**TRAINING PLAN**

**Version 1.3 (Senior Java Developer)**

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| --- | --- | --- | --- | --- | --- | --- |
| **STT** | **Course** | **Duration**  **(days)** | **Trainer Effort** | **Trainee Effort** | **Trainer** | **Note** |
| 1 | Configuration | 2d | 4h | 2d |  |  |
| 2 | Spring - RESTful WS | 1d | 4h | 1d |  |  |
| 3 | Hibernate | 1d | 4h | 1d |  |  |
| 4 | Logging framework | 1d | 4h | 1d |  |  |
| 5 | Assignment Project | 5d | 4h | 5d |  |  |
| **Total effort** | | **10d** | **2.5d** | **10d** |  | |

# **Overview**

## **Objectives**

* Understand the reason why we need to use Spring.
* Understand some design pattern in Spring.
* Distinguish Spring Web Application v/s Spring Web Service.
* Understand the process of receiving request and producing response.
* Can use some functionalities of Spring.
* Deploy RESTful WS by Spring-WebMVC or Jersey into Spring container.
* Can use Logging framework.
* Trainee can use XML-based and code-based configuration.
* Trainee can use deployment tool: Maven, Gradle.
* Can use Hibernate in spring & understand Hibernate technologies.

## **Duration: Total: 10 days.**

* Half of everyday: section 1,2,3,4.
* 6st – 10th day: self-implement project assignment.
* 11th day: present and interview.

## **Assessment**

* Project assignment: Bidding System Project (BSP).

# **Contents**

## **Configuration**

* Spring project.
* CI: Maven, Gradle.
* Maven, Gradle project.
* Multi-project using Maven, Gradle.
* Deploy project in Linux-based environment.

## **Spring - RESTful WS**

* **Spring introduction:**
  + Inversion of Control: Dependency Injection (DI), Autowire.
  + Spring Bean: scope & usage.
  + Spring MVC (\*: example) : **front controller (RequestDispatcher)**, **response handler**, **message mapping**, **view resolver**.
  + Message Auto Binding: **Jackson, JAXB**.
* **Design Pattern in Spring:**
  + Inversion of Control.
  + Model View Controller.
  + Front Controller.
  + Singleton.
  + Template method.
  + Proxy.
  + Service Locator Pattern.
  + Factory.
* **Spring functionalities:**
  + Spring AOP: logging, time measuring feature.
  + Spring Security:
    - Spring security component.
    - Token based authentication.
  + Spring JdbcTemplate.
  + Spring RestTemplate.
* **RESTful Web Service:**
  + Implement RESTful WS by Spring-WebMVC.
  + Implement RESTful WS by Jersey.
  + CRUD with POST, GET, PUT, DELETE method.

## **Hibernate:**

* Hibernate Configuration: connect to MySQL or Oracle.
* Hibernate Mapping (XML or Annotation):
  + One-To-One.
  + One-To-Many.
  + Many-To-One.
  + Many-To-Many.
* Hibernate Query: Criteria, Hibernate Query Language.
* Hibernate Caching:
  + First-level cache.
  + Second-level cacheehcache: ehcache.
  + Query-level cache.

## **Logging framework:**

* Log4J framework.
* SLF4J & LogBack.

## **Assignment Project**

* Project assignment: Bidding System Project (BSP).
* Functional Requirements:
  + User: can view products and current price in real time and bid a new price.
  + Admin: can create new product, view-update and delete existing product.
* Non-functional Requirements:
  + Database: RBDMS (Oracle, MySQL, PostgreSQL,
  + Implement 3 layer model:
    - Presentation layer:
      * Deploy RESTful web service using Spring WebMVC.
      * Validate user request parameters.
    - Business layer:
      * Use @Service to configure Service Bean.
      * Use @Transactional to control transaction.
    - Persistent layer: use Hibernate.
  + Log duration of each processing by using Spring AOP.
  + Transaction management is implemented by Spring AOP.
  + Security management is implemented by Spring AOP + Spring Security.
    - User: can view and bid only.
    - Admin: can create/read/update/delete product. Admin can’t bid.
* Trainee need to submit:
  + Source code.
  + Binary file: (war file) can deploy into web server.
  + Release Note: mention all features and functionalities.
  + Interface Control Document (ICD): define interface to consume backend services.
  + Presentation (Power Point or equivalent): 15 minutes to present.
* Face to face interview: 30 minutes.

# **Training Documents**

* Training Plan (this file).
* Questions & Answers for Quiz exams.
* Example projects.
* Questions & suggested answers of DTV interview.