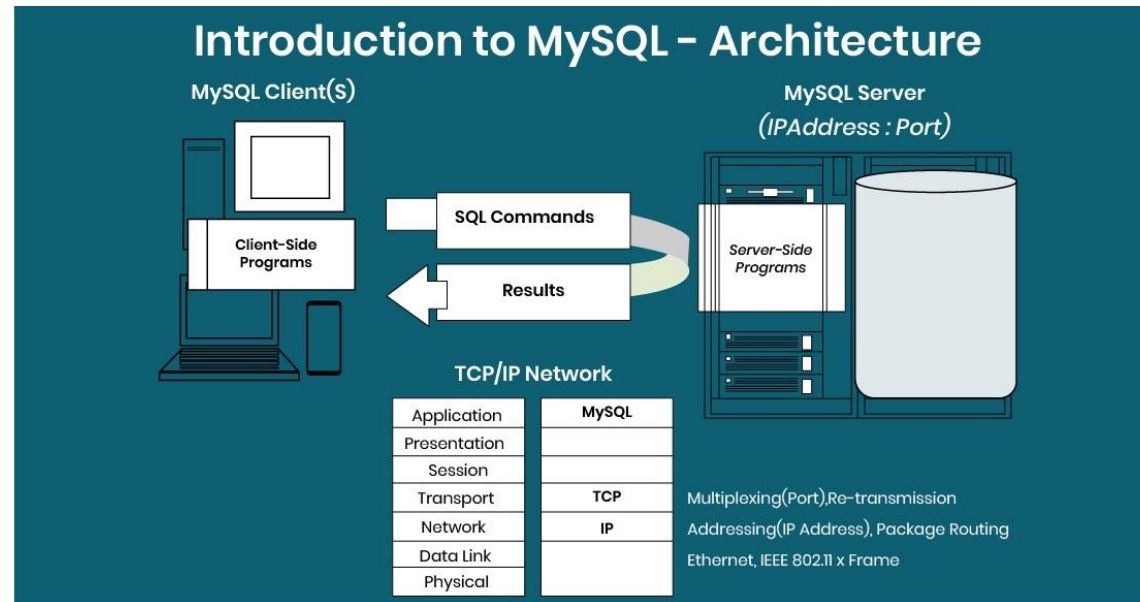




Introduction

- 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

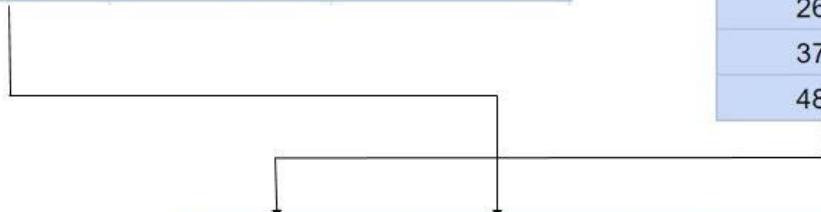


Why MySQL and Relational Database

- 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**

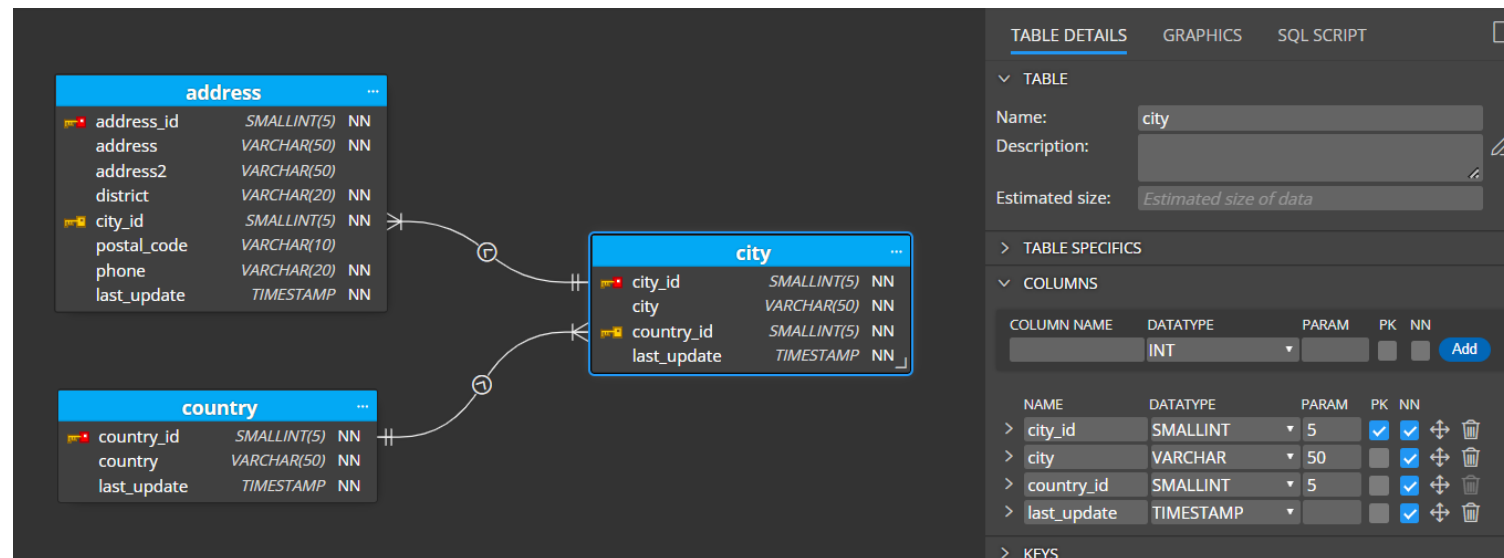
```
mysql> create database db1;
Query OK, 1 row affected (0.00 sec)

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| db1 |
| mysql |
| performance_schema |
+-----+
4 rows in set (0.00 sec)
```

```
mysql> SHOW DATABASES
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
| wordpress_project |
+-----+
5 rows in set (0.00 sec)
```

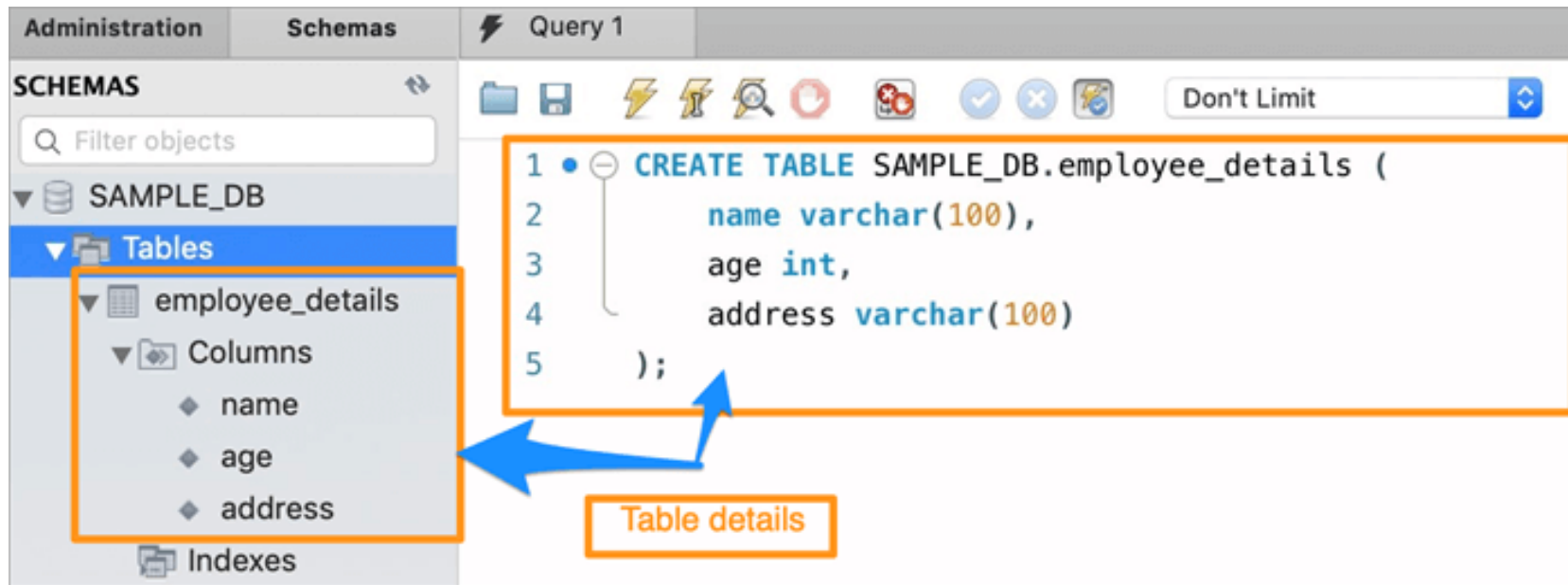
Tables in the MySQL Database

- 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));



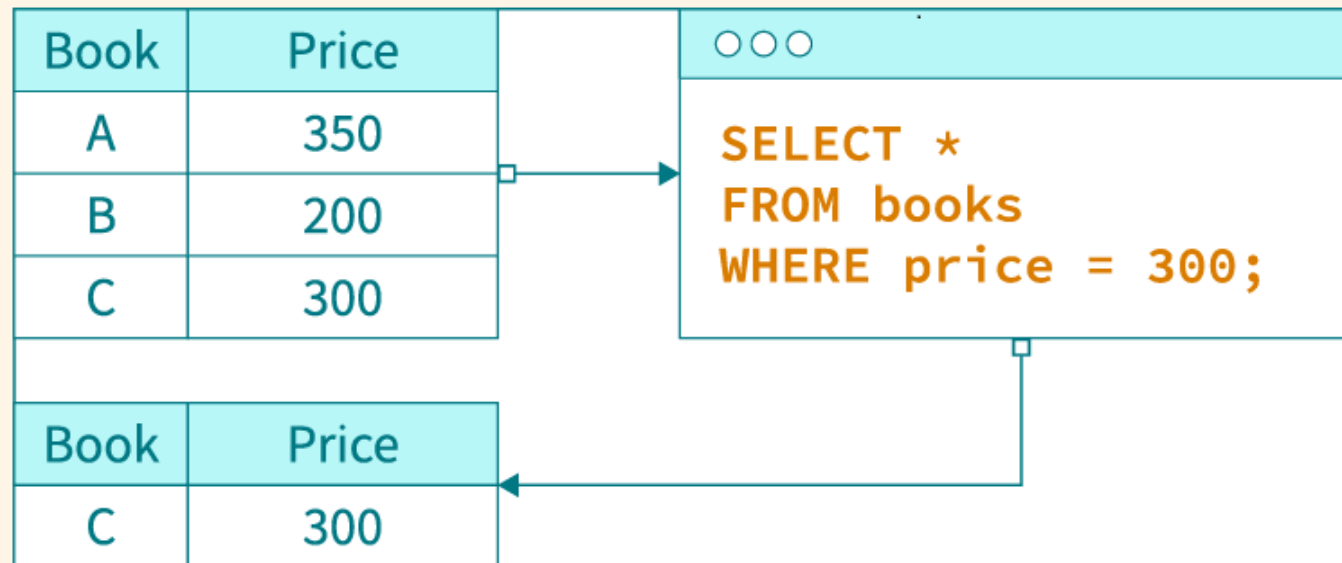
Select data from the table

- 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';

```
SELECT employee_id, last_name,  
       job_id, salary  
FROM employees  
WHERE last_name = 'Lorentz';
```



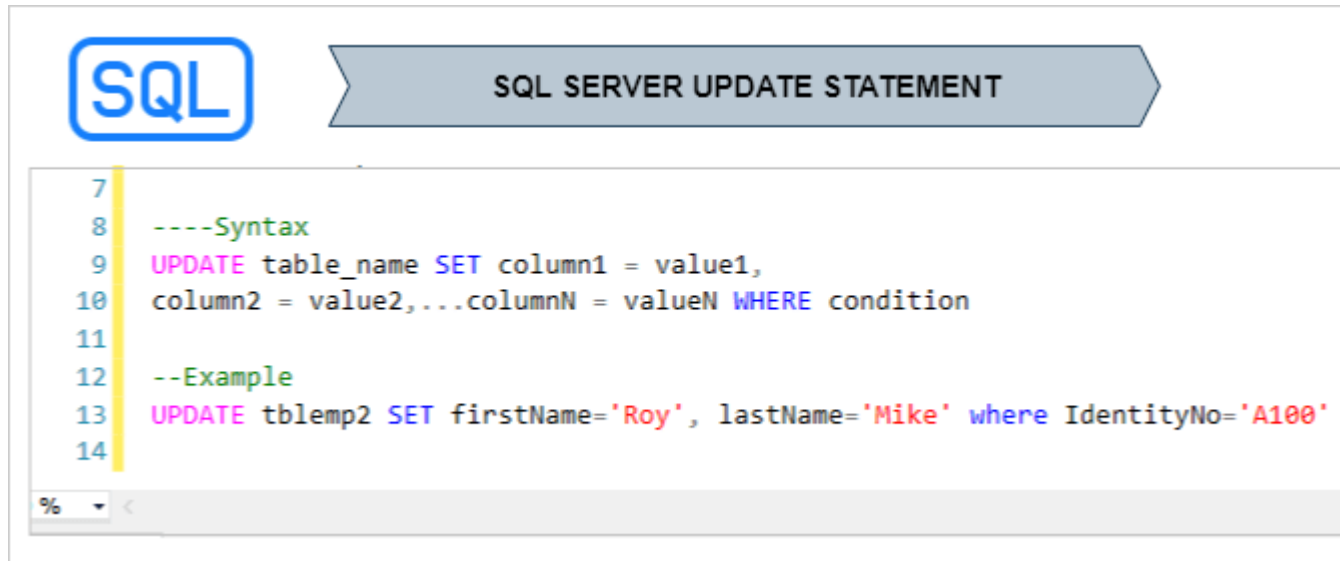
EMPLOYEE_ID	LAST_NAME	JOB_ID	SALARY
100	King	AD_PRES	24000
101	Kochhar	AD_VP	17000
102	De Haan	AD_VP	17000
103	Hunold	IT_PROG	9000
104	Ernst	IT_PROG	6000
105	Austin	IT_PROG	4800
106	Pataballa	IT_PROG	4800
107	Lorentz	IT_PROG	4200
108	Greenberg	FI_MGR	12008
109	Faviet	FI_ACCOUNT	9000



EMPLOYEE_ID	LAST_NAME	JOB_ID	SALARY
107	Lorentz	IT_PROG	4200

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*;



The screenshot shows a code editor window with a blue 'SQL' icon in the top left and a grey arrow-shaped header containing the text 'SQL SERVER UPDATE STATEMENT'. The code is displayed on a light grey background with a vertical yellow line at the start of each line. The code includes a syntax example and an example query. Line numbers 7 through 14 are visible on the left side of the code block.

```
7  
8  ----Syntax  
9  UPDATE table_name SET column1 = value1,  
10 column2 = value2,...columnN = valueN WHERE condition  
11  
12 --Example  
13 UPDATE tbltemp2 SET firstName='Roy', lastName='Mike' where IdentityNo='A100'  
14
```

At the bottom of the code editor, there is a search bar with a magnifying glass icon and a dropdown menu showing '%'. Below the search bar is a horizontal scrollbar.

Delete query in MySQL

- `DELETE FROM table_name WHERE condition;`



The screenshot shows a MySQL IDE interface. At the top, a SQL query is entered in a text area:

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

Below the query area, there are two tabs: "Results" and "Messages". The "Results" tab is active, displaying two tables of data. The first table shows the state of the SCOREBOARD table before the delete operation, and the second table shows the state after the operation.

	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

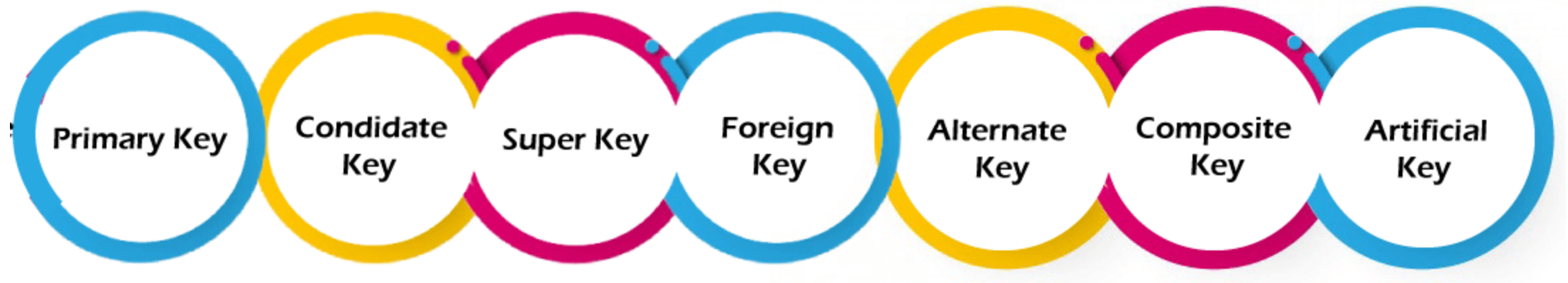
- Keys play an important role in the relational database.
- It is used to uniquely identify any record or row of data from the table. It is also used to establish and identify relationships between tables.
- For example, ID is used as a key in the Student table because it is unique for each student.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

STUDENT
ID
Name
Address
Course

PERSON
Name
DOB
Passport, Number
License_Number
SSN

- 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.

Keys



- 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.

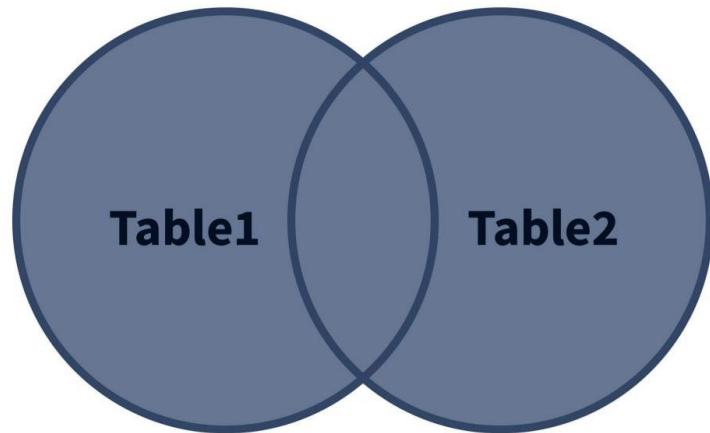
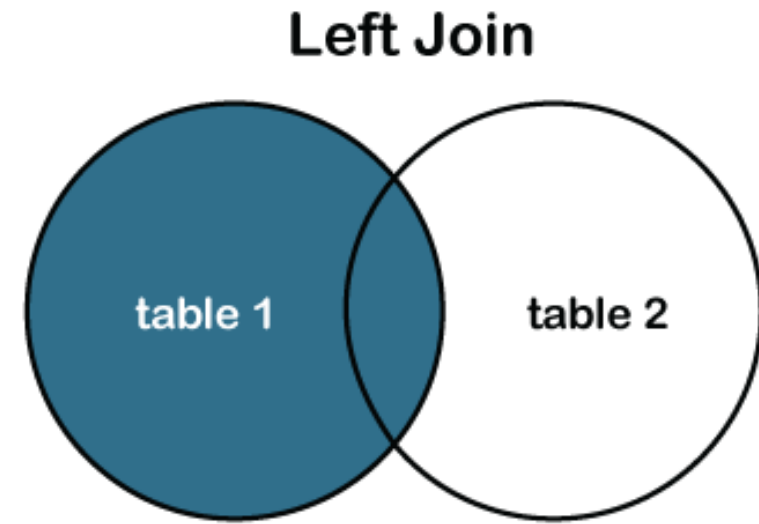
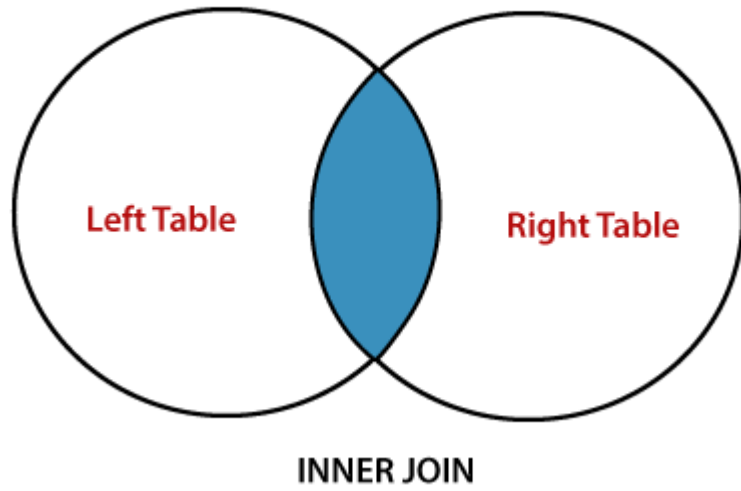
Join two Tables in MySQL

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.



FULL JOIN

