Day 1

Module 1: Class Introduction and Training Lab Setup

See trainer’s presentation for the following:

* MySQL Overview and Products
* Supported Operating Systems
* 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
* System Administration
* Choosing between types of MySQL distributions
* Installing the MySQL Server

MySQL Community Server (installer)

<https://dev.mysql.com/downloads/installer/>

MySQL Community Server (noinstall zip archive)

<https://dev.mysql.com/downloads/mysql/>

MySQL Workbench

<https://dev.mysql.com/downloads/workbench/>

* The MySQL Server installation file structure
* Starting and stopping the MySQL server
* Upgrading MySQL
* Running multiple MySQL servers on a single host

Module 2: MySQL Database Server Configuration

MySQL server configuration options

System variables

SQL Modes

Available log files

Binary logging

Module 3: MySQL 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)

Module 4: MySQL Database Administration

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 mysql show client program

Using INFORMATION\_SCHEMA queries to create shell commands and SQL statements

Day 2

Module 5: MySQL 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

Module 6: MySQL 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

Module 7: MySQL 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

Module 8: MySQL 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

Day 3

Module 9: MySQL 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

Module 10: MySQL 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

Module 11: 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

Day 4

Module 12: 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

Module 13: MySQL 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)

Module 14: MySQL 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