Course 436:
Building Applications Using Hibernate
(4 days)

Overview…

Geared for experienced Java developers, this comprehensive, 4 day hands-on course provides an in-depth introduction to Hibernate. With a strong hands-on character and many ready to use practical demos, this course enables developers to put their newly-acquired skills into action, the minute they leave the classroom. Our detailed course materials and student resource CDs server as excellent materials for post-training review as well.

Who should attend…

This is an intermediate level Java programming course, designed for developers who wish to understand Hibernate. Attending students should be able to use the syntax of the Java language without difficulty.

Session: Introduction to Hibernate

Lesson: Introduction to Hibernate

- Explain Object to Relational (O/R) Mapping (ORM)
- Explain the Hibernate Architecture
- List benefits of using Hibernate
- Discuss the goals of Hibernate
- List key functionalities of Hibernate
- List the different Hibernate types (Entities and values)
- List different Persistent representations (POJOs, Maps and XML)

Lesson: Getting started with Hibernate

- Understand the nuts and bolts of Hibernate
- Understand how to map a class to the database
- Understand the configurations involved and their relationships
- List different ways of configuring Hibernate
- Understand the overall syntax of the Hibernate Configuration file
- Understand the overall syntax of a mapping file
- Introduce the org.hibernate.SessionFactory
- Introduce the org.hibernate.Session
- Understand one way of obtain a session using Hibernate contextual sessions
- Supply a basic example of using Hibernate

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Session: ORM with Hibernate

Lesson: Basic ORM

- Configure persistent classes
- Configure persistent state of a class
- Understand the requirements on a persistent entity class
- Understand Object identity in Hibernate
- Understand how to correctly implement equals and hashCode in Hibernate
- Discuss object identity and a caveat in hashCode and equals implementations
- Discuss different ways of generating unique numbers for keys
- Understand how to influence mapping to columns
- Understand how to map properties of a class to multiple tables

Lesson: Value types Collections and Components

- Understand how to map composition using Hibernate's components
- Understand how to use components as composite identifiers
- Understand the different collection types supported
- List different element types: simple types, composite types and entities
- Understand programming restrictions when using collections
- Understand how to map java.util.Set and java.util.List
- Understand how to position elements explicitly in the List
- Understand how to map java.util.SortedSet
- Understand how to correctly use a Comparator
- Understand how to map a java.util.Map
- Understand how to map the key of the map
- Understand Hibernate's bagsIntroduce Dynamic components

Lesson: Entity associations (relations)

- List the different types of associations
- Understand the difference between uni and bidirectional associations
- Understand how to map unidirectional one to one, many to one and one to many associations
- Understand how to and when to use join tables
- Understand how to map many-to-many associations
- Understand how to configure bidirectional associations
- Understand how to cascade over associations

Lesson: Mapping Inheritance

- Discuss the three Inheritance ORM strategies
- Discuss the Single Table Inheritance Pattern (aka table per class hierarchy)
- Discuss the Class Table Inheritance Pattern (aka table per subclass)
- Discuss the Concrete Table Inheritance Pattern (aka table per concrete class)
- Discuss Hibernate's implicit polymorphism strategy
- Understand how to configure these mappings
- Understand the concept of a discriminator

Session: Using persistent Objects

Lesson: Reading, updating and deleting objects

- Understand the three object states (Transient, Persistent and detached)
- Understand how to transition from the transient to persistent state (IOW how to make objects persistent)
- Understand how to retrieve hibernated objects using the primary key
- Understand how to retrieve hibernated objects using basic HQL
- Understand how to update entities which are in the persistent state (attached updates)
- Understand how to transition entities form persistent to detached state
- Understand the detached state of an entity
- Discuss the briefcase model
- Understand how to transition from detached (back) to persistent (IOW how to re-attach detached objects)
- Understand the difference between update, merge
- Removing entities
- Discuss the different cascade options and their impact on entity associations

Lesson: Transactions

- Describe the need for transaction control.
- Explain isolation levels.
- Discuss the three different ways of demarcating transactions
- Understand the different ways of demarcating transaction in a managed Java EE environment
- Understand how to correctly use the contextual session
- Use the Hibernate Transaction API to hide transaction implementation
- Correctly handle exceptions
- Understand Optimistic vs Pessimistic locking schemes
- Implement Optimistic concurrency using Hibernate's automatic versioning
- Implement Pessimistic concurrency using Lock modes
- List different optimistic lock modes supported in Hibernate
- Locking using read for update
- Understand the read for update scope on association (and how to cascade the lock)

Appendix

Session: Querying in Hibernate

Lesson: Querying for objects

- Introduce two ways of querying (Criteria and HQL)

- Understand the basic HQL syntax
- Introduce the org.hibernate.Query class
- Working with the results of a query
- Handling different resultset element types (unique, array of entity, scalar)
- Use the relationships between entities in your HQL
- Use HQL expressions
- Use aggregate functions
- Use the group by clause
- Understand how to enable Pagination
- Use parametrized HQL
- Understand the concept of Named Queries
- Use the org.hibernate.Criteria to query
- Understand how to use Query By Example (QBE)

Please contact your ROI representative to discuss course tailoring!!!