Assessment on SQL

Schema and data for Employee table:

```
CREATE TABLE Employee (
    EmployeeID INT,
    Name VARCHAR(50),
    Department VARCHAR(50),
    Salary INT,
    JoiningDate DATE
);

INSERT INTO Employee (EmployeeID, Name, Department, Salary, JoiningDate) VALUES
(1, 'Alice', 'Sales', 70000, '2021-03-15'),
(2, 'Bob', 'Sales', 68000, '2022-04-20'),
(3, 'Charlie', 'Marketing', 72000, '2020-07-30'),
(4, 'David', 'Marketing', 75000, '2021-11-25'),
(5, 'Eve', 'Sales', 69000, '2020-02-10'),
(6, 'Frank', 'HR', 66000, '2019-05-15'),
(7, 'Grace', 'HR', 64000, '2021-06-10'),
(8, 'Hannah', 'Finance', 73000, '2022-08-19'),
(9, 'Ian', 'Finance', 71000, '2020-03-05'),
(10, 'Jack', 'Sales', 78000, '2023-01-10'),
(11, 'Kara', 'Marketing', 80000, '2022-05-05'),1
(12, 'Liam', 'Finance', 72000, '2021-01-30');
```

Question 1: Find the total number of employees and the average salary for each department.

```
    SELECT
    Department,
    COUNT(*) AS TotalEmployees,
```

```
    AVG(Salary) AS AverageSalary
FROM
    Employee
GROUP BY
    Department;
```

	Department	TotalEmployees	Average
1	Sales	4	
2	HR	2	
3	Finance	3	
4	Marketing	3	75666.6

Question 2: List each employee's name, department, salary, and their rank based on salary within their department.

```
SELECT
    Name,
    Department,
    Salary,
    RANK() OVER (PARTITION BY Department ORDER BY SalarDESC) AS RankInDepartment
FROM
    Employee;
```

```
Hannah|Finance|73000|1
Liam|Finance|72000|2
Ian|Finance|71000|3
Frank|HR|66000|1
Grace|HR|64000|2
Kara|Marketing|80000|1
David|Marketing|75000|2
Charlie|Marketing|72000|3
Jack|Sales|78000|1
Alice|Sales|70000|2
Eve|Sales|69000|3
Bob|Sales|68000|4
```

Question 3: For each department, find the employee with the highest salary

```
SELECT
  Department,
  Name,
  Salary
FROM
  Employee
WHERE
  (Department, Salary) IN (
    SELECT
      Department,
      MAX(Salary)
    FROM
      Employee
    GROUP BY
      Department
  );
```

```
HR|Frank|66000
Finance|Hannah|73000
Sales|Jack|78000
Marketing|Kara|80000
```

Question 4: Calculate the cumulative salary for each employee within their department, ordered by their salary in descending order.

```
SELECT
    Department,
    Name,
    Salary,
    SUM(Salary) OVER (PARTITION BY Department ORDER BY Salary DESC) AS
CumulativeSalary
FROM
    Employee;
```

```
Finance|Hannah|73000|73000
Finance|Liam|72000|145000
Finance|Ian|71000|216000
HR|Frank|66000|66000
HR|Grace|64000|130000
Marketing|Kara|80000|80000
Marketing|David|75000|155000
Marketing|Charlie|72000|227000
Sales|Jack|78000|78000
Sales|Alice|70000|148000
Sales|Eve|69000|217000
Sales|Bob|68000|285000

[Execution complete with exit code 0]
```

Question 5: Find the average salary for each department and list the employees who earn above their department's average salary.

```
WITH DepartmentAverage AS (
    SELECT
        Department,
        AVG(Salary) AS AvgSalary
    FROM
        Employee
    GROUP BY
        Department
)
SELECT
    e.Name,
    e.Department,
    e.Salary,
    d.AvgSalary
FROM
```

```
    Employee e
JOIN
    DepartmentAverage d
ON
    e.Department = d.Department
WHERE
    e.Salary > d.AvgSalary;
```

```
Frank|HR|66000|65000.0
Hannah|Finance|73000|72000.0
Jack|Sales|78000|71250.0
Kara|Marketing|80000|75666.6666666667
```

Question 6: For each department, determine the difference between each employee's salary and the highest salary in that department.

```
WITH MaxSalary AS (
    SELECT
        Department,
        MAX(Salary) AS MaxSalary
    FROM
        Employee
    GROUP BY
        Department
)
SELECT
    e.Name,
    e.Department,
    e.Salary,
    (m.MaxSalary - e.Salary) AS SalaryDifference
FROM
    Employee e
JOIN
    MaxSalary m
ON
    e.Department = m.Department;
```

```
Alice|Sales|70000|8000
Bob|Sales|68000|10000
Charlie|Marketing|72000|8000
David|Marketing|75000|5000
Eve|Sales|69000|9000
Frank|HR|66000|0
Grace|HR|64000|2000
Hannah|Finance|73000|0
Ian|Finance|71000|2000
Jack|Sales|78000|0
Kara|Marketing|80000|0
Liam|Finance|72000|1000
```

Question 8: Find the top two highest-paid employees from each department.

```
SELECT
    Name,
    Department,
    Salary
FROM (
    SELECT
        Name,
        Department,
        Salary,
        RANK() OVER (PARTITION BY Department ORDER BY Salary DESC) AS
RankInDepartment
    FROM
        Employee
) AS Ranked
WHERE
    RankInDepartment <= 2;
```

```
Hannah|Finance|73000
Liam|Finance|72000
Frank|HR|66000
Grace|HR|64000
Kara|Marketing|80000
David|Marketing|75000
Jack|Sales|78000
Alice|Sales|70000

[Execution complete with exit code 0]
```

Question 9: Calculate the running average salary for each department, ordered by salary in descending order.

```
SELECT
    Department,
    Name,
    Salary,
    AVG(Salary) OVER (PARTITION BY Department ORDER BY Salary DESC ROWS
BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW) AS RunningAvgSalary
FROM
    Employee;
```

```
Finance|Hannah|73000|73000.0
Finance|Liam|72000|72500.0
Finance|Ian|71000|72000.0
HR|Frank|66000|66000.0
HR|Grace|64000|65000.0
Marketing|Kara|80000|80000.0
Marketing|David|75000|77500.0
Marketing|Charlie|72000|75666.6666666667
Sales|Jack|78000|78000.0
Sales|Alice|70000|74000.0
Sales|Eve|69000|72333.3333333333
Sales|Bob|68000|71250.0
```

Sir Q7 and Q10 I didn't finding the answers.