VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.

LAB REPORT
on

Database Management Systems (23CS3PCDBM)

Submitted by

Parv D Parekh (1BM24CS198)

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

B. M. S. College of Engineering,
Bull Temple Road, Bangalore 560019
(Affiliated To Visvesvaraya Technological University, Belgaum)
Department of Computer Science and Engineering

<u>CERTIFICATE</u>

This is to certify that the Lab work entitled “Database Management Systems (23CS3PCDBM)” carried out by **Parv D Parekh(1BM24CS198),** 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 during the year 2022. 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.

Mrs. Rashmi H Assistant Professor Department of CSE, BMSCE	Dr. Kavitha Sooda Professor & HOD Department of CSE, BMSCE

Index

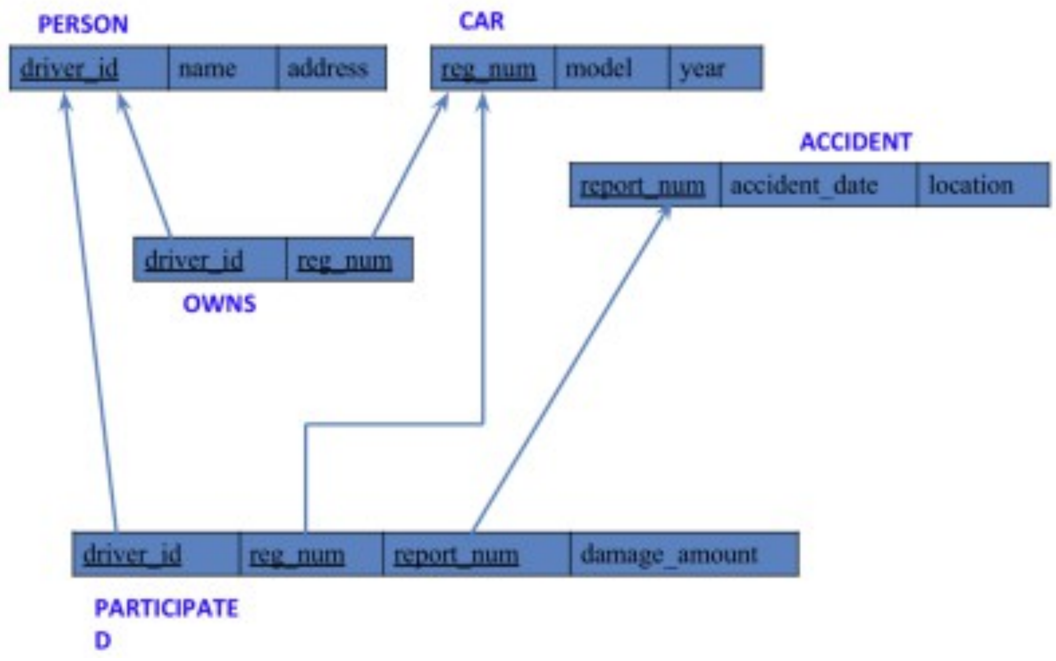
Insurance Database

Question

(Week 1)

- 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.
- Enter at least five tuples for each relation
- Display Accident date and location
- 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.
- Add a new accident to the database.
- To Do
- Display Accident date and location
- Display driver id who did accident with damage amount greater than or equal to Rs.25000

Schema Diagram



Create database

create database insurance_202;

use insurance_202;

Create table

create table person_202

(

driver_id varchar(10),

name varchar(20),

address varchar(30),

primary key(driver_id)

);

create table car_202

(reg_num varchar(10),

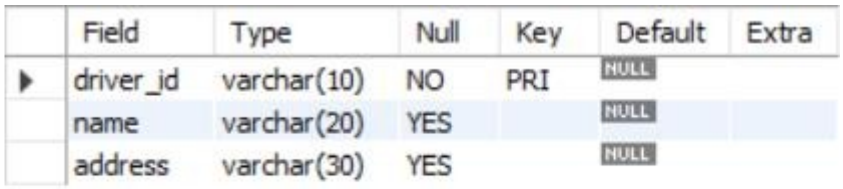
model varchar(10),

year int,

```
primary key(reg_num));

create table accident_202 (
report_num int,

accident_date date,

location varchar(20),

primary key(report_num)

);

create table owns_202

(

driver_id varchar(10),

reg_num varchar(10),

primary key(driver_id,reg_num),

foreign key(driver_id) references person_202(driver_id),

foreign key(reg_num) references car_202(reg_num)

);

create table participated_202

(

driver_id varchar(10),

reg_num varchar(10),

report_num int,

damage_amount int,

primary key(driver_id,reg_num,report_num),

foreign key(driver_id) references person_202(driver_id),

foreign key(reg_num) references car_202(reg_num),

foreign key(report_num) references accident_202(report_num)

);
```

Structure of the table

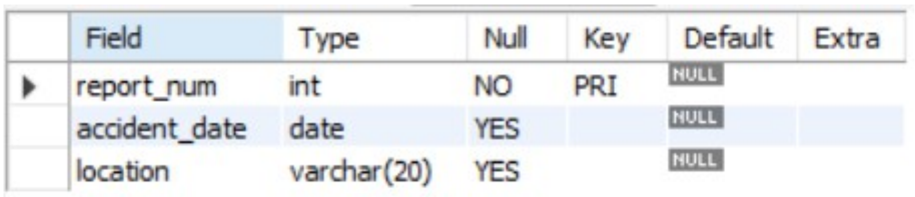
desc person_202;



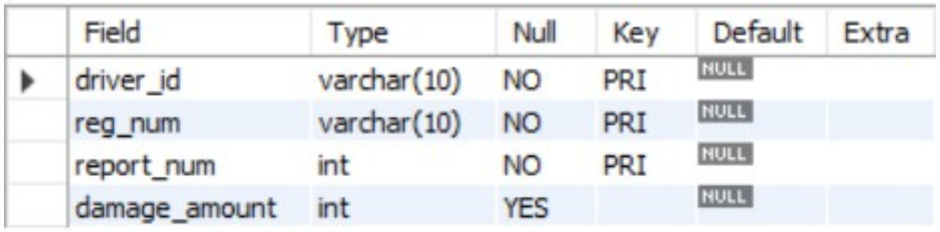
	Field	Type	Null	Key	Default	Extra
▶	driver_id	varchar(10)	NO	PRI	NULL	
	name	varchar(20)	YES		NULL	
	address	varchar(30)	YES		NULL	

desc accident_202;

desc participated_202;



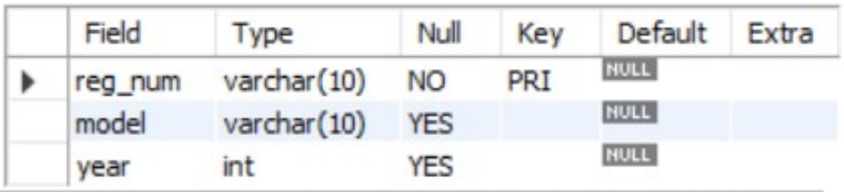
	Field	Type	Null	Key	Default	Extra
▶	report_num	int	NO	PRI	NULL	
	accident_date	date	YES		NULL	
	location	varchar(20)	YES		NULL	



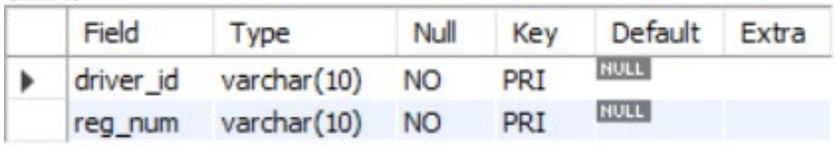
	Field	Type	Null	Key	Default	Extra
▶	driver_id	varchar(10)	NO	PRI	NULL	
	reg_num	varchar(10)	NO	PRI	NULL	
	report_num	int	NO	PRI	NULL	
	damage_amount	int	YES		NULL	

desc car_202;

desc owns_202;



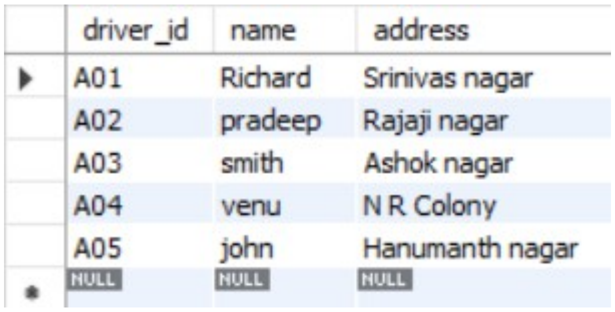
	Field	Type	Null	Key	Default	Extra
▶	reg_num	varchar(10)	NO	PRI	NULL	
	model	varchar(10)	YES		NULL	
	year	int	YES		NULL	



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

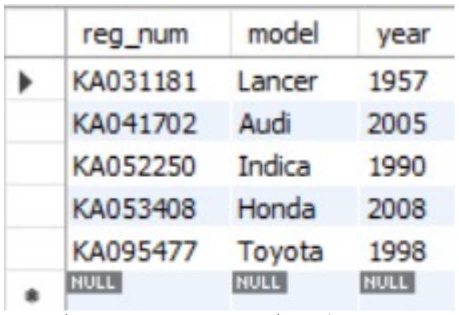
Inserting Values to the table

```
insert into person_202 values('A01','Richard','Srinivas nagar');
insert into person_202 values('A02','pradeep','Rajaji nagar');
insert into person_202 values('A03','smith','Ashok nagar');
insert into person_202 values('A04','venu','N R Colony');
insert into person_202 values('A05','john','Hanumanth nagar');
select * from person_202;
```



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
NULL	NULL	NULL

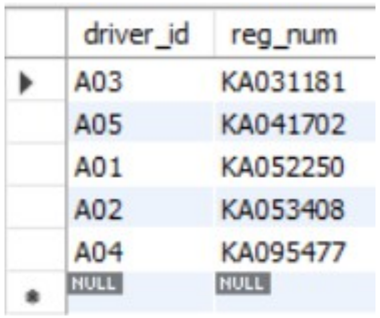
```
insert into car_202 values('KA052250','Indica',1990);
insert into car_202 values('KA031181','Lancer',1957);
insert into car_202 values('KA095477','Toyota',1998);
insert into car_202 values('KA053408','Honda',2008);
insert into car_202 values('KA041702','Audi',2005);
select * from car_202;
```



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

```
insert into owns_202 values('A01','KA052250');
insert into owns_202 values('A02','KA053408');
insert into owns_202 values('A03','KA031181');
insert into owns_202 values('A04','KA095477');
insert into owns_202 values('A05','KA041702');
```

select * from owns_202;



	driver_id	reg_num
▶	A03	KA031181
	A05	KA041702
	A01	KA052250
	A02	KA053408
	A04	KA095477
*	NULL	NULL

insert into accident_202 values(11,'2003-01-01','Mysore road');

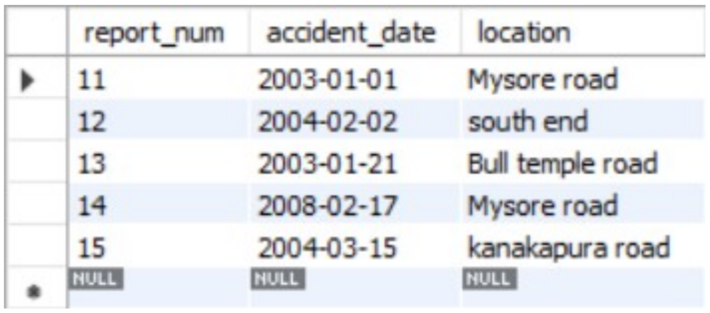
insert into accident_202 values(12,'2004-02-02','south end');

insert into accident_202 values(13,'2003-01-21','Bull temple road');

insert into accident_202 values(14,'2008-02-17','Mysore road');

insert into accident_202 values(15,'2004-03-15','kanakapura road');

select * from accident_202;



	report_num	accident_date	location
▶	11	2003-01-01	Mysore road
	12	2004-02-02	south end
	13	2003-01-21	Bull temple road
	14	2008-02-17	Mysore road
	15	2004-03-15	kanakapura road
*	NULL	NULL	NULL

insert into participated_202 values('A01','KA052250',11,10000);

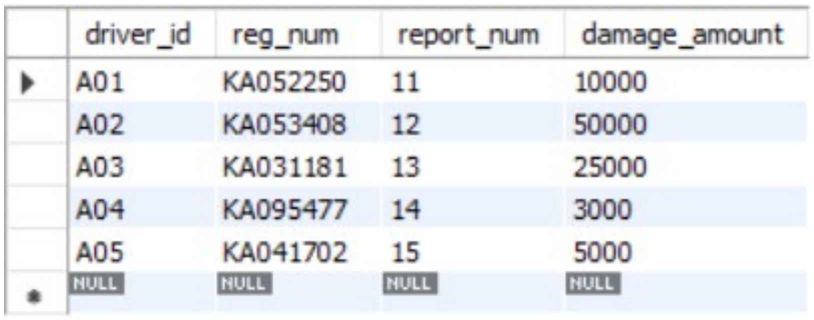
insert into participated_202 values('A02','KA053408',12,50000);

insert into participated_202 values('A03','KA031181',13,25000);

insert into participated_202 values('A04','KA095477',14,3000);

insert into participated_202 values('A05','KA041702',15,5000);

select * from participated_202;

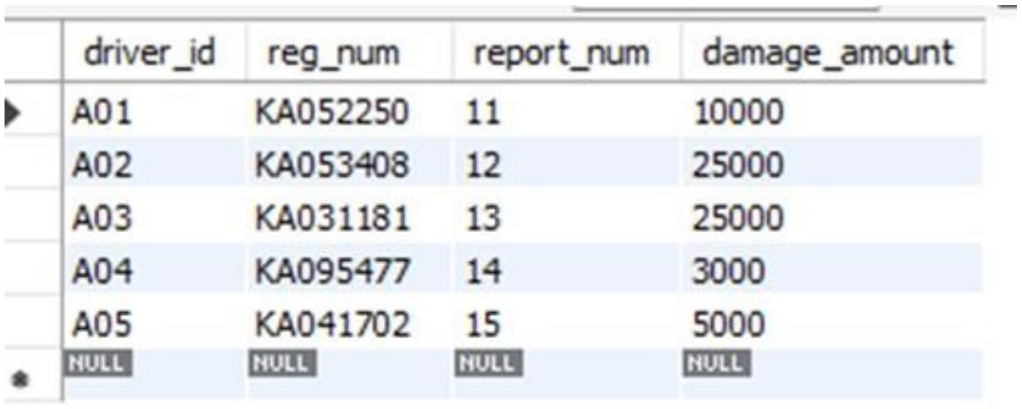


	driver_id	reg_num	report_num	damage_amount
▶	A01	KA052250	11	10000
	A02	KA053408	12	50000
	A03	KA031181	13	25000
	A04	KA095477	14	3000
	A05	KA041702	15	5000
*	NULL	NULL	NULL	NULL

Queries

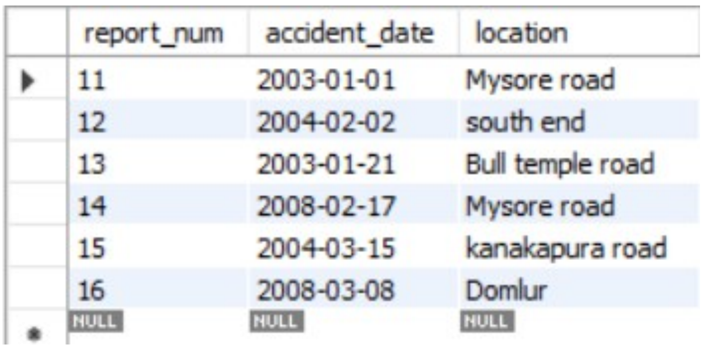
- **Update the damage amount to 25000 for the car with a specific reg-num (example 'KA053408') for which the accident report number was 12.**

  update participated_202 set damage_amount=25000 where reg_num='KA053408' and report_num=12;



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

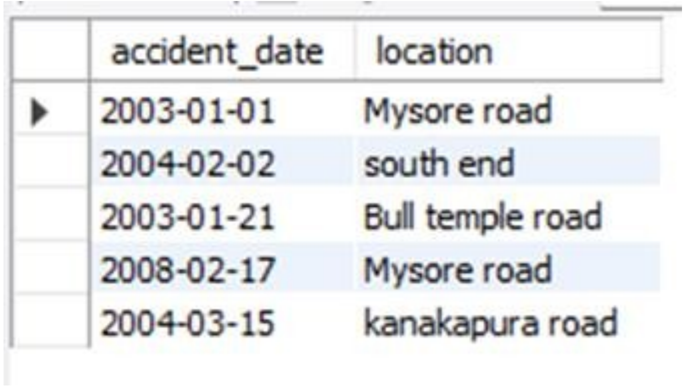
- **Add a new accident to the database.**
  insert into accident_202 values(16,'2008-03-08',"Domlur");
  select * from accident_202;



	report_num	accident_date	location
▶	11	2003-01-01	Mysore road
	12	2004-02-02	south end
	13	2003-01-21	Bull temple road
	14	2008-02-17	Mysore road
	15	2004-03-15	kanakapura road
	16	2008-03-08	Domlur
*	NULL	NULL	NULL

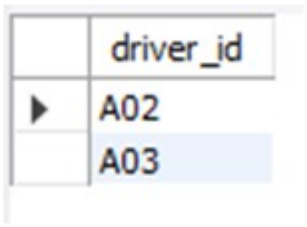
TO DO

- **Display Accident date and location.**
  select accident_date,location from accident_202;



	accident_date	location
▶	2003-01-01	Mysore road
	2004-02-02	south end
	2003-01-21	Bull temple road
	2008-02-17	Mysore road
	2004-03-15	kanakapura road

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



	driver_id
▶	A02
	A03

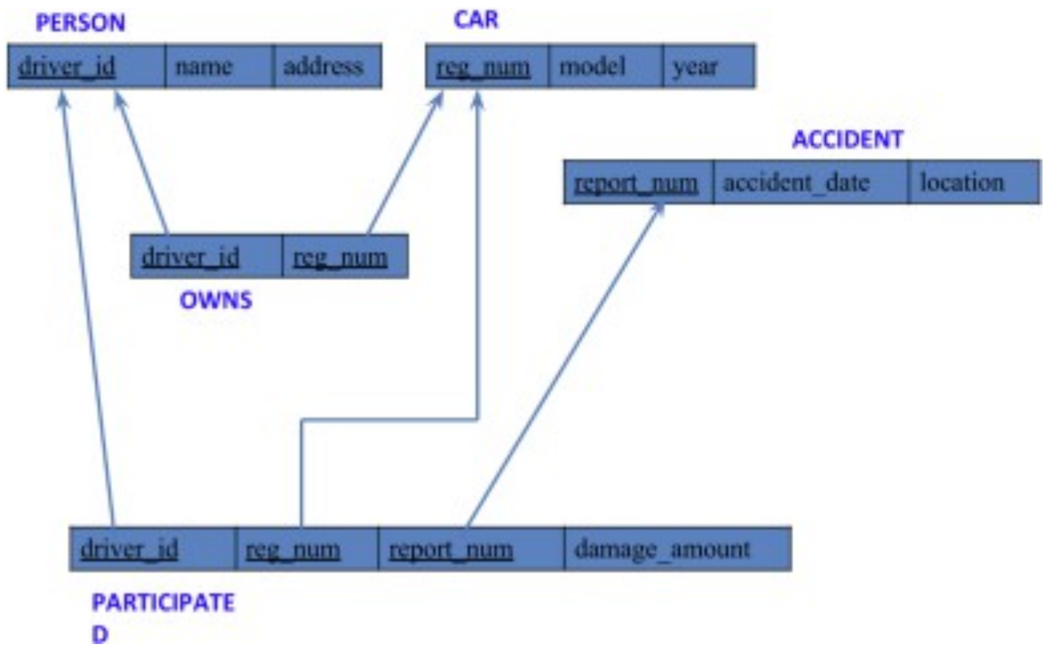
More Queries on Insurance Database

Question

(Week 2)

- 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)
- LIST THE ENTIRE PARTICIPATED RELATION IN THE DESCENDING ORDER OF DAMAGE AMOUNT.
- FIND THE AVERAGE DAMAGE AMOUNT.
- LIST THE NAME OF DRIVERS WHOSE DAMAGE IS GREATER THAN THE AVERAGE DAMAGE AMOUNT.
- FIND MAXIMUM DAMAGE AMOUNT.

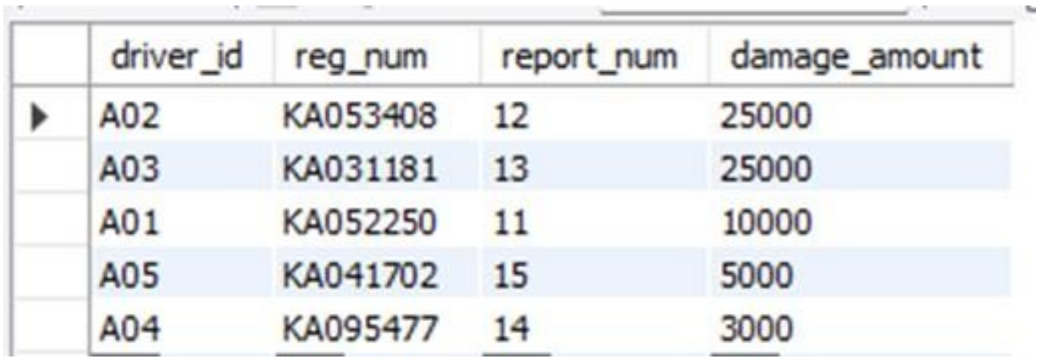
Schema Diagram



Queries

- **LIST THE ENTIRE PARTICIPATED RELATION IN THE DESCENDING ORDER OF DAMAGE AMOUNT.**

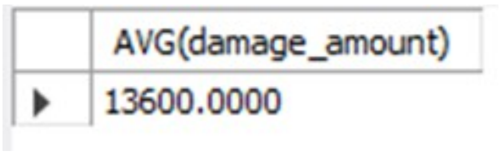
  SELECT * FROM participated_202 ORDER BY damage_amount DESC;



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

- **FIND THE AVERAGE DAMAGE AMOUNT.**

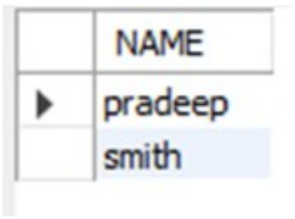
  SELECT AVG(damage_amount) FROM participated_202;



AVG(damage_amount)
13600.0000

- **LIST THE NAME OF DRIVERS WHOSE DAMAGE IS GREATER THAN THE AVERAGE DAMAGE AMOUNT.**

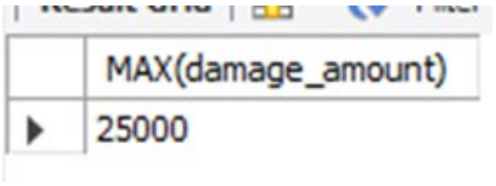
  SELECT NAME FROM person_202 A, participated_202 B WHERE A.driver_id = B.driver_id AND damage_amount > (SELECT AVG(damage_amount) FROM participated_202);



NAME
pradeep
smith

- **FIND MAXIMUM DAMAGE AMOUNT.**

  SELECT MAX(damage_amount) FROM participated_202;



MAX(damage_amount)
25000

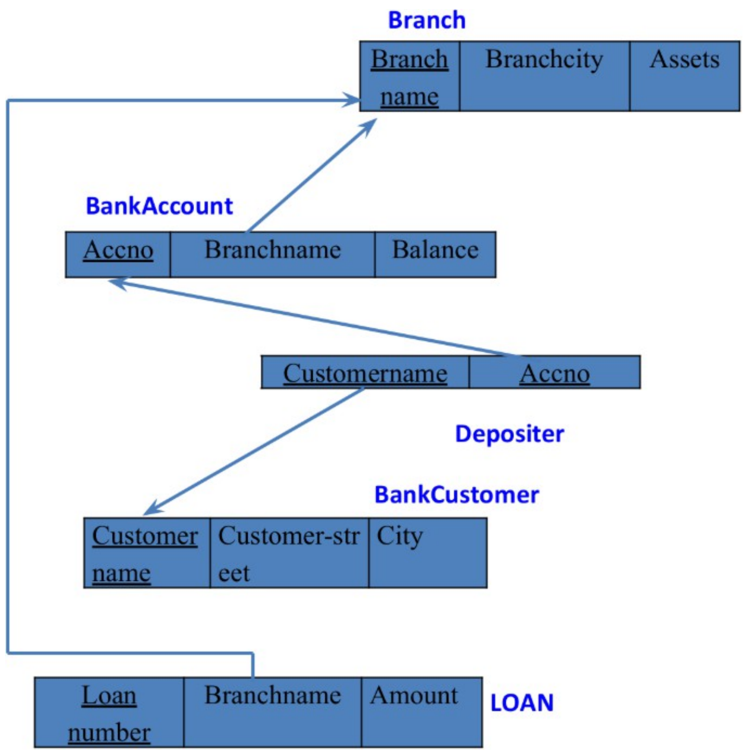
Bank Database

Question

(Week 3)

- 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)
- Create the above tables by properly specifying the primary keys and the foreign keys.
- Enter at least five tuples for each relation.
- Display the branch name and assets from all branches in lakhs of rupees and rename the assets column to 'assets in lakhs'.
- Find all the customers who have at least two accounts at the same branch (ex.SBI_ResidencyRoad).
- 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 bank_202;
use bank_202;
```

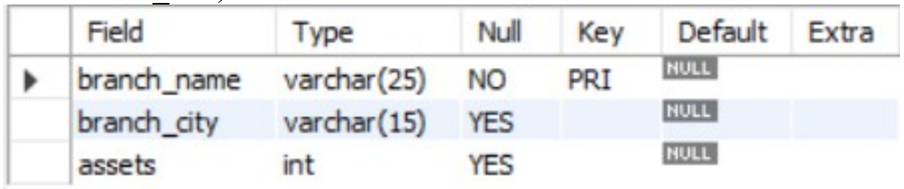
Create table

```
 create table branch_202
(
branch_name varchar(25),
branch_city varchar(15),
assets int,
primary key(branch_name)
);
create table bankAccount_202
(
accno int,
branch_name varchar(25),
balance int,
primary key(accno),
foreign key(branch_name) references branch_202(branch_name)
);
create table bankCustomer_202
(
customer_name varchar(10),
customer_street varchar(25),
customer_city varchar(15),
primary key(customer_name)
);
```

```
create table depositer_202
(
customer_name varchar(10),
accno int,
foreign key(customer_name) references bankCustomer_202(customer_name),
foreign key(accno) references bankAccount_202(accno)
);
create table loan_202
(
loan_number int,
branch_name varchar(25),
amount int,
primary key(loan_number),
foreign key(branch_name) references branch_202(branch_name)
);
```

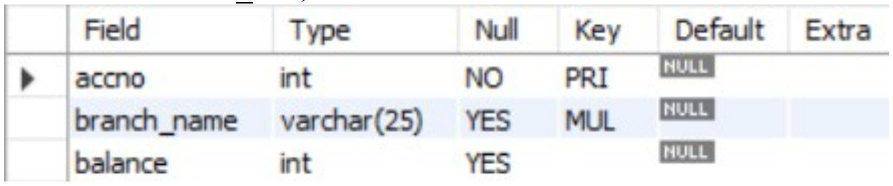
Structure of the table

desc branch_202;



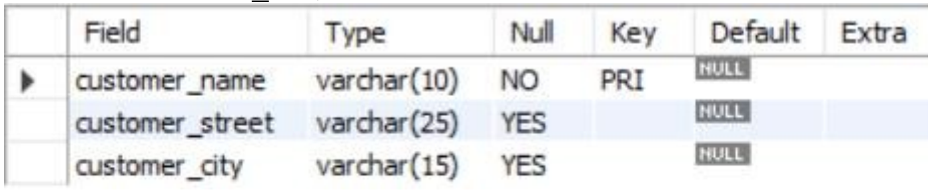
	Field	Type	Null	Key	Default	Extra
▶	branch_name	varchar(25)	NO	PRI	NULL	
	branch_city	varchar(15)	YES		NULL	
	assets	int	YES		NULL	

desc bankAccount_202;



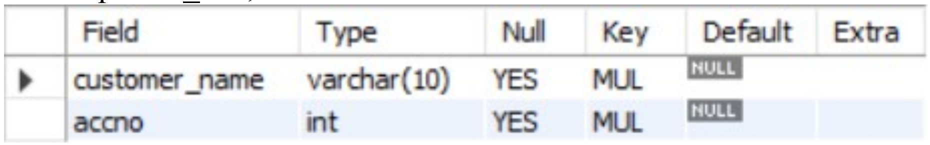
	Field	Type	Null	Key	Default	Extra
▶	accno	int	NO	PRI	NULL	
	branch_name	varchar(25)	YES	MUL	NULL	
	balance	int	YES		NULL	

desc bankCustomer_202;



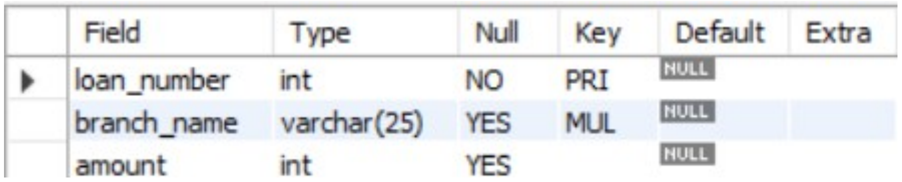
	Field	Type	Null	Key	Default	Extra
▶	customer_name	varchar(10)	NO	PRI	NULL	
	customer_street	varchar(25)	YES		NULL	
	customer_city	varchar(15)	YES		NULL	

desc depositer_202;



	Field	Type	Null	Key	Default	Extra
▶	customer_name	varchar(10)	YES	MUL	NULL	
	accno	int	YES	MUL	NULL	

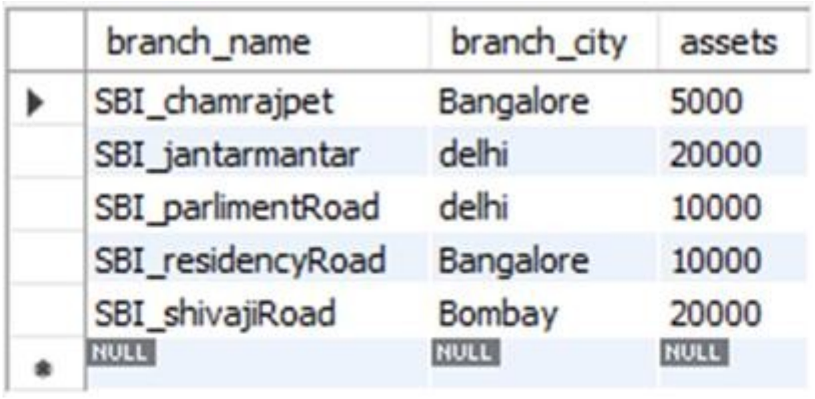
desc loan_202;



	Field	Type	Null	Key	Default	Extra
▶	loan_number	int	NO	PRI	NULL	
	branch_name	varchar(25)	YES	MUL	NULL	
	amount	int	YES		NULL	

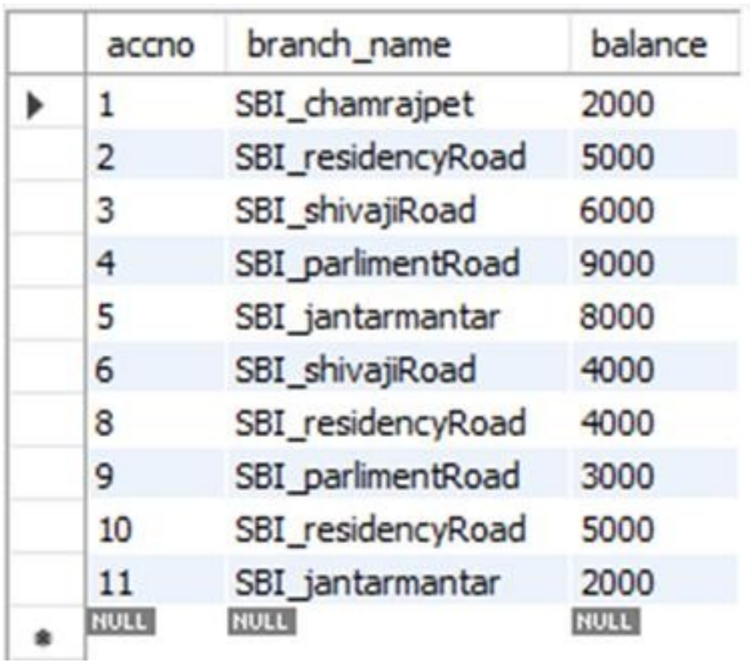
Inserting Values to the table

```
insert into branch_202 values('SBI_chamrajpet','Bangalore',5000);
insert into branch_202 values('SBI_residencyRoad','Bangalore',10000);
insert into branch_202 values('SBI_shivajiRoad','Bombay',20000);
insert into branch_202 values('SBI_parlimentRoad','delhi',10000);
insert into branch_202 values('SBI_jantarmantar','delhi',20000);
select * from branch_202;
```



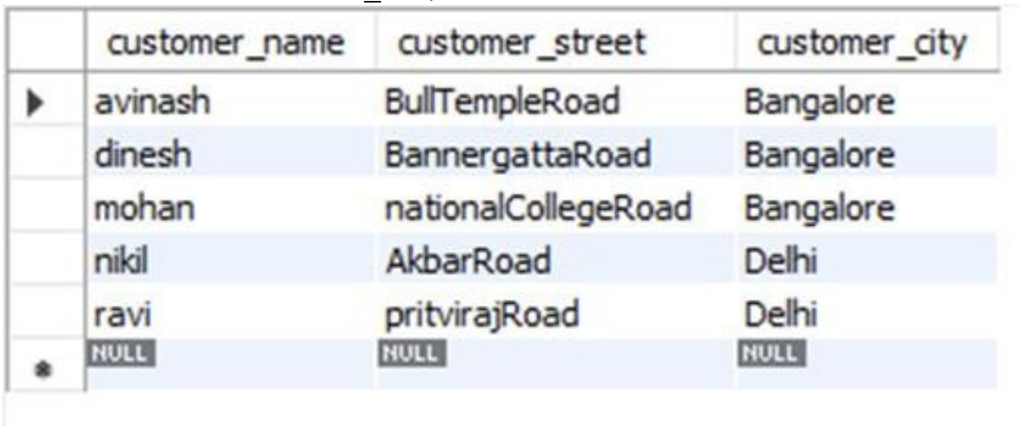
	branch_name	branch_city	assets
▶	SBI_chamrajpet	Bangalore	5000
	SBI_jantarmantar	delhi	20000
	SBI_parlimentRoad	delhi	10000
	SBI_residencyRoad	Bangalore	10000
	SBI_shivajiRoad	Bombay	20000
*	NULL	NULL	NULL

```
insert into bankAccount_202 values(1,'SBI_chamrajpet',2000);
insert into bankAccount_202 values(2,'SBI_residencyRoad',5000);
insert into bankAccount_202 values(3,'SBI_shivajiRoad',6000);
insert into bankAccount_202 values(4,'SBI_parlimentRoad',9000);
insert into bankAccount_202 values(5,'SBI_jantarmantar',8000);
insert into bankAccount_202 values(6,'SBI_shivajiRoad',4000);
insert into bankAccount_202 values(8,'SBI_residencyRoad',4000);
insert into bankAccount_202 values(9,'SBI_parlimentRoad',3000);
insert into bankAccount_202 values(10,'SBI_residencyRoad',5000);
insert into bankAccount_202 values(11,'SBI_jantarmantar',2000);
select * from bankAccount_202;
```



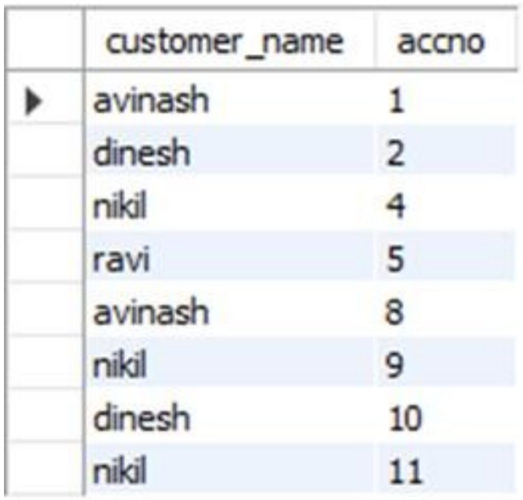
accno	branch_name	balance
1	SBI_chamrajpet	2000
2	SBI_residencyRoad	5000
3	SBI_shivajiRoad	6000
4	SBI_parlimentRoad	9000
5	SBI_jantarmantar	8000
6	SBI_shivajiRoad	4000
8	SBI_residencyRoad	4000
9	SBI_parlimentRoad	3000
10	SBI_residencyRoad	5000
11	SBI_jantarmantar	2000
NULL	NULL	NULL

```
insert into bankCustomer_202 values('avinash','BullTempleRoad','Bangalore');
insert into bankCustomer_202 values('dinesh','BannergattaRoad','Bangalore');
insert into bankCustomer_202 values('mohan','nationalCollegeRoad','Bangalore');
insert into bankCustomer_202 values('nikil','AkbarRoad','Delhi');
insert into bankCustomer_202 values('ravi','pritvirajRoad','Delhi');
select * from bankCustomer_202;
```



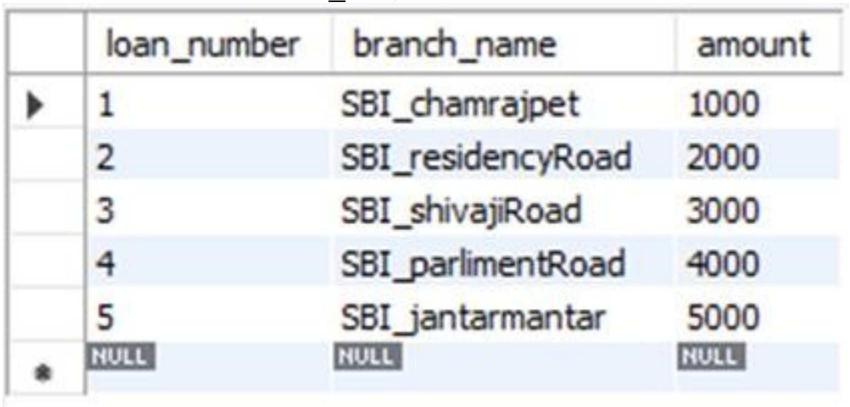
customer_name	customer_street	customer_city
avinash	BullTempleRoad	Bangalore
dinesh	BannergattaRoad	Bangalore
mohan	nationalCollegeRoad	Bangalore
nikil	AkbarRoad	Delhi
ravi	pritvirajRoad	Delhi
NULL	NULL	NULL

```
insert into depositer_202 values('avinash',1);
insert into depositer_202 values('dinesh',2);
insert into depositer_202 values('nikil',4);
insert into depositer_202 values('ravi',5);
insert into depositer_202 values('avinash',8);
insert into depositer_202 values('nikil',9);
insert into depositer_202 values('dinesh',10);
insert into depositer_202 values('nikil',11);
select * from depositer_202;
```



	customer_name	accno
▶	avinash	1
	dinesh	2
	nikil	4
	ravi	5
	avinash	8
	nikil	9
	dinesh	10
	nikil	11

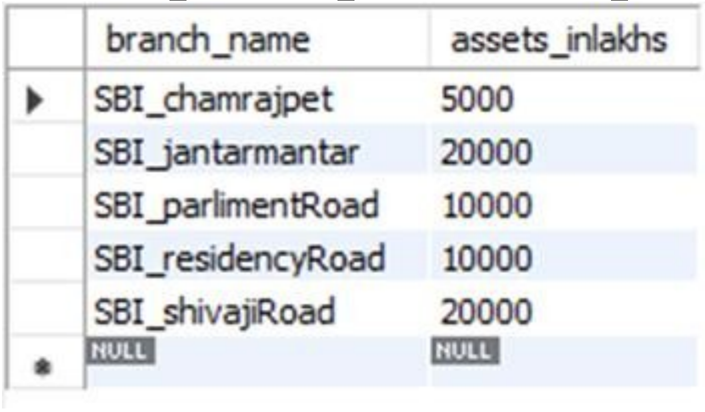
```
insert into loan_202 values(1,'SBI_chamrajpet',1000);
insert into loan_202 values(2,'SBI_residencyRoad',2000);
insert into loan_202 values(3,'SBI_shivajiRoad',3000);
insert into loan_202 values(4,'SBI_parlimentRoad',4000);
insert into loan_202 values(5,'SBI_jantarmantar',5000);
select * from loan_202;
```



	loan_number	branch_name	amount
▶	1	SBI_chamrajpet	1000
	2	SBI_residencyRoad	2000
	3	SBI_shivajiRoad	3000
	4	SBI_parlimentRoad	4000
	5	SBI_jantarmantar	5000
*	NULL	NULL	NULL

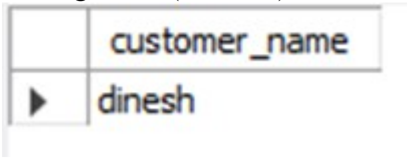
Queries

- **Display the branch name and assets from all branches in lakhs of rupees and rename the assets column to 'assets in lakhs'.**
alter table branch_202 rename column assets to assets_inlakhs;
select branch_name,assets_inlakhs from branch_202;



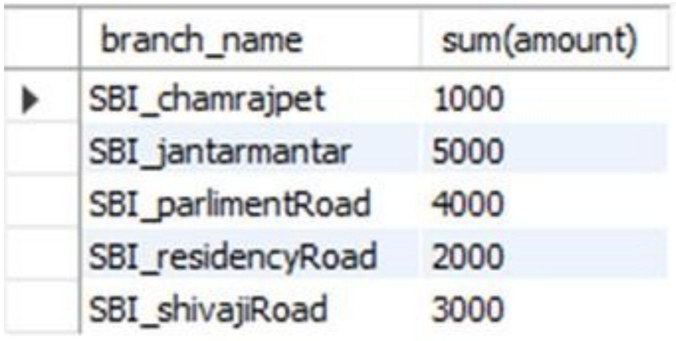
branch_name	assets_inlakhs
SBI_chamrajpet	5000
SBI_jantarmantar	20000
SBI_parlimentRoad	10000
SBI_residencyRoad	10000
SBI_shivajiRoad	20000
NULL	NULL

- **Find all the customers who have at least two accounts at the same branch (ex.SBI_ResidencyRoad).**
select d.customer_name from depositer_202 d,bankAccount_202 b
where b.branch_name='SBI_residencyRoad' and d.accno=b.accno group by d.customer_name
having count(d.accno)>=2;



customer_name
dinesh

- **CREATE A VIEW WHICH GIVES EACH BRANCH THE SUM OF THE AMOUNT OF ALL THE LOANS AT THE BRANCH.**
create view br
as
select branch_name,sum(amount) from loan_202
group by branch_name;
select * from br;



branch_name	sum(amount)
SBI_chamrajpet	1000
SBI_jantarmantar	5000
SBI_parlimentRoad	4000
SBI_residencyRoad	2000
SBI_shivajiRoad	3000

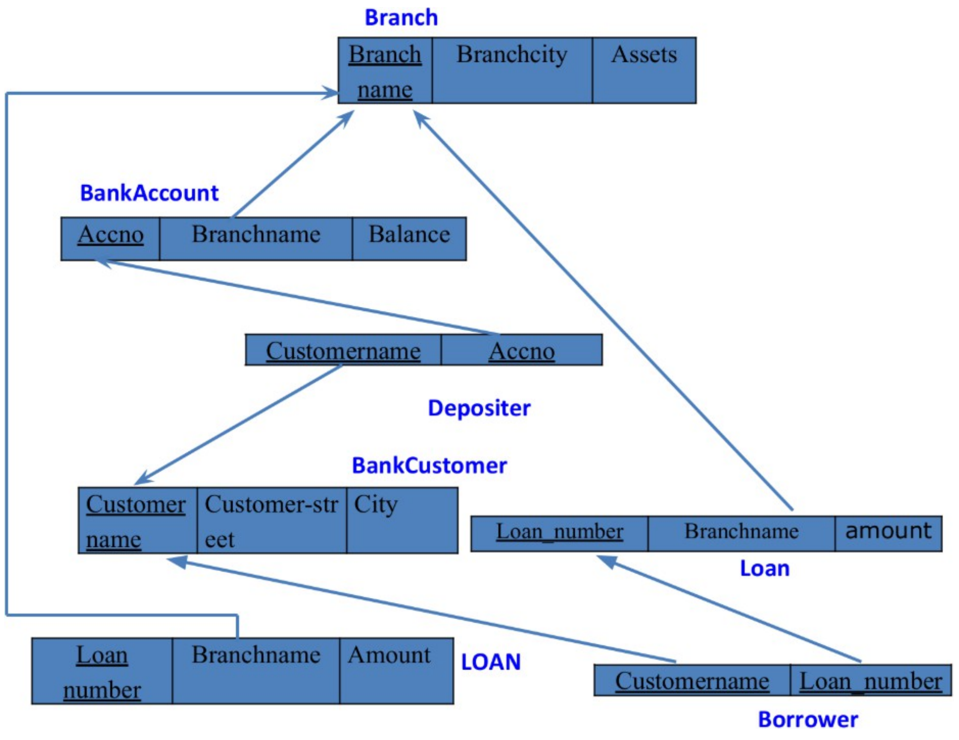
More Queries on Bank Database

Question

(Week 4)

- 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)
- Borrower (customer-name: String, loan-number: int)
- Find all the customers who have an account at all the branches located in a specific city (Ex. Delhi).
- Find all customers who have a loan at the bank but do not have an account.
- Find all customers who have both an account and a loan at the Bangalore branch
- Find the names of all branches that have greater assets than all branches located in Bangalore.
- Demonstrate how you delete all account tuples at every branch located in a specific city (Ex. Bombay).
- Update the Balance of all accounts by 5%

Schema Diagram

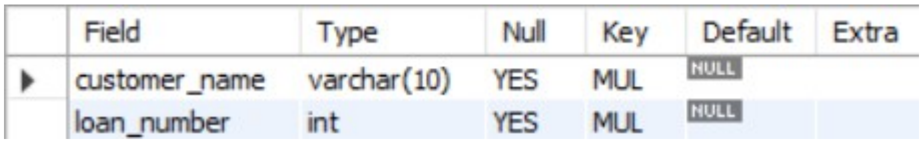


Create table

```
create table borrower_202
(
customer_name varchar(10),
loan_number int,
foreign key(customer_name) references bankCustomer_202 (customer_name),
foreign key(loan_number) references loan_202 (loan_number)
);
```

Structure of table

```
desc borrower_202;
```



	Field	Type	Null	Key	Default	Extra
▶	customer_name	varchar(10)	YES	MUL	NULL	
	loan_number	int	YES	MUL	NULL	

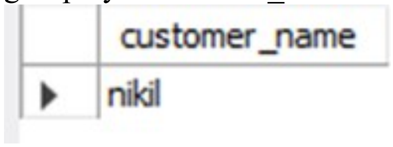
Insert values to the table

```
insert into borrower_202 values('Avinash',1);
insert into borrower_202 values('Dinesh',2);
insert into borrower_202 values('Mohan',3);
insert into borrower_202 values('Nikil',4);
insert into borrower_202 values('Ravi',5);
select * from borrower_202;
```

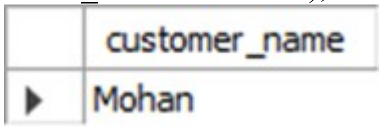
Queries

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

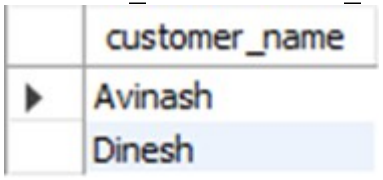
```
select distinct d.customer_name
from depositer_202 d,bankAccount_202 ba,branch_202 b
where d.accno=ba.accno and ba.branch_name=b.branch_name and b.branch_city='delhi'
group by d.customer_name having count(b.branch_name)>1;
```



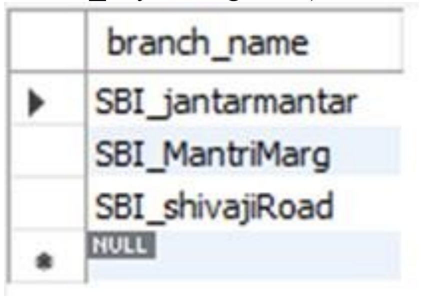
	customer_name
▶	nikil

- **Find all customers who have a loan at the bank but do not have an account.**
  select b.customer_name
  from borrower_202 b
  where b.loan_number not in(select d.accno from depositer_202 d where
  b.loan_number=d.accno);
  

customer_name
Mohan

- **Find all customers who have both an account and a loan at the Bangalore branch.**
  select b.customer_name
  from borrower_202 b
  where b.loan_number in (select d.accno from depositer_202 d,bankAccount_202
  ba,branch_202 b where b.loan_number=d.accno and d.accno=ba.accno and
  ba.branch_name=b.branch_name and b.branch_city='Bangalore');
  

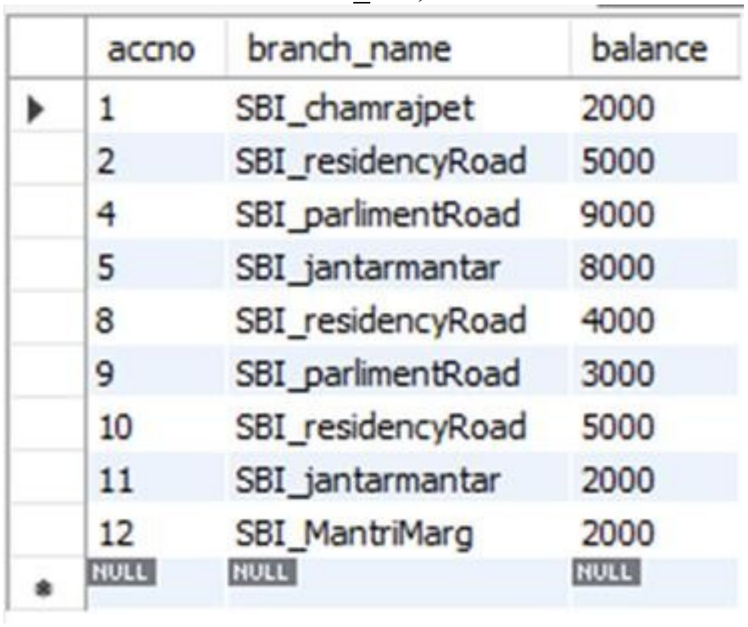
customer_name
Avinash
Dinesh

- **Find the names of all branches that have greater assets than all branches located in Bangalore.**
  select branch_name
  from branch_202
  where assets_inlakhs>all(select assets_inlakhs from branch_202 where
  branch_city='Bangalore');
  

branch_name
SBI_jantarmantar
SBI_MantriMarg
SBI_shivajiRoad
NULL

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

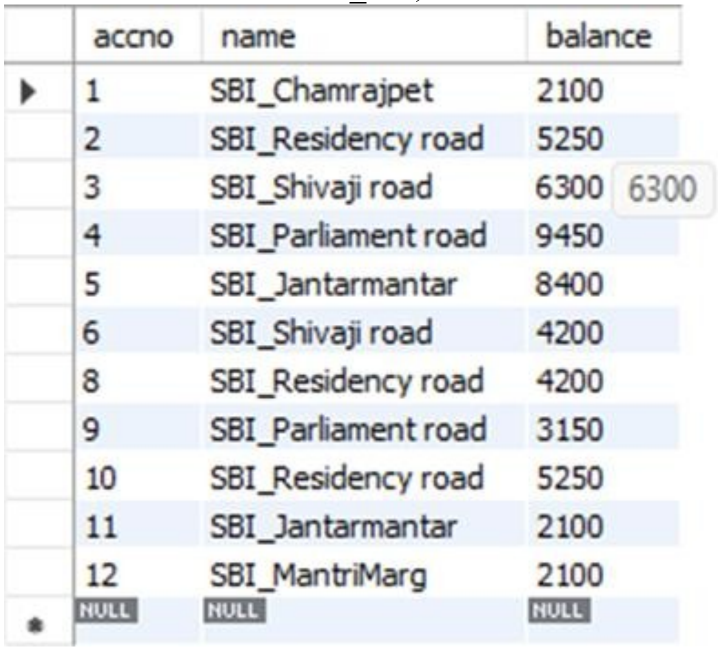
```
delete from bankAccount_202 ba
where ba.branch_name=(select b.branch_name from branch_202 b where
branch_city='Bombay');
select * from  bankAccount_202;
```



accno	branch_name	balance
1	SBI_chamrajpet	2000
2	SBI_residencyRoad	5000
4	SBI_parlimentRoad	9000
5	SBI_jantarmantar	8000
8	SBI_residencyRoad	4000
9	SBI_parlimentRoad	3000
10	SBI_residencyRoad	5000
11	SBI_jantarmantar	2000
12	SBI_MantriMarg	2000
NULL	NULL	NULL

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

```
update bankAccount_202
set balance=balance+((5*balance)/100);
select * from bankAccount_202;
```



accno	name	balance
1	SBI_Chamrajpet	2100
2	SBI_Residency road	5250
3	SBI_Shivaji road	6300
4	SBI_Parliament road	9450
5	SBI_Jantarmantar	8400
6	SBI_Shivaji road	4200
8	SBI_Residency road	4200
9	SBI_Parliament road	3150
10	SBI_Residency road	5250
11	SBI_Jantarmantar	2100
12	SBI_MantriMarg	2100
NULL	NULL	NULL

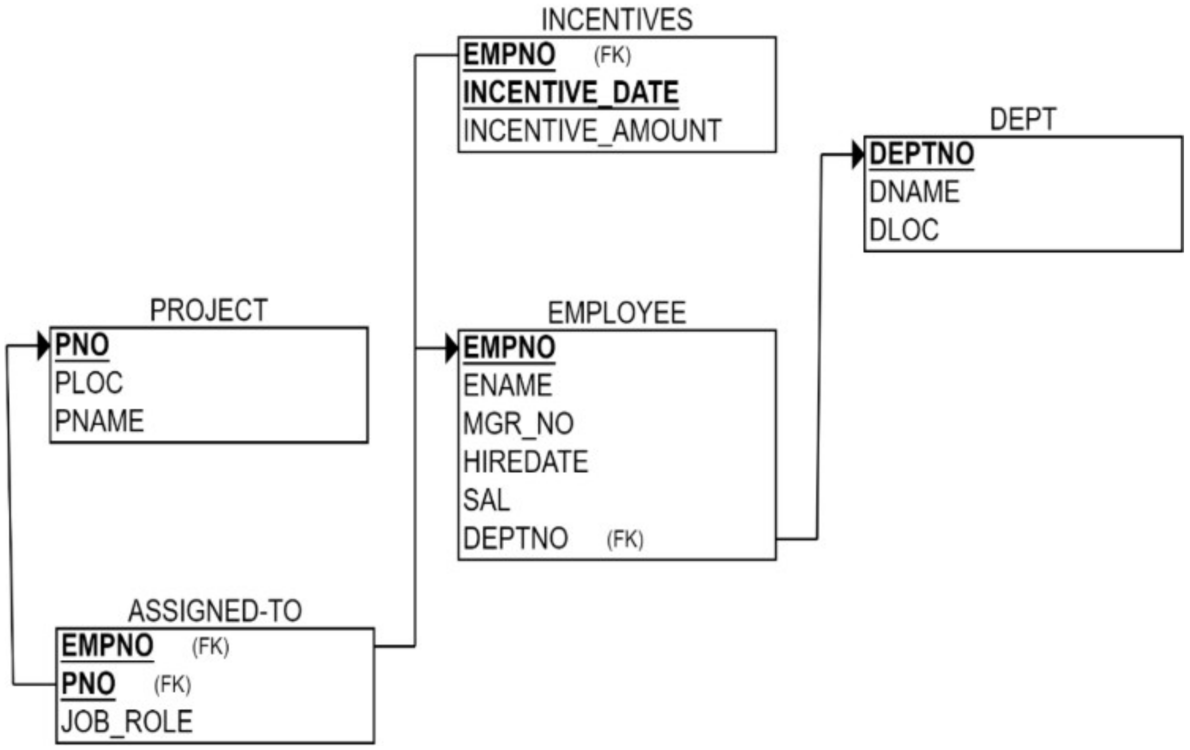
Employee Database

Question

(Week 5)

- Using Scheme diagram, Create tables by properly specifying the primary keys and the foreign keys.
- Enter greater than five tuples for each table.
- Retrieve the employee numbers of all employees who work on project located in Bengaluru, Hyderabad, or Mysuru
- Get Employee ID's of those employees who didn't receive incentives
- 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.

Schema Diagram



Create database

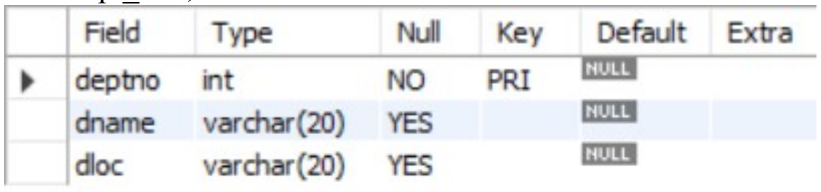
```
create database Employee_202;

use Employee_202;
```

Create table

```
create table dept_202
(
deptno int,
dname varchar(20),
dloc varchar(20),
primary key(deptno)
);
create table employee_202
(
empno int,
ename varchar(20),
mgr_no int,
hiredate varchar(20),
sal int,
deptno int,
primary key(empno,deptno),
foreign key(deptno) references dept_202(deptno)
);
create table incentives_202
(
empno int,
incentives_date varchar(20),
amount int,
primary key(empno,incentives_date),
foreign key(empno) references employee_202(empno)
);
create table project_202
(
pno int,
ploc varchar(20),
pname varchar(20),
primary key(pno)
);
create table assignedto_202
(
empno int,
pno int,
job_role varchar(20),
primary key(empno,pno),
foreign key(empno) references employee_202(empno),
foreign key(pno) references project_202(pno));
```

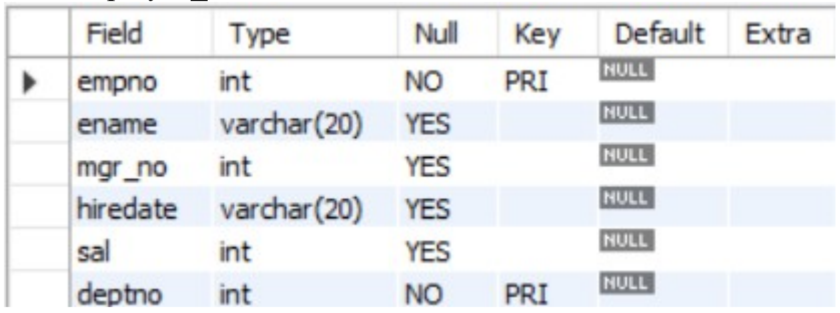
Structure of the table

desc dept_202;



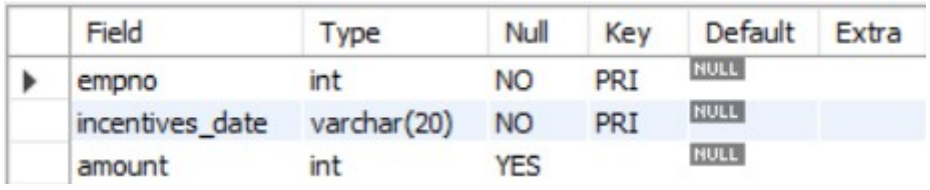
	Field	Type	Null	Key	Default	Extra
▶	deptno	int	NO	PRI	NULL	
	dname	varchar(20)	YES		NULL	
	dloc	varchar(20)	YES		NULL	

desc employee_202;



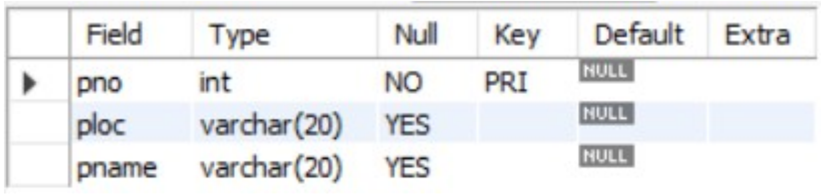
	Field	Type	Null	Key	Default	Extra
▶	empno	int	NO	PRI	NULL	
	ename	varchar(20)	YES		NULL	
	mgr_no	int	YES		NULL	
	hiredate	varchar(20)	YES		NULL	
	sal	int	YES		NULL	
	deptno	int	NO	PRI	NULL	

desc incentives_202;



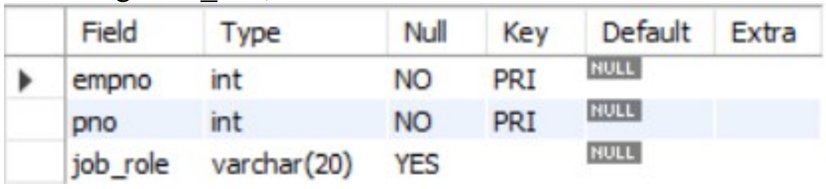
	Field	Type	Null	Key	Default	Extra
▶	empno	int	NO	PRI	NULL	
	incentives_date	varchar(20)	NO	PRI	NULL	
	amount	int	YES		NULL	

desc project_202;



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

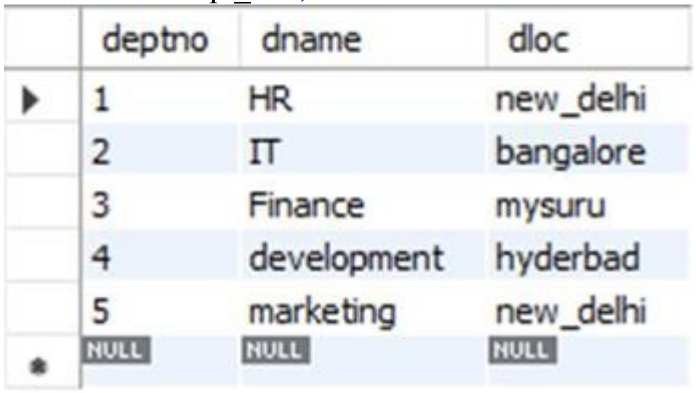
desc assignedto_202;



	Field	Type	Null	Key	Default	Extra
▶	empno	int	NO	PRI	NULL	
	pno	int	NO	PRI	NULL	
	job_role	varchar(20)	YES		NULL	

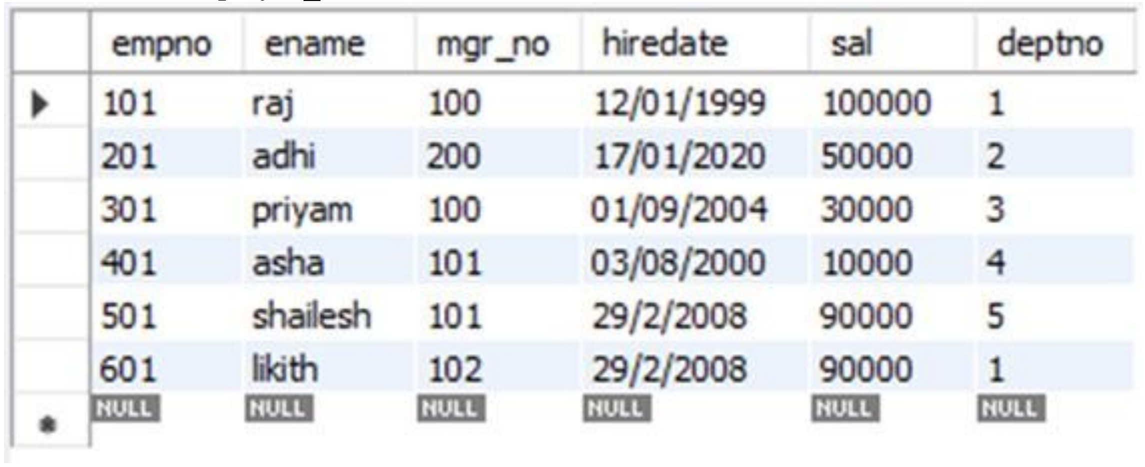
Insert values to the tables

```
insert into dept_202 values(1,'HR','new_delhi');
insert into dept_202 values(2,'IT','bangalore');
insert into dept_202 values(3,'Finance','mysuru');
insert into dept_202 values(4,'development','hyderbad');
insert into dept_202 values(5,'marketing','new_delhi');
select * from dept_202;
```



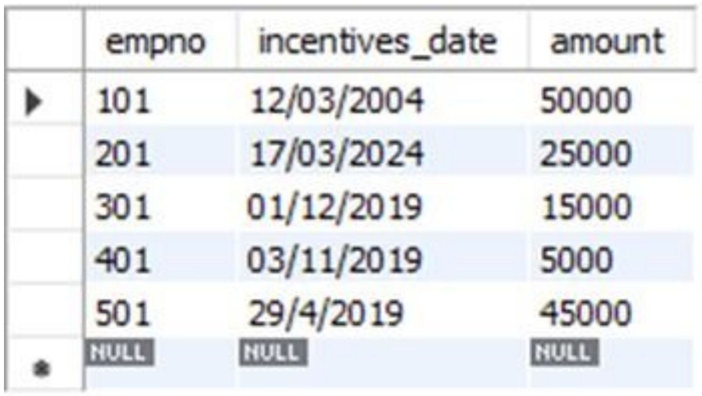
deptno	dname	dloc
1	HR	new_delhi
2	IT	bangalore
3	Finance	mysuru
4	development	hyderbad
5	marketing	new_delhi
NULL	NULL	NULL

```
insert into employee_202 values(101,'raj',100,"12/01/1999",100000,1);
insert into employee_202 values(201,'adhi',200,"17/01/2020",50000,2);
insert into employee_202 values(301,'priyam',100,"01/09/2004",30000,3);
insert into employee_202 values(401,'asha',101,"03/08/2000",10000,4);
insert into employee_202 values(501,'shailesh',101,"29/2/2008",90000,5);
insert into employee_202 values(601,'likith',102,"29/2/2008",90000,1);
select * from employee_202;
```



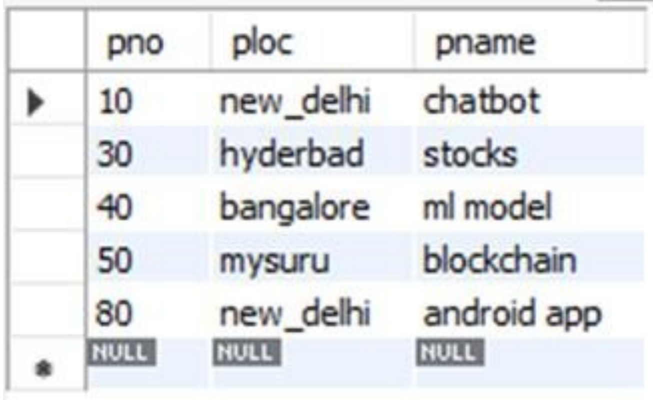
empno	ename	mgr_no	hiredate	sal	deptno
101	raj	100	12/01/1999	100000	1
201	adhi	200	17/01/2020	50000	2
301	priyam	100	01/09/2004	30000	3
401	asha	101	03/08/2000	10000	4
501	shailesh	101	29/2/2008	90000	5
601	likith	102	29/2/2008	90000	1
NULL	NULL	NULL	NULL	NULL	NULL

```
insert into incentives_202 values(101,"12/03/2004",50000);
insert into incentives_202 values(201,"17/03/2024",25000);
insert into incentives_202 values(301,"01/12/2019",15000);
insert into incentives_202 values(401,"03/11/2019",5000);
insert into incentives_202 values(501,"29/4/2019",45000);
select * from incentives_202;
```



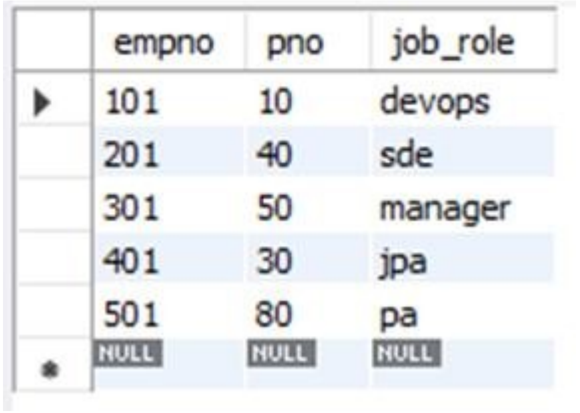
	empno	incentives_date	amount
▶	101	12/03/2004	50000
	201	17/03/2024	25000
	301	01/12/2019	15000
	401	03/11/2019	5000
	501	29/4/2019	45000
*	NULL	NULL	NULL

insert into project_202 values(10,"new_delhi","chatbot"); insert into project_202 values(40,"bangalore","ml model"); insert into project_202 values(50,"mysuru","blockchain"); insert into project_202 values(30,"hyderbad","stocks");
insert into project_202 values(80,"new_delhi","android app");
select * from project_202;



	pno	ploc	pname
▶	10	new_delhi	chatbot
	30	hyderbad	stocks
	40	bangalore	ml model
	50	mysuru	blockchain
	80	new_delhi	android app
*	NULL	NULL	NULL

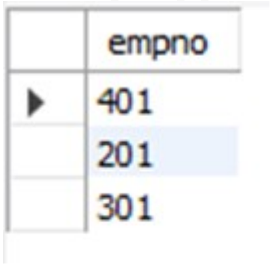
insert into assignedto_202 values(101,10,"devops");
insert into assignedto_202 values(201,40,"sde");
insert into assignedto_202 values(301,50,"manager");
insert into assignedto_202 values(401,30,"jpa");
insert into assignedto_202 values(501,80,"pa");
select * from assignedto_202;



	empno	pno	job_role
▶	101	10	devops
	201	40	sde
	301	50	manager
	401	30	jpa
	501	80	pa
*	NULL	NULL	NULL

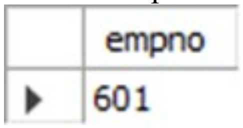
Queries

- **Retrieve the employee numbers of all employees who work on project located in Bengaluru, Hyderabad, or Mysuru.**
  select a.empno from assignedto_202 a,project_202 p
  where a.pno=p.pno and (ploc='bangalore' or ploc='hyderbad' or ploc='mysuru');



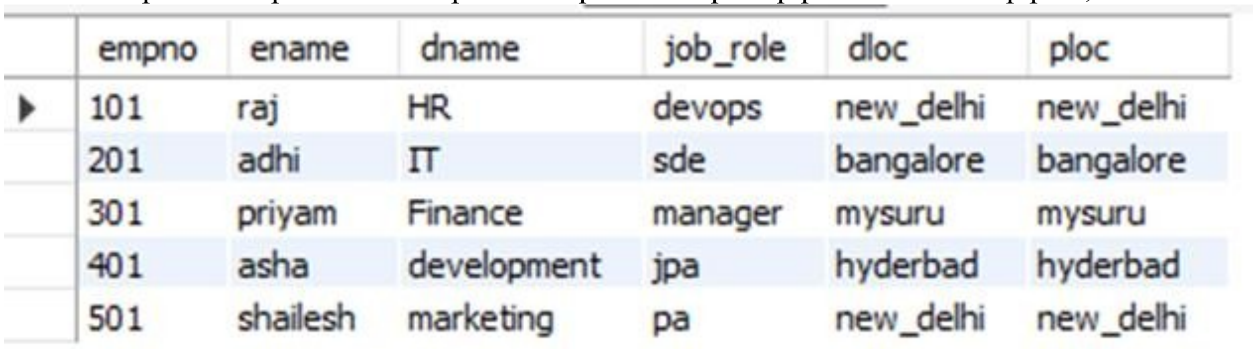
empno
401
201
301

- **Get Employee ID's of those employees who didn't receive incentives.**
  select e.empno from employee_202 e
  where e.empno!=all(select i.empno from incentives_202 i);



empno
601

- **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.empno,e.ename,d.dname,a.job_role,d.dloc,p.ploc
  from employee_202 e,dept_202 d,assignedto_202 a,project_202 p
  where e.deptno=d.deptno and e.empno=a.empno and a.pno=p.pno and d.dloc=p.ploc;



empno	ename	dname	job_role	dloc	ploc
101	raj	HR	devops	new_delhi	new_delhi
201	adhi	IT	sde	bangalore	bangalore
301	priyam	Finance	manager	mysuru	mysuru
401	asha	development	jpa	hyderbad	hyderbad
501	shailesh	marketing	pa	new_delhi	new_delhi

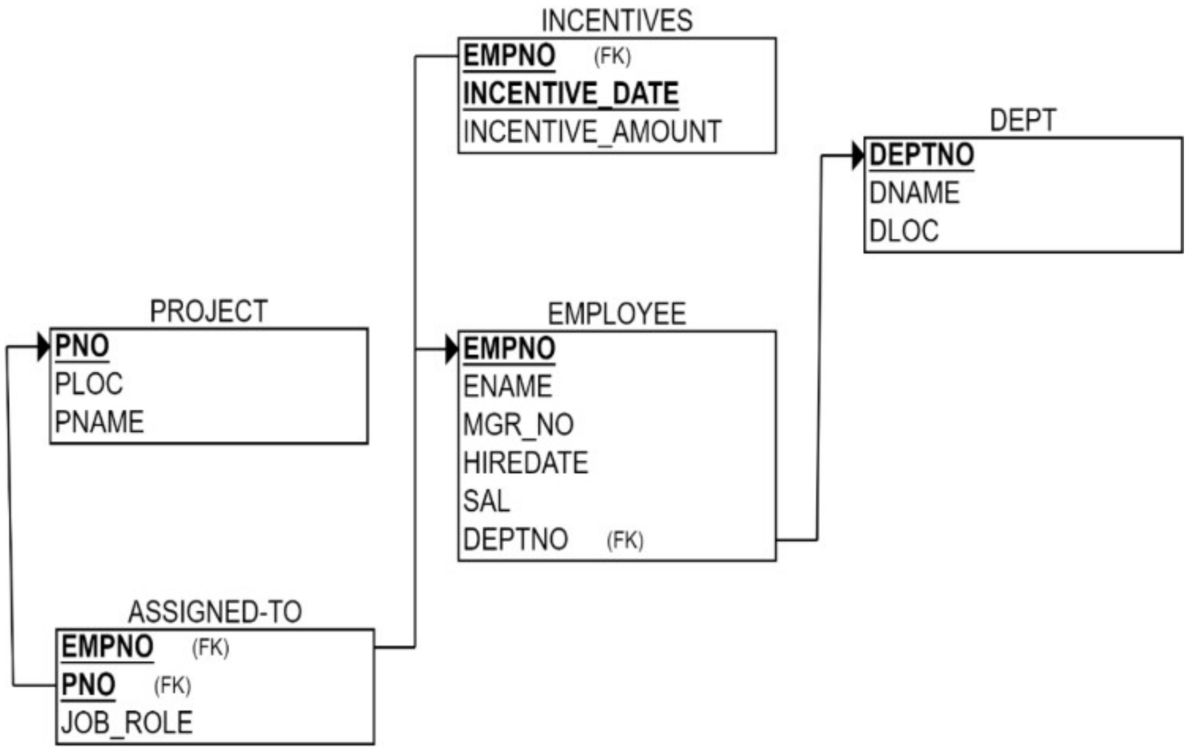
More Queries on Employee Database

Question

(Week 6)

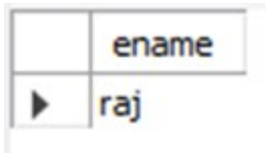
- List the name of the managers with the maximum employees
- Display those managers' names of the manager whose salary is more than the average salary of his employee.
- Find the name of the second top level managers of each department.
- Find the employee details who got the second maximum incentive in January 2019.
- Display those employees who are working in the same department where his manager is working.

Schema Diagram



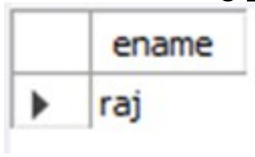
Queries

- **List the name of the managers with the maximum employees**
  select e.ename from employee_202 e where e.empno in (select m.mgr_no from employee_202 m group by m.mgr_no having count(*) = (select max(emp_count) from (select count(*) as emp_count from employee_202 em group by em.mgr_no) as emp_count_subquery));



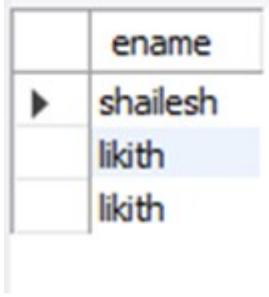
ename
raj

- **Display those managers' names of the manager whose salary is more than the average salary of his employee.**
  select e.ename from employee_202 e where e.sal>(select avg(sub.sal) from employee_202 sub where sub.mgr_no=e.empno);



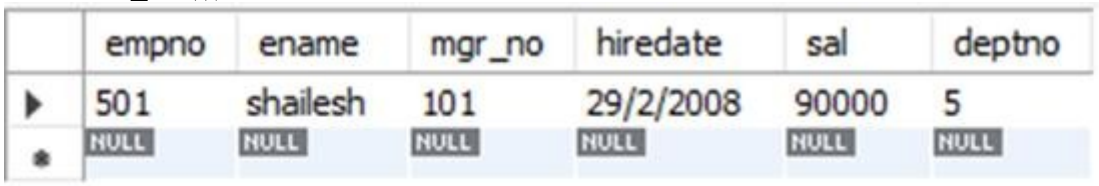
ename
raj

- **Find the name of the second top level managers of each department.**
  select ename from employee_202 where sal=(select max(sal) from employee_202 where sal < (select max(sal) from employee_202));



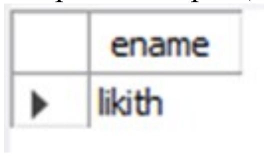
ename
shailesh
likith
likith

- **Find the employee details who got the second maximum incentive in January 2019.**
  select * from employee_202 where empno=(select empno from incentives_202 where amount=(select max(amount) from incentives_202 where amount<(select max(amount) from incentives_202)));



empno	ename	mgr_no	hiredate	sal	deptno
501	shailesh	101	29/2/2008	90000	5
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_202 e ,employee_202 m where e.mgr_no=m.empno and e.deptno=m.deptno;



ename
likith

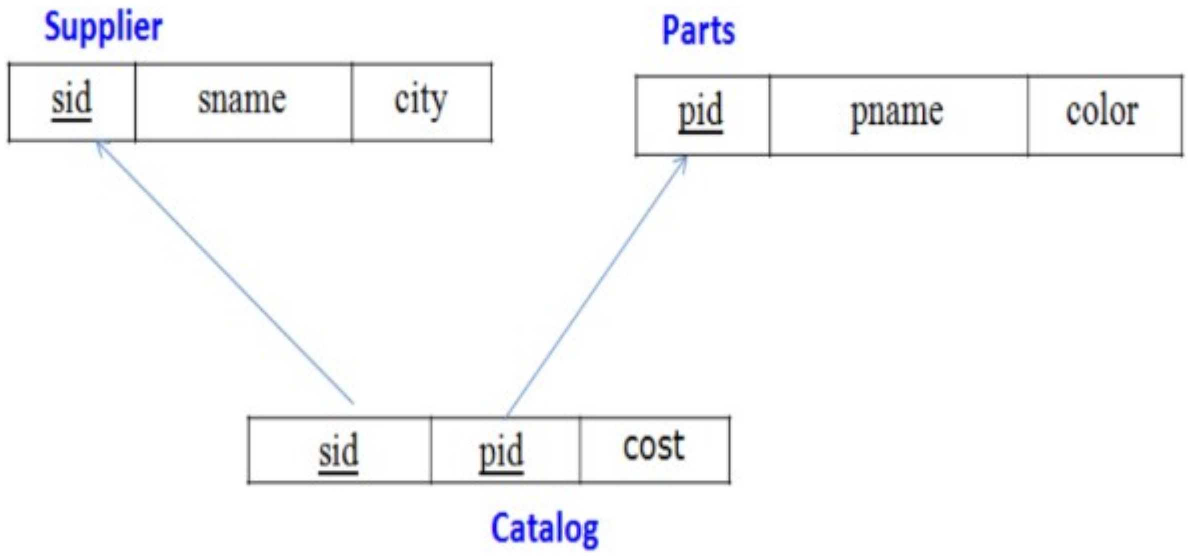
Supplier Database

Question

(Week 7)

- Using Scheme diagram, Create tables by properly specifying the primary keys and the foreign keys.
- Insert appropriate records in each table.
- Find the pnames of parts for which there is some supplier.
- Find the snames of suppliers who supply every part.
- Find the snames of suppliers who supply every red part.
- Find the pnames of parts supplied by Acme Widget Suppliers and by no one else.
- 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).
- For each part, find the sname of the supplier who charges the most for that part.

Schema Diagram



Create database

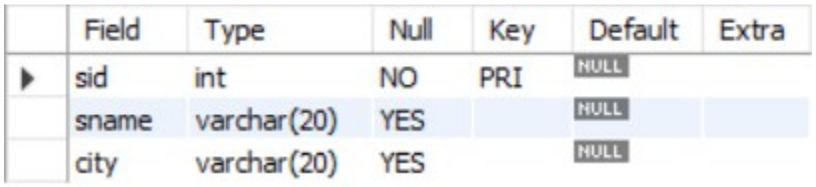
```
create database supplier_database_202;

use  supplier_database_202;
```

Create table

```
create table supplier_202(
sid int,
sname varchar(20),
city varchar(20),
primary key(sid));
create table parts_202(
pid int,
pname varchar(20),
color varchar(20),
primary key(pid));

create table catalog_202(
sid int,
pid int,
cost int,
foreign key(sid) references supplier_202(sid),
foreign key(pid) references parts_202(pid));
```

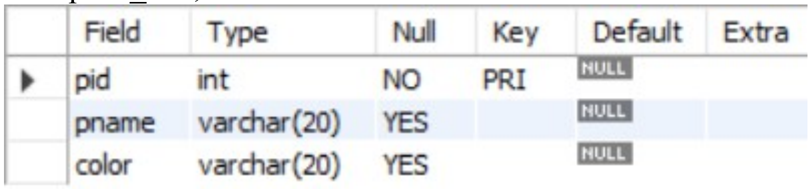
Structure of the table

desc supplier_202;



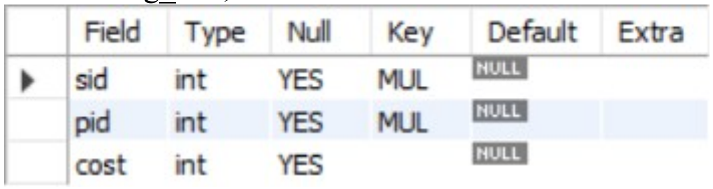
Field	Type	Null	Key	Default	Extra
sid	int	NO	PRI	NULL	
sname	varchar(20)	YES		NULL	
city	varchar(20)	YES		NULL	

desc parts_202;



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

desc catalog_202;

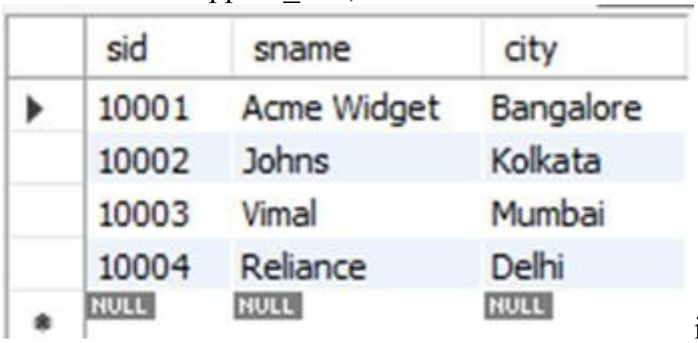


Field	Type	Null	Key	Default	Extra
sid	int	YES	MUL	NULL	
pid	int	YES	MUL	NULL	
cost	int	YES		NULL	

Insert values to the tables

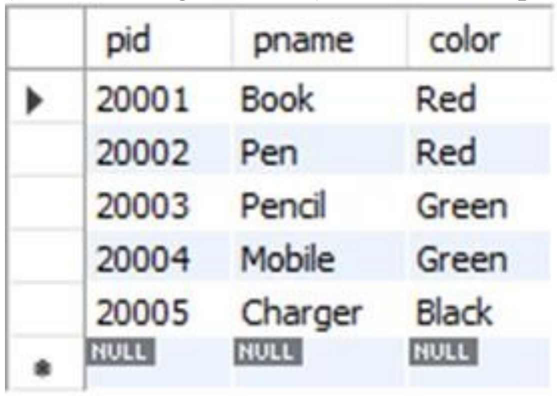
```
insert into supplier_202 values (10001, 'Acme Widget','Bangalore');
insert into supplier_202 values (10002, 'Johns','Kolkata');
```

insert into supplier_202 values (10003, 'Vimal','Mumbai');
insert into supplier_202 values (10004, 'Reliance','Delhi');
select * from supplier_202;



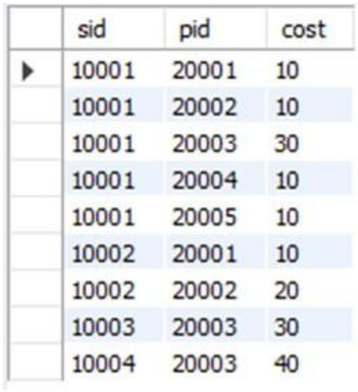
	sid	sname	city
▶	10001	Acme Widget	Bangalore
	10002	Johns	Kolkata
	10003	Vimal	Mumbai
	10004	Reliance	Delhi
*	NULL	NULL	NULL

insert into parts_202 values (20001, 'Book','Red'); insert into parts_202 values (20002, 'Pen','Red'); insert into parts_202 values (20003, 'Pencil','Green'); insert into parts_202 values (20004, 'Mobile','Green'); insert into parts_202 values (20005, 'Charger','Black'); select * from parts_202;



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

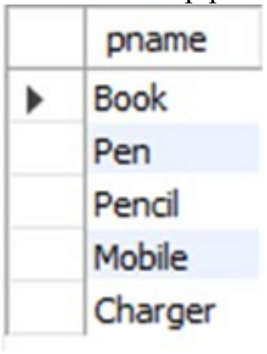
insert into catalog_202 values (10001, 20001 , 10);
insert into catalog_202 values (10001, 20002 , 10);
insert into catalog_202 values (10001, 20003 , 30);
insert into catalog_202 values (10001, 20004 , 10);
insert into catalog_202 values (10001, 20005 , 10);
insert into catalog_202 values (10002, 20001 , 10);
insert into catalog_202 values (10002, 20002 , 20);
insert into catalog_202 values (10003, 20003 , 30);
insert into catalog_202 values (10004, 20003 , 40);
select * from catalog_202;



	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

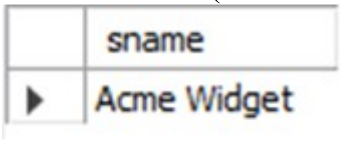
Queries

- **Find the pnames of parts for which there is some supplier.**
  select distinct p.pname from parts_202 p,catalog_202 c where p.pid=c.pid;



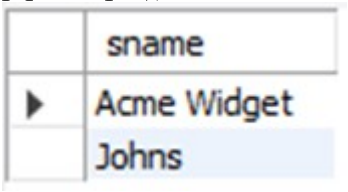
	pname
▶	Book
	Pen
	Pencil
	Mobile
	Charger

- **Find the snames of suppliers who supply every part.**
  select distinct s.sname from supplier_202 s
  where Not exists(select p.pid from parts_202 p
  where not exists(select c.sid from catalog_202 c where c.sid=s.sid and p.pid=c.pid));



	sname
▶	Acme Widget

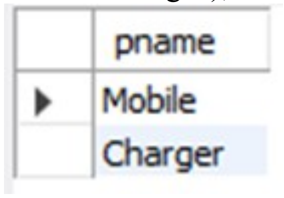
- **Find the snames of suppliers who supply every red part.**
  select s.sname from supplier_202 s
  where Not exists(select p.pid from parts_202 p
  where p.color='red' and Not exists(select c.sid from catalog_202 c where c.sid=s.sid and p.pid=c.pid));



	sname
▶	Acme Widget
	Johns

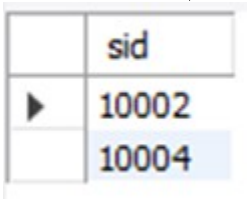
- **Find the pnames of parts supplied by Acme Widget Suppliers and by no one else.**
  select p.pname from parts_202 p,catalog_202 c,supplier_202 s
  where c.sid=s.sid and p.pid=c.pid and s.sname='Acme Widget' and not exists(

```
select * from catalog_202 c1,supplier_202 s1 where c1.sid=s1.sid and p.pid=c1.pid and s1.sname!
='Acme Widget');
```



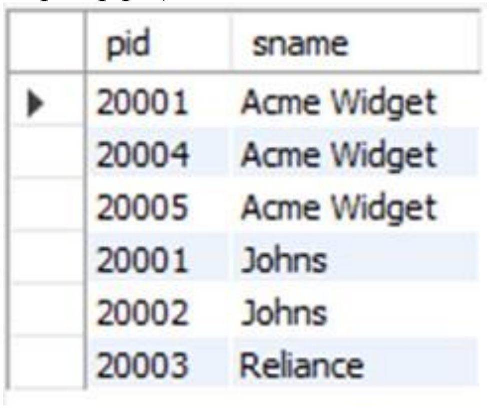
```
pname
Mobile
Charger
```

- **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 c.sid from catalog_202 c
  where c.cost>(select avg(c1.cost) from catalog_202 c1 where c1.pid=c.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_202 p,catalog_202 c,supplier_202 s
  where c.sid=s.sid and p.pid=c.pid and c.cost=(select max(c1.cost) from catalog_202 c1 where c1.pid=p.pid);



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

NO SQL - Student Database

Question

(Week 8)

Perform the following DB operations using MongoDB.

- Create a database "Student" with the following attributes Rollno, Age, ContactNo, Email-Id.
- Insert appropriate values
- Write a query to update the Email-Id of a student with rollno 10.
- Replace the student name from "ABC" to "FEM" of rollno 11.
- Export the created table into local file system
- Drop the table
- Import a given csv dataset from the local file system into mongodb collection.

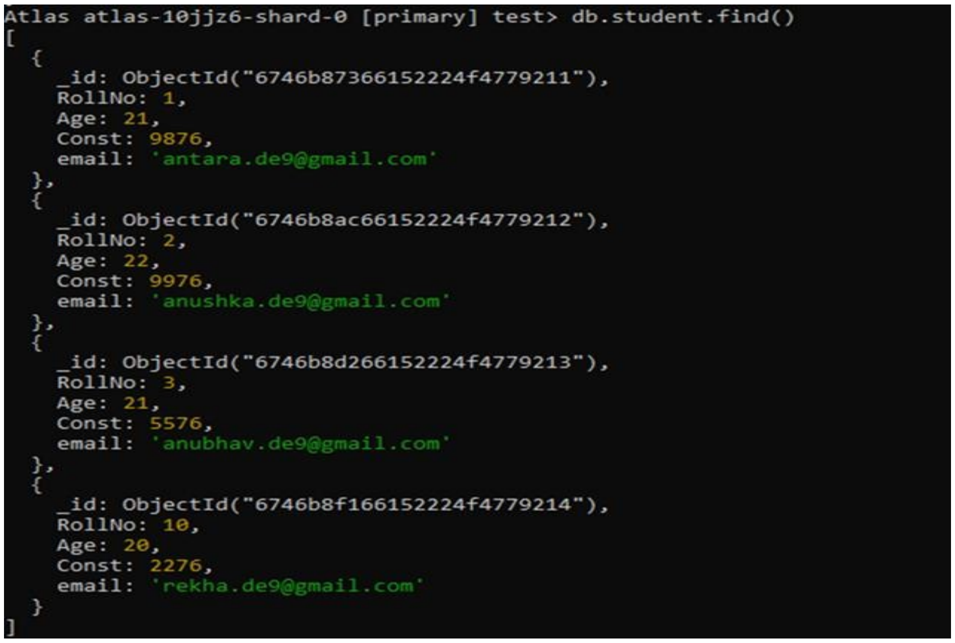
Create database

```
db.createCollection("Student");
```

Create table & Inserting Values to the table

```
db.Student.insertMany([
{rollno:1,age:21,cont:9876,email:"anthara.de9@gmail.com"},
{rollno:2,a ge:22,cont:9976,email:"anushka.de9@gmail.com"},
{rollno:3,age:21,cont:5576,email:"anubhav.de9@gmail.com"},
{rollno:10,age:20,cont:2276,email:"rekha.de9@gmail.com"}]);
```

db.student.find()

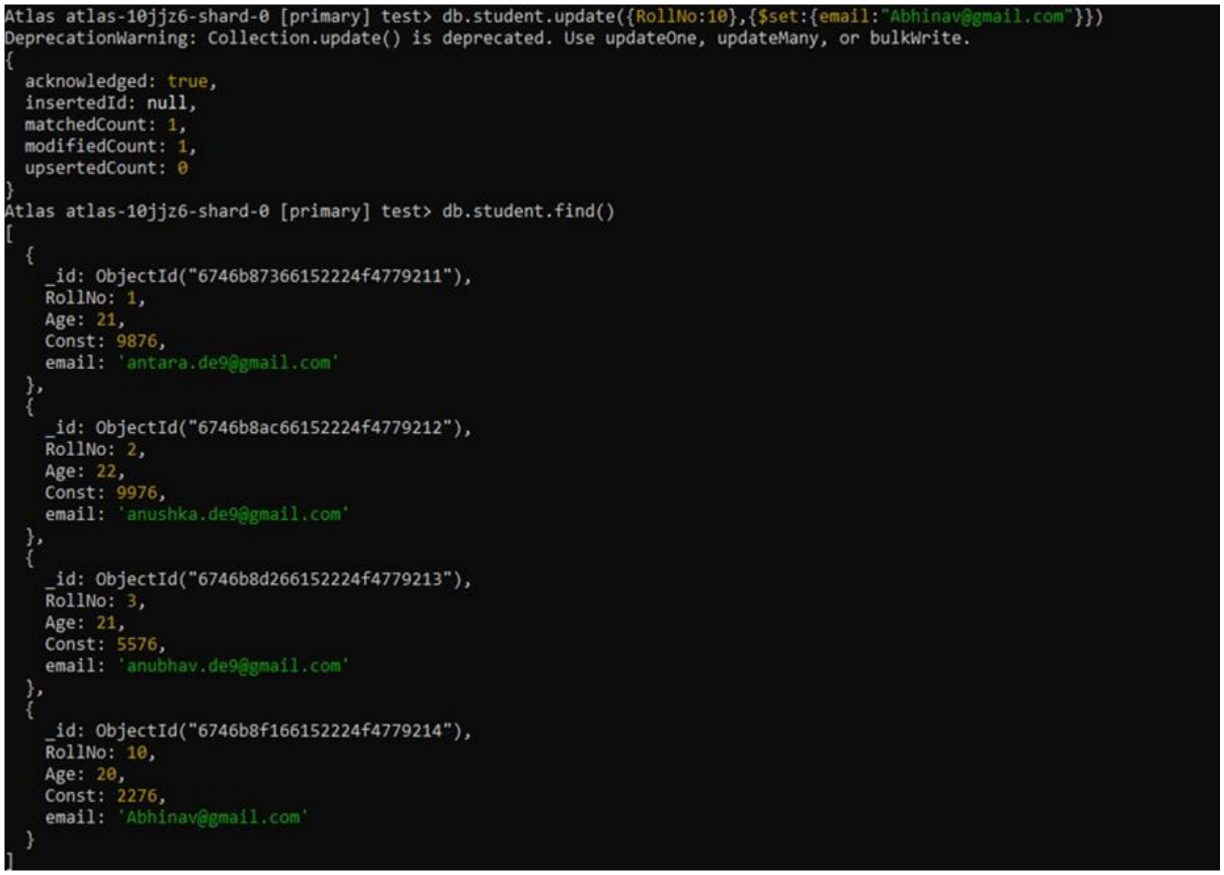


```
Atlas atlas-10jjz6-shard-0 [primary] test> db.student.find()
[
  {
    _id: ObjectId("6746b87366152224f4779211"),
    RollNo: 1,
    Age: 21,
    Const: 9876,
    email: 'antara.de9@gmail.com'
  },
  {
    _id: ObjectId("6746b8ac66152224f4779212"),
    RollNo: 2,
    Age: 22,
    Const: 9976,
    email: 'anushka.de9@gmail.com'
  },
  {
    _id: ObjectId("6746b8d266152224f4779213"),
    RollNo: 3,
    Age: 21,
    Const: 5576,
    email: 'anubhav.de9@gmail.com'
  },
  {
    _id: ObjectId("6746b8f166152224f4779214"),
    RollNo: 10,
    Age: 20,
    Const: 2276,
    email: 'rekha.de9@gmail.com'
  }
]
```

Queries

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

db.Student.update({rollno:5},{$set:{email:"abhinav@gmail.com"}})

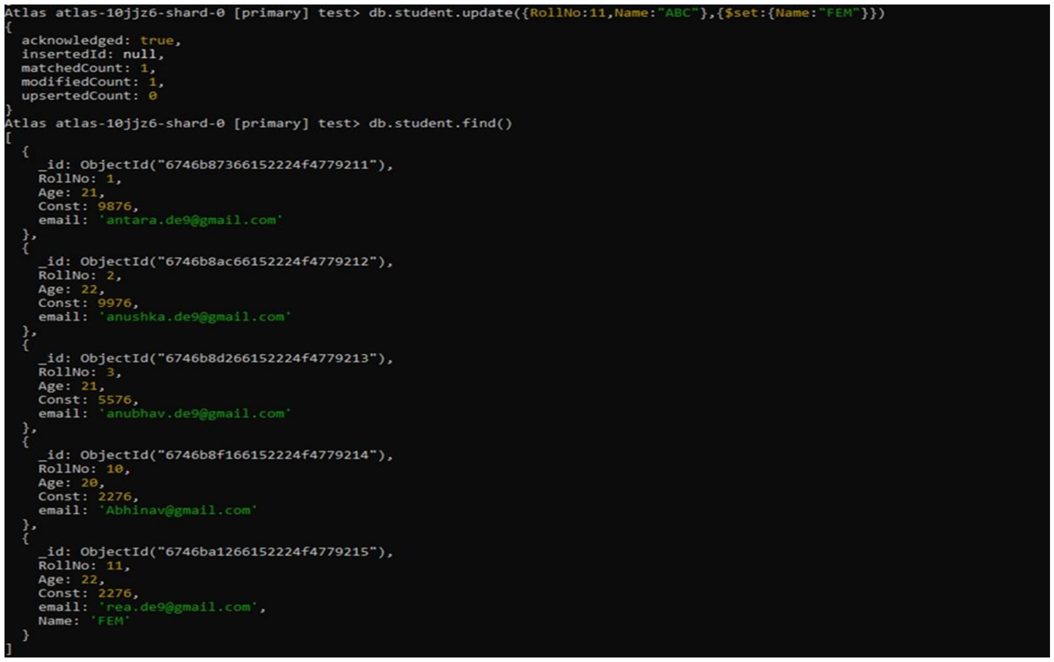


```
Atlas atlas-10jjz6-shard-0 [primary] test> db.student.update({RollNo:10},{$set:{email:"Abhinav@gmail.com"}})
DeprecationWarning: Collection.update() is deprecated. Use updateOne, updateMany, or bulkWrite.
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
Atlas atlas-10jjz6-shard-0 [primary] test> db.student.find()
[
  {
    _id: ObjectId("6746b87366152224f4779211"),
    RollNo: 1,
    Age: 21,
    Const: 9876,
    email: 'antara.de9@gmail.com'
  },
  {
    _id: ObjectId("6746b8ac66152224f4779212"),
    RollNo: 2,
    Age: 22,
    Const: 9976,
    email: 'anushka.de9@gmail.com'
  },
  {
    _id: ObjectId("6746b8d266152224f4779213"),
    RollNo: 3,
    Age: 21,
    Const: 5576,
    email: 'anubhav.de9@gmail.com'
  },
  {
    _id: ObjectId("6746b8f166152224f4779214"),
    RollNo: 10,
    Age: 20,
    Const: 2276,
    email: 'Abhinav@gmail.com'
  }
]
```

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

  db.Student.insert({rollno:11,age:22,name:"ABC",cont:2276,email:”rea.de9@gmail.com”});

  db.Student.update({rollno:11,name:"ABC"},{$set:{name:"FEM"}})



```
Atlas atlas-10jjz6-shard-0 [primary] test> db.student.update({RollNo:11,Name:"ABC"},{$set:{Name:"FEM"}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
Atlas atlas-10jjz6-shard-0 [primary] test> db.student.find()
[
  {
    _id: ObjectId("6746b87366152224f4779211"),
    RollNo: 1,
    Age: 21,
    Const: 9876,
    email: 'antara.de9@gmail.com'
  },
  {
    _id: ObjectId("6746b8ac66152224f4779212"),
    RollNo: 2,
    Age: 22,
    Const: 9976,
    email: 'anushka.de9@gmail.com'
  },
  {
    _id: ObjectId("6746b8d266152224f4779213"),
    RollNo: 3,
    Age: 21,
    Const: 5576,
    email: 'anubhav.de9@gmail.com'
  },
  {
    _id: ObjectId("6746b8f166152224f4779214"),
    RollNo: 10,
    Age: 20,
    Const: 2276,
    email: 'Abhinav@gmail.com'
  },
  {
    _id: ObjectId("6746ba1266152224f4779215"),
    RollNo: 11,
    Age: 22,
    Const: 2276,
    email: 'rea.de9@gmail.com',
    Name: 'FEM'
  }
]
```

NO SQL - Customer Database

Question

(Week 9)

Perform the following DB operations using MongoDB.

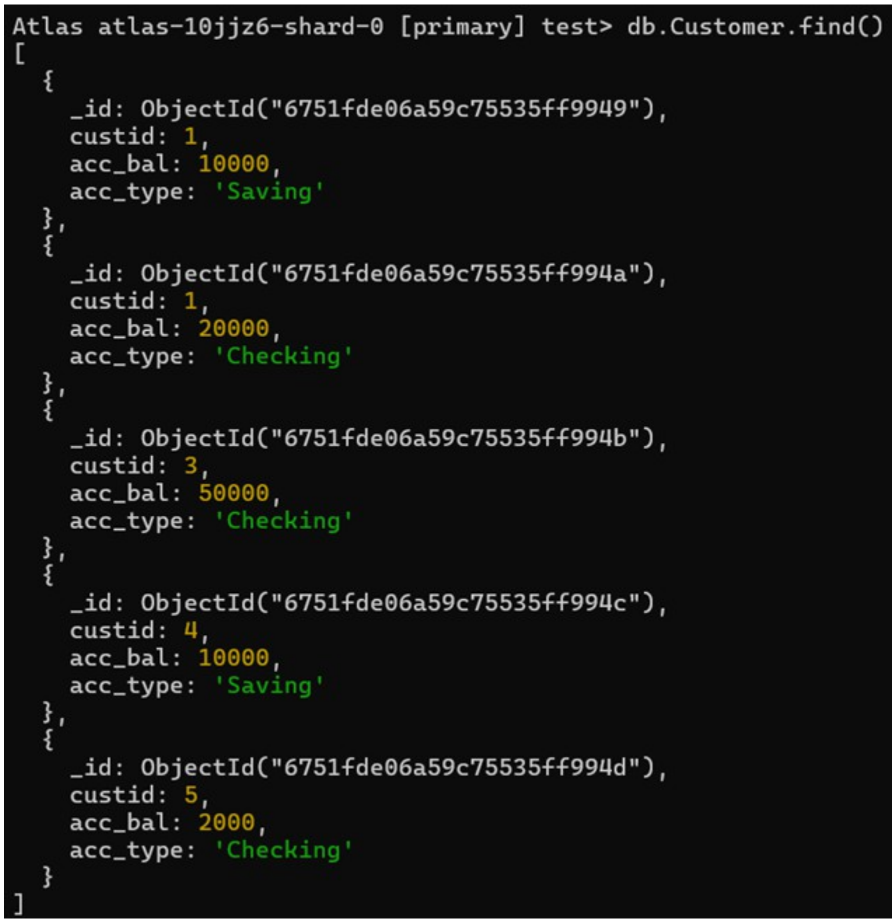
- Create a collection by name Customers with the following attributes. Cust_id, Acc_Bal, Acc_Type
- Insert at least 5 values into the table.
- Write a query to display those records whose total account balance is greater than 1200 of account type 'Checking' for each customer_id.
- Determine Minimum and Maximum account balance for each customer_id.
- Export the created collection into the local file system.
- Drop the table.
- Import a given csv dataset from the local file system into mongodb collection.

Create database

```
db.createCollection("Customer");
```

Inserting Values:

```
db.Customer.insertMany([
  {custid: 1, acc_bal:10000, acc_type:"Saving"},
  {custid: 1, acc_bal:20000, acc_type: "Checking"},
  {custid: 3,acc_bal:50000, acc_type: "Checking"},
  {custid: 4, acc_bal:10000,acc_type: "Saving"},
  {custid: 5, acc_bal:2000, acc_type: "Checking"}]);
  db.Customer.find();
```

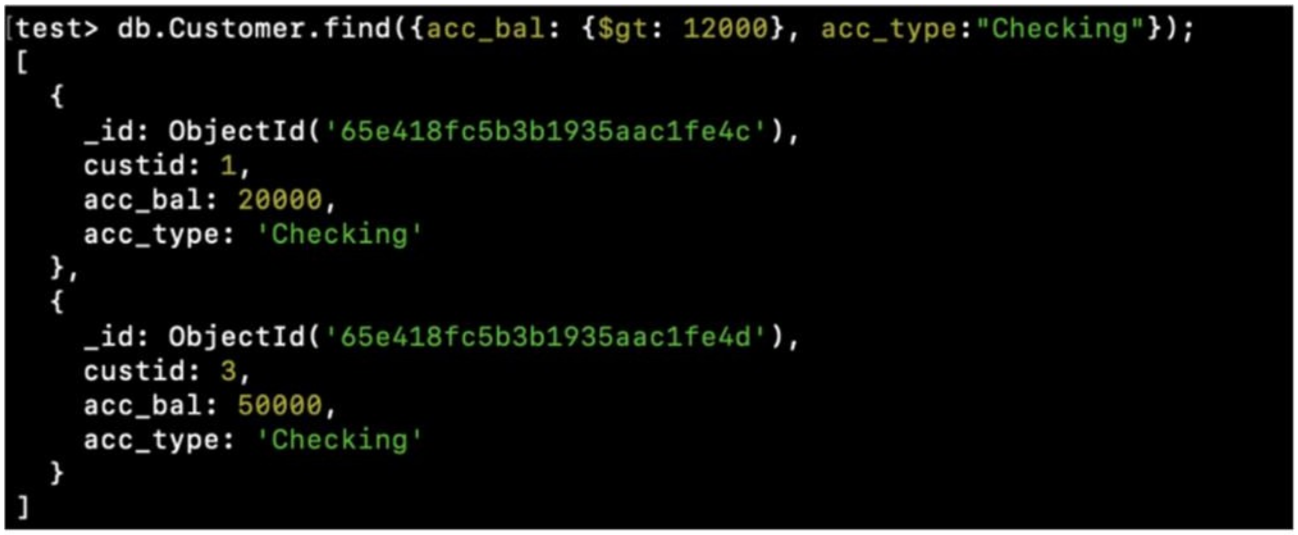


```
Atlas atlas-10jjz6-shard-0 [primary] test> db.Customer.find()
[
  {
    _id: ObjectId("6751fde06a59c75535ff9949"),
    custid: 1,
    acc_bal: 10000,
    acc_type: 'Saving'
  },
  {
    _id: ObjectId("6751fde06a59c75535ff994a"),
    custid: 1,
    acc_bal: 20000,
    acc_type: 'Checking'
  },
  {
    _id: ObjectId("6751fde06a59c75535ff994b"),
    custid: 3,
    acc_bal: 50000,
    acc_type: 'Checking'
  },
  {
    _id: ObjectId("6751fde06a59c75535ff994c"),
    custid: 4,
    acc_bal: 10000,
    acc_type: 'Saving'
  },
  {
    _id: ObjectId("6751fde06a59c75535ff994d"),
    custid: 5,
    acc_bal: 2000,
    acc_type: 'Checking'
  }
]
```

Queries

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

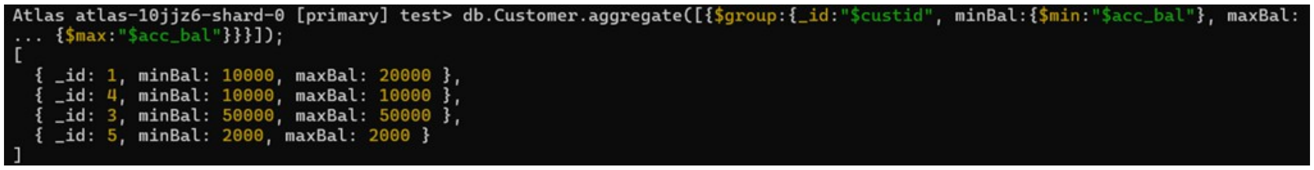
  db.Customer.find({acc_bal: {$gt: 12000}, acc_type:"Checking"});



```
test> db.Customer.find({acc_bal: {$gt: 12000}, acc_type:"Checking"});
[
  {
    _id: ObjectId('65e418fc5b3b1935aac1fe4c'),
    custid: 1,
    acc_bal: 20000,
    acc_type: 'Checking'
  },
  {
    _id: ObjectId('65e418fc5b3b1935aac1fe4d'),
    custid: 3,
    acc_bal: 50000,
    acc_type: 'Checking'
  }
]
```

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

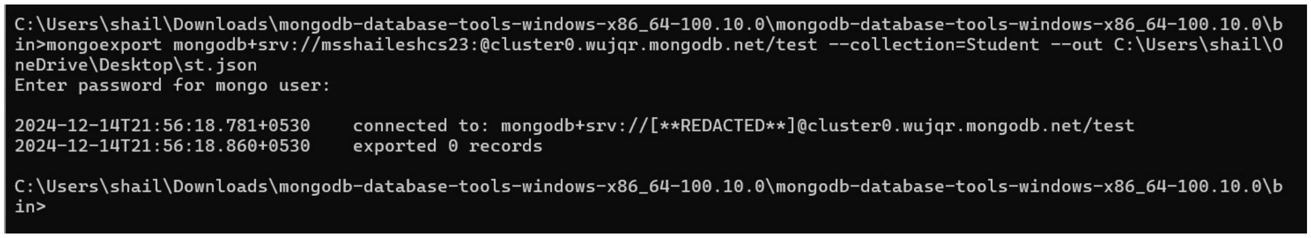
  db.Customer.aggregate([{$group:{_id:"$custid", minBal:{$min:"$acc_bal"}, maxBal:{$max:"$acc_bal"}}}]);



```
Atlas atlas-10jjz6-shard-0 [primary] test> db.Customer.aggregate([{$group:{_id:"$custid", minBal:{$min:"$acc_bal"}, maxBal:
... {$max:"$acc_bal"}}}]);
[
  { _id: 1, minBal: 10000, maxBal: 20000 },
  { _id: 4, minBal: 10000, maxBal: 10000 },
  { _id: 3, minBal: 50000, maxBal: 50000 },
  { _id: 5, minBal: 2000, maxBal: 2000 }
]
```

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

  mongoexport mongodb+srv://msshaileshcs23:@cluster0.wujqr.mongodb.net/test --collection=Customer --out C:\Users\shail\OneDrive\Desktop\st.json



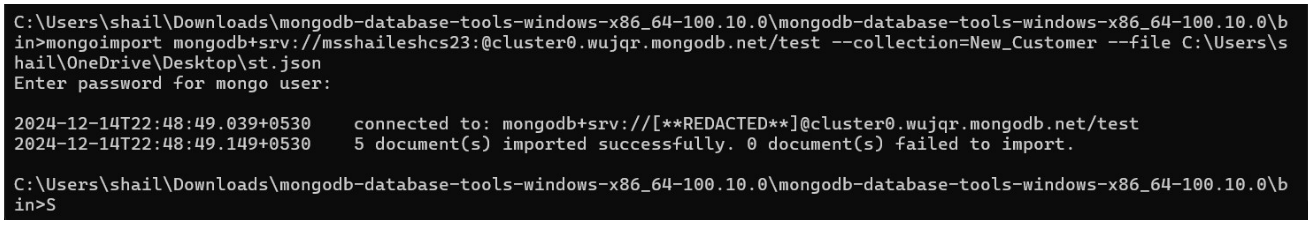
```
C:\Users\shail\Downloads\mongodb-database-tools-windows-x86_64-100.10.0\mongodb-database-tools-windows-x86_64-100.10.0\b
in>mongoexport mongodb+srv://msshaileshcs23:@cluster0.wujqr.mongodb.net/test --collection=Student --out C:\Users\shail\O
neDrive\Desktop\st.json
Enter password for mongo user:

2024-12-14T21:56:18.781+0530    connected to: mongodb+srv://[**REDACTED**]@cluster0.wujqr.mongodb.net/test
2024-12-14T21:56:18.860+0530    exported 0 records

C:\Users\shail\Downloads\mongodb-database-tools-windows-x86_64-100.10.0\mongodb-database-tools-windows-x86_64-100.10.0\b
in>
```

- **Drop the table.**

  db.Customer.drop();

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

  mongoimport mongodb+srv://msshaileshcs23:@cluster0.wujqr.mongodb.net/test --collection=New_Customer --file C:\Users\shail\OneDrive\Desktop\st.json



```
C:\Users\shail\Downloads\mongodb-database-tools-windows-x86_64-100.10.0\mongodb-database-tools-windows-x86_64-100.10.0\b
in>mongoimport mongodb+srv://msshaileshcs23:@cluster0.wujqr.mongodb.net/test --collection=New_Customer --file C:\Users\s
hail\OneDrive\Desktop\st.json
Enter password for mongo user:

2024-12-14T22:48:49.039+0530    connected to: mongodb+srv://[**REDACTED**]@cluster0.wujqr.mongodb.net/test
2024-12-14T22:48:49.149+0530    5 document(s) imported successfully. 0 document(s) failed to import.

C:\Users\shail\Downloads\mongodb-database-tools-windows-x86_64-100.10.0\mongodb-database-tools-windows-x86_64-100.10.0\b
in>S
```

NO SQL - Restaurant Database

Question

(Week 10)

- Write a MongoDB query to display all the documents in the collection restaurants.
- Write a MongoDB query to arrange the name of the restaurants in descending order along with all the columns.
- 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.
- Write a MongoDB query to find the average score for each restaurant.
- Write a MongoDB query to find the name and address of the restaurants that have a zipcode that starts with '10'.

Create database

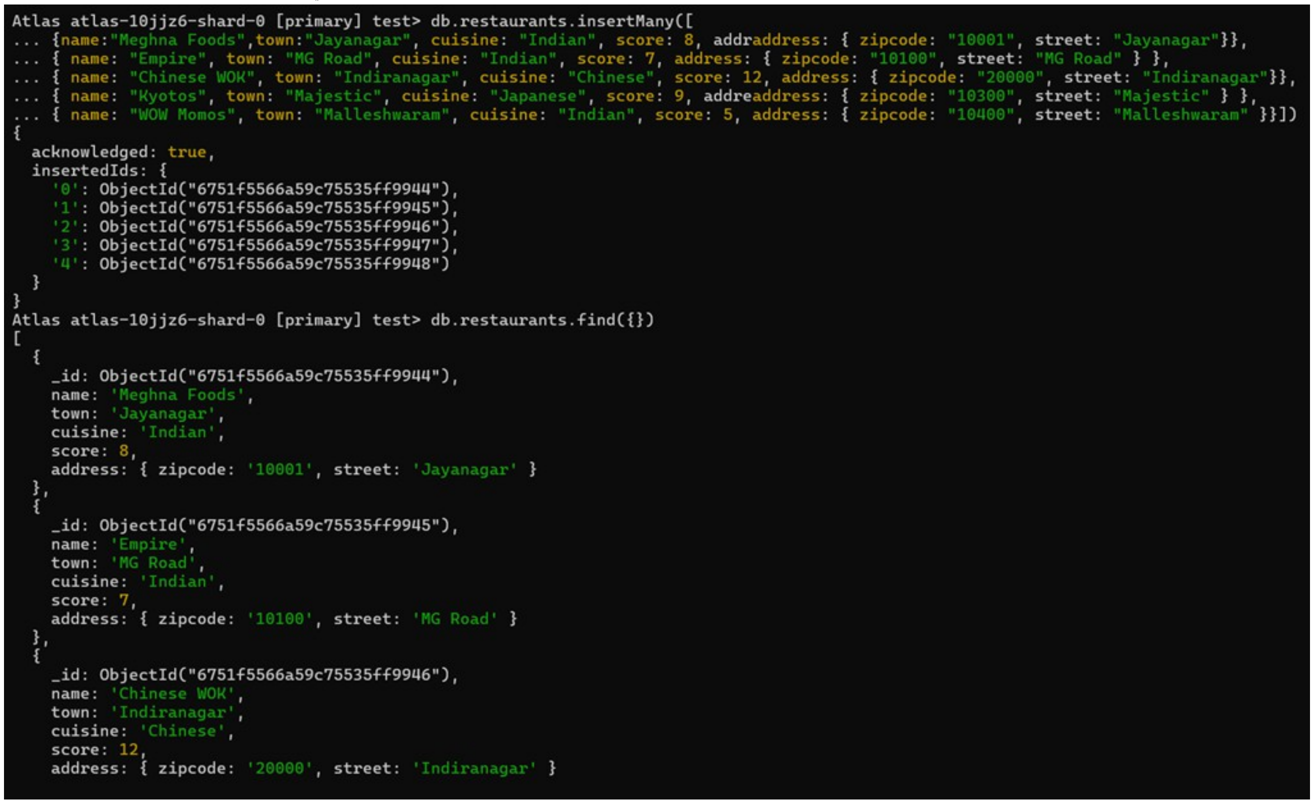
```
db.createCollection("Restaurant");
```

Inserting Values:

```
db.Restaurant.insertMany([
{name:"Meghna Foods",town:"Jayanagar", cuisine: "Indian", score: 8, address: { zipcode: "10001",
street: "Jayanagar"}},
{ name: "Empire", town: "MG Road", cuisine: "Indian", score: 7, address: { zipcode: "10100",
street: "MG Road" } },
{ name: "Chinese WOK", town: "Indiranagar", cuisine: "Chinese", score: 12, address: { zipcode:
"20000", street: "Indiranagar"}},
{ name: "Kyotos", town: "Majestic", cuisine: "Japanese", score: 9, address: { zipcode: "10300",
street: "Majestic" } },
{ name: "WOW Momos", town: "Malleshwaram", cuisine: "Indian", score: 5, address: { zipcode:
"10400", street: "Malleshwaram" }}])
```

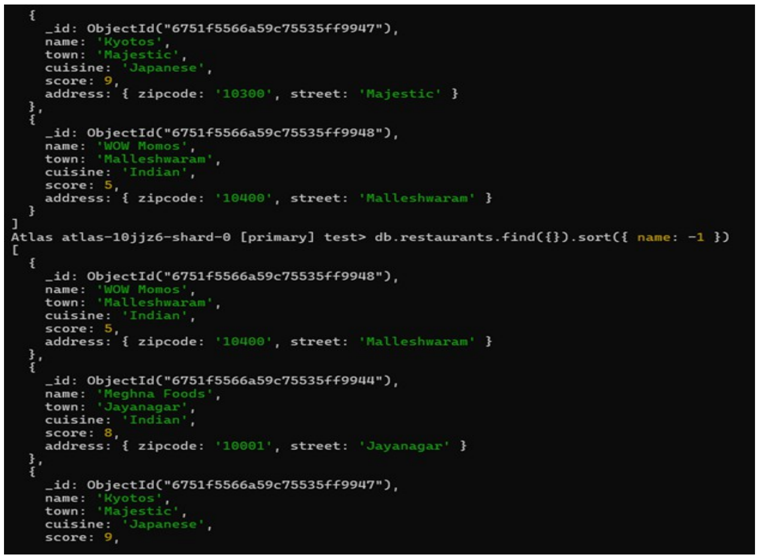
Queries

- **Write a MongoDB query to display all the documents in the collection restaurants.**
  db.Restaurant.find();



```
Atlas atlas-10jjz6-shard-0 [primary] test> db.restaurants.insertMany([
... {name:"Meghna Foods",town:"Jayanagar", cuisine: "Indian", score: 8, addraddress: { zipcode: "10001", street: "Jayanagar"}},
... { name: "Empire", town: "MG Road", cuisine: "Indian", score: 7, address: { zipcode: "10100", street: "MG Road" } },
... { name: "Chinese WOK", town: "Indiranagar", cuisine: "Chinese", score: 12, address: { zipcode: "20000", street: "Indiranagar"}},
... { name: "Kyotos", town: "Majestic", cuisine: "Japanese", score: 9, addreaddress: { zipcode: "10300", street: "Majestic" } },
... { name: "WOW Momos", town: "Malleshwaram", cuisine: "Indian", score: 5, address: { zipcode: "10400", street: "Malleshwaram" }}])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("6751f5566a59c75535ff9944"),
    '1': ObjectId("6751f5566a59c75535ff9945"),
    '2': ObjectId("6751f5566a59c75535ff9946"),
    '3': ObjectId("6751f5566a59c75535ff9947"),
    '4': ObjectId("6751f5566a59c75535ff9948")
  }
}
Atlas atlas-10jjz6-shard-0 [primary] test> db.restaurants.find({})
[
  {
    _id: ObjectId("6751f5566a59c75535ff9944"),
    name: 'Meghna Foods',
    town: 'Jayanagar',
    cuisine: 'Indian',
    score: 8,
    address: { zipcode: '10001', street: 'Jayanagar' }
  },
  {
    _id: ObjectId("6751f5566a59c75535ff9945"),
    name: 'Empire',
    town: 'MG Road',
    cuisine: 'Indian',
    score: 7,
    address: { zipcode: '10100', street: 'MG Road' }
  },
  {
    _id: ObjectId("6751f5566a59c75535ff9946"),
    name: 'Chinese WOK',
    town: 'Indiranagar',
    cuisine: 'Chinese',
    score: 12,
    address: { zipcode: '20000', street: 'Indiranagar' }
```

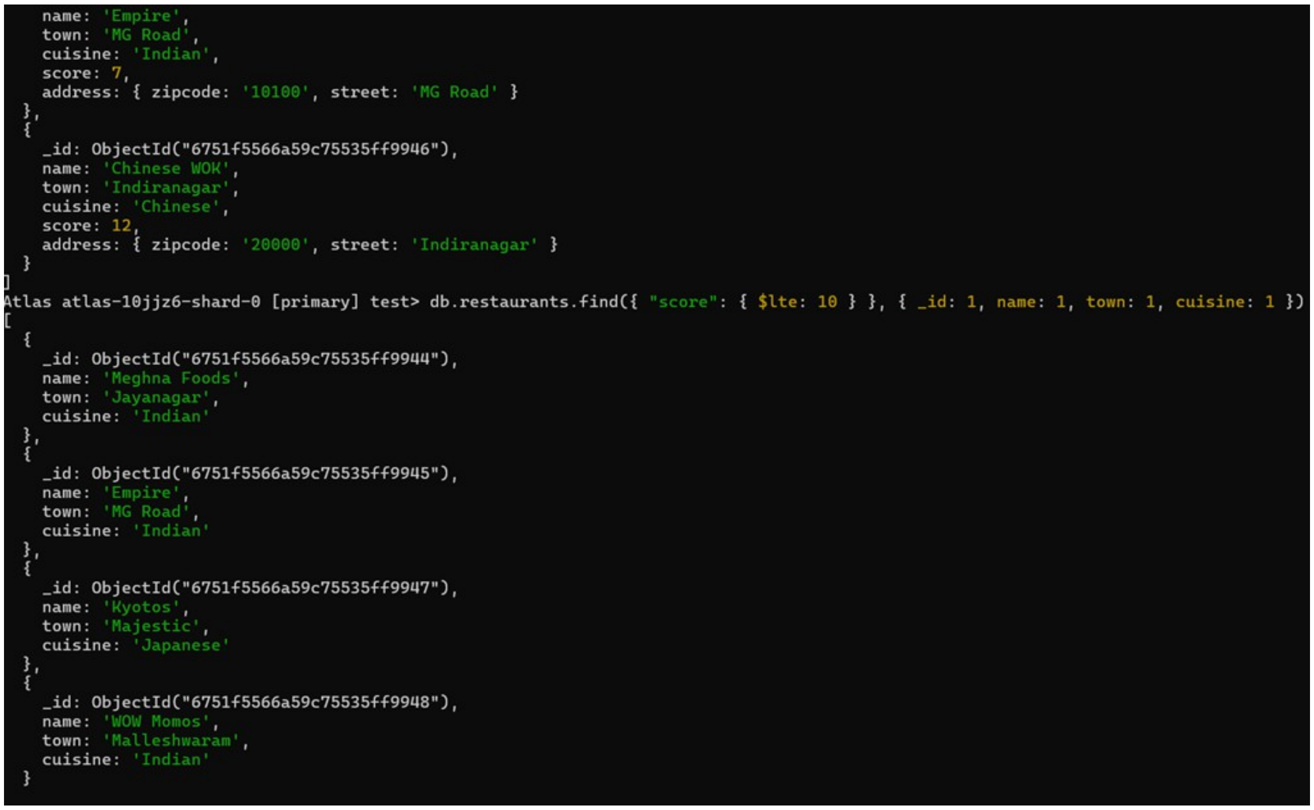
- **Write a MongoDB query to arrange the name of the restaurants in descending order along with all the columns.**
  db.Restaurant.find().sort({ "name": -1 });



```
  {
    _id: ObjectId("6751f5566a59c75535ff9947"),
    name: 'Kyotos',
    town: 'Majestic',
    cuisine: 'Japanese',
    score: 9,
    address: { zipcode: '10300', street: 'Majestic' }
  },
  {
    _id: ObjectId("6751f5566a59c75535ff9948"),
    name: 'WOW Momos',
    town: 'Malleshwaram',
    cuisine: 'Indian',
    score: 5,
    address: { zipcode: '10400', street: 'Malleshwaram' }
  }
]
Atlas atlas-10jjz6-shard-0 [primary] test> db.restaurants.find({}).sort({ name: -1 })
[
  {
    _id: ObjectId("6751f5566a59c75535ff9948"),
    name: 'WOW Momos',
    town: 'Malleshwaram',
    cuisine: 'Indian',
    score: 5,
    address: { zipcode: '10400', street: 'Malleshwaram' }
  },
  {
    _id: ObjectId("6751f5566a59c75535ff9944"),
    name: 'Meghna Foods',
    town: 'Jayanagar',
    cuisine: 'Indian',
    score: 8,
    address: { zipcode: '10001', street: 'Jayanagar' }
  },
  {
    _id: ObjectId("6751f5566a59c75535ff9947"),
    name: 'Kyotos',
    town: 'Majestic',
    cuisine: 'Japanese',
    score: 9,
```

- **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.**

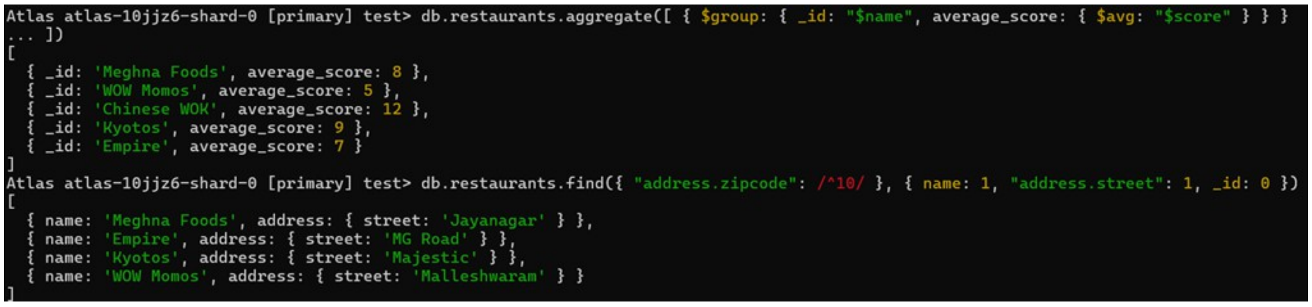
  db.Restaurant.find({ "grades.score": { $lte: 10 } },{ _id: 1, name: 1, town: 1, cuisine: 1, restaurant_id: 1 });



```
    name: 'Empire',
    town: 'MG Road',
    cuisine: 'Indian',
    score: 7,
    address: { zipcode: '10100', street: 'MG Road' }
  },
  {
    _id: ObjectId("6751f5566a59c75535ff9946"),
    name: 'Chinese WOK',
    town: 'Indiranagar',
    cuisine: 'Chinese',
    score: 12,
    address: { zipcode: '20000', street: 'Indiranagar' }
  }
]
Atlas atlas-10jjz6-shard-0 [primary] test> db.restaurants.find({ "score": { $lte: 10 } }, { _id: 1, name: 1, town: 1, cuisine: 1 })
[
  {
    _id: ObjectId("6751f5566a59c75535ff9944"),
    name: 'Meghna Foods',
    town: 'Jayanagar',
    cuisine: 'Indian'
  },
  {
    _id: ObjectId("6751f5566a59c75535ff9945"),
    name: 'Empire',
    town: 'MG Road',
    cuisine: 'Indian'
  },
  {
    _id: ObjectId("6751f5566a59c75535ff9947"),
    name: 'Kyotos',
    town: 'Majestic',
    cuisine: 'Japanese'
  },
  {
    _id: ObjectId("6751f5566a59c75535ff9948"),
    name: 'WOW Momos',
    town: 'Malleshwaram',
    cuisine: 'Indian'
  }
```

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

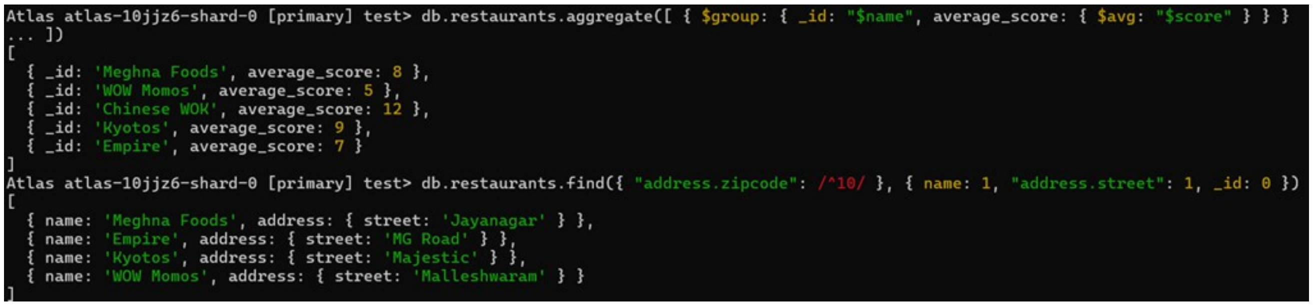
  db.restaurants.aggregate([{ $group: { _id: "$name", average_score: { $avg: "$score" }}}])



```
Atlas atlas-10jjz6-shard-0 [primary] test> db.restaurants.aggregate([ { $group: { _id: "$name", average_score: { $avg: "$score" } } }
... ])
[
  { _id: 'Meghna Foods', average_score: 8 },
  { _id: 'WOW Momos', average_score: 5 },
  { _id: 'Chinese WOK', average_score: 12 },
  { _id: 'Kyotos', average_score: 9 },
  { _id: 'Empire', average_score: 7 }
]
Atlas atlas-10jjz6-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: 'MG Road' } },
  { name: 'Kyotos', address: { street: 'Majestic' } },
  { name: 'WOW Momos', address: { street: 'Malleshwaram' } }
]
```

- **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": /^10/ }, { name: 1, "address.street": 1, _id: 0 })



```
Atlas atlas-10jjz6-shard-0 [primary] test> db.restaurants.aggregate([ { $group: { _id: "$name", average_score: { $avg: "$score" } } }
... ])
[
  { _id: 'Meghna Foods', average_score: 8 },
  { _id: 'WOW Momos', average_score: 5 },
  { _id: 'Chinese WOK', average_score: 12 },
  { _id: 'Kyotos', average_score: 9 },
  { _id: 'Empire', average_score: 7 }
]
Atlas atlas-10jjz6-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: 'MG Road' } },
  { name: 'Kyotos', address: { street: 'Majestic' } },
  { name: 'WOW Momos', address: { street: 'Malleshwaram' } }
]
```