

RAJALAKSHMI ENGINEERING COLLEGE
RAJALAKSHMI NAGAR, THANDALAM -602 105



CS23333 OOPS Using Java

Laboratory Record Note Book

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**RAJALAKSHMI ENGINEERING
COLLEGE**
An Autonomous Institution

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the..... Laboratory
during the academic year 2025- 2026*

Signature of Faculty in-charge

Submitted for the Practical Examination held on.....

Internal Examiner

External Examiner

INDEX

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ABSTRACT

The **Salary Management System** is a software application designed to automate and simplify the process of managing employee salary records within an organization. The system ensures accuracy, efficiency, and security in handling payroll data by integrating a **Java-based front end** with a **SQL database back end**.

The front end, developed using **Java**, provides an interactive and user-friendly interface for administrators and HR personnel to manage employee details, salary structures, deductions, bonuses, and attendance-related inputs. The back end, built on **Structured Query Language (SQL)**, securely stores and retrieves employee information, payroll details, and transaction histories while maintaining data integrity and consistency.

The system automates salary calculations based on predefined parameters such as basic pay, allowances, and deductions, thus minimizing human errors. It also generates reports and payslips, ensuring transparency and easy record-keeping. Additionally, the system allows quick updates and retrieval of data, supporting efficient decision-making and reducing manual workload.

Overall, the Salary Management System enhances organizational productivity by offering a reliable, scalable, and secure solution for payroll management, bridging the gap between HR operations and data-driven management through the seamless integration of **Java and SQL technologies**.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The **Salary Management System** is a software application developed to automate and manage all salary-related operations within an organization. In traditional payroll systems, salary calculations, record maintenance, and report generation are often done manually, which leads to errors, data inconsistency, and time inefficiency. To overcome these challenges, the Salary Management System provides a computerized solution that simplifies the entire payroll process.

1.2 Scope of the Work

The scope of this project includes the development of a complete salary management solution for small to medium-sized organizations. The system automates employee data handling, salary computation, and report generation. It also allows for easy modification of salary details, viewing of payment history, and generation of payslips.

1.3 Problem Statement

In many organizations, salary management is still handled manually using spreadsheets or paper-based systems. This manual process is time-consuming, error-prone, and lacks security and consistency. Errors in salary calculations, difficulties in maintaining records, and delays in report generation often lead to employee dissatisfaction and reduced productivity.

Therefore, there is a need for an automated system that can handle all salary-related processes efficiently, accurately, and securely — ensuring smooth and transparent payroll management.

1.4 Aim and Objectives of the Project

The specific objectives of the project are:

- To develop a computerized system for managing employee salary records.
- To automate salary calculations based on employee details, allowances, and deductions.
- To store and retrieve employee data securely using an SQL database.
- To generate payslips and reports quickly and accurately.
- To reduce manual effort, errors, and paperwork in the payroll process.
- To improve efficiency and transparency in salary management operations.

CHAPTER 2

SYSTEM REQUIREMENTS

Hardware Requirements:

- Processor: Intel i3 or higher
- RAM: 4GB or above
- Hard Disk: 500MB free space

Software Requirements:

- OS: Windows 10 or above
- IDE: IntelliJ IDEA / Eclipse
- Frontend: Java Swing
- Backend: MySQL
- Connector: MySQL JDBC Connector (.jar)

CHAPTER 3

MODULE DESCRIPTION

The Salary Management System is divided into several functional modules to ensure smooth operation, easy maintenance, and clear separation of tasks. Each module performs a specific function and interacts with other modules through a shared database. The modular design improves system efficiency, scalability, and reliability.

3.1 INTRODUCTION

The **Salary Management System** is divided into several functional modules to ensure smooth operation, easy maintenance, and clear separation of tasks. Each module performs a specific function and interacts with other modules through a shared database. The modular design improves system efficiency, scalability, and reliability.

3.2 LIST OF MODULES

The main modules of the Salary Management System are:

- 1. Login Module**
- 2. Employee Management Module**
- 3. Salary Calculation Module**
- 4. Deduction and Allowance Module**
- 5. Report Generation Module**
- 6. Database Management Module**

3.3 MODULE DESCRIPTION

1. Login Module

This module provides secure access to the system. Only authorized users such as administrators or HR staff can log in using valid credentials. It ensures data security and prevents unauthorized access.

2. Employee Management Module

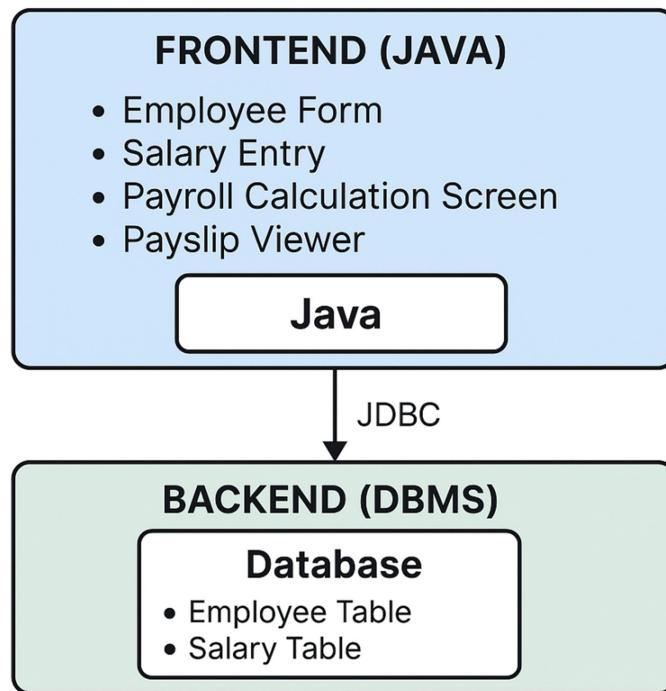
This module handles all employee-related information, including adding, updating, viewing, and deleting employee records. It stores personal and job details in the SQL database for easy retrieval.

CHAPTER 4

SYSTEM DESIGN

The Salary Management System uses a Java-based frontend to handle user interactions like salary entry and payslip viewing.

It connects to a DBMS backend via JDBC to store and manage employee and salary data. This design ensures efficient data processing, secure storage, and smooth payroll management.

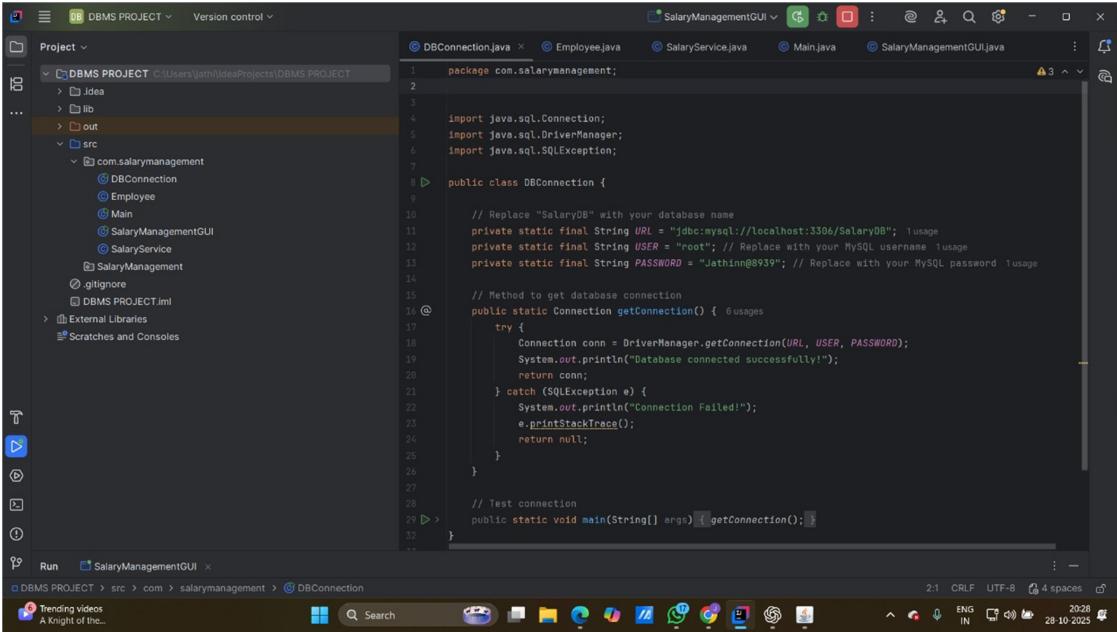


CHAPTER 5:

IMPLEMENTATION

The implementation of this code focuses on connecting the Java application to a MySQL database. It defines a method to establish the connection using JDBC by specifying the database URL, username, and password.

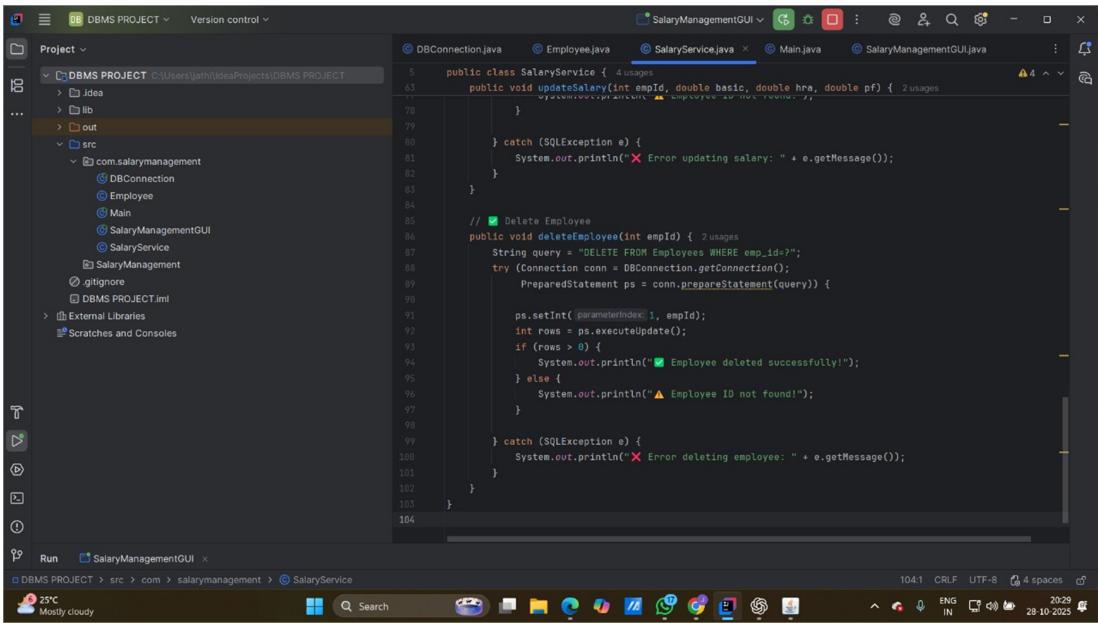
DB CONNECTION CODE:



The screenshot shows the IntelliJ IDEA interface with the project structure on the left and the code editor on the right. The code editor displays the `DBConnection.java` file, which contains the following Java code:

```
1 package com.salarymanagement;
2
3
4 import java.sql.Connection;
5 import java.sql.DriverManager;
6 import java.sql.SQLException;
7
8 public class DBConnection {
9
10    // Replace "SalaryDB" with your database name
11    private static final String URL = "jdbc:mysql://localhost:3306/SalaryDB"; 1usage
12    private static final String USER = "root"; // Replace with your MySQL username 1usage
13    private static final String PASSWORD = "Jathinn@8939"; // Replace with your MySQL password 1usage
14
15    // Method to get database connection
16    public static Connection getConnection() { 6usages
17        try {
18            Connection conn = DriverManager.getConnection(URL, USER, PASSWORD);
19            System.out.println("Database connected successfully!");
20            return conn;
21        } catch (SQLException e) {
22            System.out.println("Connection Failed!");
23            e.printStackTrace();
24            return null;
25        }
26
27        // Test connection
28        public static void main(String[] args) { getConnection(); }
29    }
30 }
```

SALARY SERVICE CODE:

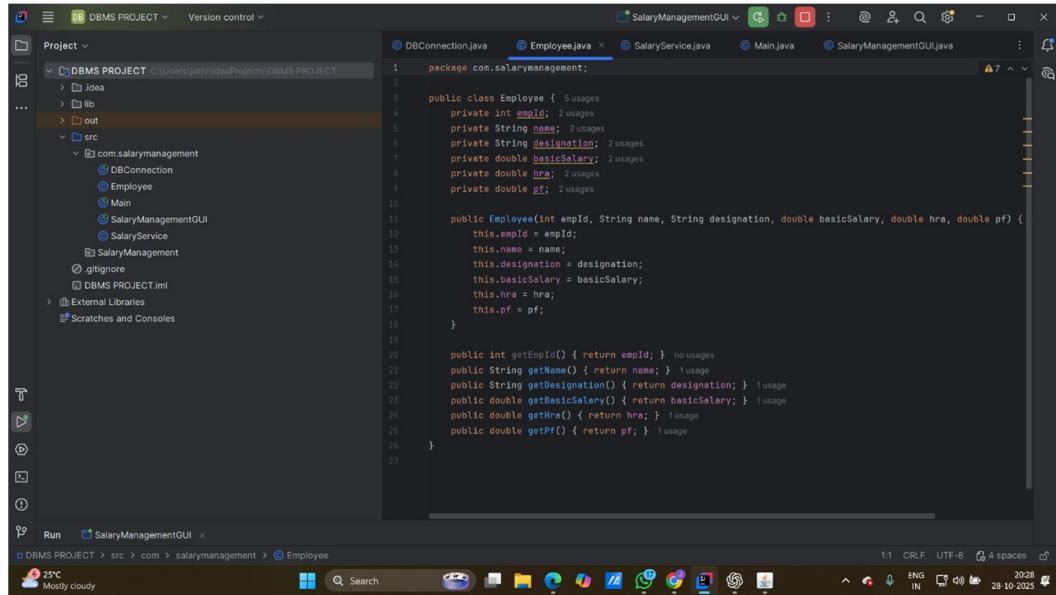


The screenshot shows the IntelliJ IDEA interface with the project 'DBMS PROJECT' open. The 'SalaryService.java' file is the active editor. The code implements a service for managing employee salaries, utilizing a database connection and a prepared statement to update or delete employees.

```
5  public class SalaryService { 4 usages
6      public void updateSalary(int empId, double basic, double hrs, double pf) { 2 usages
7          ...
8      }
9
10     } catch (SQLException e) {
11         System.out.println("X Error updating salary: " + e.getMessage());
12     }
13
14     // ✅ Delete Employee
15     public void deleteEmployee(int empId) { 2 usages
16         String query = "DELETE FROM Employees WHERE emp_id=?";
17         try (Connection conn = DBConnection.getConnection();
18              PreparedStatement ps = conn.prepareStatement(query)) {
19
20             ps.setInt( parameterIndex: 1, empId);
21             int rows = ps.executeUpdate();
22             if (rows > 0) {
23                 System.out.println("✅ Employee deleted successfully!");
24             } else {
25                 System.out.println("⚠ Employee ID not found!");
26             }
27
28         } catch (SQLException e) {
29             System.out.println("X Error deleting employee: " + e.getMessage());
30         }
31     }
32
33 }
```

The code includes comments indicating successful deletion (✅) and employee ID not found (⚠). It also handles SQLExceptions for both update and delete operations.

EMPLOYEE CODE:



The screenshot shows the IntelliJ IDEA interface with the following details:

- Project Structure:** The project is named "DBMS PROJECT". It contains a "src" directory which includes packages like "com.salarymanagement" containing classes "DBConnection", "Employee", "Main", "SalaryManagementGUI", "SalaryService", and "SalaryManagement".
- Code Editor:** The current file is "Employee.java". The code defines a class "Employee" with fields: empId (int), name (String), designation (String), basicSalary (double), hra (double), and pf (double). It has constructor, getters, and setters for these fields.
- Status Bar:** Shows the file path as "DBMS PROJECT > src > com.salarymanagement > Employee.java", the encoding as "UTF-8", and the date/time as "28-10-2025".
- System Tray:** Shows the weather as "25°C Mostly cloudy".

```
1 package com.salarymanagement;
2
3 public class Employee { 5 usages
4     private int empId; 2 usages
5     private String name; 2 usages
6     private String designation; 2 usages
7     private double basicSalary; 2 usages
8     private double hra; 2 usages
9     private double pf; 2 usages
10
11     public Employee(int empId, String name, String designation, double basicSalary, double hra, double pf) {
12         this.empId = empId;
13         this.name = name;
14         this.designation = designation;
15         this.basicSalary = basicSalary;
16         this.hra = hra;
17         this.pf = pf;
18     }
19
20     public int getEmpId() { return empId; } no usages
21     public String getName() { return name; } 1 usage
22     public String getDesignation() { return designation; } 1 usage
23     public double getBasicSalary() { return basicSalary; } 1 usage
24     public double getHra() { return hra; } 1 usage
25     public double getPf() { return pf; } 1 usage
26 }
27 }
```

CHAPTER 6

SCREENSHOTS

The screenshot shows the MySQL Workbench interface. The title bar says "MySQL Workbench" and "Salary Management System". The menu bar includes File, Edit, View, Query, Database, Server, Tools, Scripting, Help. The toolbar has various icons for database management. The Navigator pane shows the schema "salarydb" with tables "employees", views, stored procedures, and functions. The main area is titled "Query 1" and contains the following SQL code:

```
1 * CREATE DATABASE SalaryDB;
2 * USE SalaryDB;
3 * CREATE TABLE Employees (
4     emp_id INT PRIMARY KEY AUTO_INCREMENT,
5     name VARCHAR(50) NOT NULL,
6     designation VARCHAR(50),
7     basic_salary DECIMAL(10,2),
8    hra DECIMAL(10,2),
9     pf DECIMAL(10,2)
10 );
11 * INSERT INTO employees (id, name, designation, basic, hra, pf, net_salary) VALUES
12 (1, 'John Doe', 'Manager', 50000.0, 10000.0, 5000.0, 55000.0),
13 (2, 'Jane Smith', 'Developer', 40000.0, 8000.0, 4000.0, 44000.0),
14 (3, 'Hirthik', 'Sports Manager', 150000.0, 20000.0, 11000.0, 159000.0),
15 (4, 'Dathin', 'Lawyer', 500000.0, 100000.0, 35000.0, 561000.0),
16 (5, 'Giri', 'Software Engineer', 500000.0, 150000.0, 65000.0, 585000.0),
17 (6, 'John Doe', 'Manager', 50000.0, 10000.0, 5000.0, 55000.0),
18 (7, 'Jane Smith', 'Developer', 40000.0, 8000.0, 4000.0, 44000.0),
19 (8, 'Alice Johnson', 'Tester', 30000.0, 6000.0, 3000.0, 33000.0);
20
21
```

The right panel has a message: "Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help." The bottom status bar shows weather (25°C, Mostly cloudy), search, file, and system information (ENG IN, 28-10-2025).

Salary Management System

ID	Name	Designation	Basic	HRA	PF	Net Salary
1	John Doe	Manager	50000.0	10000.0	5000.0	55000.0
2	Jane Smith	Developer	40000.0	8000.0	4000.0	44000.0
3	Hirthic	Sports Manager	150000.0	20000.0	11000.0	159000.0
4	Jathin	Lawyer	500000.0	100000.0	39000.0	561000.0
5	Giri	Software Enginner	500000.0	150000.0	65000.0	585000.0
5	John Doe	Manager	50000.0	10000.0	5000.0	55000.0
7	Jane Smith	Developer	40000.0	8000.0	4000.0	44000.0
8	Alice Johnson	Tester	30000.0	6000.0	3000.0	33000.0
9	Kathir Vikaas	Doctor	250000.0	85000.0	36000.0	299000.0

ID: Name: Designation:

Basic: HRA: PF:

[Add Employee](#) [View Employees](#) [Update Salary](#) [Delete Employee](#) [Clear Fields](#)

Salary Management System

ID	Name	Designation	Basic	HRA	PF	Net Salary
1	John Doe	Manager	50000.0	10000.0	5000.0	55000.0
2	Jane Smith	Developer	40000.0	8000.0	4000.0	44000.0
3	Hirthic	Sports Manager	150000.0	20000.0	11000.0	159000.0
4	Jathin	Lawyer	500000.0	100000.0	39000.0	561000.0
5	Giri	Software Enginner	500000.0	150000.0	65000.0	585000.0
6	John Doe	Manager	50000.0	10000.0	5000.0	55000.0
7	Jane Smith	Developer	40000.0	8000.0	4000.0	44000.0
8	Alice Johnson	Tester	30000.0	6000.0	3000.0	33000.0

ID: Name: Designation:
 Basic: HRA: PF:

[Add Employee](#) [View Employees](#) [Update Salary](#) [Delete Employee](#) [Clear Fields](#)

ID:	9	Name:	Kathir Vikaas	Designation:	Doctor
Basic:	250000	HRA:	85000	PF:	36000
Add Employee View Employees Update Salary Delete Employee Clear Fields					

CHAPTER 7

CONCLUSION AND FUTURE ENHANCEMENTS

Conclusion:

The Salary Management System simplifies and automates the process of managing employee salary details. It ensures accurate calculations, secure data handling, and efficient record management through the integration of Java for the frontend and a DBMS for the backend. The system reduces manual effort, minimizes errors, and improves overall payroll efficiency within an organization.

Future Enhancements:

- Integrate biometric or attendance tracking systems for automated salary computation.
- Add online access for employees to view payslips and salary history.
- Include tax, loan, and bonus management modules.
- Implement data encryption and user role-based access for improved security.
- Develop a mobile or web-based version for remote access and real-time updates.

CHAPTER 8

REFERENCES

1. Java: The Complete Reference – Herbert Schildt
2. MySQL Documentation – <https://dev.mysql.com/doc/>
3. Oracle Java Tutorials – <https://docs.oracle.com/javase/tutorial/>
4. Online Java and JDBC resources.