PRIME COLLEGE

Affiliated to Tribhuvan University

Bachelor of Science in Computer Science and Information Technology

# Lab Report Of

# Database Management System


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## Objectives:

1. Designing database for an organization
2. Entity-Relation Diagram
3. Entity-Relation to Relational model
4. SQL

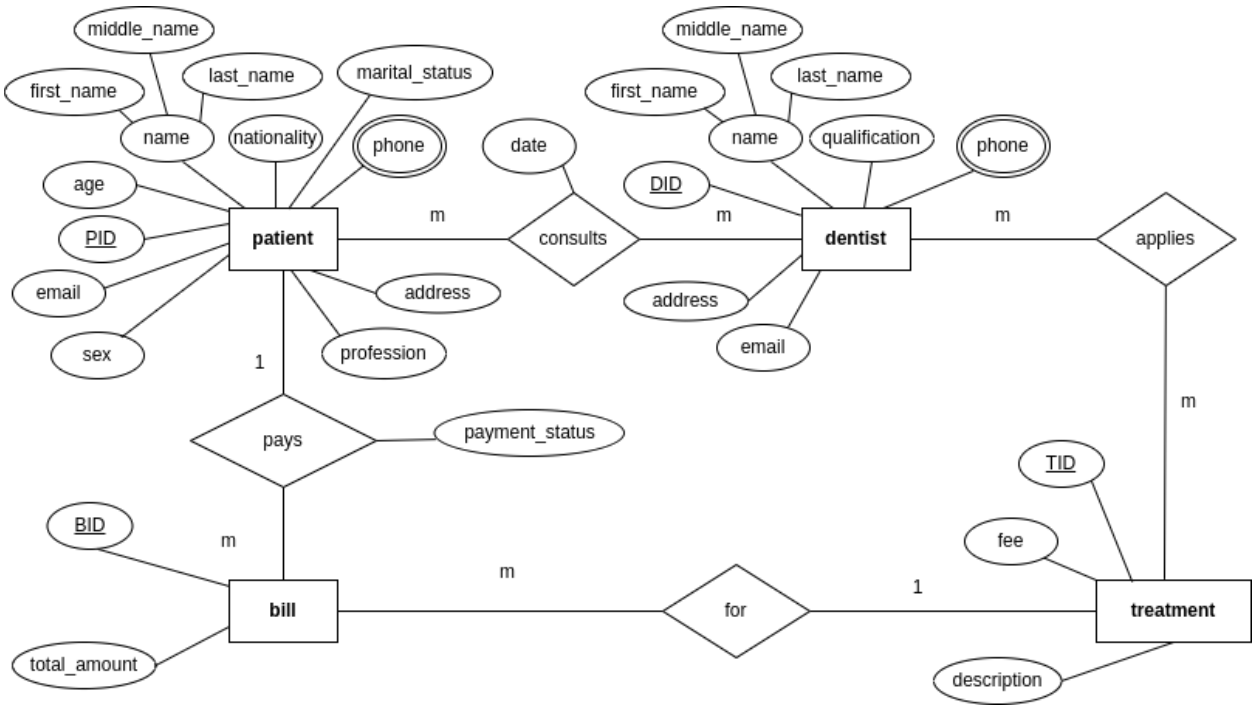
## Project Details

### Topic : Danta Clinic

Danta clinic is a dental care center, committed to expert oral health care and treatment. With a team of specialists, we aspire to provide outstanding dental services that are easily accessible to our clients and patients.

Here we will simply create a database for dental clinics, who provide dental services for patients.The clinic has many patients. Each patient can consult with many dentists and many dentists can apply many treatments to the patient. Based on treatments a patient pays a bill for that. So we created a database to store all of this information in a structured manner.

# Entity-Relational Diagram




# Entity-Relation to Relational model

- ☐ **Mapping of strong entity types**
  Here in our er-diagram strong entities are patient,dentist,treatment and bill so we create tables for them.

  For patients :

  For dentists:

For Treatments:

For Bill:

☐ **Mapping of weak entity types**
No weak entities.

☐ **Mapping of 1:1 binary relationship type**
No 1:1 relationship.

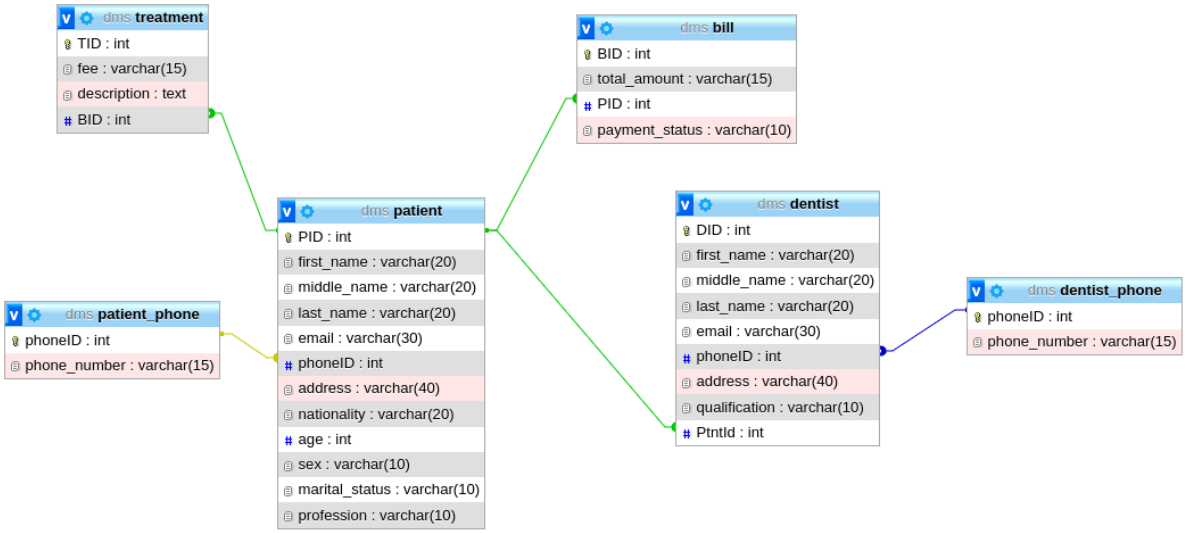
☐ **Mapping of 1:N binary relationship type**

☐ **Mapping of M:N binary relationship type**

☐ **Mapping of multivalued attribute**

☐ **Mapping of n-ary relationship type**
No n-ary relationship type.

# Relational diagram




# SQL

Let's create a new database named "dms" to store all our data tables and relationships. "dms" stands for dental management system.

```
basanta@machine:~ $ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 8.0.29-0ubuntu0.22.04.2 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database dms;
Query OK, 1 row affected (0.01 sec)

mysql> use dms;
Database changed
mysql>
```

**Creating tables**

- ❖
- ❖ **Creating patient table**

**SQL :**

```
CREATE TABLE patient(
        PID INT NOT NULL PRIMARY KEY,
        first_name VARCHAR(20) NOT NULL,
        middle_name VARCHAR(20),
        last_name VARCHAR(20) NOT NULL,
        email VARCHAR(30) NOT NULL,
        address VARCHAR(40) NOT NULL,
        nationality VARCHAR(20), age INT,
        sex VARCHAR(10),
        marital_status VARCHAR(10),
        profession VARCHAR(20)
 );
```

```
mysql> describe patient;
+----------------+-------------+------+-----+---------+-------+
| Field          | Type        | Null | Key | Default | Extra |
+----------------+-------------+------+-----+---------+-------+
| PID            | int         | NO   | PRI | NULL    |       |
| first_name     | varchar(20) | NO   |     | NULL    |       |
| middle_name    | varchar(20) | YES  |     | NULL    |       |
| last_name      | varchar(20) | NO   |     | NULL    |       |
| email          | varchar(30) | NO   |     | NULL    |       |
| address        | varchar(40) | NO   |     | NULL    |       |
| nationality    | varchar(20) | YES  |     | NULL    |       |
| age            | int         | YES  |     | NULL    |       |
| sex            | varchar(10) | YES  |     | NULL    |       |
| marital_status | varchar(10) | YES  |     | NULL    |       |
| profession     | varchar(20) | YES  |     | NULL    |       |
+----------------+-------------+------+-----+---------+-------+
11 rows in set (0.00 sec)
```

❖ **Creating patient_phone table**

Since our phone attribute in our patient entity is multi valued attribute,so we create a separate table to store values of phone number

**SQL :**

```
CREATE TABLE patient_phone(
        patientID INT,
        phone_number varchar(15) PRIMARY KEY,
        FOREIGN KEY(patientID) REFERENCES patient(PID)
);
```

```
mysql> describe patient_phone;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| patientID    | int         | YES  | MUL | NULL    |       |
| phone_number | varchar(15) | NO   | PRI | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
2 rows in set (0.01 sec)
```

❖ **Creating dentist table**

**SQL :**

```
CREATE TABLE dentist(
        DID INT NOT NULL PRIMARY KEY,
        first_name VARCHAR(20) NOT NULL,
        middle_name VARCHAR(20),
        last_name VARCHAR(20) NOT NULL,
        email VARCHAR(30) NOT NULL,
        address VARCHAR(40) NOT NULL,
        qualification VARCHAR(20)
);
```

```
mysql> describe dentist;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| DID           | int         | NO   | PRI | NULL    |       |
| first_name    | varchar(20) | NO   |     | NULL    |       |
| middle_name   | varchar(20) | YES  |     | NULL    |       |
| last_name     | varchar(20) | NO   |     | NULL    |       |
| email         | varchar(30) | NO   |     | NULL    |       |
| address       | varchar(40) | NO   |     | NULL    |       |
| qualification | varchar(20) | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
7 rows in set (0.00 sec)
```

- **Creating dentist_phone table**

  Similarly our phone attribute in our dentist table is multi valued attribute,so we create a separate table to store values of phone for a dentist

  **SQL :**

```
CREATE TABLE dentist_phone(
        dentistID INT,
        phone_number varchar(15) PRIMARY KEY,
        FOREIGN KEY(dentistID) REFERENCES dentist(DID)
);
```

```
mysql> describe dentist_phone;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| dentistID    | int         | YES  | MUL | NULL    |       |
| phone_number | varchar(15) | NO   | PRI | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

- **Creating consults table**

  **SQL :**

CREATE TABLE consults (ptID INT, dtID INT, date DATE, FOREIGN KEY(ptID) REFERENCES patient(PID), FOREIGN KEY(dtID) REFERENCES dentist(DID));

```
mysql> describe consults;
+-------+------+------+-----+---------+-------+
| Field | Type | Null | Key | Default | Extra |
+-------+------+------+-----+---------+-------+
| ptID  | int  | YES  | MUL | NULL    |       |
| dtID  | int  | YES  | MUL | NULL    |       |
| date  | date | YES  |     | NULL    |       |
+-------+------+------+-----+---------+-------+
3 rows in set (0.01 sec)
```

- **Creating treatment table**

**SQL :**

```
CREATE TABLE treatment(
    TID INT PRIMARY KEY,
    fee VARCHAR(15),
    description TEXT(100),
);
```

```
mysql> describe treatment;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| TID         | int         | NO   | PRI | NULL    |       |
| fee         | varchar(15) | YES  |     | NULL    |       |
| description | text        | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

- **Creating bill table**

**SQL :**

```
CREATE TABLE bill(
    BID INT PRIMARY KEY,
    total_amount VARCHAR(15),
    PID int,
    payment_status VARCHAR(10),
```

```
        TID int,
        FOREIGN KEY (PID) REFERENCES patient(PID),
        FOREIGN KEY (TID) REFERENCES treatment(TID),
);
```

```
+----------------+-------------+------+-----+---------+-------+
| Field          | Type        | Null | Key | Default | Extra |
+----------------+-------------+------+-----+---------+-------+
| BID            | int         | NO   | PRI | NULL    |       |
| total_amount   | varchar(15) | YES  |     | NULL    |       |
| PID            | int         | YES  | MUL | NULL    |       |
| payment_status | varchar(10) | YES  |     | NULL    |       |
| TID            | int         | YES  | MUL | NULL    |       |
+----------------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

- **Inserting data into patient table**

**SQL :**

```
CREATE TABLE dentist_treats(
        dID INT,
        tID INT,
        FOREIGN KEY(dID) REFERENCES dentist(DID),
        FOREIGN KEY(tID) REFERENCES treatment(TID)
 );
```

```
mysql> describe dentist_treats;
+-------+------+------+-----+---------+-------+
| Field | Type | Null | Key | Default | Extra |
+-------+------+------+-----+---------+-------+
| dID   | int  | YES  | MUL | NULL    |       |
| tID   | int  | YES  | MUL | NULL    |       |
+-------+------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

❖ **Inserting data into patient table**

**SQL :**

**Inserting one row at a time**

INSERT INTO patient VALUES ( 1, "Basanta", "", "Rai", "basanta@email.com", "Khandbari", "Nepali", 20, "Male" ,"Single", "Student");

INSERT INTO patient VALUES( 2,"Robin", "", "Devkota", "robin@email.com", "Kathmandu", "Nepali", 22, "Male", "Single", "Student" );

INSERT INTO patient (PID, first_name, middle_name, last_name,email, address, nationality, age, sex, marital_status, profession) VALUES (3, "Bishal", "Bahadur", "Gurung", "bishal@email.com", "Sydney", "Australian", 20, "Male", "Single", "Businessman");

**Inserting multiple rows at a time**

INSERT INTO patient (PID, first_name, last_name, email, address, nationality, age, sex, marital_status, profession) VALUES (4, "Alexa", "Capaldi", "alexa@email.com", "New York", "American", 45, "Female", "Married", "Pilot"), (5, "Violet", "Kinder", "violet@email.com", "LA", "American", 26, "Female", "Single", "Musician" );

**Let's see the datas we have inserted:**

```
mysql> select * from patient;
+-----+------------+-------------+-----------+------------------+-----------+-------------+------+--------+----------------+-------------+
| PID | first_name | middle_name | last_name | email            | address   | nationality | age  | sex    | marital_status | profession  |
+-----+------------+-------------+-----------+------------------+-----------+-------------+------+--------+----------------+-------------+
|   1 | Basanta    |             | Rai       | basanta@email.com | Khandbari | Nepali      |   20 | Male   | Single         | Student     |
|   2 | Robin      |             | Devkota   | robin@email.com   | Kathmandu | Nepali      |   22 | Male   | Single         | Student     |
|   3 | Bishal     | Bahadur     | Gurung    | bishal@email.com  | Sydney    | Australian  |   20 | Male   | Single         | Businessman |
|   4 | Alexa      | NULL        | Capaldi   | alexa@email.com   | New York  | American    |   45 | Female | Married        | Pilot       |
|   5 | Violet     | NULL        | Kinder    | violet@email.com  | LA        | American    |   26 | Female | Single         | Musician    |
+-----+------------+-------------+-----------+------------------+-----------+-------------+------+--------+----------------+-------------+
5 rows in set (0.00 sec)
```

❖ **Inserting data into patient_phone table**

**SQL :**

**Inserting one row at a time**

INSERT INTO patient_phone VALUES(1,"9876543200");

INSERT INTO patient_phone VALUES(1,"9876543100");

INSERT INTO patient_phone VALUES(1,"9876543101");

INSERT INTO patient_phone VALUES(2,"9876543111");

INSERT INTO patient_phone VALUES(2,"9876543001");

**Inserting multiple rows at a time**
INSERT INTO patient_phone (patientID, phone_number) VALUES (3, "9876543219"), (4,"9814253647"), (4,"9876452310"), (5,"9812345670");

**Let's see the datas we have inserted:**

```
mysql> select * from patient_phone;
+-----------+--------------+
| patientID | phone_number |
+-----------+--------------+
|         1 | 9876543100   |
|         1 | 9876543101   |
|         1 | 9876543200   |
|         2 | 9876543001   |
|         2 | 9876543111   |
|         3 | 9876543219   |
|         4 | 9814253647   |
|         4 | 9876452310   |
|         5 | 9812345670   |
+-----------+--------------+
9 rows in set (0.00 sec)
```

- **Inserting data into dentist table**

**SQL :**

INSERT INTO dentist VALUES (1,"Dr. Pramila", "", "Adhikari", "pramila@email.com", "Kathmandu", "BSD");

INSERT INTO dentist VALUES (2, "Dr. Sristi", "", "Shah", "sristi@email.com", "Pokhara", "BSD");

INSERT INTO dentist VALUES (3,"Dr. Alin", "", "Tamang", "alin@email.com", "Pokhara", "DDS");

INSERT INTO dentist (DID, first_name, middle_name, last_name, email, address, qualification) VALUES (4, "Arjun", "Kumar", "Jha", "arjun@email.com", "Sarlahi", "DMD");

INSERT INTO dentist (DID, first_name, last_name, email, address, qualification) VALUES (5, "Astrina", "Gurung", "astrina@email.com", "Gorkha", "BSD");

**Let's see the datas we have inserted:**

```
mysql> select * from dentist;
+-----+-------------+-------------+-----------+-------------------+-----------+---------------+
| DID | first_name  | middle_name | last_name | email             | address   | qualification |
+-----+-------------+-------------+-----------+-------------------+-----------+---------------+
|   1 | Dr. Pramila |             | Adhikari  | pramila@email.com | Kathmandu | BSD           |
|   2 | Dr. Sristi  |             | Shah      | sristi@email.com  | Pokhara   | BSD           |
|   3 | Dr. Alin    |             | Tamang    | alin@email.com    | Pokhara   | DDS           |
|   4 | Arjun       | Kumar       | Jha       | arjun@email.com   | Sarlahi   | DMD           |
|   5 | Astrina     | NULL        | Gurung    | astrina@email.com | Gorkha    | BSD           |
+-----+-------------+-------------+-----------+-------------------+-----------+---------------+
5 rows in set (0.00 sec)
```

❖ **Inserting data into dentist_phone table**

**SQL :**

INSERT INTO dentist_phone VALUES(1,"9876512340");

INSERT INTO dentist_phone VALUES(1,"9856712340");

INSERT INTO dentist_phone VALUES(2,"9856712330");

INSERT INTO dentist_phone VALUES(3, "9856712390"), (3, "9871234650"), (3, "9823415670");

INSERT INTO dentist_phone VALUEs(4,"9871231234");

INSERT INTO dentist_phone VALUEs(5,"9876543321"),(5,"9812345761");

**Let's see the datas we have inserted:**

```
mysql> select * from dentist_phone;
+-----------+--------------+
| dentistID | phone_number |
+-----------+--------------+
|         1 | 9856712340   |
|         1 | 9876512340   |
|         2 | 9856712330   |
|         3 | 9823415670   |
|         3 | 9856712390   |
|         3 | 9871234650   |
|         4 | 9871231234   |
|         5 | 9812345761   |
|         5 | 9876543321   |
+-----------+--------------+
9 rows in set (0.00 sec)
```

- **Inserting data into consults table**

**SQL :**

```
INSERT INTO consults VALUES(1,1,"2022-06-01");

INSERT INTO consults VALUES(1,2,"2022-06-01");

INSERT INTO consults VALUES(1,4,"2022-06-01");

INSERT INTO consults VALUES(2,4,"2022-06-01");

INSERT INTO consults VALUES(4,2,"2022-07-01");

 INSERT INTO consults VALUES(3,3,"2022-07-01"),(3,4,"2022-07-02");
```

**Let’s see the datas we have inserted:**

```
mysql> select * from consults;
+------+------+------------+
| ptID | dtID | date       |
+------+------+------------+
|    1 |    1 | 2022-06-01 |
|    1 |    2 | 2022-06-01 |
|    1 |    4 | 2022-06-01 |
|    2 |    4 | 2022-06-01 |
|    4 |    2 | 2022-07-01 |
|    3 |    3 | 2022-07-01 |
|    3 |    4 | 2022-07-02 |
+------+------+------------+
7 rows in set (0.00 sec)
```

- **Inserting data into treatment table**

  **SQL :**

  INSERT INTO treatment (TID,fee,description)
  VALUES(1,"3000","Endodonotics");

  INSERT INTO treatment (TID,fee,description) VALUES(2,"5000","Oral Pathology");

  INSERT INTO treatment (TID,fee,description) VALUES (3, "7000", "Periodonotics"), (4, "2000", "Cosmetic Restoration"), (5, "4000", "Pedodonotics" );

  **Let's see the datas we have inserted:**

```
mysql> select * from treatment;
+-----+------+----------------------+
| TID | fee  | description          |
+-----+------+----------------------+
|   1 | 3000 | Endodonotics         |
|   2 | 5000 | Oral Pathology       |
|   3 | 7000 | Periodonotics        |
|   4 | 2000 | Cosmetic Restoration |
|   5 | 4000 | Pedodonotics         |
+-----+------+----------------------+
5 rows in set (0.00 sec)
```

- **Inserting data into dentist_treats table**

**SQL :**

INSERT INTO dentist_treats (dID,tID) VALUES (1,1), (1,2), (2,3), (2,5), (3,1), (3,3), (3,5), (4,4), (5,1);

```
mysql> select * from dentist_treats;
+------+------+
| dID  | tID  |
+------+------+
|    1 |    1 |
|    1 |    2 |
|    2 |    3 |
|    2 |    5 |
|    3 |    1 |
|    3 |    3 |
|    3 |    5 |
|    4 |    4 |
|    5 |    1 |
+------+------+
9 rows in set (0.00 sec)
```

- **Inserting data into bill table**

**SQL :**

INSERT INTO bill VALUES(1,"20000",2,"UNPAID",3);

INSERT INTO bill VALUES(2,"5000",1,"PAID",2);

INSERT INTO bill VALUES(3,"7000",3,"PENDING",4);

INSERT INTO bill VALUES(4,"3000",1,"PAID",5),(5,"2000",5,"PAID",4);

**Let's see the datas we have inserted:**

```
mysql> select * from bill;
+-----+--------------+------+----------------+------+
| BID | total_amount | PID  | payment_status | TID  |
+-----+--------------+------+----------------+------+
|   1 | 20000        |    2 | UNPAID         |    3 |
|   2 | 5000         |    1 | PAID           |    2 |
|   3 | 7000         |    3 | PENDING        |    4 |
|   4 | 3000         |    1 | PAID           |    5 |
|   5 | 2000         |    5 | PAID           |    4 |
+-----+--------------+------+----------------+------+
5 rows in set (0.00 sec)
```

- **Using where clause**

**SQL :**

select email from patient where first_name="Basanta";

```
mysql> select email from patient where first_name="Basanta";
+--------------------+
| email              |
+--------------------+
| basanta@email.com |
+--------------------+
1 row in set (0.00 sec)
```

**SQL :**

select first_name from dentist where qualification="BSD";

```
mysql> select first_name from dentist where qualification="BSD";
+-------------+
| first_name  |
+-------------+
| Dr. Pramila |
| Dr. Sristi  |
| Astrina     |
+-------------+
3 rows in set (0.00 sec)
```

❖ **Using And, OR and Not**

**SQL :**

select total_amount from bill where PID=1 and payment_status="PAID";

```
mysql> select total_amount from bill where PID=1 and payment_status="PAID";
+--------------+
| total_amount |
+--------------+
| 5000         |
| 3000         |
+--------------+
2 rows in set (0.00 sec)
```

**SQL :**

select first_name,middle_name,last_name from patient where age>25 or nationality="American";

```
mysql> select first_name,middle_name,last_name from patient where age>25 or nationality="American";
+------------+-------------+-----------+
| first_name | middle_name | last_name |
+------------+-------------+-----------+
| Alexa      | NULL        | Capaldi   |
| Violet     | NULL        | Kinder    |
+------------+-------------+-----------+
2 rows in set (0.00 sec)
```

**SQL :**

select age from patient where not  marital_status="Married";

```
mysql> select age from patient where not  marital_status="Married";
+------+
| age  |
+------+
|   20 |
|   22 |
|   20 |
|   26 |
+------+
4 rows in set (0.00 sec)
```

❖ **Updating and showing datas**

**SQL :**

update treatment set fee="5000" where TID=4;

```
mysql> update treatment set fee="5000" where TID=4;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from treatment;
+-----+------+----------------------+
| TID | fee  | description          |
+-----+------+----------------------+
|   1 | 3000 | Endodonotics         |
|   2 | 5000 | Oral Pathology       |
|   3 | 7000 | Periodonotics        |
|   4 | 5000 | Cosmetic Restoration |
|   5 | 4000 | Pedodonotics         |
+-----+------+----------------------+
5 rows in set (0.00 sec)
```

**SQL :**

update patient set marital_status="Married" where sex="Male";

```
mysql> update patient set marital_status="Married" where sex="Male";
Query OK, 3 rows affected (0.00 sec)
Rows matched: 3  Changed: 3  Warnings: 0

mysql> select sex,marital_status from patient;
+--------+----------------+
| sex    | marital_status |
+--------+----------------+
| Male   | Married        |
| Male   | Married        |
| Male   | Married        |
| Female | Married        |
| Female | Single         |
+--------+----------------+
5 rows in set (0.00 sec)
```

❖ **Deleting data from table**

**SQL :**

delete from dentist_treats where dID=1 and tID=1;

```
mysql> select * from dentist_treats;
+------+------+
| dID  | tID  |
+------+------+
|    1 |    2 |
|    2 |    3 |
|    2 |    5 |
|    3 |    1 |
|    3 |    3 |
|    3 |    5 |
|    4 |    4 |
|    5 |    1 |
+------+------+
8 rows in set (0.00 sec)
```

**SQL :**

delete from dentist_phone where dentistID=3;

```
mysql> select * from dentist_phone;
+-----------+--------------+
| dentistID | phone_number |
+-----------+--------------+
|         1 | 9856712340   |
|         1 | 9876512340   |
|         2 | 9856712330   |
|         4 | 9871231234   |
|         5 | 9812345761   |
|         5 | 9876543321   |
+-----------+--------------+
6 rows in set (0.00 sec)
```

❖ **Using Aggregate functions**

**SQL :**

select MIN(fee) from treatment;

```
mysql> select MIN(fee) from treatment;
+----------+
| MIN(fee) |
+----------+
| 3000     |
+----------+
1 row in set (0.00 sec)
```

**SQL :**

select MAX(fee) from treatment;

```
mysql> select MAX(fee) from treatment;
+----------+
| MAX(fee) |
+----------+
| 7000     |
+----------+
1 row in set (0.00 sec)
```

**SQL :**

SELECT COUNT(age) from patient where sex="Male";

```
mysql> SELECT COUNT(age) from patient where sex="Male";
+------------+
| COUNT(age) |
+------------+
|          3 |
+------------+
1 row in set (0.00 sec)
```

**SQL :**

SELECT AVG(age) from patient where marital_status="Married";

```
mysql> SELECt AVG(age) from patient where marital_status="Married";
+----------+
| AVG(age) |
+----------+
|  26.7500 |
+----------+
1 row in set (0.00 sec)
```

❖ **Using Likes**

**SQL :**

select DID,email from dentist where email like "a%";

```
mysql> select DID,email from dentist where email like "a%";
+-----+--------------------+
| DID | email              |
+-----+--------------------+
|   3 | alin@email.com     |
|   4 | arjun@email.com    |
|   5 | astrina@email.com  |
+-----+--------------------+
3 rows in set (0.00 sec)
```

**SQL :**

select PID,email,age,sex from patient where nationality like "%l%";

```
mysql> select PID,email,age,sex from patient where nationality like "%l%";
+-----+------------------+------+------+
| PID | email            | age  | sex  |
+-----+------------------+------+------+
|   1 | basanta@email.com |   20 | Male |
|   2 | robin@email.com   |   22 | Male |
|   3 | bishal@email.com  |   20 | Male |
+-----+------------------+------+------+
3 rows in set (0.00 sec)
```

❖ **Using views**

**SQL :**

CREATE VIEW students AS SELECT first_name,middle_name,last_name FROM patient WHERE profession="Student";

```
mysql> CREATE VIEW students AS SELECT first_name,middle_name,last_name from patient WHERE profession="Student";
Query OK, 0 rows affected (0.01 sec)

mysql> SELECT * FROM students;
+------------+-------------+-----------+
| first_name | middle_name | last_name |
+------------+-------------+-----------+
| Basanta    |             | Rai       |
| Robin      |             | Devkota   |
+------------+-------------+-----------+
2 rows in set (0.00 sec)
```

❖ **Using aliases**

**SQL :**

SELECT PID AS id,first_name AS username FROM patient;

```
mysql> SELECT PID AS id,first_name AS username FROM patient;
+----+----------+
| id | username |
+----+----------+
|  1 | Basanta  |
|  2 | Robin    |
|  3 | Bishal   |
|  4 | Alexa    |
|  5 | Violet   |
+----+----------+
5 rows in set (0.00 sec)
```

❖ **Using subqueries**

**SQL :**

select * from bill where TID=(select TID from treatment where description="Cosmetic Restoration");

```
mysql> select * from bill where TID=(select TID from treatment where description="Cosmetic Restoration");
+-----+--------------+------+----------------+------+
| BID | total_amount | PID  | payment_status | TID  |
+-----+--------------+------+----------------+------+
|   3 | 7000         |    3 | PENDING        |    4 |
|   5 | 2000         |    5 | PAID           |    4 |
+-----+--------------+------+----------------+------+
2 rows in set (0.01 sec)
```

**SQL :**

select first_name,middle_name,last_name from dentist where DID=(select dtID from consults where dtID=1);

```
mysql> select first_name,middle_name,last_name from dentist where DID=(select dtID from consults where dtID=1);
+-------------+-------------+-----------+
| first_name  | middle_name | last_name |
+-------------+-------------+-----------+
| Dr. Pramila |             | Adhikari  |
+-------------+-------------+-----------+
1 row in set (0.01 sec)
```

## ❖ Using Joins

**SQL :**

SELECT treatment.TID,treatment.description,bill.PID,bill.payment_status FROM bill INNER JOIN treatment ON bill.TID=treatment.TID;

```
mysql> SELECT treatment.TID,treatment.description,bill.PID,bill.payment_status FROM bill INNER JOIN treatment ON bill.TID=treatment.TID;
+-----+---------------------+------+---------------+
| TID | description         | PID  | payment_status |
+-----+---------------------+------+---------------+
|   3 | Periodonotics       |    2 | UNPAID        |
|   2 | Oral Pathology      |    1 | PAID          |
|   4 | Cosmetic Restoration |    3 | PENDING       |
|   5 | Pedodonotics        |    1 | PAID          |
|   4 | Cosmetic Restoration |    5 | PAID          |
+-----+---------------------+------+---------------+
5 rows in set (0.00 sec)
```

**SQL :**

SELECT consults.ptID,consults.dtID,dentist.first_name,dentist.last_name FROM consults LEFT JOIN dentist ON consults.dtID=dentist.DID;

```
+------+------+-------------+-----------+
| ptID | dtID | first_name  | last_name |
+------+------+-------------+-----------+
|    1 |    1 | Dr. Pramila | Adhikari  |
|    1 |    2 | Dr. Sristi  | Shah      |
|    1 |    4 | Arjun       | Jha       |
|    2 |    4 | Arjun       | Jha       |
|    4 |    2 | Dr. Sristi  | Shah      |
|    3 |    3 | Dr. Alin    | Tamang    |
|    3 |    4 | Arjun       | Jha       |
+------+------+-------------+-----------+
7 rows in set (0.00 sec)
```

**SQL :**

SELECT patient_phone.patientID, patient_phone.phone_number, patient.first_name, patient.last_name, patient.profession FROM patient_phone RIGHT JOIN patient on patient_phone.patientID=patient.PID;

```
+-----------+--------------+------------+-----------+-------------+
| patientID | phone_number | first_name | last_name | profession  |
+-----------+--------------+------------+-----------+-------------+
|         1 | 9876543100   | Basanta    | Rai       | Student     |
|         1 | 9876543101   | Basanta    | Rai       | Student     |
|         1 | 9876543200   | Basanta    | Rai       | Student     |
|         2 | 9876543001   | Robin      | Devkota   | Student     |
|         2 | 9876543111   | Robin      | Devkota   | Student     |
|         3 | 9876543219   | Bishal     | Gurung    | Businessman |
|         4 | 9814253647   | Alexa      | Capaldi   | Pilot       |
|         4 | 9876452310   | Alexa      | Capaldi   | Pilot       |
|         5 | 9812345670   | Violet     | Kinder    | Musician    |
+-----------+--------------+------------+-----------+-------------+
9 rows in set (0.00 sec)
```

❖ **Using in, between**

**SQL :**

SELECT PID,email,marital_status FROM patient WHERE age IN(20,21,22,35);

```
mysql> SELECT PID,email,marital_status FROM patient WHERE age IN(20,21,22,35);
+-----+------------------+----------------+
| PID | email            | marital_status |
+-----+------------------+----------------+
|   1 | basanta@email.com | Married        |
|   2 | robin@email.com   | Married        |
|   3 | bishal@email.com  | Married        |
+-----+------------------+----------------+
3 rows in set (0.00 sec)
```

**SQL :**

SELECT * FROM treatment WHERE fee BETWEEN 3000 AND 6000;

```
mysql> SELECT * FROM treatment WHERE fee BETWEEN 3000 AND 6000;
+-----+------+----------------------+
| TID | fee  | description          |
+-----+------+----------------------+
|   1 | 3000 | Endodonotics         |
|   2 | 5000 | Oral Pathology       |
|   4 | 5000 | Cosmetic Restoration |
|   5 | 4000 | Pedodonotics         |
+-----+------+----------------------+
4 rows in set (0.00 sec)
```

❖ **Deleting data tables and database**

**SQL :**

SHOW TABLES;

```
+----------------+
| Tables_in_dms  |
+----------------+
| bill           |
| consults       |
| dentist        |
| dentist_phone  |
| dentist_treats |
| patient        |
| patient_phone  |
| students       |
| treatment      |
+----------------+
9 rows in set (0.00 sec)
```

**SQL :**

DROP TABLE patient_phone;

```
mysql> drop table patient_phone;
Query OK, 0 rows affected (0.02 sec)

mysql> show tables;
+----------------+
| Tables_in_dms  |
+----------------+
| bill           |
| consults       |
| dentist        |
| dentist_phone  |
| dentist_treats |
| patient        |
| students       |
| treatment      |
+----------------+
8 rows in set (0.00 sec)
```

**SQL:**

SHOW DATABASES;

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| blog               |
| conference         |
| dms                |
| information_schema |
| it                 |
| itc                |
| lara_blog          |
| mysql              |
| performance_schema |
| phpmyadmin         |
| pitc               |
| rfc                |
| sys                |
+--------------------+
13 rows in set (0.00 sec)
```

**SQL:**

DROP DATABASE dms;

```
mysql> drop database dms;
Query OK, 8 rows affected (0.05 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| blog               |
| conference         |
| information_schema |
| it                 |
| itc                |
| lara_blog          |
| mysql              |
| performance_schema |
| phpmyadmin         |
| pitc               |
| rfc                |
| sys                |
+--------------------+
12 rows in set (0.01 sec)
```