SQL Assignment 3

Table 1: Employees

EmployeeID	FirstName	LastName	Department ID	HireDate	Salary
101	Alice	Johnson	1	2022-01-15	75000
102	Bob	Smith	2	2021-06-20	62000
103	Charlie	Davis	1	2023-03-10	58000
104	Diana	Prince	3	2020-11-05	90000
105	Ethan	Hunt	2	2022-08-25	64000

Table 2: Departments

DepartmentID	DeptName	Location
1	Engineering	New York
2	Marketing	Chicago
3	Executive	San Francisco
4	Sales	Austin

Table 3: Projects

ProjectID	ProjectName	LeadEmployeeID	Budget	Status
501	Alpha Tech	101	150000	Active
502	Beta Cloud	104	300000	Active
503	Gamma SEO	102	50000	Completed
504	Delta Mobile	101	80000	Pending

Problems

1. List all columns for all employees in the 'Engineering' department (DepartmentID = 1).
2. Find the names of all departments located in 'Chicago'.
3. Show the total number of projects currently marked as 'Active'.
4. List the unique last names of all employees, sorted alphabetically.
5. Retrieve the FirstName and LastName of employees who earn more than $65,000 and were hired after January 1st, 2021.
6. Calculate the average salary for each department; display the DepartmentID and the average salary.
7. List the ProjectName and the lead employee's FirstName by joining the Projects and Employees tables.
8. Find all employees who are not currently leading any project.
9. Show the names of departments that have no employees assigned to them.
10. Find the employee(s) with the highest salary and display their full name and salary amount.
11. Calculate the total budget for all projects led by employees in the 'Engineering' department.
12. List all departments that have more than one employee, along with the count of employees in each.

1. List all columns for all employees in the 'Engineering' department (DepartmentID = 1).

```
49  1.
50  select * from employees
51  where departmentid in
52      (select departmentid
53      from departments
54      where deptname='Engineering');
```

Data Output | Messages | Notifications

	employeeid [PK] integer	firstname character varying (50)	lastname character varying (50)	departmentid integer	hiredate date	salary numeric (10,2)
1	101	Alice	Johnson	1	2022-01-...	75000.00
2	103	Charlie	Davis	1	2023-03-...	58000.00

2. Find the names of all departments located in 'Chicago'.

```
56  2.
57  select deptname from departments
58  where location = 'Chicago';
```

Data Output | Messages | Notifications

	deptname character varying (50)
1	Marketing

3. Show the total number of projects currently marked as 'Active'.

```
60  3.
61  select count(projectid) ProjectCount
62  from projects
63  where status='Active';
```

Data Output | Messages | Notifications

	projectcount bigint
1	2

4. List the unique last names of all employees, sorted alphabetically.

```
65  4.
66  select distinct lastname
67  from employees
68  order by lastname asc;
```

Data Output | Messages | Notifications

	lastname character varying (50)
1	Davis
2	Hunt
3	Johnson
4	Prince
5	Smith

5. Retrieve the FirstName and LastName of employees who earn more than $65,000 and were hired after January 1st, 2021.

```
70  5.
71  select firstname, lastname
72  from employees
73  where salary>65000
74  and hiredate>'01-JAN-2021';
```

Data Output | Messages | Notifications

	firstname character varying (50)	lastname character varying (50)
1	Alice	Johnson

6. Calculate the average salary for each department; display the DepartmentID and the average salary.

```
76  6.
77  select departmentid, avg(salary)
78  from employees
79  group by departmentid;
```

Data Output | Messages | Notifications

	departmentid integer	avg numeric
1	3	90000.000000000000
2	2	63000.000000000000
3	1	66500.000000000000

7. List the ProjectName and the lead employee's FirstName by joining the Projects and Employees tables.

```
7.
select p.projectname, e.firstname
from employees e join projects p
on e.employeeid=p.leademployeeid;
```

Data Output | Messages | Notifications

	projectname character varying (50)	firstname character varying (50)
1	Alpha Tech	Alice
2	Beta Cloud	Diana
3	Gamma SEO	Bob
4	Delta Mobile	Alice

8. Find all employees who are not currently leading any project.

```
8.
select firstname||' '||lastname employeename
from employees
where employeeid not in
    (select leademployeeid
    from projects);
```

Data Output | Messages | Notifications

	employeename text
1	Charlie Davis
2	Ethan Hunt

9. Show the names of departments that have no employees assigned to them.

```
9.
select deptname from departments
where departmentid not in
    (select departmentid
    from employees);
```

Data Output | Messages | Notifications

	deptname character varying (50)
1	Sales

10. Find the employee(s) with the highest salary and display their full name and salary amount.

```
98  10.
99  select firstname||' '||lastname fullname, salary
100 from employees where salary =
101     (select max(salary) from employees);
```

Data Output | Messages | Notifications

	fullname text	salary numeric (10,2)
1	Diana Prince	90000.00

11. Calculate the total budget for all projects led by employees in the 'Engineering' department.

```
103 11.
104 select sum(p.budget) totalbudget
105 from projects p join employees e
106 on p.leademployeeid=e.employeeid
107 join departments d
108 on e.departmentid=d.departmentid
109 where d.deptname='Engineering';
```

Data Output | Messages | Notifications

	totalbudget numeric
1	230000.00

12. List all departments that have more than one employee, along with the count of employees in each.

```
112 12.
113 select d.*, count(e.employeeid)
114 from employees e join departments d
115 on e.departmentid=d.departmentid
116 group by d.departmentid
117 having count(e.employeeid)>1;
```

Data Output | Messages | Notifications

	departmentid [PK] integer	deptname character varying (50)	location character varying (50)	count bigint
1	2	Marketing	Chicago	2
2	1	Engineering	New York	2