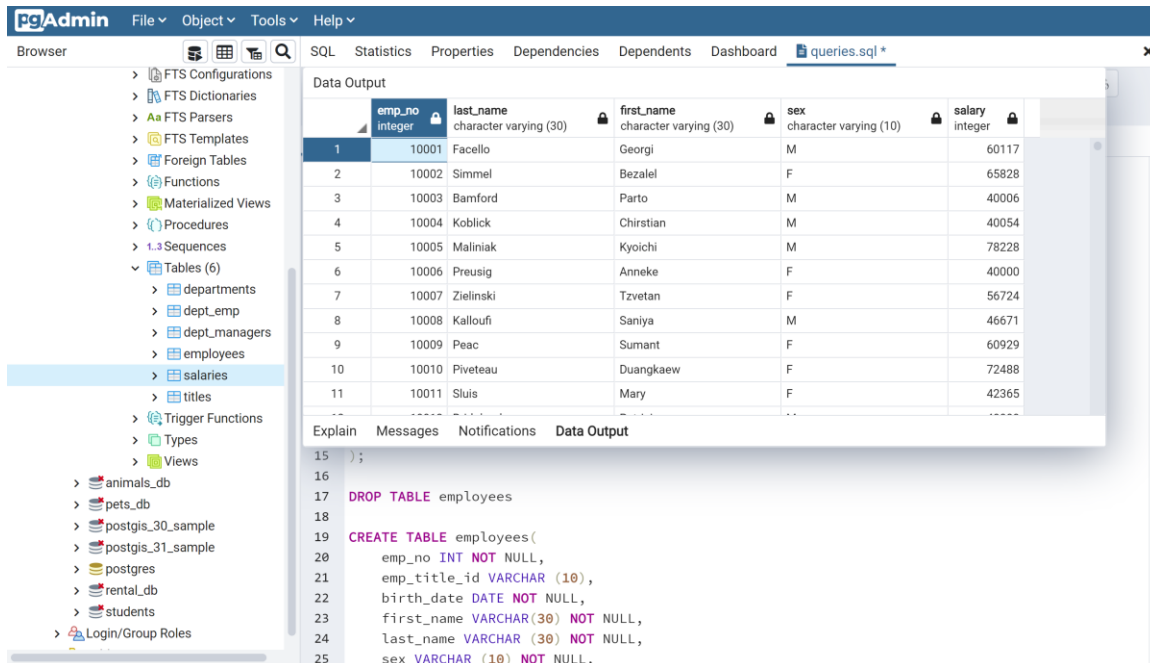


Data Analysis

Once you have a complete database, do the following:

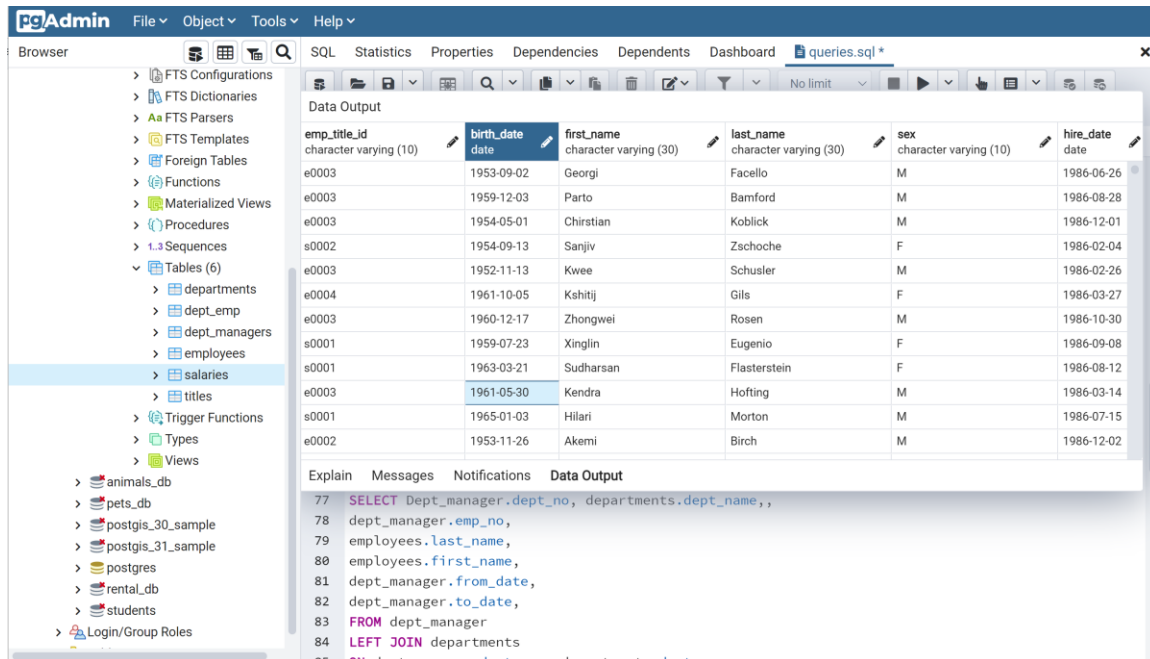
1. List the following details of each employee: employee number, last name, first name, sex, and salary.



The screenshot shows the pgAdmin interface with a query window titled 'queries.sql'. The query window displays a 'Data Output' table with the following columns: emp_no (integer), last_name (character varying (30)), first_name (character varying (30)), sex (character varying (10)), and salary (integer). The table contains 11 rows of employee data.

	emp_no	last_name	first_name	sex	salary
1	10001	Facello	Georgi	M	60117
2	10002	Simmel	Bezalel	F	65828
3	10003	Bamford	Parto	M	40006
4	10004	Koblick	Chirstian	M	40054
5	10005	Maliniak	Kyoichi	M	78228
6	10006	Preusig	Anneke	F	40000
7	10007	Zielinski	Tzvetan	F	56724
8	10008	Kalloufi	Saniya	M	46671
9	10009	Peac	Sumant	F	60929
10	10010	Piveteau	Duangkaew	F	72488
11	10011	Sluis	Mary	F	42365

2. List first name, last name, and hire date for employees who were hired in 1986.



The screenshot shows the pgAdmin interface with a query window titled 'queries.sql'. The query window displays a 'Data Output' table with the following columns: emp_title_id (character varying (10)), birth_date (date), first_name (character varying (30)), last_name (character varying (30)), sex (character varying (10)), and hire_date (date). The table contains 15 rows of employee data.

emp_title_id	birth_date	first_name	last_name	sex	hire_date
e0003	1953-09-02	Georgi	Facello	M	1986-06-26
e0003	1959-12-03	Parto	Bamford	M	1986-08-28
e0003	1954-05-01	Chirstian	Koblick	M	1986-12-01
s0002	1954-09-13	Sanjiv	Zschoche	F	1986-02-04
e0003	1952-11-13	Kwee	Schusler	M	1986-02-26
e0004	1961-10-05	Kshitij	Gils	F	1986-03-27
e0003	1960-12-17	Zhongwei	Rosen	M	1986-10-30
s0001	1959-07-23	Xinglin	Eugenio	F	1986-09-08
s0001	1963-03-21	Sudharsan	Flasterstein	F	1986-08-12
e0003	1961-05-30	Kendra	Hoffing	M	1986-03-14
s0001	1965-01-03	Hilari	Morton	M	1986-07-15
e0002	1953-11-26	Akemi	Birch	M	1986-12-02

3. List the manager of each department with the following information: department number, department name, the manager's employee number, last name, first name.

The screenshot shows the PgAdmin interface with a SQL query executed. The query is as follows:

```

87 ORDER BY emp_no;
88
89 --4. List department of each employee
90 SELECT
91 employees.emp_no,
92 employees.last_name,
93 employees.first_name,
94 dept_emp.dept_no,
95 departments.dept_name
96 FROM employees
97 INNER JOIN dept_emp ON employees.emp_no = dept_emp.emp_no

```

The Data Output table shows the following results:

dept_no	dept_name	emp_no	last_name	first_name
d001	Marketing	110022	Markovitch	Margareta
d001	Marketing	110039	Minakawa	Vishwani
d002	Finance	110085	Alpin	Ebru
d002	Finance	110114	Legleitner	Isamu
d003	Human Resources	110183	Ossenbruggen	Shirish
d003	Human Resources	110228	Sigstam	Karsten
d004	Production	110303	Wegerle	Krassimir
d004	Production	110344	Cools	Rosine
d004	Production	110386	Kieras	Shem
d004	Production	110420	Gharallia	Oscar

4. List the department of each employee with the following information: employee number, last name, first name, and department name.

The screenshot shows the PgAdmin interface with a SQL query executed. The query is as follows:

```

98 ORDER BY emp_no;
99
100 --5. List employees with first name "Hercules" and last name beginning with "B".
101 SELECT * FROM employees
102 WHERE first_name = 'Hercules' AND last_name like 'B%';
103
104 --6. List all employees in sales department
105
106 SELECT

```

The Data Output table shows the following results:

emp_no	last_name	first_name	dept_name
10001	Facello	Georgi	Development
10002	Simmel	Bezael	Sales
10003	Bamford	Parto	Production
10004	Koblick	Chirstian	Production
10005	Malniak	Kyoichi	Human Resources
10006	Preusig	Anneke	Development
10007	Zielinski	Tzvetan	Research
10008	Kalloufi	Saniya	Development
10009	Peac	Sumant	Quality Management
10010	Piveteau	Duangkaew	Production

5. List first name, last name, and sex for employees whose first name is "Hercules" and last names begin with "B."

SQL Query:

```

--5. List employees with first name "Hercules" and last name beginning with "B".
SELECT * FROM employees
WHERE first_name = 'Hercules' AND last_name like 'B%';

```

Data Output:

emp_no	emp_title_id	birth_date	first_name	last_name	sex
1	38161	1964-10-12	Hercules	Baer	M
2	276181	1957-10-17	Hercules	Biron	F
3	236650	1964-12-24	Hercules	Birge	F
4	482148	1954-04-05	Hercules	Berstel	F
5	210097	1954-08-27	Hercules	Bernatsky	M
6	213553	1961-08-14	Hercules	Bail	F
7	250175	1959-02-13	Hercules	Bodoff	M
8	461517	1963-07-20	Hercules	Benantar	F
9	89844	1954-03-01	Hercules	Basagni	M

6. List all employees in the Sales department, including their employee number, last name, first name, and department name.

SQL Query:

```

WHERE departments.dept_name = 'Sales'
--7. List all employees in the Sales and Development departments
SELECT
employees.emp_no,
employees.last_name,

```

Data Output:

emp_no	last_name	first_name	dept_no
1	Simmel	Bezalel	d007
2	Cappelletti	Kazuhiro	d007
3	Swan	Bader	d007
4	Lenart	Uri	d007
5	Dredge	Yinghua	d007
6	Zschoche	Sanjiv	d007
7	Billingsley	Breanna	d007
8	Herber	Tse	d007
9	Brattka	Charlene	d007
10	Eugenio	Xinglin	d007
11	Syrzycki	Jungsoo	d007
12	Flasterstein	Sudharsan	d007
13	Desikan	Sailaja	d007

7. List all employees in the Sales and Development departments, including their employee number, last name, first name, and department name.

SQL Homework/postgres@PostgreSQL 13

Data Output

emp_no	last_name	first_name	dept_no	dept_name
1	Facello	Georgi	d005	Development
2	Simmel	Bezalel	d007	Sales
3	Preusig	Anneke	d005	Development
4	Kalloufi	Saniya	d005	Development
5	Bridgland	Patricio	d005	Development
6	Genin	Berni	d005	Development
7	Cappelletti	Kazuhito	d007	Sales

```

119 SELECT
120 employees.emp_no,
121 employees.last_name,
122 employees.first_name,
123 dept_emp.dept_no,
124 departments.dept_name
125 FROM employees
126 LEFT JOIN dept_emp
127 ON employees.emp_no = dept_emp.emp_no
128 INNER JOIN departments
129 ON departments.dept_no = dept_emp.dept_no
130 WHERE departments.dept_name IN ('Sales', 'Development')

```

8. In descending order, list the frequency count of employee last names, i.e., how many employees share each last name.

SQL Homework/postgres@PostgreSQL 13

Data Output

last_name	name_count
Baba	226
Coorg	223
Gelosh	223
Farris	222
Sudbeck	222
Adachi	221
Osgood	220

```

124 departments.dept_name
125 FROM employees
126 LEFT JOIN dept_emp
127 ON employees.emp_no = dept_emp.emp_no
128 INNER JOIN departments
129 ON departments.dept_no = dept_emp.dept_no
130 WHERE departments.dept_name IN ('Sales', 'Development')
131
132 --8. List the count of employee last name
133 SELECT last_name, count(*) AS name_count
134 FROM employees
135 GROUP BY last_name
136 ORDER BY name_count DESC;

```

Bonus (Optional)

As you examine the data, you are overcome with a creeping suspicion that the dataset is fake. You surmise that your boss handed you spurious data in order to test the data engineering skills of a new employee. To confirm your hunch, you decide to take the following steps to generate a visualization of the data, with which you will confront your boss:

1. Import the SQL database into Pandas. (Yes, you could read the CSVs directly in Pandas, but you are, after all, trying to prove your technical mettle.) This step may require some research. Feel free to use the code below to get started. Be sure to make any necessary modifications for your username, password, host, port, and database name:

```
```sql
from sqlalchemy import create_engine
engine = create_engine('postgresql://localhost:5432/<your_db_name>')
connection = engine.connect()
```
```