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| **No** | **Topic** | **Objective** | **Date** |
| 01 | **Spring Framework Overview**   * Introduction to Spring Framework * Spring Modules * Spring Projects * Spring Web Architecture * **Getting Started with Spring Boot** * Spring Boot Features * First Application with Spring Boot * Basic Spring Annotation(@Controller, @RequestMapping) * First Spring Boot Application with Apache and Maven Project | **Understanding**   * What is Spring Framework? * What are the benefits of Spring Framework? * What are the Spring Projects and Modules? * Features of Spring Boot * Create Spring Web Project * Some Spring Annotations |  |
| 02 | **Spring Core Technologies**   * Introduction to the IoC container and bean * Bean Definition * Bean Lifecycle * Bean Scope * Dependency Injection | **Understanding**   * What is Bean & Container in Spring? * What is Inversion of Control? * What is Dependency Injection? * Injecting the dependency * Type of dependency injection |  |
| 03 | **Spring Web MVC**   * Introduction to Spring Web MVC Framework * The DispatcherServlet * Spring MVC Configuration * Implementing Controllers * Mapping Requests * REST Controllers * Data Binding & Validation * Internationalization and Localization (Multi-Language) * File Upload (Multipart) | **Understanding**   * What is Spring MVC? * Spring MVC Configuration * Flow of Web MVC * How to map client request to server * How to validate form data * How to use multi languages in web app * How to upload file with Spring |  |
| 04 | **Spring Boot with View Template Engine (Thymeleaf)**   * Thymeleaf | **Understanding**   * Introduction to thymeleaf * Text, Variable * Available Object * Standard Expression Syntax * Conditional * Iteration * Fragment |  |
| 05 | **Data Access with Spring**   * Simple JDBC & MyBatis * JPA & Hibernate | **Understanding**   * Connecting to database using JDBC or MyBatis * Data access with Hibernate * What is ORM? * What is JPA? * What is Hibernate? * JPA History * What are the difference between JPA and Hibernate? * Why JPA & Hibernate? |  |
| 06 | **Data Access**   * Spring Data JPA | **Understanding**   * Understanding Spring data JPA |  |
| N/A | **Mini-Project 03**  *Will be assigned* | **Practice**   * Friendly User Interface * CRUD * Upload Files * Multiple Language |  |
| 07 | **Spring Web Security**   * Spring Security Features * In-Memory Authentication * User Detail Service Authentication (Database) * Password encryption | **Understanding**   * Securing web resources * Authenticate user using In-Memory Authentication * Authenticate user using Database * Customize login page * Customize authentication success handler * Authentication entry point * Password encryption with BCrypt |  |
| 08 | **RESTful Web Service with Spring**   * First REST Web Service * Exception Handling Mechanism * JSON Partial Response * Basic AJAX * Web Service Security with Basic Authentication * Swagger | **Understand**   * What is RESTful? * RESTful architecture * Request & Response data as JSON format * Exception handling with REST * How to use AJAX to access data with web service * web service REST API security with Basic Authentication * Developer Document(Swagger) |  |
| 09 | **HttpClient**   * RestTemplate * Retrofit | **Understanding**   * Request data from web service using RestTemplate * Request data from web service using Retrofit |  |
| 10 | **Spring Multi-Modules Project Architecture**   * Refactoring Project Architecture | **Understanding**   * Enterprise application architecture |  |