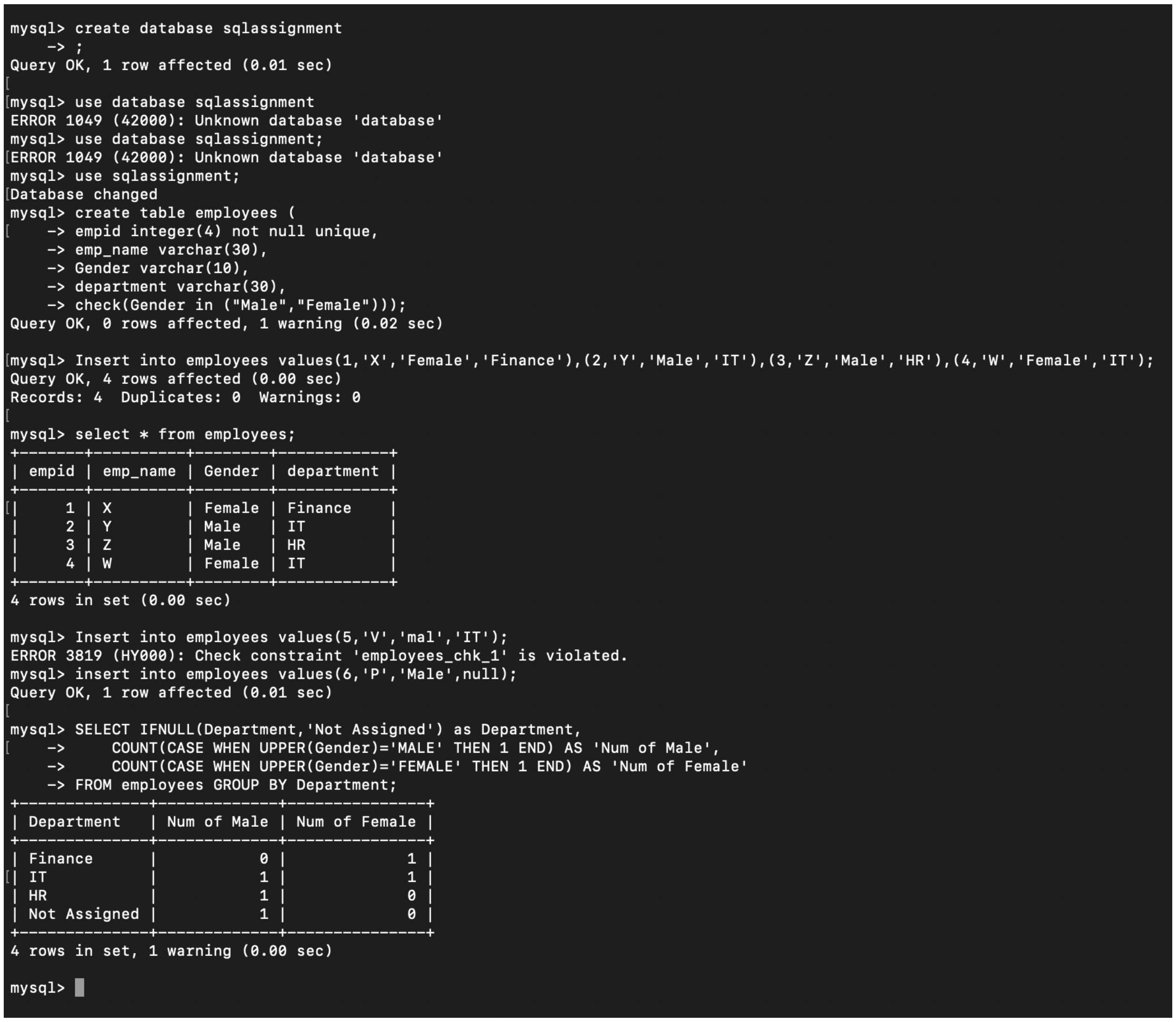
# SQL ASSIGNMENT

1. Given a table of employees, find the number of male and female employees in each department:

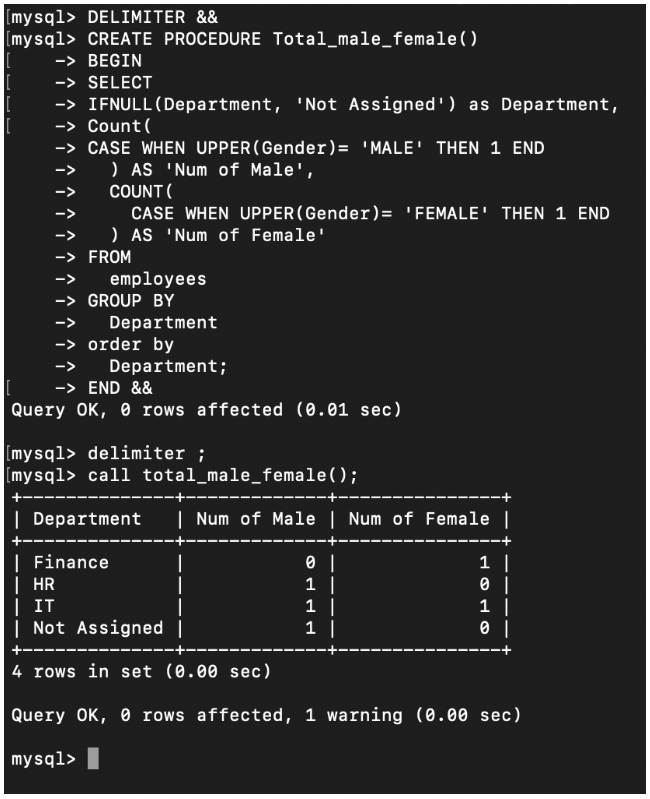
| EmpID | Name | Gender | Department |
|---|---|---|---|
| 1 | X | Female | Finance |
| 2 | Y | Male | IT |
| 3 | Z | Male | HR |
| 4 | W | Female | IT |

Output:

| Department | Num of male | Num of Female |
|---|---|---|
| Finance | 0 | 1 |
| HR | 1 | 0 |
| IT | 1 | 1 |



```
mysql> create database sqlassignment
    -> ;
Query OK, 1 row affected (0.01 sec)

mysql> use database sqlassignment
ERROR 1049 (42000): Unknown database 'database'
mysql> use database sqlassignment;
ERROR 1049 (42000): Unknown database 'database'
mysql> use sqlassignment;
Database changed
mysql> create table employees (
    -> empid integer(4) not null unique,
    -> emp_name varchar(30),
    -> Gender varchar(10),
    -> department varchar(30),
    -> check(Gender in ("Male","Female")));
Query OK, 0 rows affected, 1 warning (0.02 sec)

mysql> Insert into employees values(1,'X','Female','Finance'),(2,'Y','Male','IT'),(3,'Z','Male','HR'),(4,'W','Female','IT');
Query OK, 4 rows affected (0.00 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> select * from employees;
+-------+----------+--------+------------+
| empid | emp_name | Gender | department |
+-------+----------+--------+------------+
|     1 | X        | Female | Finance    |
|     2 | Y        | Male   | IT         |
|     3 | Z        | Male   | HR         |
|     4 | W        | Female | IT         |
+-------+----------+--------+------------+
4 rows in set (0.00 sec)

mysql> Insert into employees values(5,'V','mal','IT');
ERROR 3819 (HY000): Check constraint 'employees_chk_1' is violated.
mysql> insert into employees values(6,'P','Male',null);
Query OK, 1 row affected (0.01 sec)

mysql> SELECT IFNULL(Department,'Not Assigned') as Department,
    ->     COUNT(CASE WHEN UPPER(Gender)='MALE' THEN 1 END) AS 'Num of Male',
    ->     COUNT(CASE WHEN UPPER(Gender)='FEMALE' THEN 1 END) AS 'Num of Female'
    -> FROM employees GROUP BY Department;
+--------------+-------------+---------------+
| Department   | Num of Male | Num of Female |
+--------------+-------------+---------------+
| Finance      |           0 |             1 |
| IT           |           1 |             1 |
| HR           |           1 |             0 |
| Not Assigned |           1 |             0 |
+--------------+-------------+---------------+
4 rows in set, 1 warning (0.00 sec)

mysql> 
```



```
mysql> DELIMITER &&
mysql> CREATE PROCEDURE Total_male_female()
    -> BEGIN
    -> SELECT
    -> IFNULL(Department, 'Not Assigned') as Department,
    -> Count(
    -> CASE WHEN UPPER(Gender)= 'MALE' THEN 1 END
    ->   ) AS 'Num of Male',
    ->   COUNT(
    ->     CASE WHEN UPPER(Gender)= 'FEMALE' THEN 1 END
    ->   ) AS 'Num of Female'
    -> FROM
    ->   employees
    -> GROUP BY
    ->   Department
    -> order by
    ->   Department;
    -> END &&
Query OK, 0 rows affected (0.01 sec)

mysql> delimiter ;
mysql> call total_male_female();
+--------------+-------------+---------------+
| Department   | Num of Male | Num of Female |
+--------------+-------------+---------------+
| Finance      |           0 |             1 |
| HR           |           1 |             0 |
| IT           |           1 |             1 |
| Not Assigned |           1 |             0 |
+--------------+-------------+---------------+
4 rows in set (0.00 sec)

Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> 
```

## Commands used:

### //to create a database and use it

### //to create table employees like above

```
CREATE database `Sqlassignment` ;
USE `Sqlassignment`;
create table employees (
empid integer(4) not null unique,
emp_name varchar(30),
Gender varchar(10),
department varchar(30),
check(Gender in ("Male","Female")));
```

### //to insert values into table

```
Insert into employees
values(1,'X','Female','Finance'),(2,'Y','Male','IT'),(3,'Z','
Male','HR'),(4,'W','Female','IT');
```

**//trying to insert null values**

```
Insert into employees values(5,'X','Female',null);
```

No error.

**//Query to find the number of employees per department at the same time trying to handle the above case where department is null by displaying "not assigned"**

```
SELECT IFNULL(Department,'Not Assigned') as Department,
    COUNT(CASE WHEN UPPER(Gender)='MALE' THEN 1 END) AS 'Num
of Male',
    COUNT(CASE WHEN UPPER(Gender)='FEMALE' THEN 1 END) AS
'Num of Female'
FROM employees GROUP BY Department;
```

**//Using functions/procedures**

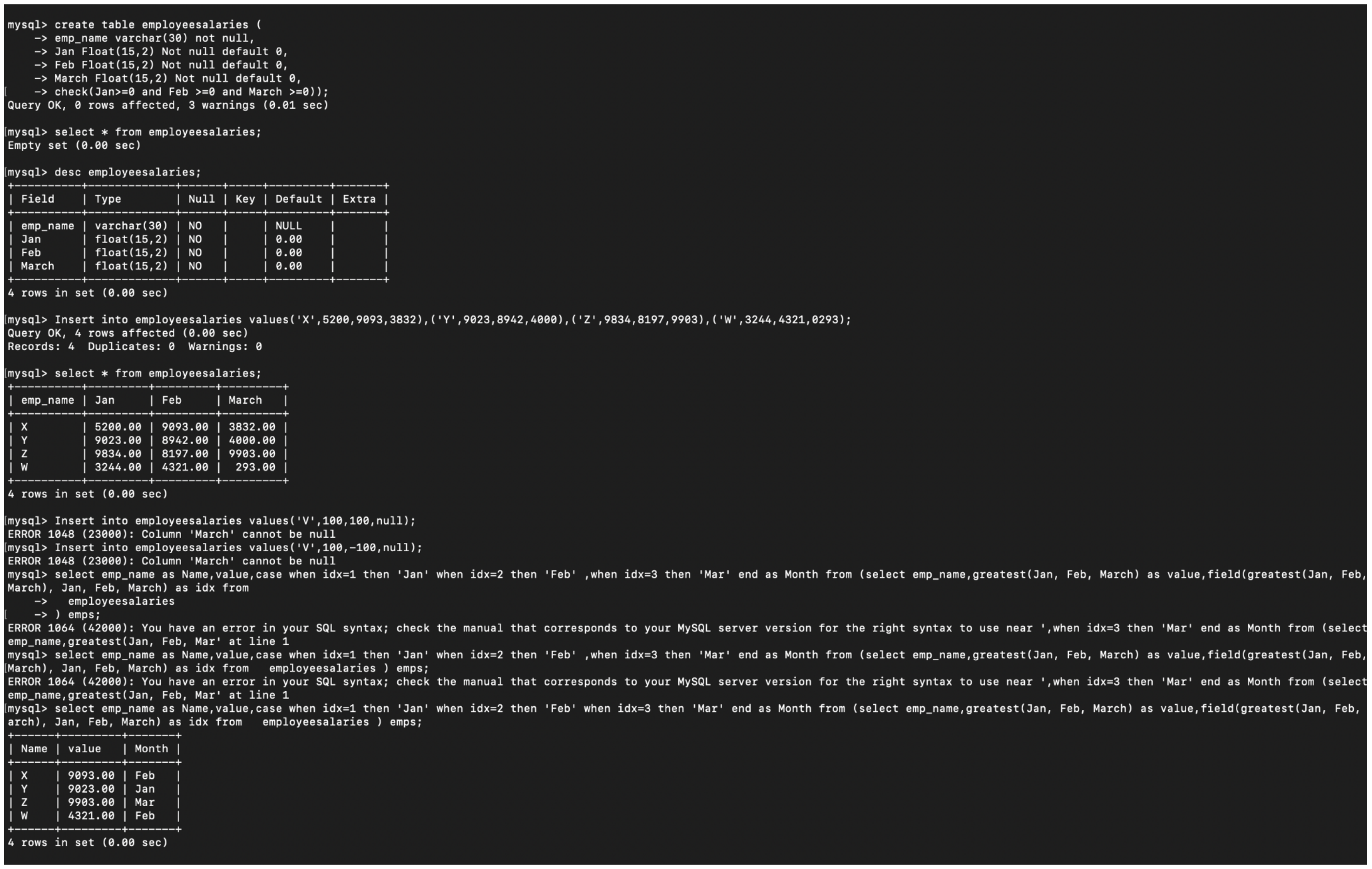
```
DELIMITER &&
mysql> CREATE PROCEDURE total_male_female()
    -> BEGIN
    -> SELECT
    ->   IFNULL(Department, 'Not Assigned') as Department,
    ->   COUNT(
    ->     CASE WHEN UPPER(Gender)= 'MALE' THEN 1 END
    ->   ) AS 'Num of Male',
    ->   COUNT(
    ->     CASE WHEN UPPER(Gender)= 'FEMALE' THEN 1 END
    ->   ) AS 'Num of Female'
    -> FROM
    ->   employees
    -> GROUP BY
    ->   Department
    -> order by
    ->   Department;
    -> END &&
```

2. Given a table with salaries of employees for different month, find the max amount from the rows with month name:

| Name | Jan | Feb | Mar |
|---|---|---|---|
| X | 5200 | 9093 | 3832 |
| Y | 9023 | 8942 | 4000 |
| Z | 9834 | 8197 | 9903 |
| W | 3244 | 4321 | 0293 |

Output:

| Name | Value | Month |
|---|---|---|
| X | 9093 | Feb |
| Y | 9023 | Jan |
| Z | 9903 | Mar |
| W | 4321 | Feb |



```
mysql> create table employeesalaries (
    -> emp_name varchar(30) not null,
    -> Jan Float(15,2) Not null default 0,
    -> Feb Float(15,2) Not null default 0,
    -> March Float(15,2) Not null default 0,
    -> check(Jan>=0 and Feb >=0 and March >=0));
Query OK, 0 rows affected, 3 warnings (0.01 sec)

mysql> select * from employeesalaries;
Empty set (0.00 sec)

mysql> desc employeesalaries;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| emp_name | varchar(30) | NO   |     | NULL    |       |
| Jan      | float(15,2) | NO   |     | 0.00    |       |
| Feb      | float(15,2) | NO   |     | 0.00    |       |
| March    | float(15,2) | NO   |     | 0.00    |       |
+----------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)

mysql> Insert into employeesalaries values('X',5200,9093,3832),('Y',9023,8942,4000),('Z',9834,8197,9903),('W',3244,4321,0293);
Query OK, 4 rows affected (0.00 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> select * from employeesalaries;
+----------+---------+---------+---------+
| emp_name | Jan     | Feb     | March   |
+----------+---------+---------+---------+
| X        | 5200.00 | 9093.00 | 3832.00 |
| Y        | 9023.00 | 8942.00 | 4000.00 |
| Z        | 9834.00 | 8197.00 | 9903.00 |
| W        | 3244.00 | 4321.00 |  293.00 |
+----------+---------+---------+---------+
4 rows in set (0.00 sec)

mysql> Insert into employeesalaries values('V',100,100,null);
ERROR 1048 (23000): Column 'March' cannot be null
mysql> Insert into employeesalaries values('V',100,-100,null);
ERROR 1048 (23000): Column 'March' cannot be null
mysql> select emp_name as Name,value,case when idx=1 then 'Jan' when idx=2 then 'Feb' ,when idx=3 then 'Mar' end as Month from (select emp_name,greatest(Jan, Feb, March) as value,field(greatest(Jan, Feb,
March), Jan, Feb, March) as idx from
    ->   employeesalaries
    -> ) emps;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near ',when idx=3 then 'Mar' end as Month from (select
emp_name,greatest(Jan, Feb, Mar' at line 1
mysql> select emp_name as Name,value,case when idx=1 then 'Jan' when idx=2 then 'Feb' ,when idx=3 then 'Mar' end as Month from (select emp_name,greatest(Jan, Feb, March) as value,field(greatest(Jan, Feb,
March), Jan, Feb, March) as idx from   employeesalaries ) emps;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near ',when idx=3 then 'Mar' end as Month from (select
emp_name,greatest(Jan, Feb, Mar' at line 1
mysql> select emp_name as Name,value,case when idx=1 then 'Jan' when idx=2 then 'Feb' when idx=3 then 'Mar' end as Month from (select emp_name,greatest(Jan, Feb, March) as value,field(greatest(Jan, Feb, 
arch), Jan, Feb, March) as idx from   employeesalaries ) emps;
+------+---------+-------+
| Name | value   | Month |
+------+---------+-------+
| X    | 9093.00 | Feb   |
| Y    | 9023.00 | Jan   |
| Z    | 9903.00 | Mar   |
| W    | 4321.00 | Feb   |
+------+---------+-------+
4 rows in set (0.00 sec)
```

## Commands used:

**//to create table employeesalaries like above**

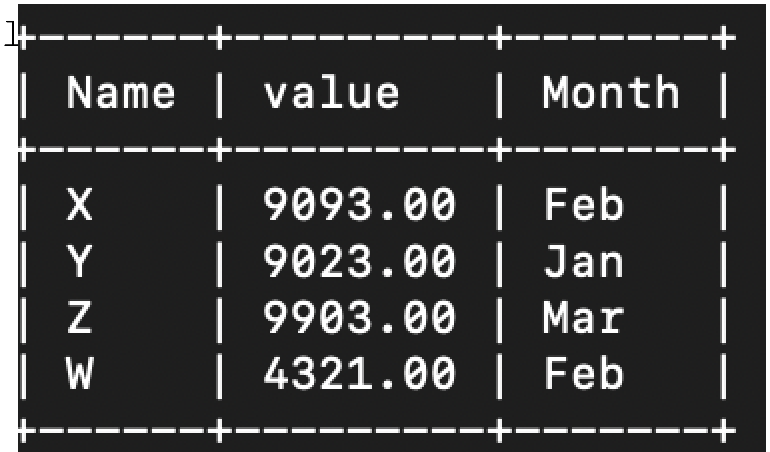
```
create table employeesalaries (
    -> emp_name varchar(30) not null,
    -> Jan Float(15,2) Not null default 0,
    -> Feb Float(15,2) Not null default 0,
    -> March Float(15,2) Not null default 0,
    -> check(Jan>=0 and Feb >=0 and March >=0));
```

**//to insert values into table**

```
Insert into employeesalaries
values('X',5200,9093,3832),('Y',9023,8942,4000),('Z',9834,819
7,9903),('W',3244,4321,0293);

Insert into employeesalaries values('V',100,100,null);
//March column is null hence error is thrown
```

**//Query to get salaries of employees of different months , find the max amount from the rows with month name**

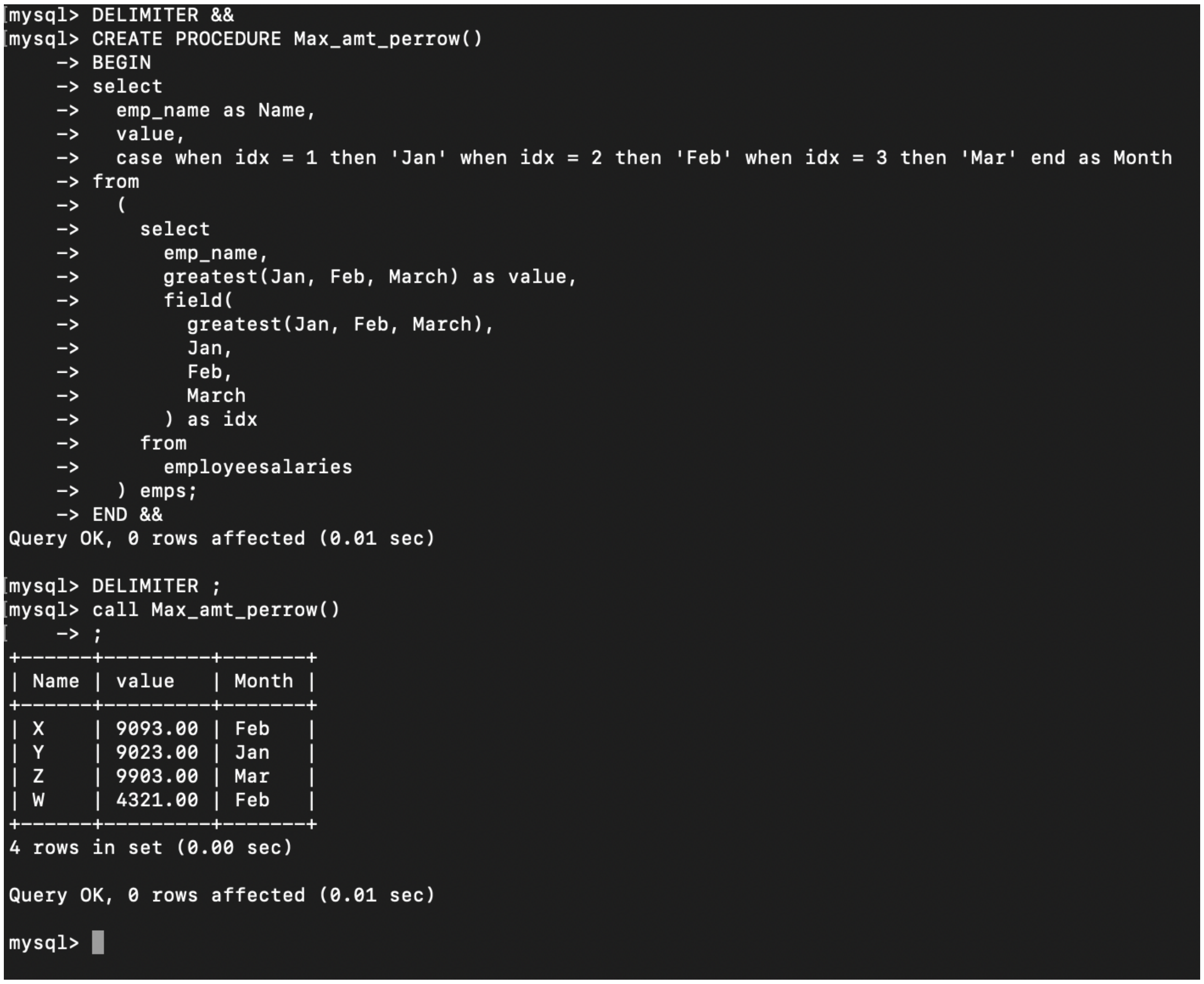
```
select emp_name as Name,value,case when idx=1
then 'Jan' when idx=2 then 'Feb' when idx=3 then
'Mar' end as Month from (select
emp_name,greatest(Jan, Feb, March) as
value,field(greatest(Jan, Feb, March), Jan, Feb,
March) as idx from   empl
```



```
+------+---------+-------+
| Name | value   | Month |
+------+---------+-------+
| X    | 9093.00 | Feb   |
| Y    | 9023.00 | Jan   |
| Z    | 9903.00 | Mar   |
| W    | 4321.00 | Feb   |
+------+---------+-------+
```

## //Using functions/Procedures

```
DELIMITER &&
mysql> CREATE PROCEDURE Max_amt_perrow()
    -> BEGIN
    -> select
    ->   emp_name as Name,
    ->   value,
    ->   case when idx = 1 then 'Jan' when idx = 2 then 'Feb' when idx = 3 then
'Mar' end as Month
    -> from
    ->   (
    ->     select
    ->       emp_name,
    ->       greatest(Jan, Feb, March) as value,
    ->       field(
    ->         greatest(Jan, Feb, March),
    ->         Jan,
    ->         Feb,
    ->         March
    ->       ) as idx
    ->     from
    ->       employeesalaries
    ->   ) emps;
    -> END &&
```



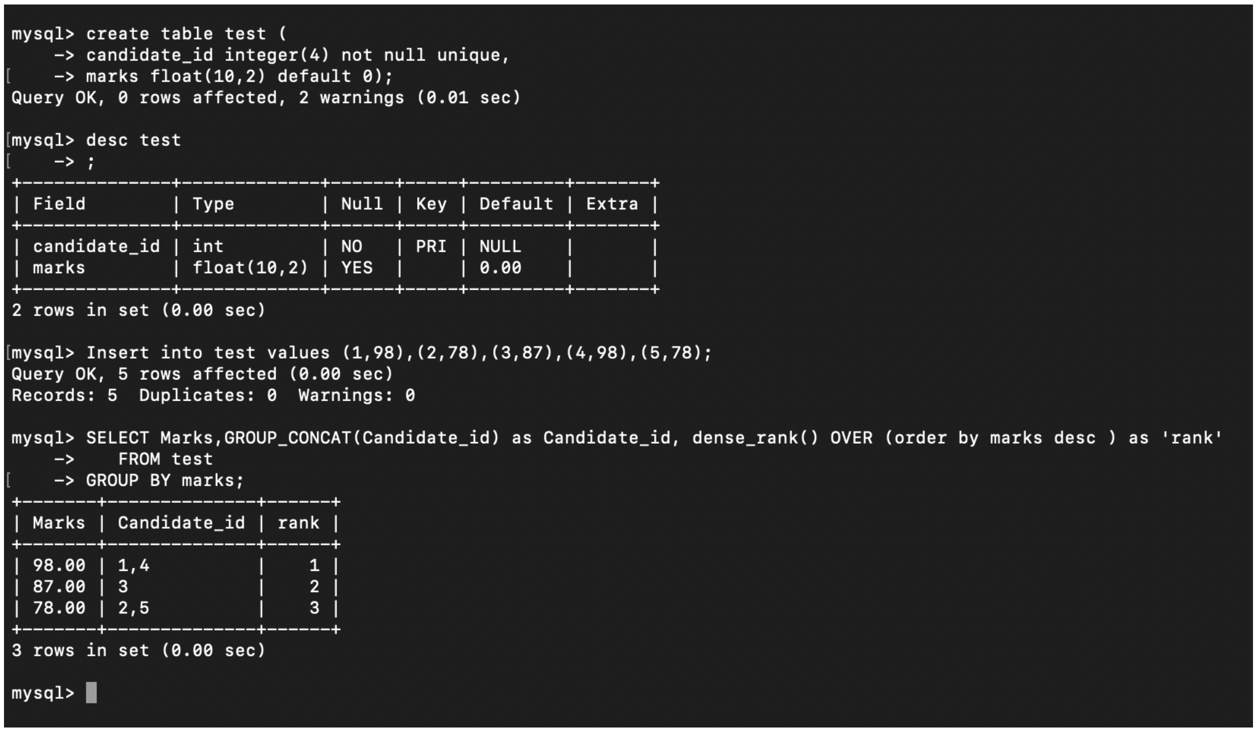
```
mysql> DELIMITER &&
mysql> CREATE PROCEDURE Max_amt_perrow()
    -> BEGIN
    -> select
    ->   emp_name as Name,
    ->   value,
    ->   case when idx = 1 then 'Jan' when idx = 2 then 'Feb' when idx = 3 then 'Mar' end as Month
    -> from
    ->   (
    ->     select
    ->       emp_name,
    ->       greatest(Jan, Feb, March) as value,
    ->       field(
    ->         greatest(Jan, Feb, March),
    ->         Jan,
    ->         Feb,
    ->         March
    ->       ) as idx
    ->     from
    ->       employeesalaries
    ->   ) emps;
    -> END &&
Query OK, 0 rows affected (0.01 sec)

mysql> DELIMITER ;
mysql> call Max_amt_perrow()
    -> ;
+------+---------+-------+
| Name | value   | Month |
+------+---------+-------+
| X    | 9093.00 | Feb   |
| Y    | 9023.00 | Jan   |
| Z    | 9903.00 | Mar   |
| W    | 4321.00 | Feb   |
+------+---------+-------+
4 rows in set (0.00 sec)

Query OK, 0 rows affected (0.01 sec)

mysql> 
```

3. Given the marks obtained by candidates in a test, rank them in proper order.

| Candidate_ID | Marks |
|---|---|
| 1 | 98 |
| 2 | 78 |
| 3 | 87 |
| 4 | 98 |
| 5 | 78 |

Output:

| Marks | Rank | Candidate_ID |
|---|---|---|
| 98 | 1 | 1,4 |
| 87 | 2 | 3 |
| 78 | 3 | 2,5 |



```
mysql> create table test (
    -> candidate_id integer(4) not null unique,
[   -> marks float(10,2) default 0);
Query OK, 0 rows affected, 2 warnings (0.01 sec)

[mysql> desc test
[   -> ;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| candidate_id | int         | NO   | PRI | NULL    |       |
| marks        | float(10,2) | YES  |     | 0.00    |       |
+--------------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)

[mysql> Insert into test values (1,98),(2,78),(3,87),(4,98),(5,78);
Query OK, 5 rows affected (0.00 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> SELECT Marks,GROUP_CONCAT(Candidate_id) as Candidate_id, dense_rank() OVER (order by marks desc ) as 'rank'
    ->    FROM test
[   -> GROUP BY marks;
+-------+--------------+------+
| Marks | Candidate_id | rank |
+-------+--------------+------+
| 98.00 | 1,4          |    1 |
| 87.00 | 3            |    2 |
| 78.00 | 2,5          |    3 |
+-------+--------------+------+
3 rows in set (0.00 sec)

mysql> 
```

**//to create table test like above**

```
create table test (
    -> candidate_id integer(4) not null unique,
    -> marks float(10,2) default 0);
```

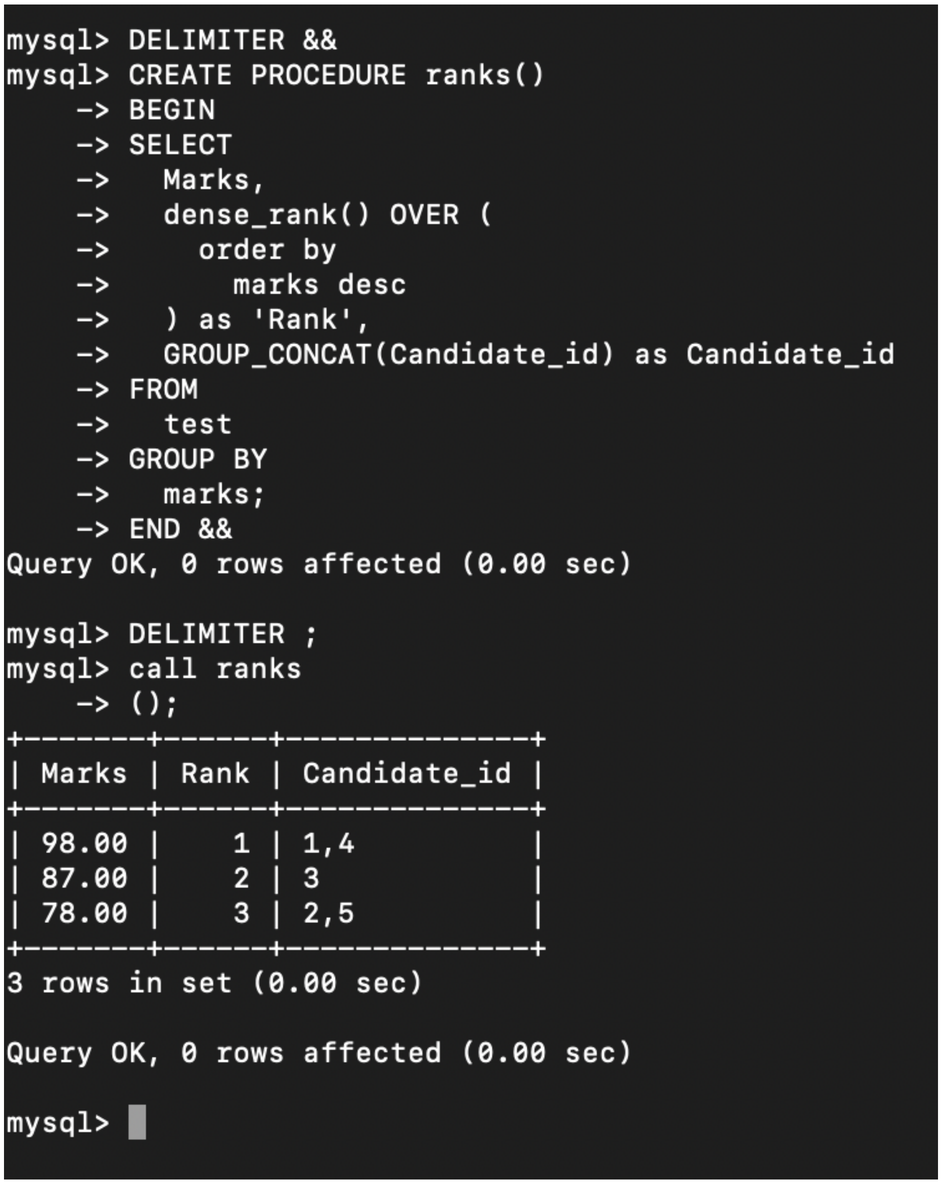
**//insert the above values**

```
Insert into test values (1,98),(2,78),(3,87),(4,98),(5,78);
```

**//Query to rank students based on the marks and showing student id.**

```
 SELECT Marks,GROUP_CONCAT(Candidate_id) as Candidate_id,
dense_rank() OVER (order by marks desc ) as 'rank'
    ->    FROM test
    -> GROUP BY marks;
```

**//Using Procedures/Functions**



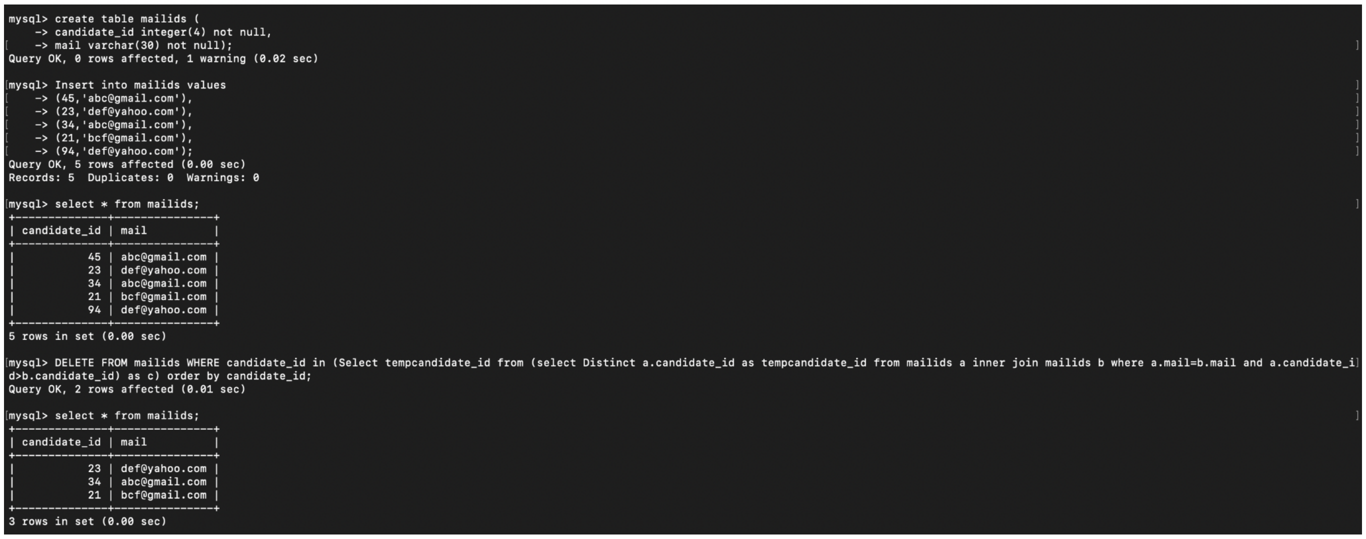
```
mysql> DELIMITER &&
mysql> CREATE PROCEDURE ranks()
    -> BEGIN
    -> SELECT
    ->   Marks,
    ->   dense_rank() OVER (
    ->     order by
    ->       marks desc
    ->   ) as 'Rank',
    ->   GROUP_CONCAT(Candidate_id) as Candidate_id
    -> FROM
    ->   test
    -> GROUP BY
    ->   marks;
    -> END &&
Query OK, 0 rows affected (0.00 sec)

mysql> DELIMITER ;
mysql> call ranks
    -> ();
+-------+------+--------------+
| Marks | Rank | Candidate_id |
+-------+------+--------------+
| 98.00 |    1 | 1,4          |
| 87.00 |    2 | 3            |
| 78.00 |    3 | 2,5          |
+-------+------+--------------+
3 rows in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> 
```

4. If same value is repeated for different id, then keep the value that has smallest id and delete all the other rows having same value:

| Candidate_ID | Email |
|---|---|
| 45 | abc@gmail.com |
| 23 | def@yahoo.com |
| 34 | abc@gmail.com |
| 21 | bcf@gmail.com |
| 94 | def@yahoo.com |

Output:

| Candidate_ID | Email |
|---|---|
| 34 | abc@gmail.com |
| 23 | def@yahoo.com |
| 21 | bcf@gmail.com |



```
mysql> create table mailids (
    -> candidate_id integer(4) not null,
    -> mail varchar(30) not null);
Query OK, 0 rows affected, 1 warning (0.02 sec)

mysql> Insert into mailids values
    -> (45,'abc@gmail.com'),
    -> (23,'def@yahoo.com'),
    -> (34,'abc@gmail.com'),
    -> (21,'bcf@gmail.com'),
    -> (94,'def@yahoo.com');
Query OK, 5 rows affected (0.00 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> select * from mailids;
+--------------+---------------+
| candidate_id | mail          |
+--------------+---------------+
|           45 | abc@gmail.com |
|           23 | def@yahoo.com |
|           34 | abc@gmail.com |
|           21 | bcf@gmail.com |
|           94 | def@yahoo.com |
+--------------+---------------+
5 rows in set (0.00 sec)

mysql> DELETE FROM mailids WHERE candidate_id in (Select tempcandidate_id from (select Distinct a.candidate_id as tempcandidate_id from mailids a inner join mailids b where a.mail=b.mail and a.candidate_i
d>b.candidate_id) as c) order by candidate_id;
Query OK, 2 rows affected (0.01 sec)

mysql> select * from mailids;
+--------------+---------------+
| candidate_id | mail          |
+--------------+---------------+
|           23 | def@yahoo.com |
|           34 | abc@gmail.com |
|           21 | bcf@gmail.com |
+--------------+---------------+
3 rows in set (0.00 sec)
```

**//to create table mailids like above**

```
 create table mailids (
    -> candidate_id integer(4) not null,
    -> mail varchar(30) not null);
```

**//insert the above values**

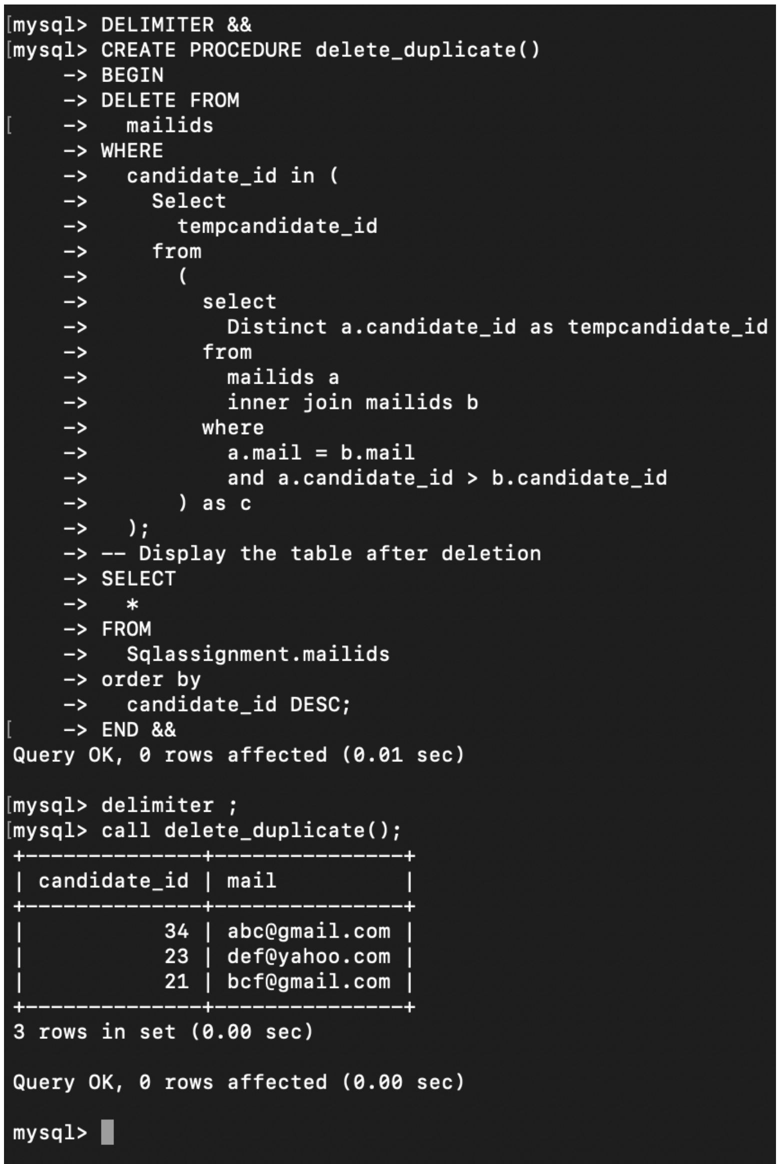
```
Insert into mailids values
```

```
    -> (45,'abc@gmail.com'),
    -> (23,'def@yahoo.com'),
    -> (34,'abc@gmail.com'),
    -> (21,'bcf@gmail.com'),
    -> (94,'def@yahoo.com');
```

**//Query to delete records having the same id but keeping the ids that have the least id number**

```
DELETE FROM mailids WHERE candidate_id in (Select
tempcandidate_id from (select Distinct a.candidate_id as
tempcandidate_id from mailids a inner join mailids b where
a.mail=b.mail and a.candidate_id>b.candidate_id) as c) order
by candidate_id desc;
```

**//Using Procedures/Functions**



```
mysql> DELIMITER &&
mysql> CREATE PROCEDURE delete_duplicate()
    -> BEGIN
    -> DELETE FROM
    ->   mailids
    -> WHERE
    ->   candidate_id in (
    ->     Select
    ->       tempcandidate_id
    ->     from
    ->       (
    ->         select
    ->           Distinct a.candidate_id as tempcandidate_id
    ->         from
    ->           mailids a
    ->           inner join mailids b
    ->         where
    ->           a.mail = b.mail
    ->           and a.candidate_id > b.candidate_id
    ->       ) as c
    ->   );
    -> -- Display the table after deletion
    -> SELECT
    ->   *
    -> FROM
    ->   Sqlassignment.mailids
    -> order by
    ->   candidate_id DESC;
    -> END &&
Query OK, 0 rows affected (0.01 sec)

mysql> delimiter ;
mysql> call delete_duplicate();
+--------------+---------------+
| candidate_id | mail          |
+--------------+---------------+
|           34 | abc@gmail.com |
|           23 | def@yahoo.com |
|           21 | bcf@gmail.com |
+--------------+---------------+
3 rows in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql>
```