

COMP 2130 – Assignment 2
JavaFX Human Resource Management and Payroll System
Project Documentation Group 47



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Section 103

CRN 15664

Project Overview

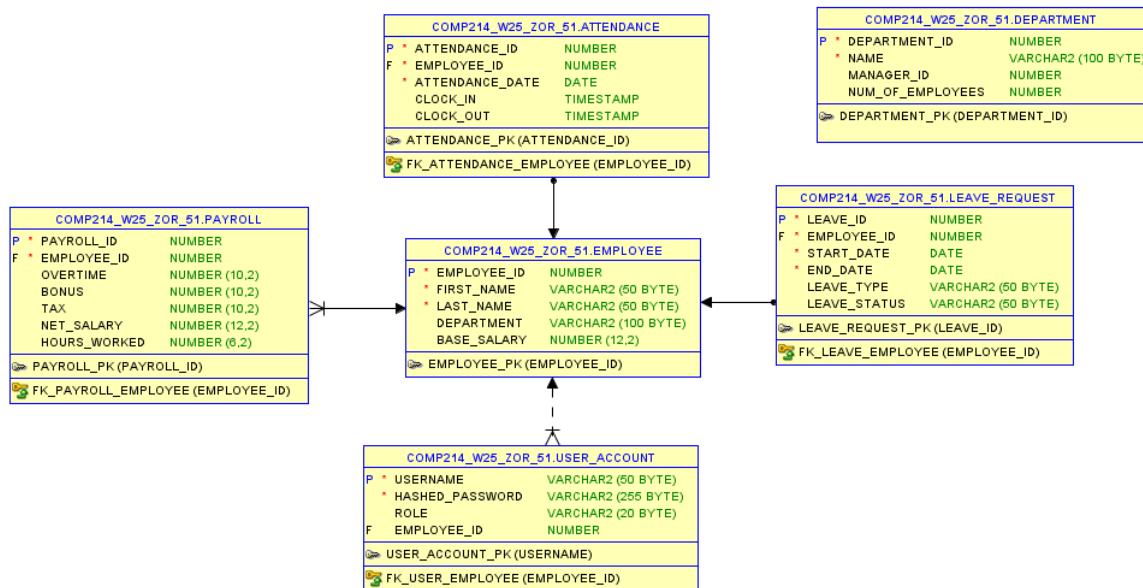
The HRM Payroll System is a comprehensive JavaFX application that allows HR personnel to manage employee records, process payroll, and generate payroll reports. It incorporates object-oriented principles, persistent data storage using Java serialization, and optional advanced features such as attendance tracking and role-based access control.

This system consists of 6 modules:

1. Employee Management – Add, view, update, and delete employee records.
2. Payroll Processing – Calculate salaries, taxes, overtime, and bonuses.
3. Employee & Department Reporting – Generate reports for employees and departments.
4. Data Storage – Persistent storage of employee, payroll, attendance, and leave records.
5. Analytics (Visual Diagrams) – Visualize salary distribution, attendance trends, and leave statistics.
6. Attendance & Leave Management – Track employee attendance and leave applications.

UML Class Diagram

The UML Diagram represents key classes in the HRM Payroll System and their references. There are 6 main classes: Department, Employee, Attendance, Leave, Payroll, and User. I have explained each class and their references and relationships in detail.



1. Department

- Attributes: departmentId, name, managerId, numOfEmployees
- There is a one-to-one relationship managerId → references id
- There is a one-to-many relationship with Employee as each department can have multiple employees.
- managerId is stored as an integer to avoid circular object references and simplify serialization.
- numOfEmployees is maintained as a convenience field for quick reporting

2. Employee

- Attributes: id, firstName, lastName, department, baseSalary
- There is a one-to-one relationship department → references name
- There is a one-to-many relationship with Attendance, Leave, and Payroll.
- Department is stored as a string for simplicity in storage.
- Employee serves as the central entity referenced by multiple modules.

3. Attendance

- Attributes: employeeId, date, clockIn, clockOut
- There is a one-to-many relationship employeeId → references id
- Department is stored as a string for simplicity in storage.
- Attendance records are linked to employees using employeeId to allow tracking work hours and leave eligibility.

4. Leave

- Attributes: employeeId, startDate, endDate, leaveType, leaveStatus
- There is a one-to-many relationship employeeId → references id
- Department is stored as a string for simplicity in storage.
- Leave type and status are stored as strings for flexibility. Enums could be used to enforce strict categories if needed.

5. Payroll

- Attributes: employeeId, overtime, bonus, tax, netSalary, hoursWorked
- There is a one-to-one relationship employeeId → references id
- Payroll calculations are stored per employee to allow historical records.
- employeeId links payroll directly to the employee, enabling reporting and analytics.

6. User

- Attributes: username, hashedPassword, role, employeeId
 - There is a one-to-one relationship employeeId → references id
 - Role is defined as an enum to implement role-based access control.
 - Users are separate from employees to allow flexibility in authentication and system security.
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Reference Attributes and Relationship

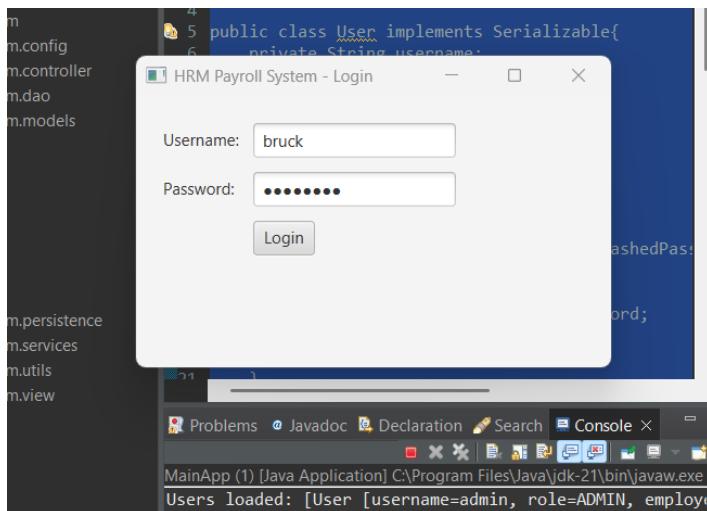
Class	Attribute	Target Class	Relationship
Department	managerId	Employee	1-to-1
Employee	department	Department	1-to-1
Attendance	employeeId	Employee	Many-to-1
Leave	employeeId	Employee	Many-to-1
Payroll	employeeId	Employee	1-to-1
User	employeeId	Employee	1-to-1

UI Screenshots

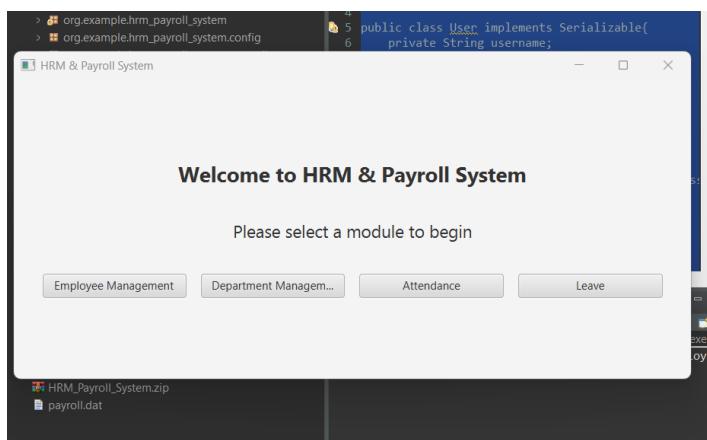
This program has 3 roles : Employee, HR and Admin.

Employee

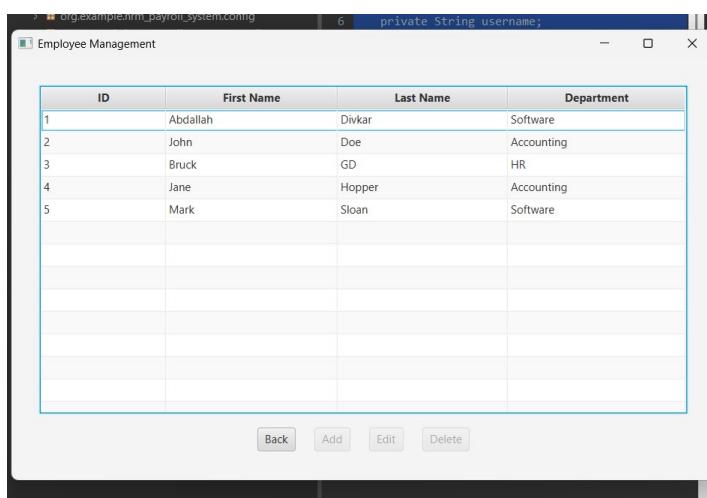
- Can view employee management and payroll information.
- Can clock in/out and apply for leave.
- Access Level: View-only for management modules.



Login Page for Employee/HR/Admin



Employee Dashboard: Employee/Department ,Attendance and Leave Module



Employee Management (View Only)

Department Management (View Only)

Attendance / Timesheet

Clock In Clock Out Back

Attendance [employeeId=201, date=2025-12-07, checkIn=18:13:52.928816100, checkOut=18:13:56.830832200]
Attendance [employeeId=201, date=2025-12-08, checkIn=02:14:18.413719700, checkOut=02:14:21.328378600]

Leave Management

Leaves Taken: 2

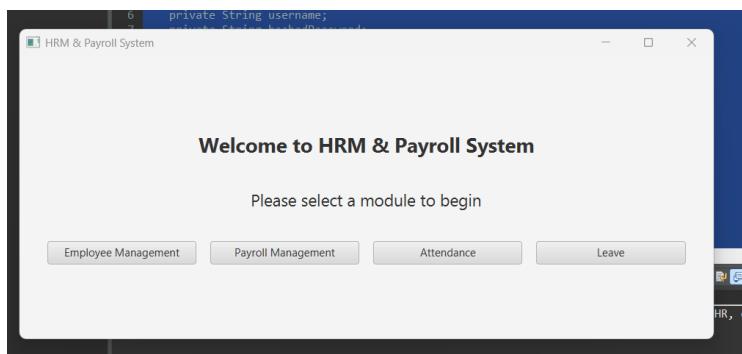
From: To: Type: Sick / Vacation

Leave [employeeId=201, startDate=2025-12-18, endDate=2026-01-04, type of leave=Vacation, status=Pending]
Leave [employeeId=201, startDate=2025-12-18, endDate=2026-01-04, type of leave=Vacation, status=Pending]

Attendance and Leave

HR

- Can add, edit, delete records for Employee and Payroll.
- Can approve or reject leave applications.
- Access Level: Full CRUD for Employee and Payroll; partial for Departments.



Dashboard when HR logs in

The screenshot shows a table titled "Employee Management" with columns: ID, First Name, Last Name, Department, and Base Salary. The data is as follows:

ID	First Name	Last Name	Department	Base Salary
1	Abdallah	Divkar	Software	2000.0
2	John	Doe	Accounting	1500.0
3	Bruck	GD	HR	3000.0
4	Jane	Hopper	Accounting	5000.0
5	Mark	Sloan	Software	50000.0

At the bottom of the table are buttons: "Back", "Add", "Edit", and "Delete".

The screenshot shows the same "Employee Management" table as above. Overlaid on the table is a modal dialog box titled "Add Employee". The dialog has fields for "First Name" (James), "Last Name" (Bond), "Department" (selected from a dropdown menu), and "Base Salary" (4500). At the bottom of the dialog are "OK" and "Cancel" buttons. The background table remains visible behind the dialog.

Employee Management (Full CRUD)

Payroll Management (Full CRUD)

Leave Management

Leaves Taken: 0

Emp ID:	Employee ID	From:		To:		Type:	Sick / Vacation	Request Leave	Back	Approve	Reject
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Leave [empLOYEEID=1, startDate=2025-12-23, endDate=2026-01-03, type of leave=Vacation, status=Approved]
Leave [empLOYEEID=201, startDate=2025-12-16, endDate=2026-01-04, type of leave=Vacation, status=Pending]
Leave [empLOYEEID=201, startDate=2025-12-18, endDate=2026-01-04, type of leave=Vacation, status=Pending]

Attendance
[employeedId=1, date=2025-12-07, checkIn=16:44:36.452057800, checkOut=16:44:59.382453500]
[employeedId=2, date=2025-12-07, checkIn=16:44:42.684361200, checkOut=16:45:07.125339300]
[employeedId=3, date=2025-12-07, checkIn=16:44:46.126860500, checkOut=16:45:21.616741]
[employeedId=4, date=2025-12-07, checkIn=16:44:49.523814900, checkOut=16:45:15.910465200]
[employeedId=3, date=2025-12-07, checkIn=16:45:10.808441300, checkOut=null]
[employeedId=201, date=2025-12-07, checkIn=18:13:52.928816100, checkOut=18:13:56.830832200]
[employeedId=1, date=2025-12-08, checkIn=01:30:57.674707800, checkOut=null]
[employeedId=201, date=2025-12-08, checkIn=02:14:18.413179700, checkOut=02:14:21.328378600]

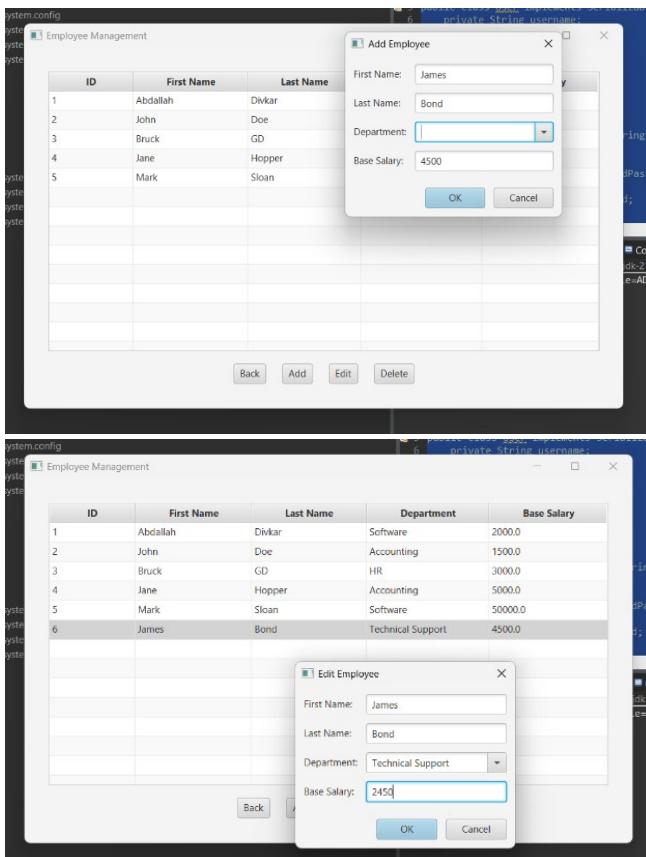
Attendance and Leave

Admin

- Full access to all modules.
- Can perform CRUD operations on Employee, Payroll, and Departments.
- Can generate reports and view analytics dashboards.
- Access Level: Full CRUD + reporting and analytics.



Dashboard when Admin logs in



The screenshot displays the Employee Management section of the system. On the left, a table lists employee details with columns: ID, First Name, Last Name, Department, and Base Salary. The table contains 6 rows of data. In the center, there are two modal dialogs: "Add Employee" and "Edit Employee". Both dialogs have fields for First Name, Last Name, Department (a dropdown menu), and Base Salary. The "Edit Employee" dialog also includes a "Current Salary" field. Buttons for "OK" and "Cancel" are at the bottom of both dialogs.

ID	First Name	Last Name	Department	Base Salary
1	Abdallah	Divkar	Software	2000.0
2	John	Doe	Accounting	1500.0
3	Bruck	GD	HR	3000.0
4	Jane	Hopper	Accounting	5000.0
5	Mark	Sloan	Software	50000.0
6	James	Bond	Technical Support	4500.0

Employee Management (FULL CRUD)

Payroll Management

Employee ID	Overtime	Bonus	Tax	Net Salary
2	65.41	1000.0	300.29	1201.17
1	87.21	20000.0	4110.47	16441.86
3	52.33	7000.0	1543.02	6172.1
4	0.0	5000.0	1234.56	5765.44
5	4360.47	10000.0	5312.34	4687.66

Add Payroll

Employee:

Overtime:

Bonus:

Hours Worked:

OK **Cancel**

Back **Add** **Edit** **Delete**

Payroll Management and Processing (FULL CRUD)

Department Management

Department ID	Name	Manager Id	Number of Employees
1	HR	321	5
2	Software	13	8
3	Accounting	184	4

Add Department

Department Id:

Name:

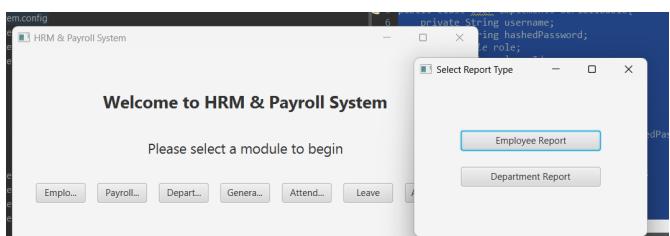
Manager Id:

Number of employees:

OK **Cancel**

Back **Add** **Edit** **Delete**

Department Management (FULL CRUD)



Department Payroll Report

Generate Department Payroll Report

Department [departmentId=2, name=Software, managerId=13, numOfEmployees=8] **Generate Report**

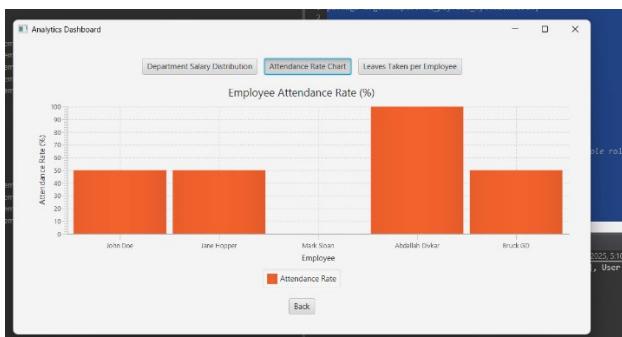
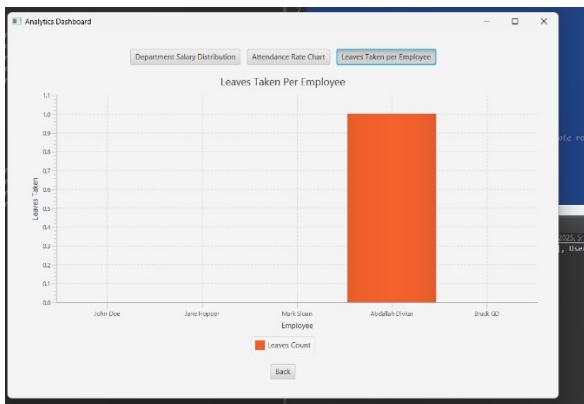
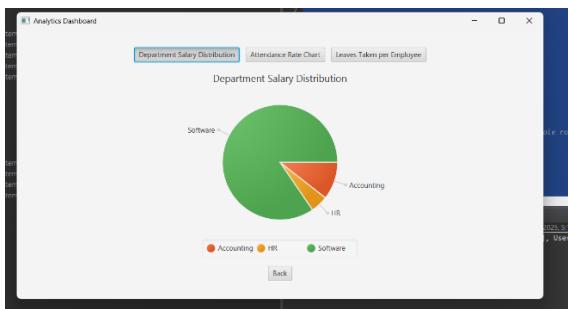
Department Payroll Report: Software

Abdullah Divakar - Net Salary: 16441.86
Mark Sloan - Net Salary: 21255.62

Totals:
Base Salary: 52000.0
Overtime: 4447.68
Bonus: 30000.0
Tax: 9424.42
Net Salary: 37697.68

Back

Employee and Department Reporting



Analytics for Department Salary Distribution , Attendance Rate and Employee Leaves

Reporting & Analytics

- Employee and department payroll reports can be generated on demand.
- Attendance and leave analytics provide insights into work patterns and resource planning.
- Visual diagrams include department salary distribution, attendance rates, and leave statistics.