**Name – Shahane Akash Dilip Roll No – C32260 Class – TE Div:2**

**Batch- T8 Subject - DBMS**

**ASSIGNMENT N0 – 2B**

**Title : Design at least 10 SQL queries for suitable database application using SQL DML statements: Insert, Select, Update, delete with operators, functions, and set operator.**

**----------------------------------------------------------------**

**Create a medical database having following table-**

**1. Patient table(pat\_id, pat\_name, date\_of\_admit, age, city)**

mysql> CREATE TABLE Patient(pat\_id VARCHAR(20), pat\_name VARCHAR(20), date\_of\_admit YEAR, age INT, city varchar(20),PRIM

ARY KEY(pat\_id) );

Query OK, 0 rows affected (0.01 sec)

mysql> DESC Patient;

+---------------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+---------------+-------------+------+-----+---------+-------+

| pat\_id | varchar(20) | NO | PRI | NULL | |

| pat\_name | varchar(20) | YES | | NULL | |

| date\_of\_admit | year | YES | | NULL | |

| age | int | YES | | NULL | |

| city | varchar(20) | YES | | NULL | |

+---------------+-------------+------+-----+---------+-------+

5 rows in set (0.00 sec)

**2. Doctor Table(doc\_id, doc\_name, qualification, exp , dept, city, salary)**

mysql> CREATE TABLE Doctor(doc\_id VARCHAR(20), doc\_name VARCHAR(20), qualification varchar(10), exp INT, dept VARCHAR(20

), city VARCHAR(20), salary INT, PRIMARY KEY(doc\_id));

Query OK, 0 rows affected (0.01 sec)

mysql> DESC Doctor;

+---------------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+---------------+-------------+------+-----+---------+-------+

| doc\_id | varchar(20) | NO | PRI | NULL | |

| doc\_name | varchar(20) | YES | | NULL | |

| qualification | varchar(10) | YES | | NULL | |

| exp | int | YES | | NULL | |

| dept | varchar(20) | YES | | NULL | |

| city | varchar(20) | YES | | NULL | |

| salary | int | YES | | NULL | |

+---------------+-------------+------+-----+---------+-------+

7 rows in set (0.00 sec)

**3. Treats Table(doc\_id, pat\_id, disease). Foreign key on doc\_id and pat\_id, doc\_id ON delete cascade, pat\_id ON delete set null.**

mysql> CREATE TABLE Treats(pat\_id VARCHAR(20),doc\_id VARCHAR(20), disease VARCHAR(20), CONSTRAINT fk\_pat FOREIGN KEY(pat\_id) REFERENCES Patient(pat\_id) ON DELETE SET NULL , CONSTRAINT fk\_doc FOREIGN KEY(doc\_id) REFERENCES Doctor(doc\_id) ON

DELETE CASCADE );

Query OK, 0 rows affected (0.02 sec)

mysql> DESC Treats;

+---------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+---------+-------------+------+-----+---------+-------+

| pat\_id | varchar(20) | YES | MUL | NULL | |

| doc\_id | varchar(20) | YES | MUL | NULL | |

| disease | varchar(20) | YES | | NULL | |

+---------+-------------+------+-----+---------+-------+

3 rows in set (0.00 sec)

**Queries-**

**1. Insert at least 5 record in each table.**

mysql> INSERT INTO Patient (pat\_id, pat\_name, date\_of\_admit, age, city) VALUES

-> ('p1', 'AAA', 2023-09-15, 25, 'Pune'),

-> ('p2', 'AAB', 2023-09-16, 30, 'Mumbai'),

-> ('p3', 'AAC', 2023-09-17, 35, 'Hyderabad'),

-> ('p4', 'AAD', 2023-09-18, 40, 'Pune'),

-> ('p5', 'AAE', 2023-09-19, 45, 'Nashik'),

-> ('p6', 'AAF', 2023-09-20, 50, 'Delhi'),

-> ('p7', 'AAG', 2023-09-21, 28, 'Chennai'),

-> ('p8', 'AAH', 2023-09-22, 33, 'Hyderabad'),

-> ('p9', 'AAI', 2023-09-23, 38, 'Bangalore'),

-> ('p10', 'AAJ', 2023-09-24, 43, 'Mumbai');

Query OK, 10 rows affected (0.00 sec)

Records: 10 Duplicates: 0 Warnings: 0

mysql> SELECT \* FROM Patient;

+--------+----------+---------------+------+-----------+

| pat\_id | pat\_name | date\_of\_admit | age | city |

+--------+----------+---------------+------+-----------+

| p1 | AAA | 1999 | 25 | Pune |

| p10 | AAJ | 1990 | 43 | Mumbai |

| p2 | AAB | 1998 | 30 | Mumbai |

| p3 | AAC | 1997 | 35 | Hyderabad |

| p4 | AAD | 1996 | 40 | Pune |

| p5 | AAE | 1995 | 45 | Nashik |

| p6 | AAF | 1994 | 50 | Delhi |

| p7 | AAG | 1993 | 28 | Chennai |

| p8 | AAH | 1992 | 33 | Hyderabad |

| p9 | AAI | 1991 | 38 | Banglore |

+--------+----------+---------------+------+-----------+

10 rows in set (0.00 sec**)**

mysql> INSERT INTO Doctor (doc\_id, doc\_name, qualification, exp, dept, city, salary)

-> VALUES

-> ('d101', 'Shubham', 'MBBS', 10, 'General', 'Pune', 12000),

-> ('d102', 'Shushant', 'PhD', 15, 'Accident', 'Mumbai', 14000),

-> ('d103', 'Ved', 'MD', 8, 'Orthopedics', 'Hyderabad', 11000),

-> ('d104', 'Om', 'MD', 12, 'Pediatrics', 'Chennai', 10000),

-> ('d105', 'Suhas', 'PhD', 20, 'General', 'Kolkata', 15000);

Query OK, 5 rows affected (0.01 sec)

Records: 5 Duplicates: 0 Warnings: 0

mysql> SELECT \* FROM Doctor;

5 rows in set (0.00 sec)

+------+---------+-------------+---+-------------+-----------+-------+

|doc\_id|doc\_name |qualification|exp| dept | city |salary |

+------+---------+-------------+---+-------------+-----------+-------+

|d101 | Shubham | MBBS |10 | General | Pune | 12000 |

|d102 | Shushant| PhD |15 | Accident | Mumbai | 14000 |

|d103 | Ved | MD | 8 | Orthopedics | Hyderabad | 11000 |

|d104 | Om | MD |12 | Pediatrics | Chennai | 10000 |

|d105 | Suhas | PhD |20 | General | Kolkata | 15000 |

+------+---------+-------------+---+-------------+-----------+-------+

5 rows in set (0.00 sec)

mysql> INSERT INTO Treats (doc\_id, pat\_id, disease)

-> VALUES

-> ('d101', 'p1', 'Hypertension'),

-> ('d102', 'p2', 'Migraine'),

-> ('d103', 'p3', 'Fractured Arm'),

-> ('d104', 'p4', 'Bronchitis'),

-> ('d105', 'p5', 'Cancer');

Query OK, 5 rows affected (0.01 sec)

Records: 5 Duplicates: 0 Warnings: 0

mysql> SELECT \* FROM Treats;

+--------+--------+---------------+

| pat\_id | doc\_id | disease |

+--------+--------+---------------+

| p1 | d101 | Hypertension |

| p2 | d102 | Migraine |

| p3 | d103 | Fractured Arm |

| p4 | d104 | Bronchitis |

| p5 | d105 | Cancer |

+--------+--------+---------------+

5 rows in set (0.00 sec)

**2. Display all the patients name between the age group 18-50**.

mysql> SELECT pat\_name FROM Patient WHERE age BETWEEN 18 AND 50;

+----------+

| pat\_name |

+----------+

| AAA |

| AAJ |

| AAB |

| AAC |

| AAD |

| AAE |

| AAF |

| AAG |

| AAH |

| AAI |

+----------+

10 rows in set (0.00 sec)

**3. Display the list of doctors who are MD**.

mysql> SELECT doc\_name FROM Doctor WHERE qualification = 'MD';

+----------+

| doc\_name |

+----------+

| Ved |

| Om |

+----------+

2 rows in set (0.00 sec)

**4. Display the list of doctors whose exp is 20+ years.**

mysql> SELECT doc\_name FROM Doctor WHERE exp > 20;

+----------+

| doc\_name |

+----------+

| Soham |

| Pratik |

| Omkar |

| Sujal |

+----------+

4 rows in set (0.00 sec**)**

**5. Display patients suffering from cancer.**

mysql> SELECT pat\_name FROM Patient WHERE pat\_id IN (SELECT pat\_id FROM Treats WHERE disease = 'Cancer');

+----------+

| pat\_name |

+----------+

| AAE |

| AAG |

| AAI |

+----------+

3 rows in set (0.01 sec)

**6. Display the patient’s name and doctor name who are in cancer.**

mysql> SELECT

-> (SELECT pat\_name FROM Patient WHERE pat\_id = t.pat\_id) AS patient\_name,

-> (SELECT doc\_name FROM Doctor WHERE doc\_id = t.doc\_id) AS doctor\_name FROM Treats t WHERE disease = 'Cancer';

+--------------+-------------+

| patient\_name | doctor\_name |

+--------------+-------------+

| AAE | Suhas |

| AAG | Pratik |

| AAI | Omkar |

+--------------+-------------+

3 rows in set (0.00 sec)

**7. Display the patient name whose name starts with letter 'a’, end with 'a', having the exact 5 letters.**

mysql> SELECT pat\_id,pat\_name FROM Patient WHERE pat\_name LIKE 'A%\_\_\_%a';

+--------+----------+

| pat\_id | pat\_name |

+--------+----------+

| p11 | Amara |

| p12 | Alina |

| p13 | Anika |

+--------+----------+

3 rows in set (0.00 sec)

**8. Remove of the records of patients with pat\_id = p10.**

mysql> DELETE FROM Patient WHERE pat\_id = 'p10';

Query OK, 1 row affected (0.01 sec)

mysql> SELECT \* FROM Patient;

+--------+----------+---------------+------+-----------+

| pat\_id | pat\_name | date\_of\_admit | age | city |

+--------+----------+---------------+------+-----------+

| p1 | AAA | 1999 | 25 | Pune |

| p11 | Amara | 1999 | 25 | Mumbai |

| p12 | Alina | 1998 | 30 | Pune |

| p13 | Anika | 1997 | 35 | Delhi |

| p2 | AAB | 1998 | 30 | Mumbai |

| p3 | AAC | 1997 | 35 | Hyderabad |

| p4 | AAD | 1996 | 40 | Pune |

| p5 | AAE | 1995 | 45 | Nashik |

| p6 | AAF | 1994 | 50 | Delhi |

| p7 | AAG | 1993 | 28 | Chennai |

| p8 | AAH | 1992 | 33 | Hyderabad |

| p9 | AAI | 1991 | 38 | BANGALORE |

+--------+----------+---------------+------+-----------+

12 rows in set (0.00 sec)

**9. Remove all the records of doctor Suhas**.

mysql> DELETE FROM Doctor WHERE doc\_name = 'Suhas';

Query OK, 1 row affected (0.00 sec)

mysql> SELECT \* FROM Doctor;

+------+----------+-------------+-----+-------------+-----------+-------+

|doc\_id| doc\_name |qualification| exp | dept | city |salary |

+------+----------+-------------+-----+-------------+-----------+-------+

| d101 | Shubham | MBBS | 10 | General | Pune | 12000 |

| d102 | Shushant | PhD | 15 | Accident | Mumbai | 14000 |

| d103 | Ved | MD | 8 | Orthopedics | Hyderabad | 11000 |

| d104 | Om | MD | 12 | Pediatrics | Chennai | 10000 |

| d106 | Soham | MBBS | 23 | General | Chennai | 12000 |

| d107 | Pratik | PhD | 25 | Accident | Mumbai | 14000 |

| d108 | Vedant | MD | 13 | Orthopedics | Delhi | 11000 |

| d109 | Omkar | MD | 22 | Pediatrics | Delhi | 10000 |

| d110 | Sujal | PhD | 27 | General | Mumbai | 15000 |

+------+----------+-------------+-----+-------------+-----------+-------+

9 rows in set (0.00 sec)

**10. Change the qualification of doctor Shubham from MBBS to MD.**

mysql> DELETE FROM Doctor WHERE doc\_name = 'Suhas';

Query OK, 1 row affected (0.00 sec)

mysql> SELECT \* FROM Doctor;

+------+----------+-------------+-----+-------------+-----------+-------+

|doc\_id| doc\_name |qualification| exp | dept | city |salary |

+------+----------+-------------+-----+-------------+-----------+-------+

| d101 | Shubham | MD | 10 | General | Pune | 12000 |

| d102 | Shushant | PhD | 15 | Accident | Mumbai | 14000 |

| d103 | Ved | MD | 8 | Orthopedics | Hyderabad | 11000 |

| d104 | Om | MD | 12 | Pediatrics | Chennai | 10000 |

| d106 | Soham | MBBS | 23 | General | Chennai | 12000 |

| d107 | Pratik | PhD | 25 | Accident | Mumbai | 14000 |

| d108 | Vedant | MD | 13 | Orthopedics | Delhi | 11000 |

| d109 | Omkar | MD | 22 | Pediatrics | Delhi | 10000 |

| d110 | Sujal | PhD | 27 | General | Mumbai | 15000 |

+------+----------+-------------+-----+-------------+-----------+-------+

9 rows in set (0.00 sec)

**11. Give 5% salary raise to the Dentist and 10% to the Cardiologist in a single query.**

mysql> UPDATE Doctor

-> SET salary = salary \* 1.05

-> WHERE dept = 'Dentist';

Query OK, 2 rows affected (0.00 sec)

Rows matched: 2 Changed: 2 Warnings: 0

mysql>

mysql> UPDATE Doctor

-> SET salary = salary \* 1.10

-> WHERE dept = 'Cardiology';

Query OK, 2 rows affected (0.00 sec)

Rows matched: 2 Changed: 0 Warnings: 0

mysql> SELECT doc\_id, doc\_name, dept, salary FROM Doctor;

+--------+----------+-------------+--------+

| doc\_id | doc\_name | dept | salary |

+--------+----------+-------------+--------+

| d101 | Shubham | General | 12000 |

| d102 | Shushant | Accident | 14000 |

| d103 | Ved | Orthopedics | 11000 |

| d104 | Om | Pediatrics | 10000 |

| d106 | Soham | General | 12000 |

| d107 | Pratik | Accident | 14000 |

| d108 | Vedant | Orthopedics | 11000 |

| d109 | Omkar | Pediatrics | 10000 |

| d110 | Sujal | General | 15000 |

| d111 | Simran | Cardiology | 13200 |

| d112 | Sarah | Dentist | 14700 |

| d113 | Sankalp | Orthopedics | 11000 |

| d114 | Tanmay | Dentist | 10500 |

| d115 | Deepak | Cardiology | 16500 |

+--------+----------+-------------+--------+

14 rows in set (0.00 sec)

**12. Display department wise total salary of the doctors.**

mysql> SELECT dept, SUM(salary) AS total\_salary FROM Doctor

-> GROUP BY dept;

+-------------+--------------+

| dept | total\_salary |

+-------------+--------------+

| General | 39000 |

| Accident | 28000 |

| Orthopedics | 33000 |

| Pediatrics | 20000 |

| Cardiology | 29700 |

| Dentist | 25200 |

+-------------+--------------+

6 rows in set (0.01 sec)

**13. Find the department which has the highest average salary.**

mysql> SELECT dept

-> FROM Doctor

-> GROUP BY dept

-> HAVING AVG(salary) = (

-> SELECT MAX(avg\_salary)

-> FROM (

-> SELECT AVG(salary) AS avg\_salary

-> FROM Doctor

-> GROUP BY dept

-> ) AS avg\_salaries

-> );

+------------+

| dept |

+------------+

| Cardiology |

+------------+

1 row in set (0.01 sec)

**14. Find the average salary of doctors in Dentist Department.**

mysql> SELECT AVG(salary) AS avg\_salary FROM Doctor WHERE dept = 'Dentist';

+------------+

| avg\_salary |

+------------+

| 12600.0000 |

+------------+

1 row in set (0.00 sec)

**15. Find the department where average salary doctor is more than 50,000.**

mysql> SELECT dept

-> FROM Doctor

-> GROUP BY dept HAVING AVG(salary) > 50000;

Empty set (0.00 sec)

**16. Find how many doctors work in hospital.**

mysql> SELECT COUNT(doc\_name) AS Total\_no\_of\_Doctors FROM Doctor;

+---------------------+

| Total\_no\_of\_Doctors |

+---------------------+

| 14 |

+---------------------+

1 row in set (0.00 sec)

**17. Find out how many doctors actually treated a patient.**

mysql> SELECT COUNT(DISTINCT doc\_id) AS num\_doctors FROM Treats;

+-------------+

| num\_doctors |

+-------------+

| 9 |

+-------------+

1 row in set (0.00 sec)

**18. List the cities in which either doctors or patient lives.**

mysql> SELECT city FROM Doctor UNION SELECT city FROM Patient;

+-----------+

| city |

+-----------+

| Pune |

| Mumbai |

| Hyderabad |

| Chennai |

| Delhi |

| Kolkata |

| Nashik |

| BANGALORE |

+-----------+

8 rows in set (0.00 sec**)**

**19. List the cities where both live.**

mysql> SELECT city FROM Doctor INTERSECT SELECT city FROM Patient;

+-----------+

| city |

+-----------+

| Pune |

| Mumbai |

| Hyderabad |

| Chennai |

| Delhi |

+-----------+

5 rows in set (0.00 sec)

**20. List doctor name patient name and their cities name if they live in same city.**

mysql> SELECT d.doc\_name AS doctors, p.pat\_name AS patients, d.city AS city FROM Doctor d, Patient p WHERE d.city = p.city;

+----------+----------+-----------+

| doctors | patients | city |

+----------+----------+-----------+

| Shubham | AAD | Pune |

| Shubham | Alina | Pune |

| Shubham | AAA | Pune |

| Shushant | AAB | Mumbai |

| Shushant | Amara | Mumbai |

| Ved | AAH | Hyderabad |

| Ved | AAC | Hyderabad |

| Om | AAG | Chennai |

| Soham | AAG | Chennai |

| Pratik | AAB | Mumbai |

| Pratik | Amara | Mumbai |

| Vedant | AAF | Delhi |

| Vedant | Anika | Delhi |

| Omkar | AAF | Delhi |

| Omkar | Anika | Delhi |

| Sujal | AAB | Mumbai |

| Sujal | Amara | Mumbai |

| Simran | AAD | Pune |

| Simran | Alina | Pune |

| Simran | AAA | Pune |

| Sarah | AAB | Mumbai |

| Sarah | Amara | Mumbai |

| Sankalp | AAH | Hyderabad |

| Sankalp | AAC | Hyderabad |

| Tanmay | AAG | Chennai |

+----------+----------+-----------+

25 rows in set (0.00 sec)

**21. Find the doctors who have not treated any patient.**

mysql> SELECT doc\_id, doc\_name

-> FROM Doctor

-> WHERE doc\_id NOT IN (SELECT DISTINCT doc\_id FROM Treats);

+--------+----------+

| doc\_id | doc\_name |

+--------+----------+

| d111 | Simran |

| d112 | Sarah |

| d113 | Sankalp |

| d114 | Tanmay |

| d115 | Deepak |

+--------+----------+

5 rows in set (0.00 sec)

**22 a. Display name of doctors and patients as a single column.**

mysql> SELECT doc\_name AS name FROM Doctor UNION

-> SELECT pat\_name AS name FROM Patient;

+----------+

| name |

+----------+

| Shubham |

| Shushant |

| Ved |

| Om |

| Soham |

| Pratik |

| Vedant |

| Omkar |

| Sujal |

| Simran |

| Sarah |

| Sankalp |

| Tanmay |

| Deepak |

| AAA |

| Amara |

| Alina |

| Anika |

| AAB |

| AAC |

| AAD |

| AAE |

| AAF |

| AAG |

| AAH |

| AAI |

+----------+

26 rows in set (0.00 sec)

**b. Let duplicate name appear many times.**

mysql> SELECT doc\_name AS name FROM Doctor UNION ALL

-> SELECT pat\_name AS name FROM Patient;

+----------+

| name |

+----------+

| Shubham |

| Shushant |

| Ved |

| Om |

| Om |

| Soham |

| Pratik |

| Vedant |

| Omkar |

| Sujal |

| Simran |

| Sarah |

| Sankalp |

| Tanmay |

| Deepak |

| AAA |

| Amara |

| Alina |

| Anika |

| Amara |

| AAB |

| AAB |

| AAC |

| AAC |

| AAD |

| AAE |

| AAF |

| AAG |

| AAH |

| AAI |

+----------+

30 rows in set (0.00 sec)

**23. What is the total money collected so far from treatment of patients.**

mysql> ALTER TABLE Treats ADD treatment\_cost DECIMAL(10, 2);

Query OK, 0 rows affected (0.03 sec)

Records: 0 Duplicates: 0 Warnings: 0

mysql> SELECT SUM(treatment\_cost) AS Total\_Cost FROM Treats;

+------------+

| Total\_Cost |

+------------+

| 29800.00 |

+------------+

1 row in set (0.00 sec)

**24. Find average salary of each department.**

mysql> SELECT dept, AVG(salary) AS Avg\_Salary FROM Doctor GROUP BY dept;

+-------------+------------+

| dept | Avg\_Salary |

+-------------+------------+

| General | 13000.0000 |

| Accident | 14000.0000 |

| Orthopedics | 11000.0000 |

| Pediatrics | 10000.0000 |

| Cardiology | 14850.0000 |

| Dentist | 12600.0000 |

+-------------+------------+

6 rows in set (0.00 sec**)**

**25. Display patient which does not have email id.**

mysql> ALTER TABLE Patient ADD COLUMN email varchar(50);

Query OK, 0 rows affected (0.02 sec)

Records: 0 Duplicates: 0 Warnings: 0

mysql> SELECT \* FROM Patient WHERE email IS NULL;

+--------+----------+---------------+------+-----------+-------+

| pat\_id | pat\_name | date\_of\_admit | age | city | email |

+--------+----------+---------------+------+-----------+-------+

| p19 | AAB | 1998 | 30 | Pune | NULL |

| p2 | AAB | 1998 | 30 | Mumbai | NULL |

| p20 | AAC | 1997 | 35 | Delhi | NULL |

| p5 | AAE | 1995 | 45 | Nashik | NULL |

| p6 | AAF | 1994 | 50 | Delhi | NULL |

| p7 | AAG | 1993 | 28 | Chennai | NULL |

| p8 | AAH | 1992 | 33 | Hyderabad | NULL |

+--------+----------+---------------+------+-----------+-------+

7 rows in set (0.00 sec)