

MySQL for Database Administrators (40 Hours)

(Exam code 1z0-883) (OCP My SQL DBA)

Prerequisites

Have some experience with relational databases and SQL

What will you learn ?

The MySQL for Database Administrators course is for MySQL DBAs and other professionals who want to install and optimize MySQL Server, set up replication and security, perform database backups and performance tuning, and protect MySQL databases.

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
- 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
- Enterprise Audit

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
- 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

- 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
- Using MySQL Utilities for Replication
- 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
- Tuning the MySQL Server