Module-4: Introduction to DBMS

Lab exercise(Extra)

* 1.INTRODUCTION TO SQL:-

🡪Lab 3: Create a database called library\_db and a table books with columns: book\_id, title, author, publisher, year\_of\_publication, and price. Insert five records into the table.

Query:-

create database library\_db;//create database

use library\_db;//use it

create table books(book\_id int primary key,title varchar(20),author varchar(20),publisher varchar(20),year\_of\_publication year,price int);//for books table

INSERT INTO books VALUES

(1, 'C Programming', 'Dennis Ritchie', 'Prentice Hall', 1988, 450),

(2, 'Data Structures', 'Seymour Lipschutz', 'McGraw-Hill', 1990, 520),

(3, 'DBMS Concepts', 'Korth', 'McGraw-Hill', 2006, 600),

(4, 'Let Us C', 'Yashwant Kanetkar', 'BPB', 2010, 300),

(5, 'Operating System', 'Galvin', 'Wiley', 2014, 750);

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🡪Lab 4: Create a table members in library\_db with columns: member\_id, member\_name, date\_of\_membership, and email. Insert five records into this table.

Query:-

create table members(member\_id int primary key,member\_name varchar(20),date\_of\_membership date,email varchar(35) unique not null);

INSERT INTO members VALUES

(1, 'Yogesh Patel', '2022-01-15', 'patelyogesh26042005@gmail.com'),

(2, 'Ayan Mansuri', '2021-11-10', 'ayanmansuri@gmail.com'),

(3, 'Jay Mokariya', '2023-05-25', 'jaymokariya@gmail.com'),

(4, 'Kuntal Nayee', '2020-07-30', 'kuntal@gmail.com'),

(5, 'Yash Parmar', '2024-03-18', 'yash@gmail.com');

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* 2.SQL SYNTAX-

🡪Lab 3: Retrieve all members who joined the library before 2022. Use appropriate SQL syntax with WHERE and ORDER BY.

Query:-

select \* from members where date\_of\_membership < '2022-01-01';

🡪Lab 4: Write SQL queries to display the titles of books published by a specific author. Sort the results by year\_of\_publication in descending order.

Query:-

Select title ,author,year\_of\_publication from books order by

year\_of\_publication desc;

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* Que-3. SQL CONSTRAINTS:-

🡪Lab 3: Add a CHECK constraint to ensure that the price of books in the books table is greater than 0.

Query:

alter table books add constraint check(price>0);

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🡪 Lab 4: Modify the members table to add a UNIQUE constraint on the email column, ensuring that each member has a unique email address.

Query:-

alter table members add constraint unique (email);

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* 4. Main SQL Commands and Sub-commands(DDL):-

🡪Lab 3: Create a table authors with the following columns: author\_id, first\_name, last\_name, and country. Set author\_id as the primary key.

Query:

create table authors(author\_id int primary key,first\_name varchar(20),last\_name varchar(20),country varchar(20))

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🡪Lab 4: Create a table publishers with columns: publisher\_id, publisher\_name, contact\_number, and address. Set publisher\_id as the primary key and contact\_number as unique.

Query:-

create table publisher(publisher\_id int primary key ,publisher\_name varchar(20),contact\_number bigint unique,address varchar(50))

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* 5. ALTER COMMAND:-

🡪Lab 3: Add a new column genre to the books table. Update the genre for all existing records.

🡪Lab 4: Modify the members table to increase the length of the email column to 100 characters.

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* 6. DROP COMMAND:-

🡪Lab 3: Drop the publishers table from the database after verifying its structure. • Lab 4: Create a backup of the members table and then drop the original members table.

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* 7. Data Manipulation Language (DML):-

🡪Lab 4: Insert three new authors into the authors table, then update the last name of one of the authors. • Lab 5: Delete a book from the books table where the price is higher than $100

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* 8.Update Command:-

🡪Lab 3: Update the year\_of\_publication of a book with a specific book\_id. • Lab 4: Increase the price of all books published before 2015 by 10%.

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* 9. Delete Command:-

🡪Lab 3: Remove all members who joined before 2020 from the members table. • Lab 4: Delete all books that have a NULL value in the author column.

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* 10.Data Query Language(DQL):-

🡪Lab 4: Write a query to retrieve all books with price between $50 and $100. • Lab 5: Retrieve the list of books sorted by author in ascending order and limit the results to the top 3 entries.

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* 11. Data Control Language(DCL):-

🡪Lab 3: Grant SELECT permission to a user named librarian on the books table. • Lab 4: Grant INSERT and UPDATE permissions to the user admin on the members table

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* 12.Revoke Command :-

🡪Lab 3: Revoke the INSERT privilege from the user librarian on the books table. • Lab 4: Revoke all permissions from user admin on the members table.

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* 13.Transaction Control language(TCL):-

🡪Lab 3: Use COMMIT after inserting multiple records into the books table, then make another insertion and perform a ROLLBACK. • Lab 4: Set a SAVEPOINT before making updates to the members table, perform some updates, and then roll back to the SAVEPOINT.

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* 14. SQL Join:-

🡪Lab 3: Perform an INNER JOIN between books and authors tables to display the title of books and their respective authors' names. • Lab 4: Use a FULL OUTER JOIN to retrieve all records from the books and authors tables, including those with no matching entries in the other table.

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* 15. SQL Group By :-

🡪Lab 3: Group books by genre and display the total number of books in each genre. • Lab 4: Group members by the year they joined and find the number of members who joined each year.

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* 16. SQL Stored Procedure:-

🡪Lab 3: Write a stored procedure to retrieve all books by a particular author. • Lab 4: Write a stored procedure that takes book\_id as an argument and returns the price of the book.

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* 17. SQL View:-

🡪Lab 3: Create a view to show only the title, author, and price of books from the books table. • Lab 4: Create a view to display members who joined before 2020.

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* 18. SQL Trigger :-

🡪Lab 3: Create a trigger to automatically update the last\_modified timestamp of the books table whenever a record is updated. • Lab 4: Create a trigger that inserts a log entry into a log\_changes table whenever a DELETE operation is performed on the books table.

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* 19. Introduction To PL/SQL :-

🡪Lab 3: Write a PL/SQL block to insert a new book into the books table and display a confirmation message. • Lab 4: Write a PL/SQL block to display the total number of books in the books table.

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* 20. PL/SQL Syntax :-

🡪Lab 3: Write a PL/SQL block to declare variables for book\_id and price, assign values, and display the results. • Lab 4: Write a PL/SQL block using constants and perform arithmetic operations on book prices.

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* 21. PL/SQL Control Structure :-

🡪Lab 3: Write a PL/SQL block using IF-THEN-ELSE to check if a book's price is above $100 and print a message accordingly. • Lab 4: Use a FOR LOOP in PL/SQL to display the details of all books one by one.

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* 22. SQL Cursor :-

🡪Lab 3: Write a PL/SQL block using an explicit cursor to fetch and display all records from the members table. • Lab 4: Create a cursor to retrieve books by a particular author and display their titles.

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* 23. Rollback And Commit Savepoint :-

🡪Lab 3: Perform a transaction that includes inserting a new member, setting a SAVEPOINT, and rolling back to the savepoint after making updates. • Lab 4: Use COMMIT after successfully inserting multiple books into the books table, then use ROLLBACK to undo a set of changes made after a savepoint.

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