COMSATS UNIVERSITY ISLAMABAD

ABBOTTABAD CAMPUS

Final Project Documentation

Submitted By:

Habib Shah (FA23-BSE-059)

Ilyas (FA23-BSE-067)

Ashraf (FA23-BSE-065)

Esrar (FA23-BSE-048)

Hashir (FA23-BSE-043)

Submitted To:

Ma’am Mehwish Sabir

Title:

Employee Payroll Management System

Course:

Database Management System

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Employee Payroll Management System

1. Introduction

The **Employee Payroll Management System** is a database-driven application designed to manage employee records and payroll information efficiently.
This project focuses on designing and implementing a **relational database** that supports employee management, payroll generation, and secure data access.

The system uses **SQL** for database operations and is integrated with a **Java application using JDBC**. It ensures accurate salary calculations, proper data storage, and controlled access to sensitive information.

2. Problem Statement

Manual handling of employee and payroll records is time-consuming, error-prone, and insecure. Organizations require a centralized system to:

- Maintain employee records
- Generate payroll accurately
- Store historical payroll data
- Restrict access based on user roles

This project addresses these issues by providing a structured database solution.

3. Objectives

The main objectives of this project are:

- To design a relational database for employee payroll management
- To implement database tables with proper relationships
- To perform CRUD (Create, Read, Update, Delete) operations
- To manage payroll data efficiently
- To apply database security using authorization and privileges

4. Tools and Technologies

- **Database Language:** SQL
- **Database System:** MySQL / MariaDB
- **Backend Language:** Java
- **Connectivity:** JDBC
- **Development Tool:** NetBeans / MySQL Workbench

5. Database Design

- **Tables Used**

Employee Table

Stores employee information.

Attribute	Data Type	Description
employee_id	INT (PK)	Unique employee ID
name	VARCHAR	Employee name
email	VARCHAR	Employee email
phone	VARCHAR	Contact number
department	VARCHAR	Department name
designation	VARCHAR	Job title
basic_salary	DECIMAL	Base salary
password	VARCHAR	Login password

Payroll Table

Stores payroll details for employees.

Attribute	Data Type	Description
payroll_id	INT (PK)	Payroll record ID
employee_id	INT (FK)	Linked employee
month	VARCHAR	Payroll month
year	INT	Payroll year
bonus	DECIMAL	Bonus amount
deductions	DECIMAL	Deductions
net_salary	DECIMAL	Final salary
generated_date	DATE	Payroll generation date

6. Relationships

- One employee can have **multiple payroll records**
- Relationship type: **One-to-Many**
- Foreign Key: `Payroll.employee_id → Employee.employee_id`

7. SQL Scripts Used

7.1 DB and Table Creation.sql

- Creates database
- Creates Employee and Payroll tables

7.2 relation.sql

- Defines foreign key relationships

7.3 Main.sql

- Insert, update, delete employee records
- Generate payroll
- View payroll information
- Login verification queries

7.4 authorization.sql

- Creates database users (admin, employee)

7.5 GRANT AND REVOKE.sql

- Grants and revokes database privileges
- Ensures secure access

8. Security and Authorization

The system implements database-level security:

- **Admin users** have full privileges
- **Employee users** have limited read-only access

- Sensitive operations are restricted using **GRANT** and **REVOKE**

9. Advantages of the System

- Centralized employee and payroll data
- Reduced manual errors
- Secure access control
- Easy integration with Java application
- Scalable for future enhancements

10. Conclusion

The **Employee Payroll Management System** database successfully demonstrates the use of relational database concepts, SQL queries, and security mechanisms.
This project provides a strong foundation for understanding real-world database design and integration with backend applications.