Experiment No.4
Apply DML commands for the specified system
Date of Performance:
Date of Submission:

Aim :- Write insert query to insert rows for each table created of your database management system. Use update and delete commands to manipulate the inserted values in the table.

Objective :- To learn commands of Data Manipulation Language(DML) to insert, update or delete the values in the database system.

Theory:

Data Manipulation Language (DML) is a subset of SQL (Structured Query Language) used for managing data within relational database management systems (RDBMS). DML commands are used to perform operations such as inserting, updating, and deleting data from database tables.

1. Inserting Data

The INSERT statement is used to add new rows of data into a table. It specifies the table to insert data into and provides values or expressions for each column in the new row. If a column list is not specified, values must be provided for all columns in the table in the order they were defined.

Syntax:-

INSERT INTO table_name (column1, column2, column3) VALUES (value1, value2,

value3); 2. Updating Data

The UPDATE statement is used to modify existing data within a table. It allows you to change the values of one or more columns in one or more rows based on specified conditions. If no condition is specified, all rows in the table will be updated.

Syntax:

UPDATE table_name SET column1 = value1, column2 = value2 WHERE

condition; 3. Deleting Data

The DELETE statement is used to remove one or more rows from a table based on specified conditions. If no condition is specified, all rows in the table will be deleted.

Syntax:

DELETE FROM table_name WHERE condition;

Implementation:

1. **INSERT:**

```sql
INSERT INTO Departments (department_id, department_name) VALUES
(1, 'Cardiology'),
(2, 'Neurology'),
(3, 'Orthopedics'),
(4, 'Pediatrics');

INSERT INTO Doctors (doctor_id, name, specialization, phone_number, department_id) VALUES
(101, 'Dr. Smith', 'Cardiologist', '123-456-7890', 1),
(102, 'Dr. Johnson', 'Neurologist', '456-789-0123', 2),
(103, 'Dr. Brown', 'Orthopedic Surgeon', '789-012-3456', 3),
(104, 'Dr. Williams', 'Pediatrician', '012-345-6789', 4);

INSERT INTO Patients (patient_id, name, age, gender, address, phone_number, doctor_id) VALUES
(201, 'John Doe', 35, 'Male', '123 Main St', '555-1234', 101),
(202, 'Jane Smith', 45, 'Female', '456 Elm St', '555-5678', 102),
(203, 'Michael Johnson', 25, 'Male', '789 Oak St', '555-9012', 103),
(204, 'Emily Brown', 30, 'Female', '321 Pine St', '555-3456', 104);

INSERT INTO Appointments (appointment_id, patient_id, doctor_id, appointment_date, appointment_time) VALUES
(301, 201, 101, '2024-04-20', '10:00:00'),
(302, 202, 102, '2024-04-21', '11:00:00'),
(303, 203, 103, '2024-04-22', '12:00:00'),
(304, 204, 104, '2024-04-23', '13:00:00');

INSERT INTO Medications (medication_id, medication_name, dosage, patient_id) VALUES
(401, 'Aspirin', '100 mg', 201),
(402, 'Tylenol', '500 mg', 202),
(403, 'Advil', '200 mg', 203),
(404, 'Amoxicillin', '250 mg', 204);

INSERT INTO Nurses (nurse_id, name, department_id) VALUES
(501, 'Nurse Smith', 1),
(502, 'Nurse Johnson', 2),
(503, 'Nurse Brown', 3),
(504, 'Nurse Williams', 4);

INSERT INTO Rooms (room_number, room_type, availability) VALUES
(101, 'Single', TRUE),
(102, 'Single', TRUE),
(103, 'Double', TRUE),
(104, 'Double', TRUE);

```

appointment_id	patient_id	doctor_id	appointment_date	appointment_time
301	201	101	2024-04-20	10:00:00
302	202	102	2024-04-21	11:00:00
303	203	103	2024-04-22	12:00:00
304	204	104	2024-04-23	13:00:00

doctor_id	name	specialization	phone_number	department_id
101	Dr. Smith	Cardiologist	123-456-7890	1
102	Dr. Johnson	Neurologist	456-789-0123	2
103	Dr. Brown	Orthopedic Surgeon	789-012-3456	3
104	Dr. Williams	Pediatrician	012-345-6789	4

department_id	department_name
1	Cardiology
2	Neurology
3	Orthopedics
4	Pediatrics

medication_id	medication_name	dosage	patient_id
401	Aspirin	100 mg	201
402	Tylenol	500 mg	202
403	Advil	200 mg	203
404	Amoxicillin	250 mg	204

2. UPDATE:

```
1 UPDATE Rooms
2 SET availability = FALSE
3 WHERE room_number = 104;
4
```

room_number	room_type	availability
101	Single	1
102	Single	1
103	Double	1
104	Double	0

3. **DELETE:**

```
1 DELETE FROM Patients WHERE patient_id = 1;
2
3
```

patient_id	name	age	gender	address	phone_number	doctor_id
201	John Doe	35	Male	123 Main St	555-1234	101
202	Jane Smith	45	Female	456 Elm St	555-5678	102
203	Michael Johnson	25	Male	789 Oak St	555-9012	103
204	Emily Brown	30	Female	321 Pine St	555-3456	104

Conclusion:

1. Explain the role of database constraints in enforcing data integrity during DML operations.

   Database constraints play a crucial role in enforcing data integrity during DML (Data Manipulation Language) operations by imposing rules and conditions on the data stored in the database tables. These constraints ensure that the data conforms to certain standards and requirements, preventing the insertion, modification, or deletion of data that could compromise its integrity. Constraints such as primary key, foreign key, unique, and check constraints help maintain consistency, accuracy, and reliability in the database by preventing invalid or inconsistent data from being introduced or manipulated.

2. How do you update multiple columns in a table using a single UPDATE statement?

   To update multiple columns in a table using a single UPDATE statement, you specify the column names and their corresponding new values separated by commas within the SET clause of the UPDATE statement. For example:

   UPDATE table_name
   SET column1 = value1, column2 = value2, column3 = value3
   WHERE condition;

   This statement updates the values of column1, column2, and column3 in the specified table with the provided values, subject to the specified condition.