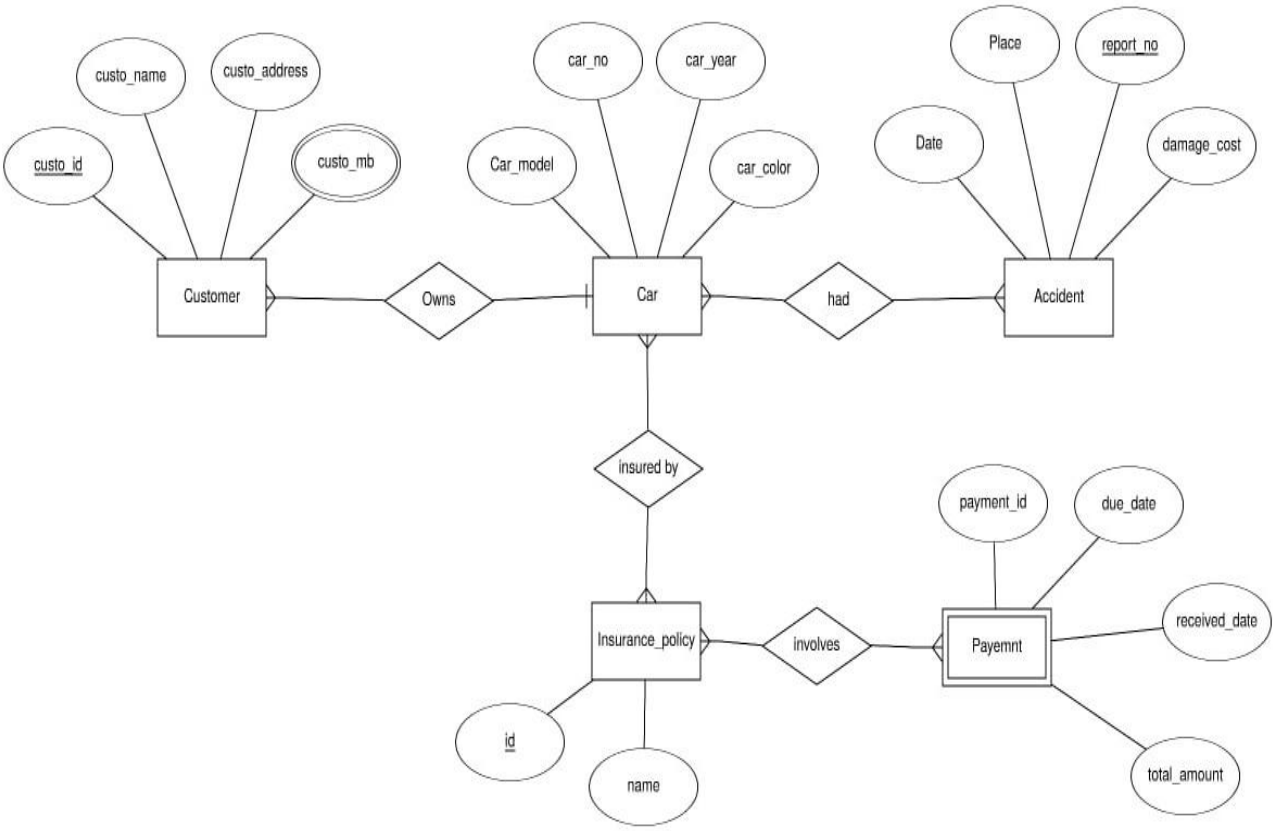
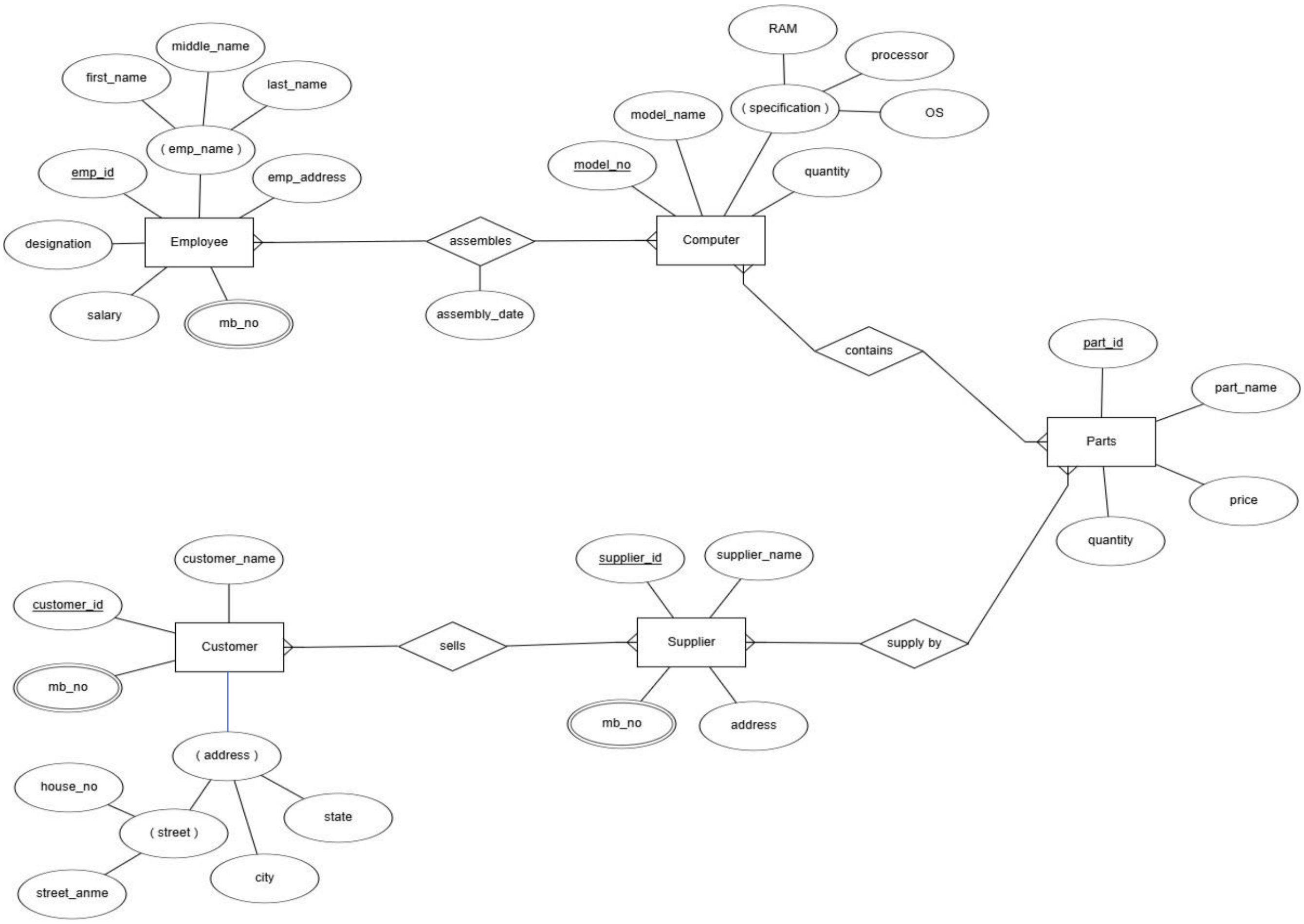
1. **Construct an E-R diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. Each insurance policy covers one or more cars, and has one or more premium payments associated with it. Each payment is for a particular period of time, and has an associated due date, and the date when the payment was received.**



2. **Use an Entity-Relationship Diagram to depict the information needs of a small computer business:**
   - **The employees of the company assemble a number of types of computers. For each employee a record is kept of his employee no., name, address, phone no., job title and salary.**
   - **A record is also kept of each of the machines model, specs and name and quantity on hand.**
   - **Each machine consists of a number of parts. An inventory must be kept of the parts in stock. For each part a record is kept of its name, price and quantity on hand.**
   - **These parts are ordered from various suppliers. A record must be kept of the suppliers name, address and phone number.**
   - **Once assembled these computers are sold to various customers. A record is kept of the customer's name, address and phone number. Some of these customers are credit customers and for these customers a record is kept of their credit limit.**



```
$ sudo mysql
[sudo] password for lab314:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.42-0ubuntu0.20.04.1 (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 Emp;
Query OK, 1 row affected (0.13 sec)

mysql> use Emp
Database changed
mysql> create table Employee(employee_name varchar(20) primary key, street varc
har(50),city varchar(15));
Query OK, 0 rows affected (0.75 sec)

mysql> create table Company(company_name varchar(20) primary key, city
varchar(20));
Query OK, 0 rows affected (1.03 sec)

mysql> create table Works(employee_name varchar(20), company_name varchar(20),
sal int, FOREIGN KEY (employee_name) REFERENCES Employee(employee_name), FOREIGN
KEY (company_name) REFERENCES Company(company_name));
Query OK, 0 rows affected (0.83 sec)

mysql> create table Manages(employee_name varchar(20), manager_name varchar(20),
FOREIGN KEY (employee_name) REFERENCES Employee(employee_name));
Query OK, 0 rows affected (1.94 sec)

---------------------------------------------------------------------------------
---------------------------------------------

mysql> ALTER TABLE Manages
ADD CONSTRAINT fk_manager_name
FOREIGN KEY (manager_name) REFERENCES Employee(employee_name);

mysql> alter table Manages add constraint fk_manager_name FOREIGN KEY
(manager_name) REFERENCES Employee(employee_name);
Query OK, 0 rows affected (2.52 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table Works add constraint sal_check check(sal>0);
Query OK, 0 rows affected (2.71 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table Employee add constraint empty_name check(employee_name="");
Query OK, 0 rows affected (2.75 sec)
Records: 0  Duplicates: 0  Warnings: 0

---------------------------------------------------------------------------------
-------------------------------------------------

mysql> create index idx_en on Employee(employee_name);
Query OK, 0 rows affected (0.91 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> create index idx_com on Works(employee_name, sal);
Query OK, 0 rows affected (0.81 sec)
Records: 0  Duplicates: 0  Warnings: 0

---------------------------------------------------------------------------------
-------------------------------------------------

mysql> create view EmpDetails as select emplonee_names,city from Employee;
ERROR 1054 (42S22): Unknown column 'emplonee_names' in 'field list'
mysql> create view EmpDetails as select employee_names,city from Employee;
ERROR 1054 (42S22): Unknown column 'employee_names' in 'field list'
mysql> create view EmpDetails as select employee_name,city from Employee;
Query OK, 0 rows affected (0.23 sec)

mysql> create view EmpDetailsCondition as select employee_name from Works where
 sal>50000;
Query OK, 0 rows affected (0.25 sec)

---------------------------------------------------------------------------------
----------------------------------------------------

mysql> ALTER TABLE Employee DROP CONSTRAINT empty_name;
Query OK, 0 rows affected (0.17 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE Employee add CONSTRAINT not_empty_name check(employee_name!
="");
Query OK, 0 rows affected (2.96 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Employee (employee_name, street, city) VALUES ('Amit Kumar',
'12 MG Road', 'Mumbai'), ('Priya Singh', '45 Park Street', 'Kolkata'), ('Ravi
Sharma', '78 Residency Rd', 'Bengaluru'), ('Sneha Patel', '90 MG Road',
'Ahmedabad'), ('Rahul Verma', '34 Brigade Rd', 'Bengaluru'), ('Anjali Gupta',
'56 Connaught Place', 'Delhi'), ('Vikram Joshi', '23 Nehru Nagar', 'Pune'),
('Neha Reddy', '67 Indira Nagar', 'Hyderabad'), ('Suresh Nair', '89 Salt Lake',
'Kolkata'), ('Kavita Mehta', '12 Jubilee Hills', 'Hyderabad'), ('Manish Tiwari',
'44 MG Road', 'Mumbai'), ('Pooja Desai', '77 Koregaon Park', 'Pune'), ('Aditya
Rao', '31 Banjara Hills', 'Hyderabad'), ('Sunita Iyer', '56 M G Road',
'Chennai'), ('Karan Malhotra', '22 Hauz Khas', 'Delhi'), ('Rina Das', '65
Ballygunge', 'Kolkata'), ('Sanjay Singh', '88 Jayanagar', 'Bengaluru'), ('Deepa
Sharma', '99 Model Town', 'Delhi'), ('Ashok Kumar', '11 Banjara Hills',
'Hyderabad'), ('Lata Nair', '54 Indira Nagar', 'Bengaluru');
Query OK, 20 rows affected (0.16 sec)
Records: 20  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Company (company_name, city) VALUES
    -> ('Infosys', 'Bengaluru'),
    -> ('TCS', 'Mumbai'),
    -> ('Wipro', 'Bengaluru'),
    -> ('HCLTech', 'Noida'),
    -> ('TechMahindra', 'Pune'),
    -> ('Larsen & Toubro', 'Mumbai'),
    -> ('Reliance Industries', 'Mumbai'),
    -> ('Bharti Airtel', 'Gurgaon'),
    -> ('Aditya Birla Group', 'Mumbai'),
    -> ('Maruti Suzuki', 'Gurgaon'),
    -> ('ICICI Bank', 'Mumbai'),
    -> ('HDFC Bank', 'Mumbai'),
    -> ('Axis Bank', 'Mumbai'),
    -> ('Flipkart', 'Bengaluru'),
    -> ('Paytm', 'Noida'),
    -> ('Ola Cabs', 'Bengaluru'),
    -> ('Zomato', 'Gurgaon'),
    -> ('Byjuâ □s', 'Bengaluru'),
    -> ('Godrej Group', 'Mumbai'),
    -> ('Tata Steel', 'Jamshedpur');
Query OK, 20 rows affected (0.19 sec)
Records: 20  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Works (employee_name, company_name, sal) VALUES
    -> ('Amit Kumar', 'Infosys', 42000),
    -> ('Priya Singh', 'TCS', 45000),
    -> ('Ravi Sharma', 'Wipro', 47000),
    -> ('Sneha Patel', 'HCLTech', 44000),
    -> ('Rahul Verma', 'TechMahindra', 43000),
    -> ('Anjali Gupta', 'Larsen & Toubro', 46000),
    -> ('Vikram Joshi', 'Reliance Industries', 42000),
    -> ('Neha Reddy', 'Bharti Airtel', 41000),
    -> ('Suresh Nair', 'Aditya Birla Group', 43000),
    -> ('Kavita Mehta', 'Maruti Suzuki', 44000),
    -> ('Manish Tiwari', 'ICICI Bank', 46000),
    -> ('Pooja Desai', 'HDFC Bank', 47000),
    -> ('Aditya Rao', 'Axis Bank', 45000),
    -> ('Sunita Iyer', 'Flipkart', 44000),
    -> ('Karan Malhotra', 'Paytm', 43000),
    -> ('Rina Das', 'Ola Cabs', 42000),
    -> ('Sanjay Singh', 'Zomato', 41000),
    -> ('Deepa Sharma', 'Byjuâ □s', 43000),
    -> ('Ashok Kumar', 'Godrej Group', 44000),
    -> ('Lata Nair', 'Tata Steel', 46000);
Query OK, 20 rows affected (0.14 sec)
Records: 20  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Manages (employee_name, manager_name) VALUES
    -> ('Priya Singh', 'Amit Kumar'),
    -> ('Ravi Sharma', 'Priya Singh'),
    -> ('Sneha Patel', 'Amit Kumar'),
    -> ('Rahul Verma', 'Sneha Patel'),
    -> ('Anjali Gupta', 'Rahul Verma'),
    -> ('Vikram Joshi', 'Anjali Gupta'),
    -> ('Neha Reddy', 'Vikram Joshi'),
    -> ('Suresh Nair', 'Neha Reddy'),
    -> ('Kavita Mehta', 'Suresh Nair'),
    -> ('Manish Tiwari', 'Kavita Mehta'),
    -> ('Pooja Desai', 'Manish Tiwari'),
    -> ('Aditya Rao', 'Pooja Desai'),
    -> ('Sunita Iyer', 'Aditya Rao'),
    -> ('Karan Malhotra', 'Sunita Iyer'),
    -> ('Rina Das', 'Karan Malhotra'),
    -> ('Sanjay Singh', 'Rina Das'),
    -> ('Deepa Sharma', 'Sanjay Singh'),
    -> ('Ashok Kumar', 'Deepa Sharma'),
    -> ('Lata Nair', 'Ashok Kumar'),
    -> ('Amit Kumar', 'Lata Nair');  -- Circular reference to complete 20
entries
Query OK, 20 rows affected (0.10 sec)
Records: 20  Duplicates: 0  Warnings: 0
-
---------------------------------------------------------------------------------
------------------------------------------------------------

mysql> select * from Employee;
+----------------+--------------------+-----------+
| employee_name  | street             | city      |
+----------------+--------------------+-----------+
| Aditya Rao     | 31 Banjara Hills   | Hyderabad |
| Amit Kumar     | 12 MG Road         | Mumbai    |
| Anjali Gupta    | 56 Connaught Place | Delhi     |
| Ashok Kumar     | 11 Banjara Hills   | Hyderabad |
| Deepa Sharma    | 99 Model Town      | Delhi     |
| Karan Malhotra  | 22 Hauz Khas       | Delhi     |
| Kavita Mehta    | 12 Jubilee Hills   | Hyderabad |
| Lata Nair       | 54 Indira Nagar    | Bengaluru |
| Manish Tiwari   | 44 MG Road         | Mumbai    |
| Neha Reddy      | 67 Indira Nagar    | Hyderabad |
| Pooja Desai     | 77 Koregaon Park   | Pune      |
| Priya Singh     | 45 Park Street     | Kolkata   |
| Rahul Verma     | 34 Brigade Rd      | Bengaluru |
| Ravi Sharma     | 78 Residency Rd    | Bengaluru |
| Rina Das        | 65 Ballygunge      | Kolkata   |
| Sanjay Singh    | 88 Jayanagar       | Bengaluru |
| Sneha Patel     | 90 MG Road         | Ahmedabad |
| Sunita Iyer     | 56 M G Road        | Chennai   |
| Suresh Nair     | 89 Salt Lake       | Kolkata   |
| Vikram Joshi    | 23 Nehru Nagar     | Pune      |
+-----------------+--------------------+-----------+
20 rows in set (0.00 sec)

mysql> select * from Company;
+----------------------+------------+
| company_name         | city       |
+----------------------+------------+
| Aditya Birla Group   | Mumbai     |
| Axis Bank            | Mumbai     |
| Bharti Airtel        | Gurgaon    |
| Byjuâ □s               | Bengaluru  |
| Flipkart             | Bengaluru  |
| Godrej Group         | Mumbai     |
| HCLTech              | Noida      |
| HDFC Bank            | Mumbai     |
| ICICI Bank           | Mumbai     |
| Infosys              | Bengaluru  |
| Larsen & Toubro      | Mumbai     |
| Maruti Suzuki        | Gurgaon    |
| Ola Cabs             | Bengaluru  |
| Paytm                | Noida      |
| Reliance Industries  | Mumbai     |
| Tata Steel           | Jamshedpur |
| TCS                  | Mumbai     |
| TechMahindra         | Pune       |
| Wipro                | Bengaluru  |
| Zomato               | Gurgaon    |
+----------------------+------------+
20 rows in set (0.00 sec)

mysql> select * from EmpDetails;
+----------------+-----------+
| employee_name  | city      |
+----------------+-----------+
| Aditya Rao     | Hyderabad |
| Amit Kumar     | Mumbai    |
| Anjali Gupta   | Delhi     |
| Ashok Kumar    | Hyderabad |
| Deepa Sharma   | Delhi     |
| Karan Malhotra | Delhi     |
| Kavita Mehta   | Hyderabad |
| Lata Nair      | Bengaluru |
| Manish Tiwari  | Mumbai    |
| Neha Reddy     | Hyderabad |
| Pooja Desai    | Pune      |
| Priya Singh    | Kolkata   |
| Rahul Verma     | Bengaluru |
| Ravi Sharma     | Bengaluru |
| Rina Das        | Kolkata   |
| Sanjay Singh    | Bengaluru |
| Sneha Patel     | Ahmedabad |
| Sunita Iyer     | Chennai   |
| Suresh Nair     | Kolkata   |
| Vikram Joshi    | Pune      |
+-----------------+-----------+
20 rows in set (0.00 sec)


mysql> CREATE OR REPLACE VIEW EmpDetailsCondition AS
    -> SELECT employee_name FROM Works WHERE sal > 40000;
Query OK, 0 rows affected (0.13 sec)

mysql> select * from EmpDetailsCondition;
+-----------------+
| employee_name   |
+-----------------+
| Aditya Rao      |
| Amit Kumar      |
| Anjali Gupta    |
| Ashok Kumar     |
| Deepa Sharma    |
| Karan Malhotra  |
| Kavita Mehta    |
| Lata Nair       |
| Manish Tiwari   |
| Neha Reddy      |
| Pooja Desai     |
| Priya Singh     |
| Rahul Verma     |
| Ravi Sharma     |
| Rina Das        |
| Sanjay Singh    |
| Sneha Patel     |
| Sunita Iyer     |
| Suresh Nair     |
| Vikram Joshi    |
+-----------------+
20 rows in set (0.01 sec)
```

# Assignment No. 3

```
projectlab00@projectlab301:~/Desktop$ sudo systemctl stop mysql
projectlab00@projectlab301:~/Desktop$ sudo mkdir -p /var/run/mysqld
projectlab00@projectlab301:~/Desktop$ sudo chown mysql:mysql /var/run/mysqld
projectlab00@projectlab301:~/Desktop$ sudo mysqld_safe --skip-grant-tables &
[1] 3152
projectlab00@projectlab301:~/Desktop$ 2025-07-25T08:12:33.880204Z mysqld_safe Logging to '/var/log/mysql/error.log'.
2025-07-25T08:12:33.894629Z mysqld_safe Starting mysqld daemon with databases from /var/lib/mysql

projectlab00@projectlab301:~/Desktop$ sudo mysql -u root
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 7
Server version: 8.0.42-0ubuntu0.22.04.1 (Ubuntu)

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owners.

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

mysql> create database college;
Query OK, 1 row affected (0.03 sec)

mysql> use college;
Database changed


mysql> create table department(
    -> dept_no int primary key,
    -> dept_name varchar(20),
    -> location varchar(20));
Query OK, 0 rows affected (0.08 sec)


mysql> create table student( stud_id int primary key, stud_name varchar(40), dept_no int,
CONSTRAINT fk_dept FOREIGN KEY (dept_no) REFERENCES department(dept_no));
Query OK, 0 rows affected (0.10 sec)


mysql> desc student;
+-------+--------+----+---+------+-----+
| Field     | Type        | Null | Key | Default | Extra |
+-------+--------+----+---+------+-----+
| stud_id   | int         | NO   | PRI | NULL    |       |
| stud_name | varchar(40) | YES  |     | NULL    |       |
| dept_no   | int         | YES  | MUL | NULL    |       |
+-------+--------+----+---+------+-----+
3 rows in set (0.01 sec)


mysql> desc department;
+-------+--------+----+---+------+-----+
| Field     | Type        | Null | Key | Default | Extra |
+-------+--------+----+---+------+-----+
| dept_no   | int         | NO   | PRI | NULL    |       |
| dept_name | varchar(20) | YES  |     | NULL    |       |
| location  | varchar(20) | YES  |     | NULL    |       |
+-------+--------+----+---+------+-----+
3 rows in set (0.00 sec)



mysql> alter table student
    -> add age int;
Query OK, 0 rows affected (0.19 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> desc student;

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

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

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

| stud_id   | int         | NO   | PRI | NULL    |       |

| stud_name | varchar(40) | YES  |     | NULL    |       |

| dept_no   | int         | YES  | MUL | NULL    |       |

| age       | int         | YES  |     | NULL    |       |

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


mysql> alter table department

    -> modify dept_name varchar(200) not null;

Query OK, 0 rows affected (0.22 sec)

Records: 0  Duplicates: 0  Warnings: 0


mysql> desc dept;

ERROR 1146 (42S02): Table 'college.dept' doesn't exist

mysql> desc department;

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

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

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

| dept_no   | int          | NO   | PRI | NULL    |       |

| dept_name | varchar(200) | NO   |     | NULL    |       |

| location  | varchar(20)  | YES  |     | NULL    |       |

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

3 rows in set (0.00 sec)


mysql> insert into department(dept_no, dept_name, location) values (1, 'Computer Science', 'Pune'),
(2, 'Mechanical Engineering', 'Pune'), (3, 'Electrical Engineering', 'Pune'), (4, 'Civil Engineering',
'Pune'), (5, 'Business Administration', 'Pune');

Query OK, 5 rows affected (0.02 sec)

Records: 5  Duplicates: 0  Warnings: 0
```

```
mysql> insert into student (stud_id, stud_name, dept_no,age) values (101, 'Sujal', 1, 20), (102,
'Gayatri', 2, 22), (103, 'Divyanjali', 1, 19), (104, 'Priti', 3, 21), (105, 'Kirti', 4, 23), (106, 'Riya', 2, 20),
(107, 'Lubdha', 3, 22), (108, 'Pratiksha', 5, 21), (109, 'Vaishnavi', 1, 20), (110, 'Prajkta', 4, 22), (111,
'laxmi', 3, 23), (112, 'Aarya', 2, 19), (113, 'Ritika', 5, 21), (114, 'Aarohi', 1, 20), (115, 'Ruhi', 4, 22), (116,
'Ritik', 3, 23), (117, 'Ziva', 2, 21), (118, 'Vamika', 5, 20), (119, 'Samaira', 1, 22), (120, 'Aagstya', NULL,
19);

Query OK, 20 rows affected (0.03 sec)

Records: 20  Duplicates: 0  Warnings: 0


mysql> select * from department;

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

| dept_no | dept_name              | location |

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

|       1 | Computer Science        | Pune     |

|       2 | Mechanical Engineering  | Pune     |

|       3 | Electrical Engineering  | Pune     |

|       4 | Civil Engineering       | Pune     |

|       5 | Business Administration | Pune     |

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

5 rows in set (0.00 sec)


mysql> select * from student;

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

| stud_id | stud_name  | dept_no | age  |

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

|     101 | Sujal      |       1 |   20 |

|     102 | Gayatri    |       2 |   22 |

|     103 | Divyanjali |       1 |   19 |

|     104 | Priti      |       3 |   21 |

|     105 | Kirti      |       4 |   23 |

|     106 | Riya       |       2 |   20 |

|     107 | Lubdha     |       3 |   22 |

|     108 | Pratiksha  |       5 |   21 |
|    109 | Vaishnavi  |       1 |   20 |
|    110 | Prajkta    |       4 |   22 |
|    111 | laxmi      |       3 |   23 |
|    112 | Aarya      |       2 |   19 |
|    113 | Ritika     |       5 |   21 |
|    114 | Aarohi     |       1 |   20 |
|    115 | Ruhi       |       4 |   22 |
|    116 | Ritik      |       3 |   23 |
|    117 | Ziva       |       2 |   21 |
|    118 | Vamika     |       5 |   20 |
|    119 | Samaira    |       1 |   22 |
|    120 | Aagstya    |    NULL |   19 |
+------+--------+------ +----+
20 rows in set (0.00 sec)
```

//Inner Join

```
mysql> select s.stud_id, s.stud_name, d.dept_name
    -> from student s
    -> INNER JOIN department d ON s.dept_no = d.dept_no;
+------+--------+----------------+
| stud_id | stud_name  | dept_name              |
+------+--------+----------------+
|    101 | Sujal      | Computer Science       |
|    103 | Divyanjali | Computer Science       |
|    109 | Vaishnavi  | Computer Science       |
|    114 | Aarohi     | Computer Science       |
|    119 | Samaira    | Computer Science       |
|    102 | Gayatri    | Mechanical Engineering |
|    106 | Riya       | Mechanical Engineering |
|    112 | Aarya      | Mechanical Engineering |
|    117 | Ziva       | Mechanical Engineering |
|     104 | Priti      | Electrical Engineering  |
|     107 | Lubdha     | Electrical Engineering  |
|     111 | laxmi      | Electrical Engineering  |
|     116 | Ritik      | Electrical Engineering  |
|     105 | Kirti      | Civil Engineering       |
|     110 | Prajkta    | Civil Engineering       |
|     115 | Ruhi       | Civil Engineering       |
|     108 | Pratiksha  | Business Administration |
|     113 | Ritika     | Business Administration |
|     118 | Vamika     | Business Administration |
+------+--------+----------------+
19 rows in set (0.01 sec)
```

//Left Join

```
mysql> SELECT s.stud_id, s.stud_name, d.dept_name
    -> FROM student s
    -> LEFT JOIN department d ON s.dept_no = d.dept_no;
+------+--------+----------------+
| stud_id | stud_name  | dept_name               |
+------+--------+----------------+
|     101 | Sujal      | Computer Science        |
|     102 | Gayatri    | Mechanical Engineering  |
|     103 | Divyanjali | Computer Science        |
|     104 | Priti      | Electrical Engineering  |
|     105 | Kirti      | Civil Engineering       |
|     106 | Riya       | Mechanical Engineering  |
|     107 | Lubdha     | Electrical Engineering  |
|     108 | Pratiksha  | Business Administration |
|     109 | Vaishnavi  | Computer Science        |
|     110 | Prajkta    | Civil Engineering       |
|     111 | laxmi      | Electrical Engineering  |
|     112 | Aarya      | Mechanical Engineering  |
|     113 | Ritika     | Business Administration |
|     114 | Aarohi     | Computer Science        |
|     115 | Ruhi       | Civil Engineering       |
|     116 | Ritik      | Electrical Engineering  |
|     117 | Ziva       | Mechanical Engineering  |
|     118 | Vamika     | Business Administration |
|     119 | Samaira    | Computer Science        |
|     120 | Aagstya    | NULL                    |
+------+--------+----------------+
20 rows in set (0.00 sec)
```

// Right Join

```
mysql> SELECT s.stud_name, d.dept_name
    -> FROM student s
    -> RIGHT JOIN department d ON s.dept_no = d.dept_no;
+--------+----------------+
| stud_name  | dept_name               |
+--------+----------------+
| Sujal        | Computer Science        |
| Divyanjali | Computer Science        |
| Vaishnavi  | Computer Science        |
| Aarohi      | Computer Science        |
| Samaira     | Computer Science        |
| Gayatri    | Mechanical Engineering  |
| Riya        | Mechanical Engineering  |
| Aarya       | Mechanical Engineering  |
| Ziva        | Mechanical Engineering  |
| Priti       | Electrical Engineering  |
| Lubdha      | Electrical Engineering  |
| laxmi       | Electrical Engineering  |
| Ritik      | Electrical Engineering  |
| Kirti      | Civil Engineering       |
| Prajkta    | Civil Engineering       |
| Ruhi       | Civil Engineering       |
| Pratiksha  | Business Administration |
| Ritika     | Business Administration |
| Vamika     | Business Administration |
+--------+----------------+
19 rows in set (0.00 sec)
```

//Full Join

```
mysql> SELECT s.stud_name, d.dept_name
    -> FROM student s
    -> LEFT JOIN department d ON s.dept_no = d.dept_no
    ->
    -> UNION
    ->
    -> SELECT s.stud_name, d.dept_name
    -> FROM student s
    -> RIGHT JOIN department d ON s.dept_no = d.dept_no;
+--------+----------------+
| stud_name  | dept_name               |
+--------+----------------+
| Sujal      | Computer Science        |
| Gayatri    | Mechanical Engineering  |
| Divyanjali | Computer Science        |
| Priti      | Electrical Engineering  |
| Kirti      | Civil Engineering       |
| Riya       | Mechanical Engineering  |
| Lubdha     | Electrical Engineering  |
| Pratiksha  | Business Administration |
| Vaishnavi  | Computer Science        |
| Prajkta    | Civil Engineering       |
| laxmi      | Electrical Engineering  |
| Aarya      | Mechanical Engineering  |
| Ritika     | Business Administration |
| Aarohi     | Computer Science        |
| Ruhi       | Civil Engineering       |
| Ritik      | Electrical Engineering  |
| Ziva       | Mechanical Engineering  |
| Vamika     | Business Administration |
| Samaira    | Computer Science        |
| Aagstya    | NULL                    |
+--------+----------------+
20 rows in set (0.01 sec)
```

// Cross Join

```
mysql> SELECT s.stud_name, d.dept_name
    -> FROM student s
    -> CROSS JOIN department d;
+--------+----------------+
| stud_name  | dept_name               |
+--------+----------------+
| Sujal      | Business Administration |
| Sujal      | Civil Engineering       |
| Sujal      | Electrical Engineering  |
| Sujal      | Mechanical Engineering  |
| Sujal      | Computer Science        |
| Gayatri    | Business Administration |
| Gayatri    | Civil Engineering       |
| Gayatri    | Electrical Engineering  |
| Gayatri    | Mechanical Engineering  |
| Gayatri    | Computer Science        |
| Divyanjali | Business Administration |
| Divyanjali | Civil Engineering       |
| Divyanjali | Electrical Engineering  |
| Divyanjali | Mechanical Engineering  |
| Divyanjali | Computer Science        |
| Priti      | Business Administration |
| Priti      | Civil Engineering       |
| Priti      | Electrical Engineering  |
| Priti      | Mechanical Engineering  |
| Priti      | Computer Science        |
| Kirti      | Business Administration |
| Kirti      | Civil Engineering       |
| Kirti      | Electrical Engineering  |
| Kirti      | Mechanical Engineering  |
| Kirti      | Computer Science        |
| Riya       | Business Administration |
| Riya       | Civil Engineering       |
| Riya       | Electrical Engineering  |
| Riya       | Mechanical Engineering  |
| Riya       | Computer Science        |
| Lubdha     | Business Administration |
| Lubdha     | Civil Engineering       |
| Lubdha     | Electrical Engineering  |
| Lubdha     | Mechanical Engineering  |
| Lubdha     | Computer Science        |
| Pratiksha  | Business Administration |
| Pratiksha  | Civil Engineering       |
| Pratiksha  | Electrical Engineering  |
| Pratiksha  | Mechanical Engineering  |
| Pratiksha  | Computer Science        |
| Vaishnavi  | Business Administration |
| Vaishnavi | Civil Engineering      |
| Vaishnavi | Electrical Engineering |
| Vaishnavi | Mechanical Engineering |
| Vaishnavi | Computer Science       |
| Prajkta   | Business Administration |
| Prajkta   | Civil Engineering      |
| Prajkta   | Electrical Engineering |
| Prajkta   | Mechanical Engineering |
| Prajkta   | Computer Science       |
| laxmi     | Business Administration |
| laxmi     | Civil Engineering      |
| laxmi     | Electrical Engineering |
| laxmi     | Mechanical Engineering |
| laxmi     | Computer Science       |
| Aarya     | Business Administration |
| Aarya     | Civil Engineering      |
| Aarya     | Electrical Engineering |
| Aarya     | Mechanical Engineering |
| Aarya     | Computer Science       |
| Ritika    | Business Administration |
| Ritika    | Civil Engineering      |
| Ritika    | Electrical Engineering |
| Ritika    | Mechanical Engineering |
| Ritika    | Computer Science       |
| Aarohi    | Business Administration |
| Aarohi    | Civil Engineering      |
| Aarohi    | Electrical Engineering |
| Aarohi    | Mechanical Engineering |
| Aarohi    | Computer Science       |
| Ruhi      | Business Administration |
| Ruhi      | Civil Engineering      |
| Ruhi      | Electrical Engineering |
| Ruhi     | Mechanical Engineering  |
| Ruhi     | Computer Science        |
| Ritik    | Business Administration |
| Ritik    | Civil Engineering       |
| Ritik    | Electrical Engineering  |
| Ritik    | Mechanical Engineering  |
| Ritik    | Computer Science        |
| Ziva     | Business Administration |
| Ziva     | Civil Engineering       |
| Ziva     | Electrical Engineering  |
| Ziva     | Mechanical Engineering  |
| Ziva     | Computer Science        |
| Vamika   | Business Administration |
| Vamika   | Civil Engineering       |
| Vamika   | Electrical Engineering  |
| Vamika   | Mechanical Engineering  |
| Vamika   | Computer Science        |
| Samaira  | Business Administration |
| Samaira  | Civil Engineering       |
| Samaira  | Electrical Engineering  |
| Samaira  | Mechanical Engineering  |
| Samaira  | Computer Science        |
| Aagstya  | Business Administration |
| Aagstya  | Civil Engineering       |
| Aagstya  | Electrical Engineering  |
| Aagstya  | Mechanical Engineering  |
| Aagstya  | Computer Science        |
+--------+----------------+
100 rows in set (0.00 sec)

mysql> insert into department values(6,'Computer Studies','Lonavala');
Query OK, 1 row affected (0.02 sec)
```

```
mysql> insert into department values(7,'Chemical
Engineering','Katraj'),(8,'Automobile','Chh.Sambhaji Nagar'),(9,'Aerospace','Akurdi'),(10,'Marine
Engineering','Chh.Sambhaji Nagar');

Query OK, 4 rows affected (0.02 sec)

Records: 4  Duplicates: 0  Warnings: 0


mysql> select * from department;

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

| dept_no | dept_name              | location           |

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

|       1 | Computer Science         | Pune               |

|       2 | Mechanical Engineering   | Pune               |

|       3 | Electrical Engineering   | Pune               |

|       4 | Civil Engineering        | Pune               |

|       5 | Business Administration | Pune               |

|       6 | Computer Studies         | Lonavala           |

|       7 | Chemical Engineering     | Katraj             |

|       8 | Automobile               | Chh.Sambhaji Nagar |

|       9 | Aerospace                | Akurdi             |

|      10 | Marine Engineering       | Chh.Sambhaji Nagar |

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

10 rows in set (0.00 sec)


mysql> insert into student values(121, 'Raha', 8, 25), (122, 'Diksha', 7, 22),(123, 'Sonu', 7,
18),(124,'Kshitij',8,19),(125, 'Riyansh', 6, 22);

Query OK, 5 rows affected (0.02 sec)

Records: 5  Duplicates: 0  Warnings: 0



mysql> select * from student;

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

| stud_id | stud_name  | dept_no | age  |

+------+--------+------+----+
|    101 | Sujal    |          1 |   20 |
|    102 | Gayatri   |          2 |   22 |
|    103 | Divyanjali |      1 |   19 |
|    104 | Priti      |      3 |   21 |
|    105 | Kirti      |      4 |   23 |
|    106 | Riya       |      2 |   20 |
|    107 | Lubdha     |      3 |   22 |
|    108 | Pratiksha  |      5 |   21 |
|    109 | Vaishnavi  |      1 |   20 |
|    110 | Prajkta    |      4 |   22 |
|    111 | laxmi      |      3 |   23 |
|    112 | Aarya      |      2 |   19 |
|    113 | Ritika     |      5 |   21 |
|    114 | Aarohi     |      1 |   20 |
|    115 | Ruhi       |      4 |   22 |
|    116 | Ritik      |      3 |   23 |
|    117 | Ziva       |      2 |   21 |
|    118 | Vamika     |      5 |   20 |
|    119 | Samaira    |      1 |   22 |
|    120 | Aagstya    |    NULL |   19 |
|    121 | Raha       |      8 |   25 |
|    122 | Diksha     |      7 |   22 |
|    123 | Sonu       |      7 |   18 |
|    124 | Kshitij    |      8 |   19 |
|    125 | Riyansh    |      6 |   22 |
+------+--------+------+----+
25 rows in set (0.00 sec)
```

//Subquery

// Find students who belong to the department located in 'Chh.Sambhaji Nagar'

```
mysql> SELECT stud_name FROM student WHERE dept_no IN (     SELECT dept_no     FROM
department     WHERE location = 'Chh.Sambhaji Nagar' );
```

```
+-------+
| stud_name |
+-------+
| Raha      |
| Kshitij   |
+-------+
2 rows in set (0.00 sec)
```

//Show students with the name of their department using a subquery (instead of join)

```
mysql> SELECT stud_name, (SELECT dept_name FROM department d WHERE d.dept_no = s.dept_no)
AS dept_name FROM student s;
+--------+----------------+
| stud_name  | dept_name              |
+--------+----------------+
| Sujal       | Computer Science        |
| Gayatri   | Mechanical Engineering  |
| Divyanjali | Computer Science        |
| Priti      | Electrical Engineering  |
| Kirti      | Civil Engineering       |
| Riya       | Mechanical Engineering  |
| Lubdha     | Electrical Engineering  |
| Pratiksha  | Business Administration |
| Vaishnavi  | Computer Science        |
| Prajkta    | Civil Engineering       |
| laxmi      | Electrical Engineering  |
| Aarya      | Mechanical Engineering  |
| Ritika     | Business Administration |
| Aarohi     | Computer Science        |
| Ruhi       | Civil Engineering       |
| Ritik      | Electrical Engineering  |
| Ziva       | Mechanical Engineering  |
| Vamika     | Business Administration |
| Samaira    | Computer Science        |
| Aagstya    | NULL                    |
| Raha       | Automobile              |
| Diksha     | Chemical Engineering    |
| Sonu       | Chemical Engineering    |
| Kshitij    | Automobile              |
| Riyansh    | Computer Studies        |
+--------+----------------+
25 rows in set (0.00 sec)
```

// Create View

```
mysql> CREATE VIEW student_department_view AS
    -> SELECT
    ->     s.stud_id,
    ->     s.stud_name,
    ->     s.age,
    ->     d.dept_name,
    ->     d.location
    -> FROM
    ->     student s
    -> LEFT JOIN
    ->     department d ON s.dept_no = d.dept_no;
Query OK, 0 rows affected (0.03 sec)
```

// Display View

```
mysql> SELECT * FROM student_department_view;
+------+--------+----+----------------+-------------+
| stud_id | stud_name  | age  | dept_name             | location          |
+------+--------+----+----------------+-------------+
|   101 | Sujal    |   20 | Computer Science          | Pune            |
|   102 | Gayatri   |   22 | Mechanical Engineering  | Pune                  |
|   103 | Divyanjali |   19 | Computer Science        | Pune             |
|   104 | Priti      |   21 | Electrical Engineering  | Pune             |
|   105 | Kirti      |   23 | Civil Engineering       | Pune             |
|   106 | Riya       |   20 | Mechanical Engineering  | Pune             |
|   107 | Lubdha     |   22 | Electrical Engineering  | Pune             |
|   108 | Pratiksha  |   21 | Business Administration | Pune             |
|   109 | Vaishnavi  |   20 | Computer Science        | Pune             |
|   110 | Prajkta    |   22 | Civil Engineering       | Pune             |
|   111 | laxmi      |   23 | Electrical Engineering  | Pune             |
|   112 | Aarya      |   19 | Mechanical Engineering  | Pune             |
|   113 | Ritika     |   21 | Business Administration | Pune             |
|   114 | Aarohi     |   20 | Computer Science        | Pune             |
|   115 | Ruhi       |   22 | Civil Engineering       | Pune             |
|   116 | Ritik      |   23 | Electrical Engineering  | Pune             |
|   117 | Ziva       |   21 | Mechanical Engineering  | Pune             |
|   118 | Vamika     |   20 | Business Administration | Pune             |
|   119 | Samaira    |   22 | Computer Science        | Pune             |
|   120 | Aagstya    |   19 | NULL                    | NULL             |
|   121 | Raha       |   25 | Automobile              | Chh.Sambhaji Nagar |
|   122 | Diksha     |   22 | Chemical Engineering    | Katraj           |
|   123 | Sonu       |   18 | Chemical Engineering    | Katraj           |
|   124 | Kshitij    |   19 | Automobile              | Chh.Sambhaji Nagar |
|   125 | Riyansh    |   22 | Computer Studies        | Lonavala         |
+------+--------+----+-----------------+-------------+
25 rows in set (0.00 sec)
```

```
(base) lab314@lab314-ThinkCentre-M70s:~$ sudo mysql
[sudo] password for lab314:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.42-0ubuntu0.20.04.1 (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 department;
Query OK, 1 row affected (0.13 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| Prem               |
| ash                |
| ash1               |
| demo               |
| department         |
| employee           |
| information_schema |
| mysql              |
| performance_schema |
| student            |
| sys                |
| testDB             |
+--------------------+
12 rows in set (0.05 sec)

mysql> use department;
Database changed
```

1) Create table Department with fieldsdeptno, dname, location.

```
mysql> CREATE TABLE dept (
    ->     dept_no INT PRIMARY KEY,
    ->     dept_name VARCHAR(100),
    ->     location VARCHAR(100)
    -> );
Query OK, 0 rows affected (0.66 sec)

mysql> desc dept;
+-----------+--------------+------+-----+---------+-------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------+
| dept_no   | int          | NO   | PRI | NULL    |       |
| dept_name | varchar(100) | YES  |     | NULL    |       |
| location  | varchar(100) | YES  |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------+
3 rows in set (0.01 sec)
```

2) Insert the following records by using any one method

```
mysql> insert into dept values(10,'Accounting','Mumbai');
Query OK, 1 row affected (0.13 sec)

mysql> insert into dept values(20,'Research','Pune');
```

```
Query OK, 1 row affected (0.09 sec)

mysql> insert into dept values(30,'Sales','Nashik');
Query OK, 1 row affected (0.14 sec)

mysql> insert into dept values(40,'Operations','Nagpur');
Query OK, 1 row affected (0.11 sec)

mysql> select * from dept;
+---------+------------+----------+
| dept_no | dept_name  | location |
+---------+------------+----------+
|      10 | Accounting | Mumbai   |
|      20 | Research   | Pune     |
|      30 | Sales      | Nashik   |
|      40 | Operations | Nagpur   |
+---------+------------+----------+
4 rows in set (0.00 sec)


--------------------------------------------------------------------------------
```

4) Create table employee

```
mysql> CREATE TABLE employee (
    ->     empno INT PRIMARY KEY,
    ->     ename VARCHAR(50),
    ->     job VARCHAR(20),
    ->     mgr INT NULL,
    ->     joined_date DATE,
    ->     salary INT,
    ->     commission INT NULL,
    ->     deptno INT NULL,
    ->     address VARCHAR(50)
    -> );
Query OK, 0 rows affected (0.67 sec)

mysql> desc employee;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| empno       | int         | NO   | PRI | NULL    |       |
| ename       | varchar(50) | YES  |     | NULL    |       |
| job         | varchar(20) | YES  |     | NULL    |       |
| mgr         | int         | YES  |     | NULL    |       |
| joined_date | date        | YES  |     | NULL    |       |
| salary      | int         | YES  |     | NULL    |       |
| commission  | int         | YES  |     | NULL    |       |
| deptno      | int         | YES  |     | NULL    |       |
| address     | varchar(50) | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
9 rows in set (0.00 sec)

mysql> INSERT INTO employee (empno, ename, job, mgr, joined_date, salary,
commission, deptno, address) VALUES
    -> (1001, 'Nileshjoshi', 'Clerk', 1005, '1995-12-17', 2800, 600, 20,
'Nashik'),
    -> (1002, 'Avinashpawar', 'Salesman', 1003, '1996-02-20', 5000, 1200, 30,
'Nagpur'),
    -> (1003, 'Amit kumar', 'Manager', 1004, '1986-04-02', 2000, NULL, 30,
'Pune'),
    -> (1004, 'Nitinkulkarni', 'President', NULL, '1986-04-19', 50000, NULL, 10,
'Mumbai'),
    -> (1005, 'Niraj Sharma', 'Analyst', 1003, '1998-12-03', 12000, NULL, 20,
'Satara'),
    -> (1006, 'Pushkardeshpande', 'Salesman', 1003, '1996-09-01', 6500, 1500,
30, 'Pune'),
    -> (1007, 'Sumitpatil', 'Manager', 1004, '1991-05-01', 25000, NULL, 20,
'Mumbai'),
    -> (1008, 'Ravi sawant', 'Analyst', 1007, '1995-11-17', 10000, NULL, NULL,
'Amaravat');
Query OK, 8 rows affected (0.11 sec)
Records: 8  Duplicates: 0  Warnings: 0

mysql> select * from employee;
+-------+------------------+-----------+------+-------------+--------
+------------+--------+-----------+
| empno | ename            | job       | mgr  | joined_date | salary |
commission | deptno | address  |
+-------+------------------+-----------+------+-------------+--------
+------------+--------+-----------+
|  1001 | Nileshjoshi      | Clerk     | 1005 | 1995-12-17  |   2800 |
600 |     20 | Nashik   |
|  1002 | Avinashpawar     | Salesman  | 1003 | 1996-02-20  |   5000 |
1200 |     30 | Nagpur   |
|  1003 | Amit kumar       | Manager   | 1004 | 1986-04-02  |   2000 |
NULL |     30 | Pune     |
|  1004 | Nitinkulkarni    | President | NULL | 1986-04-19  |  50000 |
NULL |     10 | Mumbai   |
|  1005 | Niraj Sharma     | Analyst   | 1003 | 1998-12-03  |  12000 |
NULL |     20 | Satara   |
|  1006 | Pushkardeshpande | Salesman  | 1003 | 1996-09-01  |   6500 |
1500 |     30 | Pune     |
|  1007 | Sumitpatil       | Manager   | 1004 | 1991-05-01  |  25000 |
NULL |     20 | Mumbai   |
|  1008 | Ravi sawant      | Analyst   | 1007 | 1995-11-17  |  10000 |
NULL |   NULL | Amaravat |
+-------+------------------+-----------+------+-------------+--------
+------------+--------+-----------+
8 rows in set (0.00 sec)

---------------------------------------------------------------------------------
5) Write a query to display employee information. Write a name of column
explicitly.

mysql> SELECT
    ->     empno AS EmployeeNumber,
    ->     ename AS EmployeeName,
    ->     job AS JobTitle,
    ->     mgr AS ManagerEmpNo,
    ->     joined_date AS JoiningDate,
    ->     salary AS Salary,
    ->     commission AS Commission,
    ->     deptno AS DepartmentNumber,
    ->     address AS Address
    -> FROM employee;
+----------------+------------------+-----------+--------------+-------------
+--------+------------+------------------+-----------+
| EmployeeNumber | EmployeeName     | JobTitle  | ManagerEmpNo | JoiningDate |
Salary | Commission | DepartmentNumber | Address  |
+----------------+------------------+-----------+--------------+-------------
+--------+------------+------------------+-----------+
|           1001 | Nileshjoshi      | Clerk     |         1005 | 1995-12-17  |
2800 |        600 |               20 | Nashik   |
|           1002 | Avinashpawar     | Salesman  |         1003 | 1996-02-20  |
5000 |       1200 |               30 | Nagpur   |
|           1003 | Amit kumar       | Manager   |         1004 | 1986-04-02  |
2000 |       NULL |               30 | Pune     |
|           1004 | Nitinkulkarni    | President |         NULL | 1986-04-19  |
50000 |       NULL |              10 | Mumbai   |
|           1005 | Niraj Sharma      | Analyst   |         1003 | 1998-12-03  |
12000 |       NULL |              20 | Satara   |
|           1006 | Pushkardeshpande | Salesman  |         1003 | 1996-09-01  |
6500 |       1500 |              30 | Pune     |
|           1007 | Sumitpatil       | Manager   |         1004 | 1991-05-01  |
25000 |       NULL |              20 | Mumbai   |
|           1008 | Ravi sawant      | Analyst   |         1007 | 1995-11-17  |
10000 |       NULL |            NULL | Amaravat |
+----------------+------------------+-----------+--------------+------------
+---------+------------+------------------+----------+
8 rows in set (0.00 sec)

----------------------------------------------------------------------------
6) Create a query to display unique jobs from the table.

mysql> select DISTINCT job
    -> FROM employee;
+-----------+
| job       |
+-----------+
| Clerk     |
| Salesman  |
| Manager   |
| President |
| Analyst   |
+-----------+

----------------------------------------------------------------------------

7) Change the location of dept40 to Banglore instead of Nagpur.

mysql> UPDATE dept
    -> set location='Banglore'
    -> where dept_no=40;
Query OK, 1 row affected (0.11 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM dept  WHERE dept_no = 40;
+---------+------------+----------+
| dept_no | dept_name  | location |
+---------+------------+----------+
|      40 | Operations | Banglore |
+---------+------------+----------+
1 row in set (0.00 sec)

mysql> UPDATE employee
    -> set ename = 'Nikhil Gosavi'
    -> where empno = 1003;
Query OK, 1 row affected (0.09 sec)
Rows matched: 1  Changed: 1  Warnings: 0

----------------------------------------------------------------------------

8) Change the name of the employees 1003 to Nikhil Gosavi.

mysql> SELECT * FROM employee  WHERE empno = 1003;
+-------+---------------+---------+------+-------------+--------+------------
+--------+---------+
| empno | ename         | job     | mgr  | joined_date | salary | commission |
deptno | address |
+-------+---------------+---------+------+-------------+--------+------------
+--------+---------+
|  1003 | Nikhil Gosavi | Manager | 1004 | 1986-04-02  |   2000 |       NULL |
30 | Pune    |
+-------+---------------+---------+------+------------+--------+------------
+---------+---------------+

mysql> DELETE from employee
    -> where ename= 'Pushkardeshpande';
Query OK, 1 row affected (0.14 sec)
```

--------------------------------------------------------------------------

9) Delete Pushkardeshpande from employee table.

```
mysql> SELECT * FROM employee  WHERE ename='Pushkardeshpande';
Empty set (0.00 sec)

mysql>  SELECT * FROM employee;
+-------+---------------+-----------+------+------------+--------+------------
+---------+-----------------+
| empno | ename         | job       | mgr  | joined_date | salary | commission |
deptno | address  |
+-------+---------------+-----------+------+------------+--------+------------
+---------+-----------------+
|  1001 | Nileshjoshi   | Clerk     | 1005 | 1995-12-17  |   2800 |        600 |
20 | Nashik   |
|  1002 | Avinashpawar  | Salesman  | 1003 | 1996-02-20  |   5000 |       1200 |
30 | Nagpur   |
|  1003 | Nikhil Gosavi | Manager   | 1004 | 1986-04-02  |   2000 |       NULL |
30 | Pune     |
|  1004 | Nitinkulkarni | President | NULL | 1986-04-19  |  50000 |       NULL |
10 | Mumbai   |
|  1005 | Niraj Sharma  | Analyst   | 1003 | 1998-12-03  |  12000 |       NULL |
20 | Satara   |
|  1007 | Sumitpatil    | Manager   | 1004 | 1991-05-01  |  25000 |       NULL |
20 | Mumbai   |
|  1008 | Ravi sawant   | Analyst   | 1007 | 1995-11-17  |  10000 |       NULL |
NULL | Amaravat |
+-------+---------------+-----------+------+------------+--------+------------
+---------+-----------------+
7 rows in set (0.00 sec)
```

--------------------------------------------------------------------------

10) Create a table department_temp table from deptarment table, only create the structure not
content.

```
mysql> CREATE TABLE department_temp LIKE dept;
Query OK, 0 rows affected (1.53 sec)

mysql> SELECT * FROM department_temp;
Empty set (0.00 sec)

mysql> desc department_temp;
+-----------+--------------+------+-----+---------+-------------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------------+
| dept_no   | int          | NO   | PRI | NULL    |       |
| dept_name | varchar(100) | YES  |     | NULL    |       |
| location  | varchar(100) | YES  |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------------+
3 rows in set (0.00 sec)
```

 --------------------------------------------------------------------------

 11) Insert rows into department_temp table from deptarment table

```
 mysql> INSERT INTO department_temp
    -> SELECT * FROM dept;
Query OK, 4 rows affected (0.11 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM department_temp;
+---------+------------+----------+
| dept_no | dept_name  | location |
+---------+------------+----------+
|      10 | Accounting | Mumbai   |
|      20 | Research   | Pune     |
|      30 | Sales      | Nashik   |
|      40 | Operations | Banglore |
+---------+------------+----------+
4 rows in set (0.00 sec)

--------------------------------------------------------------------------
```

12) Display the list of employee whose salary between 5000 and 20000.

```
mysql> SELECT *
    -> FROM employee
    -> WHERE salary BETWEEN 5000 AND 20000;



+-------+--------------+----------+------+-------------+--------+------------
+--------+----------+
| empno | ename        | job      | mgr  | joined_date | salary | commission |
deptno | address  |
+-------+--------------+----------+------+-------------+--------+------------
+--------+----------+
|  1002 | Avinashpawar | Salesman | 1003 | 1996-02-20  |   5000 |       1200 |
30 | Nagpur   |
|  1005 | Niraj Sharma | Analyst  | 1003 | 1998-12-03  |  12000 |       NULL |
20 | Satara   |
|  1008 | Ravi sawant  | Analyst  | 1007 | 1995-11-17  |  10000 |       NULL |
NULL | Amaravat |
+-------+--------------+----------+------+-------------+--------+------------
+--------+----------+
3 rows in set (0.00 sec)

--------------------------------------------------------------------------
```

13) Display the list of employee excluding job title as  salesman .

```
mysql> SELECT *
    -> FROM employee
    -> WHERE NOT job = 'Salesman';
+-------+---------------+-----------+------+-------------+--------+------------
+--------+----------+
| empno | ename         | job       | mgr  | joined_date | salary | commission |
deptno | address  |
+-------+---------------+-----------+------+-------------+--------+------------
+--------+----------+
|  1001 | Nileshjoshi   | Clerk     | 1005 | 1995-12-17  |   2800 |        600 |
20 | Nashik   |
|  1003 | Nikhil Gosavi | Manager   | 1004 | 1986-04-02  |   2000 |       NULL |
30 | Pune     |
|  1004 | Nitinkulkarni | President | NULL | 1986-04-19  |  50000 |       NULL |
10 | Mumbai   |
|  1005 | Niraj Sharma  | Analyst   | 1003 | 1998-12-03  |  12000 |       NULL |
20 | Satara   |
|  1007 | Sumitpatil    | Manager   | 1004 | 1991-05-01  |  25000 |       NULL |
20 | Mumbai   |
|  1008 | Ravi sawant   | Analyst   | 1007 | 1995-11-17  |  10000 |       NULL |
NULL | Amaravat |
+-------+---------------+----------+------+------------+-------+------------
+---------+----------------+
6 rows in set (0.00 sec)
```

-----------------------------------------------------------------------

14) Display all those employees whose job title is either manager or analyst (write by using OR & IN operator).

```
mysql> SELECT *
    -> FROM employee
    -> WHERE job IN ('Manager', 'Analyst');
+-------+--------------+---------+------+------------+--------+------------
+---------+----------------+
| empno | ename         | job     | mgr  | joined_date | salary | commission |
deptno | address  |
+-------+--------------+---------+------+------------+--------+------------
+---------+----------------+
|  1003 | Nikhil Gosavi  | Manager | 1004 | 1986-04-02  |   2000 |       NULL |
30 | Pune     |
|  1005 | Niraj Sharma   | Analyst | 1003 | 1998-12-03  |  12000 |       NULL |
20 | Satara   |
|  1007 | Sumitpatil     | Manager | 1004 | 1991-05-01  |  25000 |       NULL |
20 | Mumbai   |
|  1008 | Ravi sawant    | Analyst | 1007 | 1995-11-17  |  10000 |       NULL |
NULL | Amaravat |
+-------+--------------+---------+------+------------+--------+------------
+---------+----------------+
4 rows in set (0.00 sec)

mysql> SELECT *
    -> FROM employee
    -> WHERE job = 'Manager' OR Job = 'Analyst';
+-------+--------------+---------+------+------------+--------+------------
+---------+----------------+
| empno | ename         | job     | mgr  | joined_date | salary | commission |
deptno | address  |
+-------+--------------+---------+------+------------+--------+------------
+---------+----------------+
|  1003 | Nikhil Gosavi  | Manager | 1004 | 1986-04-02  |   2000 |       NULL |
30 | Pune     |
|  1005 | Niraj Sharma   | Analyst | 1003 | 1998-12-03  |  12000 |       NULL |
20 | Satara   |
|  1007 | Sumitpatil     | Manager | 1004 | 1991-05-01  |  25000 |       NULL |
20 | Mumbai   |
|  1008 | Ravi sawant    | Analyst | 1007 | 1995-11-17  |  10000 |       NULL |
NULL | Amaravat |
+-------+--------------+---------+------+------------+--------+------------
+---------+----------------+
4 rows in set (0.00 sec)
```

-----------------------------------------------------------------------

15) Display the employee name & department number of all employees in dept 10,20,30& 40

```
mysql> SELECT Ename, Deptno FROM employee WHERE deptno IN (10, 20, 30, 40);
+---------------+------------+
| Ename         | Deptno |
+---------------+------------+
| Nileshjoshi   |     20 |
| Avinashpawar  |     30 |
| Nikhil Gosavi |     30 |
| Nitinkulkarni |     10 |
| Niraj Sharma  |     20 |
| Sumitpatil    |     20 |
+---------------+--------+
6 rows in set (0.00 sec)

 mysql> SELECT ename, deptno FROM employee WHERE deptno = 10 OR deptno = 20 OR
deptno = 30 OR deptno = 40;
+---------------+--------+
| ename         | deptno |
+---------------+--------+
| Nileshjoshi   |     20 |
| Avinashpawar  |     30 |
| Nikhil Gosavi |     30 |
| Nitinkulkarni |     10 |
| Niraj Sharma  |     20 |
| Sumitpatil    |     20 |
+---------------+--------+
6 rows in set (0.00 sec)
```

---------------------------------------------------------------------------

16) Display the employee number, name, job & commission of all employees who do not get any commission.

```
mysql> SELECT empno, ename, job, commission
    -> FROM employee
    -> WHERE commission IS NULL OR commission = 0;
+-------+---------------+-----------+------------+
| empno | ename         | job       | commission |
+-------+---------------+-----------+------------+
|  1003 | Nikhil Gosavi | Manager   |       NULL |
|  1004 | Nitinkulkarni | President |       NULL |
|  1005 | Niraj Sharma  | Analyst   |       NULL |
|  1007 | Sumitpatil    | Manager   |       NULL |
|  1008 | Ravi sawant   | Analyst   |       NULL |
+-------+---------------+-----------+------------+
5 rows in set (0.00 sec)
```

---------------------------------------------------------------------------

17) Display the name & salary of all employees whose salary not in the range of 5000 & 10000

```
mysql> SELECT ename, salary
    -> FROM employee
    -> WHERE salary NOT BETWEEN 5000 AND 10000;
+---------------+--------+
| ename         | salary |
+---------------+--------+
| Nileshjoshi   |   2800 |
| Nikhil Gosavi |   2000 |
| Nitinkulkarni |  50000 |
| Niraj Sharma  |  12000 |
| Sumitpatil    |  25000 |
+---------------+--------+
5 rows in set (0.00 sec)
```

18) Find all names & joined date of employees whose names starts with â □Aâ □.

```
mysql> SELECT ename, joined_date
    -> FROM employee
    -> WHERE ename LIKE 'A%';
+--------------+-------------+
| ename        | joined_date |
+--------------+-------------+
| Avinashpawar | 1996-02-20  |
+--------------+-------------+
1 row in set (0.00 sec)

mysql> SELECT ename, joined_date FROM employee WHERE ename LIKE 'N%';
+---------------+-------------+
| ename         | joined_date |
+---------------+-------------+
| Nileshjoshi   | 1995-12-17  |
| Nikhil Gosavi | 1986-04-02  |
| Nitinkulkarni | 1986-04-19  |
| Niraj Sharma  | 1998-12-03  |
+---------------+-------------+
4 rows in set (0.00 sec)
```

-------------------------------------------------------------------------

19) Find all names of employees having i as a second letter in their names.

```
mysql> SELECT ename
    -> FROM employee
    -> WHERE ename LIKE '_i%';
+---------------+
| ename         |
+---------------+
| Nileshjoshi   |
| Nikhil Gosavi |
| Nitinkulkarni |
| Niraj Sharma  |
+---------------+
4 rows in set (0.00 sec)
```

-------------------------------------------------------------------------

20) Find employee number, name of employees whose commission is not null

```
mysql> SELECT empno, ename
    -> FROM employee
    -> WHERE commission IS NOT NULL;
+-------+--------------+
| empno | ename        |
+-------+--------------+
|  1001 | Nileshjoshi  |
|  1002 | Avinashpawar |
+-------+--------------+
2 rows in set (0.00 sec)
```

-------------------------------------------------------------------------

21) Display all employee information in the descending order of employee number.

```
mysql> SELECT *
    -> FROM employee
    -> ORDER BY empno DESC;




+-------+---------------+----------+-----+-------------+--------+-----------
+--------+--------------+
| empno | ename         | job      | mgr | joined_date | salary | commission |
deptno | address  |
+-------+---------------+-----------+------+-------------+--------+------------
+--------+----------------+
|  1008 | Ravi sawant   | Analyst   | 1007 | 1995-11-17  |  10000 |       NULL |
NULL | Amaravat |
|  1007 | Sumitpatil    | Manager   | 1004 | 1991-05-01  |  25000 |       NULL |
20 | Mumbai   |
|  1005 | Niraj Sharma  | Analyst   | 1003 | 1998-12-03  |  12000 |       NULL |
20 | Satara   |
|  1004 | Nitinkulkarni | President | NULL | 1986-04-19  |  50000 |       NULL |
10 | Mumbai   |
|  1003 | Nikhil Gosavi | Manager   | 1004 | 1986-04-02  |   2000 |       NULL |
30 | Pune     |
|  1002 | Avinashpawar  | Salesman  | 1003 | 1996-02-20  |   5000 |       1200 |
30 | Nagpur   |
|  1001 | Nileshjoshi   | Clerk     | 1005 | 1995-12-17  |   2800 |        600 |
20 | Nashik   |
+-------+---------------+-----------+------+-------------+--------+------------
+--------+----------------+
7 rows in set (0.01 sec)
```

---------------------------------------------------------------------------

22) Display the minimum, maximum, sum & average salary of each job type.

```
mysql> SELECT
    ->   job,
    ->   MIN(salary) AS Min_Salary,
    ->   MAX(salary) AS Max_Salary,
    ->   SUM(salary) AS Total_Salary,
    ->   AVG(salary) AS Avg_Salary
    -> FROM employee
    -> GROUP BY job;
+-----------+------------+------------+--------------+---------------------+
| job       | Min_Salary | Max_Salary | Total_Salary | Avg_Salary |
+-----------+------------+------------+--------------+---------------------+
| Clerk     |       2800 |       2800 |         2800 |  2800.0000 |
| Salesman  |       5000 |       5000 |         5000 |  5000.0000 |
| Manager   |       2000 |      25000 |        27000 | 13500.0000 |
| President |      50000 |      50000 |        50000 | 50000.0000 |
| Analyst   |      10000 |      12000 |        22000 | 11000.0000 |
+-----------+------------+------------+--------------+---------------------+
5 rows in set (0.03 sec)
```

---------------------------------------------------------------------------

```
mysql> SELECT deptno, COUNT(*) AS Employee_Count
    -> FROM employee
    -> GROUP BY deptno;
+--------+---------------------------+
| deptno | Employee_Count |
+--------+---------------------------+
|     20 |              3 |
|     30 |              2 |
|     10 |              1 |
|   NULL |              1 |
+--------+---------------------------+
4 rows in set (0.00 sec)

mysql> SELECT d.dept_no, d.dept_name, COUNT(e.empno) AS Employee_Count FROM dept
d LEFT JOIN employee e ON d.dept_no = e.deptno GROUP BY d.dept_no, d.dept_name;
+---------+------------+----------------------------+
| dept_no | dept_name  | Employee_Count |
+---------+------------+----------------------------+
|      10 | Accounting |              1 |
|      20 | Research   |              3 |
|      30 | Sales      |              2 |
|      40 | Operations |             0 |
+---------+------------+---------------+
4 rows in set (0.00 sec)
```

-------------------------------------------------------------------------

24) Select employee number, ename according to the annual salary in ascending order.

```
mysql> SELECT empno, ename, (salary * 12) AS Annual_Salary
    -> FROM employee
    -> ORDER BY Annual_Salary ASC;
+-------+---------------+---------------+
| empno | ename         | Annual_Salary |
+-------+---------------+---------------+
|  1003 | Nikhil Gosavi |         24000 |
|  1001 | Nileshjoshi   |         33600 |
|  1002 | Avinashpawar  |         60000 |
|  1008 | Ravi sawant   |        120000 |
|  1005 | Niraj Sharma  |        144000 |
|  1007 | Sumitpatil    |        300000 |
|  1004 | Nitinkulkarni |        600000 |
+-------+---------------+---------------+
7 rows in set (0.00 sec)
```

-------------------------------------------------------------------------

25) Find the department number, maximum salary where the maximum salary is greater than
5000.

```
mysql> SELECT deptno, MAX(salary) AS Max_Salary
    -> FROM employee
    -> GROUP BY deptno
    -> HAVING MAX(salary) > 5000;
+--------+------------+
| deptno | Max_Salary |
+--------+------------+
|     20 |      25000 |
|     10 |      50000 |
|   NULL |      10000 |
+--------+------------+
3 rows in set (0.00 sec)
```

-------------------------------------------------------------------------

26) Find all distinct column values from employee & department table.

1.Distinct values from Employee table columns :-

1) To get distinct job titles and departments-

```
mysql> SELECT DISTINCT deptno FROM employee;
+--------+
| deptno |
+--------+
|     20 |
|     30 |
|     10 |
|   NULL |
+--------+
4 rows in set (0.00 sec)
```

2) To get distinct employee names:

```
mysql> SELECT DISTINCT ename FROM employee;
+---------------+
| ename          |
+----------------+
| Nileshjoshi    |
| Avinashpawar   |
| Nikhil Gosavi  |
| Nitinkulkarni  |
| Niraj Sharma   |
| Sumitpatil     |
| Ravi sawant    |
+----------------+
7 rows in set (0.00 sec)
```

3) Distinct values for specific columns:
**From Employee table (e.g., Distinct Job Titles):

```
mysql> SELECT DISTINCT job
    -> FROM employee;
+-----------+
| job       |
+-----------+
| Clerk     |
| Salesman  |
| Manager   |
| President |
| Analyst   |
+-----------+
5 rows in set (0.00 sec)
```

**From Department table (e.g., Distinct Department Names):

```
mysql> SELECT DISTINCT dname
    -> FROM dept;
+------------+
| dname      |
+------------+
| Accounting |
| Research   |
| Sales      |
| Operations |
+------------+
4 rows in set (0.00 sec)
```

28) Find all column values which are common in both employee &amp; department table.

```
mysql> SELECT DISTINCT deptno
    -> FROM employee
    -> INTERSECT
    -> SELECT DISTINCT deptno
    -> FROM dept;
+--------+
| deptno |
+--------+
|     20 |
|     30 |
|     10 |
+--------+
3 rows in set (0.00 sec)
--------------------------------------------------------------------
```

29) Find all distinct column values present in employee but not in department table.

```
mysql> SELECT DISTINCT deptno
    -> FROM employee
    -> WHERE deptno NOT IN (SELECT deptno FROM dept);
Empty set (0.00 sec)
```

30) Display the number of employees in the department 30 who can earn a commission.

```
mysql> SELECT COUNT(*) AS "Number of Employees with Commission"
    -> FROM employee
    -> WHERE deptno = 30 AND Commission IS NOT NULL;
+-------------------------------------+
| Number of Employees with Commission |
+-------------------------------------+
|                                   1 |
+-------------------------------------+
1 row in set (0.00 sec)
```

# Assignment  No . 4

```
(base) lab314@lab314-ThinkCentre-M70s:~$ sudo mysql

[sudo] password for lab314:

Welcome to the MySQL monitor.  Commands end with ; or \g.

Your MySQL connection id is 8

Server version: 8.0.42-0ubuntu0.20.04.1 (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 EMP;

Query OK, 1 row affected (0.15 sec)


mysql> show databases;

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

| Database           |

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

| EMP                |

| EmployeeDB         |

| Prem               |

| ash                |

| ash1               |

| demo               |

| department         |
| employee           |
| information_schema |
| mysql              |
| performance_schema |
| student            |
| sys                |
| testDB             |
+--------------------+
14 rows in set (0.03 sec)

mysql> use EMP;
Database changed
mysql> CREATE TABLE employee (
    ->     employee_name VARCHAR(100) PRIMARY KEY,
    ->     street VARCHAR(100) NOT NULL,
    ->     city VARCHAR(50) NOT NULL
    -> );
Query OK, 0 rows affected (0.60 sec)

mysql> CREATE TABLE Company (
    ->     company_name VARCHAR(100) PRIMARY KEY,
    ->     city VARCHAR(50) NOT NULL
    -> )
    -> ;
Query OK, 0 rows affected (1.49 sec)

(base) lab314@lab314-ThinkCentre-M70s:~$ sudo mysql
[sudo] password for lab314:
Welcome to the MySQL monitor.  Commands end with ; or \g.
```

```
Your MySQL connection id is 8
Server version: 8.0.42-0ubuntu0.20.04.1 (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 EMP;
Query OK, 1 row affected (0.15 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| EMP                |
| EmployeeDB         |
| Prem               |
| ash                |
| ash1               |
| demo               |
| department         |
| employee           |
| information_schema |
| mysql              |
| performance_schema |
| student            |
| sys                |
| testDB             |
+--------------------+
14 rows in set (0.03 sec)

mysql> use EMP;
Database changed
mysql> CREATE TABLE employee (
    ->     employee_name VARCHAR(100) PRIMARY KEY,
    ->     street VARCHAR(100) NOT NULL,
    ->     city VARCHAR(50) NOT NULL
    -> );
Query OK, 0 rows affected (0.60 sec)

mysql> desc employee;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| employee_name | varchar(100) | NO   | PRI | NULL    |       |
| street        | varchar(100) | NO   |     | NULL    |       |
| city          | varchar(50)  | NO   |     | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
3 rows in set (0.00 sec)



mysql> CREATE TABLE Company (
    ->     company_name VARCHAR(100) PRIMARY KEY,
    ->     city VARCHAR(50) NOT NULL
    -> )
    -> ;
Query OK, 0 rows affected (1.49 sec)

mysql> CREATE TABLE Works (
    ->     employee_name VARCHAR(100),
    ->     company_name VARCHAR(100),
    ->     salary int NOT NULL,
    ->     PRIMARY KEY (employee_name, company_name),
    ->     FOREIGN KEY (employee_name) REFERENCES employee(employee_name),
    ->     FOREIGN KEY (company_name) REFERENCES Company(company_name)
    -> )
    -> ;
Query OK, 0 rows affected (1.30 sec)


mysql> desc Works;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| employee_name | varchar(100) | NO   | PRI | NULL    |       |
| company_name  | varchar(100) | NO   | PRI | NULL    |       |
| salary        | int          | NO   |     | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
3 rows in set (0.01 sec)


mysql> CREATE TABLE Manages (
    ->     employee_name VARCHAR(100),
    ->     manager_name VARCHAR(100),
    ->     PRIMARY KEY (employee_name),
    ->     FOREIGN KEY (employee_name) REFERENCES employee(employee_name),
    ->     FOREIGN KEY (manager_name) REFERENCES employee(employee_name)
    -> );
Query OK, 0 rows affected (0.94 sec)

mysql> desc Manages;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| employee_name | varchar(100) | NO   | PRI | NULL    |       |
| manager_name  | varchar(100) | YES  | MUL | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
2 rows in set (0.00 sec)

mysql> INSERT INTO Company (company_name, city) VALUES
    -> ('First Bank Corporation', 'New York'),
    -> ('TechNova Ltd', 'San Francisco'),
    -> ('InnoSoft Solutions', 'Seattle'),
    -> ('Greenline Finance', 'Chicago'),
    -> ('HealthSync Inc', 'Boston');
Query OK, 5 rows affected (0.10 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> select * from Company;
+------------------------+---------------+
| company_name           | city          |
+------------------------+---------------+
| First Bank Corporation | New York      |
| Greenline Finance      | Chicago       |
| HealthSync Inc         | Boston        |
| InnoSoft Solutions     | Seattle       |
| TechNova Ltd           | San Francisco |
+------------------------+---------------+
5 rows in set (0.00 sec)

mysql> INSERT INTO employee (employee_name, street, city) VALUES
    -> ('Alice Johnson', '123 Maple St', 'New York'),
    -> ('Bob Smith', '456 Oak Ave', 'San Francisco'),
    -> ('Charlie Lee', '789 Pine Rd', 'Seattle'),
    -> ('David Kim', '321 Birch Blvd', 'Chicago'),
    -> ('Eva Adams', '654 Cedar Ln', 'Boston'),
    -> ('Frank Wright', '147 Elm St', 'New York'),
    -> ('Grace Chen', '258 Spruce Ave', 'San Francisco'),
    -> ('Helen Zhao', '369 Willow Dr', 'Seattle'),
    -> ('Ian Brown', '741 Ash Ct', 'Chicago'),
    -> ('Jane Miller', '852 Poplar Way', 'Boston');
Query OK, 10 rows affected (0.12 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> select * from employee;
+---------------+----------------+---------------+
| employee_name | street         | city          |
+---------------+----------------+---------------+
| Alice Johnson | 123 Maple St   | New York      |
| Bob Smith     | 456 Oak Ave    | San Francisco |
| Charlie Lee   | 789 Pine Rd    | Seattle       |
| David Kim     | 321 Birch Blvd | Chicago       |
| Eva Adams     | 654 Cedar Ln   | Boston        |
| Frank Wright  | 147 Elm St     | New York      |
| Grace Chen    | 258 Spruce Ave | San Francisco |
| Helen Zhao    | 369 Willow Dr  | Seattle       |
| Ian Brown     | 741 Ash Ct     | Chicago       |
| Jane Miller   | 852 Poplar Way | Boston        |
+---------------+----------------+---------------+
10 rows in set (0.00 sec)

mysql> INSERT INTO Works (employee_name, company_name, salary) VALUES
    -> ('Alice Johnson', 'First Bank Corporation', 75000.00),
    -> ('Bob Smith', 'TechNova Ltd', 82000.00),
    -> ('Charlie Lee', 'InnoSoft Solutions', 79000.00),
    -> ('David Kim', 'Greenline Finance', 70000.00),
    -> ('Eva Adams', 'HealthSync Inc', 72000.00),
    -> ('Frank Wright', 'First Bank Corporation', 68000.00),
    -> ('Grace Chen', 'TechNova Ltd', 88000.00),
    -> ('Helen Zhao', 'First Bank Corporation', 71000.00),
    -> ('Ian Brown', 'Greenline Finance', 76000.00),
    -> ('Jane Miller', 'HealthSync Inc', 74000.00),
    -> ('Charlie Lee', 'First Bank Corporation', 81000.00),
    -> ('Eva Adams', 'First Bank Corporation', 70000.00),
    -> ('David Kim', 'First Bank Corporation', 76000.00),
    -> ('Bob Smith', 'First Bank Corporation', 69000.00),
    -> ('Jane Miller', 'First Bank Corporation', 72000.00);
Query OK, 15 rows affected (0.11 sec)
Records: 15  Duplicates: 0  Warnings: 0
```

```
mysql> select * from Works;
+-----------------+---------------------------+---------+
| employee_name | company_name          | salary |
+-----------------+---------------------------+---------+
| Alice Johnson | First Bank Corporation |  75000 |
| Bob Smith     | First Bank Corporation |  69000 |
| Bob Smith     | TechNova Ltd          |  82000 |
| Charlie Lee   | First Bank Corporation |  81000 |
| Charlie Lee   | InnoSoft Solutions     |  79000 |
| David Kim     | First Bank Corporation |  76000 |
| David Kim     | Greenline Finance      |  70000 |
| Eva Adams     | First Bank Corporation |  70000 |
| Eva Adams     | HealthSync Inc         |  72000 |
| Frank Wright  | First Bank Corporation |  68000 |
| Grace Chen    | TechNova Ltd          |  88000 |
| Helen Zhao    | First Bank Corporation |  71000 |
| Ian Brown     | Greenline Finance      |  76000 |
| Jane Miller   | First Bank Corporation |  72000 |
| Jane Miller   | HealthSync Inc         |  74000 |
+-----------------+---------------------------+---------+
15 rows in set (0.00 sec)
```

-----------------------------------------------------------------------------------------------------------------------

1. Find the names of employees who work for First Bank Coorporation

```
mysql> SELECT e.employee_name
    -> FROM employee e
    -> JOIN Works w ON e.employee_name = w.employee_name
    -> WHERE w.company_name = 'First Bank Corporation';
```

```
+-----------------+
| employee_name |
+-----------------+
| Alice Johnson |
| Bob Smith     |
| Charlie Lee   |
| David Kim     |
| Eva Adams     |
| Frank Wright  |
| Helen Zhao    |
| Jane Miller   |
+-----------------+
8 rows in set (0.00 sec)
```

-----------------------------------------------------------------------------------------------------------------------

2. Find the names and cities of residence of all employees who work for First Bank Coorporation

```
mysql> SELECT e.employee_name, e.city
    -> FROM employee e
    -> JOIN Works w ON e.employee_name = w.employee_name
    -> WHERE w.company_name = 'First Bank Corporation';
+-----------------+-----------------+
| employee_name | city          |
+-----------------+-----------------+
| Alice Johnson | New York      |
| Bob Smith     | San Francisco |
| Charlie Lee   | Seattle       |
| David Kim     | Chicago       |
| Eva Adams     | Boston        |
| Frank Wright  | New York      |
| Helen Zhao    | Seattle       |
| Jane Miller   | Boston        |
+---------------+---------------+
8 rows in set (0.00 sec)
```

---------------------------------------------------------------------------------------------------------------

3. Find the names, street addresses, and cities of residence of all employees who work for First

Bank Coorporation and earn more than $10000.

```
mysql>  SELECT e.employee_name, e.street , e.city
    ->  FROM employee e
    ->   JOIN Works w ON e.employee_name = w.employee_name
    ->    WHERE w.company_name = 'First Bank Corporation' AND salary>=10000;
+---------------+----------------+---------------+
| employee_name | street         | city          |
+---------------+----------------+---------------+
| Alice Johnson | 123 Maple St   | New York      |
| Bob Smith     | 456 Oak Ave    | San Francisco |
| Charlie Lee   | 789 Pine Rd    | Seattle       |
| David Kim     | 321 Birch Blvd | Chicago       |
| Eva Adams     | 654 Cedar Ln   | Boston        |
| Frank Wright  | 147 Elm St     | New York      |
| Helen Zhao    | 369 Willow Dr  | Seattle       |
| Jane Miller   | 852 Poplar Way | Boston        |
+---------------+----------------+---------------+
8 rows in set (0.00 sec)
```

--------------------------------------------------------------------------------------------------------------

4. Find all employees in the database who lives in the same cities as tha companies for which they

work.

```
mysql> SELECT e.employee_name
    -> FROM employee e
    -> JOIN Works w ON e.employee_name = w.employee_name
    -> JOIN Company c ON w.company_name = c.company_name
    -> WHERE e.city = c.city;
+-----------------+
| employee_name |
+-----------------+
| Alice Johnson |
| Frank Wright  |
| David Kim     |
| Ian Brown     |
| Eva Adams     |
| Jane Miller   |
| Charlie Lee   |
| Bob Smith     |
| Grace Chen    |
+-----------------+
9 rows in set (0.00 sec)
```

-----------------------------------------------------------------------------------------------------------------------

5. Find all employees in the database who lives in the same cities and on the same streets as do

their manager.

```
mysql> UPDATE employee
    -> SET street = '123 Maple St', city = 'New York'
    -> WHERE employee_name = 'Frank Wright';
Query OK, 1 row affected (0.07 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> UPDATE employee
    -> SET street = '123 Maple St', city = 'New York'
    -> WHERE employee_name = 'Alice Johnson';
Query OK, 0 rows affected (0.00 sec)
Rows matched: 1  Changed: 0  Warnings: 0

mysql> select * from employee;
+---------------+----------------+---------------+
| employee_name | street         | city          |
+---------------+----------------+---------------+
| Alice Johnson | 123 Maple St   | New York      |
| Bob Smith     | 456 Oak Ave    | San Francisco |
| Charlie Lee   | 789 Pine Rd    | Seattle       |
| David Kim     | 321 Birch Blvd | Chicago       |
| Eva Adams     | 654 Cedar Ln   | Boston        |
| Frank Wright  | 123 Maple St   | New York      |
| Grace Chen    | 258 Spruce Ave | San Francisco |
| Helen Zhao    | 369 Willow Dr  | Seattle       |
| Ian Brown     | 741 Ash Ct     | Chicago       |
| Jane Miller   | 852 Poplar Way | Boston        |
+---------------+----------------+---------------+
10 rows in set (0.00 sec)
```

```
mysql> SELECT e.employee_name
    -> FROM employee e
    -> JOIN Manages m ON e.employee_name = m.employee_name
    -> JOIN employee mgr ON m.manager_name = mgr.employee_name
    -> WHERE e.city = mgr.city
    ->   AND e.street = mgr.street;
+-----------------+
| employee_name |
+-----------------+
| Alice Johnson |
| Frank Wright  |
+-----------------+
2 rows in set (0.00 sec)
```

----------------------------------------------------------------------------------------------------

6. Find all employees in the database who do not work for First Bank Coorporation

```
mysql> SELECT employee_name
    -> FROM employee
    -> WHERE employee_name NOT IN (
    ->     SELECT employee_name
    ->     FROM Works
    ->     WHERE company_name = 'First Bank Corporation'
    -> );
+-----------------+
| employee_name |
+-----------------+
| Grace Chen    |
| Ian Brown     |
+-----------------+

2 rows in set (0.02 sec)
```

-----------------------------------------------------------------------------------------------------------

7. Find all employees in the database who earn more than each employee of Small Bank Coorporation

```
mysql> SELECT e.employee_name

    -> FROM Works e

    -> WHERE e.salary > (

    ->     SELECT MAX(s.salary)

    ->     FROM Works s

    ->     WHERE s.company_name = 'Small Bank Corporation'

    -> );

Empty set (0.00 sec)


mysql> SELECT * FROM Works WHERE company_name = 'Small Bank Corporation';

Empty set (0.00 sec)


mysql> INSERT INTO employee (employee_name, street, city)

    -> VALUES ('Sam Wilson', '500 Elm St', 'Dallas');

Query OK, 1 row affected (0.07 sec)


mysql> INSERT INTO Company (company_name, city)

    -> VALUES ('Small Bank Corporation', 'Dallas');

Query OK, 1 row affected (0.08 sec)


mysql> INSERT INTO Works (employee_name, company_name, salary)

    -> VALUES ('Sam Wilson', 'Small Bank Corporation', 55000);
```

```
Query OK, 1 row affected (0.09 sec)

mysql> SELECT * FROM employee;
+---------------+----------------+---------------+
| employee_name | street         | city          |
+---------------+----------------+---------------+
| Alice Johnson | 123 Maple St   | New York      |
| Bob Smith     | 456 Oak Ave    | San Francisco |
| Charlie Lee   | 789 Pine Rd    | Seattle       |
| David Kim     | 321 Birch Blvd | Chicago       |
| Eva Adams     | 654 Cedar Ln   | Boston        |
| Frank Wright  | 123 Maple St   | New York      |
| Grace Chen    | 258 Spruce Ave | San Francisco |
| Helen Zhao    | 369 Willow Dr  | Seattle       |
| Ian Brown     | 741 Ash Ct     | Chicago       |
| Jane Miller   | 852 Poplar Way | Boston        |
| Sam Wilson    | 500 Elm St     | Dallas        |
+---------------+----------------+---------------+
11 rows in set (0.00 sec)

mysql> SELECT * FROM Company;
+------------------------+----------+
| company_name           | city     |
+------------------------+----------+
| First Bank Corporation | New York |
| Greenline Finance      | Chicago  |
| HealthSync Inc         | Boston   |
| InnoSoft Solutions     | Seattle  |
| Small Bank Corporation | Dallas   |
| TechNova Ltd          | San Francisco |
+---------------------------+-----------------+
6 rows in set (0.00 sec)

mysql> SELECT * FROM Works;
+-----------------+---------------------------+---------+
| employee_name | company_name          | salary |
+-----------------+---------------------------+---------+
| Alice Johnson | First Bank Corporation |  75000 |
| Bob Smith     | First Bank Corporation |  69000 |
| Bob Smith     | TechNova Ltd          |  82000 |
| Charlie Lee   | First Bank Corporation |  81000 |
| Charlie Lee   | InnoSoft Solutions     |  79000 |
| David Kim     | First Bank Corporation |  76000 |
| David Kim     | Greenline Finance      |  70000 |
| Eva Adams     | First Bank Corporation |  70000 |
| Eva Adams     | HealthSync Inc         |  72000 |
| Frank Wright  | First Bank Corporation |  68000 |
| Grace Chen    | TechNova Ltd          |  88000 |
| Helen Zhao    | First Bank Corporation |  71000 |
| Ian Brown     | Greenline Finance      |  76000 |
| Jane Miller   | First Bank Corporation |  72000 |
| Jane Miller   | HealthSync Inc         |  74000 |
| Sam Wilson    | Small Bank Corporation |  55000 |
+-----------------+---------------------------+---------+
16 rows in set (0.00 sec)

mysql> SELECT e.employee_name, e.company_name, e.salary
    -> FROM Works e
    -> WHERE e.salary > (
    ->     SELECT MAX(s.salary)
    ->     FROM Works s
    ->     WHERE s.company_name = 'Small Bank Corporation'
    -> );
+---------------+-------------------------+--------+
| employee_name | company_name            | salary |
+---------------+-------------------------+--------+
| Alice Johnson | First Bank Corporation  |  75000 |
| Bob Smith     | First Bank Corporation  |  69000 |
| Bob Smith     | TechNova Ltd            |  82000 |
| Charlie Lee   | First Bank Corporation  |  81000 |
| Charlie Lee   | InnoSoft Solutions      |  79000 |
| David Kim     | First Bank Corporation  |  76000 |
| David Kim     | Greenline Finance       |  70000 |
| Eva Adams     | First Bank Corporation  |  70000 |
| Eva Adams     | HealthSync Inc          |  72000 |
| Frank Wright  | First Bank Corporation  |  68000 |
| Grace Chen    | TechNova Ltd            |  88000 |
| Helen Zhao    | First Bank Corporation  |  71000 |
| Ian Brown     | Greenline Finance       |  76000 |
| Jane Miller   | First Bank Corporation  |  72000 |
| Jane Miller   | HealthSync Inc          |  74000 |
+---------------+-------------------------+--------+
15 rows in set (0.00 sec)
```

---------------------------------------------------------------------------------------------------------------------------

8. Assume that the company is may be located in several cities. Find all companies located in every city in which Small Bank Coorporation is located

```
mysql> SELECT DISTINCT c1.company_name
    -> FROM Company c1
    -> WHERE NOT EXISTS (
    ->     SELECT c2.city
    ->     FROM Company c2
    ->     WHERE c2.company_name = 'Small Bank Corporation'
    ->     EXCEPT
    ->     SELECT c3.city
    ->     FROM Company c3
    ->     WHERE c3.company_name = c1.company_name
    -> );
+-------------------------+
| company_name            |
+-------------------------+
| Small Bank Corporation |
+-------------------------+
1 row in set (0.01 sec)
```

-----------------------------------------------------------------------------------------------------------------------

9. Find all employees who earn more than the average salary of all employees of their companies

```
mysql> SELECT w.employee_name, w.company_name, w.salary
    -> FROM Works w
    -> JOIN (
    ->     SELECT company_name, AVG(salary) AS avg_salary
    ->     FROM Works
    ->     GROUP BY company_name
    -> ) avg_table ON w.company_name = avg_table.company_name
    -> WHERE w.salary > avg_table.avg_salary;
+---------------+------------------------+---------+
| employee_name | company_name           | salary  |
+---------------+------------------------+---------+
| Alice Johnson | First Bank Corporation |  75000  |
| Charlie Lee   | First Bank Corporation |  81000  |
| David Kim     | First Bank Corporation |  76000  |
| Grace Chen    | TechNova Ltd           |  88000  |
| Ian Brown     | Greenline Finance      |  76000  |
| Jane Miller   | HealthSync Inc         |  74000  |
+---------------+------------------------+---------+
6 rows in set (0.00 sec)
```

---

10. Find the company that has the most employees.

```
mysql> SELECT company_name
    -> FROM Works
    -> GROUP BY company_name
    -> HAVING COUNT(employee_name) = (
    ->     SELECT MAX(emp_count)
    ->     FROM (
    ->         SELECT company_name, COUNT(employee_name) AS emp_count
    ->         FROM Works
    ->         GROUP BY company_name
    ->     ) AS company_counts
    -> );
+------------------------+
| company_name           |
+--------------------------+
| First Bank Corporation |
+--------------------------+
1 row in set (0.00 sec)
```

----------------------------------------------------------------------------------------------------------------

11. Find the company that has the smallest payroll.

```
mysql> SELECT company_name
    -> FROM Works
    -> GROUP BY company_name
    -> HAVING SUM(salary) = (
    ->     SELECT MIN(total_payroll)
    ->     FROM (
    ->         SELECT company_name, SUM(salary) AS total_payroll
    ->         FROM Works
    ->         GROUP BY company_name
    ->     ) AS payroll_totals
    -> );
+--------------------------+
| company_name           |
+--------------------------+
| Small Bank Corporation |
+--------------------------+
1 row in set (0.00 sec)
```

----------------------------------------------------------------------------------------------------------

12. Find those companies whose employees earn a higher salary, on average, than the average

salary at First Bank Coorporation

```
mysql> SELECT company_name
    -> FROM Works
    -> GROUP BY company_name
    -> HAVING AVG(salary) > (
    ->     SELECT AVG(salary)
    ->     FROM Works
    ->     WHERE company_name = 'First Bank Corporation'
    -> );
+-------------------+
| company_name      |
+-------------------+
| Greenline Finance |
| HealthSync Inc    |
| InnoSoft Solutions |
| TechNova Ltd      |
+-------------------+
```

---------------------------------------------------------------------------------------------------

13. Modify the database so that “Jones” now lives in Newtown

```
mysql> UPDATE employee
    -> SET city = 'Newtown'
    -> WHERE employee_name = 'Jones';
Query OK, 0 rows affected (0.00 sec)
Rows matched: 0  Changed: 0  Warnings: 0

mysql> UPDATE employee
```

```
    -> SET city = 'Newtown'
    -> WHERE employee_name = 'Jones';
Query OK, 0 rows affected (0.00 sec)
Rows matched: 0  Changed: 0  Warnings: 0

mysql> select * from employee;
+---------------+-----------------+---------------+
| employee_name | street          | city          |
+---------------+-----------------+---------------+
| Alice Johnson | 123 Maple St    | New York      |
| Bob Smith     | 456 Oak Ave     | San Francisco |
| Charlie Lee   | 789 Pine Rd     | Seattle       |
| David Kim     | 321 Birch Blvd  | Chicago       |
| Eva Adams     | 654 Cedar Ln    | Boston        |
| Frank Wright  | 123 Maple St    | New York      |
| Grace Chen    | 258 Spruce Ave  | San Francisco |
| Helen Zhao    | 369 Willow Dr   | Seattle       |
| Ian Brown     | 741 Ash Ct      | Chicago       |
| Jane Miller   | 852 Poplar Way  | Boston        |
| Sam Wilson    | 500 Elm St      | Dallas        |
+---------------+-----------------+---------------+
11 rows in set (0.00 sec)
```

------------------------------------------------------------------------------------------------

14. Give all employees of First Bank Coorporation” a 10% raise

```
mysql> UPDATE Works
    -> SET salary = salary * 1.10
    -> WHERE company_name = 'First Bank Corporation';
```

```
Query OK, 8 rows affected (0.15 sec)
Rows matched: 8  Changed: 8  Warnings: 0

mysql> select * from Works;
+---------------+-------------------------+---------+
| employee_name | company_name            | salary |
+---------------+-------------------------+---------+
| Alice Johnson | First Bank Corporation |  82500 |
| Bob Smith     | First Bank Corporation |  75900 |
| Bob Smith     | TechNova Ltd           |  82000 |
| Charlie Lee   | First Bank Corporation |  89100 |
| Charlie Lee   | InnoSoft Solutions     |  79000 |
| David Kim     | First Bank Corporation |  83600 |
| David Kim     | Greenline Finance      |  70000 |
| Eva Adams     | First Bank Corporation |  77000 |
| Eva Adams     | HealthSync Inc         |  72000 |
| Frank Wright  | First Bank Corporation |  74800 |
| Grace Chen    | TechNova Ltd           |  88000 |
| Helen Zhao    | First Bank Corporation |  78100 |
| Ian Brown     | Greenline Finance      |  76000 |
| Jane Miller   | First Bank Corporation |  79200 |
| Jane Miller   | HealthSync Inc         |  74000 |
| Sam Wilson    | Small Bank Corporation |  55000 |
+---------------+-------------------------+---------+
16 rows in set (0.00 sec)
```

-----------------------------------------------------------------------------------------------------------

15. Delete all tuples in the “Works” relation for employees of “Small Bank Coorporation”.

```
mysql> DELETE FROM Works
    -> WHERE company_name = 'Small Bank Corporation';
Query OK, 1 row affected (0.09 sec)

mysql> select * from Works;
+---------------+------------------------+--------+
| employee_name | company_name           | salary |
+---------------+------------------------+--------+
| Alice Johnson | First Bank Corporation |  82500 |
| Bob Smith     | First Bank Corporation |  75900 |
| Bob Smith     | TechNova Ltd           |  82000 |
| Charlie Lee   | First Bank Corporation |  89100 |
| Charlie Lee   | InnoSoft Solutions     |  79000 |
| David Kim     | First Bank Corporation |  83600 |
| David Kim     | Greenline Finance      |  70000 |
| Eva Adams     | First Bank Corporation |  77000 |
| Eva Adams     | HealthSync Inc         |  72000 |
| Frank Wright  | First Bank Corporation |  74800 |
| Grace Chen    | TechNova Ltd           |  88000 |
| Helen Zhao    | First Bank Corporation |  78100 |
| Ian Brown     | Greenline Finance      |  76000 |
| Jane Miller   | First Bank Corporation |  79200 |
| Jane Miller   | HealthSync Inc         |  74000 |
+---------------+------------------------+--------+
15 rows in set (0.00 sec)
```

**5.Write a Stored Procedure namely proc_Grade for the categorization of student. If marks scoredby students in examination is <=1500 and marks>=990 then student will be placed in distinction category if marks scored are between 989 and 900 category is first class, if marks 899 and 825 category is Higher Second Class. Write a PL/SQL block to use procedure created with above requirement. Stud_Marks(name, total_marks) Result(Roll,Name, Class)**

```
CREATE TABLE Stud_Marks (
    name VARCHAR2(50),
    total_marks NUMBER
);
CREATE TABLE Result (
    Roll NUMBER PRIMARY KEY,
    Name VARCHAR2(50),
    Class VARCHAR2(30)
);
-- Create the Sequenece
CREATE SEQUENCE result_seq START WITH 1 INCREMENT BY 1;
-- Create the Procedure
CREATE OR REPLACE PROCEDURE proc_Grade(
    p_name IN VARCHAR2,
    p_marks IN NUMBER
) AS
    v_class VARCHAR2(30);
    v_roll NUMBER;
BEGIN
    IF p_marks BETWEEN 990 AND 1500 THEN
        v_class := 'Distinction';
    ELSIF p_marks BETWEEN 900 AND 989 THEN
```

```
        v_class := 'First Class';
    ELSIF p_marks BETWEEN 825 AND 899 THEN
        v_class := 'Higher Second Class';
    ELSE
        v_class := 'Fail';
    END IF;

    SELECT result_seq.NEXTVAL INTO v_roll FROM dual;

    INSERT INTO Result(Roll, Name, Class)
    VALUES (v_roll, p_name, v_class);
END;
/

--To execute the Procedure

DECLARE
    CURSOR c1 IS
        SELECT name, total_marks FROM Stud_Marks;
BEGIN
    FOR rec IN c1 LOOP
        proc_Grade(rec.name, rec.total_marks);
    END LOOP;
END;
/

--  Display the Result
SELECT * FROM Result;
```

## Output –

| ROLL | NAME | CLASS |
|---|---|---|
| 1 | Sujal | Distinction |
| 2 | Radhika | First Class |
| 3 | Krushna | Higher Second Class |
| 4 | Krushna | Higher Second Class |
| 5 | Riya | Fail |
| 6 | Saurabh | Distinction |
| 7 | Aarya | Distinction |
| 8 | Kriti | Higher Second Class |
| 9 | Rashmi | Distinction |
| 10 | Amayra | First Class |
| 11 | Priya | Fail |
| 12 | Vamika | Distinction |
| 13 | Tanishka | Distinction |

# LAB ASSIGNMENT 12

```
> use clg
switched to db clg
> show dbs
College  0.000GB
admin   0.000GB
clg      0.000GB
config  0.000GB
local   0.000GB
> db.createColection("std")
uncaught exception: TypeError: db.createColection is not a function :
@(shell):1:1
> db.createCollection("std")
{
        "ok" : 0,
        "errmsg" : "Collection already exists. NS: clg.std",
        "code" : 48,
        "codeName" : "NamespaceExists"
}
>
db.std.insertMany([{roll:1,name:"vd",course:"DBMS",marks:85},{roll:2,name:"abc",course:"CNS",marks:
75},{roll:3,name:"xyz",course:"Physics",marks:90},{roll:4,name:"pqr",course:"Physics",marks:70},{roll:5,
name:"adt",course:"Chemistry",marks:88}])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("68e4c05162874ec98f3cca8d"),
                ObjectId("68e4c05162874ec98f3cca8e"),
                ObjectId("68e4c05162874ec98f3cca8f"),
                ObjectId("68e4c05162874ec98f3cca90"),
                ObjectId("68e4c05162874ec98f3cca91")
        ]
}
> db.std.find().pretty()
{
        "_id" : ObjectId("68e4c05162874ec98f3cca8d"),
        "roll" : 1,
        "name" : "vd",
        "course" : "DBMS",
        "marks" : 85
}
{
        "_id" : ObjectId("68e4c05162874ec98f3cca8e"),
        "roll" : 2,
        "name" : "abc",
        "course" : "CNS",
        "marks" : 75
}
{
        "_id" : ObjectId("68e4c05162874ec98f3cca8f"),
        "roll" : 3,
        "name" : "xyz",
        "course" : "Physics",
        "marks" : 90
}
{
        "_id" : ObjectId("68e4c05162874ec98f3cca90"),
        "roll" : 4,
        "name" : "pqr",
        "course" : "Physics",
        "marks" : 70
}
> var mapFunction=function(){emit(this.course,1);};var reduceFunction=function(key,values){return
Array.sum(values);};db.std.mapReduce(mapFunction,reduceFunction,{out:"course_counts"})
{ "result" : "course_counts", "ok" : 1 }
> db.course_counts.find()
{ "_id" : "DBMS", "value" : 1 }
{ "_id" : "CNS", "value" : 1 }
{ "_id" : "Physics", "value" : 2 }
{ "_id" : "Chemistry", "value" : 1 }
```

LAB ASSIGNMENT 7

```
SQL> Create table Cust_New(ID int, Name Varchar2(10), City Varchar2(10),
Salary int);

Table created.

SQL> Create table Cust_Old(ID int, Name Varchar2(10), City Varchar2(10),
Salary int);

Table created.

SQL> desc Cust_New;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
---------
 ID                                                 NUMBER(38)
 NAME                                               VARCHAR2(10)
 CITY                                               VARCHAR2(10)
 SALARY                                             NUMBER(38)

SQL> desc Cust_Old;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
---------
 ID                                                 NUMBER(38)
 NAME                                               VARCHAR2(10)
 CITY                                               VARCHAR2(10)
 SALARY                                             NUMBER(38)

SQL> insert into Cust_New Values ( 1,'Ajay', 'Pune', 20000);

1 row created.

SQL> insert into Cust_New Values ( 2,'Ramesh','Pune', 15000);

1 row created.

SQL> insert into Cust_New Values ( 3,'Umesh', 'Pune', 40000);

1 row created.

SQL> insert into Cust_New Values ( 4,'Ram', 'Pune', 25000);

1 row created.

SQL> insert into Cust_Old Values ( 1,'Ramesh','Pune', 15000);

1 row created.

SQL> insert into Cust_Old Values ( 5,'Sunil', 'Pune', 45000);

1 row created.
```

```
SQL> select * from Cust_New;

        ID NAME       CITY           SALARY
---------- ---------- ---------- ----------
         1 Ajay       Pune            20000
         2 Ramesh     Pune            15000
         3 Umesh      Pune            40000
         4 Ram        Pune            25000

SQL> select * from Cust_Old;

        ID NAME       CITY           SALARY
---------- ---------- ---------- ----------
         1 Ramesh     Pune            15000
         5 Sunil      Pune            45000

SQL> edit imp_cur.sql

--Implicit Cursor

declare
no Cust_New.ID%type;
totrecord  int;
begin
no:=&no;
select ID into no from Cust_New where ID=no;
if(SQL%found) then
totrecord:=SQL%ROWCOUNT;
dbms_output.put_line('total number of records:='||totrecord);
end if;
end;
/

SQL> set serveroutput on;

SQL> @imp_cur.sql
Enter value for no: 1
old   5: no:=&no;
new   5: no:=1;
total number of records:=1

PL/SQL procedure successfully completed.


SQL> edit imp_cur.sql

--Explicit Cursor

declare
cursor c1 is select * from Cust_New;
c1_id Cust_New.id%type;
c1_name Cust_New.name%type;
c1_city Cust_New.city%type;
c1_sal Cust_New.salary%type;
```

```
begin
open c1;
loop
fetch c1 into c1_id,c1_name,c1_city,c1_sal;
exit when c1%notfound;
dbms_output.put_line(c1_id||' '||c1_name||' '||c1_city||''||c1_sal);
end loop;
close c1;
end;
/

SQL> @exp_cur.sql
1 Ajay Pune20000
2 Ramesh Pune15000
3 Umesh Pune40000
4 Ram Pune25000

PL/SQL procedure successfully completed.

SQL> edit for_cur.sql
--for loop cursor
Declare
cursor fc is select * from Cust_New where salary>=25000;
tmp fc%rowtype;
begin
dbms_output.put_line('ID Name City Salary');
for tmp in fc
loop
dbms_output.put_line(tmp.id || ' ' || tmp.name || ' ' || tmp.city || ' '
|| tmp.salary);
end loop;
end;
/

SQL> @for_cur.sql
ID Name City Salary
3 Umesh Pune 40000
4 Ram Pune 25000

PL/SQL procedure successfully completed.

SQL> edit par_cur.sql
--Parameterized cursor

declare
cursor pc(c_id number) is SELECT * FROM Cust_New where id=c_id;
tmp pc%rowtype;
begin
dbms_output.put_line('ID Name City Salary');
for tmp in pc(2)
LOOP
dbms_output.put_line(tmp.id || ' ' || tmp.name || ' ' || tmp.city || ' '
|| tmp.salary);
END LOOP;
```

```
END;
/

SQL> @par_cur.sql
ID Name City Salary
2 Ramesh Pune 15000

PL/SQL procedure successfully completed.

SQL> edit merge_cur.sql
--Merge Table

declare
cursor para_cursor(c_id number) is SELECT * FROM Cust_Old where ID=c_id;
cur_cust_old para_cursor%rowtype;
flag number;
begin
flag:=0;
for i IN (SELECT id, name, city, salary from cust_new)
loop
for cur_cust_old in para_cursor(i.id)
loop
update Cust_Old set name = i.name, city = i.city, salary=i.salary where id
= i.id;
flag:=1;
end loop;
If flag=0 Then
insert into Cust_Old values (i.id, i.name,i.city,i.salary);
end if;
flag:=0;
end loop;
end;
/
SQL> @merge_cur.sql

PL/SQL procedure successfully completed.

SQL> select * from Cust_Old;

        ID NAME        CITY            SALARY
---------- ----------- --------------- ----------
         1 Ajay        Pune             20000
         5 Sunil       Pune             45000
         2 Ramesh      Pune             15000
         3 Umesh       Pune             40000
         4 Ram         Pune             25000
```

# LAB ASSIGNMENT 6

```
SQL> create table stud_marks(name varchar(20), total_marks int);


Table created.


SQL> desc stud_marks;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 NAME                                               VARCHAR2(20)
 TOTAL_MARKS                                        NUMBER(38)


SQL> insert into stud_marks('&name',&total_marks);
Enter value for name: Aditya
Enter value for total_marks: 875
old   1: insert into stud_marks('&name',&total_marks)
new   1: insert into stud_marks('Aditya',875)
insert into stud_marks('Aditya',875)
                      *
ERROR at line 1:
ORA-00928: missing SELECT keyword



SQL> insert into stud_marks values('&name',&total_marks);
Enter value for name: Aditya
Enter value for total_marks: 875
old   1: insert into stud_marks values('&name',&total_marks)
new   1: insert into stud_marks values('Aditya',875)


1 row created.
```

```
SQL> /

Enter value for name: Arnav

Enter value for total_marks: 1375

old   1: insert into stud_marks values('&name',&total_marks)

new   1: insert into stud_marks values('Arnav',1375)


1 row created.


SQL> /

Enter value for name: Arjun

Enter value for total_marks: 925

old   1: insert into stud_marks values('&name',&total_marks)

new   1: insert into stud_marks values('Arjun',925)


1 row created.


SQL> /

Enter value for name: Ashish

Enter value for total_marks: 980

old   1: insert into stud_marks values('&name',&total_marks)

new   1: insert into stud_marks values('Ashish',980)


1 row created.


SQL> /

Enter value for name: Amay

Enter value for total_marks: 1250

old   1: insert into stud_marks values('&name',&total_marks)
```

```
new   1: insert into stud_marks values('Amay',1250)

1 row created.

SQL> select * from stud_marks;

NAME            TOTAL_MARKS
------------- --------
Aditya              875
Arnav              1375
Arjun              925
Ashish              980
Amay               1250

SQL> create table result(rollno int, name varchar(20), class varchar(10));

Table created.

SQL> desc result;
 Name                          Null?    Type
 ----------------------------------------- --------------------
 ROLLNO                                 NUMBER(38)
 NAME                                  VARCHAR2(20)
 CLASS                                 VARCHAR2(10)

SQL> select * from result;

no rows selected
```

```
SQL> select * from stud_marks;

NAME                TOTAL_MARKS
------------- --------
Aditya                875
Arnav                1375
Arjun                925
Ashish                980
Amay                 1250

SQL> edit assignment6.sql;

SQL> @assignment6.sql

Procedure created.

SQL> @p1.sql
total_marks:=1375

PL/SQL procedure successfully completed.

SQL> edit assignment6.sql;

SQL> @assignment6.sql

Procedure created.
```

```
SQL> edit p1.sql

SQL> @p1.sql
Enter value for name: Amay
old   4: name:=&name;
new   4: name:=Amay;
name:=Amay;
      *
ERROR at line 4:
ORA-06550: line 4, column 7:
PLS-00201: identifier 'AMAY' must be declared
ORA-06550: line 4, column 1:
PL/SQL: Statement ignored



SQL> @p1.sql
Enter value for name: 'Amay'
old   4: name:=&name;
new   4: name:='Amay';
total_marks:=1250

PL/SQL procedure successfully completed.

SQL> select * from result;

    ROLLNO NAME                 RESULT
-------------------- -----------------
         1 Arnav                fail
         2 Arnav                fail
         3 Arnav              fail
         4 Amay                Distinction

SQL> delete from result;

4 rows deleted.

SQL> create sequence s2 start with 1 increment by 1;

Sequence created.

SQL> edit assignment6.sql;

SQL> @p1.sql
Enter value for name: 'Aditya'
old   4: name:=&name;
new   4: name:='Aditya';
total_marks:=875

PL/SQL procedure successfully completed.

SQL> @p1.sql
Enter value for name: 'Arnav'
old   4: name:=&name;
new   4: name:='Arnav';
total_marks:=1375

PL/SQL procedure successfully completed.
```

```
SQL> @p1.sql
Enter value for name: 'Arjun'
old   4: name:=&name;
new   4: name:='Arjun';
total_marks:=925

PL/SQL procedure successfully completed.

SQL> @p1.sql
Enter value for name: 'Amay'
old   4: name:=&name;
new   4: name:='Amay';
total_marks:=1250

PL/SQL procedure successfully completed.

SQL> @p1.sql
Enter value for name: 'Ashish'
old   4: name:=&name;
new   4: name:='Ashish';
total_marks:=980

PL/SQL procedure successfully completed.

SQL> select * from result;

    ROLLNO NAME                 RESULT
-------------------- -----------------
         5 Aditya              Higher Second Class
         6 Arnav              Distinction

         7 Arjun              First Class

         8 Amay               Distinction

         9 Ashish             First Class


SQL>


SQL> edit assignment6.sql;


SQL> edit

Wrote file afiedt.buf


  1* select * from result

SQL> edit p1.sql


SQL> delete from result;


5 rows deleted.


SQL> edit assignment6.sql;


SQL> @assignment6.sql;


Procedure created.


SQL> edit p1.sql


SQL> @p1.sql

Enter value for name: 'Aditya'
```

```
old   4: name:=&name;

new   4: name:='Aditya';

total_marks:=875


PL/SQL procedure successfully completed.


SQL> @p1.sql

Enter value for name: 'Arnav'

old   4: name:=&name;

new   4: name:='Arnav';

total_marks:=1375


PL/SQL procedure successfully completed.


SQL> @p1.sql

Enter value for name: 'Amay'

old   4: name:=&name;

new   4: name:='Amay';

total_marks:=1250


PL/SQL procedure successfully completed.


SQL> @p1.sql

Enter value for name: 'Arjun'

old   4: name:=&name;

new   4: name:='Arjun';

total_marks:=925


PL/SQL procedure successfully completed.
```

```
SQL> @p1.sql

Enter value for name: 'Ashish'

old   4: name:=&name;

new   4: name:='Ashish';

total_marks:=980


PL/SQL procedure successfully completed.


SQL> select * from result;


   ROLLNO NAME            RESULT

-------------------- -----------------

        2 Arnav           Distinction

        3 Amay            Distinction

        4 Arjun           First Class

        5 Ashish          First Class

        1 Aditya          Higher Second Class
```

# LAB ASSIGNMENT 8

```
SQL> desc library;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
---------
 BOOKID                                             NUMBER(38)
 BNAME                                              VARCHAR2(20)
 BPRICE                                             NUMBER(38)

SQL> desc library_audit;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
---------
 BOOKID                                             NUMBER(38)
 BNAME                                              VARCHAR2(20)
 BPRICE                                             NUMBER(38)
 AUDIT_CHANGE                                       VARCHAR2(20)
 UPDATE_TIME                                        DATE

SQL> select * from library;

    BOOKID BNAME                    BPRICE
---------- -------------------- ----------
       101 DBMS                        250
       102 PLSQL                       400
       103 CNS                         350

SQL> edit ass8_trig

PLSQL CODE Block
create or replace trigger trig_update after delete or update on library
for each row
declare
au_ch varchar(10);
begin
if deleting then
au_ch:='DELETE';
end if;
if updating then
au_ch:='UPDATE';
end if;
insert into library_audit
values(:old.bookid,:old.bname,:old.bprice,au_ch,current_timestamp);
end;
/

SQL>  @ass8_trig

Trigger created.

SQL> update library set bprice=400 where bookid=101;

1 row updated.
```

```
SQL> select * from library_audit;

    BOOKID BNAME                    BPRICE AUDIT_CHANGE         UPDATE_TI
---------- -------------------- ---------- -------------------- ---------
       101 DBMS                        250 UPDATE               07-OCT-25

SQL> delete from library where bookid=101;

1 row deleted.

SQL> select * from library_audit;

    BOOKID BNAME                    BPRICE AUDIT_CHANGE         UPDATE_TI
---------- -------------------- ---------- -------------------- ---------
       101 DBMS                        250 UPDATE               07-OCT-25
       101 DBMS                        400 DELETE               07-OCT-25
```

# LAB ASSIGNMENT 11

```
> use SportsClub

switched to db SportsClub

> db.createCollection("userz")

{ "ok" : 1 }

> db.userz.insertMany([

  { "name": "john", "joindate": "2025-03-29", "sports": "football" },

  { "name": "ana", "joindate": "2025-04-12", "sports": ["football","swimming"] },

  { "name": "coco", "joindate": "2023-08-15", "sports": ["basketball","football"] },

  { "name": "jules", "joindate": "2025-09-03", "sports": ["swimming","tennis"] }

])

{

  "acknowledged" : true,

  "insertedIds" : [

    ObjectId("68dba65cb15848ba3087d106"),

    ObjectId("68dba65cb15848ba3087d107"),

    ObjectId("68dba65cb15848ba3087d108"),

    ObjectId("68dba65cb15848ba3087d109")

  ]

}

> db.userz.aggregate([

  { $project: { _id: 0, name: { $toUpper: "$name" } } },

  { $sort: { name: 1 } }

])

{ "name" : "ANA" }

{ "name" : "COCO" }

{ "name" : "JOHN" }

{ "name" : "JULES" }
```

```
> db.userz.aggregate([
  {
    $group: {
      _id: { month: { $month: { $toDate: "$joindate" } } },
      totalUsers: { $sum: 1 }
    }
  },
  { $sort: { "_id.month": 1 } }
])
{ "_id" : { "month" : 3 }, "totalUsers" : 1 }
{ "_id" : { "month" : 4 }, "totalUsers" : 1 }
{ "_id" : { "month" : 8 }, "totalUsers" : 1 }
{ "_id" : { "month" : 9 }, "totalUsers" : 1 }
```