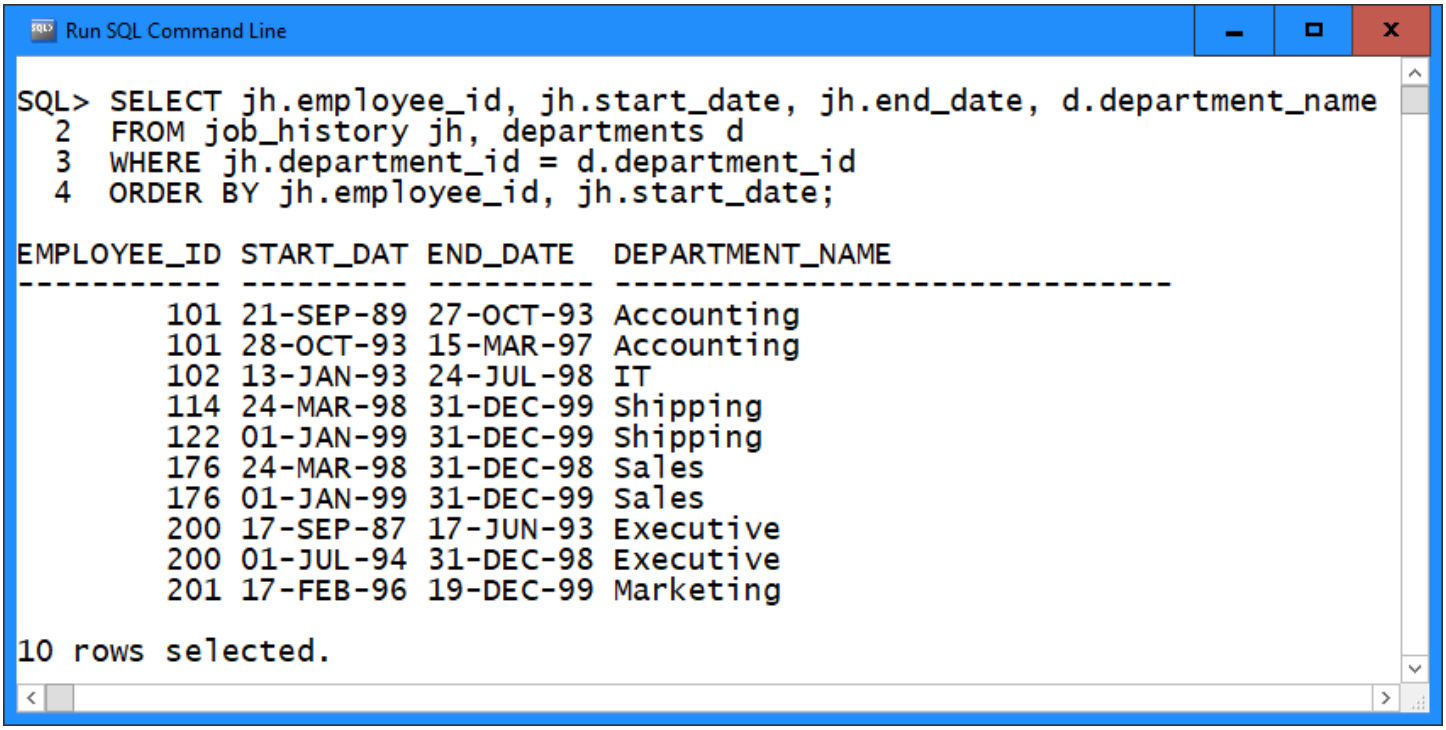
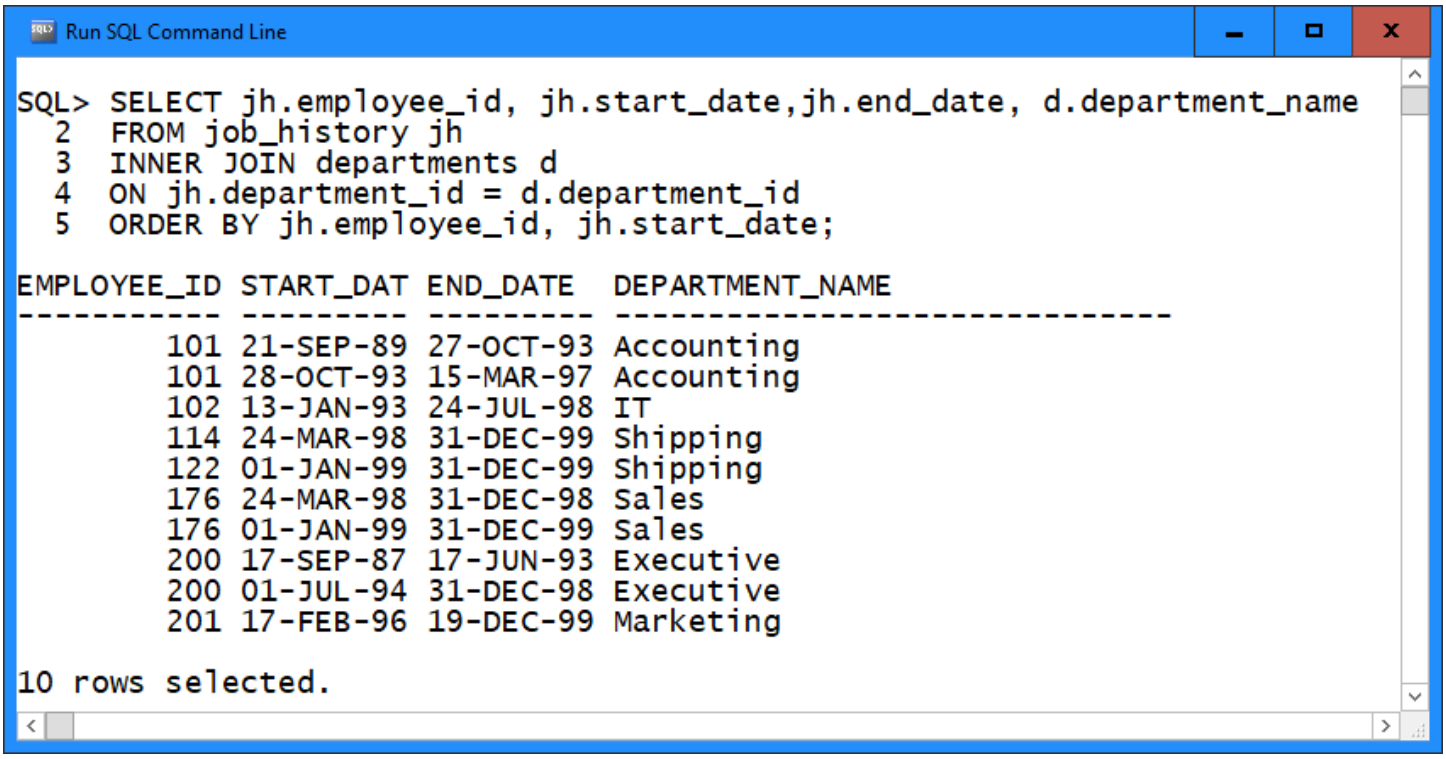
Problem 1:

```
SELECT jh.employee_id, jh.start_date, jh.end_date, d.department_name
FROM job_history jh, departments d
WHERE jh.department_id = d.department_id
ORDER BY jh.employee_id, jh.start_date;
```



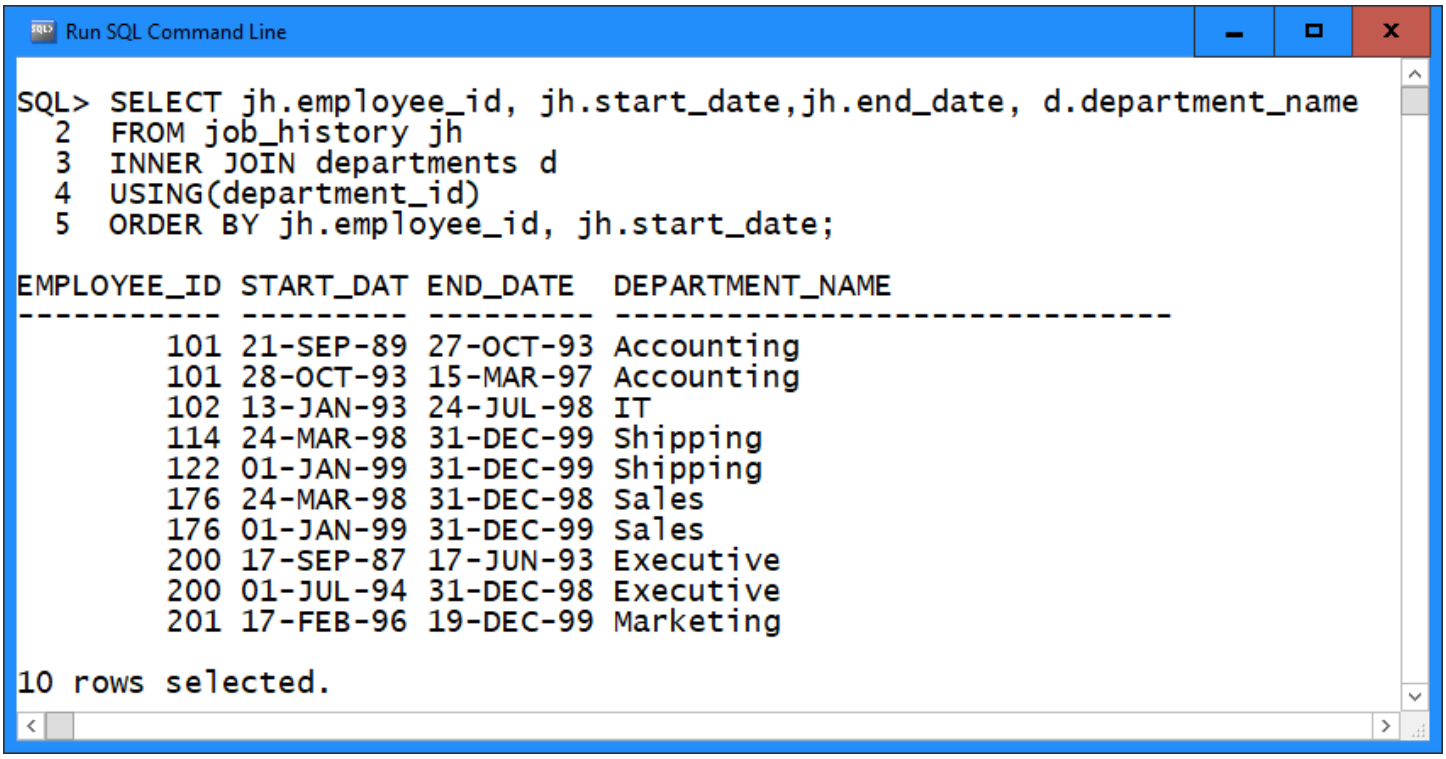
Problem 2:

```
SELECT jh.employee_id, jh.start_date,jh.end_date, d.department_name
FROM job_history jh
INNER JOIN departments d
ON jh.department_id = d.department_id
ORDER BY jh.employee_id, jh.start_date;
```

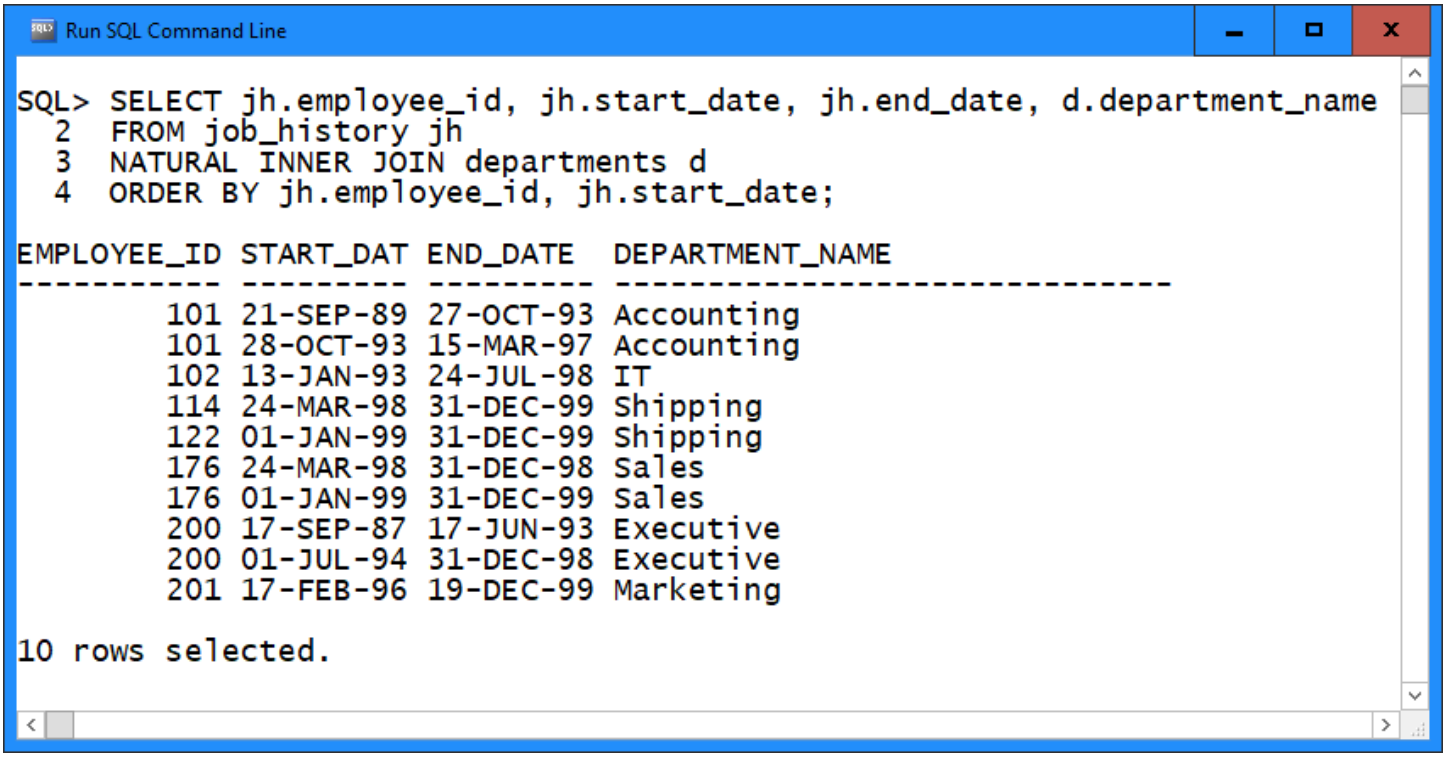


Problem 3:

```
SELECT jh.employee_id, jh.start_date,jh.end_date, d.department_name
FROM job_history jh
INNER JOIN departments d
USING(department_id)
ORDER BY jh.employee_id, jh.start_date;
```

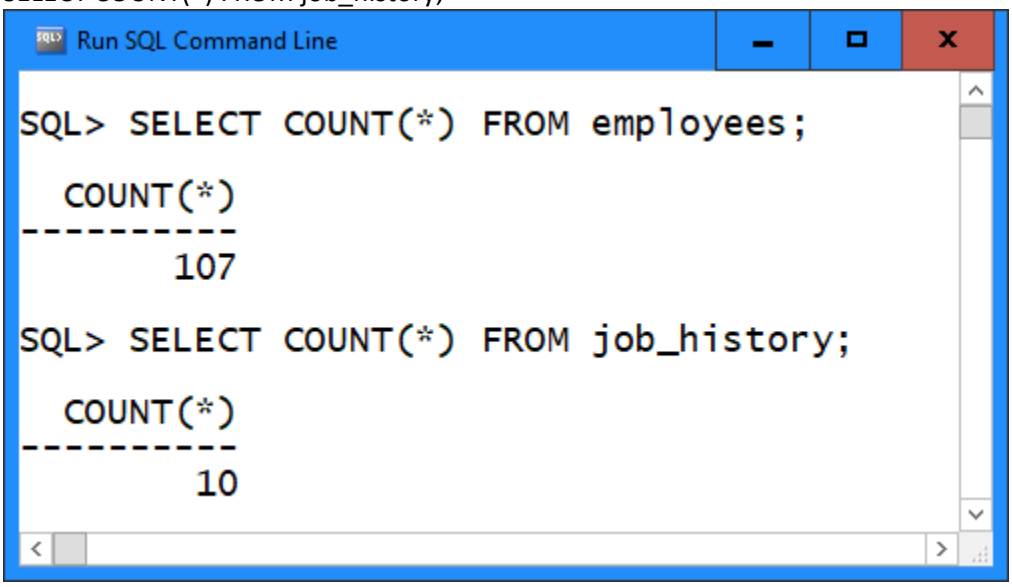


```
SELECT jh.employee_id, jh.start_date, jh.end_date, d.department_name
FROM job_history jh
NATURAL INNER JOIN departments d
ORDER BY jh.employee_id, jh.start_date;
```

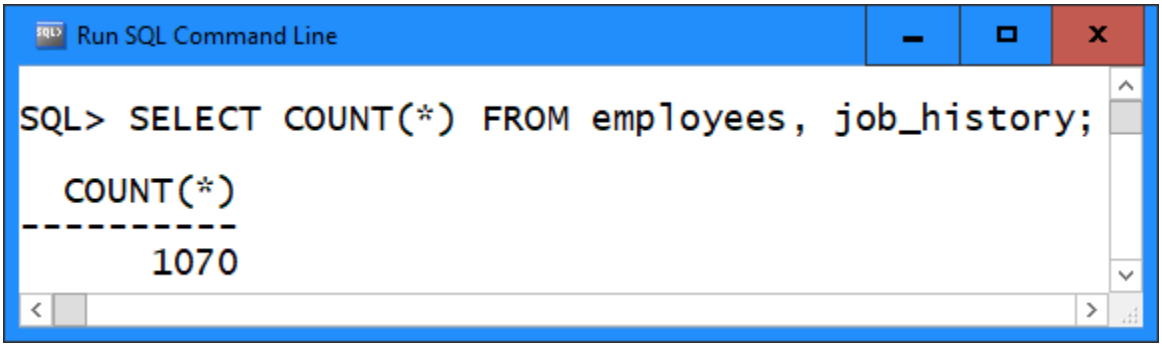


Problem 4:

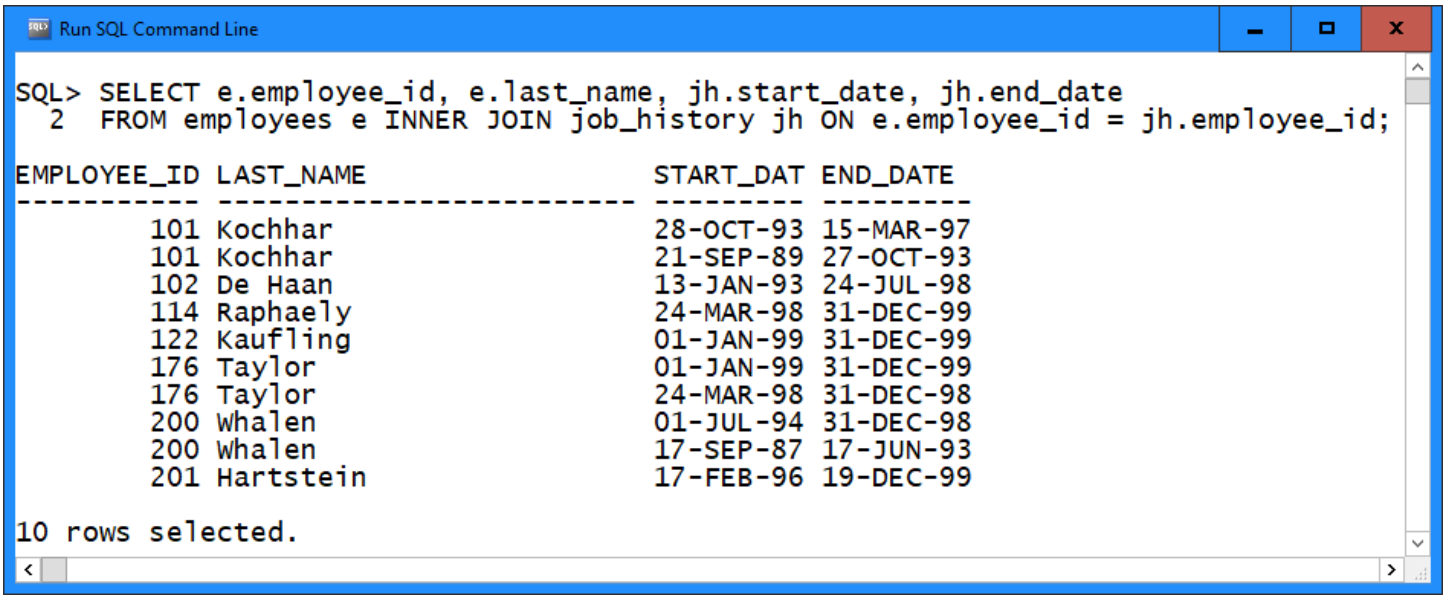
SELECT COUNT(*) FROM employees;
SELECT COUNT(*) FROM job_history;



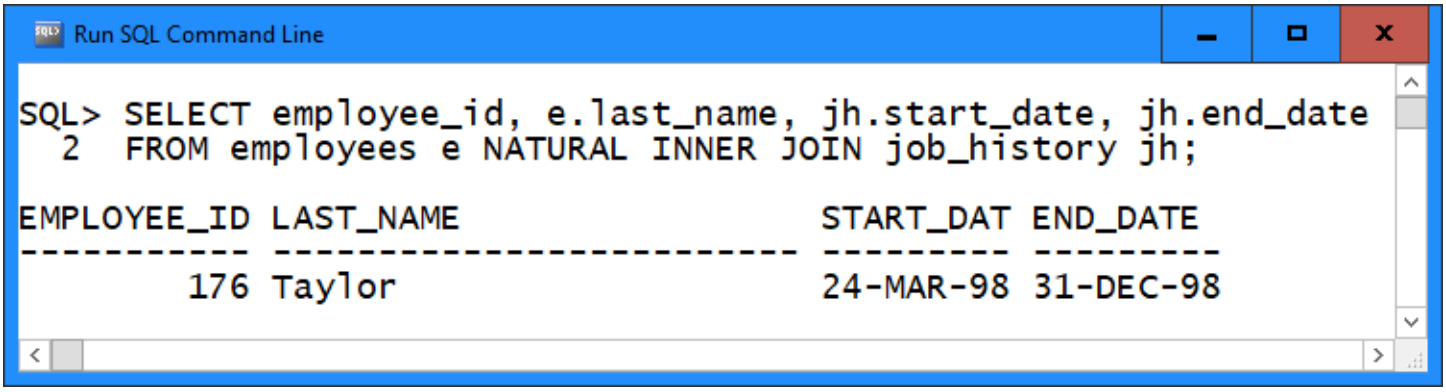
SELECT COUNT(*) FROM employees, job_history;



SELECT e.employee_id, e.last_name, jh.start_date, jh.end_date
FROM employees e INNER JOIN job_history jh ON e.employee_id = jh.employee_id;



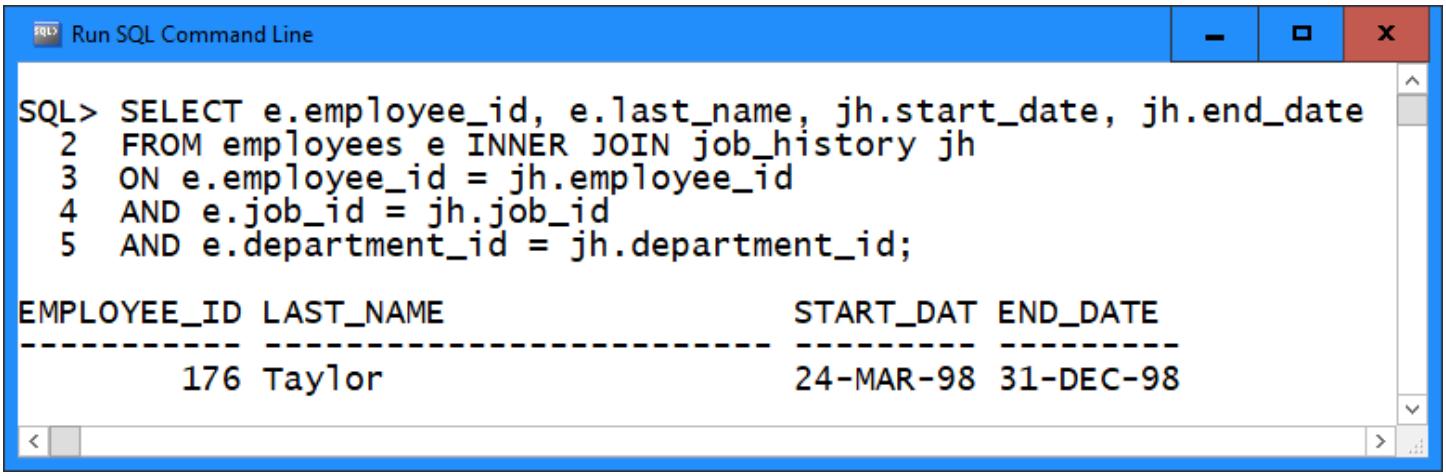
SELECT employee_id, e.last_name, jh.start_date, jh.end_date
FROM employees e NATURAL INNER JOIN job_history jh;



NATURAL INNER JOIN joins on all common columns, in this case on employee_id, job_id, and department_id. This is more restrictive and hence results in fewer records compared to the join condition on just column employee_id.

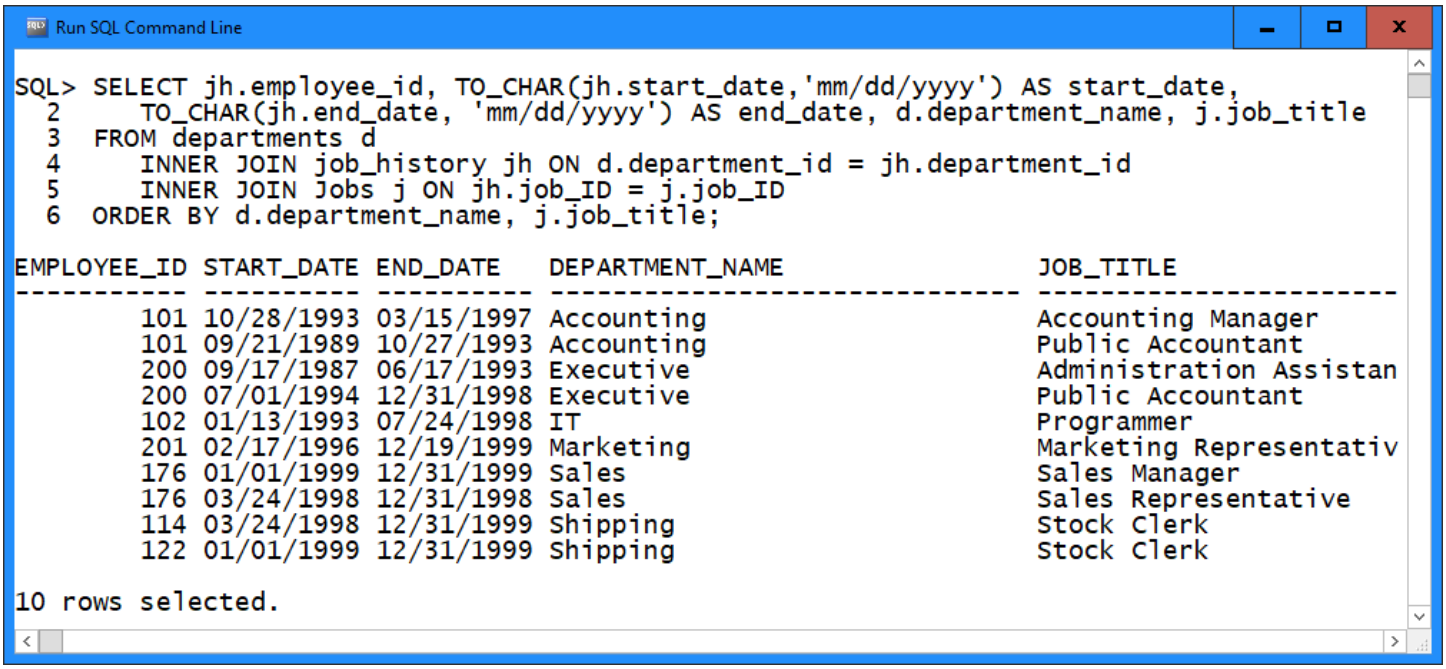
Below is the query using explicit join conditions on those three columns:

```
SELECT e.employee_id, e.last_name, jh.start_date, jh.end_date
FROM employees e INNER JOIN job_history jh
ON e.employee_id = jh.employee_id
AND e.job_id = jh.job_id
AND e.department_id = jh.department_id;
```



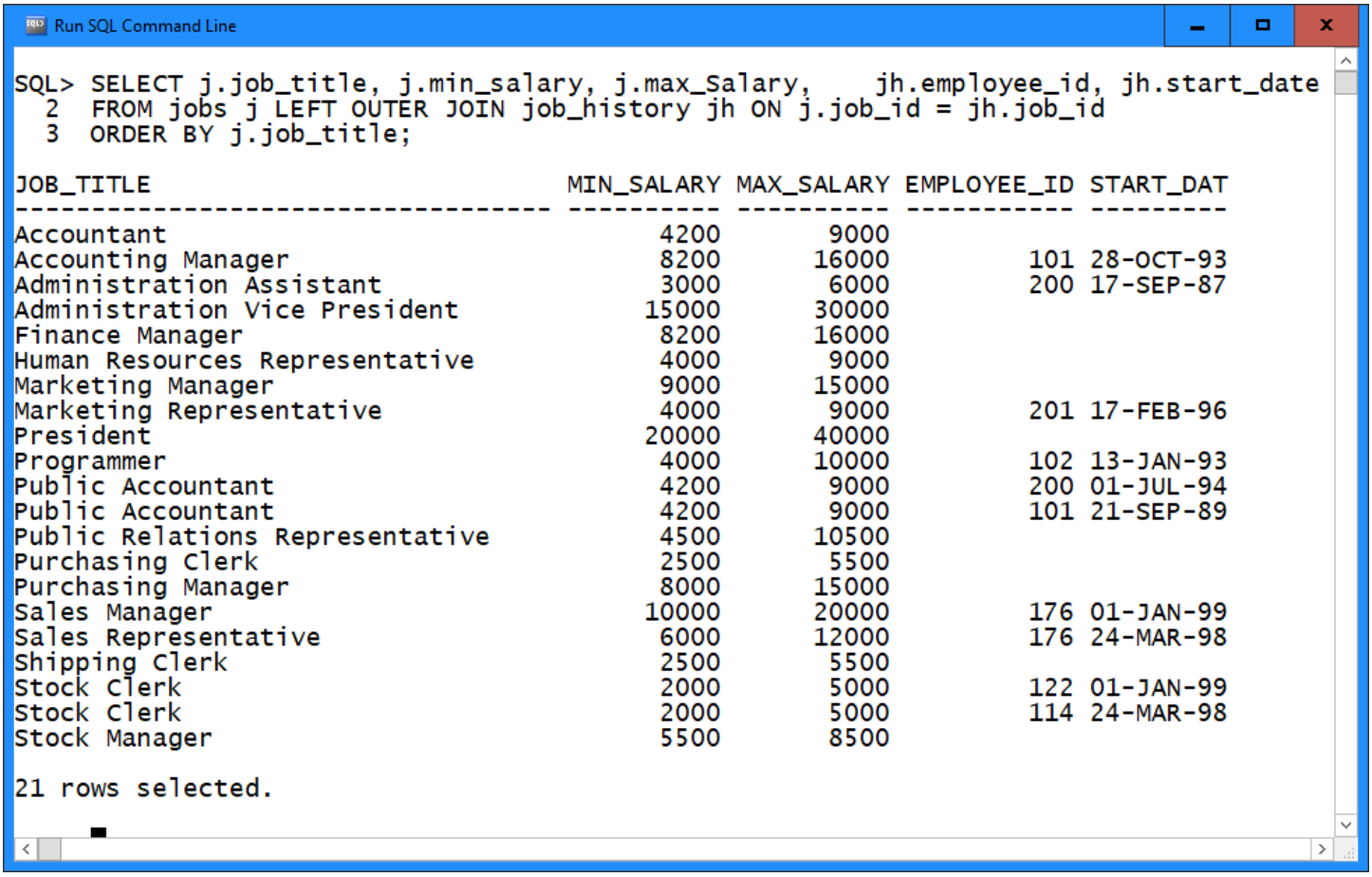
Problem 5:

```
SELECT jh.employee_id, TO_CHAR(jh.start_date,'mm/dd/yyyy') AS start_date,
        TO_CHAR(jh.end_date, 'mm/dd/yyyy') AS end_date, d.department_name, j.job_title
FROM departments d
        INNER JOIN job_history jh ON d.department_id = jh.department_id
        INNER JOIN Jobs j ON jh.job_ID = j.job_ID
ORDER BY d.department_name, j.job_title;
```



Problem 6:

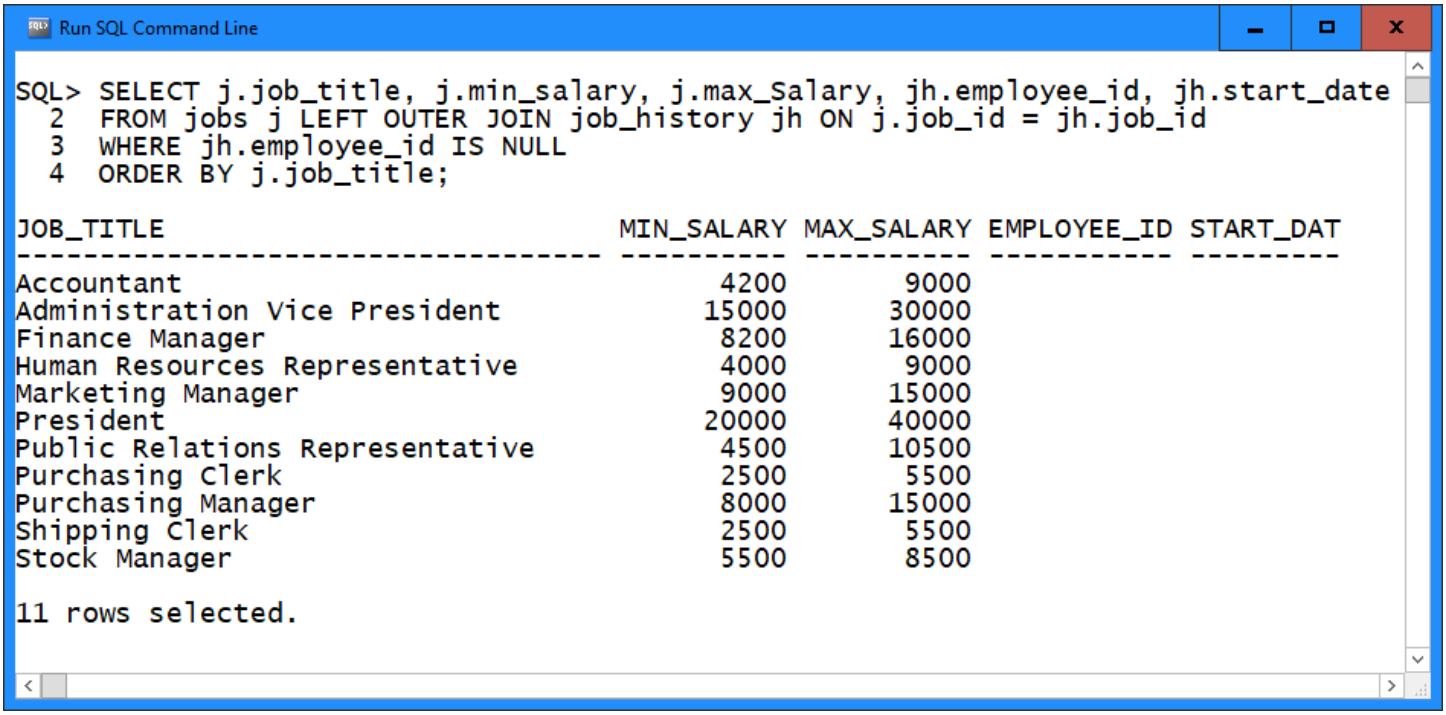
```
SELECT j.job_title, j.min_salary, j.max_Salary,     jh.employee_id, jh.start_date
FROM jobs j LEFT OUTER JOIN job_history jh ON j.job_id = jh.job_id
ORDER BY j.job_title;
```



Run SQL Command Line

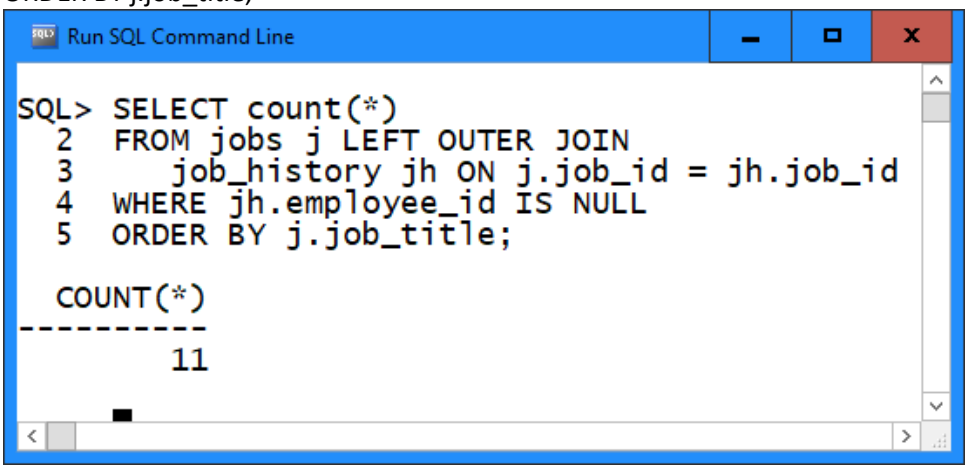
```
SQL> SELECT j.job_title, j.min_salary, j.max_Salary,    jh.employee_id, jh.start_date
  2  FROM jobs j LEFT OUTER JOIN job_history jh ON j.job_id = jh.job_id
  3  ORDER BY j.job_title;

JOB_TITLE                          MIN_SALARY MAX_SALARY EMPLOYEE_ID START_DAT
---------------------------------- ---------- ---------- ----------- ---------
Accountant                               4200       9000
Accounting Manager                       8200      16000         101 28-OCT-93
Administration Assistant                 3000       6000         200 17-SEP-87
Administration Vice President           15000      30000
Finance Manager                          8200      16000
Human Resources Representative           4000       9000
Marketing Manager                        9000      15000
Marketing Representative                 4000       9000         201 17-FEB-96
President                               20000      40000
Programmer                               4000      10000         102 13-JAN-93
Public Accountant                        4200       9000         200 01-JUL-94
Public Accountant                        4200       9000         101 21-SEP-89
Public Relations Representative          4500      10500
Purchasing Clerk                         2500       5500
Purchasing Manager                       8000      15000
Sales Manager                           10000      20000         176 01-JAN-99
Sales Representative                     6000      12000         176 24-MAR-98
Shipping Clerk                           2500       5500
Stock Clerk                              2000       5000         122 01-JAN-99
Stock Clerk                              2000       5000         114 24-MAR-98
Stock Manager                            5500       8500

21 rows selected.
```

```
SELECT j.job_title, j.min_salary, j.max_Salary, jh.employee_id, jh.start_date
FROM jobs j LEFT OUTER JOIN job_history jh ON j.job_id = jh.job_id
WHERE jh.employee_id IS NULL
ORDER BY j.job_title;
```



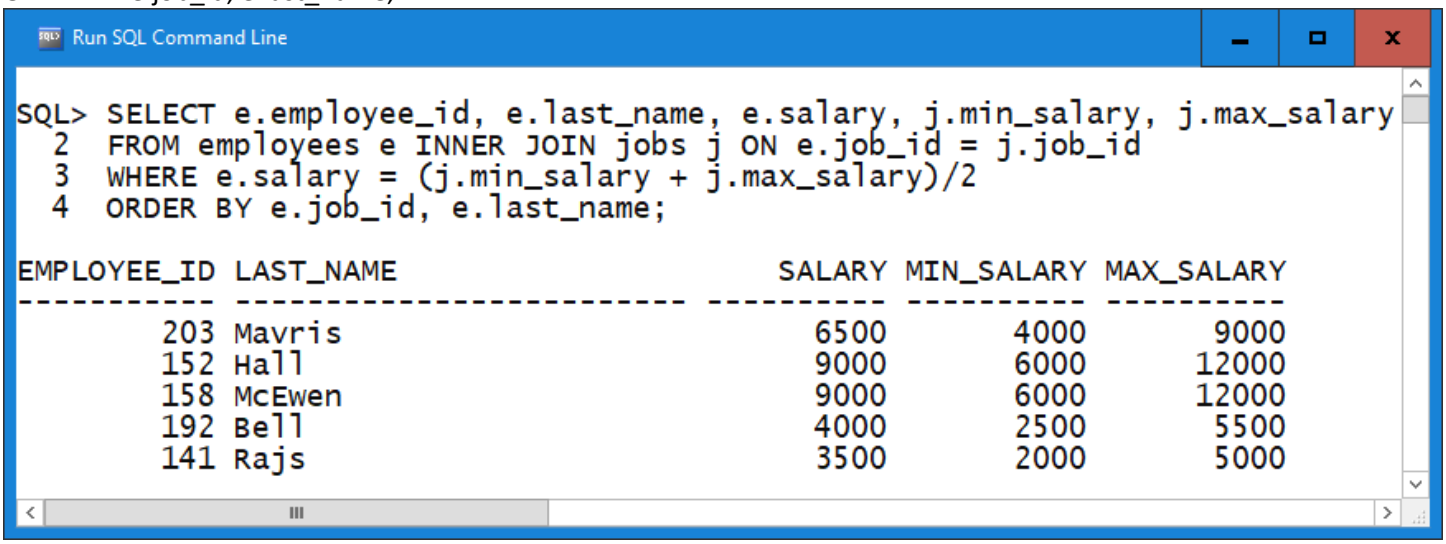
Alternatively:

```
SELECT count(*)
FROM jobs j LEFT OUTER JOIN
        job_history jh ON j.job_id = jh.job_id
WHERE jh.employee_id IS NULL
ORDER BY j.job_title;
```



Problem 7:

```
SELECT e.employee_id, e.last_name, e.salary, j.min_salary, j.max_salary
FROM employees e INNER JOIN jobs j ON e.job_id = j.job_id
WHERE e.salary = (j.min_salary + j.max_salary)/2
ORDER BY e.job_id, e.last_name;
```



Problem 8:

```
SELECT e.last_name,
SUBSTR(e.phone_number,1,3) ||'-'|| l.city ||'-'||c.country_name area_code_city_country
FROM employees e
INNER JOIN departments d on d.department_id = e.department_id
INNER JOIN locations l ON l.location_id = d.location_id
INNER JOIN countries c ON c.country_id = l.country_id
ORDER BY c.country_name, l.city, e.last_name;
```

Run SQL Command Line

```
SQL> SELECT e.last_name,
  2  SUBSTR(e.phone_number,1,3) ||'-'|| l.city ||'-'||c.country_name area_code_city_country
  3  FROM employees e
  4  INNER JOIN departments d on d.department_id = e.department_id
  5  INNER JOIN locations l ON l.location_id = d.location_id
  6  INNER JOIN countries c ON c.country_id = l.country_id
  7  ORDER BY c.country_name, l.city, e.last_name;

LAST_NAME                 AREA_CODE_CITY_COUNTRY
------------------------- --------------------------------------------------------------------
Fay                       603-Toronto-Canada
Hartstein                 515-Toronto-Canada
Baer                      515-Munich-Germany
Mavris                    515-London-United Kingdom
Abel                      011-Oxford-United Kingdom
Ande                      011-Oxford-United Kingdom
Banda                     011-Oxford-United Kingdom
Bates                     011-Oxford-United Kingdom
```

Run SQL Command Line

```
LAST_NAME                 AREA_CODE_CITY_COUNTRY
------------------------- --------------------------------------------------------------------
Vargas                    650-South San Francisco-United States of America
Vollman                   650-South San Francisco-United States of America
Walsh                     650-South San Francisco-United States of America
Weiss                     650-South San Francisco-United States of America
Austin                    590-Southlake-United States of America
Ernst                     590-Southlake-United States of America
Hunold                    590-Southlake-United States of America
Lorentz                   590-Southlake-United States of America
Pataballa                 590-Southlake-United States of America

106 rows selected.
```