Name: Muachefe Isabel
Student Number: 222141174
practical 2 Advanced databases

Question 1

1. SELECT name, department id, salary,

RANK() OVER (ORDER BY salary DESC) AS rank,

DENSE_RANK() OVER (ORDER BY salary DESC) AS dense_rank,

ROW_NUMBER() OVER (ORDER BY salary DESC) AS row_number

FROM employees;

2. SELECT

name,

department_id,

salary

FROM (

SELECT

name,

department_id,

salary,

ROW_NUMBER() OVER (PARTITION BY department_id ORDER BY salary DESC) AS rn

FROM employees

) ranked

WHERE rn <= 3;

Question 2

1. SELECT MAX(salary) AS second_highest_salary

FROM employees

WHERE salary < (SELECT MAX(salary) FROM employees);

2. SELECT salary

```
FROM employees
ORDER BY salary DESC
LIMIT 1 OFFSET 1;
```

Question 3

```
1. WITH dept_salary AS (
   SELECT
      department_id,
      SUM(salary) AS total_dept_salary
   FROM employees
   GROUP BY department_id
)
SELECT
   e.name,
   e.department_id,
   e.salary,
   ds.total_dept_salary
FROM employees e
JOIN dept_salary ds ON e.department_id = ds.department_id
ORDER BY e.department_id, e.salary DESC;
```

Question 4

```
1. DELETE FROM employees
WHERE id NOT IN (
   SELECT MIN(id)
   FROM employees
   GROUP BY name, department_id, salary
);
```

Question 5

```
1. WITH RECURSIVE org_chart AS (
```

```
    SELECT
        id,
        name,
        manager_id,
        0 AS level
    FROM employees
    WHERE manager_id IS NULL

    UNION ALL
    SELECT
        e.id,
        e.name,
        e.manager_id,
        oc.level + 1
    FROM employees e
    JOIN org_chart oc ON e.manager_id = oc.id
)
SELECT
    id,
    name,
    manager_id
FROM org_chart
ORDER BY level, id;
```