

# DATABASE MANAGEMENT SYSTEM LAB PROGRAMS

## PART A

### PROGRAM 1:

Draw the E-R diagram and convert entities and relationships to relation table for a given scenario

**Solution:**

#### 1.COLLEGE DATABASE

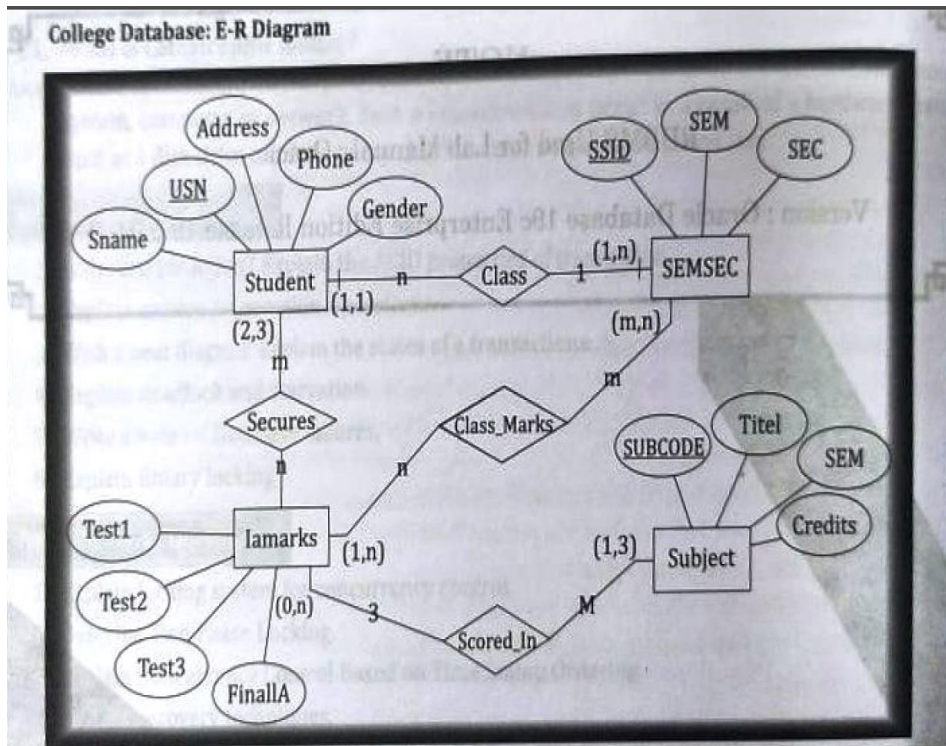
STUDENT(USN,SName,Address,Phone,Gender)

SEMSEC(SSID,Sem,Sec)

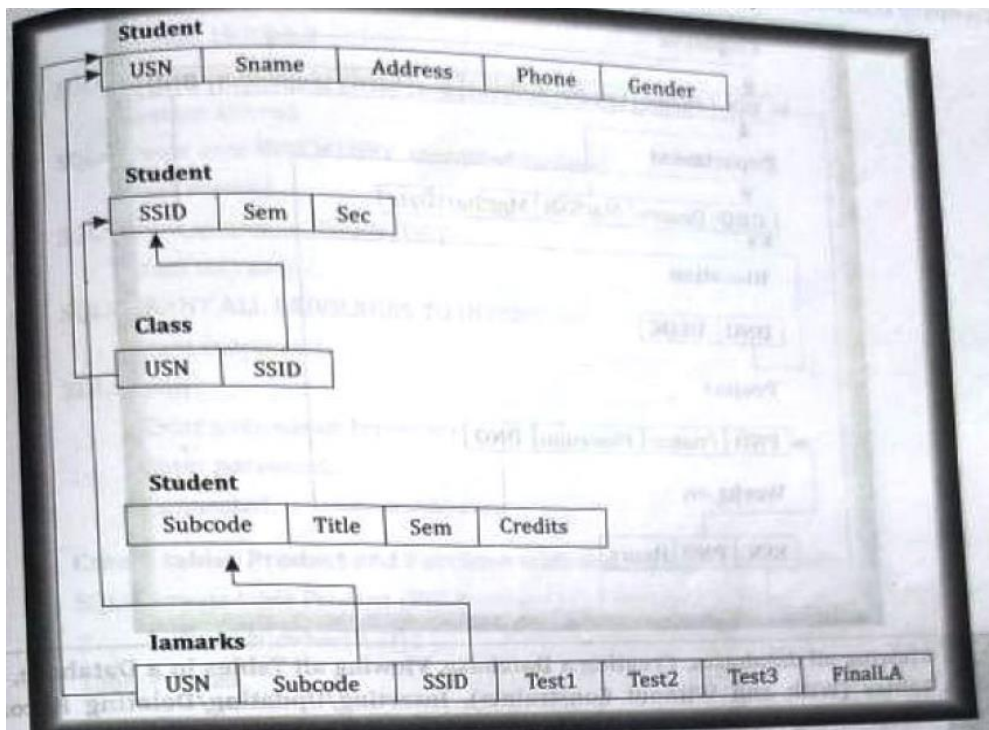
CLASS(USN,SSID)

SUBJECT(Subcode,Title,Sem,CREDITS)

IAMARKS (USN,Subcode,SSID,Test1,Test2,Test3,FinallA)



## Mapping Entities and relationships to relation table (Schema Diagram)



## 2.COMPANY DATABASE

EMPLOYEE(SSN,Name,Address,Sex, Salary, SuperSSN, DNo)

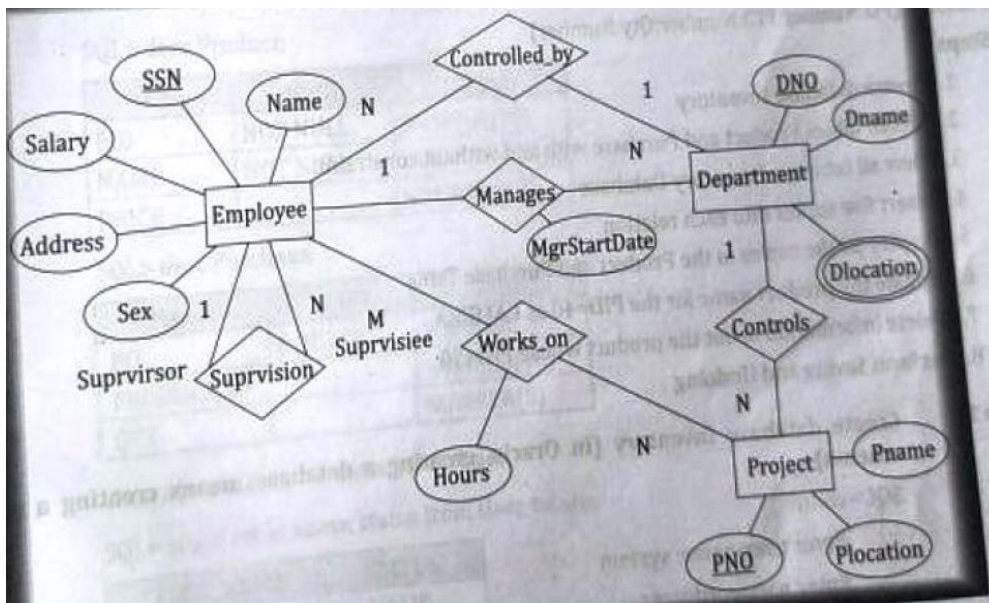
DEPARTMENT(DNo,DName, MgrSSN, MgrStartDate)

DLOCATION(DNo, DLoc)

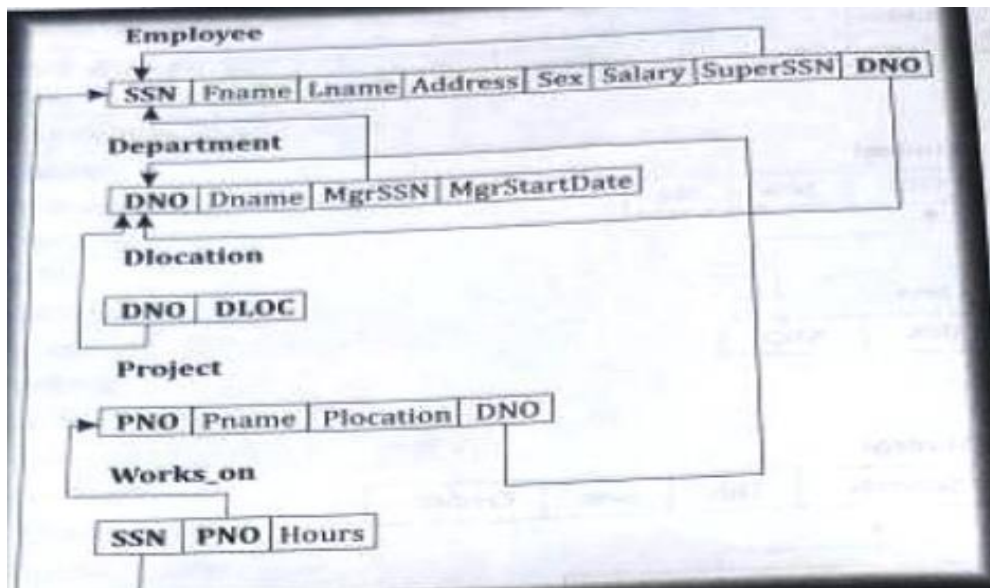
PROJECT(PNo, PName , PLocation , DNo)

WORKS\_ON(SSN,PNo, Hours)

## Company Database: E-R Diagram



## Company Database: Schema Diagram



## PROGRAM 2:

**Viewing all databases, creating a database, viewing all tables in a Database, creating tables (With and Without constraints), Inserting/Updating/Deleting Records in a Table, Saving (Commit) and Undoing(rollback)**

### **Solution:**

**Consider the Inventory Database with the following tables**

Product(PID:number;Name:Text;Price:Number)

Purchase(PO:Number;PID:Number;Qty:Number)

### **Steps:**

1. Create Database Inventory
2. Create tables Product and Purchase with and without constraint
3. View all tables in inventory database
4. Insertfive tuples into each relation
5. Display all the tuples in the Product and Purchase Table
6. Update the product name for the PID = 4 as CAMERA
7. Delete information about the product whose PID = 5
8. Perform saving and Undoing

**Step 1 : Create Database inventory(Creating a database means creating a user or schema)**

```
mysql> create database inventory001;
```

```
mysql> use inventory001;
```

**Step 2: Create tables Product and Purchase with and without constraint**

```
mysql> create table product (pidint(10) primary key, name varchar(15) not null, price int(8));
```

```
mysql> desc product;
```

```
+-----+-----+-----+-----+-----+-----+
| Field | Type      | Null      | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| pid   | int       | NO        | PRI | NULL    |      |
| name  | varchar(15) | NO        |     | NULL    |      |
| price | int       | YES       |     | NULL    |      |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.07 sec)
```

```
mysql> create table purchase (po int(10) primary key,prod_id int(10) references product(pid),
```

```
-> qty int(5));
```

```
mysql> desc purchase;
```

```
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| po    | int  | NO   | PRI | NULL    |      |
| prod_id | int  | YES  |     | NULL    |      |
| qty    | int  | YES  |     | NULL    |      |
+-----+-----+-----+-----+-----+
```

```
3 rows in set (0.00 sec)
```

### Step 3: View all tables in inventory database

```
mysql> show tables;
```

```
+-----+
| Tables_in_inventory001 |
+-----+
| product                |
| purchase                |
+-----+
```

### Step 4: Insert five tuples into each relation

```
mysql> insert into product values (10,'printer',20000);
```

```
mysql> insert into product values (20,'keyboard',20000);
```

```
mysql> insert into product values (30,'monitor',15000);
```

```
mysql> insert into product values (40,'table',25000);
```

```
mysql> insert into product values (50,'scanner',14000);
```

```
mysql> select * from product;
```

```
+-----+-----+-----+
| pid | name      | price |
+-----+-----+-----+
| 10 | printer   | 20000 |
| 20 | keyboard  | 20000 |
| 30 | monitor   | 15000 |
| 40 | table     | 25000 |
| 50 | scanner   | 14000 |
+-----+-----+-----+
```

```
5 rows in set (0.00 sec)
```

```
mysql> insert into purchase values (101,10,25);
```

```
mysql> insert into purchase values (102,40,20);
```

```
mysql> insert into purchase values (107,30,40);
```

```
mysql> insert into purchase values (104,40,50);
```

```
mysql> insert into purchase values (105,40,10);
```

```
mysql> select * from purchase;
```

```
+-----+-----+-----+
| po | prod_id | qty |
+-----+-----+-----+
| 101 | 10 | 25 |
| 102 | 40 | 20 |
| 104 | 40 | 50 |
| 105 | 40 | 10 |
| 107 | 30 | 40 |
+-----+-----+-----+
5 rows in set (0.00 sec)
```

### **Step 6: Update the product name for the PID = 40 as CAMERA**

```
mysql> update product set name='camera' where pid=40;
```

```
mysql> select * from product;
```

```
+-----+-----+-----+
| pid | name      | price |
+-----+-----+-----+
| 10 | printer   | 20000 |
| 20 | keyboard  | 20000 |
| 30 | monitor   | 15000 |
| 40 | camera    | 25000 |
| 50 | scanner   | 14000 |
+-----+-----+-----+
5 rows in set (0.00 sec)
```

### Step 7: Delete information about the product whose PID = 50

```
mysql> delete from product where pid=50;
```

```
mysql> select * from product;
```

```
+-----+-----+-----+
| pid | name      | price |
+-----+-----+-----+
| 10 | printer   | 20000 |
| 20 | keyboard  | 20000 |
| 30 | monitor   | 15000 |
| 40 | camera    | 25000 |
+-----+-----+-----+
4 rows in set (0.00 sec)
```

### Step 8: Perform saving and undoing

```
mysql> insert into product values (50,'mobile',35000);
```

```
mysql> insert into product values (60,'laptop',70000);
```

```
mysql> commit;
```

```
mysql> select * from product;
```

```
+-----+-----+-----+
| pid | name      | price |
+-----+-----+-----+
| 10 | printer   | 20000 |
| 20 | keyboard  | 20000 |
| 30 | monitor   | 15000 |
| 40 | camera    | 25000 |
| 50 | mobile    | 35000 |
| 60 | laptop    | 70000 |
+-----+-----+-----+
6 rows in set (0.00 sec)
```

```
mysql> commit;
```

```
mysql> start transaction;
```

```
mysql> savepoint s1;
```

```
mysql> insert into product values (70,'table',50000);
```

```
mysql> insert into product values (80,'chair',25000);
```

```
mysql> select * from product;
```

```
+-----+-----+-----+
| pid | name   | price |
+-----+-----+-----+
| 10 | printer | 20000 |
| 20 | keyboard | 20000 |
| 30 | monitor | 15000 |
| 40 | camera  | 25000 |
| 50 | mobile  | 35000 |
| 60 | laptop  | 70000 |
| 70 | table   | 50000 |
| 80 | chair   | 25000 |
+-----+-----+-----+
8 rows in set (0.00 sec)
```

```
mysql> rollback to savepoint s1;
```

```
mysql> select * from product;
```

```
+-----+-----+-----+
| pid | name   | price |
+-----+-----+-----+
| 10 | printer | 20000 |
| 20 | keyboard | 20000 |
| 30 | monitor | 15000 |
| 40 | camera  | 25000 |
| 50 | mobile  | 35000 |
| 60 | laptop  | 70000 |
+-----+-----+-----+
6 rows in set (0.00 sec)
```



### PROGRAM 3:

#### Altering a Table, Dropping/Truncating / Renaming a table, backing up/ Restoring a Database

Consider the library database with the following data and execute the queries

LIB(BID,TITLE,AUTHOR,PUBLICATION,YEAR OF PUBLICATION)

#### STEPS

1. Create LIB table by properly specifying the constraint
2. Rename the LIB as LIBRARY
3. Add a new column price with not null constraints to the existing table library
4. All the constraints and views that reference the column are dropped automatically along with the column.
5. Rename the BID to BOOKID in the LIBRARY table.
6. Insert Data into LIBRARY table
7. Truncate table to delete the record.
8. Drop Table.

#### Create Database Library:

```
mysql> create database library001;
```

```
mysql> use library001;
```

#### Step 1.Create LIB table by properly specifying the constraint

```
mysql> create table lib (bid varchar(15) primary key, title varchar(20) not null, author  
varchar(20), publication varchar(20),year_of_publication int(4));
```

```
mysql> desc lib;
```

Field	Type	Null	Key	Default	Extra
bid	varchar(15)	NO	PRI	NULL	
title	varchar(20)	NO		NULL	
author	varchar(20)	YES		NULL	
publication	varchar(20)	YES		NULL	
year_of_publication	int	YES		NULL	

5 rows in set (0.00 sec)

## Step 2.Rename the LIB as LIBRARY

```
mysql> alter table lib rename to library1;
```

```
mysql> desc library1;
```

```
+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| bid            | varchar(15)   | NO   | PRI | NULL    |      |
| title          | varchar(20)   | NO   |     | NULL    |      |
| author         | varchar(20)   | YES  |     | NULL    |      |
| publication     | varchar(20)   | YES  |     | NULL    |      |
| year_of_publication | int          | YES  |     | NULL    |      |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

## Step 3: Add a new column price with not null constraints to the existing table library

```
mysql> alter table library1 add price float(8,2) not null;
```

```
mysql> desc library1;
```

```
+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| bid            | varchar(15)   | NO   | PRI | NULL    |      |
| title          | varchar(20)   | NO   |     | NULL    |      |
| author         | varchar(20)   | YES  |     | NULL    |      |
| publication     | varchar(20)   | YES  |     | NULL    |      |
| year_of_publication | int          | YES  |     | NULL    |      |
| price          | float(8,2)    | NO   |     | NULL    |      |
+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

## Step 4: All the constraints and views that reference the column are dropped automatically along with the column.

```
mysql> alter table library1 drop column author;
```

```
mysql>desc library1;
```

```
+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| bid            | varchar(15)   | NO   | PRI | NULL    |      |
| title          | varchar(20)   | NO   |     | NULL    |      |
| publication     | varchar(20)   | YES  |     | NULL    |      |
| year_of_publication | int          | YES  |     | NULL    |      |
| price          | float(8,2)    | NO   |     | NULL    |      |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

**Step 5: Rename the BID to BOOKID in the LIBRARY table.**

```
mysql> alter table library1 rename column bid to bookid;
```

```
mysql>desc library1;
```

```
+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| bookid         | varchar(15)   | NO   | PRI | NULL    |      |
| title          | varchar(20)   | NO   |     | NULL    |      |
| publication     | varchar(20)   | YES  |     | NULL    |      |
| year_of_publication | int          | YES  |     | NULL    |      |
| price          | float(8,2)    | NO   |     | NULL    |      |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

**Step 7: Change the data type of the column year\_of\_publication as Text with size 15**

```
mysql> alter table library1 modify year_of_publication varchar(15);
```

```
mysql>desc library1;
```

```
+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| bookid         | varchar(15)   | NO   | PRI | NULL    |      |
| title          | varchar(20)   | NO   |     | NULL    |      |
| publication     | varchar(20)   | YES  |     | NULL    |      |
| year_of_publication | varchar(15)  | YES  |     | NULL    |      |
| price          | float(8,2)    | NO   |     | NULL    |      |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

### Step 8: Insert Data into LIBRARY table

```
mysql> insert into library1 values ('sp001','dbms','skyward_publishers','2022',300);
```

```
mysql> insert into library1 values ('sp002','java','oxford_publishers','2021',400);
```

```
mysql> select * from library1;
```

bookid	title	publication	year_of_publication	price
sp001	dbms	skyward_publishers	2022	300.00
sp002	java	oxford_publishers	2021	400.00

2 rows in set (0.00 sec)

### Step 8: Truncate table to delete the record.

```
mysql> truncate table library1;
```

```
mysql> select * from library1;
```

Empty set (0.00 sec)

### Step 9: Drop Table.

```
mysql> drop table library1;
```

```
mysql> desc library1;
```

ERROR 1146 (42S02): Table 'library001.library1' doesn't exist

## PROGRAM 4:

**For a given set of relation schemes, create tables and perform the following simple Queries, Simple Queries with aggregate functions, Queries with aggregate functions (group by and having clause)**

### STEPS

1. Create table Salary
2. Enter five tuples into the table
3. Display employee number and their salary
4. Find the sum of salaries of all the employees
5. Find the sum and average salaries of employees of a particular department
6. Find the number of employees working for each department.
7. Display employee information in ascending and descending order of their date of joining
8. Find the highest salary that an employee draws
9. Find the least salary that an employee draws
10. Display the details of employee whose name is Rushank and salary is greater than 50000

### Solution:

#### Create Database salarydb:

```
mysql> create database salarydb;
```

```
mysql> use salarydb;
```

#### Step 1: Create table Salary

```
mysql> create table salary (eno varchar(10) primary key, name varchar(20) not null, dept  
varchar(10), doj date, salary float(10,2));
```

```
mysql> desc salary;
```

```
+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| eno   | varchar(10)   | NO   | PRI | NULL    |       |
| name  | varchar(20)   | NO   |     | NULL    |       |
| dept  | varchar(10)   | YES  |     | NULL    |       |
| doj   | date          | YES  |     | NULL    |       |
| salary | float(10,2)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+
5 rows in set (0.10 sec)
```

## Step 2: Enter five tuples into the table

```
mysql> insert into salary values ('sc1010','ahana','hr','15-02-10',60000);
mysql> insert into salary values ('sc1011','ramesh','finance','10-03-12',45000);
mysql> insert into salary values ('sc1013','naveen','marketing','8-01-09',55000);
mysql> insert into salary values ('sc1014','anagha','hr','14-02-12',35000);
mysql> insert into salary values ('sc1015','rushank','admin','16-05-11',55000);
mysql> insert into salary values ('sc1016','rushank','finance','08-06-08',25000);
mysql> select * from salary;
```

eno	name	dept	doj	salary
sc1010	ahana	hr	2015-02-10	60000.00
sc1011	ramesh	finance	2010-03-12	45000.00
sc1013	naveen	marketing	0008-01-09	55000.00
sc1014	anagha	hr	2014-02-12	35000.00
sc1015	rushank	admin	2016-05-11	55000.00
sc1016	rushank	finance	2008-06-08	25000.00

6 rows in set (0.00 sec)

## Step 3: Display employee number and their salary

```
mysql> select eno,salary from salary;
```

eno	salary
sc1010	60000.00
sc1011	45000.00
sc1013	55000.00
sc1014	35000.00
sc1015	55000.00
sc1016	25000.00

6 rows in set (0.00 sec)

**Step 4: Find the sum of salaries of all the employees**

```
mysql> select sum(salary) as "total_salary" from salary;
```

```
+-----+
| total_salary |
+-----+
|  275000.00 |
+-----+
1 row in set (0.04 sec)
```

**Step 5: Find the sum and average salaries of employees of a particular department**

```
mysql> select dept,sum(salary) as "total_salary",avg(salary) as "average_salary" from salary
group by dept;
```

```
+-----+-----+-----+
| dept      | total_salary | average_salary |
+-----+-----+-----+
| hr        | 95000.00    | 47500.000000   |
| finance   | 70000.00    | 35000.000000   |
| marketing | 55000.00    | 55000.000000   |
| admin     | 55000.00    | 55000.000000   |
+-----+-----+-----+
4 rows in set (0.06 sec)
```

**Step 6: Find the number of employees working for each department.**

```
mysql> select dept,count(*) as "Number_of_Employees" from salary group by dept;
```

```
+-----+-----+
| dept      | Number_of_Employees |
+-----+-----+
| hr        | 2 |
| finance   | 2 |
| marketing | 1 |
| admin     | 1 |
+-----+-----+
4 rows in set (0.00 sec)
```

## Step 7: Display employee information in ascending and descending order of their date of joining

```
mysql> select * from salary order by doj asc;
```

eno	name	dept	doj	salary
sc1013	naveen	marketing	0008-01-09	55000.00
sc1016	rushank	finance	2008-06-08	25000.00
sc1011	ramesh	finance	2010-03-12	45000.00
sc1014	anagha	hr	2014-02-12	35000.00
sc1010	ahana	hr	2015-02-10	60000.00
sc1015	rushank	admin	2016-05-11	55000.00

6 rows in set (0.00 sec)

```
mysql> select * from salary order by dojdsc;
```

eno	name	dept	doj	salary
sc1015	rushank	admin	2016-05-11	55000.00
sc1010	ahana	hr	2015-02-10	60000.00
sc1014	anagha	hr	2014-02-12	35000.00
sc1011	ramesh	finance	2010-03-12	45000.00
sc1016	rushank	finance	2008-06-08	25000.00
sc1013	naveen	marketing	0008-01-09	55000.00

6 rows in set (0.00 sec)

## Step 8: Find the highest salary that an employee draws

```
mysql> select max(salary) as "Highest Salary" from salary;
```

Highest Salary
60000.00

1 row in set (0.10 sec)



**Step 9: Find the least salary that an employee draws**

```
mysql> select min(salary) as "Least Salary" from salary;
```

```
+-----+
| Least Salary |
+-----+
| 25000.00 |
+-----+
1 row in set (0.00 sec)
```

**Step 10: Display the details of employee whose name is Rushank and salary is greater than 50000**

```
mysql> select * from salary where name="rushank" and salary>50000;
```

```
+-----+-----+-----+-----+-----+
| eno   | name   | dept  | doj       | salary |
+-----+-----+-----+-----+-----+
| sc1015 | rushank | admin | 2016-05-11 | 55000.00 |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

## PROGRAM 5:

### Create Database company001:

```
mysql> create database company001;
```

```
mysql> use company001;
```

### Execute the following queries

#### Create tables by properly specifying primary key and foreign keys

```
mysql> create table dept ( dno int(4) primary key, dname varchar(20) not null, dlocation  
varchar(20));
```

```
mysql> create table employee ( eno int(6) primary key, ename varchar(20) not null, edob date,  
address varchar(20), gender varchar(6), salary int(10) not null, deptno int(4) references dept);
```

```
mysql> create table project (pno int(10) primary key, pname varchar(20) not null, dnum int(4)  
references dept);
```

```
mysql> create table works_on ( eno int(6) references employee, pnum int(10) references project,  
hours int(3), primary key (eno,pnum));
```

```
mysql> desc dept;
```

Field	Type	Null	Key	Default	Extra
dno	int	NO	PRI	NULL	
dname	varchar(20)	NO		NULL	
dlocation	varchar(20)	YES		NULL	

3 rows in set (1.04 sec)

```
mysql> desc employee;
```

Field	Type	Null	Key	Default	Extra
eno	int	NO	PRI	NULL	
ename	varchar(20)	NO		NULL	
edob	date	YES		NULL	
address	varchar(20)	YES		NULL	
gender	varchar(6)	YES		NULL	
salary	int	NO		NULL	
deptno	int	YES		NULL	

7 rows in set (0.06 sec)

```
mysql>desc project;
```

```
+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| pno   | int       | NO   | PRI | NULL    |       |
| pname | varchar(20)| NO   |     | NULL    |       |
| dnum  | int       | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

```
mysql>descworks_on;
```

```
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| eno   | int  | NO   | PRI | NULL    |       |
| pnum  | int  | NO   | PRI | NULL    |       |
| hours | int  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

### **Insert the values into the tables:**

```
mysql> insert into dept values (2,'accounts','jayanagar');
```

```
mysql> insert into dept values (4,'research','kengeri');
```

```
mysql> insert into dept values (5,'admin','southed');
```

```
mysql> select * from dept;
```

```
+-----+-----+-----+
| dno | dname   | dlocation |
+-----+-----+-----+
| 2   | accounts | jayanagar |
| 4   | research | kengeri   |
| 5   | admin   | southed   |
+-----+-----+-----+
3 rows in set (0.00 sec)
```

```
mysql> insert into employee values (1001,'anirudh','1990-01-14','bangalore','male',45000,4);
```

```
mysql> insert into employee values (1004,'lakshmi','1998-03-04','mysore','female',5500,4);
```

```
mysql> insert into employee values (1002,'sinchana','1990-12-22','mangalore','female',5000,2);
```

```
mysql> insert into employee values (1007,'prashant','1989-01-26','dharwad','male',20000,4);
```

```
mysql> insert into employee values (1003,'vinay','1990-11-26','hubli','male',3000,2);
mysql> insert into employee values (1005,'vidya','1978-11-26','hubli','female',35000,4);
mysql> insert into employee values (1006,'prajwal','1974-02-02','bangalore','male',65000,5);
mysql> insert into employee values (1008,'rajesh','2010-02-10','bangalore','male',25000,2);
mysql> select * from employee;
```

```
+-----+-----+-----+-----+-----+-----+
| eno | ename      | edob      | address    | gender | salary | deptno |
+-----+-----+-----+-----+-----+-----+
| 1001 | anirudh    | 1990-01-14 | bangalore  | male   | 45000  | 4      |
| 1002 | sinchana   | 1990-12-22 | mangalore  | female | 5000   | 2      |
| 1003 | vinay      | 1990-11-26 | hubli      | male   | 3000   | 2      |
| 1004 | lakshmi    | 1998-03-04 | mysore     | female | 5500   | 4      |
| 1005 | vidya      | 1978-11-26 | hubli      | female | 35000  | 4      |
| 1006 | prajwal    | 1974-02-02 | bangalore  | male   | 65000  | 5      |
| 1007 | prashant   | 1989-01-26 | dharwad    | male   | 20000  | 4      |
| 1008 | rajesh     | 2010-02-10 | bangalore  | male   | 25000  | 2      |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.05 sec)
```

```
mysql> insert into project values (10,'erp',5);
mysql> insert into project values (20,'banking',2);
mysql> insert into project values (30,'connect_tech',4);
mysql> insert into project values (40,'smart_seek',5);
mysql> insert into project values (50,'finance',2);
mysql> insert into project values (60,'analysis',4);
mysql> insert into project values (70,'market_research',4);
mysql> insert into project values (80,'smart_search',4);
mysql> select * from project;
```

```
+-----+-----+
| pno | pname          | dnum |
+-----+-----+
| 10 | erp            | 5    |
| 20 | banking        | 2    |
| 30 | connect_tech   | 4    |
| 40 | smart_seek     | 5    |
| 50 | finance        | 2    |
| 60 | analysis       | 4    |
| 70 | market_research | 4    |
| 80 | smart_search   | 4    |
+-----+-----+
8 rows in set (0.00 sec)
```

```
mysql> insert into works_on values (1001,10,4);
mysql> insert into works_on values (1002,10,6);
mysql> insert into works_on values (1003,10,4);

mysql> insert into works_on values (1004,20,4);

mysql> insert into works_on values (1005,20,8);

mysql> insert into works_on values (1006,40,8);

mysql> insert into works_on values (1007,50,8);

mysql> insert into works_on values (1008,60,5);

mysql> select * from works_on;
```

```
+-----+-----+-----+
| eno  | pnum | hours |
+-----+-----+-----+
| 1001 | 10   | 4     |
| 1002 | 10   | 6     |
| 1003 | 10   | 4     |
| 1004 | 20   | 4     |
| 1005 | 20   | 8     |
| 1006 | 40   | 8     |
| 1007 | 50   | 8     |
| 1008 | 60   | 5     |
+-----+-----+-----+
8 rows in set (0.00 sec)
```

**(a)How the resulting salaries , if every employee working on the ‘research ’ departments is given a 10% raise**

```
mysql> select e.eno,e.ename,d.dname,1.1 * e.salary as 'Inc_Salary' from employee e, dept d
-> where e.deptno=d.dno and d.dname='research';
```

```
+-----+-----+-----+-----+
| eno  | ename  | dname  | Inc_Salary |
+-----+-----+-----+-----+
| 1001 | anirudh | research | 49500.0 |
| 1004 | lakshmi | research | 6050.0 |
| 1005 | vidya   | research | 38500.0 |
| 1007 | prashant | research | 22000.0 |
+-----+-----+-----+-----+
4 rows in set (0.08 sec)
```

**(b)Find the sum of the salaries of all employees of the ‘Accounts’ department , as well as the maximum salary, the minimum salary, and the average salary in this department.**

```
mysql> select max(e.salary),min(e.salary),sum(e.salary),avg(e.salary) from employee e, dept d
where e.deptno=d.dno and d.dname='accounts';
```

```
+-----+-----+-----+-----+
| max(e.salary) | min(e.salary) | sum(e.salary) | avg(e.salary) |
+-----+-----+-----+-----+
|      25000 |      3000 |      33000 | 11000.0000 |
+-----+-----+-----+-----+
```

1 row in set (0.05 sec)

## PROGRAM 6:

```
mysql> create database company001;
```

```
mysql> use company001;
```

### Execute the following queries

- (a) Retrieve the name of each employee controlled by Department number 5 (use EXISTS operator )

```
mysql> select e.ename from employee e where exists (select d.dno from dept d where e.deptno = d.dno and e.deptno='5');
```

```
+-----+
| ename  |
+-----+
| prajwal |
+-----+
```

- (b) Retrieve the name of each dept and number of employees working in each department which has at least 2 employees.

```
mysql> select d.dname, count(*) from employee e, dept d where e.deptno = d.dno group by d.dname having count(*) >=2;
```

```
+-----+-----+
| dname  | count(*) |
+-----+-----+
| research |      4 |
| accounts |      3 |
+-----+-----+
```

```
2 rows in set (0.30 sec)
```

## PROGRAM 7:

```
mysql> create database company001;
```

```
mysql> use company001;
```

**Execute the following queries**

- (a) For each project retrieve the project number, the project name and the number of employees who work on that project. (use GROUPBY)**

```
mysql> select p.pno, p.pname, count(*) as "No_of_EMPLOYEE" from project p, works_on w
where p.pno=w.pnum group by p.pno,p.pname;
```

```
+-----+-----+-----+
| pno | pname      | No_of_EMPLOYEE |
+-----+-----+-----+
| 10 | erp        | 3 |
| 20 | banking    | 2 |
| 40 | smart_seek | 1 |
| 50 | finance    | 1 |
| 60 | analysis   | 1 |
+-----+-----+-----+

5 rows in set (0.08 sec)
```

- (b) Retrieve the name of employees who born in the year 1990's**

```
mysql> select ename, edob from employee where edob like '1990-%%-%%';
```

```
+-----+-----+
| ename | edob      |
+-----+-----+
| anirudh | 1990-01-14 |
| sinchana | 1990-12-22 |
| vinay   | 1990-11-26 |
+-----+-----+

3 rows in set (0.04 sec)
```



## PROGRAM 8:

```
mysql> create database company001;
```

```
mysql> use company001;
```

### Execute the following queries

1. For each department that has more than five employees , retrieve the department number and number of employees who are making salary more than 40000.

```
mysql> select d.dname, d.dno, count(*) from employee e, dept d where e.deptno=d.dno
and salary>40000 and d.dno in ( select deptno from employee group by deptno having
count(*)>=4) group by d.dno,d.dname;
```

```
+-----+-----+-----+
| dname  | dno | count(*) |
+-----+-----+-----+
| research | 4  | 1      |
+-----+-----+-----+
1 row in set (0.00 sec)
```

2. For each department that has more than two employees , retrieve the department number and number of employees who are making salary more than 40000.

```
mysql> select d.dname, d.dno, count(*) from employee e, dept d where e.deptno=d.dno and
salary>40000 and d.dno in ( select deptno from employee group by deptno having count(*)>=2)
group by d.dno,d.dname;
```

```
+-----+-----+-----+
| dname  | dno | count(*) |
+-----+-----+-----+
| research | 4  | 1      |
| admin   | 5  | 2      |
+-----+-----+-----+
2 rows in set (2.35 sec)
```

## PROGRAM 9:

**For each project on which more than two employees work, retrieve the project number, project name and the number of employees who work on that project.**

```
mysql> select p.pno,p.pname,count(*) as "No_of_EMP_Working" from project p, works_on w
where p.pno=w.pnum group by p.pno,p.pname having count(*)>2;
```

```
+-----+-----+-----+
| pno | pname | No_of_EMP_Working |
+-----+-----+-----+
| 10 | erp    |          3 |
+-----+-----+-----+
1 row in set (0.28 sec)
```

## PROGRAM 10:

**For a given set of relation tables perform the following . Creating views (with and without check option). Dropping views, Selecting from a view.**

### 1.Without Check Option

#### Step 1 : Create View

```
mysql> create view emp_dept as (select e.eno, e.ename, e.salary, e.deptno, d.dname from employee e,dept d where e.deptno=d.dno);
```

#### Step 2: Display all the rows of a view.

```
mysql> select * from emp_dept;
```

```
+-----+-----+-----+-----+-----+
| eno | ename   | salary | deptno | dname   |
+-----+-----+-----+-----+-----+
| 1001 | anirudh | 45000 | 4      | research |
| 1002 | sinchana | 5000 | 2      | accounts |
| 1003 | vinay   | 3000 | 2      | accounts |
| 1004 | lakshmi | 5500 | 4      | research |
| 1005 | vidya   | 35000 | 4      | research |
| 1006 | prajwal | 65000 | 5      | admin    |
| 1007 | prashant | 20000 | 4      | research |
| 1008 | rajesh  | 25000 | 2      | accounts |
+-----+-----+-----+-----+-----+
```

8 rows in set (0.14 sec)

#### Step3 : Insert records into a view

```
mysql> insert into emp_dept( eno, ename, salary, deptno) values (1009,'srikanth',90000,5);
```

#### Step 4: Display all the rows of a view

```
mysql> select * from emp_dept;
```

```
+-----+-----+-----+-----+-----+
| eno | ename   | salary | deptno | dname   |
+-----+-----+-----+-----+-----+
| 1001 | anirudh | 45000 | 4      | research |
| 1002 | sinchana | 5000 | 2      | accounts |
| 1003 | vinay   | 3000 | 2      | accounts |
| 1004 | lakshmi | 5500 | 4      | research |
| 1005 | vidya   | 35000 | 4      | research |
| 1006 | prajwal | 65000 | 5      | admin    |
| 1007 | prashant | 20000 | 4      | research |
| 1008 | rajesh  | 25000 | 2      | accounts |
| 1009 | srikanth | 90000 | 5      | admin    |
+-----+-----+-----+-----+-----+
```

9 rows in set (0.05 sec)

### Step 5: Drop view

```
mysql> drop view emp_dept;
```

## 2. With check option

**Step 1: Let us create simple view on EMP table with check option of salary less than 50000 in where condition**

```
mysql> create view emp_view as (select eno,ename,salary from employee where salary <=50000) with check option;
```

### Step 2: Display all the rows of a view

```
mysql> select * from emp_view;
```

```
+-----+-----+-----+
| eno | ename   | salary |
+-----+-----+-----+
| 1001 | anirudh | 45000 |
| 1002 | sinchana | 5000 |
| 1003 | vinay   | 3000 |
| 1004 | lakshmi | 5500 |
| 1005 | vidya   | 35000 |
| 1007 | prashant | 20000 |
| 1008 | rajesh   | 25000 |
+-----+-----+-----+
7 rows in set (0.07 sec)
```

### Step 3. Insert a row where employee salary is less than 50000

```
mysql> insert into emp_view values(1011,'snigdha',39000);
```

### Step 4: Display all the rows of a view

```
mysql> select * from emp_view;
```

```
+-----+-----+-----+
| eno | ename   | salary |
+-----+-----+-----+
| 1001 | anirudh | 45000 |
| 1002 | sinchana | 5000 |
| 1003 | vinay   | 3000 |
| 1004 | lakshmi | 5500 |
| 1005 | vidya   | 35000 |
| 1007 | prashant | 20000 |
| 1008 | rajesh   | 25000 |
| 1011 | snigdha | 39000 |
+-----+-----+-----+
8 rows in set (0.00 sec)
```

**Step 5 : Insert a row where employee salary is greater than 50000. This will give an error**

```
mysql> insert into emp_view values (1012,'Smayan'99999);
```

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '99999)' at line 1

**Step 6: Drop View**

```
mysql> drop view emp_view;
```