JAV300 : Java EE EJB Business Component Development

Code : JAV300 **Duration :** 3 days **Category :** Java EE

Audience :

Java developers that want to learn how to develop of Java EE 6 EJB business components.

Prerequisites :

To participate in this course knowledge and experience with Java programming is required. Knowledge of Java Web development is beneficial for a proper understanding.

Realization :

The theory is explained using presentation slides and is interspersed with practical exercises. Demos are used to clarify the theory. All topics that are asked in the Java EE 6 Enterprise JavaBeans Developer Certified Expert Exam (1Z0-895) are discussed. The course material is in English.

Java EE Business Component Development with EJB's

Contents :

This course focuses on Enterprise JavaBeans, as specified in the EJB 3.x specification as part of the Java EE 6. Attention is paid to the different types of Enterprise Beans like Session Beans, Message Driven Beans and Singleton Beans. The Java Naming and Directory Interface (JNDI) is discussed and the simplification of how beans can be located and instantiated through injection. Attention is also payed to the lifecycle of the different types of beans and to concurrency issues. The important role that annotations play in Java EE and EJB's is discussed as well. Annotations do their work in many places such as in establishing links with resources and the realization of persistence. Also the use of the EJB Query Language and the implementation of Object Relational Mapping in EJB 3.x is part of the course schedule. Also the use of transactions in a Java EE 6 environment is considered. Attention is paid to the Java EE security architecture and the various authentication and authorization strategies. JMS and its use in combination with Message Driven Beans is also on the course program. And finally the focus is on best practices and design patterns in EJB technology.

Module 1 : Java EE Intro

Java Editions
Java EE
Enterprise Applications
Java EE Servers
Web Components
EJB Components
JavaBean components
Web Services
Java EE API's
EAR Files
Deployment Descriptors
Annotations
Java EE 6

Module 2 : Enterprise Java Beans (EJB)

EJB features
Distributed Objects
Session Beans
Statefull and Stateless
Architecture of an EJB
EJB Object at work
Client Access
Remote versus Local Clients
Web Service Clients
Singleton Beans
Singleton Concurrency Access
Concurrency management strategy
Session faade
EJB Programming Model
Life Cycle Session Beans
Message Driven beans
Life Cycle Message Driven Beans

Module 3 : JNDI and Injection

Locate resources with JNDI
JNDI Architecture
JNDI InitialContext
JNDI Naming Context
EJB Environment
Standard JNDI SubContexts
Dependency Injection
DataSource Injection
Injection of EJB References
Example EJB Injection

Module 4 : Java Persistence API

Persistence API
Entity Classes
Entity Manager
Persistence Context
Entity Identity
Entity Managers
Entity Lifecycle
Entity Relationships
Persisting Objects
Removing Objects
Merging Objects
Managing Identity

Module 5 : 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 6 : Session Beans

Session Beans Overview
Stateless Session Beans
Lifecycle Stateless Session Beans
Event callbacks
Asynchronous communication
Singleton session bean
Singleton concurrency access
Stateful Session Beans
Servicing Remove
Passivating and Activating
Cart Session Bean
Remote Business Interface
Cart Session Bean Class
Life Cycle Callback Methods
Calling Business Methods
Remove method

Module 7 : Message Driven Beans

Motivation Message Driven Beans
Messaging Characteristics
Message Oriented Middleware
Publish and Subscribe
Point tot Point
What is JMS?
Message types
Creating and Receiving Messages
Integrating JMS with EJB
Message Driven Beans
MessageListeners
onMessage method

Module 8 : Timer Service

Timer Service
Scheduling Timers
Creating Timers
Timeout method rules
Canceling and Saving Timers
Timer Usages
Timer Service interface
Timer interface
Timer handle interface

Module 9 : Interceptors

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

Module 10 : Transactions

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

Module 11 : Security

Java EE security architecture
Java EE and EJB Security
Security Overview
Programmatic Security
Java EE authorization strategies
Declarative Security
Security Functions
Using Programmatic Security
Method Permissions
DeclareRoles
ejb-role-ref
role-link

Module 12 : EJB and Web Services

What is a Web Service?
RPC Example
Structure SOAP Message
What is WSDL
Stateless Session Bean Endpoint
JAX-WS
Publishing an Endpoint
Web Service Annotations

Module 13 : EJB Best Practices

Define best practices
Benefits of EJB best practices
Patterns to Java EE application design
Implements effective exception handling
EJB Design Patterns

Module 14 : Clustering

What is clustering?
Thin Client Clustering
Thick Client Clustering
JBoss all configuration
Clustering Stack
What is JGroups
What is JCache
HA-JNDI
HA-Smart Proxies
SLSBs
SFSBs
HTTP session replication
Entity beans
EJB3
POJO Clustering

Optional Appendix : Annotations

What are annotations?
Pre-Java 5 annotations
Why annotations
Defining annotation types
Using annotations
Kinds of annotations
Marker annotations
Single value annotations
Normal annotations
Meta-Annotations

Optional Appendix : JMX

What is JMX?
JMX API
JMX Goal
Managed Beans
MBean flavors
JMX Architecture
Java SE 5.0 Mbeans
Naming MBeans
MBean Server
Registering Mbeans
Manipulating MBeans
Notifications
Notification Listeners