Assignment

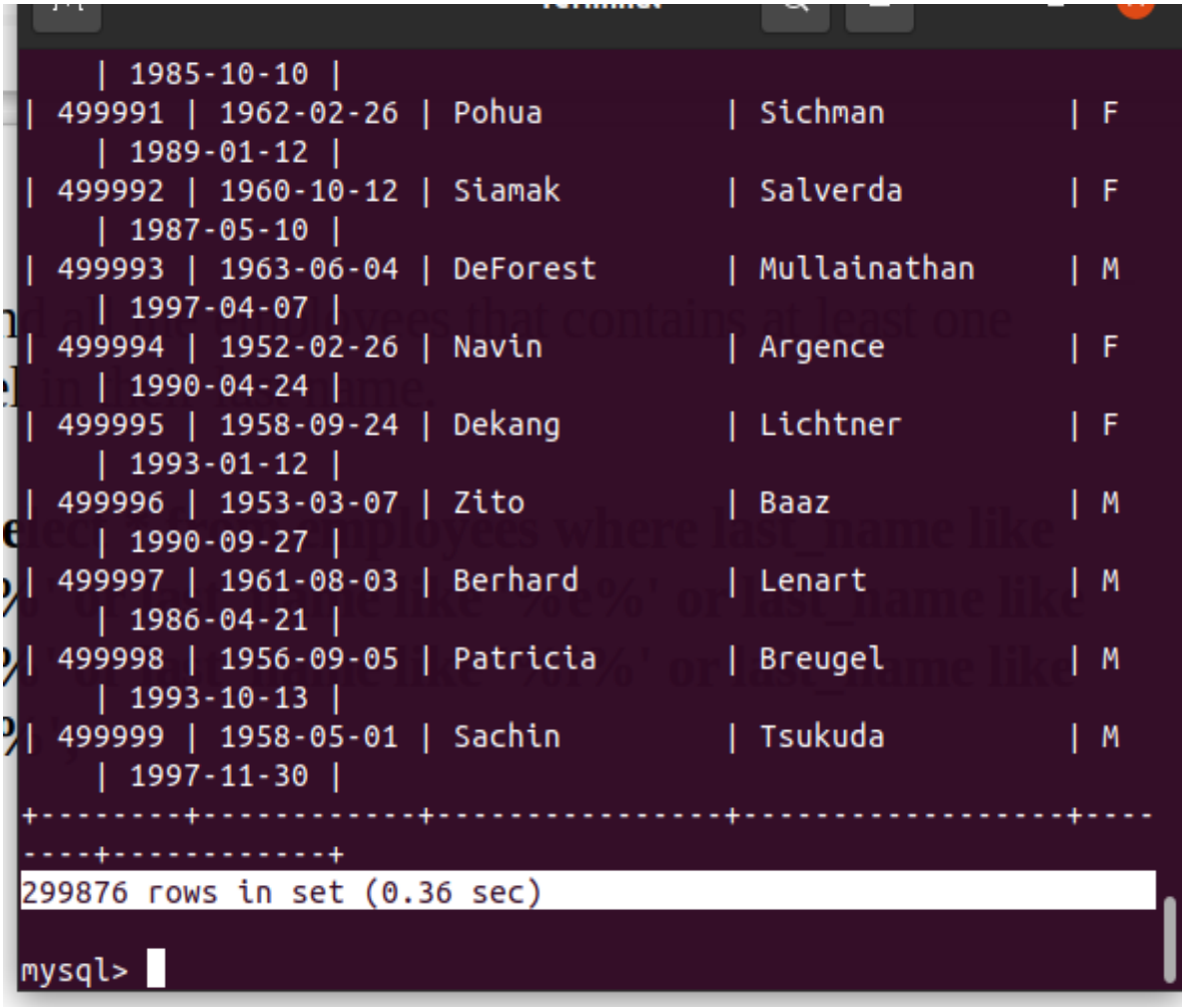
DATABASE SYSTEMS LABS

Submitted By
Muhammad Aamir Khan
(18P-0121)
Submitted to
MR. MUHAMMAD USMAN
(COMPUTER INSTRUCTOR)

DEPARTMENT OF COMPUTER SCIENCE

1. Find all the employees that contains at least one vowel in their last name.

→ **select * from employees where last_name like '%a%' or last_name like '%e%' or last_name like '%o%' or last_name like '%i%' or last_name like '%u %';**



2. Write a Query to display the number of Male (M) and Female employees in the employee database

mysql> select gender,count(*) from employees group by gender;

```
mysql> select gender,count(*) from employees group by gender;
+--------+----------+
| gender | count(*) |
+--------+----------+
| M      |   179973 |
| F      |   120051 |
+--------+----------+
2 rows in set (0.24 sec)
```

3. Display the TOTAL SALARY drawn by employees having emp number (10001,401829).

mysql> select emp_no,SUM(salary) from salaries where emp_no = '10001' or emp_no = '401829' group by emp_no;

```
mysql> select emp_no,SUM(salary) from salaries where emp_no = '10001' or emp_no = '401829' group by emp_no;
+--------+-------------+
| emp_no | SUM(salary) |
+--------+-------------+
|  10001 |     1281612 |
| 401829 |      441457 |
+--------+-------------+
2 rows in set (0.02 sec)
```

4. Display the employee number, first name, last name, and salary of the lowest payed employee.

mysql> select emp_no,first_name,last_name,salary from salaries natural join employees where salary = (select Min(salary) from salaries);

```
mysql> select emp_no,first_name,last_name,salary from salaries natural join employees where salary = (select Min(salary) from salaries);
+--------+------------+-----------+--------+
| emp_no | first_name | last_name | salary |
+--------+------------+-----------+--------+
| 401786 | Sachar     | Nicolson  |  38942 |
+--------+------------+-----------+--------+
1 row in set (0.01 sec)
```

5. Write a Query to find all the employees that have worked in at least 2 departments. Show their emp number, first name, last_name and the number of departments they work in.

6. Display the employee number, first name, last name, and salary of the second and third highest payed employee.

mysql> select emp_no,first_name, last_name,salary from salaries natural join employees order by salary desc limit 1,2;

First check the below code , I get ist 3 maxium salaries

```
mysql> select emp_no,first_name, last_name,salary from salaries natural join emp
loyees order by  salary desc limit 3;
+--------+------------+-----------+--------+
| emp_no | first_name | last_name | salary |
+--------+------------+-----------+--------+
| 401801 | Subhash    | Baek      | 110963 |
| 201777 | Wonhee     | Perl      | 110796 |
| 401801 | Subhash    | Baek      | 110589 |
+--------+------------+-----------+--------+
3 rows in set (0.00 sec)
```

As in the below pic we get the second and third highest payed employees
limit 1,2 is a range which means starting from row 2 (give 2 rows)

```
mysql> select emp_no,first_name,last_name,salary from salaries natural join employees order by salary desc limit 1,2;
+--------+------------+-----------+--------+
| emp_no | first_name | last_name | salary |
+--------+------------+-----------+--------+
| 201777 | Wonhee     | Perl      | 110796 |
| 401801 | Subhash    | Baek      | 110589 |
+--------+------------+-----------+--------+
2 rows in set (0.01 sec)
```

7. Write a Query to display employee first name, last name and the department in which he/she worked.
→ select first_name, last_name,dept_no,dept_name from dept_manager natural join employees natural join departments;

```
mysql> select first_name, last_name,dept_no,dept_name from dept_manager natural
join employees natural join departments;
+------------+--------------+---------+--------------------+
| first_name | last_name    | dept_no | dept_name          |
+------------+--------------+---------+--------------------+
| Tonny      | Butterworth  | d009    | Customer Service   |
| Marjo      | Giarratana   | d009    | Customer Service   |
| Xiaobin    | Spinelli     | d009    | Customer Service   |
| Yuchang    | Weedman      | d009    | Customer Service   |
| DeForest   | Hagimont     | d005    | Development        |
| Leon       | DasSarma     | d005    | Development        |
| Ebru       | Alpin        | d002    | Finance            |
| Isamu      | Legleitner   | d002    | Finance            |
| Shirish    | Ossenbruggen | d003    | Human Resources    |
| Karsten    | Sigstam      | d003    | Human Resources    |
| Margareta  | Markovitch   | d001    | Marketing          |
| Vishwani   | Minakawa     | d001    | Marketing          |
| Krassimir  | Wegerle      | d004    | Production         |
| Rosine     | Cools        | d004    | Production         |
| Shem       | Kieras       | d004    | Production         |
| Oscar      | Ghazalie     | d004    | Production         |
| Peternela  | Onuegbe      | d006    | Quality Management |
| Rutger     | Hofmeyr      | d006    | Quality Management |
| Sanjoy     | Quadeer      | d006    | Quality Management |
| Dung       | Pesch        | d006    | Quality Management |
| Arie       | Staelin      | d008    | Research           |
| Hilary     | Kambil       | d008    | Research           |
| Przemyslawa | Kaelbling   | d007    | Sales              |
| Hauke      | Zhang        | d007    | Sales              |
+------------+--------------+---------+--------------------+
24 rows in set (0.27 sec)
```

8. Display the employee number, first name, last name, and salary of the third highest payed employee.

mysql> select * from salaries order by salary desc limit 2,1;

It means start from 2 (which means row 3) and give the ist row
If we write limit 2,2 It means start from 2 (which means row 3) and give ist tow rows and so on..
start from 0(which means row 1)
start from 1 (which means row 2 and so on ….)
It is like indexes of arrays

```
mysql> select * from salaries order by salary desc limit 3;
+--------+--------+------------+------------+
| emp_no | salary | from_date  | to_date    |
+--------+--------+------------+------------+
| 401801 | 110963 | 2001-10-31 | 9999-01-01 |
| 201777 | 110796 | 2002-07-02 | 9999-01-01 |
| 401801 | 110589 | 2000-10-31 | 2001-10-31 |
+--------+--------+------------+------------+
3 rows in set (0.01 sec)

mysql> select * from salaries order by salary desc limit 0,3;
+--------+--------+------------+------------+
| emp_no | salary | from_date  | to_date    |
+--------+--------+------------+------------+
| 401801 | 110963 | 2001-10-31 | 9999-01-01 |
| 201777 | 110796 | 2002-07-02 | 9999-01-01 |
| 401801 | 110589 | 2000-10-31 | 2001-10-31 |
+--------+--------+------------+------------+
3 rows in set (0.00 sec)
```

We are asked to get 3rd highest paid employee now let see the below code to get 3rd highest.

```
mysql> select * from salaries order by salary desc limit 2,1;
+--------+--------+------------+------------+
| emp_no | salary | from_date  | to_date    |
+--------+--------+------------+------------+
| 401801 | 110589 | 2000-10-31 | 2001-10-31 |
+--------+--------+------------+------------+
1 row in set (0.00 sec)
```

9. Have you noticed an optional clause (ON DELETE CASCADE) in the script employee.sql for Foreign key declaration. Elaborate this clause with example.

→ This clause means if the row is deleted in parent table which have foreign key in its child table then the row will also deleted which have foreign key constraints in the child table automatically.

Now lets see the example :

→ In the below example parent table is **employees,** which have foreign key in salaries or maybe in other tables , Now lets delete the row with emp_no = 10001 to check .

```
mysql> select * from employees limit 5;
+--------+------------+------------+-----------+--------+------------+
| emp_no | birth_date | first_name | last_name | gender | hire_date  |
+--------+------------+------------+-----------+--------+------------+
|  10001 | 1953-09-02 | Georgi     | Facello   | M      | 1986-06-26 |
|  10002 | 1964-06-02 | Bezalel    | Simmel    | F      | 1985-11-21 |
|  10003 | 1959-12-03 | Parto      | Bamford   | M      | 1986-08-28 |
|  10004 | 1954-05-01 | Chirstian  | Koblick   | M      | 1986-12-01 |
|  10005 | 1955-01-21 | Kyoichi    | Maliniak  | M      | 1989-09-12 |
+--------+------------+------------+-----------+--------+------------+
5 rows in set (0.00 sec)

mysql> select * from salaries limit 5;
+--------+--------+------------+------------+
| emp_no | salary | from_date  | to_date    |
+--------+--------+------------+------------+
|  10001 |  60117 | 1986-06-26 | 1987-06-26 |
|  10001 |  62102 | 1987-06-26 | 1988-06-25 |
|  10001 |  66074 | 1988-06-25 | 1989-06-25 |
|  10001 |  66596 | 1989-06-25 | 1990-06-25 |
|  10001 |  66961 | 1990-06-25 | 1991-06-25 |
+--------+--------+------------+------------+
5 rows in set (0.00 sec)
```

→ Now in the below pic we can see that after deleting row in parent table also delete it automatically in their child table due to the (ON DELETE CASCADE) constraints.

```
mysql> delete from employees where emp_no = 10001;
Query OK, 1 row affected (0.27 sec)

mysql> select * from employees limit 5;
+--------+------------+------------+-----------+--------+------------+
| emp_no | birth_date | first_name | last_name | gender | hire_date  |
+--------+------------+------------+-----------+--------+------------+
|  10002 | 1964-06-02 | Bezalel    | Simmel    | F      | 1985-11-21 |
|  10003 | 1959-12-03 | Parto      | Bamford   | M      | 1986-08-28 |
|  10004 | 1954-05-01 | Chirstian  | Koblick   | M      | 1986-12-01 |
|  10005 | 1955-01-21 | Kyoichi    | Maliniak  | M      | 1989-09-12 |
|  10006 | 1953-04-20 | Anneke     | Preusig   | F      | 1989-06-02 |
+--------+------------+------------+-----------+--------+------------+
5 rows in set (0.00 sec)

mysql> select * from salaries limit 5;
+--------+--------+------------+------------+
| emp_no | salary | from_date  | to_date    |
+--------+--------+------------+------------+
|  10002 |  65828 | 1996-08-03 | 1997-08-03 |
|  10002 |  65909 | 1997-08-03 | 1998-08-03 |
|  10002 |  67534 | 1998-08-03 | 1999-08-03 |
|  10002 |  69366 | 1999-08-03 | 2000-08-02 |
|  10002 |  71963 | 2000-08-02 | 2001-08-02 |
+--------+--------+------------+------------+
5 rows in set (0.00 sec)
```

10. Delete every employee who was hired after 31 st December 1999.

```
mysql> select * from employees where hire_date > '1999-12-31';
+--------+------------+------------+------------+--------+------------+
| emp_no | birth_date | first_name | last_name  | gender | hire_date  |
+--------+------------+------------+------------+--------+------------+
|  47291 | 1960-09-09 | Ulf        | Flexer     | M      | 2000-01-12 |
|  60134 | 1964-04-21 | Seshu      | Rathonyi   | F      | 2000-01-02 |
|  72329 | 1953-02-09 | Randi      | Luit       | F      | 2000-01-02 |
| 108201 | 1955-04-14 | Mariangiola| Boreale    | M      | 2000-01-01 |
| 205048 | 1960-09-12 | Ennio      | Alblas     | F      | 2000-01-06 |
| 222965 | 1959-08-07 | Volkmar    | Perko      | F      | 2000-01-13 |
| 226633 | 1958-06-10 | Xuejun     | Benzmuller | F      | 2000-01-04 |
| 227544 | 1954-11-17 | Shahab     | Demeyer    | M      | 2000-01-08 |
| 422990 | 1953-04-09 | Jaana      | Verspoor   | F      | 2000-01-11 |
| 424445 | 1953-04-27 | Jeong      | Boreale    | M      | 2000-01-03 |
| 428377 | 1957-05-09 | Yucai      | Gerlach    | M      | 2000-01-23 |
| 463807 | 1964-06-12 | Bikash     | Covnot     | M      | 2000-01-28 |
| 499553 | 1954-05-06 | Hideyuki   | Delgrande  | F      | 2000-01-22 |
+--------+------------+------------+------------+--------+------------+
13 rows in set (0.11 sec)

mysql> delete from employees where hire_date > '1999-12-31';
Query OK, 13 rows affected (0.36 sec)

mysql> select * from employees where hire_date > '1999-12-31';
Empty set (0.11 sec)
```

11.

→ Update the employee number (10004) title to Project Manager.

mysql> update titles set title = 'Project Manager' where emp_no = 10004;

```
mysql> select * from titles where emp_no = 10004;
+--------+-----------------+------------+------------+
| emp_no | title           | from_date  | to_date    |
+--------+-----------------+------------+------------+
|  10004 | Project Manager | 1986-12-01 | 1995-12-01 |
|  10004 | Project Manager | 1995-12-01 | 9999-01-01 |
+--------+-----------------+------------+------------+
2 rows in set (0.00 sec)
```

12. Modify the column dept_name characteristics in the department table by changing the string characteristics from varchar(40) to varchar(60).
mysql> alter table departments modify dept_name varchar(60) Not Null;

```
mysql> alter table departments modify dept_name varchar(60) Not Null;
Query OK, 0 rows affected (1.68 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> describe departments;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| dept_no   | char(4)     | NO   | PRI | NULL    |       |
| dept_name | varchar(60) | NO   | UNI | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

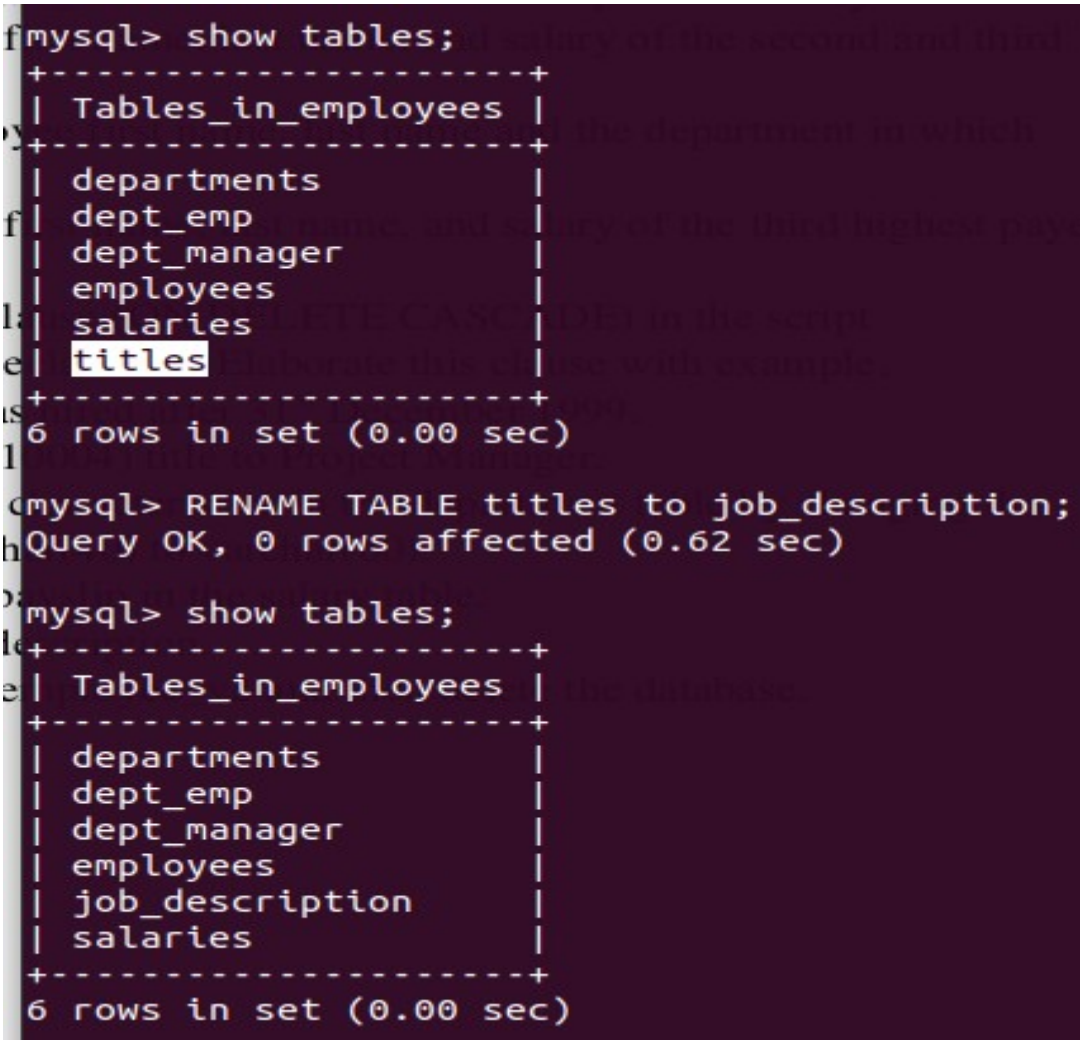
13. Rename the salary attribute to payslip in the salary table.
mysql> alter table salaries rename column salary to payslip;

```
+--------+--------+------------+------------+
| emp_no | salary | from_date  | to_date    |
+--------+--------+------------+------------+
|  10003 |  40006 | 1995-12-03 | 1996-12-02 |
+--------+--------+------------+------------+
1 row in set (0.00 sec)

mysql> alter table salaries rename column salary to payslip;
Query OK, 0 rows affected (0.21 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> select * from salaries limit 1;
+--------+---------+------------+------------+
| emp_no | payslip | from_date  | to_date    |
+--------+---------+------------+------------+
|  10003 |   40006 | 1995-12-03 | 1996-12-02 |
+--------+---------+------------+------------+
1 row in set (0.00 sec)
```

14. Rename the table titles to job_description.
→ **mysql> RENAME TABLE titles to job_description;**



15. Rename database employee to employee_v2 and then delete the database.

Ist creating a dump file of the renaming database
(anaconda3) aamir@coder:~$ mysqldump -u root -R employees > employees.sql

Then creating a databases with the new database
(anaconda3) aamir@coder:~$ mysqladmin -u root create employee_v2
Then importing dump file into newly created database
(anaconda3) aamir@coder:~$ mysql -u root employee_v2 < employees.sql
(anaconda3) aamir@coder:~$ mysql -u root
mysql> drop database employees;

mysql> drop database employee_v2;

```
(anaconda3) aamir@coder:~$ mysqldump -u root employees > employees.sql
(anaconda3) aamir@coder:~$ mysqladmin -u root create employee_v2
(anaconda3) aamir@coder:~$ mysql -u root employee_v2 < employees.sql
(anaconda3) aamir@coder:~$ mysql -u root
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 24
Server version: 8.0.23 MySQL Community Server - GPL

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owners.

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

mysql> drop database employees;
Query OK, 6 rows affected (1.30 sec)

mysql> use employee_v2;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+-----------------------+
| Tables_in_employee_v2 |
+-----------------------+
| departments           |
| dept_emp              |
| dept_manager          |
| employees             |
| job_description       |
| salaries              |
+-----------------------+
6 rows in set (0.00 sec)

mysql> drop database employee_v2;
Query OK, 6 rows affected (1.32 sec)

mysql>
```