

## MariaDB for Developers

**Duration: 5 Days**    **Course Code: MARD**    **Delivery Method: Virtual Learning**

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### Overview:

#### MariaDB for Developers Course Overview

This MariaDB Developers training course is designed for MariaDB Developers who have a good understanding of a MariaDB database and experience of using SQL commands. The course provides further practical experience in more advanced MariaDB commands and SQL statements including regular expression support, Common Table Expressions, Window functions, Stored Routines, custom functions, exception handling and Triggers.

Exercises and examples are used throughout the course to give practical hands-on experience with the techniques covered.

#### Virtual Learning

This interactive training can be taken from any location, your office or home and is delivered by a trainer. This training does not have any delegates in the class with the instructor, since all delegates are virtually connected. Virtual delegates do not travel to this course, Global Knowledge will send you all the information needed before the start of the course and you can test the logins.

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### Target Audience:

#### Who will the Course Benefit?

Developers who have a basic understanding of a MariaDB (or MySQL) database and SQL commands as covered on the Introduction to MariaDB course.

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### Objectives:

- Course Objectives
  - To provide the skills needed to write more advanced queries and database maintenance statements on a MariaDB database.
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### Prerequisites:

- A working knowledge of MariaDB (or MySQL) is required. This can be gained by attendance on the Introduction to MariaDB.
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### Follow-on-Courses:

#### Further Learning

- MariaDB Database Administration
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## Content:

### MariaDB for Developers Training Course Course Contents - DAY 1

#### Course Introduction

- Administration and Course Materials
- Course Structure and Agenda
- Delegate and Trainer Introductions

#### Session 1: CLIENT/SERVER CONCEPTS

- MariaDB client/server architecture
- Server modes
- Using MariaDB client programs
- Logging in options
- Configuration files
- Precedence of logging in options
- Exercises: Using client/server

#### Session 2: THE MYSQL CLIENT PROGRAM FOR MariaDB

- Using MariaDB interactively
- The MariaDB prompts
- Client commands and SQL statements
- Editing
- Selecting a database
- Help
- Safe updates
- Using script files
- Using a source file
- Redirecting output into a file
- Command line execution
- MariaDB output formats
- Overriding the defaults
- Html and xml output
- Exercises: Using the MariaDB client program to connect to MariaDB

#### Session 3: DATA TYPES

- Bit data type
- Numeric data types
- Auto\_increment
- Character string data types
- Character sets and collation
- Binary string data types
- Enum and Set data types
- Temporal data types
- Timezone support
- Spatial Datatypes
- Handling Missing Or Invalid Data Values
- SQL\_MODE options
- Exercises: Using data types

#### Session 4: IDENTIFIERS

- Using Quotes with identifier naming
- Case sensitivity in Identifier naming
- Qualifying columns with table and database names
- Using reserved words as identifiers

#### Session 8: CONNECTORS

- MariaDB connectors
- Connecting to MariaDB server using Java and PHP connectors
- MariaDB and NoSQL

#### Session 9: OBTAINING DATABASE METADATA

- What is metadata?
- Using mariadb-show utility
- The show and describe commands
- Describing tables
- The information\_schema
- Listing tables
- Listing columns
- Listing views
- Listing key\_columns\_usage
- Exercises: Obtaining database metadata

#### Session 10: DEBUGGING

- MariaDB error messages
- The show statement
- Show errors
- Show count(\*) errors
- Show warnings
- Show count(\*) warnings
- Note messages
- The perror utility
- Exercises: Debugging MariaDB for Developers Training Course Course Contents - DAY 3

#### Session 11: IMPORT AND EXPORT

- Exporting using SQL
- Privileges required to export data
- Importing using SQL
- Messages when loading data
- Privileges required to load data
- Exporting from the command line
- Mariadb-export main options
- Importing from the command line
- Mariadb-import main options
- Exercises: Importing and exporting data

#### Session 12: SUBQUERIES

- Types of subquery
- Multiple-column subqueries
- Correlated subqueries
- Using the ANY,ALL and SOME operators
- Using the EXISTS operator
- Subqueries as scalar expressions
- Derived Table
- WITH Clause ( Common Table Expression - CTE )
- Recursive CTEs
- Using subqueries in updates and deletes
- Exercises: Coding subqueries

#### Session 17: INTRODUCTION TO STORED ROUTINES

- Types of stored routines
- Benefits of stored routines
- Stored routine features
- Differences between procedures and functions
- Introduction to the Block
- Declaring variables and constants
- Assigning values to variables
- Definer rights and invoker rights
- Using SELECT in stored routines
- Altering and dropping stored routines
- Obtaining stored routine metadata
- Stored routine privileges and execution security
- Exercises: Writing simple stored routines

#### Session 18: STORED ROUTINES - PROGRAM LOGIC

- The IF .. THEN .. ELSEIF construct
- The CASE statement
- The basic loop
- The while loop
- The repeat loop
- The iterate statement
- Nested loops
- Exercises: Writing stored routines with program logic

#### Session 19: PROCEDURES WITH PARAMETERS

- Creating procedures with parameters
- Calling Procedures with Parameters
- Exercises: Writing stored routines with parameters MariaDB for Developers Training Course Course Contents - DAY 5

#### Session 20: STORED ROUTINES - EXCEPTION HANDLERS ; CURSORS

- Dealing with errors using Exception handlers
- Cursors
- What is a cursor?
- Cursor operations
- Declaring cursors
- Opening and closing cursors
- Fetching rows
- Status checking
- Exercises: Writing stored routines with program logic

#### Session 21: FUNCTIONS

- What is a function?
- The create function statement
- Executing functions
- Executing functions from code
- Executing functions from SQL statements

- Function names
- Exercises: Using identifiers

#### Session 5: QUERYING FOR DATA

- The SQL select statement
- Advanced order by
- Order by and collation
- Order by with enum datatype
- Order by with Set datatype
- Ordering with distinct and group by
- Special features of union
- Limit and order by clauses
- Group By clause
- Group\_concat
- Using Rollup in a Group By clause
- Exercises: Querying for data MariaDB for Developers Training Course Course Contents - DAY 2

#### Session 6: SQL EXPRESSIONS AND FUNCTIONS

- Components of expressions
- Nulls
- Numeric expressions
- String expressions
- Temporal expressions
- Comparison functions
- Flow control functions
- Numeric functions
- String functions
- Temporal functions
- Exercises: Using expressions and functions

#### Session 7: UPDATING DATA

- Update operations and privileges
- Inserting rows
- Insert using a set clause
- Inserting duplicate values
- Replacing rows
- Updating rows
- Update using the order by and limit clauses
- Deleting rows
- The delete and truncate statements
- Exercise: Inserting, updating, replacing and deleting data

#### Session 13: VIEWS

- Why views are used
- Creating views
- View creation restrictions
- View algorithms
- Updateable views
- Altering and dropping views
- Displaying information about views
- Privileges for views
- Exercises: Using views

#### Session 14: USING WINDOW FUNCTIONS

- Description
- Non-aggregate window functions
- Using RANK,DENSE\_RANK,ROW\_NUMBER,N TILE
- Window partition clause
- Using LAG. LEAD,FIRST\_VALUE,LAST\_VALUE,NT H\_VALUE
- Aggregate window functions - SUM,AVG etc
- Window frame clause
- Exercises: Using Window Functions

#### Session 15: REGULAR EXPRESSION SUPPORT

- Overview of Regular Expression
- Regular Expression Notation
- The REGEXP\_LIKE operator
- The REGEXP\_INSTR function
- The REGEXP\_SUBSTR function
- The REGEXP\_INSTR function
- The REGEXP\_REPLACE function
- Exercises: Regular Expression Support MariaDB for Developers Training Course Course Contents - DAY 4

#### Session 16: USER VARIABLES AND PREPARED STATEMENTS

- Creating User variables
- User variables in a select
- Prepared statements
- The prepare statement
- The execute statement
- The deallocate statement
- Using prepared statements in code,with connectors
- Exercises: Using variables and prepared statements

- The deterministic and SQL clauses
- Exercises: Writing functions

#### Session 22: TRIGGERS

- Trigger creation
- Restrictions on triggers
- The create trigger statement
- Using the old and new qualifiers
- Managing triggers
- Destroying triggers
- Required privileges
- Exercises: Writing triggers

#### Session 23: BASIC OPTIMIZATIONS

- Normalisation of data to third normal form
- Using indexes for optimization
- General query enhancement
- Using Explain to analyze queries
- Choosing an INNODB or MYISAM storage engine
- Exercises: Making use of basic optimizations

#### Session 24: MORE ABOUT INDEXES

- Indexes and joins
- Exercises: Investigating indexes and joins

## Further Information:

For More information, or to book your course, please call us on 0800/84.009

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[www.globalknowledge.com/en-be/](http://www.globalknowledge.com/en-be/)