MySQL Database Administration
Length: 5 Days

What you will learn

The MySQL for Database Administrators training is designed for DBAs and other database professionals. Expert Oracle University instructors will teach you how to install and configure the MySQL Server, set up replication and security, perform database backups and performance tuning and protect MySQL databases.

Learn To:

Describe the MySQL Architecture. Install and upgrade MySQL. Configure MySQL server options at runtime. Evaluate data types and character sets for performance issues. Understand the use of the InnoDB storage engine with MySQL. Perform backup and restore operations.

Benefits to You

After taking this course, you'll have a greater understanding of new enhancements made available in MySQL 5.6 to improve performance, scalability, reliability and manageability for your Web, Cloud and embedded application requirements.

Prerequesites

Have some experience with relational databases and SQL
MySQL for Beginners Ed 2

Audience Profile

Database Administrators
Develope

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
- Use available tools including MySQL Workbench
- 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 MySQLinstallation
- Use triggers for administration tasks Use Enterprise Audit and Pluggable Authentication
- Configure advanced replication topologies for high availability
- Describe introductory performance tuning techniques
- Perform backup and restore operations
- Automate administrative tasks with scheduled events

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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
The client/server model
Communication protocols
The SQL Layer
The Storage Layer
How the server supports storage engines
How MySQL uses memory and disk space
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The MySQL plug-in interface

System Administration
Choosing between types of MySQL distributions
Installing the MySQL Server
The MySQL Server installation file structure
Starting and stopping the MySQL server
Upgrading MySQL
Running multiple MySQL servers on a single host

Server Configuration
MySQL server configuration options
System variables
SQL Modes
Available log files
Binary logging

Clients and Tools
Available clients for administrative tasks
MySQL administrative clients
The mysql command-line client
The mysqladmin command-line client
The MySQL Workbench graphical client
MySQL tools
Available APIs (drivers and connectors)

Data Types
Major categories of data types
Meaning of NULL
Column attributes
Character set usage with data types
Choosing an appropriate data type

Obtaining Metadata
Available metadata access methods
Structure of INFORMATION_SCHEMA
Using the available commands to view metadata
Differences between SHOW statements and INFORMATION_SCHEMA tables
The mysqlshow client program
Using INFORMATION_SCHEMA queries to create shell commands and SQL statements

Transactions and Locking
Using transaction control statement to run multiple SQL statements concurrently
The ACID properties of transactions
Transaction isolation levels
Using locking to protect transactions

Storage Engines
Storage engines in MySQL
InnoDB storage engine
InnoDB system and file-per-table tablespaces
NoSQL and the Memcached API
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Configuring tablespaces efficiently
Using foreign keys to attain referential integrity
InnoDB locking
Features of available storage engines

Partitioning
Partitioning and its use in MySQL
Reasons for using partitioning
Types of partitioning
Creating partitioned tables
Subpartitioning
Obtaining partition metadata
Modifying partitions to improve performance
Storage Engine Support of Partitioning

User Management
Requirements for user authentication
Using SHOW PROCESSLIST to show which threads are running
Creating, modifying and dropping user accounts
Alternative authentication plugins
Requirements for user authorization
Levels of access privileges for users
Types of privileges
Granting, modifying and revoking user privileges

Security
Recognizing common security risks
Security risks specific to the MySQL installation
Security problems and counter-measures for network, operating system, filesystem and users
Protecting your data
Using SSL for secure MySQL server connections
How SSH enables a secure remote connection to the MySQL server
Finding additional information for common security issues

Table Maintenance
Types of table maintenance operations
SQL statements for table maintenance
Client and utility programs for table maintenance
Maintaining tables for other storage engines

Exporting and Importing Data
Exporting Data
Importing Data

Programming Inside MySQL
Creating and executing Stored Routines
Describing stored routine execution security
Creating and executing triggers
Creating, altering and dropping events
Event execution scheduling

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

Replication
Managing the MySQL Binary Log
MySQL replication threads and files
Setting up a MySQL Replication Environment
Designing Complex Replication Topologies
Multi-Master and Circular Replication
Performing a Controlled Switchover
Monitoring and Troubleshooting MySQL Replication
Replication with Global Transaction Identifiers (GTIDs)

Introduction to Performance Tuning
Using EXPLAIN to Analyze Queries
General Table Optimizations
Monitoring status variables that affect performance
Setting and Interpreting MySQL server Variables
Overview of Performance Schema

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