

Hibernate for Java Database Access

Length:

3 Days

Description:

This course covers everything you need to know to begin working with Hibernate in a very short time. It covers all the important concepts necessary to access and update data stored in relational databases. It includes an extensive series of labs to exercise all major capabilities.

Hibernate is an open source object/relational (OR) persistence and query service for Java. Hibernate lets you develop persistent classes following common Java idioms - including association, inheritance, polymorphism, composition and the Java collections framework.

The *Hibernate Query Language*, designed as a minimal object-oriented extension to SQL, provides an elegant bridge between the object and relational worlds. Hibernate also allows you to express queries using native SQL or Java-based Criteria and Example queries.

Hibernate is now the most popular OR mapping solutions for Java, and it has become a de facto standard in Java OR mapping. JBoss has integrated Hibernate into its JEMS (Java Enterprise Middleware System) product line.

The Java Persistence API (EJB 3) specification derives a great deal of its architecture from Hibernate, and the Hibernate annotations are compatible with the Java Persistence annotations. This promises to make Hibernate an even more important technology.

Course Objectives:

- Understand the benefits of Hibernate
- Understand the Hibernate architecture
- Create Hibernate based applications
- Understand and use Hibernate mapping to map persistent objects to the database
- Understand and work with collections & associations
- Use Hibernate's versioning support
- Map inheritance hierarchies using Hibernate
- Work with Hibernate queries, HQL, and Criteria
- Performance tune your Hibernate applications
- Understand Hibernate transaction support
- Understand the relationship between Hibernate and Java Persistence / EJB 3
- Use the new Hibernate annotations to do OR mapping

Audience:

Java Developers who want to learn to use Hibernate.

Prerequisites:

Knowledge of Java language constructs and object-oriented programming.

Course Content:**Chapter 1 - Introduction to Hibernate**

- Issues with Persistence layers and Object-Relational Mapping (ORM)
- Hibernate Overview and Benefits
- Hibernate architecture overview
- POJO (Plain Old Java Object) Based Mapping

Chapter 2 - Getting started with Hibernate quickly

- Overview of the Hibernate distribution
- Configuring Hibernate
- "Hello World" Program for Hibernate
- Mapping a Class
- Hibernate Type System
- Working with sessions and Persistent Objects
- Logging - log4j Overview and configuration for Hibernate

Chapter 3 - Querying

- Inserting and Updating Entities
- HQL - Hibernate Query Language Overview
- The Query Interface
- Creating and working with queries
- Named Queries, Projection Queries, Aggregate Queries

Chapter 4 - The Persistence Lifecycle

- Transaction Overview and Transactions in Hibernate
- Hibernate Transaction API (in Managed and Non-managed Environments)
- The lifecycle of managed objects
- Persistent, transient, and detached objects
- The Persistence (Session) Context (Lifespan, Relation to Managed Objects, Propagation)
- Contextual Sessions
- Synchronization to the Database
- The Session as cache

Chapter 5 - Optimistic Locking / Versioning

- Detached Objects and Optimistic Locking
- Versioning overview and Using Versioning
- Locking Objects

Chapter 6 - Relationships

- Object Relationship Overview
- Mapping Collections of Value Objects
- Entity Relationships: 1-N, N-1, N-N, 1-1
- Mapping Entity Relationships
- Uni and Bi-directional Relationships
- The Relationship "inverse"
- Cascading Over Relationships
- Queries Across Relationships (Lazy and Eager)

Chapter 7 - Inheritance Mapping

- Entity Inheritance with Hibernate
- Table-per-class mapping
- Table per Subclass mapping
- Table per Concrete Class mapping

Chapter 8 - Additional Querying Capabilities

- Projection Queries, Aggregate queries
- Bulk updates and deletes
- Native SQL Queries
- Query Filters

Chapter 9 - The Criteria API

- Overview of the Criteria API
- Working Querying with the Criteria API
- Query by Example

Chapter 10 - Hibernate and Java Persistence / EJB 3

- Overview of Java Persistence / EJB 3
- Relationship between Java Persistence and Hibernate
- Overview of Annotations
- Mapping Entities with Hibernate Annotations
- The EntityManager, Persistence Context and Persistence Unit
- Working with Transactions - EntityTransaction, Managed, and Unmanaged Environments
- Inserts and Updates
- JPQL - Java Persistence Query Language
- Versioning
- Relationships

Chapter 11 - Advanced Topics

- Components and Multi-Table Mapping
- equals() and hashCode()
- Caching and Efficiency
- Design Considerations