



## MySQL Performance Tuning

16 hours

### Course Overview

Naya Academy provides extensive overview about the world's most popular open source database - MySQL RDBMS.

The course will cover the advanced features such as Performance Tuning, High Availability, Scaling and more.

The students will acquire a skill set and tools to tune and perform advanced elements such as identifying and dealing with bottlenecks.

This course combines a strong and up to date theory knowledge over MySQL RDBMS as well as practical demonstrations and examples from real-world use cases.

### Course Objectives

- Understand MySQL Architecture
- Improve And Optimize database performance And Enhance Reliability
- Perform Installations And Upgrades Tasks Step By Step
- Practicing In MySQL Development Using SQL Code, Procedures, Built-In and User Defined Functions And Events (Optional)

### Target Audience

DevOps | Application Developers | Architecture Designers

### Course Prerequisites

- Linux Basic Knowledge
- ANSI SQL Basic Knowledge
- RDBMS Basic Understanding

### Course Contents

#### Day 1

#### History And Introduction (30M)

- Overview
- Real Examples and Use Cases Of Customers Using MySQL Database

#### Architecture Overview (30M)

- Sever
- Client

#### Storage Engines (1H)

- Engines Types
- Engines Characteristics
- Using Storage Engines For Different Tasks To Achieve Better Performance



### Database Management (30M)

- System Variables
- Altering Database Variables at Session / Global Level

### Identifying Slow Queries (2H)

- The Slow-Query-Log
- The Process List
- InnoDB\_TRX
- Using Show Warnings
- Performance Schema
- PT Query Digest (Percona)

### Optimizing Queries (3H)

- MySQL Performance Tuning Methods
- Explaining The EXPLAIN
- MySQL Indexes
- MySQL Optimizer Hints
- Working with MySQL Caching Solutions

## Day 2

### MySQL Parameter File Best Practices - my.cnf (30M)

- InnoDB Memory Buffers
- Log file size And log buffer
- Memory Consumption
- Memory Limitations

### Table Maintenance (2H)

- Analyze Table
- Check Table
- Checksum Table
- Optimize Table
- Repair Table
- Moving Tables Between Schemas / Servers / Tablespaces
- Implementing Partitions

### Locking in MySQL (2H)

- The Locking Mechanism Overview
- InnoDB ACID And Isolation Levels Locks
- Table Level Locking



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- Row Level Locking
- Internal / External Locking
- Dead Locks
- Locks Monitoring

#### **Monitoring Database Activity (30M)**

- Information Schema
- Performance Schema and Workbench
- Monitoring Solutions Overview

#### **Planning For Schema Change (30M)**

- Alter Table Considerations
- PT Online Schema Change (Percona)

#### **Various Logs In MySQL (Error Monitoring) (30M)**

- Error Log
- Query Log
- Slow Query Log
- Binary Log
- Relay Log
- General Query Log

#### **Using MySQL Built-In Tools (1H)**

- MySQLAdmin
- MySQLBinlog
- MySQLDump
- MySQLImport