Course Outcome 6 : Design enterprise-level applications using Spring Boot, incorporating RESTful APIs, dependency injection, and microservices principles.

Experiment 10 : Program to create a Monolithic Application using SpringBoot.

Problem Statement :

Traditional web applications often consist of multiple layers tightly coupled into a single codebase — known as a monolithic architecture. In this experiment, the task is to design and implement a monolithic Spring Boot application that manages employee details using REST APIs, with all components (Controller, Service, Repository, and Entity) contained in a single deployable unit.

Solution :

1. Monolithic Architecture

A monolithic application is a single-tiered software system where all components—user interface, business logic, and data access—are combined into one codebase and run as a single process.

Characteristics of Monolithic Architecture :

- All modules are packaged and deployed together.
- Easier to develop initially.
- Communication between components occurs internally.
- Scaling requires deploying the entire application.

2. Spring Boot Overview

Spring Boot simplifies Java-based application development by:

- Providing pre-configured templates and auto-configuration.
- Embedding servers like **Tomcat** or **Jetty** for easy deployment.
- Supporting **annotations** like @RestController, @Service, and @Repository for modular code structure.

3. Components of the Application

- **Entity:** Represents the data model (e.g., Employee).
- **Repository:** Handles database operations.
- **Service:** Contains business logic.
- **Controller:** Defines REST endpoints for user interaction.

Procedure

Create a new Spring Boot project using **Spring Initializr** or an IDE (e.g., IntelliJ or STS).

Include dependencies:

- Spring Web
- Spring Data JPA
- H2 Database (for in-memory testing)

Define the entity class Employee.
Create repository, service, and controller classes.
Run the application and test endpoints using Postman or a browser.

Conclusion

This experiment successfully demonstrates the creation of a Monolithic Application using Spring Boot. All application layers — presentation, business logic, and persistence — are combined into a single deployable unit, illustrating how traditional applications function as one cohesive block. This serves as the foundation for understanding more advanced architectures like Microservices.