**WEEK 3**

**EXERCISE 7**

**Employee Management System - Enabling Entity Auditing**

**1. Entity Auditing:**

**a. Enabling Auditing in Your Application**

* **Purpose:** Configure your Spring Boot application to support entity auditing, which tracks the creation and modification times and users for each entity.

**Steps to Enable Auditing:**

1. **Add Spring Data JPA Auditing Configuration:**
   * Enable auditing by adding the @EnableJpaAuditing annotation to one of your configuration classes.

**Example Configuration Class:**

package com.example.employeemanagementsystem.config;

import org.springframework.context.annotation.Configuration;

import org.springframework.data.jpa.repository.config.EnableJpaAuditing;

@Configuration

@EnableJpaAuditing

public class AuditingConfig {

// Additional auditing configuration can be placed here

}

1. **Add AuditorAware Implementation (Optional):**
   * If you want to track the user who created or modified an entity, implement the AuditorAware interface.

**Example AuditorAware Implementation:**

package com.example.employeemanagementsystem.config;

import org.springframework.data.domain.AuditorAware;

import org.springframework.stereotype.Component;

import java.util.Optional;

@Component

public class AuditorAwareImpl implements AuditorAware<String> {

@Override

public Optional<String> getCurrentAuditor() {

// Implement logic to retrieve the current user

return Optional.of("Admin"); // This is just a placeholder; replace with actual user retrieval logic

}

}

**b. Using Auditing Annotations in Entities**

* **Purpose:** Use annotations like @CreatedBy, @LastModifiedBy, @CreatedDate, and @LastModifiedDate to automatically populate auditing fields.

**Example: Employee Entity with Auditing:**

package com.example.employeemanagementsystem.entity;

import lombok.Data;

import org.springframework.data.annotation.CreatedBy;

import org.springframework.data.annotation.CreatedDate;

import org.springframework.data.annotation.LastModifiedBy;

import org.springframework.data.annotation.LastModifiedDate;

import org.springframework.data.jpa.domain.support.AuditingEntityListener;

import javax.persistence.\*;

import java.time.LocalDateTime;

@Entity

@Table(name = "employees")

@Data

@EntityListeners(AuditingEntityListener.class)

public class Employee {

@Id

@GeneratedValue(strategy = GenerationType.IDENTITY)

private Long id;

private String name;

private String email;

@ManyToOne

@JoinColumn(name = "department\_id")

private Department department;

@CreatedBy

@Column(updatable = false)

private String createdBy;

@CreatedDate

@Column(updatable = false)

private LocalDateTime createdDate;

@LastModifiedBy

private String lastModifiedBy;

@LastModifiedDate

private LocalDateTime lastModifiedDate;

}

**Example: Department Entity with Auditing:**

package com.example.employeemanagementsystem.entity;

import lombok.Data;

import org.springframework.data.annotation.CreatedBy;

import org.springframework.data.annotation.CreatedDate;

import org.springframework.data.annotation.LastModifiedBy;

import org.springframework.data.annotation.LastModifiedDate;

import org.springframework.data.jpa.domain.support.AuditingEntityListener;

import javax.persistence.\*;

import java.time.LocalDateTime;

@Entity

@Table(name = "departments")

@Data

@EntityListeners(AuditingEntityListener.class)

public class Department {

@Id

@GeneratedValue(strategy = GenerationType.IDENTITY)

private Long id;

private String name;

@CreatedBy

@Column(updatable = false)

private String createdBy;

@CreatedDate

@Column(updatable = false)

private LocalDateTime createdDate;

@LastModifiedBy

private String lastModifiedBy;

@LastModifiedDate

private LocalDateTime lastModifiedDate;

}