Week8 Agenda

Day 1 – TypeScript & Introduction to SPA & Angular (Node & NPM)

Day 2 – Angular Folder Structure, Angular CLI, Creating Angular App, @Component Decorator, @NgModule, Types of Directives, Data Binding

Day 3 – Pipes, Routing, Route Guards, Services & Dependency Injection

Day 4 – RxJS (Observables – Subject), Http Client & Event Emitters

Day 5 – UI Testing (Angular Testing using Jasmine & Karma) Making RestFull call in Angular

Week7 Revisit (Spring & Spring Boot – AWS S3)

Spring is a Powerful Java Based Framework used to create Loosely coupled java based Enterprise Applications.

Spring uses two important design patterns (IoC & DI) Inversion of Control & Dependency Injection

IoC – Driving own car to office & taking ola cab to office (Inversion of Control) Spring IoC container will manage the life cycle of objects (beans)

DI – Injecting the objects at the runtime. (@Autowired – annotation)

Types of Injections – Constructor Injection, Setter Injection

Bean class needs to have both default & parameterized constructor along with getters & setters

Spring contains many modules (Spring Core, ORM, Security, MVC, AOP)

Core module contains IoC, DI, SpEL, beans, core jars.

Spring MVC – Dispatcher Servlet (Front Controller), InternalViewResolver,

The main challenge in spring framework is XML based configuration (spring.xml, applicationContext.xml, sdservlet.xml, spring-config.xml)

Spring framework is also called as framework of Frameworks. (It supports lot of other frameworks like struts, hibernate, etc.,)

Spring Framework is developed by Rod Johnson in the year of 2004.

SpringBoot is a way of creating Spring based applications.

Spring Boot supports JVM based languages like Java, Kotlin & Groovy.

Spring boot is used to create Web Services & Micro-Services.

Spring uses POJO classes and converts it into powerful components using annotations.

Important Spring Based Annotations (Spring Core, Spring Data & Spring Web Annotations)

1. @Controller or @RestController – This will turn a POJO class into Controller class
2. @Service
3. @Repository
4. @Autowired – This will inject the dependencies at Run time.
5. @Bean
6. @Entity
7. @Table
8. @Column
9. @Id
10. @GeneratedValue
11. @Component
12. @SpringBootApplication (@ComponentScan + @SpringBootConfiguration + @EnableAutoConfiguration )

Different ways of creating Spring Boot Starter project

1. Using Spring Initializr (<https://start.spring.io> – It’s a web page to create springboot application)
2. Using STS (Spring Tool Suite – Eclipse based IDE)
3. Using Spring Boot CLI

Important Dependencies of Spring Boot Project

1. Spring Web – (helps to create Spring based REST full Web Service and add Embedded tomcat to the build path)
2. Spring Boot Dev Tools – (Mainly used to restart the server and re-deploy the code when ever code changes are saved)
3. Spring Data JPA – (Easily interact with any database without writing any single query using hibernate or any other ORM based framework)
4. Spring Cloud – helps to create Cloud based applications & microservices
5. Spring Netflix OSS – Helps to create Spring boot based micro-services
6. MySQL/Oracle/MSSQL/h2/derby/Postgres – Databased(RDBMS) Related dependencies.

SpringBoot Starter Project package Structure

1. Main package /Base Package (com.companyname.projectname)
2. Controller package (com.companyname.projectname.controller)
3. Entity Package (com.companyname.projectname.model/entity/bean)
4. Repository/DAO package (com.companyname.projectname.repo/dao)
5. Service package (com.companyname.projectname.service)
6. Utility Package (com.companyname.projectname.util)
7. Exception package (com.companyname.projectname.exception) – All the Custom Exceptions

Annotations used in Controller

1. @Controller or @RestController
2. @RequestMapping (Generic Mapping – Used for any http method)
3. @GetMapping (Only for http based Get request) [For reading the data – from DB Table]
4. @PostMapping (Only for http based Post request) [For inserting the data – Creating new row in table]
5. @PutMapping (Only for http based Put Request) [For updating existing record/row in a table]
6. @DeleteMapping (only for http based delete request)

All Mapping based annotations will create REST end points (URI – Uniform Resource Identifier)

1. @PathVariable (Used to path a value from the URL of browser to the REST Api call) [value only] – “/api/v3/customers/{id}”
2. @RequestBody (used to transfer the data securely in the request body of the API) [used for POST & PUT mapping ]
3. @RequestParam (used to get the data from path parameters) [ key-value pair] Ex: index.html?username=test&password=test123 (both username & password are parameters)

Types of Web Services

1. SOAP based – Simple Object Access Protocol (WSDL – Web Service Definition/Description Lang) – WSDL file is a xml based configuration file.
2. REST based – Representational State Transfer (Architecture style which re-uses http methods like get, post, put & delete)

Types of Spring application Configuration

1. XML based configuration (XML case & Space sensitive, hard to debug the code for errors)
2. Annotation based Configuration (Eliminates additional xml file, added directly to the Classes)

Lombok is a small library or tool to generate boiler plate codes automatically.

Projectlombok.org – official site.

Lombok based annotations

@Data

@Getters

@Setters

@NoArgsConstructor

@AllArgsConstructor

@EqualsAndHash

@ToString

Application.properties file is mainly used to customize the spring boot applications behavior.

Because of Application.properties file Spring Boot is also called as Opinionated Framework.

Spring Boot Environment is also called Spring Boot profiles (While starting a Spring-boot application it will check for profile, if not found it will enable the “default” profile.

AWS EC2 – Elastic Compute Cloud (Virtual Server in cloud)

EC2 instance can be created using simple steps.

AWS RDS Setup

https://github.com/syskantechnosoft/Batch4JavawithAngular/blob/main/AWS%20RDS%20Setup.docx