

Date: 04/08/2025
Task 2.1: Generating design of other traditional database model.

Aim: ~~to~~

To implementation of DDL and DML commands of SQL with suitable example

- Create table
- Alter table
- Drop table
- Truncate
- INSERT
- UPDATE
- DELETE
- SELECT

SQL (Structured Query Language):
SQL is the standard language used to interact with relational database. It allows user to create, modify, query, and manage data efficiently.

There are five types of SQL statement

They are

1. Data Definition language (DDL)
2. Data manipulation language (DML)
3. Data Retrieval language (DQL)
4. Transactional control language (TCL)
5. Data Control language (DCL)

1. Data Definition Language (DDL):
The Data definition language (DDL) is used to ~~create~~ and ~~destroy~~ database and database objects. These commands will primarily be used by database administrator during the setup and removal phase of a database and usage of four DDL commands.

1. DDL Commands Data Definition Language
Definition: DDL commands are used to define, modify or delete the structure of database objects such as table.

1. CREATE TABLE:

Definition: Used to create a new table in the database.

SQL

```
CREATE TABLE Books(  
    BookID INT,  
    Title VARCHAR(150),  
    Author VARCHAR(100),  
    Price DECIMAL(8,2))
```

output:

Field	Type	Size	Default Value	PK	FK
BookID	INTEGER	10	1		
Title	VARCHAR(50)	50			
Author	VARCHAR(100)	100			
Price	DECIMAL(10,2)	10	0.00		

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500N 98.0 26-Nov-03 100 initialising

```
CREATE TABLE Members(
    Member ID INT,
    Member Name VARCHAR(100),
    Join Date DATE
);
```

Output:

Tables Books and members
created successfully

2. DESCRIBE or DESC

Definition: Display the structure
of a table (column names and data
types)

SQL:

```
DESC Books;
```

3. DROP TABLE

Definition: Deletes the entire table
structure and all its data

SQL:

```
DROP TABLE Books;
```

Output:

Table Books dropped successfully.

4. ALTER TABLE:

Definition: Used to add, delete or modify columns in an existing table.

SQL:

ALTER TABLE Books ADD publishedYear INT;

Output:

Column published year added to Books

II. DML commands (Data Manipulation) (9 marks)

Definition: DML commands are used to manage and manipulate data inside database tables.

1. INSERT INTO

Definition: Insert new rows into a table.

SQL:

INSERT INTO Books (Book ID, Title, Author, Price)

VALUES (1, 'The Alchemist', 'Paulo Coelho', 300)

INSERT INTO Books (Book ID, Title,

Author, Price)

VALUES (2, 'Wing of Tide', 'A. P. Ahluwalia', 400.00)

Output:

Book ID	Title	Author	Price
1.	The Alchemist	Paulo Coelho	350.00
2.	Wings of fire	A.P.J. Abdul Kalam	450.00
3.	1984	George Orwell	299.00

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Book ID	Title	Author	Price
321	Wings of Fire A.P.J Abdul Kalam	A.P.J Abdul Kalam	450.00
3	1984 George Orwell	George Orwell	299.00

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BOOK ID	TITLE	AUTHOR	PRICE
9811 (1)	1984	George Orwell	299.00
(2)	1984	George Orwell	299.00

INSERT INTO Books (Book ID, Title, Author, Price)
VALUES (3, '1984', 'George Orwell', 29.99);
3 rows inserted into Books table

2. SELECT:

Definition: Retrieves data from the
SQL Server database.

SELECT * FROM Books;

3. UPDATE:

Definition: Modifies existing data in
a table.

SQL:

UPDATE Books SET Price = 450.00 WHERE
Title = 'Wings of Fire';

Output:

680298

113130

SQL:

SELECT * FROM Books

4. DELETE:

Definition: Deletes one or more rows
of data from a table.

SQL:

DELETE FROM Books WHERE Book ID = 1;

DBMS, Class 42 No 8 Job No 29 of 42 19/8/2002

Command type	Command	Description
DDL	CREATE	Create table
DDL	DESC	Show table structure
DDL	DROP	Delete table
DDL	ALTER	Modifies table structure.
DML	INSERT	Add Records to table
DML	SELECT	Retrieves record
DML	UPDATE	Modifies exists record
DML	DELETE	Removes Record

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91802 1 1080610

Output:

1 row deleted

SQL:

SELECT * FROM Books;

SQL: SELECT with WHERE clause

Definition: retrieves specific records
that satisfy the condition.

SQL:

SELECT * FROM Books WHERE Author
= 'George Orwell';

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VIVA VOCE (5)	3
RECORD (5)	1
TOTAL (20)	13
SIGN WITH DATE	1/8/25

1/8/25

RESULT:

The task to create, delete,
alter the table and DML commands
was executed successfully.

DATE: 11/08/2025

TASK 2.2: DDL AND DML COMMANDS WITH CONSTRAINTS

Aim: To implement the DDL and DML commands with constraints

DDL Commands:

CREATE, ALTER, DROP, TRUNCATE, RENAME

DML Commands:

INSERT, UPDATE, DELETE, SELECT

Constraints:

Primary key

Foreign key

NOT NULL

UNIQUE

CHECK

CREATE TABLE Books (

BookID INT PRIMARY KEY,

Title VARCHAR(150) NOT NULL

Author VARCHAR(80) (NOT NULL),

Price DECIMAL(4,2) CHECK(price > 0),

Publisher & year - INT DEFAULT 2020,

ISBN VARCHAR(20) UNIQUE

);

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✓331 PAM129 TUE 9/17/2018

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WATER (5) AND AARON 1925

```
CREATE TABLE Member(
    MemberID INT PRIMARY KEY,
    MemberName VARCHAR(100) NOT NULL,
    JoinDate DATE DEFAULT CURRENT_DATE,
    Email VARCHAR(100) UNIQUE
);
```

```
CREATE TABLE Borrow(
    BorrowID INT PRIMARY KEY,
    BookID INT NOT NULL,
    MemberID INT NOT NULL,
    BorrowDate DATE DEFAULT CURRENT_DATE,
    ReturnDate DATE,
    FOREIGN KEY(BookID) REFERENCES Books(BookID),
    FOREIGN KEY(MemberID) REFERENCES Member(MemberID)
);
```

1.2 ALTER TABLE

~~ALTER TABLE~~ Books ADD Published VARCHAR(100);
~~ALTER TABLE~~ Books MODIFY Price DECIMAL(10,2);

1.3 TRUNCATE TABLE

TRUNCATE TABLE Borrow;
TABLE truncated

1.4 RENAME TABLE

158 894589702 AT 0900W

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RENAME TABLE Members TO LibraryMember;
TABLE RENAMED.

SQL commands for Library management system

2.1 INSERT Data

SQL:

INSERT INTO Books(BOOKID, Title, Author, Price, Published Year, ISBN)

Value (1, 'The Alchemist', 'Paulo Coelho', 350.00, 2018, '9780061122415');

INSERT INTO LibraryMembers(MemberID, MemberName, JoinDate, Email)

Value (101, 'Ananya Sharma', '2025-08-01', 'ananya@gmail.com')

INSERT INTO Borrow(BorrowID, BookID, MemberID, BorrowDate, ReturnDate)

VALUES (1001, 1, 101, '2025-08-10', NULL);

Output After INSERT:

Books Table

BOOKID	Title	AUTHOR	Price	PUBLISHED YEAR
1	The Alchemist	Paulo Coelho	350.00	2018

Library Members Table

MemberID	Member Name	JoinDate	Email
101	Ananya Sharma	2025-08-01	ananya@gmail.com

Borrow Table

BORROW ID	BOOK ID	MemberID	BorrowDate	ReturnDate
1001	1	101	2025-08-10	NULL

2.2 UPDATE DATA

SQL:

UPDATE Books

SET Price = 400.00, Published Year = 2022

WHERE BookID = 1;

Output:

1 row updated successfully

Books table after update:

BookID	Title	Author	Price	ISBN	Publisher
1	The Alchemist	Pablo Coello	400	978829122415	Random House

2.3 DELETE DATA

SQL:

DELETE FROM Borrow

WHERE Borrow ID = 100;

Output:

1 row deleted from Borrow table

Borrow table after delete:

NO rows

2.4 SELECT with JOIN

SQL

SELECT b.Title, b.Author, l.MemberName, b.BorrowDate
FROM Borrow b
JOIN Books b ON b.BookID = b.BookID

JOIN LibraryMember l ON b.MemberID = l.MemberID;

JOIN LibraryMember l ON b.MemberID = l.MemberID;

OUTPUT:

IS 16 rows returned as below table
empty.

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RESULT:

All DDL and DML commands executed successfully with constraints and sample outputs.