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Employee management system

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EMPLOYEE MANAGEMENT SYSTEM

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EXECUTIVE SUMMARY

Employee Management System project is a web application developed on Java technology, Spring framework and Hibernate. The web application provides the institutions like colleges or university a systematic tool and comprehensive solution to maintain record of all the students, faculty members, and other staff of the institute and vary them accordingly whenever necessary. It is based on the principle of CRUD – Create, Read, Update and Delete the records as per admin's input to the web application.. The data fed inside the web application can be accessed only after proper authentication using username and password of the administrator.

PROBLEM STATEMENT

To develop a Spring Hibernate ORM that runs on Apache Tomcat Server. The web application should be dynamic. The web application should be a Employee Management System that takes displays employees information only to employer. The web application should be developed in such a manner that administrator should be able to perform CRUD application on the data that is added by the user. The data that is added in the front end on the server should be stored in the backend server in the database. For each new session the data (or any changes on existing data) of the previous session should be reflected in the front end.

DESCRIPTION

This Employee Management System Project application stores all the employee's information in a database. It is an application developed in Java GUI technology and database used is H2. It contains employee information like employee id, first name, surname, and age. It is an easy to use application and has a user-friendly interface. It is totally built at the administrative end which means that only the admin has access rights to change or modify any records. So this makes it safe and reliable application to use. The main aim of developing this application was to reduce the errors that occur in the manual system. One can search the details easily by just entering employee id. In earlier systems, there was

not such a facility to do so. All the details are stored in an H2 database. It is easy to update any employee details. All the employee records are integrated and so this makes it user-friendly and easy to use application. Employee Management System Project in Java is Java project developed using java GUI or java swings and this comes under java projects with source code. This is simple employee management system project in java for academic project work.

FINDINGS

HTML is the most widely used technology to create websites. Although every web browser supports HTML, but it can only create static and plain pages. Hence HTML cannot be used for creating dynamic web application. The need for high rendering web application is increasing day-by-day. This requirement cannot be fulfilled by the existing traditional technologies like HTML. To overcome the issue, Java Technology was used to create a dynamic CRUD application. Java Technology gives the developer powerful and efficient web development tools like Java Servlet Page, Spring framework and Hibernate Database connection to develop dynamic web applications which can be used to eliminate human work that is involved in creating, updating and deleting records.

The project incorporated Spring framework which provides modularity while developing a web project unlike other existing technology where developers are required to code in a single module. Spring provides Model View Control (MVC) Architecture that's support Enterprise application development. The biggest benefit of Spring over other technology is it's versatility to get integrated with Hibernate and other Java frameworks resulting in a powerful platform on which a developer can code and develop front end, back end and establish the connectivity with database using driver files like JDBC. Spring is a modular framework and it comes with may modules such as Spring MVC, Spring ORM, Spring JDBC etc. which can be used as per application requirement in future. Spring is an emerging technology that will continue to dominate the web development field in future as well because of the edge it provides over others.

Due to diversity and complexity of web-based application it's difficult to develop the applications in object-oriented manner. Hence we opt for MVC architecture.

IMPLEMENTATION

1. Software used:

Operating system	Windows, MacOs, Linux
IDE	Eclipse 2019-12 on JDK 1.8
Front end	Java Servlet Page (JSP), CSS
Backend	H2
Server	Apache Tomcat v 9.0
Web Browser	Google Chrome / Internet Explorer / Mozilla Firefox

2. Hardware used:

RAM	Minimum 256MB required
Processor	P4, double core, i3 and other
Hard Disk	Minimum 40GB

The coding was done in Eclipse IDE (Java EE module) in order to design and implement the project. Eclipse provides powerful functionalities to create dynamic web projects. The project was divided into three components – Views, Controllers and Database connection. The views were created using JSP (Java Servlet Page), HTML and CSS. Each page was created separately and then linked to each other using Controllers. These interfaces were designed to provide the 'view' in the front end.
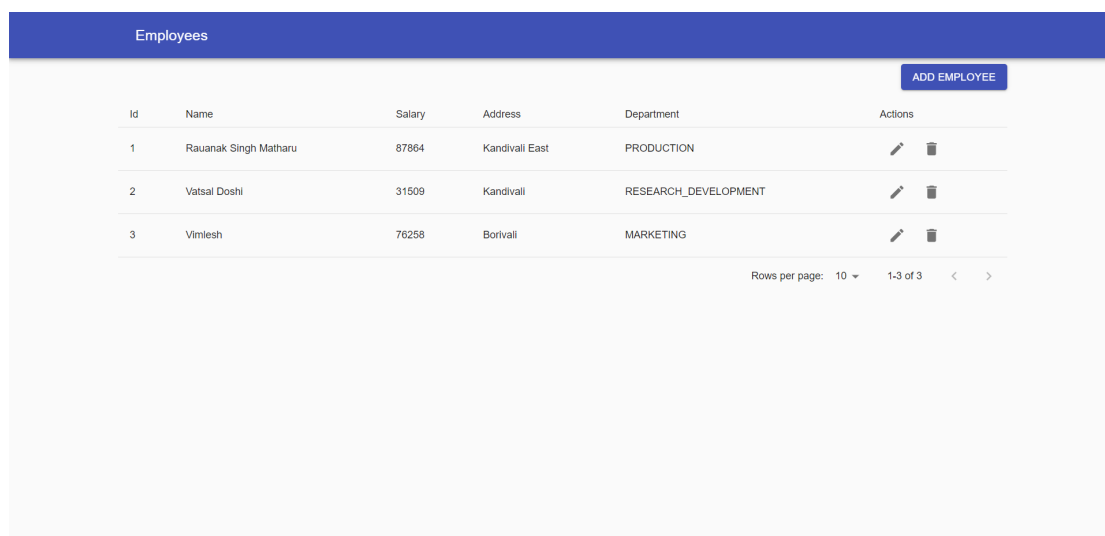
The web application uses Java classes to turn the static JSP, HTML pages into dynamic web application. These classes are called Controllers. In these controllers sessions were stored by using POST method. These Java classes provided the method to design flow of process and data in our web application. For example, AuthController which was created for Login pages takes the data that user enters in front end, verifies the username and password and then fetches the data from backend H2 database and then redirects the user to the dashboard. They are an integral component of MVC architecture on which the project has been

designed.

The backend of Employee Management System is based on H2 database that runs on Xampp server. With the help of JDBC driver and Hibernate Database Connection method, the front end of web application is linked with the backend. This connection ensures that whatever changes the administrator makes in the front end is stored i.e. created, updated and deleted in the database. It's because of the database connection the administrator can view the data that was stored in previous session whenever a new login session starts. The application is able to fetch the data of previous session as well as provide functionality to store the new data. JDBC and hibernate connection are powerful tools to access and link database with front end.

DISCUSSION

This project is aimed at developing an Online Employee Management System that is of important to any employer. The system is an Internet based application that can be accessed only by the employer. This system is being developed for employer to maintain and facilitate easy access to information. Only the employer can add or make changes in the system.
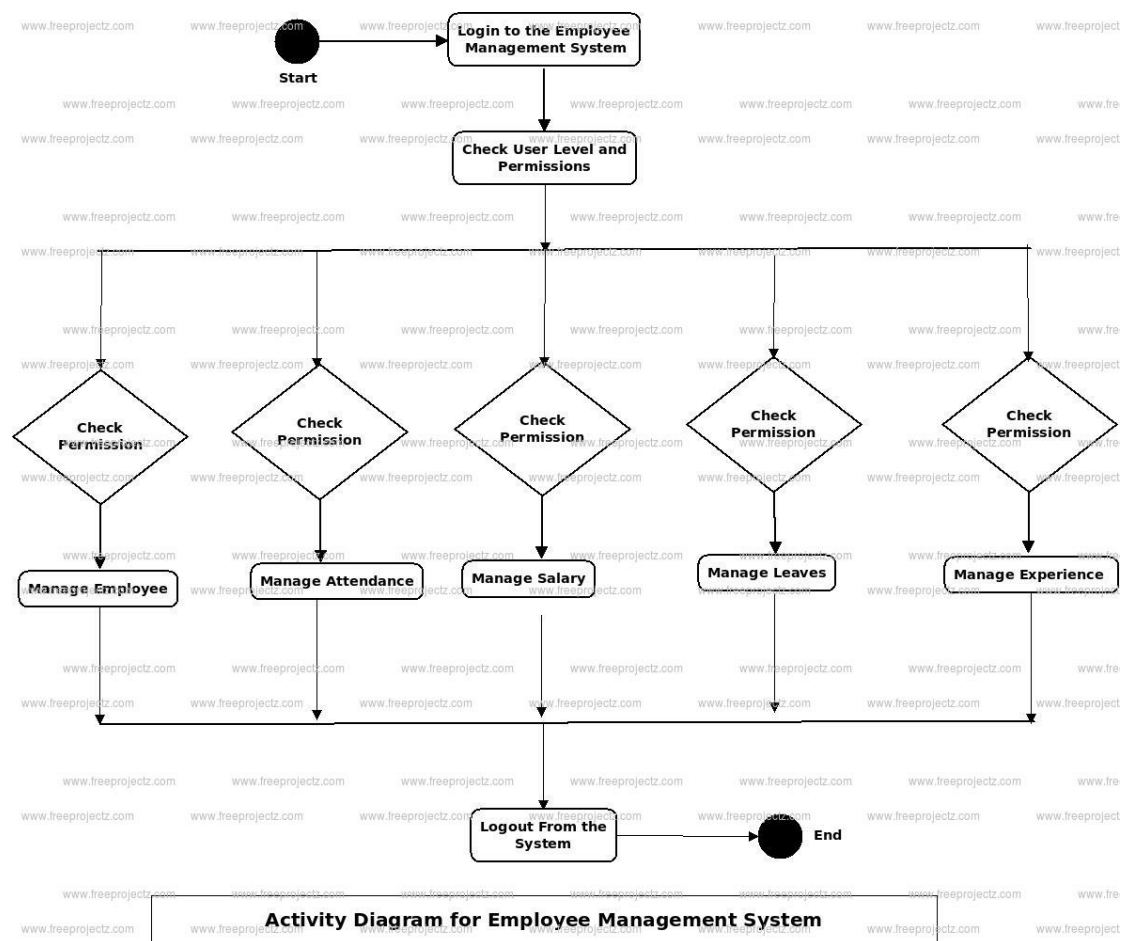

Fig. 1: Dashboard

Actions contains method to perform CRUD operations on the database. It shows employee list, provides method to add a new record, edit the existing record and delete it.

Activity Diagram for Employee Management System

INPUT STUDY

Nahar Wildan in his paper titled - Dynamic View Rendering wrote that rendering in HTML is one of the most common problems in web development world but it gets complicated and inefficient when web page to be developed is dynamic, especially when the

data that rendered get bigger and more complex. Spring framework, a MVC schema of Java is one of the most powerful front-end frameworks that can deals with large data with fast dynamic rendering.

Khawas Chunnu & Shah Pritam explained the need and importance of an efficient database their paper titled Database in Android App Development, a study for International Journal of Computer Applications. They concluded that web application has become more and more reliant upon large amount of database.

CONCLUSION

This project was successfully implemented with all the features mentioned in system requirements specification. Awareness and right information about any employee is essential for any employer. So this serves the right purpose in achieving the desired requirements of both the community. The Employee Management System was implemented on lombok architecture. The Model layer was based on H2 that was connected using JDBC and Hibernate to the front end which contained Views designed using JSP and CSS. The Controller has servlets stored in it and used HTTP Session Request and POST method.

The dynamic web application was tested on Apache Tomcat server . The web application was able to authenticate the login information, grant access to dashboard and gave the administrator method to perform CRUD operation on the database.

REFERENCES

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