature of Chief - HRD

Reviewed By

Approved By

Issued By

PROCEDURE QSSA-PR009

Section No : 6.9
Version No : 3
Revision No : 0
Page No : 5/10
Volume : 1

[QSSA-FM016-1]
Page :1/2

TRAINING & DEVELOPMENT NEEDS

Employee details

Employee No :

Name :

Dt. of Joining :

Designation :

Instructions (If any):

Part I - Training Needs

Functional/Technical		Other Areas	
Program Name	Code No.	Program Name	Code No

PROCEDURE QSSA-PR009

Section No : 6.9
Version No : 3
Revision No : 0
Page No : 6/10
Volume : 1

[QSSA-FM016-1]
Page :2/2

Part - II Areas of Interest
Level of Interest (Tick your responses)

Sl. No	Area	3 Very Much Interested	2 Interested	1 Not Interested
1	Projects:a)Domestic b)Exports/Onsite c)Exports/Offshore			
2	Product (Enhancement/ Upgradation etc.) a) AIMS b) IMAS			
3	Marketing (Customer Support)			
4	SEPG			
5	Facilities			
6	Others (Please Specify)			
7	Phases of SDLC a) System Study b)System Design c)Coding d)System Implementation (Installation & Support) e) System Maintenance			
8	Documentation			
9	Role you would like to play in a Project a) Project Leader b) Module Leader c) Programmer d) QA e) DBA			

Reviewed By

Approved By

Issued By

PARTICIPANT FEEDBACK ON TRAINING:

NOTE:

Your valuable comments will enable us to organise better training programs. We assure you that your response will be kept confidential and will be analysed along with that of the rest of the group. Please be frank in giving your opinions/suggestions and comments.

I) Name of participant :

Designation :

Employee Number :

Name of the Program :

Conducted by/facilitated by :

Venue :

Date/dates :

II Do you think the program Is relevant and useful for you ?

Yes ☐

Yes - not immediate ☐

No ☐

PROCEDURE QSSA-PR009

Section No : 6.9
Version No : 3
Revision No : 0
Page No : 8/10
Volume : 1

[QSSA-FM018-1]
Page : 2/4

		V.Good	Good	Not Satisfactory
III Are you satisfied with the faculty	:			
With respect to				
1) Knowledge of the subject handled	:	☐	☐	☐
2) Communication & facilitation Skills	:	☐	☐	☐
3) Reading material/handouts		☐	☐	☐

IV Participants			
- Was the group mix appropriate in Terms of levels/functions etc.	:	Not Applicable	☐
		Appropriate	☐
		Not Appropriate (If not, please give reason below)	☐
- Number of participants	:	Adequate	☐
		Too Many	☐
		Less	☐

		V.Good	Good	Not Satisfactory
V	Infrastructure :			
	- Seating arrangement & Comfort	☐	☐	☐
	- Audio Visual Aids	☐	☐	☐
	- Ambience - general feeling/freedom from external distractions etc.	☐	☐	☐

		Yes	No
VI	Administration/Implementation :		
	- Was intimation about program given in advance ?	☐	☐
	- Was it communicated properly i.e. did you know the objective, nature of program in advance?	☐	☐

		Yes	No
VII	Did you have any particular expectations at the beginning of the program? :	☐	☐

If yes what were they ?

PROCEDURE QSSA-PR009

Section No : 6.9
Version No : 3
Revision No : 0
Page No : 10/10
Volume : 1

[QSSA-FM018-1]
Page : 4/4

Were these expectations fulfilled

Yes ☐ Partly ☐ No ☐

IX Duration of the program

Too long ☐ Insufficient ☐ Adequate ☐

XI How can the program be made more useful ?

XII Any other Comments

(Signature)

Date :

Reviewed By

Approved By

Issued By

Annexure III
Data Collection Formats

TRAINING & DEVELOPMENT NEEDS

Employee details

Employee No :

Name :

Dt. of Joining :

Designation :

Instructions :

* This format has two parts. i.e
  - Training Needs
  - Areas of Interest

* You are requested to fill it up & hand over to HRD Department before 15.3.97.

Part I - Training Needs

a) Enclosed is a list of training programs along with code numbers for each. Please note that these include ongoing programs as well as other programs which may be organised based on the company's needs

b) Please go through the list carefully and **indicate below** the areas in which you would like to undergo training during 1997-98. You may retain the Training Codes List with you.

c) We suggest you discuss with your Supervisor/Reporting Officer before filling in the form.

Functional/Technical		Other Areas	
Program Name	Code No.	Program Name	Code No

S. No	Area	Level of Interest (Tick your ... 3 Very Much Interested	2 Interested	1 Not Interested
1	**Projects:**a)Domestic b)Exports/Onsite c)Exports/Offshore			
2	**Product** (Enhancement/ Upgradation etc.) a) AIMS b) IMAS			
3	**Marketing** (Customer Support)			
4	**SEPG**			
5	**Facilities**			
6	**Others** (Please Specify)			
7	**Phases of SDLC** a) System Study b)System Design c)Coding d)System Implementation (Installation & Support) e) System Maintenance			
8	**Documentation**			
9	**Role you would like to play in a Project** a) Project Leader b) Module Leader c) Programmer d) QA e) DBA			

TRAINING CODES LIST

Introduction

The list indicates Skill Codes, Skill Names, Codes and Descriptions of generalised and individual skills. Please note that Skill Code and Skill Name refer the generalised skills and Code & Description refer to the individual skills.

Skill Code 1 **Skill Name** Operating System

Code	Description
OS-1	Unix
OS-2	Unix Internals
OS-3	Windows '95
OS-4	Windows NT
OS-5	Windows 3.1
OS-6	VMS
OS-7	OS/2
OS-8	MVS
OS-9	DME
OS-10	TME-TD
OS-11	MAC OS
OS-12	WINDOWS for WORKGROUP
OS-13	UNIXWARE
OS-14	AIX
OS-15	MS DOS
OS-16	CP/M
OS-17	RSX - IIM
OS-18	ALDOS
OS-19	
OS-20	

Skill Code 2 **Skill Name** Languages

Code	Description
LG-1	C
LG-2	LISP Programming
LG-3	JAVA
LG-4	C++
LG-5	Cobol
LG-6	Pascal
LG-7	ForTran
LG-8	ADA
LG-9	Master PL/1
LG-10	BASIC
LG-11	PROLOG
LG-12	ALISP
LG-13	
LG-14	
LG-15	

Skill Code 6 **Skill Name** NETWORK / SERVER

Code	Description
NS-1	CLIENT SERVER
NS-2	NW SOLUTIONS
NS-3	INTERNET
NS-4	SILICON GRAPHICS

Skill Code 7 **Skill Name** APPLICATION

Code	Description
AP-26	PPS
AP-27	PHOTOSHOP ILLUSTRATOR
AP-28	PIPS
AP-29	SPL
AP-30	DRP
AP-31	IFF
AP-32	INVESTMENTS
AP-33	INVENTORY CONTROL
AP-34	MAINTENANCE SYSTEM
AP-35	MARKETING INFORMATION SYSTEM
AP-36	MATERIALS MANAGEMENT
AP-37	DSS for Scheduling
AP-38	HRD
AP-39	AVLON
AP-40	MARSHAL
AP-41	PRISM
AP-42	MFGPRO
AP-43	MANMAN
AP-44	
AP-45	

Skill Code 8 **Skill Name** OTHERS-TECHNICAL

Code	Description
OT-1	TEXTILE CAD
OT-2	3D STUDIO
OT-3	ANIMATED PROGRAMMING
OT-4	MULTIMEDIA
OT-5	CAD
OT-6	C INTERFACE WITH CAD/CAM
OT-7	WEIGH BRIDGE MAINTENANCE SYSTEM
OT-8	ADOBE PHOTOSHOP
OT-9	ADOBE ILLUSTRATOR
OT-10	AVID VIDEOSHOP
OT-11	ADOBE PREMIER
OT-12	SPECIAL DELIVERY
OT-13	QUALITY MANAGEMENT (ISO)
OT-14	AUTO PLANT
OT-15	

Skill Code 10 **Skill Name** HARDWARE

Code	Description
HW-1	MAINFRAME
HW-2	IBM AS/400
HW-3	UNIX
HW-4	PCs
HW-5	ICIM 6060
HW-6	VAX 3400
HW-7	APPLE MACINTOSH
HW-8	RS 6000
HW-9	

Skill Code 11 **Skill Name** CASE TOOLS

Code	Description
CT-1	TURBO ANALYST
CT-2	Excelerator
CT-3	ERWIN
CT-4	SILVERRUN
CT-5	SYNTHESIS
CT-6	IEW
CT-7	
CT-8	
CT-9	

Appendix A
Sample Reports

MASCON

Employee Skill Report On :18-Apr-1997

Employee Name: *S RAMANATHAN* **Code :** *163* .

Sl No.	Skill Code	Skill Name	Man Years	ManMonths
1	OS-1	Unix	9	0
2	OS-15	MS DOS	9	6
3	LG-5	Cobol	1	0
4	LG-1	C	1	0
5	LG-10	BASIC	3	0
6	RD-12	Ingres	6	6
7	RD-14	IDMS	0	6
8	RD-22	Unify	2	0
9	RD-16	FoxPro	3	0
10	CC-4	Networking	4	0
11	CC-8	RDBMS	9	0
12	AP-7	Word Perfect	2	0
13	AP-8	MS-Office	1	0
14	AP-9	MS-Project	2	4
15	AP-3	IMAS	0	6
16	HW-1	MAIN FRAME	0	0
17	HW-3	UNIX	9	3
18	HW-4	PCs	11	0
19	CT-1	TURBO ANALYST	2	6
20	AP-2	MRP	3	6
21	AP-15	CAD	0	

MASCON

Employee Skill Report On :18-Apr-1997

Employee Name: ***R VENKATESH*** **Code :** ***110***

Sl No.	Skill Code	Skill Name	Man Years	ManMonths
1	OS-11	MAC OS	1	2
2	CC-4	Networking	0	1
3	CC-7	Multimedia	0	4
4	AP-8	MS-Office	0	3
5	AP-18	CLARIS WORKS	0	7
6	AP-20	PAGEMAKER	0	1
7	HW-4	PCs	1	9
8	HW-7	APPLE MACINTOSH	1	2
9	AP-15	CAD	1	6
10	OT-8	ADOBE PHOTOSHOP	0	4
11	OT-9	ADOBE ILLUSTRATOR	0	2
12	OT-12	SPECIAL DELIVERY	0	1
13	OT-10	AVID VIDEOSHOP	0	3
14	OT-11	ADOBE PREMIER	0	3

MASCON

Skills Inventory Report

Employees Skilled in ORACLE

Sl. No.	Emp Code	Emp Name	Man Years	Man Months
1	28	K SRIDHARAN	3	6
2	116	S PADMANABHAN	3	3
3	58	R S RAJA	3	1
4	14	ANURADHA V	2	6
5	171	J CHAKRAVARTHY	2	4
6	79	B VENKATA SUBRAMANIAN	2	3
7	91	R BALAKRISHNAN	2	0
8	95	R CHITRA	2	0
9	120	S SURESH	1	11
10	102	R NATARAJAN	1	10
11	98	C CHITRA	1	10
12	100	G USHA KIRAN	1	10
13	169	R P SUDEEP	1	4
14	80	K.VIJAYAN	1	4
15	032	G THILAKAVATHY	1	3
16	177	M G MUNEER	1	3
17	168	P SARAVANAVEL	1	2
18	134	P A SUNDARA RAJAN	1	2
19	109	C MUTHUKUMARASAMY	1	0
20	157	B SETHURAMAN	1	0
21	119	P S SRISELVAN	1	0
22	129	A V PERARULALAN	1	0
23	140	S. THULSIRAM	1	10
24	83	T S SRIDHAR	0	10
25	104	N SHANKAR	0	10
26	52	R MAKHADHEVAN	0	9
27	159	R.SHYAMALA	0	9
28	174	N PRAVEEN KUMAR	0	8
29	101	P L CHIDAMBARAM	0	7
30	146	R BALAJI	0	6
31	172	R B ANNAPURNA	0	4
32	147	K SUBRAMANI	0	4
33	164	LATA SEKHAR	0	4
34	93	B S VASAN	0	3
35	59	R MAHESHWARAN	0	3
36	127	T PALANISAMY	0	2
37	155	M BALAJI	0	2
38	123	G RAMACHANDRAN	0	

MASCON

Skills Inventory Report

Employees Skilled in ORACLE

Sl. No.	Emp Code	Emp Name	Man Years	Man Months
39	175	T CHANDRAMOHAN	0	2
40	109	C MUTHUKUMARASAMY	0	1
41	81	P MURALI	0	0
42	98	C CHITRA	0	0

MASCON

Skills Inventory Report

Employees Skilled in GUPTA SQL

Sl. No.	Emp Code	Emp Name	Man Years	Man Months
1	173	K NAGARAJAN	1	2
2	126	V SANKAR	1	2
3	59	R MAHESHWARAN	1	1
4	14	ANURADHA V	1	0
5	93	B S VASAN	1	0
6	147	K SUBRAMANI	0	11
7	83	T S SRIDHAR	0	11
8	125	V RAMESH	0	10
9	101	P L CHIDAMBARAM	0	3
10	GN5	R APARNA	0	3
11	155	M BALAJI	0	3
12	159	R.SHYAMALA	0	3
13	119	P S SRISELVAN	0	3
14	123	G RAMACHANDRAN	0	3
15	146	R BALAJI	0	2
16	109	C MUTHUKUMARASAMY	0	2
17	52	R MAKHADHEVAN	0	2
18	127	T PALANISAMY	0	1
19	GN2	L CHANDRASEKARAN	0	1
20	179	K HEMANT KUMAR	0	1
21	169	R P SUDEEP	0	1
22	172	R B ANNAPURNA	0	1
23	GN1	R ARAVIND	0	1

MASCON

Skills Inventory Report

Employees Skilled in (All) POWER BUILDER,VISUAL BASIC

Emp Code	Emp Name / Skill Code	Skill Name	Man Years	Man Months
120	*S SURESH*		0	3
	GU-2	VISUAL BASIC	0	3
	GU-3	POWER BUILDER		
126	*V SANKAR*		0	3
	GU-3	POWER BUILDER	0	1
	GU-2	VISUAL BASIC		
157	*B SETHURAMAN*		0	1
	GU-2	VISUAL BASIC	0	1
	GU-3	POWER BUILDER		
175	*T CHANDRAMOHAN*		2	4
	GU-3	POWER BUILDER	0	2
	GU-2	VISUAL BASIC		
177	*M G MUNEER*		0	4
	GU-2	VISUAL BASIC	0	1
	GU-3	POWER BUILDER		

MASCON

Skills Inventory Report

Employees Skilled in(Any) POWER BUILDER,VISUAL BASIC

Emp Code	Emp Name / Skill Code	Skill Name	Man Years	Man Months
109	*C MUTHUKUMARASAMY*		0	9
	GU-3	POWER BUILDER		
116	*S PADMANABHAN*		0	3
	GU-3	POWER BUILDER		
120	*S SURESH*		0	3
	GU-2	VISUAL BASIC	0	
	GU-3	POWER BUILDER		
126	*V SANKAR*		0	3
	GU-3	POWER BUILDER	0	1
	GU-2	VISUAL BASIC		
155	*M BALAJI*		0	2
	GU-3	POWER BUILDER		
157	*B SETHURAMAN*		0	1
	GU-2	VISUAL BASIC	0	1
	GU-3	POWER BUILDER		
174	*N PRAVEEN KUMAR*		0	1
	GU-2	VISUAL BASIC		
175	*T CHANDRAMOHAN*		2	4
	GU-3	POWER BUILDER	0	2
	GU-2	VISUAL BASIC		
177	*M G MUNEER*			

MASCON

Skills Inventory Report

Employees Skilled in(Any) POWER BUILDER,VISUAL BASIC

Emp Code	Emp Name / Skill Code	Skill Name	Man Years	Man Months
			0	4
	GU-2	VISUAL BASIC	0	1
	GU-3	POWER BUILDER		
	R S RAJA		0	2
58				
	GU-3	POWER BUILDER		

MASCON

Skills Inventory Report

Employees not Skilled in (Any) POWER BUILDER,VISUAL BASI

Serial No	Employee Code	Employee Name
1	032	G THILAKAVATHY
2	068	P RANGASWAMY
3	100	G USHA KIRAN
4	101	P L CHIDAMBARAM
5	102	R NATARAJAN
6	104	N SHANKAR
7	110	R VENKATESH
8	113	M SANTHOSHKUMAR
9	119	P S SRISELVAN
10	123	G RAMACHANDRAN
11	125	V RAMESH
12	127	T PALANISAMY
13	129	A V PERARULALAN
14	134	P A SUNDARA RAJAN
15	14	ANURADHA V
16	140	S. THULSIRAM
17	146	R BALAJI
18	147	K SUBRAMANI
19	154	H R SRIDHAR
20	159	R.SHYAMALA
21	163	S RAMANATHAN
22	164	LATA SEKHAR
23	168	P SARAVANAVEL
24	169	R P SUDEEP
25	171	J CHAKRAVARTHY
26	172	R B ANNAPURNA
27	173	K NAGARAJAN
28	178	S SRINIVASA RAO
29	179	K HEMANT KUMAR
30	28	K SRIDHARAN
31	52	R MAKHADHEVAN
32	59	R MAHESHWARAN
33	71	S CHANDRASEKARAN
34	79	B VENKATA SUBRAMANIAN
35	80	K.VIJAYAN
36	81	P MURALI
37	83	T S SRIDHAR
38	91	R BALAKRISHNAN
39	92	M BHAGAVATHI
40	93	B S VASAN
41	95	R CHITRA
42	98	C CHITRA
43	GN1	R ARAVIND
44	GN2	L CHANDRASEKARAN
45	GN5	R APARNA

REVIEW OF TRAINING PLAN

Planned
Functional (same as technical) : minimum of _____ days
Others (same as non technical) : minimum of _____ days
Actual

ENO	EMP_NAME	Q1		Q2		Q3		Q4		TOTAL	
		T	NT	T	NT	T	NT	T	NT	T	NT
001	K SRINIVASAN	0	0	0	1	0	0	0	0	0	1
003	M SRINIVASAN	0	2	0	0	0	0	0	0	0	2
005	S MOHAN	0	1	0	1	0	0	0	0	0	2
016	RAVINDRA KUMAR PATHAK	2	0	1	0	0	0	0	0	3	0
019	M RAGHURAMAN	0	1	0	0	0	0	0	0	0	1
032	G THILAKAVATHY	2	1	7	5	0	0	0	0	9	6
035	S RAMACHANDRAN	2	2	0	1	0	2	0	0	2	5
036	V SRIDHAR	2	0	0	0	0	0	0	0	2	0
068	P RANGASWAMY	0	0	0	0	0	0	0	0	0	0
100	G USHA KIRAN	0	0	6	0	7	0	0	0	13	0
101	P L CHIDAMBARAM	0	0	15	0	2	2	0	0	17	2
102	R NATARAJAN	0	0	1	0	3	2	0	0	4	2
104	N SHANKAR	0	0	1	0	0	0	3	0	4	0
107	A SIVAPRAKASAM	2	1	0	0	0	0	0	0	2	1
109	C MUTHUKUMARASAMY	0	0	0	0	0	0	0	0	0	0
110	R VENKATESH	2	0	17	0	0	0	3	0	22	0
111	S PADMANABHAN	0	2	0	1	0	0	0	0	0	3
112	R K GHOSAL	0	1	0	0	0	0	0	0	0	1
113	M SANTHOSHKUMAR	0	0	0	0	0	0	0	0	0	0
115	T ANU	2	0	0	0	0	0	0	0	2	0
116	S PADMANABHAN	0	1	3	0	0	0	3	0	6	1
117	RAM KUMAR REDDY P	2	0	0	0	1	2	0	0	3	2
118	K SRIPRIYA	0	0	1	0	0	0	4	0	5	0
119	P S SRISELVAN	2	0	14	0	0	0	3	0	19	0
120	S SURESH	2	0	3	0	5	2	5	0	15	2
123	G RAMACHANDRAN	2	0	2	5	0	0	0	0	4	5
124	T PALANIAPPAN	2	0	0	0	0	0	0	0	2	0
125	V RAMESH	0	0	0	0	0	0	1	0	1	0
126	V SANKAR	2	0	0	0	0	2	0	0	2	2
127	T PALANISAMY	2	0	0	0	5	2	0	0	7	2
129	A V PERARULALAN	2	0	7	0	5	0	1	0	15	0
134	P A SUNDARA RAJAN	0	0	1	0	7	0	7	0	15	0
135	SUPRIYO DAS	0	1	0	0	0	0	0	0	0	1
138	N VISWANATHAN	2	0	1	0	0	0	0	0	3	0
14	ANURADHA V	2	1	2	5	0	0	0	0	4	6
140	S. THULSIRAM	0	0	1	0	0	0	7	0	8	0

T -- stands for technical NT -- stands for nontechnical
Q1 - Quarter 1 Q2 - Quarter 2 Q3 - Quarter 3 Q4 - Quarter 4

ENO	EMP_NAME	Q1		Q2		Q3		Q4		TOTAL	
		T	NT	T	NT	T	NT	T	NT	T	NT
144	H PRAHALADAN	0	0	1	0	1	0	4	0	6	0
146	R BALAJI	2	1	17	0	0	0	4	0	23	1
147	K SUBRAMANI	2	2	5	0	0	0	0	0	7	2
148	R GOWRI SHANKER	2	3	0	1	0	0	0	0	2	4
149	D SUBRANIYAN	2	3	2	5	0	0	0	0	4	8
150	RAMESH NARAYANAN	0	1	0	0	0	0	0	0	0	1
151	G RADHAMMA	0	1	0	0	0	0	0	0	0	1
152	K SRITHAR	2	1	0	0	0	0	0	0	2	1
153	SRIDEVI MUKUND	2	2	0	0	0	0	0	0	2	2
154	H R SRIDHAR	2	1	4	0	0	0	3	0	9	1
155	M BALAJI	2	0	16	0	0	6	3	0	21	6
157	B SETHURAMAN	2	0	7	0	4	3	0	0	13	3
158	K THIAGARAJAN	0	0	0	0	0	3	0	0	0	3
159	R.SHYAMALA	2	0	17	0	2	3	5	0	26	3
160	A N KAMAT	0	3	2	1	0	2	0	0	2	6
162	S SUNDARARAMAN	0	1	2	1	0	1	0	0	2	3
163	S RAMANATHAN	0	1	0	1	0	6	0	0	0	8
164	LATA SEKHAR	0	0	0	0	5	6	0	0	5	6
166	B SRINIVASAN	0	0	4	0	0	1	0	0	4	1
167	V KAMESHWARI	0	2	0	1	0	2	0	0	0	5
168	P SARAVANAVEL	0	0	0	0	1	2	3	0	4	2
169	R P SUDEEP	0	0	6	0	6	2	0	0	12	2
171	J CHAKRAVARTHY	0	0	2	5	2	0	0	0	4	5
172	R B ANNAPURNA	0	0	0	0	5	6	0	0	5	6
173	K NAGARAJAN	0	0	0	0	0	0	2	0	2	0
174	N PRAVEEN KUMAR	0	0	0	0	7	6	0	0	7	6
175	T CHANDRAMOHAN	0	0	0	0	5	4	0	0	5	4
176	R PRIYA	0	0	0	0	5	4	0	0	5	4
177	M G MUNEER	0	0	0	0	7	5	5	0	12	5
178	S SRINIVASA RAO	0	0	0	0	6	0	8	2	14	2
179	K HEMANT KUMAR	0	0	0	0	7	0	2	0	9	0
180	B PRASATH	0	0	0	0	3	0	3	0	6	0
181	MR V RAMESH	0	0	0	0	0	0	0	5	0	5
182	MR. C V HARI SUBRAMANYA	0	0	0	0	0	0	0	0	0	0
183	T MUTHUKUMAR	0	0	0	0	0	0	4	3	4	3
184	K SRIVATHSAN	0	0	0	0	0	0	0	0	0	0
185	P AROCKIARAJ	0	0	0	0	0	0	0	4	0	4
186	BADAL KUMAR MANUJ	0	0	0	0	0	0	6	5	6	5
187	G CHANDRASEKAR	0	0	0	0	0	0	0	4	0	4
188	P KARTHIK	0	0	0	0	0	0	4	5	4	5
189	T NAGARAJA RAO	0	0	0	0	0	0	0	5	0	5

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Q1 - Quarter 1 Q2 - Quarter 2 Q3 - Quarter 3 Q4 - Quarter 4

ENO	EMP_NAME	Q1		Q2		Q3		Q4		TOTAL	
		T	NT	T	NT	T	NT	T	NT	T	NT
190	S PARVATHAVARTHINI	0	0	0	0	0	0	0	5	0	5
191	PRADEEP KUMAR RASAM	0	0	0	0	0	0	0	5	0	5
192	SHUBENDU.D	0	0	0	0	0	0	6	5	6	5
193	PREM KURIAN PHILIP	0	0	0	0	0	0	0	5	0	5.
194	SHARON MARIA PHILLIPS	0	0	0	0	0	0	0	0	0	0
195	E G SURESH	0	0	0	0	0	0	0	3	0	3
196	V CHANDRA SEKHAR	0	0	0	0	0	0	5	3	5	3
197	G SUNDER RAJ	0	0	0	0	0	0	0	0	0	0
198	M V SARVESWARARAO	0	0	0	0	0	0	6	3	6	3
199	B SARATH KUMAR	0	0	0	0	0	0	5	3	5	3
200	S SENTHIL KUMAR	0	0	0	0	0	0	6	3	6	3
201	C SATYEN BOSE	0	0	0	0	0	0	6	3	6	3
202	V SUTHANTHIRADEVI	0	0	0	0	0	0	6	3	6	3
203	S SENTHIL	0	0	0	0	0	0	0	3	0	3
25	M BABU	2	0	0	0	0	0	0	0	2	0
28	K SRIDHARAN	0	2	0	1	0	0	0	0	0	3
42	K SRIKANTAN	2	0	2	0	2	0	0	0	6	0
52	R MAKHADHEVAN	2	1	8	5	0	2	4	0	14	8
58	R S RAJA	0	0	1	0	0	0	0	0	1	0
59	R MAHESHWARAN	2	0	0	0	0	2	0	0	2	2
71	S CHANDRASEKARAN	0	0	0	0	0	0	20	0	20	0
75	S VASANTHI	0	0	0	0	0	2	0	0	0	2
79	B VENKATA SUBRAMANIAN	0	0	0	0	1	0	0	0	1	0
80	K.VIJAYAN	0	0	3	5	1	0	2	0	6	5
81	P MURALI	0	0	1	0	0	0	0	0	1	0
83	T S SRIDHAR	2	0	0	0	2	2	0	0	4	2
84	J MOHAN CHANDER	2	1	5	5	0	2	8	0	15	8
86	S MAHESHKUMAR	2	0	0	0	0	0	0	0	2	0
91	R BALAKRISHNAN	0	0	1	0	0	0	4	0	5	0
92	M BHAGAVATHI	2	0	2	0	0	0	0	0	4	0
93	B S VASAN	2	0	0	0	0	0	3	0	5	0
95	R CHITRA	2	0	7	0	7	0	0	0	16	0
98	C CHITRA	2	0	7	0	7	2	0	0	16	2
99	K VASUDEVAN	0	0	1	5	1	0	0	0	2	5
GN1	R ARAVIND	0	0	0	0	5	4	3	0	8	4
GN2	L CHANDRASEKARAN	0	0	0	0	5	4	3	0	8	4
GN3	R. APARNA	0	0	0	0	0	0	0	0	0	0
GN5	R APARNA	0	0	0	0	0	0	3	0	3	0
PT1	MR. P KUMAR	0	0	14	0	1	3	0	0	18	3
S1	R ANBUMANI	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0

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Q1 - Quarter 1 Q2 - Quarter 2 Q3 - Quarter 3 Q4 - Quarter 4

It was thought that, for the enhancement or modification of the existing skills inventory management system, the '.QRP' files used for designing the reports and the '.WTS' files which contain all the queries and the script used during the development of the system might prove to be useful. Therefore, all the names of these files are given below :

.QRP files

i:\mathew\skill\skrep1.qrp

i:\mathew\skill\skrep2.qrp

i:\mathew\skill\skillrep.qrp

i:\mathew\emptrlst.qrp

i:\mathew\tratt.qrp

i:\mathew\emprep.qrp

.WTS files

i:\mathew\skill\allsk.wts

i:\mathew\skill\allsknot.wts

i:\mathew\skill\anysk.wts

i:\mathew\skill\anysknot.wts

i:\mathew\names.wts

i:\mathew\report.wts

i:\mathew\empinfo.wts

i:\shyam\sifold\sifbk\latscr.wts

Using PAMS

To use all or any of the eight screens of Project Activity Monitoring Sheet Software, the user has to double click the SIF icon after entering windows. The User Id and Password are 'shyam' in lower case.