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184. Department Highest Salary

July 11, 2017 | 63.5K views

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The `Employee` table holds all employees. Every employee has an Id, a salary, and there is also a column for the department Id.

Id	Name	Salary	DepartmentId
1	Joe	70000	1
2	Jim	90000	1
3	Henry	80000	2
4	Sam	60000	2
5	Max	90000	1

The `Department` table holds all departments of the company.

Id	Name
1	IT
2	Sales

Write a SQL query to find employees who have the highest salary in each of the departments. For the above tables, your SQL query should return the following rows (order of rows does not matter).

Department	Employee	Salary
IT	Max	90000
IT	Jim	90000
Sales	Henry	80000

Explanation:

Max and Jim both have the highest salary in the IT department and Henry has the highest salary in the Sales department.

Solution

Approach: Using `JOIN` and `IN` clause [Accepted]

Algorithm

Since the `Employee` table contains the `Salary` and `DepartmentId` information, we can query the highest salary in a department.

```
SELECT
    DepartmentId, MAX(Salary)
FROM
    Employee
GROUP BY DepartmentId;
```

Note: There might be multiple employees having the same highest salary, so it is safe not to include the employee name information in this query.

DepartmentId	MAX(Salary)
1	90000
2	80000

Then, we can join table `Employee` and `Department`, and query the (DepartmentId, Salary) are in the temp table using `IN` statement as below.

MySQL

```
SELECT
    Department.name AS 'Department',
    Employee.name AS 'Employee',
    Salary
FROM
    Employee
JOIN
    Department ON Employee.DepartmentId = Department.Id
WHERE
    (Employee.DepartmentId , Salary) IN
    (
        SELECT
            DepartmentId, MAX(Salary)
        FROM
            Employee
        GROUP BY DepartmentId
    )
;
```

Department	Employee	Salary
Sales	Henry	80000
IT	Max	90000

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dath1228

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Why I can't use LEFT JOIN here but I can use it in MySQL Thanks.

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March 16, 2019 11:59 AM

Why this solution doesn't work in ms sql server?

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It returns error:  
[42000] [Microsoft][ODBC Driver 13 for SQL Server][SQL Server]An expression of non-boolean type specified in a context where a condition is expected. near '!. (4145) (SQLExecDirectW)

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"Note: There might be multiple employees having the same highest salary, so it is safe not to include the employee name information in this query."

Not only that, but when you group by departmentId, the maximum salary is returned with a wrong name.

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Write your MySQL query statement below

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Using `JOIN` instead of `IN` clause

```
select d.Name as Department, e.Name as Employee, e.Salary
```

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Window function approach for Oracle engine

```
with w1 as (
    select rank() over (partition by DepartmentId order by Salary desc) rank,
           DepartmentId
```

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```
select b.name as Department, a.Employee, a.salary as Salary
from
(select name as Employee, DepartmentId, salary, rank() over (partition by DepartmentId order by salary desc) as ord
from emplovee
```

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why must use inner join? can i use left join instead?

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SWindRunner

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```
SELECT c.name AS Department,
b.name AS Employee,
a.salary AS Salary

FROM
```

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