

# Oracle - Developing Applications for the Java EE 7 Platform Ed 1

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**Course Number: D98817GC10**

**Duration: 5 days**

## Overview

## Course Description

The Developing Applications for the Java EE 7 Platform training teaches you how to build and deploy enterprise applications that comply with Java Platform, Enterprise Edition 7. The technologies presented in this course include annotations, Enterprise JavaBeans (EJB), Java Persistence API (JPA), Java Transaction API (JTA), Servlets, JavaServer Pages (JSPs), JavaServer Faces (JSF), Contexts and Dependency Injection (CDI), JAX-RS RESTful and SOAP Web Services, the Java API for WebSocket, Java Message Service API (JMS), Bean Validation, Batch API, Timer services, and Java EE Concurrency.

**Target Audience:** Java Developers who want to learn how to utilize the full power of Java EE 7

**Learn how to:**

- Use Java Persistence and Java Transaction APIs.
- Create a flexible component model using EJB and CDI technology.
- Provide Timer, Concurrency and Batch services.
- Create SOAP and REST WebServices.
- Develop web-based interfaces using Servlets, Java Server Pages, JavaServer Faces.
- Assemble and deploy Java applications to a JEE Application Server.

### **Benefits to you:**

By taking this course, you'll gain hands-on experience building Java EE 7 Applications. You will get the chance to create web-based user interfaces using HTML5 and JavaScript along with JSPs JSFs and servlets. Web-based user interfaces will use AJAX to communicate with RESTful web services you create. Business logic will be handled using CDI and EJB components. You will also create and use JMS resources, Batch and Timer components. You will learn how to persist application data using JPA and JTA APIs.

### **Participate in Hands-On Labs**

During this course practice sessions you develop a product management application. This application is going to start as a simple client-server application, but will evolve into a Java Enterprise Application having the following components:

- Java Persistence API components to handle product database objects
- Enterprise JavaBeans components to handle product management application business logic
- Java Message Service API components to produce and consume messages
- SOAP WebService to produce a product quotes
- Web user interface to search, display and update products designed with Servlets, Java Server Pages, and Java Server Faces
- REST Service to check product discount
- WebSockets application to implement chat between users
- You will also secure this application using both programmatic and declarative approaches.

### **Skills Gained**

- Deploy Java EE applications
- Handle business logic using POJOs, EJBs, SOAP WebServices, and JMS
- Manage persistency using JPA entities
- Create Java web applications using servlets, JSPs, JSFs, REST Services, and WebSockets

- Secure Java EE applications

## Who Can Benefit

- Architect
- Developer

## Prerequisites

### Suggested Prerequisite

- Java SE 8 Programming Ed 1
- Completed the Java SE 8 Programming course
- Java SE 8 Certification

### Required Prerequisite

- Experience with the Java language
- Experience with XML
- Experience with basic database concepts and a basic knowledge of SQL

## Audience

## Course Details

## Topics

- Introduction to Java EE
- Managing Persistence by Using JPA Entities
- Implementing Business Logic by Using EJBs
- Using Java Message Service API
- Implementing SOAP Services by Using JAX-WS
- Creating Java Web Applications by Using Servlets
- Creating Java Web Applications by Using JSPs
- Implementing REST Services using JAX-RS API
- Creating Java Applications with WebSockets
- Develop Web Applications Using JavaServer Faces
- Securing Java EE Applications

## Appendixes/Additional Content

- Java Logging
- CDI Beans
- BeanValidation and JPA API
- Batch and Concurrency APIs
- JAXB API
- "Pre-CDI" Servlet Examples
- Standards, containers, APIs, and services
- Application component functionalities mapped to tiers and containers
- Interconnect Application Components with CDI Annotations and JNDI
- Web container technologies, Business logic implementation technologies, and web service technologies
- Packaging and deployment
- Enterprise JavaBeans, managed beans, and CDI beans
- Understanding lifecycle and memory scopes
- Linking components together with annotations, injections, and JNDI

### **Managing Persistence by Using JPA Entities**

- Create JPA entities with Object-Relational Mappings (ORM)
- Use Entity Manager to perform database operations with JPA entities
- Handle entity data with conversions, validations, and key generation
- Describe persistence management and locking mechanisms
- Create and execute JPQL statements

### **Implementing Business Logic by Using EJBs**

- Create Session EJB components
- Create EJB business methods
- Manage EJB life cycle with container callbacks
- Use asynchronous EJB operations
- Control transactions
- Create EJB timers
- Create and apply interceptors

### **Using Java Message Service API**

- Describe Java Message Service (JMS) API messaging models
- Implement Java SE and Java EE message producers and consumers

- Use durable and shared topic consumer subscriptions
- Create message-driven beans
- Use transactions with JMS

## **Implementing SOAP Services by Using JAX-WS**

- Describe a SOAP Web Service structure
- Create SOAP Web Services using JAX-WS API
- Create SOAP Web Service clients

## **Creating Java Web Applications by Using Servlets**

- Describe HTTP basics
- Create Java servlet classes and map them to URLs
- Handle HTTP headers, parameters, cookies
- Use servlets to handle different content types
- Manage servlet life cycle with container callback methods
- Use CDI Managed Beans
- Use Interceptors and Filters
- Implement asynchronous servlets and use NIO API

## **Creating Java Web Applications by Using JSPs**

- Describe JSP life cycle
- Describe JSP syntax
- Use Expression Language (EL)
- Use CDI Beans
- Use Tag Libraries
- Handle errors

## **Implementing REST Services using JAX-RS API**

- Understand REST service conventions
- Create REST services using JAX-RS API
- Consume REST service within the client tier

## **Creating Java Applications with WebSockets**

- Understand WebSockets communication style
- Create WebSocket Endpoint Handlers using JSR 356 API
- Manage WebSocket Endpoint lifecycle

- Produce and consume WebSocket messages
- Handle Errors
- Encode and Decode JSON messages
- Provide WebSocket Client Endpoint handler using JavaScript

## **Develop Web Applications Using JavaServer Faces**

- Describe JSF lifecycle and architecture, and understand JSF syntax
- Use JSF Tag Libraries
- Apply Validators and Converters to UIComponents
- Use UI templates
- Define navigation, and handle localisation
- Produce messages
- Use Expression Language (EL), and CDI Beans
- Add AJAX support

## **Securing Java EE Applications**

- Understand Java EE security architecture
- Configure Authentication using Login Modules
- Define Application Roles and Security Constraints
- Use programmatic security
- WebServices security standards

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- JAXB API
- "Pre-CDI" Servlet Examples