# MySQL for Developers Training

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Duration: **5 Day**

## Overview

**This MySQL for Developers training teaches developers how to develop console and web applications using MySQL with their choice of the PHP, Java, or Python programming languages. Expert Oracle University instructors will guide you through realistic hands-on activities to teach you how to use Connectors to access MySQL databases, query the database effectively, present data in different formats, and use MySQL support for "NoSQL". In this course, you will be introduced to the MySQL Cloud Service.**

Learn To:

- Program with Connectors.
- Write console and web applications.
- Optimize query performance.
- Write stored routines and triggers.
- Use the InnoDB memcached plugin for NoSQL access to your data.
- Store, access, and analyze geospatial data.
- Gain an understanding of the MySQL Cloud Service.

Benefits to You

This course will teach you how to write applications that maximize your investment in MySQL. You will learn best practice techniques for writing programs that store and retrieve MySQL data and present it to users in a way that allows them to gain insight into that data.

## Prerequisites

Required Prerequisites:

- Knowledgable in using the mysql command-line client
- Knowledgable in relational database concepts and MySQL data types
- Knowledgable in executing basic DDL and DML queries using SQL
- Knowledgable in Joining tables

Suggested Prerequisites:

- Developing simple web applications using PHP, Java/JSTL, or
- Basic HTML
- Knowledge of JSON (javascript object notation)

**Those delegates who are attending via either virtual or extended classroom will be required to provide either dual monitors or single monitor plus a tablet device.**

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## What You Will Learn

- Secure your connections to the MySQL server
- Use prepared statements
- Guard against SQL injection
- Investigate and handle errors and warnings
- Create database-driven web applications
- Enable fast text search
- Respond to data changes and events
- Modify table data
- Use temporal and numeric functions in expressions
- Write queries that contain nested queries
- Safeguard concurrent queries by using transactions
- Find and fix poorly-performing queries
- Use NoSQL and JSON document stores
- Write stored programs
- Create MySQL client programs using Connectors
- Gain an understanding of the MySQL Cloud Service

## Outline

Introduction to MySQL

- MySQL overview
- MySQL Enterprise Edition
- MySQL on the Web
- The MySQL community
- What is MySQL Cloud Service
- What it means to provision a MySQL Cloud Service instance
- How an instance of MySQL Cloud Service differs from having an on-premises instance
- How MySQL course content covers material that applies whether you run MySQL locally or in MySQL Cloud Service

Connectors and APIs

- Introducing MySQL Connectors
- PHP Connectors
- Connector/J
- Connector/Python
- Embedding MySQL in an application
- Integration with MySQL Fabric

Using Connectors

- PHP, Java, and Python Connectors
- Reusing connections
- Dealing with special characters and null values
- Storing and retrieving connection details

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- Creating secure connections to the MySQL server

Prepared Statements

- Reasons for using prepared statements
- User-defined variables
- Preparing, executing, and deallocating prepared statements
- Using prepared statements with Connectors

Handling Errors and Warnings

- SQL modes
- Interpreting errors and warnings
- MySQL diagnostics
- Error and exception handling with Connectors

Building Database-Driven Web Applications

- Anatomy of a database-driven web application
- Different methods of displaying query results
- Web forms and processing requests
- Using hyperlinks for navigation
- Displaying query results across multiple pages
- Dynamic sorting of query results

Tables and Views

- Creating new tables from existing tables
- Temporary tables
- Using mysqldump
- Working with views

Working with Strings

- Overview of working with strings
- String functions
- Sorting and comparing strings
- Matching string patterns with regular expressions
- Using FULLTEXT search

Working with Numeric and Temporal Data

- Numeric expressions
- Temporal expressions
- Interval arithmetic
- Numeric functions
- Temporal functions

Subqueries

- Subquery: overview
- Scalar subqueries
- Row subqueries
- Table subqueries

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- Correlated and non-correlated subqueries
- Subqueries in data modification statements

Modifying Table Data

- Using the INSERT statement
- Retrieving the ID of the last-inserted record
- Using the DELETE statement
- Using the UPDATE and REPLACE statements
- Using the TRUNCATE statement

Transactions

- Overview of transactions
- Transactional statements
- Using transactions within programs
- Consistency issues
- Isolation levels
- Locking

Query Optimization

- Optimization strategies
- The MySQL Query Optimizer
- Indexing
- Query analysis with the EXPLAIN statement
- Rewriting queries
- MySQL Enterprise Monitor

Stored Routines

- Creating stored routines
- Variables in stored routines
- Parameters in stored routines
- Managing stored routines in the database
- Using flow control statements and constructs
- Using cursors
- Limitations of stored routines

Triggers and Scheduled Events

- Triggers
- Scheduled Events

Reporting

- Aggregating data
- Summary tables
- Grouping data
- Crosstab reports
- Bar charts
- Decision tables

NoSQL

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- NoSQL in MySQL
- Memcached plugin for InnoDB
- Memcached application development
- The JSON native data type
- JSON functions
- Generated columns

Spatial Data

- Spatial data support in MySQL
- The MySQL spatial data types
- Spatial data formats
- Using spatial indexes for analysis
- Useful spatial data functions

Conclusion