VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI 590018

Project Report on

"Employee Worker Registration"

By

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Under the Guidance of

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BMS College of Engineering

Work carried out at

Department of Computer Science and Engineering
BMS College of Engineering
(Autonomous college under VTU)
P.O. Box No.: 1908, Bull Temple Road, Bangalore-560 019
2025-2026

BMS COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the OOPS with JAVA project titled "**Employee Worker Registration"** has been carried out by Krrish Kumar Yadav (1BF24CS152), Mayank Mehta(1BF24CS171), Isparsh Giri(1BF24CS125), during the academic year 2025-2026.

Signature of the guide
Monisha H M
Assistant Professor,
Department of Computer Science and Engineering
BMS College of Engineering, Bangalore

BMS COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECLARATION

We, Krrish Kumar Yadav (1BF24CS152), Mayank Mehta (1BF24CS171), Isparsh Giri (1BF24CS125) students of 3rd Semester, B.E, Department of Computer Science and Engineering, BMS College of Engineering, Bangalore, hereby declare that, this project work entitled "Employee Worker Registration" has been carried out by us under the guidance of Tejaswini**,** Assistant Professor, Department of CSE, BMS College of Engineering, Bangalore during the academic semester Sep-Dec 2025. We also declare that to the best of our knowledge and belief, the project reported here is not from part of any other report by any other students.

Signature of the Candidates

Krrish Kumar Yadav (1BF24CS152)

Mayank Mehta (1BF24CS171)

Isparsh Giri (1BF24CS125)

I. DESCRIPTION OF PROJECT

1. OBJECTIVE OF THE PROJECT AND THE MODULES

Primary Objective: To develop a comprehensive desktop application for managing organizational hierarchies through department, employer, and worker registration using Java Swing and MySQL database integration. README.md:3-4

Core Modules:

Department Management Module: Create, update, delete, and view organizational departments

Employer Registration Module: Register employers with company details and department assignments

Worker Registration Module: Register workers under employers with position and hire date tracking

Consolidated View Module: Search and filter all worker records with complete hierarchical information.

2. INTRODUCTION

The Employee Worker Registration System is a Java-based desktop application designed to streamline organizational data management through a three-tier architecture. The system addresses the critical need for maintaining structured relationships between departments, employers, and workers in organizational settings. Built using Java Swing for the user interface and MySQL for data persistence, the application provides complete CRUD (Create, Read, Update, Delete) operations while ensuring data integrity through proper validation and referential constraints.

The application follows modern software engineering principles with clear separation of concerns between presentation, business logic, and data access layers. This design approach ensures maintainability, scalability, and adherence to object-oriented programming principles.

3. DESIGN MODULES

System Architecture Block Diagram:

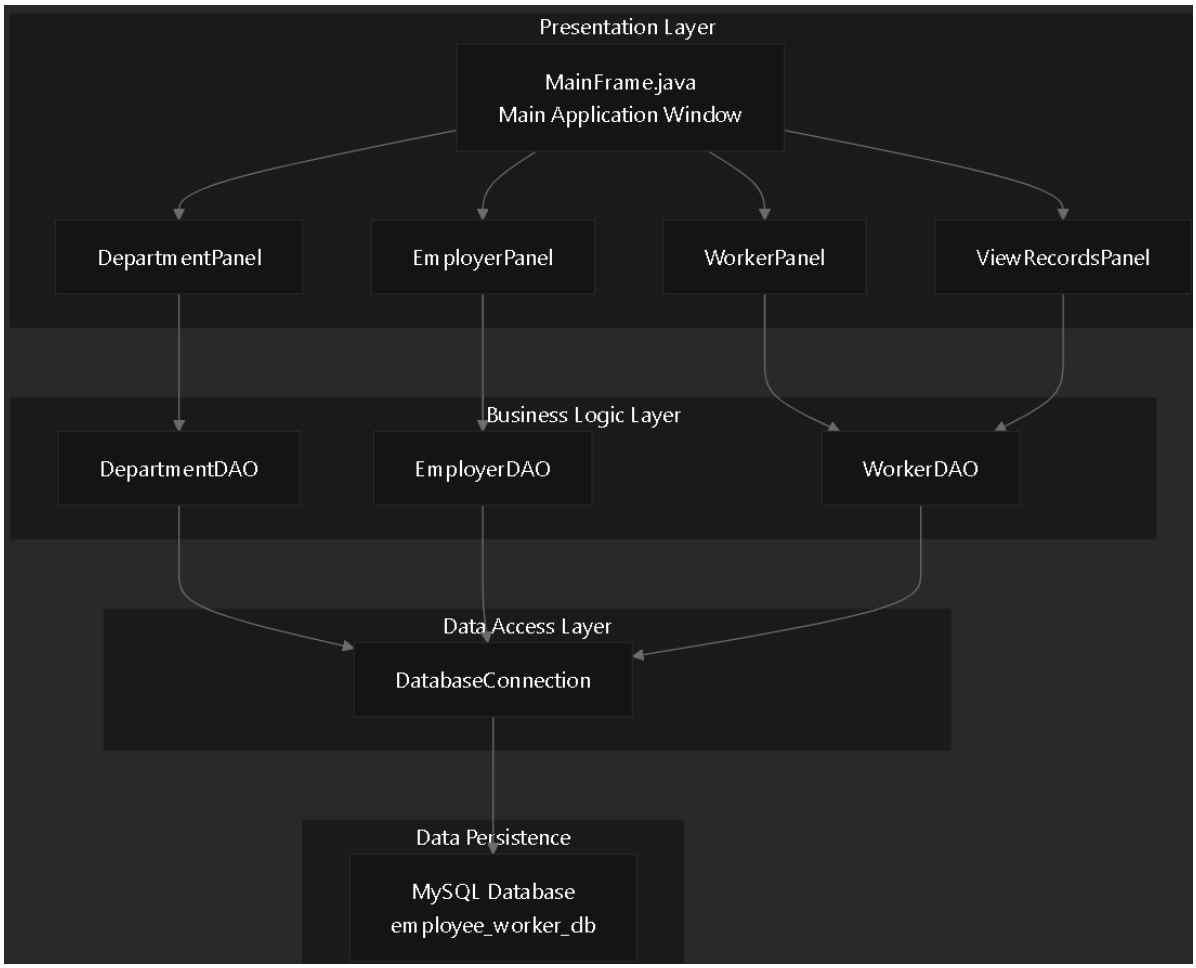


fig 1: System Architecture block diagram

Module Structure:

Entry Point: MainFrame.java - Main application window with tabbed interface

UI Components: Four specialized panels for different entity management operations

Data Access Objects: DAO classes implementing database operations

Database Connection: Centralized connection management for MySQL integration

4. DETAILED DESCRIPTION OF MODULES

Department Management Module

Requirements and Functionality:

- Create departments with unique names and descriptions
- Update existing department information
- Delete departments (with referential integrity checks)
- View all departments in tabular format

Java Techniques Used:

- Swings: JPanel, JTable, JButton for UI components
- Exception Handling: SQLException handling for database operations
- Packages:Organized under com.employeemanagement.ui and com.employeemat.daonagemen

Employer Registration Module

Requirements and Functionality:

- Register employers with personal and company information
- Assign employers to specific departments
- Enforce unique email constraints
- Prevent deletion of employers with associated workers

Java Techniques Used:

- Swings: Advanced form components with validation
- Exceptional Handling: Custom validation for business rules
- Interfaces: DAO pattern implementation for data access abstraction

Worker Registration Module

Requirements and Functionality:

- Register workers under specific employers
- Assign positions and hire dates
- Maintain department associations
- Complete CRUD operations with validation

Java Techniques Used:

- Swings: Complex form handling with date pickers
- Generics: Used in DAO layer for type-safe operations

- Exception Handling: Comprehensive error handling for database constraints

View Records Module

Requirements and Functionality:

- Display consolidated view of all workers with employer and department information
- Implement search functionality across multiple fields
- Real-time data refresh capabilities
- Export-ready data presentation

Java Techniques Used:

- Swings: JTable with custom TableModel ViewRecordsPanel.java:47-54
- Streams: Used for data filtering and searching operations
- AWT: Layout managers for responsive UI design

Database Connection Module

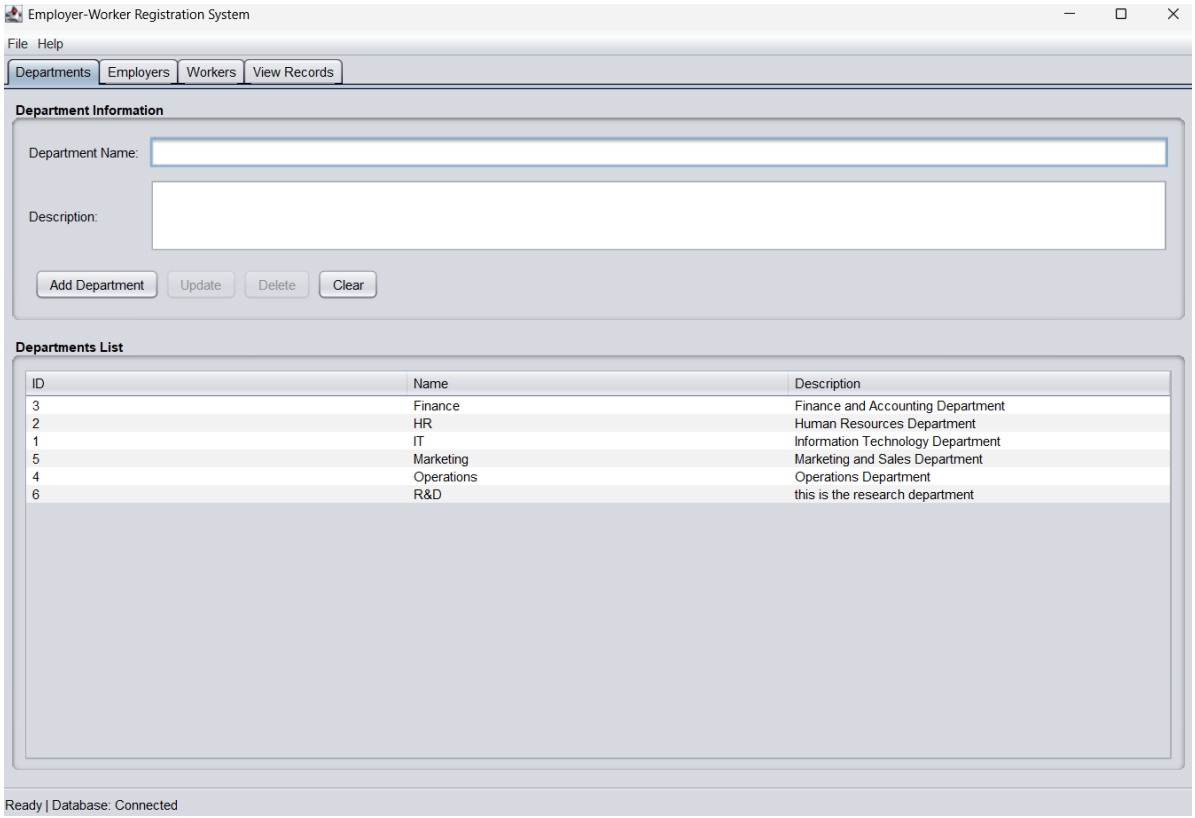
Requirements and Functionality:

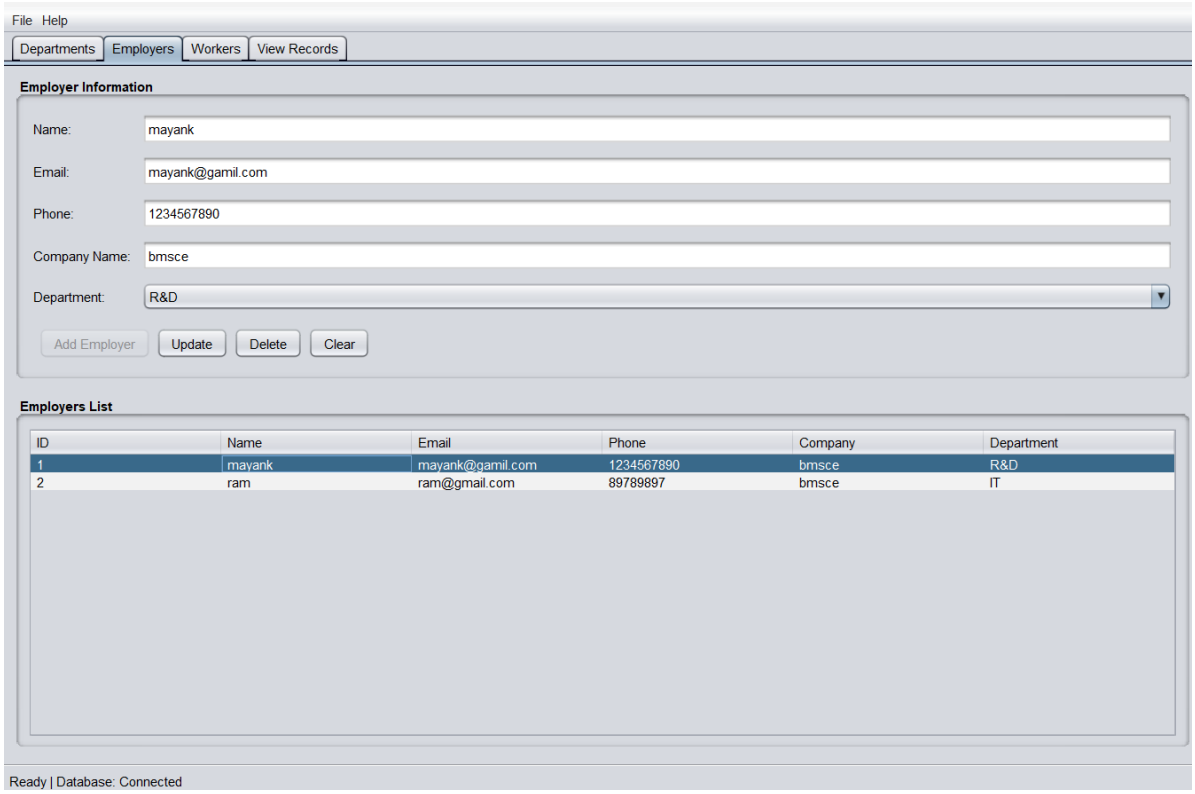
- Centralized JDBC connection management
- Connection pooling simulation
- Configuration management for database parameters

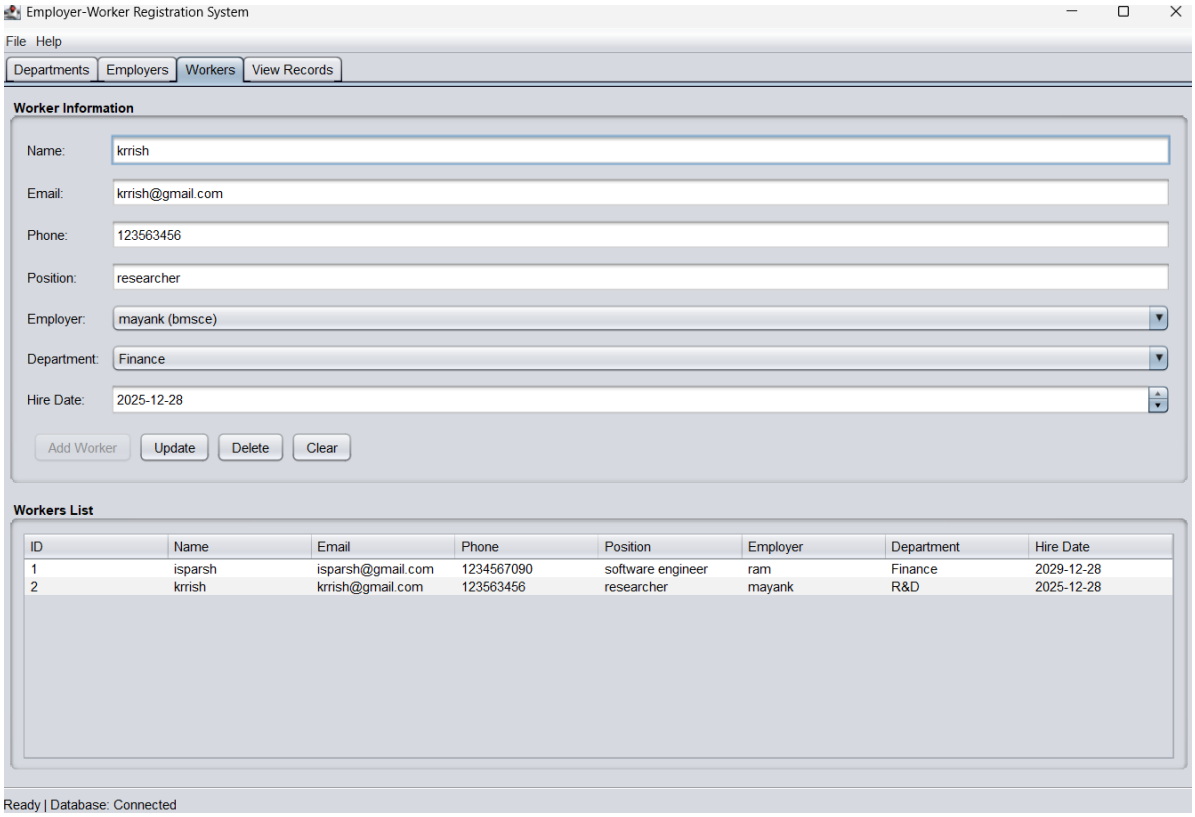
Java Techniques Used:

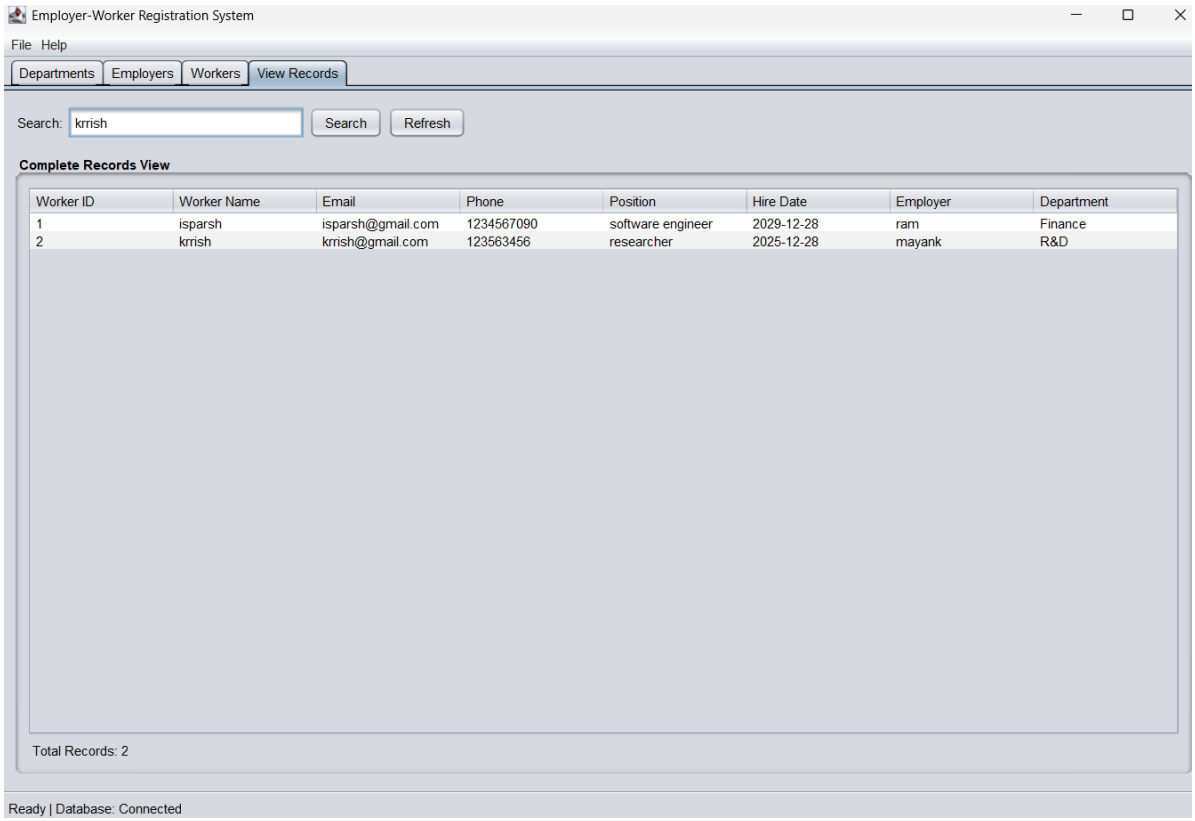
- Exception Handling: Robust SQLException management
- Interfaces: Connection factory pattern
- Packages: Proper separation of data access concerns

II. SCREENSHOTS






Employer-Worker Registration System
File Help
Departments Employers Workers View Records
Worker Information
Name: krrish
Email: krrish@gmail.com
Phone: 123563456
Position: researcher
Employer: mayank (bmsce)
Department: Finance
Hire Date: 2025-12-28
Add Worker Update Delete Clear
Workers List
ID Name Email Phone Position Employer Department Hire Date
1 isparsh isparsh@gmail.com 1234567090 software engineer ram Finance 2029-12-28
2 krrish krrish@gmail.com 123563456 researcher mayank R&D 2025-12-28
Ready | Database: Connected


Employer-Worker Registration System
File Help
Departments Employers Workers View Records
Search: krrish
Search Refresh
Complete Records View
Worker ID Worker Name Email Phone Position Hire Date Employer Department
1 isparsh isparsh@gmail.com 1234567090 software engineer 2029-12-28 ram Finance
2 krrish krrish@gmail.com 123563456 researcher 2025-12-28 mayank R&D
Total Records: 2
Ready | Database: Connected

III. NEW LEARNINGS FROM THE PROJECT

Technical Learnings:

- Three-Tier Architecture: Practical implementation of presentation, business, and data layers
- DAO Pattern: Understanding data access abstraction and its benefits in maintainability
- Swing Advanced Features: Custom table models, event handling, and layout management
- Database Integration: JDBC programming with connection management and SQL optimization
- Exception Handling: Comprehensive error handling strategies for desktop applications

Software Engineering Practices:

- Modular Design: Benefits of separating concerns into distinct modules
- Code Organization: Package structure and its impact on maintainability
- Validation Strategies: Both client-side and server-side validation implementation
- Referential Integrity: Database constraints and application-level validation

IV. FUTURE ENHANCEMENTS

Planned Improvements:

- Export Functionality: CSV/PDF export capabilities for reports and data backup
- Advanced Search: Enhanced filtering with multiple criteria and date ranges
- User Authentication: Role-based access control and user management system
- Reporting Dashboard: Analytics and visualization of organizational data
- Email Notifications: Automated alerts for registration and important events
- Backup/Restore: Database backup and restoration functionality
- Web Interface: Migration to web-based application using Spring Boot
- Mobile Support: Responsive design or dedicated mobile application

Technical Enhancements:

- Migration to modern UI frameworks (JavaFX)
- Implementation of connection pooling
- Addition of audit trails and logging
- Integration with external HR systems
- Performance optimization for large datasets