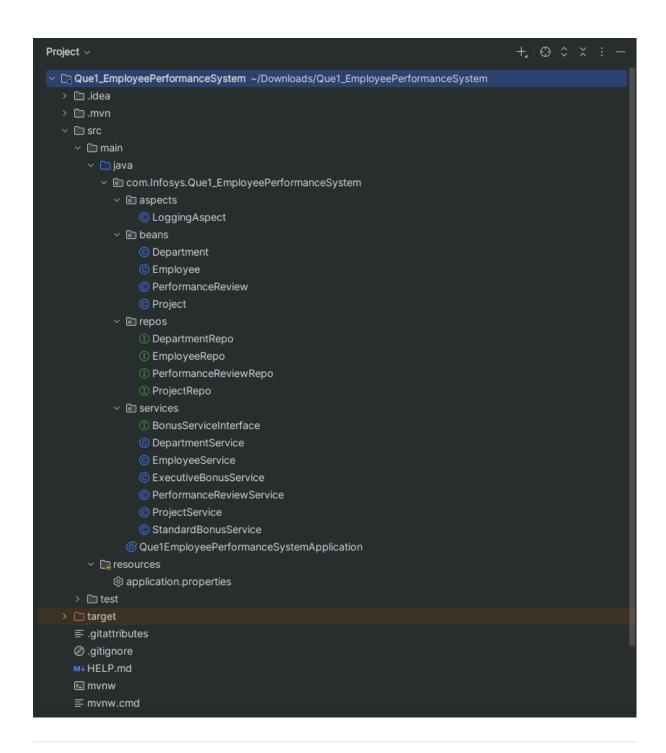
Name - Aditya Pawar

USN - 72233061J

Employee Management System

Project Structure:



Application.properties:

```
spring.application.name=Que1_EmployeePerformanceSystem

spring.datasource.url=jdbc:postgresql://localhost:5432/capstoneProject
spring.datasource.username=postgres
spring.datasource.password=root
```

Code:

EmployeePerformanceSystem.java

```
package com.Infosys.Que1_EmployeePerformanceSystem;
import com.Infosys.Que1_EmployeePerformanceSystem.beans.Department;
import com.Infosys.Que1_EmployeePerformanceSystem.beans.Employee;
import com.Infosys.Que1_EmployeePerformanceSystem.beans.PerformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanceReformanc
import com.Infosys.Que1_EmployeePerformanceSystem.services.Department(
import com.Infosys.Que1_EmployeePerformanceSystem.services.EmployeeSe
import com.Infosys.Que1_EmployeePerformanceSystem.services.ExecutiveBo
import com.Infosys.Que1_EmployeePerformanceSystem.services.StandardBor
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.beans.factory.annotation.Qualifier;
import org.springframework.boot.CommandLineRunner;
import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;
import java.text.SimpleDateFormat;
import java.util.Arrays;
import java.util.Date;
import java.util.List;
```

```
import java.util.Scanner;
@SpringBootApplication
public class Que1EmployeePerformanceSystemApplication implements Comm
{
  public static void main(String[] args) {
    SpringApplication.run(Que1EmployeePerformanceSystemApplication.clas
  }
  @Autowired
  @Qualifier("standard")
  private StandardBonusService standardBonusService;
  @Autowired
  @Qualifier("executive")
  private ExecutiveBonusService executiveBonusService;
  @Autowired
  private DepartmentService departmentService;
  @Autowired
  private EmployeeService employeeService;
  @Autowired
  private PerformanceReviewService performanceReviewService;
  @Autowired
  private ProjectService projectService;
  private SimpleDateFormat dateFormat = new SimpleDateFormat("yyyy-MM-
  @Override
  public void run(String... args) throws Exception {
    Scanner scanner = new Scanner(System.in);
    boolean running = true;
```

```
while (running) {
  System.out.println("\n====== EMPLOYEE PERFORMANCE SYSTEM :
  System.out.println("1. Add Department");
  System.out.println("2. Add Employee");
  System.out.println("3. Assign Projects");
  System.out.println("4. Add Performance Review");
  System.out.println("5. Calculate Bonus");
  System.out.println("6. Exit");
  System.out.print("Enter your choice: ");
  int choice = scanner.nextInt();
  scanner.nextLine();
  switch (choice) {
    case 1:
      System.out.println("Enter Department Name: ");
      String departmentName = scanner.nextLine();
      Department department = new Department();
      department.setName(departmentName);
      departmentService.addDepartment(department);
      System.out.println("Department added successfully..." + department
      break;
    case 2:
      System.out.println("Enter Employee Name: ");
      String employeeName = scanner.nextLine();
      System.out.println("Enter Employee Salary: ");
      double employeeSalary = scanner.nextDouble();
      scanner.nextLine();
      System.out.println("Enter Employee Rating (1-5): ");
      int employeeRating = scanner.nextInt();
      scanner.nextLine();
```

```
System.out.println("Available Departments:");
  List<Department> departments = departmentService.getAllDepartment
  for (Department dept : departments) {
    System.out.println(dept.getId() + ". " + dept.getName());
  }
  System.out.println("Select Department ID: ");
  int departmentId = scanner.nextInt();
  scanner.nextLine();
  Employee employee = new Employee();
  employee.setName(employeeName);
  employee.setSalary(employeeSalary);
  employee.setRating(employeeRating);
  Department department1 = new Department();
  department1.setId(departmentId);
  employee.setDepartment(department1);
  employeeService.addEmployee(employee);
  System.out.println("Employee added successfully...");
  break;
case 3:
  System.out.println("Enter Employee ID: ");
  int empld = scanner.nextInt();
  scanner.nextLine();
  System.out.println("Enter Project IDs (comma-separated): ");
  String projectIds = scanner.nextLine();
  List<Integer> projectIdList = Arrays.stream(projectIds.split(","))
       .map(String::trim)
       .map(Integer::parseInt)
       .toList();
  employeeService.assignProjects(empld, projectIdList);
```

```
System.out.println("Projects assigned successfully to Employee IE
  break;
case 4:
  System.out.println("Enter Employee ID for Performance Review: ")
  int empld2 = scanner.nextInt();
  scanner.nextLine();
  System.out.println("Enter Performance Rating (1-5): ");
  int performanceRating = scanner.nextInt();
  scanner.nextLine();
  System.out.println("Enter Review Date (YYYY-MM-DD): ");
  String date = scanner.nextLine();
  System.out.println("Enter Review Remarks: ");
  String remarks = scanner.nextLine();
  try {
    Date reviewDate = dateFormat.parse(date);
    PerformanceReview review = new PerformanceReview();
    review.setRating(performanceRating);
    review.setReviewDate(reviewDate);
    review.setRemarks(remarks);
    employeeService.addPerformanceReview(empld2, review);
    System.out.println("Performance Review added successfully..."
  } catch (Exception e) {
    System.err.println("Invalid DateFormat (yyyy-mm-dd)..."+e.getN
  }
  break;
case 5:
  System.out.println("Enter Employee Type (standard/executive): ");
  String type = scanner.nextLine().trim().toLowerCase();
  System.out.println("Enter Employee Rating (1-5): ");
```

```
int rating = scanner.nextInt();
            scanner.nextLine();
            double bonus;
            try {
              if ("standard".equals(type)) {
                 bonus = standardBonusService.calculateBonus(rating);
              } else if ("executive".equals(type)) {
                 bonus = executiveBonusService.calculateBonus(rating);
              } else {
                 System.out.println("Invalid employee type...");
                 return;
              }
              System.out.println("Calculated Bonus: " + bonus + " Rs.");
            } catch (Exception e) {
              System.err.println("Invalid input. Please enter a valid employee
              type and rating..." + e.getMessage());
            }
            break;
         case 6:
            System.out.println("Exiting system...Thank You For Visiting!!!");
            running = false;
            System.exit(0);
            break;
         default:
            System.err.println("Invalid choice. Please try again.");
            break;
       }
    }
  }
}
```

Department.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.beans;
import jakarta.persistence.*;
import jakarta.validation.constraints.NotBlank;
import java.util.List;
@Entity
@Table(name = "department")
public class Department {
  @ld
  @GeneratedValue(strategy = GenerationType.IDENTITY)
  private int id;
  @NotBlank(message = "Department Name should be provided")
  private String name;
  @OneToMany(mappedBy = "department", cascade = CascadeType.ALL)
  private List<Employee> employees;
  // Getters and Setters
  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;
  }
```

Employee.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.beans;
import jakarta.persistence.*;
import jakarta.validation.constraints.NotBlank;
import java.util.ArrayList;
import java.util.List;

@Entity
@Table(name = "employee")
public class Employee {

@Id
@GeneratedValue(strategy = GenerationType.IDENTITY)
private int id;
@NotBlank(message = "Employee name is mandatory")
```

```
private String name;
@NotBlank(message = "Salary should be provided")
private double salary;
@NotBlank(message = "Rating should be provided")
private int rating;
// Foreign key to Department
@ManyToOne
@JoinColumn(name = "department_id")
private Department department;
@OneToMany(mappedBy = "employee", cascade = CascadeType.ALL)
private List<PerformanceReview> performanceReviews;
@ManyToMany
@JoinTable(
    name = "employee_projects",
    joinColumns = @JoinColumn(name = "employee_id"),
    inverseJoinColumns = @JoinColumn(name = "project_id")
private List<Project> projects = new ArrayList<>();
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 int getRating() {
  return rating;
}
public void setRating(int rating) {
  this.rating = rating;
}
public Department getDepartment() {
  return department;
}
public void setDepartment(Department department) {
  this.department = department;
}
public List<PerformanceReview> getPerformanceReviews() {
  return performanceReviews;
}
public void setPerformanceReviews(List<PerformanceReview> performance
  this.performanceReviews = performanceReviews;
}
public List<Project> getProjects() {
  return projects;
}
public void setProjects(List<Project> projects) {
  this.projects = projects;
```

PerformanceReview.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.beans;
import jakarta.persistence.*;
import jakarta.validation.constraints.NotBlank;
import java.util.Date;
@Entity
@Table(name = "performance_review")
public class PerformanceReview {
  @Id
  @GeneratedValue(strategy = GenerationType.IDENTITY)
  private int id;
  @NotBlank(message = "Rating should be provided")
  private int rating;
  @Column(name = "review_date")
  @NotBlank(message = "Review date should be provided in the Format (yyy
  private Date reviewDate;
  @NotBlank(message = "Remarks should be provided")
```

```
private String remarks;
// Foreign key to Employee
@ManyToOne
@JoinColumn(name = "employee_id")
private Employee employee;
public int getId() {
  return id;
}
public void setId(int id) {
  this.id = id;
}
public int getRating() {
  return rating;
}
public void setRating(int rating) {
  this.rating = rating;
}
public Date getReviewDate() {
  return reviewDate;
}
public void setReviewDate(Date reviewDate) {
  this.reviewDate = reviewDate;
}
public String getRemarks() {
  return remarks;
}
public void setRemarks(String remarks) {
  this.remarks = remarks;
}
```

```
public Employee getEmployee() {
     return employee;
  }
  public void setEmployee(Employee employee) {
    this.employee = employee;
  }
  @Override
  public String toString() {
     return "PerformanceReview{" +
         "id=" + id +
         ", rating=" + rating +
         ", reviewDate='" + reviewDate + '\'' +
         ", remarks='" + remarks + '\'' +
         '}';
  }
}
```

Projects.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.beans;
import jakarta.persistence.*;
import jakarta.validation.constraints.NotBlank;
import java.util.ArrayList;
import java.util.List;

@Entity
@Table(name = "project")
public class Project {

@Id
@GeneratedValue(strategy = GenerationType.AUTO)
```

```
private int id;
@NotBlank(message = "Project title should be provided")
private String title;
@NotBlank(message = "Project duration in months should be provided")
private int durationMonths;
@ManyToMany(mappedBy = "projects")
private List<Employee> employees = new ArrayList<>();
public int getId() {
  return id;
}
public void setId(int id) {
  this.id = id;
}
public String getTitle() {
  return title;
}
public void setTitle(String title) {
  this.title = title;
}
public int getDurationMonths() {
  return durationMonths;
}
public void setDurationMonths(int durationMonths) {
  this.durationMonths = durationMonths;
}
public List<Employee> getEmployees() {
  return employees;
}
public void setEmployees(List<Employee> employees) {
```

```
this.employees = employees;
}

@Override
public String toString() {
  return "Project{" +
        "id=" + id +
        ", title='" + title + '\'' +
        ", durationMonths=" + durationMonths +
        '}';
}
```

DepartmentRepo.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.repos;

import com.Infosys.Que1_EmployeePerformanceSystem.beans.Department;
import org.springframework.data.jpa.repository.JpaRepository;
import org.springframework.stereotype.Repository;

@Repository
public interface DepartmentRepo extends JpaRepository<Department,Integer
}
```

EmployeeRepo.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.repos;
import com.Infosys.Que1_EmployeePerformanceSystem.beans.Employee;
import org.springframework.data.jpa.repository.JpaRepository;
import org.springframework.stereotype.Repository;

@Repository
```

```
public interface EmployeeRepo extends JpaRepository<Employee,Integer> {
}
```

PerformanceReviewRepo.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.repos;

import com.Infosys.Que1_EmployeePerformanceSystem.beans.PerformanceReimport org.springframework.data.jpa.repository.JpaRepository;

import org.springframework.stereotype.Repository;

@Repository
public interface PerformanceReviewRepo extends JpaRepository<PerformanceInteger> {
}
```

ProjectsRepo.java

```
package com.lnfosys.Que1_EmployeePerformanceSystem.repos;
import com.lnfosys.Que1_EmployeePerformanceSystem.beans.Project;
import org.springframework.data.jpa.repository.JpaRepository;
import org.springframework.stereotype.Repository;

@Repository
public interface ProjectRepo extends JpaRepository<Project,Integer> {
}
```

DepartmentService.java

```
package\ com. In fosys. Que 1\_Employee Performance System. services;
```

import com.Infosys.Que1_EmployeePerformanceSystem.beans.Department; import com.Infosys.Que1_EmployeePerformanceSystem.repos.DepartmentRep

```
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;
import java.util.List;
@Service
public class DepartmentService {
  @Autowired
  private DepartmentRepo departmentRepo;
  public void addDepartment(Department department) {
    departmentRepo.save(department);
  }
  public Department getDepartmentById(int id) {
    return departmentRepo.findById(id).orElse(null);
  }
  public List<Department> getAllDepartments() {
    return departmentRepo.findAll();
  }
}
```

EmployeeService.java

package com.Infosys.Que1_EmployeePerformanceSystem.services;

import com.Infosys.Que1_EmployeePerformanceSystem.beans.Employee; import com.Infosys.Que1_EmployeePerformanceSystem.beans.PerformanceReimport com.Infosys.Que1_EmployeePerformanceSystem.beans.Project; import com.Infosys.Que1_EmployeePerformanceSystem.repos.EmployeeRepo import com.Infosys.Que1_EmployeePerformanceSystem.repos.PerformanceReimport com.Infosys.Que1_EmployeePerformanceSystem.repos.ProjectRepo; import org.springframework.beans.factory.annotation.Autowired; import org.springframework.stereotype.Service;

```
import java.util.List;
@Service
public class EmployeeService {
  @Autowired
  private EmployeeRepo employeeRepo;
  @Autowired
  private ProjectRepo projectRepo;
  @Autowired
  private PerformanceReviewRepo performanceReviewRepo;
  // Adding employee
  public void addEmployee(Employee employee) {
    employeeRepo.save(employee);
  }
  public List<Employee> getAllEmployees() {
    return employeeRepo.findAll();
  }
  public Employee getEmployeeById(int id) {
    return employeeRepo.findById(id).orElse(null);
  }
  public void assignProjects(int employeeld, List<Integer> projectIds) {
    Employee employee = employeeRepo.findById(employeeId).orElse(null);
    List<Project> projects = projectRepo.findAllById(projectIds);
    if (employee != null) {
      employee.getProjects().addAll(projects);
      employeeRepo.save(employee);
    } else {
      throw new RuntimeException("Employee not found");
    }
```

```
public void addPerformanceReview(int employeeld, PerformanceReview review. Employee employee = employeeRepo.findByld(employeeld).orElse(null);
if (employee!= null) {
    review.setEmployee(employee);
    performanceReviewRepo.save(review);
} else {
    throw new RuntimeException("Employee not found");
}
```

PerformanceReviewService.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.services;
import com.Infosys.Que1_EmployeePerformanceSystem.beans.PerformanceReimport com.Infosys.Que1_EmployeePerformanceSystem.repos.PerformanceReimport org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

@Service
public class PerformanceReviewService {

@Autowired
private PerformanceReviewRepo performanceReviewRepo;

public void addPerformanceReview(PerformanceReview performanceRevie performanceReviewRepo.save(performanceReview);
}

public PerformanceReview getPerformanceReviewByld(int id) {
    return performanceReviewRepo.findByld(id).orElse(null);
```

```
}
```

ProjectsService.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.services;
import com.Infosys.Que1_EmployeePerformanceSystem.beans.Project;
import com.Infosys.Que1_EmployeePerformanceSystem.repos.ProjectRepo;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;
@Service
public class ProjectService {
  @Autowired
  private ProjectRepo projectRepo;
  public void addProject(Project project) {
    projectRepo.save(project);
  }
  public Project getProjectById(int id) {
    return projectRepo.findById(id).orElse(null);
  }
}
```

BonusServiceInterface.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.services;
public interface BonusServiceInterface {
   double calculateBonus(int rating);
}
```

StandardBonusService.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.services;
import org.springframework.beans.factory.annotation.Qualifier;
import org.springframework.beans.factory.annotation.Value;
import org.springframework.stereotype.Component;
@Component
@Qualifier("standard")
public class StandardBonusService implements BonusServiceInterface{
  @Value("${standard.multiplier}")
  private double multiplier;
  @Override
  public double calculateBonus(int rating) {
    if (rating < 1 || rating > 5) {
      throw new IllegalArgumentException("Rating must be between 1 and 5'
    }
    return rating * multiplier;
  }
}
```

ExecutiveBonusService.java

```
package com.lnfosys.Que1_EmployeePerformanceSystem.services;
import org.springframework.beans.factory.annotation.Qualifier;
import org.springframework.beans.factory.annotation.Value;
import org.springframework.stereotype.Component;

@Component
@Qualifier("executive")
```

```
public class ExecutiveBonusService implements BonusServiceInterface{
    @Value("${executive.multiplier}")
    private double multiplier;

@Override
    public double calculateBonus(int rating) {
        if (rating < 1 || rating > 5) {
            throw new IllegalArgumentException("Rating must be between 1 and 5'
        }
        return rating * multiplier;
    }
}
```

LoggerAspect.java

```
package com.Infosys.Que1_EmployeePerformanceSystem.aspects;
import org.aspectj.lang.ProceedingJoinPoint;
import org.aspectj.lang.annotation.Around;
import org.aspectj.lang.annotation.Aspect;
import org.slf4j.Logger;
import org.slf4j.LoggerFactory;
import org.springframework.stereotype.Component;
@Aspect
@Component
public class LoggingAspect {
  private final Logger logger = LoggerFactory.getLogger(this.getClass());
  @Around("execution(* com.example.Capstone.service.*.*(..))")
  public Object logServiceMethods(ProceedingJoinPoint joinPoint) throws
  Throwable {
    long startTime = System.currentTimeMillis();
    String methodName = joinPoint.getSignature().getName();
```

```
Object[] args = joinPoint.getArgs();

logger.info("Entering method: {} with arguments: {}", methodName, args)

Object result = joinPoint.proceed();

long endTime = System.currentTimeMillis();
long executionTime = endTime - startTime;

logger.info("Exiting method: {} with result: {}", methodName, result);
logger.info("Execution time of method {}: {} ms", methodName,
executionTime);

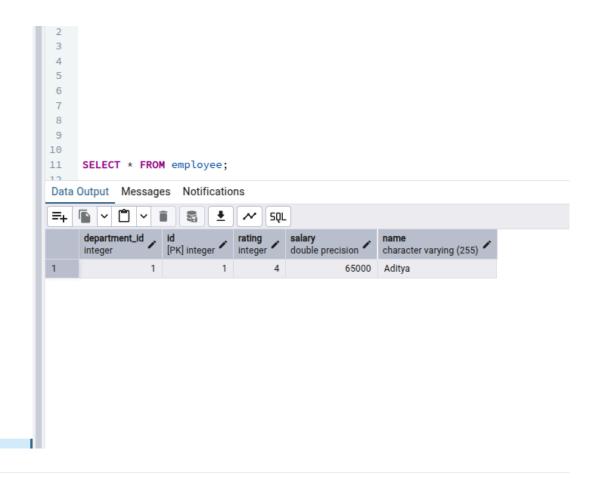
return result;
}
```

Output:

1. Add Department

2. Add Employee

```
===== EMPLOYEE PERFORMANCE SYSTEM ======
1. Add Department
2. Add Employee
3. Assign Projects
4. Add Performance Review
5. Calculate Bonus
Enter your choice: 2
Enter Employee Name:
Enter Employee Salary:
Enter Employee Rating (1-5):
Available Departments:
Hibernate: select d1_0.id,d1_0.name from department d1_0
1. Product Developer
Select Department ID:
Hibernate: insert into employee (department_id,name,rating,salary) values (?,?,?,?)
Employee added successfully...
```



3. Assign Project

4. Add Performance Review



5. Calculate Bonus

6. Exit