**Exercise 11: Implementing Dependency Injection**

**Scenario:**

You are developing a customer management application where the service class depends on a repository class. Use Dependency Injection to manage these dependencies.

**Steps:**

1. **Create a New Java Project:**
   * Create a new Java project named **DependencyInjectionExample**.
2. **Define Repository Interface:**
   * Create an interface **CustomerRepository** with methods like **findCustomerById()**.
3. **Implement Concrete Repository:**
   * Create a class **CustomerRepositoryImpl** that implements **CustomerRepository**.
4. **Define Service Class:**
   * Create a class **CustomerService** that depends on **CustomerRepository**.
5. **Implement Dependency Injection:**
   * Use constructor injection to inject **CustomerRepository** into **CustomerService**.
6. **Test the Dependency Injection Implementation:**
   * Create a main class to demonstrate creating a **CustomerService** with **CustomerRepositoryImpl** and using it to find a customer.
7. **Define Repository Interface**

// CustomerRepository.java

public interface CustomerRepository {

Customer findCustomerById(int id);

}

1. **Implement Concrete Repository**

// CustomerRepositoryImpl.java

public class CustomerRepositoryImpl implements CustomerRepository {

@Override

public Customer findCustomerById(int id) {

return new Customer(id, "John Doe");

}

}

1. **Service Class**

// CustomerService.java

public class CustomerService {

private final CustomerRepository customerRepository;

public CustomerService(CustomerRepository customerRepository) {

this.customerRepository = customerRepository;

}

public Customer getCustomerById(int id) {

return customerRepository.findCustomerById(id);

}

}

1. **Dependency Injection Implementation**

// Customer.java

public class Customer {

private int id;

private String name;

public Customer(int id, String name) {

this.id = id;

this.name = name;

}

@Override

public String toString() {

return "Customer{id=" + id + ", name='" + name + "'}";

}

}

1. **Main Class**

// Main.java

public class Main {

public static void main(String[] args) {

CustomerRepository customerRepository = new CustomerRepositoryImpl();

CustomerService customerService = new CustomerService(customerRepository);

Customer customer = customerService.getCustomerById(1);

System.out.println(customer);

}

}