

SQL for Data Science

Module 3: Getting Started

Learning Objectives of this module

In this module we will understand the types of queries and get started with writing some of the most used queries like SELECT and INSERT Statements. We will also look into the fundamental Datatypes of MySQL

- **What is SQL?**
- **History of SQL**
- **Connecting to the server**
- **Types of Commands**
 - **DDL**
 - **DML**
 - **DCL**
- **Exploring Databases (our First SQL Command)**
- **Creating our first table**
- **Inserting data to Table**
- **Selecting Data**
- **Datatypes in MySQL**
- **NULL vs NOT NULL**

SQL is the standard language to communicate with Relational Databases

Quick Internet Search

Structured Query Language or SQL

is a standard Database language

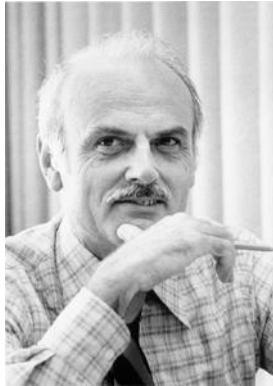
which is used to create, maintain and retrieve the relational database

Important Concepts

- It's a Language to communicate with Database
- Its Standard
- You can create, maintain and retrieve the database and its data using this language

SQL started with IBM Researcher Edgar Codd's Research on Relational Databases

1972



Edgar Codd

- **Researcher at IBM Research Center**
- **Mathematician trained from Oxford**
- **Researching on Relational Databases**
- **Chamberlin and Boyce come up with SEQUEL (Structured English Query Language to interact with IBM System R database)**

1979



- **Trademark Issue with a Firm**
- **SEQUEL was changed to SQL**

Connecting to MySQL Server

Connecting to MySQL Server is pretty straightforward

Goto Terminal/ Command Prompt and type

```
[anands-MacBook-Pro:~ analytics$ mysql -uroot -p  
[Enter password:
```

Data Definition Language

Commands used to

- Define the schema of database or its objects (like tables and indexes)
- Create and Modify the structure of database objects
- Examples:
 - CREATE
 - DROP
 - ALTER

Data Manipulation Language

Commands used to

- Manipulate and Select data in the database
- Examples:
 - SELECT
 - INSERT
 - UPDATE
 - DELETE

Data Control Language

Commands dealing with

- Rights, permissions and other controls of the database system
- Examples:
 - GRANT
 - REVOKE

Here we explore some simple commands. Note that all commands end with ; or \G in MySQL

Show all databases

```
mysql> show databases;
```

Work with a particular database

```
mysql> use <database_name>;
```

Get help about commands

```
mysql> help;
```

Get topicwise help

```
mysql> help contents;
```

```
mysql> help Data Manipulation;
```

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We have listed the most commonly used datatypes here. There are a lot more, to learn more: Refer to <https://dev.mysql.com/doc/refman/8.0/en/data-types.html>

Most Popular

- int(10)
- varchar(255)
- text
- TIMESTAMP
- ENUM ('Choice1', 'Choice2', ...)

Not so common

- FLOAT
- DECIMAL
- BLOB
- TINYBLOB
- MEDIUMBLOB
- BIGINT
- SMALLINT
- TINYINT
- DATE
- TIME
- SET
- DOUBLE
- CHAR

Some fields we can keep optional – Others are Mandatory

Difference between NULL and NOT NULL Columns/ Fields

- A column which has NOT NULL constraint means it is mandatory to put some value for the column while inserting the row
- A column which has NULL constraint means its ok to give NULL value – a special value which means blank
- This is defined in the structure of the table