

- Recommended Courses
- [best python courses](#)
  - [best java courses](#)
  - [system design courses](#)
  - [best spring courses](#)
  - [best hibernate courses](#)
  - [best design pattern courses](#)
  - [best Linux courses](#)
  - [best JavaScript courses](#)
  - [best data structure and algorithms courses](#)
  - [Best Multithreading Courses](#)
  - [best MERN stack courses](#)
  - [Best Git courses](#)
  - [Best Microservice Courses](#)
  - [Best DevOps Courses](#)
  - [best MEAN stack Courses](#)
  - [free Java courses](#)
  - [free DSA courses](#)
  - [free sql courses](#)
  - [free Linux courses](#)
  - [Free Docker courses](#)
  - [free JUnit courses](#)

Disclosure: This article may contain affiliate links. When you purchase, we may earn a commission.  
Monday, June 28, 2021

## Second Highest Salary in MySQL and SQL Server - LeetCode Solution

Write a SQL query to get the second highest salary from the Employee table.

+-----+-----+			
Id   Salary			
+-----+-----+			
1	100		
2	200		
3	300		
+-----+-----+			

For example, given the above Employee table, the second highest salary is 200. If there is no second highest salary, then the query should return NULL. You can write SQL query in any of your favorite databases e.g. MySQL, Microsoft SQL Server, or Oracle. You can also use database specific feature e.g. TOP, LIMIT or ROW\_NUMBER to write SQL query, but you must also provide a generic solution which should work on all database.

In fact, there are *several ways to find the second highest salary* and you must know a couple of them e.g. in MySQL without using the LIMIT keyword, in SQL Server without using TOP, and in Oracle without using RANK and ROWNUM.

Once you solve the problem, the Interviewer will most likely increase the difficulty level by either moving to the Nth salary direction or taking away these built-in utilities.

## Second Highest Salary in MySQL without LIMIT

Here is a generic SQL query to find the second highest salary, which will also work fine in MySQL. This solution uses a subquery to first exclude the maximum salary from the data set and then again finds the maximum salary, which is effectively the second maximum salary from the Employee table.

```
SELECT MAX(salary) FROM Employee
WHERE Salary NOT IN ( SELECT Max(Salary) FROM Employee);
```

This will return 200 in our case.

Here is another solution that uses sub query but instead of IN clause it uses < operator

```
SELECT MAX(Salary) From Employee
WHERE Salary < ( SELECT Max(Salary) FROM Employee);
```

You can use this SQL query if the Interviewer ask you to get second highest salary in MySQL without using LIMIT. You can also use `distinct` keyword if your **Employee table may contain duplicate salary**, In this example there is no such record, so I have not used `distinct`.

## Second Highest Salary using Correlated SubQuery

Previous SQL query was also using subquery but it was non-correlated, this solution will use a correlated subquery. This is also a generic solution to *find Nth highest salary in the Employee table*. For each record processed by outer query, inner query will be executed and will return how many records has salary less than the current salary. If you are looking for second highest salary then your query will stop as soon as inner query will return 2.

```
SELECT Id, Salary
FROM Employee e
WHERE 2=(SELECT COUNT(DISTINCT Salary) FROM Employee p
WHERE e.Salary<=p.Salary)
```

### SQL Tutorials

- [sql - select](#)
- [sql - online course](#)
- [sql - free books](#)
- [sql - table scan](#)
- [database - view](#)
- [sql - primary key](#)
- [sql - index](#)
- [sql - unique key](#)
- [sql - pdf](#)
- [sql - interview questions](#)
- [sql - subquery](#)
- [database - books](#)
- [sql - foreign key](#)
- [sql - query questions](#)
- [sql - second highest salary](#)
- [sql - union vs unionall](#)
- [sql - truncate](#)
- [sql - delete](#)
- [sql - self join](#)
- [sql - alter command](#)

### Blog Archive

- [2023 \(340\)](#)
- [2022 \(398\)](#)
- ▼ [2021 \(477\)](#)
  - [December \(46\)](#)
  - [November \(45\)](#)
  - [October \(26\)](#)
  - [September \(34\)](#)

### Interview

- [coding](#)
- [SQL](#)
- [data structure](#)
- [company](#)
- [java](#)
- [java question](#)
- [theory](#)
- [hiring](#)
- [j2ee](#)
- [spring](#)
- [object oriented](#)

### Records

- [51 Best Interview Questions](#)
- [51 Best Interview Questions](#)
- [10 Best Interview Questions](#)
- [10 Best Interview Questions](#)
- [10 Best Interview Questions](#)
- [10 Best Interview Questions](#)
- [10 Best Interview Questions](#)
- [10 Best Interview Questions](#)
- [10 Best Interview Questions](#)
- [10 Best Interview Questions](#)

### Books

- [Best Interview Questions](#)
- [Best Interview Questions](#)

► August (65)

► July (220)

▼ June (41)

How to format numbers in Java? - NumberFormat Example

What is fail safe and fail fast Iterator in Java?

How to convert ByteBuffer to String in Java [Example]

How to convert long to String in Java? Example

How to append text to existing File in Java? Example

How to add element at first and last position of List...

How to get first and last elements from ArrayList ...

Difference between Abstraction and Polymorphism in...

Difference between synchronized ArrayList and Copy...

4 ways to concatenate Strings in Java [Example and...]

How to use PriorityQueue in Java? An Example

How to parse String to Date in Java using JodaTime...

Right way to Compare

By the way, If you don't know the difference between correlated and non-correlated subquery, see [here](#).

## Second Maximum Salary in MySQL using LIMIT

MySQL has a special keyword called LIMIT which can be used to limit the result set e.g. it will allow you to see the first few rows, last few rows, or range of rows. You can use this keyword to find the second, third or Nth highest salary. Just use order by clause to sort the result set then print the second salary as shown below :

```
SELECT Salary FROM
(SELECT Salary FROM Employee ORDER BY salary DESC LIMIT 2) AS Emp
ORDER BY salary LIMIT 1;
```

In this solution, we have first sorted all salaries from the Employee table in decreasing order, so that the 2 highest salaries come at top of the result set. After that, we took just two records by using LIMIT 2. Again we did the same thing but this time we sort the result set in ascending order so that the second-highest salary comes at the top. Now we print that salary by using LIMIT 1. Simple and easy, right?

## Second Highest Salary using SQL Server Top Keyword

Just like MySQL has LIMIT keyword, which is immensely helpful in [sorting and paging](#), Microsoft SQL Server also has a special keyword called TOP, which as name suggest prints top records from result set. You can print top 10 records by saying TOP 10. I frequently use this keyword to see the data from a large table, just to understand columns and data inside it. Here is the SQL query to find second maximum salary in SQL Server :

```
SELECT TOP 1 Salary FROM
( SELECT TOP 2 Salary FROM Employee ORDER BY Salary DESC) AS MyTable
ORDER BY Salary ASC;
```

Here is the output of the above query running on Microsoft SQL Server 2014 :

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

```
SELECT TOP 1 Salary FROM (
    SELECT TOP 2 Salary FROM Employee2 ORDER BY Salary DESC
) AS MyTable ORDER BY Salary ASC;
```

The results pane shows a single row with the salary 200.

	Salary
1	200

• 5 I  
an• 2 I  
Ja• 12  
Pr  
E• 5 I  
dc• 5 I  
Sk• Bc  
St• To  
Bc• 10  
Bc

• 5 I

• Bc  
St• To  
Bc

Follow

Follow



Foll

Privac

• Pri

• Te

Subsc

G

String  
Objects in  
Java  
[Example]

How to  
Convert  
Byte array  
to String in  
Java with  
E...

2 Ways to  
Print  
Custom  
String  
Value of  
Java Enum

How to break  
from a  
nested loop  
in Java?  
[Example]

Difference  
between  
instance  
and Object  
in Java

How to  
Convert a  
Double to  
Long in  
Java -  
Example ...

How to  
reverse  
ArrayList in  
Java with  
Example

How to Read,  
Write XLSX  
File in Java  
- Apach  
POI E...

How to create  
User  
Defined  
Exception  
class in  
Java

How to Sort  
HashMap  
in Java  
based on  
Keys and  
Values

How to  
convert  
String to  
Float in  
Java and  
vice-v...

How to  
Generate  
Random  
Number  
between 1  
to 10 - Ja...

Second  
Highest  
Salary in  
MySQL and  
SQL Server  
- Le...

Now It's time to apply the knowledge you have learned so far. Solve following SQL queries at your convenience :

1. Write SQL query to get a third highest salary from Employee table?
2. How do you find the 4th highest salary in MySQL without using the LIMIT keyword?
3. Write SQL query to find second highest salary in Oracle database using ROWNUM?
4. How to find Nth highest salary in SQL Server without using TOP keyword?
5. Find the second highest salary in Oracle using rank?
6. How to find the top 3 salaries in Oracle without using ROW\_NUMBER or RANK()?

That's all about **different ways to find the Second highest Salary in MySQL and SQL Server**. We have seen examples to get the second highest salary in MySQL by using LIMIT and without using LIMIT. Similarly in MSSQL, we know how to get the second highest salary by using TOP and without using the TOP keyword.

I have left the Oracle database for you as an exercise. If you are able to find solutions to all the above SQL queries in a quick time and feeling bore again, check out my post about the [Top 20 SQL queries from Interviews](#) for some more fun.

## Preparing for Java Developer Interviews?

Email Address

[Download Free Questions](#)

We respect your privacy. Unsubscribe at any time.

at [6/28/2021 10:17:00 PM](#)



Labels: [MySQL tutorial example](#), [sql](#), [SQL interview Question](#)

### 49 comments:

**Anonymous** January 18, 2015 at 6:05AM

You can easily solve this problem by using window function in SQL Server 2014 e.g. RANK() and ROW\_NUMBER(). This is in fact perfect example of when to use window function in MSSQL.

Here is how to find second highest salary using RANK() function in SQL Server 2014

```
select sr.* from (select [id], salary, rank() over (order by salary desc) as salary_rank from salaries) sr where sr.salary_rank = 2;
```

[Reply](#)

[Replies](#)

How to Make Executable JAR file in Eclipse IDE - Java

How to calculate Sum of Digits using Recursion in ...

How Constructor Works in Java? [Answer]

3 Examples to Read FileInputStream as String in Ja...

How to add Zeros at the Beginning of a Number in J...

How to Synchroniz e ArrayList in Java with Example

5 Examples of Formatting Float or Double Numbers ...

3 Examples to Loop Map in Java - Foreach vs Iterator

Why Abstract class is Important in Java? [Example]

Difference between String literal and New String o...

What is the difference between a Class and an Obje...

What is the Actual Use of interface in Java?

How to use Modulo , Modulus, or Remainder Operator...

How to Print Array with elements in



**SEO** December 29, 2015 at 11:05AM

Thank you Anonymous



**Rahul Beled** June 18, 2020 at 11:56 PM

Try This:

select salary from employee order by salary desc limit 1 offset 1;



**javin paul** June 26, 2020 at 11:31 PM

This is as easy as it can be but it will not work in all database and probably not on interviews, where you are most likely be asked about window function and co-related subquery. It's good to know those techniques as well.

**Reply**



**Unknown** August 25, 2016 at 1:15 PM

Select min(salary) from ( select top2 salary from employee order by desc ) as salary; ;)

**Reply**



**Unknown** August 25, 2016 at 1:15 PM

Select min(salary) from ( select top2 salary from employee order by desc ) as salary; ;)

**Reply**

**Replies**



**Abhi** October 29, 2020 at 8:56 AM

what if first twosalary is same then this qunry work ?



**javin paul** October 31, 2020 at 7:55 PM

If criterion is to choose unique salary then just use distinct to filter out duplicate salaries like

Select min(salary) from ( select top2 distinct salary from employee order by desc ) as salary;

**Reply**



**Unknown** September 26, 2016 at 7:29AM

select \* from (select salary, dense\_rank()over(order by salary desc)rk from emp)  
Where rk=2;

**Reply**

**Anonymous** October 8, 2016 at 4:49AM

THIRD Highest Salary:--

select MAX(Salary) from EmpSalary where salary <(select MAX(Salary) from EmpSalary where salary <(select MAX(Salary) from EmpSalary))

**Reply**

**Replies**



**subu** June 12, 2019 at 6:28 PM

SQL> select max(sal) from emp  
2 where sal > ( select max(sal) from emp where sal > (select max(sal) from emp));

MAX(SAL)

-----

NOT WORKING

Java?  
[Solutio...

How to  
Remove  
Duplicates  
from  
ArrayList in  
Java [E...

Difference  
between  
RuntimeEx  
ception and  
checked  
Ex...

**Anonymous** March 31, 2023 at 10:26 PM

select top 1 salary from Mahesh where salary in  
(select distinct top 3 salary from Mahesh order by salary desc)  
order by salary

**Reply**

**Anonymous** October 20, 2016 at 7:00 AM

WE CAN GET N th SALARY FROM A TABLE

IF ANY DUPLICATES SALARIES IT CAN WORK

SELECT SALARY FROM WHERE SALARY=(  
SELECT MIN(SALARY)FROM (SELECT TOP N SALARY FROM ORDER BY DESC  
)T)

IN THIS CASE N=2

THIS IS SAGAR

WEB SYNERGIES

**Reply**



**Unknown** February 26, 2017 at 4:31 AM

Hi ,

For the below query :

SELECT Id, Salary FROM Employee e WHERE 2=(SELECT COUNT(DISTINCT Salary) FROM  
Employee p WHERE e.Salary<=p.Salary)

Shouldn't the e.salary<=p.salary condition in the subquery reversed . We are comparing the  
p.salary column with the e.salary column from the outer query repeatedly. Please let me know if  
my understanding is wrong .

**Reply**



**Unknown** July 31, 2017 at 3:02 AM

very helping

**Reply**

**Anonymous** August 8, 2017 at 4:47 AM

we cant use where for aggregate but how goe you are getting solution iam unable to get the  
solution and its giving the above error

**Reply**



**Unknown** August 19, 2017 at 5:28 AM

select min(emp\_salary)  
from (select distinct \* from employee\_table  
order by emp\_salary desc  
limit 2);

this query uses a sub-query to find out the first two highest salaries of employees in  
employee\_table relation (note that the value of limit is 2), now using these two records it finds the  
minimum of both, which would be the second highest salary.

-----  
this query finds the second lowest salary and works pretty much the same way as the above do -  
>

select max(emp\_salary)  
from (select distinct \* from employee\_table  
order by emp\_salary asc  
limit 2);

[Reply](#)**Unknown** November 28, 2017 at 11:33AM

```
select * from max(sal) from emp1 where sal<(select max(sal) from emp1)
```

[Reply](#)**Anonymous** December 20, 2017 at 7:22AM

Make it little complicate, suppose you have 4 duplicate rows of 2 IDs in same numbers then RANK/ROW\_NUMBER function will not work as I tried.

That time I got the above desired output just by through the correlated subquery and operator only. (In SQL Server)

[Reply](#)**Unknown** January 27, 2018 at 9:54AM

Write SQL query to get third highest salary from Employee table?

Solution: Select salary from employee order by salary DESC limit 3,1;

[Reply](#)**Satish** February 9, 2018 at 12:32PM

```
select * from (
select e.*, row_number() over (order by e.id desc) rn from emp e
)
where rn = 3;
```

[Reply](#)**Anonymous** February 24, 2018 at 8:20AM

THANKS VERY HELPFUL :-)

[Reply](#)**Manoj** March 12, 2018 at 11:20AM

```
SELECT Salary FROM (SELECT Salary FROM Employee ORDER BY salary DESC LIMIT 2) AS
Emp ORDER BY salary LIMIT 1;
```

The above works for your case but will not work always it should ideally be

```
SELECT Salary FROM (SELECT Salary FROM Employee ORDER BY salary ASC LIMIT 2) AS
Emp ORDER BY salary DESC LIMIT 1;
```

[Reply](#)[Replies](#)**Unknown** June 26, 2020 at 1:42AM

from the above query it will provide the result of highest salary of employee instead of second highest salary

[Reply](#)**Anonymous** March 13, 2018 at 12:25AM

Use below query to find nth highest salary:

```
select salary from employee order by salary desc limit N-1,1;
```

[Reply](#)**Unknown** June 4, 2018 at 10:41PM

```
select top 1 RoleId from (select top 3 RoleId from RoleMaster order by RoleId asc) as result
order by RoleId desc
```

[Reply](#) **Unknown** September 10, 2018 at 3:07 AM

A more complex way in MySQL using session variable

```
SET @rank := 0;
SET @last_value := 0;
SELECT * FROM (
  SELECT id, salary, IF(@last_value = salary, @rank, @rank := @rank + 1) AS rank, @last_value,
    @last_value := salary FROM key_value ORDER BY salary DESC)
  AS temp WHERE rank = 3;
```

[Reply](#) **Unknown** April 28, 2019 at 10:38 PM

```
SELECT DISTINCT(Salary) FROM Employee ORDER BY Salary DESC LIMIT 1,1;
```

[Reply](#) **Unknown** May 29, 2019 at 11:26 PM

```
Select * from Employee order by Salary desc limit 1 offset 1; //here we go
```

[Reply](#) **NK** June 3, 2019 at 11:29 PM

```
select * from Employee in(select MAX(Salary) form Employee having Salary!=(Select
MAX(Salary) from Employee)
```

[Reply](#) **subu** June 12, 2019 at 6:29 PM

```
SQL> select max(sal) from emp
2 where sal > ( select max(sal) from emp where sal > (select max(sal) from emp));
```

```
MAX(SAL)
-----
```


not working

[Reply](#)[Replies](#) **javin paul** June 13, 2019 at 6:26 AM

Not working on which database? what output/error you are getting?

[Reply](#) **siddhu salvi** September 14, 2019 at 1:10 AM

```
select *
from employees
order by salary desc
limit 1,1;
```

[Reply](#) **Unknown** October 14, 2019 at 11:40 PM

Write SQL query to get third highest salary from Employee table without using nested query?

[Reply](#) **Unknown** November 7, 2019 at 10:54 AM

```
Select top 1 a.* from (select Distinct top 2 Salary as slry from employee order by desc)a
order by a.slry asc
```



[Reply](#)**Tamilselvan** December 27, 2019 at 5:37 AM

Not valid order by clause in subquery.

[Reply](#)**Unknown** April 2, 2020 at 8:57 PM

if the second maximum salary has two rows say there are two employees having 200 how can i display the records of both the rows having the same second highest salary

[Reply](#)[Replies](#)**javin paul** April 3, 2020 at 5:31 AM

just use that salary to get all employees with that salary

**Unknown** July 18, 2020 at 11:30 AM

Use the -- distinct(salary)

[Reply](#)**Unknown** April 29, 2020 at 12:21 PM/\*Add 3 months to the employee who joined on 26th feb 2008 and whose sal is 30000\*/  
select \* from Employee  
where Sal='30000'select DATEADD(month,3,'2008-02-26')AS DateAdd;  
Q)how do I add this two statements?[Reply](#)[Replies](#)**javin paul** April 30, 2020 at 5:23 AM

May be you can try like this:

select e.\*, DATEADD(month,3,'2008-02-26')AS DateAdd from Employee e where  
e.Sal='30000'[Reply](#)**javin paul** April 30, 2020 at 5:22 AM

select e.\*, DATEADD(month,3,'2008-02-26')AS DateAdd from Employee e where e.Sal='30000'

[Reply](#)**Anonymous** May 16, 2020 at 8:07 AM

Thanks, helpful! You saved me some headache.

[Reply](#)**reehant** August 7, 2020 at 8:02 PM

how to modify it for Nth highest? Tried but getting error.

[Reply](#)[Replies](#)**javin paul** August 15, 2020 at 9:35 PMHello reehant, what error you are getting and what is your SQL query, can you post it here please? I have showed [how to find Nth highest salary](#) on this article, you may want to check.

[Reply](#)**Anonymous** January 25, 2022 at 5:47 AM

How to use in Joins  
display max(sala) based on depart wise  
dep\_no, de\_name, max(sal)

[Reply](#)**Tapas Talukder** March 24, 2022 at 2:44 AM

This query shown all employee list of getting 2nd highest salary.

```
select * from master_salary where emp_salary = (select `emp_salary` from `master_salary`  
group by emp_salary limit 1,1);
```

[Reply](#)**Anonymous** August 29, 2022 at 9:37 PM

What is the table has only one record? How to return null in that case.

[Reply](#)[Replies](#)**javin paul** September 1, 2022 at 7:07 AM

What is returning in current code? I believe it will return null if table is empty and the one record if table just have one record

---

[Reply](#)

Enter Comment

Feel free to comment, ask questions if you have any doubt.

[Newer Post](#)[Home](#)[Older Post](#)

Subscribe to: [Post Comments \(Atom\)](#)