**Additional Hands On**

**1)Create static employee list data using spring xml configuration**

**Step 1: Define Models**

**Department.java**

package com.cognizant.springlearn.model;

public class Department {

private int id;

private String name;

public Department() {}

public Department(int id, String name) {

this.id = id;

this.name = name;

}

public int getId() { return id; }

public void setId(int id) { this.id = id; }

public String getName() { return name; }

public void setName(String name) { this.name = name; }

@Override

public String toString() {

return "Department [id=" + id + ", name=" + name + "]";

}

}

**Skill.java**

package com.cognizant.springlearn.model;

public class Skill {

private int id;

private String name;

public Skill() {}

public Skill(int id, String name) {

this.id = id;

this.name = name;

}

public int getId() { return id; }

public void setId(int id) { this.id = id; }

public String getName() { return name; }

public void setName(String name) { this.name = name; }

@Override

public String toString() {

return "Skill [id=" + id + ", name=" + name + "]";

}

}

**Employee.java**

package com.cognizant.springlearn.model;

import java.util.Date;

import java.util.List;

public class Employee {

private int id;

private String name;

private double salary;

private boolean permanent;

private Department department;

private Date dateOfBirth;

private List<Skill> skillList;

public Employee() {}

public int getId() { return id; }

public void setId(int id) { this.id = id; }

public String getName() { return name; }

public void setName(String name) { this.name = name; }

public double getSalary() { return salary; }

public void setSalary(double salary) { this.salary = salary; }

public boolean isPermanent() { return permanent; }

public void setPermanent(boolean permanent) { this.permanent = permanent; }

public Department getDepartment() { return department; }

public void setDepartment(Department department) { this.department = department; }

public Date getDateOfBirth() { return dateOfBirth; }

public void setDateOfBirth(Date dateOfBirth) { this.dateOfBirth = dateOfBirth; }

public List<Skill> getSkillList() { return skillList; }

public void setSkillList(List<Skill> skillList) { this.skillList = skillList; }

@Override

public String toString() {

return "Employee [id=" + id + ", name=" + name + ", salary=" + salary +

", permanent=" + permanent + ", department=" + department +

", dateOfBirth=" + dateOfBirth + ", skillList=" + skillList + "]";

}

}

**Step 2: Spring XML Configuration (employee.xml)**

<?xml version="1.0" encoding="UTF-8"?>

<beans xmlns="http://www.springframework.org/schema/beans"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="http://www.springframework.org/schema/beans

http://www.springframework.org/schema/beans/spring-beans.xsd">

<!-- Departments -->

<bean id="dept1" class="com.cognizant.springlearn.model.Department">

<property name="id" value="1" />

<property name="name" value="HR" />

</bean>

<bean id="dept2" class="com.cognizant.springlearn.model.Department">

<property name="id" value="2" />

<property name="name" value="Finance" />

</bean>

<!-- Skills -->

<bean id="skill1" class="com.cognizant.springlearn.model.Skill">

<property name="id" value="1" />

<property name="name" value="Java" />

</bean>

<bean id="skill2" class="com.cognizant.springlearn.model.Skill">

<property name="id" value="2" />

<property name="name" value="SQL" />

</bean>

<!-- Employee List -->

<bean id="employeeList" class="java.util.ArrayList">

<constructor-arg>

<list>

<bean class="com.cognizant.springlearn.model.Employee">

<property name="id" value="1" />

<property name="name" value="John" />

<property name="salary" value="30000" />

<property name="permanent" value="true" />

<property name="dateOfBirth">

<bean class="java.util.Date">

<constructor-arg value="2020/01/01" />

</bean>

</property>

<property name="department" ref="dept1" />

<property name="skillList">

<list>

<ref bean="skill1" />

<ref bean="skill2" />

</list>

</property>

</bean>

<bean class="com.cognizant.springlearn.model.Employee">

<property name="id" value="2" />

<property name="name" value="Emma" />

<property name="salary" value="40000" />

<property name="permanent" value="false" />

<property name="dateOfBirth">

<bean class="java.util.Date">

<constructor-arg value="2021/01/01" />

</bean>

</property>

<property name="department" ref="dept2" />

<property name="skillList">

<list>

<ref bean="skill1" />

</list>

</property>

</bean>

</list>

</constructor-arg>

</bean>

</beans>

**Step 3: EmployeeDao.java**

package com.cognizant.springlearn.dao;

import com.cognizant.springlearn.model.Employee;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

import java.util.ArrayList;

public class EmployeeDao {

public static ArrayList<Employee> EMPLOYEE\_LIST;

public EmployeeDao() {

ApplicationContext context = new ClassPathXmlApplicationContext("employee.xml");

EMPLOYEE\_LIST = context.getBean("employeeList", ArrayList.class);

}

public ArrayList<Employee> getAllEmployees() {

return EMPLOYEE\_LIST;

}

}

**Step 4: Test the DAO**

package com.cognizant.springlearn;

import com.cognizant.springlearn.dao.EmployeeDao;

import com.cognizant.springlearn.model.Employee;

import java.util.List;

public class SpringLearnApplication {

public static void main(String[] args) {

EmployeeDao dao = new EmployeeDao();

List<Employee> employees = dao.getAllEmployees();

for (Employee emp : employees) {

System.out.println(emp);

}

}

}

**Output:**

Employee [id=1, name=John, salary=30000.0, permanent=true, department=Department [id=1, name=HR], dateOfBirth=Wed Jan 01 00:00:00 IST 2020, skillList=[Skill [id=1, name=Java], Skill [id=2, name=SQL]]]

Employee [id=2, name=Emma, salary=40000.0, permanent=false, department=Department [id=2, name=Finance], dateOfBirth=Fri Jan 01 00:00:00 IST 2021, skillList=[Skill [id=1, name=Java]]]

**2)Create REST service to gets all employees**   
  
 **1. EmployeeService.java**

package com.cognizant.springlearn.service;

import com.cognizant.springlearn.dao.EmployeeDao;

import com.cognizant.springlearn.model.Employee;

import org.springframework.stereotype.Service;

import org.springframework.transaction.annotation.Transactional;

import java.util.ArrayList;

@Service

public class EmployeeService {

private final EmployeeDao employeeDao = new EmployeeDao(); // or @Autowired if it's a @Repository

@Transactional

public ArrayList<Employee> getAllEmployees() {

return employeeDao.getAllEmployees();

}

}

**2. EmployeeController.java**

package com.cognizant.springlearn.controller;

import com.cognizant.springlearn.model.Employee;

import com.cognizant.springlearn.service.EmployeeService;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.web.bind.annotation.\*;

import java.util.ArrayList;

@RestController

public class EmployeeController {

@Autowired

private EmployeeService employeeService;

@GetMapping("/employees")

public ArrayList<Employee> getAllEmployees() {

return employeeService.getAllEmployees();

}

}

**3. Application Configuration**

**application.properties**

Make sure server is running on a known port (e.g., 8083):

server.port=8083

**4. Run and Test with Postman**

**Request**

GET http://localhost:8083/employees

**Response (Sample JSON Output)**

[

{

"id": 1,

"name": "John",

"salary": 30000.0,

"permanent": true,

"department": {

"id": 1,

"name": "HR"

},

"dateOfBirth": "2020-01-01T00:00:00.000+00:00",

"skillList": [

{ "id": 1, "name": "Java" },

{ "id": 2, "name": "SQL" }

]

},

{

"id": 2,

"name": "Emma",

"salary": 40000.0,

"permanent": false,

"department": {

"id": 2,

"name": "Finance"

},

"dateOfBirth": "2021-01-01T00:00:00.000+00:00",

"skillList": [

{ "id": 1, "name": "Java" }

]

}

]

**What’s Happening Behind the Scenes**

| **Component** | **Role** |
| --- | --- |
| EmployeeDao | Loads data from employee.xml into static list |
| EmployeeService | Fetches the list and is marked @Transactional |
| EmployeeController | REST controller serving /employees endpoint |
| Spring | Uses Jackson to convert Java objects to JSON |

3) **Create REST service for department**

**1. Department.java (Model)**

package com.cognizant.springlearn.model;

public class Department {

private int id;

private String name;

public Department() {}

public Department(int id, String name) {

this.id = id;

this.name = name;

}

public int getId() { return id; }

public void setId(int id) { this.id = id; }

public String getName() { return name; }

public void setName(String name) { this.name = name; }

@Override

public String toString() {

return "Department [id=" + id + ", name=" + name + "]";

}

}

**2. department.xml (Spring Configuration)**

src/main/resources/department.xml

<?xml version="1.0" encoding="UTF-8"?>

<beans xmlns="http://www.springframework.org/schema/beans"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="http://www.springframework.org/schema/beans

http://www.springframework.org/schema/beans/spring-beans.xsd">

<bean id="dept1" class="com.cognizant.springlearn.model.Department">

<property name="id" value="1" />

<property name="name" value="HR" />

</bean>

<bean id="dept2" class="com.cognizant.springlearn.model.Department">

<property name="id" value="2" />

<property name="name" value="Finance" />

</bean>

<bean id="dept3" class="com.cognizant.springlearn.model.Department">

<property name="id" value="3" />

<property name="name" value="Operations" />

</bean>

<bean id="departmentList" class="java.util.ArrayList">

<constructor-arg>

<list>

<ref bean="dept1" />

<ref bean="dept2" />

<ref bean="dept3" />

</list>

</constructor-arg>

</bean>

</beans>

**3. DepartmentDao.java**

package com.cognizant.springlearn.dao;

import com.cognizant.springlearn.model.Department;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

import java.util.ArrayList;

public class DepartmentDao {

public static ArrayList<Department> DEPARTMENT\_LIST;

public DepartmentDao() {

ApplicationContext context = new ClassPathXmlApplicationContext("department.xml");

DEPARTMENT\_LIST = context.getBean("departmentList", ArrayList.class);

}

public ArrayList<Department> getAllDepartments() {

return DEPARTMENT\_LIST;

}

}

**4. DepartmentService.java**

package com.cognizant.springlearn.service;

import com.cognizant.springlearn.dao.DepartmentDao;

import com.cognizant.springlearn.model.Department;

import org.springframework.stereotype.Service;

import org.springframework.transaction.annotation.Transactional;

import java.util.ArrayList;

@Service

public class DepartmentService {

private final DepartmentDao departmentDao = new DepartmentDao();

@Transactional

public ArrayList<Department> getAllDepartments() {

return departmentDao.getAllDepartments();

}

}

**5. DepartmentController.java**

package com.cognizant.springlearn.controller;

import com.cognizant.springlearn.model.Department;

import com.cognizant.springlearn.service.DepartmentService;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.web.bind.annotation.\*;

import java.util.ArrayList;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

@RestController

public class DepartmentController {

private static final Logger LOGGER = LoggerFactory.getLogger(DepartmentController.class);

@Autowired

private DepartmentService departmentService;

@GetMapping("/departments")

public ArrayList<Department> getAllDepartments() {

LOGGER.info("START - getAllDepartments()");

ArrayList<Department> departments = departmentService.getAllDepartments();

LOGGER.info("END - getAllDepartments()");

return departments;

}

}

**6. application.properties**

server.port=8083

**7. Test with Postman**

**Request:**

GET http://localhost:8083/departments

**Response:**

[

{

"id": 1,

"name": "HR"

},

{

"id": 2,

"name": "Finance"

},

{

"id": 3,

"name": "Operations"

}

]

**8. Console Log Output**

INFO com.cognizant.springlearn.controller.DepartmentController - START - getAllDepartments()

INFO com.cognizant.springlearn.controller.DepartmentController - END - getAllDepartments()