System Requirements Specification for DBIS Lab Project (CS387)

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1 Introduction

1.1 Overall Description

This project aims to manage booking of rooms for lectures/talks/courses/seminars/labs through a semester in the CSE department. The main features supported are recording of the booking of lectures, their venues, scheduled times, and providing access to information of already booked lectures and availability of rooms and slots.

The facility of booking is allowed only to registered users (faculty etc. of the department). The information is accessible via internet.

1.2 Definitions

1. lecture: lecture signifies anything including a course/talk/seminar or practicals in case of a lab.

2. user: user is an authorised person who is allowed to make a booking, this includes faculty members, CSEA members etc.

3. speaker: speaker is the person giving the talk/lecture (instructor in case of course/lab).

1.3 References

1. "Database Systems Concepts"
   by Silberschatz, Korth, Sudarshan.

1.4 Overview of Developer's Responsibilities

Not Applicable

2 General Description

2.1 Product Perspective

The database can be interfaced with the student registration database of the institute to find all the students who have registered for a particular course.

There are following interfaces.

1. For querying about scheduled lectures and talks
2. For login and for change of password
3. For booking/cancellation of lectures
4. For getting the commitments for a particular period of time and deleting the selected ones from them
5. For getting week's time table for user/groups
6. Sending schedule reminders to a particular group attending a course/talk
7. For adding/deleting a particular course/lecture (done by the administrator)
8. Interfaces for administrator :
    (a) Adding a user
    (b) Removing a user
    (c) Adding the information about a new room in the database
    (d) Removing the information about a room from the database

2.2 Product Functions Overview

1. Functions for administartor like adding a user, adding a room, adding information about a course.
2. Querying to find information about lectures and rooms, getting commitments for a user.
3. Booking, Cancellation.
4. Getting the timetable for a particular user.
5. Sending schedule reminders.

2.3 User Characteristics

The users include the faculty members, CSEA representatives etc. They are allowed to book rooms. They do not need any special training.
There will be a database administrator who will be doing the bookings of periodic lectures, administartion of users/rooms.
Querying can be done by anyone.

2.4 General Constraints

This project is to be completed, including coding, testing and loading of the database, by Nov 24, 2000. A prototype demo has been given.

3 Information Description

3.1 Entities and Relationships

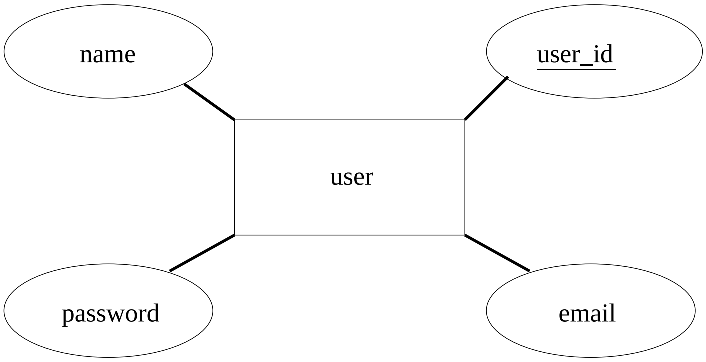

Figure 1: Entity user

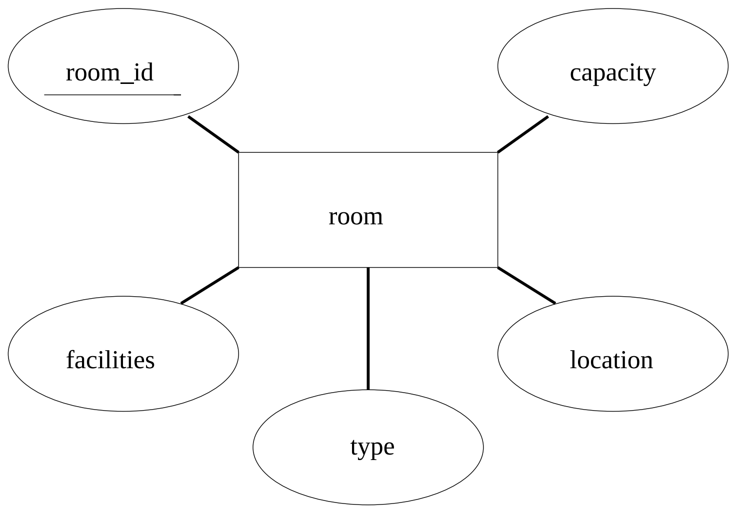

Figure 2: Entity room

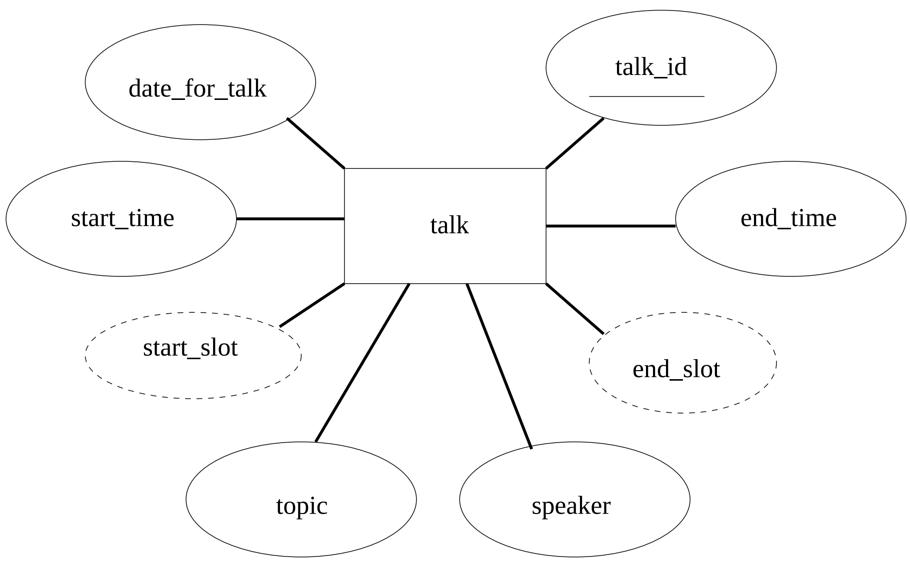

Figure 3: Entity talk

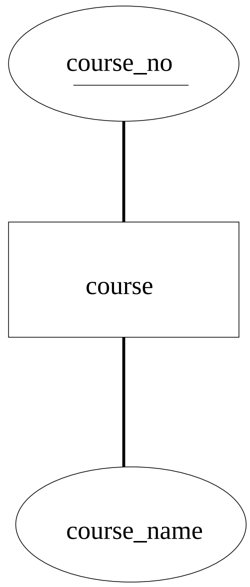

Figure 4: Entity course

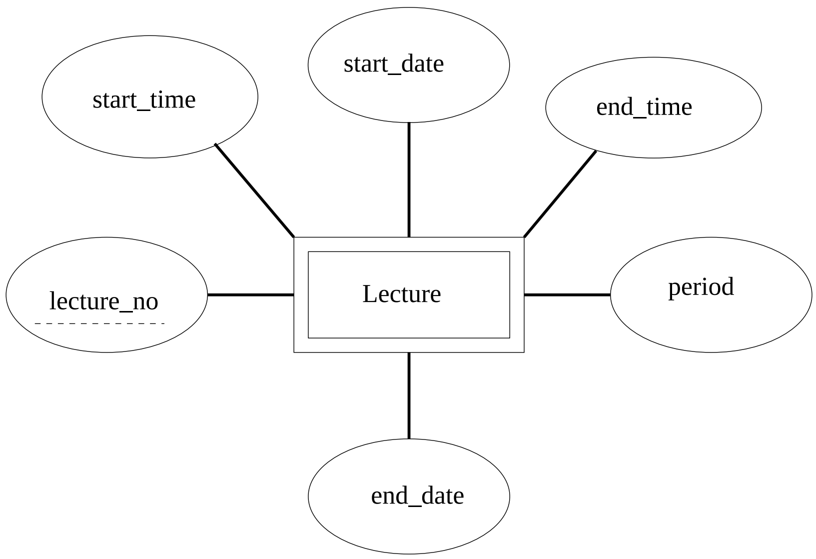

Figure 5: Weak Entity lecture

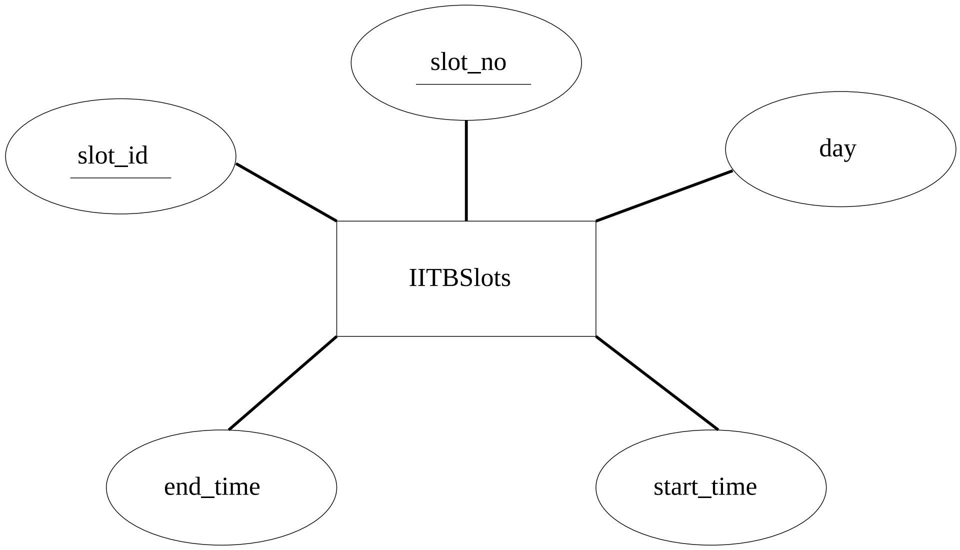

Figure 6: Entity IITBSlots

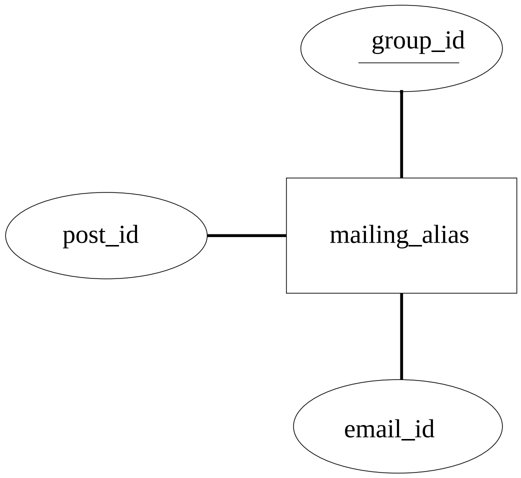

Figure 7: Entity mailing_alias

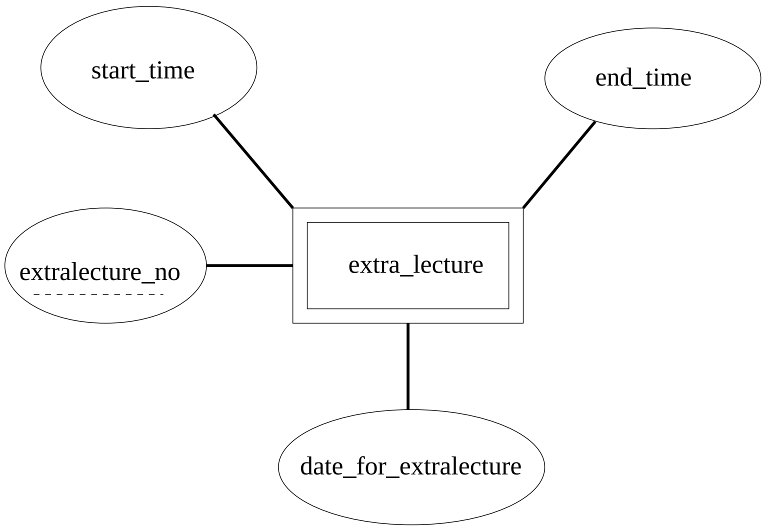

Figure 8: Weak Entity extra_lecture

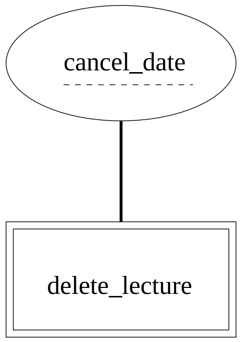

Figure 9: Weak Entity delete_lecture

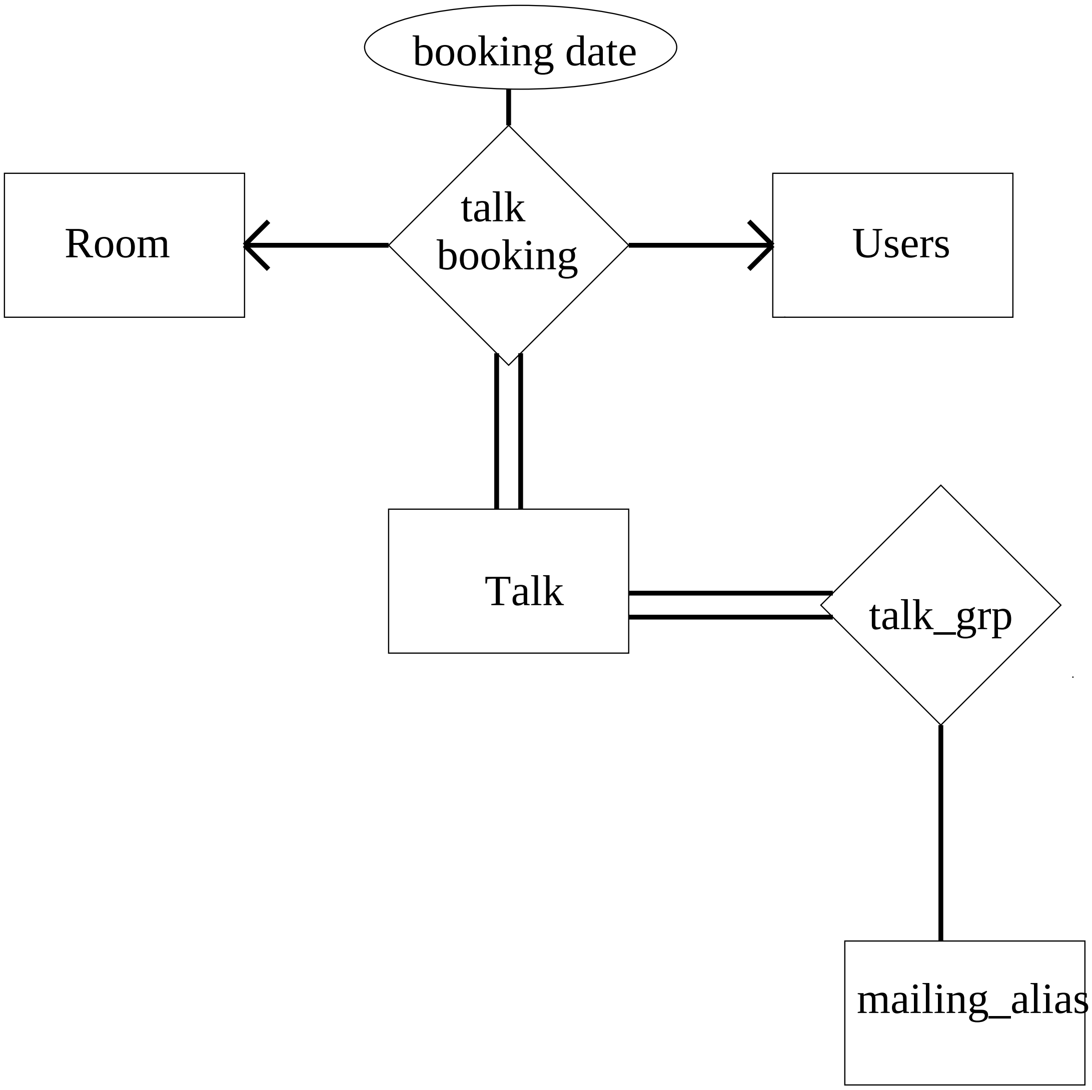

Figure 10: ER Diagram : Relationships between Entities

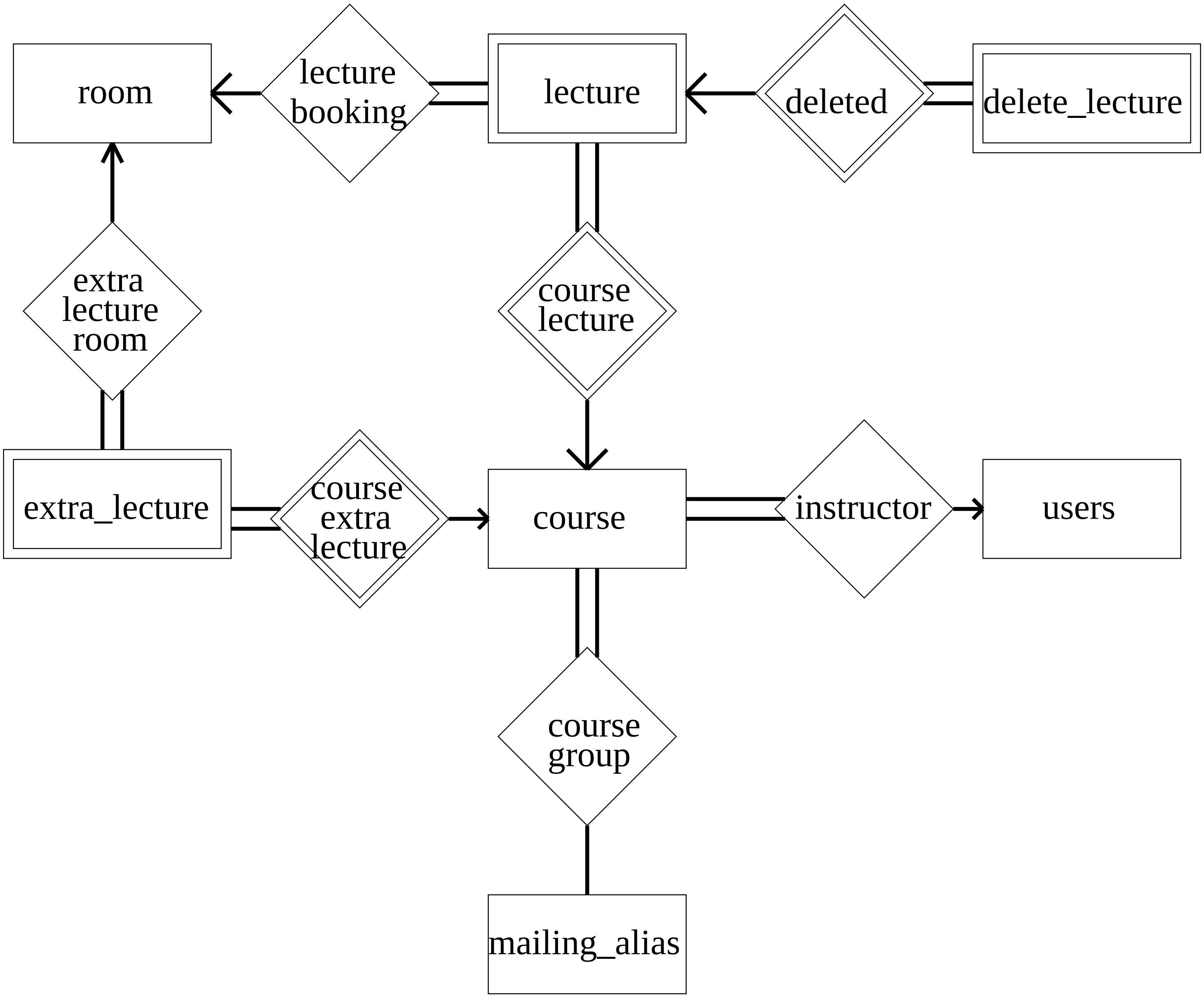

Figure 11: ER Diagram : Relationships between Entities

3.2 Data Dictionary

3.2.1 users

Attribute Name	Attribute Type	Constraint	Description
user_id	varchar(08)	Primary Key	Login Name
name	varchar(50)	not null	User Name
password	varchar(08)	not null	User password
email	varchar(100)	not null	Email id

3.2.2 room

Attribute Name	Attribute Type	Constraints	Description
room_id	varchar(20)	Primary Key	Room Identification
type	varchar(50)	not null	Type of Room
capacity	integer	not null	Room capacity
facilities	varchar(100)	-	Information about blackboards,projector etc
location	varchar(100)	-	Information about location of room

3.2.3 mailing_alias

Attribute Name	Attribute Type	Constraints	Description
group_id	varchar(20)	Primary key	ID for the group
post_id	varchar(100)	not null	Posting address
email_id	varchar(100)	not null	e-mail address

3.2.4 talk

Attribute Name	Attribute Type	Constraints	Description
talk_id	integer	Primary Key	Unique talk identifier
topic	varchar(100)	-	Talk topic
speaker	varchar(50)	-	Person giving the talk
date_for_talk	date	not null	Date on which talk is scheduled
start_time	varchar(05)	not null	Starting time
end_time	varchar(05)	not null	Ending time
start_slot	integer	not null	For Internal Representation
end_slot	integer	not null	For Internal Representation

3.2.5 talk_booking

Name	Type	Constraints	Description
talk_id	integer	Primary Key references talk	Unique identifier
room_id	varchar(20)	Foreign key references room	Room identifier
user_id	varchar(08)	Foreign key references users	Person who did the booking
booking_date	date	not null	Date on which booking is done

3.2.6 talk_group

Attribute Name	Attribute type	Constraints	Description
talk_id	integer	primary key references talk	Unique identifier
group_id	varchar(20)	primary key,references mailing_alias	mailing ID

3.2.7 IITB_Slots

Attribute Name	Attribute Type	Constraints	Description
slot_no	integer	Primary key	Unique identifier along with slot_id
slot_id	char(1)	Primary key	Unique identifier for a particual slot_no
day	char(3)	not null	Day of the week
start_time	varchar(05)	not null	Starting time
end_time	varchar(05)	not null	Ending time

3.2.8 course

Attribute Name	Attribute Type	Constraints	Description
course_no	varchar(05)	Primary Key	Unique talk identifier
course_name	varchar(100)	-	Course name
user_id	varchar(08)	Foreign key references users	Instructor of the course

3.2.9 course_group

Attribute Name	Attribute Type	Constraints	Description
course_no	varchar(05)	primary key references course	course identifier
group_id	varchar(20)	primary key references mailing_alias	Group name

3.2.10 lecture

Attribute Name	Attribute Type	Constraints	Description
course_no	varchar(05)	Primary Key references course	Course no
lecture_no	integer	primary key	lecture no
start_time	varchar(05)	not null	Starting date
end_time	varchar(05)	not null	Starting date
start_date	date	not null	Starting date
end_date	date	not null	Ending date
period	integer	not null	Repeating period

3.2.11 allotted

Name	Type	Constraints	Description
course_no	varchar(05)	Primary key references lecture	Course number
lecture_no	integer	Primary key references lecture	Course number
slot_no	integer	Foreign key references iitbslots	IITB slot Number
slot_id	char(01)	Foreign key references iitbslots	IITB slot id

3.2.12 extra_lecture

Attribute Name	Attribute Type	Constraints	Description
course_no	varchar(05)	Primary Key references course	Course no
extralecture_no	integer	primary key	lecture no
room_id	varchar(20)	References room	Room for the lecture
date_for_extralecture	date	not null	Date for the lecture
start_time	varchar(05)	not null	Starting date
end_time	varchar(05)	not null	Starting date

3.2.13 lecture_booking

Name	Type	Constraints	Description
course_no	varchar(05)	primary key references lecture	Unique identifier
lecture_no	integer	primary key references lecture	Unique identifier
room_id	varchar(20)	Foreign key references room	Room identifier

3.2.14 delete_lecture

Attribute Name	Attribute Type	Constraints	Description
course_no	varchar(05)	Primary Key references lecture	Course no
lecture_no	integer	Primary Key references lecture	lecture no
cancel_date	date	Primary Key	Date for cancellation

3.2.15 Views

View definitions –

- **view** *lecture_info* as
  select users.user_id,users.name,lecture.course_no,lecture.lecture_no,lecture.start_time, lecture.end_time,start_date,end_date,period,day,room_id,group_id, iitbslots.slot_no,iitbslots.slot_id
  from users,course,lecture, allotted,iitbslots,lecture_booking,course_group
  where users.user_id=course.user_id and course.course_no=lecture.course_no
  and lecture.course_no=allotted.course_no and lecture.lecture_no=allotted.lecture_no
  and lecture_booking.course_no=lecture.course_no and lecture_booking.lecture_no=lecture.lecture_no
  and allotted.slot_no=iitbslots.slot_no and allotted.slot_id=iitbslots.slot_id
  and course_group.course_no=course.course_no;

- **view** *talk_info* as
  select talk.talk_id,user_id,topic,speaker,room_id,date_for_talk,start_time, end_time,group_id
  from talk,talk_booking,talk_group
  where talk.talk_id=talk_booking.talk_id and talk_group.talk_id=talk.talk_id;

- **view** *extra_lecture_info* as
  select course.course_no,extralecture_no,room_id,users.name,users.user_id,group_id, date_for_extralecture,start_time,end_time
  from extra_lecture,course,course_group,users
  where course.course_no=extra_lecture.course_no and course.course_no=course_group.course_no
  and users.user_id=course.user_id;

3.3 Data Flow

Reminders: The database user may request the database to send a reminder(in form of mail or posting) to all the groups attending.

4 Functional Requirements

4.1 Querying about lectures,availability of rooms,schedule of different groups etc.

1. Querying about any talk/lecture for eg. the schedule of the talk/lecture, the venue of the talk/lecture. Such queries are allowed to everyone who can access the database through web.

2. Querying about rooms i.e. whether a room is available on a particular day and time or not and information about the room like capacity and other available facilities.

3. Querying about the schedules of different groups i.e. whether a particular group is free or not on some particular day and time.

The following functionalities are allowed only to registered users.

4.2 Login to the system

The registered users like the faculty and CSEA representatives etc. who need to make bookings/cancellations are required to login to the system before making any such requests. Each user has his own login-id and password.

4.3 Booking/Postponement a room

A user can request for a booking a particular room on a specified day and time if it is not already booked for that period. If the group for which he is doing the booking is busy during this time then he is warned about the clash although he can go ahead.

4.4 Cancellation/deactivation of non-periodic/periodic lectures

A user can cancel/deactivate only a booking that has been made by him.

4.5 Reminders

The reminders can be sent to the groups attending the talk/lecture.

5 External Interface Requirements

5.1 User Interfaces

The web is used as interface.

5.2 Hardware Interfaces

No special hardware.

5.3 Software Interfaces

The software interfaces include an Oracle server to support the database and SQL for making queries to the database.

6 Performance Requirements

Not applicable.

7 Design Constraints

7.1 Standards Compliance

Not applicable.

7.2 Hardware Limitations

Not applicable.

8 Validation Criteria

The database will be loaded with the semester slot schedule. All the functions will be tested by several bookings, cancellation, exchanges and postponement. Special attention will be paid to possible clashes and their resolution.

9 Other Requirements

No other requirements.