JAV750 : Java Data Access with Persistence API

Code : JAV750 **Duration :** 3 days **Category :** Java EE

Audience :

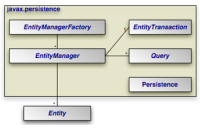
Experienced Java developers who want to learn how to use the Java Persistence API for accessing data in databases.

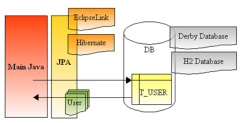
Prerequisites :

Experience with Java programming and object orientation is required to participate in this course. Knowledge of database structures and SQL is beneficial for a good understanding.

Realization :

The concepts are treated on the basis of presentation slides and demos. The theory is interspersed with exercises. All topics in the Java EE 6 Persistence API Developer Certified Expert Exam (1Z0-898) will be discussed. The course material is in English.





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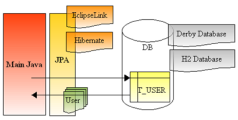

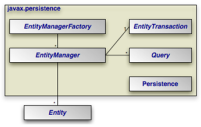

Contents :

In this course Object Relational Mapping with the Java Persistence API 2.0 is on the agenda. After an overview of the data access capabilities in Java, including JDBC, and the challenge they face, the basic concepts and architecture of the JPA is explained. The role of the Entity Manager and the persistence.xml configuration file is discussed and attention is paid to the differences between version 1.0 and 2.0 of the JPA specification. The next topic covers the concept of a JPA Entity, the lifecycle of Entities and how Entity classes are mapped to database tables. Also the various states Entities can have in relation to the database such as new, persistent, detached and removed are discussed in this respect as is the concept of merging. Furthermore the use of annotations and XML mapping files and the role the various properties and attributes play is explained. The various key generation strategies are discussed as well as the mapping of association relationships and the mapping of inheritance relationships between Entities. Next the possibilities of the JPA Query language, JPQL, are covered and the uses of JPA criteria and native SQL queries. The function and operation of Entity callbacks that are called immediately before and after the execution of a persistence operation is explained and the alternative use of Entity Listener classes as well. Part of the course program is also the treatment of interceptors which are used for crosscutting concerns like logging and security. Finally, attention is paid to the use of JPA in a Java EE application, how to interact with EJBs and the method of packaging JPA entities. Finally JPA transactions are addressed in both a desktop environment and a Java EE environment.

Module 1 : Intro Java Persistence

Java Persistence
Traditional Persistence
Transparent Persistence
Persistence Technologies
Direct File I/O
Serialization
Java Database Connectivity
JDBC Architecture
Executing Statements
Retrieving Results
JDBC Drivers
JDBC URL's
Problems with JDBC

Module 2 : Java Persistence API

Traditional Persistence
Object Relational Mapping
Persistence API and EJB's
Entity Classes
Entity Manager
Persistence Context
Entity Identity
Entity Managers
Entity Lifecycle
Entity Relationships
Persisting Objects
Removing Objects
Merging Objects
Managing Identity
JPA 1.0 versus 2.0
New Features JPA 2.0

Module 3 : Mapping Persistent Objects

Mapping Annotations
Table Annotation
UniqueConstraint Annotation
Column Annotation
Id Annotation
IdClass Annotation
GeneratedValue Annotation
Version Annotation
Basic Annotation
Lob Annotation
Temporal Annotation
Enumerated Annotation
Transient Annotation

Module 4 : Mapping Relationships

Entity Relationship types
Bidirectional OneToOne
Bidirectional ManyToOne
Bidirectional OneToMany
Bidirectional ManyToMany
Unidirectional OneToOne
Unidirectional ManyToOne
Unidirectional OneToMany
Unidirectional ManyToMany
Cascading persist

Module 5 : Mapping Inheritance

Inheritance Mapping Strategies
Single Table per Class Hierarchy
Single Table Data Model
Advantages and Disadvantages
Table per Concrete Class Strategy
Table per Class Data Model
Advantages and Disadvantages
Joined Subclass Strategy
Joined Data Model
Advantages and Disadvantages

Module 6 : JPA Query Language

Java Persistence QL
Projections
Subqueries
Joins
Update
Delete
Queries
Dynamic Query
Static Query
Criteria API
CriteriaQuery interface
Query Error Detection
CriteriaBuilder
Metamodel in JPA 2

Module 7 : Entity Callbacks and Listeners

Life Cycle Callback methods
Entity Listeners
Life Cycle Callback Rules
Signature Life Cycle Callbacks
Signature Entity Listeners
@PrePersist and @PostPersist
@PreRemove and @PostRemove
@PreUpdate and @PostLoad
Multiple Invocation Callbacks
Invocation Order

Module 8 : Interceptors

Interceptors
Interceptor Classes
@AroundInvoke
Example Interceptor
Interceptor Lifecycle
Interceptor Types
Default Interceptors
Exclude Interceptors

Module 9 : Java EE integration

Enterprise Java Beans
Sessions Beans
Statefull and Stateless
JNDI lookups
EJB injection
Transaction-Scoped Persistence Context
Extended Persistence Context
Persistence Unit
Packaging in EAR files
Deployment Descriptors

Module 10 : Transactions

Transactions
Demarcating Boundaries
Container Managed
Bean Managed
Client Managed
Transaction Attributes
SessionSynchronization
Before Completion
After Completion