SECTION 15

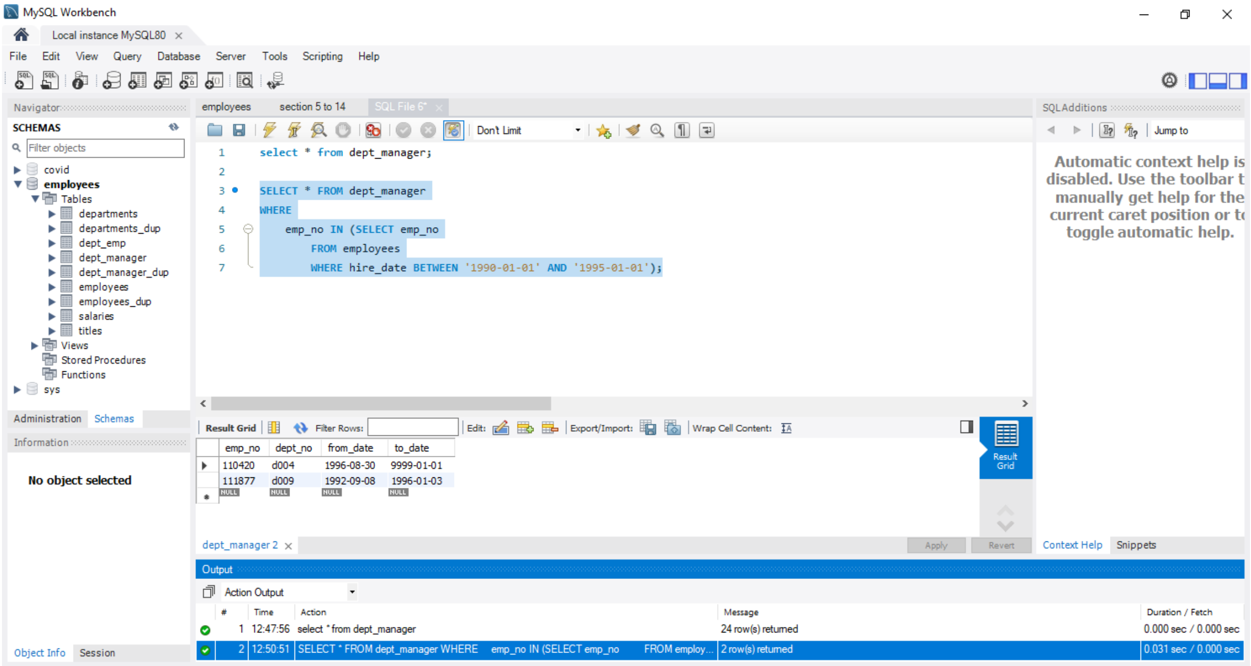
This lesson, we studied SQL Subqueries.

First topic is, SQL Subqueries with IN nested inside WHERE

Exercise:

Extract the information about all department managers who were hired between the 1st of January 1990 and the 1st of January 1995.

Solution:



```
select * from dept_manager;

SELECT * FROM dept_manager
WHERE
    emp_no IN (SELECT emp_no
        FROM employees
        WHERE hire_date BETWEEN '1990-01-01' AND '1995-01-01');
```

emp_no	dept_no	from_date	to_date
110420	d004	1996-08-30	9999-01-01
111877	d009	1992-09-08	1996-01-03
NULL	NULL	NULL	NULL

#	Time	Action	Message	Duration / Fetch
1	12:47:56	select * from dept_manager	24 row(s) returned	0.000 sec / 0.000 sec
2	12:50:51	SELECT * FROM dept_manager WHERE emp_no IN (SELECT emp_no FROM employ...	2 row(s) returned	0.031 sec / 0.000 sec

Automatic context help is disabled. Use the toolbar t manually get help for the current caret position or t toggle automatic help.

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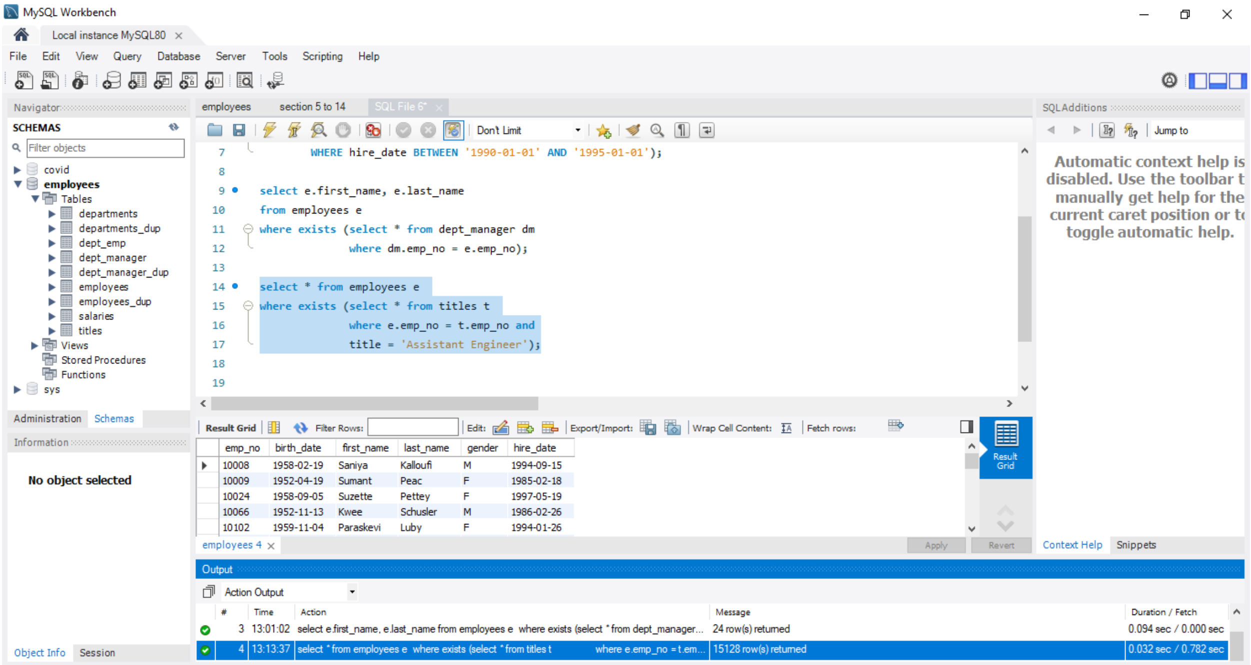
Our next subtopic is: SQL Subqueries with EXISTS-NOT EXISTS nested inside WHERE.

Exercise:

Select the entire information for all employees whose job title is “Assistant Engineer”.

Hint: To solve this exercise, use the 'employees' table.

Solution:



```
        WHERE hire_date BETWEEN '1990-01-01' AND '1995-01-01');

select e.first_name, e.last_name
from employees e
where exists (select * from dept_manager dm
              where dm.emp_no = e.emp_no);

select * from employees e
where exists (select * from titles t
              where e.emp_no = t.emp_no and
              title = 'Assistant Engineer');
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10008	1958-02-19	Saniya	Kalloufi	M	1994-09-15
10009	1952-04-19	Sumant	Peac	F	1985-02-18
10024	1958-09-05	Suzette	Pettey	F	1997-05-19
10066	1952-11-13	Kwee	Schusler	M	1986-02-26
10102	1959-11-04	Paraskevi	Luby	F	1994-01-26

```
#  Time      Action                                                                          Message              Duration / Fetch
3  13:01:02  select e.first_name, e.last_name from employees e  where exists (select * from dept_manager...  24 row(s) returned   0.094 sec / 0.000 sec
4  13:13:37  select * from employees e  where exists (select * from titles t       where e.emp_no = t.em...  15128 row(s) returned  0.032 sec / 0.782 sec
```

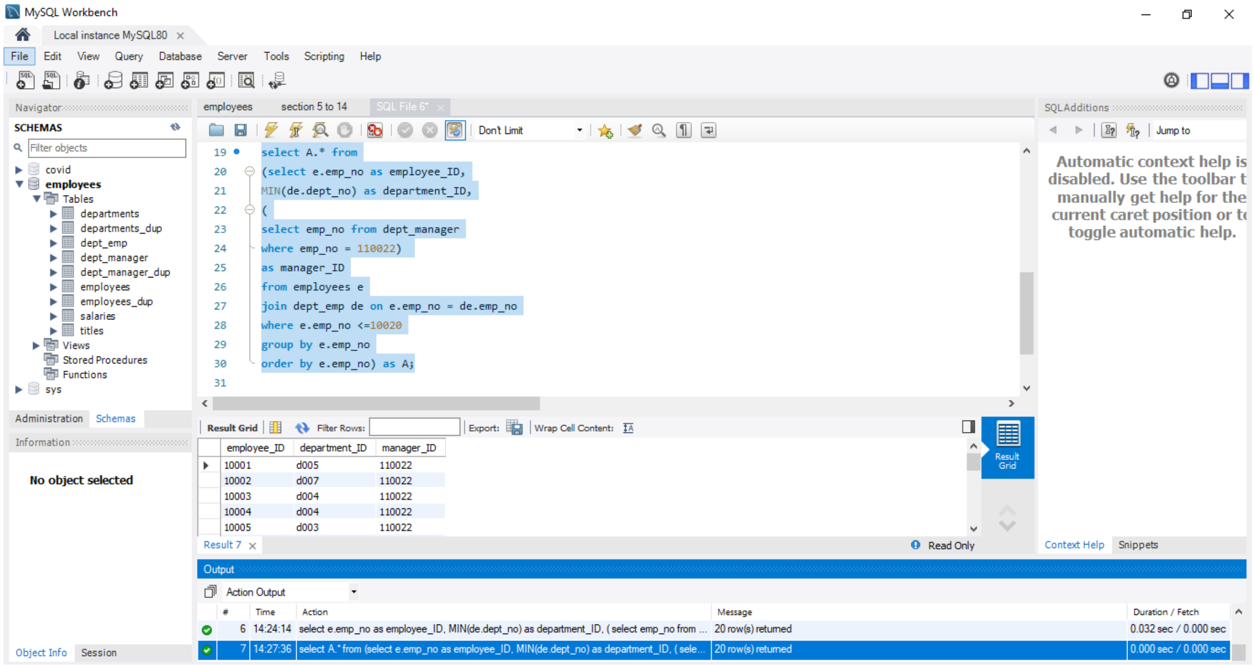
Our last topic in this section is: SQL Subqueries nested in SELECT and FROM

Our first task is to assign employee number 110022 as a manager to all employees from 10001 to 10020 and employee number 110039 as a manager to all employees from 10021 to 10040.

To solve this task, we will employ dept_manager and employees tables. We will make two subsets here.
A) Employee number 110022 from 10001 – 10020

B) Employee number 110039 from 10021 – 10040

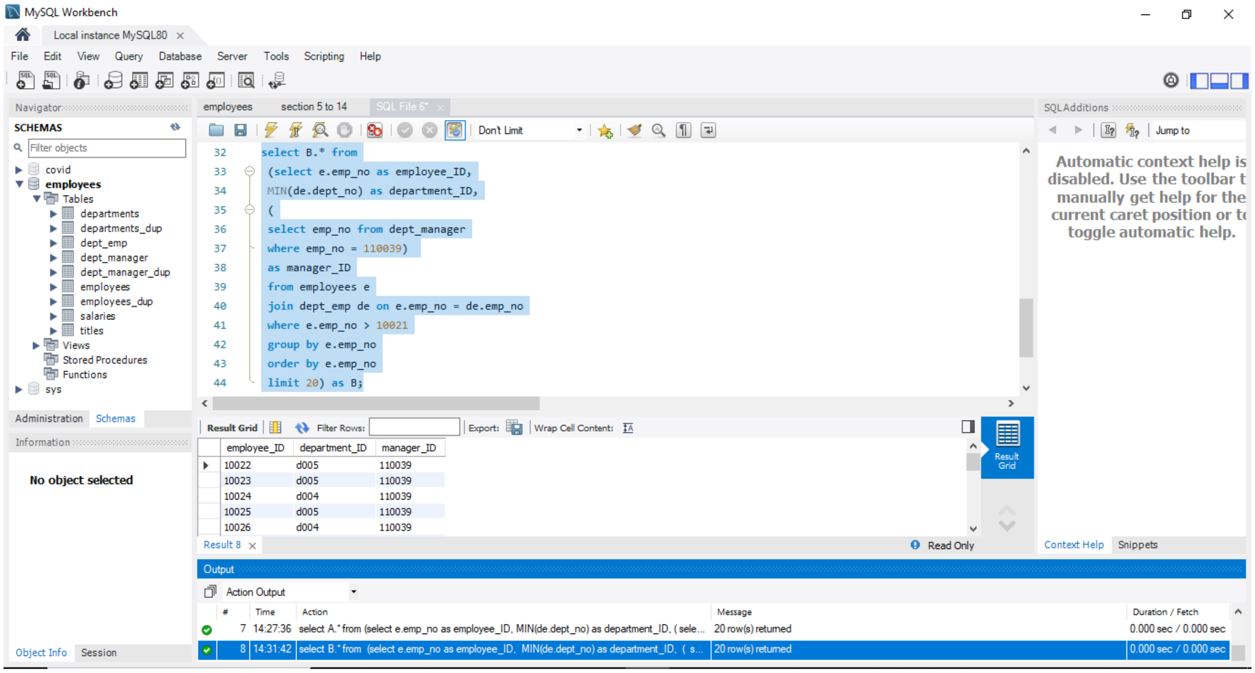
Next we will also unify both subsets.



```
select A.* from
(select e.emp_no as employee_ID,
MIN(de.dept_no) as department_ID,
(
select emp_no from dept_manager
where emp_no = 110022)
as manager_ID
from employees e
join dept_emp de on e.emp_no = de.emp_no
where e.emp_no <=10020
group by e.emp_no
order by e.emp_no) as A;
```

employee_ID	department_ID	manager_ID
10001	d005	110022
10002	d007	110022
10003	d004	110022
10004	d004	110022
10005	d003	110022

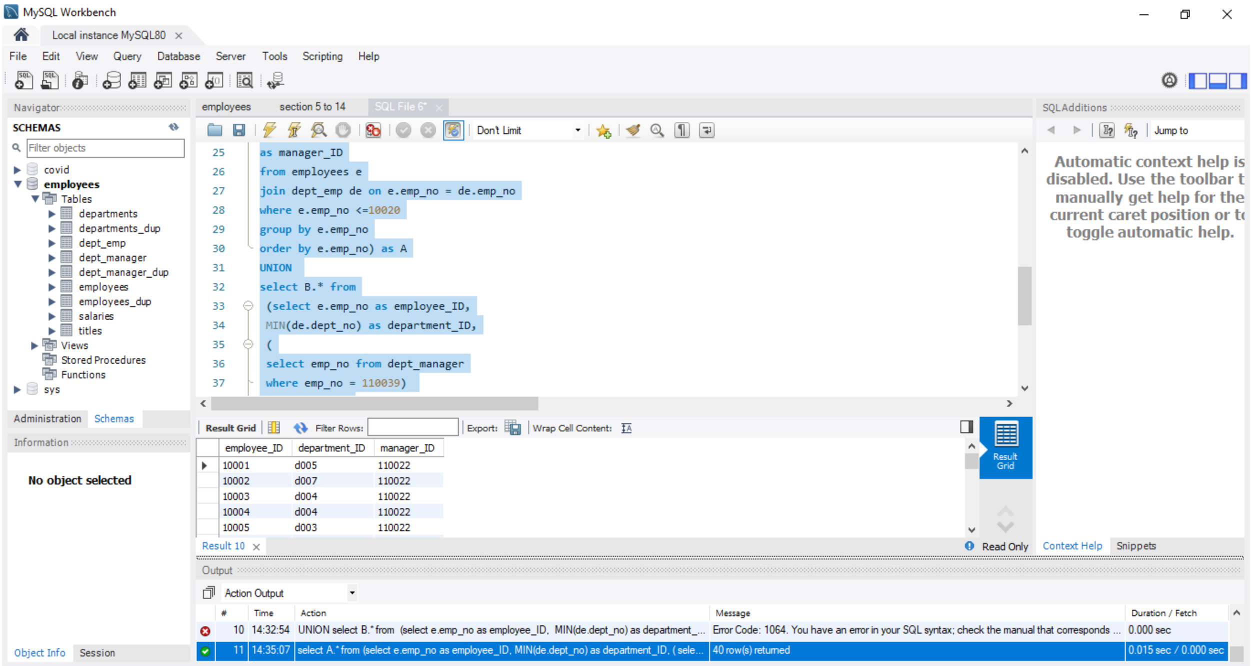
```
#  Time      Action                                                                                      Message              Duration / Fetch
6  14:24:14  select e.emp_no as employee_ID, MIN(de.dept_no) as department_ID, ( select emp_no from ...   20 row(s) returned   0.032 sec / 0.000 sec
7  14:27:36  select A.* from (select e.emp_no as employee_ID, MIN(de.dept_no) as department_ID, ( sele...  20 row(s) returned   0.000 sec / 0.000 sec
```



```
select B.* from
 (select e.emp_no as employee_ID,
 MIN(de.dept_no) as department_ID,
 (
 select emp_no from dept_manager
 where emp_no = 110039)
 as manager_ID
 from employees e
 join dept_emp de on e.emp_no = de.emp_no
 where e.emp_no > 10021
 group by e.emp_no
 order by e.emp_no
 limit 20) as B;
```

employee_ID	department_ID	manager_ID
10022	d005	110039
10023	d005	110039
10024	d004	110039
10025	d005	110039
10026	d004	110039

```
#  Time      Action                                                                                      Message              Duration / Fetch
7  14:27:36  select A.* from (select e.emp_no as employee_ID, MIN(de.dept_no) as department_ID, ( sele...  20 row(s) returned   0.000 sec / 0.000 sec
8  14:31:42  select B.* from  (select e.emp_no as employee_ID,  MIN(de.dept_no) as department_ID,  ( s...  20 row(s) returned   0.000 sec / 0.000 sec
```



```
as manager_ID
from employees e
join dept_emp de on e.emp_no = de.emp_no
where e.emp_no <=10020
group by e.emp_no
order by e.emp_no) as A
UNION
select B.* from
 (select e.emp_no as employee_ID,
 MIN(de.dept_no) as department_ID,
 (
 select emp_no from dept_manager
 where emp_no = 110039)
```

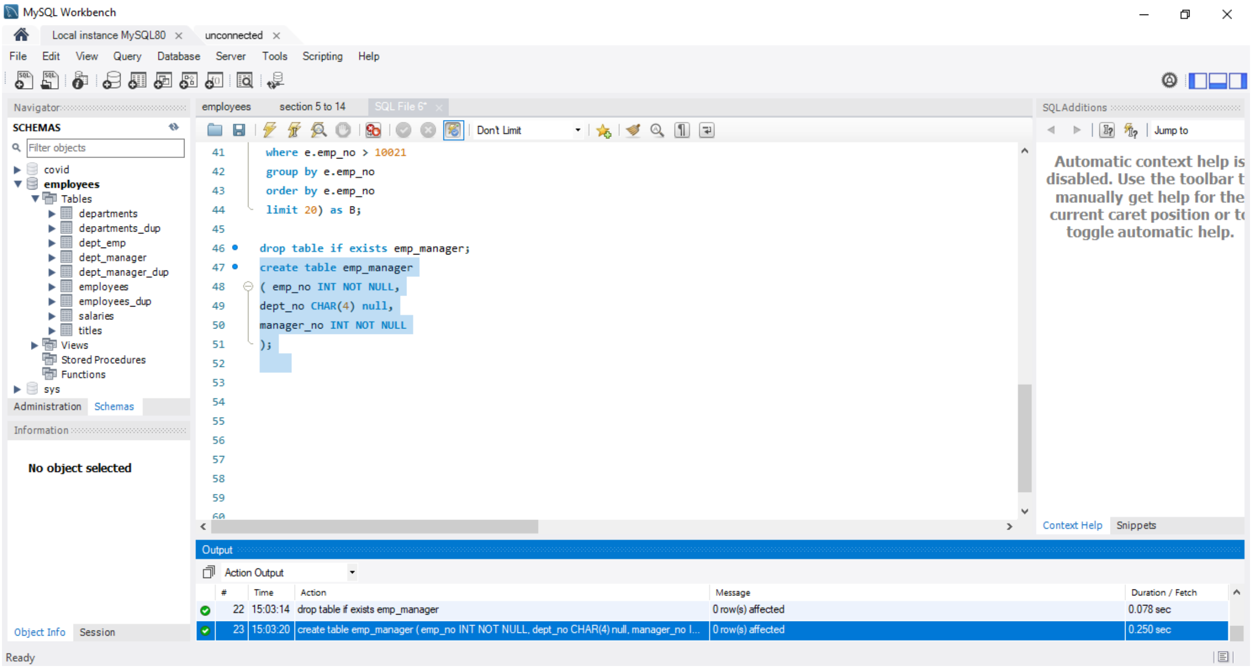
employee_ID	department_ID	manager_ID
10001	d005	110022
10002	d007	110022
10003	d004	110022
10004	d004	110022
10005	d003	110022

```
#   Time      Action                                                                          Message                                                                            Duration / Fetch
10  14:32:54  UNION select B.* from  (select e.emp_no as employee_ID,  MIN(de.dept_no) as department_...  Error Code: 1064. You have an error in your SQL syntax; check the manual that corresponds ...  0.000 sec
11  14:35:07  select A.* from (select e.emp_no as employee_ID, MIN(de.dept_no) as department_ID, ( sele...  40 row(s) returned                                                                 0.015 sec / 0.000 sec
```

Exercise_1:

Starting your code with "DROP TABLE", create a table called "emp_manager" (emp_no – integer of 11, not null; dept_no – CHAR of 4, null; manager_no – integer of 11, not null).

Solution:



```
 where e.emp_no > 10021
 group by e.emp_no
 order by e.emp_no
 limit 20) as B;

drop table if exists emp_manager;
create table emp_manager
( emp_no INT NOT NULL,
dept_no CHAR(4) null,
manager_no INT NOT NULL
);
```

```
#   Time      Action                                                                          Message             Duration / Fetch
22  15:03:14  drop table if exists emp_manager                                                0 row(s) affected   0.078 sec
23  15:03:20  create table emp_manager ( emp_no INT NOT NULL, dept_no CHAR(4) null, manager_no I...  0 row(s) affected   0.250 sec
```

Exercise_2:

Fill *emp_manager* with data about employees, the number of the department they are working in, and their managers.

Your query skeleton must be:

```
Insert INTO emp_manager SELECT

U.*

FROM

        (A)

UNION (B) UNION (C) UNION (D) AS U;
```

A and B should be the same subsets used in the last lecture *(SQL Subqueries Nested in SELECT and FROM)*. In other words, assign employee number 110022 as a manager to all employees from 10001 to 10020 (this must be subset A), and employee number 110039 as a manager to all employees from 10021 to 10040 (this must be subset B).

Use the structure of subset A to create subset C, where you must assign employee number 110039 as a manager to employee 110022.

Following the same logic, create subset D. Here you must do the opposite - assign employee 110022 as a manager to employee 110039.

Your output must contain 42 rows.

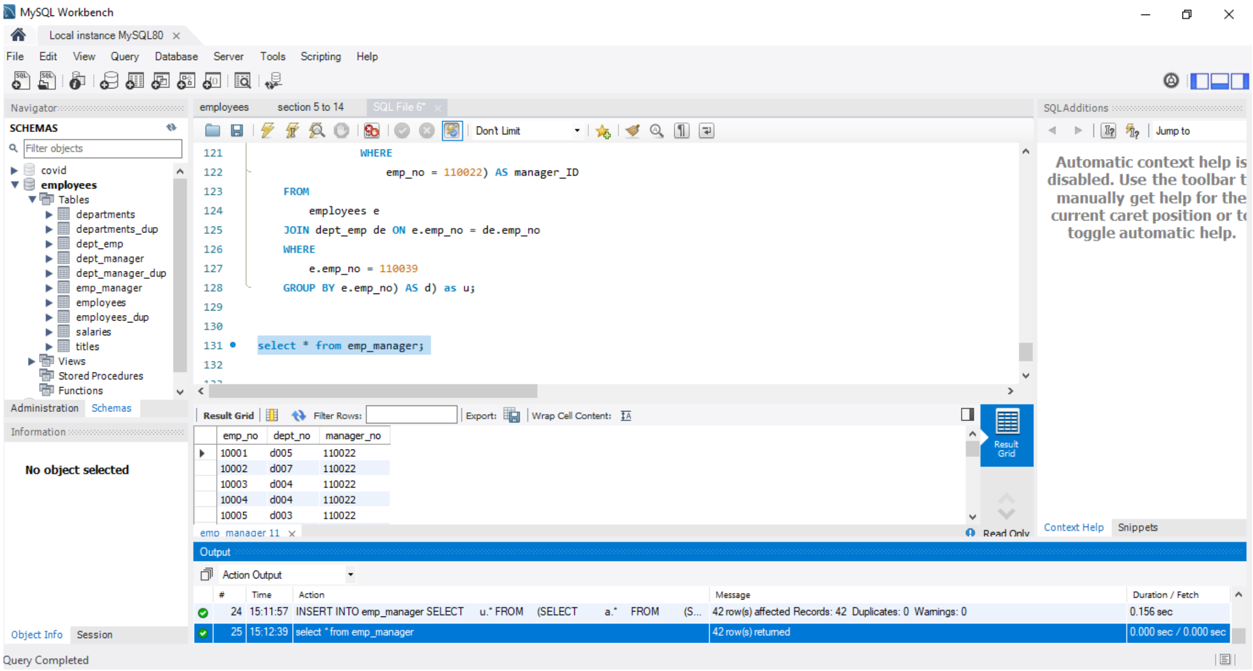
Solution:

Here is the code:

```
INSERT INTO emp_manager

SELECT

    u.*

FROM

    (SELECT

        a.*

    FROM

        (SELECT

        e.emp_no AS employee_ID,

            MIN(de.dept_no) AS department_code,

            (SELECT

                    emp_no
                FROM
                    dept_manager
                WHERE
                    emp_no = 110022) AS manager_ID
    FROM
        employees e
    JOIN dept_emp de ON e.emp_no = de.emp_no
    WHERE
        e.emp_no <= 10020
    GROUP BY e.emp_no
    ORDER BY e.emp_no) AS a UNION SELECT
        b.*
    FROM
        (SELECT
        e.emp_no AS employee_ID,
            MIN(de.dept_no) AS department_code,
            (SELECT
                    emp_no
                FROM
                    dept_manager
                WHERE
                    emp_no = 110039) AS manager_ID
    FROM
        employees e
    JOIN dept_emp de ON e.emp_no = de.emp_no
    WHERE
        e.emp_no > 10020
    GROUP BY e.emp_no
    ORDER BY e.emp_no
```

```
LIMIT 20) AS b UNION SELECT
    c.*
FROM
    (SELECT
    e.emp_no AS employee_ID,
        MIN(de.dept_no) AS department_code,
        (SELECT
                emp_no
            FROM
                dept_manager
            WHERE
                emp_no = 110039) AS manager_ID
FROM
    employees e
JOIN dept_emp de ON e.emp_no = de.emp_no
WHERE
    e.emp_no = 110022
GROUP BY e.emp_no) AS c UNION SELECT
    d.*
FROM
    (SELECT
    e.emp_no AS employee_ID,
        MIN(de.dept_no) AS department_code,
        (SELECT
                emp_no
            FROM
                dept_manager
            WHERE
                emp_no = 110022) AS manager_ID
```

```
FROM
    employees e
JOIN dept_emp de ON e.emp_no = de.emp_no
WHERE
    e.emp_no = 110039
GROUP BY e.emp_no) AS d) as u;
```



```
                    WHERE
                        emp_no = 110022) AS manager_ID
    FROM
        employees e
    JOIN dept_emp de ON e.emp_no = de.emp_no
    WHERE
        e.emp_no = 110039
    GROUP BY e.emp_no) AS d) as u;


select * from emp_manager;
```

emp_no	dept_no	manager_no
10001	d005	110022
10002	d007	110022
10003	d004	110022
10004	d004	110022
10005	d003	110022

#	Time	Action	Message	Duration / Fetch
24	15:11:57	INSERT INTO emp_manager SELECT u.* FROM (SELECT a.* FROM (S...	42 row(s) affected Records: 42 Duplicates: 0 Warnings: 0	0.156 sec
25	15:12:39	select * from emp_manager	42 row(s) returned	0.000 sec / 0.000 sec

Query Completed