**Tek School**

**SQL Interview Questions**

1. **What is the order of SQL SELECT?**

**Please give an example**

**SELECT, FROM, WHERE, GROUP BY, HAVING, ORDER BY.**

**SELECT AVG(SALARY), J.JOB\_ID, JOB\_TITLE**

**FROM EMPLOYEES E JOIN JOBS J**

**ON E.JOB\_ID=J.JOB\_ID**

**WHERE JOB\_TITLE LIKE '%Manager%'**

**GROUP BY J.JOB\_ID, JOB\_TITLE**

**HAVING AVG(SALARY)>11000**

**ORDER BY JOB\_TITLE;**

1. **How to rename a column in the output of SQL query?**

**Please give an example**

**To rename columns in the result output we would use Aliases.**

**That would change the column in the Results but not in the Database itself.**

**There is 2 ways how it can be done:**

1. **We can use AS Keyword**

**SELECT FIRST\_NAME, LAST\_NAME, SALARY AS MONTHLY\_SALARY, SALARY\*12 AS YEARLY\_SALARY**

**FROM EMPLOYEES;**

1. **We can just leave space**

**SELECT FIRST\_NAME, LAST\_NAME, SALARY MONTHLY\_SALARY, SALARY\*12 YEARLY\_SALARY**

**FROM EMPLOYEES;**

1. **How to add new Employee details in an Employee table?**

To add new record to the Table we would use INSERT DML Command

INSERT INTO EMPLOYEES(EMPLOYEE\_ID,FIRST\_NAME,LAST\_NAME,EMAIL,HIRE\_DATE,JOB\_ID, SALARY)

VALUES (220,'JOHN', 'SNOW', 'JSNOW', '01-JUL-08', 'IT\_PROG' ,5500);

1. **What is a constraint in SQL?**

**Please give an example**

Constraint, as in limitation or check, can be used to specify the limit on the data type of any table column. It can be specified while creating or altering the table. Common constraints – NOT NULL, DEFAULT, UNIQUE, PRIMARY KEY, FOREIGN KEY.

1. What is a Primary key?

**Please give an example**

PK is a column in the Table that uniquely identifies each record and the value is never duplicated in the same table

PK cannot contain NULL Values

1. What is a Foreign key?

**Please give an example**

Is existence of PK in another table

Is a key used to link two tables together

It can accept Null Values

We can have more than one Foreign Key in a table.

1. **How to avoid duplicate records in a SELECT query?**

**Please give an example**

**We can use DISTICT Keyword.**

**SELECT DISTINCT DEPARTMENT\_ID**

**FROM EMPLOYEES**

**ORDER BY DEPARTMENT\_ID;**

1. What is difference between DELETE and TRUNCATE?

**Please give an example**

DELETE: delete selected rows from the table, WHERE clause can be used for conditional parameters. Deleted records can be rolled back or committed.

TRUNCATE: delete ALL rows from the table >> auto-commits, i.e. cannot be rolled back.

DELETE FROM INSURANCE

WHERE POLICY\_NUMBER=0002;

TRUNCATE TABLE JOB\_HISTORY;

1. What is the difference between UNION and UNION ALL?

**Please give an example**

UNION merges the contents of two structurally-compatible tables into a single combined table.

UNION will omit duplicate records whereas and it will also sort the results where is UNION ALL will include duplicate records.

The performance of UNION ALL will typically be better than UNION, since UNION requires the server to do the additional work of removing any duplicates.

SELECT FIRST\_NAME, LAST\_NAME, EMAIL FROM EMPLOYEES

UNION ALL

SELECT FIRST\_NAME, LAST\_NAME, EMAIL FROM MY\_TABLE;

SELECT FIRST\_NAME FROM EMPLOYEES

UNION

SELECT LAST\_NAME FROM EMPLOYEES;

1. What is the difference between BETWEEN and IN condition operators?

**Please give an example**

BETWEEN: used to display rows based on a range of values

IN: used to check for values contained in a specific set of values.

SELECT \* FROM EMPLOYEES

WHERE SALARY IN (6000, 10000);

SELECT \* FROM EMPLOYEES

WHERE SALARY BETWEEN 6000 AND 10000;

1. What is the difference between the WHERE and HAVING clauses?

**Please give an example**

The WHERE clause is used to filter records from a result. The filtering occurs before any groupings are made.

The HAVING clause is used to filter values from a group (i.e., to check conditions after aggregation into groups has been performed.

SELECT COUNT(\*), DEPARTMENT\_ID

FROM EMPLOYEES

WHERE DEPARTMENT\_ID IN(10,50,80,100,110,120,150)

GROUP BY DEPARTMENT\_ID

HAVING COUNT(\*)>5;

1. **What do you mean by DML?**

**Please give an example**

Data Manipulation Language (DML) - deals with data manipulation (used to retrieve, store, modify, delete and update data in database).

**DML Commands: SELECT, UPDATE, DELETE, INSERT (SUDI)**

DELETE FROM INSURANCE

WHERE POLICY\_NUMBER=0002;

INSERT INTO EMPLOYEES(EMPLOYEE\_ID,FIRST\_NAME,LAST\_NAME,EMAIL,HIRE\_DATE,JOB\_ID, SALARY)

VALUES (220,'JOHN', 'SNOW', 'JSNOW', '01-JUL-08', 'IT\_PROG' ,5500);

1. Which Operators available in SQL?

**Please give an example**

**SQL Operator is a reserved word used primarily in an SQL statement’s WHERE clause to perform operations, such as arithmetic operations and comparisons. These are used to specify conditions in an SQL statement.**

**There are three types of Operators.**

1. **Arithmetic Operators**

**SELECT FIRST\_NAME, LAST\_NAME, SALARY\*12**

**FROM EMPLOYEES;**

1. **Comparison Operators**

**SELECT FIRST\_NAME, LAST\_NAME, DEPARTMENT\_ID**

**FROM EMPLOYEES**

**WHERE DEPARTMENT\_ID = 90;**

1. **Logical Operators**

**SELECT FIRST\_NAME, LAST\_NAME, SALARY**

**FROM EMPLOYEES**

**WHERE DEPARTMENT\_ID = 90 AND LAST\_NAME='King';**

**SELECT FIRST\_NAME, LAST\_NAME, SALARY**

**FROM EMPLOYEES**

**WHERE DEPARTMENT\_ID = 90 OR LAST\_NAME='King';**

**SELECT FIRST\_NAME, LAST\_NAME, DEPARTMENT\_ID**

**FROM EMPLOYEES**

**WHERE DEPARTMENT\_ID IN (90,100,110,10);**

1. **What is the difference between an inner and outer join?**

**Please give an example**

**An inner join returns rows when there is at least some matching data between two (or more) tables that are being compared.**

**An outer join returns rows from both tables that include the records that are unmatched from one or both the tables.**

**SELECT COUNT(EMPLOYEE\_ID), E.DEPARTMENT\_ID, DEPARTMENT\_NAME**

**FROM EMPLOYEES E INNER JOIN DEPARTMENTS D**

**ON E.DEPARTMENT\_ID=D.DEPARTMENT\_ID**

**GROUP BY E.DEPARTMENT\_ID, DEPARTMENT\_NAME;**

**SELECT COUNT(EMPLOYEE\_ID), E.DEPARTMENT\_ID, DEPARTMENT\_NAME**

**FROM EMPLOYEES E FULL OUTER JOIN DEPARTMENTS D**

**ON E.DEPARTMENT\_ID=D.DEPARTMENT\_ID**

**GROUP BY E.DEPARTMENT\_ID, DEPARTMENT\_NAME;**

1. **What is a Subquery ?**

**Please give an example**

**A Subquery is a SQL query within another query. It is a subset of a Select statement whose return values are used in filtering the conditions of the main query.**

**SELECT \* FROM EMPLOYEES**

**WHERE SALARY>(SELECT AVG(SALARY) FROM EMPLOYEES);**

**SELECT \* FROM EMPLOYEES**

**WHERE DEPARTMENT\_ID IN**

**(SELECT DEPARTMENT\_ID FROM DEPARTMENTS WHERE DEPARTMENT\_NAME LIKE 'A%');**

1. **What is Database Testing?**

**Please give an example**

**It is AKA back-end testing or data testing.**

**Database testing involves in verifying the integrity of data in the front end with the data present in the back end. It involves in updating records in a database and verifying the same on the front end.**

1. What are aggregate functions in SQL?

**Please give an example**

SQL aggregate functions return a single value, calculated from values in a column. Some of the aggregate functions in SQL are as follows

• AVG() – This function returns the average value

• COUNT() – This function returns the number of rows

• MAX() – This function returns the largest value

• MIN() – This function returns the smallest value

• ROUND() – This function rounds a numeric field to the number of decimals specified

• SUM() – This function returns the sum

SELECT ROUND(AVG(SALARY),2) FROM EMPLOYEES;

1. **Explain SQL Data Types?**

**Please give an example**

**In SQL Server, each column in a database table has a name and a data type. We need to decide what type of data to store inside each and every column of a table while creating a SQL table.**

**There are many different Data Types, the common are:**

Numbers – 1234

VarChar2 - String, letters, characters (Variable Length)

Char - String, letters, characters (Fixed Length)

Date - 02/13/201

Difference between Char() and varChar2()in Memory Allocation

1. **How to Test for**NULL**Values?**

**Please give an example**

**A field with a NULL value is a field with no value. NULL value cannot be compared with other NULL values. Hence, It is not possible to test for NULL values with comparison operators, such as =, <, or <>. For this, we have to use the IS NULL and IS NOT NULL operators.**

**SELECT \* FROM EMPLOYEES**

**WHERE COMMISSION\_PCT IS NULL;**

**SELECT \* FROM EMPLOYEES**

**WHERE COMMISSION\_PCT IS NOT NULL;**

1. **What is a GROUP BY Clause? Have you use it?**

**Please give an example**

**The GROUP BY statement is often used with aggregate functions (COUNT, MAX, MIN, SUM, AVG) to group the result-set by one or more columns.**

SELECT COUNT(\*), DEPARTMENT\_ID

FROM EMPLOYEES

WHERE DEPARTMENT\_ID IN(10,50,80,100,110,120,150)

GROUP BY DEPARTMENT\_ID

HAVING COUNT(\*)>5;

1. **When and why do we use ORDER BY Clause**

**Please give an example**

**The ORDER BY keyword is used to sort the result-set in ascending or descending order.**

**The ORDER BY keyword sorts the records in ascending order by default. To sort the records in descending order, use the DESC keyword.**

**SELECT EMPLOYEE\_ID, FIRST\_NAME**

**FROM EMPLOYEES**

**WHERE ROWNUM<=5**

**ORDER BY 1 DESC;**

1. **What is the difference between AND and OR operators**

**Please give an example**

**The AND and OR operators are used to filter records based on more than one condition:**

**The AND operator displays a record if all the conditions separated by AND is TRUE.**

**The OR operator displays a record if any of the conditions separated by OR is TRUE.**

**SELECT FIRST\_NAME, LAST\_NAME, SALARY**

**FROM EMPLOYEES**

**WHERE DEPARTMENT\_ID = 90 AND LAST\_NAME='King';**

**SELECT FIRST\_NAME, LAST\_NAME, SALARY**

**FROM EMPLOYEES**

**WHERE DEPARTMENT\_ID = 90 OR LAST\_NAME='King';**

1. **How can you get first 5 records from the Table? Last 5 records?**

**Please give an example**

**For that we can use ROWNUM Keyword:**

**SELECT EMPLOYEE\_ID, FIRST\_NAME**

**FROM EMPLOYEES**

**WHERE ROWNUM<=5**

**ORDER BY EMPLOYEE\_ID;**

**SELECT EMPLOYEE\_ID, FIRST\_NAME**

**FROM EMPLOYEES**

**WHERE ROWNUM<=5**

**ORDER BY 1 DESC;**

1. **Have you done functions in SQL?**

**Please give an example**

**Yes I have**

**SELECT \* FROM EMPLOYEES**

**WHERE HIRE\_DATE=(SELECT MIN(HIRE\_DATE) FROM EMPLOYEES)**

**UNION**

**SELECT \* FROM EMPLOYEES**

**WHERE HIRE\_DATE=(SELECT MAX(HIRE\_DATE) FROM EMPLOYEES);**

**SELECT UPPER(COUNTRY\_NAME)**

**from COUNTRIES**

**WHERE LENGTH(COUNTRY\_NAME)>6;**

1. **Explain how would you query two or more tables when validating data in SQL Database?**

**Please give an example**

**Using Subquery:**

**SELECT FIRST\_NAME, LAST\_NAME FROM EMPLOYEES**

**WHERE DEPARTMENT\_ID =( SELECT DEPARTMENT\_ID FROM DEPARTMENTS WHERE DEPARTMENT\_NAME ='Shipping');**

**Using JOINS**

**SELECT EMPLOYEE\_ID, FIRST\_NAME, D.DEPARTMENT\_ID, DEPARTMENT\_NAME**

**FROM EMPLOYEES E JOIN DEPARTMENTS D**

**ON E.DEPARTMENT\_ID=D.DEPARTMENT\_ID;**

1. **How to write a query to show the details of employees from Employees table whose last names starts with K? Ends with k?**

**Please write an example**

**To achieve that we can use LIKE Operator**

**There are two wildcards used in conjunction with the LIKE operator:**

**% - The percent sign represents zero, one, or multiple characters**

**\_ - The underscore represents a single character**

**SELECT \* FROM EMPLOYEES**

**WHERE LAST\_NAME LIKE 'A%';**

**SELECT \* FROM EMPLOYEES**

**WHERE LAST\_NAME LIKE '%a';**

1. What is difference between TRUNCATE and DROP?

**Please write an example**

**TRUNCATE: delete ALL rows from the table >> auto-commits, i.e. cannot be rolled back. Database triggers do not fire on TRUNCATE**

**DROP: delete a table from the database and operation cannot be rolled back.**

TRUNCATE TABLE INSURANCE;

DROP TABLE INSURANCE;

1. What types of joins have you used in the past?

**Please write an example**

**In the Past I have used Inner joins, Left Joins, Right Joins and Full Outer Joins**

**SELECT EMPLOYEE\_ID, E.DEPARTMENT\_ID, D.DEPARTMENT\_ID, DEPARTMENT\_NAME**

**FROM EMPLOYEES E RIGHT OUTER JOIN DEPARTMENTS D**

**ON E.DEPARTMENT\_ID=D.DEPARTMENT\_ID;**

**SELECT EMPLOYEE\_ID, E.DEPARTMENT\_ID, D.DEPARTMENT\_ID, DEPARTMENT\_NAME**

**FROM DEPARTMENTS D LEFT OUTER JOIN EMPLOYEES E**

**ON E.DEPARTMENT\_ID=D.DEPARTMENT\_ID;**

**SELECT EMPLOYEE\_ID, FIRST\_NAME, LAST\_nAME, SALARY, D.DEPARTMENT\_NAME, CITY, COUNTRY\_NAME**

**FROM EMPLOYEES E FULL JOIN DEPARTMENTS D**

**ON E.DEPARTMENT\_ID=D.DEPARTMENT\_ID**

**FULL JOIN LOCATIONS L**

**ON L.LOCATION\_ID=D.LOCATION\_ID**

**FULL JOIN COUNTRIES C ON C.COUNTRY\_ID=L.COUNTRY\_ID;**

**SELECT AVG(SALARY), J.JOB\_ID, JOB\_TITLE**

**FROM EMPLOYEES E JOIN JOBS J**

**ON E.JOB\_ID=J.JOB\_ID**

**WHERE JOB\_TITLE LIKE '%Manager%'**

**GROUP BY J.JOB\_ID, JOB\_TITLE**

**HAVING AVG(SALARY)>11000**

**ORDER BY JOB\_TITLE;**

1. What is the difference between DDL and DML Commands?

**Please write an example**

|  |  |  |
| --- | --- | --- |
| **BASIS FOR COMPARISON** | **DDL** | **DML** |
| Basic | DDL is used to Specify the database schema database structure. | DML is used to access, modify or retrieve the data from the database. |
| Full Form | Data Definition Language | Data Manipulation Language |
| Commands | CREATE, ALTER, DROP, TRUNCATE AND COMMENT and RENAME, etc. | SELECT, INSERT, UPDATE, DELETE, MERGE, CALL, etc. |

1. What is the difference between Commit and Rollback?

**Please write an example**

s both ROLLBACK and COMMIT Commands are TCC (Transaction Control Commands), they have differences:

COMMIT is used to save the changes permanently on the server

ROLLBACK is used to undo the changes and restore previous state.

1. Let’s say you working on a Employees Database. How would you write a query to find out those employees whose first name starts with character ‘N’, ‘A’, ‘K’ ?

**Please write an example**

SELECT \* FROM EMPLOYEES WHERE LAST\_NAME LIKE 'A%'

UNION

SELECT \* FROM EMPLOYEES WHERE LAST\_NAME LIKE 'N%'

UNION

SELECT \* FROM EMPLOYEES WHERE LAST\_NAME LIKE 'K%';

Or

SELECT \* FROM EMPLOYEES

WHERE LAST\_NAME LIKE 'A%' OR LAST\_NAME LIKE 'N%' OR LAST\_NAME LIKE 'K%';

1. What is the difference between right join and left join ?

**Please write an example**

**Left join and Right join are both Outer Joins and they both return matching data from both Tables PLUS**

* **LEFT outer join or LEFT join** Return **non matching** data from all rows from the **LEFT TABLE** written in **YOUR QUERY**, even if there is **NO MATCH** in the **right table**
* **RIGHT outer join or RIGHT join** Return **non matching** data from all rows from the **RIGHT TABLE** written in **YOUR QUERY**, even if there is **NO MATCH** in the **left table**

**SELECT EMPLOYEE\_ID, E.DEPARTMENT\_ID, D.DEPARTMENT\_ID, DEPARTMENT\_NAME**

**FROM EMPLOYEES E RIGHT OUTER JOIN DEPARTMENTS D**

**ON E.DEPARTMENT\_ID=D.DEPARTMENT\_ID;**

**SELECT EMPLOYEE\_ID, E.DEPARTMENT\_ID, D.DEPARTMENT\_ID, DEPARTMENT\_NAME**

**FROM DEPARTMENTS D LEFT OUTER JOIN EMPLOYEES E**

**ON E.DEPARTMENT\_ID=D.DEPARTMENT\_ID;**