

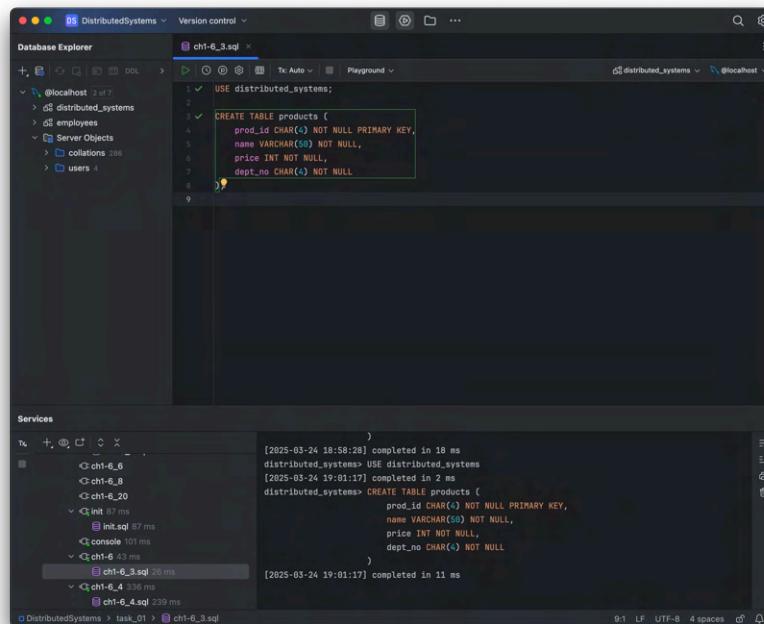
분산시스템 과제 #1

박종현, 2025-03-19
공과대학 컴퓨터정보통신공학과

과제 목표

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3. 1-8 자료 : 8, 9, 12, 13, 14 쪽

[1-6, #3]

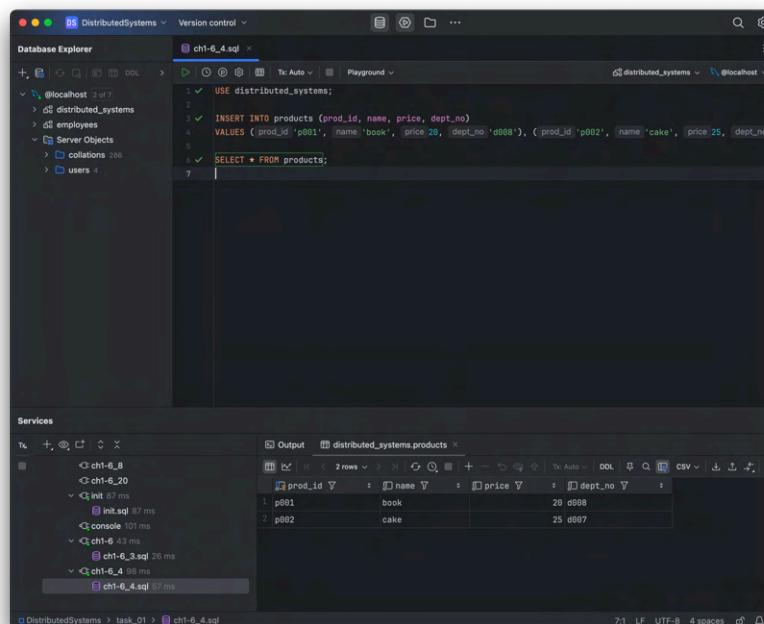


```

USE distributed_systems;
CREATE TABLE products (
    prod_id CHAR(2) NOT NULL PRIMARY KEY,
    name VARCHAR(50) NOT NULL,
    price INT NOT NULL,
    dept_no CHAR(4) NOT NULL
)

```

[1-6, #4]



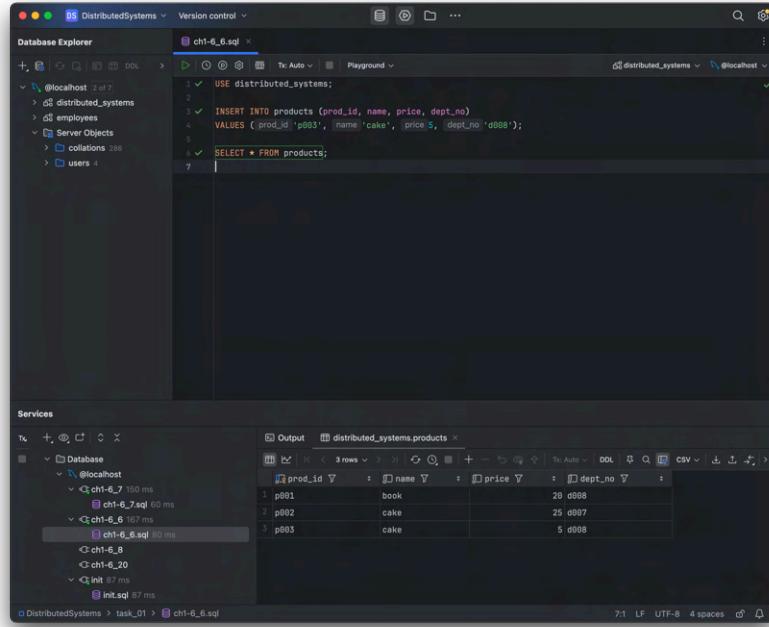
```

USE distributed_systems;
INSERT INTO products (prod_id, name, price, dept_no)
VALUES ('p001', 'book', 20, 'd008'), ('p002', 'cake', 25, 'd007');
SELECT * FROM products;

```

prod_id	name	price	dept_no
p001	book	20	d008
p002	cake	25	d007

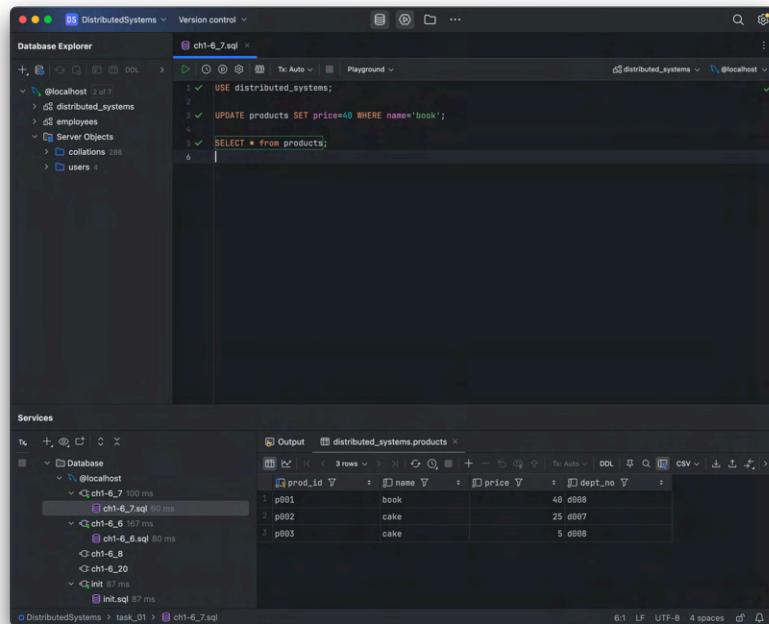
[1-6, #6]



```
ch1-6_6.sql
1 USE distributed_systems;
2
3 INSERT INTO products (prod_id, name, price, dept_no)
4     VALUES ('prod_id1', 'p003', 'name'cake', 'price $, 'dept_no' d008');
5
6 SELECT * FROM products;
```

prod_id	name	price	dept_no
p001	book	20	d008
p002	cake	25	d007
p003	cake	5	d008

[1-6, #7]



```
ch1-6_7.sql
1 USE distributed_systems;
2
3 UPDATE products SET price=40 WHERE name='book';
4
5 SELECT * from products;
```

prod_id	name	price	dept_no
p001	book	40	d008
p002	cake	25	d007
p003	cake	5	d008

[1-6, #8]

```

USE distributed_systems;
DELETE FROM products WHERE name='cake';
SELECT * FROM products;

```

Services

prod_id	name	price	dept_no
1	book	40	d008

[1-6, #19]

```

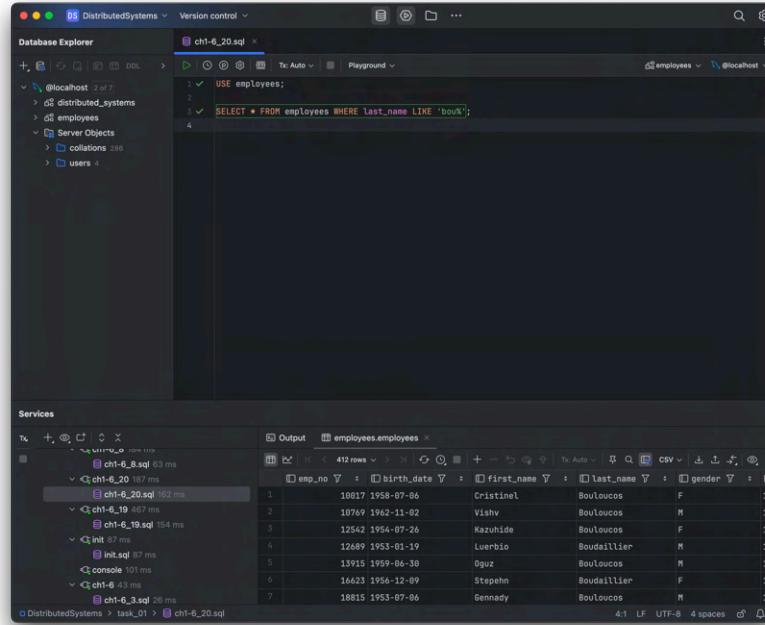
USE employees;
SELECT * FROM employees WHERE birth_date BETWEEN '1952-02-04' AND '1952-02-05';
SELECT * FROM employees WHERE last_name IN ('Skogmar', 'Bolotov');

```

Services

emp_no	birth_date	first_name	last_name	gender
1	19299 1960-03-01	Ulf	Skogmar	F
2	13157 1957-11-26	Bernd	Skogmar	F
3	13945 1957-02-11	Phuoc	Skogmar	M
4	14762 1962-12-19	Kayoko	Bolotov	M
5	18282 1960-01-13	Brigham	Bolotov	M
6	20317 1956-02-12	Georgy	Skogmar	F
7	20365 1957-09-11	Elrique	Bolotov	F

[1-6, #20]



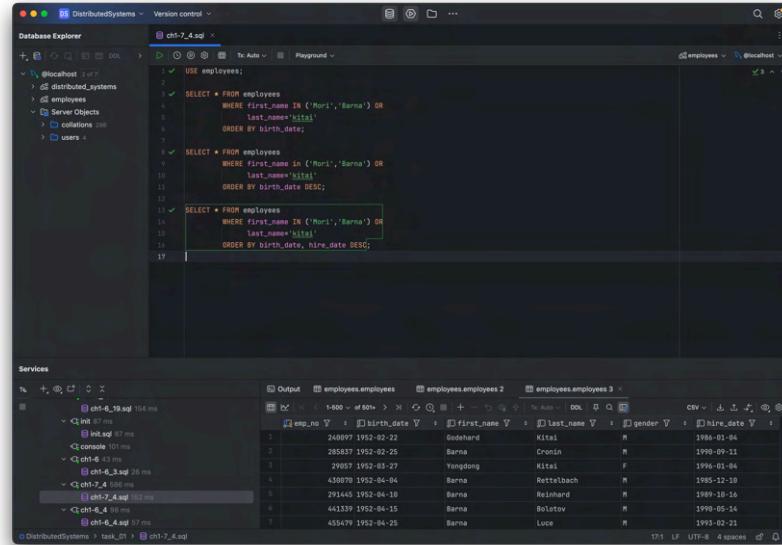
The screenshot shows a SQL development environment with the following details:

- Database Explorer:** Shows a connection to `@localhost` with 2 objects: `distributed_systems` and `employees`. The `employees` database is selected.
- Query Editor:** A file named `ch1-6_20.sql` is open, containing the following SQL code:

```
1 USE employees;
2
3 SELECT * FROM employees WHERE last_name LIKE 'bou%';
```
- Output Window:** Shows the results of the query execution. The results are as follows:

emp_no	birth_date	first_name	last_name	gender	hire_date
10817	1958-07-06	Cristinel	Boulanger	F	1995-01-15
10769	1962-11-02	Vishw	Boulanger	M	1995-01-15
12542	1954-07-26	Kazuhide	Boulanger	F	1995-01-15
12689	1953-01-19	Luverbio	Boulanger	M	1995-01-15
13915	1959-06-30	Oguz	Boulanger	M	1995-01-15
16623	1956-12-09	Stephenn	Boulanger	F	1995-01-15
18815	1953-07-06	Gennady	Boulanger	M	1995-01-15

[1-7, #4]



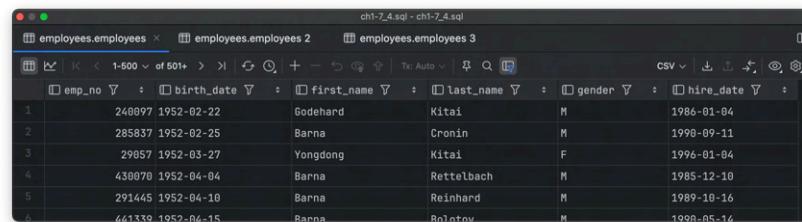
```

USE employees;
SELECT * FROM employees
WHERE first_name IN ('Mori','Barna') OR
      last_name='Kitai'
ORDER BY birth_date;

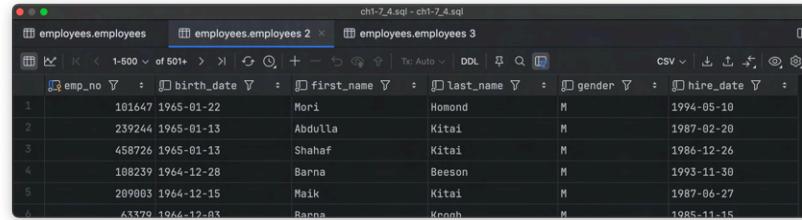
SELECT * FROM employees
WHERE first_name IN ('Mori','Barna') OR
      last_name='Cronin'
ORDER BY birth_date DESC;

SELECT * FROM employees
WHERE first_name IN ('Mori','Barna') OR
      last_name='Kitai'
ORDER BY birth_date, hire_date DESC;

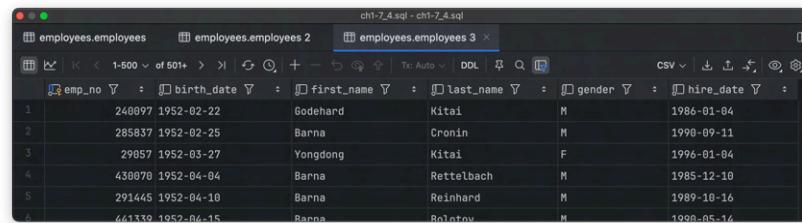
```



	emp_no	birth_date	first_name	last_name	gender	hire_date
1	240897	1952-02-22	Godehard	Kitai	M	1986-01-04
2	285837	1952-02-25	Barna	Cronin	M	1990-09-11
3	29057	1952-03-27	Yongdong	Kitai	F	1996-01-04
4	430870	1952-04-04	Barna	Rettelbach	M	1985-12-10
5	291445	1952-04-10	Barna	Reinhard	M	1989-10-16
6	661339	1952-04-15	Barna	Boletov	M	1990-05-14
7	455479	1952-04-25	Barna	Luce	M	1993-02-21

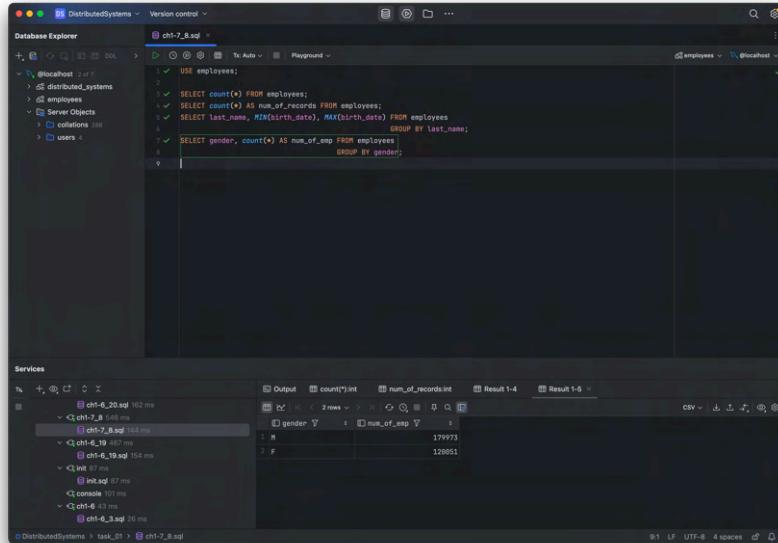


	emp_no	birth_date	first_name	last_name	gender	hire_date
1	240897	1952-02-22	Godehard	Kitai	M	1986-01-04
2	285837	1952-02-25	Barna	Cronin	M	1990-09-11
3	29057	1952-03-27	Yongdong	Kitai	F	1996-01-04
4	430870	1952-04-04	Barna	Rettelbach	M	1985-12-10
5	291445	1952-04-10	Barna	Reinhard	M	1989-10-16
6	661339	1952-04-15	Barna	Boletov	M	1990-05-14
7	455479	1952-04-25	Barna	Luce	M	1993-02-21



	emp_no	birth_date	first_name	last_name	gender	hire_date
1	101647	1965-01-22	Mori	Homond	M	1994-05-10
2	239244	1965-01-13	Abdulla	Kitai	M	1987-02-20
3	458726	1965-01-13	Shahaf	Kitai	M	1986-12-26
4	108239	1964-12-28	Barna	Beeson	M	1993-11-30
5	209003	1964-12-15	Maik	Kitai	M	1987-06-27
6	633732	1964-12-03	Barna	Krohn	M	1985-11-15

[1-7, #8]



```

USE employees;
SELECT count(*) AS num_of_records FROM employees;
SELECT count(*) AS num_of_records FROM employees;
SELECT last_name, MIN(birth_date), MAX(birth_date) FROM employees
GROUP BY last_name;
SELECT gender, count(*) AS num_of_emp FROM employees
GROUP BY gender;

```

ch1-7_8.sql - ch1-7_8.sql	
count(*):int	num_of_records:int
1	300024

ch1-7_8.sql - ch1-7_8.sql	
count(*):int	num_of_records:int
1	300024

ch1-7_8.sql - ch1-7_8.sql			
count(*):int	num_of_records:int	Result 1-4	Result 1-5
1	last_name	=	MIN(birth_date)
2	Simmel	=	1952-03-15
3	Bamford	=	1952-02-04
4	Koblick	=	1952-02-17
5	Matiniak	=	1952-02-22
6	Preusin	=	1952-02-16
		:	MAX(birth_date)
		:	1964-12-17
		:	1965-01-30
		:	1965-01-22
		:	1965-01-27
		:	1965-01-21
		:	1965-01-10

ch1-7_8.sql - ch1-7_8.sql			
count(*):int	num_of_records:int	Result 1-4	Result 1-5
1	gender	=	num_of_emp
2	M	=	179973
3	F	=	128051

[1-7, #9]

```

USE employees;
SELECT last_name, count(*) AS num_of_emp
FROM employees
GROUP BY last_name
HAVING num_of_emp > 226;

```

last_name	num_of_emp
Ceceg	223
Sudeck	223
Babu	226
Adeschi	221
Selosh	223
Faris	223

[1-7, #12]

```

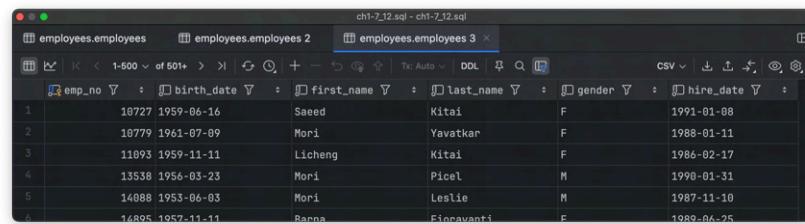
USE employees;
SELECT * FROM employees WHERE first_name LIKE 'Mo%' AND gender='M';
SELECT * FROM employees WHERE last_name LIKE 'Ba%' AND birth_date BETWEEN '1955-01-01' AND '1960-12-31';
SELECT * FROM employees WHERE first_name IN ('Marti', 'Barna') OR last_name='Gautam';

```

emp_no	birth_date	first_name	last_name	gender	hire_date
10727	1959-06-16	Seed	Kitali	F	1991-01-08
10779	1963-07-09	Mori	Yavaskar	F	1988-01-11
11093	1959-11-11	Licheng	Kitali	F	1986-02-17
13538	1956-03-23	Mori	Pical	M	1990-01-31
14088	1953-06-03	Mori	Leslie	M	1987-11-10
14895	1957-11-11	Barna	Fireavanti	F	1989-01-25
15981	1962-11-27	Barna	Dasecu	F	1984-10-06

emp_no	birth_date	first_name	last_name	gender	hire_date
10896	1954-09-16	Jayson	Mandell	M	1990-01-14
10113	1963-11-13	Jaewon	Syrzycki	M	1989-12-24
10164	1956-01-19	Jagoda	Braunmuhl	M	1985-11-12
10213	1964-05-24	Jackson	Kakkad	M	1992-11-06
10337	1957-12-10	Jeong	Sadowsky	M	1995-08-06
10381	1963-03-06	Lianna	Parfitt	M	1991-12-06

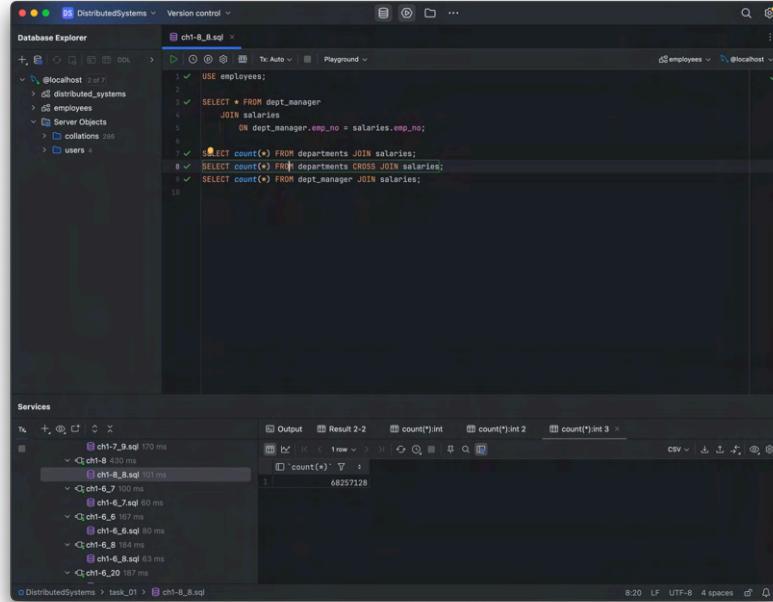
emp_no	birth_date	first_name	last_name	gender	hire_date
10088	1958-02-19	Saniya	Kalloufi	M	1994-09-15
10084	1960-05-25	Tuval	Kalloufi	M	1995-12-15
10201	1956-12-15	Idoia	Kavraki	F	1986-11-22
10208	1968-01-02	Xiping	Klerer	M	1991-12-23
10227	1957-07-04	Anneli	Kaiser	M	1994-04-24
10266	1958-09-08	Nalini	Kawashimo	F	1997-07-16



The screenshot shows a MySQL Workbench interface with three tabs: 'employees.employees', 'employees.employees 2', and 'employees.employees 3'. The 'employees.employees 3' tab is active, displaying the following data:

	emp_no	birth_date	first_name	last_name	gender	hire_date
1	10727	1959-06-16	Saeed	Kitai	F	1991-01-08
2	10779	1961-07-09	Mori	Yavatkar	F	1988-01-11
3	11093	1959-11-11	Licheng	Kitai	F	1986-02-17
4	13538	1956-03-23	Mori	Picel	M	1990-01-31
5	14088	1953-06-03	Mori	Leslie	M	1987-11-10
6	14805	1977-11-11	Renna	Finiscenti	F	1992-08-25

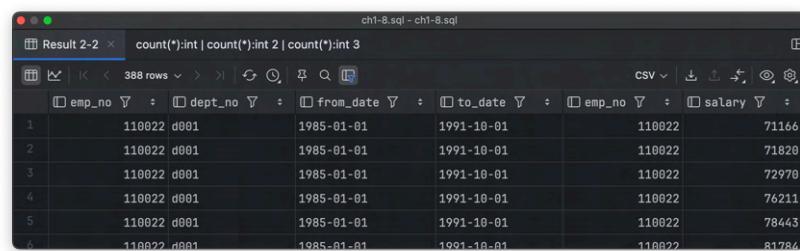
[1-8, #8]



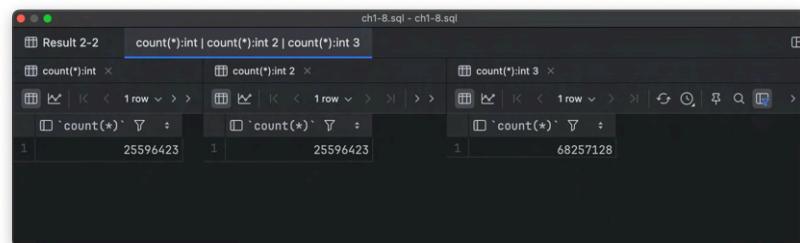
```

1 ✓ USE employees;
2 ✓
3 ✓ SELECT * FROM dept_manager
4     JOIN salaries
5         ON dept_manager.emp_no = salaries.emp_no;
6 ✓
7 ✓ SELECT count(*) FROM departments JOIN salaries;
8 ✓
9 ✓ SELECT count(*) FROM departments CROSS JOIN salaries;
10 ✓
11 ✓
12 ✓
13 ✓
14 ✓
15 ✓
16 ✓
17 ✓
18 ✓
19 ✓

```

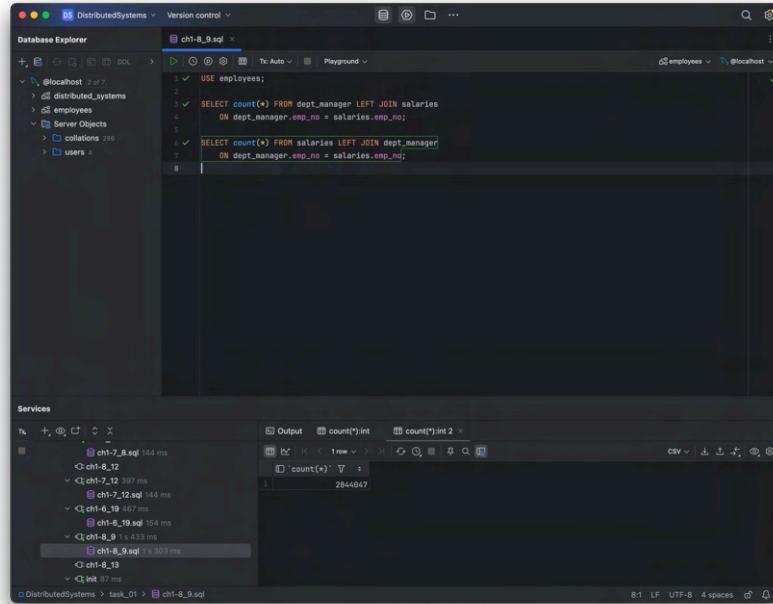


	emp_no	dept_no	from_date	to_date	emp_no	salary
1	110022	d001	1985-01-01	1991-10-01	110022	71166
2	110022	d001	1985-01-01	1991-10-01	110022	71820
3	110022	d001	1985-01-01	1991-10-01	110022	72978
4	110022	d001	1985-01-01	1991-10-01	110022	76211
5	110022	d001	1985-01-01	1991-10-01	110022	78443
6	110022	d001	1985-01-01	1991-10-01	110022	81784



count(*)	count(*)	count(*)
25596423	25596423	68257128
1	1	1

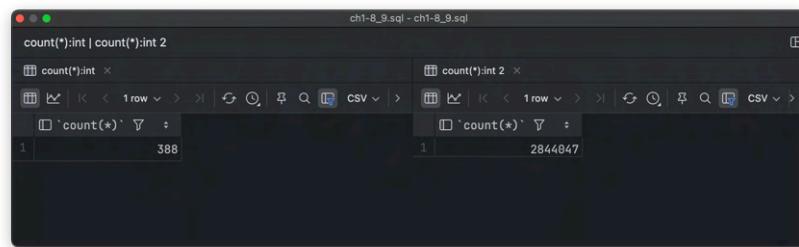
[1-8, #9]



The screenshot shows a database management system interface. The top part is a query editor with a tab labeled 'ch1-8_9.sql'. The code in the editor is:

```
1 USE employees;
2
3 SELECT count(*) FROM dept_manager LEFT JOIN salaries
4       ON dept_manager.emp_no = salaries.emp_no;
5
6 SELECT count(*) FROM salaries LEFT JOIN dept_manager
7       ON dept_manager.emp_no = salaries.emp_no;
```

The bottom part is a 'Services' panel showing a list of recent queries and their execution times. The query 'ch1-8_9.sql' is highlighted and shows a time of 3.03 ms. Other queries listed include 'ch1-8_8.sql' (44 ms), 'ch1-8_12' (397 ms), 'ch1-7_12' (144 ms), 'ch1-4_19' (467 ms), 'ch1-6_19.sql' (154 ms), and 'ch1-8_13' (87 ms).



The screenshot shows a terminal window with the title 'ch1-8_9.sql - ch1-8_9.sql'. The command 'count(*):int | count(*):int 2' is being run. The output shows two rows of data:

	count(*):int	count(*):int 2
1	388	2844047

[1-8, #12]

Database Explorer

```
ch1-8_12.sql
1 ✓ USE employees;
2
3 ✓ SELECT * FROM (SELECT emp_no, max(salary) AS max_salary
4   FROM salaries GROUP BY emp_no) AS tmp_salaries
5   WHERE max_salary > 90000
6   ORDER BY max_salary DESC LIMIT 30;
7
8
9 ✓ SELECT employees.first_name, employees.last_name, max_salary
10  FROM (SELECT emp_no, max(salary) AS max_salary
11    FROM salaries GROUP BY emp_no) AS tmp_salaries
12  JOIN employees ON employees.emp_no = tmp_salaries.emp_no
13  WHERE max_salary > 90000 ORDER BY max_salary DESC limit 30;
```

Services

File	Output	Result 1-2	Result 1-3
ch1-7_8.sql	947 ms		
ch1-8_12.sql	446 ms		
ch1-7_12.sql	397 ms		
ch1-7_12.sql	144 ms		
ch1-6_19.sql	467 ms		
ch1-6_19.sql	154 ms		
ch1-8_9.sql	1433 ms		
ch1-8_9.sql	303 ms		
ch1-8_13			

ch1-8_12.sql - ch1-8_12.sql

Result 1-2

emp_no	max_salary
43624	158220
254466	156286
47978	155709
253939	155513
109334	155377
88823	154459

Result 1-3

first_name	last_name	max_salary
Tokuyasu	Pesch	158220
Honesty	Mukaidono	156286
Xiahua	Whitcomb	155709
Sanjai	Luders	155513
Tsutomo	Alameldin	155377
Willard	Baca	154459
Lidong	Meriste	154376

ch1-8_12.sql - ch1-8_12.sql

Result 1-2

emp_no	max_salary
43624	158220
254466	156286
47978	155709
253939	155513
109334	155377
88823	154459

Result 1-3

first_name	last_name	max_salary
Tokuyasu	Pesch	158220
Honesty	Mukaidono	156286
Xiahua	Whitcomb	155709
Sanjai	Luders	155513
Tsutomo	Alameldin	155377
Willard	Baca	154459
Lidong	Meriste	154376

ch1-8_12.sql - ch1-8_12.sql

Result 1-2

emp_no	max_salary
43624	158220
254466	156286
47978	155709
253939	155513
109334	155377
88823	154459

Result 1-3

first_name	last_name	max_salary
Tokuyasu	Pesch	158220
Honesty	Mukaidono	156286
Xiahua	Whitcomb	155709
Sanjai	Luders	155513
Tsutomo	Alameldin	155377
Willard	Baca	154459
Lidong	Meriste	154376

[1-8, #13]

```

USE employees;
SELECT emp_no FROM dept_manager WHERE dept_no='d001';
SELECT count(*) FROM salaries
WHERE salary > (SELECT emp_no FROM dept_manager
WHERE dept_no='d001');

```

[1-8, #14]

```

USE employees;
SELECT count(*) FROM salaries WHERE salary > ALL (
SELECT salary FROM salaries JOIN dept_manager
ON salaries.emp_no = dept_manager.emp_no
WHERE dept_manager.dept_no='d001');
SELECT count(*) FROM salaries WHERE salary > ANY (
SELECT emp_no FROM dept_manager WHERE dept_no='d001');

```

Window	Count
Left	38379
Right	31637