--- case study 1

-- Problem Statements to be solved using - Where Clause

/* 1. Display the first name and department number for all customers whose last name is "De Haan"
(Employees table).*/

select first_name, department_id from employees

where last_name="de haan";

-- 2. Display all data from Departments table for Sales department (department_name column)

select * from departments

where department_name="sales";

/* 3. Display the first name, last_name, department number and salary for all employees who earn
more than 9700 (Employees table).*/

select first_name, last_name, department_id,salary from employees

where salary>"9700";

-- 4. Display all data from Employees table for all employees who was hired before January 1st, 1992

select * from employees

where hire_date < "1992-01-01";

/* 5. Display the employee number, first name, job id and department number for all employees whose
department number equals 20, 60 or 80 (Employees table).*/

select employee_id,first_name,job_id,department_id from employees

where department_id in (20,60,80);

/* 6. Display the employee number, first name, job id and department number for all employees whose
department number is not equal to 20, 60 and 80 (Employees table).*/

select employee_id,first_name, job_id ,department_id from employees

where department_id not in (20,60,80);

/*7. Display the last name, phone number, salary and manager number, for all employees whose manager number equals 100, 102 or 103 (Employees table).*/

select last_name,phone_number,salary,manager_id from employees

where manager_id in (100,102,103);

/*8. Display the first name and salary for all employees whose first name ends with an e (Employees table).*/

select first_name, salary from employees

where first_name like "%e";

/* 9. Display the last name and department number for all employees where the second letter in their last name is i (Employees table).*/

select last_name,department_id from employees

where last_name like "_i%";

/*10. Display all data from Employees table for all employees who have the letters : L, J, or H in their last name. Sort the query in descending order by salary.*/

select * from employees

where last_name like "%l%" or last_name like "%j%" or last_name like "%h%"

order by salary desc;

/*11. Display the first name, hire date, salary and department number for all employees whose first name doesn't have the letter A. Sort the query in ascending order by department number (Employees table).*/

select first_name,hire_date,salary,department_id from employees

where first_name not like "%a%"

order by department_id;

-- 12. Display all data from Employees table for all employees without any department number

```
select * from employees
where department_id is null;
```

/* 13. Display the first name concatenated with the last name, separated by comma, and salary, for all employees whose salary not in the range between 7000 and 15000. Sort the query in ascending order by the full name (Employees table)*/

```
select concat(first_name,',',salary,last_name) as full_name  from employees
where salary not between '7000'and '15000'
order by full_name;
```

/*14. Display the first name concatenated with the last name, separated by comma, the phone number concatenated with the email address, separated by hyphen, and salary, for all employees whose salary is in the range of 5000 and 10000. Name the column headings: "FULL_NAME", "CONTACTS" and "SAL" respectively (Employees table).*/

```
select concat(first_name,',',last_name) as 'full_name',concat(phone_number,'-',email) as
'contacts',salary as 'sal' from employees
where salary between '5000' and '10000';
```

/*15. Display all data from Employees table for all employees whose: salary is in the range of 6000 and 800 and their commission is not null or department number is not equal to 80, 90 and 100 and their hire date is before January 1st, 1990.*/

```
select * from employees
where salary between '800'and '6000'and
commission_pct is not null or
department_id not in(80,90,100) or
hire_date<'1999-01-01'
order by salary desc;
```

/*16. Display last name, job id and hire date for all employees who was hired during December 12th, 1995 and April 17th, 1998.*/

select last_name,job_id,hire_date from employees

where hire_date between '1995-12-12' and '1998-04-17';

/*17. Display the first name concatenated with last name, hire date, commission percentage, telephone, and salary for all employees whose salary is greater than 10000 or the third digit in their phone number equals 5. Sort the query in a descending order by the first name (Employees table).*/

select concat(first_name,' ',last_name),hire_date,commission_pct,phone_number,salary from employees

where salary > '10000' or phone_number like '__5%'

order by first_name desc;

-- 18. Display the last name and salary for all employees who earn more than 12000 (Employees table).

select last_name, salary from employees

where salary >"12000";

/*19. Display the last name and department number for all employees whose department number is equal to 50 or 80. Perform this exercise once by using the IN operator, once by using the OR operator.*/

select last_name,department_id from employees

where department_id in (50,80);

select last_name,department_id from employees

where department_id='50' or department_id='80';

-- 20. Display the first name and salary for all employees who doesn't earn any commission.

select first_name, salary,commission_pct from employees

where commission_pct is null;

/*21. Display the first name, salary, and manager number for all employees whose manager number is not null*/

select first_name,salary,manager_id from employees

where manager_id is not null;

select * from employees;

-- Problem Statements to be solved using – SQL Scalar/Numeric Functions

/*1. Display the first name in lower case and last name in upper case, for all employees whose employee number is in the range between 80 and 150*/

select employee_id,(first_name),upper(last_name) from employees

where employee_id between '80' and '150';

/*2. Display the first name and last name for all employees whose family name is King, perform this exercise with a case-insensitive search (regardless of the capitalization used for the values within last name column).*/

select first_name ,last_name from employees

where last_name='king';

/*3. Generating new email address

a. For each employee, display the first name, last name, and email address. The email address will be composed from the first letter of first name, concatenated with the three first letters of last name, concatenated with @oracle.com.*/

select first_name,last_name, concat(substr(first_name,1,1),substr(last_name,1,3),'@oracle.com') as email

from employees;

/*b. For each employee, display the first name, last name, and email address. The email address will be composed from the first letter of first name, concatenated with the three last letters of last name, concatenated with @oracle.com.*/

select first_name, last_name,concat(substr(first_name,1,1),substr(last_name,-3),'@oracle.com') as email

from employees;

-- 4. Using the CONCAT function

/*a. For each employee, use the CONCAT function to display the first name concatenated with the last name.*/

select First_name,last_name,concat(first_name,' ',last_name) from employees;

/*b. For each employee, use the CONCAT function to display the first name concatenated with the last name, concatenated with hire date.*/

select first_name, last_name,concat(first_name,last_name,hire_date) from employees;

-- 5. Display the last name for all employees where last name's length is greater than 8 characters.

select last_name from employees

where length(last_name)>"8";

-- 6. Phone numbers:

/*a. For each employee, display the first name, last name, phone number and a new phone number using the REPLACE function. in the new phone number replace all occurrences of 515 with 815.*/

select first_name,last_name,phone_number,replace(phone_number,"515","815") as new_phnno from employees;

/*b. For each employee, display the first name, last name, phone number and a new phone number using the REPLACE function. in the new phone number replace all prefixes of 515 with 815.*/

-- 7. For each employee, display :
-- a. first name
select first_name from employees;

-- b. salary
select salary from employees;

-- c. salary after a raise of 12%
select salary,salary+salary*(12/100) from employees;

-- d. salary after a raise of 12%, expressed as a whole number (ROUND).
select salary,round((salary+(salary*(12/100)))) from employees;

-- e. salary after a raise of 12%, round down to the nearest whole number
select salary,floor((salary+(salary*(12/100)))) from employees;

/*8. For each employee, display the first name, hire date, hire date minus 10 days, hire date plus one month, and the day difference between current date and hire date*/
select first_name,hire_date,timestampdiff(day,hire_date,curdate()),adddate(hire_date,-10),timestampadd(month,1,hire_date)
from employees;

/*9. For each employee, display the first name, last name, hire date, number of months he works in the company, and number of years he works in the company*/

```sql
select first_name,
last_name,hire_date,timestampdiff(month,hire_date,curdate()),timestampdiff(year,hire_date,curdate())
 from employees;
```

-- 10. For each employee, display the first name, hire date, and hire date plus one year.

```sql
 select first_name,hire_date,timestampadd(year,1,hire_date) from employees;
```

/*11. For each employee, display the first name, hire date, hire date rounded up to the nearest year, and hire date rounded up to the nearest month*/

```sql
select first_name, hire_date,round('year',hire_date) from employees;
```

-- 12. For each employee, display the first name, the day of his hire date, and the year of his hire date.

```sql
select first_name,hire_date,year(hire_date) from employees;
```

/*13. Display the last name in upper case, the salary in format model : '9,999.999', and hire date in format model: 'DD/MM/YYYY', for all employees whose last name begins with the letter D or K.*/

```sql
select upper(last_name),salary,date_format(hire_date,'%d/%m/%Y') from employees
where last_name like 'D%' or last_name like '%k';
```

-- 14. Commission Percentage
/*a. For each employee, display the first name, last name, salary and commission percentage.
If an employee doesn't earn a commission, display 0 instead of NULL.*/

```sql
set sql_safe_updates=0;
update employees
set commission_pct='0'
where commission_pct is null;
```

/*b. For each employee, display the first name, last name, salary and commission percentage.

If an employee doesn't earn a commission, display "No Commission" instead of NULL.*/

alter table employees

modify commission_pct varchar(20);

update employees

set commission_pct='no commission'

where commission_pct is null;

-- 15. For each employee, display the first name, last name, salary, and a salary grade based on these conditions :

-- a. if the salary is between 0 and 5000 – salary grade level is A.

select first_name,last_name,salary ,

case salary

when salary between '0.00' and '5000.00' then 'a'

when salary between '5001.00' and '15000.00' then 'b'

when salary between '15001.00' and '20000.00' then 'c'

else 'D'

end as 'salary_grade'

from employees;

-- wrong output

-- Problem Statements to be solved using – Basic Select Statements

/*1.Create a query to display the employee number, first name, last name, phone number and

department number (Employees table).*/

select employee_id,first_name,last_name,phone_number,department_id from employees;

/*2. Create a query to display the first name, last name, hire date, salary, and salary after a raise of 20%. Name the last column (salary after a raise) heading as "ANNUAL_SAL" (Employees table).*/

select first_name,last_name,hire_date,salary,salary+(salary*(20/100)) as 'ANNUAL_SAL' from employees;

/*3. Create a query to display the last name concatenated with the first name, separated by space, and the telephone number concatenated with the email address, separated by hyphen. Name the column headings "FULL_NAME" and "CONTACT_DETAILS" respectively (Employees tables)*/

select last_name,first_name,concat(last_name,' ',first_name)as full_name,concat(phone_number,'-',email)as contact_details

from employees;

-- 4. Create a query to display the unique manager numbers from Employees table.

select distinct manager_id from employees;

/*5. Create a query to display the last name concatenated with job_id column, separated by space. Name this column heading as "EMPLOYEE_AND_TITLE" (Employees table).*/

select concat(last_name,' ',job_id) as 'EMPLOYEE_AND_TITLE' from employees;

/*6. Create a query to display the first name, last name, salary, and hire date concatenated with the literal string "HD", separated by space. Name the column headings "FN", "LN", "SAL", and "HD" respectively (Employees table).*/

select first_name as FN,last_name as LN,salary as SAL,concat(hire_date,"HD")as HD from employees;

-- 7. Create a query to display the unique salaries in Employees tables.

select distinct salary from employees;

/*8. Create a query to display the unique combination of values in department_id and job_id columns (Employees table)*/

select distinct job_id,department_id from employees;

-- Problem Statements to be solved using – Group By

-- 1. Display the lowest last name alphabetically (Employees table).

select min(last_name) from employees;

-- 2. Display the highest last name alphabetically (Employees table).

select max(last_name) from employees;

-- 3. Display the number of rows in Employees table.

select count(*) from employees;

-- 4. Display the number of values (exclude NULLs) in commission_pct column (Employees table).

select   count(commission_pct is not null) from employees;

select commission_pct from employees

where commission_pct is not null;

-- 5. Display the number of NULL values in commission_pct column (Employees table).

select count(commission_pct is null) from employees;

-- 6. Display the highest, lowest, and average salary

select max(salary),avg(salary),min(salary) from employees;

/*Problem Statements to be solved using - GROUP BY and HAVING Clauses

7. Average salary per department

a. Display the department number and average salary for each

department.

 b. Modify your query to display the results only for departments 50 or 80.*/

select department_id,avg(salary) from employees

group by department_id;

select department_id,avg(salary) from employees

group by department_id

having department_id in(50,80);

/*8. Numer of employees per job id

a. Display the job id and the number of employees for each job id.

b. Modify your query to display the results only for employees whose salary is greater the

10000.

c. Modify your query again, this time display the results only for jobs with more than 2

people.*/

select job_id,count(*)

from employees

group by job_id;

select job_id,count(*)

from employees

where salary>10000

group by job_id;

select job_id,count(*)

from employees

group by job_id

having count(*)>2;

-- 9. Display the department number, job id, and the average salary for each department and job id.

select department_id,job_id,avg(salary)

from employees

group by department_id,job_id;

/*10. Managers and highest salary

a. Display the manager number and the highest salary for each

manager number.

b. Modify your query to display the results only for employees whose salary is

greater than 10000.*/

select manager_id,max(salary)

from employees

group by manager_id;

select manager_id,salary

from employees

where salary>10000

group by manager_id;

/*11. Display the job id and minimum salary for each job id, for all jobs whose minimum salary is

greater than 7000.*/

select job_id ,min(salary)

from employees

group by job_id

having min(salary)>7000;

/*12. Display the department number, and the average salary for each department, for all

departments whose number is in the range of 20 and 80, and their average salary is greater than

9000*/

select department_id,avg(salary)

from employees

group by department_id

having department_id in (20,80) and avg(salary)>9000;

-- Problem Statements to be solved using – SQL Sub-Queries

/*1. Display the first name and salary for all employees who earn more than employee number 103

(Employees table).*/

select employee_id,salary from employees

where salary >all(select salary from employees where employee_id=103);

/*2. Display the department number and department name for all departments whose location

number is equal to the location number of department number 90 (Departments table).*/

select department_id,department_name,location_id

 from departments

 where location_id=(select location_id from departments where department_id=90);

/*3. Display the last name and hire date for all employees who was hired after employee number 101

(Employees table)*/

select last_name, hire_date

from employees

where hire_date > (select hire_date from employees where employee_id=101);

/*4. Display the first name, last name, and department number for all employees who work in Sales

department (Employees and Departments table).*/

select first_name,last_name,department_id from employees

where department_id=(select department_id from employees where department=sales);

/*5. Display the department number and department name for all departments located in Toronto

(Departments table).*/

select department_id,department_name from departments

where department_name in (select department_name from departments where locations=toronto);

/*6. Display the first name, salary and department number for all employees who work in the department as employee number 124 (Employees table)*/
select first_name,salary,department_id from employees
where (select department_id from employees where employee_id=124);

/*7. Display the first name, salary, and department number for all employees who earn more than the average salary (Employees table).*/
select first_name,salary,department_id from employees
where salary>(select avg(salary) from employees);

/*8. Display the first name, salary, and department number for all employees whose salary equals one of the salaries in department number 20 (Employees table).*/
select first_name,salary,department_id from employees
where salary=any(select salary from employees where department_id=20);

/*9. Display the first name, salary, and department number for all employees who earn more than maximum salary in department number 50 (Employees table).*/
select first_name,salary,department_id from employees
where salary>(select max(salary) from employees where department_id=50);
select max(salary) from employees where department_id=50;

/*10. Display the first name, salary, and department number for all employees who earn more than the minimum salary in department number 60 (Employees table).*/
select first_name,salary,department_id from employees
where salary>(select min(salary) from employees where department_id=60);

/*11. Display the first name, salary, and department number for all employees who earn less than the

minimum salary of department number 90 (Employees table).*/

select first_name,salary,department_id from employees

where salary<(select min(salary) from employees where department_id=90);

/*12. Display the first name, salary and department number for all employees whose department is

located Seattle (Employees, Departments and Locations table).*/

select first_name,salary,department_id from employees

where department_id= (select department_id from locations where city='seattle');

/*13. Display the first name, salary, and department number for all employees who earn less than the

average salary, and also work at the same department as employee whose first name is Kevin*/

select first_name,salary,department_id from employees

where salary <(select avg(salary),department_name from employees where first_name='kevin');

select avg(salary) from employees;

-- Problem Statements to be solved using – Inner JOIN

/*1. Employees and departments (Employees & Departments tables)

a. For each employee, display the first name, last name, department number and department name.*/

select e.first_name,e.last_name,e.department_id,d.department_name

from employees e inner join departments d

on e.department_id=d.department_id;

/*b. Display the first name, last name, department number and department name, for all employees in

departments 50 or 90.*/

select e.first_name,e.last_name,d.department_id,d.department_name

```sql
from employees e inner join departments d

on e.department_id=d.department_id

having department_id in (50,90);


/*2. Departments and locations (Departments, Employees & Locations tables)

a. For each department, display the department name, city, and state province.*/

select d.department_name,l.city,l.state_province

from departments d  inner join locations l;


-- b. For each employee, display the full name, department name, city, and state province.

select concat(e.first_name,' ',e.last_name) as full_name,d.department_name,l.city,l.state_province

from departments d

inner join employees e

on e.department_id=d.department_id

inner join locations l

on l.location_id=d.location_id ;


/*c. Display the full name, department name, city, and state province, for all employees whose last

name contains the letter a.*/

select concat(e.first_name,' ',e.last_name) as full_name,d.department_name,l.city,l.state_province

from employees e

inner join departments d

on e.department_id=d.department_id

inner join locations l

on l.location_id=d.location_id;



-- Problem Statements to be solved using – Outer JOIN

/*4. Employees & departments
```

a. Display the first name, last name, department number and department name, for all employees

including those without any department.*/

```sql
select e.first_name,e.last_name,d.department_id,d.department_name

from employees e

right join departments d

on e.department_id=d.department_id;
```

-- b. Modify your query to display all departments including departments without any employees.

```sql
select e.first_name,e.last_name,d.department_id,d.department_name

from departments d

left join employees e

on e.department_id=d.department_id;
```

-- Problem Statements to be solved using – Self JOIN

/*5. Employees and managers (Employees table)

a. For each employee, display the last name, and the manager's last name.*/

```sql
select e.last_name as employee,m.last_name as manager

from employees e

join employees m

on e.employee_id=m.manager_id;
```

-- b. Modify your query to display all employees including those without any manager.

```sql
select e.last_name as employee,m.last_name as manager

from employees e

join employees m

on e.employee_id=m.manager_id;
```

/*6. Display the first name, last name, and department number for all employees who work in the

same department as employee whose last name is "King".*/

```
SELECT e.first_name,e.last_name,d.department_id

from employees e

join employees d

on e.department_id=d.department_id

where e.last_name='king';


-- 7. Display the last name and salary for all employees who earn less than employee number 103

select last_name,salary

from employees

where salary<(select salary from employees where employee_id=103);




select * from employees;

select * from departments;

select* from locations;

select department_name from departments where location_id=toronto;
```