Assignment -

Theory

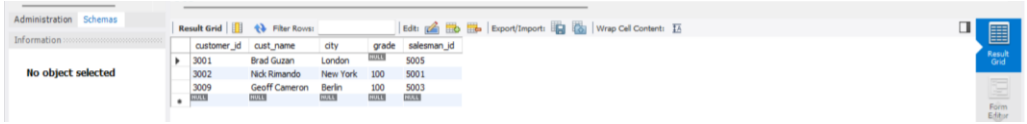
1.compare sql and nosql databases.

Aspect	SQL (Relational)	NoSQL (Non-relational)
Data Structure	Tables with rows and columns	Document-based, key-value, column-family, or graph-based
Schema	Fixed schema (predefined structure)	Flexible schema (dynamic and adaptable)
Scalability	Vertically scalable (upgrading hardware)	Horizontally scalable (adding more servers)
Data Integrity	ACID-compliant (strong consistency)	BASE-compliant (more available, less consistent)
Query Language	SQL (Structured Query Language)	Varies (e.g., MongoDB uses its own query language)
Performance	Efficient for complex queries and transactions	Better for large-scale data and fast read/write operations
Use Case	Best for transactional systems (banking, ERP, etc.)	Ideal for big data, real-time web apps, and data lakes
Examples	MySQL, PostgreSQL, Oracle, MS SQL Server	MongoDB, Cassandra, CouchDB, Neo4j

Practical-

1. Write a SQL query to find customers who are either from the city ‘New York’ or who do not have a grade greater than 100. Return customer_id, cust_name, city, grade, and salesman_id.

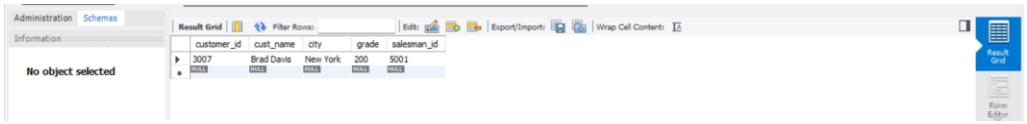
```
select customer_id,cust_name,city,grade,salesman_id
from customer
where city = 'newyork' or grade <= 100 OR grade IS NULL;
```



2. Write a SQL query to find all the customers in ‘New York’ city who have a grade value above 100. Return customer_id, cust_name, city, grade, and salesman_id.

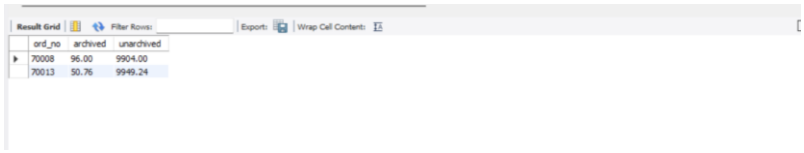
```
select customer_id, cust_name, city, grade,  salesman_id
from customer
```

where city = 'new york' and grade >100;



3. Write a SQL query that displays order number, purchase amount, and the achieved and unachieved percentage (%) for those orders that exceed 50% of the target value of 6000.

```
select ord_no, round((purch_amt /6000)*100,2) as archived, round((100-purch_amt /6000)*100,2)
as unarchived
 from orders
 where purch_amt > 3000;
```



4. Write a SQL query to calculate the total purchase amount of all orders. Return total purchase amount.

select sum(purch_amt) as totalpurchase

from orders;

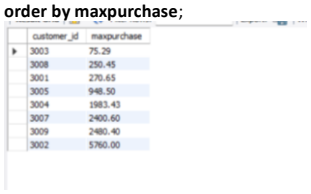
5.Write a SQL query to find the highest purchase amount ordered by each customer. Return customer_id, maximum purchase amount.

select customer_id,max(purch_amt) as maxpurchase

from orders

group by customer_id

order by maxpurchase;



6.Write a SQL query to calculate the average product price. Return average product price.

select round(avg(pro_price),2) as avgprice

from item_mast;

7. Write a SQL query to find those employees whose department is located at 'Toronto'. Return first name, last name, employee_id, job_id.

SELECT e.employee_id,e.first_name,e.last_name,e.job_id

FROM employees e

join departments d

```
on e.department_id = d.department_id
join locations l
on d.location_id = l.location_id
where l.city='toronto';
```

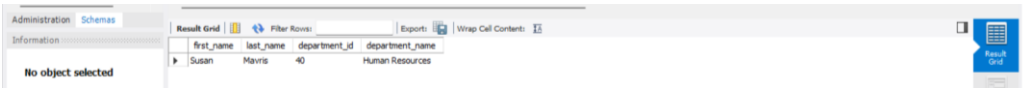
employee_id	first_name	last_name	job_id
201	Michael	Hartstein	MK_MAN
202	Pat	Fay	MK_REP

8. Write a SQL query to find those employees whose salary is lower than that of employees whose job title is"MK_MAN". Exclude employees of the job title "MK_MAN". Return employee_id, first name, last name, job_id.

```
select employee_id,first_name,last_name,job_id
from employees
where salary <
   (select min(salary) lowersalary
   from employees
   where job_id = 'MK_MAN')
 and job_id != 'MK_MAN';
```

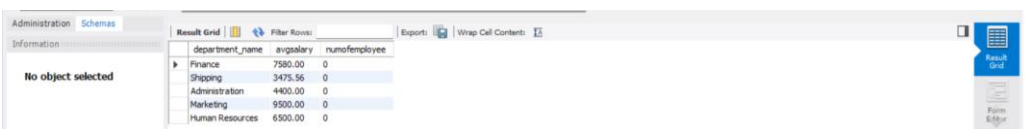
9. Write a SQL query to find all those employees who work in department ID 80 or 40. Return first name, last name, department number, and department name.

```
select e.first_name,e.last_name,d.department_id,d.department_name
from employees e
join departments d
on e.department_id = d.department_id
where d.department_id = 80 or d.department_id= 40;
```



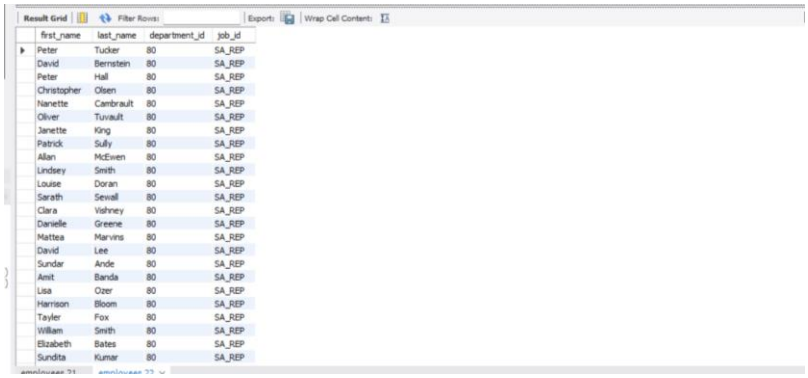
10. Write a SQL query to calculate the average salary, the number of employees receiving commissions in that department. Return department name, average salary and number of employees.

```
select d.department_name , round(avg(e.salary),2) avgsalary ,count(e.commission_pct) numofemployee
from employees e
join departments d
on e.department_id = d.department_id
group by d.department_name;
```



11. Write a SQL query to find out which employees have the same designation as the employee whose ID is 169. Return first name, last name, department ID, and job ID.

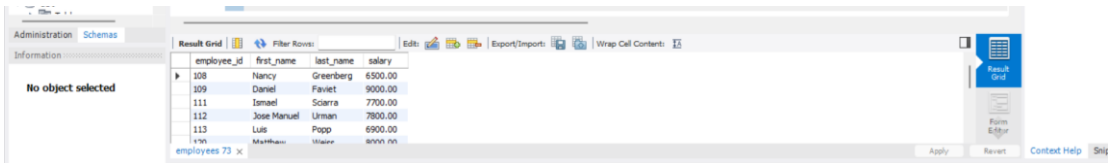
```
select*from employees;
select first_name,last_name,department_id,job_id
from employees
where job_id = (
        select job_id
        from employees
        where employee_id = 169);
```



first_name	last_name	department_id	job_id
Peter	Tucker	80	SA_REP
David	Bernstein	80	SA_REP
Peter	Hall	80	SA_REP
Christopher	Olsen	80	SA_REP
Nanette	Cambrault	80	SA_REP
Oliver	Tuvault	80	SA_REP
Janette	King	80	SA_REP
Patrick	Sully	80	SA_REP
Allan	McEwen	80	SA_REP
Lindsey	Smith	80	SA_REP
Louise	Doran	80	SA_REP
Sarath	Sewall	80	SA_REP
Clara	Vishney	80	SA_REP
Danielle	Greene	80	SA_REP
Mattea	Marvins	80	SA_REP
David	Lee	80	SA_REP
Sundar	Ande	80	SA_REP
Amit	Banda	80	SA_REP
Lisa	Ozer	80	SA_REP
Harrison	Bloom	80	SA_REP
Tayler	Fox	80	SA_REP
William	Smith	80	SA_REP
Elizabeth	Bates	80	SA_REP
Sundita	Kumar	80	SA_REP

12. Write a SQL query to find those employees who earn more than the average salary. Return employee ID, first name, last name.

```
select employee_id,first_name,last_name,salary
from employees
where salary >
(select avg(salary) avgsalary
from employees);
```



employee_id	first_name	last_name	salary
108	Nancy	Greenberg	6500.00
109	Daniel	Faviet	9000.00
111	Ismael	Sciarra	7700.00
112	Jose Manuel	Urman	7800.00
113	Luis	Popp	6900.00

13.Write a SQL query to find all those employees who work in the Finance department. Return department ID, name (first), job ID, and department name.

```
select d.department_id, e.first_name,e.job_id,d.department_name
from employees e
join departments d
on e.department_id = d.department_id
where department_name = 'finance';
```

department_id	first_name	job_id	department_name
100	Nancy	FI_MGR	Finance
100	Daniel	FI_ACCOUNT	Finance
100	Ismael	FI_ACCOUNT	Finance
100	Jose Manuel	FI_ACCOUNT	Finance
100	Luis	FI_ACCOUNT	Finance

14.From the following table, write a SQL query to find the employees who earn less than the employee of ID 182. Return first name, last name, and salary.

```
select first_name,last_name, salary
from employees
where salary <
(select salary
```

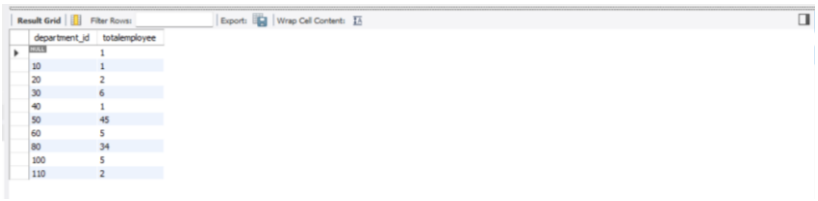
from employees

where employee_id = 182);

stored procedure

15. Create a stored procedure CountEmployeesByDept that returns the number of employees in each department.

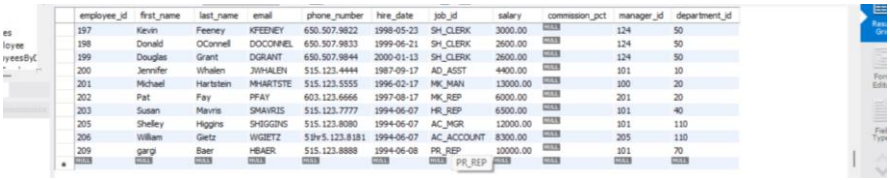
```
delimiter //
create procedure countemployee()
begin
   select department_id,count(*) as totalemployee
   from employees
   group by department_id;
end//
delimiter ;
call countemployee();
```



16.Create a stored procedure AddNewEmployee that adds a new employee to the database.

```
delimiter //
create procedure addnewemployee(
  in employee_id INT UNSIGNED ,
   in first_name VARCHAR(20),
    in last_name VARCHAR(25) ,
   in email VARCHAR(25) ,
   in phone_number VARCHAR(20),
  in  hire_date DATE ,
  in  job_id VARCHAR(10) ,
  in  salary DECIMAL(8, 2),
  in  commission_pct DECIMAL(5, 2),
  in  manager_id INT UNSIGNED,
  in  department_id INT UNSIGNED
)
begin
  INSERT INTO employees
VALUES
(employee_id, first_name, last_name, email, phone_number, hire_date, job_id, salary, commission_pct, manager_id, department_id);
end //
delimiter ;
SET FOREIGN_KEY_CHECKS = 1;
```

```
call addNEWemployee(209, 'gargi', 'Baer', 'HBAER', '515.123.8888', '1994-06-08', 'PR_REP', 10000, NULL, 101, 70);
SET FOREIGN_KEY_CHECKS = 1;
```



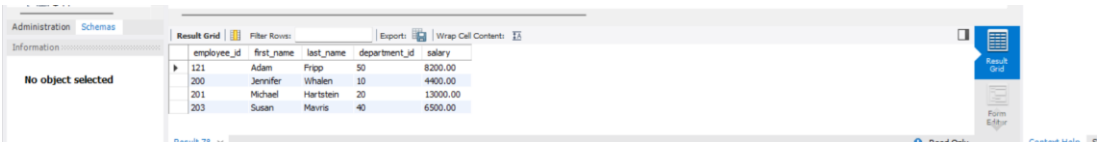
employee_id	first_name	last_name	email	phone_number	hire_date	job_id	salary	commission_pct	manager_id	department_id
197	Kevin	Feeney	KFEENEY	650.507.9822	1998-05-23	SH_CLERK	3000.00	NULL	124	50
198	Donald	OConnell	DOCONNEL	650.507.9833	1999-06-21	SH_CLERK	2600.00	NULL	124	50
199	Douglas	Grant	DGRANT	650.507.9844	2000-01-13	SH_CLERK	2600.00	NULL	124	50
200	Jennifer	Whalen	JWHALEN	515.123.4444	1987-09-17	AD_ASST	4400.00	NULL	101	10
201	Michael	Hartstein	MHARTSTE	515.123.5555	1996-02-17	MK_MAN	13000.00	NULL	100	20
202	Pat	Fay	PFAY	603.123.6666	1997-08-17	MK_REP	6000.00	NULL	201	20
203	Susan	Mavris	SMAVRIS	515.123.7777	1994-06-07	HR_REP	6500.00	NULL	101	40
205	Shelley	Higgins	SHIGGINS	515.123.8080	1994-06-07	AC_MGR	12000.00	NULL	101	110
206	William	Gietz	WGIETZ	51hr5.123.8181	1994-06-07	AC_ACCOUNT	8300.00	NULL	205	110
209	gargi	Baer	HBAER	515.123.8888	1994-06-08	PR_REP	10000.00	NULL	101	70
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

17. Create a stored procedure DeleteEmployeesByDept that removes all employees from a specific department.

```
delimiter //
create procedure DeleteEmployeesByDept(in dept_id int unsigned)
begin
   delete
   from employees
   where  department_id = dept_id;
end //
delimiter ;
SET FOREIGN_KEY_CHECKS = 0;
call DeleteEmployeesByDept(100);
SET FOREIGN_KEY_CHECKS = 1;
```

18. Create a stored procedure GetTopPaidEmployees that retrieves the highest-paid employee in each department.

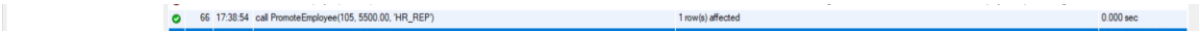
```
DELIMITER //
CREATE PROCEDURE GetTopPaidEmployees()
BEGIN
  SELECT e.employee_id, e.first_name, e.last_name, e.department_id, e.salary
   FROM employees e
   WHERE e.salary = (
      SELECT MAX(salary)
      FROM employees
      WHERE department_id = e.department_id
      );
END //

DELIMITER ;

CALL GetTopPaidEmployees();
```



19. Create a stored procedure PromoteEmployee that increases an employee's salary and changes their job role.

```
delimiter //
create procedure PromoteEmployee(IN emp_id INT,
   IN new_salary DECIMAL(8,2),
   IN new_job_id VARCHAR(10)
```

```
)
begin
update employees
set salary = new_salary,
      job_id = new_job_id
   WHERE employee_id = emp_id;
end //
delimiter ;
call PromoteEmployee(105, 5500.00, 'HR_REP');
```



20. Create a stored procedure AssignManagerToDepartment that assigns a new manager to all employees in a specific department.

```
delimiter //
create procedure AssignManagerToDepartment (in  dept_id INT UNSIGNED,
in  new_manager_id INT UNSIGNED)
begin
update employees
set manager_id = new_manager_id
where department_id = dept_id;
end //
delimiter ;
call AssignManagerToDepartment(50,114);
```


No-sql

1.retrive all employee records.

```
db.collection.find()
```

2.find employee who work in the IT department.

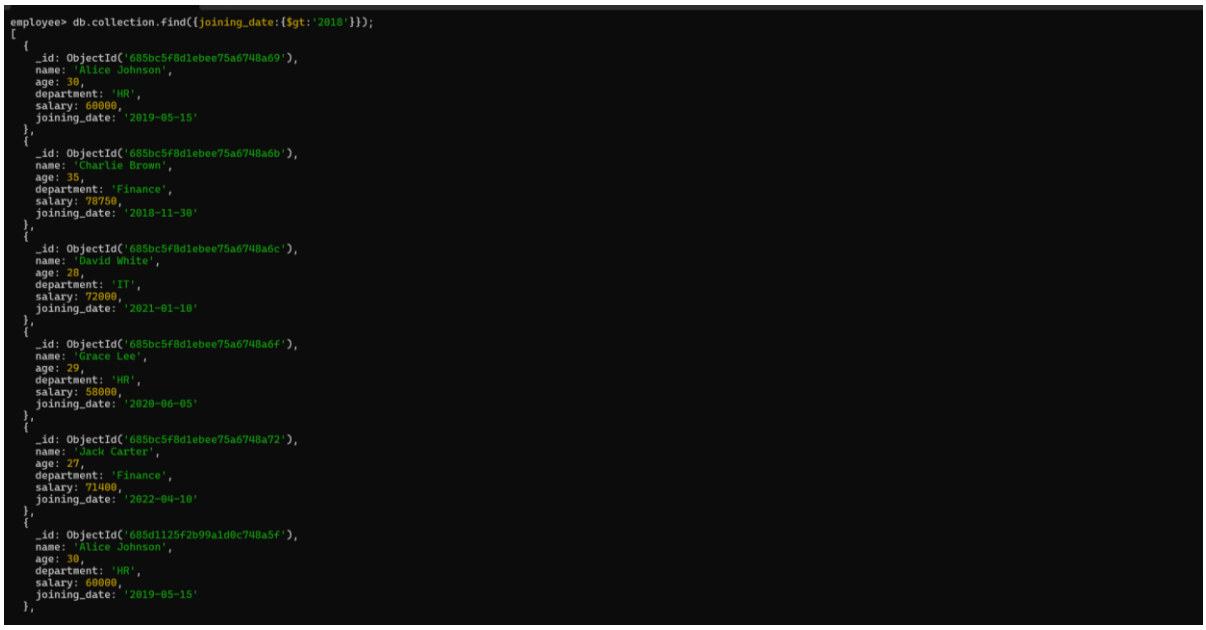
db.collection.find({department:'IT'});

3.find employee who have a salary greater than 70000.

db.collection.find({salary:{$gt:70000}});

4. find employee who joined after 2018.

db.collection.find({joining_date:{$gt:'2018'}});



5.find employee between the ages of 30 and 40.

db.collection.find({age:{$gt:30,$lt:40}});

```
employee> db.collection.find({age:{$gt:30,$lt:40}});
[
  {
    _id: ObjectId('685bc5f8d1ebee75a6748a6b'),
    name: 'Charlie Brown',
    age: 35,
    department: 'Finance',
    salary: 78750,
    joining_date: '2018-11-30'
  },
  {
    _id: ObjectId('685bc5f8d1ebee75a6748a6d'),
    name: 'Emma Wilson',
    age: 32,
    department: 'Marketing',
    salary: 65000,
    joining_date: '2017-03-25'
  },
  {
    _id: ObjectId('685bc5f8d1ebee75a6748a71'),
    name: 'Isabella Martinez',
    age: 38,
    department: 'Marketing',
    salary: 70000,
    joining_date: '2016-09-18'
  },
  {
    _id: ObjectId('685d1125f2b99a1d0c748a61'),
    name: 'Charlie Brown',
    age: 35,
    department: 'Finance',
    salary: 75000,
    joining_date: '2018-11-30'
  },
  {
    _id: ObjectId('685d1125f2b99a1d0c748a63'),
    name: 'Emma Wilson',
    age: 32,
    department: 'Marketing',
    salary: 65000,
    joining_date: '2017-03-25'
  },
  {
    _id: ObjectId('685d1125f2b99a1d0c748a67'),
    name: 'Isabella Martinez',
    age: 38,
    department: 'Marketing',
    salary: 70000,
    joining_date: '2016-09-18'
```

6.increase the salary of all employee in the finance department by 5%.

db.collection.updateMany({department:'Finance'},{$mul:{salary:0.05}});

```
employee> db.collection.updateMany({department:'Finance'},{$mul:{salary:1.05}});
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 6,
  modifiedCount: 6,
  upsertedCount: 0
}
```

7.delete employee who joined before 2010.

db.collection.deleteMany({joining_date:{$lt:"2010"}});

```
employee> db.collection.deleteMany({joining_date:{$lt:"2010"}});
{ acknowledged: true, deletedCount: 1 }
employee>
```

8. find the highest-paid employee.

db.collection.find().sort({salary:-1}).limit(1);

```
employee> db.collection.find().sort({salary:-1}).limit(1);
[
  {
    _id: ObjectId('685bc5f8d1ebee75a6748a6e'),
    name: 'Franklin Adams',
    age: 45,
    department: 'Finance',
    salary: 99225,
    joining_date: '2010-07-12'
  }
]
```