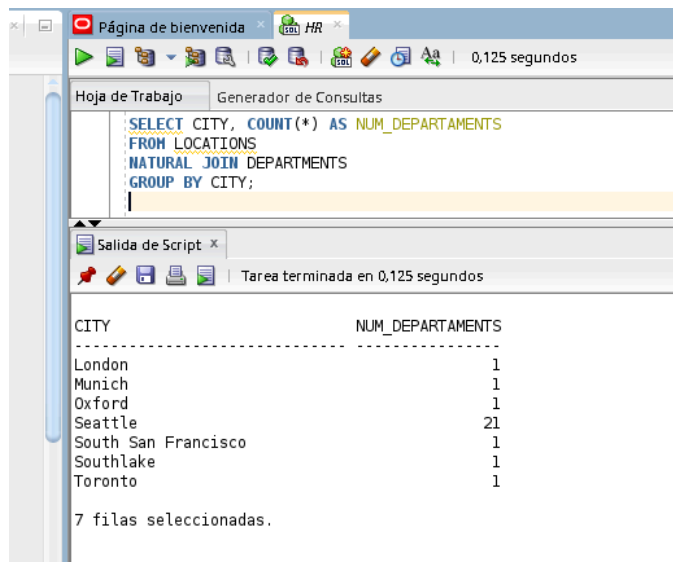


SELECT 4A PART 2

1. Versio amb NATURAL JOIN:

```
SELECT CITY, COUNT(*) AS NUM_DEPARTAMENTOS
FROM LOCATIONS
NATURAL JOIN DEPARTMENTS
GROUP BY CITY;
```



Salida de Script x

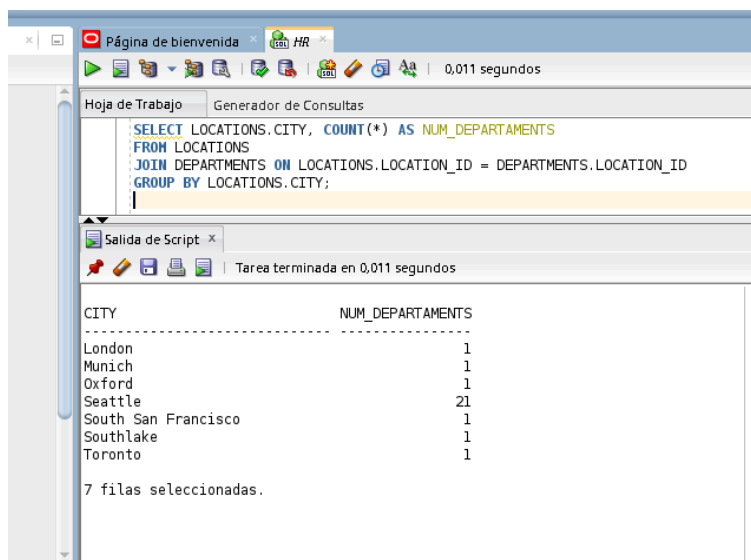
Tarea terminada en 0,125 segundos

CITY	NUM_DEPARTAMENTOS
London	1
Munich	1
Oxford	1
Seattle	21
South San Francisco	1
Southlake	1
Toronto	1

7 filas seleccionadas.

Versió amb JOIN explícit:

```
SELECT LOCATIONS.CITY, COUNT(*) AS NUM_DEPARTAMENTOS
FROM LOCATIONS
JOIN DEPARTMENTS ON LOCATIONS.LOCATION_ID = DEPARTMENTS.LOCATION_ID
GROUP BY LOCATIONS.CITY;
```



Salida de Script x

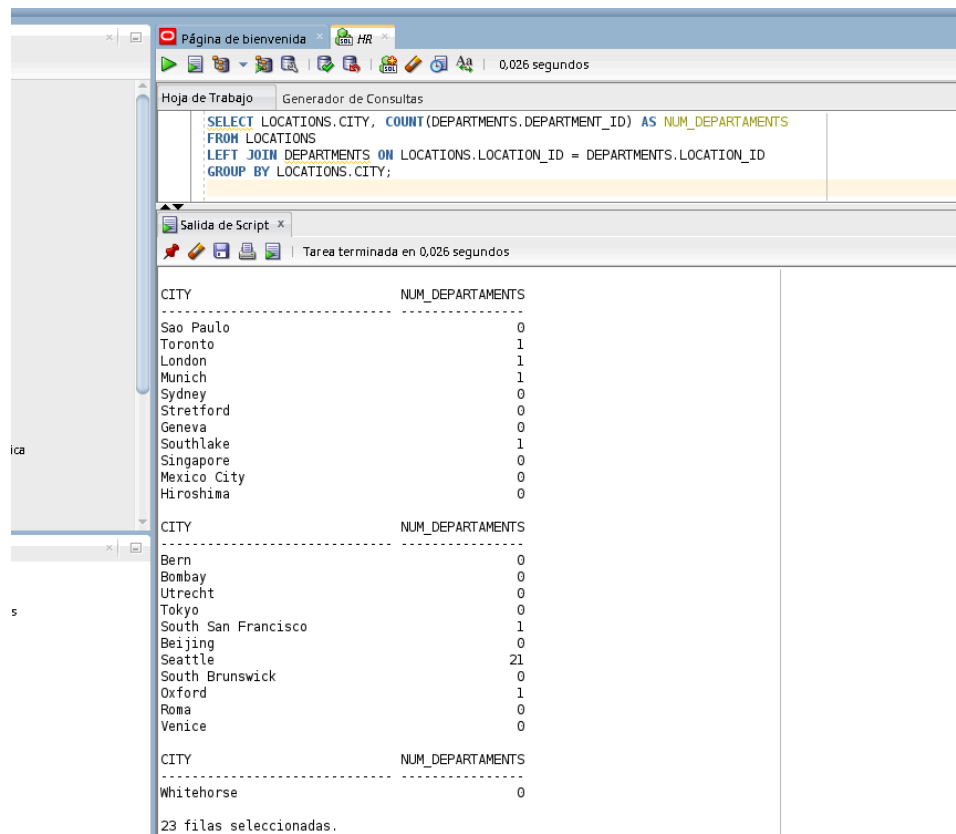
Tarea terminada en 0,011 segundos

CITY	NUM_DEPARTAMENTOS
London	1
Munich	1
Oxford	1
Seattle	21
South San Francisco	1
Southlake	1
Toronto	1

7 filas seleccionadas.

2. El NATURAL JOIN no permet unir amb un OUTER JOIN, així que no es pot aplicar

```
SELECT LOCATIONS.CITY, COUNT(DEPARTMENTS.DEPARTMENT_ID) AS
NUM_DEPARTMENTS
FROM LOCATIONS
LEFT JOIN DEPARTMENTS ON LOCATIONS.LOCATION_ID =
DEPARTMENTS.LOCATION_ID
GROUP BY LOCATIONS.CITY;
```



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0,026 segundos

```
SELECT LOCATIONS.CITY, COUNT(DEPARTMENTS.DEPARTMENT_ID) AS NUM_DEPARTMENTS
FROM LOCATIONS
LEFT JOIN DEPARTMENTS ON LOCATIONS.LOCATION_ID = DEPARTMENTS.LOCATION_ID
GROUP BY LOCATIONS.CITY;
```

Salida de Script x

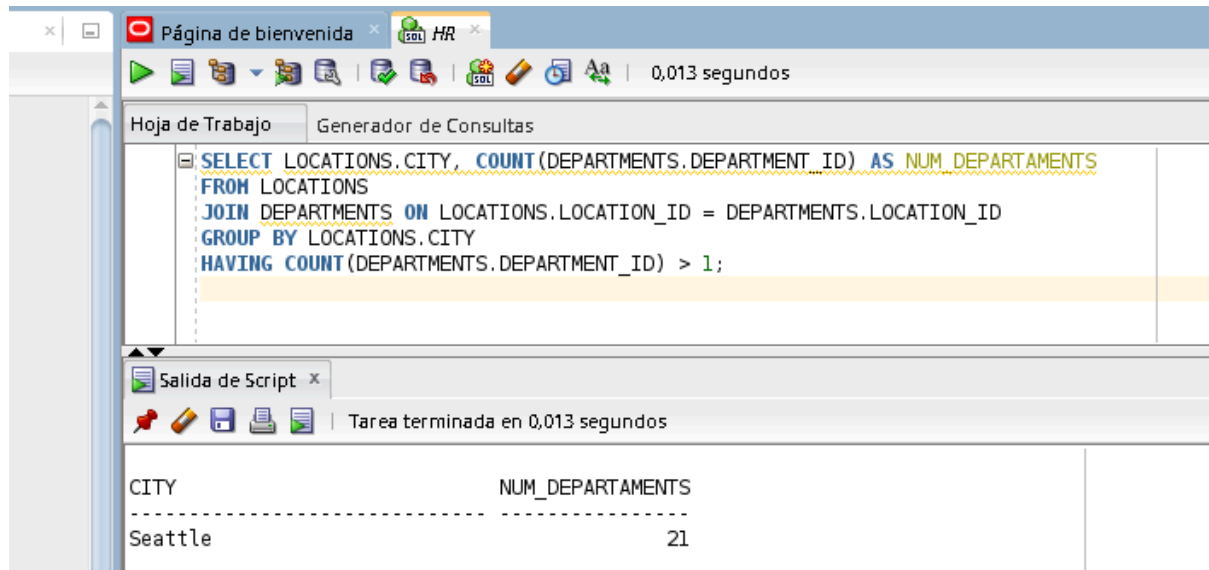
Tarea terminada en 0,026 segundos

CITY	NUM_DEPARTMENTS
Sao Paulo	0
Toronto	1
London	1
Munich	1
Sydney	0
Stretford	0
Geneva	0
Southlake	1
Singapore	0
Mexico City	0
Hiroshima	0
Bern	0
Bombay	0
Utrecht	0
Tokyo	0
South San Francisco	1
Beijing	0
Seattle	21
South Brunswick	0
Oxford	1
Roma	0
Venice	0
Whitehorse	0

23 filas seleccionadas.

3. No es pot utilitzar en aquest cas, ja que el NATURAL JOIN no permet aplicar directament una condició com `HAVING COUNT(*) > 1`

```
SELECT LOCATIONS.CITY, COUNT(DEPARTMENTS.DEPARTMENT_ID) AS
NUM_DEPARTAMENTS
FROM LOCATIONS
JOIN DEPARTMENTS ON LOCATIONS.LOCATION_ID = DEPARTMENTS.LOCATION_ID
GROUP BY LOCATIONS.CITY
HAVING COUNT(DEPARTMENTS.DEPARTMENT_ID) > 1;
```



The screenshot shows a SQL query editor window with the following content:

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```
SELECT LOCATIONS.CITY, COUNT(DEPARTMENTS.DEPARTMENT_ID) AS NUM_DEPARTAMENTS
FROM LOCATIONS
JOIN DEPARTMENTS ON LOCATIONS.LOCATION_ID = DEPARTMENTS.LOCATION_ID
GROUP BY LOCATIONS.CITY
HAVING COUNT(DEPARTMENTS.DEPARTMENT_ID) > 1;
```

Salida de Script | Tarea terminada en 0,013 segundos

CITY	NUM_DEPARTAMENTS
Seattle	21

4. Com que cal manipular dades agregades el NATURAL JOIN no és la millor opció, ja que limita la flexibilitat en els càlculs.

```

SELECT
  DEPARTMENTS.DEPARTMENT_NAME,
  COUNTRIES.COUNTRY_NAME,
  COUNT(EMPLOYEES.EMPLOYEE_ID) AS NUM_EMPLEATS,
  SUM(EMPLOYEES.SALARY) AS SUMA_SALARIS,
  AVG(EMPLOYEES.SALARY) AS MITJA_SALARIS
FROM DEPARTMENTS
JOIN LOCATIONS ON DEPARTMENTS.LOCATION_ID = LOCATIONS.LOCATION_ID
JOIN COUNTRIES ON LOCATIONS.COUNTRY_ID = COUNTRIES.COUNTRY_ID
LEFT JOIN EMPLOYEES ON DEPARTMENTS.DEPARTMENT_ID =
EMPLOYEES.DEPARTMENT_ID
GROUP BY DEPARTMENTS.DEPARTMENT_NAME, COUNTRIES.COUNTRY_NAME
ORDER BY COUNTRIES.COUNTRY_NAME ASC, MITJA_SALARIS DESC;

```

0.039 segundos

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```

SELECT
  DEPARTMENTS.DEPARTMENT_NAME,
  COUNTRIES.COUNTRY_NAME,
  COUNT(EMPLOYEES.EMPLOYEE_ID) AS NUM_EMPLEATS,
  SUM(EMPLOYEES.SALARY) AS SUMA_SALARIS,
  AVG(EMPLOYEES.SALARY) AS MITJA_SALARIS
FROM DEPARTMENTS
JOIN LOCATIONS ON DEPARTMENTS.LOCATION_ID = LOCATIONS.LOCATION_ID
JOIN COUNTRIES ON LOCATIONS.COUNTRY_ID = COUNTRIES.COUNTRY_ID
LEFT JOIN EMPLOYEES ON DEPARTMENTS.DEPARTMENT_ID = EMPLOYEES.DEPARTMENT_ID
GROUP BY DEPARTMENTS.DEPARTMENT_NAME, COUNTRIES.COUNTRY_NAME
ORDER BY COUNTRIES.COUNTRY_NAME ASC, MITJA_SALARIS DESC;

```

Tarea terminada en 0.039 segundos

DEPARTMENT_NAME	COUNTRY_NAME	NUM_EMPLEATS	SUMA_SALARIS	MITJA_SALARIS
Marketing	Canada	2	19000	9500
Public Relations	Germany	1	10000	10000
Sales	United Kingdom	34	304500	8955,88235
Human Resources	United Kingdom	1	6500	6500
Government Sales	United States of America	0		
Contracting	United States of America	0		
Corporate Tax	United States of America	0		
Benefits	United States of America	0		
Manufacturing	United States of America	0		
Shareholder Services	United States of America	0		
NOC	United States of America	0		
Control And Credit	United States of America	0		
Payroll	United States of America	0		
Recruiting	United States of America	0		
Operations	United States of America	0		
Retail Sales	United States of America	0		
Construction	United States of America	0		
IT Helpdesk	United States of America	0		
Treasury	United States of America	0		
IT Support	United States of America	0		
Executive	United States of America	3	58000	19333,3333
Accounting	United States of America	2	20308	10154
Finance	United States of America	6	51608	8601,33333
IT	United States of America	5	28800	5760
Administration	United States of America	1	4400	4400
Purchasing	United States of America	6	24900	4150
Shipping	United States of America	45	156400	3475,55556

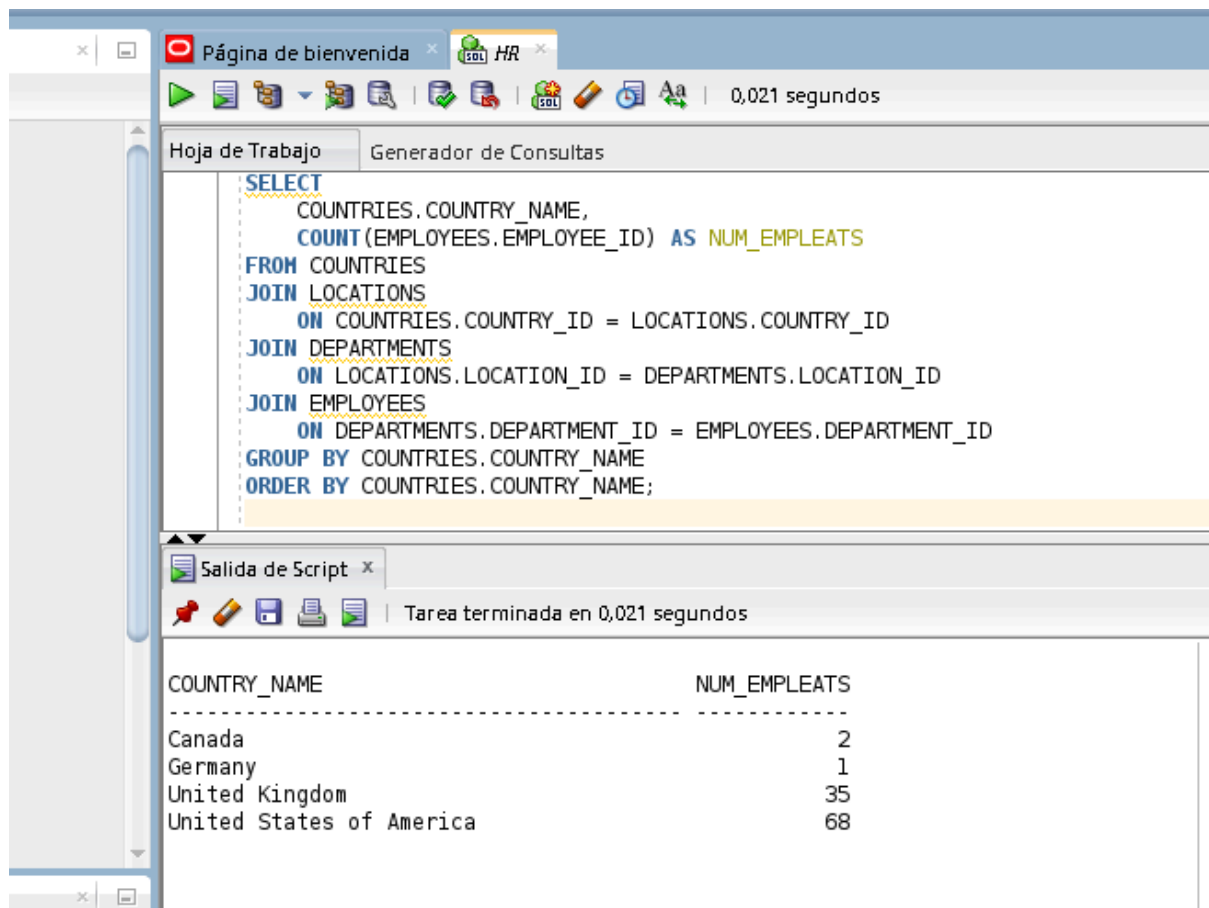
27 filas seleccionadas.

5. Sense natural Join:

```

SELECT
  COUNTRIES.COUNTRY_NAME,
  COUNT(EMPLOYEES.EMPLOYEE_ID) AS NUM_EMPLEATS
FROM COUNTRIES
JOIN LOCATIONS
  ON COUNTRIES.COUNTRY_ID = LOCATIONS.COUNTRY_ID
JOIN DEPARTMENTS
  ON LOCATIONS.LOCATION_ID = DEPARTMENTS.LOCATION_ID
JOIN EMPLOYEES
  ON DEPARTMENTS.DEPARTMENT_ID = EMPLOYEES.DEPARTMENT_ID
GROUP BY COUNTRIES.COUNTRY_NAME
ORDER BY COUNTRIES.COUNTRY_NAME;

```



The screenshot shows a SQL IDE window with a query editor and a results pane. The query in the editor is the same as the one in the previous block. The results pane shows the output of the query, which is a table with two columns: COUNTRY_NAME and NUM_EMPLEATS. The data is as follows:

COUNTRY_NAME	NUM_EMPLEATS
Canada	2
Germany	1
United Kingdom	35
United States of America	68

Amb NATURAL JOIN:

```
SELECT
  COUNTRIES.COUNTRY_NAME,
  COUNT(EMPLOYEES.EMPLOYEE_ID) AS NUM_EMPLEATS
FROM COUNTRIES
NATURAL JOIN LOCATIONS
NATURAL JOIN DEPARTMENTS
JOIN EMPLOYEES USING (DEPARTMENT_ID)
GROUP BY COUNTRIES.COUNTRY_NAME
ORDER BY COUNTRIES.COUNTRY_NAME;
```

The screenshot shows the Oracle SQL Developer interface. The top toolbar includes icons for running, saving, and other database operations, along with a timer showing 0,024 segundos. The main window is titled 'Hoja de Trabajo' and 'Generador de Consultas'. The SQL editor contains the following query:

```
SELECT
  COUNTRIES.COUNTRY_NAME,
  COUNT(EMPLOYEES.EMPLOYEE_ID) AS NUM_EMPLEATS
FROM COUNTRIES
NATURAL JOIN LOCATIONS
NATURAL JOIN DEPARTMENTS
JOIN EMPLOYEES USING (DEPARTMENT_ID)
GROUP BY COUNTRIES.COUNTRY_NAME
ORDER BY COUNTRIES.COUNTRY_NAME;
```

Below the editor, the 'Salida de Script' window shows the execution results. The task was completed in 0,024 segundos. The results are displayed in a table with two columns: COUNTRY_NAME and NUM_EMPLEATS.

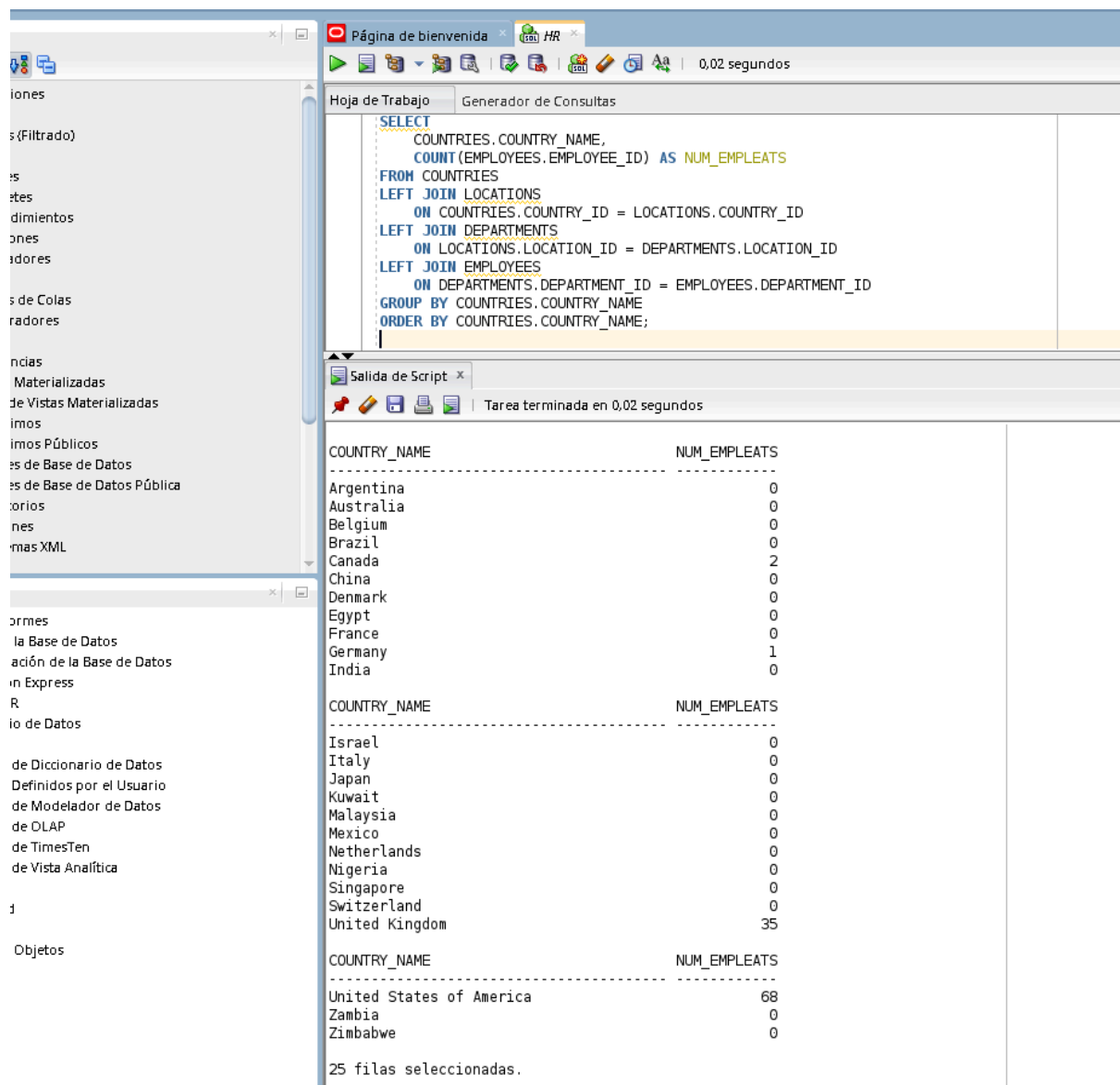
COUNTRY_NAME	NUM_EMPLEATS
Canada	2
Germany	1
United Kingdom	35
United States of America	68

7. Sense NATURAL JOIN

```

SELECT
  COUNTRIES.COUNTRY_NAME,
  COUNT(EMPLOYEES.EMPLOYEE_ID) AS NUM_EMPLEATS
FROM COUNTRIES
LEFT JOIN LOCATIONS
  ON COUNTRIES.COUNTRY_ID = LOCATIONS.COUNTRY_ID
LEFT JOIN DEPARTMENTS
  ON LOCATIONS.LOCATION_ID = DEPARTMENTS.LOCATION_ID
LEFT JOIN EMPLOYEES
  ON DEPARTMENTS.DEPARTMENT_ID = EMPLOYEES.DEPARTMENT_ID
GROUP BY COUNTRIES.COUNTRY_NAME
ORDER BY COUNTRIES.COUNTRY_NAME;

```



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```

SELECT
  COUNTRIES.COUNTRY_NAME,
  COUNT(EMPLOYEES.EMPLOYEE_ID) AS NUM_EMPLEATS
FROM COUNTRIES
LEFT JOIN LOCATIONS
  ON COUNTRIES.COUNTRY_ID = LOCATIONS.COUNTRY_ID
LEFT JOIN DEPARTMENTS
  ON LOCATIONS.LOCATION_ID = DEPARTMENTS.LOCATION_ID
LEFT JOIN EMPLOYEES
  ON DEPARTMENTS.DEPARTMENT_ID = EMPLOYEES.DEPARTMENT_ID
GROUP BY COUNTRIES.COUNTRY_NAME
ORDER BY COUNTRIES.COUNTRY_NAME;

```

Salida de Script x

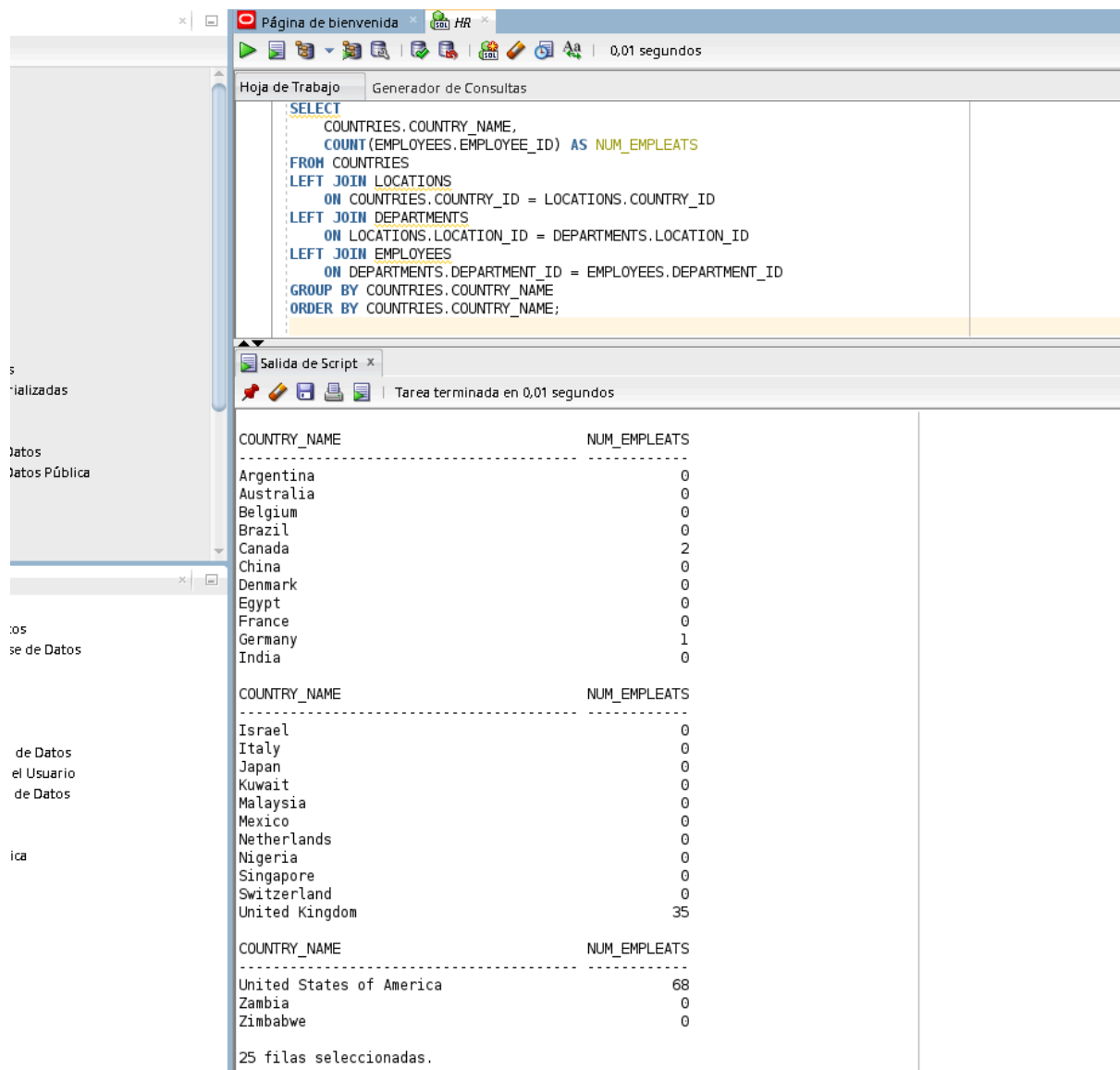
Tarea terminada en 0,02 segundos

COUNTRY_NAME	NUM_EMPLEATS
Argentina	0
Australia	0
Belgium	0
Brazil	0
Canada	2
China	0
Denmark	0
Egypt	0
France	0
Germany	1
India	0
Israel	0
Italy	0
Japan	0
Kuwait	0
Malaysia	0
Mexico	0
Netherlands	0
Nigeria	0
Singapore	0
Switzerland	0
United Kingdom	35
United States of America	68
Zambia	0
Zimbabwe	0

25 filas seleccionadas.

Amb NATURAL JOIN:

```
SELECT
    COUNTRIES.COUNTRY_NAME,
    COUNT(EMPLOYEES.EMPLOYEE_ID) AS NUM_EMPLEATS
FROM COUNTRIES
LEFT JOIN LOCATIONS
    ON COUNTRIES.COUNTRY_ID = LOCATIONS.COUNTRY_ID
LEFT JOIN DEPARTMENTS
    ON LOCATIONS.LOCATION_ID = DEPARTMENTS.LOCATION_ID
LEFT JOIN EMPLOYEES
    ON DEPARTMENTS.DEPARTMENT_ID = EMPLOYEES.DEPARTMENT_ID
GROUP BY COUNTRIES.COUNTRY_NAME
ORDER BY COUNTRIES.COUNTRY_NAME;
```



Hoja de Trabajo | Generador de Consultas

```
SELECT
    COUNTRIES.COUNTRY_NAME,
    COUNT(EMPLOYEES.EMPLOYEE_ID) AS NUM_EMPLEATS
FROM COUNTRIES
LEFT JOIN LOCATIONS
    ON COUNTRIES.COUNTRY_ID = LOCATIONS.COUNTRY_ID
LEFT JOIN DEPARTMENTS
    ON LOCATIONS.LOCATION_ID = DEPARTMENTS.LOCATION_ID
LEFT JOIN EMPLOYEES
    ON DEPARTMENTS.DEPARTMENT_ID = EMPLOYEES.DEPARTMENT_ID
GROUP BY COUNTRIES.COUNTRY_NAME
ORDER BY COUNTRIES.COUNTRY_NAME;
```

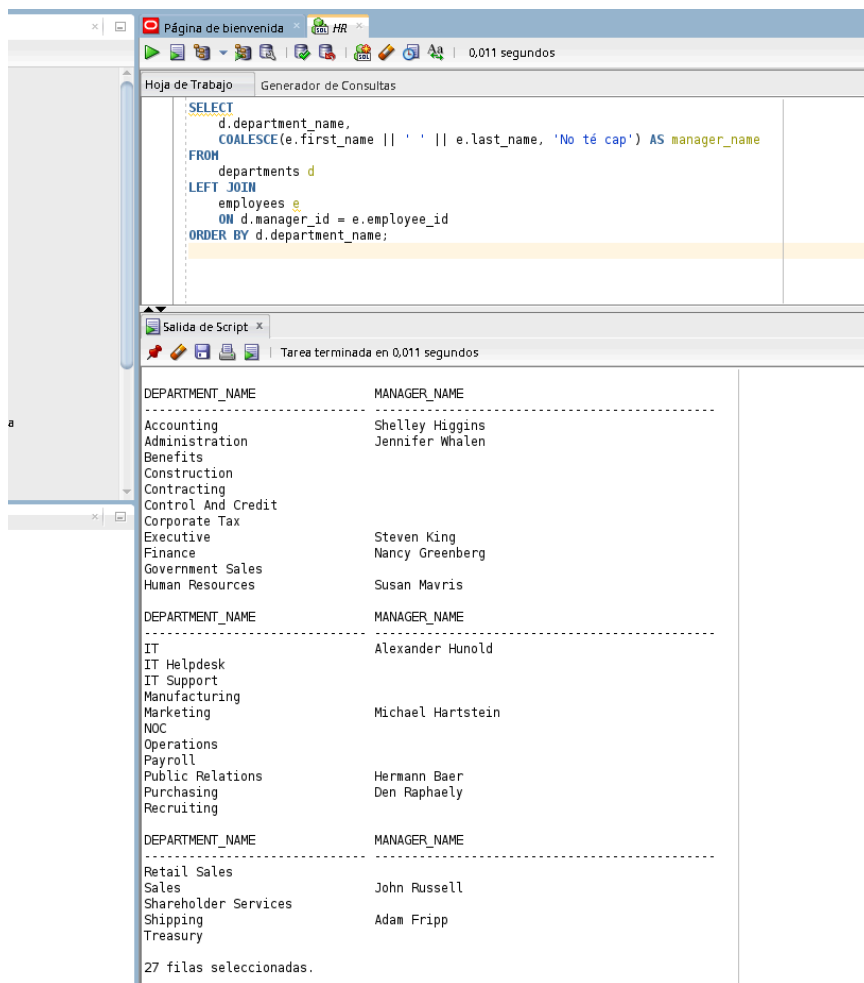
Salida de Script | Tarea terminada en 0,01 segundos

COUNTRY_NAME	NUM_EMPLEATS
Argentina	0
Australia	0
Belgium	0
Brazil	0
Canada	2
China	0
Denmark	0
Egypt	0
France	0
Germany	1
India	0
Israel	0
Italy	0
Japan	0
Kuwait	0
Malaysia	0
Mexico	0
Netherlands	0
Nigeria	0
Singapore	0
Switzerland	0
United Kingdom	35
United States of America	68
Zambia	0
Zimbabwe	0

25 filas seleccionadas.

10. Amb NATURAL JOIN:

```
SELECT
    d.department_name,
    COALESCE(e.first_name || ' ' || e.last_name, 'No té cap') AS manager_name
FROM
    departments d
LEFT JOIN
    employees e
    ON d.manager_id = e.employee_id
ORDER BY d.department_name;
```



The screenshot shows a database query tool interface. The top pane displays the SQL query, and the bottom pane shows the results of the query. The query is a LEFT JOIN between the departments and employees tables, ordered by department name. The results show 27 rows, with the manager's name for each department.

DEPARTMENT_NAME	MANAGER_NAME
Accounting	Shelley Higgins
Administration	Jennifer Whalen
Benefits	
Construction	
Contracting	
Control And Credit	
Corporate Tax	
Executive	Steven King
Finance	Nancy Greenberg
Government Sales	
Human Resources	Susan Mavris
IT	Alexander Hunold
IT Helpdesk	
IT Support	
Manufacturing	
Marketing	Michael Hartstein
NOC	
Operations	
Payroll	
Public Relations	Hermann Baer
Purchasing	Den Raphaely
Recruiting	
Retail Sales	
Sales	John Russell
Shareholder Services	
Shipping	Adam Fripp
Treasury	

27 filas seleccionadas.

Sense NATURAL JOIN:

```

SELECT
    d.department_name,
    COALESCE(e.first_name || ' ' || e.last_name, 'No té cap') AS manager_name
FROM
    departments d
LEFT JOIN
    employees e
    ON d.manager_id = e.employee_id
ORDER BY d.department_name;

```

The screenshot shows the Oracle SQL Developer interface. The top window is titled 'Página de bienvenida' and 'HR'. Below it, the 'Hoja de Trabajo' (Worksheet) tab is active, displaying the following SQL query:

```

SELECT
    d.department_name,
    COALESCE(e.first_name || ' ' || e.last_name, 'No té cap') AS manager_name
FROM
    departments d
LEFT JOIN
    employees e
    ON d.manager_id = e.employee_id
ORDER BY d.department_name;

```

Below the query editor, the 'Salida de Script' (Script Output) window shows the execution results. The task was completed in 0.009 seconds. The results are displayed in a table with two columns: DEPARTMENT_NAME and MANAGER_NAME. The table contains 27 rows of data, grouped by department. The departments listed are: Accounting, Administration, Benefits, Construction, Contracting, Control And Credit, Corporate Tax, Executive, Finance, Government Sales, Human Resources, IT, IT Helpdesk, IT Support, Manufacturing, Marketing, NOC, Operations, Payroll, Public Relations, Purchasing, Recruiting, Retail Sales, Sales, Shareholder Services, Shipping, and Treasury.

DEPARTMENT_NAME	MANAGER_NAME
Accounting	Shelley Higgins
Administration	Jennifer Whalen
Benefits	
Construction	
Contracting	
Control And Credit	
Corporate Tax	
Executive	Steven King
Finance	Nancy Greenberg
Government Sales	
Human Resources	Susan Mavris
IT	Alexander Hunold
IT Helpdesk	
IT Support	
Manufacturing	
Marketing	Michael Hartstein
NOC	
Operations	
Payroll	
Public Relations	Hermann Baer
Purchasing	Den Raphaely
Recruiting	
Retail Sales	
Sales	John Russell
Shareholder Services	
Shipping	Adam Fripp
Treasury	

27 filas seleccionadas.