




 Home


 MySQL


 SQL

 PL/SQL

 MongoDB

 PostgreSQL

 SQL Server

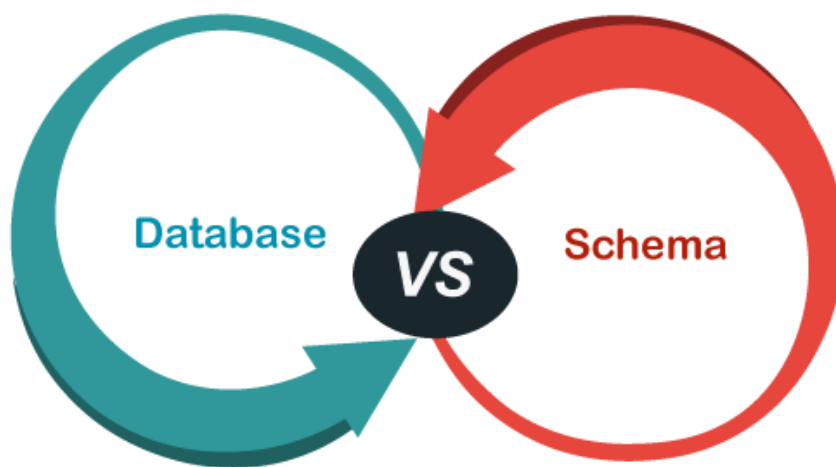
 Oracle

Difference between Database and Schema

The database is a common term in today's life. Many organizations, firms, enterprises, and institutes require a system to store their data in a well-formatted structure so that it might be easy to get valuable information whenever needs. Each database is made of physical files that contain data and metadata. Thus we can say that a database is a memory component to store information. Each database is a collection of schema means that while designing a database, we need to specify the schema for their structural view.

The difference between DATABASE and SCHEMA terminology is the most common part of an interview question.

The main difference between them is that the database is a collection of interrelated data, whereas schema is the database's structural view. This article explains the complete overview of DATABASE and SCHEMA and their differences that are primarily used interchangeably but are totally different.



What is a database?

A database is an application that stores the collection of organized and interrelated data. Each database has its own structure, data types, and constraints of the data, their relation with another constraint, and the data or information about an object. **The data stored in a database would update regularly.** Hence it changes frequently. We can modify or change the data stored in the database using the **DML (data manipulation language) command**. The data in the database at a particular moment is called a database instance.

A database can be generated and operated either manually or computerized. The size of the database based on the user's needs. In today's life, the database is generally used digitally.

What is a schema?

A schema is a **logical representation** of a database that describes the structural definition or description of an entire database. Generally, it is nothing more than a user who owns database objects such as tables, views, etc. We must specify schema during the design of a database. Once we define the database schema, we should not change it frequently because it would disturb the organization of data in a database.

We can display a database schema in the form of a diagram referred to as a **schema diagram**. This diagram indicates what data contains in a table, what variables are, and how they are associated with each other. Note that the schema diagram doesn't show every aspect of the database, such as database instances, type of the attributes, etc.

We can specify the schema using the **DDL (Data Definition Language) statements**. The DDL statement sets the table name, the attributes and their types, constraints, and its relation with other tables in a database. We can also use this statement when we want to modify the schema.

For example, the below representation shows the schema of a database with student information. Here we can see all table's name and their variables.

Student

ID	stud_name	stream	semester
----	-----------	--------	----------

Course

course_name	course_id	department
-------------	-----------	------------

Grade

ID	semester	course_name	grade
----	----------	-------------	-------

Student Schema

Key Differences between Database and Schema

The following points explain the main differences between database and schema:

- The fundamental difference between them is that the database is an organized collection of interrelated data or information about the considered object. In contrast, the schema is a logical representation or description of an entire database.
- Once we declare a database schema, we must not change it often as it would disturb the organization of data stored in the database. In contrast, we can update the database regularly.
- The database is a collection of schema, records, and constraints for the tables. On the other hand, a schema contains the structure of tables, attributes, their types, constraints, and how they relate to other tables.
- The DDL statement is used to generate and modify the schema. On the other hand, DML statements are used to create and modify the data inside the database.
- Each database **uses the memory** to store the data, whereas the schema can **use a logical structure** to store data.

Database vs. Schema Comparison Chart

The following comparison chart explains their main differences in a quick manner:

Comparison Basis	Database	Schema
Definition	The database is an application that stores the organized collection of interrelated data.	The schema is a logical representation of a database.
Statement	A DML is used to generate and modify the records in the database.	A DDL statement defined the schema for a database.
Modification	A database is updating the data regularly so that it can change frequently.	We should not change a schema often once it is declared.
Include	A database is a collection of schema, records, and constraints for the tables.	A schema always included the name of the tables, columns name, their types, and constraints.
Memory	It uses memory to store data.	It does not use memory to store data.

Database vs. Schema in MySQL

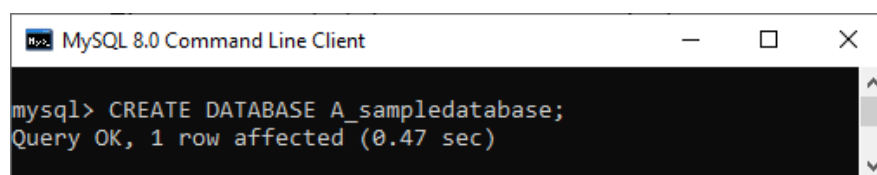
MySQL does not provide any real distinction between a database and schema. They are used interchangeably, which means **schema is synonymous with the database**. As we write the query for creating the database, we can use a similar query for creating the schema.

We can clarify this concept by creating a database and a schema using the steps are as follows:

First, we can use the below syntax to create a database:

```
CREATE DATABASE database_name;
```

We can use this syntax in a query as below output:

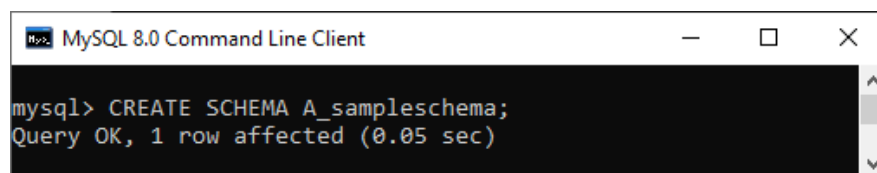


```
mysql> CREATE DATABASE A_sampledatabase;  
Query OK, 1 row affected (0.47 sec)
```

Second, we can use the below syntax to create a database:

```
CREATE SCHEMA schema_name;
```

We can use this syntax in a query as below output:

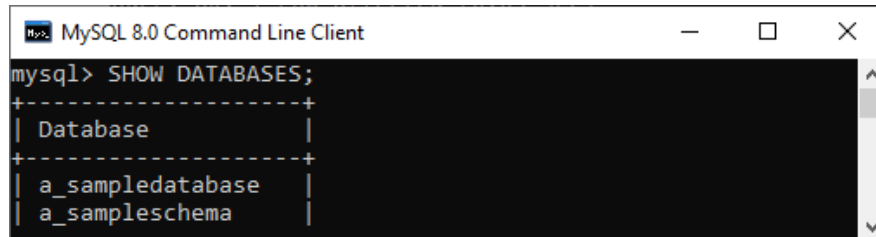


```
mysql> CREATE SCHEMA A_sampleschema;  
Query OK, 1 row affected (0.05 sec)
```

Now, both the database and the schema have been created successfully. We can use the **SHOW** command to display the database and the schema. The query for the above illustration is given below:

```
mysql> SHOW DATABASES;
```

We will see the following output of the above query:



```
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| a_sampledatabase |
| a_sampleschema   |
+-----+
```

Conclusion

In this article, we have made a comparison between database and schema. Here we conclude that MySQL has no actual differences between a schema and the database. They are used interchangeably means both are synonymous. On the other hand, there is a clear distinction between them in some other languages. In simple terms, databases are collections of schema, and schemas are a collection of tables.

[← Prev](#)[Next →](#)

 [For Videos Join Our Youtube Channel: Join Now](#)

Feedback

- Send your Feedback to feedback@javatpoint.com






Help Others, Please Share



Learn Latest Tutorials

 Splunk tutorial Splunk	 SPSS tutorial SPSS	 Swagger tutorial Swagger	 T-SQL tutorial Transact-SQL	 Tumblr tutorial Tumblr
 React tutorial ReactJS	 Regex tutorial Regex	 Reinforcement learning tutorial Reinforcement Learning	 R Programming tutorial R Programming	 RxJS tutorial RxJS
 React Native tutorial React Native	 Python Design Patterns Python Design Patterns	 Python Pillow tutorial Python Pillow	 Python Turtle tutorial Python Turtle	 Keras tutorial Keras

Preparation

 Aptitude Aptitude	 Logical Reasoning Reasoning	 Verbal Ability Verbal Ability	 Interview Questions Interview Questions	 Company Interview Questions Interview Questions
---	---	---	---	---

Trending Technologies



Artificial
Intelligence

Artificial
Intelligence



AWS Tutorial
AWS



Selenium
tutorial
Selenium



Cloud
Computing
Cloud Computing



Hadoop tutorial
Hadoop



ReactJS
Tutorial
ReactJS



Data Science
Tutorial
Data Science



Angular 7
Tutorial
Angular 7



Blockchain
Tutorial
Blockchain



Git Tutorial
Git



Machine
Learning Tutorial
Machine Learning



DevOps
Tutorial
DevOps

B.Tech / MCA



DBMS tutorial
DBMS



Data Structures
tutorial
Data Structures



DAA tutorial
DAA



Operating
System
Operating System



Computer
Network tutorial
Computer Network



Compiler
Design tutorial
Compiler Design



Computer
Organization and
Architecture
Computer
Organization



Discrete
Mathematics
Tutorial
Discrete
Mathematics



Ethical Hacking
Ethical Hacking



Computer
Graphics Tutorial
Computer Graphics



Software
Engineering
Software
Engineering



html tutorial
Web Technology



Cyber Security
tutorial
Cyber Security



Automata
Tutorial
Automata



C Language
tutorial
C Programming



C++ tutorial
C++



Java tutorial
Java



.Net
Framework
tutorial
.Net



Python tutorial
Python



List of
Programs
Programs



Control
Systems tutorial
Control System



Data Mining
Tutorial
Data Mining



Data
Warehouse
Tutorial
Data Warehouse