VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“JnanaSangama”, Belgaum -590014, Karnataka.

LAB REPORT
on

Database Management Systems (23CS3PCDBM)

Submitted by

PRAMODH RAO H(1BM24CS212)

in partial fulfillment for the award of the degree of
BACHELOR OF ENGINEERING
in
COMPUTER SCIENCE AND ENGINEERING

B.M.S. COLLEGE OF ENGINEERING
(Autonomous Institution under VTU)
BENGALURU-560019
Sep-2025 to Jan-2026

B.M.S. College of Engineering,

Bull Temple Road, Bangalore 560019

(Affiliated To Visvesvaraya Technological University, Belgaum)

Department of Computer Science and Engineering

CERTIFICATE

This is to certify that the Lab work entitled “Database Management Systems (23CS3PCDBM)” carried out by **PRAMODH RAO H (1BM24CS212),** who is bonafide student of **B.M.S. College of Engineering.** It is in partial fulfillment for the award of **Bachelor of Engineering in Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum. The Lab report has been approved as it satisfies the academic requirements in respect of a Database Management Systems (23CS3PCDBM) work prescribed for the said degree.

Surabhi S Assistant Professor Department of CSE, BMSCE	Dr. Kavitha Sooda Professor & HOD Department of CSE, BMSCE

Index

Program 1

Insurance Database

Question:

- PERSON (driver_id: String, name: String, address: String)
- CAR (reg_num: String, model: String, year: int)
- ACCIDENT (report_num: int, accident_date: date, location: String)
- OWNS (driver_id: String, reg_num: String)
- PARTICIPATED (driver_id: String,reg_num: String, report_num: int, damage_amount: int)

i. Create the above tables by properly specifying the primary keys and the foreign keys.

ii. Enter at least five tuples for each relation.

iii. Display Accident date and location.

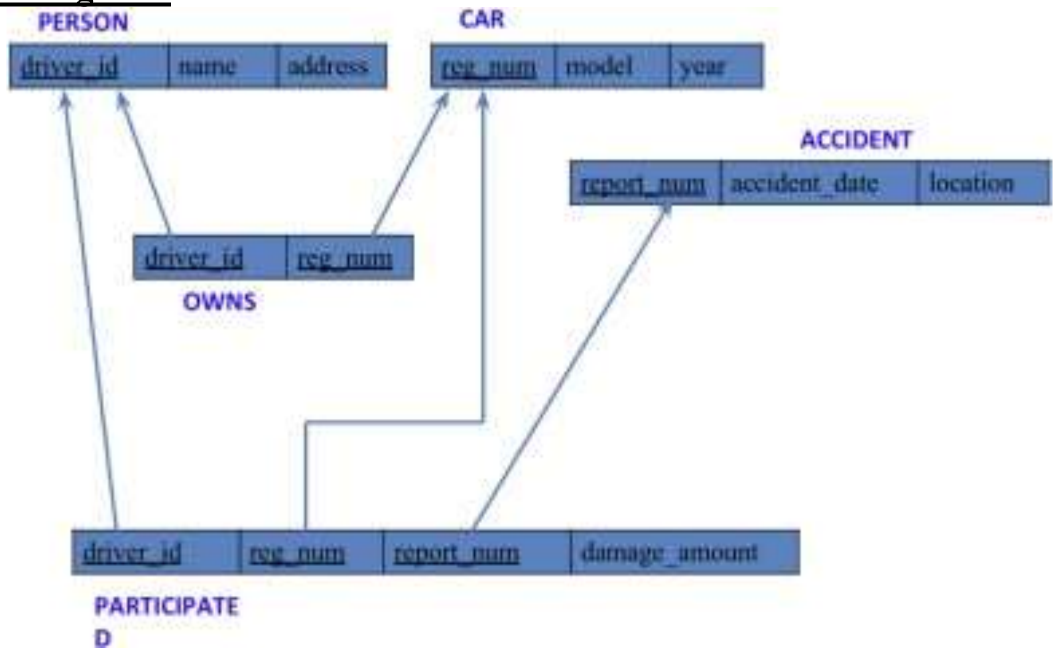
iv. Update the damage amount to 25000 for the car with a specific reg_num (example 'K A053408') for which the accident report number was 12.

v. Add a new accident to the database.

vi. Display Accident date and location.

vii. Display driver id who did accident with damage amount greater than or equal to Rs.25000.

Schema Diagram:



Create Database:

CREATE DATABASE insurance_dhiksha;
USE insurance_dhiksha;

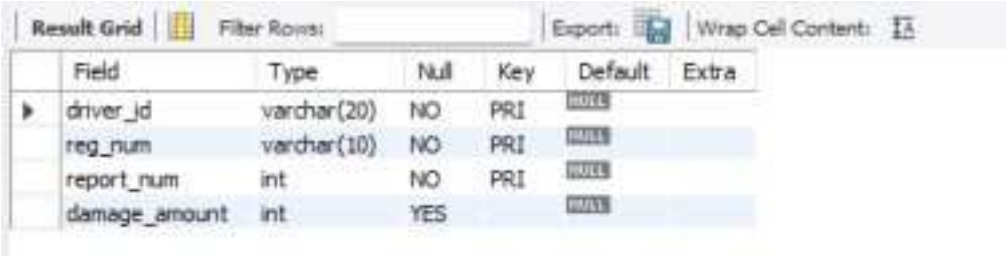
Create Table:

```
CREATE TABLE insurance_dhiksha.person (driver_id VARCHAR(20), name VARCHAR(30), address VARCHAR(50), PRIMARY KEY(driver_id));

CREATE TABLE insurance_dhiksha.car (reg_num VARCHAR(15), model VARCHAR(10), year INT, PRIMARY KEY(reg_num));

CREATE TABLE insurance_dhiksha.owns (driver_id VARCHAR(20), reg_num VARCHAR(10), PRIMARY KEY(driver_id, reg_num), FOREIGN KEY(driver_id) REFERENCES person(driver_id), FOREIGN KEY(reg_num) REFERENCES car(reg_num));

CREATE TABLE insurance_dhiksha.accident (report_num INT, accident_date DATE, location VARCHAR(50), PRIMARY KEY(report_num));

CREATE TABLE insurance_dhiksha.participated (driver_id VARCHAR(20), reg_num
```

VARCHAR(10), report_num INT, damage_amount INT, PRIMARY KEY(driver_id, reg_num, report_num), FOREIGN KEY(driver_id) REFERENCES person(driver_id), FOREIGN KEY(reg_num) REFERENCES car(reg_num), FOREIGN KEY(report_num) REFERENCES accident(report_num));

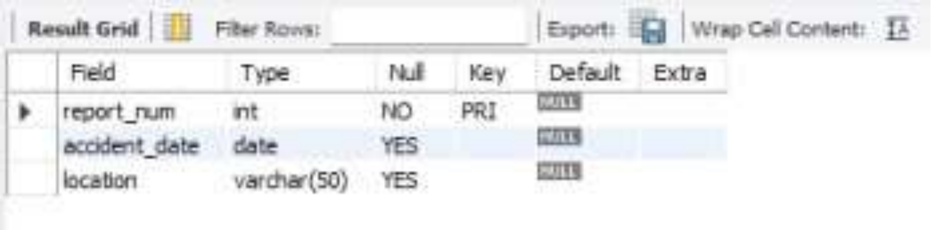
Structure of the table:

DESC person;



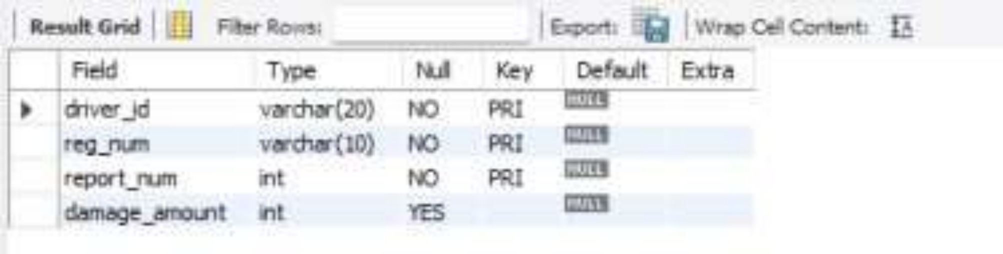
Field	Type	Null	Key	Default	Extra
driver_id	varchar(20)	NO	PRI	NULL	
reg_num	varchar(10)	NO	PRI	NULL	
report_num	int	NO	PRI	NULL	
damage_amount	int	YES		NULL	

DESC accident;



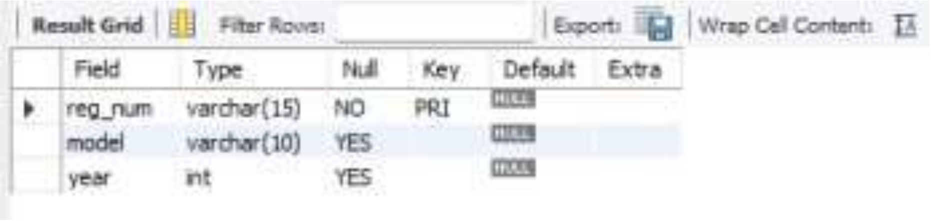
Field	Type	Null	Key	Default	Extra
report_num	int	NO	PRI	NULL	
accident_date	date	YES		NULL	
location	varchar(50)	YES		NULL	

DESC participated;



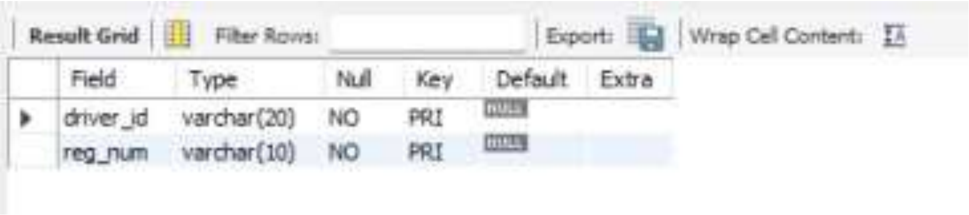
Field	Type	Null	Key	Default	Extra
driver_id	varchar(20)	NO	PRI	NULL	
reg_num	varchar(10)	NO	PRI	NULL	
report_num	int	NO	PRI	NULL	
damage_amount	int	YES		NULL	

DESC car;



Field	Type	Null	Key	Default	Extra
reg_num	varchar(15)	NO	PRI	NULL	
model	varchar(10)	YES		NULL	
year	int	YES		NULL	

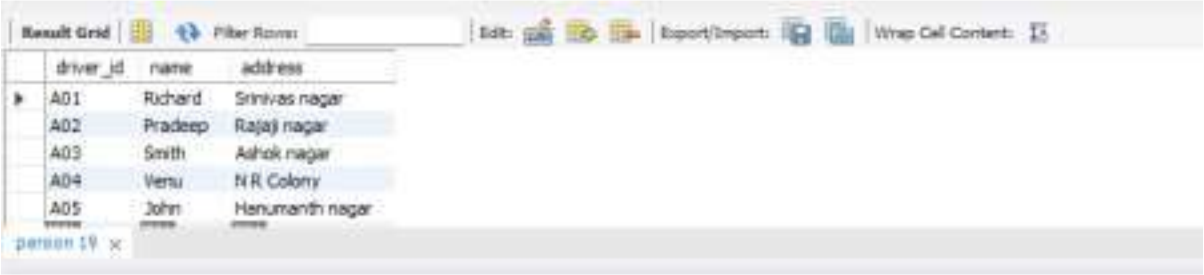
DESC owns;



Field	Type	Null	Key	Default	Extra
driver_id	varchar(20)	NO	PRI	NULL	
reg_num	varchar(10)	NO	PRI	NULL	

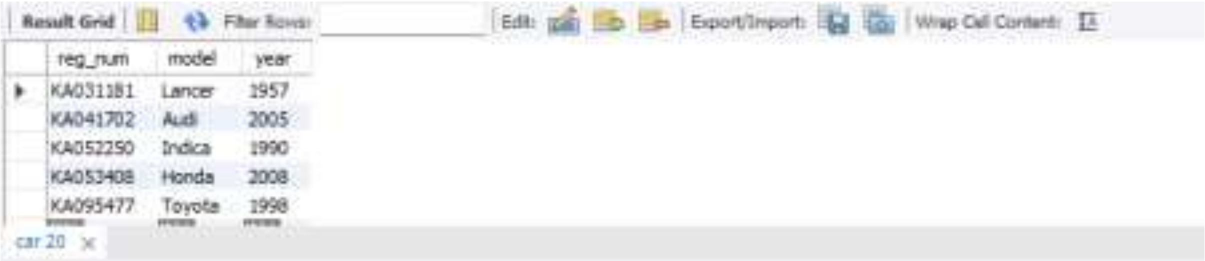
Inserting Values To The Table:

```
INSERT INTO PERSON VALUES("A01","Richard", "Srinivas nagar");
INSERT INTO PERSON VALUES("A02","Pradeep", "Rajaji nagar");
INSERT INTO PERSON VALUES("A03","Smith", "Ashok nagar");
INSERT INTO PERSON VALUES("A04","Venu", "N R Colony");
INSERT INTO PERSON VALUES("A05","John", "Hanumanth nagar");
SELECT * FROM PERSON;
```



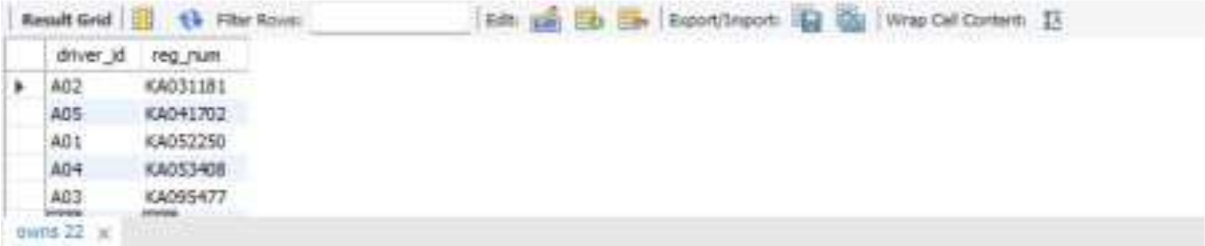
driver_id	name	address
A01	Richard	Srinivas nagar
A02	Pradeep	Rajaji nagar
A03	Smith	Ashok nagar
A04	Venu	N R Colony
A05	John	Hanumanth nagar

```
INSERT INTO CAR VALUES("KA052250","Indica", "1990");
INSERT INTO CAR VALUES("KA031181","Lancer", "1957");
INSERT INTO CAR VALUES ("KA095477","Toyota", "1998");
INSERT INTO CAR VALUES ("KA053408","Honda", "2008");
INSERT INTO CAR VALUES ("KA041702","Audi", "2005");
SELECT * FROM CAR;
```



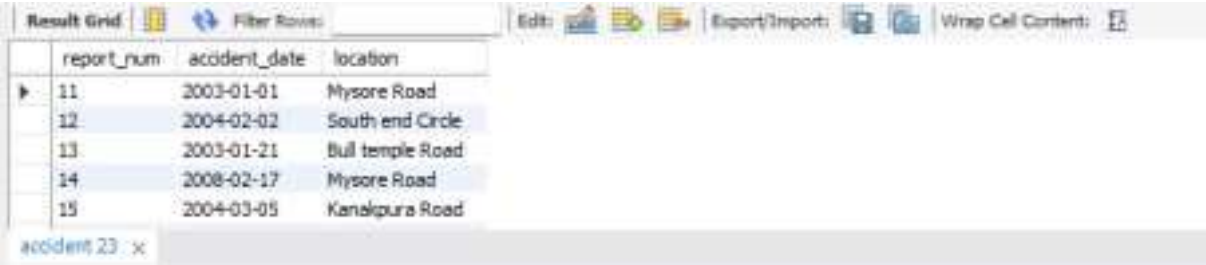
reg_num	model	year
KA031181	Lancer	1957
KA041702	Audi	2005
KA052250	Indica	1990
KA053408	Honda	2008
KA095477	Toyota	1998

```
INSERT INTO OWNS VALUES("A01","KA052250");
INSERT INTO OWNS VALUES("A02","KA031181");
INSERT INTO OWNS VALUES("A03","KA095477");
INSERT INTO OWNS VALUES("A04","KA053408");
INSERT INTO OWNS VALUES("A05","KA041702");
SELECT * FROM OWNS;
```



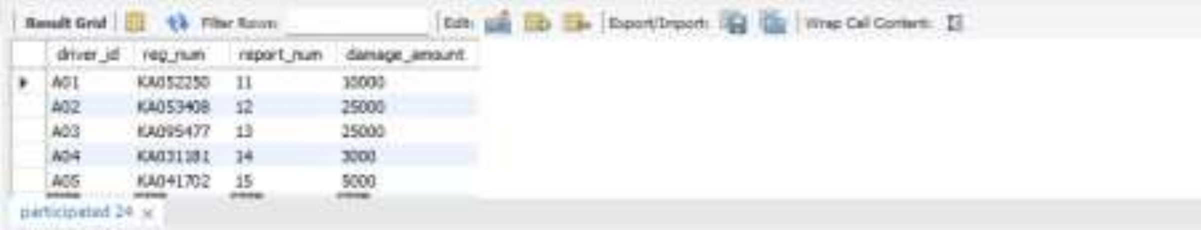
```
driver_id  reg_num
A02        KA031181
A05        KA041702
A01        KA052250
A04        KA053408
A03        KA095477
```

```
INSERT INTO ACCIDENT VALUES(11,'2003-01-01',"Mysore Road");
INSERT INTO ACCIDENT VALUES(12,'2004-02-02',"South end Circle");
INSERT INTO ACCIDENT VALUES (13,'2003-01-21',"Bull temple Road");
INSERT INTO ACCIDENT VALUES (14,'2008-02-17',"Mysore Road");
INSERT INTO ACCIDENT VALUES (15,'2004-03-05',"Kanakpura Road");
SELECT * FROM ACCIDENT;
```



```
report_num  accident_date  location
11          2003-01-01     Mysore Road
12          2004-02-02     South end Circle
13          2003-01-21     Bull temple Road
14          2008-02-17     Mysore Road
15          2004-03-05     Kanakpura Road
```

```
INSERT INTO PARTICIPATED VALUES("A01","KA052250",11,10000);
INSERT INTO PARTICIPATED VALUES ("A02","KA053408",12,50000);
INSERT INTO PARTICIPATED VALUES ("A03","KA095477",13,25000);
INSERT INTO PARTICIPATED VALUES ("A04","KA031181",14,3000);
INSERT INTO PARTICIPATED VALUES ("A05","KA041702",15,5000);
SELECT * FROM PARTICIPATED;
```

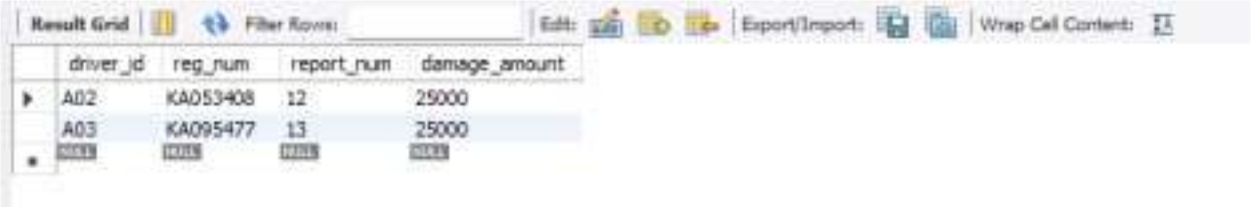


```
driver_id  reg_num   report_num  damage_amount
A01        KA052250  11          10000
A02        KA053408  12          25000
A03        KA095477  13          25000
A04        KA031181  14          3000
A05        KA041702  15          5000
```

Queries:

- **Update the damage amount to 25000 for the car with a specific reg-num (example 'KA053408') for which the accident report number was 12.**

  UPDATE PARTICIPATED SET damage_amount = 25000 WHERE reg_num = 'KA053408' AND report_num = 12;

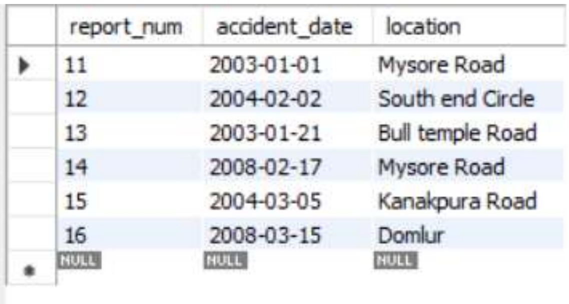


driver_id	reg_num	report_num	damage_amount
A02	KA053408	12	25000
A03	KA095477	13	25000
NULL	NULL	NULL	NULL

- **Add a new accident to the database.**

  INSERT INTO ACCIDENT VALUES(16,'2008-03-15','Domlur');

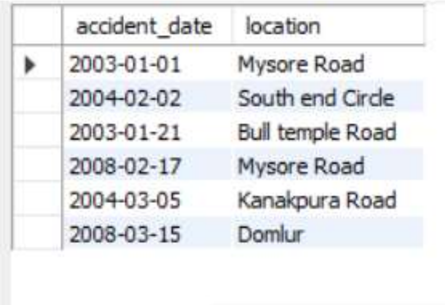
  SELECT * FROM ACCIDENT;



report_num	accident_date	location
11	2003-01-01	Mysore Road
12	2004-02-02	South end Circle
13	2003-01-21	Bull temple Road
14	2008-02-17	Mysore Road
15	2004-03-05	Kanakpura Road
16	2008-03-15	Domlur
NULL	NULL	NULL

- **Display Accident date and location.**

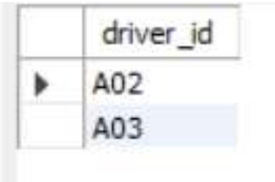
  SELECT accident_date, location FROM ACCIDENT;



accident_date	location
2003-01-01	Mysore Road
2004-02-02	South end Circle
2003-01-21	Bull temple Road
2008-02-17	Mysore Road
2004-03-05	Kanakpura Road
2008-03-15	Domlur

- **Display driver id who did accident with damage amount greater than or equal to Rs.25000.**

  SELECT driver_id FROM PARTICIPATED WHERE damage_amount >= 25000;



driver_id
A02
A03

Program 2

More Queries On Insurance Database

Question:

-PERSON (driver_id: String, name: String, address: String)

-CAR (reg_num: String, model: String, year: int)

-ACCIDENT (report_num: int, accident_date: date, location: String)

-OWNS (driver_id: String, reg_num: String)

-PARTICIPATED (driver_id: String,reg_num: String, report_num: int, damage_amount: int)

-Create the above tables by properly specifying the primary keys and the foreign keys as done in "Program-1"week's lab and Enter at least five tuples for each relation.

i. Display the entire CAR relation in the ascending order of manufacturing year.

ii. Find the number of accidents in which cars belonging to a specific model (example 'Lancer') were involved.

iii. Find the total number of people who owned cars that involved in accidents in 2008.

iv. List the entire participated relation in the Descending Order of Damage Amount.

v. Find the Average Damage Amount.

vi. Delete the tuple whose Damage Amount is below the Average Damage Amount.

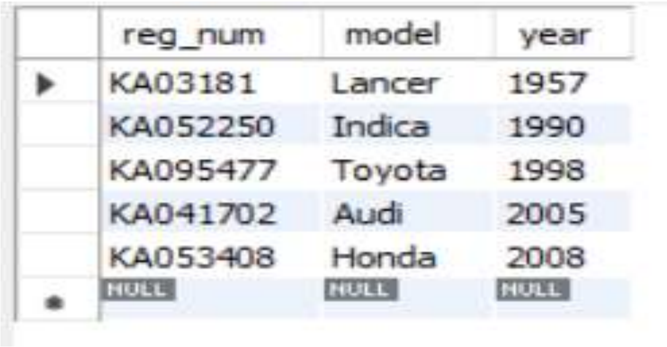
vii. List the name of drivers whose Damage is Greater than the Average Damage Amount.

viii. Find Maximum Damage Amount.

Queries:

- **Display the entire CAR relation in the ascending order of manufacturing year.**

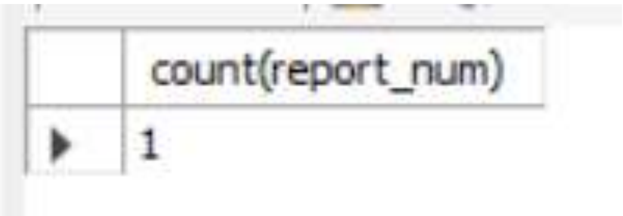
```
SELECT * FROM CAR ORDER BY year ASC;
```



	reg_num	model	year
▶	KA03181	Lancer	1957
	KA052250	Indica	1990
	KA095477	Toyota	1998
	KA041702	Audi	2005
	KA053408	Honda	2008
*	NULL	NULL	NULL

- **Find the number of accidents in which cars belonging to a specific model (example 'Lancer') were involved.**

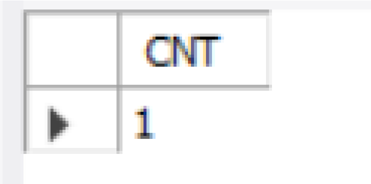
```
SELECT COUNT(report_num) FROM CAR C, PARTICIPATED P WHERE C.reg_num =
P.reg_num AND C.model = 'Lancer';
```



	count(report_num)
▶	1

- **Find the total number of people who owned cars that involved in accidents in 2008.**

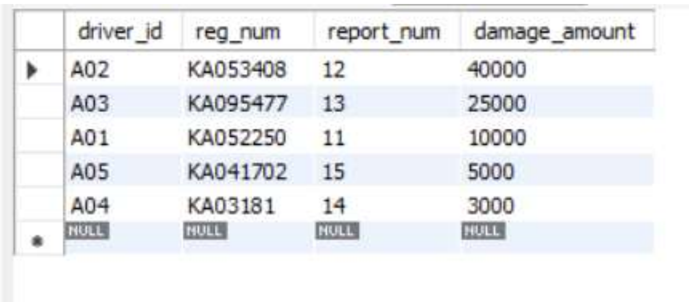
```
SELECT COUNT(DISTINCT driver_id) AS CNT FROM ACCIDENT A, PARTICIPATED
P WHERE P.report_num = A.report_num AND A.accident_date LIKE '__08%';
```



	CNT
▶	1

- **List the entire participated relation in the Descending Order of Damage Amount.**

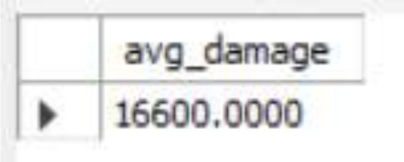
```
SELECT * FROM PARTICIPATED ORDER BY damage_amount DESC;
```



	driver_id	reg_num	report_num	damage_amount
▶	A02	KA053408	12	40000
	A03	KA095477	13	25000
	A01	KA052250	11	10000
	A05	KA041702	15	5000
	A04	KA03181	14	3000
*	NULL	NULL	NULL	NULL

- **Find the Average Damage Amount.**

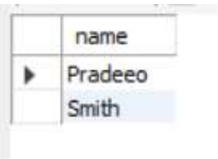
```
SELECT AVG(damage_amount) AS avg_damage
FROM PARTICIPATED;
```



	avg_damage
▶	16600.0000

- **List the name of drivers whose Damage is Greater than the Average Damage Amount.**

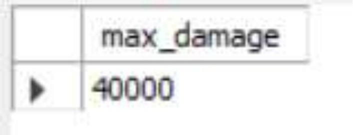
```
SELECT P.nameFROM PERSON P
JOIN PARTICIPATED PA ON P.driver_id = PA.driver_id
WHERE PA.damage_amount > (
    SELECT AVG(damage_amount)
    FROM PARTICIPATED
  );
```



	name
▶	Pradeeo
	Smith

- **Find Maximum Damage Amount.**

```
SELECT MAX(damage_amount) AS max_damage FROM PARTICIPATED;
```



	max_damage
▶	40000

Program 3

Bank Database

Question:

-Branch (branch-name: String, branch-city: String, assets: real)

-BankAccount(accno: int, branch-name: String, balance: real)

-BankCustomer (customer-name: String, customer-street: String, customer-city: String)

-Depositer(customer-name: String, accno: int) LOAN (loan-number: int, branch-name: String, amount: real)

i. Create the above tables by properly specifying the primary keys and the foreign keys.

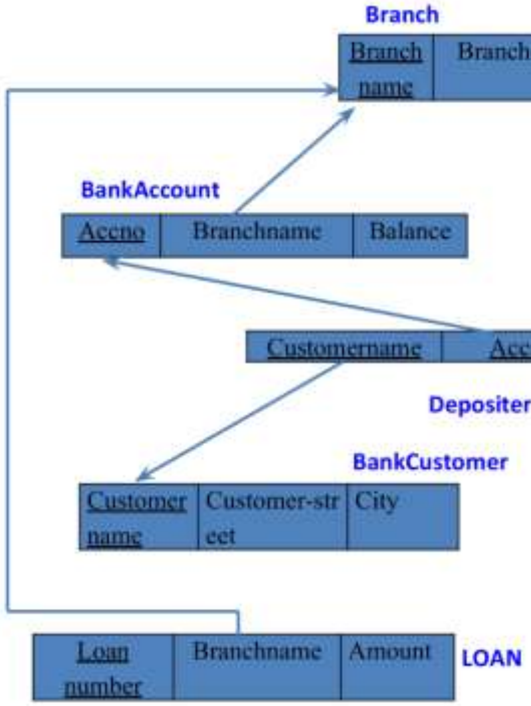
ii. Enter at least five tuples for each relation.

iii. Display the branch name and assets from all branches in lakhs of rupees and rename the assets column to 'assets in lakhs'.

iv. Find all the customers who have at least two accounts at the same branch (ex. SBI_ResidencyRoad).

v. Create a view which gives each branch the sum of the amount of all the loans at the branch.

Schema Diagram:



Create Database:

CREATE DATABASE dhiksha_bank;

USE dhiksha_bank;

Create Table:

CREATE TABLE dhiksha_bank.branch (Branch_name VARCHAR(30), Branch_city VARCHAR(25), assets INT, PRIMARY KEY(Branch_name));

CREATE TABLE dhiksha_bank.BankAccount (Accno INT, Branch_name VARCHAR(30), Balance INT, PRIMARY KEY(Accno), FOREIGN KEY(Branch_name) REFERENCES branch(Branch_name));

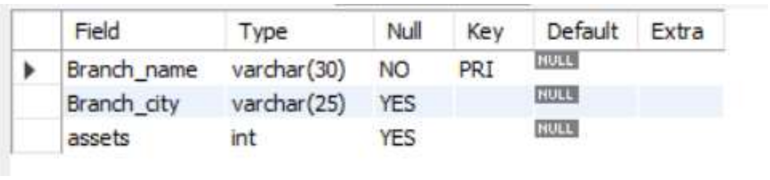
CREATE TABLE dhiksha_bank.BankCustomer (Customername VARCHAR(20), Customer_street VARCHAR(30), CustomerCity VARCHAR(35), PRIMARY KEY(Customername));

CREATE TABLE dhiksha_bank.Depositer (Customername VARCHAR(20), Accno INT, PRIMARY KEY(Customername, Accno), FOREIGN KEY(Accno) REFERENCES BankAccount(Accno), FOREIGN KEY(Customername) REFERENCES BankCustomer(Customername));

CREATE TABLE dhiksha_bank.Loan (Loan_number INT, Branch_name VARCHAR(30), Amount INT, PRIMARY KEY(Loan_number), FOREIGN KEY(Branch_name) REFERENCES branch(Branch_name));

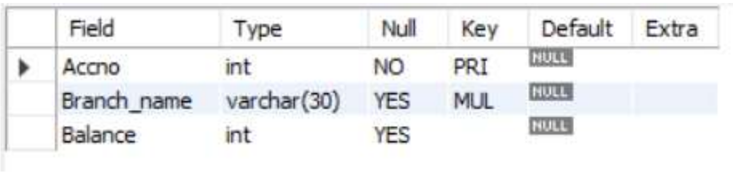
Structure of the table:

DESC BRANCH;



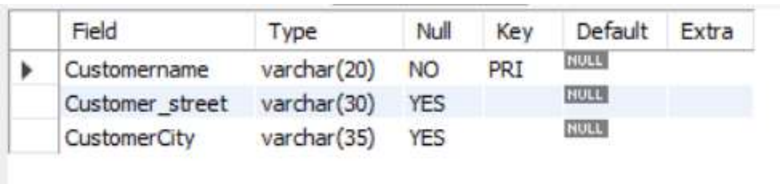
	Field	Type	Null	Key	Default	Extra
▶	Branch_name	varchar(30)	NO	PRI	NULL	
	Branch_city	varchar(25)	YES		NULL	
	assets	int	YES		NULL	

DESC BANKACCOUNT;



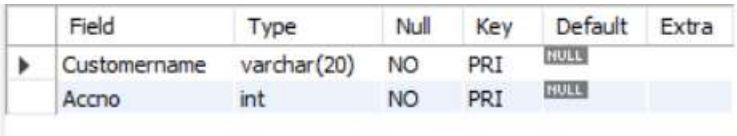
	Field	Type	Null	Key	Default	Extra
▶	Accno	int	NO	PRI	NULL	
	Branch_name	varchar(30)	YES	MUL	NULL	
	Balance	int	YES		NULL	

DESC BANKCUSTOMER;



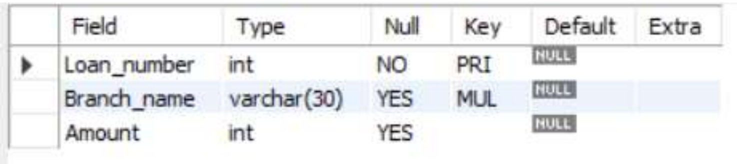
	Field	Type	Null	Key	Default	Extra
▶	Customername	varchar(20)	NO	PRI	NULL	
	Customer_street	varchar(30)	YES		NULL	
	CustomerCity	varchar(35)	YES		NULL	

DESC DEPOSITER;



	Field	Type	Null	Key	Default	Extra
▶	Customername	varchar(20)	NO	PRI	NULL	
	Accno	int	NO	PRI	NULL	

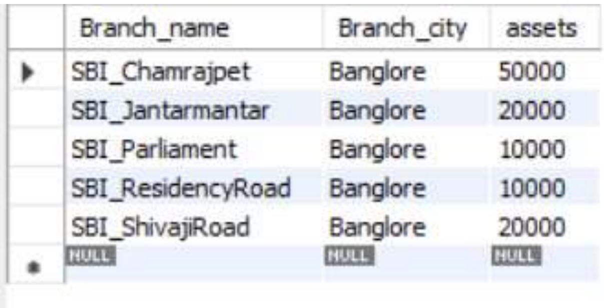
DESC LOAN;



	Field	Type	Null	Key	Default	Extra
▶	Loan_number	int	NO	PRI	NULL	
	Branch_name	varchar(30)	YES	MUL	NULL	
	Amount	int	YES		NULL	

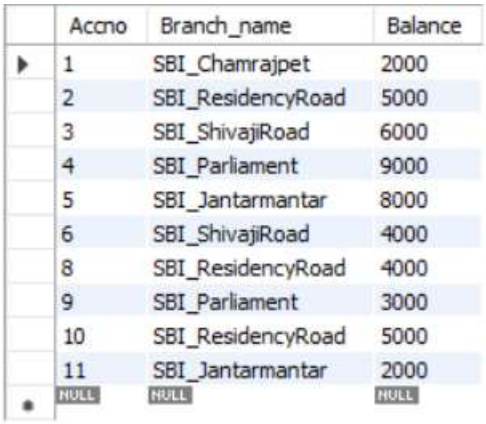
Inserting Values To The Table:

```
INSERT INTO BRANCH VALUES("SBI_Chamrajpet","Banglore",50000);
INSERT INTO BRANCH VALUES("SBI_ResidencyRoad","Banglore",10000);
INSERT INTO BRANCH VALUES("SBI_ShivajiRoad","Banglore",20000);
INSERT INTO BRANCH VALUES("SBI_Parliament","Banglore",10000);
INSERT INTO BRANCH VALUES("SBI_Jantarmantar","Banglore",20000);
SELECT * FROM BRANCH;
```



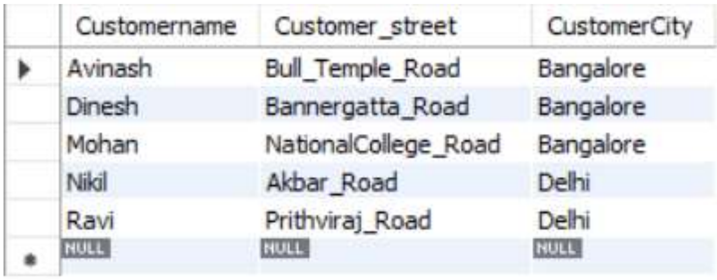
	Branch_name	Branch_city	assets
▶	SBI_Chamrajpet	Banglore	50000
	SBI_Jantarmantar	Banglore	20000
	SBI_Parliament	Banglore	10000
	SBI_ResidencyRoad	Banglore	10000
	SBI_ShivajiRoad	Banglore	20000
*	NULL	NULL	NULL

```
INSERT INTO BANKACCOUNT VALUES(1,"SBI_Chamrajpet",2000);
INSERT INTO BANKACCOUNT VALUES(2,"SBI_ResidencyRoad",5000);
INSERT INTO BANKACCOUNT VALUES(3,"SBI_ShivajiRoad",6000);
INSERT INTO BANKACCOUNT VALUES(4,"SBI_Parliament",9000);
INSERT INTO BANKACCOUNT VALUES(5,"SBI_Jantarmantar",8000);
INSERT INTO BANKACCOUNT VALUES(6,"SBI_ShivajiRoad",4000);
INSERT INTO BANKACCOUNT VALUES(8,"SBI_ResidencyRoad",4000);
INSERT INTO BANKACCOUNT VALUES(9,"SBI_Parliament",3000);
INSERT INTO BANKACCOUNT VALUES(10,"SBI_ResidencyRoad",5000);
INSERT INTO BANKACCOUNT VALUES(11,"SBI_Jantarmantar",2000);
SELECT * FROM BANKACCOUNT;
```



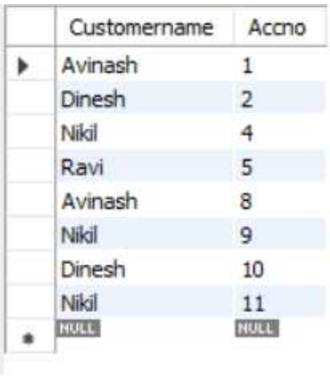
Accno	Branch_name	Balance
1	SBI_Chamrajpet	2000
2	SBI_ResidencyRoad	5000
3	SBI_ShivajiRoad	6000
4	SBI_Parliament	9000
5	SBI_Jantarmantar	8000
6	SBI_ShivajiRoad	4000
8	SBI_ResidencyRoad	4000
9	SBI_Parliament	3000
10	SBI_ResidencyRoad	5000
11	SBI_Jantarmantar	2000
NULL	NULL	NULL

```
INSERT INTO BANKCUSTOMER VALUES("Avinash","Bull_Temple_Road","Bangalore");
INSERT INTO BANKCUSTOMER VALUES("Dinesh","Bannergatta_Road","Bangalore");
INSERT INTO BANKCUSTOMER VALUES("Mohan","NationalCollege_Road","Bangalore");
INSERT INTO BANKCUSTOMER VALUES("Nikil","Akbar_Road","Delhi");
INSERT INTO BANKCUSTOMER VALUES("Ravi","Prithviraj_Road","Delhi");
SELECT * FROM BANKCUSTOMER;
```



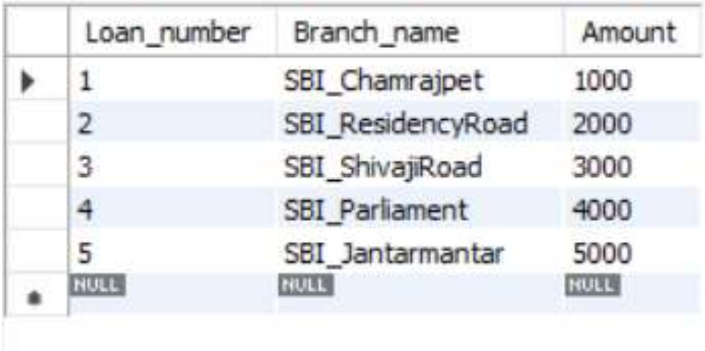
Customername	Customer_street	CustomerCity
Avinash	Bull_Temple_Road	Bangalore
Dinesh	Bannergatta_Road	Bangalore
Mohan	NationalCollege_Road	Bangalore
Nikil	Akbar_Road	Delhi
Ravi	Prithviraj_Road	Delhi
NULL	NULL	NULL

```
INSERT INTO DEPOSITER VALUES("Avinash",1);
INSERT INTO DEPOSITER VALUES("Dinesh",2);
INSERT INTO DEPOSITER VALUES("Nikil",4);
INSERT INTO DEPOSITER VALUES("Ravi",5);
INSERT INTO DEPOSITER VALUES("Avinash",8);
INSERT INTO DEPOSITER VALUES("Nikil",9);
INSERT INTO DEPOSITER VALUES("Dinesh",10);
INSERT INTO DEPOSITER VALUES("Nikil",11);
SELECT * FROM DEPOSITER;
```



Customername	Accno
Avinash	1
Dinesh	2
Nikil	4
Ravi	5
Avinash	8
Nikil	9
Dinesh	10
Nikil	11
NULL	NULL

```
INSERT INTO Loan VALUES(1,"SBI_Chamrajpet",1000);
INSERT INTO Loan VALUES(2,"SBI_ResidencyRoad",2000);
INSERT INTO Loan VALUES(3,"SBI_ShivajiRoad",3000);
INSERT INTO Loan VALUES(4,"SBI_Parliament",4000);
INSERT INTO Loan VALUES(5,"SBI_Jantarmantar",5000);
SELECT * FROM Loan;
```

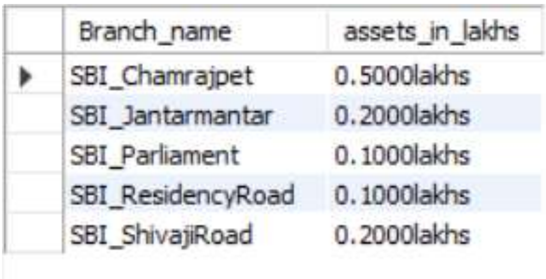


Loan_number	Branch_name	Amount
1	SBI_Chamrajpet	1000
2	SBI_ResidencyRoad	2000
3	SBI_ShivajiRoad	3000
4	SBI_Parliament	4000
5	SBI_Jantarmantar	5000
NULL	NULL	NULL

Queries:

- **Display the branch name and assets from all branches in lakhs of rupees and rename the assets column to 'assets in lakhs'.**

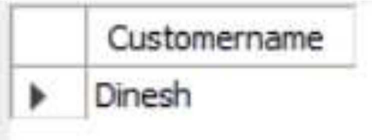
  SELECT Branch_name, CONCAT(assets/100000,'lakhs') AS assets_in_lakhs FROM BRANCH;



Branch_name	assets_in_lakhs
SBI_Chamrajpet	0.5000lakhs
SBI_Jantarmantar	0.2000lakhs
SBI_Parliament	0.1000lakhs
SBI_ResidencyRoad	0.1000lakhs
SBI_ShivajiRoad	0.2000lakhs

- **Find all the customers who have at least two accounts at the same branch (ex. SBI_ResidencyRoad).**

  SELECT d.Customername FROM DEPOSITER d, BANKACCOUNT b WHERE b.Branch_name='SBI_ResidencyRoad' AND d.Accno=b.Accno GROUP BY d.Customername HAVING COUNT(d.Accno)>=2;

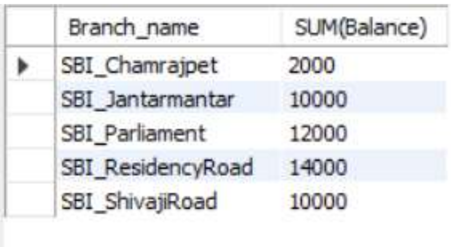


Customername
Dinesh

- **Create a view which gives each branch the sum of the amount of all the loans at the branch.**

  CREATE VIEW sum_of_loan AS SELECT Branch_name, SUM(Balance) AS total_balance FROM BANKACCOUNT GROUP BY Branch_name;

  SELECT * FROM sum_of_loan;



Branch_name	SUM(Balance)
SBI_Chamrajpet	2000
SBI_Jantarmantar	10000
SBI_Parliament	12000
SBI_ResidencyRoad	14000
SBI_ShivajiRoad	10000

Program 4

More Queries On Bank Database

Question:

-Branch (branch-name: String, branch-city: String, assets: real)

-BankAccount(accno: int, branch-name: String, balance: real)

-BankCustomer (customer-name: String, customer-street: String, customer-city: String)

-Depositer(customer-name: String, accno: int)

-LOAN (loan-number: int, branch-name: String, amount: real)

i. Find all the customers who have an account at all the branches located in a specific city (Ex. Delhi).

ii. Find all customers who have a loan at the bank but do not have an account.

iii. Find all customers who have both an account and a loan at the Bangalore branch.

iv. Find the names of all branches that have greater assets than all branches located in Bangalore.

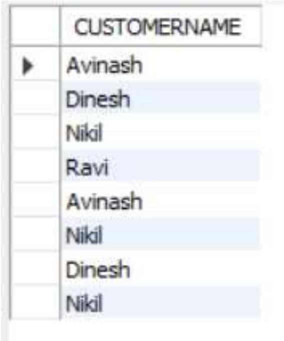
v. Demonstrate how you delete all account tuples at every branch located in a specific city (Ex. Bombay).

vi. Update the Balance of all accounts by 5%.

Queries:

- **Find all the customers who have an account at all the branches located in a specific city (Ex. Delhi).**

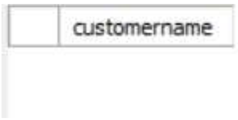
  SELECT d.customer_name FROM DEPOSITER d WHERE NOT EXISTS (SELECT b.branch_name FROM BRANCH b WHERE b.branch_city='Delhi' EXCEPT SELECT ba.branch_name FROM BANKACCOUNT ba WHERE ba.accno=d.accno);



	CUSTOMERNAME
▶	Avinash
	Dinesh
	Nikil
	Ravi
	Avinash
	Nikil
	Dinesh
	Nikil

- **Find all customers who have a loan at the bank but do not have an account.**

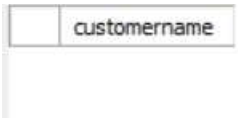
  SELECT DISTINCT c.customer_name FROM BANKCUSTOMER c, LOAN l WHERE c.customer_name=l.loan_number AND c.customer_name NOT IN (SELECT d.customer_name FROM DEPOSITER d);



customername

- **Find all customers who have both an account and a loan at the Bangalore branch.**

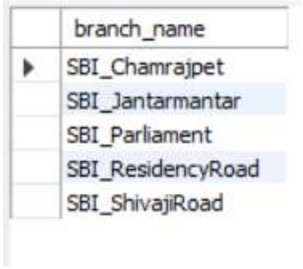
  SELECT DISTINCT d.customer_name FROM DEPOSITER d, BANKACCOUNT ba, LOAN l WHERE d.accno=ba.accno AND ba.branch_name=l.branch_name AND ba.branch_name='Bangalore';



customername

- **Find the names of all branches that have greater assets than all branches located in Bangalore.**

  SELECT branch_name FROM BRANCH WHERE assets > ALL (SELECT assets FROM BRANCH WHERE branch_city='Bangalore');

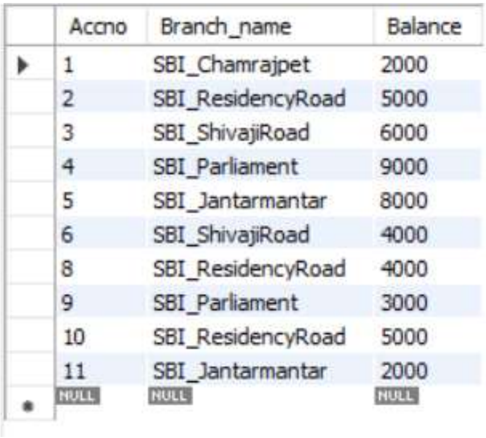


branch_name
SBI_Chamrajpet
SBI_Jantarmantar
SBI_Parliament
SBI_ResidencyRoad
SBI_ShivajiRoad

- **Demonstrate how you delete all account tuples at every branch located in a specific city (Ex. Bombay).**

  DELETE FROM BANKACCOUNT WHERE branch_name IN (SELECT branch_name FROM BRANCH WHERE branch_city='Bombay');

  SELECT * FROM BANKACCOUNT;

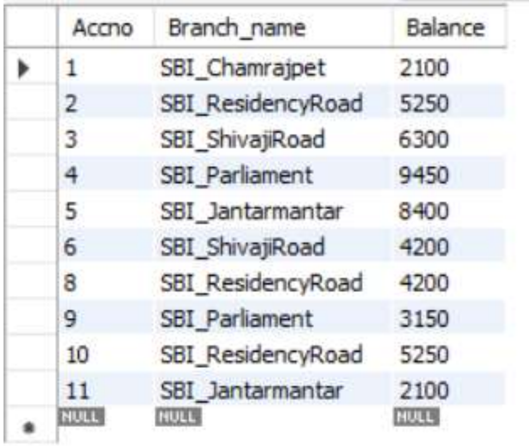


Accno	Branch_name	Balance
1	SBI_Chamrajpet	2000
2	SBI_ResidencyRoad	5000
3	SBI_ShivajiRoad	6000
4	SBI_Parliament	9000
5	SBI_Jantarmantar	8000
6	SBI_ShivajiRoad	4000
8	SBI_ResidencyRoad	4000
9	SBI_Parliament	3000
10	SBI_ResidencyRoad	5000
11	SBI_Jantarmantar	2000
NULL	NULL	NULL

- **Update the Balance of all accounts by 5%.**

  UPDATE BANKACCOUNT SET balance=balance*1.05;

  SELECT * FROM BANKACCOUNT;

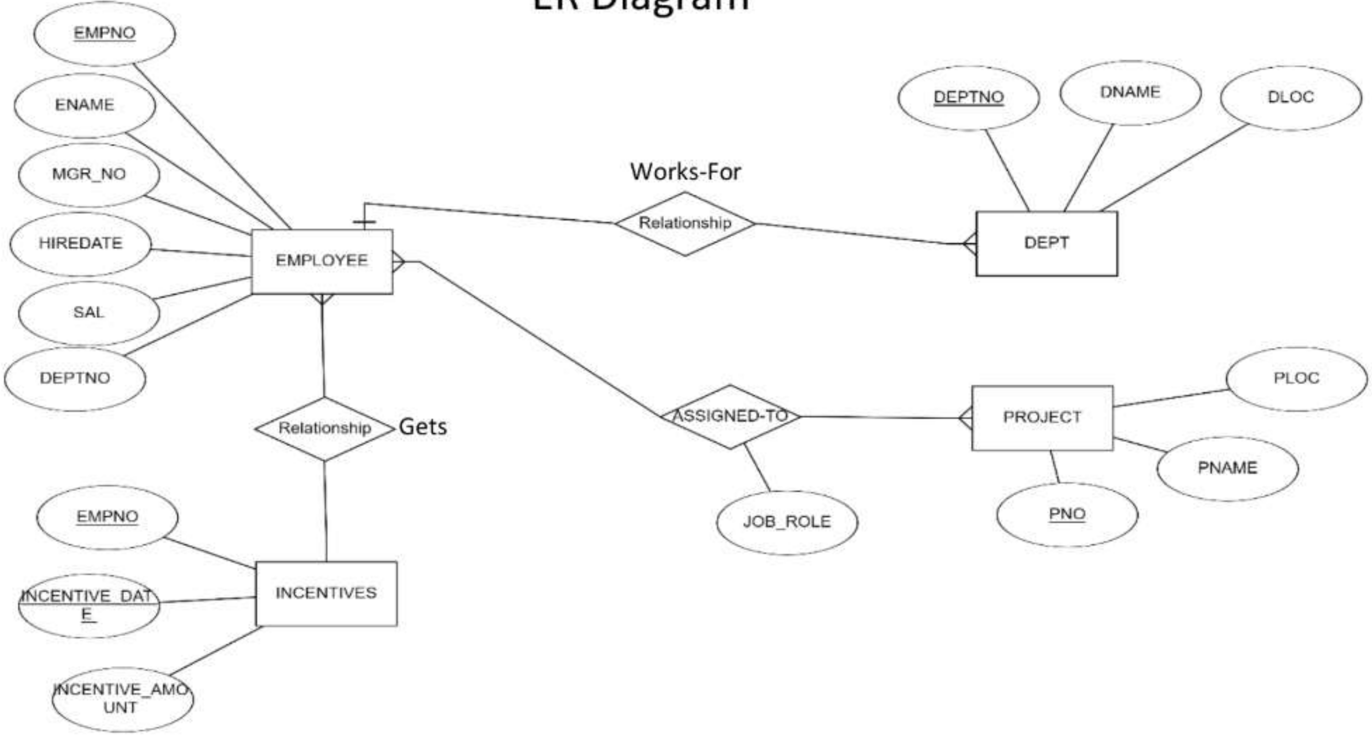


Accno	Branch_name	Balance
1	SBI_Chamrajpet	2100
2	SBI_ResidencyRoad	5250
3	SBI_ShivajiRoad	6300
4	SBI_Parliament	9450
5	SBI_Jantarmantar	8400
6	SBI_ShivajiRoad	4200
8	SBI_ResidencyRoad	4200
9	SBI_Parliament	3150
10	SBI_ResidencyRoad	5250
11	SBI_Jantarmantar	2100
NULL	NULL	NULL

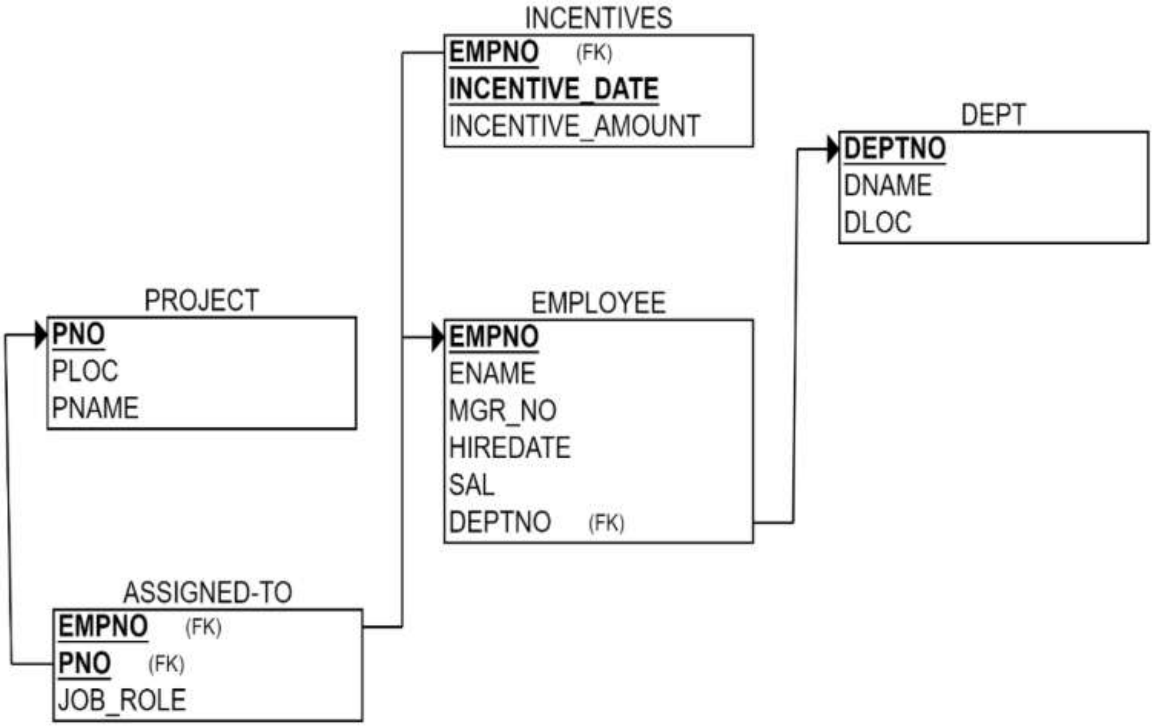
Program 5

Employee Database

ER Diagram



Schema Diagram:



Question:

i. Using Scheme diagram, create tables by properly specifying the primary keys and the foreign keys.

ii. Enter greater than five tuples for each table.

iii. Retrieve the employee numbers of all employees who work on project located in Bengaluru, Hyderabad, or Mysuru.

iv. Get Employee ID's of those employees who didn't receive incentives.

v. Write a SQL query to find the employees name, number, dept, job_role, department location and project location who are working for a project location same as his/her department location.

Create Database:

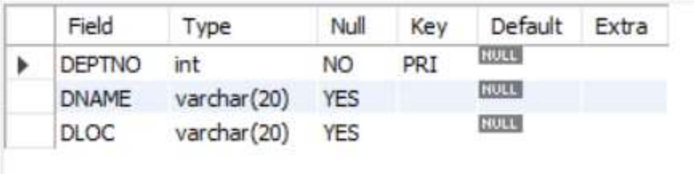
```
CREATE DATABASE Employee;
USE Employee;
```

Create Table:

```
CREATE TABLE DEPT (deptno INT PRIMARY KEY, dname VARCHAR(20), dloc VARCHAR(20));

CREATE TABLE EMPLOYEE (empno INT PRIMARY KEY, ename VARCHAR(20), mgr_no INT,
hiredate DATE, sal INT, deptno INT, FOREIGN KEY (deptno) REFERENCES DEPT(deptno));

CREATE TABLE PROJECT (pno INT PRIMARY KEY, ploc VARCHAR(20), pname VARCHAR(20));

CREATE TABLE ASSIGNED_TO (empno INT, pno INT, job_role VARCHAR(20), PRIMARY KEY
(empno, pno), FOREIGN KEY (empno) REFERENCES EMPLOYEE(empno), FOREIGN KEY (pno)
REFERENCES PROJECT(pno));

CREATE TABLE INCENTIVES (empno INT, incentive_date DATE, incentive_amount INT, FOREIGN
KEY (empno) REFERENCES EMPLOYEE(empno));
```

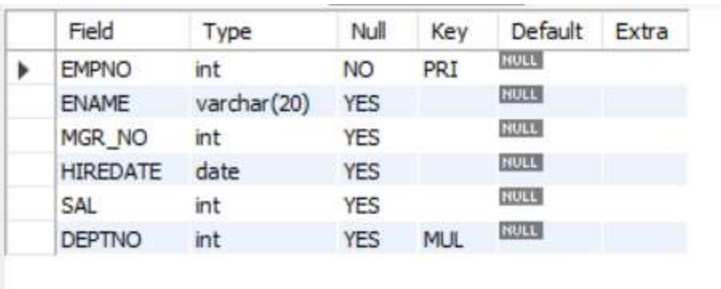
Structure of the table:

DESC DEPT;



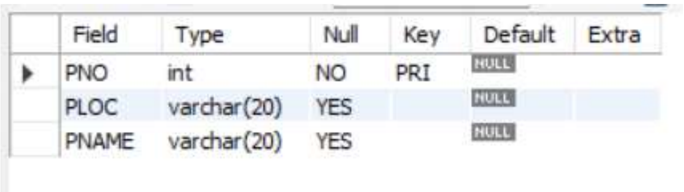
	Field	Type	Null	Key	Default	Extra
▶	DEPTNO	int	NO	PRI	NULL	
	DNAME	varchar(20)	YES		NULL	
	DLOC	varchar(20)	YES		NULL	

DESC EMPLOYEE;



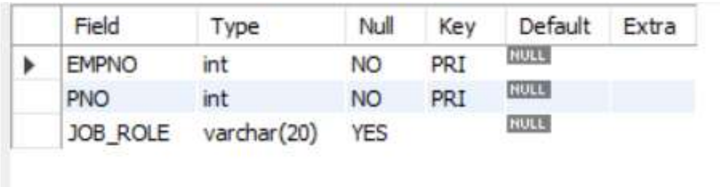
	Field	Type	Null	Key	Default	Extra
▶	EMPNO	int	NO	PRI	NULL	
	ENAME	varchar(20)	YES		NULL	
	MGR_NO	int	YES		NULL	
	HIREDATE	date	YES		NULL	
	SAL	int	YES		NULL	
	DEPTNO	int	YES	MUL	NULL	

DESC PROJECT;



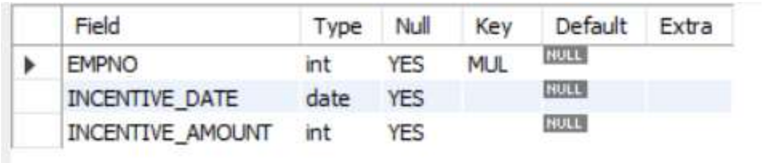
	Field	Type	Null	Key	Default	Extra
▶	PNO	int	NO	PRI	NULL	
	PLOC	varchar(20)	YES		NULL	
	PNAME	varchar(20)	YES		NULL	

DESC ASSIGNED_TO;



	Field	Type	Null	Key	Default	Extra
▶	EMPNO	int	NO	PRI	NULL	
	PNO	int	NO	PRI	NULL	
	JOB_ROLE	varchar(20)	YES		NULL	

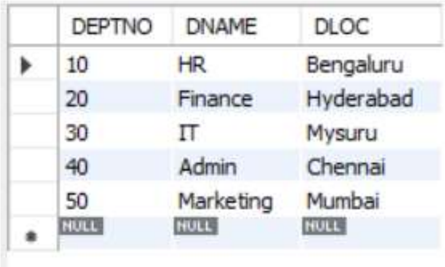
DESC INCENTIVES;



	Field	Type	Null	Key	Default	Extra
▶	EMPNO	int	YES	MUL	NULL	
	INCENTIVE_DATE	date	YES		NULL	
	INCENTIVE_AMOUNT	int	YES		NULL	

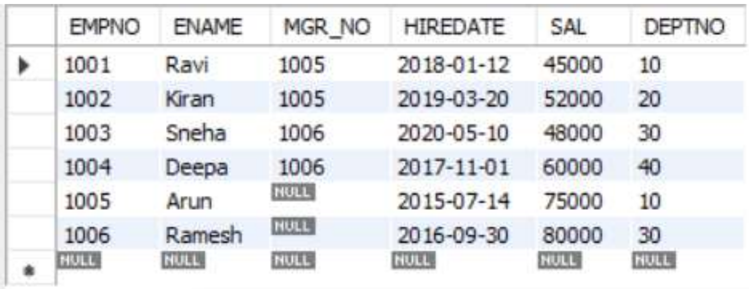
Inserting Values To The Table:

```
INSERT INTO DEPT VALUES (10, 'HR', 'Bengaluru');
INSERT INTO DEPT VALUES (20, 'Finance', 'Hyderabad');
INSERT INTO DEPT VALUES (30, 'IT', 'Mysuru');
INSERT INTO DEPT VALUES (40, 'Admin', 'Chennai');
INSERT INTO DEPT VALUES (50, 'Marketing', 'Mumbai');
SELECT * FROM DEPT;
```



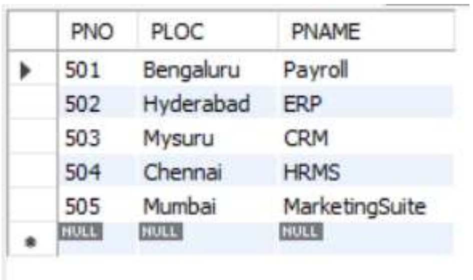
	DEPTNO	DNAME	DLOC
▶	10	HR	Bengaluru
	20	Finance	Hyderabad
	30	IT	Mysuru
	40	Admin	Chennai
	50	Marketing	Mumbai
*	NULL	NULL	NULL

```
INSERT INTO EMPLOYEE VALUES (1001, 'Ravi', 1005, '2018-01-12', 45000, 10);
INSERT INTO EMPLOYEE VALUES (1002, 'Kiran', 1005, '2019-03-20', 52000, 20);
INSERT INTO EMPLOYEE VALUES (1003, 'Sneha', 1006, '2020-05-10', 48000, 30);
INSERT INTO EMPLOYEE VALUES (1004, 'Deepa', 1006, '2017-11-01', 60000, 40);
INSERT INTO EMPLOYEE VALUES (1005, 'Arun', NULL, '2015-07-14', 75000, 10);
INSERT INTO EMPLOYEE VALUES (1006, 'Ramesh', NULL, '2016-09-30', 80000, 30);
SELECT * FROM EMPLOYEE;
```



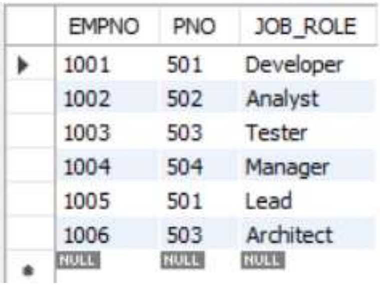
	EMPNO	ENAME	MGR_NO	HIREDATE	SAL	DEPTNO
▶	1001	Ravi	1005	2018-01-12	45000	10
	1002	Kiran	1005	2019-03-20	52000	20
	1003	Sneha	1006	2020-05-10	48000	30
	1004	Deepa	1006	2017-11-01	60000	40
	1005	Arun	NULL	2015-07-14	75000	10
	1006	Ramesh	NULL	2016-09-30	80000	30
*	NULL	NULL	NULL	NULL	NULL	NULL

```
INSERT INTO PROJECT VALUES (501, 'Bengaluru', 'Payroll');
INSERT INTO PROJECT VALUES (502, 'Hyderabad', 'ERP');
INSERT INTO PROJECT VALUES (503, 'Mysuru', 'CRM');
INSERT INTO PROJECT VALUES (504, 'Chennai', 'HRMS');
INSERT INTO PROJECT VALUES (505, 'Mumbai', 'MarketingSuite');
SELECT * FROM PROJECT;
```



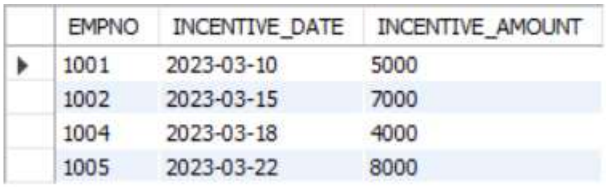
PNO	PLOC	PNAME
501	Bengaluru	Payroll
502	Hyderabad	ERP
503	Mysuru	CRM
504	Chennai	HRMS
505	Mumbai	MarketingSuite
NULL	NULL	NULL

```
INSERT INTO ASSIGNED_TO VALUES (1001, 501, 'Developer');
INSERT INTO ASSIGNED_TO VALUES (1002, 502, 'Analyst');
INSERT INTO ASSIGNED_TO VALUES (1003, 503, 'Tester');
INSERT INTO ASSIGNED_TO VALUES (1004, 504, 'Manager');
INSERT INTO ASSIGNED_TO VALUES (1005, 501, 'Lead');
INSERT INTO ASSIGNED_TO VALUES (1006, 503, 'Architect');
SELECT * FROM ASSIGNED_TO;
```



EMPNO	PNO	JOB_ROLE
1001	501	Developer
1002	502	Analyst
1003	503	Tester
1004	504	Manager
1005	501	Lead
1006	503	Architect
NULL	NULL	NULL

```
INSERT INTO INCENTIVES VALUES (1001, '2023-03-10', 5000);
INSERT INTO INCENTIVES VALUES (1002, '2023-03-15', 7000);
INSERT INTO INCENTIVES VALUES (1004, '2023-03-18', 4000);
INSERT INTO INCENTIVES VALUES (1005, '2023-03-22', 8000);
SELECT * FROM INCENTIVES;
```

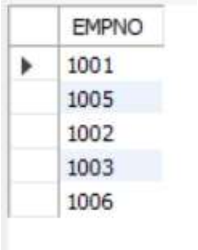


EMPNO	INCENTIVE_DATE	INCENTIVE_AMOUNT
1001	2023-03-10	5000
1002	2023-03-15	7000
1004	2023-03-18	4000
1005	2023-03-22	8000

Queries:

- **Retrieve the employee numbers of all employees who work on project located in Bengaluru, Hyderabad, or Mysuru.**

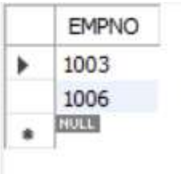
```
SELECT DISTINCT a.empno FROM ASSIGNED_TO a JOIN PROJECT p ON a.pno=p.pno
WHERE p.ploc IN ('Bengaluru','Hyderabad','Mysuru');
```



EMPNO
1001
1005
1002
1003
1006

- **Get Employee ID’s of those employees who didn’t receive incentives.**

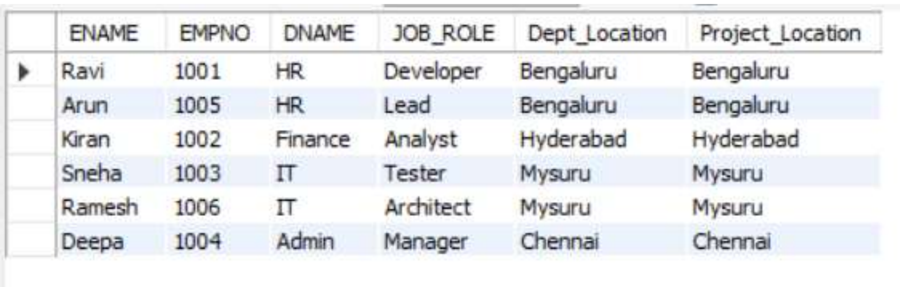
  SELECT e.empno FROM EMPLOYEE e WHERE e.empno NOT IN (SELECT empno FROM INCENTIVES);



EMPNO
1003
1006
NULL

- **Write a SQL query to find the employees name, number, dept, job_role, department location and project location who are working for a project location same as his/her department location.**

  SELECT e.ename,e.empno,d.dname,a.job_role,d.dloc AS dept_location,p.ploc AS project_location FROM EMPLOYEE e JOIN DEPT d ON e.deptno=d.deptno JOIN ASSIGNED_TO a ON e.empno=a.empno JOIN PROJECT p ON a.pno=p.pno;



ENAME	EMPNO	DNAME	JOB_ROLE	Dept_Location	Project_Location
Ravi	1001	HR	Developer	Bengaluru	Bengaluru
Arun	1005	HR	Lead	Bengaluru	Bengaluru
Kiran	1002	Finance	Analyst	Hyderabad	Hyderabad
Sneha	1003	IT	Tester	Mysuru	Mysuru
Ramesh	1006	IT	Architect	Mysuru	Mysuru
Deepa	1004	Admin	Manager	Chennai	Chennai

Program 6

More Queries On Employee Database

Question:

i. Using Scheme diagram (under Program-5), Create tables by properly specifying the primary keys and the foreign keys.

ii. Enter greater than five tuples for each table.

iii. List the name of the managers with the maximum employees.

iv. Display those managers name whose salary is more than average salary of his employee.

v. Find the name of the second top level managers of each department.

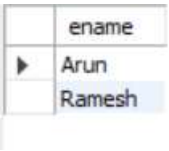
vi. Find the employee details who got second maximum incentive in January 2019.

vii. Display those employees who are working in the same department where his manager is working.

Queries:

- **List the name of the managers with the maximum employees.**

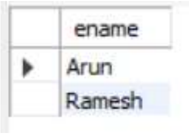
```
SELECT e.ename FROM EMPLOYEE e WHERE e.empno IN (SELECT mgr_no FROM
EMPLOYEE GROUP BY mgr_no HAVING COUNT(*)=(SELECT MAX(cnt) FROM
(SELECT COUNT(*) AS cnt FROM EMPLOYEE GROUP BY mgr_no) t));
```



	ename
▶	Arun
	Ramesh

- **Display those managers name whose salary is more than average salary of his employee.**

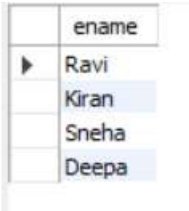
```
SELECT m.ename FROM EMPLOYEE m WHERE m.empno IN (SELECT e.mgr_no FROM
EMPLOYEE e GROUP BY e.mgr_no HAVING m.sal>AVG(e.sal));
```



	ename
▶	Arun
	Ramesh

- **Find the name of the second top level managers of each department.**

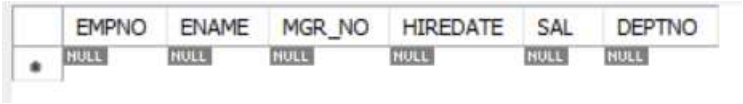
  SELECT e.ename FROM EMPLOYEE e WHERE e.mgr_no IN (SELECT empno FROM EMPLOYEE WHERE mgr_no IS NULL) GROUP BY e.deptno,e.empno;



ename
Ravi
Kiran
Sneha
Deepa

- **Find the employee details who got second maximum incentive in January 2019.**

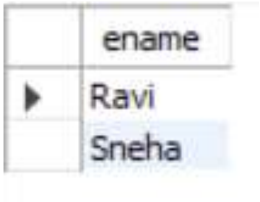
  SELECT e.* FROM EMPLOYEE e WHERE e.empno=(SELECT empno FROM INCENTIVES WHERE MONTH(incentive_date)=1 AND YEAR(incentive_date)=2019 ORDER BY incentive_amount DESC LIMIT 1 OFFSET 1);



EMPNO	ENAME	MGR_NO	HIREDATE	SAL	DEPTNO
NULL	NULL	NULL	NULL	NULL	NULL

- **Display those employees who are working in the same department where his manager is working.**

  SELECT e.ename FROM EMPLOYEE e JOIN EMPLOYEE m ON e.mgr_no=m.empno WHERE e.deptno=m.deptno;

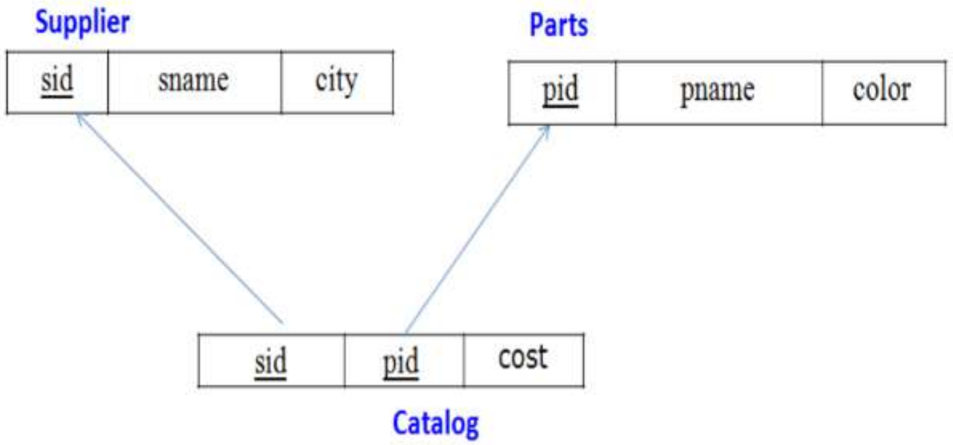


ename
Ravi
Sneha

Program 7

Supplier Database

Schema Diagram:



Question:

i. Using Scheme diagram, Create tables by properly specifying the primary keys and the foreign keys.

ii. Insert appropriate records in each table.

iii. Find the pnames of parts for which there is some supplier.

iv. Find the snames of suppliers who supply every part.

v. Find the snames of suppliers who supply every red part.

vi. Find the pnames of parts supplied by Acme Widget Suppliers and by no one else.

vii. Find the sids of suppliers who charge more for some part than the average cost of that part (averaged over all the suppliers who supply that part).

viii. For each part, find the sname of the supplier who charges the most for that part.

Create Database:

```
CREATE DATABASE Supplier;
USE Supplier;
```

Create Table:

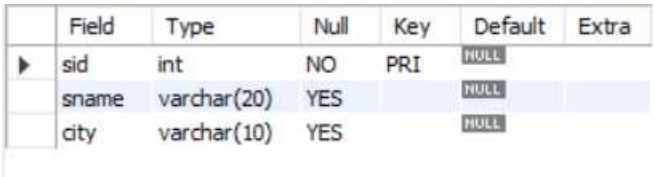
CREATE TABLE SUPPLIER (sid INT, sname VARCHAR(20), city VARCHAR(10), PRIMARY KEY(sid));

CREATE TABLE PARTS (pid INT PRIMARY KEY, pname VARCHAR(20), color VARCHAR(20));

CREATE TABLE CATALOG (sid INT, pid INT, cost INT, FOREIGN KEY (sid) REFERENCES SUPPLIER(sid), FOREIGN KEY (pid) REFERENCES PARTS(pid));

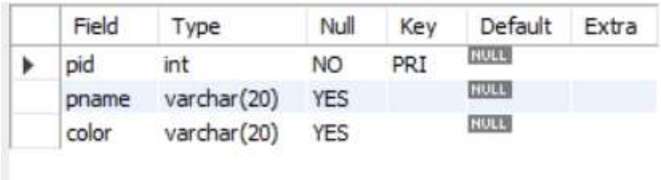
Structure of the table:

DESC SUPPLIER;



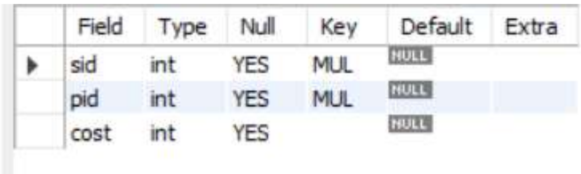
	Field	Type	Null	Key	Default	Extra
▶	sid	int	NO	PRI	NULL	
	sname	varchar(20)	YES		NULL	
	city	varchar(10)	YES		NULL	

DESC PARTS;



	Field	Type	Null	Key	Default	Extra
▶	pid	int	NO	PRI	NULL	
	pname	varchar(20)	YES		NULL	
	color	varchar(20)	YES		NULL	

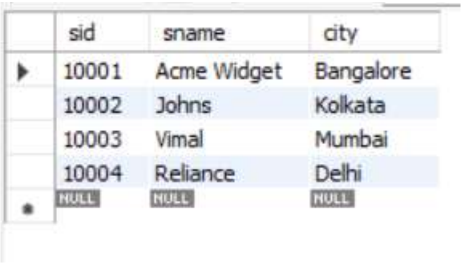
DESC CATALOG;



	Field	Type	Null	Key	Default	Extra
▶	sid	int	YES	MUL	NULL	
	pid	int	YES	MUL	NULL	
	cost	int	YES		NULL	

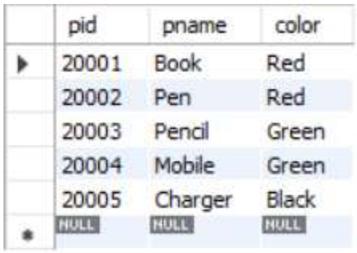
Inserting Values To The Table:

```
INSERT INTO SUPPLIER VALUES(10001,'Acme Widget','Bangalore');
INSERT INTO SUPPLIER VALUES(10002,'Johns','Kolkata');
INSERT INTO SUPPLIER VALUES(10003,'Vimal','Mumbai');
INSERT INTO SUPPLIER VALUES(10004,'Reliance','Delhi');
SELECT * FROM SUPPLIER;
```



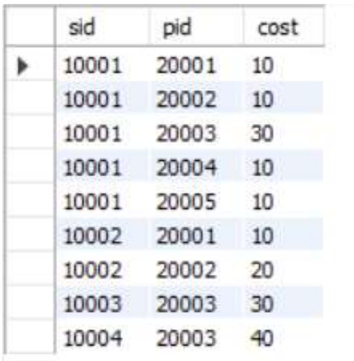
	sid	sname	city
▶	10001	Acme Widget	Bangalore
	10002	Johns	Kolkata
	10003	Vimal	Mumbai
	10004	Reliance	Delhi
*	NULL	NULL	NULL

```
INSERT INTO PARTS VALUES(20001,'Book','Red');
INSERT INTO PARTS VALUES(20002,'Pen','Red');
INSERT INTO PARTS VALUES(20003,'Pencil','Green');
INSERT INTO PARTS VALUES(20004,'Mobile','Green');
INSERT INTO PARTS VALUES(20005,'Charger','Black');
SELECT * FROM PARTS;
```



	pid	pname	color
▶	20001	Book	Red
	20002	Pen	Red
	20003	Pencil	Green
	20004	Mobile	Green
	20005	Charger	Black
*	NULL	NULL	NULL

```
INSERT INTO CATALOG VALUES(10001,20001,10);
INSERT INTO CATALOG VALUES(10001,20002,10);
INSERT INTO CATALOG VALUES(10001,20003,30);
INSERT INTO CATALOG VALUES(10001,20004,10);
INSERT INTO CATALOG VALUES(10001,20005,10);
INSERT INTO CATALOG VALUES(10002,20001,10);
INSERT INTO CATALOG VALUES(10002,20002,20);
INSERT INTO CATALOG VALUES(10003,20003,30);
INSERT INTO CATALOG VALUES(10004,20003,40);
SELECT * FROM CATALOG;
```

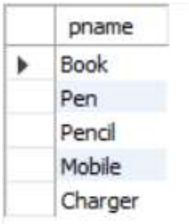


sid	pid	cost
10001	20001	10
10001	20002	10
10001	20003	30
10001	20004	10
10001	20005	10
10002	20001	10
10002	20002	20
10003	20003	30
10004	20003	40

Queries:

- **Find the pnames of parts for which there is some supplier.**

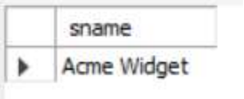
```
SELECT DISTINCT p.pname FROM PARTS p WHERE p.pid IN (SELECT pid FROM
CATALOG c,SUPPLIER s WHERE s.sid=c.sid);
```



pname
Book
Pen
Pencil
Mobile
Charger

- **Find the snames of suppliers who supply every part.**

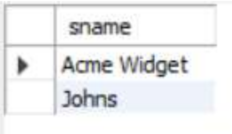
```
SELECT sname FROM SUPPLIER WHERE NOT EXISTS (SELECT pid FROM PARTS
WHERE pid NOT IN (SELECT pid FROM CATALOG WHERE
SUPPLIER.sid=CATALOG.sid));
```



sname
Acme Widget

- **Find the snames of suppliers who supply every red part.**

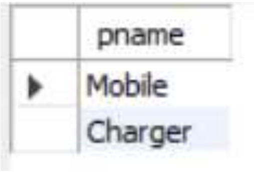
```
SELECT sname FROM SUPPLIER WHERE EXISTS (SELECT pid FROM CATALOG
WHERE pid IN (SELECT pid FROM PARTS WHERE PARTS.color='red') AND
CATALOG.sid=SUPPLIER.sid);
```



sname
Acme Widget
Johns

- **Find the pnames of parts supplied by Acme Widget Suppliers and by no one else.**

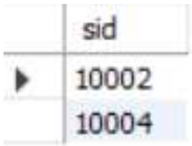
  SELECT pname FROM PARTS WHERE pid IN (SELECT pid FROM CATALOG WHERE sid=10001) AND pid NOT IN (SELECT pid FROM CATALOG WHERE sid!=10001);



pname
Mobile
Charger

- **Find the sids of suppliers who charge more for some part than the average cost of that part (averaged over all the suppliers who supply that part).**

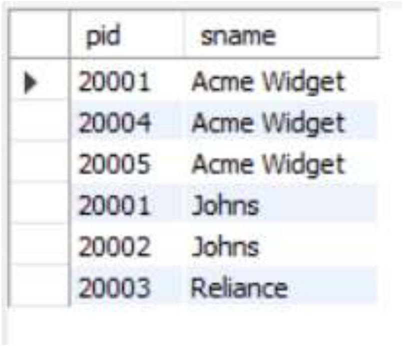
  SELECT DISTINCT c1.sid FROM CATALOG c1 WHERE c1.cost>(SELECT AVG(c2.cost) FROM CATALOG c2 WHERE c2.pid=c1.pid);



sid
10002
10004

- **For each part, find the sname of the supplier who charges the most for that part.**

  SELECT p.pid,s.sname FROM PARTS p JOIN CATALOG c ON p.pid=c.pid JOIN SUPPLIER s ON c.sid=s.sid WHERE c.cost=(SELECT MAX(cost) FROM CATALOG WHERE p.pid=pid);



pid	sname
20001	Acme Widget
20004	Acme Widget
20005	Acme Widget
20001	Johns
20002	Johns
20003	Reliance

Program 8

NoSQL Student Database

Question:

Perform the following DB operations using MongoDB.

i. Create a database “Student” with the following attributesRollno, Age, ContactNo, Email-Id.

ii. Insert appropriate values.

iii. Write query to update Email-Id of a student with rollno 10.

iv. Replace the student name from “ABC” to “FEM” of rollno 11.

v. Export the created table into local file system.

vi. Drop the table.

vii. Import a given csv dataset from local file system into mongodb collection.

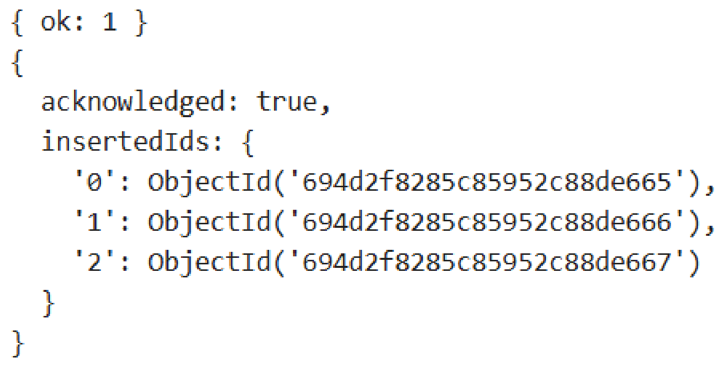
Queries:

- **Create a database “Student” with the following attributes Rollno, Age, ContactNo, Email-Id.**

```
USE Student
db.createCollection("student")
```

- **Insert appropriate values.**

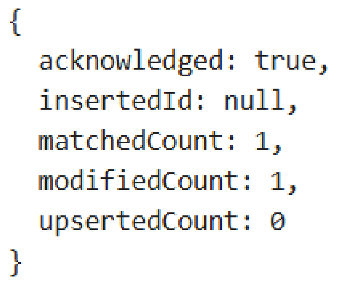
```
db.student.insertMany([
  { Rollno: 10, Age: 20, ContactNo: "9876543210", EmailId: "abc10@gmail.com", Name: "ABC" },
  { Rollno: 11, Age: 21, ContactNo: "9876543211", EmailId: "abc11@gmail.com", Name: "ABC" },
  { Rollno: 12, Age: 22, ContactNo: "9876543212", EmailId: "abc12@gmail.com", Name: "XYZ" }
])
```



```
{ ok: 1 }
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('694d2f8285c85952c88de665'),
    '1': ObjectId('694d2f8285c85952c88de666'),
    '2': ObjectId('694d2f8285c85952c88de667')
  }
}
```

- **Write query to update Email-Id of a student with rollno 10.**

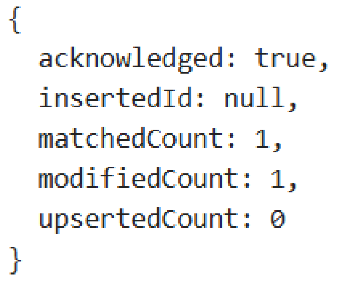
```
db.student.updateOne(
 { Rollno: 10 },
 { $set: { EmailId: "updated10@gmail.com" } }
 )
```



```
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

- **Replace the student name from "ABC" to "FEM" of rollno 11.**

```
db.student.updateOne(
 { Rollno: 11, Name: "ABC" },
 { $set: { Name: "FEM" } }
 )
```



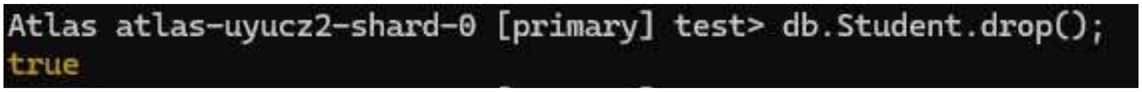
```
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

- **Export the created table into local file system.**

  mongoexport --db=Student --collection=student --out=student.json

- **Drop the table.**

  db.student.drop()

```
Atlas atlas-uyucz2-shard-0 [primary] test> db.Student.drop();
true
```

- **Import a given csv dataset from local file system into mongodb collection.**

  mongoimport --db=Student --collection=student --type=csv --headerline --file=student.csv

Program 9

NoSQL Customer Database

Question:

Perform the following DB operations using MongoDB.

i. Create a collection by name Customers with the following attributes. Cust_id, Acc_Bal, Acc_Type

ii. Insert at least 5 values into the table.

iii. Write a query to display those records whose total account balance is greater than 1200 of account type ‘Z’ for each customer_id.

iv. Determine Minimum and Maximum account balance for each customer_id.

v. Export the created collection into local file system.

vi. Drop the table.

vii. Import a given csv dataset from local file system into mongodb collection.

Queries:

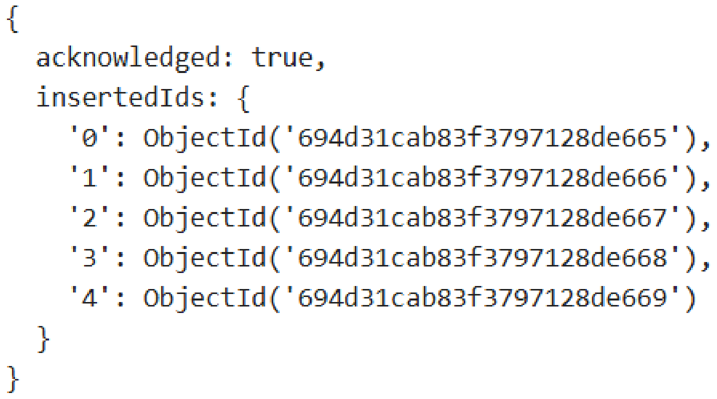
- **Create a collection by name Customers with the following attributes: Cust_id, Acc_Bal, Acc_Type**

```
use BankDB
db.createCollection("Customers")
```

- **Insert at least 5 values into the table.**

```
db.Customers.insertMany([
  { Cust_id: 1, Acc_Bal: 1500, Acc_Type: "Z" },
  { Cust_id: 2, Acc_Bal: 800,  Acc_Type: "X" },
  { Cust_id: 3, Acc_Bal: 2000, Acc_Type: "Z" },
  { Cust_id: 4, Acc_Bal: 1200, Acc_Type: "Y" },
  { Cust_id: 5, Acc_Bal: 2500, Acc_Type: "Z" }
```

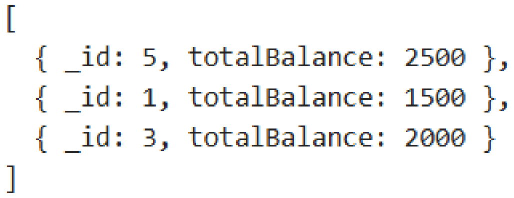
])



```
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('694d31cab83f3797128de665'),
    '1': ObjectId('694d31cab83f3797128de666'),
    '2': ObjectId('694d31cab83f3797128de667'),
    '3': ObjectId('694d31cab83f3797128de668'),
    '4': ObjectId('694d31cab83f3797128de669')
  }
}
```

- **Write a query to display those records whose total account balance is greater than 1200 of account type ‘Z’ for each customer_id.**

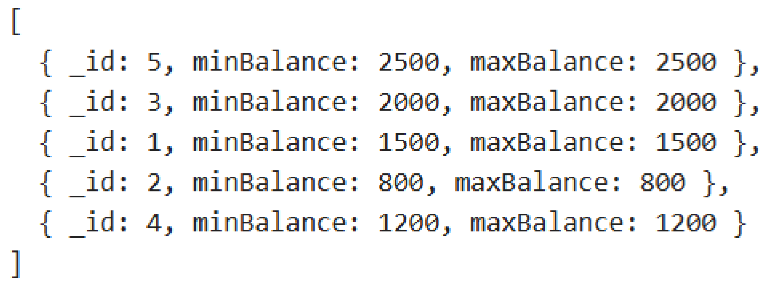
```
db.Customers.aggregate([
 { $match: { Acc_Type: "Z" } },
 { $group: { _id: "$Cust_id", totalBalance: { $sum: "$Acc_Bal" } } },
 { $match: { totalBalance: { $gt: 1200 } } }
 ])
```



```
[
  { _id: 5, totalBalance: 2500 },
  { _id: 1, totalBalance: 1500 },
  { _id: 3, totalBalance: 2000 }
]
```

- **Determine Minimum and Maximum account balance for each customer_id.**

```
db.Customers.aggregate([
 { $group: {
    _id: "$Cust_id",
    minBalance: { $min: "$Acc_Bal" },
    maxBalance: { $max: "$Acc_Bal" }
 }}
 ])
```



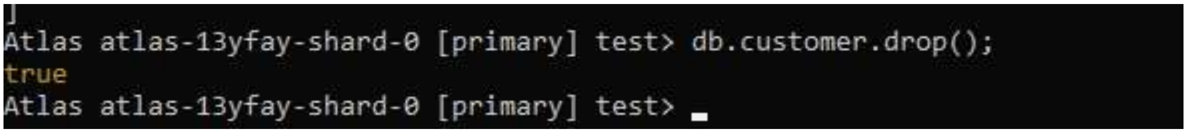
```
[
  { _id: 5, minBalance: 2500, maxBalance: 2500 },
  { _id: 3, minBalance: 2000, maxBalance: 2000 },
  { _id: 1, minBalance: 1500, maxBalance: 1500 },
  { _id: 2, minBalance: 800, maxBalance: 800 },
  { _id: 4, minBalance: 1200, maxBalance: 1200 }
]
```

- **Export the created collection into local file system.**

  mongoexport --db=BankDB --collection=Customers --out=customers.json

- **Drop the table.**

  db.Customers.drop()



```
]
Atlas atlas-13yfay-shard-0 [primary] test> db.customer.drop();
true
Atlas atlas-13yfay-shard-0 [primary] test> _
```

- **Import a given csv dataset from local file system into mongodb collection.**

  mongoimport --db=BankDB --collection=Customers --type=csv --headerline --file=customers.csv

Program 10

NoSQL Restaurant Database

Question:

Perform the following DB operations using MongoDB.

i. Write NoSQL Queries on “Restaurant” collection.

ii. Write a MongoDB query to display all the documents in the collection restaurants.

iii. Write a MongoDB query to arrange the name of the restaurants in descending along with all the columns.

iv. Write a MongoDB query to find the restaurant Id, name, town and cuisine for those restaurants which achieved a score which is not more than 10.

v. Write a MongoDB query to find the average score for each restaurant.

vi. Write a MongoDB query to find the name and address of the restaurants that have a zipcode that starts with '10'.

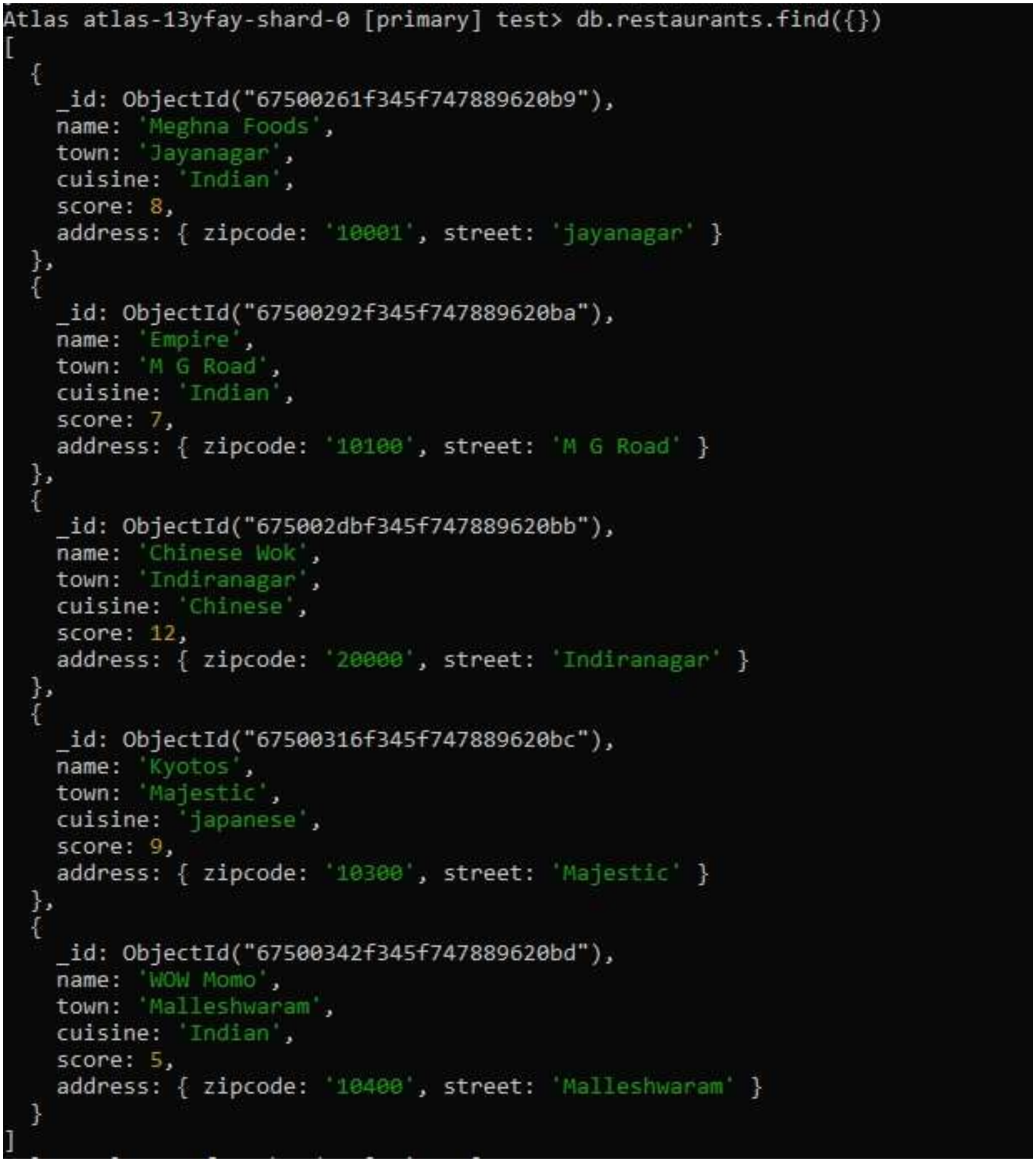
Queries:

- **Write NoSQL Queries on “Restaurant” collection.**

```
db.createCollection("Customers")
```

- **Write a MongoDB query to display all the documents in the collection restaurants.**

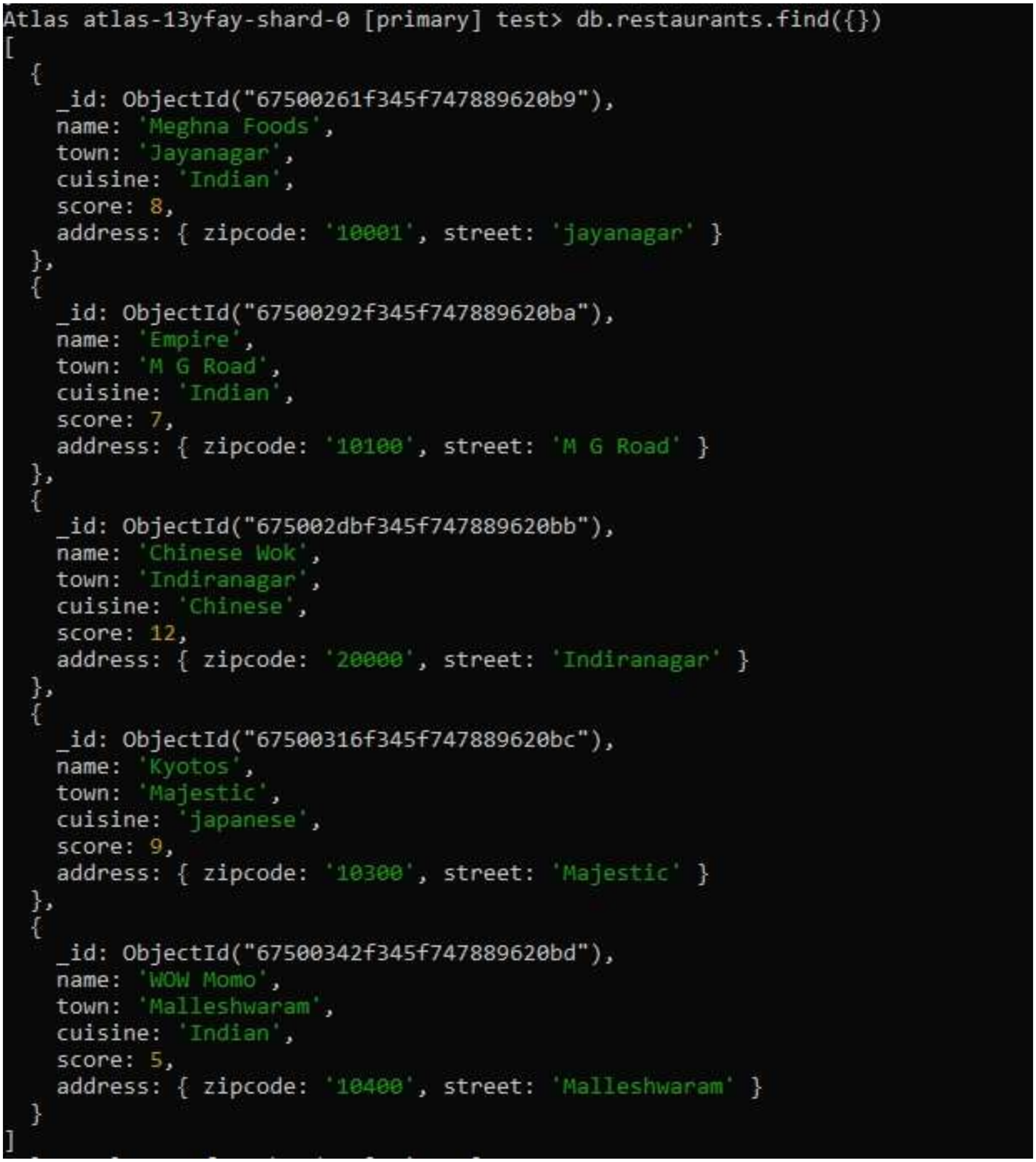
```
db.restaurants.find({})
```



```
Atlas atlas-13yfay-shard-0 [primary] test> db.restaurants.find({})
[
  {
    _id: ObjectId("67500261f345f747889620b9"),
    name: 'Meghna Foods',
    town: 'Jayanagar',
    cuisine: 'Indian',
    score: 8,
    address: { zipcode: '10001', street: 'jayanagar' }
  },
  {
    _id: ObjectId("67500292f345f747889620ba"),
    name: 'Empire',
    town: 'M G Road',
    cuisine: 'Indian',
    score: 7,
    address: { zipcode: '10100', street: 'M G Road' }
  },
  {
    _id: ObjectId("675002dbf345f747889620bb"),
    name: 'Chinese Wok',
    town: 'Indiranagar',
    cuisine: 'Chinese',
    score: 12,
    address: { zipcode: '20000', street: 'Indiranagar' }
  },
  {
    _id: ObjectId("67500316f345f747889620bc"),
    name: 'Kyotos',
    town: 'Majestic',
    cuisine: 'japanese',
    score: 9,
    address: { zipcode: '10300', street: 'Majestic' }
  },
  {
    _id: ObjectId("67500342f345f747889620bd"),
    name: 'WOW Momo',
    town: 'Malleshwaram',
    cuisine: 'Indian',
    score: 5,
    address: { zipcode: '10400', street: 'Malleshwaram' }
  }
]
```

- **Write a MongoDB query to arrange the name of the restaurants in descending along with all the columns.**

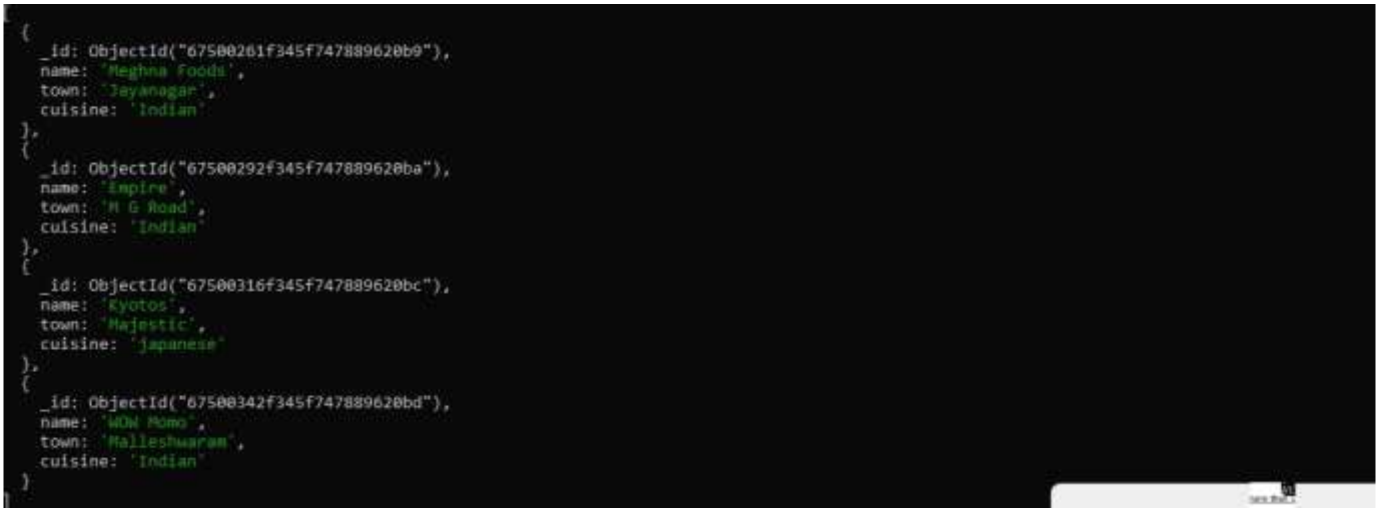
  db.restaurants.find().sort({ name: -1 })



```
Atlas atlas-13yfay-shard-0 [primary] test> db.restaurants.find({})
[
  {
    _id: ObjectId("67500261f345f747889620b9"),
    name: 'Meghna Foods',
    town: 'Jayanagar',
    cuisine: 'Indian',
    score: 8,
    address: { zipcode: '10001', street: 'jayanagar' }
  },
  {
    _id: ObjectId("67500292f345f747889620ba"),
    name: 'Empire',
    town: 'M G Road',
    cuisine: 'Indian',
    score: 7,
    address: { zipcode: '10100', street: 'M G Road' }
  },
  {
    _id: ObjectId("675002dbf345f747889620bb"),
    name: 'Chinese Wok',
    town: 'Indiranagar',
    cuisine: 'Chinese',
    score: 12,
    address: { zipcode: '20000', street: 'Indiranagar' }
  },
  {
    _id: ObjectId("67500316f345f747889620bc"),
    name: 'Kyotos',
    town: 'Majestic',
    cuisine: 'japanese',
    score: 9,
    address: { zipcode: '10300', street: 'Majestic' }
  },
  {
    _id: ObjectId("67500342f345f747889620bd"),
    name: 'WOW Momo',
    town: 'Malleshwaram',
    cuisine: 'Indian',
    score: 5,
    address: { zipcode: '10400', street: 'Malleshwaram' }
  }
]
```

- **Write a MongoDB query to find the restaurant Id, name, town and cuisine for those restaurants which achieved a score which is not more than 10.**

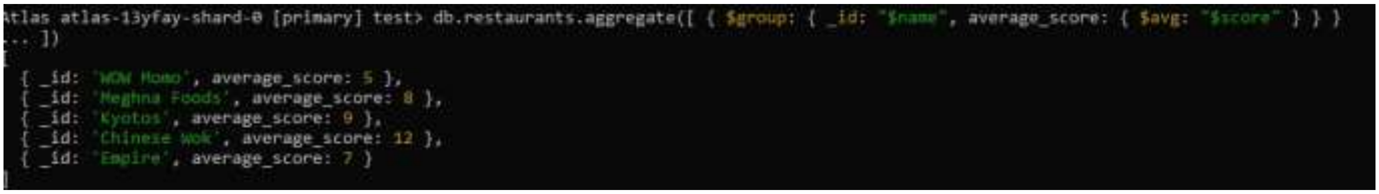
```
db.restaurants.find(
 { "grades.score": { $lte: 10 } },
 { restaurant_id: 1, name: 1, town: 1, cuisine: 1, _id: 0 }
 )
```



```
[
  {
    _id: ObjectId("67500261f345f747889620b9"),
    name: 'Meghna Foods',
    town: 'Jayanagar',
    cuisine: 'Indian'
  },
  {
    _id: ObjectId("67500292f345f747889620ba"),
    name: 'Empire',
    town: 'M G Road',
    cuisine: 'Indian'
  },
  {
    _id: ObjectId("67500316f345f747889620bc"),
    name: 'Kyotos',
    town: 'Majestic',
    cuisine: 'japanese'
  },
  {
    _id: ObjectId("67500342f345f747889620bd"),
    name: 'WOW Momo',
    town: 'Malleshwaram',
    cuisine: 'Indian'
  }
]
```

- **Write a MongoDB query to find the average score for each restaurant.**

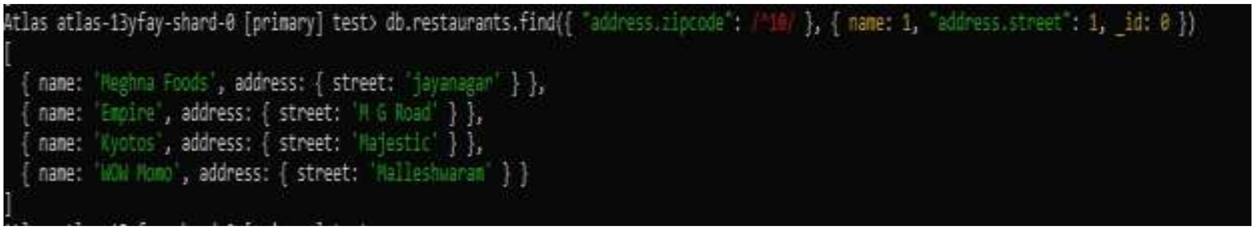
```
db.restaurants.aggregate([
 { $unwind: "$grades" },
 { $group: {
    _id: "$restaurant_id",
    name: { $first: "$name" },
    avgScore: { $avg: "$grades.score" }
 }}
 ])
```



```
Atlas atlas-13yfay-shard-0 [primary] test> db.restaurants.aggregate([ { $group: { _id: "$name", average_score: { $avg: "$score" } } }
... ])
[
  { _id: 'WOW Momo', average_score: 5 },
  { _id: 'Meghna Foods', average_score: 8 },
  { _id: 'Kyotos', average_score: 9 },
  { _id: 'Chinese Wok', average_score: 12 },
  { _id: 'Empire', average_score: 7 }
]
```

- **Write a MongoDB query to find the name and address of the restaurants that have a zipcode that starts with '10'.**

```
db.restaurants.find(
  { "address.zipcode": { $regex: /^10/ } },
  { name: 1, "address": 1, _id: 0 }
  )
```



```
Atlas atlas-13yfay-shard-0 [primary] test> db.restaurants.find({ "address.zipcode": /^10/ }, { name: 1, "address.street": 1, _id: 0 })
[
  { name: 'Meghna Foods', address: { street: 'jayanagar' } },
  { name: 'Empire', address: { street: 'M G Road' } },
  { name: 'Kyotos', address: { street: 'Majestic' } },
  { name: 'WOW Momo', address: { street: 'Malleshwaram' } }
]
```