Assignment 7

creating db and tables

```
create database exp7;
```

```
+--------------------+
| Database           |
+--------------------+
| exp3               |
| exp4               |
| exp6               |
| exp7               |
```

```
use exp7;
```

```
mysql> use exp7;
Database changed
mysql>
```

creating table Departments

```
create table Departments(
    dept_id int not null primary key,
    dept_name varchar(20) not null
);
```

```
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| dept_id   | int         | NO   | PRI | NULL    |       |
| dept_name | varchar(20) | NO   |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
```

creating table Employees

```
create table Employees(
    emp_id int not null primary key,
    emp_name varchar(24) not null,
    age int not null,
    salary bigint not null,
    dept_id int not null,
    foreign key (dept_id) references Departments(dept_id)
);
```

Field	Type	Null	Key	Default	Extra
emp_id	int	NO	PRI	NULL	
emp_name	varchar(24)	NO		NULL	
age	int	NO		NULL	
salary	bigint	NO		NULL	
dept_id	int	NO	MUL	NULL	

creating table Projects

```
create table Projects(
    project_id int not null primary key,
    project_name varchar(24) not null
);
```

Field	Type	Null	Key	Default	Extra
project_id	int	NO	PRI	NULL	
project_name	varchar(24)	NO		NULL	

creating table Employee_Projects

```
create table Employee_Projects(
    emp_id int not null references Employees(emp_id),
    project_id int not null references Projects(project_id)
);
```

Field	Type	Null	Key	Default	Extra
emp_id	int	NO		NULL	
project_id	int	NO		NULL	

inserting data in Departments table

```
insert into Departments values
(1,"HR"),
(2,"Finance"),
(3,"Engineering"),
(4,"Marketing");
```

dept_id	dept_name
1	HR
2	Finance
3	Engineering
4	Marketing

inserting data in Employees table

```
insert into Employees values
(1,"Alice",30,70000,3),
(2,"Bob",28,60000,3),
(3,"Charlie",32,80000,2),
(4,"David",45,90000,1),
(5,"Eve",35,75000,4),
(6,"Frank",29,60000,2),
(7,"Grace",38,85000,3);
```

emp_id	emp_name	age	salary	dept_id
1	Alice	30	70000	3
2	Bob	28	60000	3
3	Charlie	32	80000	2
4	David	45	90000	1
5	Eve	35	75000	4
6	Frank	29	60000	2
7	Grace	38	85000	3

inserting data in Projects table

```
insert into Projects values
(101,"Payroll System"),
(102,"Recruitment Portal"),
(103,"Ad Campaign"),
(104,"Data Analytics");
```

project_id	project_name
101	Payroll System
102	Recruitment Portal
103	Ad Campaign
104	Data Analytics

inserting data in Employee_Projects table

```
insert into Employee_Projects values
(1,101),
(1,104),
(2,101),
(3,101),
(3,104),
(4,102),
(5,103),
(6,104),
(7,101),
(7,102),
(7,104);
```

emp_id	project_id
1	101
1	104
2	101
3	101
3	104
4	102
5	103
6	104
7	101
7	102
7	104

Questions

1. Retrieve details of the employee with the second highest salary.

```
select *
from Employees
order by salary desc
limit 1
offset 1;
```

emp_id	emp_name	age	salary	dept_id
7	Grace	38	85000	3

2. Find the department that has the maximum number of employees.

```
select *
from Departments
where dept_id = (
    select dept_id
    from Employees
    group by dept_id
    order by count(*) desc
    limit 1
);
```

dept_id	dept_name
3	Engineering

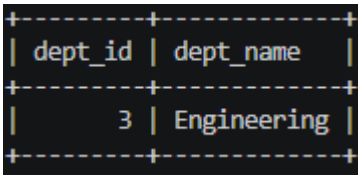
3. List employees who work on all the projects on which Alice works on.

```
select e.*
from Employees e
where not exists (
    select p1.project_id
    from Employee_projects p1
    join Employees e1
    on e1.emp_id = p1.emp_id
    and e1.emp_name = "Alice"
    except
    select p2.project_id
    from Employee_Projects p2
    where e.emp_id = p2.emp_id
)
and emp_name != "Alice";
```

emp_id	emp_name	age	salary	dept_id
3	Charlie	32	80000	2
7	Grace	38	85000	3

4. Find the names of department whose employees works on an average on 2 or more projects.

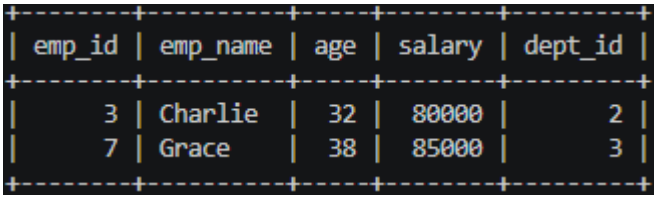
```
select d.*
from Departments d
join Employees e on e.dept_id = d.dept_id
join Employee_Projects ep on e.emp_id = ep.emp_id
group by e.dept_id
having count(ep.project_id) / count(distinct e.emp_id) >= 2;
```



dept_id	dept_name
3	Engineering

5. List employees whose salary is higher than the average salary of their department.

```
select e.*
from Employees e
where e.salary > (
    select avg(salary)
    from Employees
    where dept_id = e.dept_id
);
```



emp_id	emp_name	age	salary	dept_id
3	Charlie	32	80000	2
7	Grace	38	85000	3