



MySQL Database Administration

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

Overview:

This MySQL Database Administration course is designed for MySQL Database Administrators who have a basic understanding of a MySQL database and a good working knowledge of SQL commands.

The course provides an understanding of MySQL Architecture and practical experience in setting up, configuring and maintaining a MySQL server, and backing up and recovering data. This MySQL Database Administration course also covers MySQL replication and its role in high availability and scalability.

Versions supported 8,5,7,5,6.

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.

Target Audience:

Database Administrators, Database Developers and Technical Consultants who need to setup, administer, monitor and support MySQL databases and servers.

Objectives:

- At the end of the MySQL Database Administration course, delegates will have the knowledge to use the features available to administer, monitor and support MySQL databases and servers.
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Prerequisites:

A working knowledge of MySQL is required. Delegates should have knowledge of relational database concepts; have knowledge of MySQL data types; be able to run queries using SQL; join tables and run basic DDL and DML statements. This knowledge can be gained by attendance on the Introduction to MySQL course.

This course is run on a Linux operating system platform, therefore, a good working knowledge of Linux/UNIX is strongly recommended. This knowledge can be gained by attendance on the Linux Introduction course.

Follow-on-Courses:

- MySQL Performance & Tuning (MYSDBAPT)
 - Perl Programming (PERL)
 - Apache Web Server (APH)
 - PHP Programming & MySQL for Web Development (PHPPMWD)
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Content:

MySQL Database Administration Training Course Course Contents - DAY 1

Course Introduction

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

Session 1: THE SERVER, CLIENTS AND TOOLS

- Introduction
- The versions of MySQL
- An Overview of MySQL Architecture
- The MySQL Server
- MySQL Client Connections
- MySQL Client Programs
- MySQL Client Libraries
- The mysql Command Line Tool
- The mysqladmin Program

Session 2: MYSQL WORKBENCH

- Installation of MySQL Workbench
- Connecting to MySQL Workbench
- MySQL Workbench Screens

Session 3: OBTAINING METADATA

- What is Metadata?
- The mysqlshow Client Program
- The SHOW and DESCRIBE Commands
- The INFORMATION_SCHEMA
- MySQL 8 INFORMATION_SCHEMA Changes
- Generate Statements using the INFORMATION_SCHEMA

Session 4: CONFIGURE THE SERVER

- Start and Stop the Server
- Status Files
- Time Zone Tables
- An Overview of MySQL Storage Engines
- MySQL Server Options and Variables
- MySQL Status Variables
- Configuring MySQL Enterprise Audit

Session 5: SQL MODES, LOG FILES AND BINARY LOGGING

- MySQL Error Messages
- The SHOW Errors Statement
- The SHOW Warnings Statement
- SQL Modes
- Note Messages
- The perror Utility
- The General Log
- The Error Log
- The Slow Query Log
- The Binary Logs

MySQL Database

Session 7: THE INNODB STORAGE ENGINE

- Features of InnoDB
- Transactions and Referential Integrity
- Physical Characteristics of InnoDB Tables
- System Tablespace Configuration
- File per Table Tablespace
- Log File and Buffer Configuration
- Undo Logs and Undo Tablespaces
- General Tablespaces
- Temporary Table Tablespaces
- InnoDB Status
- InnoDB Shutdown Options

Session 8: OTHER STORAGE ENGINES

- Check Engine Usage
- The MYISAM Engine
- The Merge Engine
- Other Engines:
Archive, Memory, Blackhole, CSV
- Mixing Storage Engines

Session 9: TABLE MAINTENANCE

- Table Maintenance Operations
- Check Table
- Repair Table
- Analyze Table
- Optimize Table
- MySQL Check
- Repair InnoDB Tables
- MyISAM Table Maintenance and Repair Utilities
MySQL Database Administration Training Course Course Contents - DAY 3

Session 10: BACKUP AND RECOVERY

- The Advantages and Disadvantages of Different Backup Methods
- Backup Tool Overview
- Binary Backups of MYISAM Tables
- Binary Backups of InnoDB Tables
- Performing Hot Backups
- Performing Recovery
- Import and Export Operations
- Exporting and Importing using SQL
- Exporting from the Command Line using mysqldump
- Importing from the Command Line using mysqlimport
- Additional Backup Tools

Session 11: USER MANAGEMENT

- Introduction
- User Accounts
- Creating Users
- Renaming Users
- Change a User Password
- Dropping Users
- Granting Privileges

Session 15: TUNING THE SERVER

- Status Variables
- Server Variables
- System Variables
- Per Client Variables
- Performance Schema Overview
- The Query Cache
- MySQL 8 Desupport of the Query Cache

Session 16: THE EVENT SCHEDULER

- Event scheduler concepts
- Event scheduler configuration
- Creating, altering and dropping events
- Event scheduler monitoring
- Events and privileges

Session 17: MYSQL SERVER INSTALLATION AND UPGRADE

- Installing MySQL on Linux and UNIX
- Upgrade the MySQL Server
- Deployment Security
- Database Server Access
MySQL Database Administration Training Course Course Contents - DAY 5

Session 18: OVERVIEW OF HIGH AVAILABILITY

- High Availability Goals
- High Availability Concepts
- Design for High Availability
- Definition of Availability
- High Availability Terminology

Session 19: CONFIGURE MASTER SLAVE REPLICATION

- Replication Overview
- When to Use Replication
- Disadvantages of Replication
- Replication Factors
- Replication Architecture
- Complex Replication Topologies
- Replicating from InnoDB to MyISAM Tables
- Testing Replication
- Monitoring Replication Threads
- Excluding Databases or Tables from Replication
- Example: Setting Up a Master Slave Replication
- Replication Using GTIDs
- Controlled Switchover
- Configure Replication using MySQL Workbench

Session 20: ADMINISTER A REPLICATION TOPOLOGY

- MySQL Replication and Failover Utilities

Administration Training Course Course Contents - DAY 2

Session 6: MYSQL ARCHITECTURE

- Communication Protocols used to connect a Client to the Server
- The SQL Parser and Storage Engine Tiers
- Installing and Uninstalling Plugins
- How MySQL Uses Disk Space
- How MYSQL Uses Memory

- The User Table
- Connection Validation
- Password Validation Plugins

Session 12: PRIVILEGES

- Types of Privileges
 - Granting and Revoking Privileges
 - Setting Resource Limits
 - MySQL 8 Resource Management
 - MySQL 8 Role Management
 - The MySQL Database
 - The Show Grants Command
- MySQL Database Administration Training Course Course Contents - DAY 4

Session 13: TRANSACTIONS AND LOCKING

- Locking Concepts
- Levels of Locking
- Implicit Table Locking with MyISAM and InnoDB
- Explicit Table Locking
- Advisory Locking
- Monitoring Locks
- Turning Autocommit on and off
- Using Transaction Blocks
- Handling Concurrency Problems and Deadlocks

Session 14: TUNING AND TABLES

- General Table Optimizations
- MyIsam Specific Optimizations
- InnoDB Specific Optimizations
- Other Engine Specific Optimizations

- Access the Utilities from MySQL Workbench
- Replication Files and Threads
- Configure a Lagging Slave
- Monitoring Replication
- Troubleshooting Replication
- Semi-synchronous Replication
- Configure MySQL Failover

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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