

### **Table creation**

```
CREATE TABLE employees (  
    employee_id CHAR(10),  
    first_name VARCHAR(20),  
    last_name VARCHAR(20),  
    email VARCHAR(60),  
    phone_number CHAR(14),  
    hire_date DATE,  
    job_id CHAR(10),  
    salary INT,  
    commission_pct DECIMAL(5,3),  
    manager_id CHAR(10),  
    department_id CHAR(10)  
);
```

### **Adding records:**

```
INSERT INTO employees VALUES  
(  
'EMP001', 'Udoy', 'Saha', 'udoy.saha@g.bracu.ac.bd', '+8801184654339', '2021-06-12', 'JOB001', 50000, 5, 'MNG001', 'DPT001'),  
(  
'EMP002', 'Omuk', 'Tomuk', 'omuk.tomuk@g.bracu.ac.bd', '+8801086554339', '2022-06-12', 'JOB002', 40000, 3, 'MNG001', 'DPT001'),  
(  
'EMP003', 'Ulfat', 'Fatema', 'ulfat.fatema@g.bracu.ac.bd', '+8801626154339', '2021-09-12', 'JOB003', 45000, 2, 'MNG002', 'DPT002'),  
(  
'EMP004', 'Muntasir', 'Amit', 'muntasir.amit@g.bracu.ac.bd', '+8801626102749', '2023-06-12', 'JOB004', 20000, 4, 'MNG002', 'DPT002'),  
(  
'EMP005', 'Ankur', 'Paul', 'ankur.paul@g.bracu.ac.bd', '+8801626102948', '2021-06-15', 'JOB005', 25000, 5, 'MNG003', 'DPT003'),  
(  
'EMP006', 'Punno', 'Khan', 'punno.khan@g.bracu.ac.bd', '+8801626000000', '2022-06-11', 'JOB006', 22000, 2, 'MNG004', 'DPT003'),  
(  
'EMP007', 'Tasnim', 'Rahman', 'tasnim.rahman@g.bracu.ac.bd', '+8801623583900', '2023-06-12', 'JOB006', 34000, 4, 'MNG004', 'DPT003'),  
(  
'EMP008', 'Md', 'Yasin', 'md.yasin@g.bracu.ac.bd', '+8801624578300', '2023-06-12', 'JOB007', 28000, 2, 'MNG005', 'DPT004'),  
(  
'EMP009', 'Atanu', 'Banik', 'atanu.banik@g.bracu.ac.bd', '+8801936154339', '2021-11-02', 'JOB008', 38000, 3, 'MNG005', 'DPT005'),  
(  
'EMP010', 'Sajid', 'Khan', 'sajid.khan@g.bracu.ac.bd', '+8801623411119', '2022-01-12', 'JOB008', 48000, 5, 'MNG006', 'DPT005'),  
(  
'EMP011', 'Jannatul', 'Piasha', 'jannatul.piasha@g.bracu.ac.bd', '+8801623333333', '2023-03-12', 'JOB009', 45500, 4, 'MNG007', 'DPT006'),
```

```
( 'EMP012', 'Shikder', 'Bijoy', 'shikder.bijoy@g.bracu.ac.bd', '+880165533333',
'2022-03-22', 'JOB010', 25900, 4, 'MNG007', 'DPT006'),
( 'EMP013', 'Omor', 'Chowdhuri', 'omor.chowdhuri@g.bracu.ac.bd', '+8801623159333',
'2020-04-02', 'JOB011', 25500, 5, 'MNG008', 'DPT007'),
( 'EMP014', 'Dechen', 'Sheldon', 'dechen.sheldon@g.bracu.ac.bd', '+8801623357333',
'2020-03-12', 'JOB011', 42500, 1, 'MNG009', 'DPT007'),
( 'EMP015', 'Ashok', 'Lamichane', 'ashok.lamichane@g.bracu.ac.bd',
'+8801623147333', '2020-03-02', 'JOB012', 35500, 3, 'MNG010', 'DPT007'),
( 'EMP016', 'Mukund', 'Prasad', 'mukund.prasad@g.bracu.ac.bd', '+8801623359333',
'2021-12-12', 'JOB013', 25800, 2, 'MNG011', 'DPT008'),
( 'EMP017', 'Abdul', 'Khalek', 'abdul.khalek@g.bracu.ac.bd', '+8801623326333',
'2021-03-19', 'JOB014', 46000, 4, 'MNG011', 'DPT008');
```

```
MariaDB [assignment3]> INSERT INTO employees VALUES
-> ( 'EMP001', 'Udoy', 'Saha', 'udoy.saha@g.bracu.ac.bd', '+8801184654339', '2021-06-12', 'JOB001', 50000, 5, 'MNG001', 'DPT001'),
-> ( 'EMP002', 'Omuk', 'Tomuk', 'omuk.tomuk@g.bracu.ac.bd', '+8801086554339', '2022-06-12', 'JOB002', 40000, 3, 'MNG001', 'DPT001'),
-> ( 'EMP003', 'Ulfat', 'Fatema', 'ulfat.fatema@g.bracu.ac.bd', '+8801626154339', '2021-09-12', 'JOB003', 45000, 2, 'MNG002', 'DPT002'),
-> ( 'EMP004', 'Muntasir', 'Amit', 'muntasir.amit@g.bracu.ac.bd', '+8801626102749', '2023-06-12', 'JOB004', 20000, 4, 'MNG002', 'DPT002'),
-> ( 'EMP005', 'Ankur', 'Paul', 'ankur.paul@g.bracu.ac.bd', '+8801626102948', '2021-06-15', 'JOB005', 25000, 5, 'MNG003', 'DPT003'),
-> ( 'EMP006', 'Punno', 'Khan', 'punno.khan@g.bracu.ac.bd', '+8801626000000', '2022-06-11', 'JOB006', 22000, 2, 'MNG004', 'DPT003'),
-> ( 'EMP007', 'Tasnim', 'Rahman', 'tasnim.rahman@g.bracu.ac.bd', '+8801623583900', '2023-06-12', 'JOB006', 34000, 4, 'MNG004', 'DPT003'),
-> ( 'EMP008', 'Md', 'Yasin', 'md.yasin@g.bracu.ac.bd', '+8801624578300', '2023-06-12', 'JOB007', 28000, 2, 'MNG005', 'DPT004'),
-> ( 'EMP009', 'Atanu', 'Banik', 'atanu.banik@g.bracu.ac.bd', '+8801936154339', '2021-11-02', 'JOB008', 38000, 3, 'MNG005', 'DPT005'),
-> ( 'EMP010', 'Sajid', 'Khan', 'sajid.khan@g.bracu.ac.bd', '+8801623411119', '2022-01-12', 'JOB008', 48000, 5, 'MNG006', 'DPT005'),
-> ( 'EMP011', 'Jannatul', 'Piasha', 'jannatul.piasha@g.bracu.ac.bd', '+8801623333333', '2023-03-12', 'JOB009', 45500, 4, 'MNG007', 'DPT006'),
-> ( 'EMP012', 'Shikder', 'Bijoy', 'shikder.bijoy@g.bracu.ac.bd', '+8801655333333', '2022-03-22', 'JOB010', 25900, 4, 'MNG007', 'DPT006'),
-> ( 'EMP013', 'Omor', 'Chowdhuri', 'omor.chowdhuri@g.bracu.ac.bd', '+8801623159333', '2020-04-02', 'JOB011', 25500, 5, 'MNG008', 'DPT007'),
-> ( 'EMP014', 'Dechen', 'Sheldon', 'dechen.sheldon@g.bracu.ac.bd', '+8801623357333', '2020-03-12', 'JOB011', 42500, 1, 'MNG009', 'DPT007'),
-> ( 'EMP015', 'Ashok', 'Lamichane', 'ashok.lamichane@g.bracu.ac.bd', '+8801623147333', '2020-03-02', 'JOB012', 35500, 3, 'MNG010', 'DPT007'),
-> ( 'EMP016', 'Mukund', 'Prasad', 'mukund.prasad@g.bracu.ac.bd', '+8801623359333', '2021-12-12', 'JOB013', 25800, 2, 'MNG011', 'DPT008'),
-> ( 'EMP017', 'Abdul', 'Khalek', 'abdul.khalek@g.bracu.ac.bd', '+8801623326333', '2021-03-19', 'JOB014', 46000, 4, 'MNG011', 'DPT008');
```

Query OK, 17 rows affected (0.058 sec)

Records: 17 Duplicates: 0 Warnings: 0

MariaDB [assignment3]> SELECT \* FROM employees;

employee_id	first_name	last_name	email	phone_number	hire_date	job_id	salary	commission_pct	manager_id	department_id
EMP001	Udoy	Saha	udoy.saha@g.bracu.ac.bd	+8801184654339	2021-06-12	JOB001	50000	5.000	MNG001	DPT001
EMP002	Omuk	Tomuk	omuk.tomuk@g.bracu.ac.bd	+8801086554339	2022-06-12	JOB002	40000	3.000	MNG001	DPT001
EMP003	Ulfat	Fatema	ulfat.fatema@g.bracu.ac.bd	+8801626154339	2021-09-12	JOB003	45000	2.000	MNG002	DPT002
EMP004	Muntasir	Amit	muntasir.amit@g.bracu.ac.bd	+8801626102749	2023-06-12	JOB004	20000	4.000	MNG002	DPT002
EMP005	Ankur	Paul	ankur.paul@g.bracu.ac.bd	+8801626102948	2021-06-15	JOB005	25000	5.000	MNG003	DPT003
EMP006	Punno	Khan	punno.khan@g.bracu.ac.bd	+8801626000000	2022-06-11	JOB006	22000	2.000	MNG004	DPT003
EMP007	Tasnim	Rahman	tasnim.rahman@g.bracu.ac.bd	+8801623583900	2023-06-12	JOB006	34000	4.000	MNG004	DPT003
EMP008	Md	Yasin	md.yasin@g.bracu.ac.bd	+8801624578300	2023-06-12	JOB007	28000	2.000	MNG005	DPT004
EMP009	Atanu	Banik	atanu.banik@g.bracu.ac.bd	+8801936154339	2021-11-02	JOB008	38000	3.000	MNG005	DPT005
EMP010	Sajid	Khan	sajid.khan@g.bracu.ac.bd	+8801623411119	2022-01-12	JOB008	48000	5.000	MNG006	DPT005
EMP011	Jannatul	Piasha	jannatul.piasha@g.bracu.ac.bd	+8801623333333	2023-03-12	JOB009	45500	4.000	MNG007	DPT006
EMP012	Shikder	Bijoy	shikder.bijoy@g.bracu.ac.bd	+8801655333333	2022-03-22	JOB010	25900	4.000	MNG007	DPT006
EMP013	Omor	Chowdhuri	omor.chowdhuri@g.bracu.ac.bd	+8801623159333	2020-04-02	JOB011	25500	5.000	MNG008	DPT007
EMP014	Dechen	Sheldon	dechen.sheldon@g.bracu.ac.bd	+8801623357333	2020-03-12	JOB011	42500	1.000	MNG009	DPT007
EMP015	Ashok	Lamichane	ashok.lamichane@g.bracu.ac.bd	+8801623147333	2020-03-02	JOB012	35500	3.000	MNG010	DPT007
EMP016	Mukund	Prasad	mukund.prasad@g.bracu.ac.bd	+8801623359333	2021-12-12	JOB013	25800	2.000	MNG011	DPT008
EMP017	Abdul	Khalek	abdul.khalek@g.bracu.ac.bd	+8801623326333	2021-03-19	JOB014	46000	4.000	MNG011	DPT008

17 rows in set (0.000 sec)

1.

```
-- With latest hire date
SELECT first_name, last_name, email, phone_number, hire_date, department_id
FROM employees
WHERE hire_date = (
    SELECT MAX(hire_date)
    FROM employees
);
```

```
MariaDB [assignment3]> -- With latest hire date
MariaDB [assignment3]> 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
Muntasir	Amit	muntasir.amit@g.bracu.ac.bd	+8801626102749	2023-06-12	DPT002
Tasnim	Rahman	tasnim.rahman@g.bracu.ac.bd	+8801623583900	2023-06-12	DPT003
Md	Yasin	md.yasin@g.bracu.ac.bd	+8801624578300	2023-06-12	DPT004

```
3 rows in set (0.004 sec)
```

## 2.

```
-- Lowest salary in each department
SELECT first_name, last_name, employee_id, phone_number, salary, department_id
FROM employees e1
WHERE NOT EXISTS (
    SELECT *
    FROM employees e2
    WHERE e1.employee_id != e2.employee_id AND e1.salary > e2.salary AND
e1.department_id = e2.department_id
);
```

```
MariaDB [assignment3]> -- Lowest salary in each department
MariaDB [assignment3]> SELECT first_name, last_name, employee_id, phone_number, salary, department_id
-> FROM employees e1
-> WHERE NOT EXISTS (
->     SELECT *
->     FROM employees e2
->     WHERE e1.employee_id != e2.employee_id AND e1.salary > e2.salary AND e1.department_id = e2.department_id
-> );
```

first_name	last_name	employee_id	phone_number	salary	department_id
Omuk	Tomuk	EMP002	+8801086554339	40000	DPT001
Muntasir	Amit	EMP004	+8801626102749	20000	DPT002
Punno	Khan	EMP006	+8801626000000	22000	DPT003
Md	Yasin	EMP008	+8801624578300	28000	DPT004
Atanu	Banik	EMP009	+8801936154339	38000	DPT005
Shikder	Bijoy	EMP012	+8801655533333	25900	DPT006
Omor	Chowdhuri	EMP013	+8801623159333	25500	DPT007
Mukund	Prasad	EMP016	+8801623359333	25800	DPT008

8 rows in set (0.001 sec)

3.

```
-- All the employees in the department 'DPT007' who have a lower commission_pct
than all of the employees of the department 'DPT005'
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'
);
```

```
MariaDB [assignment3]> -- all the employees in the department 'DPT007' who have a lower commission_pct than all of the employees of the department 'DPT005'
MariaDB [assignment3]> 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
Dechen	Sheldon	EMP014	1.000	DPT007

```
1 row in set (0.003 sec)
```

4.

```
-- Departments which do not have any employee's salary more than 30000
SELECT department_id, COUNT(*) AS 'Total number of employees'
FROM employees
GROUP BY department_id
HAVING MAX(salary) <= 30000;
```

```
MariaDB [assignment3]> -- Departments which do not have any employee's salary more than 30000
MariaDB [assignment3]> SELECT department_id, COUNT(*) AS 'Total number of employees'
    -> FROM employees
    -> GROUP BY department_id
    -> HAVING MAX(salary) <= 30000;
+-----+-----+
| department_id | Total number of employees |
+-----+-----+
| DPT004       | 1 |
+-----+-----+
1 row in set (0.006 sec)
```

5.

```
-- (in general, this excludes the top commission percentage job in each
department)
SELECT department_id, job_id, commission_pct
FROM employees e1
WHERE EXISTS(
    SELECT *
    FROM employees e2
    WHERE e1.department_id = e2.department_id AND
          e1.job_id != e2.job_id AND
          e1.commission_pct < e2.commission_pct
)
ORDER BY department_id ASC, job_id ASC, commission_pct ASC;
```

```
MariaDB [assignment3]> -- (in general, this excludes the top commission percentage job in each department)
MariaDB [assignment3]> SELECT department_id, job_id, commission_pct
-> FROM employees e1
-> WHERE EXISTS(
->     SELECT *
->     FROM employees e2
->     WHERE e1.department_id = e2.department_id AND
->           e1.job_id != e2.job_id AND
->           e1.commission_pct < e2.commission_pct
-> )
-> ORDER BY department_id ASC, job_id ASC, commission_pct ASC;
+-----+-----+-----+
| department_id | job_id | commission_pct |
+-----+-----+-----+
| DPT001        | JOB002 | 3.000          |
| DPT002        | JOB003 | 2.000          |
| DPT003        | JOB006 | 2.000          |
| DPT003        | JOB006 | 4.000          |
| DPT007        | JOB011 | 1.000          |
| DPT007        | JOB012 | 3.000          |
| DPT008        | JOB013 | 2.000          |
+-----+-----+-----+
7 rows in set (0.001 sec)
```

6.

```
-- Managers who don't have any employee with salary less than 3500
SELECT manager_id
FROM employees
GROUP BY manager_id
HAVING MIN(salary) >= 3500
ORDER BY manager_id ASC;
```

```
MariaDB [assignment3]> -- Managers who don't have any employee with salary less than 3500
MariaDB [assignment3]> SELECT manager_id
-> FROM employees
-> GROUP BY manager_id
-> HAVING MIN(salary) >= 3500
-> ORDER BY manager_id ASC;
+-----+
| manager_id |
+-----+
| MNG001     |
| MNG002     |
| MNG003     |
| MNG004     |
| MNG005     |
| MNG006     |
| MNG007     |
| MNG008     |
| MNG009     |
| MNG010     |
| MNG011     |
+-----+
11 rows in set (0.001 sec)
```



Z

```
-- Employee having least commission percentage under each Manager
SELECT first_name, last_name, employee_id, email, salary, department_id,
commission_pct
FROM employees e1
WHERE NOT EXISTS(
    SELECT *
    FROM employees e2
    WHERE e1.manager_id = e2.manager_id AND
          e1.commission_pct > e2.commission_pct
);
```

```
MariaDB [assignment3]> -- Employee having least commission percentage under each Manager
MariaDB [assignment3]> SELECT first_name, last_name, employee_id, email, salary, department_id, commission_pct
-> FROM employees e1
-> WHERE NOT EXISTS(
->     SELECT *
->     FROM employees e2
->     WHERE e1.manager_id = e2.manager_id AND
->           e1.commission_pct > e2.commission_pct
-> );
```

first_name	last_name	employee_id	email	salary	department_id	commission_pct
Omuk	Tomuk	EMP002	omuk.tomuk@g.bracu.ac.bd	40000	DPT001	3.000
Ulfat	Fatema	EMP003	ulfat.fatema@g.bracu.ac.bd	45000	DPT002	2.000
Ankur	Paul	EMP005	ankur.paul@g.bracu.ac.bd	25000	DPT003	5.000
Punno	Khan	EMP006	punno.khan@g.bracu.ac.bd	22000	DPT003	2.000
Md	Yasin	EMP008	md.yasin@g.bracu.ac.bd	28000	DPT004	2.000
Sajid	Khan	EMP010	sajid.khan@g.bracu.ac.bd	48000	DPT005	5.000
Jannatul	Piasha	EMP011	jannatul.piasha@g.bracu.ac.bd	45500	DPT006	4.000
Shikder	Bijoy	EMP012	shikder.bijoy@g.bracu.ac.bd	25900	DPT006	4.000
Omor	Chowdhuri	EMP013	omor.chowdhuri@g.bracu.ac.bd	25500	DPT007	5.000
Dechen	Sheldon	EMP014	dechen.sheldon@g.bracu.ac.bd	42500	DPT007	1.000
Ashok	Lamichane	EMP015	ashok.lamichane@g.bracu.ac.bd	35500	DPT007	3.000
Mukund	Prasad	EMP016	mukund.prasad@g.bracu.ac.bd	25800	DPT008	2.000

12 rows in set (0.001 sec)