

## Java EE Training

Duration:

- 5 days
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Prerequisites:

- Good knowledge of Core Java
- Basic knowledge of XML, HTML, CSS and JavaScript

Detailed course outline:

- Day 1:
  - Web Application Basics
    - How the Web works, Thin Clients, TCP/IP
    - HTTP overview, Brief HTML review
    - Overview of Java EE, servlets & Web applications.
    - Servlet Basics
    - Servlet API
    - HTML Forms
    - HTTP: Request-response, headers, GET, POST
    - Overview: How Servlets Work
    - Servlet Lifecycle: init(), service(), destroy()
    - Requests and responses
    - Core Servlet API
    - GenericServlet
    - ServletRequest, and ServletResponse
    - HTTP Servlets
    - HttpServlet
    - HttpServletRequest and HttpServletResponse
    - Accessing Parameters
- Day 2:
  - State management in JEE
    - What is state and why do we care?
    - Cookies
    - Overview
    - API
    - Using cookies
    - HttpSession
    - Putting data into a session object
    - Retrieving data from a session object
- Day 3:
  - JSP Overview
    - JSP architecture
    - JSP tags and JSP expressions
    - Fixed Template Data
    - Lifecycle of a JSP

- Day 4:
  - JSP without Java
    - JSP Expression Language (EL)
    - The JSTL
    - Model View Controller (MVC)
    - Model 1/Model 2 Architecture
    - Using servlets and JSP together to create an MVC app
- Day 5:
  - OVERVIEW of Enterprise Applications
    - Distributed computing
    - Remote method invocation (RMI)
    - Containers and Objects
    - Three Containers
    - Remote Connectivity
    - Scalability and Availability
    - Security
    - Transaction Control
  - ARCHITECTURE
    - What is an EJB?
    - Types of Beans
    - Inversion of Control
    - The Bean-Type Annotations
    - Dependency Injection
    - The @EJB Annotation
    - The JBoss Application Server
    - The Administration Console
    - Deploying EJB Applications
    - Configuring Data Sources
    - Development Cycle and Roles
  - SESSION BEANS
    - Interface/Implementation Split
    - Stateful vs. Stateless
    - The @Stateless Annotation
    - Lifecycle and State Transitions
    - Session Context
    - The @Stateful Annotation
    - State Transitions
    - Singletons and Pools
- Day 6:
  - MESSAGE-DRIVEN BEANS
    - Asynchronous Messaging
    - The Java Message Service
    - Message-Driven Beans
    - Message Types
    - Injecting JMS Queues
    - JMS Configuration in Jboss
  - INTERCEPTORS
    - EJB and AOP
    - The Intercepting Filter Pattern

- EJB Interceptors
  - Annotating Interceptor Classes
  - The InvocationContext Interface
  - Binding Interceptors to Targets
  - Shared Lifecycle and Context
  - Interceptors and MDBs
- TIMERS
  - The EJB Timer Service
  - The TimerService Interface
  - The Timer Interface
  - Timeout Methods
  - Timer Handles
- Day 7:
  - ENTITIES
    - The Java Persistence API
    - Hibernate as a JPA Provider
    - Persistence Annotations
    - Configuration by Exception
    - ORM Annotations
    - The EntityManager
    - Acquiring and Using the EntityManager
    - persistence.xml
    - @Enumerated and @Temporal Types
  - ASSOCIATIONS
    - Associations, Cardinality, and Ownership
    - Annotations
    - Unidirectional vs. Bidirectional
    - The @Embedded Annotation
  - JAVA PERSISTENCE QUERY LANGUAGE
    - OO Query Languages
    - The FROM Clause and Directionality
    - The WHERE Clause
    - The SELECT Clause
    - Joins
    - Aggregates and Grouping
    - Ordering
- Day 8:
  - DEPENDENCY INJECTION
    - Interdependent Systems
    - The Factory Pattern
    - The Service Locator Pattern
    - Dependency Injection
    - Injection by Magic?
    - Injection by Type
    - Injection by Name
    - The Component Environment
    - Deployment Descriptors
    - Impact on Stateful Session Beans
  - JNDI

- Connecting to a Remote Bean
  - Using mappedName
  - Who Can Declare Dependencies
- Day 9:
  - TRANSACTIONS
    - JTA and JTS
    - ACID Transactions
    - The EntityTransaction Interface
    - EJB Transaction Attributes
    - Persistence Contexts
    - Extended Persistence Contexts
    - Isolation Levels
    - Application-Managed Persistence
    - The SessionSynchronization Interface
    - Impact on JMS and MDBs
  - EXCEPTION HANDLING
    - Java Exceptions
    - Remote Exceptions
    - EJB Exception Handling
    - System Exceptions
    - Application Exceptions
    - Transaction Control
  - SECURITY
    - Authentication and Authorization
    - Declarative Authorization
    - Abstract Roles
    - Concrete Realms
    - Configuring User Realms in JBoss
    - Programmatic Authorization
    - Run-As Identity
- Day 10:
  - JCA
    - Introduction
    - Resource adaptors
    - Common client interface (CCI)
    - Server contracts
  - Apache Ant Scripting
    - Overview