RAJAGIRI SCHOOL OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

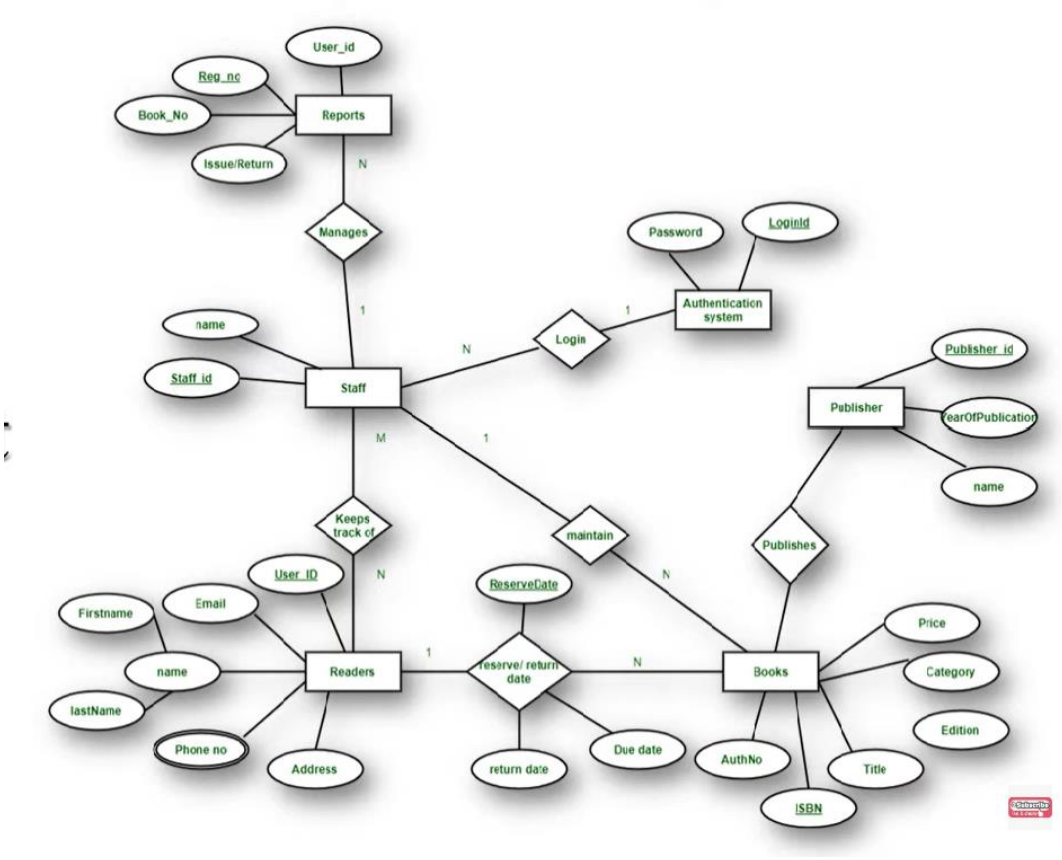
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

FIFTH SEMESTER B. TECH DEGREE, SEPTEMBER 2023

101003 CS522T-Database Management Systems Lab
LAB CYCLE

Day 1. – DDL Commands

1. Design and creation of a database schema and tables with the given ER diagram of a Library Management System.



2. Creation of a database using DDL commands.
   a. Create the following tables.
      i. Readers
      ii. Books
      iii. Return

Sample Example - Readers

Column Name	Data Type	Constraint
User_ID	Varchar2(10)	Primary Key
Email	Varchar2(20)	Unique
FirstName	Varchar2(20)	
LastName	Varchar2(10)	
Phone No	Number(10,3)	Default – 0
Address	Varchar2(5)	

Sample Example - Return

Column Name	Data Type	Constraint
Reserve_Date	Date	Primary Key
Issue_Date	Date	
Return_Date	Date	
Due_Date	Date	
User_ID	Varchar2(10)	Primary Key
ISBN	Varchar2(10)	Foreign Key

3. Modifying Tables

a. Add a column “Fine” to the Return table. The data type is Number and set default to 0.
b. Add a column “Currently Available Copies ” to the Books table. The data type is Number.
c. Modify the column width of the “LastName” field of Readers table to 20.
d. Add a foreign key constraint on “Reports” table.
e. Display all the tables currently available to the user.
f. Drop the table “Maintains”.

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***Deadline: 21-09-2023**

Day 2 & 3 – DML Commands

4. Performing DML commands like Insertion, Deletion, Modification, and Updation of records based on conditions.

a. Create and insert the following values in Readers table.

User_ID	Email	FirstName	LastName	PhoneNo	Address

L0001	tom@gmail.com	FRANK	TOM	422544	NY
L0002	bob@gmail.com	ELLIOT	BOB	435678	NY
L0003	ann@gmail.com	CALF	ANN	234908	DALLAS
L0004	harry@gmail.com	POTTER	HARRY	112466	SEATTLE
L0005	smith@gmail.com	DANIEL	HAIK	982222	SEATTLE
L0006	dick@gmail.com	XAME	DICK	876987	NJ

b. Create and insert the following values in Books table.

ISBN	**AuthorNo**	**Title**	**Publisher**	**Currently Available Copies**
12345	A001	Fundamentals of JAVA	Pearson	1
54321	A002	Computer Networks	Pearson	5
34561	A002	Operating System	MK	10
16543	A004	Microprocessors	Wiley	10
98765	A005	Internet of Things	McKane	8
56789	A005	Artificial Intelligence	BPB	3

c. Create and insert the following values in Return table.

Reserve Date	**Return Date**	**Issue Date**	**Due Date**	**Fine**	**User_ ID**	**ISBN**
10/09/23		10/09/23	30/09/23	0	L0006	56789
10/09/23	01/10/23	10/09/23	30/09/23	8	L0005	98765
11/09/23				0	L0005	16543
12/09/23		14/09/23	04/10/23	0	L0004	56789
12/09/23	25/09/23	18/09/23	08/10/23	20	L0001	12345
13/09/23				0	L0001	56789

5. Display the entire contents of all the tables.
6. Display the email ids and cities of readers of the library.

7. Display details of all users who belong to NY.
8. Display details of all books published by “Pearson”.
9. Display details of authors who publish with both Pearson and MK.
10. Display details of all book titles which has more than 5 copies in the library
11. Display all readers whose name start with H.
12. Display all readers whose name end with the letter K.

13. Implementation of set operators, nested queries and join queries.
    a. Get the list of book titles that are issued but not returned.
    b. Get the list of users who have read the “Artificial Intelligence” book.
    c. Get the total fine collected for the current month.
    d. Get the list of users who have not returned the books on due date.
    e. Get the list of users who have not taken any books.
    f. Get the list of authors who have written more than one book.

14. Implementation of Order By, Group by & Having clause.
    a. Display the reader names in ascending order.
    b. Determine the maximum fine obtained for each book.

15. Implementation of various aggregate functions in SQL.
    a. Display the number of books written by each author.
    b. Calculate the total fine obtained by the library as of date.
    c. Count the total number of records in the Readers table.
    d. Display the list of publishers and the number of books published by each publisher.

***Deadline: 05-10-2023**

Day 4. TCL, DCL Commands and Views

16. Practice of SQL TCL commands like Rollback, Commit and Savepoint.
    a. Delete all users who have not yet borrowed a book.
    b. Write a query to undo the above delete query.

17. Practice of SQL DCL commands for granting and revoking user privileges.
    a. Write a query to grant all privileges of Users table to nearby user.
    b. Write a query to grant some privileges of Return table to nearby user.
    c. Write a query to revoke all privileges of Users table from the user.
    d. Write a query to revoke some privileges of Return table from the user.

18. Creation of Views
    a. Create a view Reader_VW of the Employee table with the following columns.

User_ID
LastName
City

    b. Update Reader_VW by changing the Address='NY' to 'New York'.
    c. Delete from Reader_VW the Reader -Ann.
    d. Delete the view created.

19. Implementation of Built in functions in RDBMS
    a. Find the value of 16^5.
    b. Find the length of the string "Application".
    c. What is the last date of the current month?
    d. Convert the given number 65432 to $65432. Use format mask.
    e. Display the current system date and time with fractional seconds with time zone.
    f. Find the number of book titles available.

***Deadline: 12-10-2023**

Day 5: PL/SQL Programs

20. Implement the following simple PL/SQL programs.
    a. PL/SQL program to find the factorial of a number.
    b. PL/SQL program to reverse a string.

21. Implementation of various control structures using PL/SQL.
    a. Write a PL/SQL code block to calculate the area of a circle for a value of radius varying from 5 to 15. Store the radius and the corresponding values of calculated area in an empty table named areas, consisting of two columns radius & area.

    b. Write a PL/SQL code block that will accept an account number from the user, check if the users balance is less than minimum balance, then deduct Rs.100/ - from the balance. (Exception handling in PL/SQL)

***Deadline: 19-10-2023**

Day 6. Procedures and Functions

22. Creation of Procedures and Functions

a. Create a procedure which decreases the fine of the given reader from the Readers table by 5% if the total fine is greater than 100.
b. Write a procedure to add "not returned" status to the Books table which are not returned after the due date.
c. Write a function which returns the no. of copies of a book, given the author ID.
d. Create a function which returns the "Return Date" of all books for a particular reader if the userID is given.

***Deadline: 26-10-2023**

Day 7. Cursors

23. Create a Cursor which updates the "fine" of a reader as follows.
    i. If fine < 100 then update the fine to 100.
    ii. If fine>=100 and <150 then update the fine to 150.
    iii. If fine>=150 and < 200 then update the fine to 200.
    iv. Count the no: of records that have been updated.
24. Create a cursor to update the due date for a particular book to 15 days if more than three reserve exists.
25. Create a cursor to increase the number of copies of the books as follows.
    i. If no. of copies < 5 then update to 8.
    ii. If no. of copies < 10 then update to 12.
    iii. If no. of copies < 15 then update to 17.

***Deadline: 02-11-2023**

Day 8. Triggers

26. Create a trigger to the reader when the due date of a book exceeds the current date.
27. Create a trigger to the reader if the total fine for a reader is greater than Rs 500.
28. Create a trigger to the reader if there exists more than two reserves for a particular book.
29. Create a trigger to check a particular reader has given only maximum three reserves in total.

***Deadline: 09-11-2023**

Day 9. Packages

30. Create a package which contains:
    i. A procedure to add new books to library.
    ii. A function to increase the due date by 5 days.

***Deadline: 16-11-2023**

Day 10. NOSQL Databases

31. Create a collection “employees” with the following structure:

{

{ emp: "Harry", sal: 20000, address: { street: “asb12”, city: “lll”, country: "US" }, dept: "A" },
{ emp: "Tom", sal: 25000, address: { street: “ak112”, city: “lll”, country: "US" }, dept: "B" },
{ emp: "Tim", sal: 80000, address: { street: “asb12”, city: “kkk”, country: "UK" }, dept: "A" },
{ emp: "Pam", sal: 65000, address: { street: “al12”, city: “ooo”, country: "SA" }, dept: "C" },
{emp: "Mary", sal: 40000, address: { street: “a4512”, city: “tttt”, country: "SA" }, dept: "A" },
{ emp: "Lily", sal: 75000, address: { street: “ak11”, city: “yyy”, country: "UK" }, dept: "C" },
{ emp: "Sal", sal: 55000, address: { street: “at11”, city: “yyl”, country: "UK" }, dept: "B" }

}

32. Insert a new document in the collection “employees”.
33. Read all documents from the collection.
34. Read all employees with salary greater than 50,000 and working in department C.
35. Update the documents of each employee working in department B, by adding a new field email:["a1@gmail.com", “aa1@gmail.com”].
36. Delete the documents of all employees whose salary is less than 30000 and department =A or B.

***Deadline: 23-11-2023**

Day 11 & 12. Mini Project

***Deadline: 07-12-2023**

NB: (The Date of Completion of Experiments are given between programs. The Students are directed to strictly follow the deadlines to avoid loosing of marks.)

Lab-in charges

S5 CS Alpha : Mr. Paul Augustine

S5 CS Beta : Dr. Saritha S

S5 CS Gamma: Ms. Jomina John.

Dr. Preetha K.G.

HOD, CSE