

# DATABASE MANAGEMENT SYSTEM

## Project Assignment

### GROUP MEMBERS:

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4. Şevval Ayşe Kenar / 200209003
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A database table is a structured collection of data stored in a database. Tables are used to store data in a organized manner, making it easy to retrieve and manipulate the data.

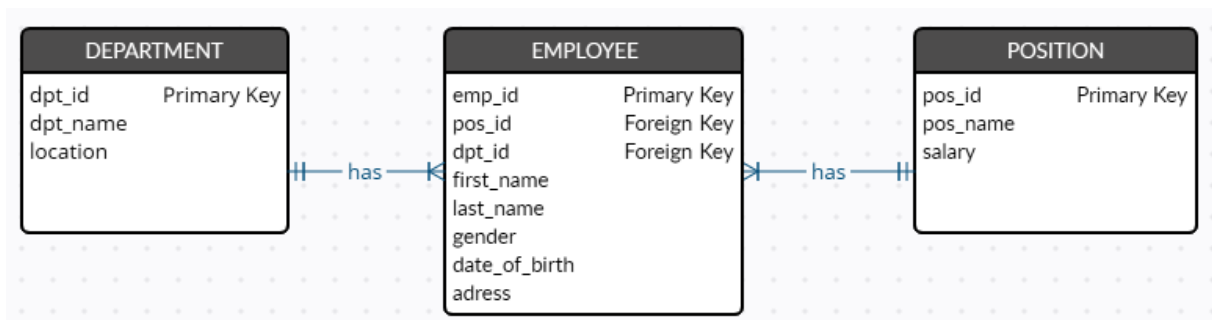
The Employee table would typically contain data about individual employees, such as their name, employee ID, contact information, salary, and job title.

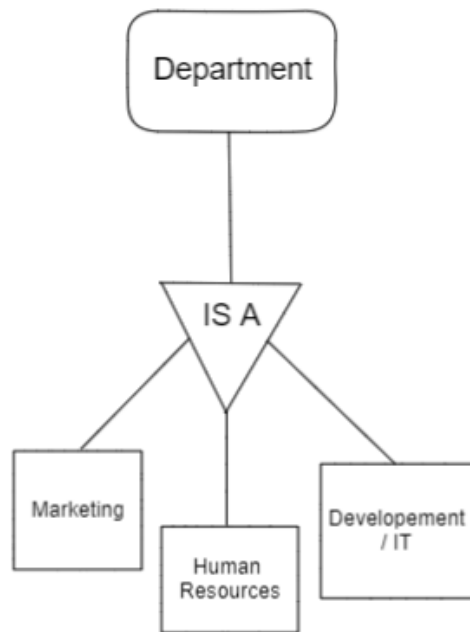
The Department table would contain data about the various departments within an organization, such as the department name and department code.

The Position table would contain data about the different positions within an organization, such as the position title and the responsibilities associated with that position.

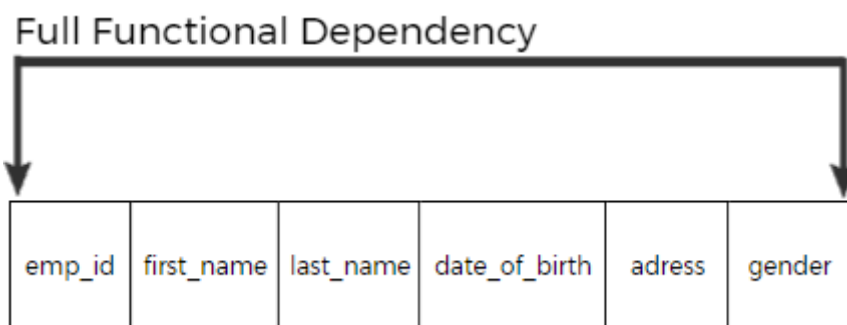
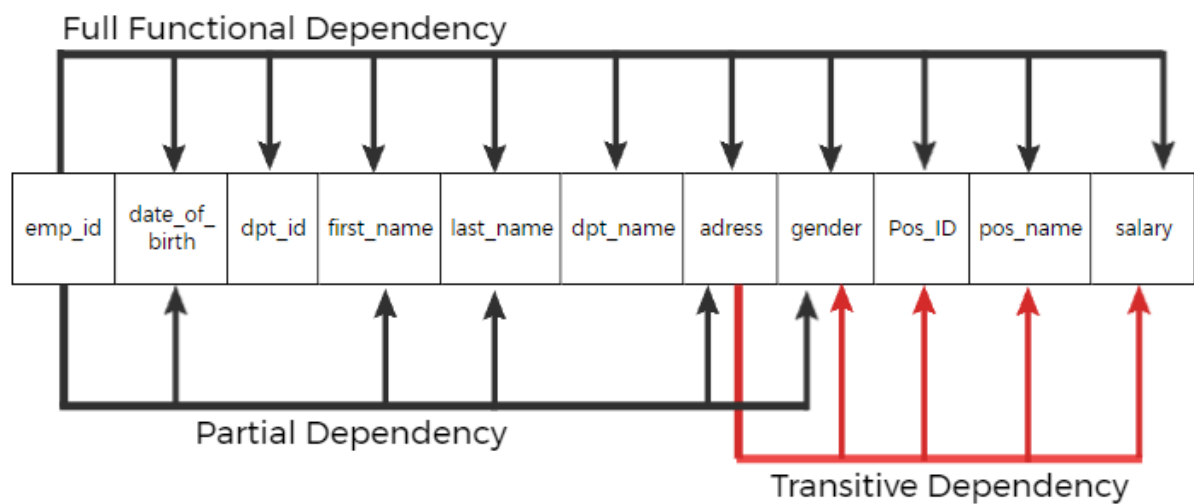
## PART 1:

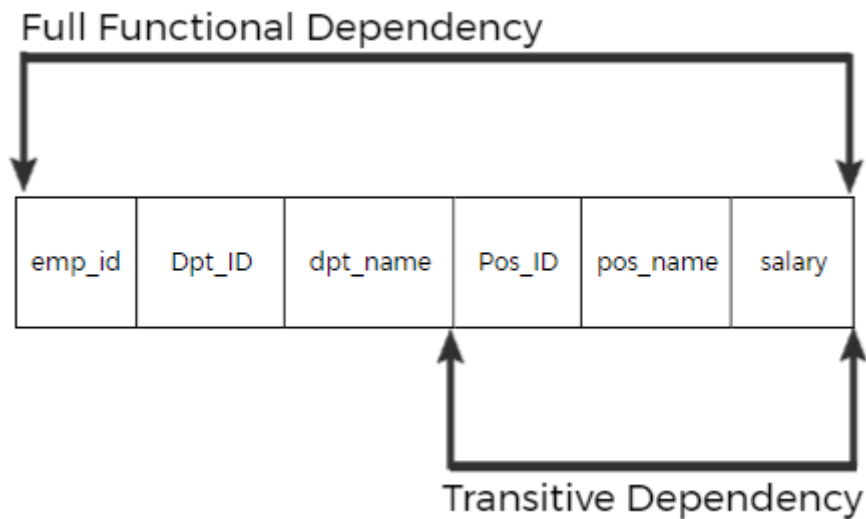
### Entity-Relationship Diagram:





### Normalization Tables:





### Full Functional Dependency :

emp\_id → date\_of\_birth, dpt\_id, first\_name, last\_name, dpt\_name, adress, gender, pos\_id, pos\_name, salary

### Partial Dependency :

emp\_id → date\_of\_birth, first\_name, last\_name, adress, gender

### Data Dictionary:

Table Name	Field Name	Data Type	Primary Key	Foreign Key	Foreign Key Reference Table	Format
DEPARTMENT	dpt_id dpt_name	INTEGER 1 CHAR 40	dpt_id			9 XXXXXXXXXX
EMPLOYEE	emp_id first_name last_name gender date_of_birth adress Dpt_ID Pos_ID	INTEGER 6 CHAR 15 CHAR 15 CHAR 1 DATE CHAR 15 INTEGER 1 INTEGER 1	emp_id	dpt_id pos_id	DEPARTMENT POSITION	999999 XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXX X yyyy-mm-dd XXXXXXXXXXXXXXXX 9 9
POSITION	pos_id pos_name salary	INTEGER 1 CHAR 40 INTEGER 6	pos_id			9 XXXXXXXXXXXXXXXX 999999

Tables:

emp_id	first_name	last_name	gender	date_of_birth	adress	Dpt_id	Pos_id
110423	Emir	Sakal	M	1994-02-01	Istanbul	4	5
115045	Abdulaziz	Abduvahobov	M	1987-05-09	Ankara	4	5
169002	Ahmet	Ince	M	1998-01-01	Bursa	1	6
117890	Tuğçe	Erciyes	F	1995-04-02	Istanbul	2	2
120375	Deniz	Özkan	M	1999-07-09	Ankara	3	3
189203	Hakan	Yılmaz	M	2000-10-04	Izmir	4	4
170234	Şevval	Kenar	F	1972-03-01	Yalova	1	1
108923	Hasan	Kaya	M	2001-01-04	Izmir	4	4

Position_Id	Position_Name	Salary
1	CEO	30000
2	Marketing Manager	5000
3	HR Manager	4000
4	Junior Software Developer	9000
5	Senior Software Developer	14000
6	Project Manager	7000

Department_Id	Department_Name
1	Administration
2	Marketing
3	Human Resources
4	Developement / IT

## PART 2:

### Create Statements:

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe
mysql: Switching to the default character set 'utf8mb4'.
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 16
Server version: 8.0.31 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database company;
Query OK, 1 row affected (0.07 sec)

mysql> use company;
Database changed
mysql> create table employee(emp_id int(6), first_name char(15), last_name char(15), gender char(1), date_of_birth date,
address char(15), Dpt_ID int(1), Pos_ID int(1));
Query OK, 0 rows affected, 3 warnings (0.68 sec)

mysql> create table department(dpt_id int(1), dpt_name char(40));
Query OK, 0 rows affected, 1 warning (0.36 sec)

mysql> create table position (pos_id int(1), pos_name char(40), salary int(6));
Query OK, 0 rows affected, 2 warnings (0.15 sec)
```

### Insert Statements:

#### EMPLOYEE:

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> use company;
Database changed
mysql> insert into employee values(110423,"Emir","Sakal","M","1994-02-01","Istanbul",4,5);
Query OK, 1 row affected (0.00 sec)

mysql> insert into employee values(115045,"Abdulaziz","Abduvahobov","M","1987-05-09","Ankara",4,5);
Query OK, 1 row affected (0.00 sec)

mysql> insert into employee values(169002,"Ahmet","Ince","M","1998-01-01","Bursa",1,6);
Query OK, 1 row affected (0.00 sec)

mysql> insert into employee values(117890,"Tugce","Erciyes","F","1995-04-02","Istanbul",2,2);
Query OK, 1 row affected (0.00 sec)

mysql> insert into employee values(120375,"Deniz","Ozkan","M","1999-07-09","Ankara",3,3);
Query OK, 1 row affected (0.00 sec)

mysql> insert into employee values(189203,"Hakan","Yilmaz","M","2000-10-04","Izmir",4,4);
Query OK, 1 row affected (0.00 sec)

mysql> insert into employee values(170234,"Sevval","Kenar","F","1972-03-01","Yalova",1,1);
Query OK, 1 row affected (0.00 sec)

mysql> insert into employee values(108923,"Hasan","Kaya","M","2001-01-04","Izmir",4,4);
Query OK, 1 row affected (0.00 sec)

mysql> select * from employee;
+-----+-----+-----+-----+-----+-----+-----+-----+
| emp_id | first_name | last_name | gender | date_of_birth | adress | Dpt_ID | Pos_ID |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 110423 | Emir       | Sakal     | M      | 1994-02-01    | Istanbul | 4      | 5      |
| 115045 | Abdulaziz  | Abduvahobov | M      | 1987-05-09    | Ankara  | 4      | 5      |
| 169002 | Ahmet      | Ince      | M      | 1998-01-01    | Bursa   | 1      | 6      |
| 117890 | Tugce      | Erciyes   | F      | 1995-04-02    | Istanbul | 2      | 2      |
| 120375 | Deniz      | Ozkan     | M      | 1999-07-09    | Ankara  | 3      | 3      |
| 189203 | Hakan      | Yilmaz    | M      | 2000-10-04    | Izmir   | 4      | 4      |
| 170234 | Sevval     | Kenar     | F      | 1972-03-01    | Yalova  | 1      | 1      |
| 108923 | Hasan      | Kaya      | M      | 2001-01-04    | Izmir   | 4      | 4      |
+-----+-----+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

## DEPARTMENT:

```
mysql> insert into department values (1,"Administration");
Query OK, 1 row affected (0.00 sec)

mysql> insert into department values (2,"Marketing");
Query OK, 1 row affected (0.00 sec)

mysql> insert into department values (3,"Human Resources");
Query OK, 1 row affected (0.00 sec)

mysql> insert into department values (4,"Development/IT");
Query OK, 1 row affected (0.00 sec)

mysql> select * from department;
+-----+-----+
| dpt_id | dpt_name |
+-----+-----+
| 1 | Administration |
| 2 | Marketing |
| 3 | Human Resources |
| 4 | Development/IT |
+-----+-----+
4 rows in set (0.00 sec)
```

## POSITION:

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

mysql> insert into position values (1, "CEO", 30000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into position values (2, "Marketing Manager", 5000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into position values (3, "HR Manager", 4000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into position values (4, "Junior Software Developer", 9000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into position values (5, "Senior Software Developer", 14000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into position values (6, "Project Manager", 7000);
Query OK, 1 row affected (0.00 sec)

mysql> select * from position;
+-----+-----+-----+
| pos_id | pos_name | salary |
+-----+-----+-----+
| 1 | CEO | 30000 |
| 2 | Marketing Manager | 5000 |
| 3 | HR Manager | 4000 |
| 4 | Junior Software Developer | 9000 |
| 5 | Senior Software Developer | 14000 |
| 6 | Project Manager | 7000 |
+-----+-----+-----+
6 rows in set (0.00 sec)
```

## ADDING PRIMARY AND FOREIGN KEYS:

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

mysql> alter table employee add primary key(emp_id);
Query OK, 8 rows affected (0.62 sec)
Records: 8 Duplicates: 0 Warnings: 0

mysql> alter table position add primary key(pos_id);
Query OK, 6 rows affected (1.66 sec)
Records: 6 Duplicates: 0 Warnings: 0

mysql> alter table department add primary key(dpt_id);
Query OK, 4 rows affected (1.19 sec)
Records: 4 Duplicates: 0 Warnings: 0

mysql> alter table employee add foreign key(Dpt_ID) references department (dpt_id);
Query OK, 8 rows affected (0.28 sec)
Records: 8 Duplicates: 0 Warnings: 0

mysql> alter table employee add foreign key(Pos_ID) references position (pos_id);
Query OK, 8 rows affected (1.21 sec)
Records: 8 Duplicates: 0 Warnings: 0
```

## PART THREE:

With 'AND' Word:

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

mysql> select employee.first_name,last_name,pos_name from employee,position where employee.Pos_ID = position.pos_id;
+-----+-----+-----+
| first_name | last_name | pos_name |
+-----+-----+-----+
| Emir       | Sakal     | Senior Software Developer |
| Abdulaziz  | Abduvahobov | Senior Software Developer |
| Ahmet      | Ince      | Project Manager |
| Tugce      | Erciyes   | Marketing Manager |
| Deniz      | Ozkan     | HR Manager |
| Hakan      | Yilmaz    | Junior Software Developer |
| Sevval     | Kenar     | CEO |
| Hasan      | Kaya      | Junior Software Developer |
+-----+-----+-----+
8 rows in set (0.00 sec)

mysql> select employee.first_name,last_name,date_of_birth,dpt_name from employee,department where employee.Dpt_ID = department.dpt_id and date_of_birth between '1990-01-01' and '2000-01-01';
+-----+-----+-----+-----+
| first_name | last_name | date_of_birth | dpt_name |
+-----+-----+-----+-----+
| Emir       | Sakal     | 1994-02-01    | Developement/IT |
| Ahmet      | Ince      | 1998-01-01    | Administration |
| Tugce      | Erciyes   | 1995-04-02    | Marketing |
| Deniz      | Ozkan     | 1999-07-09    | Human Resources |
+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

With using SUM, COUNT, AVG, MAX, MIN:

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

mysql> select sum(salary) as totalSalaryGiven, avg(salary) as averageSalaryGiven, max(salary) as maximumSalaryGiven, min(salary) as minimumSalaryGiven, count(salary) as NumberOfPerson from employee,position where employee.Pos_ID = position.pos_id;
+-----+-----+-----+-----+-----+
| totalSalaryGiven | averageSalaryGiven | maximumSalaryGiven | minimumSalaryGiven | NumberOfPerson |
+-----+-----+-----+-----+-----+
| 92000            | 11500.0000         | 30000              | 4000               | 8              |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

With using 'NOT' Word:

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

mysql> select employee.first_name,last_name,date_of_birth,pos_name,salary from employee,position where employee.Pos_ID = position.pos_id and salary > 8000;
+-----+-----+-----+-----+-----+
| first_name | last_name | date_of_birth | pos_name | salary |
+-----+-----+-----+-----+-----+
| Sevval     | Kenar     | 1972-03-01    | CEO      | 30000  |
| Hakan      | Yilmaz    | 2000-10-04    | Junior Software Developer | 9000   |
| Hasan      | Kaya      | 2001-01-04    | Junior Software Developer | 9000   |
| Emir       | Sakal     | 1994-02-01    | Senior Software Developer | 14000  |
| Abdulaziz  | Abduvahobov | 1987-05-09    | Senior Software Developer | 14000  |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select employee.first_name,last_name,date_of_birth,pos_name,salary from employee,position where employee.Pos_ID = position.pos_id and NOT salary > 8000;
+-----+-----+-----+-----+-----+
| first_name | last_name | date_of_birth | pos_name | salary |
+-----+-----+-----+-----+-----+
| Tugce      | Erciyes   | 1995-04-02    | Marketing Manager | 5000   |
| Deniz      | Ozkan     | 1999-07-09    | HR Manager | 4000   |
| Ahmet      | Ince      | 1998-01-01    | Project Manager | 7000   |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

## With LIKE, IN CLAUSE:

As you can see it in the code below, we can get the same result with using LIKE or IN CLAUSE.

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

mysql> select employee.first_name,last_name,date_of_birth,gender,pos_name from employee,position where employee.Pos_ID = position.pos_id
and pos_name LIKE '%Manager';

+-----+-----+-----+-----+-----+
| first_name | last_name | date_of_birth | gender | pos_name |
+-----+-----+-----+-----+-----+
| Tugce      | Erciyes   | 1995-04-02    | F      | Marketing Manager |
| Deniz      | Ozkan     | 1999-07-09    | M      | HR Manager |
| Ahmet      | Ince      | 1998-01-01    | M      | Project Manager |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> select employee.first_name,last_name,date_of_birth,gender,pos_name from employee,position where employee.Pos_ID = position.pos_id
and position.pos_id IN (2, 3, 6);

+-----+-----+-----+-----+-----+
| first_name | last_name | date_of_birth | gender | pos_name |
+-----+-----+-----+-----+-----+
| Tugce      | Erciyes   | 1995-04-02    | F      | Marketing Manager |
| Deniz      | Ozkan     | 1999-07-09    | M      | HR Manager |
| Ahmet      | Ince      | 1998-01-01    | M      | Project Manager |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

mysql> select employee.first_name,last_name,date_of_birth,gender,pos_name from employee,position where employee.Pos_ID = position.pos_id
and pos_name LIKE '%Developer';

+-----+-----+-----+-----+-----+
| first_name | last_name | date_of_birth | gender | pos_name |
+-----+-----+-----+-----+-----+
| Hakan      | Yilmaz    | 2000-10-04    | M      | Junior Software Developer |
| Hasan      | Kaya      | 2001-01-04    | M      | Junior Software Developer |
| Emir       | Sakal     | 1994-02-01    | M      | Senior Software Developer |
| Abdulaziz  | Abduvahobov | 1987-05-09    | M      | Senior Software Developer |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> select employee.first_name,last_name,date_of_birth,gender,pos_name from employee,position where employee.Pos_ID = position.pos_id
and position.pos_id IN (4, 5);

+-----+-----+-----+-----+-----+
| first_name | last_name | date_of_birth | gender | pos_name |
+-----+-----+-----+-----+-----+
| Hakan      | Yilmaz    | 2000-10-04    | M      | Junior Software Developer |
| Hasan      | Kaya      | 2001-01-04    | M      | Junior Software Developer |
| Emir       | Sakal     | 1994-02-01    | M      | Senior Software Developer |
| Abdulaziz  | Abduvahobov | 1987-05-09    | M      | Senior Software Developer |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

## With ORDER BY, GROUP BY:

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

mysql> select employee.emp_id,first_name,last_name,gender,date_of_birth,adress from employee ORDER BY emp_id;

+-----+-----+-----+-----+-----+-----+
| emp_id | first_name | last_name | gender | date_of_birth | adress |
+-----+-----+-----+-----+-----+-----+
| 108923 | Hasan      | Kaya      | M      | 2001-01-04    | Izmir  |
| 110423 | Emir       | Sakal     | M      | 1994-02-01    | Istanbul |
| 115045 | Abdulaziz  | Abduvahobov | M      | 1987-05-09    | Ankara |
| 117890 | Tugce      | Erciyes   | F      | 1995-04-02    | Istanbul |
| 120375 | Deniz      | Ozkan     | M      | 1999-07-09    | Ankara |
| 169002 | Ahmet      | Ince      | M      | 1998-01-01    | Bursa  |
| 170234 | Sevvval    | Kenar     | F      | 1972-03-01    | Yalova |
| 189203 | Hakan      | Yilmaz    | M      | 2000-10-04    | Izmir  |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)

mysql> select gender,count(*) as employeeNumber from employee group by gender;

+-----+-----+
| gender | employeeNumber |
+-----+-----+
| M      | 6 |
| F      | 2 |
+-----+-----+
2 rows in set (0.00 sec)
```



## WITH UPDATE and DELETE:

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

mysql> select gender,count(*) as employeeNumber from employee group by gender;
+-----+-----+
| gender | employeeNumber |
+-----+-----+
| M      | 6              |
| F      | 2              |
+-----+-----+
2 rows in set (0.00 sec)

mysql> update employee set first_name = 'Ahmet Furkan' where address = 'Bursa';
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from employee
-> ;
+-----+-----+-----+-----+-----+-----+-----+-----+
| emp_id | first_name | last_name | gender | date_of_birth | adress | Dpt_ID | Pos_ID |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 110423 | Emir       | Sakal     | M      | 1994-02-01    | Istanbul | 4      | 5      |
| 115045 | Abdulaziz | Abduvahobov | M      | 1987-05-09    | Ankara  | 4      | 5      |
| 169002 | Ahmet Furkan | Ince      | M      | 1998-01-01    | Bursa   | 1      | 6      |
| 117890 | Tugce      | Erciyes   | F      | 1995-04-02    | Istanbul | 2      | 2      |
| 120375 | Deniz      | Ozkan     | M      | 1999-07-09    | Ankara  | 3      | 3      |
| 189203 | Hakan      | Yilmaz    | M      | 2000-10-04    | Izmir   | 4      | 4      |
| 170234 | Sevvval    | Kenar     | F      | 1972-03-01    | Yalova  | 1      | 1      |
| 108923 | Hasan      | Kaya      | M      | 2001-01-04    | Izmir   | 4      | 4      |
+-----+-----+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

```
d:\wamp64\bin\mysql\mysql8.0.31\bin\mysql.exe

mysql> select * from department;
+-----+-----+
| dpt_id | dpt_name |
+-----+-----+
| 1      | Administration |
| 2      | Marketing      |
| 3      | Human Resources |
| 4      | Development/IT |
| 5      | WillBeDeleted  |
+-----+-----+
5 rows in set (0.00 sec)

mysql> delete from department where dpt_id = 5;
Query OK, 1 row affected (0.00 sec)

mysql> select * from department;
+-----+-----+
| dpt_id | dpt_name |
+-----+-----+
| 1      | Administration |
| 2      | Marketing      |
| 3      | Human Resources |
| 4      | Development/IT |
+-----+-----+
4 rows in set (0.00 sec)
```