



Hewlett Packard Enterprise

Course Datasheet

JEE Spring with Hibernate Framework

Education Services course product number – HPE-JSpHF-v1.0

Course length – 90 Hrs.

Delivery mode – Instructor Led Training (ILT)

Virtual Instructor Led Training (vILT)

JEE is a framework that defines the standard for developing multi-tier enterprise applications. It simplifies enterprise applications by basing them on standardized, modular components, and it provides a complete set of services to those components. Introduction to Object/relational mapping framework for enabling transparent POJO persistence and build persistent objects using common OO programming concepts. Allows developers focus on domain object modelling not the persistence plumbing. Sophisticated query facilities. Struts2 is popular and mature web application framework based on the MVC design pattern. Struts2 is not just the next version of Struts 1, but it is a complete rewrite of the Struts architecture.

Course Objective

Learning how to build enterprise application using state-of-the-art technology of Java EE

Prerequisite

Understanding of Java SE

Course Modules

Chapter 01 – Introduction to JAVA Technology

- Introduction to JAVA Technology
- JAVA Language Features
- What is JAVA bytecode? What is JVM?
- Different Editions of JAVA
- Writing the “Hello World” command-line Application
- Understanding the “main()” method
- Setting path & classpath

Chapter 02 – Object-Oriented Programming Concepts

- Encapsulation
- Polymorphism
- Inheritance
- Abstraction

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- Implementing OO Concepts: Defining Classes
- Variables and methods as members of a class

Chapter 03 – JDBC API

- Introduction to JDBC API
- Types of JDBC Drivers
- Executing statements, prepared statements
- DatabaseMetaData
- ResultSetMetaData

Chapter 04 – Introduction to Hibernate

- Issues with Persistence layers
- Object/Relational Mapping(ORM)
- What is and Why Hibernate
- Hibernate architecture
- Instance states
- Persistence lifecycle operations
- POJO (Plain Old Java Object) Based Mapping
- DAO

Chapter 05 – Mapping Class

- Persistent Entity Class
- Hibernate Mapping
- Mapping the Entity Class
- Primary keys: Id property, Generated Id
- Hibernate Type System
- Working with sessions and Persistent Objects

Chapter 06 – Hibernate Query Language(HQL)

- What is HQL
- The Query Interface
- Creating and working with queries
- Named Queries
- Projection Queries
- Aggregate Queries
- “from” clause
- Associations and join
- “select” clause
- Polymorphic query
- “where” clause

Chapter 07 – Criteria query

- Criteria query
- Criteria query API
- Pagination
- Restrictions
- Ordering
- Aggregate function
- Fetch modes
- Query By Example

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Chapter 08 – Persistence Lifecycle

- Transaction Overview
- Transactions in Hibernate
- Hibernate Transaction API
- The lifecycle of managed objects
- Persistent, transient, and detached objects
- The Persistence (Session) Context
- Contextual Sessions
- Synchronization to the Database
- The Session as cache

Chapter 09 – Optimistic Locking / Versioning

- Detached Objects and Optimistic Locking
- Versioning overview and Using Versioning
- Locking Objects

Chapter 10 – Relationships

- Object Relationship Overview
- Mapping Collections of Value Objects
- Entity Relationships: 1-N, N-1, N-N, 1-1
- Mapping Entity Relationships
- Uni and Bi-directional Relationships
- The Relationship "inverse"
- Cascading Over Relationships
- Queries Across Relationships

Chapter 11 – Inheritance Mapping

- Entity Inheritance with Hibernate
- Table-per-class mapping
- Table per Subclass mapping
- Table per Concrete Class mapping

Chapter 12 – Introduction to Spring

- What is Spring?
- Overview of the Spring Framework
- Spring Philosophies
- Spring Documentation
- Java 5 Language Features

Chapter 13 – A First Look at Spring

- A Simple Example
- Wiring Beans
- Configuring a Properties File
- Schema-Based Configuration

Chapter 14 – Beans and Containers

- Spring Containers
- Spring Configuration File
- Spring Beans
- Using the Container

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- The BeanFactory Interface
- Singleton vs. Prototype
- Bean Naming
- Dependency Injection
- Setter Injection
- Constructor Injection

Chapter 15 – The Application Context

- The ApplicationContext Interface
- Accessing Application Components
- Accessing Resources
- Internationalization with MessageSource
- Application Events

Chapter 16 – Data Validation and Conversion

- The Validator Interface
- The Errors Interface
- The ValidationUtils Class
- Validator Example

Chapter 17 – Aspect-Oriented Programming

- Aspect-Oriented Programming
- AOP Concepts
- AOP Proxies
- The AOP Alliance
- Types of Advice
- AOP Example
- Introductions

Chapter 18 – Using JDBC with Spring

- A Simpler Approach
- The JdbcTemplate Class
- Exception Translation
- Updating with the JdbcTemplate
- Queries using the JdbcTemplate
- Mapping Results to Java Objects

Chapter 19 – Using Hibernate with Spring

- The HibernateTemplate
- Sample Class and Mapping File
- Creating and Saving a New Entity
- Locating an Existing Entity
- Updating an Existing Entity
- Hibernate Query Language
- Executing Queries

Chapter 20 – Introduction to Java EE

- Introduction to Java EE
- Important J2EE API
- J2EE Architecture
- Introduction to EE Components

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- EE Containers

Chapter 21 – HTML

- Introduction To HTML
- Markup Tags
- HTML Comments
- Character entities
- Working with CSS
- Invoking JavaScript methods for event handling

Chapter 22 – JAVA EE Web Application & it's working

- A conceptual view of JAVA EE Web Application
- Web Application Structure
- New Java Servlet technology features
- Annotation support
- Asynchronous support
- Ease of configuration

Chapter 23 – Java Servlet technology

- ServletContext
- Deployment Descriptor
- Deployment Descriptor Elements
- Servlets & dynamic content
- Advantage of Servlets
- Life cycle of a Servlet
- Packages & Classes
- Generic & Http Servlets
- Declaring & Mapping Servlets in web.xml
- Retrieving Http Headers & Form Data
- Request and Response
- Request dispatching & response redirection

Chapter 24 – Session Management

- Session Management
- Different ways to session management
- URL Rewriting : Advantage & Disadvantage
- Hidden Form Fields : Advantage & Disadvantage
- Cookies: Session-Level & Persistent
- Using HttpSession

Chapter 25 – Servlet Listeners

- Introduction to Servlet Listeners

Chapter 26 – Servlet Filter

- Servlet Filter Overview
- Filter API
- Using Filters
- Filter Processing
- Filter Chain
- Mapping of a filter in web.xml
- Using filters to modify a request or response

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Chapter 27 – Getting Started with JSP

- Shortcomings of Servlets : Solution is JSP
- JSP Life Cycle
- JSP Elements
- JSP Directives
- Scripting Elements
- Built-in Action Elements
- Using Beans in JSP

Chapter 28 – Using JSTL

- Using JSTL
- Different Libraries in JSTL
- JSTL Expression Language
- Implicit Object & Operators in EL
- Data Objects & the JSTL EL
- Using Core Tag Library
- Accessing DB using SQL Tag Library

Chapter 29 – Spring Web MVC

- Spring Web MVC
- The DispatcherServlet
- Writing a Controller
- A Simple View Page
- Configuring the Controller
- Adding a View Resolver
- Adding a Message Bundle
- Adding Business Classes
- Adding Test Data
- Accessing a Database
- Adding a Form
- Updating the Database
- Integrating Hibernate
- Handler Mappings
- View Resolution
- Chaining View Resolvers
- Controllers