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DBMS LAB – 1

1.)Done

2.)use db;
i.)CREATE TABLE EMP(EMPNO INT, ENAME VARCHAR(20) NOT NULL, JOB VARCHAR(10) NOT NULL, DEPTNO INT, SAL INT);
DESC EMP;

Field	Type	Null	Key	Default	Extra
EMPNO	int	YES		NULL	
ENAME	varchar(20)	NO		NULL	
JOB	varchar(10)	YES		NULL	
DEPTNO	int	YES		NULL	
SAL	int	YES		NULL	

ii.)ALTER TABLE EMP ADD experience INT;
DESC EMP;

Field	Type	Null	Key	Default	Extra
EMPNO	int	YES		NULL	
ENAME	varchar(20)	NO		NULL	
JOB	varchar(10)	NO		NULL	
DEPTNO	int	YES		NULL	
SAL	int	YES		NULL	
experience	int	YES		NULL	

iii.)ALTER TABLE EMP MODIFY JOB VARCHAR(15);
DESC EMP;

Field	Type	Null	Key	Default	Extra
EMPNO	int	YES		NULL	
ENAME	varchar(20)	NO		NULL	
JOB	varchar(15)	YES		NULL	
DEPTNO	int	YES		NULL	
SAL	int	YES		NULL	

iv.)CREATE TABLE dept(
    -> DEPTNO INT,
    -> DNAME VARCHAR(10),
    -> LOC VARCHAR(10)
    ->);
DESC dept;

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```
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| DEPTNO | int         | YES  |     | NULL    |       |
| DNAME  | varchar(10) | YES  |     | NULL    |       |
| LOC    | varchar(10) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
```

v.)ALTER TABLE EMP DROP COLUMN experience;
DESC EMP;

```
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| EMPNO  | int         | YES  |     | NULL    |       |
| ENAME  | varchar(20) | NO   |     | NULL    |       |
| JOB    | varchar(10) | YES  |     | NULL    |       |
| DEPTNO | int         | YES  |     | NULL    |       |
| SAL    | int         | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
```

3.)
i.)INSERT INTO dept (DEPTNO,DNAME,LOC) VALUES (1,'soma','ZIRCON');
SELECT * FROM dept;

```
+--------+-------+--------+
| DEPTNO | DNAME | LOC    |
+--------+-------+--------+
|      1 | soma  | ZIRCON |
+--------+-------+--------+
```

ii.)INSERT INTO EMP VALUES(1,'soma','j1',1,2),(2,'jaman','j2',2,3) ;
SELECT * FROM EMP;

```
+-------+-------+------+--------+------+
| EMPNO | ENAME | JOB  | DEPTNO | SAL  |
+-------+-------+------+--------+------+
|     1 | soma  | j1   |      1 |    2 |
|     2 | jaman | j2   |      2 |    3 |
+-------+-------+------+--------+------+
```

iii.)SELECT ENAME,JOB FROM EMP;

```
+-------+------+
| ENAME | JOB  |
+-------+------+
| soma  | j1   |
| jaman | j2   |
+-------+------+
```

4.)TRUNCATE EMP;
DROP TABLE dept;

5.)
i.)create user dbuser identified by "ABcd@123";
ii.)create database mysampledb;
use mysampledb;
iii.)GRANT ALL ON mysampledb TO dbuser;

6.)

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```
REVOKE ALL ON mysampledb FROM dbuser;
i.)create user dbuser1 identified by "Soma@21";
ii.)GRANT SELECT ON EMP TO dbuser1;
iii.)REVOKE SELECT ON EMP FROM dbuser1;
```

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DBMS LAB – 2

1.

```
CREATE TABLE AUTHOR(author_id INT,name VARCHAR(20),city VARCHAR(20),country VARCHAR(20));
CREATE TABLE PUBLISHER(publisher_id INT,name VARCHAR(20),city VARCHAR(20),country
VARCHAR(20));
CREATE TABLE CATALOG(book_id INT,author_id INT,publisher_id INT,category_id INT,year INT,price
INT);
CREATE TABLE CATEGORY(category_id INT,DESCRIPTION varchar(20));
CREATE TABLE ORDER_DETAILS(order_no INT,book_id INT,quantity INT);

ALTER TABLE PUBLISHER ADD PRIMARY KEY(publisher_id);
ALTER TABLE CATALOG ADD PRIMARY KEY(book_id,author_id,publisher_id,category_id);
ALTER TABLE CATEGORY ADD PRIMARY KEY(category_id);
ALTER TABLE ORDER_DETAILS ADD PRIMARY KEY(order_no,book_id);
```

```
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| author_id | int         | NO   | PRI | NULL    |       |
| name      | varchar(20) | YES  |     | NULL    |       |
| city      | varchar(20) | YES  |     | NULL    |       |
| country   | varchar(20) | YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
```

```
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| publisher_id | int         | NO   | PRI | NULL    |       |
| name         | varchar(20) | YES  |     | NULL    |       |
| city         | varchar(20) | YES  |     | NULL    |       |
| country      | varchar(20) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
```

```
DESC CATALOG;
+--------------+------+------+-----+---------+-------+
| Field        | Type | Null | Key | Default | Extra |
+--------------+------+------+-----+---------+-------+
| book_id      | int  | NO   | PRI | NULL    |       |
| author_id    | int  | NO   | PRI | NULL    |       |
| publisher_id | int  | NO   | PRI | NULL    |       |
| category_id  | int  | NO   | PRI | NULL    |       |
| year         | int  | YES  |     | NULL    |       |
| price        | int  | YES  |     | NULL    |       |
+--------------+------+------+-----+---------+-------+
```

```
DESC ORDER_DETAILS;
```

```
+----------+------+------+-----+---------+-------+
| Field    | Type | Null | Key | Default | Extra |
+----------+------+------+-----+---------+-------+
| order_no | int  | NO   | PRI | NULL    |       |
| book_id  | int  | NO   | PRI | NULL    |       |
| quantity | int  | YES  |     | NULL    |       |
+----------+------+------+-----+---------+-------+

INSERT INTO PUBLISHER
VALUES(1,'Soma','Trichy','India'),(2,'Sri','Trichy','India'),(3,'Sanjeev','Trichy','India'),(4
,'Mano','Trichy','India'),(5,'Nitin','Trichy','India')
    -> ;

INSERT INTO CATALOG VALUES(1,1,1,1,2023,7200,'SQL'),(2,2,2,2,2023,5200,'C++'
'Cotlin');

INSERT INTO CATEGORY VALUES(1,'V Good'),(2,'V Good'),(3,'Exellent'),(4,'Good

INSERT INTO ORDER_DETAILS VALUES(1,1,200),(2,2,230),(3,3,300),(4,4,210),(5,5,100);

SELECT COUNT(author_id) FROM AUTHOR;
+------------------+
| COUNT(author_id) |
+------------------+
|                5 |
+------------------+



2.
CREATE TABLE Book(Acc_no INT,Yr_pib INT,title VARCHAR(20));
DESC Book;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| Acc_no | int         | YES  |     | NULL    |       |
| Yr_pib | int         | YES  |     | NULL    |       |
| title  | varchar(20) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+

INSERT INTO Book VALUES(734216,1982,'Algorithm design'),(237235,1995,'Database
systems'),(631523,1992,'Compiler design'),(543211,1991,'programming'),(376112,1992,'Machine
design');



SELECT * FROM Book;
+--------+--------+------------------+
| Acc_no | Yr_pib | title            |
+--------+--------+------------------+
| 237235 |   1995 | Database systems |
| 376112 |   1992 | Machine design   |
| 543211 |   1991 | programming      |
| 631523 |   1992 | Compiler design  |
| 734216 |   1982 | Algorithm design |
+--------+--------+------------------+



SELECT title,Acc_no FROM Book;
```

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```
+------------------+--------+
| title            | Acc_no |
+------------------+--------+
| Database systems | 237235 |
| Machine design   | 376112 |
| programming      | 543211 |
| Compiler design  | 631523 |
| Algorithm design | 734216 |
+------------------+--------+

SELECT * FROM Book WHERE Yr_pib =1992;
+--------+--------+-----------------+
| Acc_no | Yr_pib | title           |
+--------+--------+-----------------+
| 376112 |   1992 | Machine design  |
| 631523 |   1992 | Compiler design |
+--------+--------+-----------------+

SELECT * FROM Book WHERE Acc_no>=56782;
+--------+--------+------------------+
| Acc_no | Yr_pib | title            |
+--------+--------+------------------+
| 237235 |   1995 | Database systems |
| 376112 |   1992 | Machine design   |
| 543211 |   1991 | programming      |
| 631523 |   1992 | Compiler design  |
| 734216 |   1982 | Algorithm design |
+--------+--------+------------------+

SELECT Acc_no AS SERIAL_NO
    -> FROM Book;
+-----------+
| SERIAL_NO |
+-----------+
|    237235 |
|    376112 |
|    543211 |
|    631523 |
|    734216 |
+-----------+

SELECT Yr_pib AS YEAR FROM Book;
+------+
| YEAR |
+------+
| 1995 |
| 1992 |
| 1991 |
| 1992 |
| 1982 |
+------+
```

3.

```
CREATE TABLE branch(branch_name VARCHAR(20),branch_city VARCHAR(20),assets VARCHAR(20));

CREATE TABLE customer(customer_name VARCHAR(20),customer_city VARCHAR(20),cutomer_street
VARCHAR(20));
```

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```
CREATE TABLE account(account_number INT,branch_name VARCHAR(20),balance INT);

CREATE TABLE loan(loan_number INT,branch_name VARCHAR(20),amount INT);

CREATE TABLE depositor(customer_name VARCHAR(20),account_number INT);

CREATE TABLE borrower(customer_name VARCHAR(20),loan_number INT);

SELECT title,Acc_no FROM Book;
+------------------+--------+
| title            | Acc_no |
+------------------+--------+
| Database systems | 237235 |
| Machine design   | 376112 |
| programming      | 543211 |
| Compiler design  | 631523 |
| Algorithm design | 734216 |
+------------------+--------+

SELECT * FROM Book WHERE Yr_pib =1992;
+--------+--------+-----------------+
| Acc_no | Yr_pib | title           |
+--------+--------+-----------------+
| 376112 |   1992 | Machine design  |
| 631523 |   1992 | Compiler design |
+--------+--------+-----------------+
SELECT * FROM Book WHERE Acc_no>=56782;
+--------+--------+------------------+
| Acc_no | Yr_pib | title            |
+--------+--------+------------------+
| 237235 |   1995 | Database systems |
| 376112 |   1992 | Machine design   |
| 543211 |   1991 | programming      |
| 631523 |   1992 | Compiler design  |
| 734216 |   1982 | Algorithm design |
+--------+--------+------------------+

SELECT Acc_no AS SERIAL_NO FROM Book;
+-----------+
| SERIAL_NO |
+-----------+
|    237235 |
|    376112 |
|    543211 |
|    631523 |
|    734216 |
+-----------+




SELECT Yr_pib AS YEAR FROM Book;
+------+
| YEAR |
+------+
```

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```
| 1995 |
| 1992 |
| 1991 |
| 1992 |
| 1982 |
+------+

DESC Book;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| Acc_no | int         | NO   | PRI | NULL    |       |
| Yr_pib | int         | NO   | PRI | NULL    |       |
| title  | varchar(20) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+

+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| branch_name | varchar(20) | YES  |     | NULL    |       |
| branch_city | varchar(20) | YES  |     | NULL    |       |
| assets      | varchar(20) | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+

SELECT COUNT(author_id) FROM AUTHOR;
+------------------+
| COUNT(author_id) |
+------------------+
|                5 |
+------------------+

INSERT INTO branch VALUES('Soma','Trichy','GGGG');

INSERT INTO branch VALUES('San','Trichy','GGG');

INSERT INTO branch VALUES('Nitin','Trichy','GGGGG');

INSERT INTO branch VALUES('Jam','Trichy','GGGG');

INSERT INTO branch VALUES('Sri','Trichy','GGG');

INSERT INTO customer VALUES ('Soma','Trichy1','GGGG'), ('San','Trichy2','GGG'),
('Nitin','Trichy1','GGGGG'), ('Sri','Trichy2','GGG'), ('Jam','Trichy1','GGGG');

INSERT INTO account VALUES(1,'Soma',32000),(2,'San',12000),(3,'Nitin',23000);

INSERT INTO loan VALUES (1,'Soma',2000), (2,'San',1000), (3,'Nitin',3000), (4,'Sri',50),
(5,'Jam',2500);

INSERT INTO depositor VALUES('Soma',1),('San',2),('Nitin',3),('Sri',4),('Jam',5);

INSERT INTO borrower VALUES('Soma',1),('San',2),('Nitin',3),('Sri',4),('Jam',5);

SELECT amount FROM loan WHERE amount>=12000;
Empty Set
```

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```
SELECT branch_name FROM branch WHERE branch_city='Trichy';
+-------------+
| branch_name |
+-------------+
| Soma        |
| San         |
| Nitin       |
| Jam         |
| Sri         |
+-------------+


SELECT customer_name FROM depositor WHERE account_number=1;
+---------------+
| customer_name |
+---------------+
| Soma          |
+---------------+

SELECT customer_name FROM customer WHERE customer_name LIKE 'S%';
+---------------+
| customer_name |
+---------------+
| Soma          |
| San           |
| Sri           |
| Soma          |
| San           |
| Sri           |
+---------------+
```

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DBMS LAB – 3

1.
1)

```
CREATE TABLE EMP( EMPNO INT(10),EFNAME VARCHAR(20),ELNAME VARCHAR(20),JOB VARCHAR
(10),DEPTNAME VARCHAR (10),DEPTNO INT (2),ECITY VARCHAR (10),SAL INT (7),WORKEXPERIENCE
INT(10),MANAGERNAME VARCHAR (10),MANAGERNO INT (20),PRIMARY KEY(DEPTNO) );

CREATE TABLE dept( DEPTNO INT(2), DNAME VARCHAR(10), LOC VARCHAR(10), LOCID INT(5) );

ALTER TABLE EMP ADD PRIMARY KEY(EMPNO);

ALTER TABLE EMP ADD FOREIGN KEY (DEPTNO) references EMP(EMPNO);

INSERT INTO EMP
VALUES(1,'SOMA','VIGNESH','ENG','CSE',1,'CHENNAI',1000000,1,'MANAGER1',1),(2,'SANJIV','KANNA',
'DOC','MEDICINE',2,'DELHI',2000000,2,'MANAGER2',2),(3,'SRI','VIGNESH','YT','SHORTS',3,'KOLKATA
',3000000,3,'MANAGER3',3),(4,'NITIN','KUMAR','TEACHER','ENGLISH',4,'HOSUR',4000000,4,'MANAGER4
',4),(5,'ABHI','MANO','CEO','ALL',5,'BANGALORE',5000000,5,'MANAGER5',5);
```

```
+-------+--------+---------+---------+----------+--------+-----------+---------+-------------
--+-------------+-----------+
| EMPNO | EFNAME | ELNAME  | JOB     | DEPTNAME | DEPTNO | ECITY     | SAL     |
WORKEXPERIENCE | MANAGERNAME | MANAGERNO |
+-------+--------+---------+---------+----------+--------+-----------+---------+-------------
--+-------------+-----------+
|     1 | SOMA   | VIGNESH | ENG     | CSE      |      1 | CHENNAI   | 1000000 |
1 | MANAGER1    |         1 |
|     2 | SANJIV | KANNA   | DOC     | MEDICINE |      2 | DELHI     | 2000000 |
2 | MANAGER2    |         2 |
|     3 | SRI    | VIGNESH | YT      | SHORTS   |      3 | KOLKATA   | 3000000 |
3 | MANAGER3    |         3 |
|     4 | NITIN  | KUMAR   | TEACHER | ENGLISH  |      4 | HOSUR     | 4000000 |
4 | MANAGER4    |         4 |
|     5 | ABHI   | MANO    | CEO     | ALL      |      5 | BANGALORE | 5000000 |
5 | MANAGER5    |         5 |
+-------+--------+---------+---------+----------+--------+-----------+---------+-------------
--+-------------+-----------+
```

```
INSERT INTO dept
VALUES(1,'CSE','CHENNAI',1),(2,'MEDICINE','DELHI',2),(3,'SHORTS','KOLKATA',3),(4,'ENGLISH','HO
SUR',4),(5,'ALL','BANGALORE',5);
```

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```
+--------+----------+-----------+-------+
| DEPTNO | DNAME    | LOC       | LOCID |
+--------+----------+-----------+-------+
|      1 | CSE      | CHENNAI   |     1 |
|      2 | MEDICINE | DELHI     |     2 |
|      3 | SHORTS   | KOLKATA   |     3 |
|      4 | ENGLISH  | HOSUR     |     4 |
|      5 | ALL      | BANGALORE |     5 |
+--------+----------+-----------+-------+
```

2)

```
SELECT ELNAME,DEPTNO,DEPTNAME FROM EMP;
+---------+--------+----------+
| ELNAME  | DEPTNO | DEPTNAME |
+---------+--------+----------+
| VIGNESH |      1 | CSE      |
| KANNA   |      2 | MEDICINE |
| VIGNESH |      3 | SHORTS   |
| KUMAR   |      4 | ENGLISH  |
| MANO    |      5 | ALL      |
+---------+--------+----------+
```

3)

```
SELECT EMP.JOB,dept.LOC FROM EMP,dept
WHERE EMP.DEPTNO=80;
Empty set
```

4)

```
SELECT EMP.ELNAME,EMP.DEPTNAME,dept.LOCID,EMP.ECITY FROM EMP inner JOIN dept ON
EMP.DEPTNO=dept.DEPTNO WHERE EMP.SAL>=10000;
+---------+----------+-------+-----------+
| ELNAME  | DEPTNAME | LOCID | ECITY     |
+---------+----------+-------+-----------+
| VIGNESH | CSE      |     1 | CHENNAI   |
| KANNA   | MEDICINE |     2 | DELHI     |
| VIGNESH | SHORTS   |     3 | KOLKATA   |
| KUMAR   | ENGLISH  |     4 | HOSUR     |
| MANO    | ALL      |     5 | BANGALORE |
+---------+----------+-------+-----------+
```

5)

```
SELECT ELNAME,DEPTNAME FROM EMP WHERE EFNAME LIKE '%a%';
+---------+----------+
| ELNAME  | DEPTNAME |
+---------+----------+
| VIGNESH | CSE      |
| KANNA   | MEDICINE |
| MANO    | ALL      |
+---------+----------+
```

6)

```
SELECT ELNAME,EMPNO,MANAGERNAME,MANAGERNO FROM EMP;
+---------+-------+-------------+-----------+
```

```
| ELNAME  | EMPNO | MANAGERNAME | MANAGERNO |
+---------+-------+-------------+-----------+
| VIGNESH |     1 | MANAGER1    |         1 |
| KANNA   |     2 | MANAGER2    |         2 |
| VIGNESH |     3 | MANAGER3    |         3 |
| KUMAR   |     4 | MANAGER4    |         4 |
| MANO    |     5 | MANAGER5    |         5 |
+---------+-------+-------------+-----------+
```

7)

```
SELECT ELNAME,JOB,DEPTNO,DEPTNAME FROM EMP
    -> WHERE ECITY ='toronto';
Empty set
```

8)

```
SELECT * FROM EMP
    -> WHERE MANAGERNAME = NULL
    -> ORDER BY EMPNO DESC;
Empty set
```

9)

```
SELECT s.ELNAME,s.DEPTNO FROM EMP s JOIN EMP p WHERE s.DEPTNAME=p.DEPTNAME;
+---------+--------+
| ELNAME  | DEPTNO |
+---------+--------+
| VIGNESH |      1 |
| KANNA   |      2 |
| VIGNESH |      3 |
| KUMAR   |      4 |
| MANO    |      5 |
+---------+--------+
```

10)

```
SELECT SUM(SAL),AVG(SAL) FROM EMP;
+----------+--------------+
| SUM(SAL) | AVG(SAL)     |
+----------+--------------+
| 15000000 | 3000000.0000 |
+----------+--------------+
```

11)

```
SELECT * FROM EMP WHERE WORKEXPERIENCE=(SELECT MAX(WORKEXPERIENCE) FROM
EMP);
+-------+--------+--------+------+----------+--------+-----------+---------+----------------+-
-----------+-----------+
| EMPNO | EFNAME | ELNAME | JOB  | DEPTNAME | DEPTNO | ECITY     | SAL     | WORKEXPERIENCE |
MANAGERNAME | MANAGERNO |
+-------+--------+--------+------+----------+--------+-----------+---------+----------------+-
-----------+-----------+
|     5 | ABHI   | MANO   | CEO  | ALL      |      5 | BANGALORE | 5000000 |              5 |
MANAGER5    |         5 |
+-------+--------+--------+------+----------+--------+-----------+---------+----------------+-
-----------+-----------+
```

12)

```
SELECT COUNT(EMPNO) FROM EMP;
+--------------+
| COUNT(EMPNO) |
```

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```
+--------------+
|            5 |
+--------------+
```

13)

```
SELECT * FROM EMP WHERE WORKEXPERIENCE=(SELECT MIN(WORKEXPERIENCE) FROM EMP);
+-------+--------+---------+------+----------+--------+---------+---------+----------------+--
----------+-----------+
| EMPNO | EFNAME | ELNAME  | JOB  | DEPTNAME | DEPTNO | ECITY   | SAL     | WORKEXPERIENCE |
MANAGERNAME | MANAGERNO |
+-------+--------+---------+------+----------+--------+---------+---------+----------------+--
----------+-----------+
|     1 | SOMA   | VIGNESH | ENG  | CSE      |      1 | CHENNAI | 1000000 |              1 |
MANAGER1    |         1 |
+-------+--------+---------+------+----------+--------+---------+---------+----------------+--
----------+-----------+
```

14)

```
SELECT * FROM EMP WHERE SAL=(SELECT MAX(SAL) FROM EMP);
+-------+--------+--------+------+----------+--------+-----------+---------+----------------+-
----------+-----------+
| EMPNO | EFNAME | ELNAME | JOB  | DEPTNAME | DEPTNO | ECITY     | SAL     | WORKEXPERIENCE |
MANAGERNAME | MANAGERNO |
+-------+--------+--------+------+----------+--------+-----------+---------+----------------+-
----------+-----------+
|     5 | ABHI   | MANO   | CEO  | ALL      |      5 | BANGALORE | 5000000 |              5 |
MANAGER5    |         5 |
+-------+--------+--------+------+----------+--------+-----------+---------+----------------+-
----------+-----------+
```

2.
1)

```
CREATE TABLE Depositor(CUSNAME VARCHAR(20), ACC_NO VARCHAR(20) );

CREATE TABLE Borrower( CUSNAME VARCHAR(20), LOAN_NO VARCHAR(20) );

ALTER TABLE Depositor
    -> ADD PRIMARY KEY(ACC_NO);

ALTER TABLE Borrower ADD PRIMARY KEY(LOAN_NO);

INSERT INTO Depositor VALUES('Soma',1),('Sanjiv',2),('Sri',3),('Nitin',4),('Mano',5);

INSERT INTO Borrower VALUES('Soma',1),('Sanjiv',2),('Sri',3),('Nitin',4),('Mano',5);
```

2)

```
SELECT CUSNAME FROM Depositor INTERSECT SELECT CUSNAME FROM Borrower;
+---------+
| CUSNAME |
+---------+
| Soma    |
| Sanjiv  |
| Sri     |
```

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```
| Nitin   |
| Mano    |
+---------+
```

3)

```
SELECT CUSNAME FROM Depositor EXCEPT SELECT CUSNAME FROM Borrower;
Empty set
```

4)

```
SELECT CUSNAME FROM Depositor UNION SELECT CUSNAME FROM Borrower;
+---------+
| CUSNAME |
+---------+
| Soma    |
| Sanjiv  |
| Sri     |
| Nitin   |
| Mano    |
+---------+
```

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DBMS LAB – 4

create table EMP (employee_id int, first_name varchar(20), last_name varchar(20), email varchar(20), phone_number varchar(30), hire_date date, job_id varchar(30), commissino_pct float, manager_id int, department_id int);

create table DEPT (department_id int, department_name varchar(20), manager_id int, location_id int);

create table LOCA (location_id int, street_address varchar(30), postal_code int, city varchar(10), stata_province varchar(30), country_id int);

insert into EMP values (1, "sanjiv", "lastname1", "emp1@company.org", "0000000001", "2023-08-24", "IT_PROG", 10.1 ,1, 1);

insert into EMP values (2, "soma", "lastname2", "emp2@company.org", "0000000002", "2023-08-24", "IT_PROG", 10.2 ,1, 1);

insert into EMP values (3, "sri", "lastname3", "emp3@company.org", "0000000003", "2023-08-24", "AD_PRESS", 10.3 ,2, 2);

insert into EMP values (134, "vignesh", "lastname134", "emp1@company.org", "0000000004", "2023-08-24", "IT_PROG", 10.4 ,1, 1);

insert into EMP values (159, "mano", "lastname159", "emp1@company.org", "0000000005", "2023-08-24", "IT_PROG", 10.5 ,1, 1);

insert into EMP values (183, "nithin", "lastname183", "emp1@company.org", "0000000006", "2023-08-24", "IT_PROG", 10.6 ,1, 1);

insert into EMP values (8, "jaman", "lastname8", "emp8@company.org", "0000000007", "2023-08-24", "AD_PRESS", 10.7 ,2, 2);

insert into EMP values (9, "bhoop", "lastname9", "emp9@company.org", "0000000008", "2023-08-24", "AD_PRESS", 10.8 ,2, 2);

insert into DEPT values (1, "IT", 1, 1);

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insert into DEPT values (2, "Administration", 2, 2);

insert into LOCA values (1, "IT_BUILDING", 1, "Trichy", "TN", 1);

insert into LOCA values (2, "ADMIN_BLOCK", 2, "Trichy", "TN", 1);

select * from EMP;

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

| employee_id | first_name | last_name | email | phone_number | hire_date | job_id | commissino_pct | manager_id | department_id |

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

| 1 | sanjiv | lastname1 | emp1@company.org | 0000000001 | 2023-08-24 | IT_PROG | 10.1 | 1 | 1 |

| 2 | soma | lastname2 | emp2@company.org | 0000000002 | 2023-08-24 | IT_PROG | 10.2 | 1 | 1 |

| 3 | sri | lastname3 | emp3@company.org | 0000000003 | 2023-08-24 | AD_PRESS | 10.3 | 2 | 2 |

| 134 | vignesh | lastname134 | emp1@company.org | 0000000004 | 2023-08-24 | IT_PROG | 10.4 | 1 | 1 |

| 159 | mano | lastname159 | emp1@company.org | 0000000005 | 2023-08-24 | IT_PROG | 10.5 | 1 | 1 |

| 183 | nithin | lastname183 | emp1@company.org | 0000000006 | 2023-08-24 | IT_PROG | 10.6 | 1 | 1 |

| 8 | jaman | lastname8 | emp8@company.org | 0000000007 | 2023-08-24 | AD_PRESS | 10.7 | 2 | 2 |

| 9 | bhoop | lastname9 | emp9@company.org | 0000000008 | 2023-08-24 | AD_PRESS | 10.8 | 2 | 2 |

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```
+-------------+------------+-------------+-----------------+-------------+------------+----------+----------------
+------------+---------------+
```

select * from DEPT;

```
+---------------+-----------------+------------+-------------+
| department_id | department_name | manager_id | location_id |
+---------------+-----------------+------------+-------------+
| 1 | IT | 1 | 1 |
| 2 | Administration | 2 | 2 |
+---------------+-----------------+------------+-------------+
```

select * from LOCA;

```
+-------------+----------------+-------------+--------+----------------+------------+
| location_id | street_address | postal_code | city | stata_province | country_id |
+-------------+----------------+-------------+--------+----------------+------------+
| 1 | IT_BUILDING | 1 | Trichy | TN | 1 |
| 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |
+-------------+----------------+-------------+--------+----------------+------------+
```

q1.

SELECT * FROM EMP INNER JOIN DEPT INNER JOIN LOCA ON EMP.DEPARTMENT_ID=DEPT.DEPARTMENT_ID AND DEPT.LOCATION_ID=LOCA.LOCATION_ID WHERE EMPLOYEE_ID IN (134,159,183);

```
+-------------+------------+-------------+-----------------+-------------+------------+---------+----------------
+------------+---------------+--------------+-----------------+------------+-------------+-------------+------------
----+-------------+--------+----------------+------------+
```

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| employee_id | first_name | last_name | email | phone_number | hire_date | job_id | commissino_pct | manager_id | department_id | department_id | department_name | manager_id | location_id | location_id | street_address | postal_code | city | stata_provin ce | country_id |

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

| 134 | vignesh | lastname134 | emp1@company.org | 0000000004 | 2023-08-24 | IT_PROG | 10.4 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 159 | mano | lastname159 | emp1@company.org | 0000000005 | 2023-08-24 | IT_PROG | 10.5 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 183 | nithin | lastname183 | emp1@company.org | 0000000006 | 2023-08-24 | IT_PROG | 10.6 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

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

q2.

SELECT * FROM EMP INNER JOIN DEPT INNER JOIN LOCA ON EMP.DEPARTMENT_ID=DEPT.DEPARTMENT_ID AND DEPT.LOCATION_ID=LOCA.LOCATION_ID WHERE EMP.DEPARTMENT_ID NOT IN (SELECT DEPARTMENT_ID FROM DEPT WHERE MANAGER_ID BETWEEN 100 AND 200);

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

| employee_id | first_name | last_name | email | phone_number | hire_date | job_id | commissino_pct | manager_id | department_id | department_id | department_name | manager_id | location_id | location_id | street_address | postal_code | city | stata_provin ce | country_id |

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

| 1 | sanjiv | lastname1 | emp1@company.org | 0000000001 | 2023-08-24 | IT_PROG | 10.1 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 2 | soma | lastname2 | emp2@company.org | 0000000002 | 2023-08-24 | IT_PROG | 10.2 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 3 | sri | lastname3 | emp3@company.org | 0000000003 | 2023-08-24 | AD_PRESS | 10.3 | 2 | 2 | 2 | Administration | 2 | 2 | 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |

| 134 | vignesh | lastname134 | emp1@company.org | 0000000004 | 2023-08-24 | IT_PROG | 10.4 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 159 | mano | lastname159 | emp1@company.org | 0000000005 | 2023-08-24 | IT_PROG | 10.5 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 183 | nithin | lastname183 | emp1@company.org | 0000000006 | 2023-08-24 | IT_PROG | 10.6 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 8 | jaman | lastname8 | emp8@company.org | 0000000007 | 2023-08-24 | AD_PRESS | 10.7 | 2 | 2 | 2 | Administration | 2 | 2 | 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |

| 9 | bhoop | lastname9 | emp9@company.org | 0000000008 | 2023-08-24 | AD_PRESS | 10.8 | 2 | 2 | 2 | Administration | 2 | 2 | 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |

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

q3.

select * from EMP inner JOIN DEPT inner JOIN LOCA on EMP.department_id=DEPT.department_id and DEPT.location_id=LOCA.location_id where EMP.commissino_pct in (select max(commissino_pct) from EMP where commissino_pct not in (select max(commissino_pct) from EMP));

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

| employee_id | first_name | last_name | email | phone_number | hire_date | job_id | commissino_pct | manager_id | department_id | department_id | department_name |

manager_id | location_id | location_id | street_address | postal_code | city | stata_province | country_id |

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

| 8 | jaman | lastname8 | emp8@company.org | 0000000007 | 2023-08-24 | AD_PRESS | 10.7 | 2 | 2 | 2 | Administration | 2 | 2 | 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |

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

q4.

select * from EMP inner JOIN DEPT inner JOIN LOCA on EMP.department_id=DEPT.department_id and DEPT.location_id=LOCA.location_id where EMP.commissino_pct in (select min(commissino_pct) from EMP where commissino_pct not in (select min(commissino_pct) from EMP));

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

| employee_id | first_name | last_name | email | phone_number | hire_date | job_id | commissino_pct | manager_id | department_id | department_id | department_name | manager_id | location_id | location_id | street_address | postal_code | city | stata_provin ce | country_id |

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

| 2 | soma | lastname2 | emp2@company.org | 0000000002 | 2023-08-24 | IT_PROG | 10.2 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

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

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select * from EMP inner JOIN DEPT inner JOIN LOCA on EMP.department_id=DEPT.department_id and DEPT.location_id=LOCA.location_id where exists (select DISTINCT(manager_id) from EMP);

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

| employee_id | first_name | last_name | email | phone_number | hire_date | job_id | commissino_pct | manager_id | department_id | department_id | department_name | manager_id | location_id | location_id | street_address | postal_code | city | stata_provin ce | country_id |

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

| 1 | sanjiv | lastname1 | emp1@company.org | 0000000001 | 2023-08-24 | IT_PROG | 10.1 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 2 | soma | lastname2 | emp2@company.org | 0000000002 | 2023-08-24 | IT_PROG | 10.2 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 3 | sri | lastname3 | emp3@company.org | 0000000003 | 2023-08-24 | AD_PRESS | 10.3 | 2 | 2 | 2 | Administration | 2 | 2 | 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |

| 134 | vignesh | lastname134 | emp1@company.org | 0000000004 | 2023-08-24 | IT_PROG | 10.4 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 159 | mano | lastname159 | emp1@company.org | 0000000005 | 2023-08-24 | IT_PROG | 10.5 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 183 | nithin | lastname183 | emp1@company.org | 0000000006 | 2023-08-24 | IT_PROG | 10.6 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 8 | jaman | lastname8 | emp8@company.org | 0000000007 | 2023-08-24 | AD_PRESS | 10.7 | 2 | 2 | 2 | Administration | 2 | 2 | 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |

| 9 | bhoop | lastname9 | emp9@company.org | 0000000008 | 2023-08-24 | AD_PRESS | 10.8 | 2 | 2 | 2 | Administration | 2 | 2 | 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |

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

q5.

select DISTINCT(DEPT.department_name) from EMP inner JOIN DEPT inner JOIN LOCA on EMP.department_id=DEPT.department_id and DEPT.location_id=LOCA.location_id;

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

| department_name |

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

| IT |

| Administration |

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

q6.

select first_name, last_name, DEPT.department_name from EMP inner JOIN DEPT inner JOIN LOCA on EMP.department_id=DEPT.department_id and DEPT.location_id=LOCA.location_id where exists (select commissino_pct from EMP where commissino_pct > 3700);

Empty set

q7.

select DEPT.department_id,department_name from DEPT inner join EMP on DEPT.department_id=EMP.department_id where not exists(select employee_id from DEPT inner join EMP on DEPT.department_id=EMP.department_id);

Empty set

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q8.

select employee_id, concat(first_name,' ',last_name)as full_name from EMP where employee_id in (select employee_id from EMP where first_name like "%t%");

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

| employee_id | full_name |

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

| 183 | nithin lastname183 |

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

q9.

select employee_id, concat(first_name,' ',last_name)as full_name,commissino_pct as salary from EMP where commissino_pct>(select avg(commissino_pct) from EMP)and exists(select employee_id from EMP where first_name like '%j%');

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

| employee_id | full_name | salary |

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

| 8 | jaman lastname8 | 10.7 |

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

q10.

select employee_id, concat(first_name,' ',last_name)as full_name, job_id as job_title from EMP where commissino_pct<any(select (commissino_pct) from EMP where job_id="IT_PROG");

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

| employee_id | full_name | job_title |

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

| 1 | sanjiv lastname1 | IT_PROG |

| 2 | soma lastname2 | IT_PROG |

| 3 | sri lastname3 | AD_PRESS |

| 134 | vignesh lastname134 | IT_PROG |

| 159 | mano lastname159 | IT_PROG |

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

Q11.

select employee_id, concat(first_name,' ',last_name)as full_name, job_id as job_title from EMP where commissino_pct<any(select (commissino_pct) from EMP where job_id="IT_PROG") and job_id<>"IT_PROG";

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

| employee_id | full_name | job_title |

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

| 3 | sri lastname3 | AD_PRESS |

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

Q12.

select employee_id, concat(first_name,' ',last_name)as full_name, job_id as job_title from EMP where commissino_pct>all(select (commissino_pct) from EMP where job_id="IT_PROG") and job_id<>"IT_PROG";

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

| employee_id | full_name | job_title |

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

| 8 | jaman lastname8 | AD_PRESS |

| 9 | bhoop lastname9 | AD_PRESS |

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

Q13.

select employee_id, concat(first_name,' ',last_name)as full_name, job_id as job_title from EMP where commissino_pct>all(select avg(commissino_pct) from EMP group by job_id);

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

| employee_id | full_name | job_title |

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

| 183 | nithin lastname183 | IT_PROG |

| 8 | jaman lastname8 | AD_PRESS |

| 9 | bhoop lastname9 | AD_PRESS |

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

q14.

select first_name, last_name, commissino_pct as salary, EMP.department_id from EMP inner JOIN DEPT inner JOIN LOCA on EMP.department_id=DEPT.department_id and DEPT.location_id=LOCA.location_id where EMP.commissino_pct in (select commissino_pct from EMP where commissino_pct > (select avg(commissino_pct) from EMP)) order by EMP.commissino_pct desc ;

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

| first_name | last_name | salary | department_id |

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

| bhoop | lastname9 | 10.8 | 2 |

| jaman | lastname8 | 10.7 | 2 |

| nithin | lastname183 | 10.6 | 1 |

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| mano | lastname159 | 10.5 | 1 |

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

q15.

select * from EMP inner JOIN DEPT inner JOIN LOCA on EMP.department_id=DEPT.department_id and DEPT.location_id=LOCA.location_id where EMP.commissino_pct in (select commissino_pct from EMP where commissino_pct between (select min(commissino_pct) from EMP) and 2500);

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

| employee_id | first_name | last_name | email | phone_number | hire_date | job_id | commissino_pct | manager_id | department_id | department_id | department_name | manager_id | location_id | location_id | street_address | postal_code | city | stata_provin ce | country_id |

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

| 1 | sanjiv | lastname1 | emp1@company.org | 0000000001 | 2023-08-24 | IT_PROG | 10.1 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 2 | soma | lastname2 | emp2@company.org | 0000000002 | 2023-08-24 | IT_PROG | 10.2 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 3 | sri | lastname3 | emp3@company.org | 0000000003 | 2023-08-24 | AD_PRESS | 10.3 | 2 | 2 | 2 | Administration | 2 | 2 | 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |

| 134 | vignesh | lastname134 | emp1@company.org | 0000000004 | 2023-08-24 | IT_PROG | 10.4 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 159 | mano | lastname159 | emp1@company.org | 0000000005 | 2023-08-24 | IT_PROG | 10.5 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 183 | nithin | lastname183 | emp1@company.org | 0000000006 | 2023-08-24 | IT_PROG | 10.6 | 1 | 1 | 1 | IT | 1 | 1 | 1 | IT_BUILDING | 1 | Trichy | TN | 1 |

| 8 | jaman | lastname8 | emp8@company.org | 0000000007 | 2023-08-24 | AD_PRESS | 10.7 | 2 | 2 | 2 | Administration | 2 | 2 | 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |

| 9 | bhoop | lastname9 | emp9@company.org | 0000000008 | 2023-08-24 | AD_PRESS | 10.8 | 2 | 2 | 2 | Administration | 2 | 2 | 2 | ADMIN_BLOCK | 2 | Trichy | TN | 1 |

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

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DBMS LAB – 5

q1.

```
create table STUDENT(Roll_number int,Name varchar(20),Address varchar(40),Phone int,Age int);

create table StudentCourse(CourseId int,Roll_number int);

insert into STUDENT values(106121134,'Soma','Zircon C',1234567890,19);
insert into STUDENT values(106121132,'SR Vijay','Zircon C',1234567891,21);
insert into STUDENT values(106121130,'Sri Vignesh','Zircon B',1234567892,20);
insert into STUDENT values(106121128,'SRI K','Zircon B',1234567893,21);
insert into STUDENT values(106121126,'Soubaghya','Zircon C',1234567890,22);

insert into StudentCourse values(876594,106121134);
insert into StudentCourse values(876593,106121132);
insert into StudentCourse values(876592,106121130);
insert into StudentCourse values(876591,106121128);
insert into StudentCourse values(876590,106121126);

-- Joins
a.INNER JOIN and g.equi join are the same
select * from STUDENT inner join StudentCourse on
STUDENT.Roll_number=StudentCourse.Roll_number;
```

Roll_number	Name	Address	Phone	Age	CourseId	Roll_number
106121134	Soma	Zircon C	1234567890	19	876594	106121134
106121132	SR Vijay	Zircon C	1234567891	21	876593	106121132
106121130	Sri Vignesh	Zircon B	1234567892	20	876592	106121130
106121128	SRI K	Zircon B	1234567893	21	876591	106121128
106121126	Soubaghya	Zircon C	1234567890	22	876590	106121126

```
b.LEFT JOIN
select * from STUDENT left join StudentCourse on
STUDENT.Roll_number=StudentCourse.Roll_number;
```

Roll_number	Name	Address	Phone	Age	CourseId	Roll_number
106121134	Soma	Zircon C	1234567890	19	876594	106121134
106121132	SR Vijay	Zircon C	1234567891	21	876593	106121132
106121130	Sri Vignesh	Zircon B	1234567892	20	876592	106121130
106121128	SRI K	Zircon B	1234567893	21	876591	106121128
106121126	Soubaghya	Zircon C	1234567890	22	876590	106121126

```
c.RIGHT JOIN
select * from STUDENT right join StudentCourse on
```

```
STUDENT.Roll_number=StudentCourse.Roll_number;
+-------------+-------------+----------+------------+------+----------+-------------+
| Roll_number | Name        | Address  | Phone      | Age  | CourseId | Roll_number |
+-------------+-------------+----------+------------+------+----------+-------------+
|   106121134 | Soma        | Zircon C | 1234567890 |   19 |   876594 |   106121134 |
|   106121132 | SR Vijay    | Zircon C | 1234567891 |   21 |   876593 |   106121132 |
|   106121130 | Sri Vignesh | Zircon B | 1234567892 |   20 |   876592 |   106121130 |
|   106121128 | SRI K       | Zircon B | 1234567893 |   21 |   876591 |   106121128 |
|   106121126 | Soubaghya   | Zircon C | 1234567890 |   22 |   876590 |   106121126 |
+-------------+-------------+----------+------------+------+----------+-------------+
```

```
d.FULL JOIN
select * from STUDENT full join StudentCourse on
STUDENT.Roll_number=StudentCourse.Roll_number;
+-------------+-------------+----------+------------+------+----------+-------------+
| Roll_number | Name        | Address  | Phone      | Age  | CourseId | Roll_number |
+-------------+-------------+----------+------------+------+----------+-------------+
|   106121134 | Soma        | Zircon C | 1234567890 |   19 |   876594 |   106121134 |
|   106121132 | SR Vijay    | Zircon C | 1234567891 |   21 |   876593 |   106121132 |
|   106121130 | Sri Vignesh | Zircon B | 1234567892 |   20 |   876592 |   106121130 |
|   106121128 | SRI K       | Zircon B | 1234567893 |   21 |   876591 |   106121128 |
|   106121126 | Soubaghya   | Zircon C | 1234567890 |   22 |   876590 |   106121126 |
+-------------+-------------+----------+------------+------+----------+-------------+
```

```
e.NATURAL JOIN
select * from STUDENT natural join StudentCourse on
STUDENT.Roll_number=StudentCourse.Roll_number;
+-------------+-------------+----------+------------+------+----------+-------------+
| Roll_number | Name        | Address  | Phone      | Age  | CourseId | Roll_number |
+-------------+-------------+----------+------------+------+----------+-------------+
|   106121134 | Soma        | Zircon C | 1234567890 |   19 |   876594 |   106121134 |
|   106121132 | SR Vijay    | Zircon C | 1234567891 |   21 |   876593 |   106121132 |
|   106121130 | Sri Vignesh | Zircon B | 1234567892 |   20 |   876592 |   106121130 |
|   106121128 | SRI K       | Zircon B | 1234567893 |   21 |   876591 |   106121128 |
|   106121126 | Soubaghya   | Zircon C | 1234567890 |   22 |   876590 |   106121126 |
+-------------+-------------+----------+------------+------+----------+-------------+
```

```
f.THETA JOIN
select * from STUDENT join StudentCourse ON STUDENT.Roll_number=StudentCourse.Roll_number
where CourseId=876594;
+-------------+------+----------+------------+------+----------+-------------+
| Roll_number | Name | Address  | Phone      | Age  | CourseId | Roll_number |
+-------------+------+----------+------------+------+----------+-------------+
|   106121134 | Soma | Zircon C | 1234567890 |   19 |   876594 |   106121134 |
+-------------+------+----------+------------+------+----------+-------------+
```

```
q2.
1.
create table Customer(Cust_id int,Cust_name varchar(20),primary key(Cust_id));
create table Item(item_id int,item_name varchar(20),price int,primary key(Item_id));
create table Sale(bill_no int,bill_date date,cust_id int,item_id int,qty_sold int,primary
key(bill_no));

insert into Customer values(1,'Soma');
insert into Customer values(2,'SRV');
```

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```
insert into Customer values(3,'Sri Vignesh');
insert into Customer values(4,'Sri K');
insert into Customer values(5,'Soubaghya');
insert into Customer values(6,'Nitin');
insert into Customer values(7,'Sanjiv');
insert into Customer values(8,'Appruval');
insert into Customer values(9,'Abinav');
insert into Customer values(10,'SKM');

insert into Item values(1,'Computer',1000);
insert into Item values(2,'Mouse',120);
insert into Item values(3,'Keyboard',130);
insert into Item values(4,'CPU',250);
insert into Item values(5,'Cable',10);
insert into Item values(6,'Watch',60);
insert into Item values(7,'Phone',580);
insert into Item values(8,'Laptop',900);
insert into Item values(9,'Glass',75);
insert into Item values(10,'Clock',50);



insert into Sale values(1,'2021-02-21',1,1,200);
insert into Sale values(2,'2023-04-16',2,2,1200);
insert into Sale values(3,'2021-03-08',3,3,500);
insert into Sale values(4,'2023-05-12',4,4,900);
insert into Sale values(5,'2021-08-24',5,5,2400);
insert into Sale values(6,'2022-08-24',6,6,1000);
insert into Sale values(7,'2023-08-24',7,7,400);
insert into Sale values(8,'2021-08-24',8,8,240);
insert into Sale values(9,'2021-08-24',9,9,750);
insert into Sale values(10,'2023-08-24',10,10,1500);

2.
create view view2 as (select
bill_no,bill_date,cust_id,Item.item_id,price,qty_sold,qty_sold*price as amount from Sale inner
join Item on Item.item_id=Sale.item_id);
select * from view2;
+---------+------------+---------+---------+-------+----------+--------+
| bill_no | bill_date  | cust_id | item_id | price | qty_sold | amount |
+---------+------------+---------+---------+-------+----------+--------+
|       1 | 2021-02-21 |       1 |       1 |  1000 |      200 | 200000 |
|       2 | 2023-04-16 |       2 |       2 |   120 |     1200 | 144000 |
|       3 | 2021-03-08 |       3 |       3 |   130 |      500 |  65000 |
|       4 | 2023-05-12 |       4 |       4 |   250 |      900 | 225000 |
|       5 | 2021-08-24 |       5 |       5 |    10 |     2400 |  24000 |
|       6 | 2022-08-24 |       6 |       6 |    60 |     1000 |  60000 |
|       7 | 2023-08-24 |       7 |       7 |   580 |      400 | 232000 |
|       8 | 2021-08-24 |       8 |       8 |   900 |      240 | 216000 |
|       9 | 2021-08-24 |       9 |       9 |    75 |      750 |  56250 |
|      10 | 2023-08-24 |      10 |      10 |    50 |     1500 |  75000 |
+---------+------------+---------+---------+-------+----------+--------+

3.
create view view3 as(select * from Sale where bill_date >'2023-08-21' order by bill_date);
select * from view3;

+---------+------------+---------+---------+----------+
| bill_no | bill_date  | cust_id | item_id | qty_sold |
+---------+------------+---------+---------+----------+
```

```
|       7 | 2023-08-24 |       7 |       7 |      400 |
|      10 | 2023-08-24 |      10 |      10 |     1500 |
+---------+------------+---------+---------+----------+
```

4.

```
select item_name,price*qty_sold as total_price from Item inner join Sale
on Item.item_id=Sale.item_id order by total_price DESC limit 5;
+-----------+-------------+
| item_name | total_price |
+-----------+-------------+
| Phone     |      232000 |
| CPU       |      225000 |
| Laptop    |      216000 |
| Computer  |      200000 |
| Mouse     |      144000 |
+-----------+-------------+
```

5.

```
(select Customer.cust_name,sum(qty_sold*price), 'platinum' as lvl from Sale,Item,Customer
where bill_date like '2021%' and Sale.cust_id=Customer.cust_id and Sale.item_id group by
Customer.cust_name having sum(qty_sold*price)>50000) union (select
Customer.cust_name,sum(qty_sold*price), 'gold' as lvl from Sale,Item,Customer where bill_date
like '2021%' and Sale.cust_id=Customer.cust_id and Sale.item_id group by Customer.cust_name
having sum(qty_sold*price)>10000 and sum(qty_sold*price)<50000) union(select
Customer.cust_name,sum(qty_sold*price), 'silver' as lvl from Sale,Item,Customer where
bill_date like '2021%' and Sale.cust_id=Customer.cust_id and Sale.item_id group by
Customer.cust_name having sum(qty_sold*price)>10000);
+-------------+---------------------+----------+
| cust_name   | sum(qty_sold*price) | lvl      |
+-------------+---------------------+----------+
| Abinav      |             2381250 | platinum |
| Appruval    |              762000 | platinum |
| Soubaghya   |             7620000 | platinum |
| Sri Vignesh |             1587500 | platinum |
| Soma        |              635000 | platinum |
| Abinav      |             2381250 | silver   |
| Appruval    |              762000 | silver   |
| Soubaghya   |             7620000 | silver   |
| Sri Vignesh |             1587500 | silver   |
| Soma        |              635000 | silver   |
+-------------+---------------------+----------+
```

6.

```
select Cust_name,qty_sold*price as total_amount from Customer inner join Sale inner join Item
on Sale.item_id=Item.item_id and Customer.cust_id=Sale.cust_id where bill_date like '2021%'
order by total_amount desc limit 5;
+-------------+--------------+
| Cust_name   | total_amount |
+-------------+--------------+
| Appruval    |       216000 |
| Soma        |       200000 |
| Sri Vignesh |        65000 |
| Abinav      |        56250 |
| Soubaghya   |        24000 |
+-------------+--------------+
```

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DBMS LAB – 6

Q1

```
CREATE TABLE course (coursenum INT primary key, coursename VARCHAR(20));
CREATE TABLE section (sectionnum INT primary key, term INT);
CREATE TABLE professor (profnum INT primary key, profname INT, sectionnum INT, coursenum INT);
CREATE TABLE student (studentnum INT primary key, studentname VARCHAR(30), GPA INT, sectionnum
INT, coursenum INT);
CREATE TABLE offsitesection (location VARCHAR(30), sectionnum INT);
ALTER TABLE professor ADD CONSTRAINT FOREIGN KEY professor_fk(sectionnum) REFERENCES
section(sectionnum);
ALTER TABLE student ADD CONSTRAINT FOREIGN KEY student_fk(sectionnum) REFERENCES
section(sectionnum);
```

```
mysql> DESC course;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| coursenum  | int         | NO   | PRI | NULL    |       |
| coursename | varchar(20) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

```
mysql> DESC section;
+------------+------+------+-----+---------+-------+
| Field      | Type | Null | Key | Default | Extra |
+------------+------+------+-----+---------+-------+
| sectionnum | int  | NO   | PRI | NULL    |       |
| term       | int  | YES  |     | NULL    |       |
+------------+------+------+-----+---------+-------+
2 rows in set (0.01 sec)
```

```
mysql> DESC professor;
+------------+------+------+-----+---------+-------+
| Field      | Type | Null | Key | Default | Extra |
+------------+------+------+-----+---------+-------+
| profnum    | int  | NO   | PRI | NULL    |       |
| profname   | int  | YES  |     | NULL    |       |
| sectionnum | int  | YES  | MUL | NULL    |       |
| coursenum  | int  | YES  |     | NULL    |       |
+------------+------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

```
mysql> DESC student;
+-------------+-------------+------+-----+---------+-------+
```

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```
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| studentnum  | int         | NO   | PRI | NULL    |       |
| studentname | varchar(30) | YES  |     | NULL    |       |
| GPA         | int         | YES  |     | NULL    |       |
| sectionnum  | int         | YES  | MUL | NULL    |       |
| coursenum   | int         | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)

mysql> DESC offsitesection;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| location   | varchar(30) | YES  |     | NULL    |       |
| sectionnum | int         | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)



mysql> DESC course;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| coursenum  | int         | NO   | PRI | NULL    |       |
| coursename | varchar(20) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
2 rows in set (0.13 sec)

mysql> DESC section;
+------------+------+------+-----+---------+-------+
| Field      | Type | Null | Key | Default | Extra |
+------------+------+------+-----+---------+-------+
| sectionnum | int  | NO   | PRI | NULL    |       |
| term       | int  | YES  |     | NULL    |       |
+------------+------+------+-----+---------+-------+
2 rows in set (0.00 sec)

mysql> DESC professor;
+------------+------+------+-----+---------+-------+
| Field      | Type | Null | Key | Default | Extra |
+------------+------+------+-----+---------+-------+
| profnum    | int  | NO   | PRI | NULL    |       |
| profname   | int  | YES  |     | NULL    |       |
| sectionnum | int  | YES  | MUL | NULL    |       |
| coursenum  | int  | YES  |     | NULL    |       |
+------------+------+------+-----+---------+-------+
4 rows in set (0.00 sec)




mysql> DESC student;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
```

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```
+-------------+-------------+------+-----+---------+-------+
| studentnum  | int         | NO   | PRI | NULL    |       |
| studentname | varchar(30) | YES  |     | NULL    |       |
| GPA         | int         | YES  |     | NULL    |       |
| sectionnum  | int         | YES  | MUL | NULL    |       |
| coursenum   | int         | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)

mysql> DESC offsitesection;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| location   | varchar(30) | YES  |     | NULL    |       |
| sectionnum | int         | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

Q2

```
CREATE TABLE product (barcode VARCHAR(10) primary key, pname VARCHAR(20), price int,
quantityinstock int);
CREATE TABLE sale (saleid INT primary key, deliveryaddress VARCHAR(20), creditcard int);
CREATE TABLE saleitem (saleid INT primary key, barcode VARCHAR(10), quantity int);

Delimiter $$
CREATE TRIGGER updateAvailabilityQuantity
AFTER INSERT
ON saleitem
FOR EACH ROW BEGIN
UPDATE product
SET product.quantityinstock = product.quantityinstock - NEW.quantity
WHERE NEW.barcode = product.barcode;
END;
$$
Delimiter ;

select * from product;
+---------+-------+-------+-----------------+
| barcode | pname | price | quantityinstock |
+---------+-------+-------+-----------------+
| abcd    | phone |    10 |              10 |
+---------+-------+-------+-----------------+
1 row in set (0.00 sec)

insert into product values ('abcd', 'phone', 10, 10);
insert into saleitem values (1, 'abcd', 1);




select * from product;
+---------+-------+-------+-----------------+
| barcode | pname | price | quantityinstock |
+---------+-------+-------+-----------------+
| abcd    | phone |    10 |               9 |
```

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```
+---------+-------+-------+-----------------+
1 row in set (0.00 sec)
```

Q3

```
create table emp (e_no integer(5) primary key, e_name varchar(20), pos varchar(20), man_id
integer(5), salary integer(5), foreign key(man_id) references emp(e_no));
create table dept (d_no integer(5) primary key, d_name varchar(20));
create table company (e_no integer(5), d_no integer(5), joinDate date, foreign key(e_no)
references emp(e_no) on delete cascade, foreign key(d_no) references dept(d_no) on update
cascade);
insert into dept values (11,'Sales'),(22,'Development'),(33,'cleaning');
insert into emp values
(1,'Ajay','guard',1,200),(2,'Aman','sde1',1,1200),(3,'Amar','salesman',1,800),(4,'Ram','manage
r',1,1600),(5,'Avi','sde2',1,1800);
insert into company values (1,33,'2022-3-11'),(2,22,'2022-6-3'),(3,11,'2022-5-2'),(4,11,'2022-
3-21'),(5,22,'2022-7-1');
```

(i)

```
mysql> select * from emp;
+------+--------+----------+--------+--------+
| e_no | e_name | pos      | man_id | salary |
+------+--------+----------+--------+--------+
|    1 | Ajay   | guard    |      1 |    200 |
|    2 | Aman   | sde1     |      1 |   1200 |
|    3 | Amar   | salesman |      1 |    800 |
|    4 | Ram    | manager  |      1 |   1600 |
|    5 | Avi    | sde2     |      1 |   1800 |
+------+--------+----------+--------+--------+
5 rows in set (0.00 sec)

mysql> delete from emp where e_no = 3;
Query OK, 1 row affected (0.22 sec)

mysql> select * from emp;
+------+--------+---------+--------+--------+
| e_no | e_name | pos     | man_id | salary |
+------+--------+---------+--------+--------+
|    1 | Ajay   | guard   |      1 |    200 |
|    2 | Aman   | sde1    |      1 |   1200 |
|    4 | Ram    | manager |      1 |   1600 |
|    5 | Avi    | sde2    |      1 |   1800 |
+------+--------+---------+--------+--------+
4 rows in set (0.00 sec)
```

(ii)

```
mysql> select * from dept;
+------+-------------+
| d_no | d_name      |
+------+-------------+
|   11 | Sales       |
```

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```
|   22 | Development |
|   33 | cleaning    |
+------+-------------+
3 rows in set (0.00 sec)


mysql> update dept set d_no = 12 where d_no = 11;
Query OK, 1 row affected (0.09 sec)
Rows matched: 1  Changed: 1  Warnings: 0


mysql> select * from dept;
+------+-------------+
| d_no | d_name      |
+------+-------------+
|   12 | Sales       |
|   22 | Development |
|   33 | cleaning    |
+------+-------------+
3 rows in set (0.00 sec)


(iii)
-- check in create table part
```

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DBMS LAB – 7

```
create table EMP(EMPNO int,ENAME varchar(20),JOB varchar(20),DEPTNO int,SAL int);
create table DEPT(DEPTNO int,DNAME varchar(10),LOC varchar(10));

insert into EMP values(1,"Soma","Doctor",1,150000);
insert into EMP values(2,"Sri","Teacher",2,180000);
insert into EMP values(3,"Sanjeev","Engineer",3,300000);
insert into EMP values(4,"Nitin","Developer",4,500000);
insert into EMP values(5,"Mano","CEO",5,9999999);

select * from EMP;
+-------+---------+-----------+--------+---------+
| EMPNO | ENAME   | JOB       | DEPTNO | SAL     |
+-------+---------+-----------+--------+---------+
|     1 | Soma    | Doctor    |      1 |  150000 |
|     2 | Sri     | Teacher   |      2 |  180000 |
|     3 | Sanjeev | Engineer  |      3 |  300000 |
|     4 | Nitin   | Developer |      4 |  500000 |
|     5 | Mano    | CEO       |      5 | 9999999 |
+-------+---------+-----------+--------+---------+


insert into DEPT values(1,"Medical","Mumbai");
insert into DEPT values(2,"Physics","Trichy");
insert into DEPT values(3,"CSE","Bangalore");
insert into DEPT values(4,"CSE","Chennai");
insert into DEPT values(5,"Marketing","Delhi");

select * from DEPT;
+--------+-----------+-----------+
| DEPTNO | DNAME     | LOC       |
+--------+-----------+-----------+
|      1 | Medical   | Mumbai    |
|      2 | Physics   | Trichy    |
|      3 | CSE       | Bangalore |
|      4 | CSE       | Chennai   |
|      5 | Marketing | Delhi     |
+--------+-----------+-----------+


Q1
delimiter $

create procedure emp_rec(in id int)
begin
    select * from EMP where EMPNO =id;
end
$

delimiter ;
call emp_rec(1);
```

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```
+-------+-------+--------+--------+--------+
| EMPNO | ENAME | JOB    | DEPTNO | SAL    |
+-------+-------+--------+--------+--------+
|     1 | Soma  | Doctor |      1 | 150000 |
+-------+-------+--------+--------+--------+
```

Q2

```
delimiter $

create procedure emp_insert(in EMPNO int,ENAME varchar(20),JOB varchar(20),DEPTNO int,SAL int)
begin
    insert into EMP values(EMPNO,ENAME,JOB,DEPTNO,SAL);
end
$

delimiter ;

call emp_insert(6,"EVR","Chef",6,600000);
select * from EMP;
```

```
+-------+---------+-----------+--------+---------+
| EMPNO | ENAME   | JOB       | DEPTNO | SAL     |
+-------+---------+-----------+--------+---------+
|     1 | Soma    | Doctor    |      1 |  150000 |
|     2 | Sri     | Teacher   |      2 |  180000 |
|     3 | Sanjeev | Engineer  |      3 |  300000 |
|     4 | Nitin   | Developer |      4 |  500000 |
|     5 | Mano    | CEO       |      5 | 9999999 |
|     6 | EVR     | Chef      |      6 |  600000 |
+-------+---------+-----------+--------+---------+
```

Q3

```
delimiter $

create procedure raise_sal(in id int,in X int)
begin
    update EMP set SAL = SAL + X where EMPNO =id;
end
$

delimiter ;

call raise_sal(1,10000);
select * from EMP;
```

```
+-------+---------+-----------+--------+---------+
| EMPNO | ENAME   | JOB       | DEPTNO | SAL     |
+-------+---------+-----------+--------+---------+
|     1 | Soma    | Doctor    |      1 |  160000 |
|     2 | Sri     | Teacher   |      2 |  180000 |
|     3 | Sanjeev | Engineer  |      3 |  300000 |
|     4 | Nitin   | Developer |      4 |  500000 |
|     5 | Mano    | CEO       |      5 | 9999999 |
|     6 | EVR     | Chef      |      6 |  600000 |
+-------+---------+-----------+--------+---------+
```

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Q4

```
delimiter $

create procedure rem_rec(in emp_name varchar(20))
begin
    delete from EMP where ENAME=emp_name;
end
$

delimiter ;

call rem_rec("EVR");
select * from EMP;
+-------+---------+-----------+--------+---------+
| EMPNO | ENAME   | JOB       | DEPTNO | SAL     |
+-------+---------+-----------+--------+---------+
|     1 | Soma    | Doctor    |      1 |  160000 |
|     2 | Sri     | Teacher   |      2 |  180000 |
|     3 | Sanjeev | Engineer  |      3 |  300000 |
|     4 | Nitin   | Developer |      4 |  500000 |
|     5 | Mano    | CEO       |      5 | 9999999 |
+-------+---------+-----------+--------+---------+
```

Q5

```
delimiter $

create function min_sal()
returns int
deterministic
begin
    return (select min(SAL) from EMP);
end
$
delimiter ;

select min_sal() as ans;
+--------+
| ans    |
+--------+
| 160000 |
+--------+
```

Q6

```
delimiter $

create function count_emp()
returns int
deterministic
begin
    return (select count(ENAME) from EMP);
end
$
delimiter ;

select count_emp() as ans;
+------+
| ans  |
```

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```
+------+
|    5 |
+------+
```

Q7

```
delimiter $

create function disp_sal()
returns int
deterministic
begin
    return (select SAL from EMP where EMPNO=5);
end
$
delimiter ;

select disp_sal() as ans;
+---------+
| ans     |
+---------+
| 9999999 |
+---------+
```

Q8

```
delimiter $

create function avg_sal(id int)
returns int
deterministic
begin
    return (select AVG(SAL) from EMP where DEPTNO=id);
end
$
delimiter ;

select avg_sal(3) as ans;

+--------+
| ans    |
+--------+
| 300000 |
+--------+
```

Q9

```
delimiter $

create procedure emp_list()
begin
    select ENAME from EMP where DEPTNO=5;
end
$

delimiter ;
call emp_list();
call emp_list();
+-------+
| ENAME |
+-------+
```

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```
| Mano  |
+-------+

Q10
delimiter $

create procedure dept_highest()
begin
    select MAX(SAL) from EMP group by DEPTNO;
end
$

delimiter ;

call dept_highest();
+----------+
| MAX(SAL) |
+----------+
|   160000 |
|   180000 |
|   300000 |
|   500000 |
|  9999999 |
+----------+

Q11
delimiter $

create function count_emp_cons()
returns int
deterministic
begin
    return (select count(ENAME) from EMP where SAL>30000);
end
$
delimiter ;

select count_emp_cons() as ans;
+------+
| ans  |
+------+
|    5 |
+------+

Q12
delimiter $

create function count_emp_loc()
returns int
deterministic
begin
    return (select count(ENAME) from EMP inner join DEPT on EMP.DEPTNO=DEPT.DEPTNO where
LOC="Mumbai");
end
$
delimiter ;
select count_emp_loc() as ans;
+------+
```

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```
| ans  |
+------+
|    1 |
+------+
```

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DBMS LAB – 8

Q1 Write a C Program to find Candidate Key from Functional Dependencies.

```
#include<bits/stdc++.h>
using namespace std;

int smallest_size = INT_MAX;

int obtain_bitmask(string A, unordered_map<char,int>mapping){
    int curr = 0;
    for(auto x: A){
        if(mapping.find(x)!= mapping.end()){
            curr |= 1<<(mapping[x]);
        }
    }
    return curr;
}

string convertToString(int mask, unordered_map<int,char>revMap){
    string res;
    int index = 0;
    while(mask>0){
        if(mask %2){
            res += revMap[index];
        }
        index++;
        mask /=2;
    }
    return res;
}

bool isSuperKey(string A,int set, unordered_map<char,int>mapping,unordered_map<string,string>
func_depend, unordered_map<int,int> bit_depend){
    unordered_set<int>characters;
    int curr_set = set;
    while(true){
        int prev_set = curr_set;
        for(auto x: bit_depend){
            if((curr_set & x.first) != 0){
                curr_set |= x.second;
            }
        }
        if(curr_set == prev_set){
            break;
        }
    }
    if(curr_set == ((1<<A.size())-1)){
        return true;
    }
    return false;
}
int main(){
    int n;
```

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```
    string A;
    unordered_map<char,int>mapping;
    unordered_map<int,char>revChar;
    unordered_map<string,string> func_depend;
    unordered_map<int,int> bit_depend;
    cout<<"Enter Attributes ";
    cin>>A;
    cout<<"Enter number of functional dependencies ";
    cin>>n;
    for(int i=0;i<A.size();i++){
        mapping[A[i]] = i;
        revChar[i] =A[i];
    }
    for(int i=0;i<n;i++){
        string LHS,RHS;
        cout<<"Enter the LHS of the string ";
        cin>>LHS;
        cout<<"Enter the RHS of the string ";
        cin>>RHS;
        int templ = obtain_bitmask(LHS,mapping), tempr = obtain_bitmask(RHS,mapping);
        cout<<templ<<" "<<tempr<<endl;
        func_depend[LHS] = RHS;
        bit_depend[templ] = tempr;
    }

    for(int i=0;i<(1<<A.size());i++){
        if(isSuperKey(A,i,mapping, func_depend,bit_depend)){
            string temp= convertToString(i,revChar);
            if(temp.size() <=smallest_size){
                cout<<temp<<" is a candidate key"<<endl;
                smallest_size = temp.size();
            }
        }
    }
}
```

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```
┌──(magic_kite㉿magic-kite)-[~/…/NITT/1_semester5/CSLR51_DBMS_lab/lab8]
└─$ ./1
Enter Attributes xyzw
Enter number of functional dependencies 3
Enter the LHS of the string x
Enter the RHS of the string yzw
1 14
Enter the LHS of the string xy
Enter the RHS of the string zw
3 12
Enter the LHS of the string xyz
Enter the RHS of the string w
7 8
x is a candidate key

┌──(magic_kite㉿magic-kite)-[~/…/NITT/1_semester5/CSLR51_DBMS_lab/lab8]
└─$ ./1
Enter Attributes xyzw
Enter number of functional dependencies 3
Enter the LHS of the string x
Enter the RHS of the string y
1 2
Enter the LHS of the string y
Enter the RHS of the string z
2 4
Enter the LHS of the string z
Enter the RHS of the string x
4 1
xw is a candidate key
yw is a candidate key
zw is a candidate key
```

Q2 Write a C Program to find super Key from Functional Dependencies.

```
#include<bits/stdc++.h>
using namespace std;

int obtain_bitmask(string A, unordered_map<char,int>mapping){
    int curr = 0;
    for(auto x: A){
        if(mapping.find(x)!= mapping.end()){
            curr |= 1<<(mapping[x]);
        }
    }
    return curr;
}

string convertToString(int mask, unordered_map<int,char>revMap){
    string res;
    int index = 0;
    while(mask>0){
        if(mask %2){
            res += revMap[index];
        }
        index++;
        mask /=2;
    }
    return res;
}

bool isSuperKey(string A,int set, unordered_map<char,int>mapping,unordered_map<string,string>
func_depend, unordered_map<int,int> bit_depend){
    unordered_set<int>characters;
    int curr_set = set;
    while(true){
        int prev_set = curr_set;
        for(auto x: bit_depend){
            if((curr_set & x.first) != 0){
                curr_set |= x.second;
            }
        }
        if(curr_set == prev_set){
            break;
        }
    }
    if(curr_set == ((1<<A.size())-1)){
        return true;
    }
    return false;
}
int main(){
    int n;
    string A;
    unordered_map<char,int>mapping;
    unordered_map<int,char>revChar;
    unordered_map<string,string> func_depend;
    unordered_map<int,int> bit_depend;
    cout<<"Enter Attributes ";
    cin>>A;
    cout<<"Enter number of functional dependencies ";
    cin>>n;
    for(int i=0;i<A.size();i++){
        mapping[A[i]] = i;
        revChar[i] =A[i];
```

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```
    }
    for(int i=0;i<n;i++){
        string LHS,RHS;
        cout<<"Enter the LHS of the string ";
        cin>>LHS;
        cout<<"Enter the RHS of the string ";
        cin>>RHS;
        int templ = obtain_bitmask(LHS,mapping), tempr = obtain_bitmask(RHS,mapping);
        cout<<templ<<" "<<tempr<<endl;
        func_depend[LHS] = RHS;
        bit_depend[templ] = tempr;
    }

    for(int i=0;i<(1<<A.size());i++){
        if(isSuperKey(A,i,mapping, func_depend,bit_depend)){
            cout<<convertToString(i,revChar)<<" is a super key"<<endl;
        }
    }
}
```

```
┌──(magic_kite㉿magic-kite)-[~/…/NITT/1_semester5/CSLR51_DBMS_lab/lab8]
└─$ ./2
Enter Attributes xyzw
Enter number of functional dependencies 3
Enter the LHS of the string x
Enter the RHS of the string yzw
1 14
Enter the LHS of the string xy
Enter the RHS of the string zw
3 12
Enter the LHS of the string xyz
Enter the RHS of the string w
7 8
x is a super key
xy is a super key
xz is a super key
xyz is a super key
xw is a super key
xyw is a super key
xzw is a super key
xyzw is a super key
```

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```
┌──(magic_kite㉿magic-kite)-[~/…/NITT/1_semester5/CSLR51_DBMS_lab/lab8]
└─$ ./2
Enter Attributes xyzw
Enter number of functional dependencies 3
Enter the LHS of the string x
Enter the RHS of the string y
1 2
Enter the LHS of the string y
Enter the RHS of the string z
2 4
Enter the LHS of the string z
Enter the RHS of the string x
4 1
xw is a super key
yw is a super key
xyw is a super key
zw is a super key
xzw is a super key
yzw is a super key
xyzw is a super key
```

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DBMS LAB – 9

Q1

```
set autocommit = 0;

create table emp (empno int(6), ename varchar(20), job varchar(10), dept varchar(10), deptno
int(3), sal float(7, 2));

start transaction;

insert into emp values (1, "sanjivkannaa", "SDE", "software", 1, 100.10);

commit;

select * from emp;
+-------+-------------+------+----------+--------+--------+
| empno | ename       | job  | dept     | deptno | sal    |
+-------+-------------+------+----------+--------+--------+
|     1 | sanjivkannaa | SDE  | software |      1 | 100.10 |
+-------+-------------+------+----------+--------+--------+

rollback;


select * from emp;
+-------+-------------+------+----------+--------+--------+
| empno | ename       | job  | dept     | deptno | sal    |
+-------+-------------+------+----------+--------+--------+
|     1 | sanjivkannaa | SDE  | software |      1 | 100.10 |
+-------+-------------+------+----------+--------+--------+


start transaction;

insert into emp values (2, "sri vignesh", "SDE", "software", 1, 200.10);

select * from emp;
+-------+-------------+------+----------+--------+--------+
| empno | ename       | job  | dept     | deptno | sal    |
+-------+-------------+------+----------+--------+--------+
|     1 | sanjivkannaa | SDE  | software |      1 | 100.10 |
|     2 | sri vignesh  | SDE  | software |      1 | 200.10 |
+-------+-------------+------+----------+--------+--------+
```

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```
rollback;

select * from emp;
+-------+-------------+------+----------+--------+--------+
| empno | ename       | job  | dept     | deptno | sal    |
+-------+-------------+------+----------+--------+--------+
|     1 | sanjivkannaa | SDE  | software |      1 | 100.10 |
+-------+-------------+------+----------+--------+--------+
```

Q2

```
#creating table
create table product (barcode varchar(10), pname varchar(10), price int, quantityinstock int);

create table sale (saleid int, deliveryaddress varchar(30), creditcard int);


create table saleitem (saleid int, barcode varchar(10), quantity int);

#insert data
insert into product values ("aaaa", "phone", 100000, 9);

insert into product values ("bbbb", "laptop", 90000, 8);


insert into sale values (1, "address1", 1234567890);

insert into sale values (2, "address2", 1234567891);


insert into saleitem values (1, "aaaa", 1);

insert into saleitem values (2, "bbbb", 2);


1
delimiter //
create trigger updateavailablequantity
    -> after insert
    -> on saleitem
    -> for each row begin
    -> update product
    -> set product.quantityinstock = product.quantityinstock - NEW.quantity
```

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```
    -> where NEW.barcode = product.barcode;
    -> end;
    -> //

select * from product//
+---------+--------+--------+-----------------+
| barcode | pname  | price  | quantityinstock |
+---------+--------+--------+-----------------+
| aaaa    | phone  | 100000 |               9 |
| bbbb    | laptop |  90000 |               8 |
+---------+--------+--------+-----------------+

insert into saleitem values (1, "aaaa", 1);//

select * from product//
+---------+--------+--------+-----------------+
| barcode | pname  | price  | quantityinstock |
+---------+--------+--------+-----------------+
| aaaa    | phone  | 100000 |               8 |
| bbbb    | laptop |  90000 |               8 |
+---------+--------+--------+-----------------+
```

```
2
delimiter //
create procedure spinsertproduct (in barcode_ varchar(10), in pname_ varchar(10), in price_
int, in quantity_ int)
    -> begin
    ->     start transaction;
    ->     insert into product values (barcode_, pname_, price_, quantity_);
    ->     if price_ <= 0 or quantity_ < 0 then rollback;
    ->     end if;
    -> end;
    -> //
delimiter ;

call spinsertproduct("cccc", "tablet", 0, 10);

call spinsertproduct("cccc", "tablet", 10, 0);

select * from product;
+---------+--------+--------+-----------------+
| barcode | pname  | price  | quantityinstock |
+---------+--------+--------+-----------------+
| aaaa    | phone  | 100000 |              10 |
| bbbb    | laptop |  90000 |               9 |
+---------+--------+--------+-----------------+

call spinsertproduct("cccc", "tablet", 10000, 10);
```

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```
select * from product;
+---------+--------+--------+-----------------+
| barcode | pname  | price  | quantityinstock |
+---------+--------+--------+-----------------+
| aaaa    | phone  | 100000 |              10 |
| bbbb    | laptop |  90000 |               9 |
| cccc    | tablet |  10000 |              10 |
+---------+--------+--------+-----------------+
```

3

```
delimiter //
create function spreturn1 (quantity_ int, barcode_ varchar(10))
    -> returns int deterministic
    -> begin
    -> return (select quantity_*price as total_price from product where barcode=barcode_);
    -> end;
    -> //

select spreturn1(2, "aaaa");
    -> //
+----------------------+
| spreturn1(2, "aaaa") |
+----------------------+
|               200000 |
+----------------------+
```

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DBMS LAB – 10

Q1(i)

1.Create a xquery to list the salary > 30000

doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q1.xml")/EmployeeDetails/Employee[Salary>30000]

1

Soma

SDE

8

CSE

1

1000000

2

Sanjiv

Devops

7

CSE

1

1500000

3

Sri

Trader

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1

DS

2

10000000

4

Mano

Manager

13

Management

3

20000000

5

Nitin

AppDev

8

Research

1

1000000

2.Get Employee numbers of employees whose last name starts with "S".

```
for $x in
doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q1.xml")/
EmployeeDetails/Employee[starts-with(EName,"S")]/EmpNo

return $x
```

123

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3.Get names of employees in the "Research" department.

```
for $x in
doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q1.xml")/
EmployeeDetails/Employee

where $x/Dept = "Research"

return $x
```

```
5

Nitin

AppDev

8

Research

1

1000000
```

4.Get employees who are managers work more than 8 hours

```
for $x in
doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q1.xml")/
EmployeeDetails/Employee

where $x/Job="Manager" and $x/WorkingHours>8

return $x
```

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5.Display the salary in highest to lowest.

```
for $x in
doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q1.xml")/
EmployeeDetails/Employee

order by $x/Salary

return $x
```

```
1

Soma

SDE

8

CSE

1

1000000

5

Nitin

Manager

8

Research

1

1000000

3

Sri

Trader
```

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1

DS

2

10000000

2

Sanjiv

Devops

7

CSE

1

1500000

4

Mano

Manager

13

Management

3

20000000

6.Display the Employee name in Alphabetical order.

```
for $x in
doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q1.xml")/
EmployeeDetails/Employee/EName

order by $x

return $x
```

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ManoNitinSanjivSomaSri

Q1(ii)

1. Create a xquery to list the Marks > 75

```
for $x in
doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q2.xml")/
StudentDetails/Students

where $x/Marks>75

return $x
```

1

Soma

SE

CSE

1

100

13

2

Sanjiv

Devops

CSE

1

99

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12

3

Sri

Networks

ECE

2

98

43

4

Mano

Analog

ICE

13

20

79

5

Nitin

Electronics

EEE

1

10

99

2. Find the Avg Mark of a Student.

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```
for $x in
doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q2.xml")/
StudentDetails/Students[STUID eq "1"]

return avg($x/Marks)
```

56.5

3. Find the Total Marks of a Student.

```
sum(doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q2.x
ml")/StudentDetails/Students[STUID eq "2"]/Marks)
```

111

4. Find the Min and Max Mark of a student in a subject.

```
min(doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q2.x
ml")/StudentDetails/Students[STUID eq "3"]/Marks),

max(doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q2.x
ml")/StudentDetails/Students[STUID eq "3"]/Marks)
```

43 98

Q2(i)

1. Create a xquery to list the price of journey < 5000

```
doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q3.xml")/
FlightDetails/Flight[Price<5000]
```

5

Corona

Nitin

Trichy

Hosur

21.10.2023

6:45

4000

2. Create a xquery to find the departs Time of the particular flight on a 4.12.2020 from a particular city.

doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q3.xml")/FlightDetails/Flight[Date eq 21.10.2023 and From eq Trichy]/DepartTime

5

Corona

Nitin

Trichy

Hosur

21.10.2023

6:45

9:00

4000

3. Create a xquery to find the Flight Names handled by a particular Pilot.

doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q3.xml")/FlightDetails/Flight[PilotName eq "Soma"]

1

Lufthansa

Soma

Chennai

Trichy

2020-12-04

3:00

6:00

15000

4. Create a xquery to find out number of Flight journeys of a particular flight on 30.11.2020

count(doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q3.xml")/FlightDetails/Flight[Date eq "30.11.2020"])

0

5. Create a xquery to find Arrival Time of a particular flight on 25.11.2020 from a particular city.

doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q3.xml")/FlightDetails/Flight[Date eq 21.10.2023 and From eq Trichy]/ArrivesTime

5

Corona

Nitin

Trichy

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106121116

Hosur

21.10.2023

6:45

9:00

4000

Q2(ii)

1. Create a xquery to list the employees in Dept =’Human Resources’.

doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q4.xml")/EmployeeDetails/Employee[Dept eq "HumanResouces"]

4

Mano

Manager

4

HumanResouces

13

20000000

2. Create a xquery to find the Employee who works in particular project and salary > 50000.

doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q4.xml")/EmployeeDetails/Employee[Project eq "3" and Salary>50000]

3

Sri

Trader

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3

DS

2

10000000

3. Create a xquery to find the Total salary of Employees in a particular department.

```
sum(doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q4.xml")/EmployeeDetails/Employee[Dept eq "CSE"]/Salary)
```

33500000

4. Create a xquery to find the number of Employees working in a department.

```
count(doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q4.xml")/EmployeeDetails/Employee[Dept eq "CSE"])
```

2

5. Create a xquery to find the highest salary of a manager in particular department.

```
max(doc("/home/magic_kite/Desktop/NITT/1_semester5/CSLR51_DBMS_lab/lab10/q4.xml")/EmployeeDetails/Employee[Dept eq "HumanResouces" and Job eq "Manager"]/Salary)
```

20000000