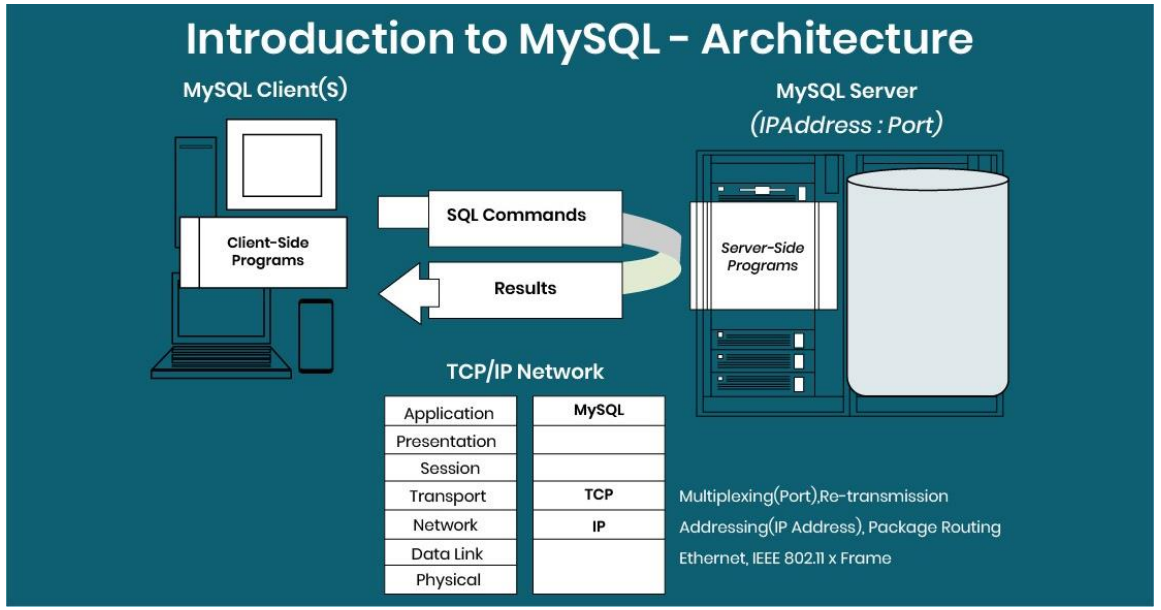

MySQL

Introduction

- MySQL is a widely used, open-source relational database management system (RDBMS) based on the Structured Query Language (SQL), used for storing and managing data, known for its speed, reliability, and scalability.
- Other kinds of data storages can also be used to manage data, such as files on the file system or large hash tables in memory, but data fetching and writing would not be so fast and easy with those type of systems



Why MySQL and Relational Database

- MySQL is a popular choice for relational databases because it's an open-source, reliable, and scalable database management system (RDBMS) that's easy to use, supports various programming languages, and is widely used for web applications and other data-intensive tasks.

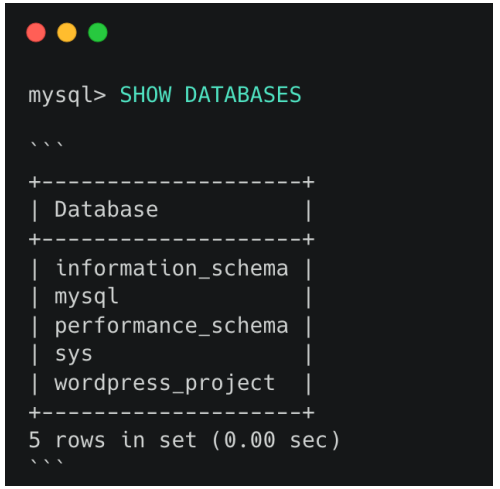
Name	Dry/Wet Food	Good Boy (Y/N)
Fido	Dry	Y
Rex	Wet	N
Bubbles	Dry	Y
Cujo	Wet	N

Tag #	Height (in)	Weight (lbs)
1573	15	21
2684	9	7
3795	27	130
4806	6	5

Tag #	Name	Breed	Color	Age
1573	Fido	Beagle	Brown/White	1.5
2684	Rex	Pekingese	White	9
3795	Bubbles	Rottweiler	Black	5
4806	Cujo	Chihuahua	Gold	4

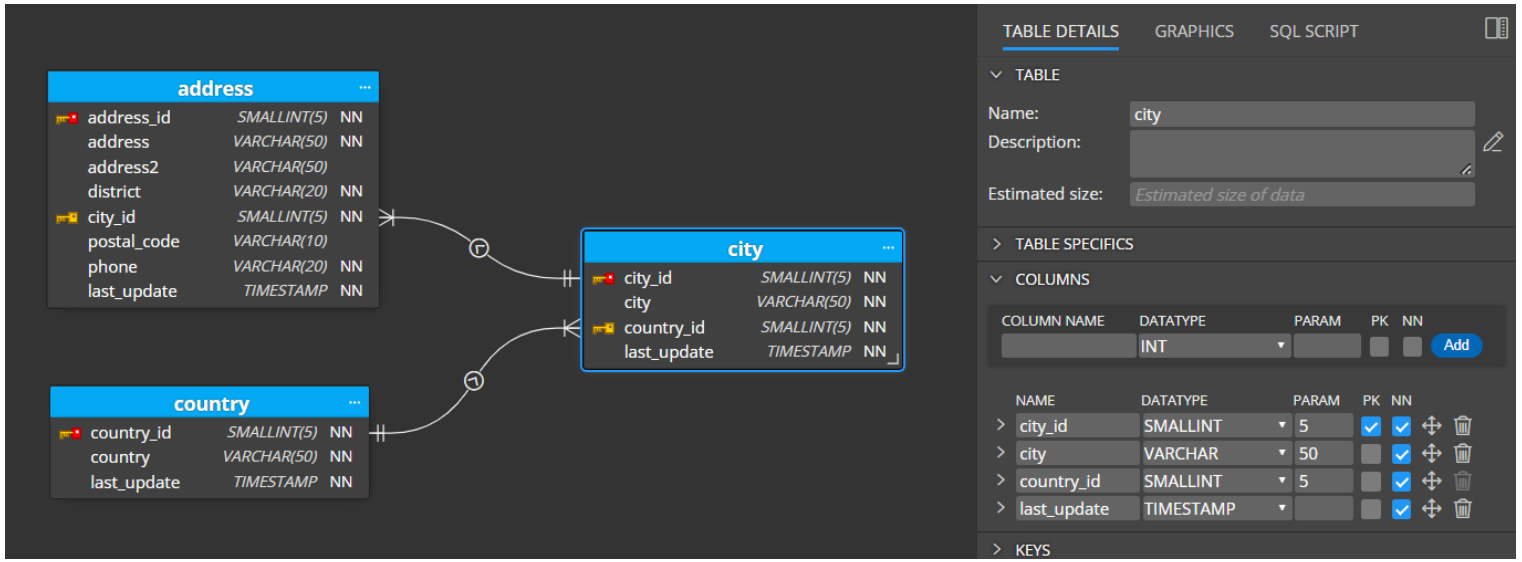
Creation of Database in MySQL

- The CREATE DATABASE statement is used to create a new SQL database.
- To See existing database in the MySQL database: SHOW DATABASES
- To See all the Tables in the existing database: SHOW TABLES



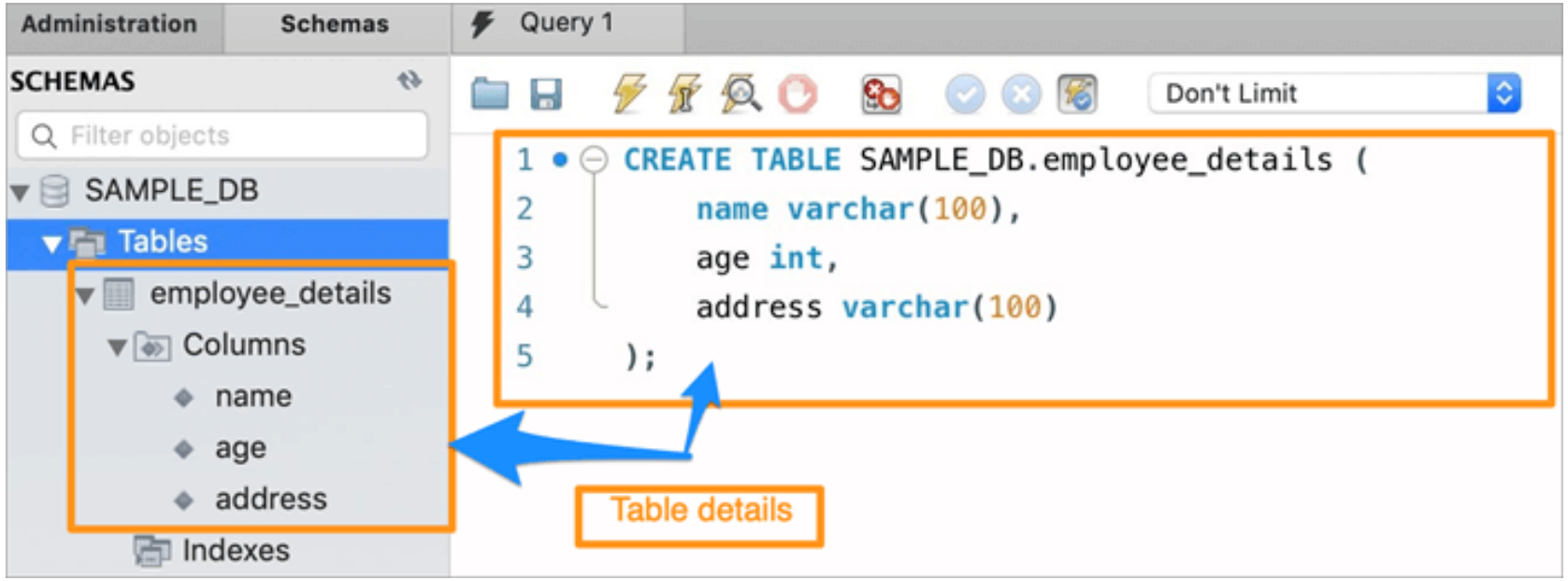
Tables in the MySQL Database

- In MySQL, tables are made up of columns and rows, and can be created using the CREATE TABLE statement. You can create tables using MySQL Workbench or the MySQL Command Line Client.
- Each database table has a name which consists of two parts: a table prefix and the specific database name itself. The use of prefix allows several web applications to utilize one database. For example, a given database can store Joomla CMS and phpBB forum data simultaneously by using tables of the jos_tablename and phppbb_tablename type, respectively.



Syntax of Table Creation

- CREATE TABLE *table_name* (*column1 datatype,column2 datatype, column3 datatype,....*);
- CREATE TABLE Persons (PersonID int,LastName varchar(255),FirstName varchar(255),Address varchar(255),City varchar(255));



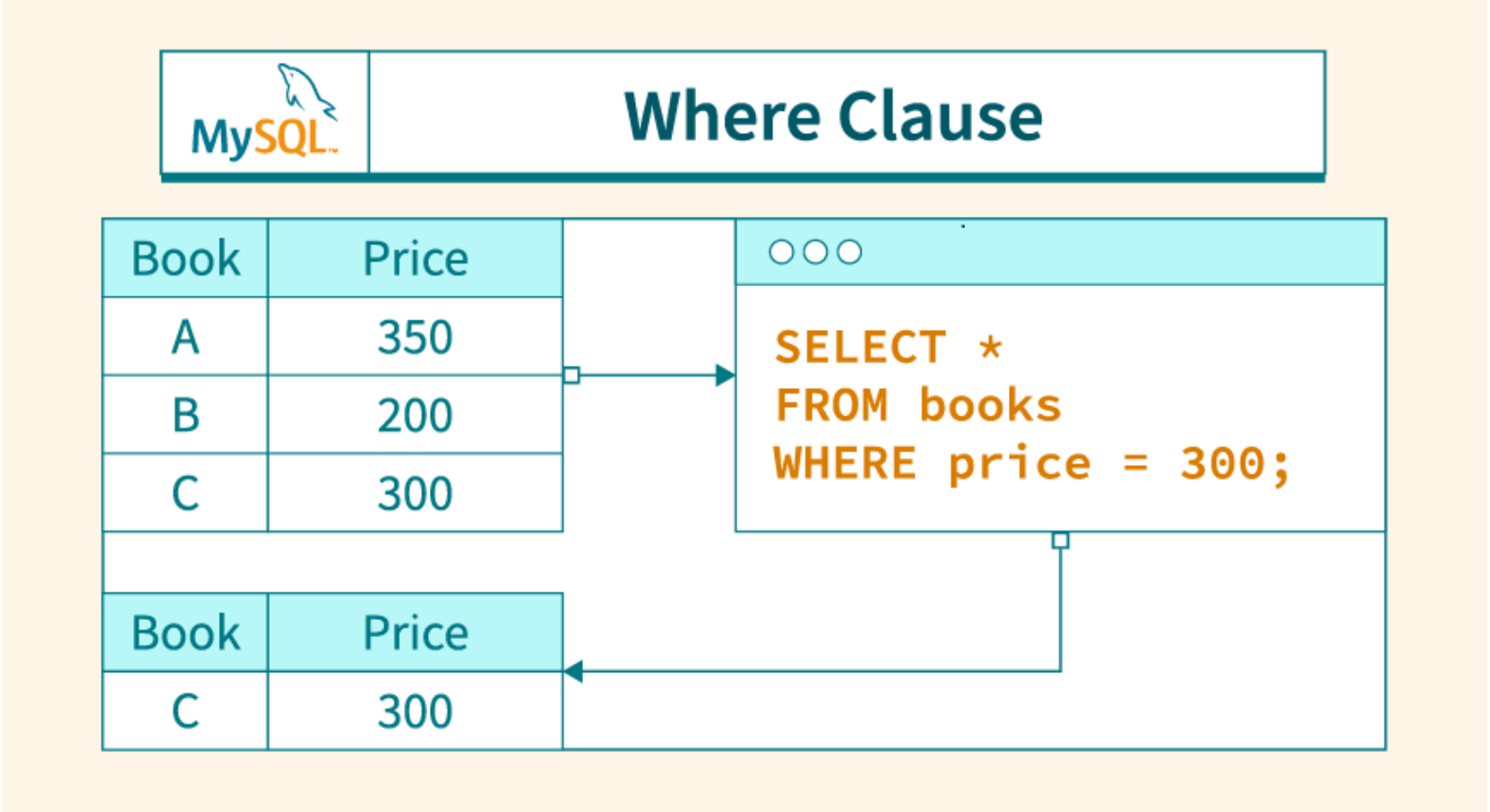
Select data from the table

- The SQL Select statement is a statement that you use to select data from a database.
- The result of the SELECT statement is stored in a result table, also known as a result-set. The result-set is a virtual table that has no physical existence. You use the result-set to display the data in a tabular format.
- SELECT * FROM *table_name*;

```
mysql> SELECT * FROM cars;
+--------+------------+---------------------+-------------+-------------+
| car_id | car_name   | manufacturing_date | engine_type | description |
+--------+------------+---------------------+-------------+-------------+
|      1 | HONDA e    | NULL                | Electric    | NULL        |
|      2 | FERRARI F8 | NULL                | Gasoline    | NULL        |
+--------+------------+---------------------+-------------+-------------+
2 rows in set (0.00 sec)
```

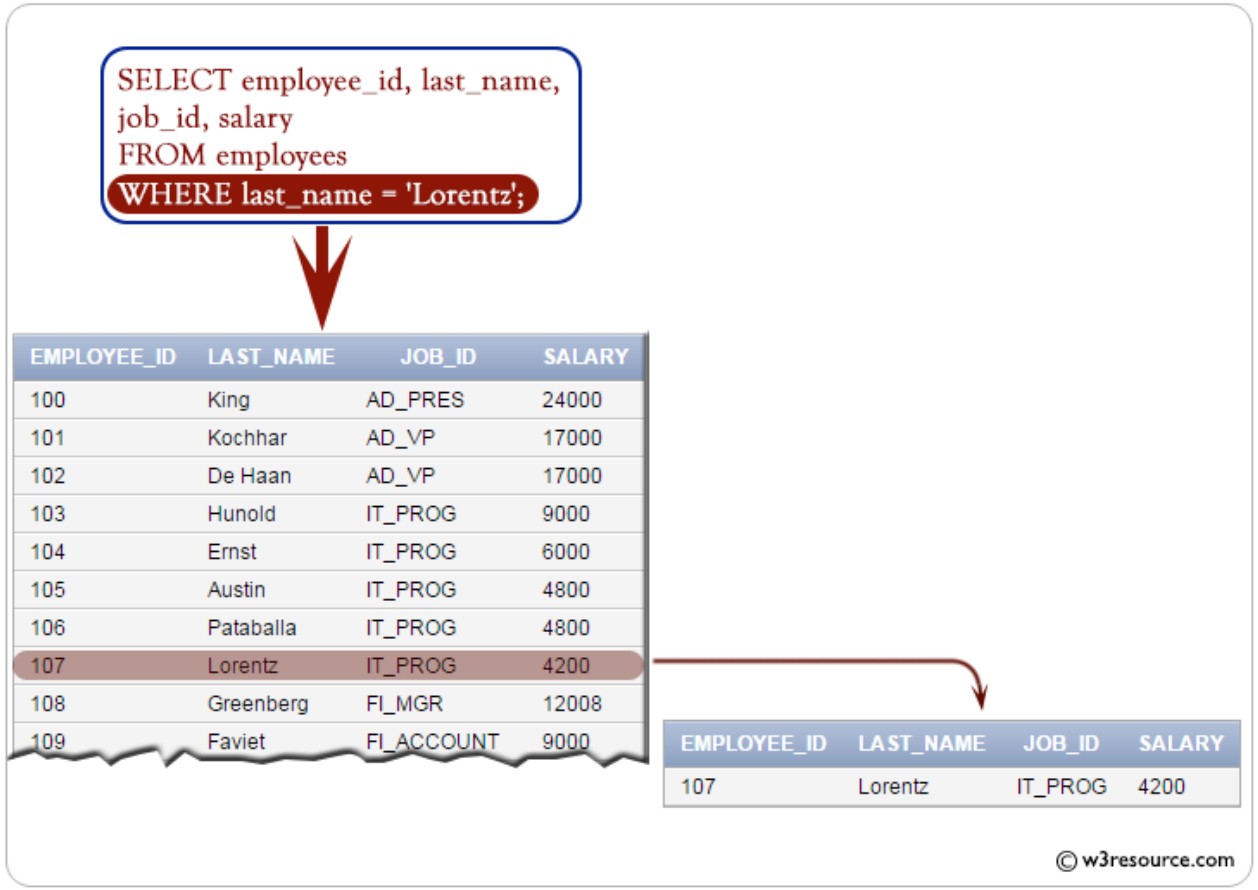
“Where” clause

- The WHERE clause in MySQL filters rows from a table based on specified conditions, allowing you to retrieve only the data you need and making data retrieval more efficient and specific.



Section with Filtration “Where”

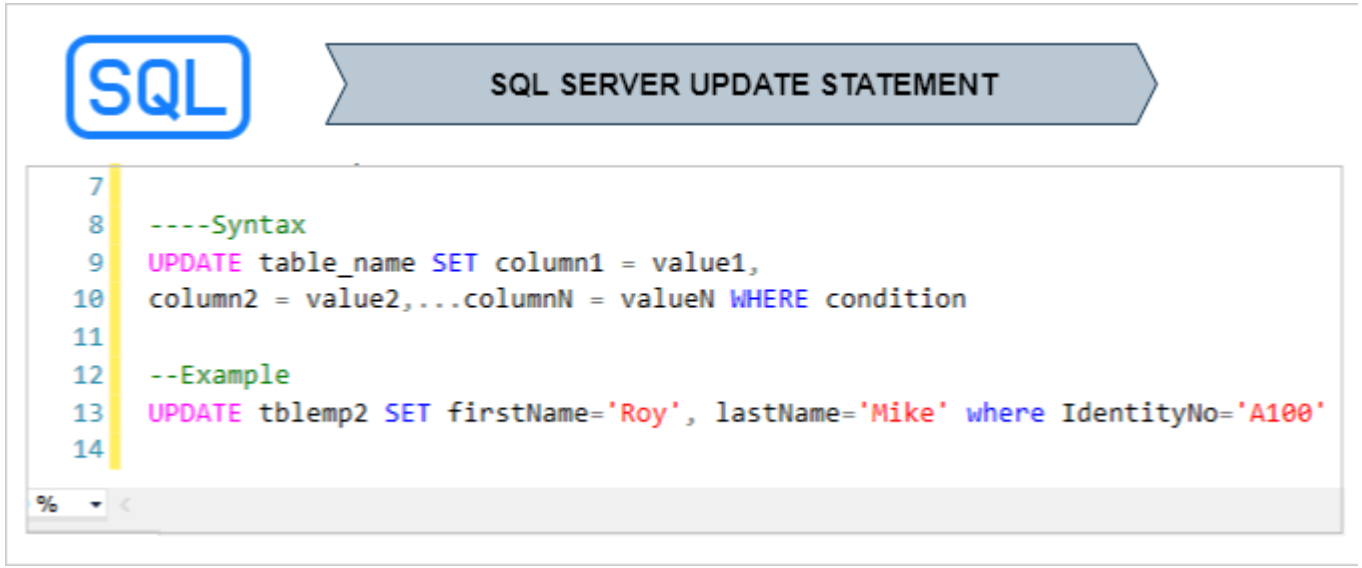
- `SELECT * FROM Customers WHERE Country='Mexico’;`



Update Table in MySQL

- The UPDATE statement is used to modify the existing records in a table.

- UPDATE *table_name*
  SET *column1 = value1, column2 = value2, ...*
  WHERE *condition*;



Delete query in MySQL

- DELETE FROM *table_name* WHERE *condition*;

```
SELECT * FROM SCOREBOARD;
DELETE FROM SCOREBOARD WHERE Playername='Dravid' AND Runs=20;
SELECT * FROM SCOREBOARD;
```

100 %

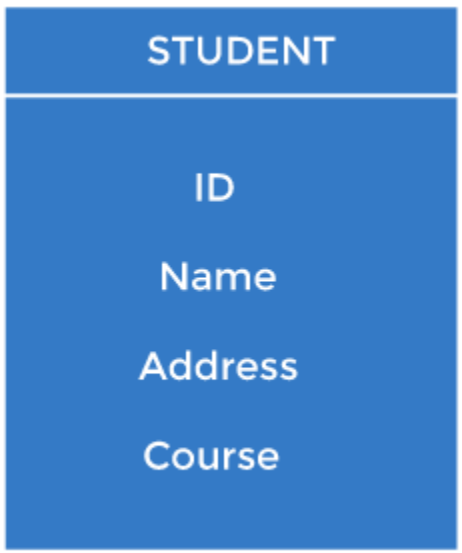
Results | Messages

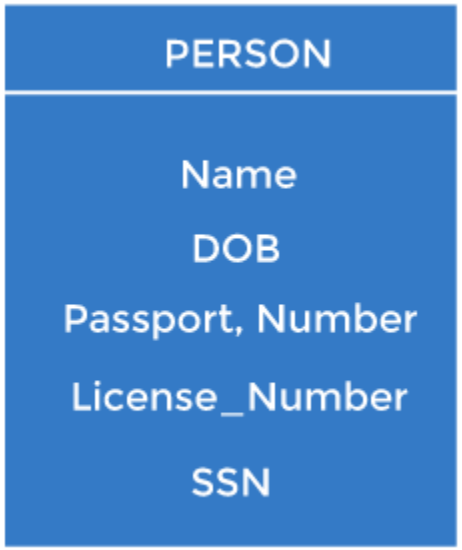
	Playername	Runs	Balls	Sixers	Fours
1	Sachin	100	100	6	10
2	Sehwag	90	70	8	4
3	Dravid	20	25	0	4

	Playername	Runs	Balls	Sixers	Fours
1	Sachin	100	100	6	10
2	Sehwag	90	70	8	4

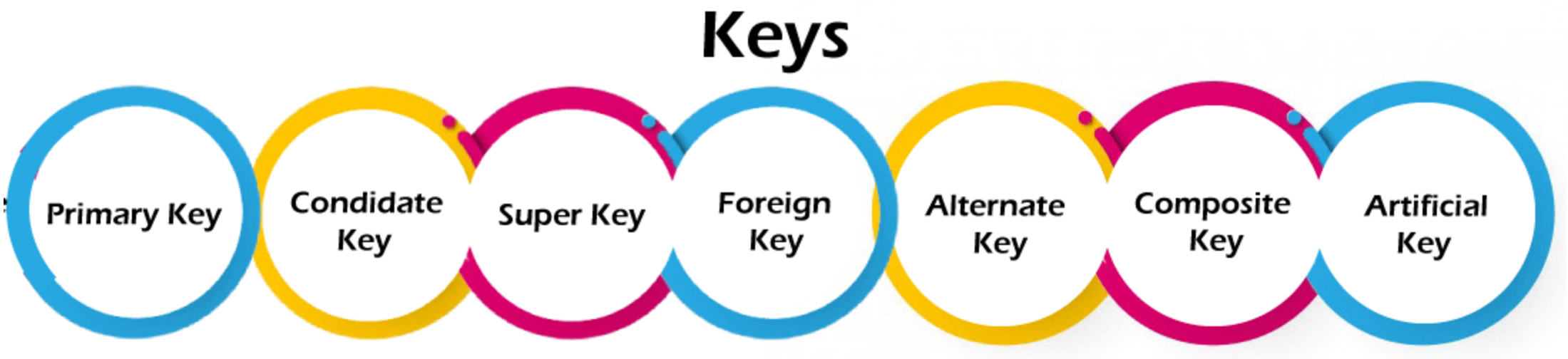
Keys in MySQL

- Keys play an important role in the relational database.
- It is used to uniquely identify any record or row of data from the table. It is also used to establish and identify relationships between tables.
- For example, ID is used as a key in the Student table because it is unique for each student. In the PERSON table, passport_number, license_number, SSN are keys since they are unique for each person.





- In order to define different kinds of integrity constraints in a database, we employ keys. In contrast, a table is a collection of records for different occurrences for any relation. These documents might number in the thousands, and some of them might even be duplicates.
- Therefore, we want a method that allows one to identify each of these entries independently and uniquely-that is, without creating duplicates. Keys assist to eliminate this inconvenience.



- Primary Key is the first key used to identify one and only one instance of an entity uniquely. An entity can contain multiple keys, as we saw in the PERSON table. The key which is most suitable from those lists becomes a primary key.

A candidate key's main goal is to make sure that no two items in a table have the same set of attribute values combined. It offers a dependable way to identify records individually.

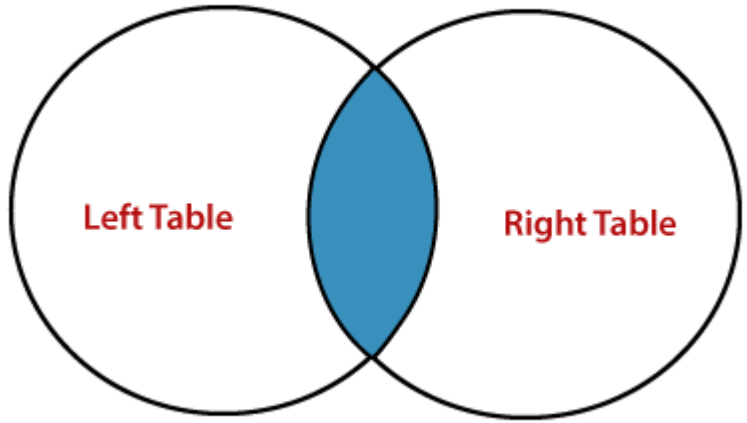
Join two Tables in MySQL

As the name shows, JOIN means *to combine something*. In case of SQL, JOIN means **"to combine two or more tables"**.

The SQL JOIN clause takes records from two or more tables in a database and combines it together.

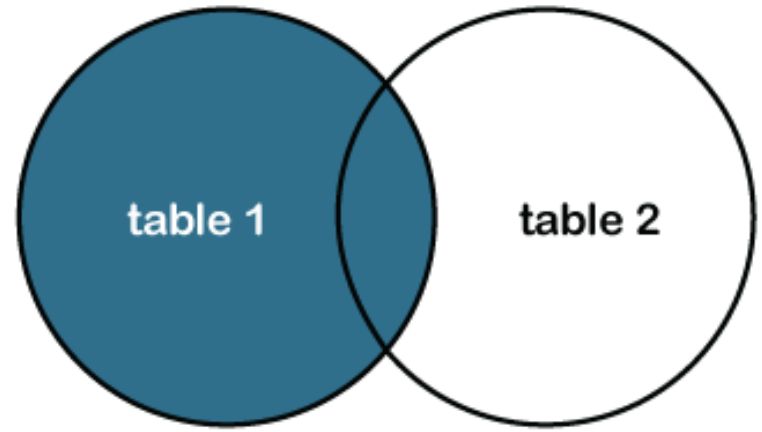
ANSI standard SQL defines five types of JOIN :

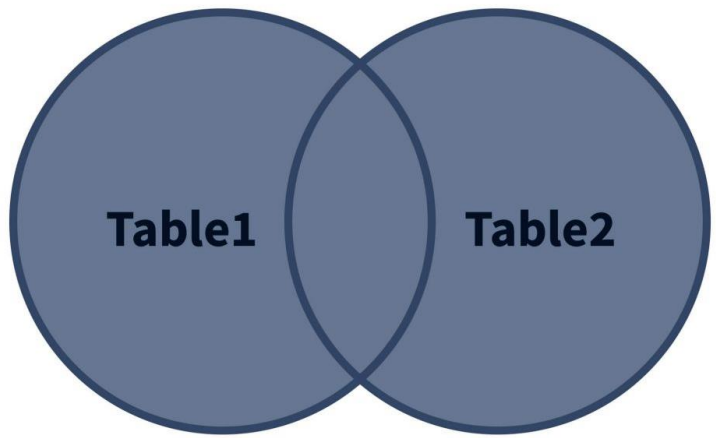
1. inner join,
2. left outer join,
3. right outer join,
4. full outer join, and
5. cross join.

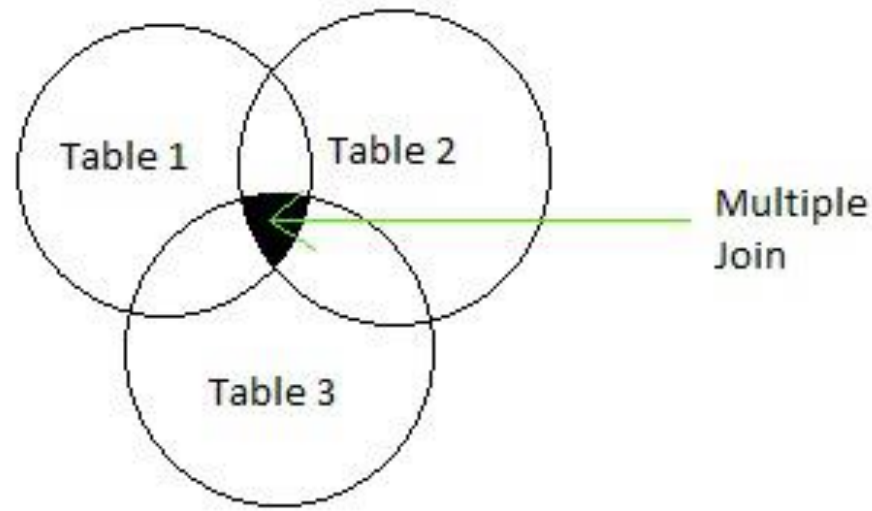


INNER JOIN

Left Join







FULL JOIN