

Department of Computer Science and Engineering

Course Code: CSE 370	Credits: 3.0
Course Name: Database Systems	

Lab Homework 3

Table create:

```
CREATE TABLE employees (  
    employee_id CHAR(10) NOT NULL,  
    first_name VARCHAR(20) NOT NULL,  
    last_name VARCHAR(20) NOT NULL,  
    email VARCHAR(60) NOT NULL,  
    phone_number CHAR(14),  
    hire_date DATE NOT NULL,  
    job_id CHAR(10) NOT NULL,  
    salary INT,  
    commission_pct DECIMAL(5,3),  
    manager_id CHAR(10),  
    department_id CHAR(10),  
    PRIMARY KEY (employee_id)  
);
```

Insert into:

```
INSERT INTO employees (employee_id, first_name, last_name, email, phone_number,  
    hire_date, job_id, salary, commission_pct, manager_id, department_id)  
VALUES  
('EMP001', 'Shihab', 'Muhtasim', 'shihab@gmail.com', '01554375947', '2021-01-01', 'JOB001',  
    70000, 5, 'MNG001', 'DPT001'),  
('EMP002', 'Martin', 'Garrix', 'garrix@gmail.com', '01563747483', '2023-01-02', 'JOB002', 40000,  
    0.3, 'MNG001', 'DPT001'),  
('EMP003', 'David', 'Scooper', 'david@gmail.com', '01673837477', '2022-01-03', 'JOB002',  
    55000, 0.43, 'MNG001', 'DPT002'),  
('EMP004', 'Harry', 'Potter', 'harry@gmail.com', '01364983827', '2022-01-04', 'JOB003', 85000,  
    0.02, 'MNG002', 'DPT007'),  
('EMP005', 'charls', 'Brown', 'charls@gmail.com', '01925463737', '2022-01-05', 'JOB004', 37000,  
    2, 'MNG002', 'DPT003'),  
('EMP006', 'Awsaf', 'Hossain', 'awsaf@gmail.com', '01336474737', '2020-09-03', 'JOB001',  
    70000, 0.5, 'MNG001', 'DPT007'),  
('EMP007', 'Arik', 'Hassan', 'arki@yahoo.com', '01735367484', '2021-02-02', 'JOB005', 40000,  
    0.3, 'MNG003', 'DPT001'),
```

('EMP008', 'Misha', 'Jarin', 'misha.jarin@yahoo.com', '01390984576', '2022-05-03', 'JOB004', 55000, 0.4, 'MNG003', 'DPT005'),
 ('EMP009', 'Ayesha', 'Tasnia', 'ayesha.tasnia', '01427738440', '2019-01-04', 'JOB005', 85000, 0.25, 'MNG004', 'DPT002'),
 ('EMP010', 'David', 'Guetta', 'guetta@gmail.com', '01835638300', '2021-07-05', 'JOB006', 37000, 0.2, 'MNG005', 'DPT005');

```
MariaDB [homework_3]> CREATE TABLE employees (
-> employee_id CHAR(10) NOT NULL,
-> first_name VARCHAR(20) NOT NULL,
-> last_name VARCHAR(20) NOT NULL,
-> email VARCHAR(60) NOT NULL,
-> phone_number CHAR(14),
-> hire_date DATE NOT NULL,
-> job_id CHAR(10) NOT NULL,
-> salary INT,
-> commission_pct DECIMAL(5,3),
-> manager_id CHAR(10),
-> department_id CHAR(10),
-> PRIMARY KEY (employee_id)
-> );
Query OK, 0 rows affected (0.011 sec)

MariaDB [homework_3]> INSERT INTO employees (employee_id, first_name, last_name, email, phone_number, hire_date, job_id, salary, commission_pct, manager_id, department_id)
-> VALUES
-> ('EMP001', 'Shihab', 'Muhtasim', 'shihab@gmail.com', '01554375947', '2021-01-01', 'JOB001', 70000, 5, 'MNG001', 'DPT001'),
-> ('EMP002', 'Martin', 'Garrix', 'garrix@gmail.com', '01563747483', '2023-01-02', 'JOB002', 40000, 0.3, 'MNG001', 'DPT001'),
-> ('EMP003', 'David', 'Scoopier', 'david@gmail.com', '01673837477', '2022-01-03', 'JOB002', 55000, 0.43, 'MNG001', 'DPT002'),
-> ('EMP004', 'Harry', 'Potter', 'harry@gmail.com', '01364983827', '2022-01-04', 'JOB003', 85000, 0.02, 'MNG002', 'DPT007'),
-> ('EMP005', 'charls', 'Brown', 'charls@gmail.com', '01925463737', '2022-01-05', 'JOB004', 37000, 2, 'MNG002', 'DPT003'),
-> ('EMP006', 'Awsaf', 'Hossain', 'awsaf@gmail.com', '01336474737', '2020-09-03', 'JOB001', 70000, 0.5, 'MNG001', 'DPT007'),
-> ('EMP007', 'Arik', 'Hassan', 'arki@yahoo.com', '01735367484', '2021-02-02', 'JOB005', 40000, 0.3, 'MNG003', 'DPT001'),
-> ('EMP008', 'Misha', 'Jarin', 'misha.jarin@yahoo.com', '01390984576', '2022-05-03', 'JOB004', 55000, 0.4, 'MNG003', 'DPT005'),
-> ('EMP009', 'Ayesha', 'Tasnia', 'ayesha.tasnia', '01427738440', '2019-01-04', 'JOB005', 85000, 0.25, 'MNG004', 'DPT002'),
-> ('EMP010', 'David', 'Guetta', 'guetta@gmail.com', '01835638300', '2021-07-05', 'JOB006', 37000, 0.2, 'MNG005', 'DPT005');
Query OK, 10 rows affected (0.002 sec)
Records: 10 Duplicates: 0 Warnings: 0

MariaDB [homework_3]>
MariaDB [homework_3]> select *from employees;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| employee_id | first_name | last_name | email | phone_number | hire_date | job_id | salary | commission_pct | manager_id | department_id |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| EMP001 | Shihab | Muhtasim | shihab@gmail.com | 01554375947 | 2021-01-01 | JOB001 | 70000 | 5.000 | MNG001 | DPT001 |
| EMP002 | Martin | Garrix | garrix@gmail.com | 01563747483 | 2023-01-02 | JOB002 | 40000 | 0.300 | MNG001 | DPT001 |
| EMP003 | David | Scoopier | david@gmail.com | 01673837477 | 2022-01-03 | JOB002 | 55000 | 0.430 | MNG001 | DPT002 |
| EMP004 | Harry | Potter | harry@gmail.com | 01364983827 | 2022-01-04 | JOB003 | 85000 | 0.020 | MNG002 | DPT007 |
| EMP005 | charls | Brown | charls@gmail.com | 01925463737 | 2022-01-05 | JOB004 | 37000 | 2.000 | MNG002 | DPT003 |
| EMP006 | Awsaf | Hossain | awsaf@gmail.com | 01336474737 | 2020-09-03 | JOB001 | 70000 | 0.500 | MNG001 | DPT007 |
| EMP007 | Arik | Hassan | arki@yahoo.com | 01735367484 | 2021-02-02 | JOB005 | 40000 | 0.300 | MNG003 | DPT001 |
| EMP008 | Misha | Jarin | misha.jarin@yahoo.com | 01390984576 | 2022-05-03 | JOB004 | 55000 | 0.400 | MNG003 | DPT005 |
| EMP009 | Ayesha | Tasnia | ayesha.tasnia | 01427738440 | 2019-01-04 | JOB005 | 85000 | 0.250 | MNG004 | DPT002 |
| EMP010 | David | Guetta | guetta@gmail.com | 01835638300 | 2021-07-05 | JOB006 | 37000 | 0.200 | MNG005 | DPT005 |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
10 rows in set (0.000 sec)
```

Task 1:

SELECT first_name, last_name, email, phone_number, hire_date, department_id FROM employees WHERE hire_date = (SELECT MAX(hire_date) FROM employees);

```
MariaDB [homework_3]> SELECT first_name, last_name, email, phone_number, hire_date, department_id FROM employees WHERE hire_date = (SELECT MAX(hire_date) FROM employees);
+-----+-----+-----+-----+-----+-----+
| first_name | last_name | email | phone_number | hire_date | department_id |
+-----+-----+-----+-----+-----+-----+
| Martin | Garrix | garrix@gmail.com | 01563747483 | 2023-01-02 | DPT001 |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.001 sec)
```

Task 2:

select first_name, last_name, employee_id, phone_number, salary, department_id from employees where (department_id, salary) in (select department_id, min(salary) from employees group by department_id) order by department_id;

```

MariaDB [homework_3]> select first_name, last_name, employee_id, phone_number, salary, department_id from employees
-> where (department_id, salary) in (select department_id, min(salary) from employees group by
-> department_id) order by department_id;
+-----+-----+-----+-----+-----+-----+
| first_name | last_name | employee_id | phone_number | salary | department_id |
+-----+-----+-----+-----+-----+-----+
| Martin    | Garrix    | EMP002      | 01563747483  | 40000  | DPT001        |
| Arik       | Hassan    | EMP007      | 01735367484  | 40000  | DPT001        |
| David     | Scooper   | EMP003      | 01673837477  | 55000  | DPT002        |
| charls     | Brown     | EMP005      | 01925463737  | 37000  | DPT003        |
| David     | Guetta    | EMP010      | 01835638300  | 37000  | DPT005        |
| Awsaf     | Hossain   | EMP006      | 01336474737  | 70000  | DPT007        |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.007 sec)

```

Task 3:

SELECT first_name, last_name, employee_id, commission_pct, department_id
FROM employees WHERE department_id = 'DPT007' AND commission_pct < ALL (SELECT
commission_pct FROM employees WHERE department_id = 'DPT005');

Task 4:

SELECT department_id, COUNT(*) AS total_number_of_employees FROM employees WHERE
department_id NOT IN (SELECT department_id FROM employees WHERE salary > 30000)
GROUP BY department_id;

Task 3 and 4:

```

0 rows in set (0.001 sec)

MariaDB [homework_3]> SELECT first_name, last_name, employee_id, commission_pct, department_id
-> FROM employees
-> WHERE department_id = 'DPT007'
-> AND commission_pct < ALL (SELECT commission_pct FROM employees WHERE department_id = 'DPT005')
-> ;
+-----+-----+-----+-----+-----+
| first_name | last_name | employee_id | commission_pct | department_id |
+-----+-----+-----+-----+-----+
| Harry      | Potter    | EMP004      | 0.020         | DPT007        |
+-----+-----+-----+-----+-----+
1 row in set (0.003 sec)

MariaDB [homework_3]> SELECT department_id, COUNT(*) AS total_number_of_employees FROM employees WHERE department_id NOT IN (SELECT department_id FROM employees WHERE s
alary > 30000) GROUP BY department_id;
Empty set (0.003 sec)

```

Task 5:

SELECT department_id, job_id, commission_pct FROM employees e1 WHERE
commission_pct < ANY (SELECT commission_pct FROM employees e2 WHERE
e1.department_id = e2.department_id AND e1.job_id != e2.job_id);

```

MariaDB [homework_3]> SELECT department_id, job_id, commission_pct FROM employees e1 WHERE commission_pct < ANY (SELECT commission_pct FROM employees e2 WHERE e1.depart
ment_id = e2.department_id AND e1.job_id != e2.job_id);
+-----+-----+-----+
| department_id | job_id | commission_pct |
+-----+-----+-----+
| DPT001        | JOB002 | 0.300         |
| DPT007        | JOB003 | 0.020         |
| DPT001        | JOB005 | 0.300         |
| DPT002        | JOB005 | 0.250         |
| DPT005        | JOB006 | 0.200         |
+-----+-----+-----+
5 rows in set (0.001 sec)

```

Task 6:

SELECT DISTINCT manager_id FROM employees WHERE manager_id NOT IN (SELECT DISTINCT manager_id FROM employees WHERE salary < 3500);

```
MariaDB [homework_3]> SELECT DISTINCT manager_id FROM employees WHERE manager_id NOT IN (SELECT DISTINCT manager_id FROM employees WHERE salary < 3500);
+-----+
| manager_id |
+-----+
| MNG001     |
| MNG002     |
| MNG003     |
| MNG004     |
| MNG005     |
+-----+
5 rows in set (0.002 sec)
```

Task 7:

select first_name, last_name, employee_id, email, salary, department_id, commission_pct from employees where commission_pct in (select min(commission_pct) from employees group by manager_id);

```
MariaDB [homework_3]> select first_name, last_name, employee_id, email, salary, department_id, commission_pct from employees where
-> commission_pct in (select min(commission_pct) from employees group by manager_id);
+-----+-----+-----+-----+-----+-----+-----+
| first_name | last_name | employee_id | email          | salary | department_id | commission_pct |
+-----+-----+-----+-----+-----+-----+-----+
| Martin    | Garrix    | EMP002     | garrix@gmail.com | 40000 | DPT001        | 0.300          |
| Harry     | Potter    | EMP004     | harry@gmail.com  | 85000 | DPT007        | 0.020          |
| Arik      | Hassan    | EMP007     | arki@yahoo.com   | 40000 | DPT001        | 0.300          |
| Ayesha    | Tasnia    | EMP009     | ayesha.tasnia    | 85000 | DPT002        | 0.250          |
| David     | Guetta    | EMP010     | guetta@gmail.com | 37000 | DPT005        | 0.200          |
+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.002 sec)
```