

**Coding questions: -**

**Question 1: Setter Injection**

Create a Spring application where you have an interface NotificationService with two implementations: EmailNotificationService and SMSNotificationService.

Use Setter Injection in a NotificationManager class to inject the service and call the sendNotification() method.

- Write the Java code showing how the setter method is used for injection.
- Show the required Spring configuration using either XML configuration or annotations.
- Demonstrate how to test switching between EmailNotificationService and SMSNotificationService.

**Question 2: Constructor Injection**

You are building a BookService class that depends on a BookRepository for fetching book data from a database.

Implement Constructor Injection to provide the dependency.

- Define BookRepository as an interface and provide a class InMemoryBookRepository as implementation.
- Inject the repository via the constructor into BookService.
- Write a simple main() method or Spring Boot test to fetch and print all books.

**Question 3: Mixing Setter and Constructor Injection**

Design a UserService class that:

- Requires a UserRepository dependency (should be injected via Constructor Injection)
- Optionally accepts a LoggerService (should be injected via Setter Injection).

Tasks:

- Implement UserService so that UserRepository is mandatory but LoggerService is optional.
- Write code to demonstrate how Spring handles both required and optional dependencies.

- Show example output when both dependencies are provided and when only the constructor injection is used.