**Exercise 11: Implementing Dependency Injection**

**CustomerRepository.java**

package com.mycompany.dependencyinjection;

public interface CustomerRepository {

    String findCustomerById(int id);

}

**CustomerRepositoryImpl**.**java**

package com.mycompany.dependencyinjection;

import java.util.HashMap;

import java.util.Map;

import java.util.Scanner;

public class CustomerRepositoryImpl implements CustomerRepository {

    private Map<Integer, String> customerData = new HashMap<>();

    public void loadCustomers() {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter number of customers: ");

        int n = Integer.parseInt(sc.nextLine());

        for (int i = 0; i < n; i++) {

            System.out.print("Enter Customer ID: ");

            int id = Integer.parseInt(sc.nextLine());

            System.out.print("Enter Customer Name: ");

            String name = sc.nextLine();

            customerData.put(id, name);

        }

    }

    @Override

    public String findCustomerById(int id) {

        if (customerData.containsKey(id)) {

            return "Customer: " + customerData.get(id);

        }

        return "Customer not found.";

    }

}

**CustomerService.java**

package com.mycompany.dependencyinjection;

public class CustomerService {

    private CustomerRepository customerRepository;

    public CustomerService(CustomerRepository customerRepository) {

        this.customerRepository = customerRepository;

    }

    public void displayCustomerById(int id) {

    System.out.println(customerRepository.findCustomerById(id));

    }

}

**DependencyInjection.java**

package com.mycompany.dependencyinjection;

import java.util.Scanner;

public class DependencyInjection {

public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        CustomerRepositoryImpl repository = new CustomerRepositoryImpl();

        repository.loadCustomers();

        CustomerService service = new CustomerService(repository);

        while (true) {

            System.out.print("\nEnter Customer ID (0 to exit): ");

            int id = sc.nextInt();

            if (id == 0) {

                System.out.println("Exiting");

                break;

            }

            service.displayCustomerById(id);

        }

        sc.close();

    }

}

**Output**

