

Project — Human Resource Management System

1. Context

A medium-sized company employs staff across different departments, including administration, technical, and management teams. The company needs a simple computer-based system to manage employee information (ID, Name, status, DOB, StartDate, Part-time/Full-time, ...), job positions, and attendance records. The system should store detailed employee data such as employee ID, full name, department, job title, date of joining, and employment status. It should also manage attendance records to track working days and absences. HR officers need to record employee attendance, update employee information, and calculate monthly salaries based on basic salary, attendance, and overtime. The system must enforce basic HR rules such as unique employee identification, attendance validation, and salary calculation policies. Overall, the system aims to improve accuracy, efficiency, and daily HR management operations.

2. Users

- HR Officer – manages employees, attendance records, and salary calculations.

3. Functional Requirements

Employee Management

1. Add new employee with details (ID, name, department, job title, date of joining, basic salary, ...).
2. Update employee information.
3. Remove an employee.
4. View all employees.
5. Search employees by name, department, or job title.

Attendance Management

1. Record daily attendance for an employee.
2. Update attendance record.
3. View attendance history for an employee.
4. Calculate total working days and absences.

Salary Management

1. Calculate monthly salary for an employee.
2. View salary details.
3. Generate salary report for all employees.

Reporting

1. List employees with low attendance.
2. List highest-paid employees.

4. Business Rules

- BR1: Each Employee ID must be unique in the system and cannot be modified after creation.
BR2: Employee name and department must not be empty.
BR3: An employee must exist before attendance can be recorded.
BR4: Attendance date must be unique per employee per day.
BR5: Attendance status must be one of: Present, Absent, or Leave.
BR6: Monthly working days are calculated based on attendance records.
BR7: Salary = Basic Salary + Overtime Pay – Absence Deduction.
BR8: Overtime pay is fixed at **50,000 VND per hour/Part-time and 80,000VND per hour/Full-time**.
BR9: Absence deduction is **100,000 VND per day**.
BR10: Salary can only be calculated for active employees.
BR11: All user input must be validated before processing.
BR12: An employee is considered to have low attendance if the number of Absent days in a selected month exceeds a predefined threshold (e.g. more than 3 days).
BR13: The highest-paid employees are determined based on the total calculated salary for a selected month, including basic salary, overtime pay, and deductions

5. OOP Requirements

- Encapsulation (e.g. Employee, Attendance classes).
- Inheritance (e.g. FullTimeEmployee vs PartTimeEmployee).
- Polymorphism (e.g. overriding calculateSalary()).
- Collections (e.g. List, Map).
- Exception handling.
- Class diagram before coding.

6. Console UI Requirements

Menu-based interface:

Manage Employees
Attendance Management
Salary Management
Reports
Exit

- Validate user input and validate business rules.
- Use console I/O and File I/O.
- Display messages (Success / Fail) for each task.

PROJECT — HUMAN RESOURCE MANAGEMENT SYSTEM

1. MAIN MENU

```
=====
          HUMAN RESOURCE MANAGEMENT
=====
1. Manage Employees
2. Attendance Management
3. Salary Management
4. Reports
5. Exit
-----
Choose an option: _
```

EMPLOYEE MANAGEMENT

Task B1 — Add Employee

GUI

```
----- ADD EMPLOYEE -----  
Employee ID: E01  
Full Name: Nguyen Van An  
Department: IT  
Job Title: Software Engineer  
Type: Full-time  
Date of Joining: 01/03/2023  
Basic Salary: 12,000,000  
  
[1] Save   [2] Cancel
```

Output

Employee added successfully.

Task B2 — Update Employee

GUI

```
----- UPDATE EMPLOYEE -----  
Enter Employee ID to update: E01  
  
Current Information:  
Name: Nguyen Van An  
Department: IT  
Job Title: Software Engineer  
Basic Salary: 12,000,000  
...  
  
Enter new Department (leave blank to skip): R&D  
Enter new Job Title (leave blank): Senior Engineer  
[1] Update   [2] Cancel
```

Output

Employee updated successfully.

Task B3 — View All Employees

```
----- EMPLOYEE LIST -----  
ID      Name           Department  Job Title      Salary      ...  
-----  
E01     Nguyen Van An      R&D        Senior Engineer 12,000,000  ...  
E02     Tran Thi Hoa       HR         HR Officer      10,000,000  ...  
-----  
Press ENTER to return...
```

ATTENDANCE MANAGEMENT

Task B4 — Record Attendance

GUI

```
----- RECORD ATTENDANCE -----  
Employee ID: E01  
Date: 15/12/2025  
Status: Present  
Overtime Hours: 2
```

Output

Attendance recorded successfully.

Task B5 — View Attendance History

Employee ID: E01

```
-----  
Date           Status      Overtime  
-----  
15/12/2025     Present    2  
16/12/2025     Absent     0  
-----
```

Press ENTER to return...

SALARY MANAGEMENT

Task B6 — Calculate Salary

GUI

```
----- CALCULATE SALARY -----  
Employee ID: E01  
Month / Year: 12 / 2025
```

Output

Salary calculated successfully.
Total Working Days: 22
Overtime Hours: 10
Absence Days: 1
Total Salary: 12,400,000 VND

REPORTS

Task B7 — Employees with Low Attendance

```
----- LOW ATTENDANCE REPORT -----  
E02  Tran Thi Hoa  5 absent days  
-----  
Press ENTER to return...
```

Task B8 — Highest Paid Employees

```
----- HIGHEST PAID EMPLOYEES -----  
E01  Nguyen Van An  12,400,000 VND  
-----  
Press ENTER to return...
```