Week-4

Exercise 1:

Spring Boot 3 introduces several updates and new features that enhance its capabilities, including performance improvements, expanded support for modern Java features, and better integration with cloud-native technologies. Here are some of the key highlights:

1. Java 17 Baseline

- Spring Boot 3 sets Java 17 as the minimum required version, allowing the framework to take full advantage of the modern features introduced in Java 17 and beyond, such as pattern matching, sealed classes, and records.

2. Spring Framework 6

- Spring Boot 3 is built on top of Spring Framework 6, which includes support for Jakarta EE 9+ namespaces, preparing the framework for the future of enterprise Java development.

3. Jakarta EE 9+ Support

- With the migration from javax.* to jakarta.* namespaces, Spring Boot 3 aligns with the latest standards of Jakarta EE, ensuring compatibility with the newest enterprise Java specifications.

4. Native Executable Support with GraalVM

- One of the most significant enhancements is the first-class support for building native executables using GraalVM. This enables Spring Boot applications to start faster and consume less memory, making them more suitable for cloud and microservices environments.

5. Improved Observability with Micrometer 2.0

- Spring Boot 3 integrates with Micrometer 2.0, offering advanced observability features like distributed tracing, metrics, and logging. This makes it easier to monitor and manage Spring Boot applications in production.

6. AOT (Ahead-of-Time) Compilation

- The new AOT compilation support enables the optimization of Spring Boot applications during the build phase, which can significantly improve startup times and reduce resource consumption in production.

7. HTTP/2 and HTTP/3 Support

- Spring Boot 3 enhances its web capabilities by offering support for HTTP/2 and HTTP/3, providing improved performance, especially in cloud and high-latency environments.

8. Revamped Spring Security

- Spring Boot 3 comes with updates to Spring Security, including simplified configuration and better support for OAuth 2.0, OpenID Connect, and modern authentication methods.

9. Kubernetes and Cloud-Native Improvements

- Enhanced support for Kubernetes and cloud-native deployments, including better integration with Kubernetes probes, ConfigMaps, and Secrets, making Spring Boot 3 more cloud-native.

10. Spring Boot CLI Improvements

- The Spring Boot Command Line Interface (CLI) has been updated to support newer Java versions and improvements in the overall developer experience, including better dependency management and project creation.

11. New and Updated Starters

- New Spring Boot starters and updates to existing ones make it easier to integrate with various technologies, such as Apache Kafka, Redis, and more.

12. Improved Configuration Properties

- Spring Boot 3 improves the configuration properties mechanism, making it more intuitive to configure and manage application settings.

These updates make Spring Boot 3 a more powerful and efficient framework for building modern, cloud-native Java applications.