Spring Framework

Upon completion of this course, students will be able to:

1. Describe the seven component modules of the Spring Framework.
2. Understand the basic philosophies of Spring.
3. Explain the purpose and benefits of dependency injection.
4. Configure beans in a Spring configuration file.
5. Use setter and constructor injection with Spring beans.
6. Create property files for error messages and to support internationalization.
7. Write validators and property editors for user-defined data .
8. Understand basic concepts of aspect-oriented programming.
9. Use the JDBC template to simplify database access.
10. Use the Hibernate template to integrate Hibernate and Spring.
11. Create Web applications using the Model-View-Controller architecture.
12. Write forms and controllers for Spring Web applications.

PREREQUISITE
Students must have strong Java programming skills and exposure to Java EE technology.

COURSE OUTLINE:

CHAPTER 1: INTRODUCTION TO SPRING
- What is Spring?
- Overview of the Spring Framework
- Spring Philosophies
- Spring Documentation
- Java 5 Language Features
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CHAPTER 2: A FIRST LOOK AT SPRING
- A Simple Example
- Wiring Beans
- Configuring a Properties File
- Schema-Based Configuration

CHAPTER 3: BEANS AND CONTAINERS
- Spring Containers
- Spring Configuration File
- Spring Beans
- Using the Container
- The Bean Factory Interface
- Singleton vs. Prototype

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- Bean Naming
- Dependency Injection
- Setter Injection
- Constructor Injection

CHAPTER 4: THE APPLICATION CONTEXT

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

CHAPTER 5: DATA VALIDATION AND CONVERSION

- The Validator Interface
- The Errors Interface
- The ValidationUtils Class
- Validator Example
- Testing the Validator
- Property Editors
- Custom Property Editors

CHAPTER 6: ASPECT-ORIENTED PROGRAMMING

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

CHAPTER 7: 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 8: USING HIBERNATE WITH SPRING

- What is Hibernate?
- Hibernate Sessions
- The HibernateTemplate
- Sample Class and Mapping File
- Creating and Saving a New Entity
- Locating an Existing Entity

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- Updating an Existing Entity
- Hibernate Query Language
- Executing Queries

CHAPTER 9: SPRING WEB MVC - PART 1
- 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

CHAPTER 10: SPRING WEB MVC - PART 2
- Handler Mappings
- View Resolution
- Chaining View Resolvers
- Controllers
- AbstractWizardFormController

APPENDIX A: RESOURCES

Hibernate

- Introduction To Hibernate
- Setting Up Hibernate
- Part-1- Writing a Hibernate Application
- Part-2-Writing-the-Model-Class-with-Annotations
- Part-3-Saving-Objects-using-Hibernate-APIs
- hbm2ddl-Configuration-and-Name-Annotations
- More-Annotations
- Retrieving-Objects-using-session-get
- Primary-Keys

- Value-Types-and-Embedding-Objects
- AttributeOverrides-and-Embedded-Object-Keys
- Saving-Collections
- Configuring Collections and Adding Keys
- Proxy Objects and Eager and Lazy Fetch Types
- One To One Mapping
- One To Many Mapping
- mappedBy and Many To Many Mapping
- CascadeTypes and Other Things
- Implementing Inheritance
- Implementing Inheritance - Single Table Strategy
- Implementing Inheritance With Table Per Class Strategy
- Implementing Inheritance With Joined Strategy
- CRUD Operations
- Transient, Persistent and Detached Objects
- Understanding-State-Changes
- Persisting-Detached-Objects
- Introducing HQL and the Query Object
- Select-and-Pagination-in-HQL
- Understanding Parameter Binding and SQL Injection
- Named Queries
- Introduction-to-Criteria-API
- Understanding-Restrictions
- Projections-and-Query-By-Example
- Cacheing-in-Hibernate
- Configuring-Second-Level-Cache
- Using-Query-Cache