**SQL Query Interview Questions and Answers**

**Question 1: SQL Query to find second highest salary of Employee**

Answer: There are many ways to find second highest salary of Employee in SQL, you can either use SQL Join or Subquery to solve this problem. Here is SQL query using Subquery:

select MAX(Salary) from Employee WHERE Salary NOT IN (select MAX(Salary) from Employee );

See [How to find second highest salary in SQL](http://javarevisited.blogspot.com/2012/12/how-to-find-second-highest-or-maximum-salary-sql.html) for more ways to solve this problem.

**Question 2: SQL Query to find Max Salary from each department.**

Answer: You can find the maximum salary for each department by grouping all records by DeptId and then using MAX() function to calculate maximum salary in each group or each department.

SELECT DeptID, MAX(Salary) FROM Employee  GROUP BY DeptID.

These questions become more interesting if Interviewer will ask you to print department name instead of department id, in that case, you need to join Employee table with Department using foreign key DeptID, make sure you do LEFT or RIGHT OUTER JOIN to include departments without any employee as well.  Here is the query

SELECT DeptName, MAX(Salary) FROM Employee e RIGHT JOIN Department d ON e.DeptId = d.DeptID GROUP BY DeptName;

In this query, we have used RIGHT OUTER JOIN because we need the name of the department from Department table which is on the right side of JOIN clause, even if there is no reference of dept\_id on Employee table.  **Question 3: Write SQL Query to display the current date.**

Answer: SQL has built-in function called GetDate() which returns the current timestamp. This will work in Microsoft SQL Server, other vendors like Oracle and MySQL also has equivalent functions.

SELECT GetDate();

**Question 4: Write an SQL Query to check whether date passed to Query is the date of given format or not**.

Answer: SQL has IsDate() function which is used to check passed value is a date or not of specified format, it returns 1(true) or 0(false) accordingly. Remember ISDATE() is an MSSQL function and it may not work on Oracle, MySQL or any other database but there would be something similar.

SELECT  ISDATE('1/08/13') AS "MM/DD/YY";

It will return 0 because passed date is not in correct format.

**Question 5: Write an SQL Query to print the name of the distinct employee whose DOB is between 01/01/1960 to 31/12/1975.**

Answer: This SQL query is tricky, but you can use BETWEEN clause to get all records whose date fall between two dates.

SELECT DISTINCT EmpName FROM Employees WHERE DOB  BETWEEN ‘01/01/1960’ AND ‘31/12/1975’;

**Question 6: Write an SQL Query find number of employees according to gender  whose DOB is between 01/01/1960 to 31/12/1975.**

Answer : 

SELECT COUNT(\*), sex from Employees WHERE DOB BETWEEN '01/01/1960' AND '31/12/1975' GROUP BY sex;

**Question 7: Write an SQL Query to find an employee whose Salary is equal or greater than 10000**.

Answer : 

SELECT EmpName FROM Employees WHERE Salary>=10000;

**Question 8: Write an SQL Query to find name of employee whose name Start with ‘M’**

Answer : 

SELECT \* FROM Employees WHERE EmpName like 'M%';

**Question 9: find all Employee records containing the word "Joe", regardless of whether it was stored as JOE, Joe, or joe.**

Answer :

SELECT \* from Employees WHERE UPPER(EmpName) like '%JOE%';

**Question 10: Write an SQL Query to find  the year from date.**

Answer:  Here is how you can find Year from a Date in SQL Server 2008 

SELECT YEAR(GETDATE()) as "Year";

**Question 11: Write SQL Query to find duplicate rows in a database? and then write SQL query to delete them?**  
Answer: You can use the following query to select distinct records:

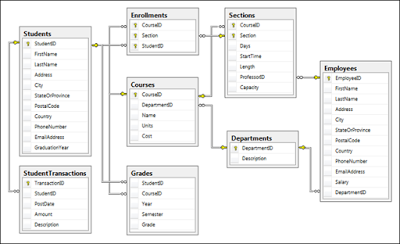
SELECT \* FROM emp a WHERE rowid = (SELECT MAX(rowid) FROM EMP b WHERE a.empno=b.empno)

to Delete:

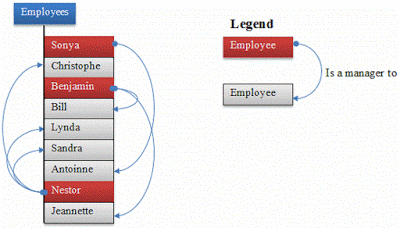
DELETE FROM emp a WHERE rowid != (SELECT MAX(rowid) FROM emp b WHERE a.empno=b.empno);

**Question 12: There is a table which contains two column Student and Marks, you need to find all the students, whose marks are greater than average marks i.e. list of above average students.**  
Answer: This query can be written using subquery as shown below:

SELECT student, marks from table where marks > SELECT AVG(marks) from table)

[](http://1.bp.blogspot.com/-EBP7clmjL1Q/VXrjOw_yTVI/AAAAAAAADAs/n_pQ6j7vkZw/s1600/SQL+Schema+Interview+Questions.png)

**Question 13: How do you find all employees which are also manager? .**  
You have given a standard employee table with an additional column mgr\_id, which contains employee id of the manager.

[](http://1.bp.blogspot.com/-A8OVkcRMrsM/VXrj9FBPKvI/AAAAAAAADA0/XZvHQHDVaNQ/s1600/Employee+Manager+query.gif)

Answer: You need to know about self-join to solve this problem. In Self Join, you can join two instances of the same table to find out additional details as shown below

SELECT e.name, m.name FROM Employee e, Employee m WHERE e.mgr\_id = m.emp\_id;

this will show employee name and manager name in two column e.g.  
  
name  manager\_name  
John   David  
  
One follow-up is to modify this query to include employees which don't have a manager. To solve that, instead of using the inner join, just use left outer join, this will also include employees without managers.  
  
  
  
**Question 14: You have a composite index of three columns, and you only provide the value of two columns in WHERE clause of a select query? Will Index be used for this operation?** For example if Index is on EmpId, EmpFirstName, and EmpSecondName and you write query like

SELECT \* FROM Employee WHERE EmpId=2 and EmpFirstName='Radhe'

If the given two columns are secondary index column then the index will not invoke, but if the given 2 columns contain the primary index(first column while creating index) then the index will invoke. In this case, Index will be used because EmpId and EmpFirstName are primary columns.

**9. What is a join?**

This is a keyword used to query data from more tables based on the relationship between the fields of the tables. Keys play a major role when JOINs are used.

**10. What are the types of join and explain each?**

There are various types of join which can be used to retrieve data and it depends on the relationship between tables.

**Inner join.**

Inner join return rows when there is at least one match of rows between the tables.

**Right Join.**

Right join return rows which are common between the tables and all rows of Right hand side table. Simply, it returns all the rows from the right hand side table even though there are no matches in the left hand side table.

**Left Join.**

Left join return rows which are common between the tables and all rows of Left hand side table. Simply, it returns all the rows from Left hand side table even though there are no matches in the Right hand side table.

**Full Join.**

Full join return rows when there are matching rows in any one of the tables. This means, it returns all the rows from the left hand side table and all the rows from the right hand side table.

**4. What is a View?**

A view is a virtual table which consists of a subset of data contained in a table. Views are not virtually present, and it takes less space to store. View can have data of one or more tables combined, and it is depending on the relationship.

**15. What is an Index?**

An index is performance tuning method of allowing faster retrieval of records from the table. An index creates an entry for each value and it will be faster to retrieve data.

**16. What are all the different types of indexes?**

There are three types of indexes -.

**Unique Index.**

This indexing does not allow the field to have duplicate values if the column is unique indexed. Unique index can be applied automatically when primary key is defined.

**Clustered Index.**

This type of index reorders the physical order of the table and search based on the key values. Each table can have only one clustered index.

**NonClustered Index.**

NonClustered Index does not alter the physical order of the table and maintains logical order of data. Each table can have 999 nonclustered indexes.

**17. What is a Cursor?**

A database Cursor is a control which enables traversal over the rows or records in the table. This can be viewed as a pointer to one row in a set of rows. Cursor is very much useful for traversing such as retrieval, addition and removal of database records.

**18. What is a relationship and what are they?**

Database Relationship is defined as the connection between the tables in a database. There are various data basing relationships, and they are as follows:.

* One to One Relationship.
* One to Many Relationship.
* Many to One Relationship.
* Self-Referencing Relationship.

**19. What is a query?**

A DB query is a code written in order to get the information back from the database. Query can be designed in such a way that it matched with our expectation of the result set. Simply, a question to the Database.

**20. What is subquery?**

A subquery is a query within another query. The outer query is called as main query, and inner query is called subquery. SubQuery is always executed first, and the result of subquery is passed on to the main query.

**21. What are the types of subquery?**

There are two types of subquery – Correlated and Non-Correlated.

A correlated subquery cannot be considered as independent query, but it can refer the column in a table listed in the FROM the list of the main query.

A Non-Correlated sub query can be considered as independent query and the output of subquery are substituted in the main query.

**22. What is a stored procedure?**

Stored Procedure is a function consists of many SQL statement to access the database system. Several SQL statements are consolidated into a stored procedure and execute them whenever and wherever required.

**23. What is a trigger?**

A DB trigger is a code or programs that automatically execute with response to some event on a table or view in a database. Mainly, trigger helps to maintain the integrity of the database.

Example: When a new student is added to the student database, new records should be created in the related tables like Exam, Score and Attendance tables.

**24. What is the difference between DELETE and TRUNCATE commands?**

DELETE command is used to remove rows from the table, and WHERE clause can be used for conditional set of parameters. Commit and Rollback can be performed after delete statement.

TRUNCATE removes all rows from the table. Truncate operation cannot be rolled back.

**25. What are local and global variables and their differences?**

Local variables are the variables which can be used or exist inside the function. They are not known to the other functions and those variables cannot be referred or used. Variables can be created whenever that function is called.

Global variables are the variables which can be used or exist throughout the program. Same variable declared in global cannot be used in functions. Global variables cannot be created whenever that function is called.

**26. What is a constraint?**

Constraint can be used to specify the limit on the data type of table. Constraint can be specified while creating or altering the table statement. Sample of constraint are.

* NOT NULL.
* CHECK.
* DEFAULT.
* UNIQUE.
* PRIMARY KEY.
* FOREIGN KEY.

**27. What is data Integrity?**

Data Integrity defines the accuracy and consistency of data stored in a database. It can also define integrity constraints to enforce business rules on the data when it is entered into the application or database.

**28. What is Auto Increment?**

Auto increment keyword allows the user to create a unique number to be generated when a new record is inserted into the table. AUTO INCREMENT keyword can be used in Oracle and IDENTITY keyword can be used in SQL SERVER.

Mostly this keyword can be used whenever PRIMARY KEY is used.

**29. What is the difference between Cluster and Non-Cluster Index?**

Clustered index is used for easy retrieval of data from the database by altering the way that the records are stored. Database sorts out rows by the column which is set to be clustered index.

A nonclustered index does not alter the way it was stored but creates a complete separate object within the table. It point back to the original table rows after searching.

**30. What is Datawarehouse?**

Datawarehouse is a central repository of data from multiple sources of information. Those data are consolidated, transformed and made available for the mining and online processing. Warehouse data have a subset of data called Data Marts.

**31. What is Self-Join?**

Self-join is set to be query used to compare to itself. This is used to compare values in a column with other values in the same column in the same table. ALIAS ES can be used for the same table comparison.

**32. What is Cross-Join?**

Cross join defines as Cartesian product where number of rows in the first table multiplied by number of rows in the second table. If suppose, WHERE clause is used in cross join then the query will work like an INNER JOIN.

**33. What is user defined functions?**

User defined functions are the functions written to use that logic whenever required. It is not necessary to write the same logic several times. Instead, function can be called or executed whenever needed.

**34. What are all types of user defined functions?**

Three types of user defined functions are.

* Scalar Functions.
* Inline Table valued functions.
* Multi statement valued functions.

Scalar returns unit, variant defined the return clause. Other two types return table as a return.

**35. What is collation?**

Collation is defined as set of rules that determine how character data can be sorted and compared. This can be used to compare A and, other language characters and also depends on the width of the characters.

ASCII value can be used to compare these character data.

**36. What are all different types of collation sensitivity?**

Following are different types of collation sensitivity -.

* Case Sensitivity – A and a and B and b.
* Accent Sensitivity.
* Kana Sensitivity – Japanese Kana characters.
* Width Sensitivity – Single byte character and double byte character.

**37. Advantages and Disadvantages of Stored Procedure?**

Stored procedure can be used as a modular programming – means create once, store and call for several times whenever required. This supports faster execution instead of executing multiple queries. This reduces network traffic and provides better security to the data.

Disadvantage is that it can be executed only in the Database and utilizes more memory in the database server.

**38. What is Online Transaction Processing (OLTP)?**

Online Transaction Processing or OLTP manages transaction based applications which can be used for data entry and easy retrieval processing of data. This processing makes like easier on simplicity and efficiency. It is faster, more accurate results and expenses with respect to OTLP.

Example – Bank Transactions on a daily basis.

**39. What is CLAUSE?**

SQL clause is defined to limit the result set by providing condition to the query. This usually filters some rows from the whole set of records.

Example – Query that has WHERE condition

Query that has HAVING condition.

**40. What is recursive stored procedure?**

A stored procedure which calls by itself until it reaches some boundary condition. This recursive function or procedure helps programmers to use the same set of code any number of times.

**41. What is Union, minus and Interact commands?**

UNION operator is used to combine the results of two tables, and it eliminates duplicate rows from the tables.

MINUS operator is used to return rows from the first query but not from the second query. Matching records of first and second query and other rows from the first query will be displayed as a result set.

INTERSECT operator is used to return rows returned by both the queries.

**42. What is an ALIAS command?**

ALIAS name can be given to a table or column. This alias name can be referred in WHERE clause to identify the table or column.

|  |  |
| --- | --- |
| 1 | Select st.StudentID, Ex.Result from student st, Exam as Ex where st.studentID = Ex. StudentID |

Here, st refers to alias name for student table and Ex refers to alias name for exam table.

**43. What is the difference between TRUNCATE and DROP statements?**

TRUNCATE removes all the rows from the table, and it cannot be rolled back. DROP command removes a table from the database and operation cannot be rolled back.

**44. What are aggregate and scalar functions?**

Aggregate functions are used to evaluate mathematical calculation and return single values. This can be calculated from the columns in a table. Scalar functions return a single value based on the input value.

Example -.

Aggregate – max(), count – Calculated with respect to numeric.

Scalar – UCASE(), NOW() – Calculated with respect to strings.

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**45. How can you create an empty table from an existing table?**

Example will be -.

Select \* into studentcopy from student where 1=2

Here, we are copying student table to another table with the same structure with no rows copied.

**46. How to fetch common records from two tables?**

Common records result set can be achieved by -.

Select studentID from student. <strong>INTERSECT </strong> Select StudentID from Exam

**47. How to fetch alternate records from a table?**

Records can be fetched for both Odd and Even row numbers -.

To display even numbers-.

Select studentId from (Select rowno, studentId from student) where mod(rowno,2)=0

To display odd numbers-.

Select studentId from (Select rowno, studentId from student) where mod(rowno,2)=1

from (Select rowno, studentId from student) where mod(rowno,2)=1.[/sql]

**48. How to select unique records from a table?**

Select unique records from a table by using DISTINCT keyword.

1.Select DISTINCT StudentID, StudentName from Student.

**49. What is the command used to fetch first 5 characters of the string?**

There are many ways to fetch first 5 characters of the string -.

1.Select SUBSTRING(StudentName,1,5) as studentname from student

2.Select RIGHT(Studentname,5) as studentname from student

50. Which operator is used in query for pattern matching?

LIKE operator is used for pattern matching, and it can be used as -.

% – Matches zero or more characters.

\_(Underscore) – Matching exactly one character.

Example -.

1.Select \* from Student where studentname like ‘a%’

2.Select \* from Student where studentname like ‘ami\_’

1. **To fetch ALTERNATE records from a table. (EVEN NUMBERED)**select \* from emp where rowid in (select decode(mod(rownum,2),0,rowid, null) from emp);
2. **To select ALTERNATE records from a table. (ODD NUMBERED)**select \* from emp where rowid in (select decode(mod(rownum,2),0,null ,rowid) from emp);
3. **Find the 3rd MAX salary in the emp table.**select distinct sal from emp e1 where 3 = (select count(distinct sal) from emp e2 where e1.sal <= e2.sal);
4. **Find the 3rd MIN salary in the emp table.**select distinct sal from emp e1 where 3 = (select count(distinct sal) from emp e2where e1.sal >= e2.sal);
5. **Select FIRST n records from a table.**select \* from emp where rownum <= &n;
6. **Select LAST n records from a table**select \* from emp minus select \* from emp where rownum <= (select count(\*) - &n from emp);
7. **List dept no., Dept name for all the departments in which there are no employees in the department.**select \* from dept where deptno not in (select deptno from emp);    
   alternate solution:  select \* from dept a where not exists (select \* from emp b where a.deptno = b.deptno);  
   altertnate solution:  select empno,ename,b.deptno,dname from emp a, dept b where a.deptno(+) = b.deptno and empno is null;
8. **How to get 3 Max salaries ?**select distinct sal from emp a where 3 >= (select count(distinct sal) from emp b where a.sal <= b.sal) order by a.sal desc;
9. **How to get 3 Min salaries ?**select distinct sal from emp a  where 3 >= (select count(distinct sal) from emp b  where a.sal >= b.sal);
10. **How to get nth max salaries ?**  
    select distinct hiredate from emp a where &n =  (select count(distinct sal) from emp b where a.sal >= b.sal);
11. **Select DISTINCT RECORDS from emp table.**select \* from emp a where  rowid = (select max(rowid) from emp b where  a.empno=b.empno);
12. **How to delete duplicate rows in a table?**delete from emp a where rowid != (select max(rowid) from emp b where  a.empno=b.empno);
13. **Count of number of employees in  department  wise.**select count(EMPNO), b.deptno, dname from emp a, dept b  where a.deptno(+)=b.deptno  group by b.deptno,dname;
14. **Suppose there is annual salary information provided by emp table. How to fetch monthly salary of each and every employee?**

select ename,sal/12 as monthlysal from emp;

1. **Select all record from emp table where deptno =10 or 40.**

select \* from emp where deptno=30 or deptno=10;

1. **Select all record from emp table where deptno=30 and sal>1500.**

select \* from emp where deptno=30 and sal>1500;

1. **Select  all record  from emp where job not in SALESMAN  or CLERK.**

select \* from emp where job not in ('SALESMAN','CLERK');

1. **Select all record from emp where ename in 'BLAKE','SCOTT','KING'and'FORD'.**

select \* from emp where ename in('JONES','BLAKE','SCOTT','KING','FORD');

1. **Select all records where ename starts with ‘S’ and its lenth is 6 char.**

select \* from emp where ename like'S\_\_\_\_';

1. **Select all records where ename may be any no of  character but it should end with ‘R’.**

select \* from emp where ename like'%R';

1. **Count  MGR and their salary in emp table.**

select count(MGR),count(sal) from emp;

1. **In emp table add comm+sal as total sal  .**

select ename,(sal+nvl(comm,0)) as totalsal from emp;

1. **Select  any salary <3000 from emp table.**

select \* from emp  where sal> any(select sal from emp where sal<3000);

1. **Select  all salary <3000 from emp table.**

select \* from emp  where sal> all(select sal from emp where sal<3000);

1. **Select all the employee  group by deptno and sal in descending order.**

select ename,deptno,sal from emp order by deptno,sal desc;

1. **How can I create an empty table emp1 with same structure as emp?**

Create table emp1 as select \* from emp where 1=2;

1. **How to retrive record where sal between 1000 to 2000?**  
   Select \* from emp where sal>=1000 And  sal<2000
2. **Select all records where dept no of both emp and dept table matches.**  
   select \* from emp where exists(select \* from dept where emp.deptno=dept.deptno)
3. **If there are two tables emp1 and emp2, and both have common record. How can I fetch all the recods but common records only once?**  
   (Select \* from emp) Union (Select \* from emp1)
4. **How to fetch only common records from two tables emp and emp1?**  
   (Select \* from emp) Intersect (Select \* from emp1)
5. **How can I retrive all records of emp1 those should not present in emp2?**  
   (Select \* from emp) Minus (Select \* from emp1)
6. **Count the totalsa  deptno wise where more than 2 employees exist.**  
   SELECT  deptno, sum(sal) As totalsal  
   FROM emp  
   GROUP BY deptno  
   HAVING COUNT(empno) > 2