EMPLOYEE MANAGEMENT SYSTEM

CS23333 OBJECT ORIENTED

PROGRAMMING USING JAVA and JAVA

Mini Project Report

Submitted by

HARISH S - 231001057

ADHITHYAN M - 231001007

BACHELOR OF
TECHNOLOGY
in
INFORMATION
TECHNOLOGY

RAJALAKSHMI ENGINEERING COLLEGE, THANDALAM

(An Autonomous Institution)

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RAJALAKSHMI ENGINEERING COLLEGE

BONA FIDE CERTIFICATE

Certified that this project report titled "EMPLOYEE MANAGEMENT SYSTEM " is the bona fide work of HARISH S(231001057) , ADHITHYAN M(231001007) who Carried out the project work und er

SIGNATURE

Dr.P.Valarmathie
HEAD OF THE DEPARTMENT
Information Technology
Rajalakshmi Engineering College,
Rajalakshmi Nagar, Thandalam,
Chennai 602105

SIGNATURE

Mrs.S.Usha
COURSE INCHARGE
Information Technology
Rajalakshmi Engineering College,
Rajalakshmi Nagar,Thandalam,
Chennai 602105

This project report is submitted for CS23333 OBJECT ORIENTED PROGRAMMING USING JAVA
, held on _____.

INTERNAL
EXAMINER

EXTERNAL
EXAMINER

ABSTRACT

The main objective of this project is to build an Employee management system that will store and retrieve records of Employees. The System is intended to accept process, generate Employee details. The System was developed using basic technologies such as MYSQL database and Java (JDBC, SWING, AWT).The system is free of errors and very efficient and less time consuming due to care taken to develop it. All the phases of Development cycle are employed and it is worthwhile to state that the system is user friendly and strong

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EMPLOYEE MANAGEMENT SYSTEM

1 INTRODUCTION:

Employee Management System is a Software which is helpful for the Authorities. In the current system all the activities are done manually. It is very time consuming and costly. Our Employee Management System deals with the various activities related to the Employees.

By using this software, we can get Name and Salary details of the Employees in a single window page

1.1 PURPOSE:

The objective of *Employee management system* is to allow the administrator of any organization to edit and find out the personal details of a Employee and allows them to keep up to date their profile. Overall, it will make Employee information management an easier job for the administration and the Employee of any organization.

1.2 SCOPE OF THE PROJECT:

The proposed system will with the administrator. The system works and fulfils all the functionalities as per the proposed system. It will provide reduced response time
against the queries made by different users. This project is based on Java (JDBC)
language with MYSQL database which manage the details of the Employee because
it is a tedious job for any organization. Employee Information system will store all the details of the Employees including their background information.

1.3 Software requirement Specification:

Introduction:

The Employee management system can handle all the details about a Employee. The details include Employee personal details, Salary details etc., the Employee management system is an automated version of manual Employee management system.

Document Purpose:

This SRS Document contains the complete software requirements for the Employee Management System and describes the design decisions, architectural design and the detailed design needed to implement the system. It provides the visibility in the design and provides information needed for software support.

Product Scope:

Employee Management System is developing for general purpose and used to replace old paper work system. SMS is to build to efficiently provide Employee information to school/college administration. It provides a mechanism to edit the Employee information form which makes the system flexible.

Definitions, Acronyms and Abbreviations:

EMS - Online Employee Information Management System
SRS - Software Requirements Specification

References and Acknowledgement:

[1] https://www.javatpoint.com/java-awt [2]

https://www.javatpoint.com/java-swing

Overall Description:

The Employee management system allows authorized members to access the records of academically registered Employees. It can be used in various educational institutes across the globe and simplifies working of institutes.

Product Perspective:

The proposed system shall be developed using client/server architecture and be compatible with Microsoft Windows Operating System. The front end of the system will be developed using Java AWT and SWING and backend will be developed using My SQL server.

Product Functionality:

a) Add Employee: to store a new Employee. b) View Employee: to view and update an existing Employee c) Delete Employee: to delete an existing Employee. d) Add Salary: to store a particular Employee Salary.

e) Update Salary: to view and update an existing Employee Salary.

User and Characteristics:

Qualification: At least matriculation and comfortable with English.

Experience: Should be well versed/informed about the registration process of the university.

Technical Experience: Elementary knowledge of computers.

Operating Environment:

Hardware requirements:

- Any Processor Over i3.
- Any version of Windows 8,10,11.
- Processor speed: 2.0 GHz
- RAM: 4GB
- Hard disk: 500GB

Software requirements:

- Database: MySQL
- Frontend: JAVA (SWING, AWT)
- Technology: JAVA (JDBC)

Constraints:

It will only accessed by the administrator. The delete operation is available only to the administrator. To reduce the complexity of the system, there is no check on delete operation. Hence, administrator should be very careful before deletion of any record and he/she will be responsible for data consistency.

Specific Requirements:

User Interface:

The EMS will have following user-friendly single page interface.

a) Add Employee: to store a new Employee. b) View Employee: to view and update an existing Employee c) Delete Employee: to delete an existing Employee. d) Add Salary: to store a particular Employee Salary. e) Update Salary: to view and update an existing Employee Salary

Hardware Interface:

a) Screen resolution of at least 640 x 480 or above.
b) Any version of Windows 8,10,11.

Software Interface:

a) MS-Windows Operating System b) Java AWT and SWING for designing front-end c) MS SQL Server for backend d) PLATFORM : JAVA LANGUAGE e) INTEGRATED DEVELOPMENT ENVIRONMENT(IDE): VSCODE

Functional Requirements:

Log in Module (LM):

User (admin) shall be able to load the Login Module. The LM shall support the user to log into the system. The login panel shall contain fields to contain a user name and a field for password. The password field shall be masked with symbols when the user types. It shall also contain a button labeled as Login. When the user clicks on Login button the username and password will be verified by database administrator and then only the user will able to use the system functions.

Registered Users Module (RUM):

After successful login, user shall be able to continue navigating through the Application and view Employee detailed information. After successful login, user (admin) shall be able to update and maintain their Employee profile, such as changing Salary and personal details.

Administrator Module (AM):

After successful login, system shall display administrative functions. Administrative functions shown shall be add and update. When administrator clicks on the add button, system shall display a section where administrator can add new Employee details, remove unused Employee details and many more. When administrator clicks on update button, system shall display a section where administrator can update Employee details which are currently stored in the database. When administrator adds, updates or delete and entry, the AM module will send the request to the Server Module which will do the necessary changes to the DB.

Server Module (SM):

SM shall be between the various modules and the DB. SM shall receive all requests and format the pages accordingly to be displayed. SM shall validate and execute all requests from the other modules

Non-functional Requirements:

Non-functional requirements may exist for the following attributes. Often these requirements must be achieved at a system wide level rather than at a unit level. State the requirements in the following sections in measurable terms (e.g., 95% of transaction shall be processed in less than a second, system downtime may not exceed 1 minute per day, etc.).

Performance:

The system and the server must be capable of handling the real-time error functionality occurs by the defined users. In addition, the system must be safety critical. All failures reported by the server side must be handled instantaneously to allow for user and system safety.

Reliability:

The system is safety critical. If it moves out of normal operation mode, the requirement to drop or down the server and fix it as soon as possible and open it again. This emergency behaviour shall not occur without reason.

Availability:

When in normal operating conditions, request by a user for system shall be handled within 1 second. Immediate feedback of the systems activities shall be communicated to the user.

Security:

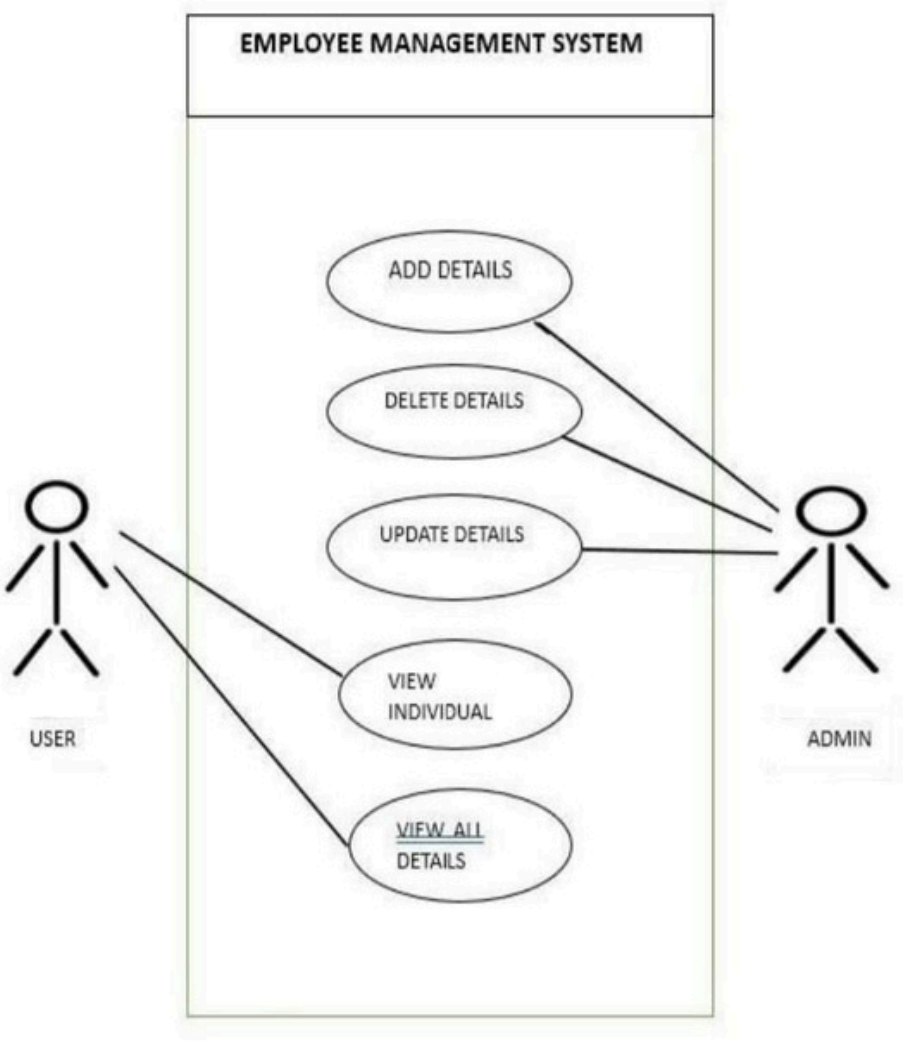
There shall be a strong security mechanism should be place in the server side of the system to keep unwanted users to hack or damage the system. However, all users of the system give and store the details of privacy related to personal information and many other.

Maintainability:

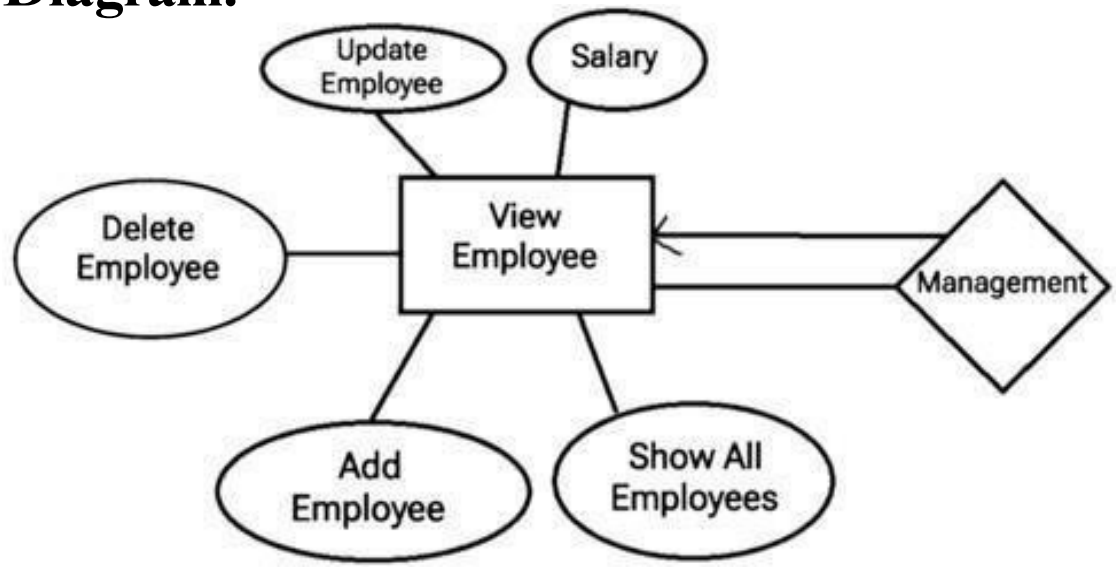
There shall be design documents describing maintenance of the software and database used to save the user details as well as the daily updated and modification done in system. There shall be an access on the control system by the admin to be maintained it properly at the front end as well as at back end

2 SYSTEM FLOW DIAGRAMS:

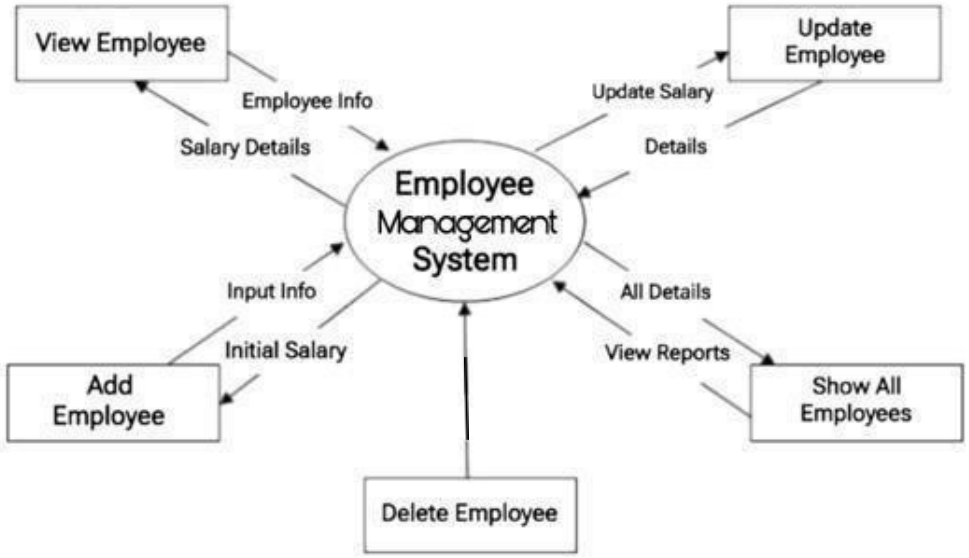
2.1 Use case Diagram:



2.2 ER Model Diagram:



2.3 Data Flow Diagram:



3. MODULE DESCRIPTION:

The different types of modules present in this project are: **Details:**

Employee id, Name, Salary 3.1 Add Employee: In this section admin can add Employee details

3.2 View Employee: In this section admin can view and update Employee details.

3.3 Delete Employee: In this section admin can delete Employees details.

3.4 Update Employee: In this section admin can update Employee Salary

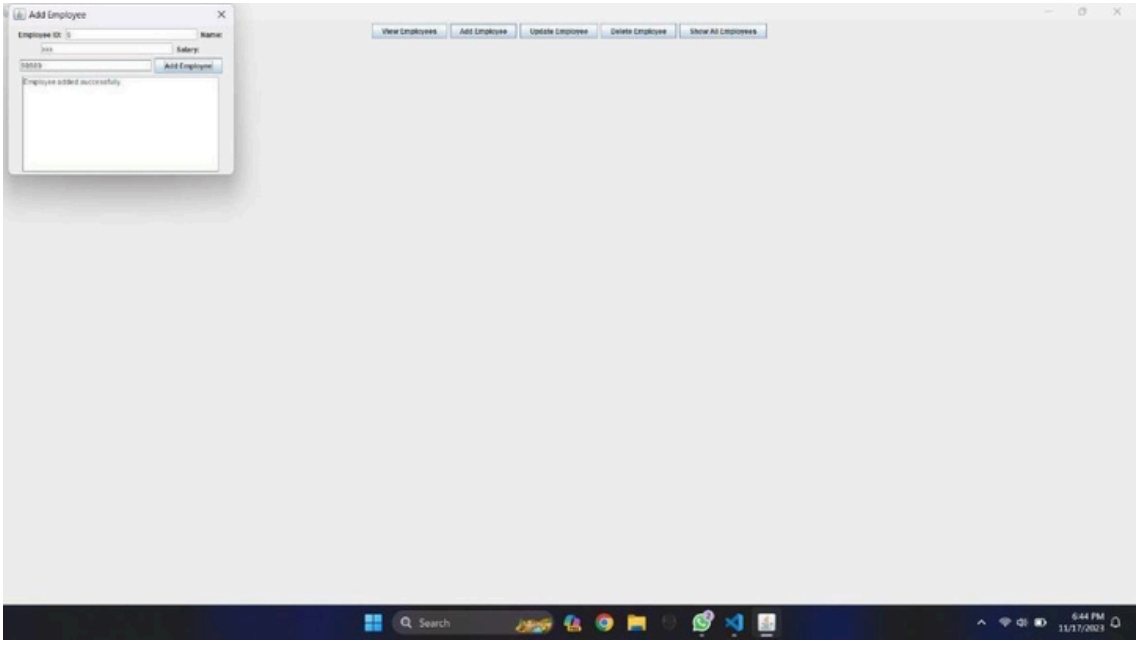
3.5 View Employee: In this section user can view details of individual Employee

3.6 Show all: In this section user view details of all the employees.

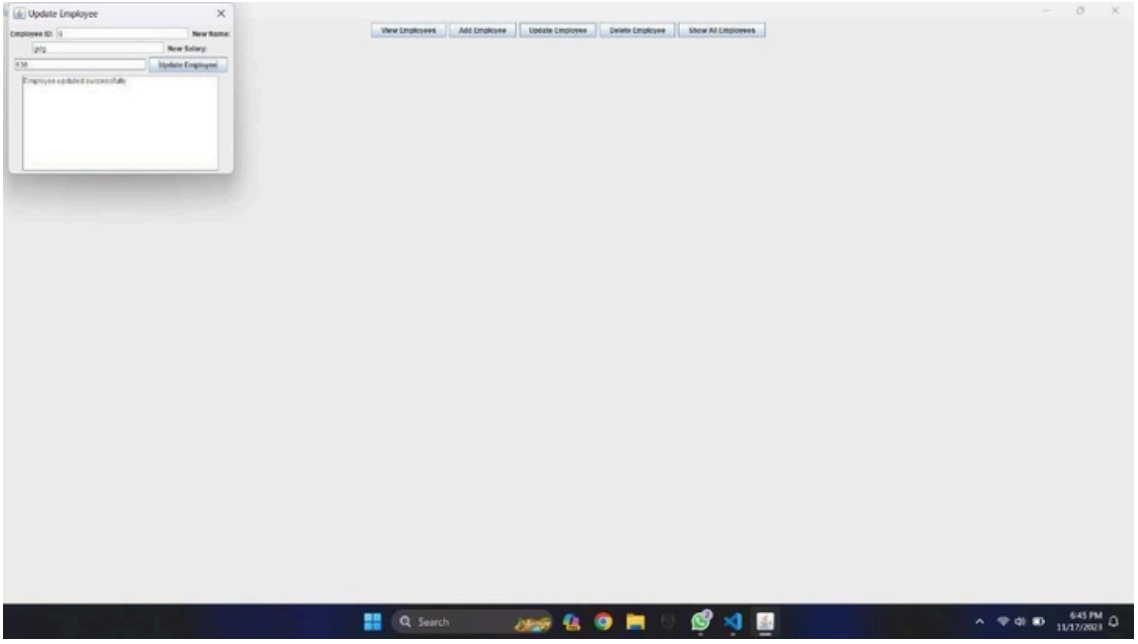
4 IMPLEMENTATION:

4.1 DESIGN

Homepage

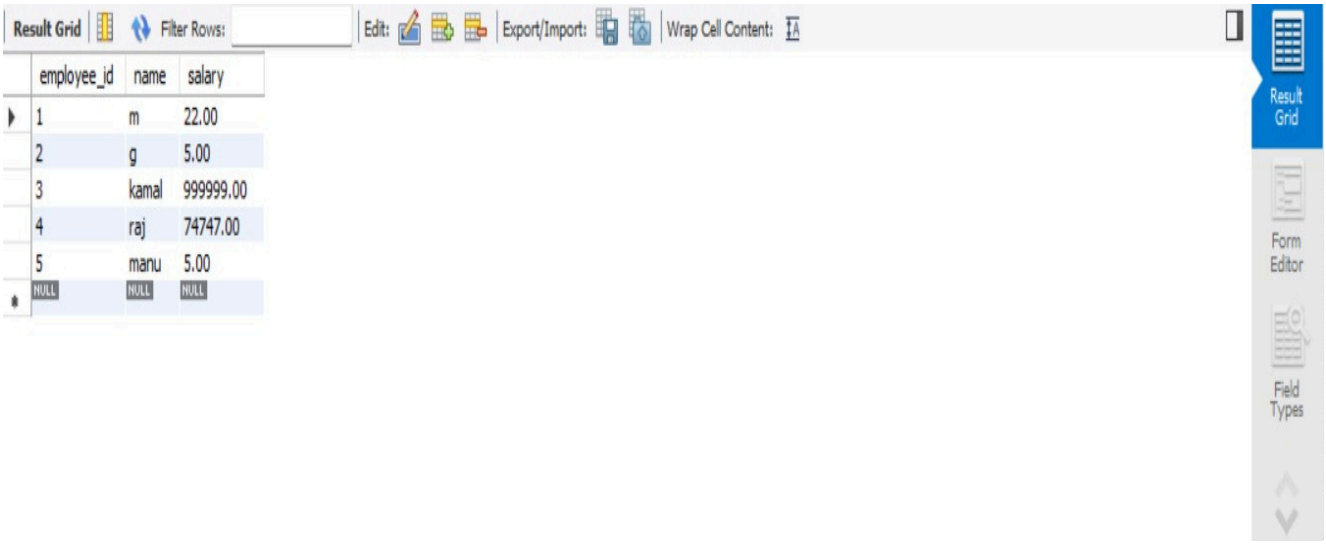


Adding Details



4.2 DATABASE DESIGN

Table



4.3 CODE:

```
import javax.swing.*; import java.awt.*; import java.awt.event.ActionEvent; import
java.awt.event.ActionListener; import java.sql.Connection; import
java.sql.DriverManager; import java.sql.PreparedStatement; import
java.sql.ResultSet; import java.sql.SQLException;

public class EmployeeManagementApp extends JFrame implements ActionListener

{

    private static final String JDBC_URL =
"jdbc:mysql://localhost:3306/employee_db";
private static final String USERNAME = "root";
private static final String PASSWORD = "root";
    private JButton viewButton, addButton, updateButton, deleteButton,

    allEmpButton;
public EmployeeManagementApp() {
    setTitle("Employee Management");
    setSize(400, 200);
    setDefaultCloseOperation(EXIT_ON_CLOSE);
    setLayout(new FlowLayout());

    viewButton = new JButton("View Employees");
    addButton = new JButton("Add Employee");
    updateButton = new JButton("Update Employee");
    deleteButton = new JButton("Delete Employee");
    allEmpButton = new JButton("Show All

    Employees");

    viewButton.addActionListener(this);
    addButton.addActionListener(this);
    updateButton.addActionListener(this);
    deleteButton.addActionListener(this);
    allEmpButton.addActionListener(this);

    add(viewButton);
    add(addButton);
    add(updateButton);
    add(deleteButton);
    add(allEmpButton);
```

```
} public void actionPerformed(ActionEvent e)

{
    if (e.getSource() == viewButton) {
        openViewEmployeesWindow();
    } else if (e.getSource() == addButton) {
        openAddEmployeeWindow();
    } else if (e.getSource() == updateButton) {
        openUpdateEmployeeWindow()
    } else if (e.getSource() == deleteButton) {
        openDeleteEmployeeWindow();
    } else if (e.getSource() == allEmpButton) {
        openShowAllEmployeesWindow();
    }
}

private void openViewEmployeesWindow() {
    JDialog viewDialog = new JDialog(this, "View Employees", true);
    viewDialog.setSize(600, 400);
    viewDialog.setLayout(new FlowLayout());

    JComboBox<String searchCriteriaComboBox = new JComboBox<>(new
String[]{"Employee ID", "Name", "Salary"});
    JTextField searchText = new JTextField(20);
    JButton searchButton = new JButton("Search");
    JTextArea resultTextArea = new JTextArea(10, 50);
    resultTextArea.setEditable(false);
    searchButton.addActionListener(new ActionListener()

    {
        @Override
        public void actionPerformed(ActionEvent e) {
            try (Connection connection = DriverManager.getConnection(JDBC_URL,
USERNAME, PASSWORD))
{
                String criteria = (String) searchCriteriaComboBox.getSelectedItem();
                String searchTerm = searchText.getText();

                String query;
                if (criteria.equals("Employee ID")) {
                    query = "SELECT * FROM employees WHERE employee_id =
                } else if (criteria.equals("Name")) {
                    query = "SELECT * FROM employees WHERE name =
                } else if (criteria.equals("Salary")) {
                    try {
                        query = "SELECT * FROM employees WHERE salary =
```

```
                } catch (NumberFormatException ex)
value.");       {  resultTextArea.setText("Invalid salary value. Please enter a valid numeric
                   return;

                }
             } else {
                resultTextArea.setText("Invalid search criteria.");
                return;
             }

             try (PreparedStatement statement = connection.prepareStatement(query))
                if (criteria.equals("Employee ID") || criteria.equals("Name")) {
             {     statement.setString(1, searchTerm);
                }
                try (ResultSet resultSet = statement.executeQuery()) {

                   resultTextArea.setText(""); // Clear the text area
                   while (resultSet.next()) {
                      int id = resultSet.getInt("employee_id");
                      String name = resultSet.getString("name");
                      double salary = resultSet.getDouble("salary");
                      resultTextArea.append("Employee ID: " + id + ", Name: " + name +

Salary: " + salary +„"\n");
                   }    ’
                }
             } catch (SQLException ex) {
                ex.printStackTrace();
             }
          } catch (SQLException ex) {
             ex.printStackTrace();
          }
       }
    });
    viewDialog.add(searchCriteriaComboBox);
    viewDialog.add(searchText);
    viewDialog.add(searchButton);
    viewDialog.add(new JScrollPane(resultTextArea));
    viewDialog.setVisible(true);

  }
  private void openAddEmployeeWindow() {
```

```
JDialog addDialog = new JDialog(this, "Add Employee", true);
addDialog.setSize(400, 300); addDialog.setLayout(new
FlowLayout());

JTextField idField = new JTextField(20); // Add employee ID field
JTextField nameField = new JTextField(20);
JTextField salaryField = new JTextField(20);
JButton addButton = new JButton("Add Employee");
JTextArea resultTextArea = new JTextArea(10, 30);
resultTextArea.setEditable(false);
addButton.addActionListener(new ActionListener() {

  @Override
  public void actionPerformed(ActionEvent e) {
    try (Connection connection = DriverManager.getConnection(JDBC_URL,
USERNAME, PASSWORD))
      int id = Integer.parseInt(idField.getText()); // Get employee ID from the input
{       field
      String name = nameField.getText();
      double salary = Double.parseDouble(salaryField.getText());
      String insertQuery = "INSERT INTO employees (employee_id, name, salary)
VALUES (?, ?, ?)";
      try (PreparedStatemen insertStatement =
connection.prepareStatement(insertQuery))
{       t
        insertStatement.setInt(1, id); // Set the employee ID in the

        query
        insertStatement.setString(2, name);
        insertStatement.setDouble(3, salary);
        int rowsAffected = insertStatement.executeUpdate();
        if (rowsAffected > 0) {
          resultTextArea.setText("Employee added successfully.");
        } else {
          resultTextArea.setText("Failed to add the
          employee.");
        }
      } catch (SQLException ex) {
        ex.printStackTrace();
      }
    } catch (SQLException ex) {
      ex.printStackTrace();
    }
  }
});

addDialog.add(new JLabel("Employee ID: ")); // Label for employee

ID
addDialog.add(idField); // Input field for employee ID
```

```
        addDialog.add(new JLabel("Name: "));
        addDialog.add(nameField); addDialog.add(new
        JLabel("Salary: ")); addDialog.add(salaryField);
        addDialog.add(addButton); addDialog.add(new
        JScrollPane(resultTextArea));

        addDialog.setVisible(true);


    }
    private void openUpdateEmployeeWindow()

    { JDialog updateDialog = new JDialog(this, "Update Employee",
        true);
        updateDialog.setSize(400, 300);
        updateDialog.setLayout(new FlowLayout());

        JTextField idField = new JTextField(20);

        JTextField nameField = new JTextField(20);
        JTextField salaryField = new JTextField(20);
        JButton updateButton = new JButton("Update Employee");
        JTextArea resultTextArea = new JTextArea(10, 30);
        resultTextArea.setEditable(false);

        updateButton.addActionListener(new ActionListener() {

            @Override
            public void actionPerformed(ActionEvent e) {
                try (Connection connection = DriverManager.getConnection(JDBC_URL,
USERNAME, PASSWORD))
{
                    int id = Integer.parseInt(idField.getText());
                    String newName = nameField.getText();
                    double newSalary = Double.parseDouble(salaryField.getText());

                    String updateQuery = "UPDATE employees SET name = ?, salary = ?
WHERE employee_id = ?";
                    try (PreparedStatement updateStatement =
connection.prepareStatement(updateQuery))
{
                        updateStatement.setString(1, newName);
                        updateStatement.setDouble(2, newSalary);
                        updateStatement.setInt(3, id);
                        int rowsAffected =
                        updateStatement.executeUpdate();
                        if (rowsAffected > 0) {
                            resultTextArea.setText("Employee updated successfully.");
                        } else {
                            resultTextArea.setText("Failed to update the
                            employee.");
                        }
```

```
                } catch (SQLException ex) {
                    ex.printStackTrace();
                }
            } catch (SQLException ex) {
                ex.printStackTrace();
            }
        }
    });

    updateDialog.add(new JLabel("Employee ID: "));
    updateDialog.add(idField);
    updateDialog.add(new JLabel("New Name: "));
    updateDialog.add(nameField);
    updateDialog.add(new JLabel("New Salary: "));
    updateDialog.add(salaryField);
    updateDialog.add(updateButton);
    updateDialog.add(new JScrollPane(resultTextArea));

    updateDialog.setVisible(true);

}
private void openDeleteEmployeeWindow() {

    JDialog deleteDialog = new JDialog(this, "Delete Employee", true);
    deleteDialog.setSize(400, 150);
    deleteDialog.setLayout(new FlowLayout());

    JTextField idField = new JTextField(20);

    JButton deleteButton = new JButton("Delete Employee");
    JTextArea resultTextArea = new JTextArea(4, 30);
    resultTextArea.setEditable(false);

    deleteButton.addActionListener(new ActionListener() {

        @Override
        public void actionPerformed(ActionEvent e) {
            try (Connection connection = DriverManager.getConnection(JDBC_URL,
USERNAME, PASSWORD))
                int id = Integer.parseInt(idField.getText());
{
                String deleteQuery = "DELETE FROM employees WHERE employee_id =

                try (PreparedStatement deleteStatement =
?";
{
connection.prepareStatement(deleteQuery))
                    deleteStatement.setInt(1, id);
{
                    int rowsAffected =

                    deleteStatement.executeUpdate();
                    if (rowsAffected > 0) {
```

```
                    resultTextArea.setText("Employee deleted successfully.");
                } else {
                    resultTextArea.setText("Failed to delete the employee.");
                }
            } catch (SQLException ex) {
                ex.printStackTrace();
            }
        } catch (SQLException ex) {
            ex.printStackTrace();
        }
    }
});

deleteDialog.add(new JLabel("Employee ID: "));
deleteDialog.add(idField);
deleteDialog.add(deleteButton);
deleteDialog.add(new JScrollPane(resultTextArea));
deleteDialog.setVisible(true);

}
private void openShowAllEmployeesWindow() {

JDialog allEmpDialog = new JDialog(this, "All Employees", true);
allEmpDialog.setSize(600, 400);
allEmpDialog.setLayout(new FlowLayout());
JTextArea resultTextArea = new JTextArea(10, 50);
resultTextArea.setEditable(false);
try (Connection connection = DriverManager.getConnection(JDBC_URL,

PASSWORD);
    String query = "SELECT * FROM employees";
    try (PreparedStatement statement = connection.prepareStatement(query))
    {
        try (ResultSet resultSet = statement.executeQuery()) {
            resultTextArea.setText(""); // Clear the text area
            while (resultSet.next()) {
                int id = resultSet.getInt("employee_id");
                String name = resultSet.getString("name");
                double salary = resultSet.getDouble("salary");
                resultTextArea.append("Employee ID: " + id + ", Name: " + name + ", Salary:

+ salary + "\n");
            }
        }
```

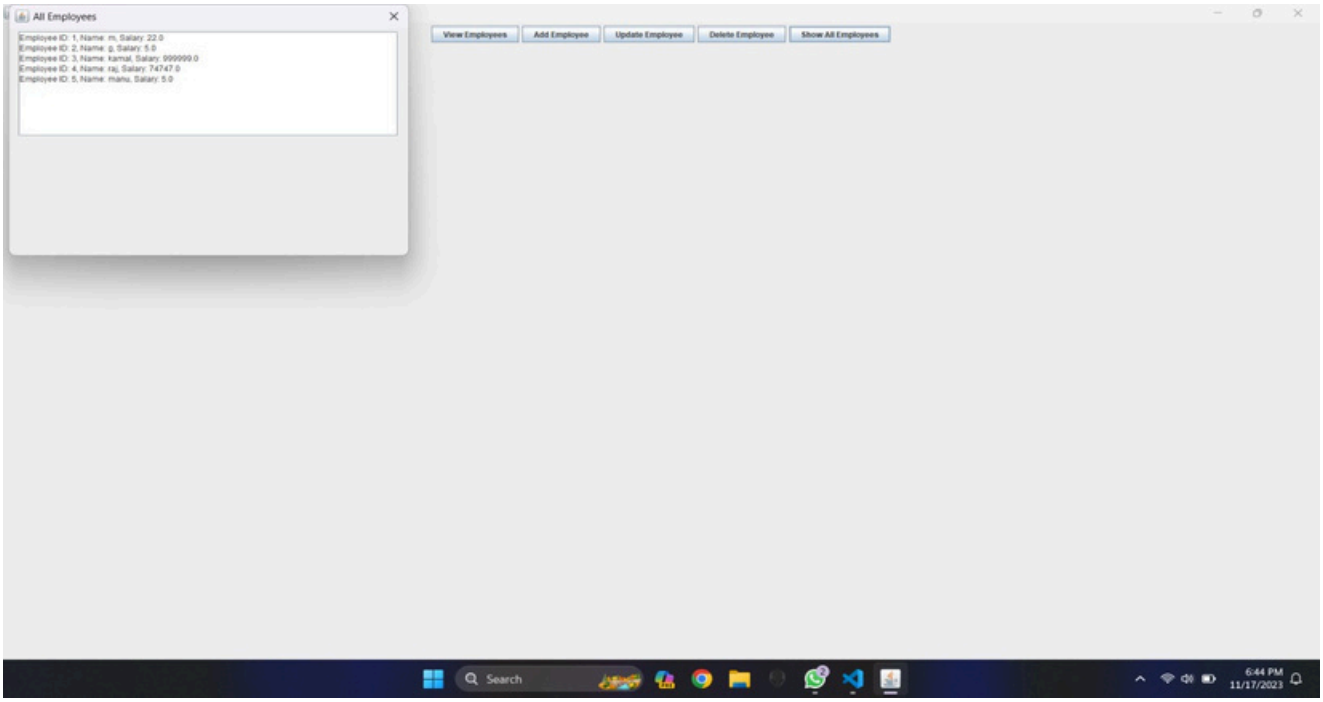
```
            } catch (SQLException ex) {
                ex.printStackTrace();
            }
        } catch (SQLException ex) {
            ex.printStackTrace();
        }

        allEmpDialog.add(new

        JScrollPane(resultTextArea));
    }
        allEmpDialog.setVisible(true);
    public static void main(String[] args) {
    SwingUtilities.invokeLater(() -> {
            EmployeeManagementApp app = new
        });EmployeeManagementApp();
            app.setVisible(true);
    }
}
```

TABLE CREATION:

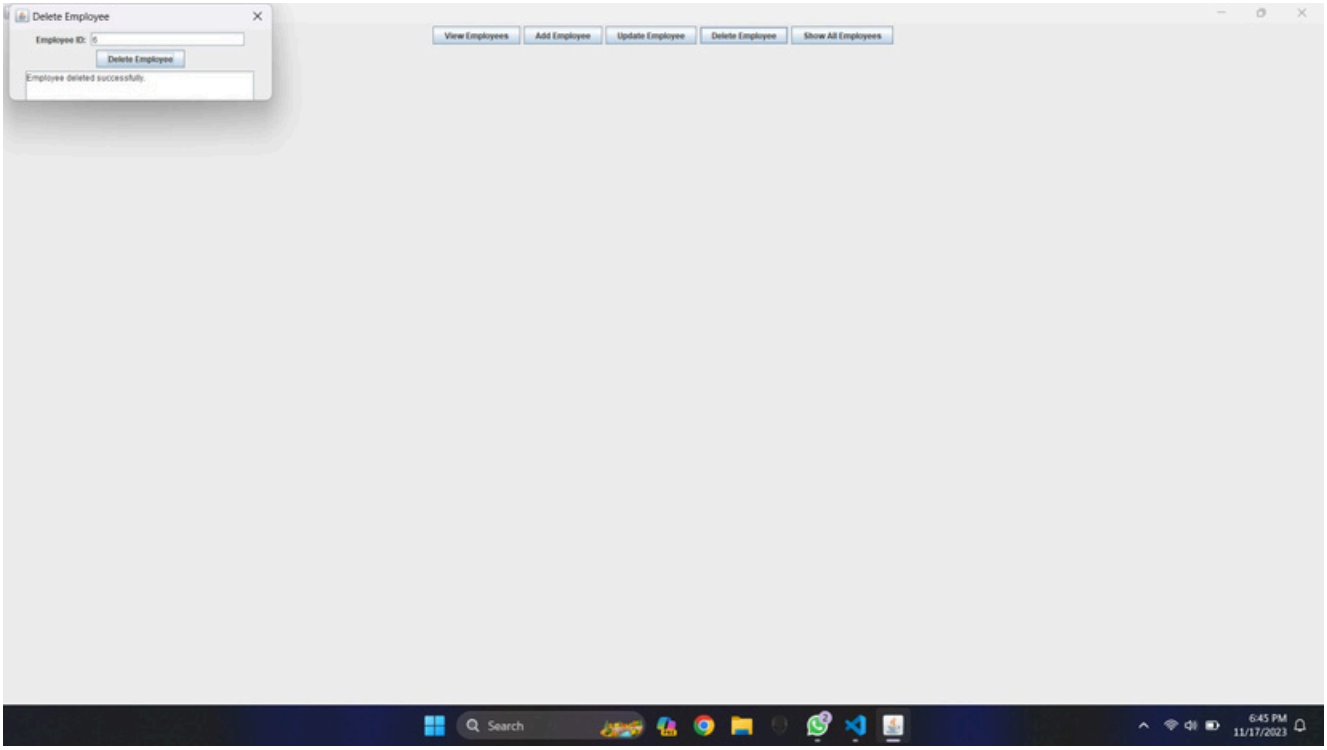
```
import java.sql.Connection;
import
java.sql.DriverManager;
import java.sql.SQLException;
import java.sql.Statement;
public class CreateTable {

    public static void main(String[] args) { // Database connection
    parameters String JDBC_URL =
    "jdbc:mysql://localhost:3306/employee_db"; String USERNAME =
    "root";
```

```
        String PASSWORD =
        "root";

        try (Connection connection =
            DriverManager.getConnection(JDBC_URL,
USERNAME,
PASSWORD);
             Statement statement = connection.createStatement())
        {
            // SQL query to create the "employees" table
            String createTableSQL = "CREATE TABLE employees ("
            +    "employee_id INT AUTO_INCREMENT PRIMARY KEY,"
                 +
                 "name VARCHAR(255) NOT NULL," +
                 "salary DECIMAL(10, 2)" +
                  //"CREATE SEQUENCE employee_id_seq START WITH 1
                ")"; INCREMENT

            // Execute the SQL query to create the table
            statement.execute(createTableSQL);
            System.out.println("Table 'employees' created successfully.");
        } catch (SQLException e) {
            e.printStackTrace();
            System.err.println("Error creating the table: " +
            e.getMessage());
        }
    }
}
```

Viewing details



Deleting details



5 CONCLUSION:

The project titled as Employee Management System was deeply studied and analyzed to design the code and implement. It was done under the guidance of the experienced project guide. All the current requirements and possibilities have been taken care during the project time.

6 REFERENCE LINKS:

[1] https://www.javatpoint.com/java-awt

[2] https://www.javatpoint.com/java-swing