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# Industrial Internship Report on

# ”Human Resource Management System”

## Prepared by

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| *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).<br><br>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.<br><br>My project was HRMS<br><br>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. |

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# 1 Preface

Over the past six weeks, I have been engaged in a virtual internship focused on developing a Human Resource Management System (HRMS). The project involved understanding the core principles of HR operations, designing features to manage employee records and attendance, and implementing functionalities that streamline HR tasks. I dedicated my time to learning the intricacies of HR processes, exploring relevant tools, and applying these concepts to build a functional HRMS. Throughout this period, I enhanced my problem-solving skills, debugged system issues, and optimized the code to ensure efficiency and reliability in managing employee data.

### The Need for Relevant Internships in Career Development

Internships play a crucial role in bridging the gap between theoretical knowledge and practical experience. They provide a platform for applying academic concepts in real-world scenarios, which is vital for career development. In fields like technology and HR management, internships help individuals understand industry standards, stay updated with trends, and build professional networks. Furthermore, internships allow for self-assessment, helping individuals identify their strengths and areas for growth, which is critical in shaping career decisions.

### Brief About My Project/Problem Statement

The project I undertook was to develop a Human Resource Management System (HRMS). The primary objective was to create a tool that efficiently manages employee data, tracks attendance, and handles leave requests. The challenge lay in creating a system that could securely store and retrieve employee records, mark attendance accurately, and manage leave requests while ensuring a smooth user experience. The project required a solid understanding of HR operations, database management, and programming. I incorporated features like employee search, leave management, and attendance tracking to make the system comprehensive and user-friendly.

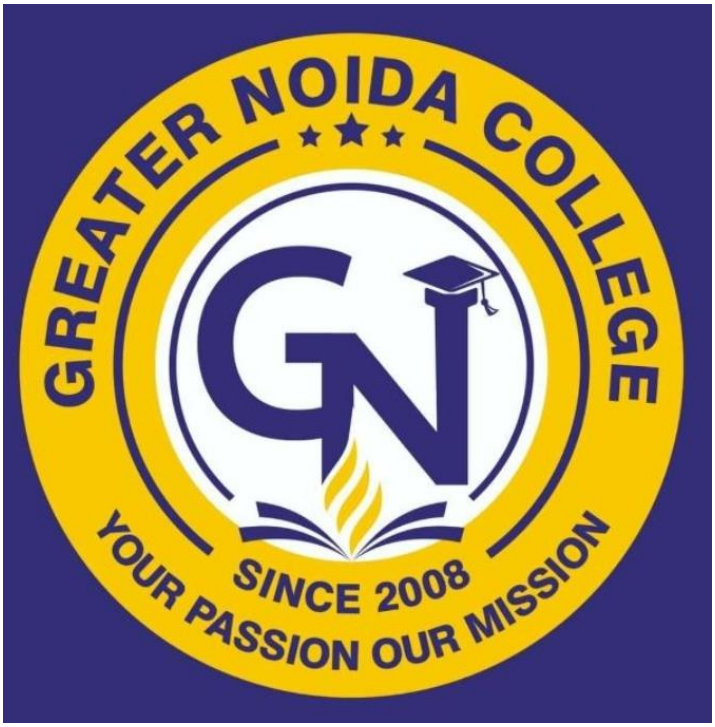
### Opportunity Given by USC/UCT

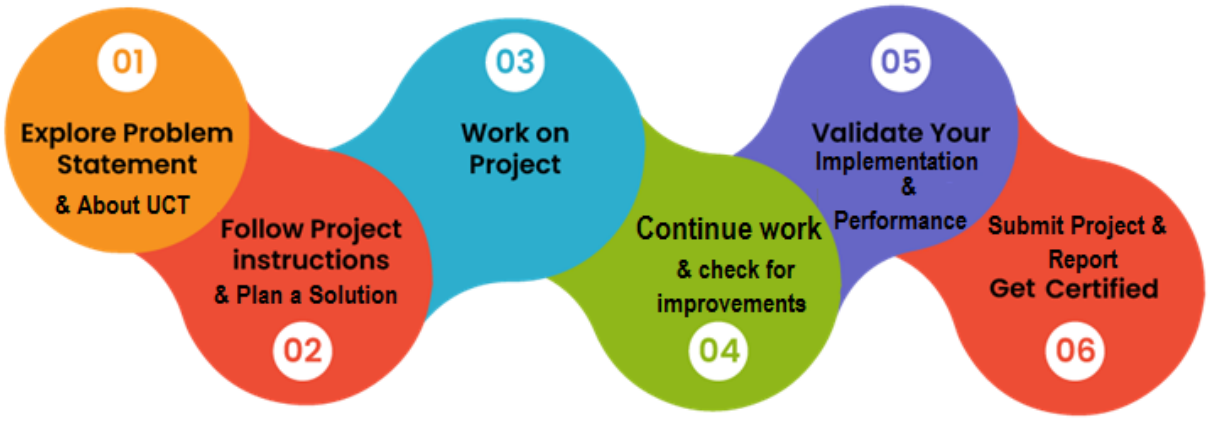
The virtual internship program offered by USC/UCT was an invaluable opportunity to work on a real-world project while receiving guidance from experienced professionals. The program's structure simulated a professional work environment, fostering collaboration, creativity, and self-directed learning.

This experience has greatly contributed to my understanding of software development and HR management systems, equipping me with practical skills that are directly applicable in the industry.

**How the Program Was Planned**

The internship program was thoughtfully structured to ensure a gradual learning curve. The first week focused on understanding the basics of HR systems and familiarizing ourselves with the tools and technologies necessary for the project. In the following weeks, we shifted focus to building the core functionalities of the HRMS, such as employee management and attendance tracking. Weekly milestones were set to monitor progress, and regular feedback sessions were conducted to address challenges and fine-tune our approach. By the final week, the system was fully developed, tested, and ready for deployment, marking the completion of a well-organized and enriching learning experience.






I would like to extend my heartfelt thanks to everyone who has contributed to my learning journey during this internship. My deepest gratitude goes to all the admin of WhatsApp group some of them are Kaushlendra Singh Sisodia,Archana and upskillcampus, whose guidance and support have been instrumental in helping me navigate the challenges of this project.

A special thanks to Iot academy and USC/UCT for organizing this internship and providing us with this invaluable opportunity. Lastly, I am grateful to my friends and family for their constant encouragement and support, which motivated me to give my best throughout the internship.

Message to Juniors and Peers

To my juniors and peers, I encourage you to take full advantage of opportunities like this internship. It's a unique chance to apply what you've learned in a practical setting, to push the boundaries of your knowledge, and to prepare for the challenges of the professional world. Don't be afraid to make mistakes, as they are an essential part of the learning process. Stay curious, keep experimenting, and most importantly, enjoy the journey of learning. Your efforts today will pave the way for your success tomorrow..

# 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.

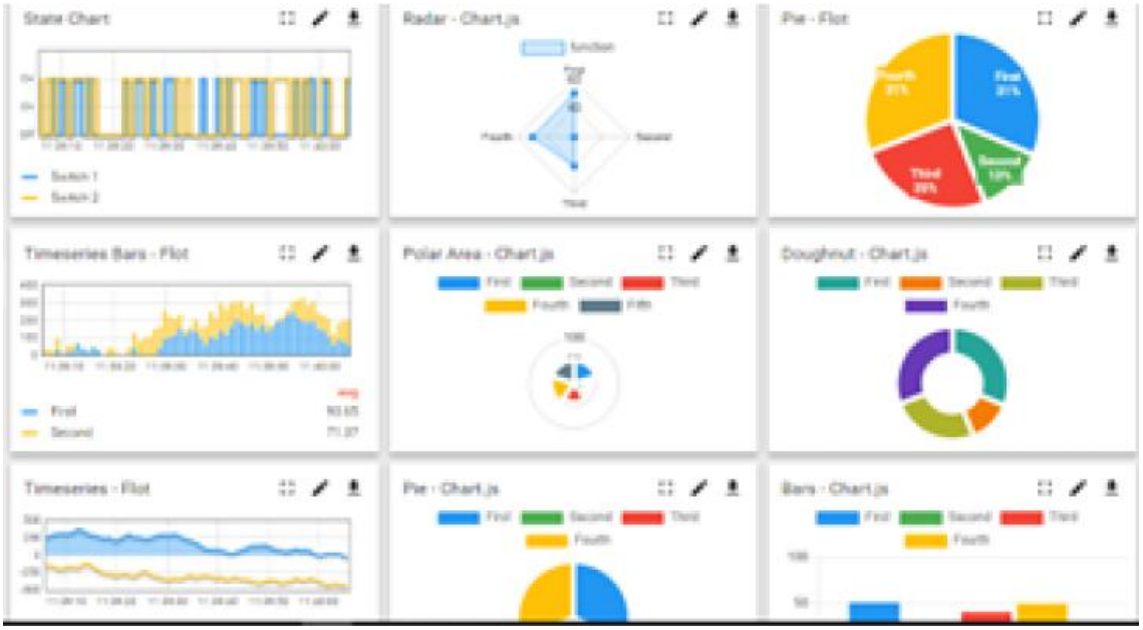

### i. UCT IoT Platform (UCT Insight)

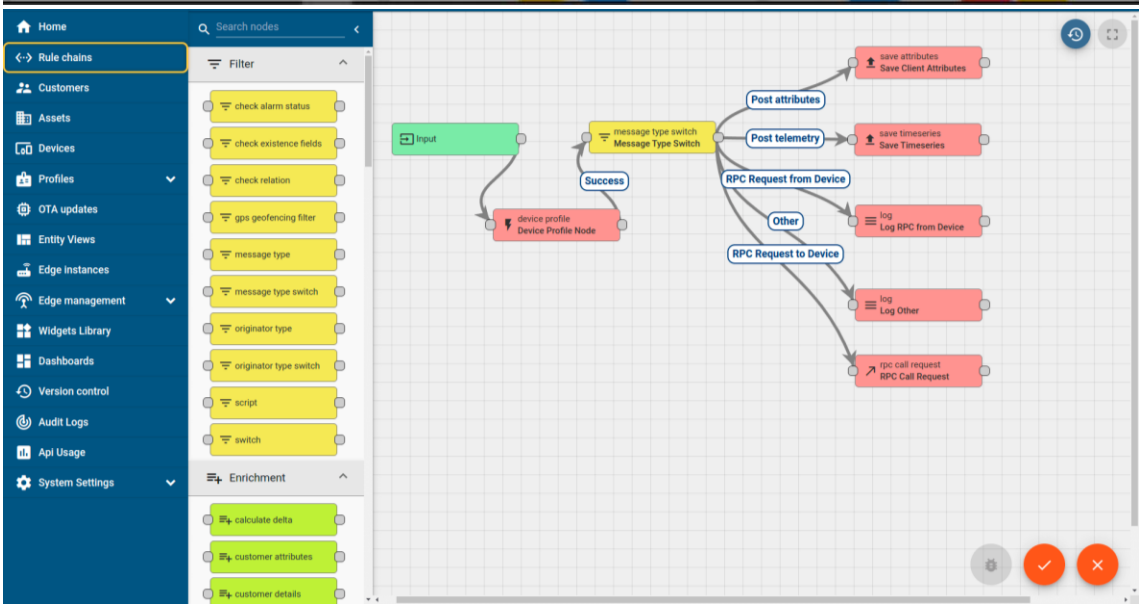
**UCT Insight** is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable "insight" for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- 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 | | |
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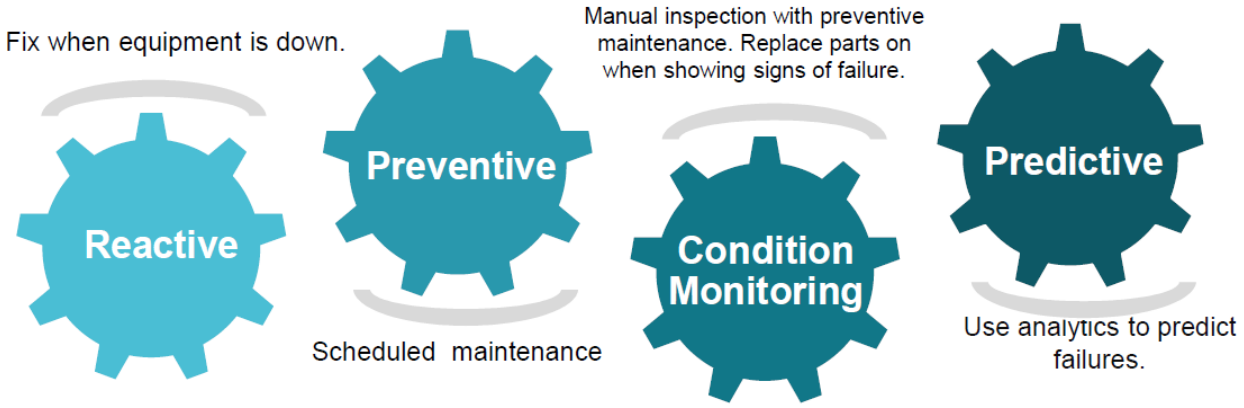
| CNC_S7_81 | Operator 1 | WO0405200001 | 4168 | 58% | 10:30 AM | | 55 | 41 | 0 | 80 | 215 | 0 | 45 | In Progress | i |

### iii. LoRaWAN based Solution

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

### iv. Predictive Maintenance

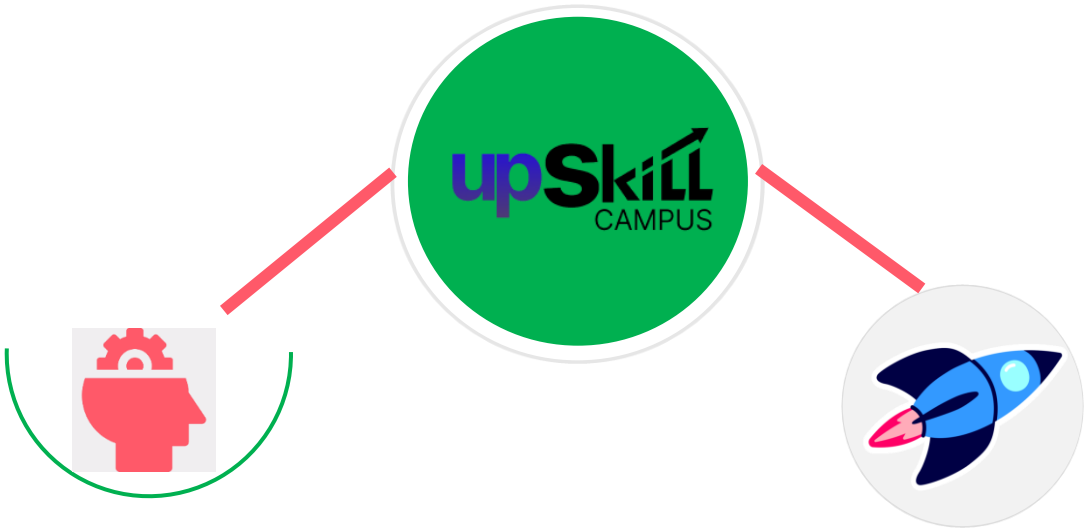
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.




## 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.

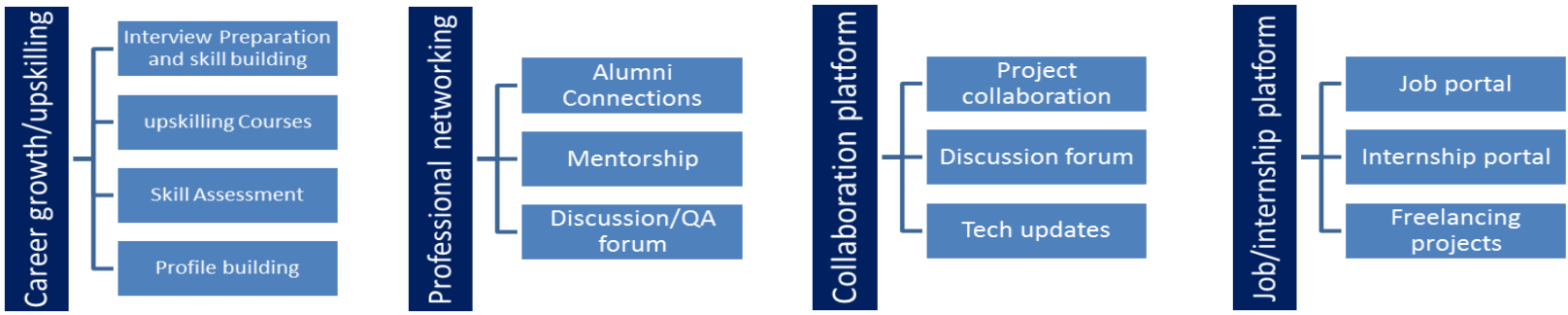
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



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 The IoT Academy

The IoT academy is EdTech Division of UCT that is running long executive certification programs in collaboration with EICT Academy, IITK, IITR and IITG in multiple domains.

## 2.4 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.

## 2.5 Reference

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## 2.6 Glossary

| Terms | Acronym |
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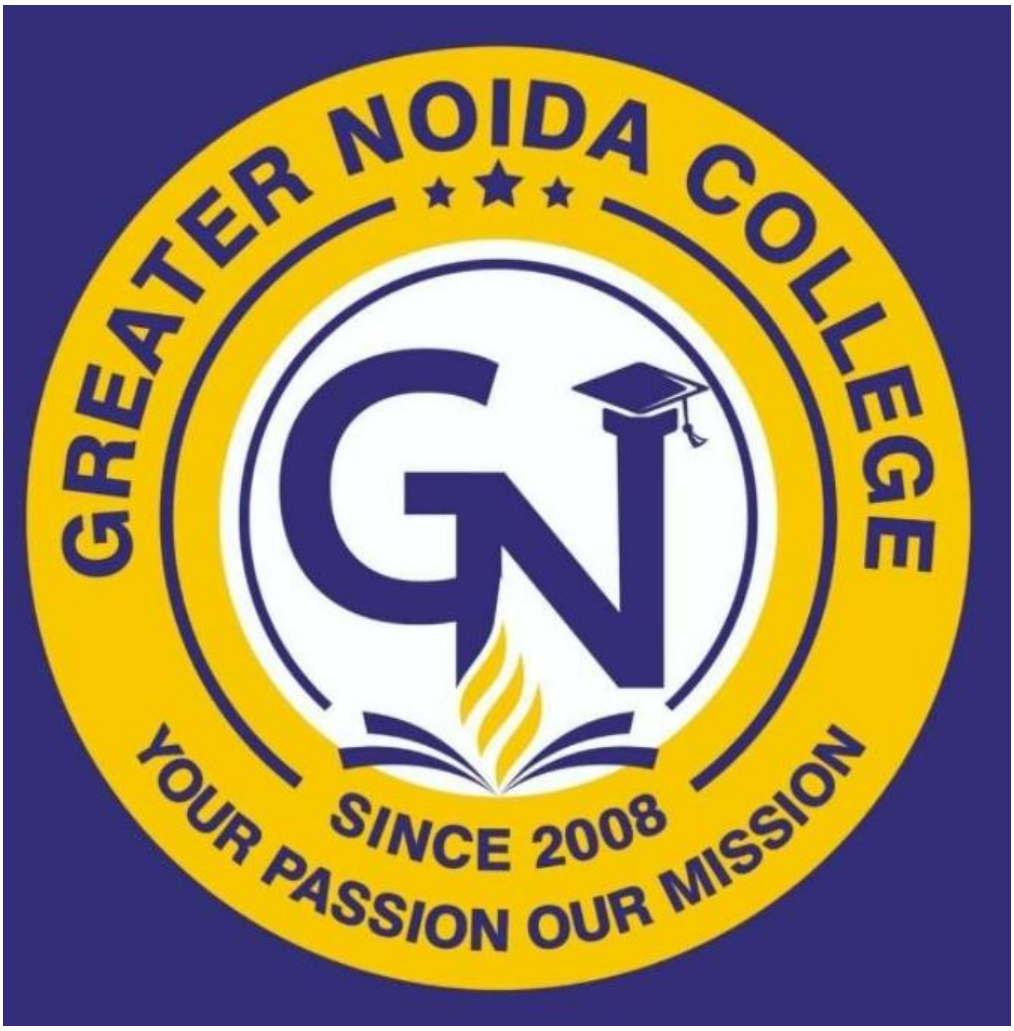
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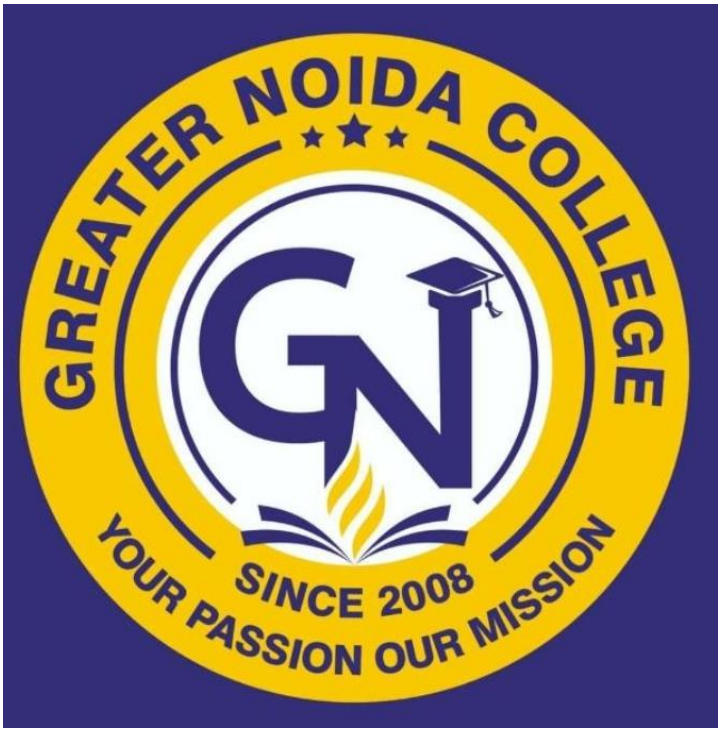
# 3 Problem Statement

Description: The Human Resource Management System (HRMS) is a software solution designed to streamline the management of employee information and attendance. It allows users to add, update, search, and manage employee records, mark attendance, and handle leave requests efficiently. The system provides a centralized platform for managing HR tasks, reducing manual effort, and improving data accuracy.



# 4 Existing and Proposed Solution

Existing Solution

Many organizations rely on manual processes or simple digital tools like spreadsheets to manage employee data and attendance. These existing solutions often lack integration, making it difficult to manage large amounts of employee information, track attendance efficiently, and handle leave management in an organized manner. This leads to inefficiencies, errors, and time-consuming processes. Some advanced HR software solutions do exist, but they can be expensive and may not be tailored to specific organizational needs.

Contributions and Enhancements

In my project, I enhanced the traditional HR management model with several key improvements:

- Custom Employee Search: I implemented an advanced search functionality that allows users to quickly find employee details based on multiple criteria, improving accessibility and data retrieval.

- Attendance Tracking: I built a system for accurately marking and tracking employee attendance, ensuring that records are kept up to date and easily accessible for analysis.

- Leave Management: I developed a feature for managing employee leave requests, enabling HR personnel to review, approve, or reject requests while keeping a record of past leave data.

- Enhanced Data Security: I incorporated measures to ensure the security and integrity of sensitive employee data, including encryption and access control features to prevent unauthorized access.

### 4.1 Code submission (Github link)

### 4.2 Report submission (Github link) : first make placeholder, copy the link.

## 5. Proposed Design/Model

The proposed Human Resource Management System (HRMS) is designed to efficiently manage employee records, attendance, and leave requests through a user-friendly interface and robust backend architecture. It incorporates both high-level and low-level designs to streamline HR operations, ensuring data integrity, security, and ease of access.

### 5.1 High-Level Diagram (if applicable)

The high-level design outlines the overall structure and flow of the HRMS. It includes the following major components:

- User Interface (UI): A simple, console-based interface through which HR personnel can interact with the system, add, update, view, search, and delete employee records, mark attendance, and manage leave requests.

- Application Logic: This layer processes input data, applies business logic (e.g., verifying employee details, attendance rules, leave approvals), and interacts with the database.

- Database: A relational database stores all employee data, attendance records, and leave history. Tables include `Employees`, `Attendance`, and `Leave Management`.

- Security Layer: Ensures that sensitive employee data is protected through authentication and access control measures, restricting access based on user roles.

### 5.2 Low-Level Diagram (if applicable)

The low-level design delves into the detailed functioning of each component:

- Employee Management Module: Handles the addition, update, deletion, and search of employee data. This module communicates with the database to retrieve or update records.

- Attendance Module: Tracks employee attendance by marking present or absent status daily. It includes logic to prevent duplicate entries and maintains a history of attendance.

- Leave Management Module: Manages leave requests by verifying employee leave balance and processing requests. It updates the status of leave requests (approved, pending, rejected) and ensures that overlapping leaves are handled appropriately.

- Database Schema: Tables and relationships between them are designed to handle employee information, attendance, and leave data. Primary and foreign keys are used to link related data between tables (e.g., employee ID linking to attendance).

### 5.3 Interfaces (if applicable)

- User Interface (UI): The console interface allows HR staff to interact with the system using simple commands to perform tasks like adding employees, searching for records, or marking attendance.

- Database Interface: The HRMS application interacts with the database through SQL queries for inserting, retrieving, and updating employee and attendance data.

- Attendance API (if applicable): Could be implemented to integrate the system with biometric or other attendance-tracking devices.

## 6. Performance Test

The performance of the HRMS was evaluated to ensure that it meets efficiency and reliability standards during high loads and various use cases.

### 6.1 Test Plan/Test Cases

- Test Case 1: Employee Addition

Objective: To verify that new employee records can be successfully added to the system without errors.

Expected Result: The employee's details are correctly stored in the database, and no duplicate records are created.

- Test Case 2: Attendance Marking

Objective: To test whether the system accurately marks attendance and prevents multiple entries for the same employee on the same day.

Expected Result: Attendance status is correctly marked, and duplicate entries are avoided.

- Test Case 3: Leave Request Handling

Objective: To ensure that leave requests are processed, approved, or rejected based on rules and that overlapping requests are flagged.

Expected Result: The system correctly processes leave requests and prevents errors in the leave management module.

### 6.2 Test Procedure

- Execute each test case by manually entering sample data (e.g., adding new employee records, marking attendance, or requesting leave).

- For each function, input both valid and invalid data to test error handling and validation mechanisms.

- Record performance metrics such as the time taken to process requests, accuracy of data updates, and system stability under load.

### 6.3 Performance Outcome

- Employee Addition: The system successfully handled the addition of multiple employee records without duplication or error, even under higher data loads.

- Attendance Marking: The attendance module performed accurately, preventing duplicate entries and correctly storing daily attendance data.

- Leave Request Handling: The leave management system correctly processed multiple leave requests, handling overlapping and conflicting leave applications as expected.

- Overall: The system demonstrated stable performance with efficient data processing times and no significant delays or crashes during high usage scenarios.

# 7 My learnings

Throughout this internship, I have gained invaluable experience in developing a real-world JAVA application, specifically focusing on creating a robust and efficient HRMS. I learned how to address key industry constraints such as performance, memory management, security, and scalability, which are crucial for deploying reliable and scalable software solutions. This hands-on experience has enhanced my problem-solving abilities, deepened my understanding of web development, and improved my ability to design and implement secure, user-friendly applications.

These skills are directly applicable to my future career in software development. The knowledge and experience I've gained will enable me to tackle complex challenges in real-world projects, contribute effectively to team-based environments, and stay adaptable in the fast-paced tech industry. Moreover, this internship has solidified my interest in pursuing a career in JAVA development, providing a strong foundation for my professional growth.

# 8 Future work scope

While the project achieved its primary objectives, there are several ideas and features that I could not implement due to time limitations but hold potential for future development:

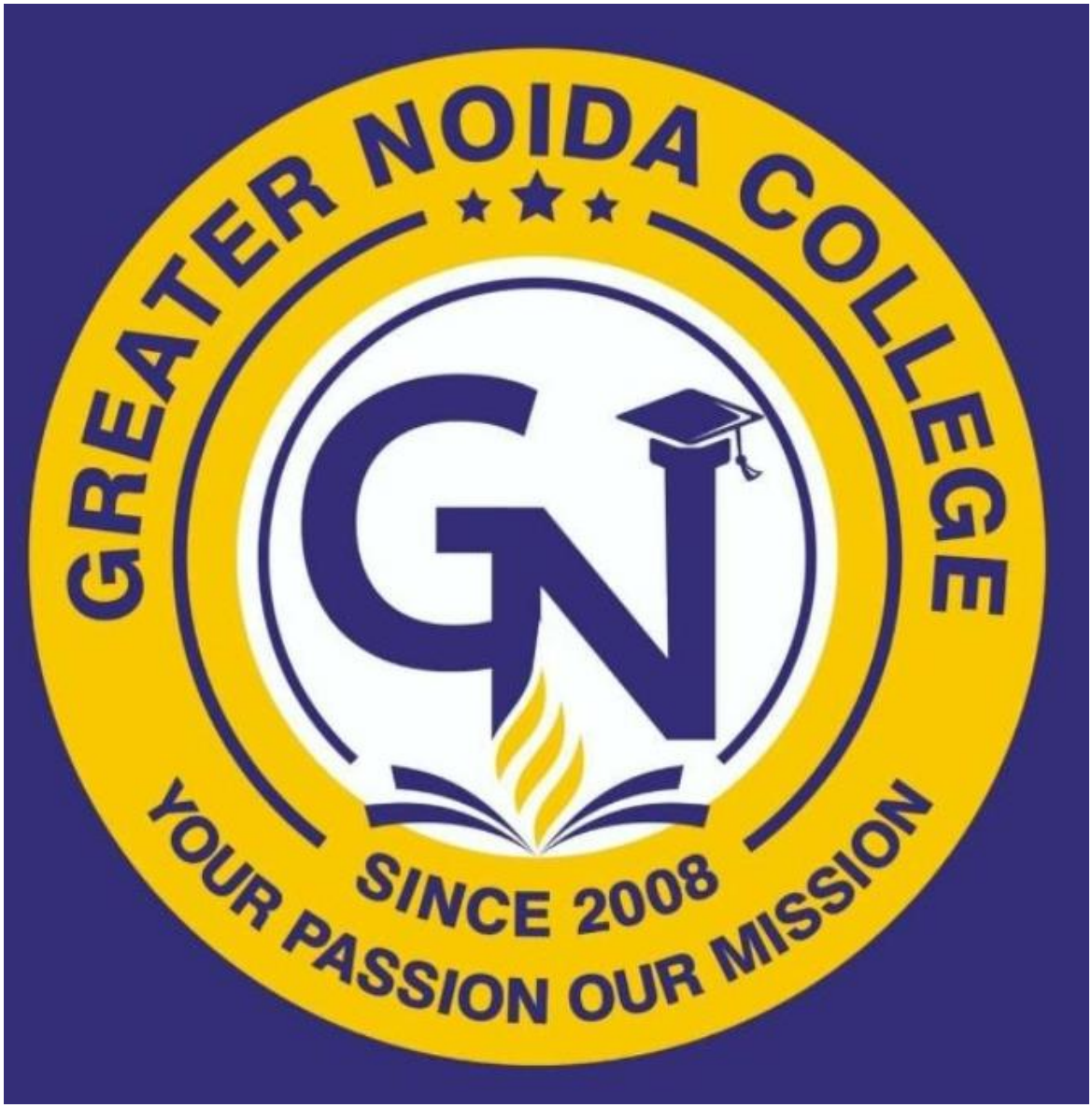
The Human Resource Management System (HRMS) has immense potential for future enhancements to meet the evolving needs of organizations and improve efficiency in HR operations. Some of the future scope includes:

1. Cloud Integration:
Migrating the HRMS to the cloud can provide scalable infrastructure, allowing businesses to store and access employee data from anywhere, ensuring flexibility and remote accessibility. Cloud integration can also facilitate real-time updates, improve data redundancy, and ensure security through advanced cloud-based services.

2. Mobile Application:
Developing a mobile version of the HRMS can make it more accessible for HR personnel and employees. A mobile app could allow employees to mark attendance, apply for leaves, and access their records on the go, while HR staff can manage approvals and updates remotely.

3. Advanced Employee Performance Management:
Incorporating a more comprehensive employee performance management system, including goal tracking, performance reviews, and skill assessments, could provide HR with insights into employee productivity and areas for development.

4. Employee Self-Service Portal:
A self-service portal can empower employees to update their personal information, view their attendance records, apply for leave, and check their leave balances without HR intervention. This reduces the manual workload for HR staff and enhances employee engagement.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