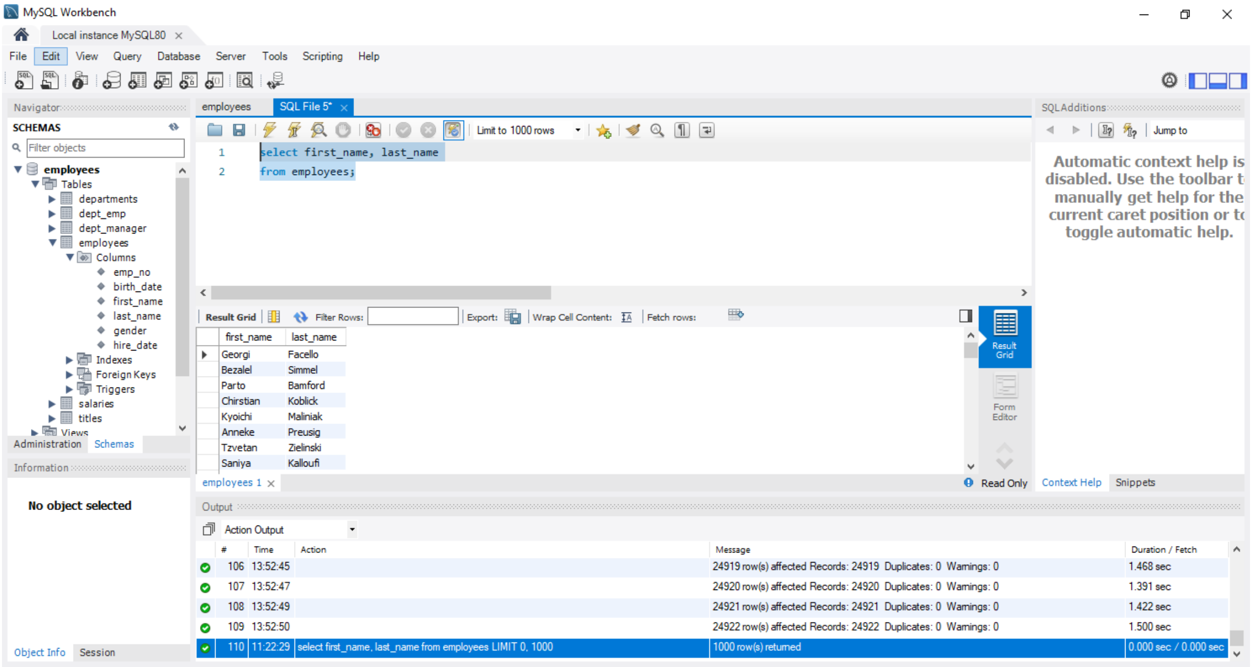
SQL COURSE EXERCISES (SECTIONS 8 & 9)

SECTION: 08

In this section, we will take a step further in our learning and start manipulating our data. For this reason, we downloaded a huge dataset available on GitHub named *employees*.

SECTION: 09

We want to know the list of names of the employees, so using the SELECT command.

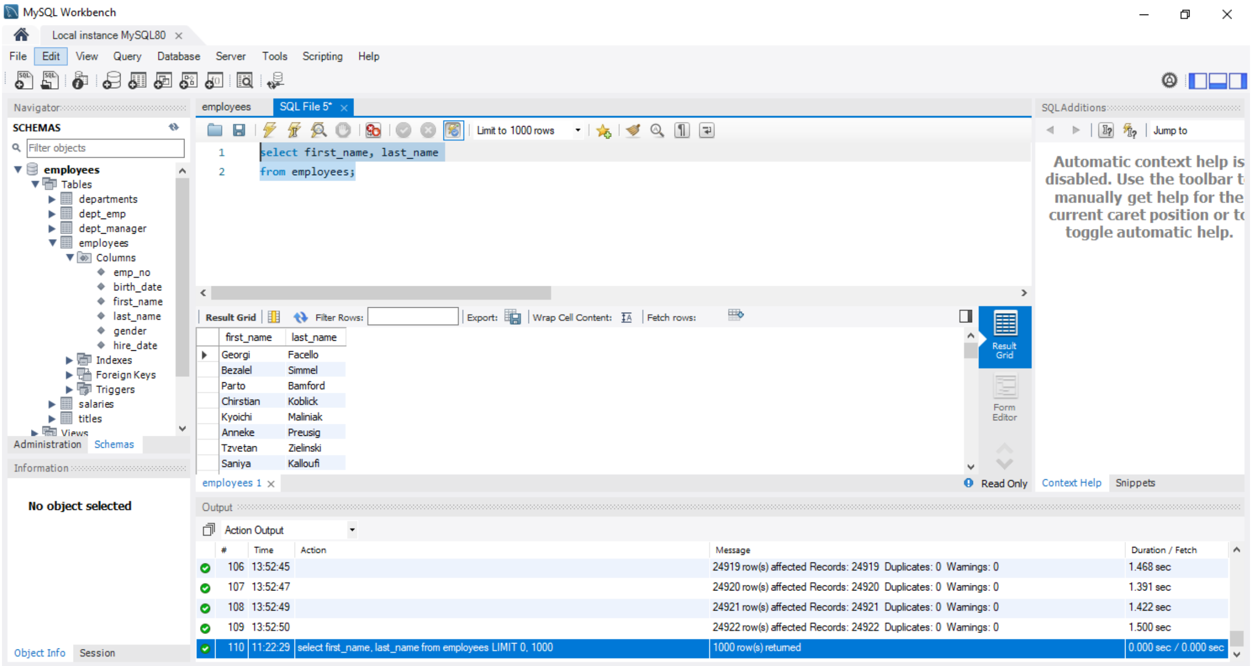


```sql
select first_name, last_name
from employees;
```

first_name	last_name
Georgi	Facello
Bezalel	Simmel
Parto	Bamford
Chirstian	Koblick
Kyoichi	Maliniak
Anneke	Preusig
Tzvetan	Zielinski
Saniya	Kalloufi

```
#    Time      Action                                                  Message                                                          Duration / Fetch
106  13:52:45                                                          24919 row(s) affected Records: 24919  Duplicates: 0  Warnings: 0  1.468 sec
107  13:52:47                                                          24920 row(s) affected Records: 24920  Duplicates: 0  Warnings: 0  1.391 sec
108  13:52:49                                                          24921 row(s) affected Records: 24921  Duplicates: 0  Warnings: 0  1.422 sec
109  13:52:50                                                          24922 row(s) affected Records: 24922  Duplicates: 0  Warnings: 0  1.500 sec
110  11:22:29  select first_name, last_name from employees LIMIT 0, 1000  1000 row(s) returned                                            0.000 sec / 0.000 sec
```

I also wanted to see the hire date of each employee, so



```sql
select first_name, last_name
from employees;
```

first_name	last_name
Georgi	Facello
Bezalel	Simmel
Parto	Bamford
Chirstian	Koblick
Kyoichi	Maliniak
Anneke	Preusig
Tzvetan	Zielinski
Saniya	Kalloufi

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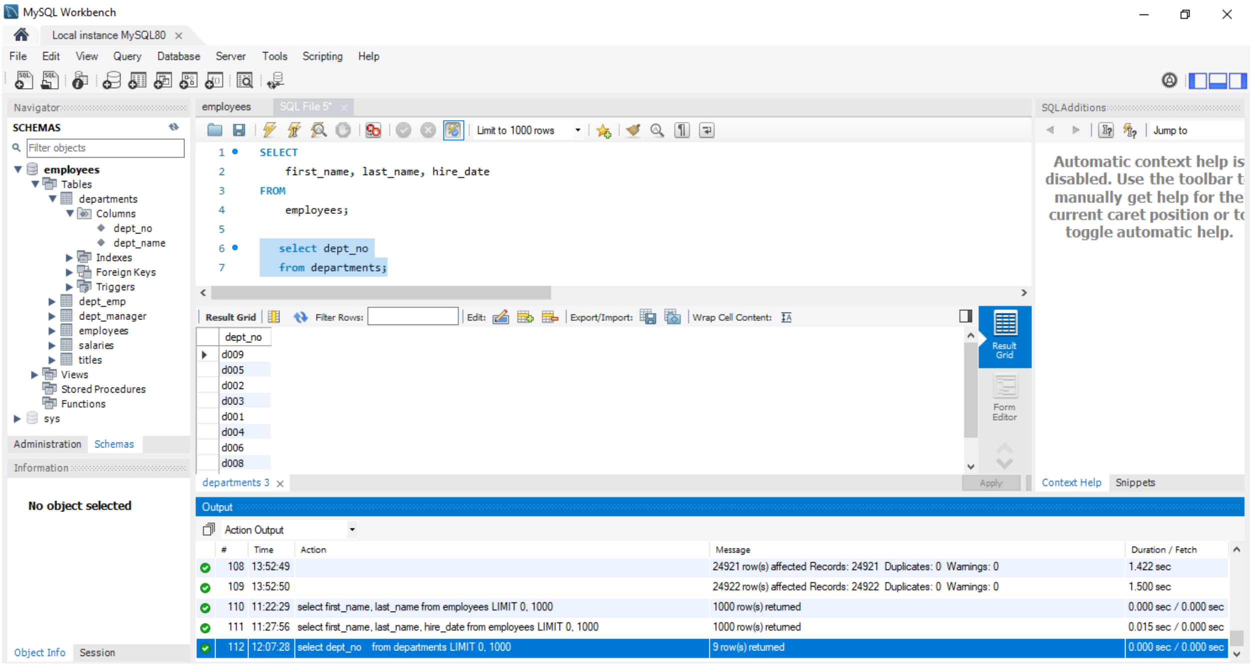
#	Time	Action	Message	Duration / Fetch
106	13:52:45		24919 row(s) affected Records: 24919 Duplicates: 0 Warnings: 0	1.468 sec
107	13:52:47		24920 row(s) affected Records: 24920 Duplicates: 0 Warnings: 0	1.391 sec
108	13:52:49		24921 row(s) affected Records: 24921 Duplicates: 0 Warnings: 0	1.422 sec
109	13:52:50		24922 row(s) affected Records: 24922 Duplicates: 0 Warnings: 0	1.500 sec
110	11:22:29	select first_name, last_name from employees LIMIT 0, 1000	1000 row(s) returned	0.000 sec / 0.000 sec

Exercise:

Select the information from the “dept_no” column of the “departments” table. Then, select all data from the “departments” table.

Solution:



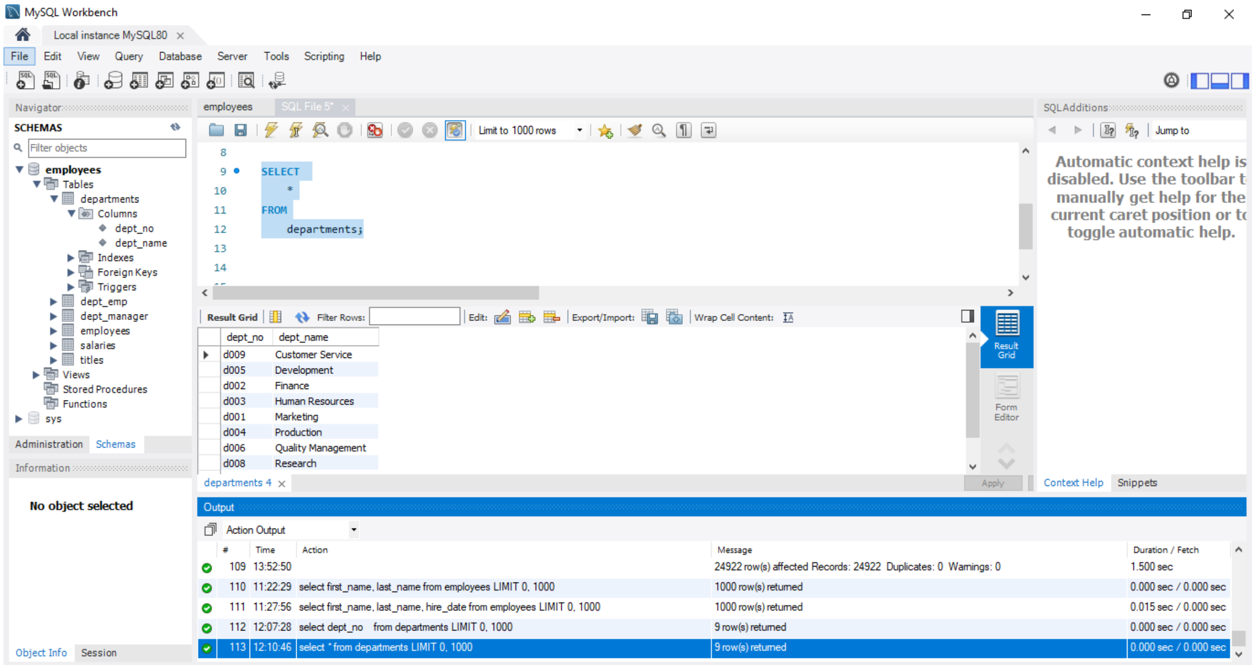
```sql
SELECT
    first_name, last_name, hire_date
FROM
    employees;

select dept_no
from departments;
```

dept_no
d009
d005
d002
d003
d001
d004
d006
d008

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

#	Time	Action	Message	Duration / Fetch
108	13:52:49		24921 row(s) affected Records: 24921 Duplicates: 0 Warnings: 0	1.422 sec
109	13:52:50		24922 row(s) affected Records: 24922 Duplicates: 0 Warnings: 0	1.500 sec
110	11:22:29	select first_name, last_name from employees LIMIT 0, 1000	1000 row(s) returned	0.000 sec / 0.000 sec
111	11:27:56	select first_name, last_name, hire_date from employees LIMIT 0, 1000	1000 row(s) returned	0.015 sec / 0.000 sec
112	12:07:28	select dept_no from departments LIMIT 0, 1000	9 row(s) returned	0.000 sec / 0.000 sec



```
SELECT
    *
FROM
    departments;
```

dept_no	dept_name
d009	Customer Service
d005	Development
d002	Finance
d003	Human Resources
d001	Marketing
d004	Production
d006	Quality Management
d008	Research

```
#    Time      Action                                                           Message                                                        Duration / Fetch
109  13:52:50                                                                   24922 row(s) affected Records: 24922  Duplicates: 0  Warnings: 0  1.500 sec
110  11:22:29  select first_name, last_name from employees LIMIT 0, 1000          1000 row(s) returned                                           0.000 sec / 0.000 sec
111  11:27:56  select first_name, last_name, hire_date from employees LIMIT 0, 1000  1000 row(s) returned                                        0.015 sec / 0.000 sec
112  12:07:28  select dept_no    from departments LIMIT 0, 1000                    9 row(s) returned                                              0.000 sec / 0.000 sec
113  12:10:46  select * from departments LIMIT 0, 1000                           9 row(s) returned                                              0.000 sec / 0.000 sec
```

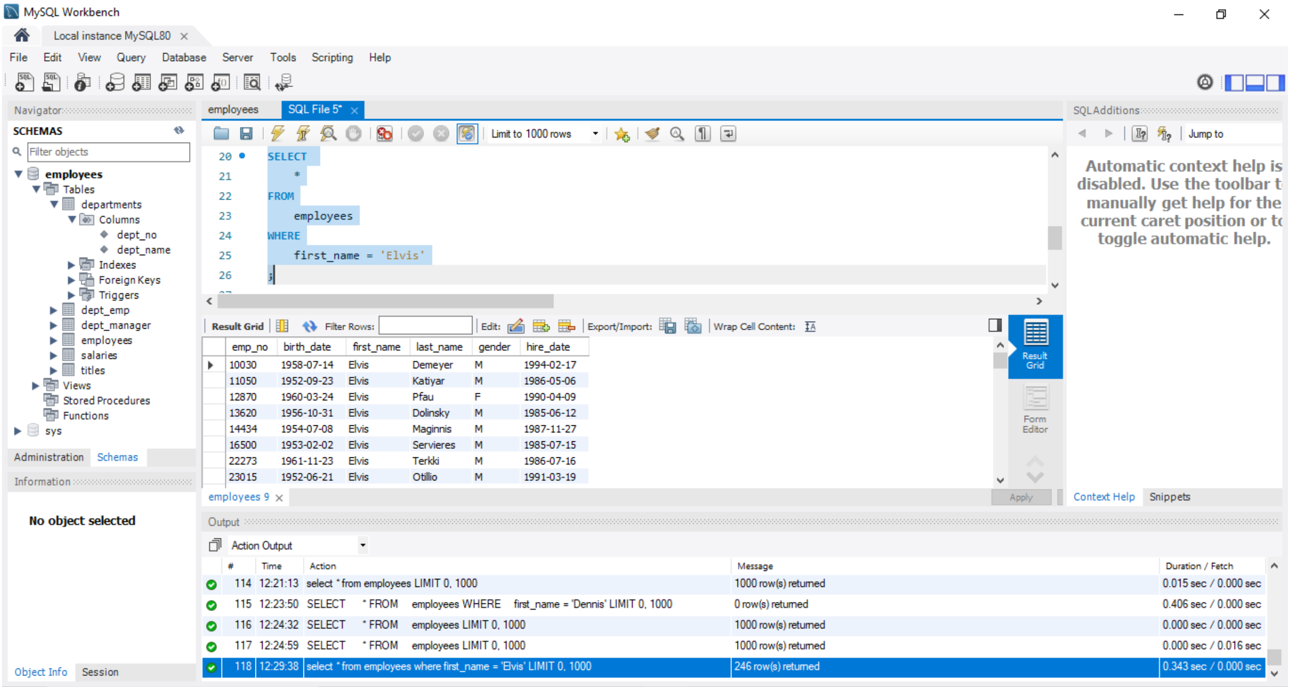
Automatic context help is disabled. Use the toolbar t manually get help for the current caret position or to toggle automatic help.

Exercise:

Select all people from the "employees" table whose first name is "Elvis."

Solution:

Thus, we will be using the WHERE clause, as shown below.



```
SELECT
    *
FROM
    employees
WHERE
    first_name = 'Elvis'
;
```

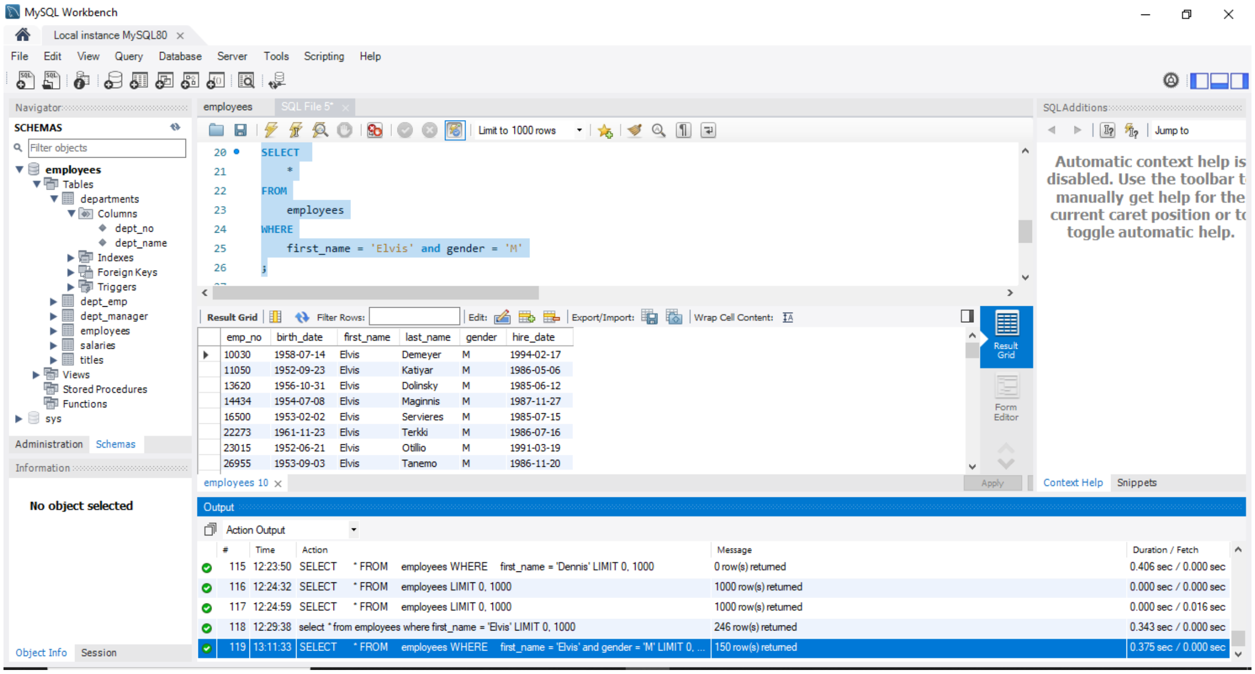
emp_no	birth_date	first_name	last_name	gender	hire_date
10030	1958-07-14	Elvis	Demeyer	M	1994-02-17
11050	1952-09-23	Elvis	Katiyar	M	1986-05-06
12870	1960-03-24	Elvis	Pfau	F	1990-04-09
13620	1956-10-31	Elvis	Dolinsky	M	1985-06-12
14434	1954-07-08	Elvis	Maginnis	M	1987-11-27
16500	1953-02-02	Elvis	Servieres	M	1985-07-15
22273	1961-11-23	Elvis	Terkki	M	1986-07-16
23015	1952-06-21	Elvis	Otillio	M	1991-03-19

```
#    Time      Action                                                              Message               Duration / Fetch
114  12:21:13  select * from employees LIMIT 0, 1000                                 1000 row(s) returned  0.015 sec / 0.000 sec
115  12:23:50  SELECT    * FROM    employees WHERE    first_name = 'Dennis' LIMIT 0, 1000  0 row(s) returned     0.406 sec / 0.000 sec
116  12:24:32  SELECT    * FROM    employees LIMIT 0, 1000                           1000 row(s) returned  0.000 sec / 0.000 sec
117  12:24:59  SELECT    * FROM    employees LIMIT 0, 1000                           1000 row(s) returned  0.000 sec / 0.016 sec
118  12:29:38  select * from employees where first_name = 'Elvis' LIMIT 0, 1000    246 row(s) returned   0.343 sec / 0.000 sec
```

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

We got 246 rows returned with the first_name having Elvis.

But how many of these people whose first name is Elvis are men? For this, we will employ the keyword AND in our code to define our second condition. The code and result are shown below:



```
SELECT
    *
FROM
    employees
WHERE
    first_name = 'Elvis' and gender = 'M'
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10030	1958-07-14	Elvis	Demeyer	M	1994-02-17
11050	1952-09-23	Elvis	Katiyar	M	1986-05-06
13620	1956-10-31	Elvis	Dolinsky	M	1985-06-12
14434	1954-07-08	Elvis	Maginnis	M	1987-11-27
16500	1953-02-02	Elvis	Servieres	M	1985-07-15
22273	1961-11-23	Elvis	Terkki	M	1986-07-16
23015	1952-06-21	Elvis	Otillio	M	1991-03-19
26955	1953-09-03	Elvis	Tanemo	M	1986-11-20

```
#    Time      Action                                                                  Message               Duration / Fetch
115  12:23:50  SELECT  * FROM  employees WHERE  first_name = 'Dennis' LIMIT 0, 1000    0 row(s) returned     0.406 sec / 0.000 sec
116  12:24:32  SELECT  * FROM  employees LIMIT 0, 1000                                 1000 row(s) returned  0.000 sec / 0.000 sec
117  12:24:59  SELECT  * FROM  employees LIMIT 0, 1000                                 1000 row(s) returned  0.000 sec / 0.016 sec
118  12:29:38  select * from employees where first_name = 'Elvis' LIMIT 0, 1000        246 row(s) returned   0.343 sec / 0.000 sec
119  13:11:33  SELECT  * FROM  employees WHERE  first_name = 'Elvis' and gender = 'M' LIMIT 0, ...  150 row(s) returned  0.375 sec / 0.000 sec
```

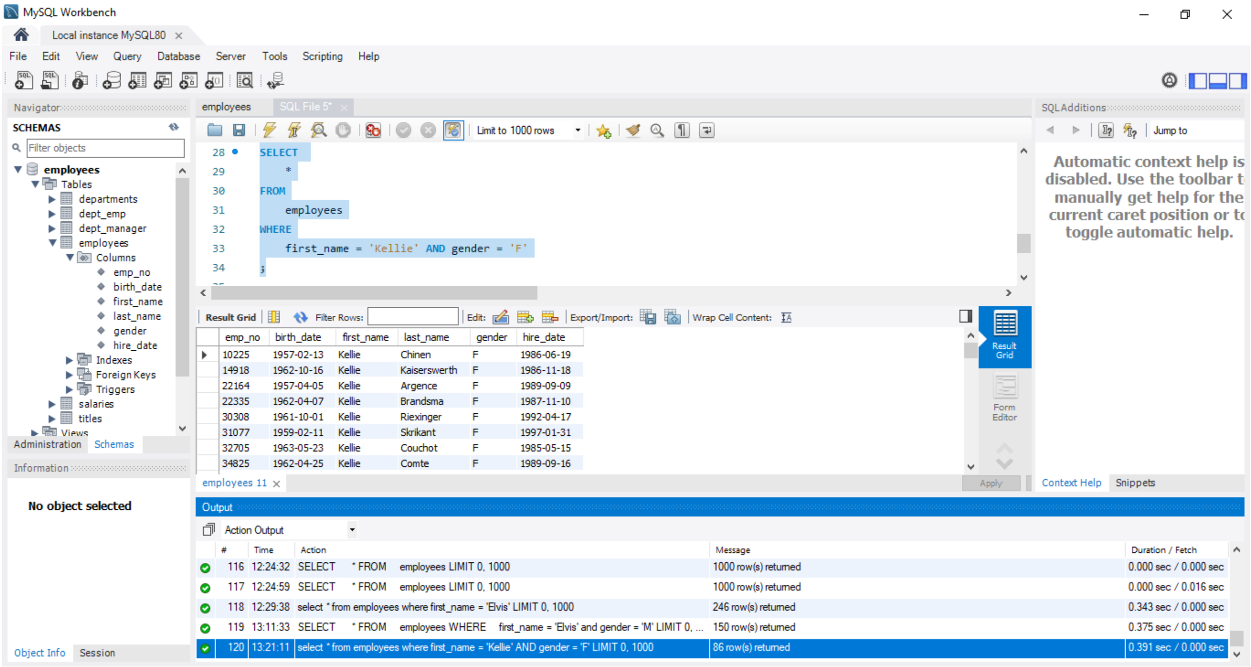
Automatic context help is disabled. Use the toolbar t manually get help for the current caret position or to toggle automatic help.

Well, turns out, not all 246 people were men. Instead, only 150 of them are male.

Exercise:

Retrieve a list of all female employees whose first name is Kellie.

Solution:



```
SELECT
    *
FROM
    employees
WHERE
    first_name = 'Kellie' AND gender = 'F'
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10225	1957-02-13	Kellie	Chinen	F	1986-06-19
14918	1962-10-16	Kellie	Kaiserswerth	F	1986-11-18
22164	1957-04-05	Kellie	Argence	F	1989-09-09
22335	1962-04-07	Kellie	Brandsma	F	1987-11-10
30308	1961-10-01	Kellie	Riexinger	F	1992-04-17
31077	1959-02-11	Kellie	Skrikant	F	1997-01-31
32705	1963-05-23	Kellie	Couchot	F	1985-05-15
34825	1962-04-25	Kellie	Comte	F	1989-09-16

```
#    Time      Action                                                                  Message               Duration / Fetch
116  12:24:32  SELECT  * FROM  employees LIMIT 0, 1000                                 1000 row(s) returned  0.000 sec / 0.000 sec
117  12:24:59  SELECT  * FROM  employees LIMIT 0, 1000                                 1000 row(s) returned  0.000 sec / 0.016 sec
118  12:29:38  select * from employees where first_name = 'Elvis' LIMIT 0, 1000        246 row(s) returned   0.343 sec / 0.000 sec
119  13:11:33  SELECT  * FROM  employees WHERE  first_name = 'Elvis' and gender = 'M' LIMIT 0, ...  150 row(s) returned  0.375 sec / 0.000 sec
120  13:21:11  select * from employees where first_name = 'Kellie' AND gender = 'F' LIMIT 0, 1000  86 row(s) returned  0.391 sec / 0.000 sec
```

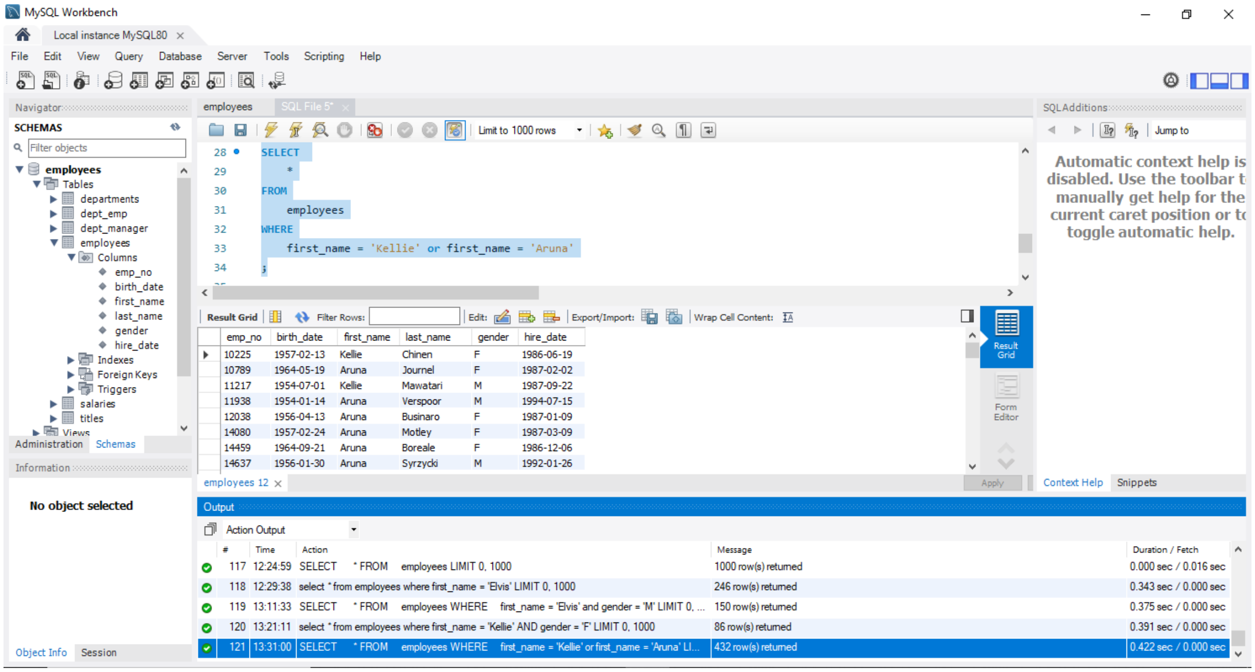
Automatic context help is disabled. Use the toolbar t manually get help for the current caret position or to toggle automatic help.

Thus, from the output section, we can see there are 86 people with the first name Kellie whose gender is female.

Exercise:

Retrieve a list of all employees whose first name is either Kellie or Aruna.

Solution:



```
SELECT
    *
FROM
    employees
WHERE
    first_name = 'Kellie' or first_name = 'Aruna'
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10225	1957-02-13	Kellie	Chinen	F	1986-06-19
10789	1964-05-19	Aruna	Journel	F	1987-02-02
11217	1954-07-01	Kellie	Mawatari	M	1987-09-22
11938	1954-01-14	Aruna	Verspoor	M	1994-07-15
12038	1956-04-13	Aruna	Businaro	F	1987-01-09
14080	1957-02-24	Aruna	Motley	F	1987-03-09
14459	1964-09-21	Aruna	Boreale	F	1986-12-06
14637	1956-01-30	Aruna	Syrzycki	M	1992-01-26

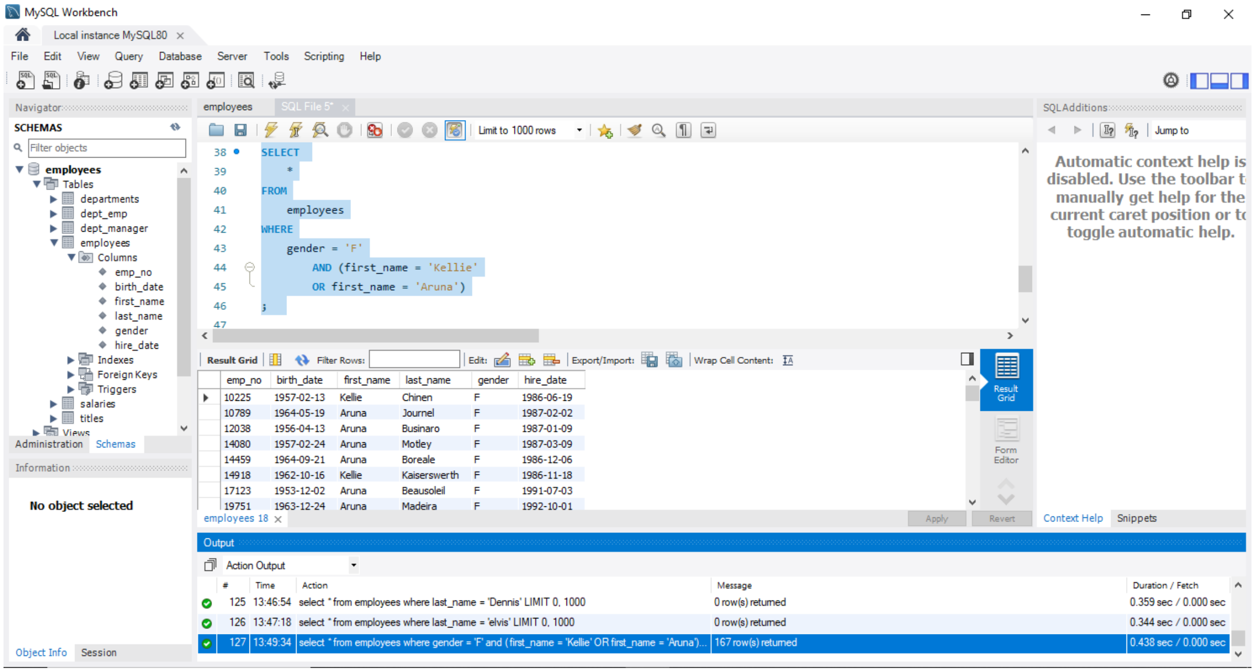
```
#    Time      Action                                                                        Message               Duration / Fetch
117  12:24:59  SELECT   * FROM   employees LIMIT 0, 1000                                     1000 row(s) returned  0.000 sec / 0.016 sec
118  12:29:38  select * from employees where first_name = 'Elvis' LIMIT 0, 1000              246 row(s) returned   0.343 sec / 0.000 sec
119  13:11:33  SELECT   * FROM   employees WHERE   first_name = 'Elvis' and gender = 'M' LIMIT 0, ...  150 row(s) returned   0.375 sec / 0.000 sec
120  13:21:11  select * from employees where first_name = 'Kellie' AND gender = 'F' LIMIT 0, 1000  86 row(s) returned    0.391 sec / 0.000 sec
121  13:31:00  SELECT   * FROM   employees WHERE   first_name = 'Kellie' or first_name = 'Aruna' LI...  432 row(s) returned   0.422 sec / 0.000 sec
```

We got 432 rows returned having names Kellie or Aruna.

Exercise:

Retrieve a list of all female employees whose first name is either Kellie or Aruna.

Solution:

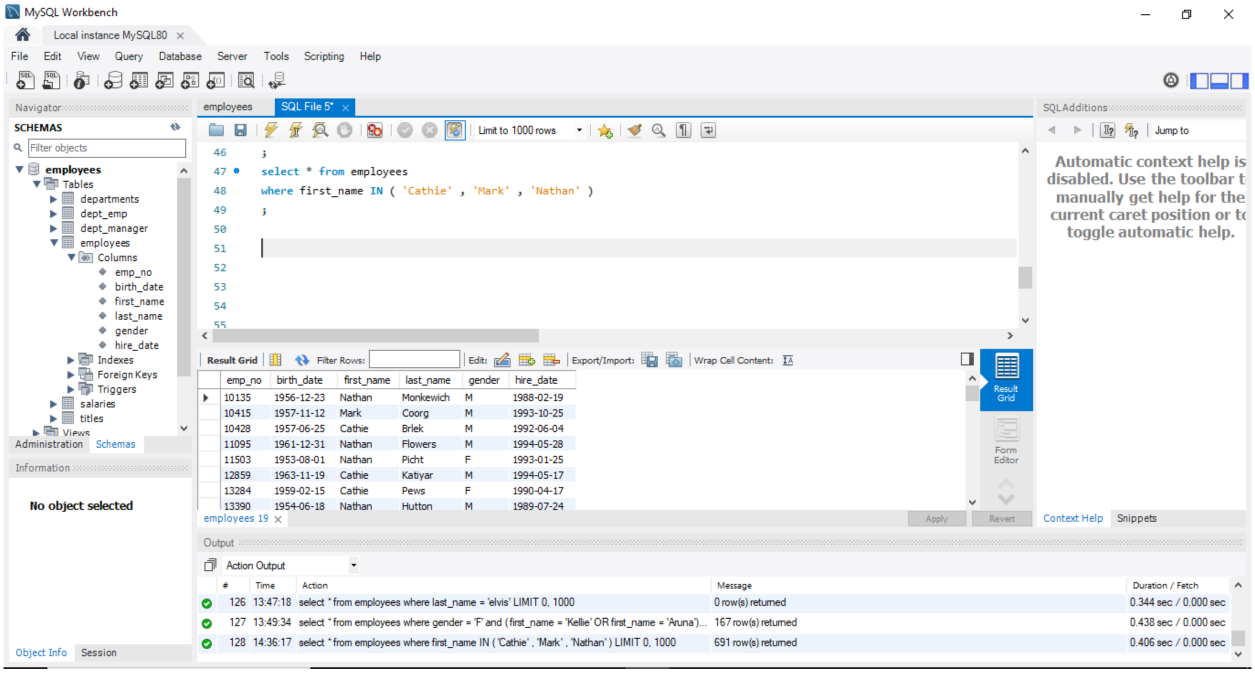


```
SELECT
    *
FROM
    employees
WHERE
    gender = 'F'
        AND (first_name = 'Kellie'
        OR first_name = 'Aruna')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10225	1957-02-13	Kellie	Chinen	F	1986-06-19
10789	1964-05-19	Aruna	Journel	F	1987-02-02
12038	1956-04-13	Aruna	Businaro	F	1987-01-09
14080	1957-02-24	Aruna	Motley	F	1987-03-09
14459	1964-09-21	Aruna	Boreale	F	1986-12-06
14918	1962-10-16	Kellie	Kaiserswerth	F	1986-11-18
17123	1953-12-02	Aruna	Beausoleil	F	1991-07-03
19751	1963-12-24	Aruna	Madeira	F	1992-10-01

```
 #    Time      Action                                                                         Message               Duration / Fetch
 125  13:46:54  select * from employees where last_name = 'Dennis' LIMIT 0, 1000                0 row(s) returned     0.359 sec / 0.000 sec
 126  13:47:18  select * from employees where last_name = 'elvis' LIMIT 0, 1000                 0 row(s) returned     0.344 sec / 0.000 sec
 127  13:49:34  select * from employees where gender = 'F' and (first_name = 'Kellie' OR first_name = 'Aruna')...   167 row(s) returned   0.438 sec / 0.000 sec
```

For instance, we want to apply three conditions. First, let's say I want to retrieve data of all employees from the employees table whose first names are Cathie, Mark, or Nathan. Then, we can employ the IN clause as shown below:



```
;
select * from employees
where first_name IN ( 'Cathie' , 'Mark' , 'Nathan' )
;
```

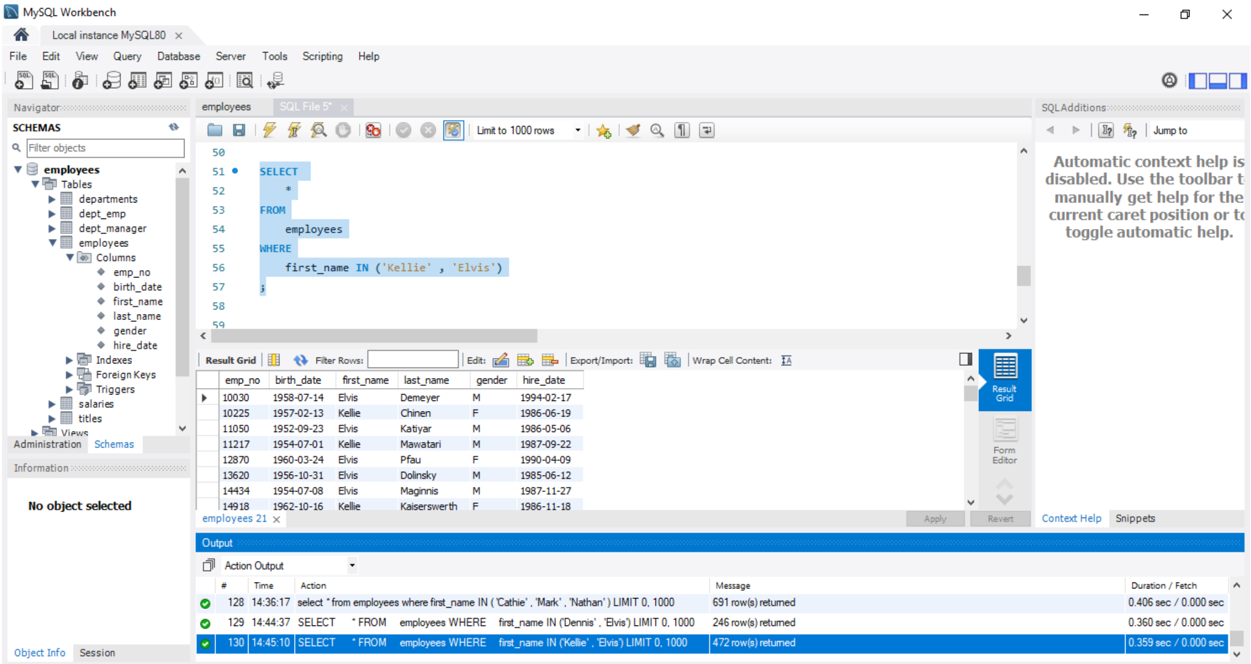
emp_no	birth_date	first_name	last_name	gender	hire_date
10135	1956-12-23	Nathan	Monkewich	M	1988-02-19
10415	1957-11-12	Mark	Coorg	M	1993-10-25
10428	1957-06-25	Cathie	Brlek	M	1992-06-04
11095	1961-12-31	Nathan	Flowers	M	1994-05-28
11503	1953-08-01	Nathan	Picht	F	1993-01-25
12859	1963-11-19	Cathie	Katiyar	M	1994-05-17
13284	1959-02-15	Cathie	Pews	F	1990-04-17
13390	1954-06-18	Nathan	Hutton	M	1989-07-24

```
 #    Time      Action                                                                         Message               Duration / Fetch
 126  13:47:18  select * from employees where last_name = 'elvis' LIMIT 0, 1000                 0 row(s) returned     0.344 sec / 0.000 sec
 127  13:49:34  select * from employees where gender = 'F' and (first_name = 'Kellie' OR first_name = 'Aruna')...   167 row(s) returned   0.438 sec / 0.000 sec
 128  14:36:17  select * from employees where first_name IN ( 'Cathie' , 'Mark' , 'Nathan' ) LIMIT 0, 1000   691 row(s) returned   0.406 sec / 0.000 sec
```

Exercise:

Use the IN operator to select all individuals from the "employees" table whose first name is either "Kellie" or "Elvis."

Solution:



```sql
SELECT
    *
FROM
    employees
WHERE
    first_name IN ('Kellie' , 'Elvis')
;
```

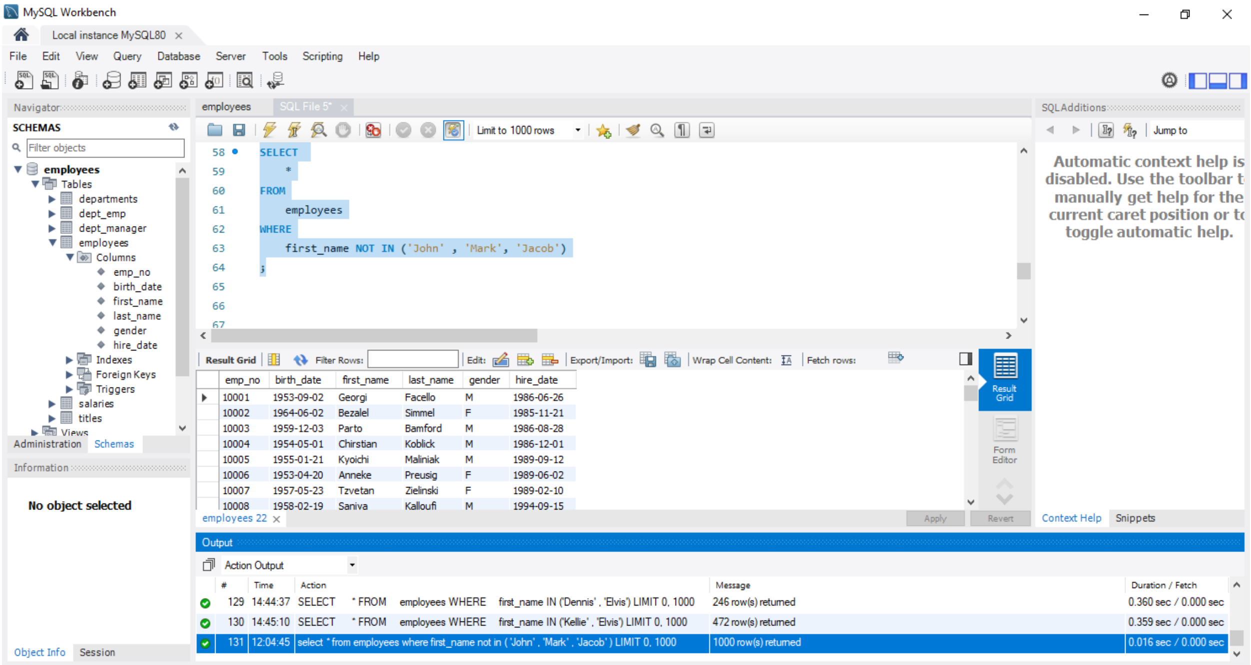
emp_no	birth_date	first_name	last_name	gender	hire_date
10030	1958-07-14	Elvis	Demeyer	M	1994-02-17
10225	1957-02-13	Kellie	Chinen	F	1986-06-19
11050	1952-09-23	Elvis	Katiyar	M	1986-05-06
11217	1954-07-01	Kellie	Mawatari	M	1987-09-22
12870	1960-03-24	Elvis	Pfau	F	1990-04-09
13620	1956-10-31	Elvis	Dolinsky	M	1985-06-12
14434	1954-07-08	Elvis	Maginnis	M	1987-11-27
14918	1962-10-16	Kellie	Kaiserswerth	F	1986-11-18

```
#    Time      Action                                                                            Message              Duration / Fetch
128  14:36:17  select * from employees where first_name IN ( 'Cathie' , 'Mark' , 'Nathan' ) LIMIT 0, 1000   691 row(s) returned  0.406 sec / 0.000 sec
129  14:44:37  SELECT    * FROM    employees WHERE    first_name IN ('Dennis' , 'Elvis') LIMIT 0, 1000       246 row(s) returned  0.360 sec / 0.000 sec
130  14:45:10  SELECT    * FROM    employees WHERE    first_name IN ('Kellie' , 'Elvis') LIMIT 0, 1000       472 row(s) returned  0.359 sec / 0.000 sec
```

Exercise:

Extract all records from the ‘employees’ table, aside from those with employees named John, Mark, or Jacob.

Solution:

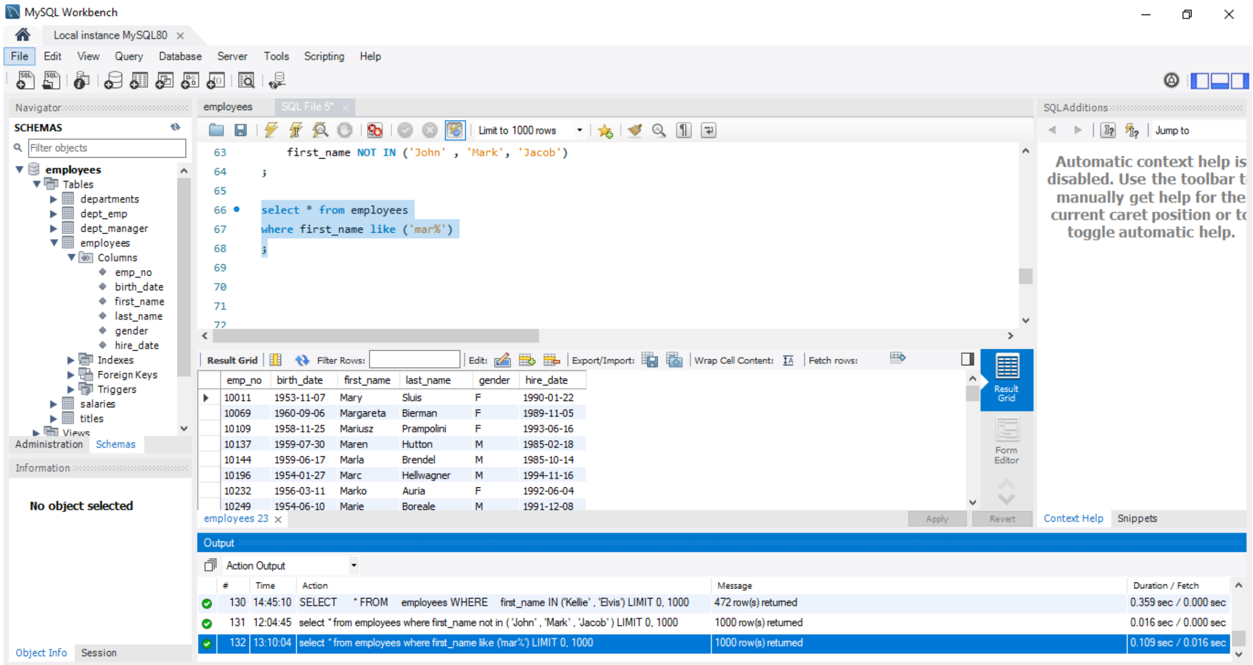


```sql
SELECT
    *
FROM
    employees
WHERE
    first_name NOT IN ('John' , 'Mark', 'Jacob')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10001	1953-09-02	Georgi	Facello	M	1986-06-26
10002	1964-06-02	Bezalel	Simmel	F	1985-11-21
10003	1959-12-03	Parto	Bamford	M	1986-08-28
10004	1954-05-01	Chirstian	Koblick	M	1986-12-01
10005	1955-01-21	Kyoichi	Maliniak	M	1989-09-12
10006	1953-04-20	Anneke	Preusig	F	1989-06-02
10007	1957-05-23	Tzvetan	Zielinski	F	1989-02-10
10008	1958-02-19	Saniva	Kalloufi	M	1994-09-15

```
#    Time      Action                                                                            Message               Duration / Fetch
129  14:44:37  SELECT    * FROM    employees WHERE    first_name IN ('Dennis' , 'Elvis') LIMIT 0, 1000       246 row(s) returned   0.360 sec / 0.000 sec
130  14:45:10  SELECT    * FROM    employees WHERE    first_name IN ('Kellie' , 'Elvis') LIMIT 0, 1000       472 row(s) returned   0.359 sec / 0.000 sec
131  12:04:45  select * from employees where first_name not in ( 'John' , 'Mark' , 'Jacob' ) LIMIT 0, 1000  1000 row(s) returned  0.016 sec / 0.000 sec
```

In the next few pictures attached below, I will be retrieving data from the names columns that will specify a specific pattern. For this, I will employ LIKE and NOT LIKE operators:



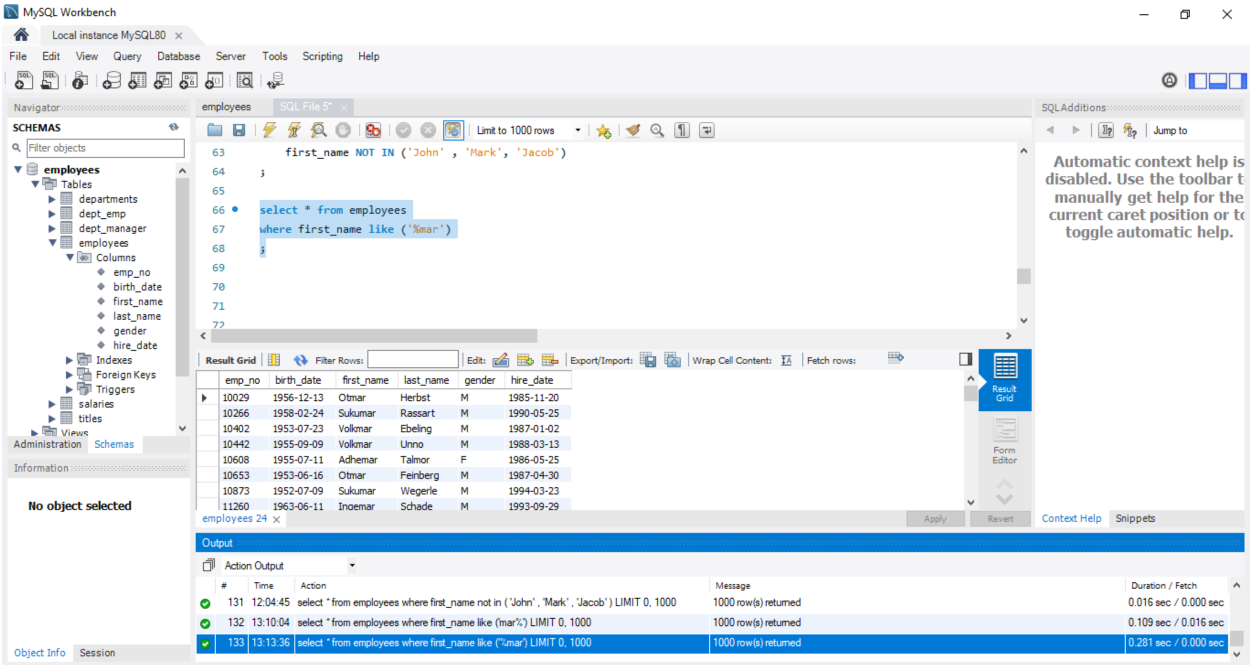
```
	first_name NOT IN ('John' , 'Mark', 'Jacob')
;

select * from employees
where first_name like ('mar%')
;
```

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

emp_no	birth_date	first_name	last_name	gender	hire_date
10011	1953-11-07	Mary	Sluis	F	1990-01-22
10069	1960-09-06	Margareta	Bierman	F	1989-11-05
10109	1958-11-25	Mariusz	Prampolini	F	1993-06-16
10137	1959-07-30	Maren	Hutton	M	1985-02-18
10144	1959-06-17	Marla	Brendel	M	1985-10-14
10196	1954-01-27	Marc	Hellwagner	M	1994-11-16
10232	1956-03-11	Marko	Auria	F	1992-06-04
10249	1954-06-10	Marie	Boreale	M	1991-12-08

#	Time	Action	Message	Duration / Fetch
130	14:45:10	SELECT * FROM employees WHERE first_name IN ('Kellie' , 'Elvis') LIMIT 0, 1000	472 row(s) returned	0.359 sec / 0.000 sec
131	12:04:45	select * from employees where first_name not in ('John' , 'Mark' , 'Jacob') LIMIT 0, 1000	1000 row(s) returned	0.016 sec / 0.000 sec
132	13:10:04	select * from employees where first_name like ('mar%') LIMIT 0, 1000	1000 row(s) returned	0.109 sec / 0.016 sec



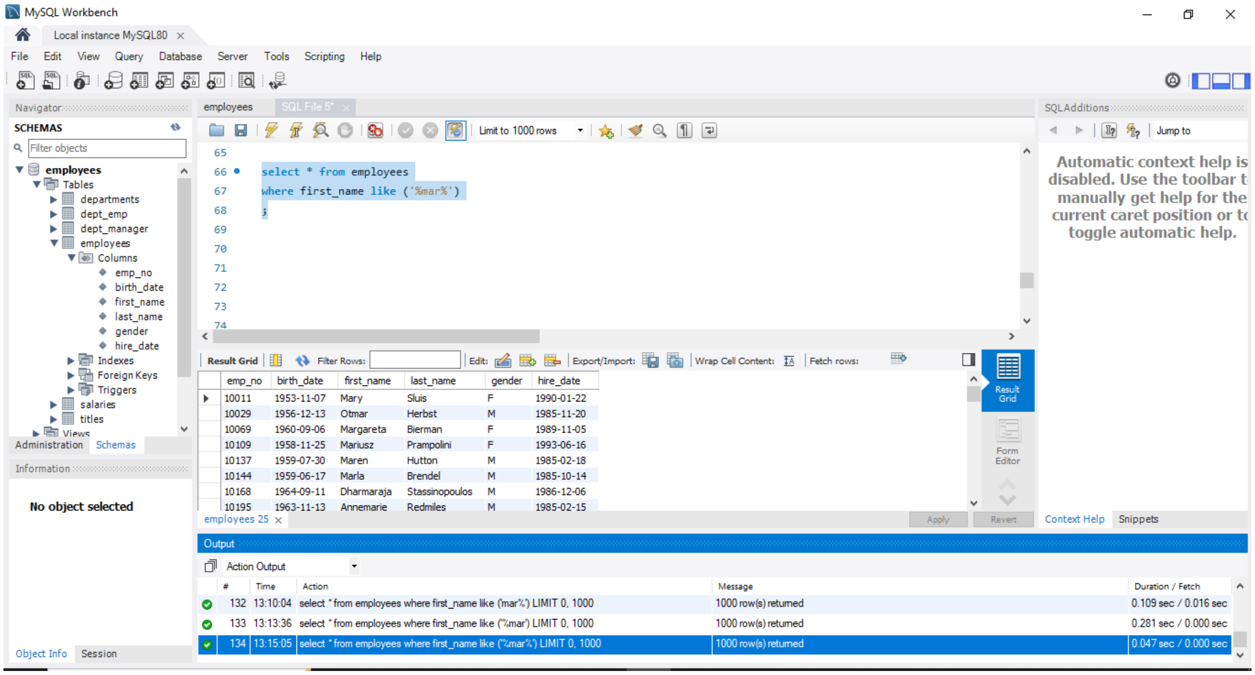
```
	first_name NOT IN ('John' , 'Mark', 'Jacob')
;

select * from employees
where first_name like ('%mar')
;
```

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

emp_no	birth_date	first_name	last_name	gender	hire_date
10029	1956-12-13	Otmar	Herbst	M	1985-11-20
10266	1958-02-24	Sukumar	Rassart	M	1990-05-25
10402	1953-07-23	Volkmar	Ebeling	M	1987-01-02
10442	1955-09-09	Volkmar	Unno	M	1988-03-13
10608	1955-07-11	Adhemar	Talmor	F	1986-05-25
10653	1953-06-16	Otmar	Feinberg	M	1987-04-30
10873	1952-07-09	Sukumar	Wegerle	M	1994-03-23
11260	1963-06-11	Ingemar	Schade	M	1993-09-29

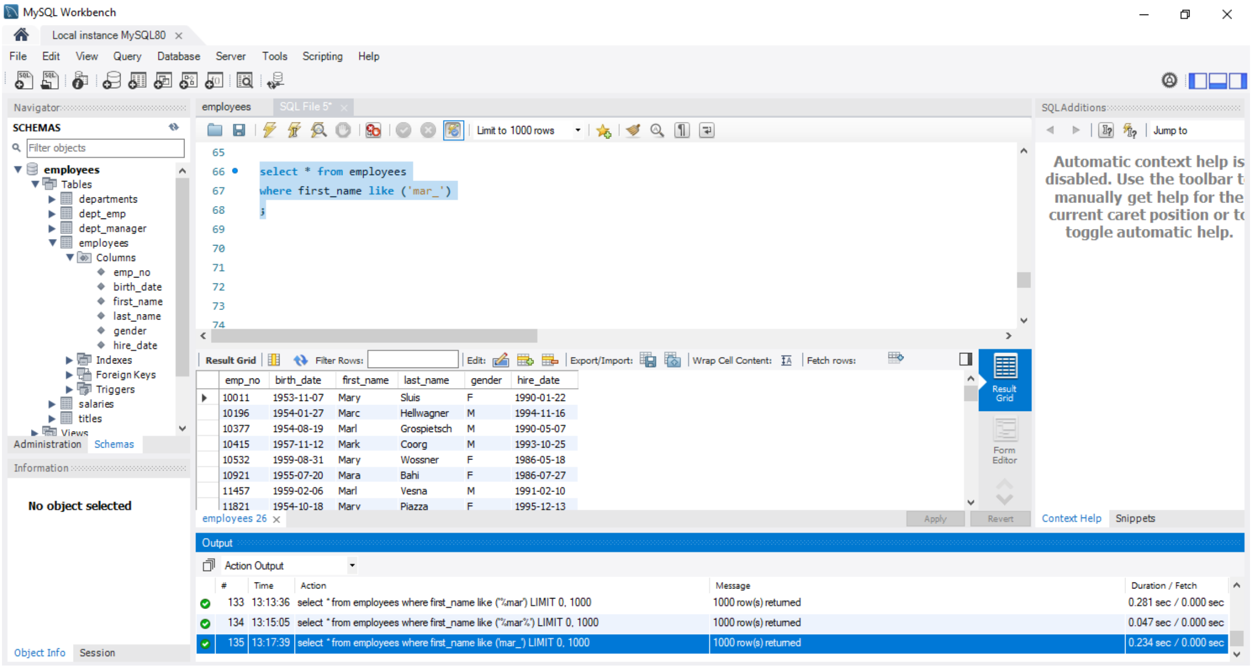
#	Time	Action	Message	Duration / Fetch
131	12:04:45	select * from employees where first_name not in ('John' , 'Mark' , 'Jacob') LIMIT 0, 1000	1000 row(s) returned	0.016 sec / 0.000 sec
132	13:10:04	select * from employees where first_name like ('mar%') LIMIT 0, 1000	1000 row(s) returned	0.109 sec / 0.016 sec
133	13:13:36	select * from employees where first_name like ('%mar') LIMIT 0, 1000	1000 row(s) returned	0.281 sec / 0.000 sec



```sql
select * from employees
where first_name like ('%mar%')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10011	1953-11-07	Mary	Sluis	F	1990-01-22
10029	1956-12-13	Otmar	Herbst	M	1985-11-20
10069	1960-09-06	Margareta	Bierman	F	1989-11-05
10109	1958-11-25	Mariusz	Prampolini	F	1993-06-16
10137	1959-07-30	Maren	Hutton	M	1985-02-18
10144	1959-06-17	Marla	Brendel	M	1985-10-14
10168	1964-09-11	Dharmaraja	Stassinopoulos	M	1986-12-06
10195	1963-11-13	Annemarie	Redmiles	M	1985-02-15

	#	Time	Action	Message	Duration / Fetch
✓	132	13:10:04	select * from employees where first_name like ('mar%') LIMIT 0, 1000	1000 row(s) returned	0.109 sec / 0.016 sec
✓	133	13:13:36	select * from employees where first_name like ('%mar') LIMIT 0, 1000	1000 row(s) returned	0.281 sec / 0.000 sec
✓	134	13:15:05	select * from employees where first_name like ('%mar%') LIMIT 0, 1000	1000 row(s) returned	0.047 sec / 0.000 sec



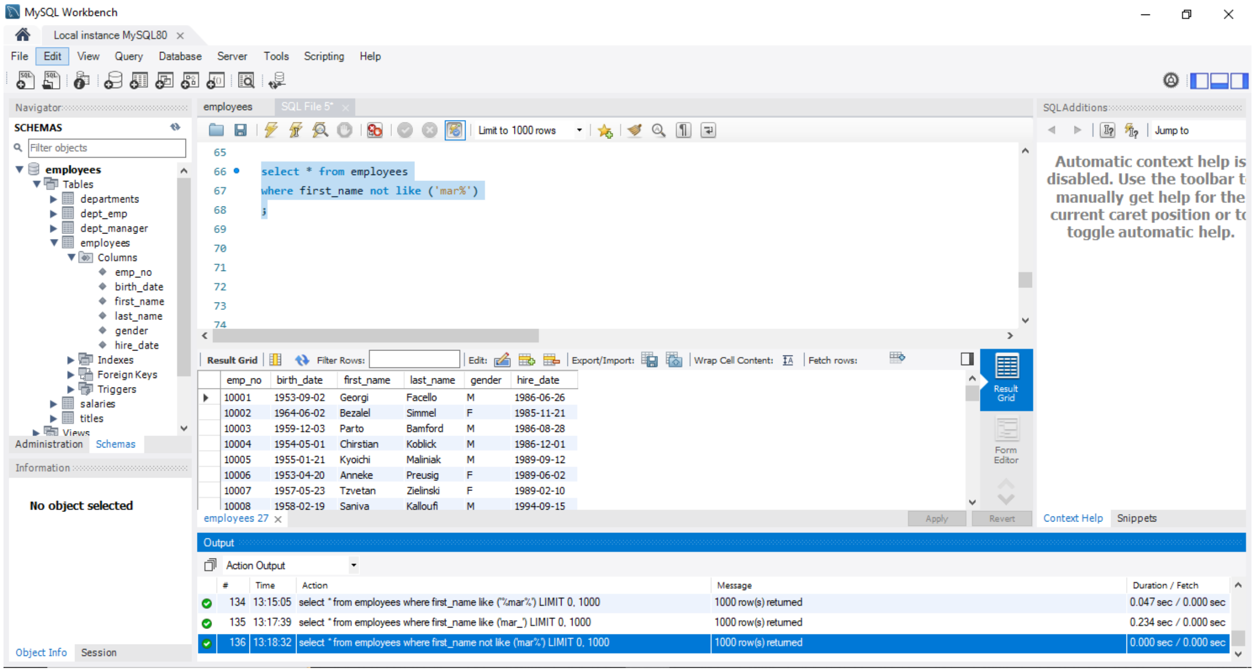
No object selected

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

```
select * from employees
where first_name like ('mar_')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10011	1953-11-07	Mary	Sluis	F	1990-01-22
10196	1954-01-27	Marc	Hellwagner	M	1994-11-16
10377	1954-08-19	Marl	Grospietsch	M	1990-05-07
10415	1957-11-12	Mark	Coorg	M	1993-10-25
10532	1959-08-31	Mary	Wossner	F	1986-05-18
10921	1955-07-20	Mara	Bahi	F	1986-07-27
11457	1959-02-06	Marl	Vesna	M	1991-02-10
11821	1954-10-18	Mary	Piazza	F	1995-12-13

#	Time	Action	Message	Duration / Fetch
133	13:13:36	select * from employees where first_name like ('%mar') LIMIT 0, 1000	1000 row(s) returned	0.281 sec / 0.000 sec
134	13:15:05	select * from employees where first_name like ('%mar%') LIMIT 0, 1000	1000 row(s) returned	0.047 sec / 0.000 sec
135	13:17:39	select * from employees where first_name like ('mar_') LIMIT 0, 1000	1000 row(s) returned	0.234 sec / 0.000 sec



No object selected

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

```
select * from employees
where first_name not like ('mar%')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10001	1953-09-02	Georgi	Facello	M	1986-06-26
10002	1964-06-02	Bezalel	Simmel	F	1985-11-21
10003	1959-12-03	Parto	Bamford	M	1986-08-28
10004	1954-05-01	Chirstian	Koblick	M	1986-12-01
10005	1955-01-21	Kyoichi	Maliniak	M	1989-09-12
10006	1953-04-20	Anneke	Preusig	F	1989-06-02
10007	1957-05-23	Tzvetan	Zielinski	F	1989-02-10
10008	1958-02-19	Saniva	Kalloufi	M	1994-09-15

#	Time	Action	Message	Duration / Fetch
134	13:15:05	select * from employees where first_name like ('%mar%') LIMIT 0, 1000	1000 row(s) returned	0.047 sec / 0.000 sec
135	13:17:39	select * from employees where first_name like ('mar_') LIMIT 0, 1000	1000 row(s) returned	0.234 sec / 0.000 sec
136	13:18:32	select * from employees where first_name not like ('mar%') LIMIT 0, 1000	1000 row(s) returned	0.000 sec / 0.000 sec

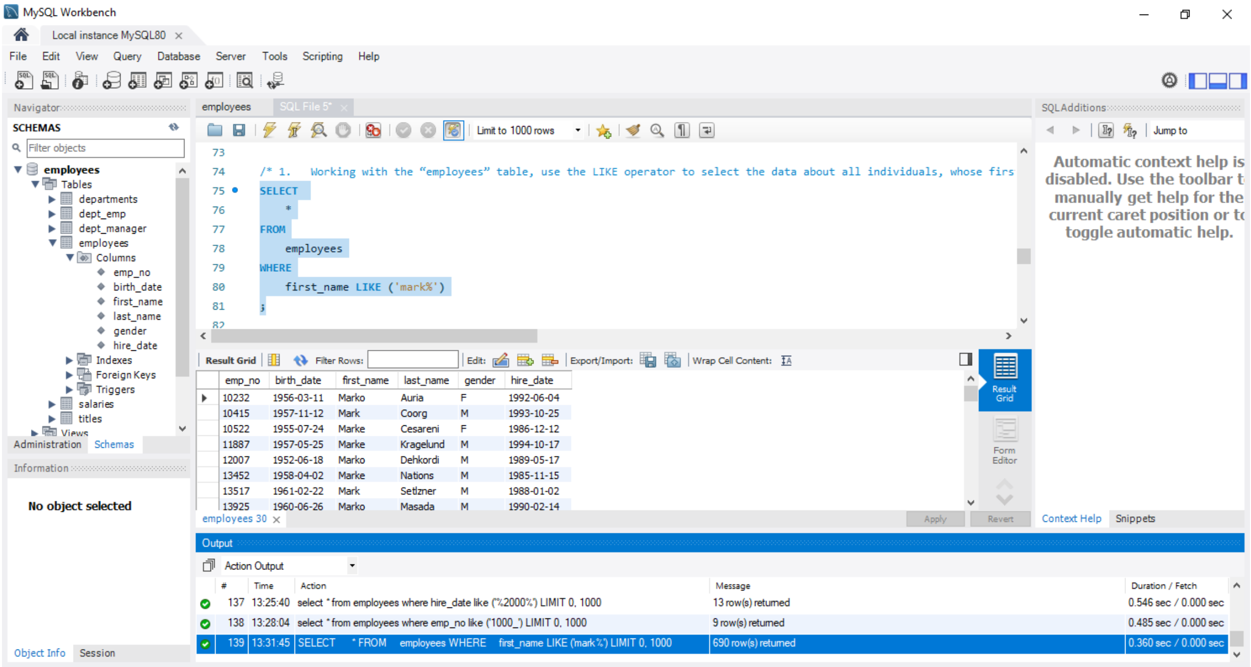
Exercise:

1. Working with the “employees” table, use the LIKE operator to select the data about all individuals whose first name starts with “Mark”; specify that the name can be succeeded by any sequence of characters.

2. Retrieve a list of all employees who have been hired in the year 2000.

3. Retrieve a list with all employees whose employee number is written with five characters and starts with “1000”.

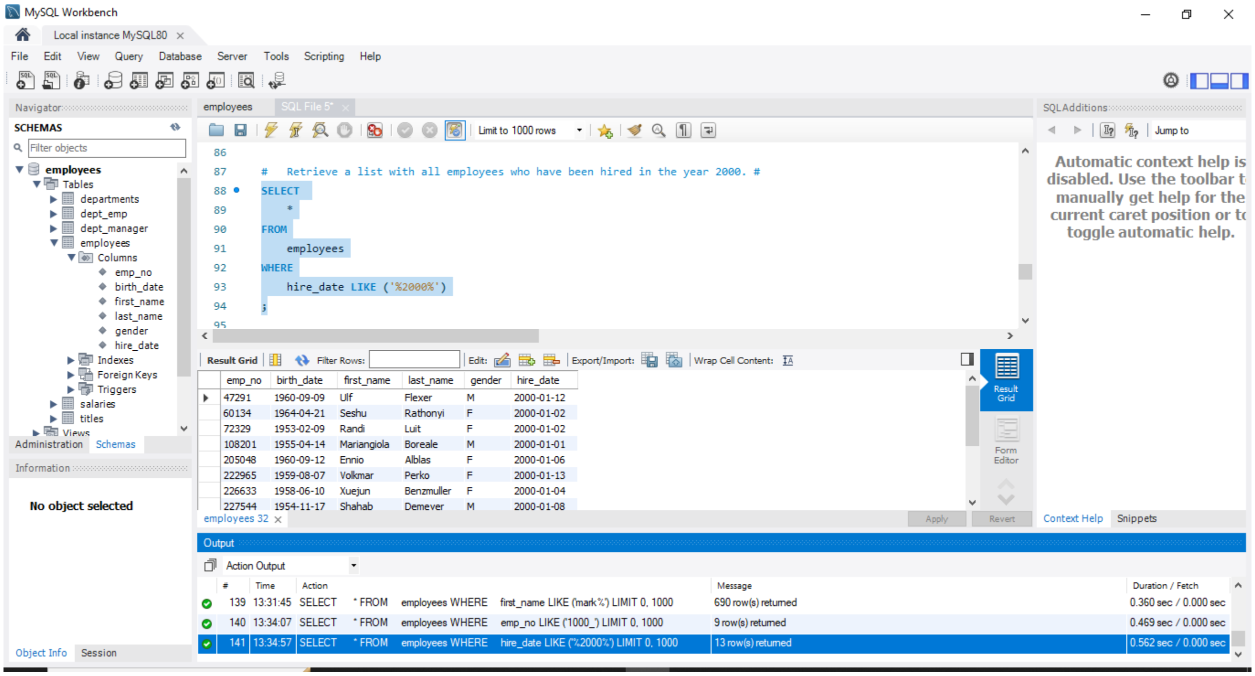
Solution:



```
/* 1.   Working with the “employees” table, use the LIKE operator to select the data about all individuals, whose firs
SELECT
    *
FROM
    employees
WHERE
    first_name LIKE ('mark%')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10232	1956-03-11	Marko	Auria	F	1992-06-04
10415	1957-11-12	Mark	Coorg	M	1993-10-25
10522	1955-07-24	Marke	Cesareni	F	1986-12-12
11887	1957-05-25	Marke	Kragelund	M	1994-10-17
12007	1952-06-18	Marko	Dehkordi	M	1989-05-17
13452	1958-04-02	Marke	Nations	M	1985-11-15
13517	1961-02-22	Mark	Setlzner	M	1988-01-02
13925	1960-06-26	Marko	Masada	M	1990-02-14

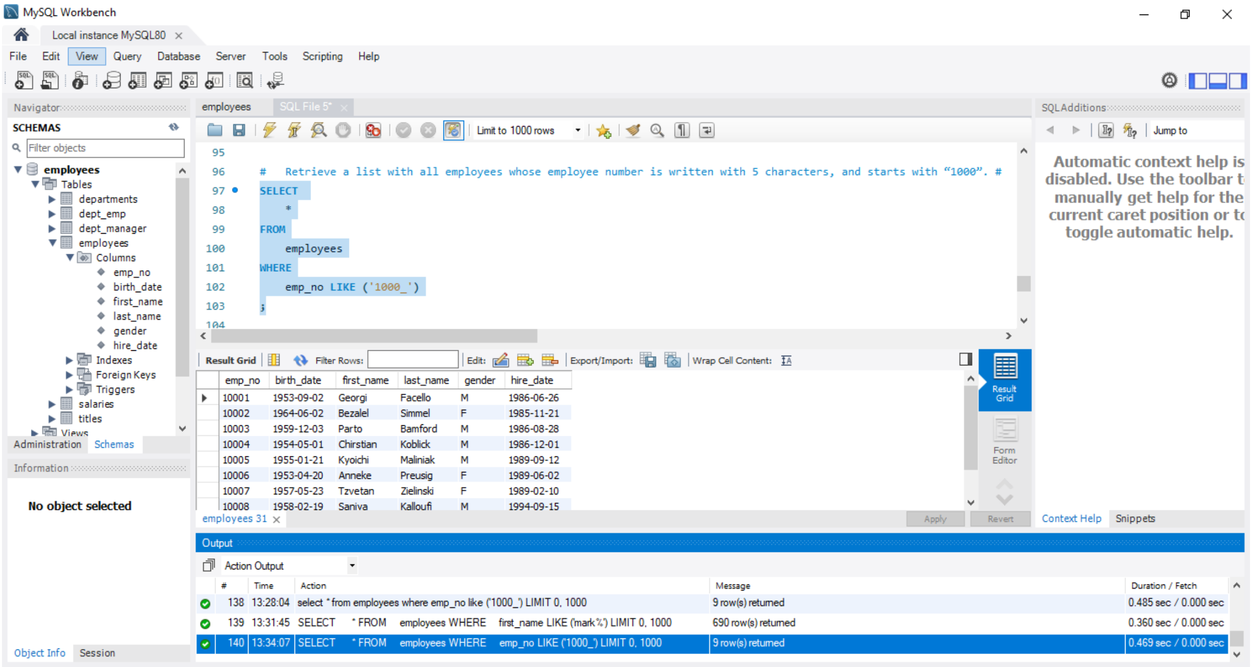
```
#    Time      Action                                                              Message               Duration / Fetch
137  13:25:40  select * from employees where hire_date like ('%2000%') LIMIT 0, 1000   13 row(s) returned    0.546 sec / 0.000 sec
138  13:28:04  select * from employees where emp_no like ('1000_') LIMIT 0, 1000      9 row(s) returned     0.485 sec / 0.000 sec
139  13:31:45  SELECT   * FROM   employees WHERE   first_name LIKE ('mark%') LIMIT 0, 1000   690 row(s) returned   0.360 sec / 0.000 sec
```



```
#   Retrieve a list with all employees who have been hired in the year 2000. #
SELECT
    *
FROM
    employees
WHERE
    hire_date LIKE ('%2000%')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
47291	1960-09-09	Ulf	Flexer	M	2000-01-12
60134	1964-04-21	Seshu	Rathonyi	F	2000-01-02
72329	1953-02-09	Randi	Luit	F	2000-01-02
108201	1955-04-14	Mariangiola	Boreale	M	2000-01-01
205048	1960-09-12	Ennio	Alblas	F	2000-01-06
222965	1959-08-07	Volkmar	Perko	F	2000-01-13
226633	1958-06-10	Xuejun	Benzmuller	F	2000-01-04
227544	1954-11-17	Shahab	Demever	M	2000-01-08

```
#    Time      Action                                                              Message               Duration / Fetch
139  13:31:45  SELECT   * FROM   employees WHERE   first_name LIKE ('mark%') LIMIT 0, 1000   690 row(s) returned   0.360 sec / 0.000 sec
140  13:34:07  SELECT   * FROM   employees WHERE   emp_no LIKE ('1000_') LIMIT 0, 1000      9 row(s) returned     0.469 sec / 0.000 sec
141  13:34:57  SELECT   * FROM   employees WHERE   hire_date LIKE ('%2000%') LIMIT 0, 1000   13 row(s) returned    0.562 sec / 0.000 sec
```



```
#   Retrieve a list with all employees whose employee number is written with 5 characters, and starts with “1000”. #
SELECT
    *
FROM
    employees
WHERE
    emp_no LIKE ('1000_')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10001	1953-09-02	Georgi	Facello	M	1986-06-26
10002	1964-06-02	Bezalel	Simmel	F	1985-11-21
10003	1959-12-03	Parto	Bamford	M	1986-08-28
10004	1954-05-01	Chirstian	Koblick	M	1986-12-01
10005	1955-01-21	Kyoichi	Maliniak	M	1989-09-12
10006	1953-04-20	Anneke	Preusig	F	1989-06-02
10007	1957-05-23	Tzvetan	Zielinski	F	1989-02-10
10008	1958-02-19	Saniva	Kalloufi	M	1994-09-15

employees 31

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

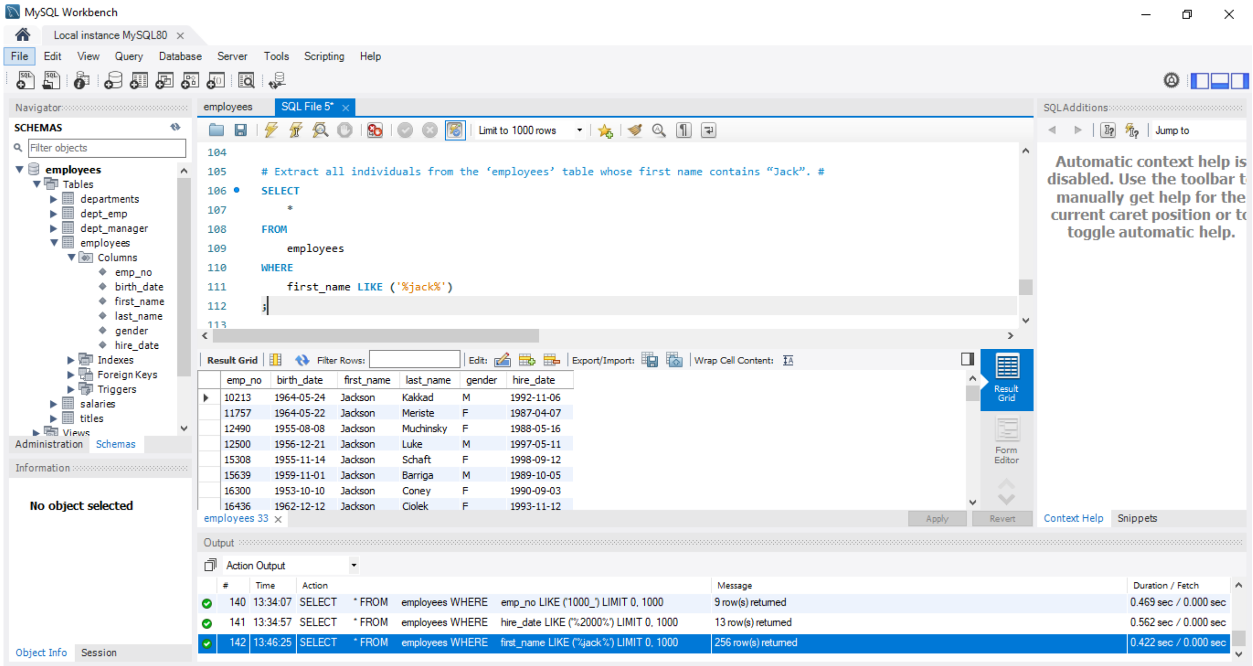
#	Time	Action	Message	Duration / Fetch
138	13:28:04	select * from employees where emp_no like ('1000_') LIMIT 0, 1000	9 row(s) returned	0.485 sec / 0.000 sec
139	13:31:45	SELECT * FROM employees WHERE first_name LIKE ('mark%') LIMIT 0, 1000	690 row(s) returned	0.360 sec / 0.000 sec
140	13:34:07	SELECT * FROM employees WHERE emp_no LIKE ('1000_') LIMIT 0, 1000	9 row(s) returned	0.469 sec / 0.000 sec

Exercise:

Extract all individuals from the ‘employees’ table whose first name contains “Jack.”

Once you have done that, extract another list containing the names of employees that do not contain “Jack.”

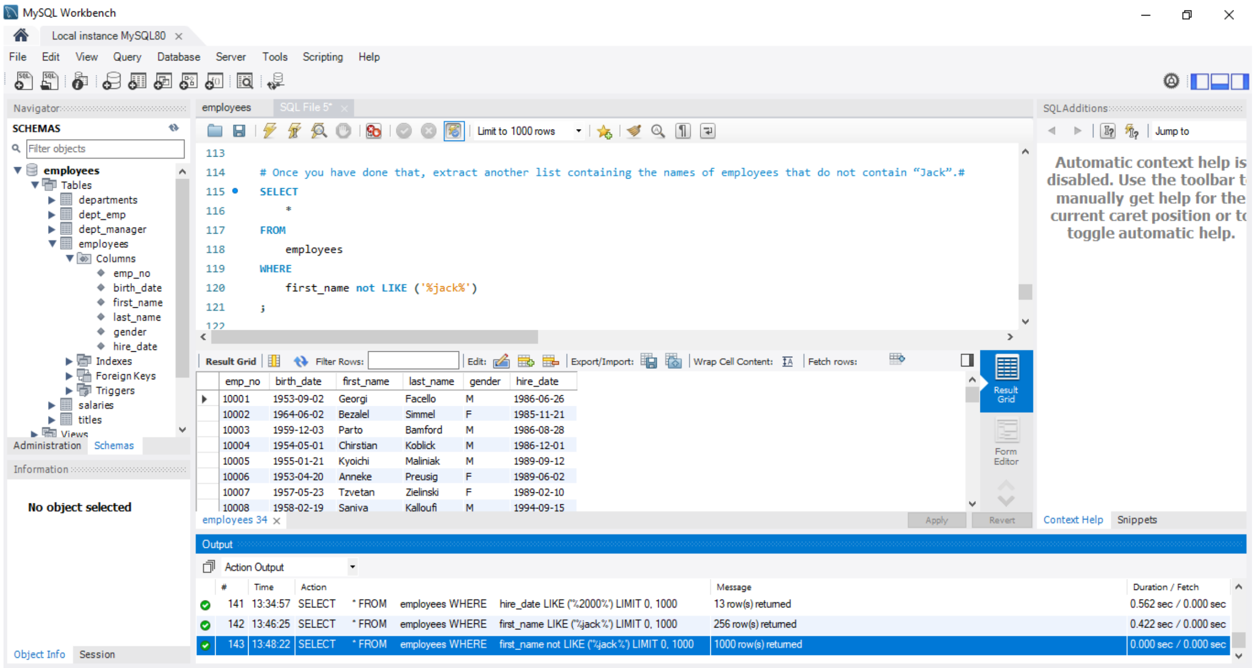
Solution:



```
# Extract all individuals from the ‘employees’ table whose first name contains “Jack”. #
SELECT
    *
FROM
    employees
WHERE
    first_name LIKE ('%jack%')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10213	1964-05-24	Jackson	Kakkad	M	1992-11-06
11757	1964-05-22	Jackson	Meriste	F	1987-04-07
12490	1955-08-08	Jackson	Muchinsky	F	1988-05-16
12500	1956-12-21	Jackson	Luke	M	1997-05-11
15308	1955-11-14	Jackson	Schaft	F	1998-09-12
15639	1959-11-01	Jackson	Barriga	M	1989-10-05
16300	1953-10-10	Jackson	Coney	F	1990-09-03
16436	1962-12-12	Jackson	Ciolek	F	1993-11-12

```
#    Time      Action                                                                  Message              Duration / Fetch
140  13:34:07  SELECT  * FROM  employees WHERE  emp_no LIKE ('1000_') LIMIT 0, 1000      9 row(s) returned    0.469 sec / 0.000 sec
141  13:34:57  SELECT  * FROM  employees WHERE  hire_date LIKE ('%2000%') LIMIT 0, 1000  13 row(s) returned   0.562 sec / 0.000 sec
142  13:46:25  SELECT  * FROM  employees WHERE  first_name LIKE ('%jack%') LIMIT 0, 1000 256 row(s) returned  0.422 sec / 0.000 sec
```

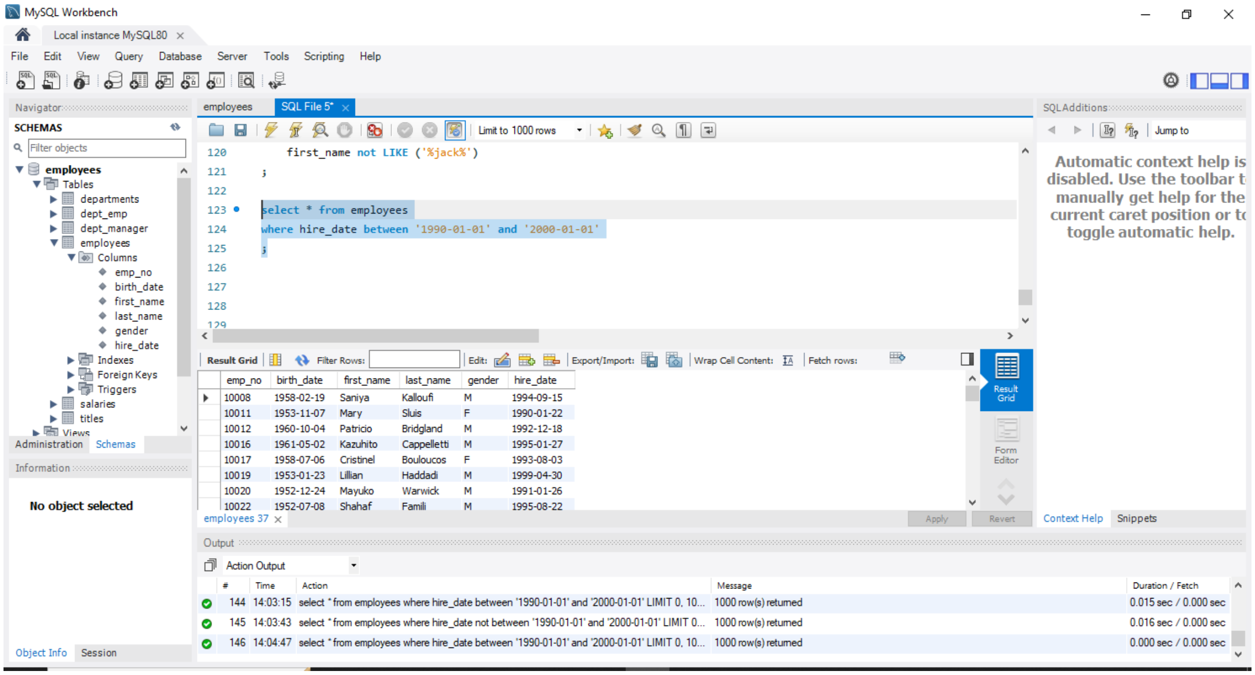


```
# Once you have done that, extract another list containing the names of employees that do not contain “Jack”.#
SELECT
    *
FROM
    employees
WHERE
    first_name not LIKE ('%jack%')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10001	1953-09-02	Georgi	Facello	M	1986-06-26
10002	1964-06-02	Bezalel	Simmel	F	1985-11-21
10003	1959-12-03	Parto	Bamford	M	1986-08-28
10004	1954-05-01	Chirstian	Koblick	M	1986-12-01
10005	1955-01-21	Kyoichi	Maliniak	M	1989-09-12
10006	1953-04-20	Anneke	Preusig	F	1989-06-02
10007	1957-05-23	Tzvetan	Zielinski	F	1989-02-10
10008	1958-02-19	Saniva	Kalloufi	M	1994-09-15

```
#    Time      Action                                                                      Message               Duration / Fetch
141  13:34:57  SELECT  * FROM  employees WHERE  hire_date LIKE ('%2000%') LIMIT 0, 1000      13 row(s) returned    0.562 sec / 0.000 sec
142  13:46:25  SELECT  * FROM  employees WHERE  first_name LIKE ('%jack%') LIMIT 0, 1000     256 row(s) returned   0.422 sec / 0.000 sec
143  13:48:22  SELECT  * FROM  employees WHERE  first_name not LIKE ('%jack%') LIMIT 0, 1000 1000 row(s) returned  0.000 sec / 0.000 sec
```

Suppose I want to retrieve data from a certain range. I’ll use BETWEEN and AND operators in my WHERE clause of the SELECT command



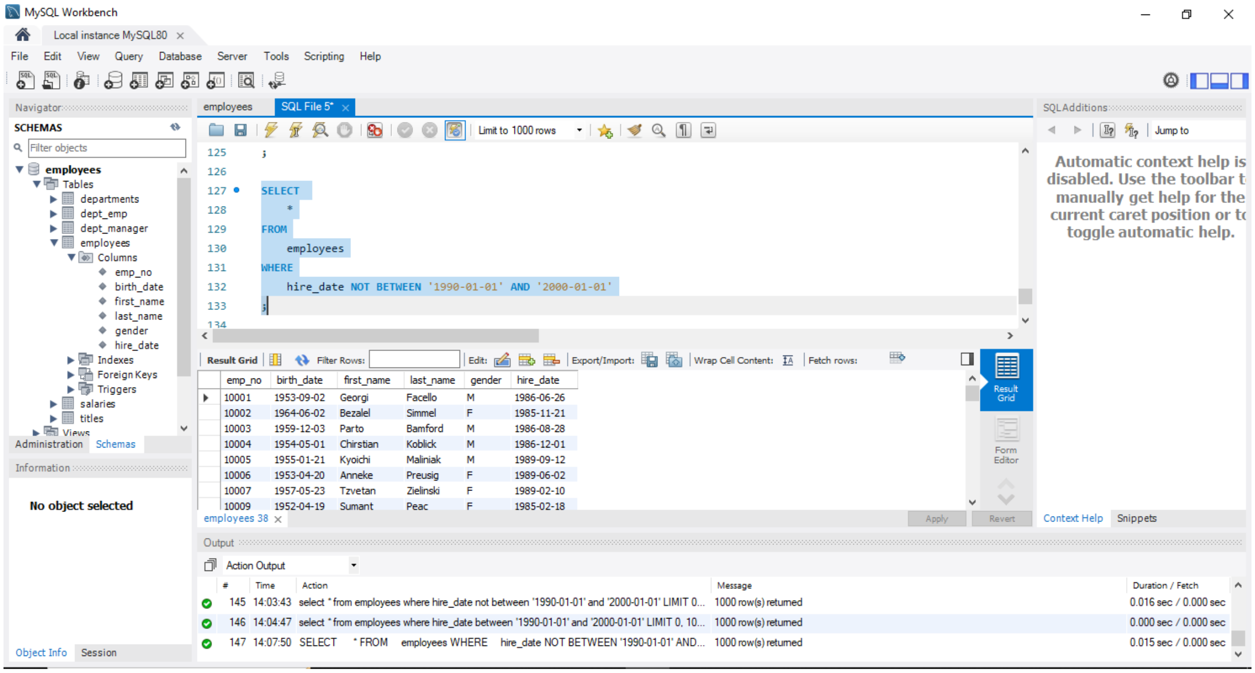
```sql
    first_name not LIKE ('%jack%')
;

select * from employees
where hire_date between '1990-01-01' and '2000-01-01'
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10008	1958-02-19	Saniya	Kalloufi	M	1994-09-15
10011	1953-11-07	Mary	Sluis	F	1990-01-22
10012	1960-10-04	Patricio	Bridgland	M	1992-12-18
10016	1961-05-02	Kazuhito	Cappelletti	M	1995-01-27
10017	1958-07-06	Cristinel	Bouloucos	F	1993-08-03
10019	1953-01-23	Lillian	Haddadi	M	1999-04-30
10020	1952-12-24	Mayuko	Warwick	M	1991-01-26
10022	1952-07-08	Shahaf	Famili	M	1995-08-22

```
#    Time      Action                                                                              Message                  Duration / Fetch
144  14:03:15  select * from employees where hire_date between '1990-01-01' and '2000-01-01' LIMIT 0, 10...      1000 row(s) returned  0.015 sec / 0.000 sec
145  14:03:43  select * from employees where hire_date not between '1990-01-01' and '2000-01-01' LIMIT 0...      1000 row(s) returned  0.016 sec / 0.000 sec
146  14:04:47  select * from employees where hire_date between '1990-01-01' and '2000-01-01' LIMIT 0, 10...      1000 row(s) returned  0.000 sec / 0.000 sec
```

The exact opposite of BETWEEN…AND is NOT BETWEEN…AND



```sql
;

SELECT
    *
FROM
    employees
WHERE
    hire_date NOT BETWEEN '1990-01-01' AND '2000-01-01'
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10001	1953-09-02	Georgi	Facello	M	1986-06-26
10002	1964-06-02	Bezalel	Simmel	F	1985-11-21
10003	1959-12-03	Parto	Bamford	M	1986-08-28
10004	1954-05-01	Chirstian	Koblick	M	1986-12-01
10005	1955-01-21	Kyoichi	Maliniak	M	1989-09-12
10006	1953-04-20	Anneke	Preusig	F	1989-06-02
10007	1957-05-23	Tzvetan	Zielinski	F	1989-02-10
10009	1952-04-19	Sumant	Peac	F	1985-02-18

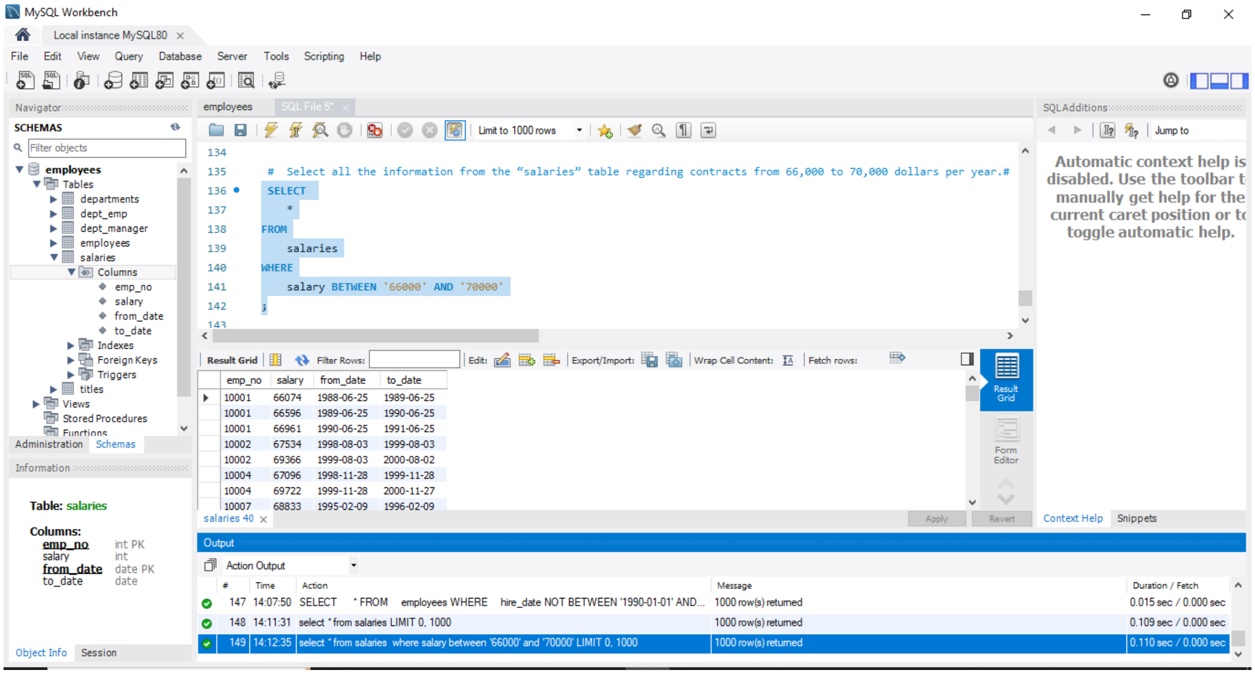
```
#    Time      Action                                                                              Message                  Duration / Fetch
145  14:03:43  select * from employees where hire_date not between '1990-01-01' and '2000-01-01' LIMIT 0...      1000 row(s) returned  0.016 sec / 0.000 sec
146  14:04:47  select * from employees where hire_date between '1990-01-01' and '2000-01-01' LIMIT 0, 10...      1000 row(s) returned  0.000 sec / 0.000 sec
147  14:07:50  SELECT    * FROM    employees WHERE    hire_date NOT BETWEEN '1990-01-01' AND...              1000 row(s) returned  0.015 sec / 0.000 sec
```

Exercise:

1. Select all the information from the “salaries” table regarding contracts from 66,000 to 70,000 dollars per year.
2. Retrieve a list with all individuals whose employee number is not between ‘10004’ and ‘10012’.

3. Select the names of all departments with numbers between ‘d003’ and ‘d006’.

Solution:



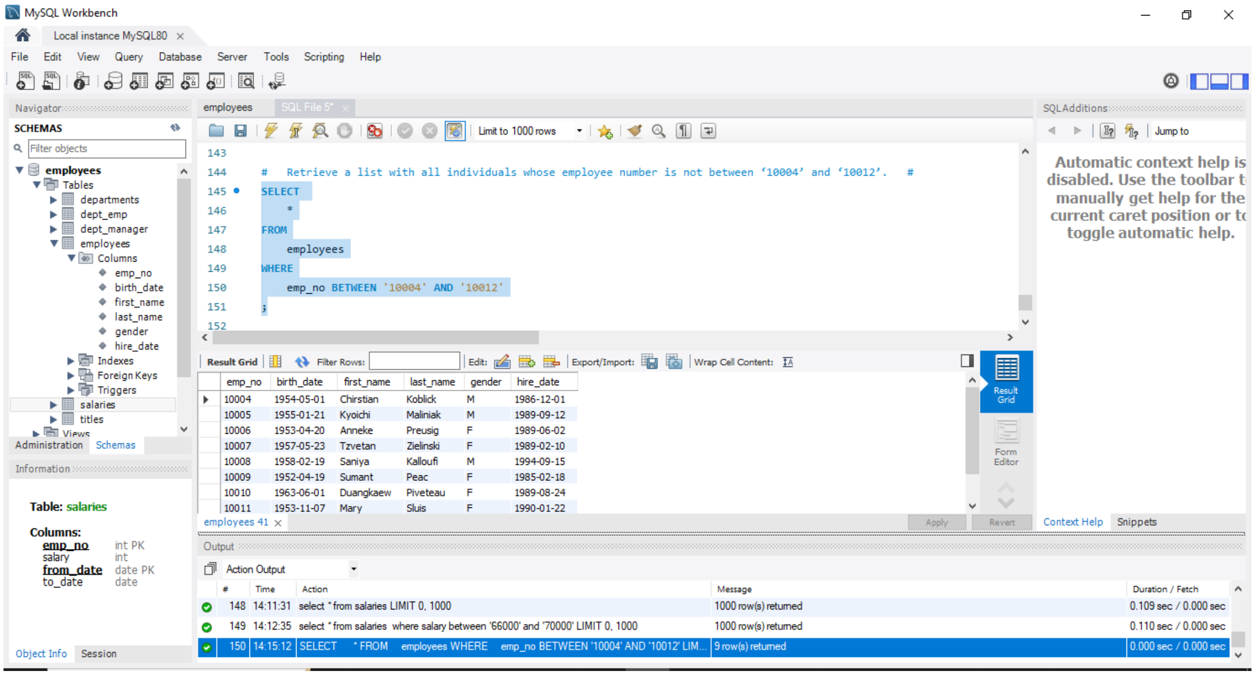
```
#  Select all the information from the “salaries” table regarding contracts from 66,000 to 70,000 dollars per year.#
 SELECT
    *
FROM
    salaries
WHERE
    salary BETWEEN '66000' AND '70000'
;
```

emp_no	salary	from_date	to_date
10001	66074	1988-06-25	1989-06-25
10001	66596	1989-06-25	1990-06-25
10001	66961	1990-06-25	1991-06-25
10002	67534	1998-08-03	1999-08-03
10002	69366	1999-08-03	2000-08-02
10004	67096	1998-11-28	1999-11-28
10004	69722	1999-11-28	2000-11-27
10007	68833	1995-02-09	1996-02-09

Table: salaries

Columns:
emp_no int PK
salary int
from_date date PK
to_date date

#	Time	Action	Message	Duration / Fetch
147	14:07:50	SELECT * FROM employees WHERE hire_date NOT BETWEEN '1990-01-01' AND...	1000 row(s) returned	0.015 sec / 0.000 sec
148	14:11:31	select * from salaries LIMIT 0, 1000	1000 row(s) returned	0.109 sec / 0.000 sec
149	14:12:35	select * from salaries where salary between '66000' and '70000' LIMIT 0, 1000	1000 row(s) returned	0.110 sec / 0.000 sec



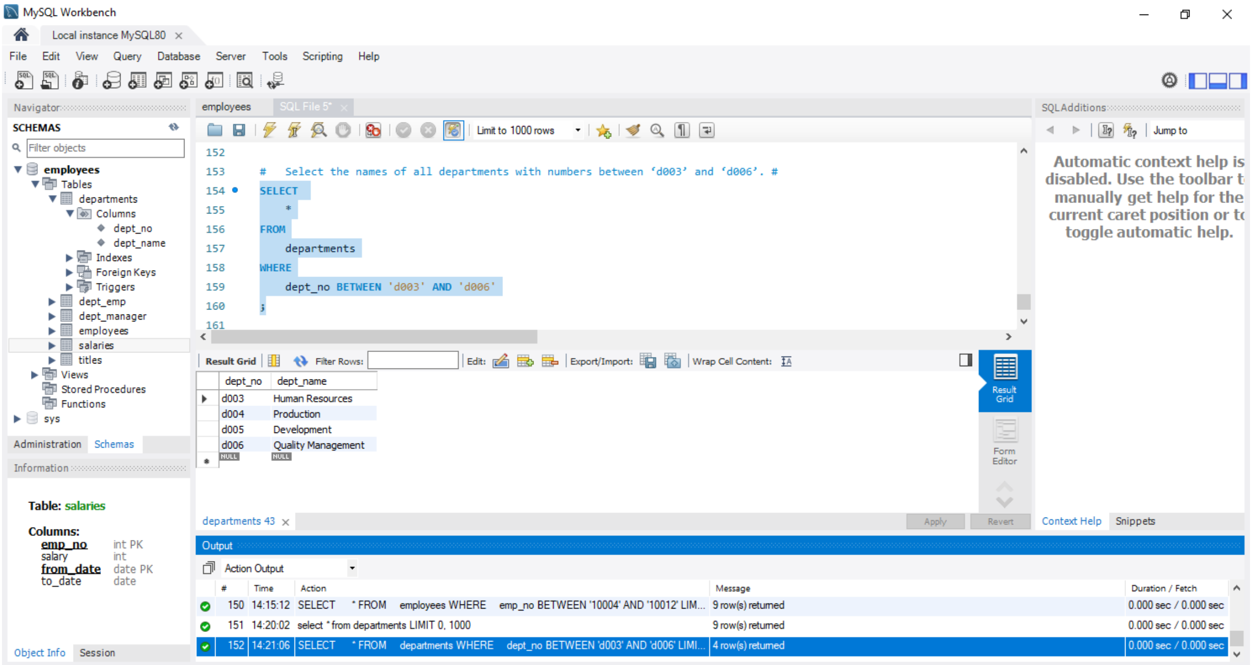
```
#   Retrieve a list with all individuals whose employee number is not between ‘10004’ and ‘10012’.   #
SELECT
    *
FROM
    employees
WHERE
    emp_no BETWEEN '10004' AND '10012'
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10004	1954-05-01	Chirstian	Koblick	M	1986-12-01
10005	1955-01-21	Kyoichi	Maliniak	M	1989-09-12
10006	1953-04-20	Anneke	Preusig	F	1989-06-02
10007	1957-05-23	Tzvetan	Zielinski	F	1989-02-10
10008	1958-02-19	Saniya	Kalloufi	M	1994-09-15
10009	1952-04-19	Sumant	Peac	F	1985-02-18
10010	1963-06-01	Duangkaew	Piveteau	F	1989-08-24
10011	1953-11-07	Mary	Sluis	F	1990-01-22

Table: salaries

Columns:
emp_no int PK
salary int
from_date date PK
to_date date

#	Time	Action	Message	Duration / Fetch
148	14:11:31	select * from salaries LIMIT 0, 1000	1000 row(s) returned	0.109 sec / 0.000 sec
149	14:12:35	select * from salaries where salary between '66000' and '70000' LIMIT 0, 1000	1000 row(s) returned	0.110 sec / 0.000 sec
150	14:15:12	SELECT * FROM employees WHERE emp_no BETWEEN '10004' AND '10012' LIM...	9 row(s) returned	0.000 sec / 0.000 sec



```sql
#   Select the names of all departments with numbers between ‘d003’ and ‘d006’. #
SELECT
    *
FROM
    departments
WHERE
    dept_no BETWEEN 'd003' AND 'd006'
;
```

dept_no	dept_name
d003	Human Resources
d004	Production
d005	Development
d006	Quality Management
NULL	NULL

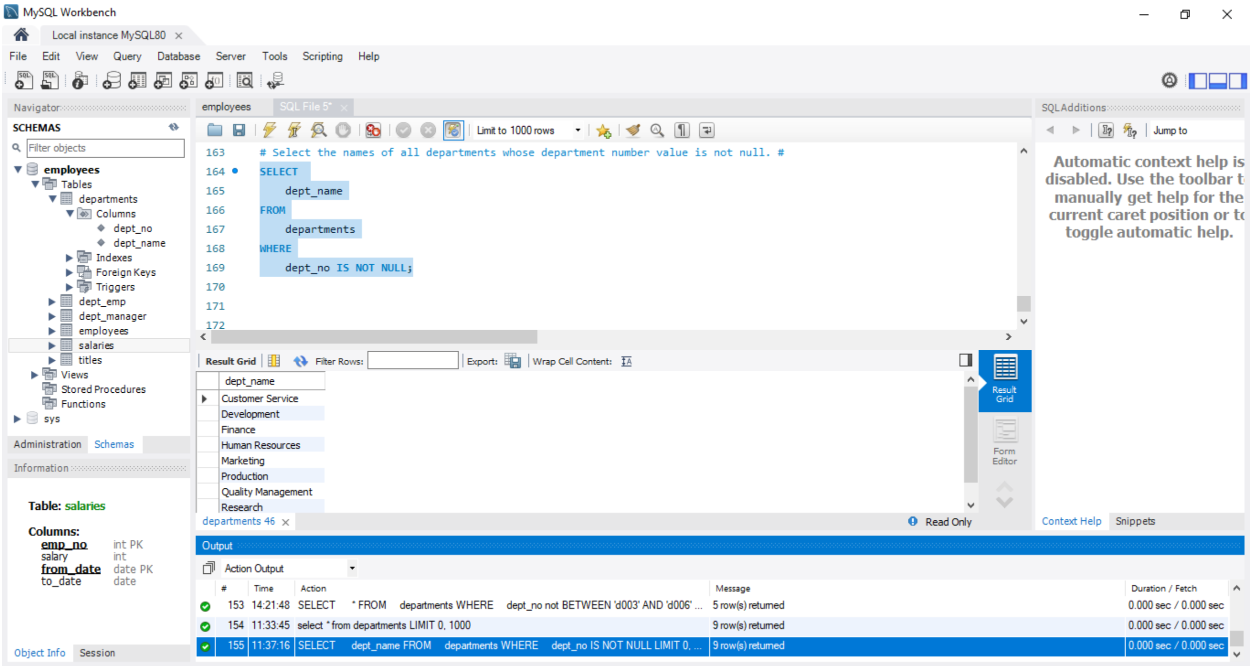
```
#    Time      Action                                                                   Message             Duration / Fetch
150  14:15:12  SELECT  * FROM  employees WHERE  emp_no BETWEEN '10004' AND '10012' LIM...  9 row(s) returned  0.000 sec / 0.000 sec
151  14:20:02  select * from departments LIMIT 0, 1000                                  9 row(s) returned   0.000 sec / 0.000 sec
152  14:21:06  SELECT  * FROM  departments WHERE  dept_no BETWEEN 'd003' AND 'd006' LIMI...  4 row(s) returned  0.000 sec / 0.000 sec
```

Exploring the IS NOT NULL – IS NULL operators:

Exercise:

Select the names of all departments whose department number value is not null.

Solution:



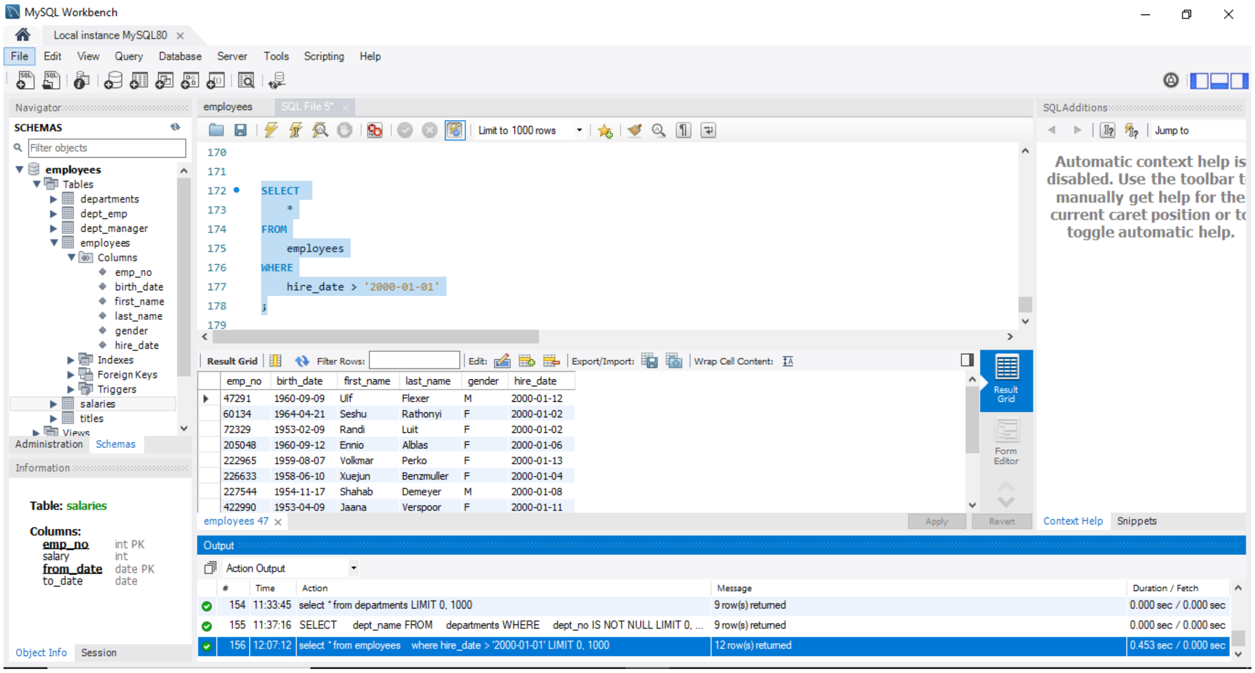
```sql
# Select the names of all departments whose department number value is not null. #
SELECT
    dept_name
FROM
    departments
WHERE
    dept_no IS NOT NULL;
```

dept_name
Customer Service
Development
Finance
Human Resources
Marketing
Production
Quality Management
Research

```
#    Time      Action                                                                    Message             Duration / Fetch
153  14:21:48  SELECT  * FROM  departments WHERE  dept_no not BETWEEN 'd003' AND 'd006' ...  5 row(s) returned  0.000 sec / 0.000 sec
154  11:33:45  select * from departments LIMIT 0, 1000                                   9 row(s) returned   0.000 sec / 0.000 sec
155  11:37:16  SELECT  dept_name FROM  departments WHERE  dept_no IS NOT NULL LIMIT 0, ...  9 row(s) returned  0.000 sec / 0.000 sec
```

Provide a list of employees hired after 1st Jan 2000.

For this, we will use > operator to find employees hired *after* the stated date.



```
SELECT
    *
FROM
    employees
WHERE
    hire_date > '2000-01-01'
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
47291	1960-09-09	Ulf	Flexer	M	2000-01-12
60134	1964-04-21	Seshu	Rathonyi	F	2000-01-02
72329	1953-02-09	Randi	Luit	F	2000-01-02
205048	1960-09-12	Ennio	Alblas	F	2000-01-06
222965	1959-08-07	Volkmar	Perko	F	2000-01-13
226633	1958-06-10	Xuejun	Benzmuller	F	2000-01-04
227544	1954-11-17	Shahab	Demeyer	M	2000-01-08
422990	1953-04-09	Jaana	Verspoor	F	2000-01-11

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

Table: salaries

Columns:
emp_no int PK
salary int
from_date date PK
to_date date

Output

Action Output

```
#    Time      Action                                                          Message             Duration / Fetch
154  11:33:45  select * from departments LIMIT 0, 1000                        9 row(s) returned   0.000 sec / 0.000 sec
155  11:37:16  SELECT    dept_name FROM    departments WHERE    dept_no IS NOT NULL LIMIT 0, ...   9 row(s) returned   0.000 sec / 0.000 sec
156  12:07:12  select * from employees    where hire_date > '2000-01-01' LIMIT 0, 1000   12 row(s) returned   0.453 sec / 0.000 sec
```

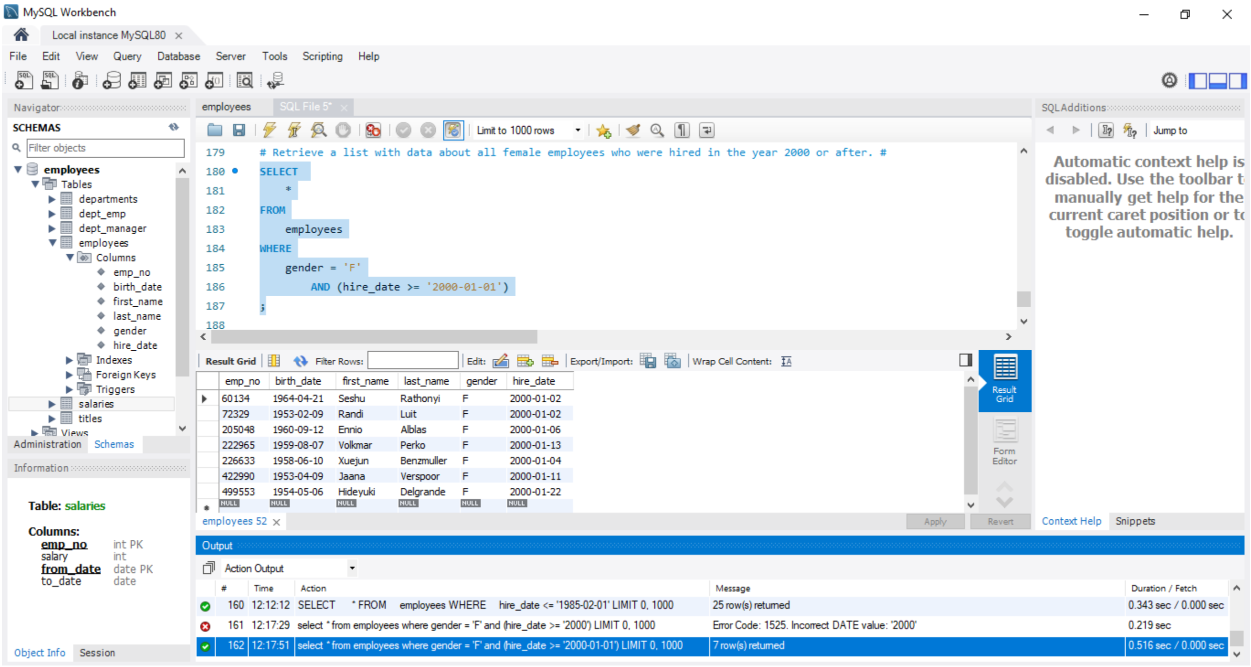
Exercise:

1. Retrieve a list with data about all female employees who were hired in the year 2000 or after.

Hint: If you solve the task correctly, SQL should return seven rows.

2. Extract a list with all employees' salaries higher than $150,000 per annum.

Solution:



```
# Retrieve a list with data about all female employees who were hired in the year 2000 or after. #
SELECT
    *
FROM
    employees
WHERE
    gender = 'F'
        AND (hire_date >= '2000-01-01')
;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
60134	1964-04-21	Seshu	Rathonyi	F	2000-01-02
72329	1953-02-09	Randi	Luit	F	2000-01-02
205048	1960-09-12	Ennio	Alblas	F	2000-01-06
222965	1959-08-07	Volkmar	Perko	F	2000-01-13
226633	1958-06-10	Xuejun	Benzmuller	F	2000-01-04
422990	1953-04-09	Jaana	Verspoor	F	2000-01-11
499553	1954-05-06	Hideyuki	Delgrande	F	2000-01-22
NULL	NULL	NULL	NULL	NULL	NULL

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

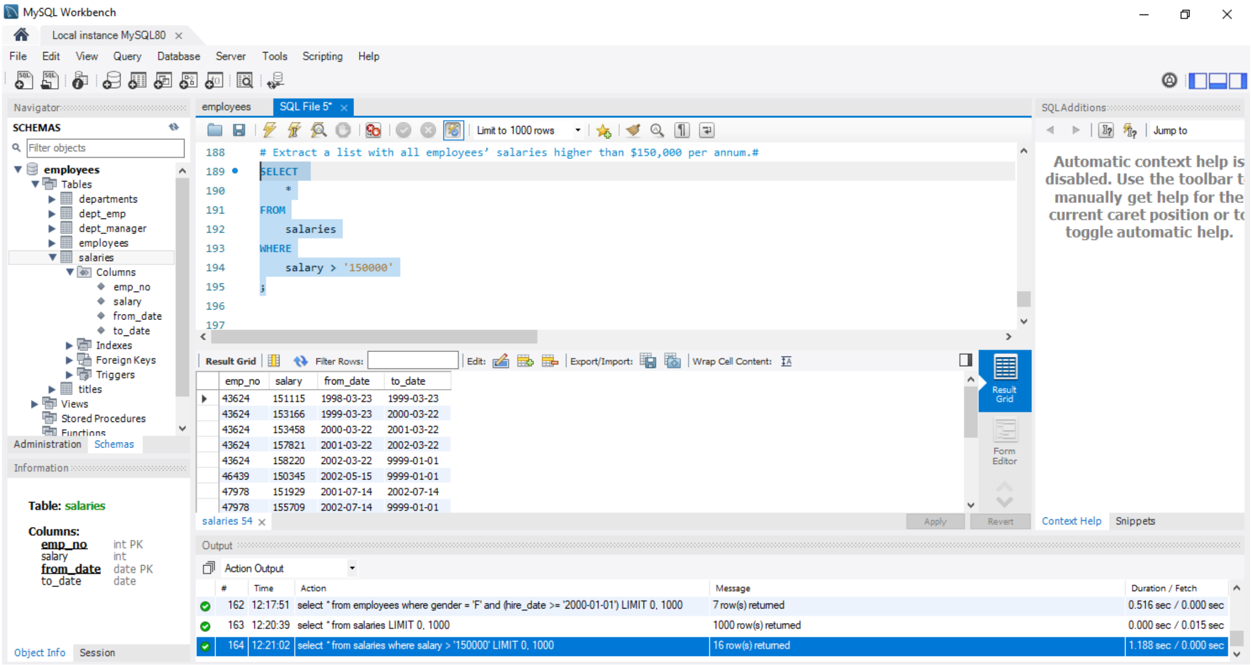
Table: salaries

Columns:
emp_no int PK
salary int
from_date date PK
to_date date

Output

Action Output

```
#    Time      Action                                                                              Message                                       Duration / Fetch
160  12:12:12  SELECT    * FROM    employees WHERE    hire_date <= '1985-02-01' LIMIT 0, 1000        25 row(s) returned                            0.343 sec / 0.000 sec
161  12:17:29  select * from employees where gender = 'F' and (hire_date >= '2000') LIMIT 0, 1000     Error Code: 1525. Incorrect DATE value: '2000'   0.219 sec
162  12:17:51  select * from employees where gender = 'F' and (hire_date >= '2000-01-01') LIMIT 0, 1000   7 row(s) returned                          0.516 sec / 0.000 sec
```



```
# Extract a list with all employees' salaries higher than $150,000 per annum.#
SELECT
    *
FROM
    salaries
WHERE
    salary > '150000'
;
```

emp_no	salary	from_date	to_date
43624	151115	1998-03-23	1999-03-23
43624	153166	1999-03-23	2000-03-22
43624	153458	2000-03-22	2001-03-22
43624	157821	2001-03-22	2002-03-22
43624	158220	2002-03-22	9999-01-01
46439	150345	2002-05-15	9999-01-01
47978	151929	2001-07-14	2002-07-14
47978	155709	2002-07-14	9999-01-01

Table: salaries

Columns:

emp_no	int PK
salary	int
from_date	date PK
to_date	date

```
#    Time      Action                                                                          Message              Duration / Fetch
162  12:17:51  select * from employees where gender = 'F' and (hire_date >= '2000-01-01') LIMIT 0, 1000   7 row(s) returned    0.516 sec / 0.000 sec
163  12:20:39  select * from salaries LIMIT 0, 1000                                            1000 row(s) returned 0.000 sec / 0.015 sec
164  12:21:02  select * from salaries where salary > '150000' LIMIT 0, 1000                    16 row(s) returned   1.188 sec / 0.000 sec
```

So far, we have been exploring the SELECT statement. But what if we want to select distinct, different values from our dataset? For this, we will employ SELECT DISTINCT.

Exercise:

Obtain a list with all different “hire dates” from the “employees” table.

Expand this list and click on “Limit to 1000 rows”. This way, you will set the limit of output rows displayed back to the default of 1000.

Solution:

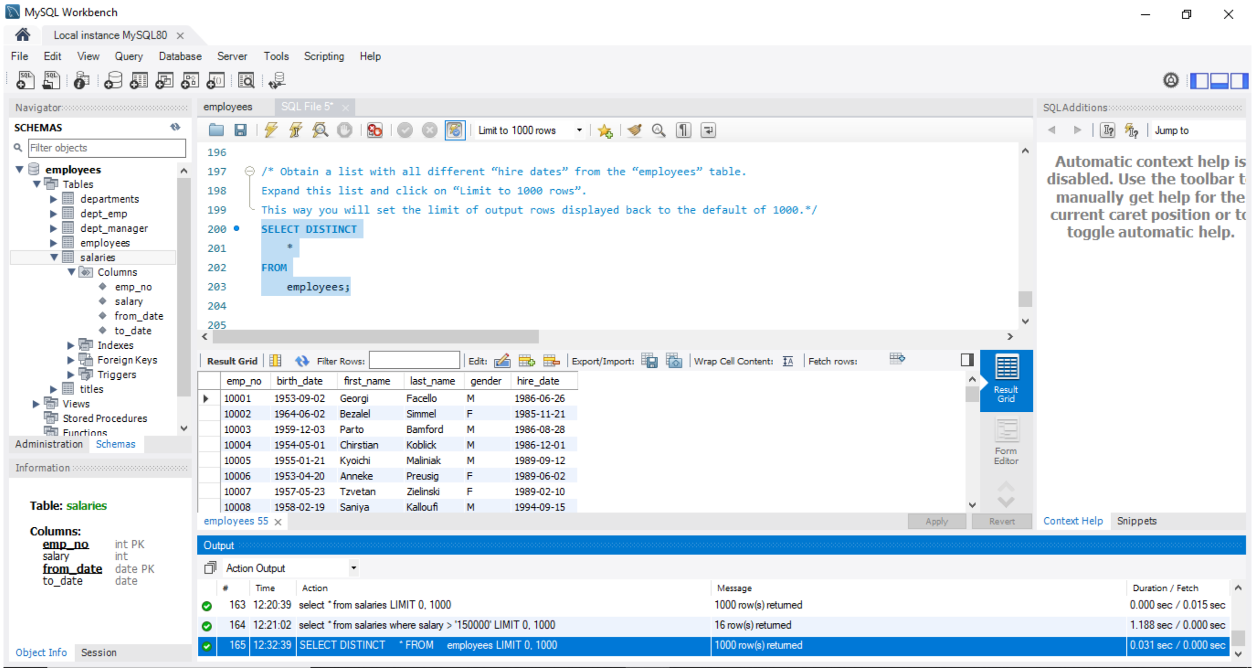


Table: salaries

Columns:

emp_no	int PK
salary	int
from_date	date PK
to_date	date

```
/* Obtain a list with all different "hire dates" from the "employees" table.
Expand this list and click on "Limit to 1000 rows".
This way you will set the limit of output rows displayed back to the default of 1000.*/
SELECT DISTINCT
    *
FROM
    employees;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
10001	1953-09-02	Georgi	Facello	M	1986-06-26
10002	1964-06-02	Bezalel	Simmel	F	1985-11-21
10003	1959-12-03	Parto	Bamford	M	1986-08-28
10004	1954-05-01	Chirstian	Koblick	M	1986-12-01
10005	1955-01-21	Kyoichi	Maliniak	M	1989-09-12
10006	1953-04-20	Anneke	Preusig	F	1989-06-02
10007	1957-05-23	Tzvetan	Zielinski	F	1989-02-10
10008	1958-02-19	Saniya	Kalloufi	M	1994-09-15

employees 55

Output

Action Output

```
#    Time      Action                                                        Message               Duration / Fetch
163  12:20:39  select * from salaries LIMIT 0, 1000                          1000 row(s) returned  0.000 sec / 0.015 sec
164  12:21:02  select * from salaries where salary > '150000' LIMIT 0, 1000  16 row(s) returned    1.188 sec / 0.000 sec
165  12:32:39  SELECT DISTINCT   * FROM   employees LIMIT 0, 1000            1000 row(s) returned  0.031 sec / 0.000 sec
```

Aggregate Functions:

Our next question is, how many employees are registered in our database? For this, we will use our most common aggregate function: COUNT().

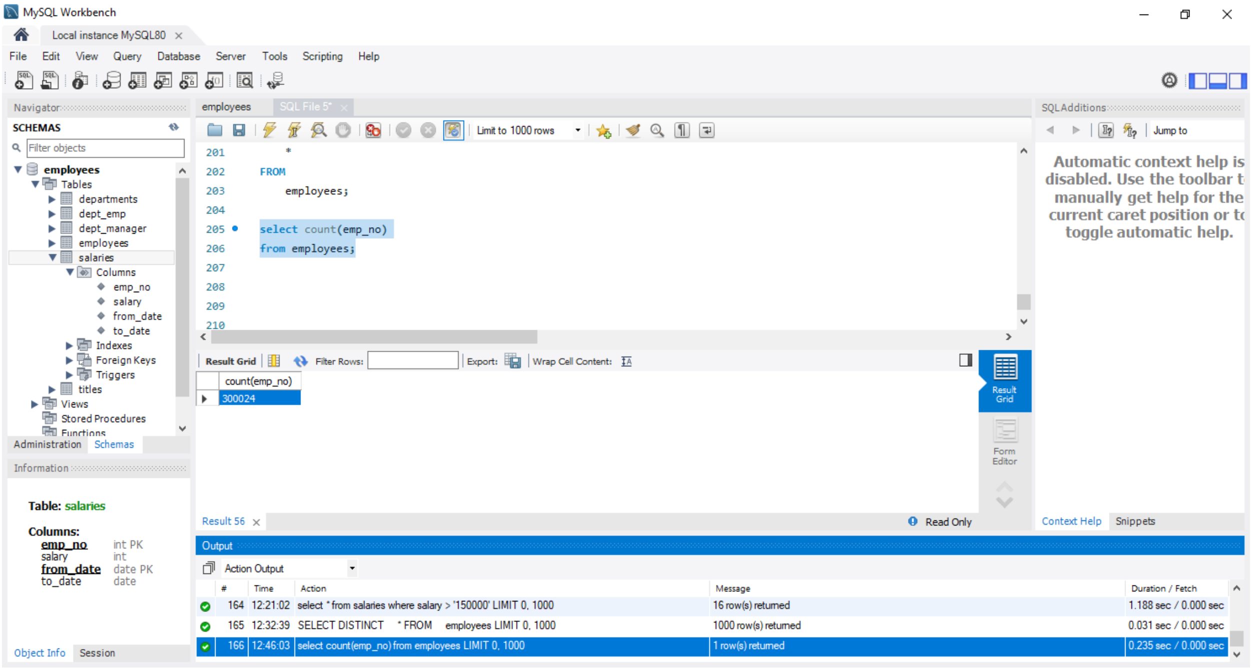


Table: salaries

Columns:

emp_no	int PK
salary	int
from_date	date PK
to_date	date

```
    *
FROM
    employees;

select count(emp_no)
from employees;
```

count(emp_no)
300024

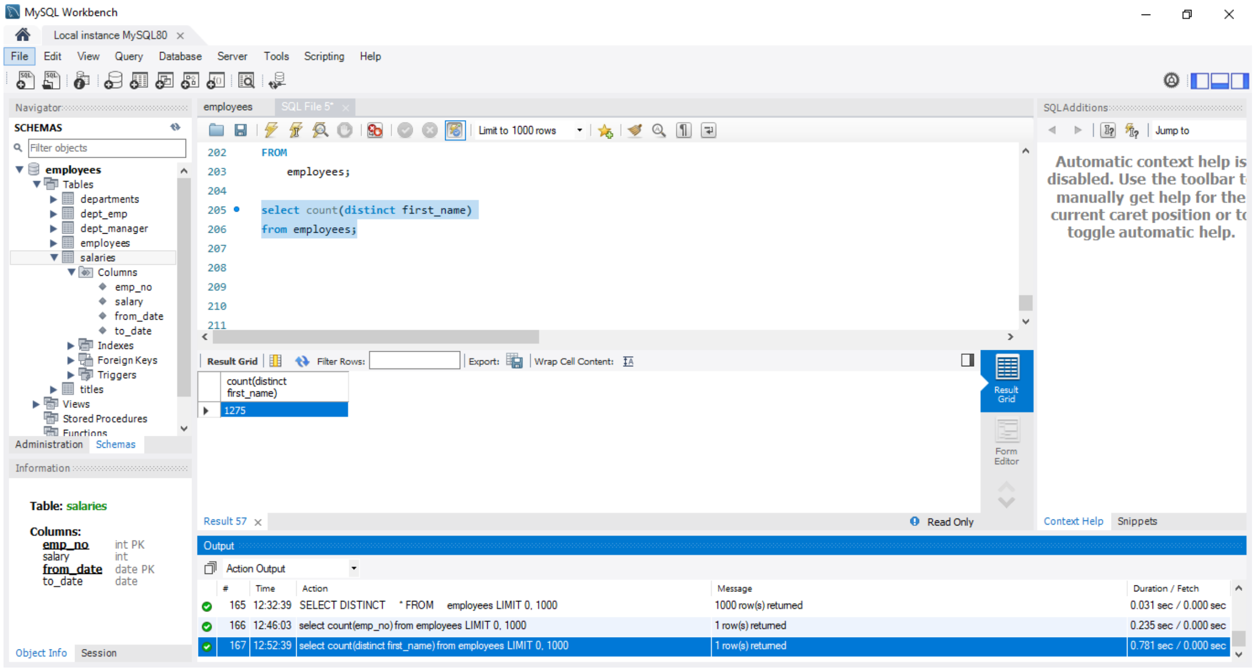
Result 56

Output

Action Output

```
#    Time      Action                                                        Message               Duration / Fetch
164  12:21:02  select * from salaries where salary > '150000' LIMIT 0, 1000  16 row(s) returned    1.188 sec / 0.000 sec
165  12:32:39  SELECT DISTINCT   * FROM   employees LIMIT 0, 1000            1000 row(s) returned  0.031 sec / 0.000 sec
166  12:46:03  select count(emp_no) from employees LIMIT 0, 1000             1 row(s) returned     0.235 sec / 0.000 sec
```

How many different names can be found in the employees table?



```
FROM
    employees;

select count(distinct first_name)
from employees;
```

count(distinct first_name)
1275

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

Table: salaries

Columns:

emp_no	int PK
salary	int
from_date	date PK
to_date	date

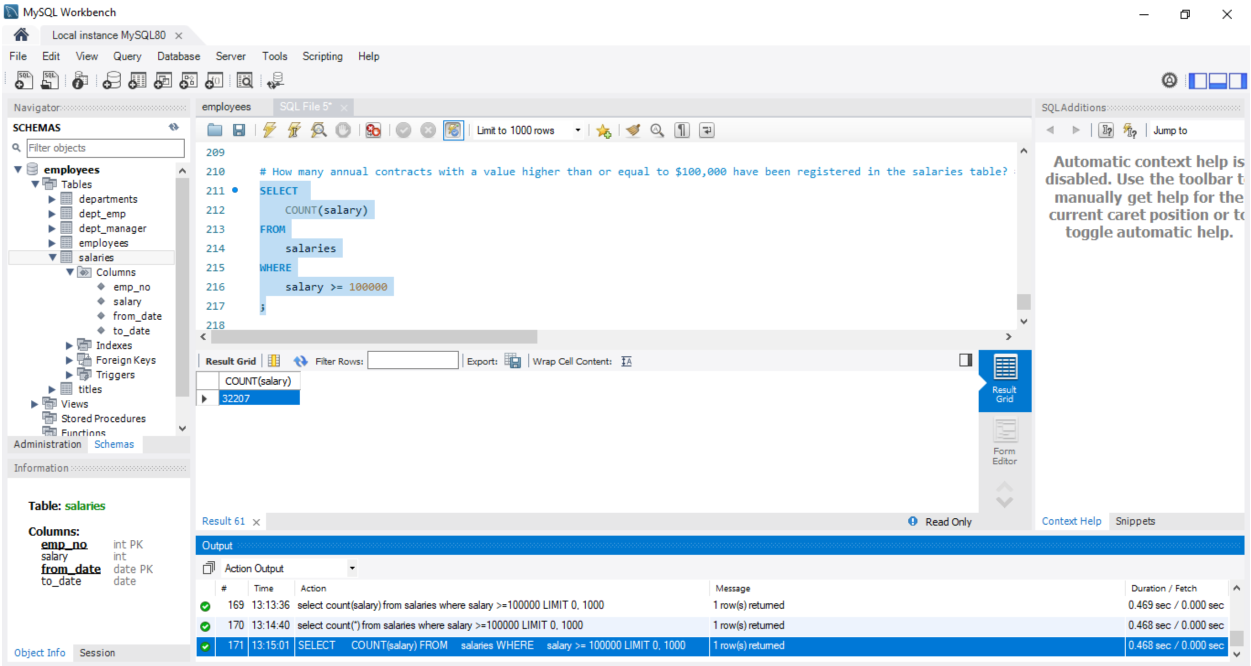
```
#    Time      Action                                                Message            Duration / Fetch
165  12:32:39  SELECT DISTINCT   * FROM   employees LIMIT 0, 1000    1000 row(s) returned  0.031 sec / 0.000 sec
166  12:46:03  select count(emp_no) from employees LIMIT 0, 1000     1 row(s) returned     0.235 sec / 0.000 sec
167  12:52:39  select count(distinct first_name) from employees LIMIT 0, 1000  1 row(s) returned  0.781 sec / 0.000 sec
```

Exercise:

How many annual contracts with a value higher than or equal to $100,000 have been registered in the *salaries* table?

How many managers do we have in the “employees” database? Use the star symbol (*) in your code to solve this exercise.

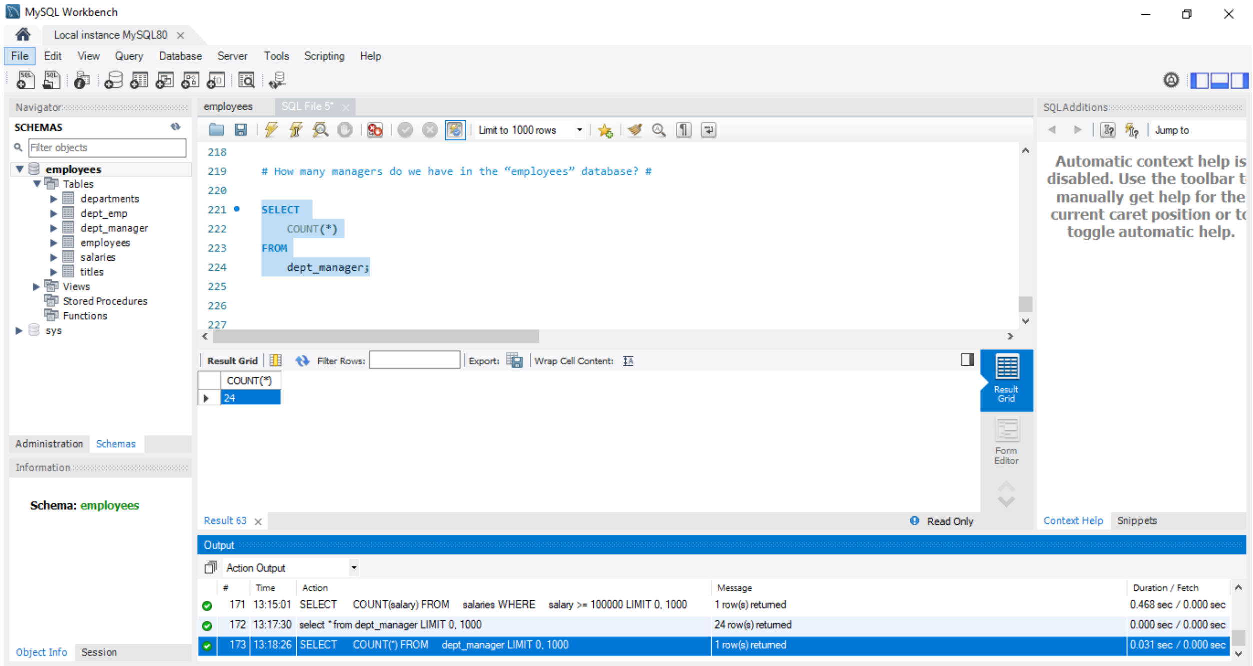
Solution:



```sql
# How many annual contracts with a value higher than or equal to $100,000 have been registered in the salaries table?
SELECT
    COUNT(salary)
FROM
    salaries
WHERE
    salary >= 100000
;
```

COUNT(salary)
32207

```
#    Time      Action                                                              Message            Duration / Fetch
169  13:13:36  select count(salary) from salaries where salary >=100000 LIMIT 0, 1000  1 row(s) returned  0.469 sec / 0.000 sec
170  13:14:40  select count(*) from salaries where salary >=100000 LIMIT 0, 1000      1 row(s) returned  0.468 sec / 0.000 sec
171  13:15:01  SELECT    COUNT(salary) FROM    salaries WHERE    salary >= 100000 LIMIT 0, 1000  1 row(s) returned  0.468 sec / 0.000 sec
```



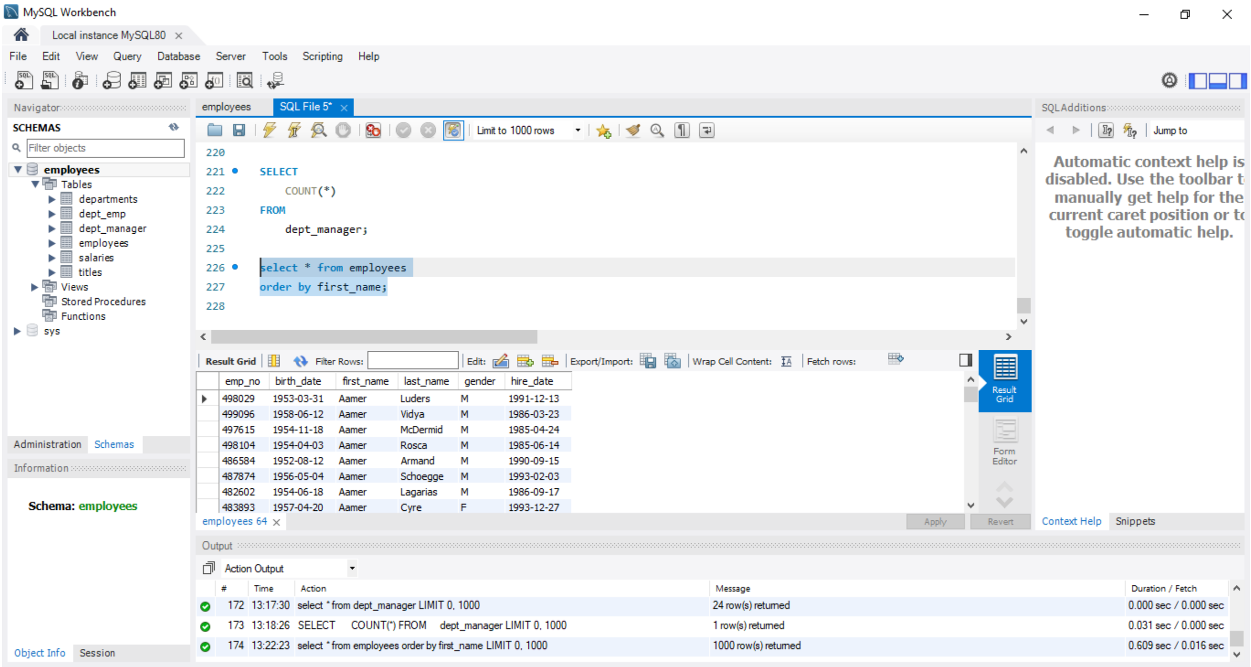
```sql
# How many managers do we have in the “employees” database? #

SELECT
    COUNT(*)
FROM
    dept_manager;
```

COUNT(*)
24

```
#    Time      Action                                                              Message             Duration / Fetch
171  13:15:01  SELECT    COUNT(salary) FROM    salaries WHERE    salary >= 100000 LIMIT 0, 1000  1 row(s) returned  0.468 sec / 0.000 sec
172  13:17:30  select * from dept_manager LIMIT 0, 1000                            24 row(s) returned  0.000 sec / 0.000 sec
173  13:18:26  SELECT    COUNT(*) FROM    dept_manager LIMIT 0, 1000                1 row(s) returned   0.031 sec / 0.000 sec
```

Do you wish to retrieve data that is organized by first name instead of employee number? In that case, you can use the ORDER BY clause.

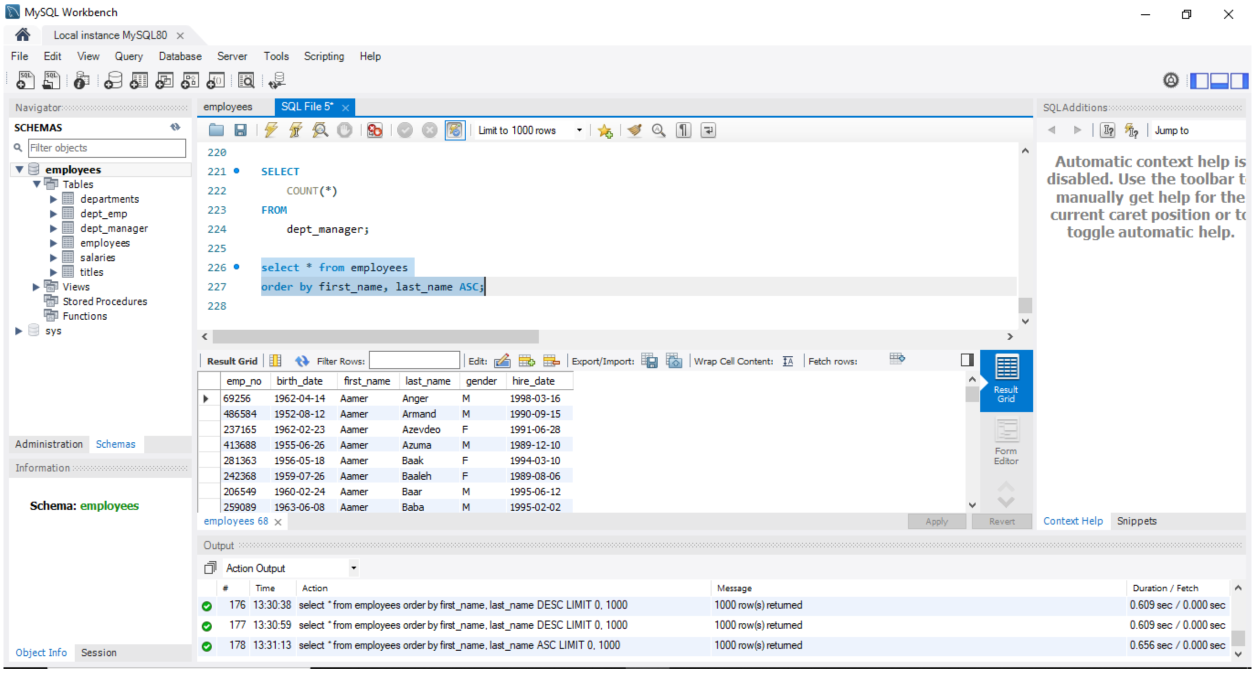


```sql
SELECT
    COUNT(*)
FROM
    dept_manager;

select * from employees
order by first_name;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
498029	1953-03-31	Aamer	Luders	M	1991-12-13
499096	1958-06-12	Aamer	Vidya	M	1986-03-23
497615	1954-11-18	Aamer	McDermid	M	1985-04-24
498104	1954-04-03	Aamer	Rosca	M	1985-06-14
486584	1952-08-12	Aamer	Armand	M	1990-09-15
487874	1956-05-04	Aamer	Schoegge	M	1993-02-03
482602	1954-06-18	Aamer	Lagarias	M	1986-09-17
483893	1957-04-20	Aamer	Cyre	F	1993-12-27

#	Time	Action	Message	Duration / Fetch
172	13:17:30	select * from dept_manager LIMIT 0, 1000	24 row(s) returned	0.000 sec / 0.000 sec
173	13:18:26	SELECT COUNT(*) FROM dept_manager LIMIT 0, 1000	1 row(s) returned	0.031 sec / 0.000 sec
174	13:22:23	select * from employees order by first_name LIMIT 0, 1000	1000 row(s) returned	0.609 sec / 0.016 sec



```sql
SELECT
    COUNT(*)
FROM
    dept_manager;

select * from employees
order by first_name, last_name ASC;
```

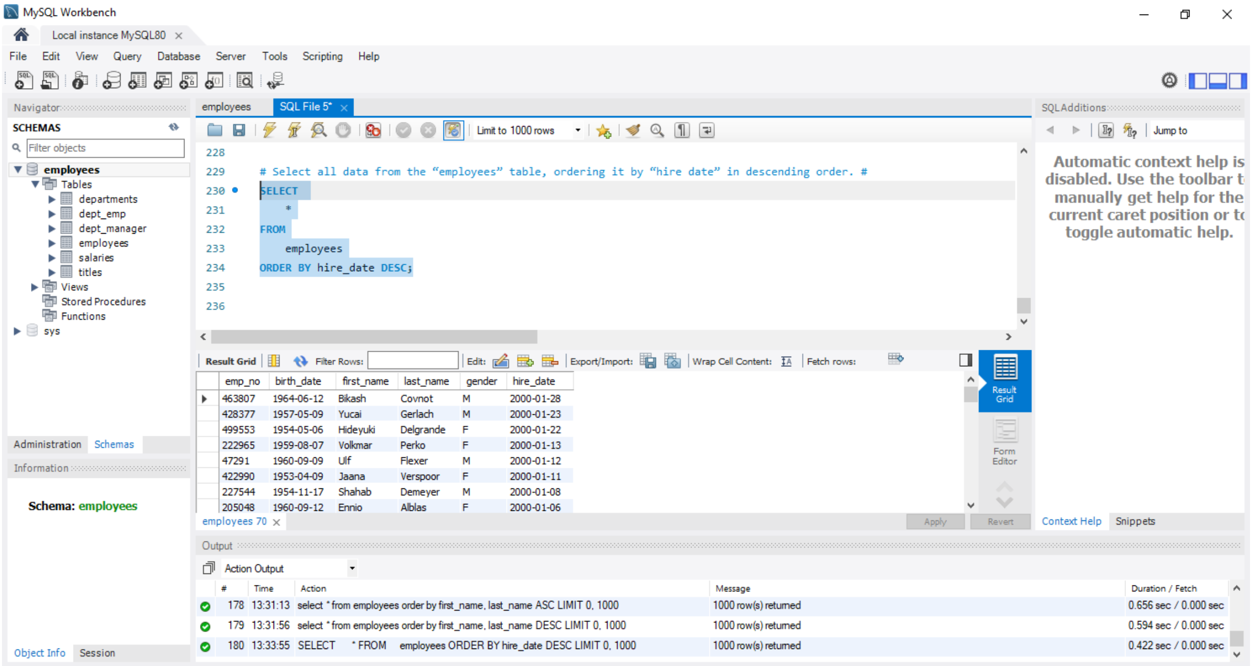
emp_no	birth_date	first_name	last_name	gender	hire_date
69256	1962-04-14	Aamer	Anger	M	1998-03-16
486584	1952-08-12	Aamer	Armand	M	1990-09-15
237165	1962-02-23	Aamer	Azevdeo	F	1991-06-28
413688	1955-06-26	Aamer	Azuma	M	1989-12-10
281363	1956-05-18	Aamer	Baak	F	1994-03-10
242368	1959-07-26	Aamer	Baaleh	F	1989-08-06
206549	1960-02-24	Aamer	Baar	M	1995-06-12
259089	1963-06-08	Aamer	Baba	M	1995-02-02

#	Time	Action	Message	Duration / Fetch
176	13:30:38	select * from employees order by first_name, last_name DESC LIMIT 0, 1000	1000 row(s) returned	0.609 sec / 0.000 sec
177	13:30:59	select * from employees order by first_name, last_name DESC LIMIT 0, 1000	1000 row(s) returned	0.609 sec / 0.000 sec
178	13:31:13	select * from employees order by first_name, last_name ASC LIMIT 0, 1000	1000 row(s) returned	0.656 sec / 0.000 sec

Exercise:

Select all data from the “employees” table, ordering it by “hire date” in descending order.

Solution:

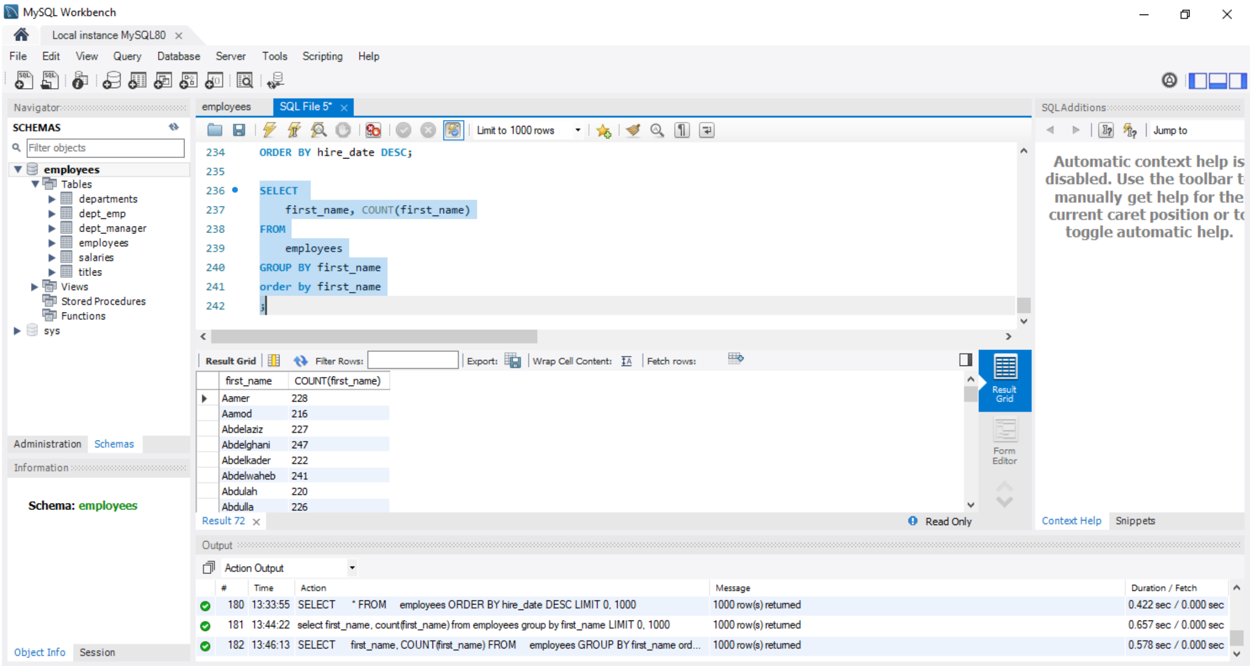


```
# Select all data from the “employees” table, ordering it by “hire date” in descending order. #
SELECT
    *
FROM
    employees
ORDER BY hire_date DESC;
```

emp_no	birth_date	first_name	last_name	gender	hire_date
463807	1964-06-12	Bikash	Covnot	M	2000-01-28
428377	1957-05-09	Yucai	Gerlach	M	2000-01-23
499553	1954-05-06	Hideyuki	Delgrande	F	2000-01-22
222965	1959-08-07	Volkmar	Perko	F	2000-01-13
47291	1960-09-09	Ulf	Flexer	M	2000-01-12
422990	1953-04-09	Jaana	Verspoor	F	2000-01-11
227544	1954-11-17	Shahab	Demeyer	M	2000-01-08
205048	1960-09-12	Ennio	Alblas	F	2000-01-06

```
#    Time      Action                                                                     Message                Duration / Fetch
178  13:31:13  select * from employees order by first_name, last_name ASC LIMIT 0, 1000   1000 row(s) returned   0.656 sec / 0.000 sec
179  13:31:56  select * from employees order by first_name, last_name DESC LIMIT 0, 1000  1000 row(s) returned   0.594 sec / 0.000 sec
180  13:33:55  SELECT    * FROM    employees ORDER BY hire_date DESC LIMIT 0, 1000         1000 row(s) returned   0.422 sec / 0.000 sec
```

We want to know how many times each first name was repeated. So we used the GROUP BY clause:

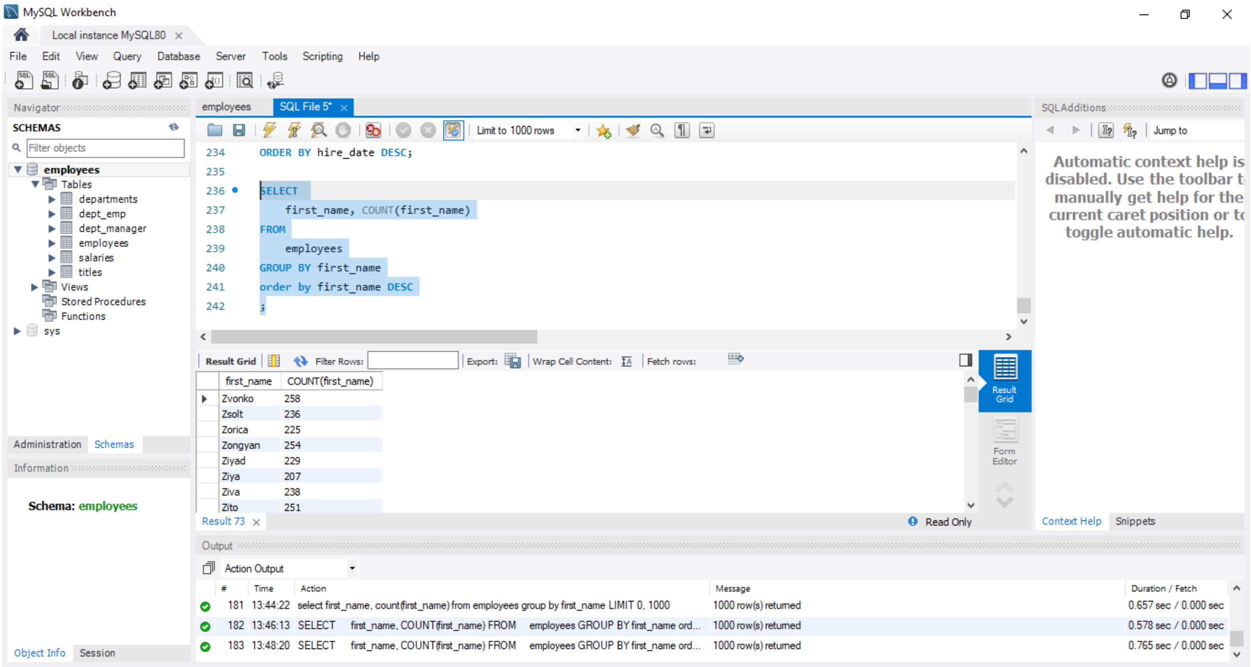


```
ORDER BY hire_date DESC;

SELECT
    first_name, COUNT(first_name)
FROM
    employees
GROUP BY first_name
order by first_name
;
```

first_name	COUNT(first_name)
Aamer	228
Aamod	216
Abdelaziz	227
Abdelghani	247
Abdelkader	222
Abdelwaheb	241
Abdulah	220
Abdulla	226

```
#    Time      Action                                                                     Message                Duration / Fetch
180  13:33:55  SELECT    * FROM    employees ORDER BY hire_date DESC LIMIT 0, 1000         1000 row(s) returned   0.422 sec / 0.000 sec
181  13:44:22  select first_name, count(first_name) from employees group by first_name LIMIT 0, 1000   1000 row(s) returned   0.657 sec / 0.000 sec
182  13:46:13  SELECT    first_name, COUNT(first_name) FROM    employees GROUP BY first_name ord...   1000 row(s) returned   0.578 sec / 0.000 sec
```



```
ORDER BY hire_date DESC;

SELECT
    first_name, COUNT(first_name)
FROM
    employees
GROUP BY first_name
order by first_name DESC
;
```

first_name	COUNT(first_name)
Zvonko	258
Zsolt	236
Zorica	225
Zongyan	254
Ziyad	229
Ziya	207
Ziva	238
Zito	251

```
#    Time      Action                                                                            Message                Duration / Fetch
181  13:44:22  select first_name, count(first_name) from employees group by first_name LIMIT 0, 1000   1000 row(s) returned   0.657 sec / 0.000 sec
182  13:46:13  SELECT   first_name, COUNT(first_name) FROM   employees GROUP BY first_name ord...     1000 row(s) returned   0.578 sec / 0.000 sec
183  13:48:20  SELECT   first_name, COUNT(first_name) FROM   employees GROUP BY first_name ord...     1000 row(s) returned   0.765 sec / 0.000 sec
```

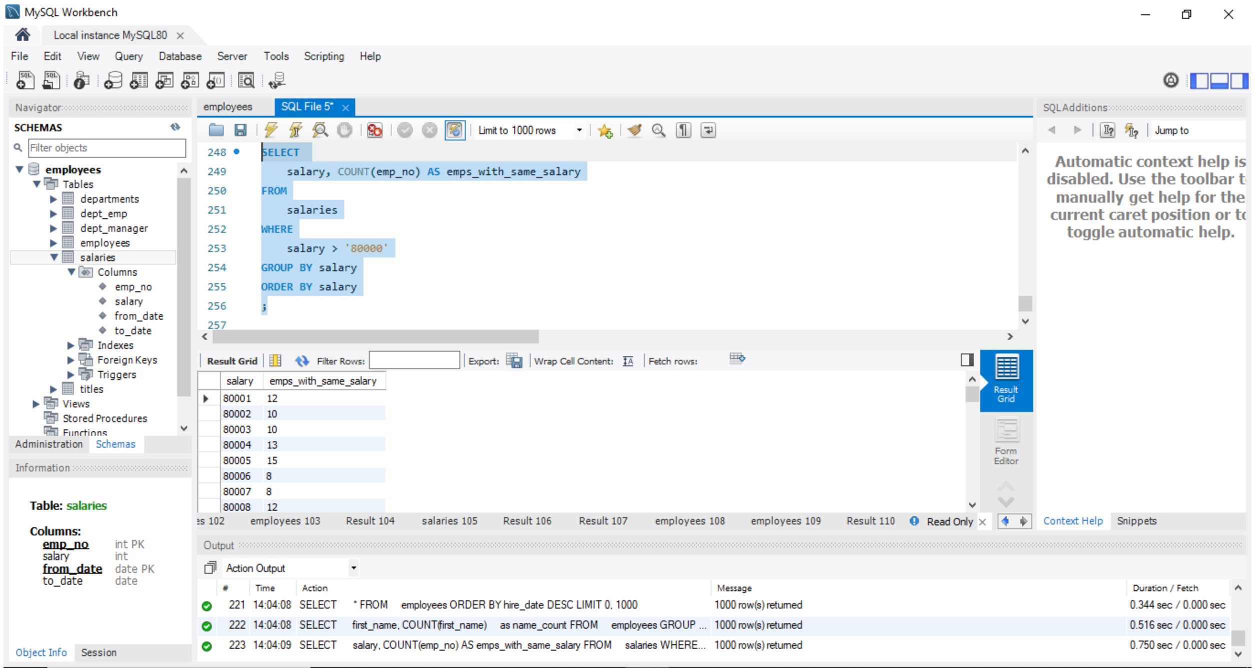
Automatic context help is disabled. Use the toolbar t manually get help for the current caret position or to toggle automatic help.

Schema: employees

Exercise:

Write a query that obtains two columns. The first column must contain annual salaries higher than 80,000 dollars. The second column, renamed to “emps_with_same_salary,” must show the number of employees contracted to that salary. Lastly, sort the output by the first column.

Solution:



```
SELECT
    salary, COUNT(emp_no) AS emps_with_same_salary
FROM
    salaries
WHERE
    salary > '80000'
GROUP BY salary
ORDER BY salary
;
```

salary	emps_with_same_salary
80001	12
80002	10
80003	10
80004	13
80005	15
80006	8
80007	8
80008	12

```
#    Time      Action                                                                          Message                Duration / Fetch
221  14:04:08  SELECT   * FROM   employees ORDER BY hire_date DESC LIMIT 0, 1000                 1000 row(s) returned   0.344 sec / 0.000 sec
222  14:04:08  SELECT   first_name, COUNT(first_name)   as name_count FROM   employees GROUP ...  1000 row(s) returned   0.516 sec / 0.000 sec
223  14:04:09  SELECT   salary, COUNT(emp_no) AS emps_with_same_salary FROM   salaries WHERE...    1000 row(s) returned   0.750 sec / 0.000 sec
```

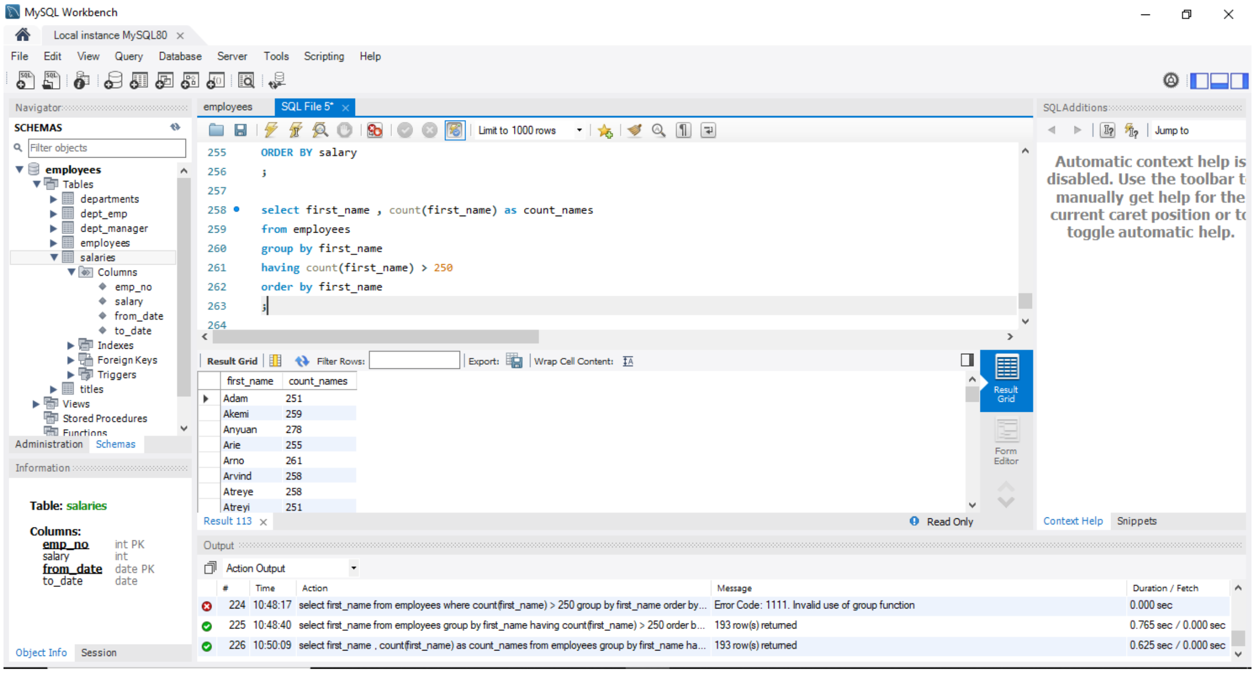
Automatic context help is disabled. Use the toolbar t manually get help for the current caret position or to toggle automatic help.

Table: salaries

Columns:

emp_no	int PK
salary	int
from_date	date PK
to_date	date

Extract all the first names that appear more than 250 times in the employees table.



```sql
ORDER BY salary
;

select first_name , count(first_name) as count_names
from employees
group by first_name
having count(first_name) > 250
order by first_name
;
```

first_name	count_names
Adam	251
Akemi	259
Anyuan	278
Arie	255
Arno	261
Arvind	258
Atreye	258
Atreyi	251

```
#    Time      Action                                                                                Message                                        Duration / Fetch
224  10:48:17  select first_name from employees where count(first_name) > 250 group by first_name order by...  Error Code: 1111. Invalid use of group function  0.000 sec
225  10:48:40  select first_name from employees group by first_name having count(first_name) > 250 order b...  193 row(s) returned                            0.765 sec / 0.000 sec
226  10:50:09  select first_name , count(first_name) as count_names from employees group by first_name ha...  193 row(s) returned                            0.625 sec / 0.000 sec
```

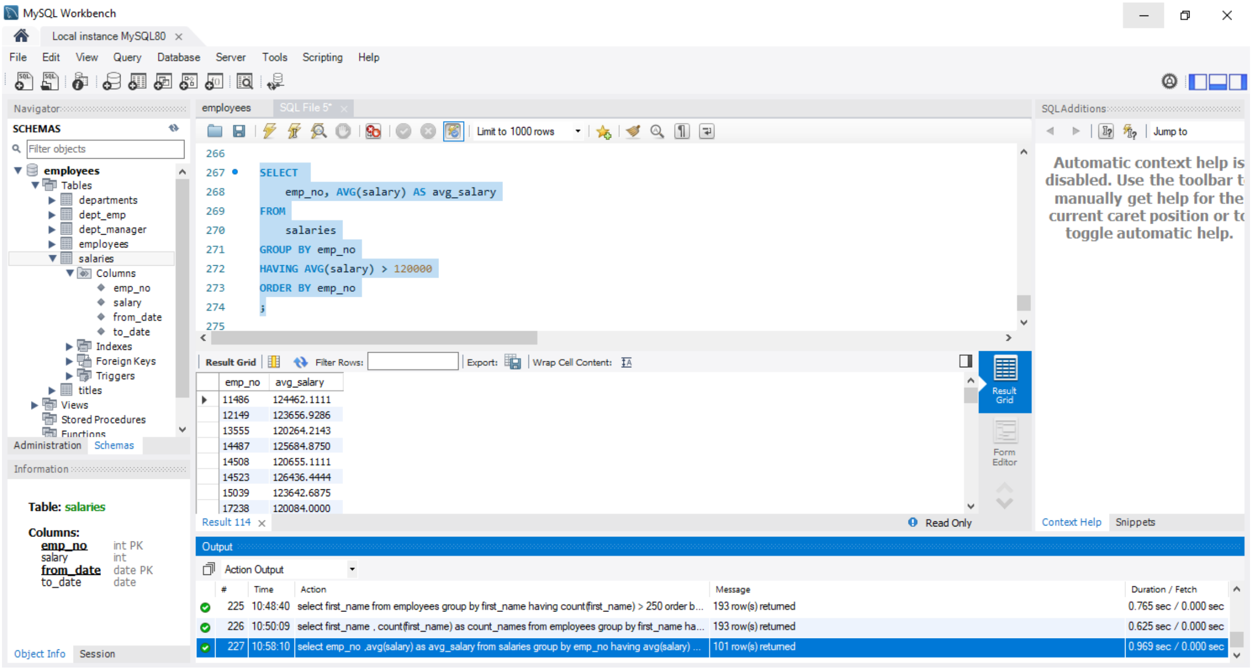
We got 193 rows whose first names appeared more than 250 times in the employees table.

Exercise:

Select all employees whose average salary is higher than $120,000 per annum.

Hint: You should obtain 101 records.

Solution:



```sql
SELECT
    emp_no, AVG(salary) AS avg_salary
FROM
    salaries
GROUP BY emp_no
HAVING AVG(salary) > 120000
ORDER BY emp_no
;
```

emp_no	avg_salary
11486	124462.1111
12149	123656.9286
13555	120264.2143
14487	125684.8750
14508	120655.1111
14523	126436.4444
15039	123642.6875
17238	120084.0000

```
#    Time      Action                                                                                Message               Duration / Fetch
225  10:48:40  select first_name from employees group by first_name having count(first_name) > 250 order b...  193 row(s) returned   0.765 sec / 0.000 sec
226  10:50:09  select first_name , count(first_name) as count_names from employees group by first_name ha...  193 row(s) returned   0.625 sec / 0.000 sec
227  10:58:10  select emp_no ,avg(salary) as avg_salary from salaries group by emp_no having avg(salary) ...    101 row(s) returned   0.969 sec / 0.000 sec
```

Now, the question is to extract the list of all the employees' names that appeared less than 200 times. However, let the data reveal the names of employees that were hired after 1st Jan 1999.

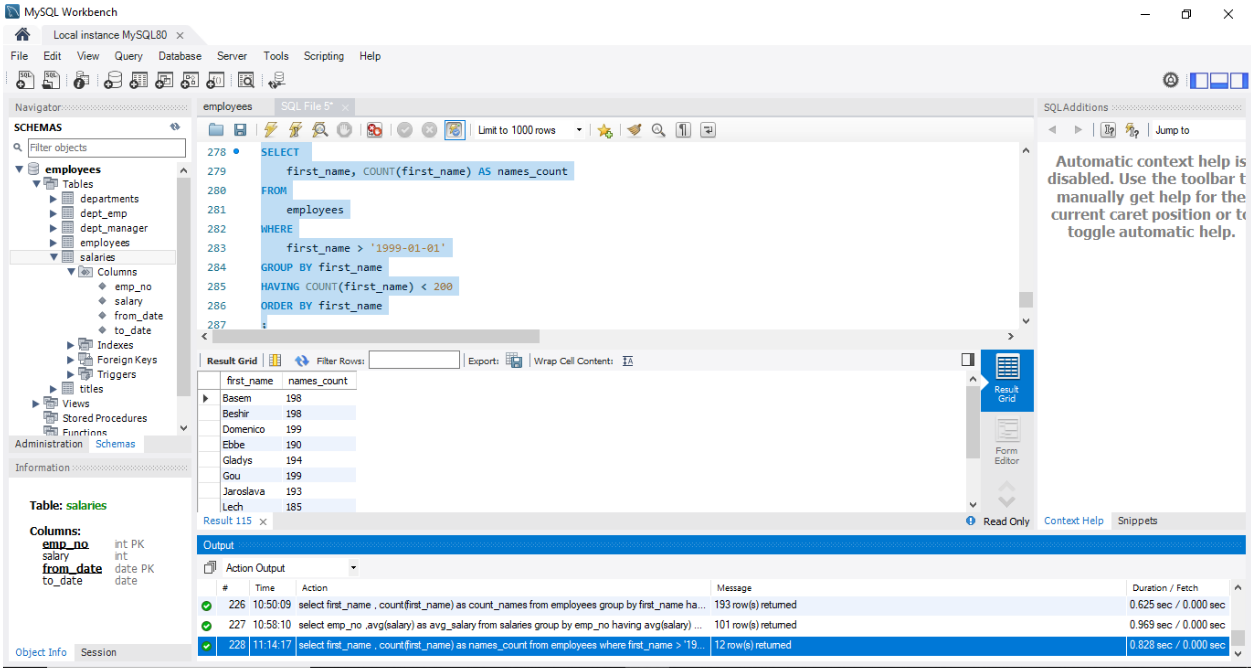


Table: salaries

Columns:

emp_no	int PK
salary	int
from_date	date PK
to_date	date

```
SELECT
    first_name, COUNT(first_name) AS names_count
FROM
    employees
WHERE
    first_name > '1999-01-01'
GROUP BY first_name
HAVING COUNT(first_name) < 200
ORDER BY first_name
;
```

first_name	names_count
Basem	198
Beshir	198
Domenico	199
Ebbe	190
Gladys	194
Gou	199
Jaroslava	193
Lech	185

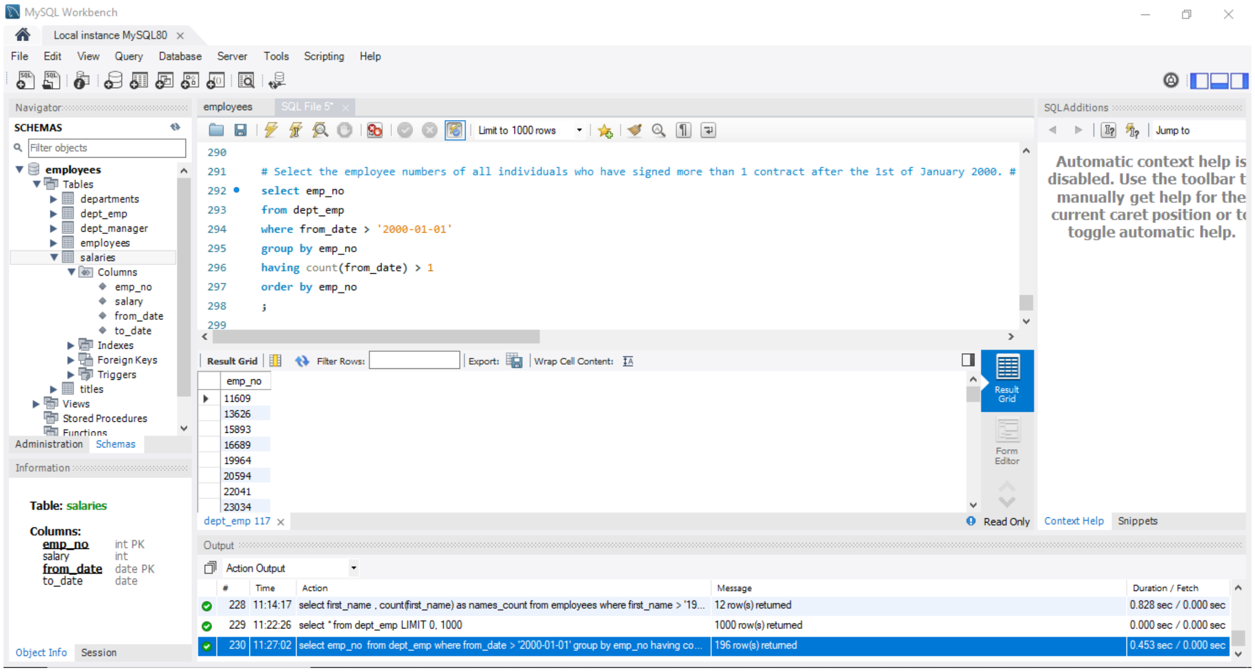
#	Time	Action	Message	Duration / Fetch
226	10:50:09	select first_name , count(first_name) as count_names from employees group by first_name ha...	193 row(s) returned	0.625 sec / 0.000 sec
227	10:58:10	select emp_no ,avg(salary) as avg_salary from salaries group by emp_no having avg(salary) ...	101 row(s) returned	0.969 sec / 0.000 sec
228	11:14:17	select first_name , count(first_name) as names_count from employees where first_name > '19...	12 row(s) returned	0.828 sec / 0.000 sec

Exercise:

Select the employee numbers of all individuals who have signed more than one contract after 1st Jan 2000.

Hint: To solve this exercise, use the "dept_emp" table.

Solution:



```
# Select the employee numbers of all individuals who have signed more than 1 contract after the 1st of January 2000. #
select emp_no
from dept_emp
where from_date > '2000-01-01'
group by emp_no
having count(from_date) > 1
order by emp_no
;
```

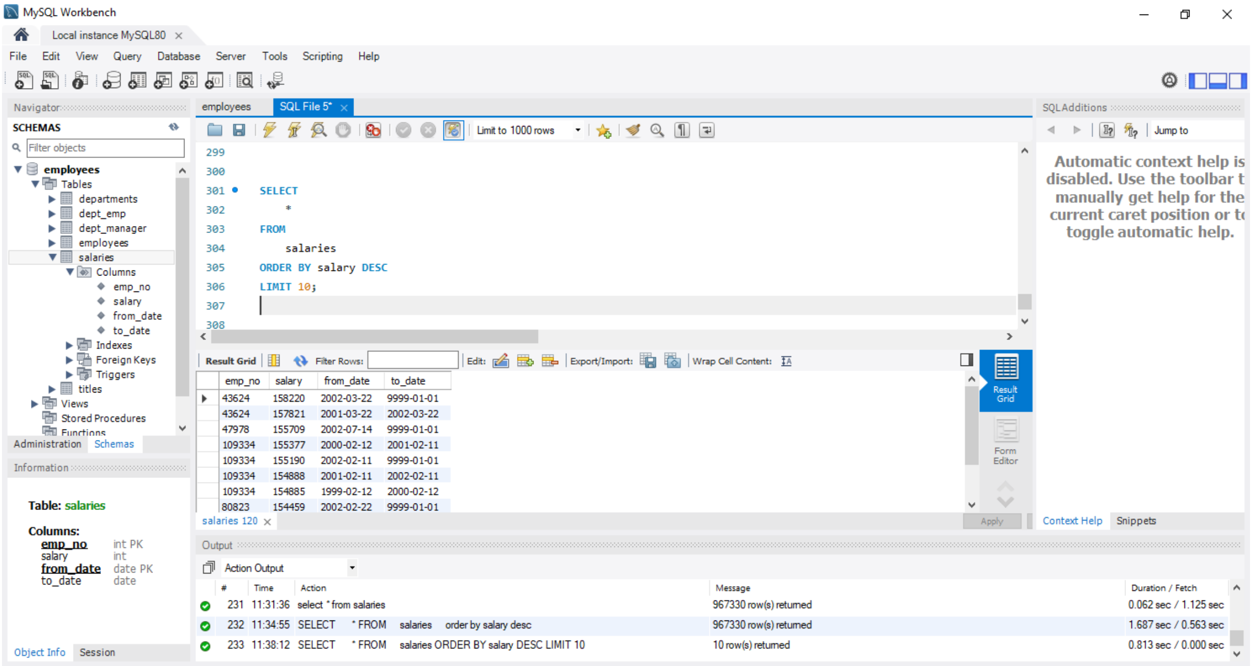
emp_no
11609
13626
15893
16689
19964
20594
22041
23034

Table: salaries

Columns:
emp_no int PK
salary int
from_date date PK
to_date date

```
#    Time      Action                                                                            Message                Duration / Fetch
228  11:14:17  select first_name , count(first_name) as names_count from employees where first_name > '19...  12 row(s) returned     0.828 sec / 0.000 sec
229  11:22:26  select * from dept_emp LIMIT 0, 1000                                              1000 row(s) returned   0.000 sec / 0.000 sec
230  11:27:02  select emp_no  from dept_emp where from_date > '2000-01-01' group by emp_no having co...  196 row(s) returned    0.453 sec / 0.000 sec
```

Our last question to be solved in the SELECT lecture is to display the employee numbers of the ten highest-paid employees in the dataset.



```
SELECT
    *
FROM
    salaries
ORDER BY salary DESC
LIMIT 10;
```

emp_no	salary	from_date	to_date
43624	158220	2002-03-22	9999-01-01
43624	157821	2001-03-22	2002-03-22
47978	155709	2002-07-14	9999-01-01
109334	155377	2000-02-12	2001-02-11
109334	155190	2002-02-11	9999-01-01
109334	154888	2001-02-11	2002-02-11
109334	154885	1999-02-12	2000-02-12
80823	154459	2002-02-22	9999-01-01

Table: salaries

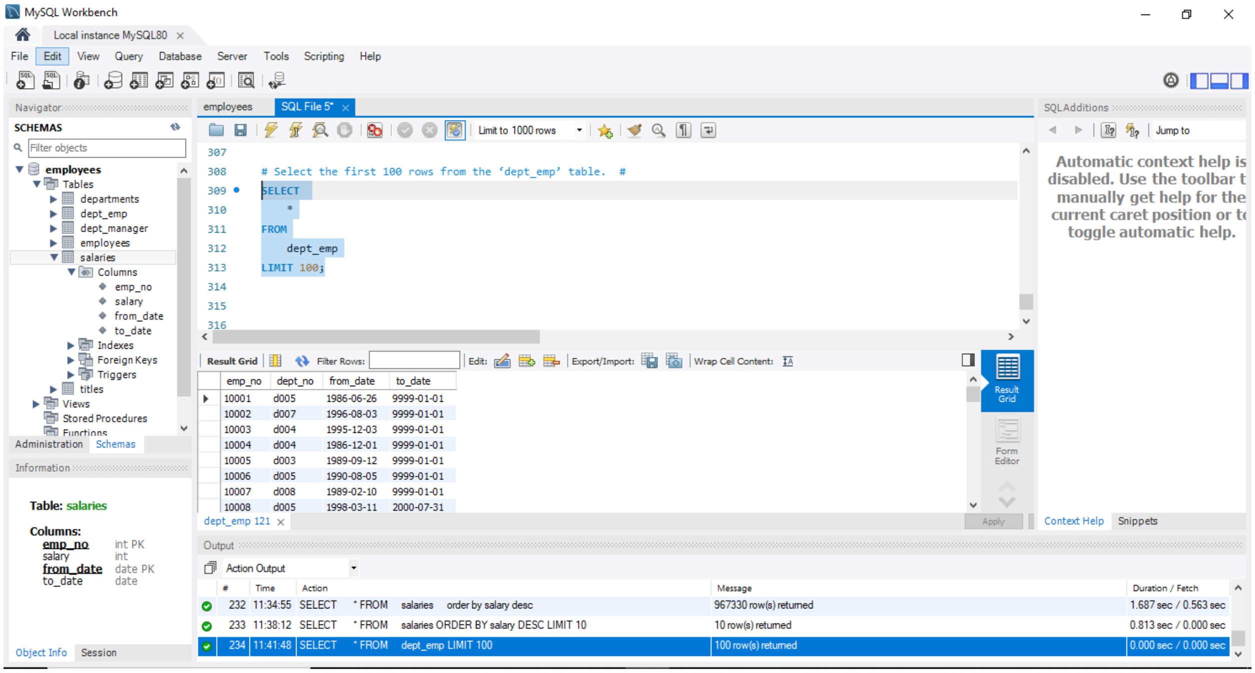
Columns:
emp_no int PK
salary int
from_date date PK
to_date date

```
#    Time      Action                                              Message                  Duration / Fetch
231  11:31:36  select * from salaries                              967330 row(s) returned   0.062 sec / 1.125 sec
232  11:34:55  SELECT    * FROM    salaries    order by salary desc  967330 row(s) returned   1.687 sec / 0.563 sec
233  11:38:12  SELECT    * FROM    salaries ORDER BY salary DESC LIMIT 10  10 row(s) returned   0.813 sec / 0.000 sec
```

Exercise:

Select the first 100 rows from the ‘dept_emp’ table.

Solution:



```
# Select the first 100 rows from the ‘dept_emp’ table.  #
SELECT
    *
FROM
    dept_emp
LIMIT 100;
```

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

emp_no	dept_no	from_date	to_date
10001	d005	1986-06-26	9999-01-01
10002	d007	1996-08-03	9999-01-01
10003	d004	1995-12-03	9999-01-01
10004	d004	1986-12-01	9999-01-01
10005	d003	1989-09-12	9999-01-01
10006	d005	1990-08-05	9999-01-01
10007	d008	1989-02-10	9999-01-01
10008	d005	1998-03-11	2000-07-31

Table: salaries

Columns:
emp_no int PK
salary int
from_date date PK
to_date date

#	Time	Action	Message	Duration / Fetch
232	11:34:55	SELECT * FROM salaries order by salary desc	967330 row(s) returned	1.687 sec / 0.563 sec
233	11:38:12	SELECT * FROM salaries ORDER BY salary DESC LIMIT 10	10 row(s) returned	0.813 sec / 0.000 sec
234	11:41:48	SELECT * FROM dept_emp LIMIT 100	100 row(s) returned	0.000 sec / 0.000 sec