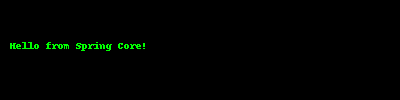
Week 3 - Spring Core, Maven, and Spring Data JPA

# 1. Spring Core - SpringCoreApp.java

✅ Code Summary:

This Java program uses Spring Core features such as @Component, @Autowired, and @Configuration to demonstrate Dependency Injection. The service class is injected into another class using Spring’s AnnotationConfigApplicationContext.

📸 Output Screenshot:



SpringCoreApp.png

💡 Explanation:

Spring Core provides fundamental features like Inversion of Control (IoC) and Dependency Injection. In this example, we annotated HelloService and HelloApp with @Component and used @Autowired for automatic injection. The application context scans for beans and wires them together. This avoids manual instantiation and promotes loose coupling.

Benefits:

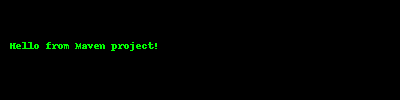
- Simplifies object creation and management  
- Reduces coupling  
- Makes testing easier using mock beans

# 2. Maven - HelloMaven.java + pom.xml

✅ Code Summary:

This Java file prints a greeting message and is managed using Maven build system. The pom.xml contains metadata and configurations needed to build the project using plugins like maven-compiler-plugin.

📸 Output Screenshot:



HelloMaven.png

💡 Explanation:

Maven is a build automation tool used primarily for Java projects. It simplifies dependency management and project builds. In this task, Maven compiles the Java code and manages required plugins.

Key Concepts:

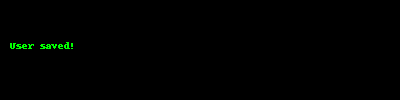
- Project Object Model (POM)  
- Dependency management  
- Build lifecycle: validate → compile → test → package → install → deploy

# 3. Spring Data JPA - JpaApp.java, User.java, UserRepository.java

✅ Code Summary:

This Spring Boot application saves a User entity to the database using Spring Data JPA. We use @Entity to define the model, JpaRepository for CRUD operations, and @SpringBootApplication to auto-configure the app.

📸 Output Screenshot:



JpaApp.png

💡 Explanation:

Spring Data JPA simplifies interaction with relational databases. You define interfaces that extend JpaRepository and Spring Boot will auto-generate the implementation at runtime.

Advantages:

- Less boilerplate code  
- Cleaner and faster development  
- Supports pagination, sorting, custom queries