Industrial Internship Report on

”Human Resource Management System”

Prepared by

[Mahima Shandilya]

Executive Summary
This report provides details of the Industrial Internship provided by upskill Campus and The IoT Academy in collaboration with Industrial Partner UniConverge Technologies Pvt Ltd (UCT). This internship was focused on a project/problem statement provided by UCT. We had to finish the project including the report in 6 weeks’ time. My project was Human Resource Management System This internship gave me a very good opportunity to get exposure to Industrial problems and design/implement solution for that. It was an overall great experience to have this internship.

TABLE OF CONTENTS

1 Preface

My Internship was on core JAVA. I have developed a Human Resource Management System.

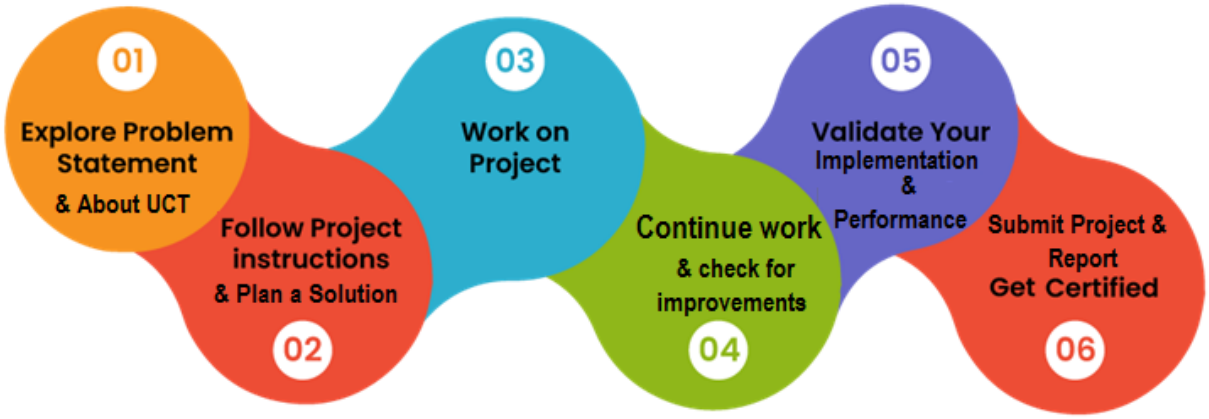
This Internship helped me to learn new java skills and gave me a platform to implement all my skills.

This is an opportunity to upgrade my skills for future job purpose.

My project was Human Resource Management System to add, view, update, delete and leave management of employee.

I got the opportunity from UCT to work in corporate environment and develop an efficiently working project.

The Internship was well planned with learning from basic to advance and implementing all skills together.



My overall experience was Great and I would like to work with UCT again in future.

I would like to thank my guide for helping me in troubleshooting and executing the project efficiently , also my team members for collaborating with me.

My message to my juniors to must join this internship and complete with full dedication.

2 Introduction

2.1 About UniConverge Technologies Pvt Ltd

A company established in 2013 and working in Digital Transformation domain and providing Industrial solutions with prime focus on sustainability and RoI.

For developing its products and solutions it is leveraging various **Cutting Edge Technologies e.g. Internet of Things (IoT), Cyber Security, Cloud computing (AWS, Azure), Machine Learning, Communication Technologies (4G/5G/LoRaWAN), Java Full Stack, Python, Front end** etc.

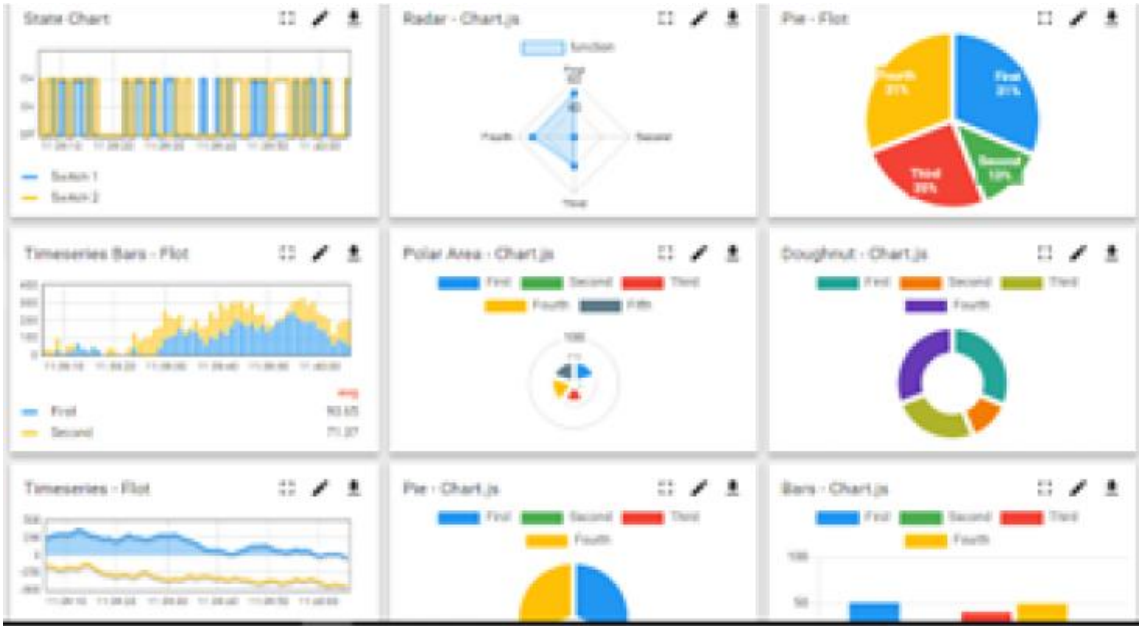
i. UCT IoT Platform (UCT Insight)

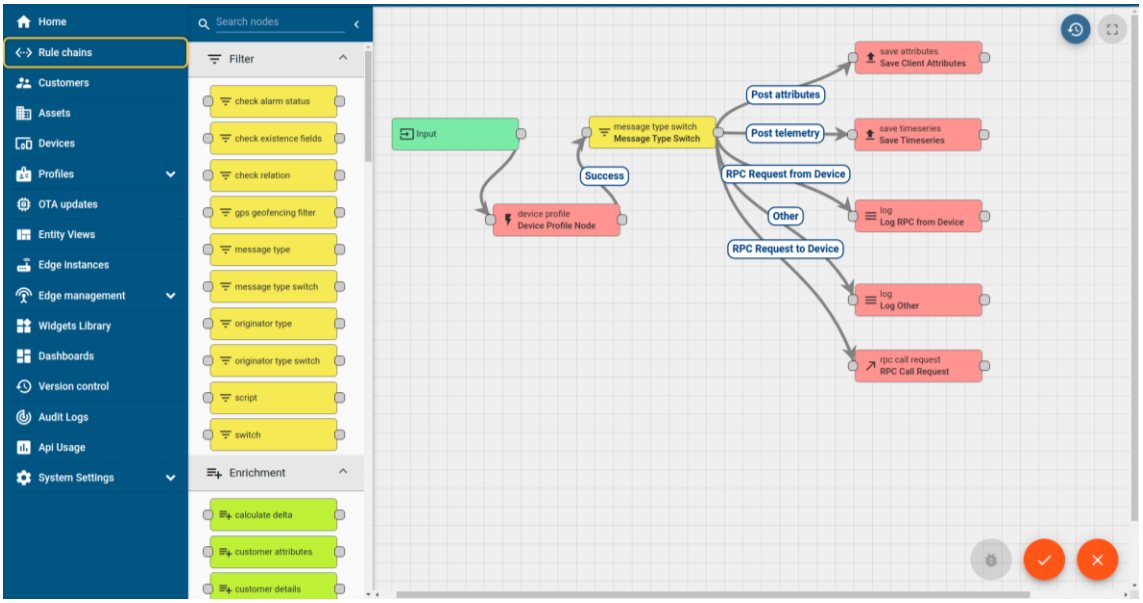
UCT Insight is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable "insight" for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- It enables device connectivity via industry standard IoT protocols - MQTT, CoAP, HTTP, Modbus TCP, OPC UA
- It supports both cloud and on-premises deployments.

It has features to

- Build Your own dashboard
- Analytics and Reporting
- Alert and Notification
- Integration with third party application(Power BI, SAP, ERP)
- Rule Engine





ii. Smart Factory Platform (FACTORY WATCH)

Factory watch is a platform for smart factory needs.

It provides Users/ Factory

- with a scalable solution for their Production and asset monitoring
- OEE and predictive maintenance solution scaling up to digital twin for your assets.
- to unleased the true potential of the data that their machines are generating and helps to identify the KPIs and also improve them.
- A modular architecture that allows users to choose the service that they what to start and then can scale to more complex solutions as per their demands.

Its unique SaaS model helps users to save time, cost and money.

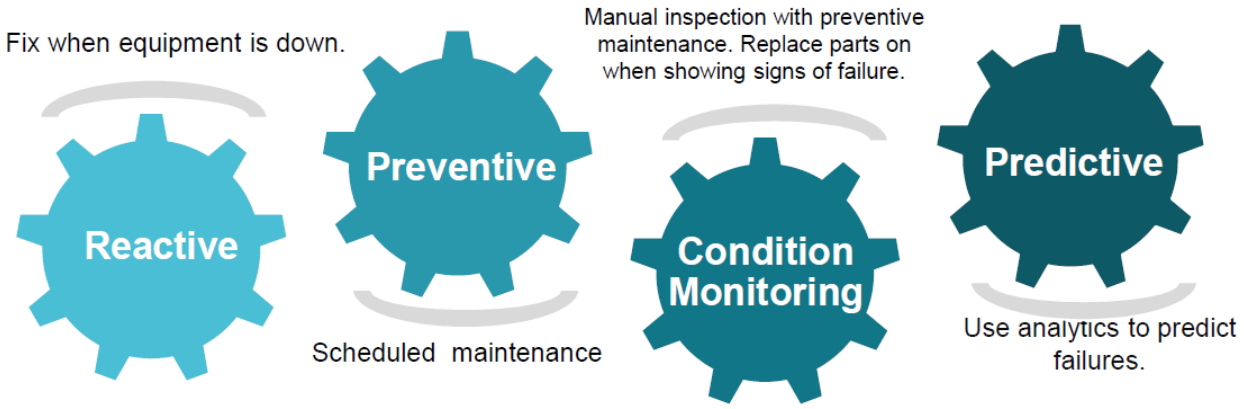
Machine	Operator	Work Order ID	Job ID	Job Performance	Job Progress		Output		Rejection	Time (mins)				Job Status	End Customer
					Start Time	End Time	Planned	Actual		Setup	Pred	Downtime	Idle		
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i

iii. LoRaWAN based Solution

UCT is one of the early adopters of LoRAWAN technology and providing solution in Agritech, Smart cities, Industrial Monitoring, Smart Street Light, Smart Water/ Gas/ Electricity metering solutions etc.

iv. Predictive Maintenance

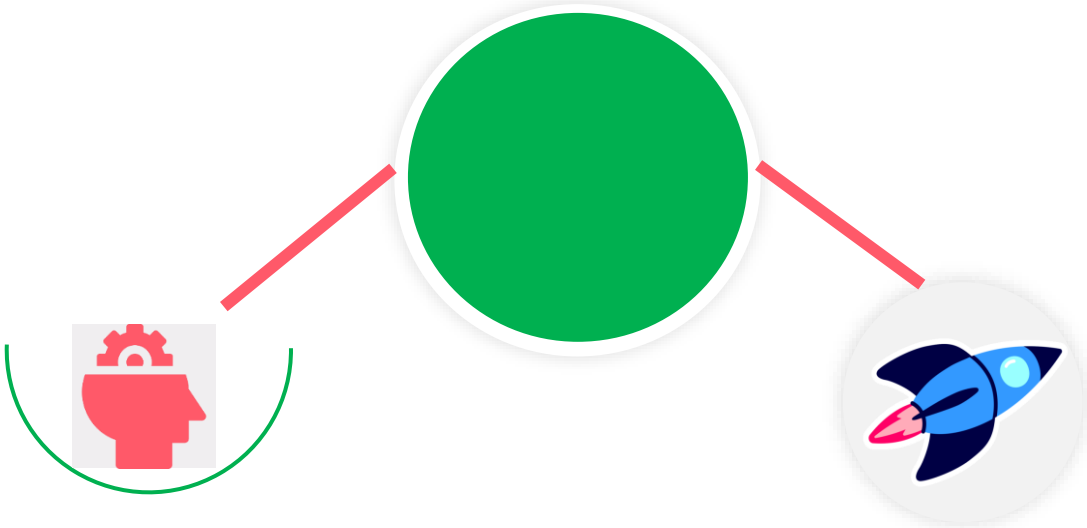
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



2.2 About upskill Campus (USC)

Upskill Campus along with The IoT Academy and in association with Uniconverge technologies has facilitated the smooth execution of the complete internship process.

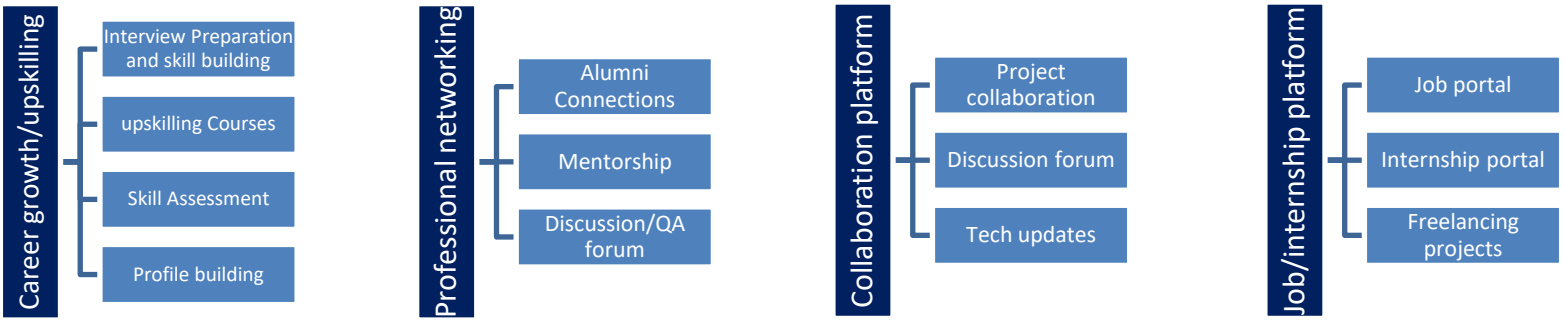
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



Seeing need of upskilling in self paced manner along-with additional support services e.g. Internship, projects, interaction with Industry experts, Career growth Services

UpSkill Campus aiming to upskill 1 million learners in next 5 year

https://www.upskillcampus.com/



2.3 Objectives of this Internship program

The objective for this internship program was to

- ☛ get practical experience of working in the industry.
- ☛ to solve real world problems.
- ☛ to have improved job prospects.
- ☛ to have Improved understanding of our field and its applications.
- ☛ to have Personal growth like better communication and problem solving.

2.4 Reference

[1] UCT Recorded videos

[2] Introduction to programming using JAVA by David J. Eck

[3] Live sessions by upskill campus

2.5 Glossary

Terms	Acronym
API	Application Programming Interface
Compiler	A program used to translate source code into the code executed by a computer
Downcast	**A** process of changing the data type from *Object* to the particular type,
DOM	Document Object Model
Extends	***A*** keyword used to define the inheritance of classes or interfaces:

3 Problem Statement

In the assigned problem statement

Human Resource Management System –

The Human Resource Management System is a software application designed to streamline and automate the processes related to managing employee information within an organization. The system aims to improve efficiency, reduce manual errors, and provide a centralized platform for HR personnel to handle various tasks.

Objectives:

Employee Information Management:

Maintain a centralized database of employee information, including personal details, contact information, and job-related data.

Allow for easy updating and retrieval of employee records.

Attendance Tracking:

Implement a mechanism to record and track employee attendance.

Generate reports to analyze attendance patterns and trends.

Leave Management:

Enable employees to apply for leave through the system.

Provide a workflow for leave approval by supervisors or HR personnel.

Technologies: The system will be developed using Core Java, leveraging object-oriented principles for code organization and design. Database connectivity can be achieved using JDBC for seamless interaction with a relational database.

Conclusion: The Employee Management System in Core Java aims to provide a comprehensive solution for handling various aspects of employee management within an organization, promoting efficiency, accuracy, and data security. The system will be user-friendly, ensuring easy adoption by HR personnel and other stakeholders.

Implementing an Human Resource Management System using Core Java involves several steps. Here's a procedure implemented by us:

Requirements Gathering:

Understand the specific requirements and features needed for the Employee Management System.

Identify key functionalities such as employee information management, attendance tracking, leave management, payroll processing, etc.

Design the System:

Create a high-level system architecture, defining modules and their interactions.

Design the database schema to store employee information, attendance records, and other relevant data.

Plan the user interface for various functionalities.

Set Up the Development Environment:

Install a Java Development Kit (JDK) on your development machine.

Choose an Integrated Development Environment (IDE) such as Eclipse or IntelliJ IDEA for coding.

Database Setup:

Choose a relational database (e.g., MySQL, PostgreSQL) and set up the necessary tables based on the designed schema.

Use JDBC for database connectivity in your Java application.

Coding:

Implement the different modules of the Employee Management System using Core Java.

Create classes for employee information, attendance tracking, leave management, and other functionalities.

Implement database operations to store, retrieve, and update data.

User Interface (UI) Development:

Design and implement the user interface for the Employee Management System using Swing or JavaFX.

Ensure a user-friendly layout for easy navigation and data input.

Authentication and Authorization:

Implement a secure login system using Java's security features.

Define user roles and permissions to control access to different functionalities.

Testing:

Conduct thorough testing of each module to identify and fix bugs.

Perform integration testing to ensure seamless interaction between different components.

Documentation:

Document the code, including comments for better code readability.

Create user manuals and technical documentation for future reference.

Deployment:

Package the application into a deployable format (e.g., JAR file).

Deploy the application on a server or distribute it to end-users.

Training and User Support:

Provide training sessions for users (HR personnel, administrators) on how to use the Employee Management System.

Establish a system for user support and address any issues that may arise.

Maintenance and Updates:

Monitor the system's performance and address any issues reported by users.

Implement updates and improvements based on feedback and changing requirements.

4 Existing and Proposed solution

This is an earlier designed project but there are some drawbacks of earlier designed Human Resource Management System are:-

It is unable to handle large amount of data.

It has some security concerns.

Here, we had used some modern tools to resolve these problems and add our personal value to this project.

4.1 Code submission (Github link):- https://github.com/Mahima-0802/upskillcampus/blob/main/HumanResourceManagementSystem.java

4.2 Report submission (Github link) :

5 Proposed Design/ Model

In this model firstly we will register new employee with adding his/her details.

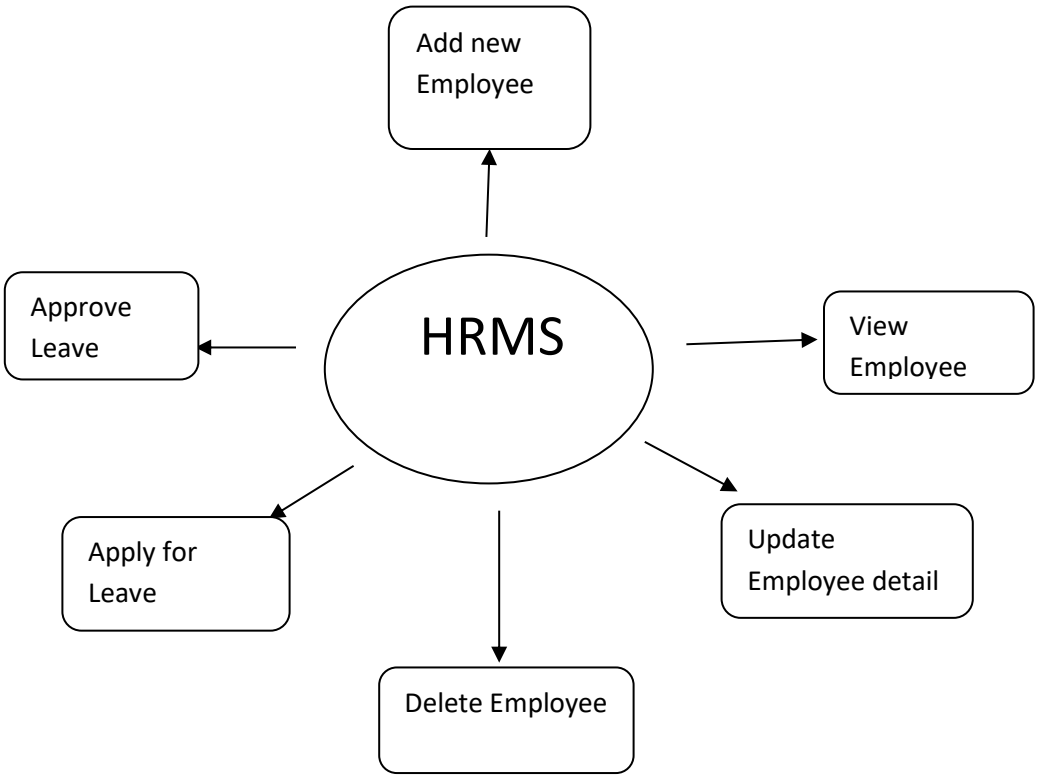
Then, we have feature to view and update the details of employee.

Employee can apply for leave and the supervisor have feature to approve the leave.

In this model we can make an eye over the attendance and leave of every employee that will ease the salary calculation too.

These above features combine together and form a Human Resource Management System.

5.1 Interfaces



6 Performance Test

This is not only an internship project but it has many real world utilities. In current industries due to increasing number of headcounts it is difficult to maintain details of each employee in traditional method. As we are getting automated in every field we should take one step forward to automate our employee management system. This system will help us to maintain the data and leave approval system easily within very less time and cost

6.1 Test Plan/ Test Cases

For executing next procedure in this model we have to satisfy the earlier test cases.

Like to view employee list, we have to firstly add new employees.

6.2 Test Procedure

-Add Employee

-View Employee

-Update Employee

-Delete Employee

-Apply for Leave

-Approve Leave

6.3 Performance Outcome

The successful implementation of an Employee Management System can bring about several positive outcomes for an organization. Here are some key outcomes:-

Efficient Employee Information Management

Improved Productivity

Enhanced Data Accuracy

Time and Cost Saving

Better decision making

Enhanced Employee Satisfaction

7 My learnings

Embarking on a project to develop a Human Resource Management System using Core Java can be a valuable learning experience. Here are some key learnings from this project:

- Java Programming Skills:

Strengthen your skills in Core Java by implementing various features and functionalities of the Employee Management System.

- Object-Oriented Design:

Gain a deeper understanding of object-oriented principles such as encapsulation, inheritance, and polymorphism while designing and implementing classes for different modules.

- Database Design and Connectivity:

Learn how to design a relational database schema to store employee information and use JDBC for connecting your Java application to the database.

- User Interface Development:

Acquire skills in developing user interfaces using Java Swing or JavaFX, focusing on creating a user-friendly and intuitive experience.

- Security Implementation:

Explore techniques for implementing secure authentication and authorization mechanisms to safeguard the system and user data.

- Project Planning and Management:

Develop project management skills by planning and organizing tasks, defining project scope, and establishing timelines and milestones.

- Problem-Solving:

Hone your problem-solving skills by addressing challenges that may arise during the development process, such as debugging and resolving issues.

- Testing and Quality Assurance:

Learn the importance of testing, including unit testing and integration testing, to ensure the reliability and correctness of your application.

- Documentation Practices:

Cultivate good documentation habits by commenting your code effectively and creating user manuals and technical documentation for future reference.

- User-Centric Design:

Understand the importance of designing systems with the end-users in mind, ensuring that the user interface is intuitive and meets the needs of HR personnel and employees.

- Collaboration and Communication:

Develop collaboration and communication skills by working with stakeholders, understanding their requirements, and providing regular updates on the project's progress.

- Adaptability and Continuous Improvement:

Learn to adapt to changing requirements and embrace a mindset of continuous improvement, incorporating feedback and making enhancements to the system.

- Deployment and Maintenance:

Gain insights into the deployment process, including packaging the application, setting up servers, and ensuring ongoing maintenance to address any issues that arise post-deployment.

- Understanding Business Processes:

Acquire a deeper understanding of HR processes within an organization, including attendance tracking, leave management, and payroll processing.

- Real-world Application of Skills:

Apply theoretical knowledge gained in your coursework to a real-world project, gaining practical experience that can be valuable in future endeavors.

8 Future work scope

The future scope of a Human Resource Management System (HRMS) using Core Java can be broad and may involve enhancements, integrations, and adaptations to keep up with evolving technology and organizational needs. Here are several potential future directions for the project:

- Integration with Cloud Services:

Explore opportunities to integrate the Employee Management System with cloud-based services, allowing for improved scalability, accessibility, and collaboration.

- Mobile Application Development:

Develop a dedicated mobile application or enhance the existing system for mobile responsiveness, enabling employees and managers to access and interact with the system on the go.

- Advanced Analytics and Reporting:

Implement more advanced analytics and reporting features to provide deeper insights into workforce trends, performance metrics, and other relevant data for strategic decision-making.

- AI and Machine Learning Integration:

Explore the integration of artificial intelligence (AI) and machine learning (ML) algorithms to automate tasks, predict employee performance, or identify patterns in attendance and leave data.

- Enhanced Security Measures:

Stay updated on security best practices and technologies, incorporating advanced security measures to protect sensitive employee data against emerging threats.

- Employee Self-Service Portals:

Expand the employee self-service capabilities by introducing portals for activities like updating personal information, viewing payslips, and accessing relevant documents.

- Blockchain for Data Integrity:

Investigate the use of blockchain technology to enhance data integrity and security, ensuring tamper-proof records for critical HR information.

- Integration with HRM Suites:

Consider integrating the Employee Management System with broader Human Resource Management (HRM) suites or enterprise resource planning (ERP) systems for a more comprehensive solution.

- Employee Engagement Features:

Implement features to enhance employee engagement, such as recognition programs, feedback mechanisms, or social collaboration tools integrated into the system.

- API Development for Integration:

Develop APIs (Application Programming Interfaces) to facilitate easier integration with third-party services, allowing for seamless data exchange with other organizational systems.

- Real-time Collaboration Tools:

Integrate real-time collaboration tools to facilitate communication and collaboration among employees, managers, and HR personnel.

- Globalization and Localization:

Adapt the system for globalization by supporting multiple languages and localization to meet the specific regulatory and cultural requirements of different regions.

- Enhanced User Experience (UX):

Continuously improve the user interface and experience based on user feedback and changing design trends, ensuring an intuitive and enjoyable user experience.

- GDPR Compliance and Data Privacy:

Stay updated on data protection regulations and ensure continuous compliance, especially with laws such as the General Data Protection Regulation (GDPR).

- Scalability for Enterprise Growth:

Plan for scalability to accommodate the growth of the organization, ensuring that the system remains efficient and effective as the number of employees and data volume increases.