

## MySQL for Database Administrators

**Duration:** 5 Days

### What you will learn

The MySQL for Database Administrators course is the cornerstone curriculum for MySQL Database Administrators and Developers who want to use this powerful relational database.

In this course students will benefit from learning how to secure users privileges, set resource limitations, access controls and describe backup and recovery basics. Students will also learn how to create and use stored procedures, triggers and views.

This course fulfills the training requirement for an Oracle Certification Path. Only instructor-led online (LVC, LWC), in-class (ILT), or Training On Demand courses will fulfill the requirement. Self-study CD-ROM and Knowledge Center courses do not fulfill the training requirement.

### Audience

Database Administrators  
Developer

### Related Training

#### *Required Prerequisites*

Have some experience with relational databases and SQL

### Course Objectives

Describe the MySQL Architecture

Install and Upgrade MySQL

Use the INFORMATION\_SCHEMA database to access metadata

Perform the MySQL start and shutdown operations

Configure MySQL server options at runtime

Evaluate data types and character sets for performance issues

Understand data locking in MySQL

Understand the use of the InnoDB storage engine with MySQL

Maintain integrity of a MySQL installation

Use triggers for administration tasks

Understand views

Describe introductory performance tuning techniques

Perform backup and restore operations

## Course Topics

### Introduction

MySQL Overview, Products, Services

MySQL Services and Support

Supported Operating Services

MySQL Certification Program

Training Curriculum Paths

MySQL Documentation Resources

### MySQL Architecture

Describe the client/server model

Understand communication protocols

Understand how the server supports storage engines

Explain the basics of how MySQL uses memory and disk space

### System Administration

Choose between types of MySQL distributions

Install the MySQL Server

Describe the MySQL Server installation file structure

Start and stop the MySQL server

Upgrade MySQL

Run multiple MySQL servers on a single host

### Server Configuration

Set up MySQL server configuration files

Explain the purpose of dynamic server variables

Review the server status variables available

Configure operational characteristics of the MySQL server

Describe the available log files

Explain binary logging

### Clients and Tools

Describe the available clients for administrative tasks

Use MySQL administrative clients

Use the mysql command line clients

Use the mysqladmin for administrative tasks

Describe available MySQL tools

List the available APIs (drivers and connectors)

### Data Types

Describe the major categories of data types

- Explain the meaning of NULL
- Describe column attributes
- Explain character set usage with data types
- Choose an appropriate data type

### **Obtaining Metadata**

- List the various metadata access methods available
- Recognize the structure of the INFORMATION\_SCHEMA database schema
- Use the available commands to view metadata
- Describe differences between SHOW statements and INFORMATION\_SCHEMA tables
- Use the mysqlshow client program
- Use INFORMATION\_SCHEMA to create shell commands and SQL statements

### **Transaction and Locking**

- Use transaction control statement to run multiple SQL statements concurrently
- Explain the ACID properties
- Describe the transaction isolation levels
- Use locking to protect transactions

### **InnoDB Storage Engine**

- Describe the InnoDB storage engine
- Set the storage engine to InnoDB
- Illustrate the InnoDB tablespace storage system
- Efficiently configure the tablespace
- Use foreign keys to attain referential integrity
- Explain InnoDB locking

### **Other Storage Engines**

- Explain the general purpose of storage engines in MySQL
- List the storage engines available for MySQL
- Describe the key features of the MyISAM storage engine
- Describe the key features of the MEMORY storage engine
- Give an overview of other storage engines: FEDERATED, ARCHIVE, BLACKHOLE, NDBCLUSTER
- Choose an appropriate storage engine

### **Partitioning**

- Define partitioning and its particular use in MySQL
- Determine server partitioning support
- List the reasons for using partitioning
- Explain the types of partitioning
- Create partitioned tables
- Describe subpartitioning
- Obtain partitioning metadata
- Use partitioning to improve performance

### **User Management**

- Depict the user connection and query process
- List requirements for user authentication
- Use SHOW PROCESSLIST to show which threads are running
- Create, modify and drop user accounts
- List requirements for user authorization
- Describe the levels of access privileges for users

List the types of privileges  
Grant, modify and revoke user privileges

## **Security**

Recognize common security risks  
Describe security risks specific to the MySQL installation  
List security problems and counter-measures for network, operating system, filesystem and users  
Protect your data  
Use SSL for secure MySQL server connections  
Explain how SSH enables a secure remote connection to the MySQL server  
Find additional information for common security issues

## **Table Maintenance**

Recognize types of table maintenance operations  
Execute SQL statements for table maintenance  
Client and utility programs for table maintenance  
Maintain tables according to specific storage engines

## **Exporting and Importing Data**

Exporting Data using SQL  
Importing Data using SQL

## **Programming Inside MySQL**

Creating and executing Stored Routines  
Describing stored routine execution security  
Creating and executing triggers  
Creating, altering and dropping events  
Explaining even execution scheduling

## **Views**

Defining views  
Reasons to use views  
Altering, checking and removing a view  
Setting privileges for views

## **MySQL Backup and Recovery**

Describing backup basics  
Types of backups  
Backup tools and utilities  
Making binary and text backups  
Role of log and status files in backups  
Data Recovery

## **Introduction to Replication**

Describing MySQL Replication  
Managing the MySQL Binary Log  
Explaining MySQL replication threads and files  
Setting up a MySQL Replication Environment  
Monitoring MySQL Replication  
Troubleshooting MySQL Replication

## **Introduction to Performance Tuning**

Using EXPLAIN to Analyze Queries  
General Table Optimizations  
Monitoring status variables that affect performance  
Setting and Interpreting MySQL server Variables

## **Conclusion**

Course Overview  
MySQL Curriculum  
Course Evaluation  
Thank You!  
Q&A Session