Spring Framework 6

Beginner to Guru

Overview of MySQL

About MySQL

- With over 100 million downloads, MySQL is the most popular database in history
- MySQL is a Relational Database System (aka RDMS)
- MySQL is owned by Oracle, but MySQL is open source and free to use
- Officially pronounced ‘My Ess Que Ell’

MySQL History

- MySQL was created in 1995 by a Swedish company called MySQL AB
- Original developers included: Michael (Monty) Widenius, David Axmark, Allan Larsson
  - MySQL is named after Monty's daughter 'My'
- Under GPL, MySQL was open source in 2000
- MySQL had over 2 million active installations by the end of 2001

MySQL History

- In 2005, Oracle acquired Innobase, the company behind the storage backend of MySQL
- In 2006, MySQL had 8 million installations, 320 employees, across 25 countries
- Sun Microsystems bought MySQL in 2008 for $1 billion
  - MySQL had become the choice database for large corporations, banks, and telecoms

MySQL History

- In 2010, after legal complications in the EU, Oracle's acquisition of Sun Microsystems was finalized
  - This included the purchase of MySQL
- Michael (Monty) Widenius left Sun Microsystems and developed a fork of MySQL called MariaDB
  - Largely out of concern about the future of MySQL
  - The MariaDB API remains 100% compatible with MySQL

MySQL Features

- MySQL is a Relational Database Management System
- “SQL” stands for Structured Query Language
  - MySQL supports the ANSI/ISO SQL standard
- MySQL is developed in C and C++, making it portable across many different platforms
- MySQL is very fast, stable and scalable.
- There are MySQL clients for all popular languages.
  - C, C++, Eiffel, Java, Perl, PHP, Python, Ruby, Tcl, and ODBC, JDBC, ADO.NET

MySQL Features

- Stored Procedures
- Triggers
- Cursors
- Updated Views
- Query Cache
- Subselects

MySQL Features

- ACID Compliance
  - Atomicity - all or nothing
  - Consistency - transactions are valid to rules of the DB
  - Isolation - Results of transactions are as if they are done end to end
  - Durability - Once a transaction is committed, it remains so

MySQL Editions

- **MySQL Community Edition** - free!
  - Open Source under GPL, free to use.
  - This is the edition we will use in the course.
  - Community support only
- **MySQL Standard Edition** - Annual subscription ($2,000/year, per ~ server)
  - 24x7 Support from Oracle
  - Technically the same as Community Edition, but with support from Oracle

MySQL Editions (Cont.)

- **MySQL Enterprise Edition** - ($5,000/year per ~server)
  - Provides features for cluster routing and partitioning.
  - Includes Enterprise tooling for monitoring, backups, and security
  - Thread pooling for significant increase in performance under large loads
- **MySQL Cluster CGE** - ($10,000/year per ~server)
  - Designed for near linear scalability through clustering.
  - High volume, highly available.

MySQL Installation Options

- MySQL is available for all major operating systems
  - Supported OS's: Microsoft Windows, macOS, Linux, Solaris (Unix), FreeBSD
- MySQL can also be run in a Docker container
  - Recommended to use official MySQL Docker image
- MySQL Workbench - GUI interface for MySQL available for major operating systems
  - Use is optional

MySQL and Spring Boot

- Connectivity to MySQL is managed via a JDBC Driver
- **JDBC** - **J**ava **D**ata**B**ase **C**onnectivity
- All major Relational Databases have a database specific JDBC Driver
- MySQL was selected for this course due to its widespread popularity and its free to use
- Configuration steps for Spring Boot for other relational databases will be roughly the same
  - JDBC is a common API abstraction
  - Each will have vendor specific options

Course Requirements

- Require access to MySQL instance with root user permissions
  - Free community edition is perfect
- Local installation is preferred
  - Docker container optional
  - VM instance in cloud optional
- Verification - Able to connect using root user account using GUI tool like MySQL Workbench
  - If you cannot connect using a GUI tool, you will not be able to connect from Spring

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Coming Up In Course

- With MySQL we will be performing the following tasks
  - Creating user accounts with limited permissions
  - Creating database schemas
  - Creating database tables and indexes
- Required SQL scripts will be provided in course for above tasks

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