

## CSE370 : Database Systems

Assignment 01/03/2025 | Spring 2025

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```
CREATE DATABASE Company_23101137;  
USE Company_23101137;
```

```
CREATE TABLE Employee  
(  
    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)  
);
```

```
INSERT INTO Employee VALUES  
('EMP001', 'Nafis', 'Rahman', 'nafis.rahman@company.com', '+8801712345678', '2024-01-15', 'JOB001', 25000, 0.050, 'MNG001', 'DPT001'),  
('EMP002', 'Tasneem', 'Hossain', 'tasneem.hossain@company.com', '+8801812345678', '2023-12-10', 'JOB002', 2000, 0.073, 'MNG002', 'DPT002'),  
('EMP003', 'Nahid', 'Hasan', 'nahid.hasan@company.com', '+8801912345678', '2024-02-20', 'JOB003', 27000, 0.064, 'MNG003', 'DPT003'),  
('EMP004', 'Arafat', 'Islam', 'arafat.islam@company.com', '+8801711111111', '2024-03-05', 'JOB004', 3200, 0.081, 'MNG004', 'DPT004'),  
('EMP005', 'Tasneem', 'Ahmed', 'tasneem.ahmed@company.com', '+8801811111111', '2024-01-30', 'JOB005', 2600, 0.054, 'MNG005', 'DPT005'),
```

('EMP006', 'Muhtadi', 'Kamal', 'muhtadi.kamal@company.com', '+8801911111111', '2023-11-25', 'JOB006', 26000, 0.042, 'MNG006', 'DPT006'),  
 ('EMP007', 'Farhana', 'Begum', 'farhana.begum@company.com', '+8801712222222', '2024-04-10', 'JOB007', 35000, 0.101, 'MNG007', 'DPT007'),  
 ('EMP008', 'Naima', 'Chowdhury', 'naima.chowdhury@company.com', '+8801812222222', '2023-10-15', 'JOB008', 25000, 0.031, 'MNG001', 'DPT001'),  
 ('EMP009', 'Zubair', 'Khan', 'zubair.khan@company.com', '+8801912222222', '2024-02-28', 'JOB009', 29000, 0.063, 'MNG002', 'DPT002'),  
 ('EMP010', 'Ishrat', 'Jahan', 'ishrat.jahan@company.com', '+8801713333333', '2023-09-05', 'JOB003', 22000, 0.064, 'MNG003', 'DPT003'),  
 ('EMP011', 'Mahmud', 'Hassan', 'mahmud.hassan@company.com', '+8801723456789', '2024-05-12', 'JOB011', 26700, 0.04, 'MNG004', 'DPT004'),  
 ('EMP012', 'Sharmin', 'Akter', 'sharmin.akter@company.com', '+8801823456789', '2023-08-20', 'JOB011', 2800, 0.06, 'MNG005', 'DPT005'),  
 ('EMP013', 'Fahim', 'Uddin', 'fahim.uddin@company.com', '+8801923456789', '2024-06-15', 'JOB012', 31000, 0.09, 'MNG006', 'DPT006'),  
 ('EMP014', 'Sadiah', 'Rahman', 'sadia.rahman@company.com', '+8801724567890', '2023-07-25', 'JOB013', 23000, 0.03, 'MNG007', 'DPT007'),  
 ('EMP015', 'Raihan', 'Kabir', 'raihan.kabir@company.com', '+8801824567890', '2024-05-05', 'JOB014', 2700, 0.07, 'MNG001', 'DPT001');

MariaDB [Company\_23101137]> SELECT \* FROM Employee;

employee_id	first_name	last_name	email	phone_number	hire_date	job_id	salary	commission_pct	manager_id	department_id
EMP001	Nafis	Rahman	nafis.rahman@company.com	+8801712345678	2024-01-15	JOB001	25000	0.050	MNG001	DPT001
EMP002	Tasneem	Hossain	tasneem.hossain@company.com	+8801812345678	2023-12-10	JOB002	2000	0.073	MNG002	DPT002
EMP003	Nahid	Hasan	nahid.hasan@company.com	+8801912345678	2024-02-20	JOB003	27000	0.064	MNG003	DPT003
EMP004	Arafat	Islam	arafat.islam@company.com	+8801711111111	2024-03-05	JOB004	3200	0.081	MNG004	DPT004
EMP005	Tasneem	Ahmed	tasneem.ahmed@company.com	+8801811111111	2024-01-30	JOB005	2600	0.054	MNG005	DPT005
EMP006	Muhtadi	Kamal	muhtadi.kamal@company.com	+8801911111111	2023-11-25	JOB006	26000	0.042	MNG006	DPT006
EMP007	Farhana	Begum	farhana.begum@company.com	+8801712222222	2024-04-10	JOB007	35000	0.101	MNG007	DPT007
EMP008	Naima	Chowdhury	naima.chowdhury@company.com	+8801812222222	2023-10-15	JOB008	25000	0.031	MNG001	DPT001
EMP009	Zubair	Khan	zubair.khan@company.com	+8801912222222	2024-02-28	JOB009	29000	0.063	MNG002	DPT002
EMP010	Ishrat	Jahan	ishrat.jahan@company.com	+8801713333333	2023-09-05	JOB003	22000	0.064	MNG003	DPT003
EMP011	Mahmud	Hassan	mahmud.hassan@company.com	+8801723456789	2024-05-12	JOB011	26700	0.040	MNG004	DPT004
EMP012	Sharmin	Akter	sharmin.akter@company.com	+8801823456789	2023-08-20	JOB011	2800	0.060	MNG005	DPT005
EMP013	Fahim	Uddin	fahim.uddin@company.com	+8801923456789	2024-06-15	JOB012	31000	0.090	MNG006	DPT006
EMP014	Sadia	Rahman	sadia.rahman@company.com	+8801724567890	2023-07-25	JOB013	23000	0.030	MNG007	DPT007
EMP015	Raihan	Kabir	raihan.kabir@company.com	+8801824567890	2024-05-05	JOB014	2700	0.070	MNG001	DPT001

15 rows in set (0.000 sec)

<b>No 1 Query</b> <b>(as Plain Text)</b>	SELECT first_name, last_name, email, phone_number, hire_date, department_id FROM Employee WHERE hire_date = (SELECT MAX(hire_date) FROM Employee);
<b>No 1 SS</b> <b>(of Query &amp; Output in Shell)</b>	<pre> MariaDB [Company_23101137]&gt; SELECT first_name, last_name, email, phone_number, hire_date, department_id FROM Employee WHERE hire_date = (SELECT MAX(hire_date) FROM Employee); +-----+-----+-----+-----+-----+-----+   first_name   last_name   email                  phone_number   hire_date   department_id   +-----+-----+-----+-----+-----+-----+   Fahim       Uddin      fahim.uddin@company.com   +8801923456789   2024-06-15   DPT006          +-----+-----+-----+-----+-----+-----+ 1 row in set (0.001 sec) </pre>
<b>No 2 Query</b> <b>(as Plain Text)</b>	SELECT first_name, last_name, employee_id, phone_number, salary, department_id FROM employee WHERE (department_id, salary) IN (SELECT department_id, MIN(salary) FROM employee GROUP BY department_id ) ORDER BY department_id ASC;
<b>No 2 SS</b> <b>(of Query &amp; Output in Shell)</b>	<pre> MariaDB [Company_23101137]&gt; SELECT first_name, last_name, employee_id, phone_number, salary, department_id FROM employee WHERE (department_id, salary) IN (SELECT department_id, MIN(salary) FROM employee GROUP BY department_id ) ORDER BY department_id ASC; +-----+-----+-----+-----+-----+-----+   first_name   last_name   employee_id   phone_number   salary   department_id   +-----+-----+-----+-----+-----+-----+   Raihan      Kabir      EMP015       +8801824567890   2700    DPT001            Tasneem     Hossain    EMP002       +8801812345678   2000    DPT002            Ishrat      Jahan      EMP010       +8801713333333   22000   DPT003            Arafat      Islam      EMP004       +8801711111111   3200    DPT004            Tasneem     Ahmed      EMP005       +8801811111111   2600    DPT005            Muhtadi     Kamal      EMP006       +8801911111111   26000   DPT006            Sadia       Rahman     EMP014       +8801724567890   23000   DPT007          +-----+-----+-----+-----+-----+-----+ 7 rows in set (0.001 sec) </pre>
<b>No 3 Query</b> <b>(as Plain Text)</b>	SELECT first_name, last_name, employee_id, commission_pct, department_id FROM Employee WHERE department_id = "DPT007" AND commission_pct < ALL(SELECT commission_pct FROM Employee WHERE department_id = "DPT005");

**No 3 SS**  
**(of Query & Output**  
**in Shell)**

```
MariaDB [Company_23101137]> SELECT first_name, last_name, employee_id, commission_pct, department_id FROM Employee WHERE department_id = "DPT007" AND
commission_pct < ALL(SELECT commission_pct FROM Employee WHERE department_id = "DPT005");
```

first_name	last_name	employee_id	commission_pct	department_id
Sadia	Rahman	EMP014	0.030	DPT007

```
1 row in set (0.000 sec)
```

**No 4 Query**  
**(as Plain Text)**

SELECT department\_id, COUNT(employee\_id) AS total\_employees FROM Employee GROUP BY department\_id HAVING  
MAX(salary) < 30000;

**No 4 SS**  
**(of Query & Output**  
**in Shell)**

```
MariaDB [Company_23101137]> SELECT department_id, COUNT(employee_id) AS total_employees FROM Employee GROUP BY department_id HAVING MAX(salary) < 30000;
```

department_id	total_employees
DPT001	3
DPT002	2
DPT003	2
DPT004	2
DPT005	2

```
5 rows in set (0.000 sec)
```

**No 5 Query**  
**(as Plain Text)**

SELECT department\_id, job\_id, commission\_pct FROM employee as e1 WHERE EXISTS(SELECT \* FROM employee e2 WHERE  
e2.department\_id = e1.department\_id AND e2.commission\_pct > e1.commission\_pct);

**No 5 SS**  
**(of Query & Output**  
**in Shell)**

```
MariaDB [Company_23101137]> SELECT department_id, job_id, commission_pct FROM employee as e1 WHERE EXISTS(SELECT * FROM employee e2 WHERE e2.department_id = e1.department_id
AND e2.commission_pct > e1.commission_pct);
```

department_id	job_id	commission_pct
DPT001	JOB008	0.031
DPT002	JOB009	0.063
DPT004	JOB011	0.040
DPT007	JOB013	0.030
DPT005	JOB005	0.054
DPT006	JOB006	0.042
DPT001	JOB001	0.050

```
7 rows in set (0.000 sec)
```

<b>No 6 Query</b> <b>(as Plain Text)</b>	SELECT manager_id FROM Employee GROUP BY manager_id HAVING MIN(salary) >= 3500;
<b>No 6 SS</b> <b>(of Query &amp; Output in Shell)</b>	<pre> MariaDB [Company_23101137]&gt; SELECT manager_id FROM Employee GROUP BY manager_id HAVING MIN(salary) &gt;= 3500; +-----+   manager_id   +-----+   MNG003         MNG006         MNG007       +-----+ 3 rows in set (0.000 sec) </pre>
<b>No 7 Query</b> <b>(as Plain Text)</b>	SELECT first_name, last_name, employee_id, email, salary, department_id, commission_pct FROM Employee L1 WHERE commission_pct = (SELECT MIN(L2.commission_pct) FROM Employee L2 WHERE L2.manager_id=L1.manager_id);
<b>No 7 SS</b> <b>(of Query &amp; Output in Shell)</b>	<pre> MariaDB [Company_23101137]&gt; SELECT first_name, last_name, employee_id, email, salary, department_id, commission_pct FROM Employee L1 WHERE commission_pct = (SELECT MIN(L2.commission_pct) FROM Employee L2 WHERE L2.manager_id=L1.manager_id); +-----+-----+-----+-----+-----+-----+-----+   first_name   last_name   employee_id   email   salary   department_id   commission_pct   +-----+-----+-----+-----+-----+-----+-----+   Nahid        Hasan      EMP003        nahid.hasan@company.com   27000   DPT003          0.064              Tasneem      Ahmed      EMP005        tasneem.ahmed@company.com   2600    DPT005          0.054              Muhtadi      Kamal      EMP006        muhtadi.kamal@company.com   26000   DPT006          0.042              Naima        Chowdhury   EMP008        naima.chowdhury@company.com   25000   DPT001          0.031              Zubair       Khan       EMP009        zubair.khan@company.com   29000   DPT002          0.063              Ishrat       Jahan      EMP010        ishrat.jahan@company.com   22000   DPT003          0.064              Mahmud       Hassan     EMP011        mahmud.hassan@company.com   26700   DPT004          0.040              Sadia        Rahman     EMP014        sadia.rahman@company.com   23000   DPT007          0.030            +-----+-----+-----+-----+-----+-----+-----+ 8 rows in set (0.001 sec) </pre>