# CONFERENCE ROOM MANAGEMENT SYSTEM

## A DISSERTATION

*Submitted in partial fulfilment of the requirements for the award of the degree of*

MASTER OF TECHNOLOGY

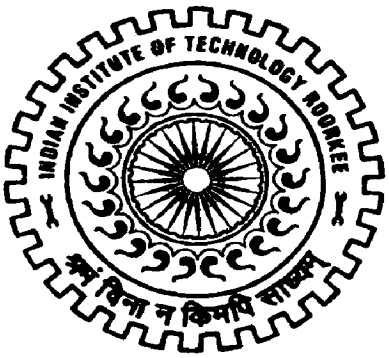
*in*

INFORMATION TECHNOLOGY

CENTRAL LIBRARY
G11228
Acc No.....
Date 23-5-03
I.I.T. ROOREEE

*By*

**RITU RAJ ARYA**




*ER & DCI NOIDA*

**IIT Roorkee-ER&DCI, Noida**
**C-56/1, "Anusandhan Bhawan"**
**Sector 62, Noida-201 307**

FEBRUARY, 2003

**Enrollment Number – 019038**

621.380285
ARY

# CANDIDATE'S DECLARATION

I hereby declare that the work presented in this dissertation titled **"CONFERENCE ROOM MANAGEMENT SYSTEM"**, in partial fulfillment of the requirements for the award of the degree of **Master of Technology** in **Information Technology**, submitted in **IIT, Roorkee – ER&DCI Campus, Noida,** is an authentic record of my own work carried out during the period from August 2002 to February, 2003 under the guidance of **Mr. V.N.Shukla,** Director (Special Applications), ER&DCI, Noida.

The matter embodied in this dissertation has not been submitted by me for award of any other degree of diploma.

Date: 26/02/03
Place: Noida

(Ritu Raj Arya)

# CERTIFICATE

This is to certify that the above statement made by the candidate is correct to the best of my knowledge and belief.

Date: 26/02/03
Place: Noida

(V.N.Shukla)
Director (SA),
ER&DCI, Noida

# ACKNOWLEDGEMENT

The work presented in this report would not have been completed without the guidance and support of many people. In first place, I would like to thank my guide, **Mr. Venkat Raman**, Engineer, BHEL – EDN, Bangalore, for his constant support, incredible enthusiasm and encouragement. I am grateful to **Mr. V. N. Shukla,** Director (SA), ER&DCI for his support and guidance. My sincere thanks are due to **Dr. P.R. Gupta** for the encouragement and valuable suggestions she provided me with during the course of my work. I am also grateful to **Mr. Munish Kumar** for the cooperation extended by him in the successful completion of this report.

Most of all I would like to thank my family. My parents provided me a perfect environment for my studies and supported me throughout. Finally, I would like to extend my gratitude to all those persons who directly or indirectly helped me in the process and contributed towards this work.

**(Ritu Raj Arya)**

1. Prof. Prem Vratt, Director, IIT Roorkee and Sh. R.K.Verma, Executive Director, ER&DCI, Noida.
2. Prof. A.K.Awasthi, Dean PGS&R, IIT Roorkee.
3. Prof. R.P.Agrawal, Course Coordinator, M.Tech.(IT), IIT Roorkee and Mr. V.N.Shukla, Course Coordinator, M.Tech.(IT), ER&DCI, Noida
4. Concerned Guide.
5. Others : Teachers and other sources of guidance
6. Friends

(Ritu Raj Arya)

Enrollmen No. 019038

# CONTENTS


CANDIDATE'S DECLARATION (i)

ACKNOWLEDGEMENT (ii)

ABSTRACT 1

1 INTRODUCTION 3
- 1.1 Objective 3
- 1.2 Scope 4
- 1.3 Organization 5
- 1.4 Organization Chart 6
- 1.5 Organization of Dissertation 7

2 LITERATURE SURVEY 9

3 REQUIREMENTS ANALYSIS 11
- 3.1 Exizting Syatem 11
  - 3.1.1 Problem with Exiating System 11
- 3.2 Dataflow Diagrams 13
- 3.3 Database Schema and Relationship 20
- 3.4 System Description 22
  - 3.4.1 Features of CRMS 22
  - 3.4.2 Conference Room Management System 22

4 SYSTEM CONFIGURATION REQUIREMENT 31
- 4.1 Hardware Configuration 31
- 4.2 Software Configuration 31

5 CONFERENCE ROOM MANAGEMENT SYSTEM PROGRAMME SPECIFICATION 33
- 5.1 Splash Form 33
- 5.2 Login Form 35
- 5.3 Menu Form 37
- 5.4 Back Office Confirmation Form 39
- 5.5 HOD Authorization Form 41
- 5.6 Booking Form 43
- 5.7 Room Booking Form 45
- 5.8 Regular Equipment Booking Form 47
- 5.9 Hired Equipment Booking Form 49
- 5.10 Refereshment Booking Form 51
- 5.11 Booking Confirmation Form 53

5.12 Booking Cancellation Form 55
5.13 Booking Modification/Rescheduling Form 57
5.14 Booking Status Form 59
5.15 Password Change Form 61
5.16 Report Input First Form 63
5.17 Report Input Second Form 65
5.18 Report Input Third Form 67
5.19 Report Input Forth Form 69
5.20 Report Input Fifth Form 71
5.21 Report Input Sixth Form 73
5.22 Report Input Seventh Form 75
5.23 Report Input Eighth Form 77
5.24 Update Users Form 79
5.25 Update Rooms Form 81
5.26 Update Regular Equipment Form 83
5.27 Update Refereshment Form 85
5.28 Update Hired Equipment Form 87
5.29 Release Priority Room Form 89
5.30 Room Availability Display Form 91

6 SYSTEM TEST PLAN 93

7 RESULTS AND DISCUSSIONS 97

8 CONCLUSION 99

REFERENCES 101

# ABSTRACT

The project deals with the reservation/booking of the conference rooms maintained by the organization, which were carried out manually with the complex book-keeping and maintaining a staff for this purpose. It is a system managing this job, thus eliminating the staff and complexity. The software does the booking and rescheduling from the terminals provided to the executives and the data are stored in the a database which is located at the server room. The rescheduling which was very difficult and time consuming process earlier is now made easy. The resource requirement is fulfilled easily as each data report can be generated easily at the time of ordering to outside vendor, earlier if a paper was misplaced then it was difficult to fulfill the requirement. The optimization of the rooms is done by the system as the minimum difference between the people and seats is made.

# Chapter 1

# INTRODUCTION

## 1.1 Objective

To build a system which can efficiently and effectively maintain the conference rooms of the company utilized by the employees of the organization. To make it an easy to use GUI application, it should make reservations, cancellations and modifications from any terminal in the company and should make it easy to do, it should generate reports for various information, should optimize room allocation and eliminate the Front-Office, book keeping and paper work. It should be cost effective.

## 1.2 Scope

To build a system which can lead to quick scheduling and retrieving of information and update & modification should be easy to make. It should make work easy.

## 1.3 Organization

The Electronics Division (EDN) of BHEL was formed in 1976 mainly to establish a strong base in the areas of power and control electronics, to supplement and support BHEL's strong and unique presence in power generation and transmission equipment manufacturing. The division came into being when BHEL took over the Radio and Electricals Manufacturing Company (REMCO), which formally merged with BHEL-EDN in 1980. Growing from a meager turnover of Rs.3 crore in 1976-77 to 500 crore in 2000-01, BHEL-EDN has entered a new phase of growth. Its quick progress was aided by collaborations with international leaders in the field. But it was BHEL-EDN's pioneering spirit and the unwavering commitment to in-house solutions that has really contributed to its rapid growth and success. BHEL-EDN today holds on its own against the world's leaders in the field and has won many prestigious contracts against stiff competition from them.

In recognition of its commitment to the quality systems and procedures, the unit was awarded ISO-9001 certification by BVQI (UK) in July 1993. This was further re-certified in July 1996 for the updated version of ISO-9001. Presently the unit is treading along the path of Total Quality Management (TQM) as well as Business Process Re-Engineering (BPR). EDN has also become the first electronics industry in Bangalore to get ISO-14001 environmental management certification and also OHSAS-18001.

In addition to its comprehensive product profile, a number of new technology areas have been earmarked for future developments. Prominent among them are Power and Control Electronics for Traction Applications, Energy Management Systems, Training Simulators for Defence Applications, Large Telecommunication Exchanges, Electronic Energy Meters, etc.

In the new millennium, BHEL's vision envisages further growth for EDN, transforming it into a world class enterprise providing comprehensive solutions to customers, while exploring new frontiers in software and hardware applications to fulfill the growing needs and expectations of the global market.

## 1.4 Organization Chart

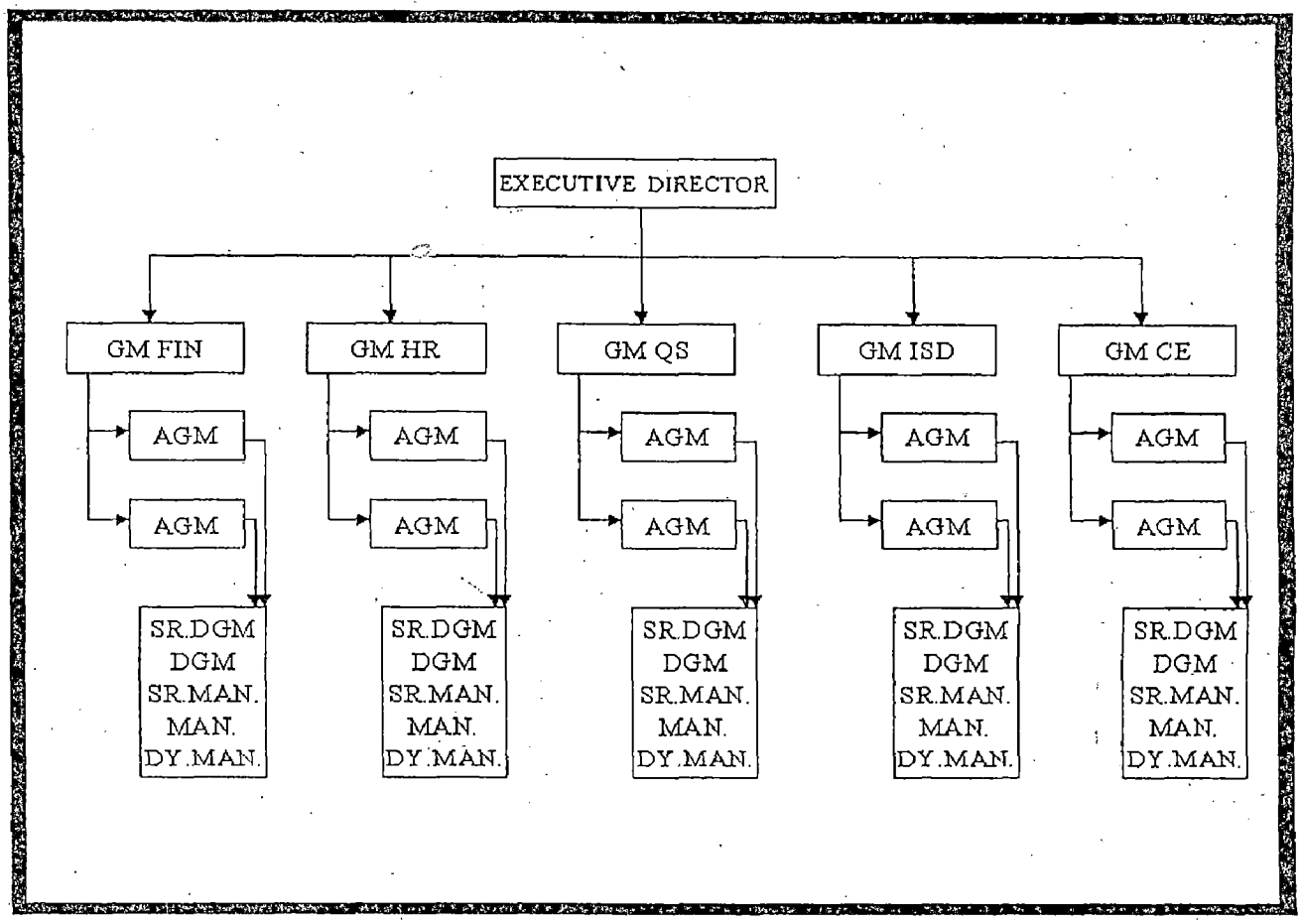



fig. 1.4.1

## 1.5 Organization of Dissertation

The project started at BHEL-EDN. The first thig done there was to get the structure of the organiztaion, this took some days to get the information about the organization and start the project keeping in mind the users and the requirement to fulfill.

Then the study over the project began with the involvement of the employees dealing the managemet of the conference rooms at the EDN. The required information about how they work there and how the reservations are done were and how the book-keeping was done was studied.

The report begins with the objective that was sought out after understanding the project and making the initial studies. Then the scope for the project was drawn from the objective and the work to be done. Then begins the study of the database to be used and the front end in which the project is to be implemented. EDN is using SQL Server 7.0 for maintaining its databases and the Visual Basic 6 is used there for the front end and in-house software development. Then the studies regarding SQL Server 7.0 and Visual Basic 6 were done. The books used are given in the references section.

Then began the real work of the project, the requirements study, which was started at the beginning and was going on in the mean time at the time of study about the back-end and front-end. it is explained in chapter 3. Then the system configuration requirement study was done, which is given in chapter 4. After the requirements study was over, the work on the system started and the database was designed and normalized. The keys were assigned and implemented. The software was started to design keeping the database connectivity and manipulation in mind. It took long time to develop the design and logic and the software was ready for the testing. This all is given in chapter 5. the system was then tested on the test data and then on real-time data, this ig shown in chapter 6. After testing the system the results were recorded and the software was implemented, this all is given in chapter 7. the conclusion is imade in chapter 8 and references are provided in chapter 9.

Chapter 2

# LITERATURE SURVEY

The project that has been worked on, deals with a real life problem of an organization. Therefore, there was not to go much in the details of the theoritical studies, rather it has to be studied in the working environment and solution has to be designed. So the major work was studied in real time and then at the time of implementation the help from the texts were taken. The books referenced are given in the references section. Some of the terms has been described below.

Some of the terms that are to be known are,

DATBASE[1]: A database is a collection of related data. It is the definition of a database in the simplest form. By data, we mean known facts that can be recorded and that have implicit meaning.

DBMS[2]: Database Management System is a collection of programs that enables users to create and maintain a database.

DATA MODEL[2]: A data model is a collection of concepts that can be used to describe the structure of a database.

DATABASE SCHEMA[2]: The description of a database is called a database schema. And the diagran that is drawn is called schema diagram.

The database is classified in three major categories

- RELATIONAL MODEL[2]: It is represented in tabular form.
- OBJECT MODEL[2]: It is represented on OOP concepts.
- NETWORK MODEL[2]: It is represented in tree form.

NORMALIZATION[1]: It is a process of analyzing the given relation schemas based on their functional dependencies and primary keys to achieve the desirable properties of minimizing redundancies and minimizing the manipulations of the database.

PRIMARY KEY[2]: It is an ordered file whose records are of fixed length with two fields. The first field is of the same data type as the ordering key field, called the primary key.

SECONDARY KEY[2]: It is an ordered file with two fields. The first field is of the same data type as some non-ordering field of the data file that is primary key. The second field is either a block pointer or a record pointer, called secondary key.

The project deals with the Relational Database Model,

DOMAIN[2]: A domain is a set of atomic values. By atomic we mean that each value in the domain is indivisible .

ATTRIBUTES[2]: An attribute is a set of all the data types that are of same type and are represented in one row.

TUPLE[1]: A tuple is a set of data corresponding to one row. They are of different types but correspond to one entity.

RELATION[1]: A relation is a relationship that join two attributes to a single entity.

In this project we are using SQL Server 7.0 as the database which is a Relational Database. The tables are designed and are manipulated through Query Analyser.

The front-end desigining software is Visual Basic 6. The studies were carried out and the forms were designed. It involves two steps,

- The visual programming step[3]
- The code programming step[3]

In visual programming step, the forms are designed by using the tools that come with the Visual Basic package. The code writing for the visual environment is done in the package and we have to just draw the objects and the code is put from back which is invisible. The formatting of the objects is done through the properties window in the visual environment and the desired looks are provided to the objects.

In code programming step, the in-built text editor is used to do the real programming stuff, the logics are made and formed in code and implemented in the objects on the form through the use of functions. This is the place where all the logics are implemented.

The visual environment makes it easier to concentrate on the programming part than designing part. It is a very user friendly package providing ease of aking the software.

# REQUIREMENTS ANALYSIS

## 3.1 Existing System

The company manages the reservations and logistics of its various conference rooms by a Front-Office, operated manually. Employees submit their requests for the reservation, modification and cancellation of rooms and resources on the prescribed forms after getting the necessary approval from the concerned authorities.

The front-office staff keeps track of conference rooms' booking and availability status, ensures readiness of rooms and make arrangement for the equipment and refreshment required.

The staff also ensures that the rooms are optimally used – a room with a larger capacity is not allocated to a smaller requirement. To achieve this, they manually keep track of the bookings and swap the room numbers whenever possible. In case no suitable room is available for a particular booking request, the Front-Office also maintains a queue. It manually monitors it after each booking cancellation and allocates the now available room to a suitable request in the queue.

The Front-Office maintains various reports for efficient management – details of a room's booking, equipment/refreshment required on a particular day etc.

### 3.1.1 Problem with Existing System

- Employees have to depend on front office for booking.
- Modification of slots and cancellation of booking is difficult.
- Equipment sources from external vendors cannot be made available in time due to non-availability of proper reports.
- Loss of information can occur if papers carrying booking information are misplaced.
- Room availability status is difficult to maintain manually.
- In the event of any modification/rescheduling of a booking, it is difficult to properly implement the changes, especially when the time available is very less.

- Ensuring the optimum use of the rooms is difficult to achieve manually.

- Lots of paper work is involved in keeping records and maintaining reports.

- There is a lot of to-and-fro movement of papers among various staffers – e.g. User chases the HOD for authorization, Administrator has to frequently correspond with Back-Office for confirmation of hired resources availability.

- Lots of time gets wasted in such back-forth communication.

- Last minute changes are difficult to communicate.

## 3.2 Dataflow Diagrams

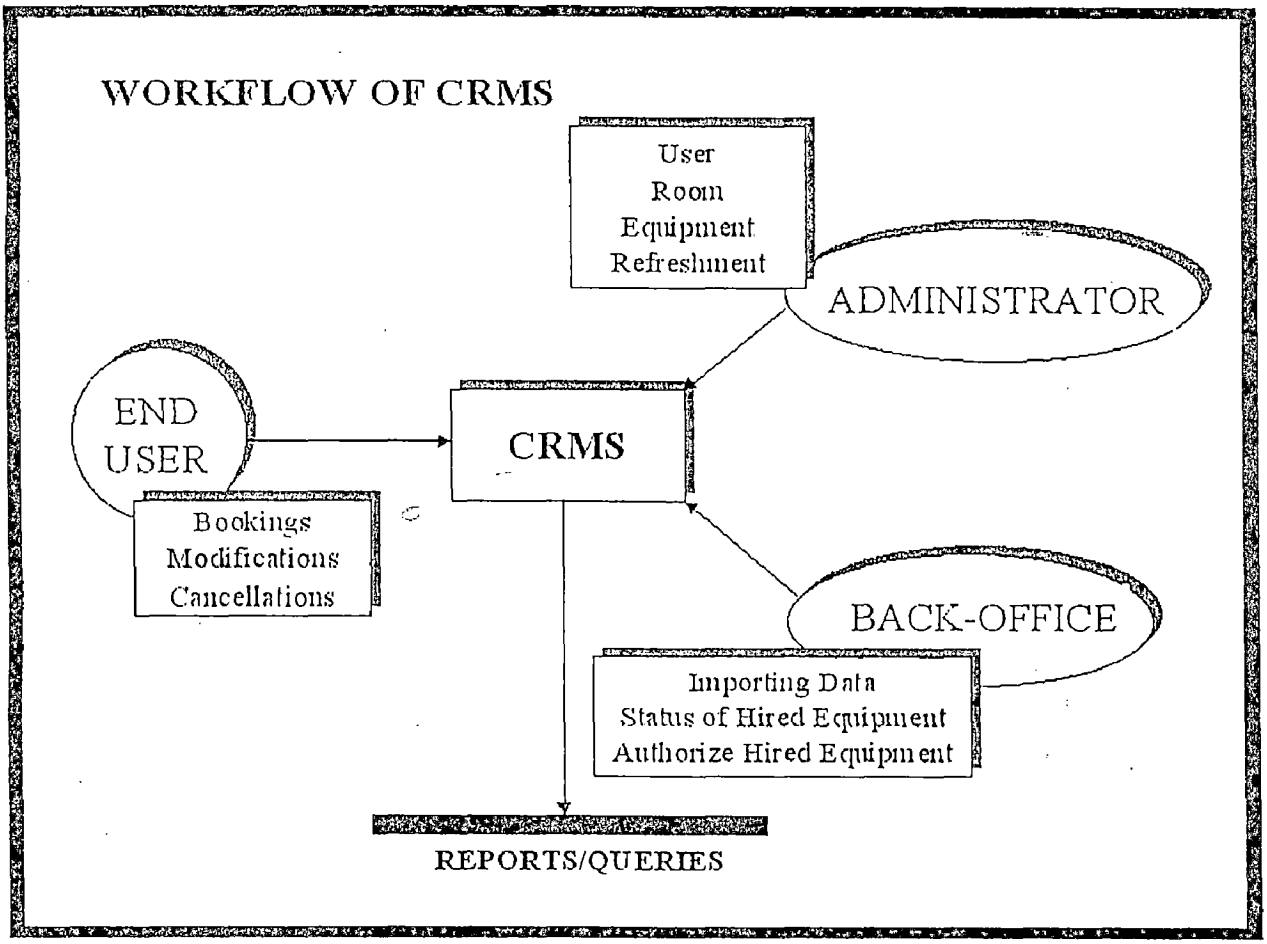



fig. 3.2.1

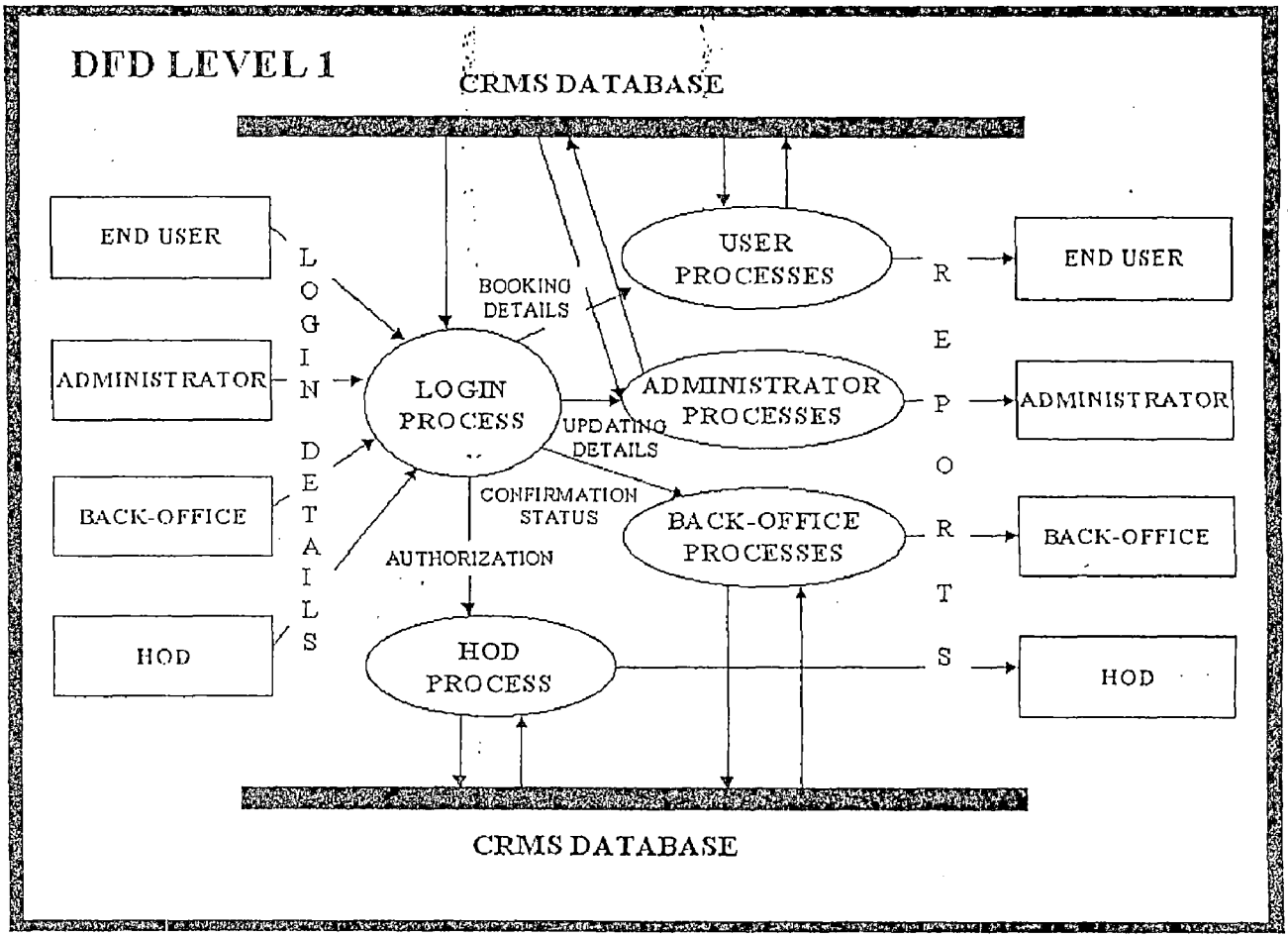

DFD LEVEL 1
CRMS DATABASE
END USER
ADMINISTRATOR
BACK-OFFICE
HOD
LOGIN DETAILS
LOGIN PROCESS
BOOKING DETAILS
UPDATING DETAILS
CONFIRMATION STATUS
AUTHORIZATION
USER PROCESSES
ADMINISTRATOR PROCESSES
BACK-OFFICE PROCESSES
HOD PROCESS
REPORTS
END USER
ADMINISTRATOR
BACK-OFFICE
HOD
CRMS DATABASE

Fig. 3.2.2

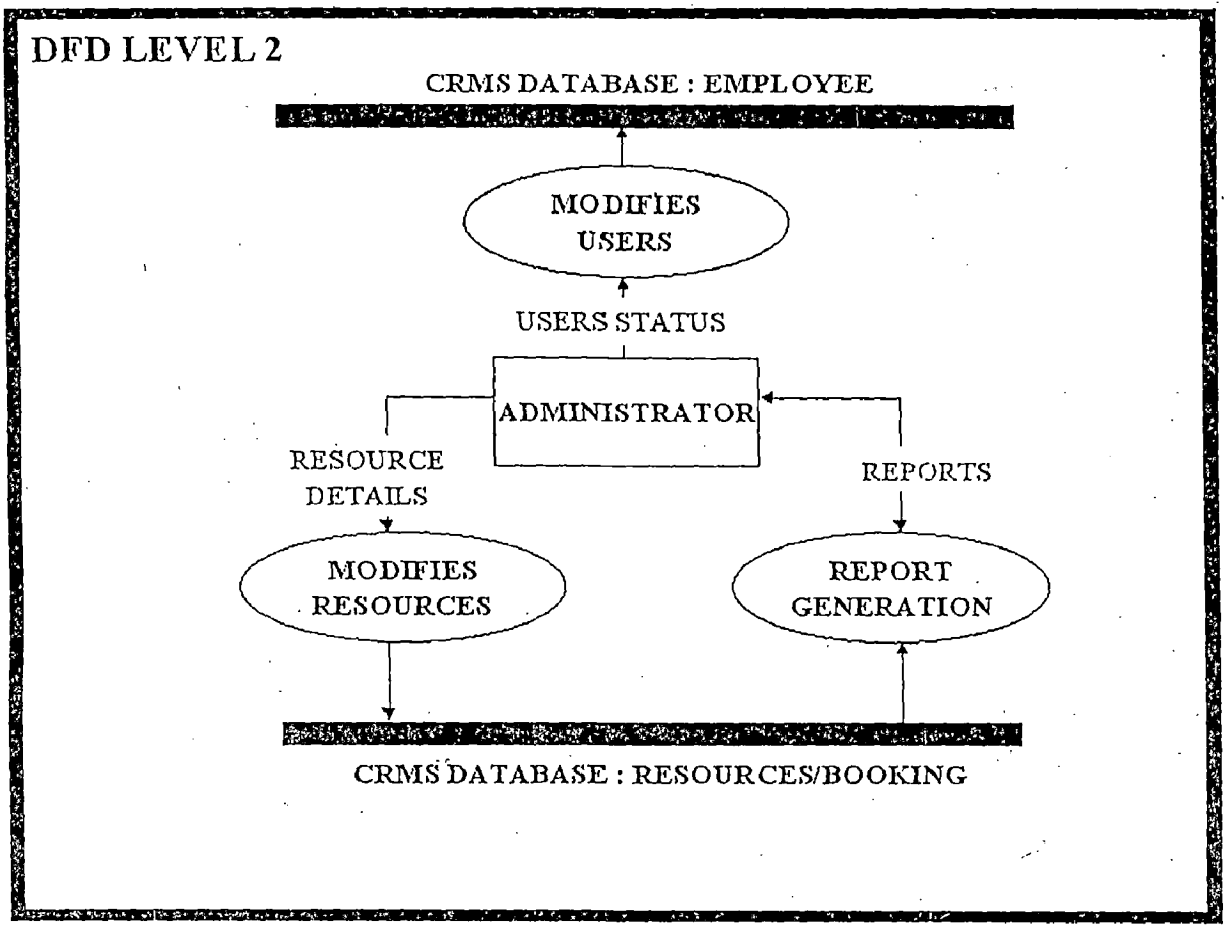

DFD LEVEL 2
CRMS DATABASE : EMPLOYEE
MODIFIES USERS
USERS STATUS
ADMINISTRATOR
RESOURCE DETAILS
REPORTS
MODIFIES RESOURCES
REPORT GENERATION
CRMS DATABASE : RESOURCES/BOOKING

Fig. 3.2.3

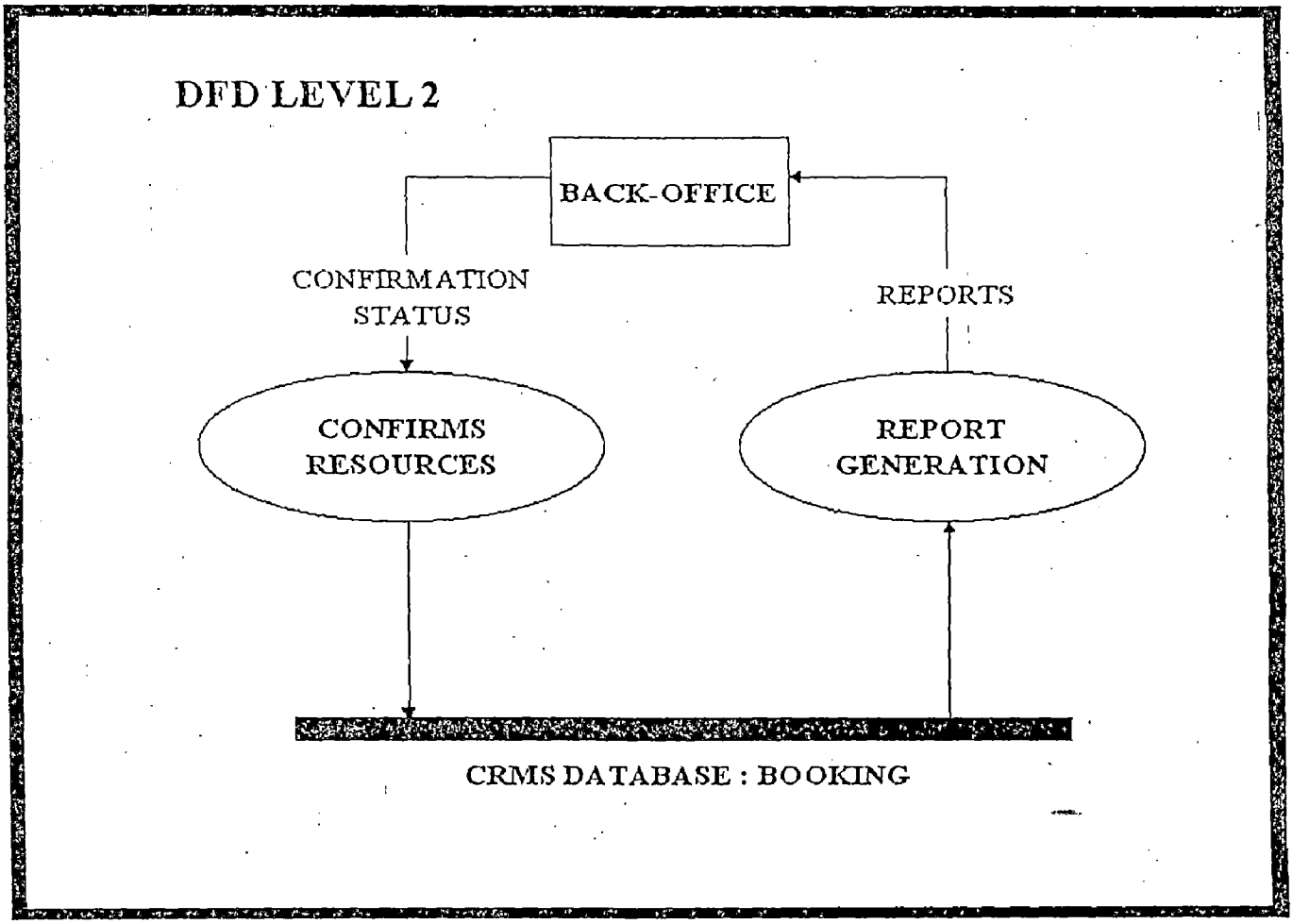

DFD LEVEL 2
BACK-OFFICE
CONFIRMATION STATUS
REPORTS
CONFIRMS RESOURCES
REPORT GENERATION
CRMS DATABASE : BOOKING

Fig. 3.2.4

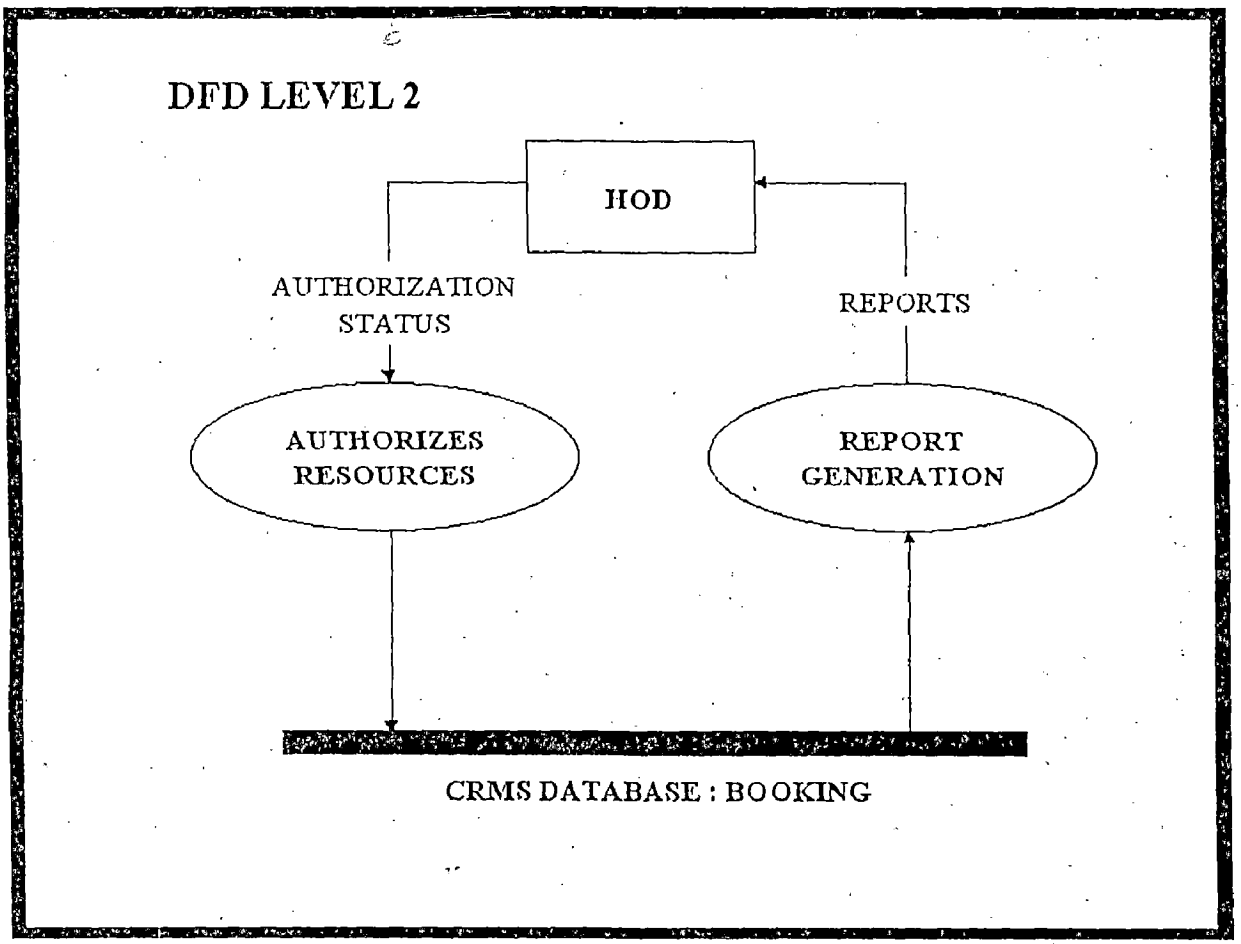

DFD LEVEL 2
HOD
AUTHORIZATION STATUS
REPORTS
AUTHORIZES RESOURCES
REPORT GENERATION
CRMS DATABASE : BOOKING

Fig. 3.2.5

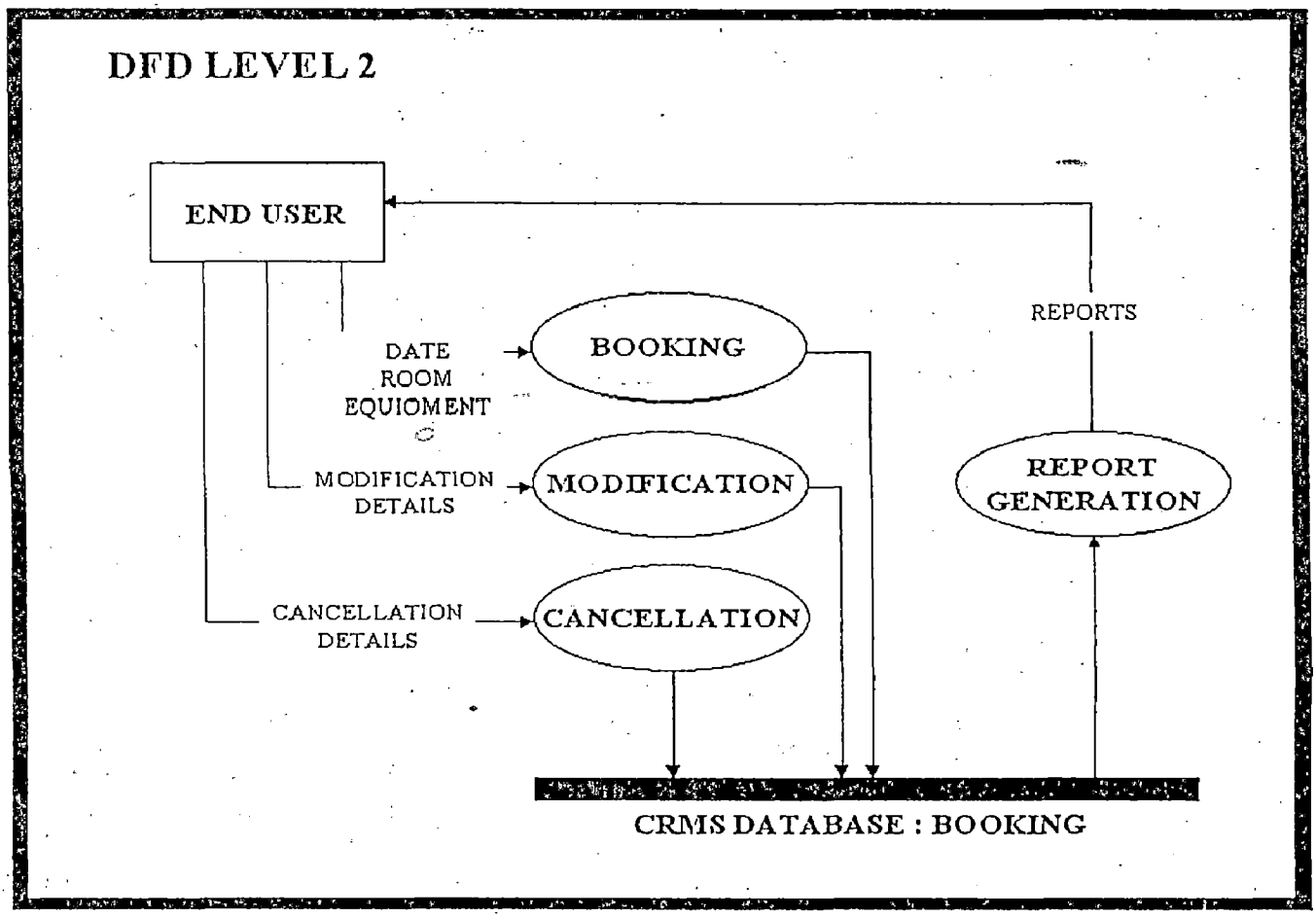

DFD LEVEL 2
END USER
DATE
ROOM
EQUIOMENT
BOOKING
REPORTS
MODIFICATION
DETAILS
MODIFICATION
REPORT
GENERATION
CANCELLATION
DETAILS
CANCELLATION
CRMS DATABASE : BOOKING

Fig. 3.2.6

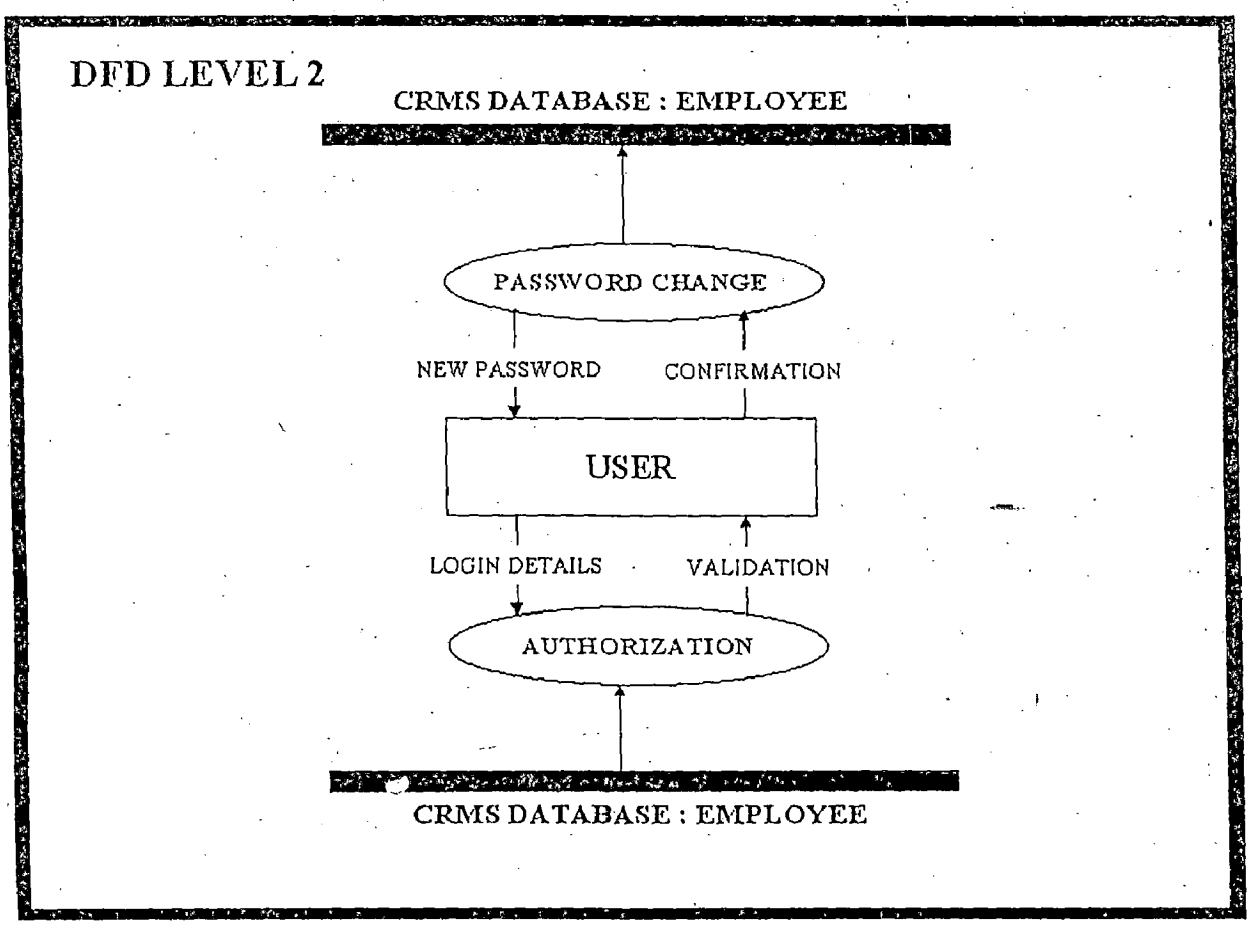

DFD LEVEL 2
CRMS DATABASE : EMPLOYEE
PASSWORD CHANGE
NEW PASSWORD
CONFIRMATION
USER
LOGIN DETAILS
VALIDATION
AUTHORIZATION
CRMS DATABASE : EMPLOYEE

Fig. 3.2.7

## 3.3 Database Schema and Relationship

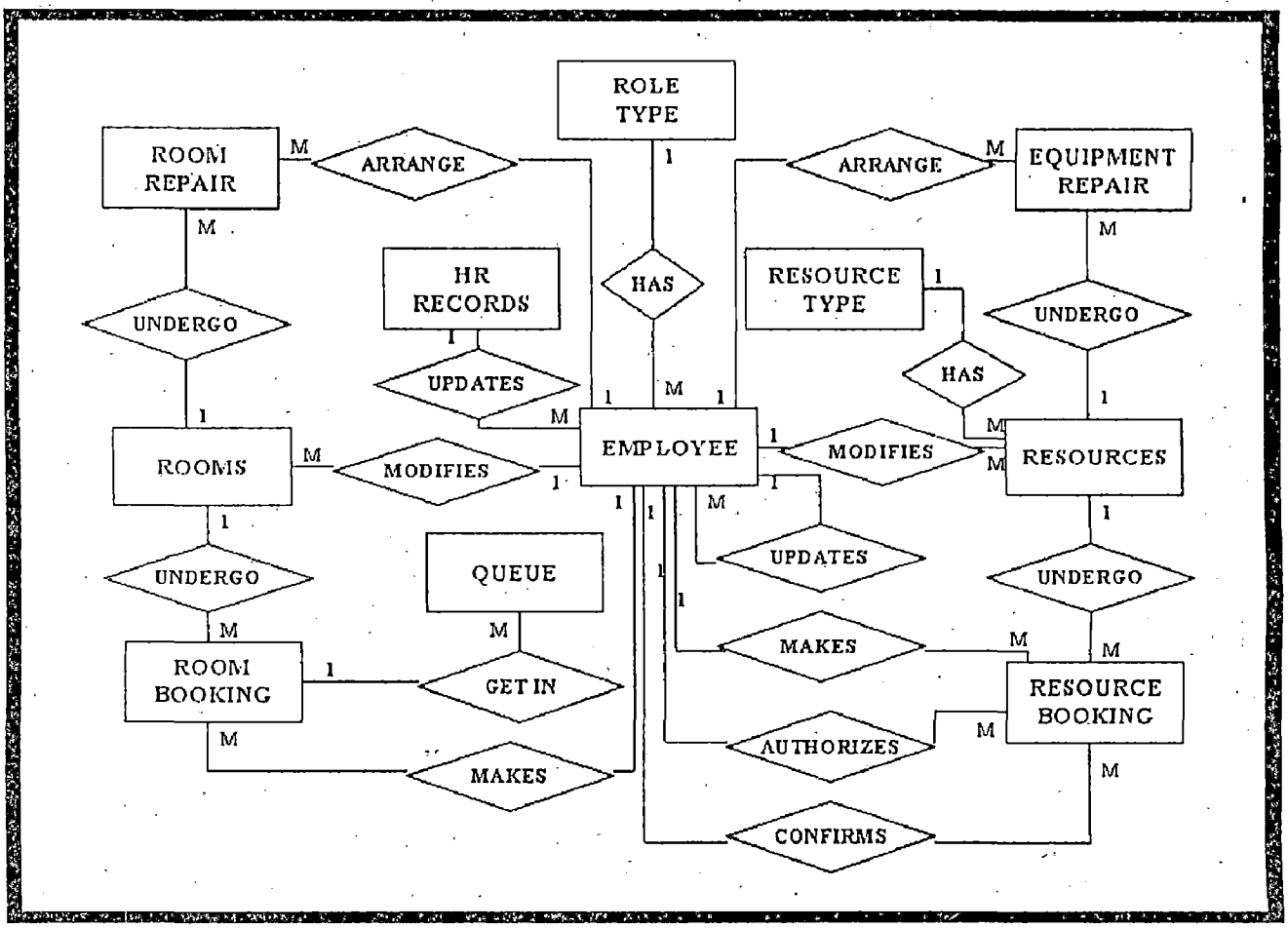



fig. 3.3.1

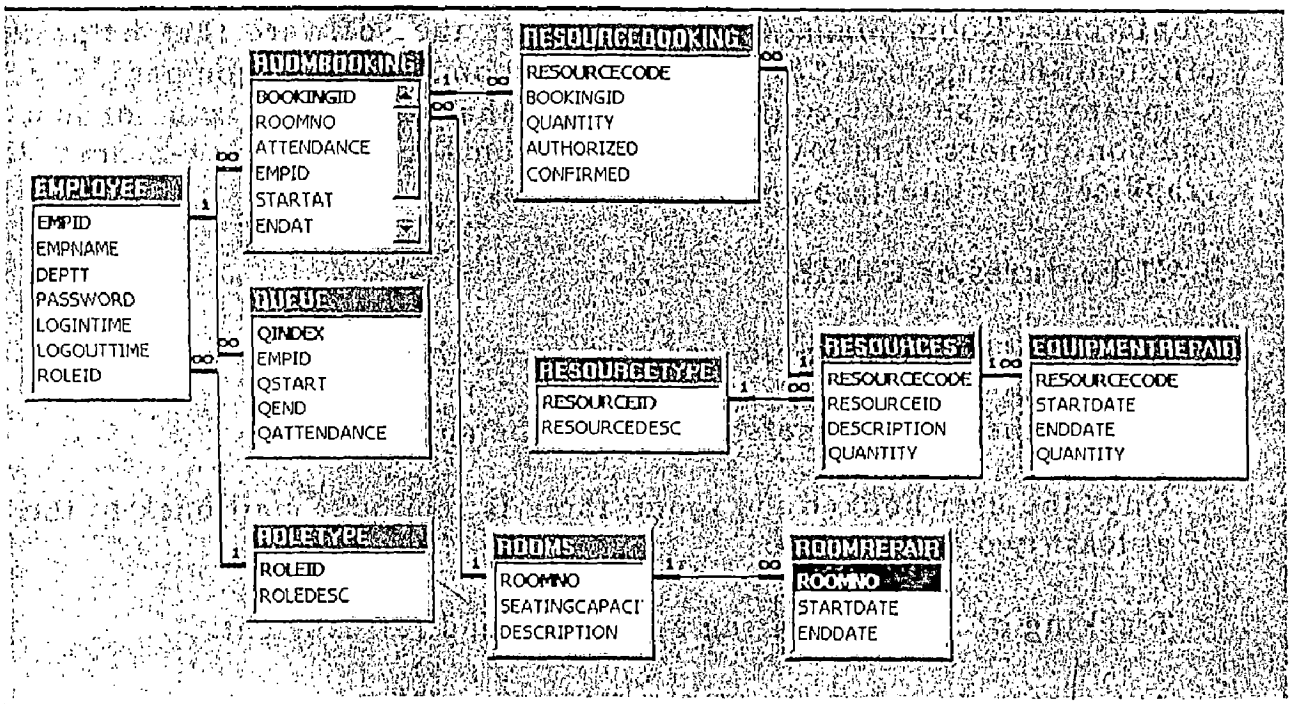

EMPLOYEE
EMPID
EMPNAME
DEPTT
PASSWORD
LOGINTIME
LOGOUTTIME
ROLEID
ROOMBOOKING
BOOKINGID
ROOMNO
ATTENDANCE
EMPID
STARTAT
ENDAT
QUEUE
QINDEX
EMPID
QSTART
QEND
QATTENDANCE
ROLETYPE
ROLEID
ROLEDESC
RESOURCEBOOKING
RESOURCECODE
BOOKINGID
QUANTITY
AUTHORIZED
CONFIRMED
RESOURCETYPE
RESOURCEID
RESOURCEDESC
ROOMS
ROOMNO
SEATINGCAPACI
DESCRIPTION
RESOURCES
RESOURCECODE
RESOURCEID
DESCRIPTION
QUANTITY
EQUIPMENTREPAID
RESOURCECODE
STARTDATE
ENDDATE
QUANTITY
ROOMREPAIR
ROOMNO
STARTDATE
ENDDATE

Fig. 3.3.2

## 3.4 System Description

Conference Room Management System is the software that helps in the efficient management of conference rooms at the company's office. Company has several conference rooms that can be utilized for meetings and conferences. Employees can book rooms in the slots of ½ hour. It has graphical user interface and is user friendly.

### 3.4.1 Features of CRMS

- From any location employees can access the application.
- Only authenticated users can access the application.
- Once the user booked the room, there is reminder mail back to the user at least two days before.
- Tracking of status of hiring equipment and refreshment.
- Automatic generation of reports for efficient communication of information to services department.
- Master data are already with the HR department be directly put into system without requiring user to reenter all the data over and again.
- Rooms can be booked in the slots of half-an-hour only, between 9am to 9pm.
- Booking can be done for the next fifteen days only.
- Only the HOD of the User's department can authorize Hired Equipment booked by him.

### 3.4.2 Conference Room Management System

**CRMS:** The Conference Room Management System is a system primarily meant for the efficient management of the conference rooms of an organization.

For calling a meeting or a conference the User (the End User) has to make a booking of a Conference Room in advance, along with the requirements of the equipment which may either be available within the organization (the Regular Equipment) or are required to be hired from outside (the Hired Equipment) and the Refreshments.

Among all the users, which interact with the system, their roles can be identified among one of the following:

1. **End User:** This is the user which makes use of the services of CRMS for booking, cancellation, modification of booking etc.

   RoleID:"U"

2. **Administrator:** This user is responsible for the management of the CRMS by

   - Identifying the valid users of the system -by supplying User's data.
   - Providing the list of available Conference Rooms.
   - Providing the list of equipment and refreshment available for booking.

   RoleID:"A"

3. **Back Office:** This user provides the services to the End User by

   - Making the booked items available during the booking
   - Interacting with the Vendors for arranging Hired Equipment and Refreshment

   RoleID:"B"

4. **HOD (Head of Department):** They have to interact with the system to confirm the authorization-status of the Hired Items required by the respective End Users of their Department.

   RoleID:"H"

The CRMS provides a GUI for each of the categories of the users identified above.

For End User, it provides the facilities of Room Booking (in the slots of Half an hour) , Cancellation or Modification of a booking. It also gives the reports relating to the availability of a Conference Room on particular day or time-slot or status of all rooms during a slot etc.

For Administrator, it provides the GUI to add/delete/update User's Data , Conference Room's Data , Equipment or Refreshment Data.

For Back Office, it gives the reports relating to the Orders and a GUI to change the Confirmation status of any Equipment or Refreshment-as per the availability.

For HOD, it provides the screen to change the Authorization Status of Hired Items of a particular booking by entering the BookingID .

**User**

**New Booking**

Click on the Booking Menu Item. The New Booking Form will appear on the Screen. There we can choose the Date of the Booking. A New Booking can be done for a Period of NEXT 15 DAYS only. The time slot for the conference room booking can be chosen from the Time Period from the "From Time" and "To Time" combo-boxes. The Booking can be done between 9 a.m. to 9 p.m. (the working hours in a day). The Booking can be done in the slots, which are multiples of half-an-hour. A Booking can span over more than one slot. Time slots are Optional, i.e. if you want to do booking after viewing the suitable empty slot, just keep time slot fields empty. You have to enter the Minimum Seating-Capacity of the room Required by you. On clicking the Next Button to check the Room No and Time Slot allotted to you on the Next Form. In case you don't get the Room-Booking on the Required slot, modification options will come.

Modify your booking's time slot after viewing the room-availability details from the room-data displaying grid. Enter into waiting list. You can keep the time slot same. You may get the booking, if any room with appropriate seating capacity will get it's booking cancelled on the slots corresponding to your booking. If you get booking, click on the Next Button, to get the Equipment and Refreshment booked for your booking. Now, you will reach on the Book Regular Equipment form. On Book Regular Equipment form, the user's shown the list of Equipments, which

are available within the organization, i.e. the regular equipment. User has to choose equipment from the list shown on right hand side. He has to select the equipment from the list and to include it into the Booking, he has to click on the Next Button. The default value of quantity will be "One". If user wants to modify the quantity, he can change it through the text-box given below the lists, by entering the required quantity in the box and then clicking on the Change Button. Now the user can book the Hired Equipment by clicking on the Next Button. He will get a list similar to the Regular Equipment's list. The booking process is similar to that of the Regular Equipment's Booking. The difference being that there's no list of available quantity. Now, the user can opt for the booking of Refreshment, by clicking on the Next Button. The process is similar to that of booking of Hired Equipment. The User can now make his booking final by clicking on the Book Now Button. This will show him a message box, containing the brief booking information, and a BookingID. This number (similar to PNR in railways)will be used in future as reference to that booking for any Rescheduling and/or Modification and HOD's authorizations .

For getting the Hired Item(i.e. The Hired Equipment and Refreshments), the user has to take the HOD's Authorization, from the HOD of his own department. Although the HOD can see all the BookingID's of the employees of his own department (on opening the HOD's Authorization form), it is strongly recommended to inform the HOD about the Booking by specifying him the BookingID for getting the Authorization, because all the bookings, with any of the items with Authorization as "No" will be deleted, after One day, of day, on which the booking was made.

### Reschedule/Modify a Booking

Modify/Reschedule Booking's when clicked on the menu opens the rescheduling form. To reschedule the booking you have to select the bookingID provided on your booking made earlier, by selecting it, it will fill the form from the database to be modified. From here you can modify/reschedule the booking or make new arrangements for the Regular Equipments and/or Hired Equipments and/or Refreshments.

### Inquire about a Booking

It is the same form that appears for the modification/rescheduling but the features are now disabled for any changes to be made and the information about the booking regarding room number, seating capacity, refreshments, etc.

### Cancle a Booking

On clicking the cancellation menu the relevant form appears and by selecting the bookingID the reservation for the conference room can be cancelled. There are two options available for the cancellation purpose one is the cancellation for the confirmed booking and other one is for the waiting list booking. On canceling the slot is made empty or occupied by the next booking in the queue.

### Change Password

On clicking this menu option the form for changing the password appears, this is for changing the password of the all the users. When a new user is created by the Administrator the employee number obtained by the user becomes its default password, which it can change by using this form. And for the security purpose it can be used frequently.

### Administrator

### Update the User's Database

### Add a New User

Clicking the Add New in the Administrator's menu Add Users form will be opened, with the option Add as selected. Enter the required information in the corresponding fields. EmployeeID, This field should be a Number. Employee Name, maximum size of this field is 20 characters. Department, maximum size of this field is 4 character. RoleID, this can be chosen from a combo-box, from either of the 4 choices-A/U/B/H. Now click on the Add New Button, to enter the user in the database.

### Modify an Existing User

To modify an already existing user click on the modify user menu and the relevant form will be opened where the modifications can be made. The process of modifying an employee is similar to that of "Add New". Difference being that now the Administrator has to choose the EmployeeID from a combo-box. All the information will be displayed in the corresponding fields. The Administrator can edit any field as required

and then by clicking on the Modify Button, the information of the employee will be modified and saved in the database.

**Update the Rooms Database**

You can add a new room or modify an already existing room by clicking the update rooms menu. There are two options for this menu one for adding new room and the other one is for modifying the existing room. On clicking the required one the database can be updated.

**Update the Resources**

You can add new resources or modify already existing resources by clicking the update resources menu. There are three options for this menu one for adding the Regular Equipments which again has two options one for adding and another for modifying, second one is for the Hired Equipments and the third one is for the Refreshments. On clicking the required one the database can be updated.

Update Regular Equipment: From here you can add/delete/reserve/modify for the Regular Equipments.

Update the Hired Equipment: From here you can add/delete/reserve for the Hired Equipments.

Update the Refreshment: From here you can add/delete/reserve for the Refreshments.

**Back-Office**

**Back-Office Confirmation**

Clicking on Back-Office's Confirmation Process menu item. It'll open the Back-Office Confirmation Form. The Back-Office will see the two lists on the screen, one corresponding to the Refreshments and other for the Hired Equipment. The list will be displaying BookingID, Item Code, Item Description, Booking Date, Room No. of the Booking, Start Time and End Time of the Booking, the Quantity required of the Item and the Confirmation status of the item-this is the only field which the Back-Office User can change. If there're no requirement of the hired items (Equipments and the Refreshments) for next two days, it'll be informed to the user through the message boxes on the opening of the form. It's also possible that the bookings are made, but these are not authorized by the HOD of the User's department.

The Back-Office can change the Confirmation Status: Yes/No (i.e. whether the required item will be available during the time of the meeting or not) by, First selecting and then double clicking on the data-grid display or through the combo-box, by clicking on the required confirmation status-value.

**HOD**

**Authorization Process**

For any booking involving Hired Items, i.e. the Hired Equipment and the Refreshments, the user is required to take the department's permission. This is to be done by the HOD of the user's own HOD, who will give the Authorization by changing the authorization status field of the Booking's Items. The Authorization Status can be Yes, The permission to book that items is granted. Not-Required, The permission to book that item is not granted. The item is not thought to be mandatory for the booking. No, The permission not given-for that particular item as well as for the booking. The booking will be cancelled, even if one item of the booking has Authorization status as "No". The booking will be cancelled after one day of the day, on which the booking was made, if the Authorization status remains as "No" for any item of that booking.

The Authorization Status for a booking can be changed as by clicking on the Authorization Process menu. This will open the HOD Authorization form. For the Authorization Process the HOD has to specify the particular BookinID. The HOD gets a choice on the screen of the BookingIDs in a combo-box. These BookingIDs are of the bookings made by the employee of the HOD's own department. Choose a BookingID from the list. All the details of the hired items of that booking will come in a data-grid display, which contains Code of the item required (RESOURCECODE), Description of the item HIRED EQUIPMENT/REFRESHMENT (RESOURCEDESC), the description of the equipment required (DESCRIPTION), quantity required (QUANTITY) and the present authorization status (AUTHORIZED). The Authorization status can be changed through selecting an item from the data-grid display. Double click on the data-grid, select the required status-value from the combo-box to change the authorization status to required value, of a single item. Select a particular status value from the combo-box, click the Change All Button, to change the authorization status of all the displayed items of the booking. The HOD can also change the required Quantity of the items, by editing the quantity field to any value. The HOD can only decrease the

Quantity-value. He can't increase the Quantity. If he does so, he will get an error message stating the "Required Quantity Value".

**Miscellaneous**

The other things are the various reports generated by the system regarding the information about the room booking, status of available rooms, history of the room etc.

Chapter 4

# SYSTEM CONFIGURATION REQUIREMENT

Following is the minimum requirement of the system required to run the CRMS:

## 4.1 Hardware Configuration

Minimum requirement
Processor: 260 MHZ.
RAM: 32 MB.
HDD Space: 2 MB.

## 4.2 Software Configuration

Operating System: MS-Windows-NT 4.00
Back End: MS-SQL 7.0
Others: Internet Explorer 5.0

Chapter 5

# CONFERENCE ROOM MANAGEMENT SYSTEM PROGRAMME SPECIFICATION

## 5.1 Splash Form

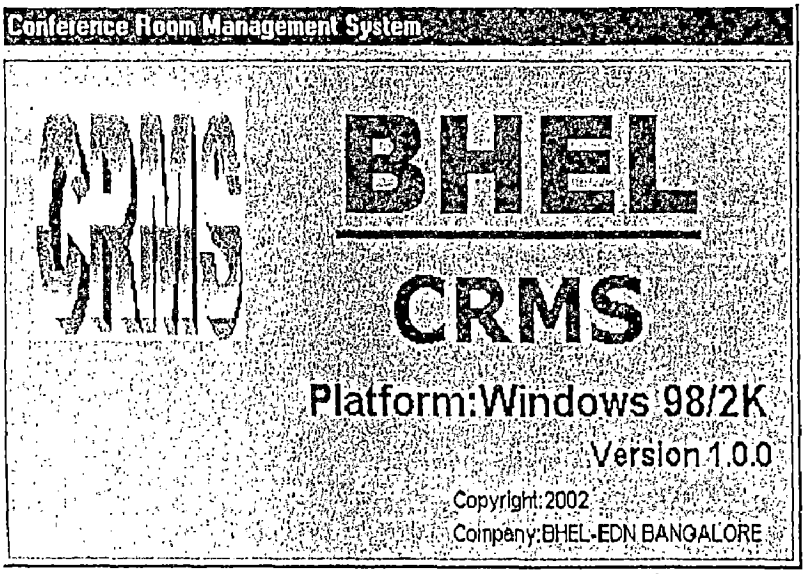



fig. 5.1.1

**INPUTS**

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : None. |
| Environment Variables | : None. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : None. |
| Reports | : None. |

**CALLED FORM** : None.

**CALLS** : LOGIN FORM.

**OVERVIEW** : This screen is the first screen to be displayed, when the user enters into the CRMS. This

| | |
|---|---|
| | gives the brief information about the product (name, company, platform). |
| VALIDATION | : None. |

## 5.2 Login Form

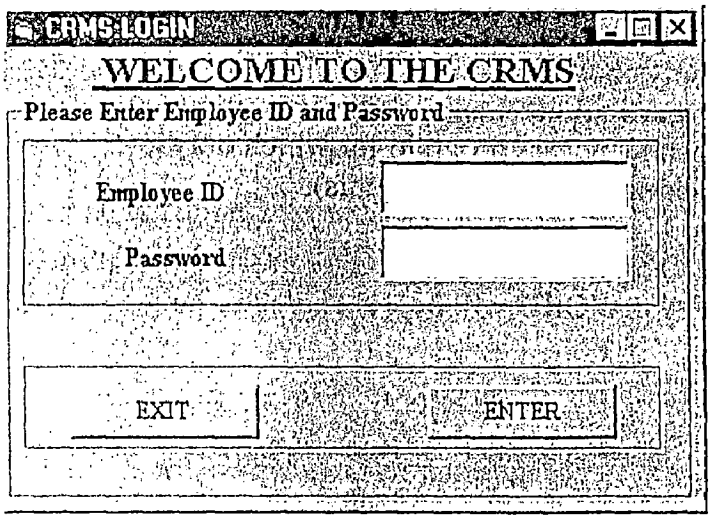



fig. 5.2.1

**INPUTS**

| | |
|---|---|
| Database Tables | : EMPLOYEE |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : EMPID<br>PASSWORD. |
| Environment Variables | : ROLEID<br>DEPTT. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : MENU. |
| Objects/Parameters | : ROLEID<br>DEPTT. |
| Reports | : None. |

**CALLED FORM** : STARTUP FORM.

**CALLS** : MENU.

**OVERVIEW** : The screen asks for LOGINID and PASWORD

And validates it using the EMPLOYEE table. A menu screen gets visible, the relevant options enabled depending on the ROLEID of the employee logged-in(i.e. an end user can only choose booking/ modification/ cancellation/ change password options and cannot access program for which only administrator has the rights).

**VALIDATION** : LOGINID will be an integer greater than zero. PASSWORD will be 4-8 character long.

## 5.3 Menu Form

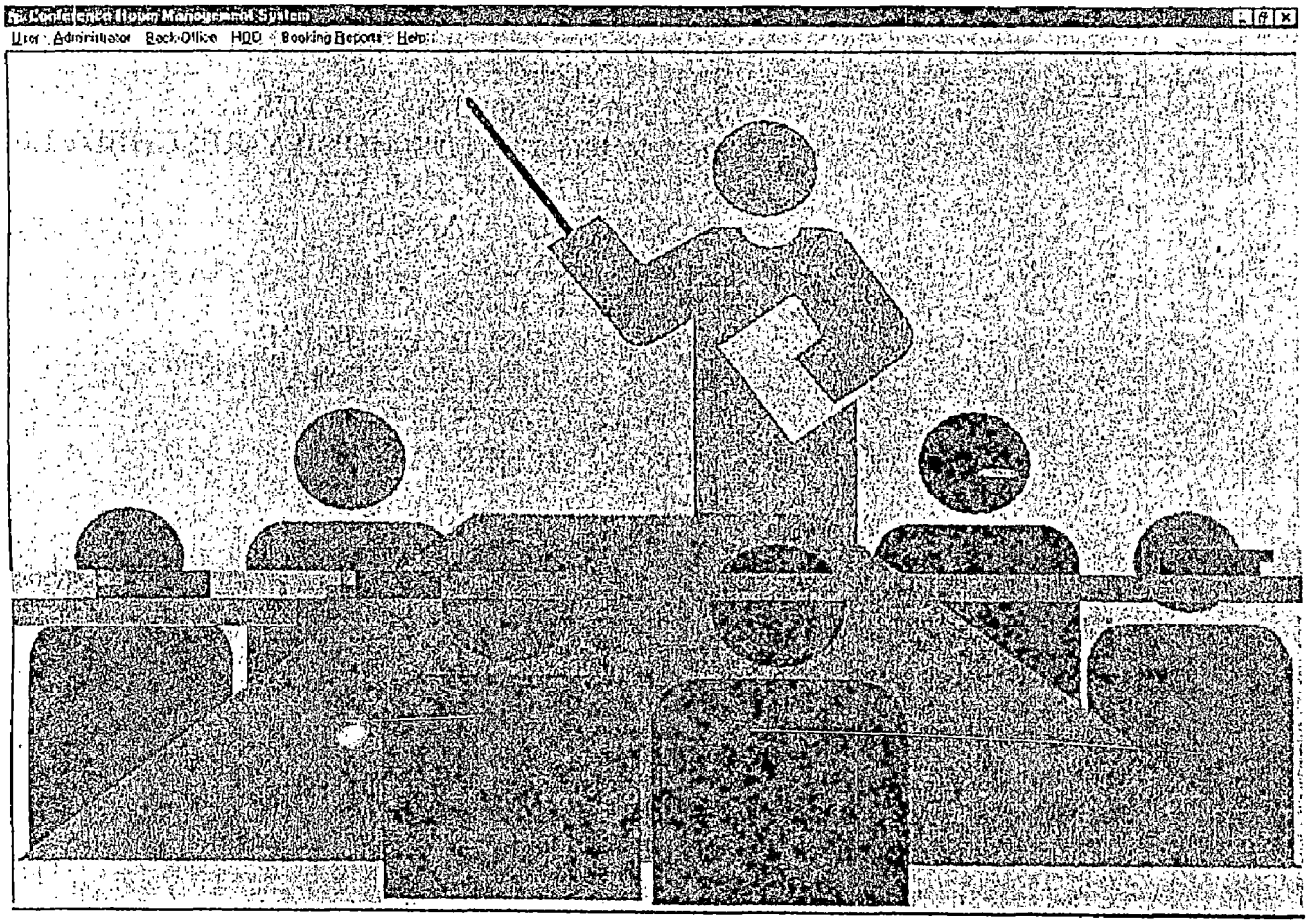



fig. 5.3.1

### INPUTS

| | |
|---|---|
| Database Tables | : EMPLOYEE |
| Files | : None. |
| Screens | : LOGIN. |
| Objects/Parameters | : None. |
| Environment Variables | : ROLEID. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : None. |

| | |
|---|---|
| Reports | : None. |
| **CALLED FORM** | : LOGIN FORM. |
| **CALLS** | : BOOKING FORM<br>INQUIRE BOOKING STATUS<br>BOOKING STATUS/MODIFY-RESCHEDULE<br>BOOKING CANCELLATION<br>PASSWORD CHANGE<br>UPDATE USERS<br>UPDATE ROOMS<br>ADMIN RESOURCE CHOICE<br>BACK-OFFICE CONFIRMATION<br>HOD AUTHORISATION<br>REPORT GENERATION<br>HELP<br>ABOUT HELP |
| **OVERVIEW** | : The screen displays the menu-bar, which will be enabled only after the user logins through LOGIN FORM. The menu-bar has menu items, which will be enabled depending upon the user-role. Then the user can navigate through the menu-items to use various CRMS facilities. |
| **VALIDATION** | : None. |

## 5.4 Back Office Confirmation Form

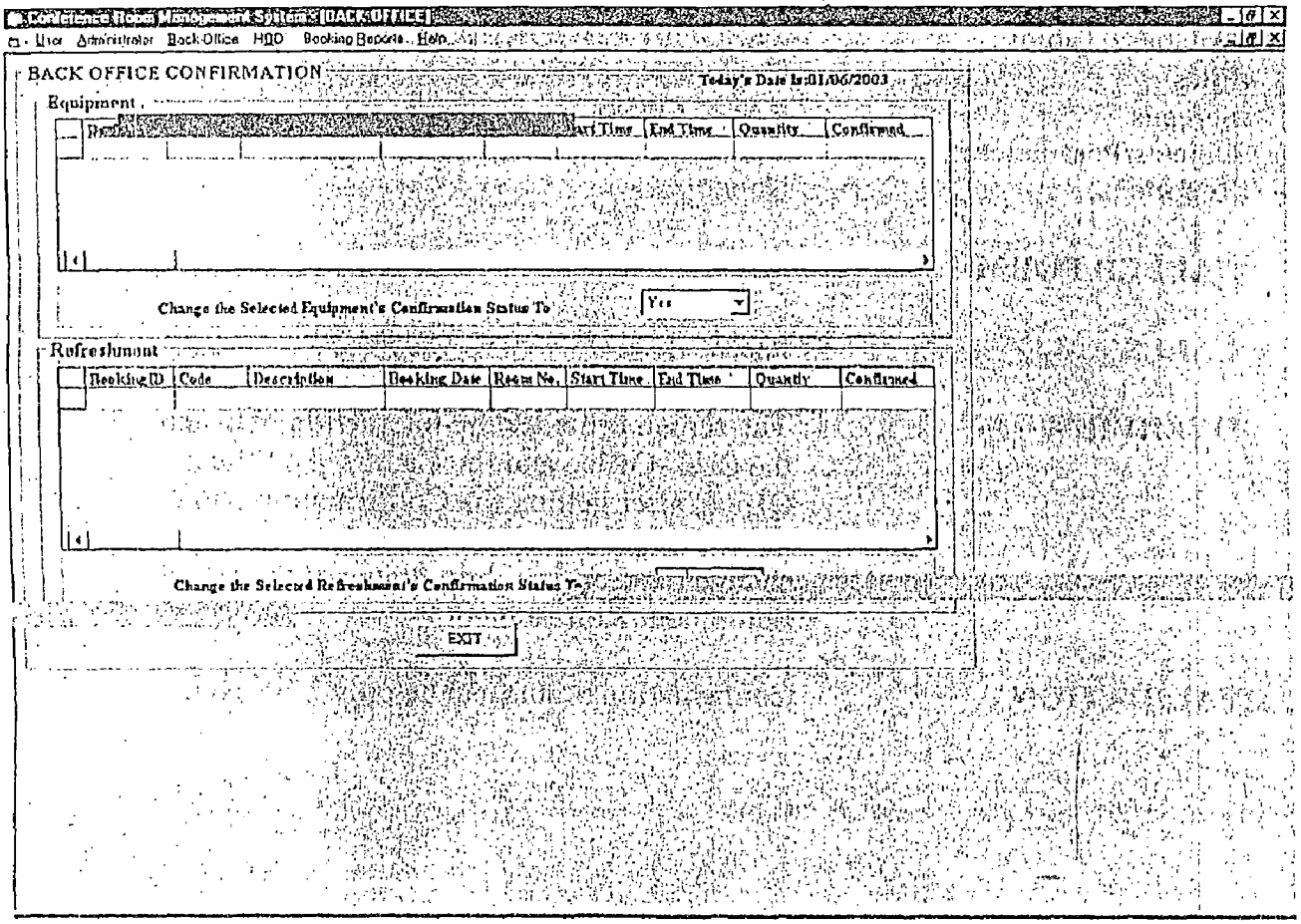



fig. 5.4.1

**INPUTS**

| | |
|---|---|
| Database Tables | : EMPLOYEE<br>RESOURCEBOOKING<br>ROOMBOOKING<br>RESOURCETYPE<br>RESOURCES |
| Files | : None. |
| Screens | : MENU. |
| Objects/Parameters | : HIREDEQUIPMENT<br>REFRESHMENT |
| Environment Variables | : ROLEID<br>DEPTT. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : RESOURCEBOOKING. |
| Files | : None. |
| Screens | : BACK OFFICE. |
| Objects/Parameters | : None. |
| Reports | : None. |

**CALLED FORM** : MENU.

**CALLS** : Itself.

**OVERVIEW** : The screen provides the interaction between the Back-Office and the CRMS. The Back-Office, after getting the Confirmation about the orders placed with the vendors, can change the Confirmation Status of the Hired Equipment/Refreshment.

**VALIDATION** : Confirmation Status can be only YES/NO.

## 5.5 HOD Authorization Form

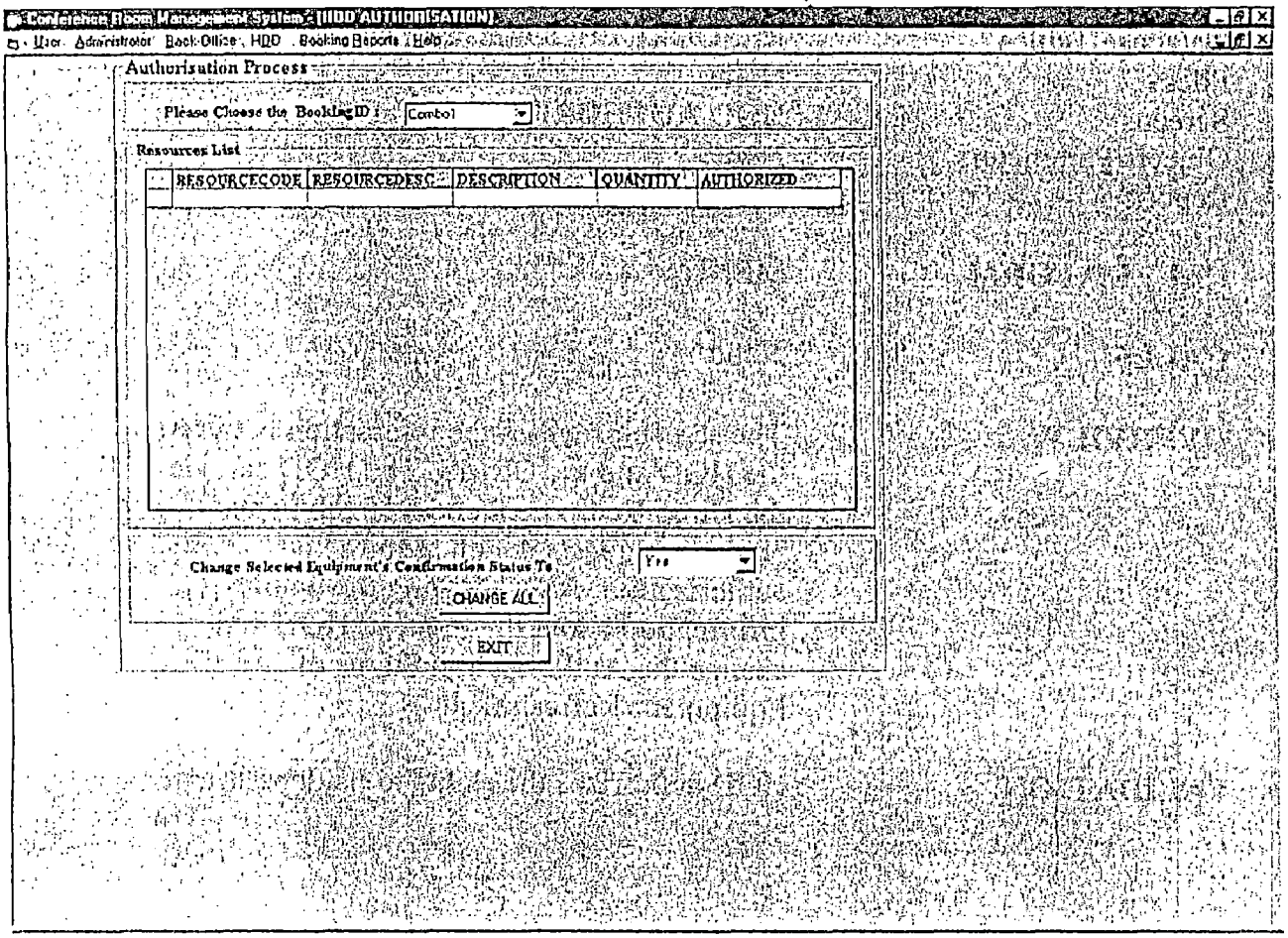



fig. 5.5.1

### INPUTS

| | |
|---|---|
| Database Tables | : EMPLOYEE<br>RESOURCEBOOKING<br>ROOMBOOKING<br>RESOURCETYPE<br>RESOURCES |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : BOOKINGID<br>AUTHORISATIONSTATUS |
| Environment Variables | : ROLEID<br>DEPTT. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : RESOURCEBOOKING. |
| Files | : None. |
| Screens | : HOD AUTHORISATION. |
| Objects/Parameters | : None. |
| Reports | : None. |

**CALLED FORM** : MENU.

**CALLS** : None.

**OVERVIEW** : The screen provides the interaction between the HOD and the CRMS. The HOD can view all the Hired Equipment and Refreshments' booking requests which require his authorisation. After viewing the whole information about the request, HOD can change the Authorisation Status of any Hired Equipment/Refreshment.

**VALIDATION** : HOD authorizes the rights to its department.

## 5.6 Booking Form

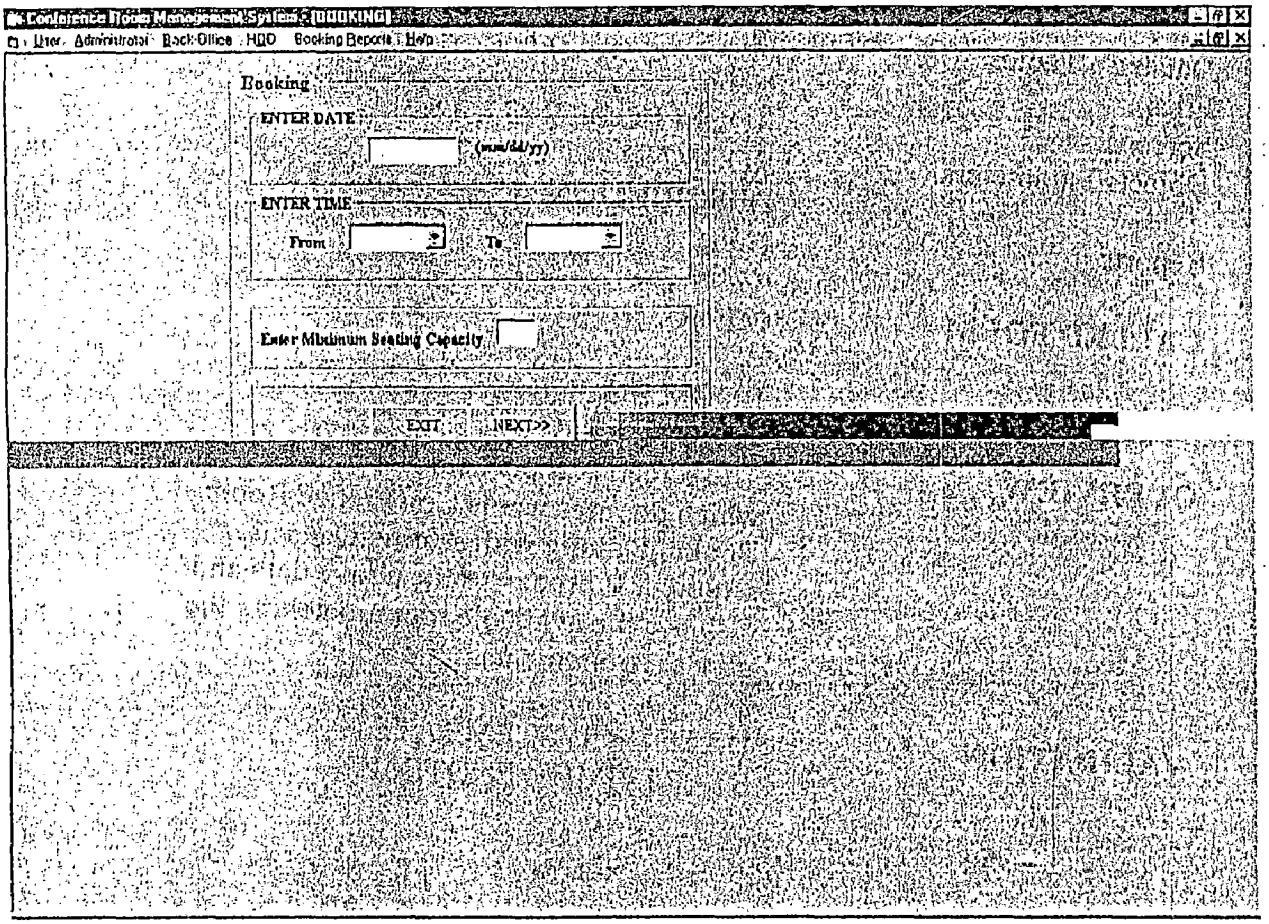



fig. 5.6.1

**INPUTS**

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : MENU. |
| Objects/Parameters | : DATE<br>STARTTIME<br>ENDTIME<br>SEATINGCAPACITY. |
| Environment Variables | : ROLEID<br>DEPTT. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : ROOM BOOKING. |
| Objects/Parameters | : ROOMNO<br>DESCRIPTION. |
| Reports | : None. |

**CALLED FORM** : MENU.

**CALLS** : ROOM BOOKING.

**OVERVIEW** : The screen accepts date and time slot for which the user wants Conference Room Booking, along with seating Capacity required. It processes the above data and displays the available room matching the user's requirements.

**VALIDATION** : DATE >= SYSTEMDATE
STARTTIME < ENDTIME

## 5.7 Room Booking Form

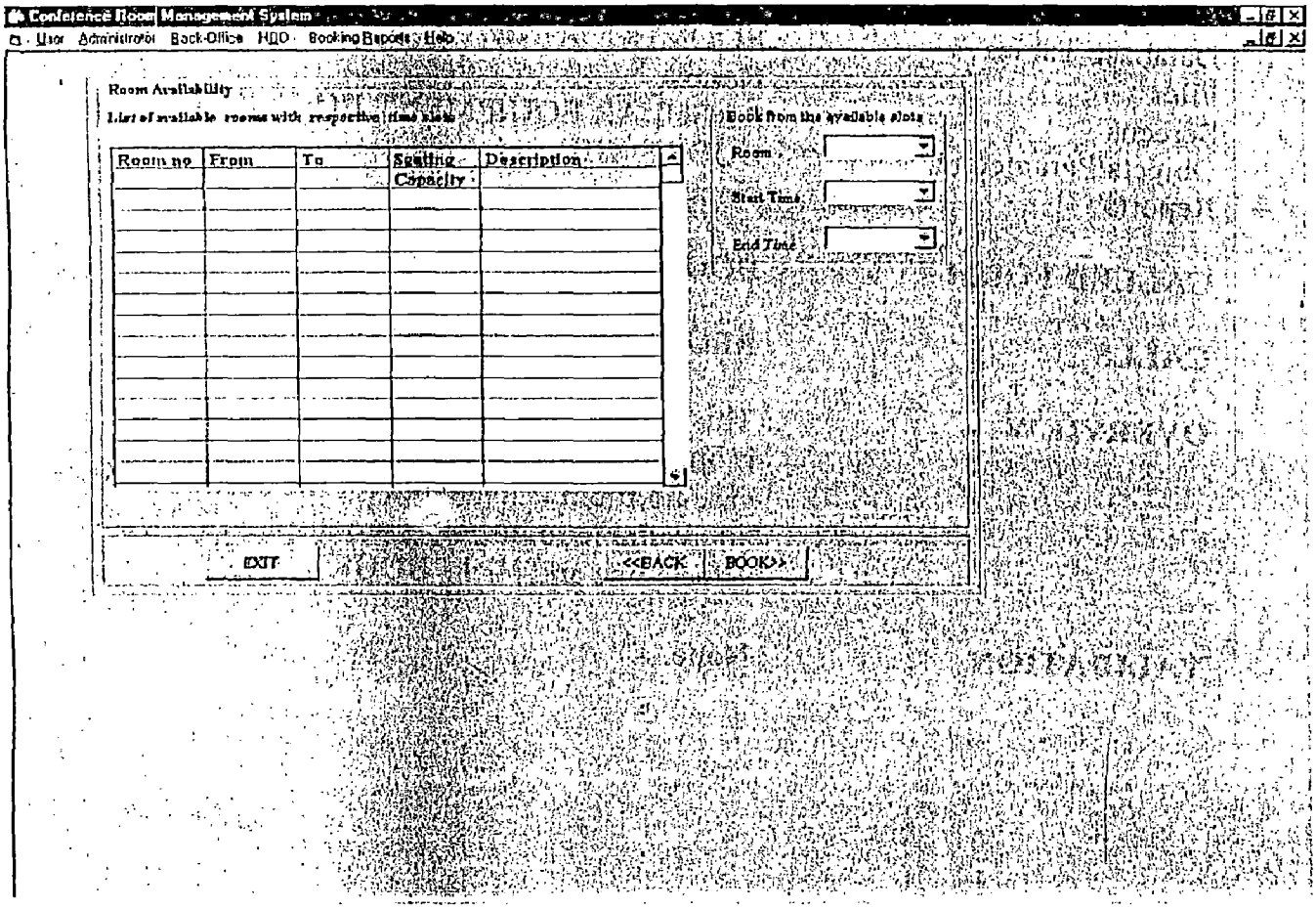



fig. 5.7.1

**INPUTS**

| | |
|---|---|
| Database Tables | : ROOM<br>ROOMREPAIR<br>ROOMBOOKING |
| Files | : None. |
| Screens | : BOOKING. |
| Objects/Parameters | : ROOMNO<br>DATE<br>STARTAT<br>ENDAT<br>SEATINGCAPACITY |
| Environment Variables | : None. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : ROOMBOOKING. |
| Files | : None. |
| Screens | : REGULAR EQUIPMENT BOOKING. |
| Objects/Parameters | : BOOKINGID. |
| Reports | : None. |

**CALLED FORM** : BOOKING.

**CALLS** : REGULAR EQUIPMENT BOOKING.

**OVERVIEW** : This screen displays the allocated conference room number with their brief description. In case no room is available for the desired slot, all available rooms/slots are displayed. User selects one and clicks BOOK.

**VALIDATION** : None.

## 5.8 Regular Equipment Booking Form

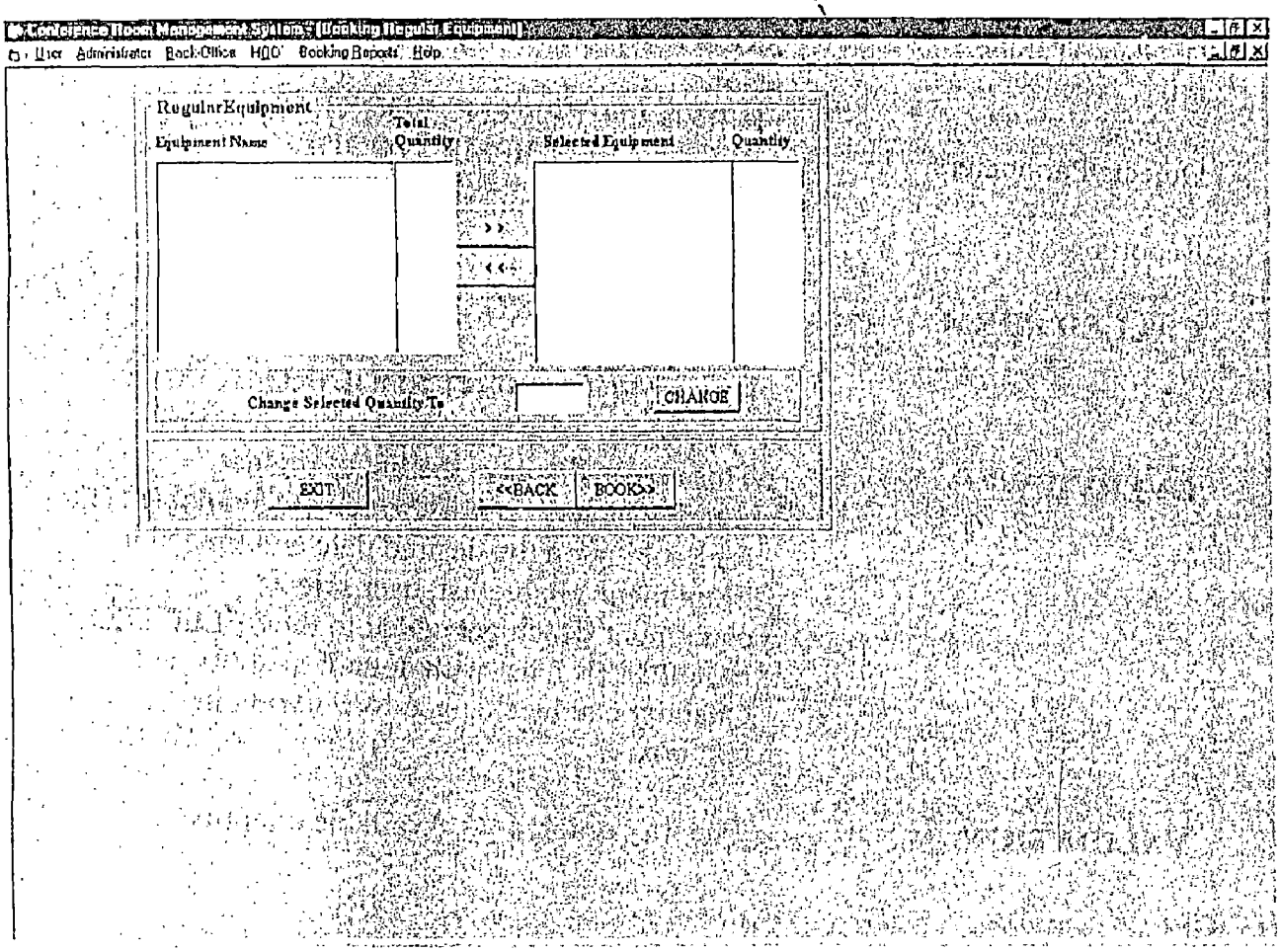



fig. 5.8.1

**INPUTS**

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>ROOMREPAIR<br>RESOURCEBOOKING<br>EQUIPMENTREPAIR |
| Files | : None. |
| Screens | : ROOM BOOKING. |
| Objects/Parameters | : BOOKINGID<br>DESCRIPTION<br>QUANTITY |
| Environment Variables | : None. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : RESOURCEBOOKING. |
| Files | : None. |
| Screens | : HIRED EQUIPMENT BOOKING. |
| Objects/Parameters | : REGULAREQUIPMENTCODE<br>QUANTITY |
| Reports | : None. |

**CALLED FORM** : ROOM BOOKING.

**CALLS** : HIRED EQUIPMENT BOOKING.

**OVERVIEW** : This screen displays the list of regular equipment and quantity which are available for booking on the desired date and time slot. From the available list, user selects equipment which get added to the SELECTED EQUIPMENT list with default quantity as 1. Quantity can be changed by entering in the text box.

**VALIDATION** : Quantity ordered <= Available quantity.

## 5.9 Hired Equipment Booking Form

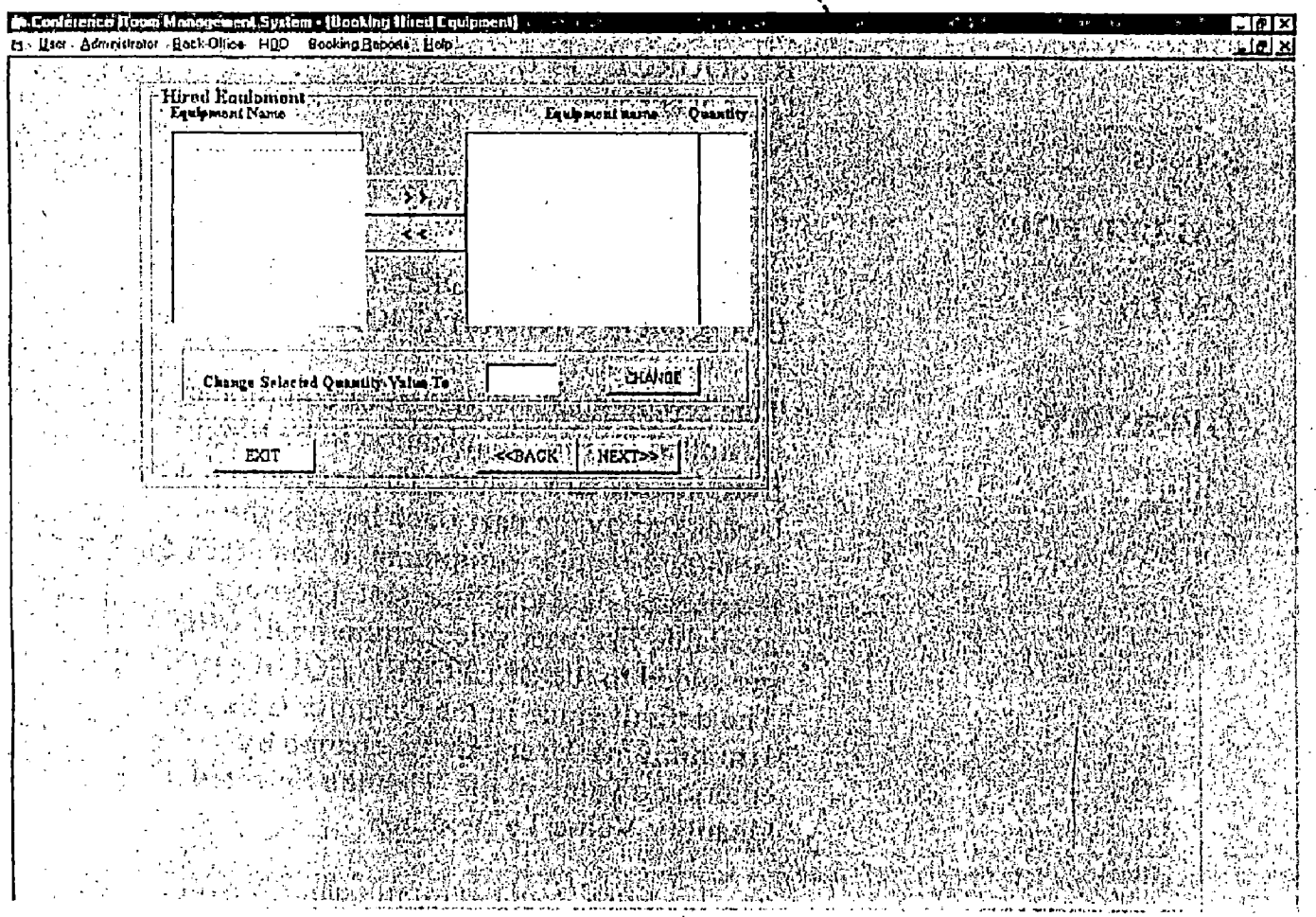



fig. 5.9.1

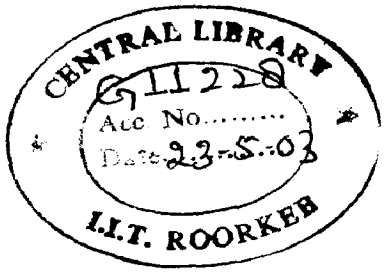
**INPUTS**

| | |
|---|---|
| Database Tables | : RESOURCES |
| Files | : None. |
| Screens | : REGULAR EQUIPMENT BOOKING. |
| Objects/Parameters | : DESCRIPTION. |
| Environment Variables | : None. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : RESOURCEBOOKING<br>ROOMBOOKING |
| Files | : None. |
| Screens | : REFERESHMENT BOOKING |

| | |
|---|---|
| | BOOKING CONFIRMATION |
| Objects/Parameters | : BOOKINGID<br>RESOURCECODE<br>RESOURCETYPE<br>QUANTITY |
| Reports | : None. |
| **CALLED FORM** | : REGULAR EQUIPMENT. |
| **CALLS** | : REFRESHMENT BOOKING<br>BOOKING CONFIRMATION |
| **OVERVIEW** | : This screen displays the list of equipment, permitted by the organization to be hired from identified vendors. These equipment can be booked by the user once he gets the room(and regular equipment, if required) for the desired date and time slot. From the available list, user select equipments which get added to the SELECTED EQUIPMENT list. The default value in the Quantity Column is 1(minimum). User can the change by entering a value in the 'Change Selected Quantity Value To' text box. |
| **VALIDATION** | : The quantity changed by the user(default is always 1), is a positive integer. |



## 5.10 Refereshment Booking Form

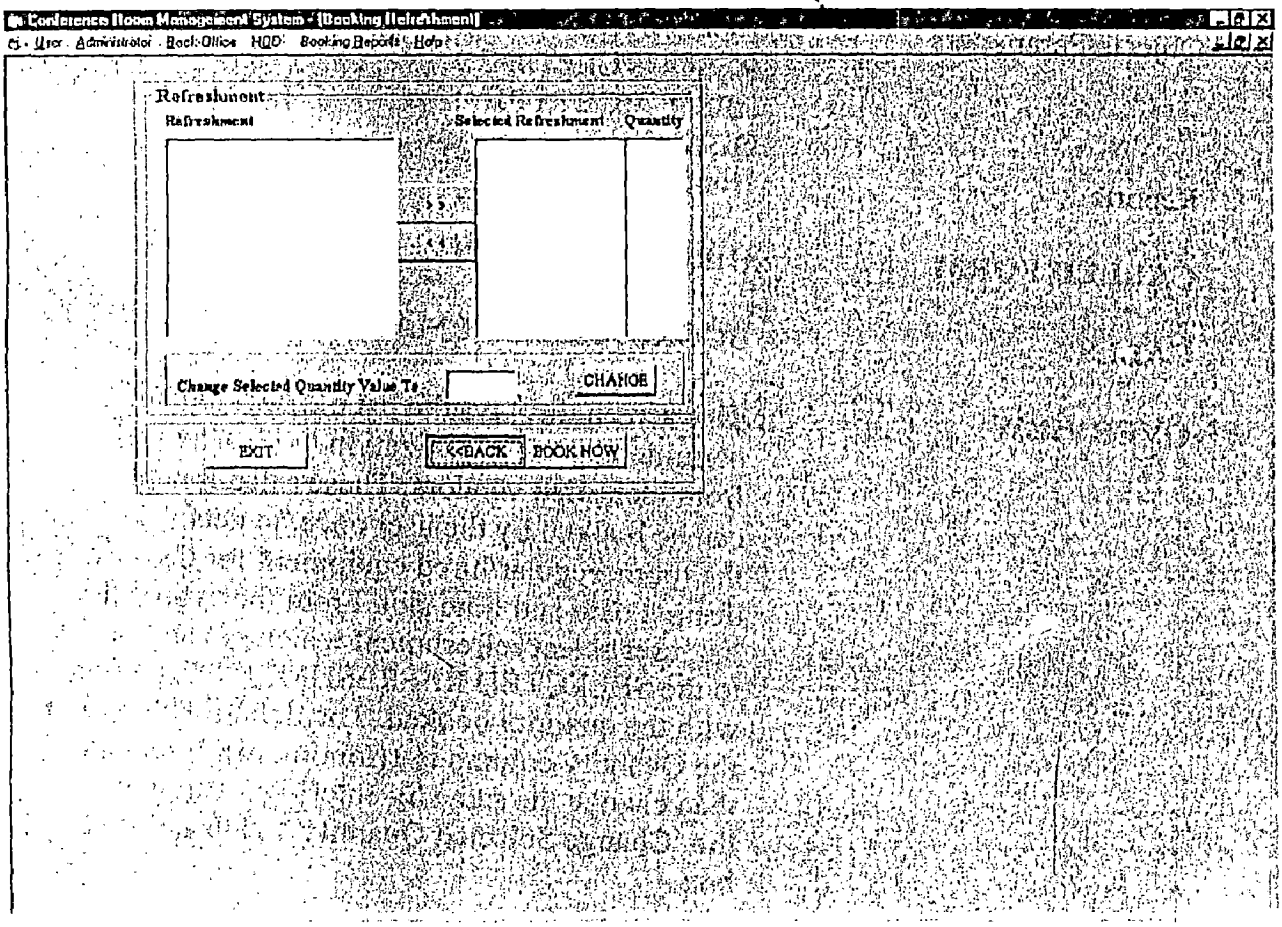



fig. 5.10.1

### INPUTS

| | |
|---|---|
| Database Tables | : RESOURCES<br>RESOURCETYPE |
| Files | : None. |
| Screens | : HIRED EQUIPMENT BOOKING. |
| Objects/Parameters | : DESCRIPTION<br>QUANTITY |
| Environment Variables | : None. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : RESOURCEBOOKING. |

| | |
|---|---|
| Files | : None. |
| Screens | : BOOKING CONFIRMATION. |
| Objects/Parameters | : BOOKINGID<br>RESOURCECODE<br>RESOURCETYPE<br>QUANTITY |
| Reports | : None. |
| **CALLED FORM** | : HIRED EQUIPMENT. |
| **CALLS** | : BOOKING CONFIRMATION. |
| **OVERVIEW** | : This screen displays the list of refreshment, permitted by the organization to be arranged from identified vendors. These refreshment can be booked by the user once he gets the room, regular/hired equipment for the desired date and time slot. From the available list, user select refreshment which get added to the SELECTED REFRESHMENT list along with the quantity booked. The default value in the Quantity column is 1(minimum). User can then change the same by entering a value in the 'Change Selected Quantity Value To' text box. |
| **VALIDATION** | : The quantity changed by the user(default is always 1), is a positive integer. |

## 5.11 Booking Confirmation Form

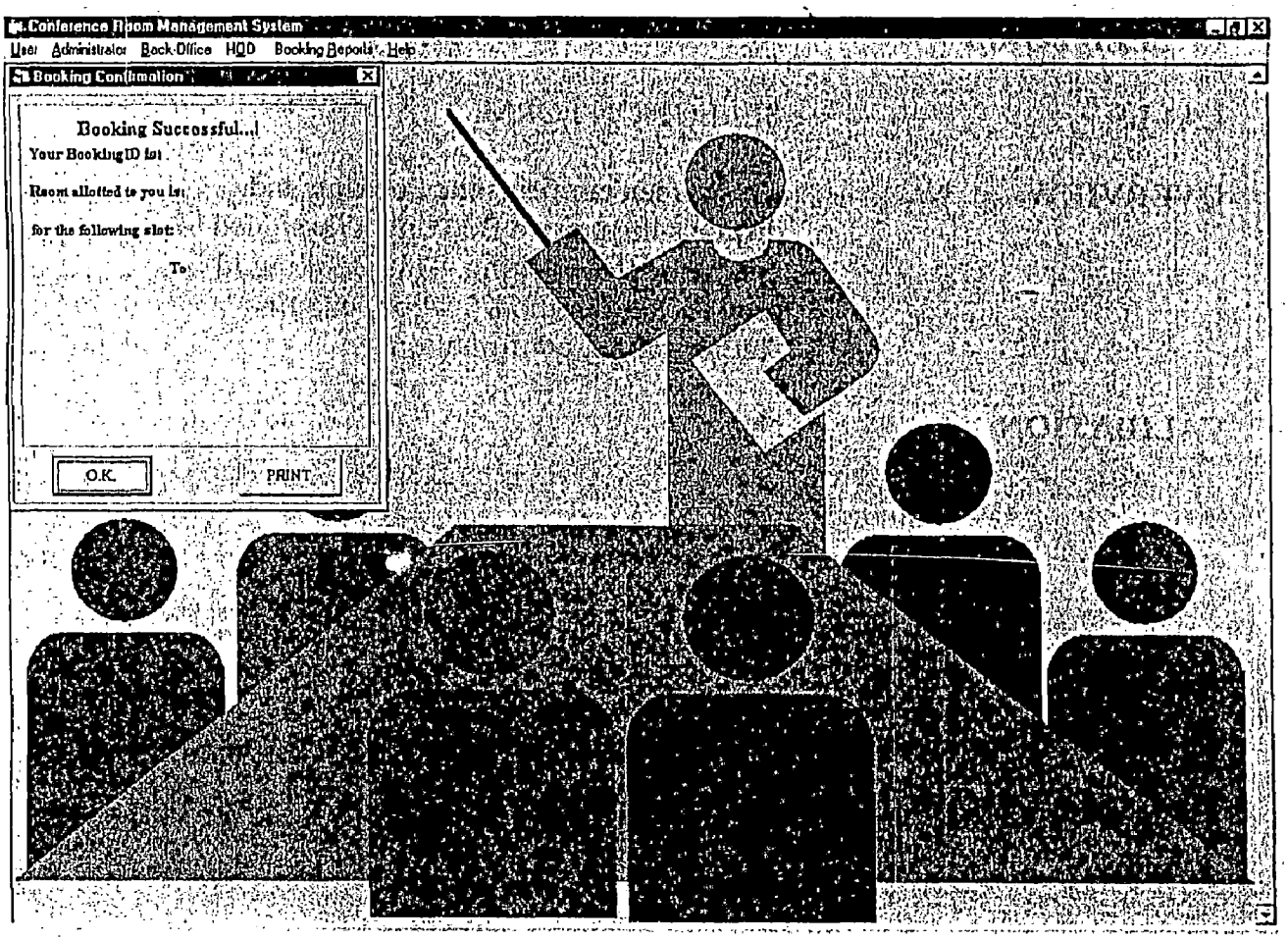



fig. 5.11.1

**INPUTS**

| | |
|---|---|
| Database Tables | : ROOMBOOKING |
| Files | : None. |
| Screens | : BOOKING. |
| Objects/Parameters | : BOOKINGID |
| Environment Variables | : None. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : None. |

| | |
|---|---|
| Reports | : None. |
| **CALLED FORM** | : REFRESHMENT BOOKING. |
| **CALLS** | : SELECTION FORM. |
| **OVERVIEW** | : This screen confirms the booking and displays the unique Booking id assigned to this particular booking. This Booking id is used for further modification, enquiry, Authorisation, confirmation. |
| **VALIDATION** | : None. |

## 5.12 Booking Cancellation Form

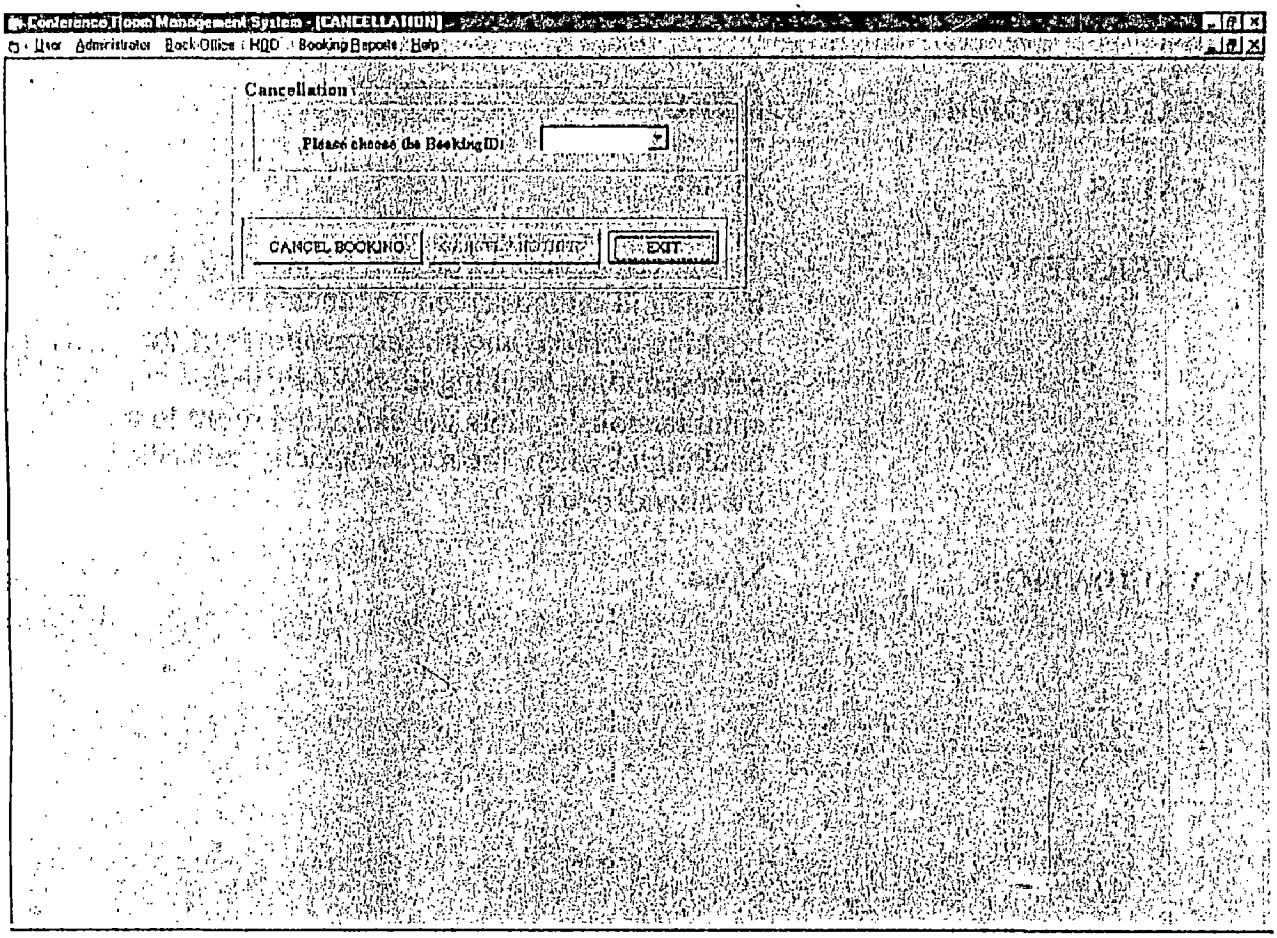



fig. 5.12.1

### INPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING |
| Files | : None. |
| Screens | : MENU. |
| Objects/Parameters | : BOOKINGID |
| Environment Variables | : EMPID. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>RESOURCEBOOKING |
| Files | : None. |

| | |
|---|---|
| Screens | : None. |
| Objects/Parameters | : None. |
| Reports | : None. |
| **CALLED FORM** | : MENU. |
| **CALLS** | : MENU. |
| **OVERVIEW** | : A user can cancel a booking by entering the booking id on the screen. It cancels the booking of room and all the resources of the corresponding booking id. SWAPPING simultaneously allots the cancelled room to a booking id where the room capacity exceeds the attendance by 3. |
| **VALIDATION** | : None. |

## 5.13 Booking Modification/Rescheduling Form

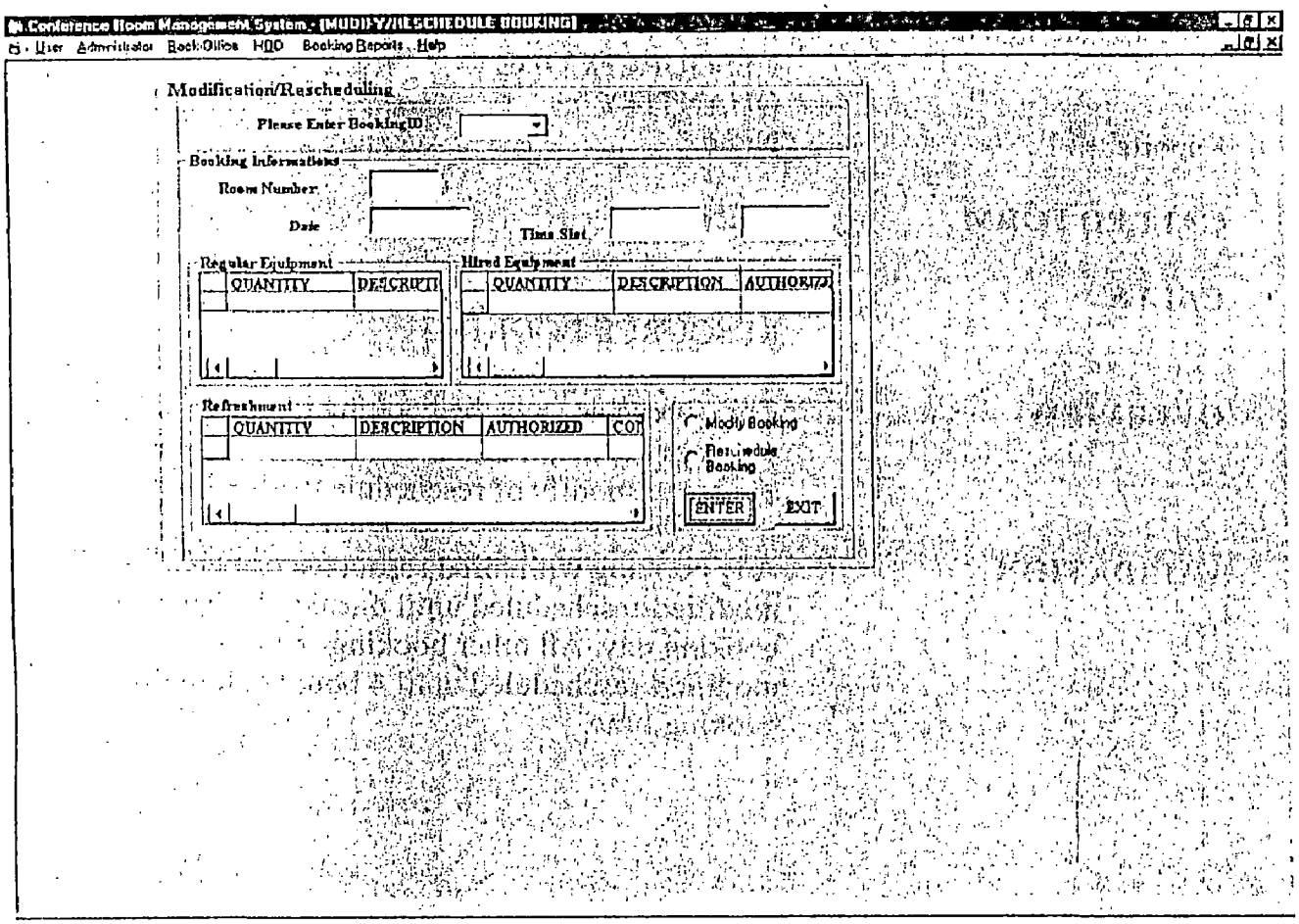



fig. 5.13.1

### INPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>RESOURCEBOOKING |
| Files | : None. |
| Screens | : MENU. |
| Objects/Parameters | : BOOKINGID |
| Environment Variables | : EMPID. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>RESOURCEBOOKING |
| Files | : None. |

| | |
|---|---|
| Screens | : ROOM BOOKING<br>RESOURCE BOOKING |
| Objects/Parameters | : ROOMNO<br>RESOURCECODE<br>QUANTITY |
| Reports | : None. |
| **CALLED FORM** | : MENU. |
| **CALLS** | : ROOM BOOKING<br>RESOURCE BOOKING |
| **OVERVIEW** | : This screen accepts the booking id and displays the detail of the booking. User can choose to modify or reschedule the booking. |
| **VALIDATION** | : Any booking with hired resources can be modified/rescheduled until one day before the booking day. All other bookings can be modified/rescheduled until 4 hours before the booking time. |

## 5.14 Booking Status Form

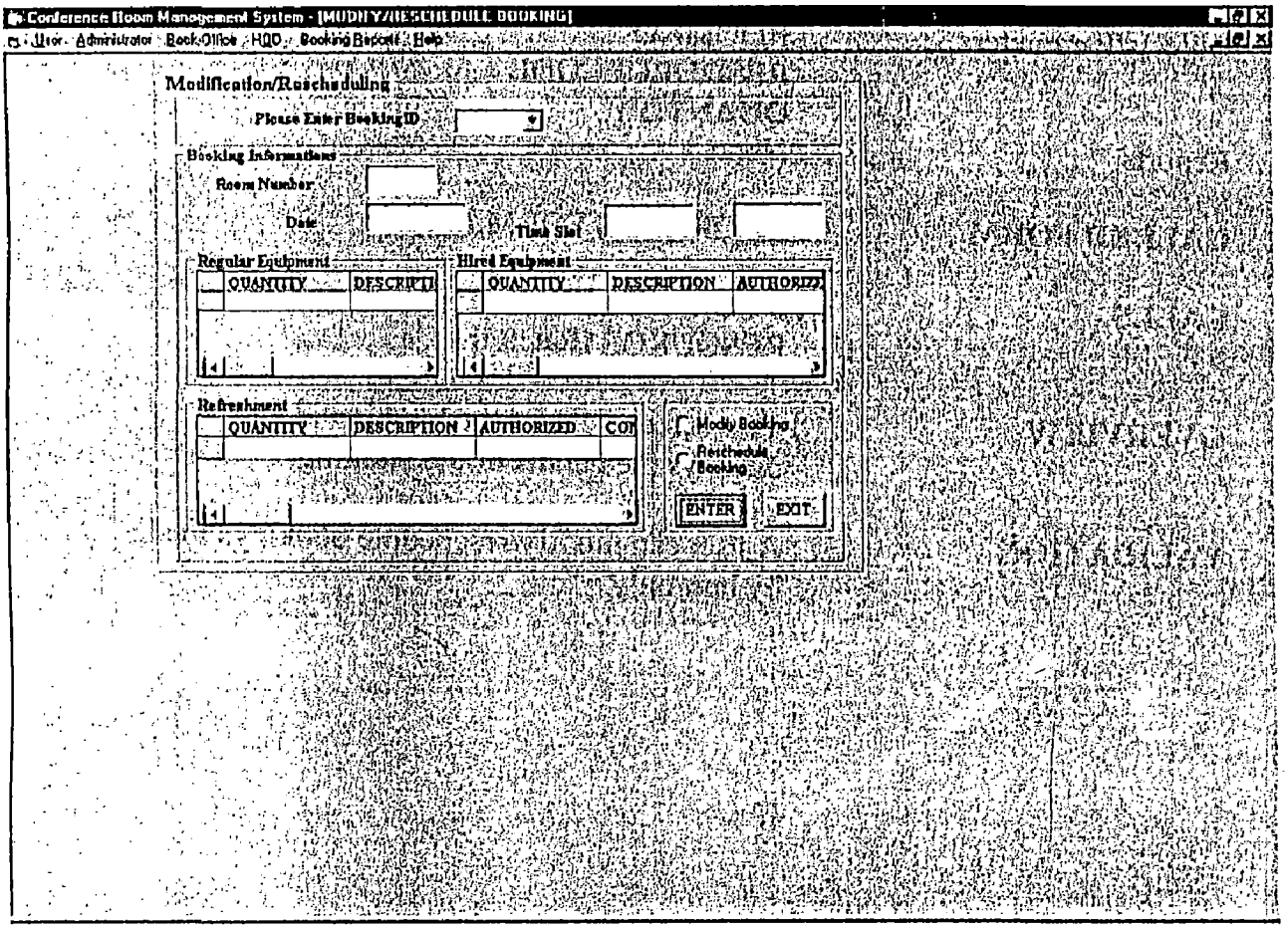



fig. 5.14.1

**INPUTS**

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>RESOURCEBOOKING |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : BOOKINGID |
| Environment Variables | : EMPID. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>RESOURCEBOOKING |

| | |
|---|---|
| Files | : None. |
| Screens | : ROOM BOOKING<br>RESOURCE BOOKING |
| Objects/Parameters | : ROOMNO<br>RESOURCECODE<br>QUANTITY |
| Reports | : None. |
| **CALLED FORM** | : SELECTION FORM. |
| **CALLS** | : ROOM BOOKING<br>RESOURCE BOOKING |
| **OVERVIEW** | : This screen accepts the booking id and displays the details of the booking. |
| **VALIDATION** | : A user can modify/reschedule bookings made by him only. |

## 5.15 Password Change Form

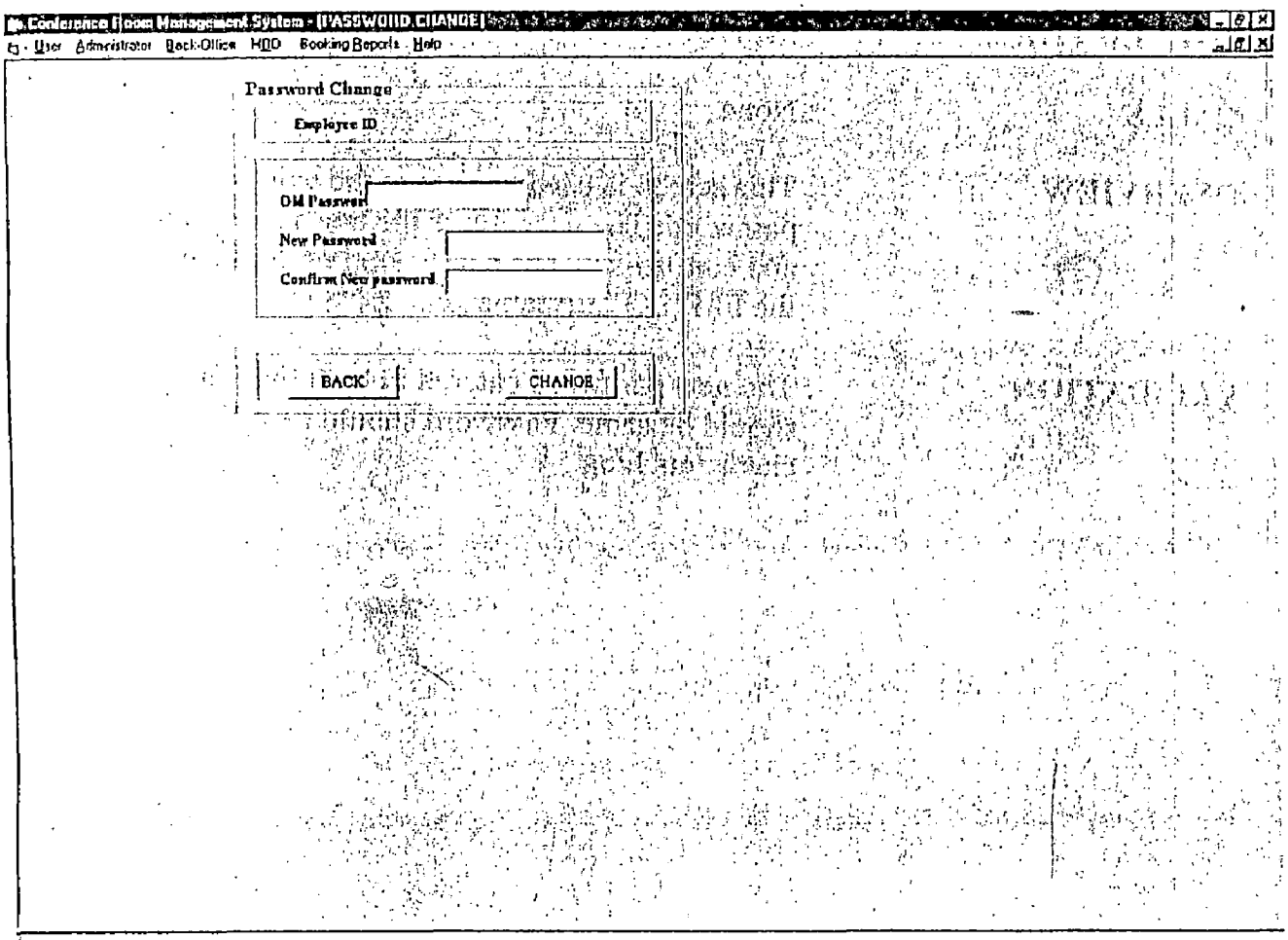



fig. 5.15.1

**INPUTS**

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : NEWPASSWORD. |
| Environment Variables | : EMPID. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : EMPLOYEE. |
| Files | : None. |
| Screens | : CONFIRMATION. |
| Objects/Parameters | : None. |

| | |
|---|---|
| Reports | : None. |
| **CALLED FORM** | : MENU. |
| **CALLS** | : None. |
| **OVERVIEW** | : This screen is used to change the existing password. The user enters the new password and confirms it. The corresponding tuple in the EMPLOYEE table gets updated. |
| **VALIDATION** | : The new password entered in both the fields should be same. Password should be 4-8 characters long. |

## 5.16 Report Input First Form

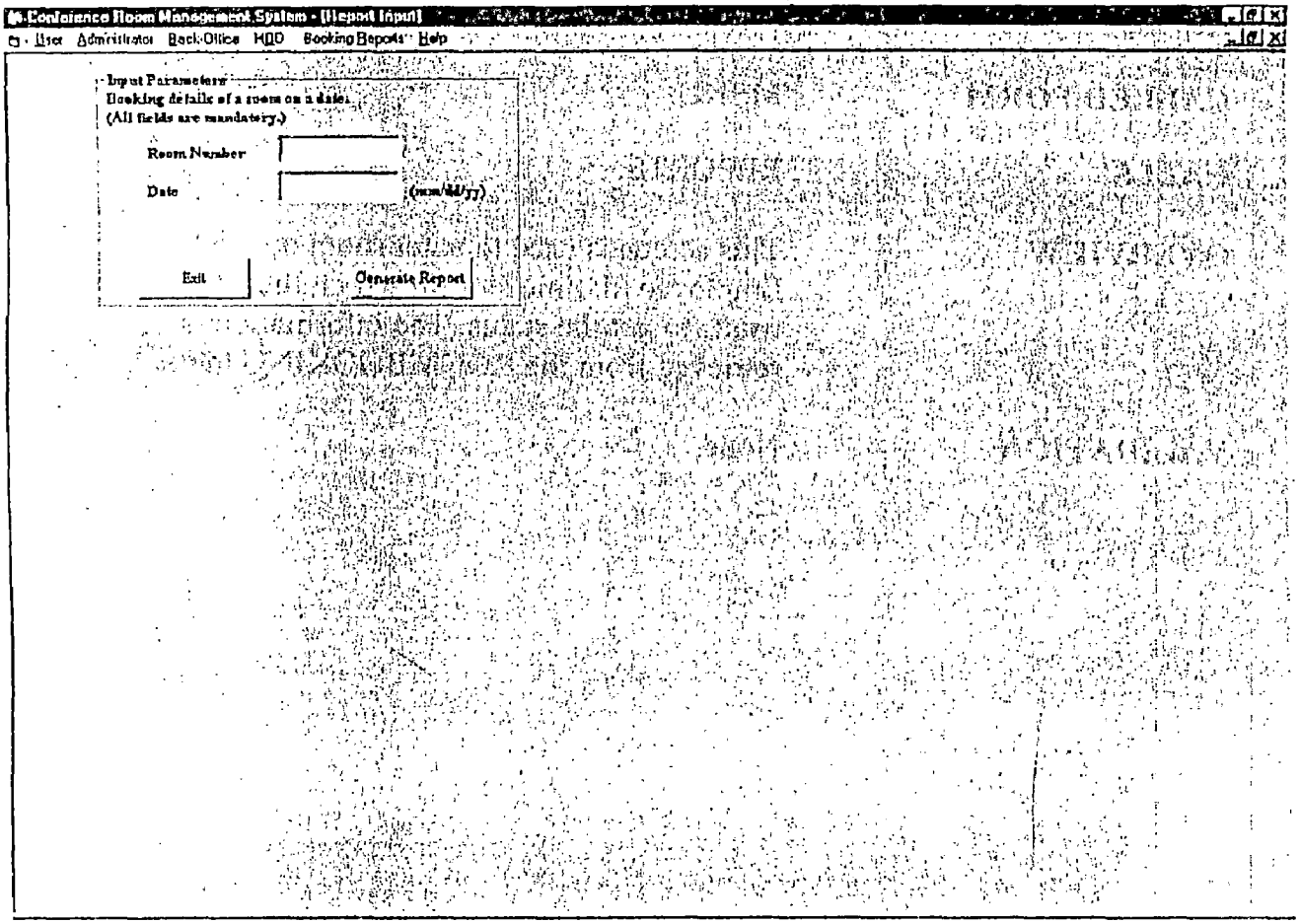



fig. 5.16.1

### INPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>RESOURCEBOOKING |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : ROOMNO<br>DATE |
| Environment Variables | : None. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |

| | |
|---|---|
| Screens | : None. |
| Objects/Parameters | : None. |
| Reports | : Various Booking. |
| **CALLED FORM** | : MENU. |
| **CALLS** | : REPORTS. |
| **OVERVIEW** | : This screen is used to enter room no., date, Employee id, time slot for which the user wants to get the status. The information is retrieved from the ROOMBOOKING table. |
| **VALIDATION** | : None. |

## 5.17 Report Input Second Form

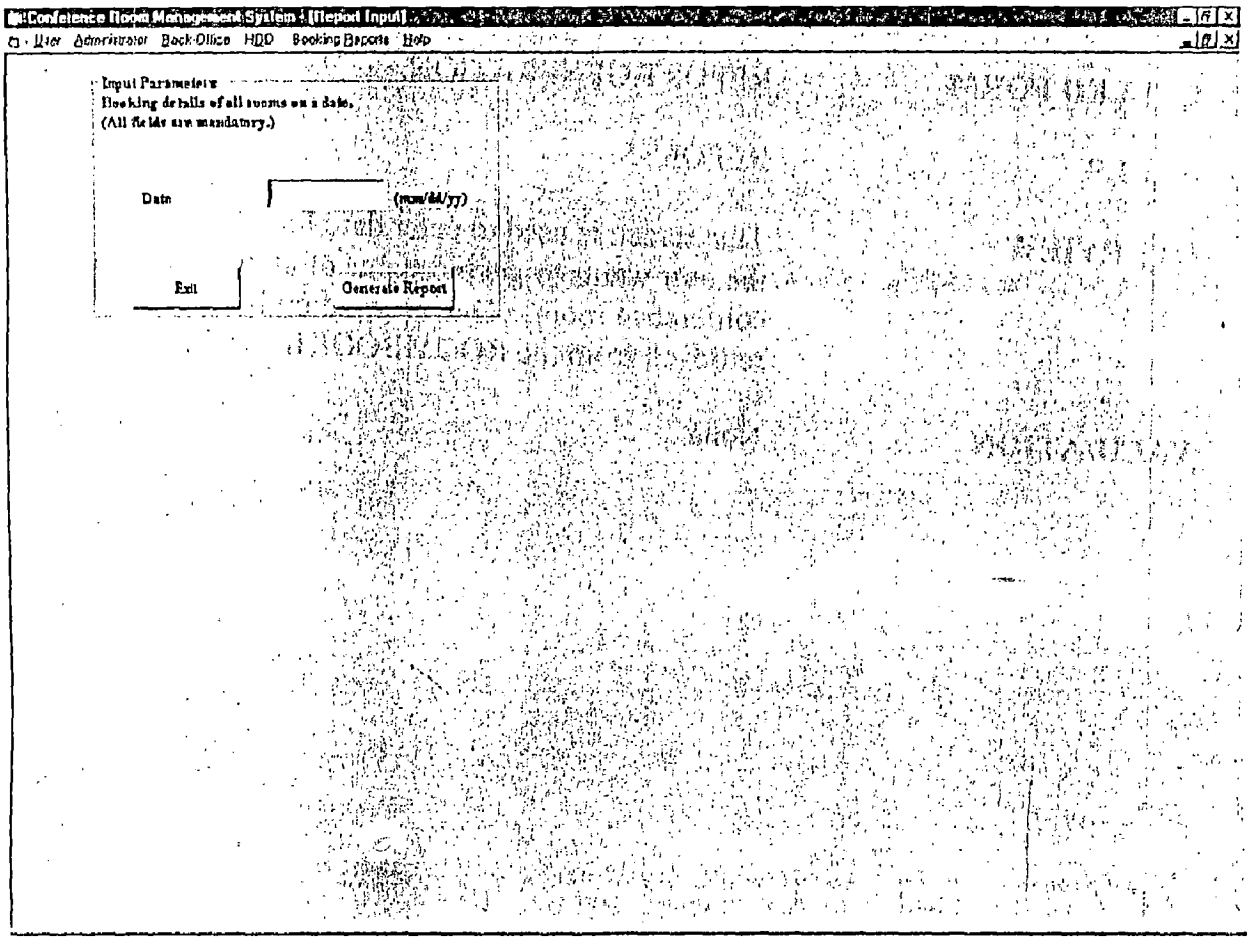



fig. 5.17.1

**INPUTS**

| | |
|---|---|
| Database Tables | : ROOMBOOKING |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : DATE |
| Environment Variables | : None. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : None. |

| | |
|---|---|
| Reports | : Booking status of all the conference rooms for a given date. |
| **CALLED FORM** | : REPORT GENERATION. |
| **CALLS** | : REPORTS. |
| **OVERVIEW** | : This screen is used to enter date for which the user wants to get the status of all the conference rooms. The information is retrieved from the ROOMBOOKING table. |
| **VALIDATION** | : None. |

## 5.18 Report Input Third Form

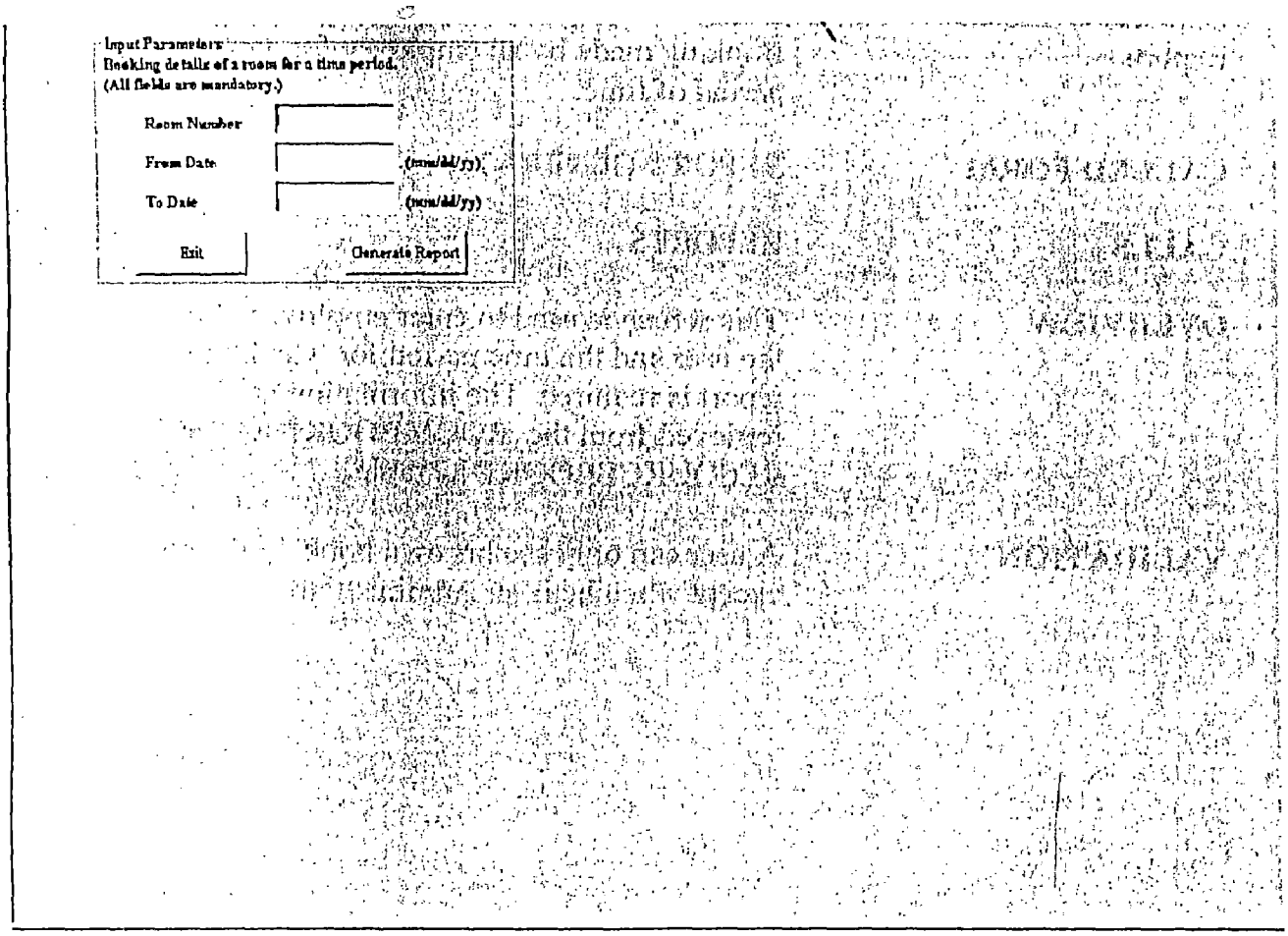



fig. 5.18.1

### INPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>RESOURCEBOOKING |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : EMPID<br>PERIOD |
| Environment Variables | : None. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |

| | |
|---|---|
| Screens | : None. |
| Objects/Parameters | : None. |
| Reports | : Booking made by an employee for a given period of time. |
| **CALLED FORM** | : REPORT GENERATION. |
| **CALLS** | : REPORTS. |
| **OVERVIEW** | : This screen is used to enter employee id of the user and the time period for which the report is required. The information is retrieved from the ROOMBOOKING and RESOURCEBOOKING table. |
| **VALIDATION** | : A user can only see his own booking details except when he is an Administrator. |

## 5.19 Report Input Fourth Form

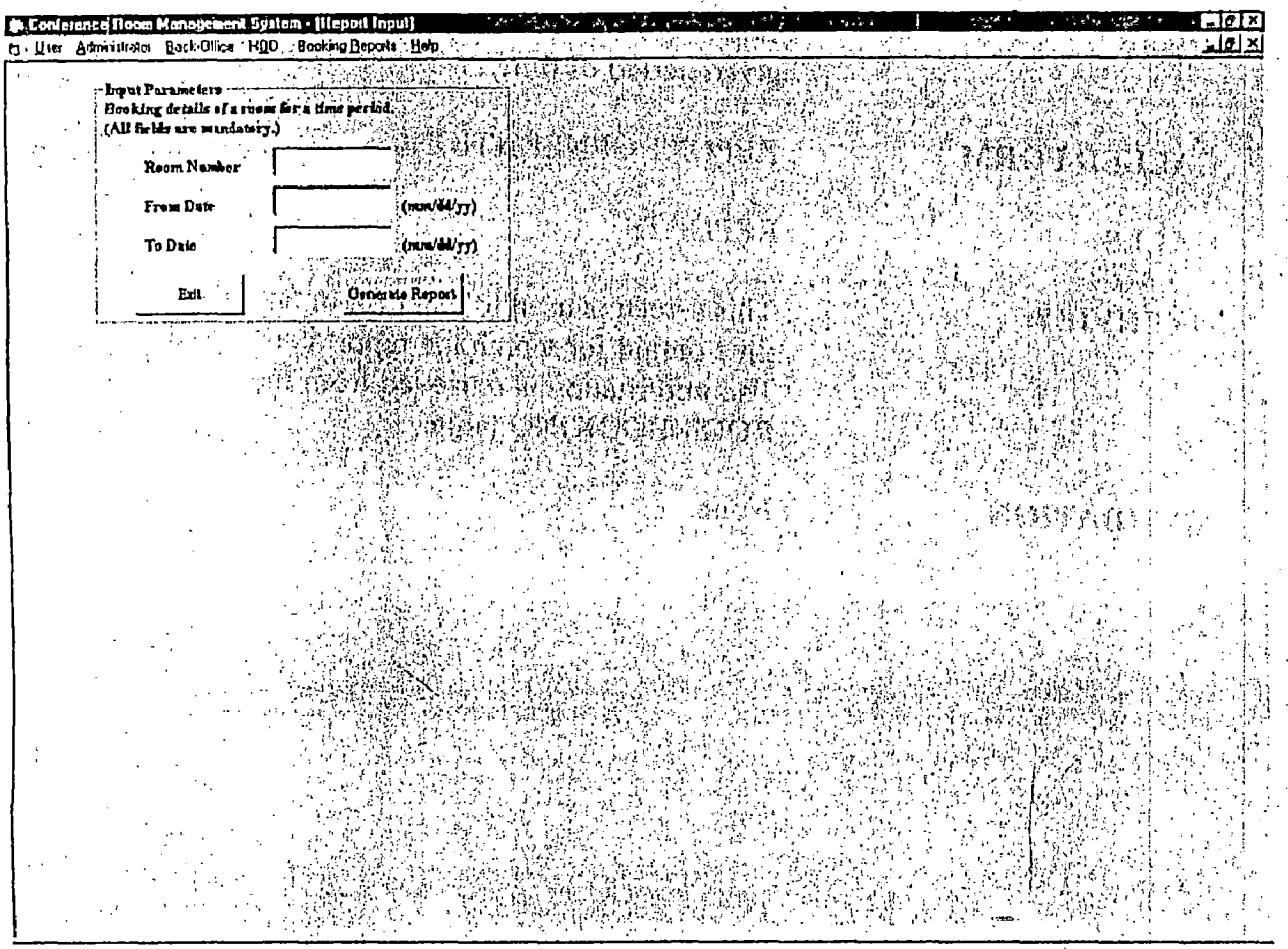



fig. 5.19.1

### INPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>EMPLOYEE |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : ROOMNO<br>PERIOD |
| Environment Variables | : None. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |

| | |
|---|---|
| Screens | : None. |
| Objects/Parameters | : None. |
| Reports | : Booking status of a conference room for a given period of time. |
| **CALLED FORM** | : REPORT GENERATION. |
| **CALLS** | : REPORTS. |
| **OVERVIEW** | : This screen is used to enter room no. and the time period for which the report is required. The information is retrieved from the ROOMBOOKING table. |
| **VALIDATION** | : None. |

## 5.20 Report Input Fifth Form

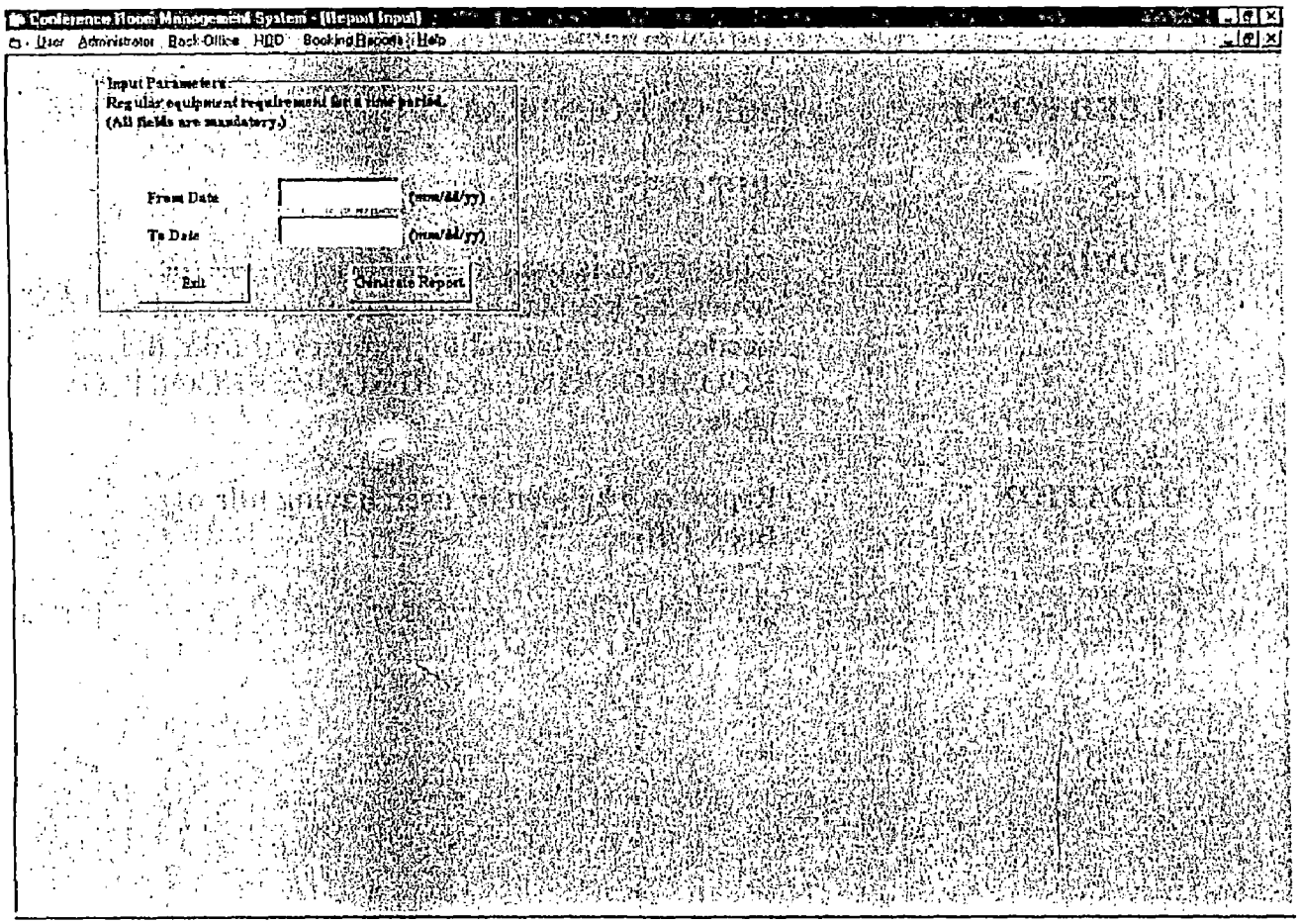



fig. 5.20.1

**INPUTS**

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>RESOURCEBOOKING |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : PERIOD. |
| Environment Variables | : None. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |

| | |
|---|---|
| Objects/Parameters | : None. |
| Reports | : Regular Equipment Requirement for a given period of time. |
| **CALLED FORM** | : REPORT GENERATION. |
| **CALLS** | : REPORTS. |
| **OVERVIEW** | : This screen is used to enter time period for which the Regular Equipment Requirement is needed. The information is retrieved from the ROOMBOOKING and RESOURCEBOOKING table. |
| **VALIDATION** | : Report can be seen by user, having role of Back-Office. |

## 5.21 Report Input Sixth Form

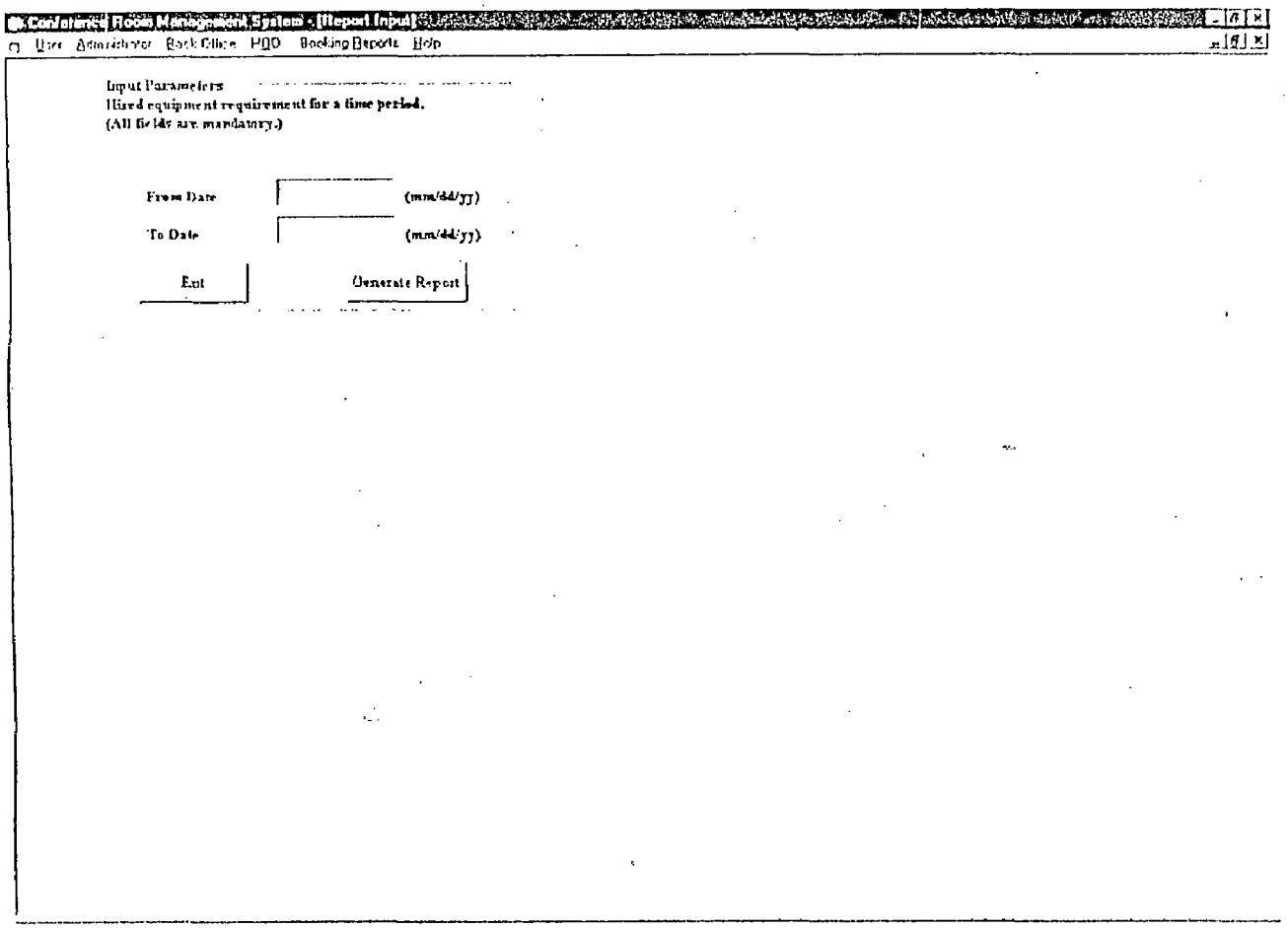



fig. 5.21.1

### INPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>RESOURCEBOOKING |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : PERIOD. |
| Environment Variables | : None. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |

| | |
|---|---|
| Objects/Parameters | : None. |
| Reports | : Hired Equipment Requirement for a given period of time. |
| **CALLED FORM** | : REPORT GENERATION. |
| **CALLS** | : REPORTS. |
| **OVERVIEW** | : This screen is used to enter time period for which the Hired Equipment Requirement is needed. The information is retrieved from the ROOMBOOKING and RESOURCEBOOKING table. |
| **VALIDATION** | : Report can be seen by user, having role of Back-Office. |

## 5.22 Report Input Seventh Form

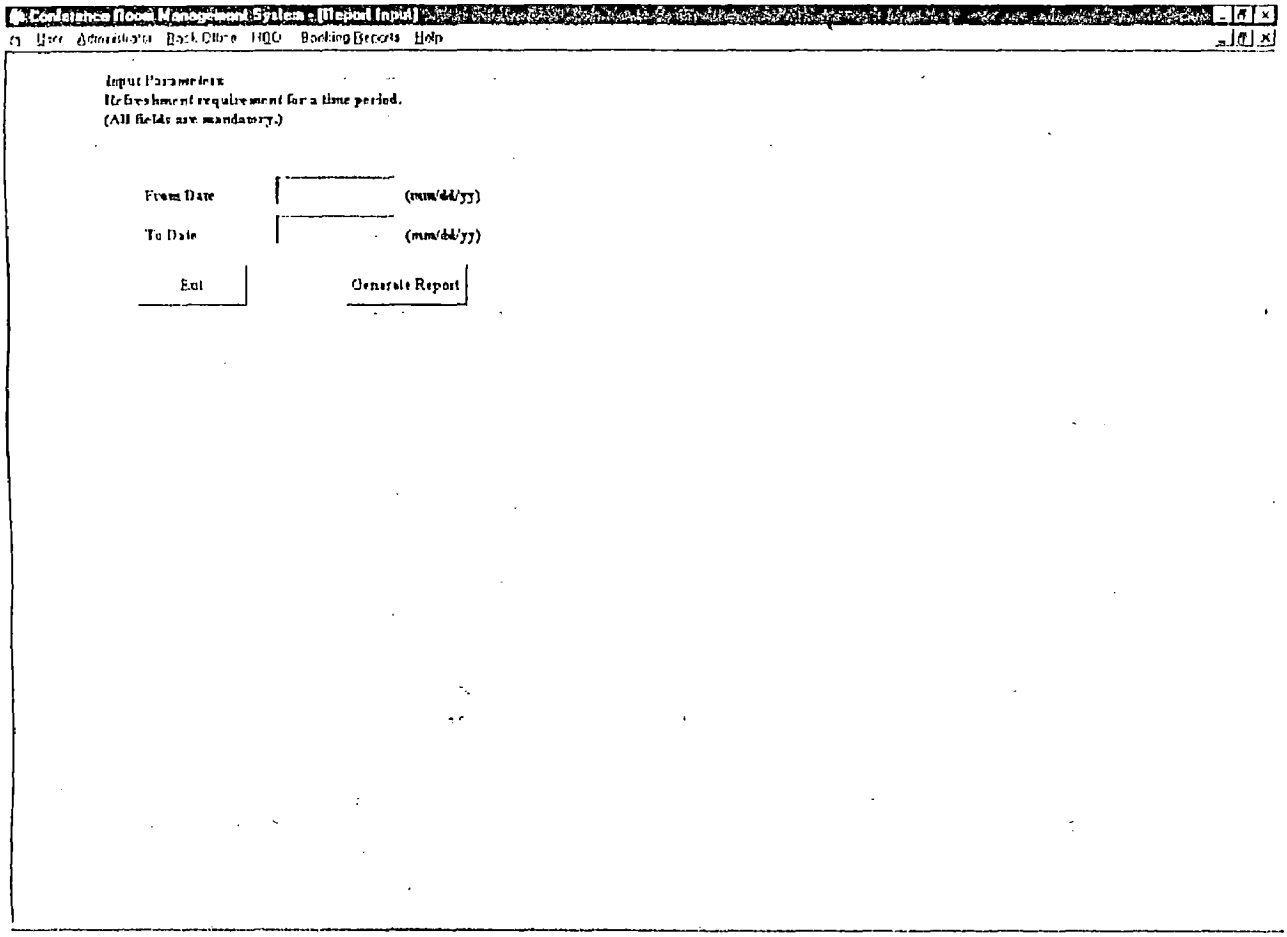



fig. 5.22.1

### INPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>RESOURCEBOOKING |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : PERIOD. |
| Environment Variables | : None. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |

| | |
|---|---|
| Objects/Parameters | : None. |
| Reports | : Refreshment Requirement for a given period of time. |
| **CALLED FORM** | : REPORT GENERATION. |
| **CALLS** | : REPORTS. |
| **OVERVIEW** | : This screen is used to enter time period for which the Refreshment Requirement is needed. The information is retrieved from the ROOMBOOKING and RESOURCEBOOKING table. |
| **VALIDATION** | : Report can be seen by user, having role of Back-Office. |

## 5.23 Report Input Eighth Form

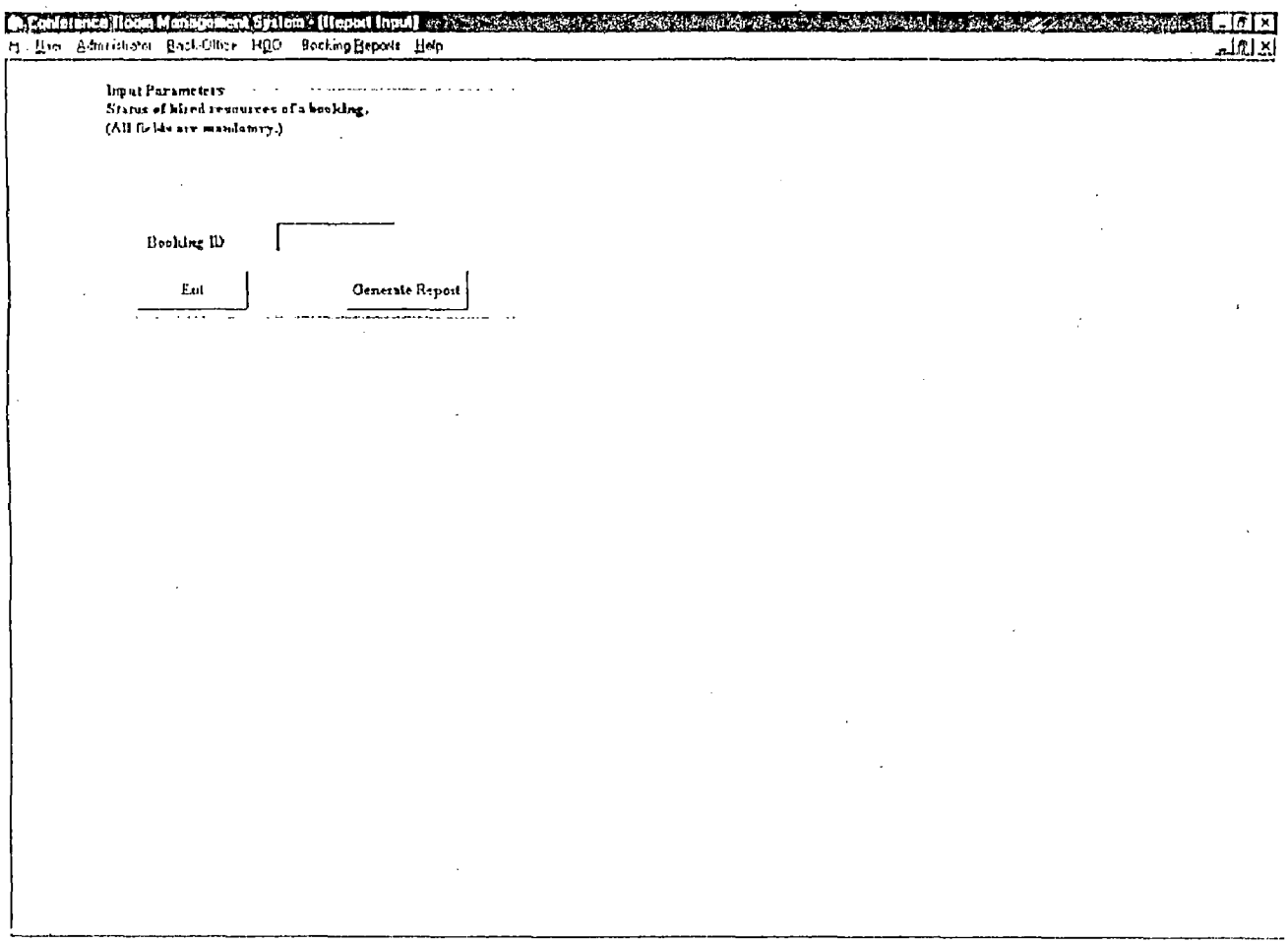



Fig. 5.23.1

### INPUTS

| | |
|---|---|
| Database Tables | : RESOURCE<br>RESOURCEBOOKING |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : BOOKINGID. |
| Environment Variables | : ROLEID. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |

| | |
|---|---|
| Objects/Parameters | : None. |
| Reports | : Status of hired resources of a booking. |
| **CALLED FORM** | : REPORT GENERATION. |
| **CALLS** | : REPORTS. |
| **OVERVIEW** | : This screen is used to enter booking id for which the Status of Hired Equipment is needed. The information is retrieved from the RESOURCE and RESOURCEBOOKING table. |
| **VALIDATION** | : User can be either HOD and he can see the status of his own department only. |

## 5.24 Update Users Form

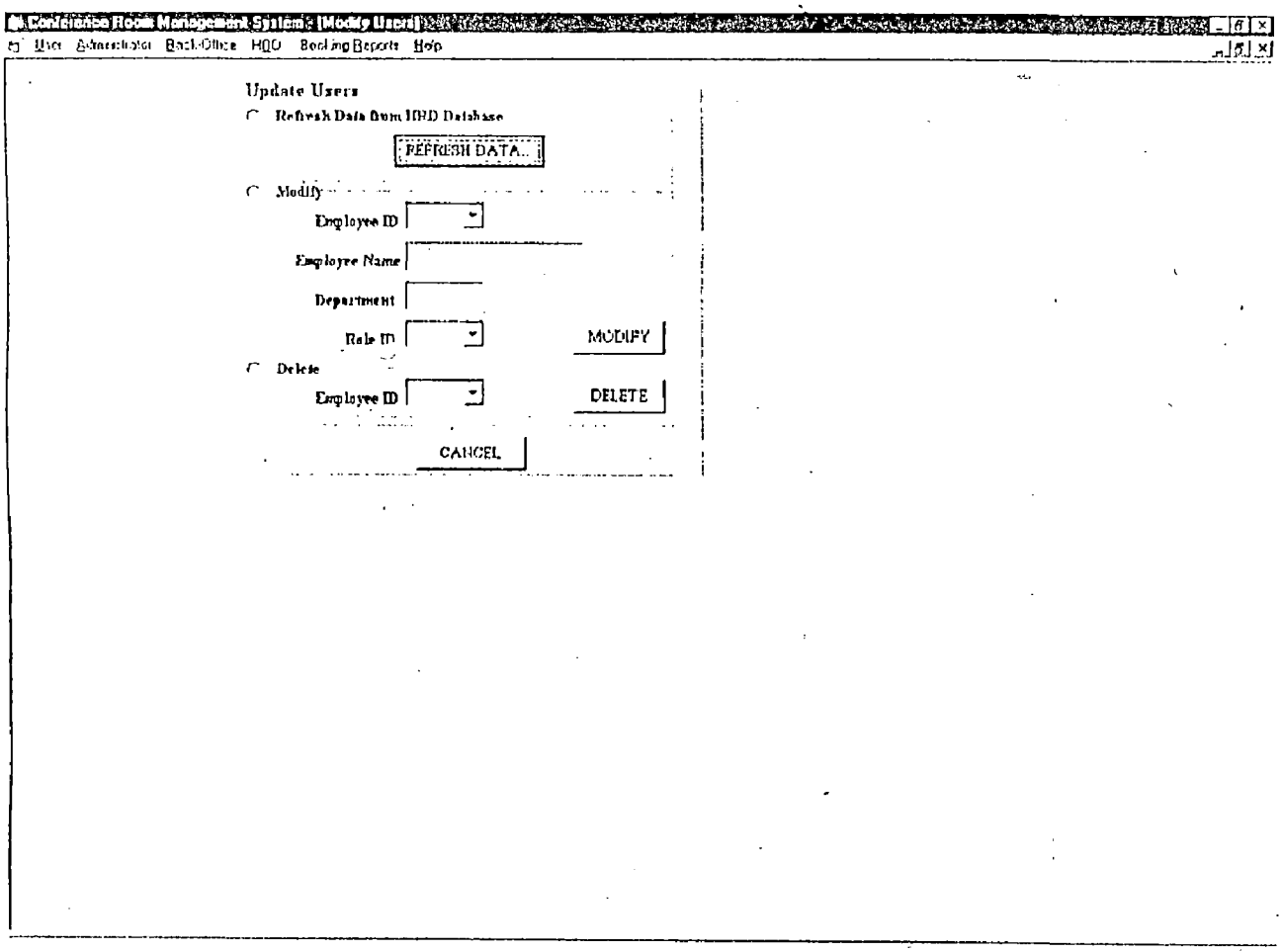



fig. 5.25.1

### INPUTS

| | |
|---|---|
| Database Tables | : None |
| Files | : None. |
| Screens | : ADD/DELETE USER. |
| Objects/Parameters | : EMPID<br>EMPNAME<br>ROLEID<br>DEPTT |
| Environment Variables | : ROLEID. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : EMPLOYEE. |

| | |
|---|---|
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : EMPID<br>EMPNAME<br>ROLEID<br>DEPTT |
| Reports | : ROLEID. |
| **CALLED FORM** | : SELECTION FORM. |
| **CALLS** | : None. |
| **OVERVIEW** | : This screen gets displayed when Administrator selects ADD/DELETE USER function from SELECTION FORM. Administrator can either add user to the database or delete user from the database using this form. He can also refresh the data of EMPLOYEE table from HR data. |
| **VALIDATION** | : EMPID is an integer = 4. PASSWORD is 4-8 character long only. |

## 5.25 Update Rooms Form

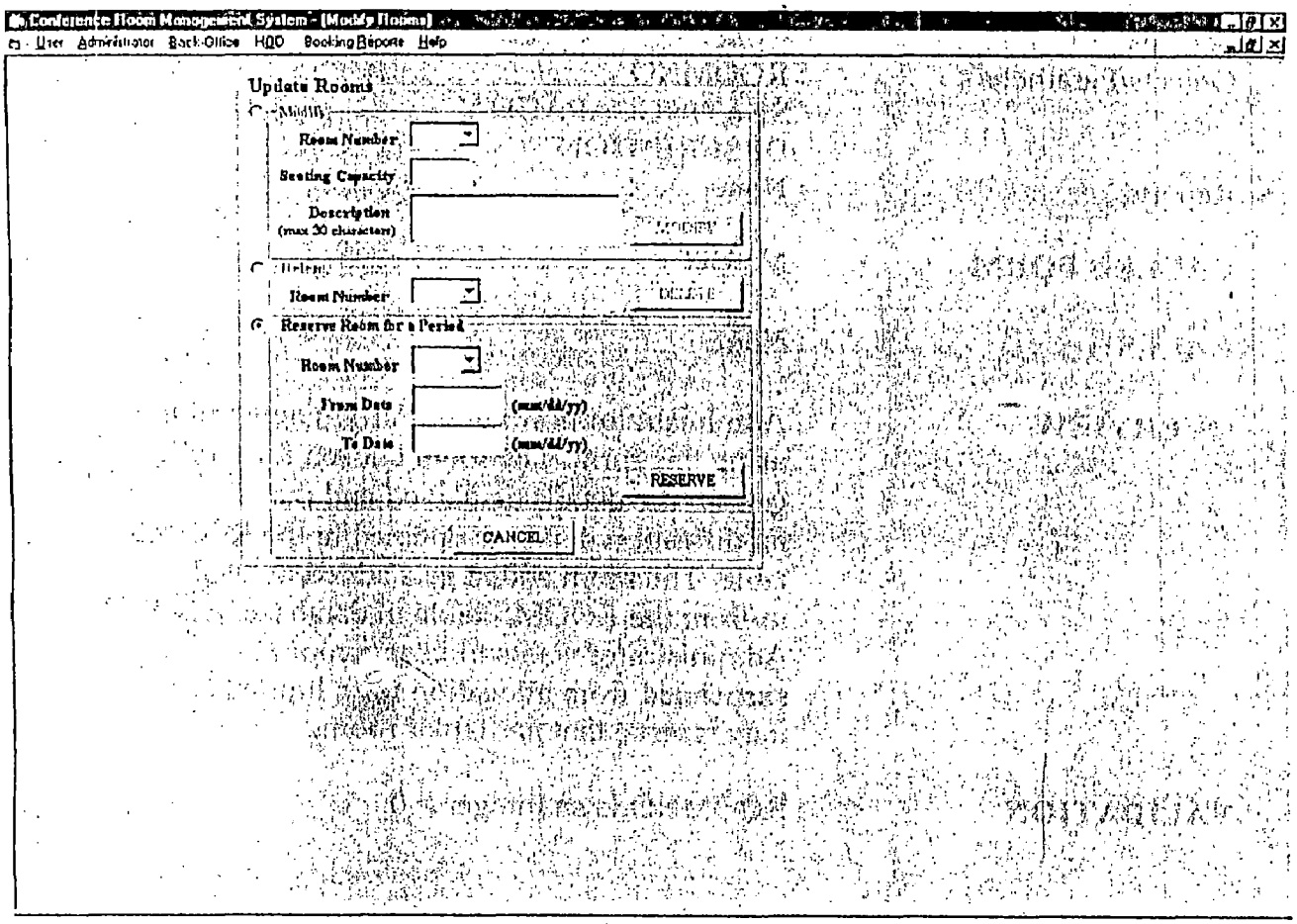



fig. 5.25.1

### INPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : ADMIN ADD ROOM. |
| Objects/Parameters | : ROOMNO<br>SEATINGCAPACITY<br>DESCRIPTION |
| Environment Variables | : ROLEID. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : ROOMS<br>ROOMBOOKING |

| | |
|---|---|
| | ROOMREPAIR |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : ROOMNO<br>SEATINGCAPACITY<br>DESCRIPTION |
| Reports | : None. |
| **CALLED FORM** | : MENU. |
| **CALLS** | : None. |
| **OVERVIEW** | : Administrator may add/modify/delete room using this form. The room chosen for modify gets all the details displayed and the modification done are updated in the ROOMS table. The room added gets added/deleted to/from the ROOMS table in database. Also if Administrator wants to keep a room suspended from allocation for a limited period may reserve that particular room. |
| **VALIDATION** | : ROOMNO is an integer > 0. |

## 5.26 Update Regular Equipment Form

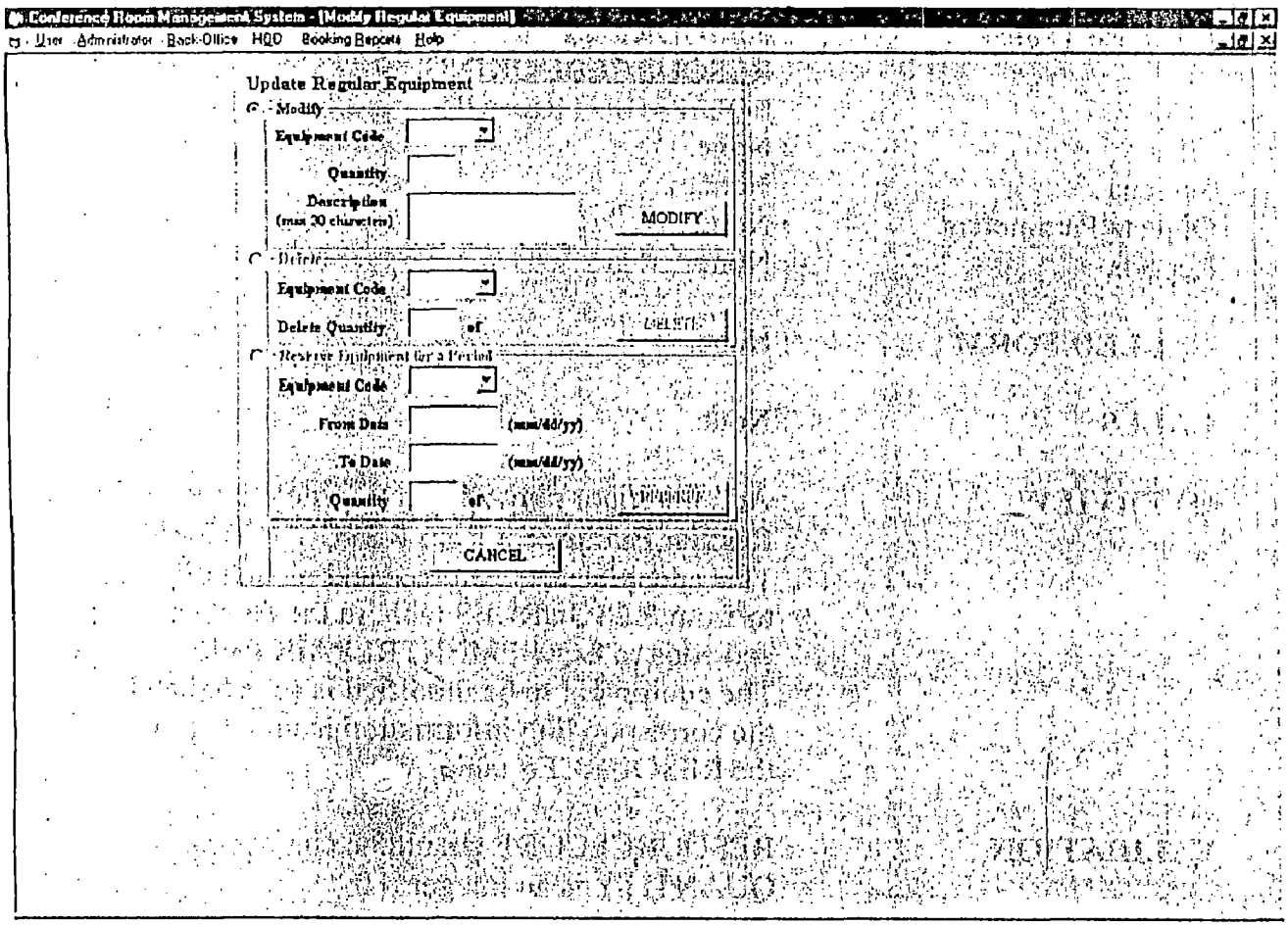



fig. 5.26.1

**INPUTS**

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : ADD/DELETE REGULAR EQUIPMENT. |
| Objects/Parameters | : EQUIPMENTCODE<br>QUANTITY<br>STARTDATE<br>ENDDATE<br>DESCRIPTION |
| Environment Variables | : ROLEID. |

**OUTPUTS**

| | |
|---|---|
| Database Tables | : RESOURCES<br>RESOURCEBOOKING<br>EQUIPMENTREPAIR |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : None. |
| Reports | : None. |

**CALLED FORM** : None.

**CALLS** : None.

**OVERVIEW** : Administrator may add/modify/delete/reserve Regular Equipment from RESOURCES table. This adds/deletes resources and its quantity to/from RESOURCES table in the database and adds to EQUIPMENTREPAIR table. The equipment to be modified is selected and the corresponding information is updated in the RESOURCES table.

**VALIDATION** : RESOURCECODE should be characters. QUANTITY is an integer > 0.

## 5.27 Update Refereshment Form

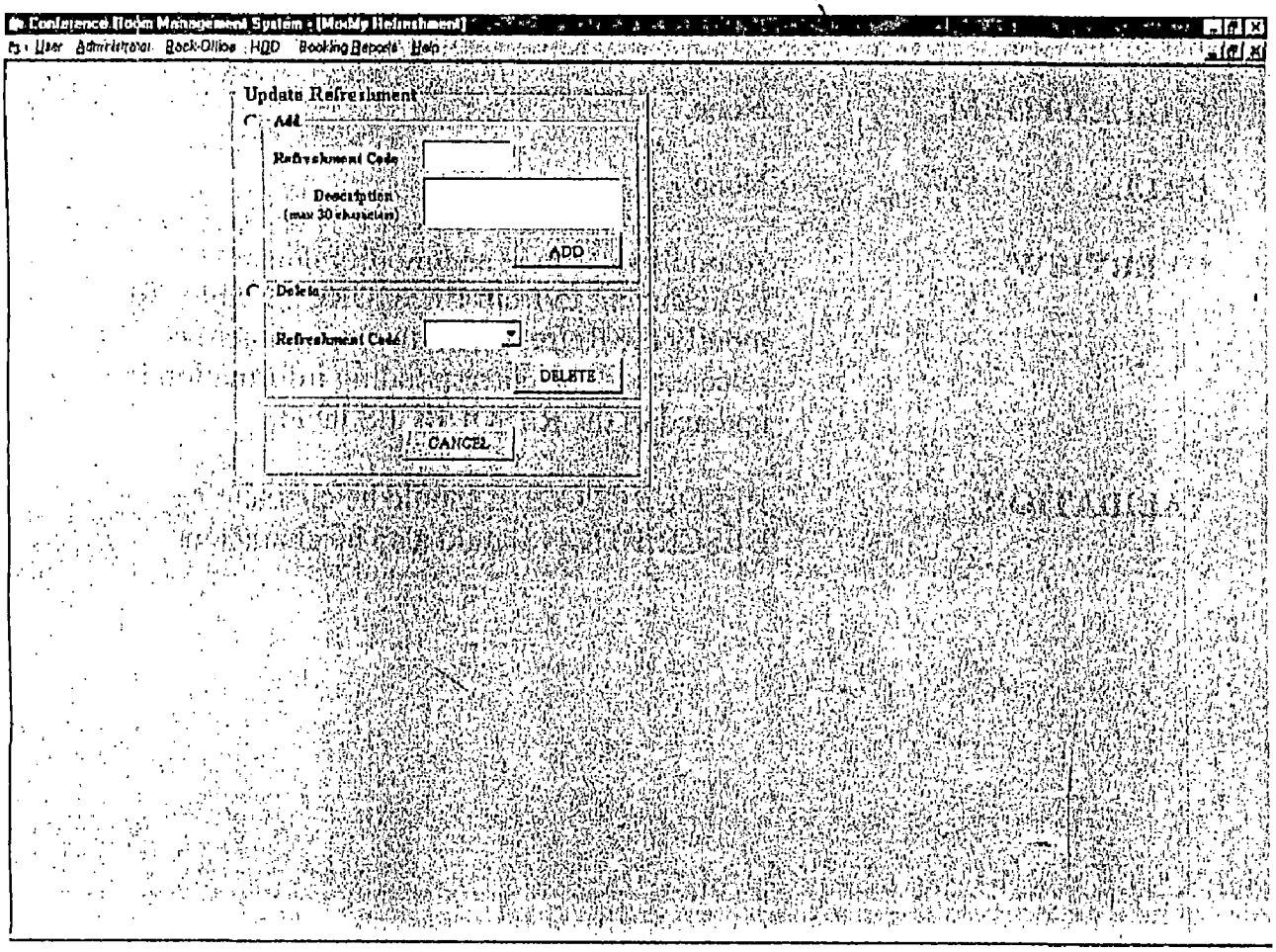



fig. 5.27.1

### INPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : ADD/DELETE REFRESHMENT. |
| Objects/Parameters | : REFRESHMENTCODE<br>DESCRIPTION |
| Environment Variables | : None. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : RESOURCES. |
| Files | : None. |
| Screens | : None. |

| | |
|---|---|
| Objects/Parameters | : RESOURCESCODE<br>DESCRIPTION |
| Reports | : None. |
| **CALLED FORM** | : None. |
| **CALLS** | : None. |
| **OVERVIEW** | : Administrator may add/modify/delete Refreshment to/from RESOURCES table. To modify the Refreshment the refreshment is selected and the corresponding information is updated in the RESOURCES table. |
| **VALIDATION** | : RESOURCECODE should be characters. DESCRIPTION should also be characters. |

## 5.28 Update Hired Equipment Form

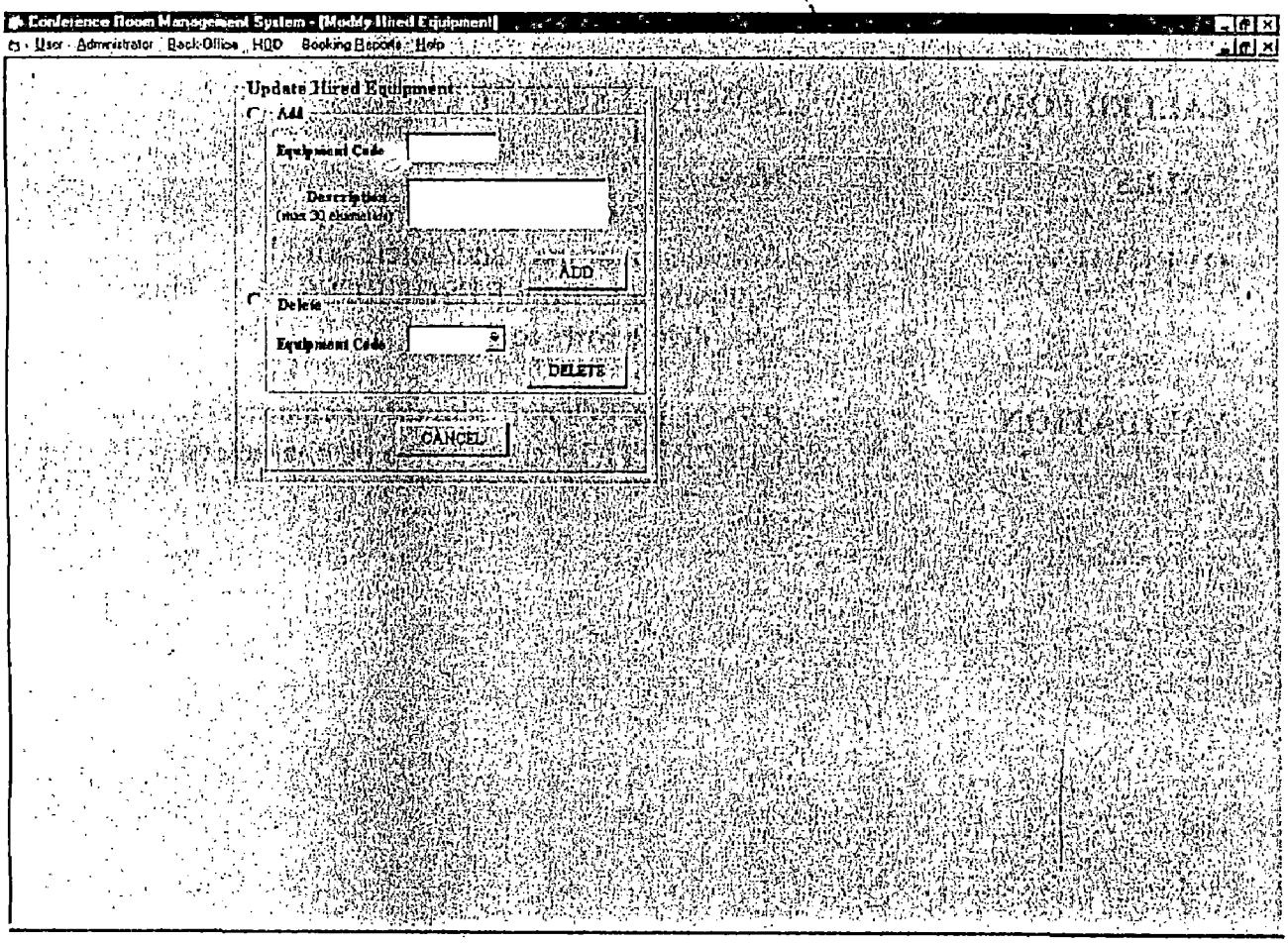



fig. 5.28.1

### INPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : ADMIN ADD/DELETE HIRED EQUIPMENT. |
| Objects/Parameters | : RESOURCECODE<br>DESCRIPTION |
| Environment Variables | : ROLEID. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : RESOURCES. |
| Files | : None. |
| Screens | : None. |

| | |
|---|---|
| Objects/Parameters | : RESOURCECODE<br>DESCRIPTION |
| Reports | : None. |
| **CALLED FORM** | : ADMIN RESOURCE CHOICE. |
| **CALLS** | : None. |
| **OVERVIEW** | : Administrator may add/delete Hired Equipment to/from RESOURCES table. This adds/delete rows to RESOURCE table. |
| **VALIDATION** | : RESOURCECODE should be characters. DESCRIPTION should also be characters. |

## 5.29 Release Priority Room Form

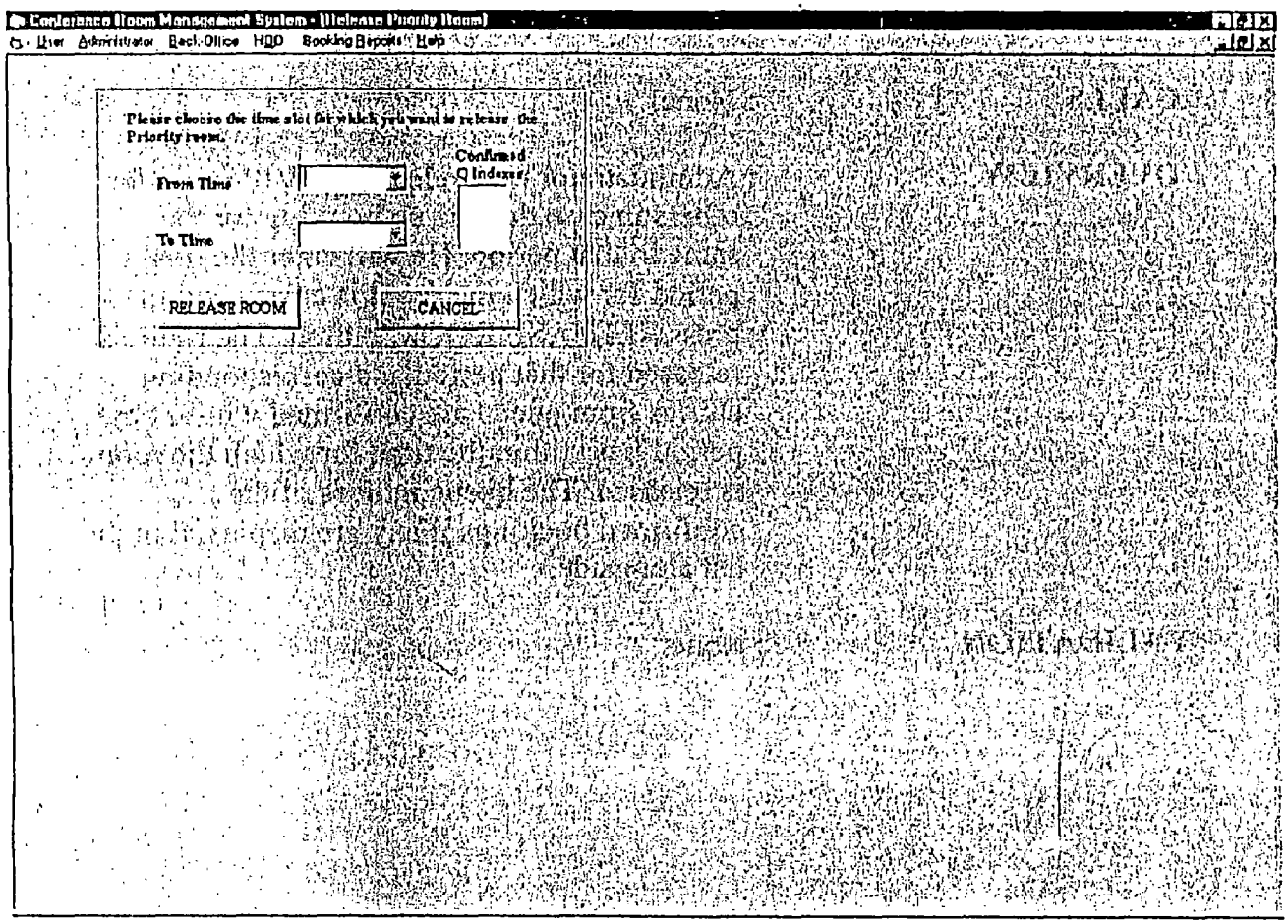



fig. 5.29.1

### INPUTS

| | |
|---|---|
| Database Tables | : QUEUE. |
| Files | : None. |
| Screens | : ADMIN RELEASE PRIORITY ROOM |
| Objects/Parameters | : TIMEPERIOD. |
| Environment Variables | : ROLEID. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING. |
| Files | : None. |
| Screens | : None. |
| Objects/Parameters | : None. |

| | |
|---|---|
| Reports | : None. |
| **CALLED FORM** | : MDI BACKGROUND. |
| **CALLS** | : None. |
| **OVERVIEW** | : Administrator may release the VIP room for others in case there is no booking for the same in that period. He will enter the time period for which the room is empty and then press RELEASE ROOM button. The room is released for that period and corresponding entries from queue are confirmed whose time period lies within the time for which the room is released. The queue indices of the confirmed bookings if any are displayed in the list alongside. |
| **VALIDATION** | : None. |

## 5.30 Room Availability Display Form

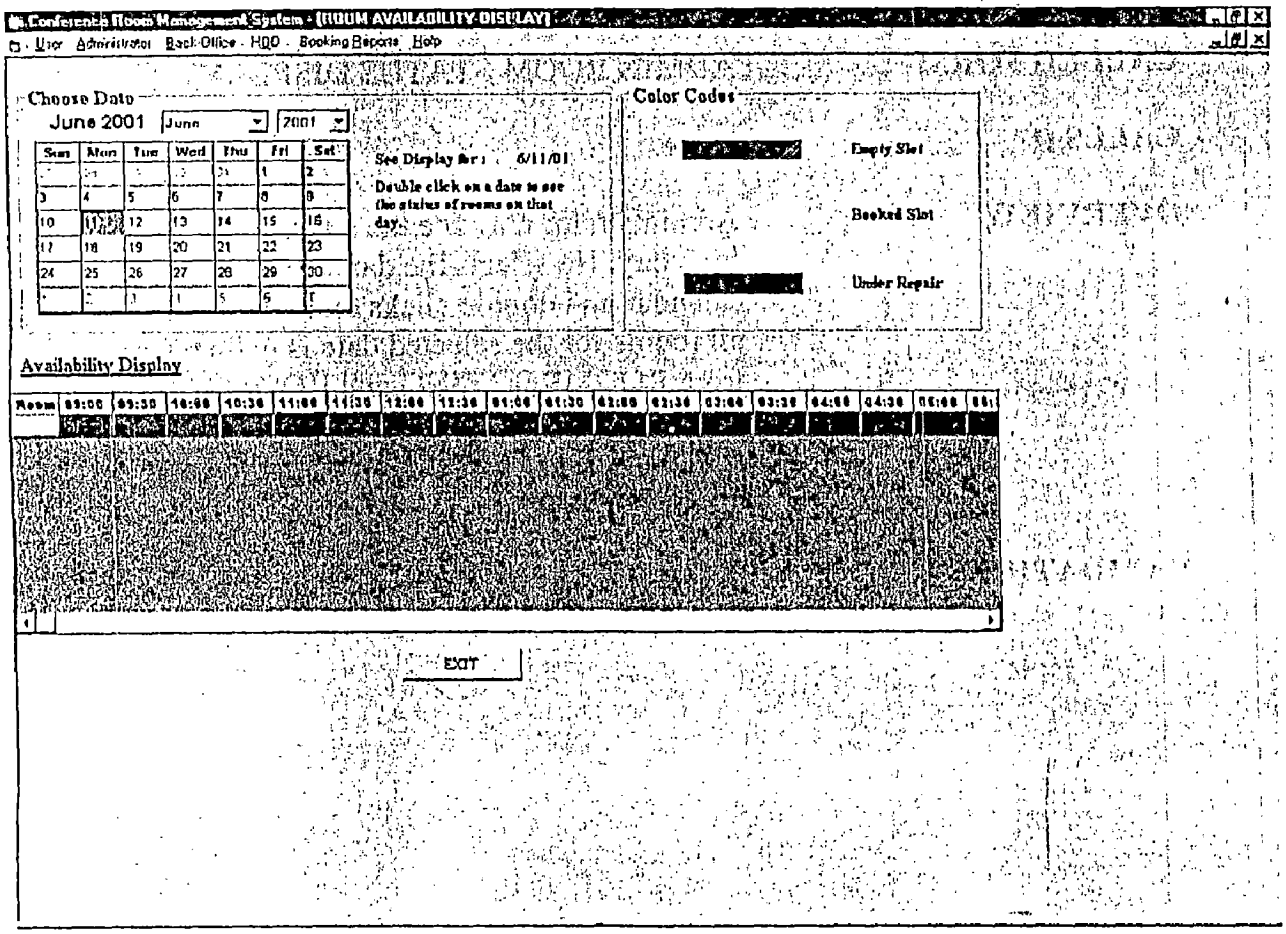



fig. 5.30.1

### INPUTS

| | |
|---|---|
| Database Tables | : ROOMBOOKING<br>ROOMREPAIR |
| Files | : None. |
| Screens | : ADMIN ROOM STATUS DISPLAY. |
| Objects/Parameters | : DATE. |
| Environment Variables | : ROLEID. |

### OUTPUTS

| | |
|---|---|
| Database Tables | : None. |
| Files | : None. |
| Screens | : None. |

| | |
|---|---|
| Objects/Parameters | : None. |
| Reports | : None. |
| **CALLED FORM** | : ADMIN ROOM STATUS DISPLAY |
| **CALLS** | : None. |
| **OVERVIEW** | : Administrator may see the status of all rooms for a day. He selects the date from the calendar and double clicks on it. The status of all rooms for the selected date is gathered from ROOMBOOKING and ROOMREPAIR tables and displayed in the grid. Different colour coding is used for empty, filled and under repair slots. |
| **VALIDATION** | : DATE should not be a past date and not more than 30 days from the day of booking. |

# SYSTEM TEST PLAN

| | |
|---|---|
| OBJECTIVE | : The objective of this test is to ensure that the CRMS compiles with the functionality provided in it within the constraints identified. The test ensures that all the processes are working as per the expected results. |
| TEST | : Starting the CRMS application. |
| USER ACTION | : User clicks on the CRMS icon to start the CRMS application. |
| TEST DATA | : None. |
| EXPECTED RESULT | : The SPLASH FORM containing the information of CRMS should appear on the screen. |
| ACTUAL RESULT | : SPLASH FORM appeared. |
| TEST | : LOGIN FORM should appear after SPLASH FORM. |
| USER ACTION | : None. |
| TEST DATA | : None. |
| EXPECTED RESULT | : The LOGIN FORM should appear after 10 seconds of the appearance of the SPLASH FORM. |
| ACTUAL RESULT | : LOGIN FORM appeared. |
| TEST | : User login. |
| USER ACTION | : User enters his login id and password. |
| TEST DATA | : Employee's login id is invalid. |
| EXPECTED RESULT | : A message box, stating that only numerals |

should be entered or prompting for the entry of a valid login id should appear.

ACTUAL RESULT : Message box appeared.

TEST DATA : Employee's password is invalid.

EXPECTED RESULT : A message label, stating invalid password should appear. Password textbox should get clear and focus.

ACTUAL RESULT : Message label appeared. Textbox gets clear and gets focus.

TEST DATA : Employee's login id and password are valid.

EXPECTED RESULT : The MENU FORM containing menu items should appear. Main menu items should be enabled/disabled as per user's ROLEID. Database table should be updated.

ACTUAL RESULT : MENU FORM appeared. Items are enabled/disabled as per the ROLEID. Database table is updated.

TEST : NEW BOOKING

USER ACTION : User enters the date and seating capacity and time slot for the booking in the text boxes and combo boxes. Then the user presses the NEXT button.

TEST DATA : Entered date in mm/dd/yy format and within 15 days from booking date, time slot with from time less than end time and seating capacity.

EXPECTED RESULT : User gets output according to data entered. If he has entered time slot then, if available he gets room no. allotted to him. ROOMBOOKING table gets updated, a new

| | |
|---|---|
| | tuple with new booking id gets inserted into the table else for the same date rooms with their description and seating capacity more than that specified should appear. In this case user has other options also. |
| ACTUAL RESULT | : Room allotted to the user with start time and end time as specified and ROOMBOOKING table updated. |
| USER ACTION | : User enters date in the text box provided. |
| TEST DATA | : Date is not entered as per restrictions. |
| EXPECTED RESULT | : Message box appears with you have entered past date or invalid date format. |
| ACTUAL RESULT | : Message box appears. |
| | |
| TEST | : ROOM SELECTION |
| USER ACTION | : User enters time slot and one of the rooms available is shown to him on screen. User is allotted the same room for his booking. User presses NEXT button. |
| TEST DATA | : Time slot and room no. entered as per instructions. |
| EXPECTED RESULT | : A message box appears showing him his booking id asking him to click YES/NO/CANCEL. If he selects YES then a new booking id in ROOMBOOKING table is generated and other details entered by the user are inserted into the table. |
| ACTUAL RESULT | : Message box appeared and table updated. |
| USER ACTION | : User leaves one or more of the fields unselected. |

| | |
|---|---|
| TEST DATA | : Leaves start time and room no. unselected. |
| EXPECTED RESULT | : Please fill all the fields message is displayed to the user. |
| ACTUAL RESULT | : Message box appeared. |
| USER ACTION | : No room is suitable for the user from the list of available rooms and time slots. User chooses to be in waiting list or to book for some other date or chooses no booking required. |
| TEST DATA | : None. |
| EXPECTED RESULT | : Waiting list no. is displayed to the user or room booking screen is displayed to the user or menu for appears. |
| ACTUAL RESULT | : As expected. |

# Chapter 7

## RESULTS AND DISCUSSIONS

The software is made and implemented at the EDN and tested for the realtime data. The software was working to the expected results and as at the time of testing. The software is now in use at the EDN and is working as per the results. The total process was time consuming, while understanding the requirements, but when it was understood then the process of working was in the clear direction. Then the work began with the toiling with the books to build the system. Then the problem came at the time of making logic for complex problems, but they were solved with the help of the guide at the EDN. Overall it was a great experience to work on the real project and at the implementation place. It made it easy to understand the need of the users and make the software.

# Chapter 8

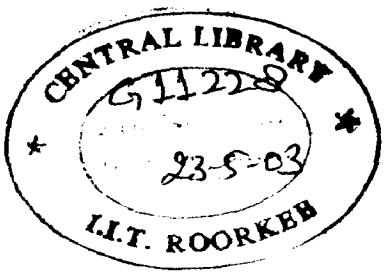
# CONCLUSION

The project title "Conference Room Management System" for the third semester has been created successfully in BHEL using Visual Basic 6 and SQL Server 7.0. The software has been tested and implemented and working successfully. The coding is around 6500 LOC in Visual Basic.

# REFERENCES


1. Jhonny Papa, Mathew Shepker and Team, "Microsoft SQL Server 7.0 Programming (Unleashed)", Techmedia Sams, 1999

2. Robert D. Schneider, "Microsoft SQL Server", Printice Hall, 1997

3. Roger Jennings, "Database Developer's Guide with Visual Basic 6", Techmedia Sams, 1999

4. Petroutsos(E), "Mastering Visual Basic 6", BPB Publications, 1998