



## MySQL Database Administration

**Duration: 5 Days**    **Course Code: MYSDBA**    **Delivery Method: Company Event**

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### 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.

### Company Events

These events can be delivered exclusively for your company at our locations or yours, specifically for your delegates and your needs. The Company Events can be tailored or standard course deliveries.

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### Target Audience:

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

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### 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 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.

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### 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

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#### 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
- MySQL 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

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**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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