EMPLOYEE MANAGEMENT SYSTEM USING JAVA AND MYSQL

Akash yadav
(Student, Digvijay Nath P.G. College, Gorakhpur)
Guided by: Dr Kaushal Pratap Singh

Abstract

The research paper is a detailed study and development of a Java and MySQL Employee Management System. The system will automate the manual processes of managing employee records including maintenance of employee records, updating of employee records and managing employee records effectively.

The conventional employee management systems tend to be inefficient, time consuming and likely to be human errors. The proposed system will offer a user-friendly interface and will guarantee effective data management through database management techniques. It assists organizations in storing, retrieving and managing employee information in an organized and systematic way.

The graphical user interface is designed using Java Swing and MySQL is the backend database. JDBC is employed in the communication between the database and the application. The system also enforces validation techniques and data constraints on the database to ensure data integrity and accuracy.

This study illustrates how software application can greatly enhance operational efficiency in an organization through lessening manual labor, decreasing errors, and easily accessing employee information.

Introduction

In the contemporary business world, companies have to deal with much information concerning employees in an efficient and accurate way. Personal

information, departmental information, salary information, contact numbers, job descriptions etc. are some of the essential employee records that are required to ensure the smooth running of any company. These records are hard to manage manually using registers or paper files and require time. It tends to cause mistakes, wastage of data, loss of documents, and wastage of time in accessing valuable data.

As computer technology has developed, management systems that are based on software have proven to be an efficient solution to managing organizational data. One such application is an Employee Management System which assists organizations to store, manage, update and retrieve employee information online. It saves time, enhances productivity, and accuracy and minimizes manual work.

The Employee Management System suggested is written in the Java programming language and MySQL as the database. Java is a secure and platform-independent environment and MySQL is a stable place of data storage and management. The graphical user interface has been developed in Java Swing and this renders the system user-friendly and easy to use. Java and MySQL are connected via JDBC (Java Database Connectivity).

This system offers simple CRUD functions that consist of Create, Read, update, and Delete employee records. Users are able to add new employee information, access the available records, make any changes when necessary and delete records that are not in use. Data integrity and data security are also ensured through proper validation techniques and safe database queries.

The objective of the project is to show how computer based systems can ease the management of employee data in organisations. It further gives emphasis on the relevance of database systems and programming in addressing administrative issues in the real world.

Objectives

The primary goal of the Employee Management System is to provide an efficient and easy to use application that will simplify the running of employee records with simple operations like Add, View, Update and Delete.

Among the main goals is to have a convenient means of entering employee data into the system. The system enables the users to add new employee records like employee name, ID, department, email and contact details with proper validation to maintain accuracy.

The other significant aim is to allow the display of employee information in a systematic way. All the records are presented in a tabular format, which is simple to access and analyze employee data by the users.

The system is also designed to enable current employee records to be updated. Users are able to change the information anytime they need like updating the department, contact number or any other information relevant to the database to ensure that the database is current.

The system will also have the capability of deleting unwanted or idle employee records. This assists in having a clean and organized database.

The other goal is to provide data accuracy and security by adopting validation methods and applying secure database functions, such as PreparedStatement to avoid mistakes and unauthorized access.

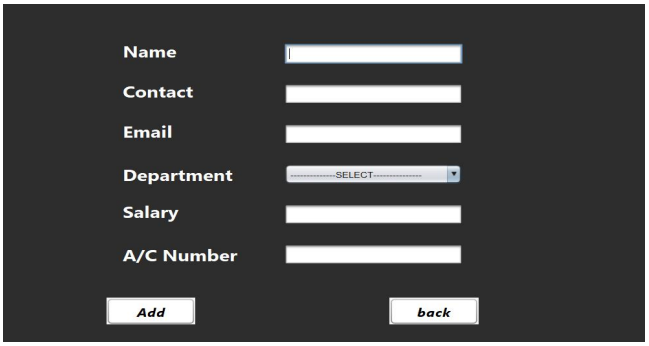
The system is also aimed at minimizing manual tasks and time wastage by automating employee records management system with the use of a graphical user interface built on Java Swing.

In general, the aim of the given system is to develop a stable, effective, and convenient-to-use application that will enhance the work with employee data by applying CRUD (Create, Read, Update, Delete) operations in a proper way.

Working

The working of the Employee Management System is based on four main operations: Add Data, View Data, Update Data, and Delete Data. Combined, these operations aid in managing the whole employee database effectively and also makes sure that the system runs smoothly.

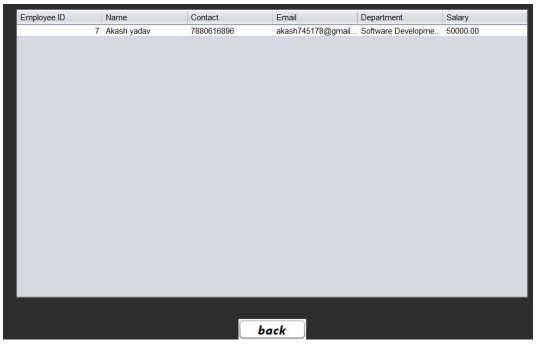
1. Add Data



The Add Data operation is applied to add new records of employees to the system. The user will be required to fill an online form with necessary information including the employee name, employee ID, department, designation, salary, email and contact number. The system also conducts verification prior to storing the data to ensure that all the fields have been filled properly and they are in the required format.

After successful validation, the data is added to the MySQL database through JDBC connection. Insert queries are run with the help of PreparedStatement in a secure way. The operation is significant in keeping the records of employees updated and the system can be expanded with the addition of new employees.

2. View Data



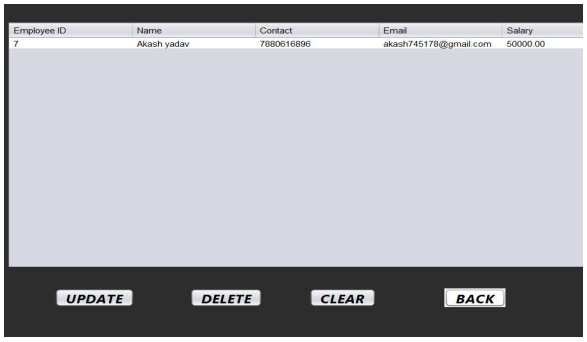
View Data operation allows the user to view and read all the records of the employees in

the database. The system uses SQL SELECT queries to retrieve data and displays it in a table format as a table using JTable. This tabular view helps users easily understand and analyze employee information.

Such details as employee ID, name, department, designation, salary, email and contact number can be viewed by the users. This attribute is necessary in tracking and controlling information of employees effectively. It enhances transparency and ease of data handling.

3. Update Data

The Update Data operation enables the user to update the existing employee records in the database. This comes in handy when one requires to rectify mistakes or modify data like alteration of department, pay and contact numbers of an employee.



The user picks a record, changes the necessary fields and posts the amendments. The system then updates the database with SQL UPDATE queries via PreparedStatement. This will make the data accurate, consistent and up to date over time.

4. Delete Data

The Delete Data action is employed to delete unnecessary or dormant records of employees in the system. The user picks a record which they want to delete and the system deletes it out of the database by running SQL DELETE statements.

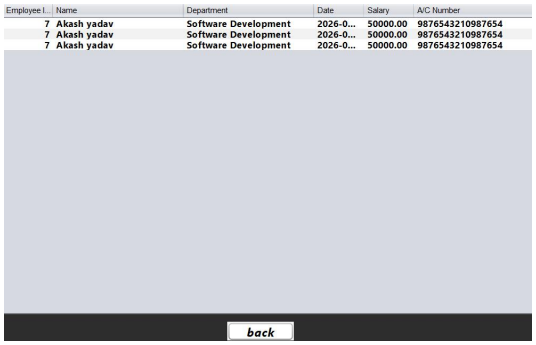
This operation helps in maintaining a clean and organized database by eliminating unnecessary data. Confirmation messages can also be used to prevent deletion by accident by ensuring that proper confirmation messages are used before any deletion is done.

Pay

The Pay module handles employee salary records, including payment details and dates. It allows quick and accurate salary processing using employee ID for easy data access.

Payment List

The Payment List module displays all employee payment records in a structured format. It helps in tracking salary history, department details, and payment dates efficiently.



Future Scope

The latest capabilities that may be incorporated into the system are biometric or ID-based attendance tracking to capture the presence of the employees fast and precisely. It can also be created as a mobile application to enable employees and administrators to access the application remotely. The integration of cloud database can be done, where the data of the employees can be stored online and can be accessed anywhere.

Other functionalities like payroll management, calculation of salary, generation of reports and advanced search filters can also be added. An access control system can be implemented based on role-based logins to differentiate between the employees and the admins to ensure enhanced security and control.

The system can also be connected to the HR management tools and provide real-time notifications of updates (attendance, salary credit, or important announcements). These will improve the system and enable it to be more efficient, scalable and easier to use.

Conclusion

Employee Management System has managed to showcase the way software can be utilized to automate manual processes in an organization. The system offers a good means of managing employee records and at the same time provide accuracy and consistency of data.

Java Swing and MySQL used make the system reliable, efficient, and easy to maintain. The key concepts that were learned in this project include database connectivity, graphical user interface (GUI) design and event handling.

In general, the system is an effective way of handling information about employees in the organizations and can be improved with the addition of more sophisticated features like payroll planning, time tracking, and report creation. It emphasises the role of technology in enhancing efficiency in operations and minimising manual labour.

References

[1] Pratik Udayshankar Singh, Hemant Singh Fartyal, Khan Abdul Ahad Zubair, Prof. Akshata Laddha, “Employee Management System ”, IRJET, Vol-06, 5 may 2019.

[2] Sadhana J. Kamatkar , Amarapali Tayade , Amelec Viloria , and Ana Hernández-Chacín, “Application of Classification Technique of Data Mining for Employee Management System”, Springer International Publishing AG, part of Springer Nature 2018.

[3] Albert C., Hyde J. and M. Shafritz (1977). Introduction To Tomorrow's System For Managing Human Resources", Public Personnel Management. Academic Journal, Vol. 6 Issue 2, pp.70 – 77.

[4] Griffin, A. & Hoyle, M. (2009). Managing Personnel Records in an Electronic Environment. International Records Management Trust, London, UK, pp. 1-2.

[5] Khera, S. N. and Gulati, K. (2012). Human Resources Information System and its Impact on Human Resource Planning: A Perceptual Analysis of Information Technologies Companies. IOSR Journal of Business and Management, 6: 06-13.

[7] A.S.SyedNavaz, A.S.Syed Faiz, C.Prabhadevi, V.Sangeetha, S.Gopalakrishnan, "Human Resource Management System", IOSR Journal of Computer Engineering (IOSR-JCE), Volume 8, Issue 4 (Jan. – Feb. 2013) Page 62-71.

[8] Sahajik Ahmed, Xing Ke, "Human Resource Management, Employees career development impact on organizational performance", ICSSSM, 2016.

[9] Kancho Kanchev, "Employee Management System", ISSN, ISRN, VXU/MSI, Dec-06.

[10] Ashis Data.Md. Rahu Islam, Amit Kumar Mukharjee, Debadatta Kadar, "Cloud Computing: A solution to Human Resource Management System", Publisher IEEE, Radar, ICRCC 2012 International Conference, Feb-2013.

[11] de Waal, A. A., & Heijden, B. van der. The Role of Performance Management in Creating and Maintaining a High-Performance Organization. Journal of Organization Design, 2015;4(1).

[12] Schraeder, M., & Jordan, M. Managing Performance: A practical perspective on employee performance. The Journal for Quality and Participation, 2011:4-10.

[13] Ian Sommerville, "Software Engineering", 9th Edition, Addison-Wesley, 2011

[14] Gary Dessler, *Human Resource Management*, 13th Edition, Pearson Education, 2013.

[15] David A. DeCenzo and Stephen P. Robbins, *Personnel/Human Resource Management*, Prentice Hall, 2010.

[16] Raymond A. Noe, John R. Hollenbeck, Barry Gerhart, and Patrick M. Wright, *Human Resource Management: Gaining a Competitive Advantage*, McGraw-Hill, 2012.