Industrial Training and Internship Report

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# 1. Introduction

The industrial training program is an essential part of the academic curriculum at C. V. Raman Global University.   
This report highlights the 3-month training and internship undertaken by Sushobhan Roy, a final-year student of Computer Science and Engineering (Data Science).   
The internship was conducted through a campus recruitment program and offered by Cognizant, focusing on Java Full Stack Development.   
The objective of this internship was to provide hands-on experience in full stack development and familiarize students with industry practices and standards.   
The program was structured in four stages, emphasizing both frontend and backend development, and culminated in the completion of a real-world project.

Key highlights of the training include structured learning modules, mentorship by industry professionals, project-based learning approaches,   
and regular assessments to evaluate skill acquisition. These components helped build a strong foundation for transitioning from academic knowledge to industry-ready skills.

# 2. Training Structure and Stages

## 2.1 Stage 1: Onboarding and Brush-up Phase

This initial phase lasted for two weeks and was primarily focused on corporate orientation and a refresher on basic Java concepts.   
Activities included corporate induction, asset allocation, core values sessions, and leadership talks. This phase was crucial for acclimatizing to the corporate environment, understanding company expectations, and ensuring all interns were aligned with the training objectives.  
Additionally, brushing up on Java basics ensured that everyone started from a common ground before diving into advanced topics.

## 2.2 Stage 2: Backend Development Phase

Spanning over one month, this phase focused on backend development using Java technologies. Key learning areas included Agile Methodology,   
SOLID principles, Spring Core, Maven, and Test-Driven Development (TDD) using JUnit and Mockito. Interns also learned about maintaining code quality using tools like SonarQube.  
The training was designed to instill best practices in software design, development, and testing. Real-world use cases were used to demonstrate backend architecture, REST API development, and integration with relational databases.

## 2.3 Stage 3: Frontend Development Phase

The next month was dedicated to frontend development. Angular (version 16) was the primary technology used to develop dynamic and responsive web applications.   
This stage also introduced the basics of Docker for containerization, as well as cloud and DevOps fundamentals using Google Cloud Platform (GCP). Interns learned debugging techniques for frontend applications and how to integrate them seamlessly with backend systems.  
The goal of this stage was to develop robust user interfaces that provide an efficient and engaging user experience.

## 2.4 Stage 4: Project Evaluation and Deployment Phase

This final phase, lasting two weeks, was focused on evaluation and deployment. The interim evaluation included technical skill assessments and project progress reviews.   
The final evaluation was comprehensive, testing all concepts learned during the training. Feedback was provided to help interns understand their strengths and areas of improvement.   
This stage ensured that interns were industry-ready and could contribute effectively to real-world software projects.

# 3. Internship Project: Employee Leave and Attendance Management System

As part of the internship, interns were tasked with developing a real-world application—an Employee Leave and Attendance Management System.   
This system was designed to automate the process of tracking employee attendance, managing leave requests, monitoring working hours, and handling shift schedules.  
The application was developed using a full stack approach, integrating both backend and frontend technologies learned during the training.

The project was divided into several modules:  
- \*\*Employee Attendance Module:\*\* Enables employees to mark attendance, view their attendance history, and track clock-in/clock-out times.  
- \*\*Leave Management Module:\*\* Allows submission and tracking of various types of leave requests (e.g., sick leave, vacation).  
- \*\*Leave Balance Module:\*\* Automatically tracks leave balances and updates them based on company policies.  
- \*\*Shift Management Module:\*\* Facilitates assigning, viewing, and swapping of employee shifts.  
- \*\*Reports and Analytics Module:\*\* Provides insights into attendance trends, leave patterns, and shift distributions.

# 4. Technical Architecture

## 4.1 Backend Overview

The backend of the application was developed using Spring Boot and followed a RESTful architecture.   
It was integrated with a MySQL relational database to store and manage data efficiently. Key modules in the backend included:  
- Employee Attendance Management  
- Leave Request Handling  
- Leave Balance Tracking  
- Shift Scheduling  
- Reporting and Analytics  
All business logic was handled at the backend, ensuring robust data management and system scalability.

## 4.2 Frontend Overview

Angular was used to develop the frontend interface of the application. Key features of the frontend included:  
- \*\*Employee Dashboard:\*\* Allows employees to mark attendance, apply for leave, and view their schedule.  
- \*\*Manager Dashboard:\*\* Enables managers to monitor attendance, approve/reject leave requests, and manage shifts.  
The frontend communicated with the backend via REST APIs to perform data operations and render user-specific content dynamically.

# 5. Conclusion

The industrial training and internship at Cognizant was a transformative learning experience.   
It provided in-depth exposure to both backend and frontend development, with hands-on experience in technologies like Spring Boot, Angular, Docker, and GCP.   
The project component offered a practical opportunity to build and deploy a real-world application, enhancing understanding of software development lifecycles, design principles, and collaborative teamwork.  
This internship has significantly strengthened my technical skills and prepared me for a successful career in full stack development.