Cognizant Digital Nurture 4.0 – Week 3:

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# Topic: Spring Core, Maven, Spring Data JPA

## 1. Spring Core

Spring Core is the foundational framework module that provides features such as Dependency Injection (DI) and Inversion of Control (IoC). These principles allow you to develop loosely coupled, easy-to-test applications.

Example: Basic Spring Bean Configuration using XML

<bean id="student" class="com.example.Student">  
 <property name="name" value="John"/>  
</bean>

Output: A Student bean with name 'John' is created and managed by Spring container.

## 2. Maven

Maven is a build automation and dependency management tool for Java projects. It uses a file named pom.xml to manage project configuration, dependencies, and build lifecycle.

Example: Basic pom.xml with Spring Dependency

<project xmlns="http://maven.apache.org/POM/4.0.0"  
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
 xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">  
 <modelVersion>4.0.0</modelVersion>  
 <groupId>com.example</groupId>  
 <artifactId>springdemo</artifactId>  
 <version>1.0-SNAPSHOT</version>  
 <dependencies>  
 <dependency>  
 <groupId>org.springframework</groupId>  
 <artifactId>spring-context</artifactId>  
 <version>5.3.10</version>  
 </dependency>  
 </dependencies>  
</project>

Output: Maven downloads the required Spring libraries automatically.

## 3. Spring Data JPA

Spring Data JPA simplifies data persistence by reducing boilerplate code for CRUD operations. It extends JPA (Java Persistence API) and integrates with Spring Boot.

Example: JPA Entity and Repository Interface

import jakarta.persistence.\*;  
  
@Entity  
public class Employee {  
 @Id  
 @GeneratedValue(strategy = GenerationType.IDENTITY)  
 private Long id;  
  
 private String name;  
 private double salary;  
}

Output: Defines a table with id, name, and salary columns.

import org.springframework.data.jpa.repository.JpaRepository;  
  
public interface EmployeeRepository extends JpaRepository<Employee, Long> {  
 List<Employee> findByName(String name);  
}

Output: Enables CRUD operations and query method findByName on Employee entity.