## What is Join?  Ans: An SQL Join is used to combine data from two or more tables, based on a common field between them.

## Different Types of SQL JOINs

Here are the different types of the JOINs in SQL:

* **(INNER) JOIN**: Returns records that have matching values in both tables
* **LEFT (OUTER) JOIN**: Return all records from the left table, and the matched records from the right table
* **RIGHT (OUTER) JOIN**: Return all records from the right table, and the matched records from the left table
* **FULL (OUTER) JOIN**: Return all records when there is a match in either left or right table

**SQL Constraints**SQL constraints are used to specify rules for the data in a table.

Constraints are used to limit the type of data that can go into a table. This ensures the accuracy and reliability of the data in the table. If there is any violation between the constraint and the data action, the action is aborted.

The following constraints are commonly used in SQL:

* [NOT NULL](https://www.w3schools.com/sql/sql_notnull.asp) - Ensures that a column cannot have a NULL value
* [UNIQUE](https://www.w3schools.com/sql/sql_unique.asp) - Ensures that all values in a column are different
* [PRIMARY KEY](https://www.w3schools.com/sql/sql_primarykey.asp) - A combination of a NOT NULL and UNIQUE. Uniquely identifies each row in a table
* [FOREIGN KEY](https://www.w3schools.com/sql/sql_foreignkey.asp) - Uniquely identifies a row/record in another table
* [CHECK](https://www.w3schools.com/sql/sql_check.asp) - Ensures that all values in a column satisfies a specific condition
* [DEFAULT](https://www.w3schools.com/sql/sql_default.asp) - Sets a default value for a column when no value is specified

**What are the differences between DDL, DML and DCL in SQL?**  
**Ans:** Following are some details of three.  
**DDL**stands for Data Definition Language. SQL queries like CREATE, ALTER, DROP and RENAME come under this.  
**DML**stands for Data Manipulation Language. SQL queries like SELECT, INSERT and UPDATE come under this.  
**DCL** stands for Data Control Language. SQL queries like GRANT and REVOKE come under this.

**Explain the difference between DELETE, TRUNCATE and DROP commands?**Once delete operation is performed, Commit and Rollback can be performed to retrieve data.

Once the truncate statement is executed, Commit and Rollback statement cannot be performed. Where condition can be used along with delete statement, but it can't be used with truncate statement.

­­­­­­­Drop command is used to drop the table or keys like primary, foreign from a table.

**What is the difference between having and where clause?**  
**Ans:** HAVING is used to specify a condition for a group or an aggregate function used in select statement. The WHERE clause selects before grouping. The HAVING clause selects rows after grouping. Unlike HAVING clause, the WHERE clause cannot contain aggregate functions.

**What is a Trigger?**  
**Ans:**A [Trigger](http://en.wikipedia.org/wiki/Database_trigger) is a code that associated with insert, update or delete operations. The code is executed automatically whenever the associated query is executed on a table. Triggers can be useful to maintain integrity in database.

**What is a view?**

The views are virtual tables. Unlike tables that contain data, views simply contain queries that dynamically retrieve data when used.

**What is a stored procedure?**  
**Ans:** A [stored procedure](http://en.wikipedia.org/wiki/Stored_procedure) is like a function that contains a set of operations compiled together. It contains a set of operations that are commonly used in an application to do some common database tasks.

**What are indexes?**   
Ans: A [database index](http://en.wikipedia.org/wiki/Database_index) is a data structure that improves the speed of data retrieval operations on a database table at the cost of additional writes and the use of more storage space to maintain the extra copy of data.  
Data can be stored only in one order on disk. To support faster access according to different values, faster search like binary search for different values is desired, For this purpose, indexes are created on tables. These indexes need extra space on disk, but they allow faster search according to different frequently searched values.

**What is database normalization?**  
**Ans:**It is a process of analyzing the given relation schemas based on their functional dependencies and primary keys to achieve the following desirable properties:  
1) Minimizing Redundancy  
2) Minimizing the Insertion, Deletion, And Update Anomalies  
Relation schemas that do not meet the properties are decomposed into smaller relation schemas that could meet desirable properties.

**What is a Database Lock?**Database lock tells a transaction, if the data item in questions is currently being used by other transactions.

**What are the type of locks?**

1. Shared Lock

When a shared lock is applied on data item, other transactions can only read the item, but can't write into it.

2. Exclusive Lock

When an exclusive lock is applied on data item, other transactions can't read or write into the data item.

**What is a transaction? What are ACID properties?**  
Ans: A [Database Transaction](http://en.wikipedia.org/wiki/Database_transaction) is a set of database operations that must be treated as whole, means either all operations are executed or none of them.  
An example can be bank transaction from one account to another account. Either both debit and credit operations must be executed or none of them.  
[ACID](http://en.wikipedia.org/wiki/ACID)(Atomicity, Consistency, Isolation, Durability) is a set of properties that guarantee that database transactions are processed reliably.