Internship Review Report - I

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ELECTRONICS AND COMMUNICATION ENGINEERING

by

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ABSTRACT

This report presents the work carried out during my ongoing internship experience as a **Software Development Intern at Vakrangee Limited,** where I am currently contributing to the design and development of a comprehensive web-based onboarding management portal for the Human Resources department. Vakrangee Limited is a technology-driven organization that operates across multiple sectors and emphasizes digital transformation and operational efficiency.

As part of my role, I am developing a role-based onboarding portal to digitize and streamline the employee onboarding process. The system manages employee data, document verification, and form submissions using a structured Role-Based Access Control (RBAC) model with Employee, HR Admin, and HR Super Admin roles. It replaces manual paperwork and email-based communication with a centralized digital workflow.

The platform improves efficiency, reduces onboarding time, minimizes documentation errors, and enhances transparency within HR operations. My responsibilities include backend development, database management, secure authentication implementation, and workflow automation with automated email notifications. This project is helping me gain practical experience in full-stack and enterprise-level application development while contributing to organizational digital transformation.

Keywords: Software Development, HR Management System, Employee Onboarding Portal, Role-Based Access Control (RBAC), MySQL, Express.js, React, Node.js, Tailwind CSS

ACKNOWLEDGEMENT

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LIST OF ABBREVIATIONS

API - Application Programming Interface

RBAC – Role-Based Access Control

CSS - Cascading Style Sheets

JSON - JavaScript Object Notation

JWT - JSON Web Token

REST - Representational State Transfer

UI - User Interface

URL - Uniform Resource Locator

UX - User Experience

HR – Human Resources

DB – Database

SQL – Structured Query Language

PAN – Permanent Account Number

EPF – Employees' Provident Fund

TDS – Tax Deducted at Source

NDA – Non-Disclosure Agreement

Chapter 1

Introduction

1.1 Brief Introduction about Internship Work

During my six-month ongoing internship at Vakrangee Limited, I am working as a Software Development Intern, contributing to the development of an internal web application called the **Vakrangee Onboarding Portal**. The project focuses on digitizing and streamlining the employee onboarding process within the Human Resources (HR) department.

Previously, the onboarding process involved manual paperwork, physical document submission, and extensive email communication, which led to delays and inefficiencies. The developed portal replaces these traditional methods with a centralized digital workflow. It enables employees to complete required forms online, upload necessary documents, and track their onboarding progress in real time.

The system follows a Role-Based Access Control (RBAC) model with three primary roles: Employee, HR Admin, and HR Super Admin. Each role has defined permissions to ensure secure access and structured workflow management. The platform supports dynamic form submission, document verification, automated stage transitions, and email notifications.

The application is built using React and Tailwind CSS for the frontend, and Node.js, Express.js, and MySQL for the backend. Secure authentication is implemented using JWT and bcrypt, ensuring data protection and controlled access.

1.2 Motivation

The motivation behind this project was to eliminate inefficiencies in the traditional onboarding process and create a structured, automated, and transparent system. Manual workflows often resulted in repetitive follow-ups, document mismanagement, and lack of centralized tracking.

A digital onboarding portal ensures faster processing, improved data accuracy, and better coordination between employees and HR personnel. From a personal perspective, this internship provided an opportunity to apply full-stack development skills in a real-world enterprise environment and contribute to digital transformation within the organization.

1.3 Objectives of the Project

The main objectives of the project are:

- To digitize the complete employee onboarding workflow.
- To implement a secure Role-Based Access Control (RBAC) system.
- To enable dynamic form submission and structured verification processes.
- To provide secure document upload and management features.
- To implement real-time onboarding status tracking.
- To integrate automated email notifications for communication.
- To design a scalable and maintainable full-stack architecture.

These objectives aim to reduce onboarding time, improve efficiency, enhance transparency, and ensure secure data management.

Chapter 2

CONCEPT / TECHNOLOGY USED

The Vakrangee Onboarding Portal is designed as a full-stack web application that digitizes and automates the employee onboarding process. The core concept of the system is to replace manual, paper-based workflows with a centralized digital platform that enables structured data management, secure document handling, automated verification, and role-based access control.

2.1 Concept of the System

The primary concept behind the onboarding portal is **Workflow Automation integrated with Role-Based Access Control (RBAC).** In traditional onboarding systems, employees are required to fill multiple physical forms, submit hard copies of documents, and coordinate with HR through repeated email communication. This process often results in delays, lack of transparency, document mismanagement, and increased administrative effort.

To overcome these limitations, the portal centralizes the entire onboarding lifecycle into a single digital system. The workflow is divided into structured stages such as Login Pending, Profile Completion, Pre-Joining Formalities, Post-Joining Formalities, and Completion. The system automatically advances an employee's onboarding stage once required forms are submitted and verified by HR.

The application defines three primary roles:

- **Employee** – Responsible for filling and submitting onboarding forms, uploading required documents, and tracking progress.
- **HR Admin** – Responsible for verifying forms and documents, managing employees, and monitoring onboarding stages.
- **HR Super Admin** – Has higher-level control including managing HR accounts, monitoring system-wide activities, and administrative decision-making.

2.2 Technologies Used

The application follows a modern full-stack architecture:

Frontend Technologies:

- React (with Vite) for building dynamic user interfaces
- Tailwind CSS for responsive and modern UI design
- React Router for client-side routing
- React Hook Form and Yup for form handling and validation
- Axios for API communication
- jsPDF for generating print-ready documents

Backend Technologies:

- Node.js as the runtime environment
- Express.js for building RESTful APIs
- MySQL as the relational database
- Sequelize ORM for database modeling and queries
- JWT (JSON Web Tokens) for secure authentication
- bcrypt for password encryption
- Multer for file uploads
- Nodemailer for automated email notifications

The system is structured using a modular architecture with separate controllers, models, routes, and middleware layers to ensure scalability, maintainability, and clean code practices.

Overall, the combination of these technologies enables secure authentication, efficient data management, automated workflow processing, and a responsive user experience, making the onboarding portal a reliable enterprise solution.
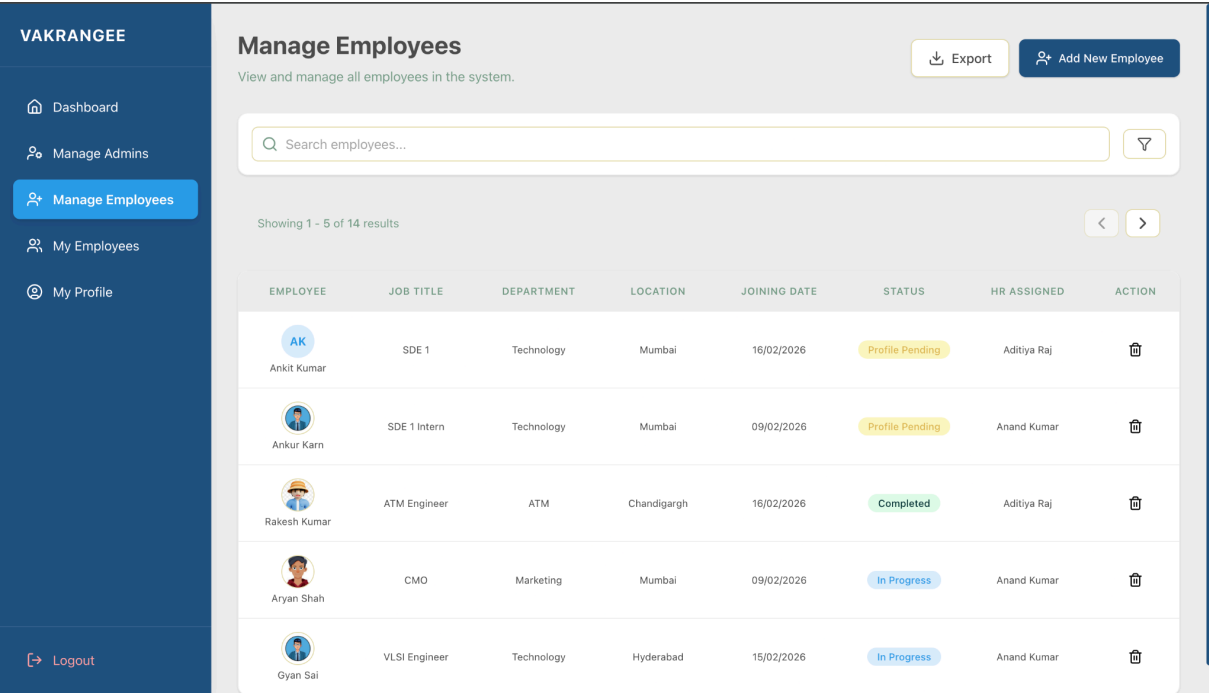
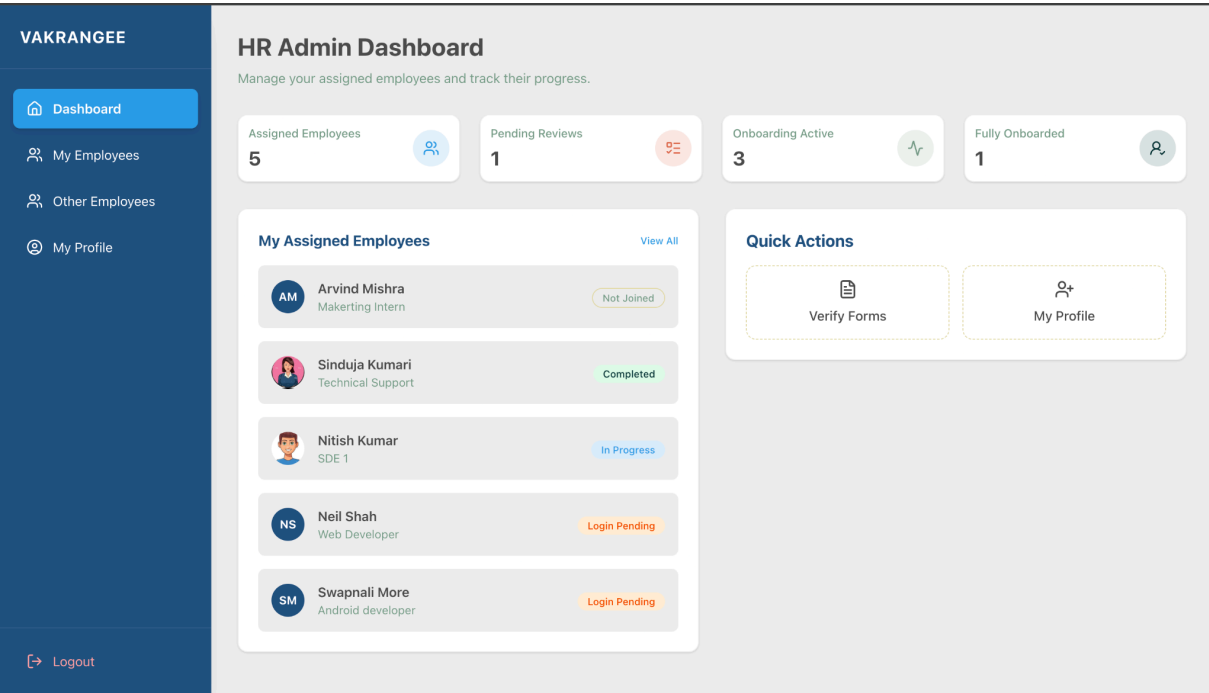**Figure 1: Super HR Admin Dashboard Interface**
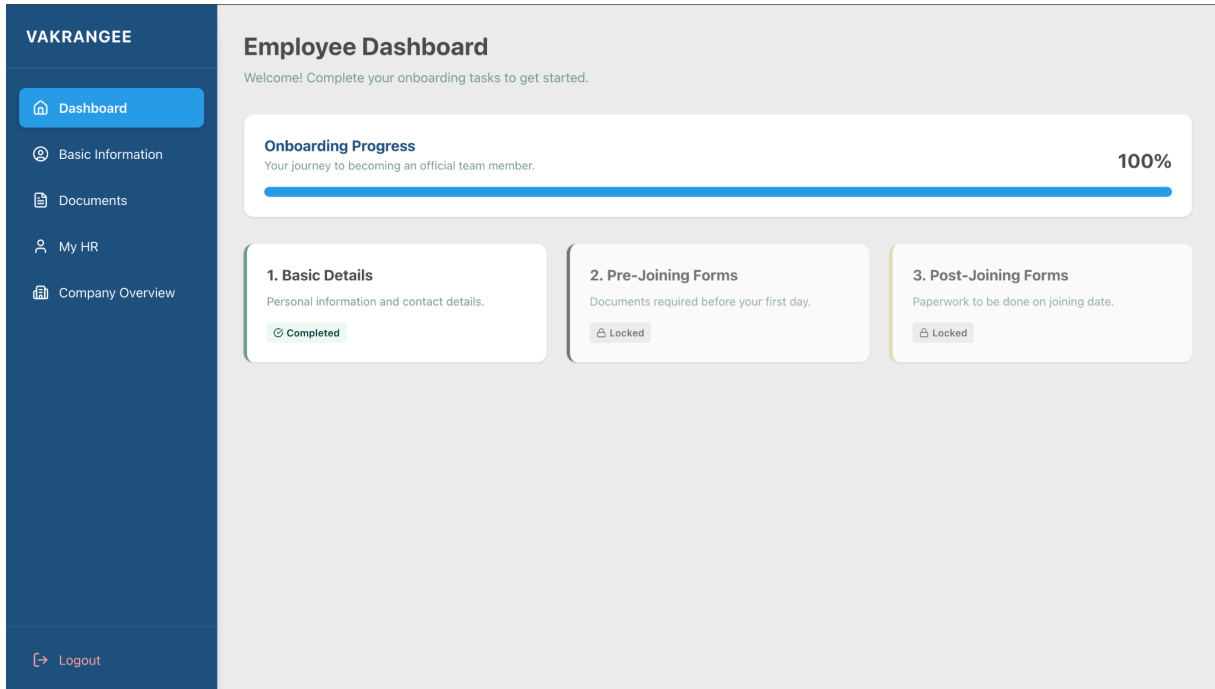

Figure 2: HR Admin Dashboard Interface

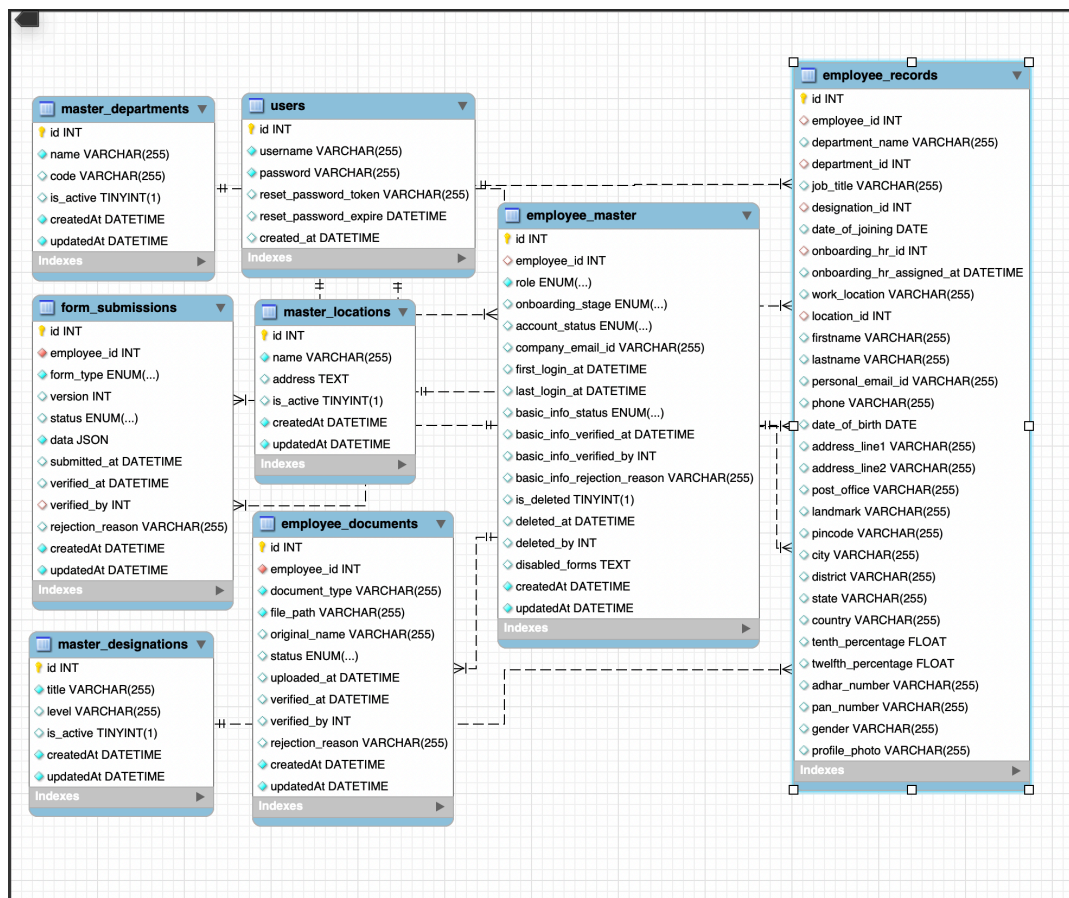**Figure 3: Employee Dashboard Interface**

Figure 4: ERR Diagram

CHAPTER 3

PROJECT DESCRIPTION

The Vakrangee Onboarding Portal is a full-stack web application developed to digitize and streamline the employee onboarding process within the organization. The project replaces manual paperwork and email-based communication with a centralized, role-based digital system that ensures efficiency, transparency, and secure data handling.

3.1 Overview of the System

The portal manages the complete onboarding lifecycle of employees, starting from account creation to final onboarding completion. It provides a structured workflow where employees can submit required forms and documents online, while HR personnel can verify and manage submissions through dedicated dashboards.

The system follows a Role-Based Access Control (RBAC) model with three roles: Employee, HR Admin, and HR Super Admin. Each role has defined permissions to ensure secure and controlled access to system functionalities.

3.2 Core Modules

3.2.1 Authentication and Authorization

The system uses JWT-based authentication and bcrypt for password encryption to ensure secure login and session management. Protected API routes and role-based permissions maintain data confidentiality and system integrity.

3.2.2 Employee and Dashboard Management

HR Admins can view, update, and manage employee records, monitor onboarding progress, and control form access. Employees can update profile details and track onboarding status through visual progress indicators.

3.2.3 Form Management

The portal includes multiple digital onboarding forms such as Employment Application, Basic Information, NDA, Declaration, TDS, EPF, Mediclaim, and Gratuity. Employees can save forms as drafts or submit them for verification. HR personnel can approve, reject, or verify submissions. Form validation ensures data accuracy and compliance.

3.2.4 Document Management

Employees can securely upload regulatory documents such as PAN and Aadhaar. Files are stored on the server and reviewed by HR for verification. This eliminates physical document handling and ensures secure digital storage.

3.2.5 Workflow Automation and Notifications

The onboarding process is divided into predefined stages. The system automatically advances employees to the next stage once required forms and documents are verified. Automated email notifications are sent for welcome messages and status updates, reducing manual follow-ups.

3.3 System Workflow

The workflow begins with employee account creation and login. The employee completes profile information and submits required forms and documents. HR verifies submissions, and the system updates the onboarding stage accordingly. Once all pre-joining and post-joining requirements are completed, the onboarding process is marked as finished.

3.4 Outcome of the Project

The project successfully digitizes the onboarding process, improves efficiency, reduces administrative workload, and enhances transparency within HR operations. It demonstrates practical implementation of full-stack development, secure authentication, workflow automation, and enterprise application design in a real-world corporate environment.
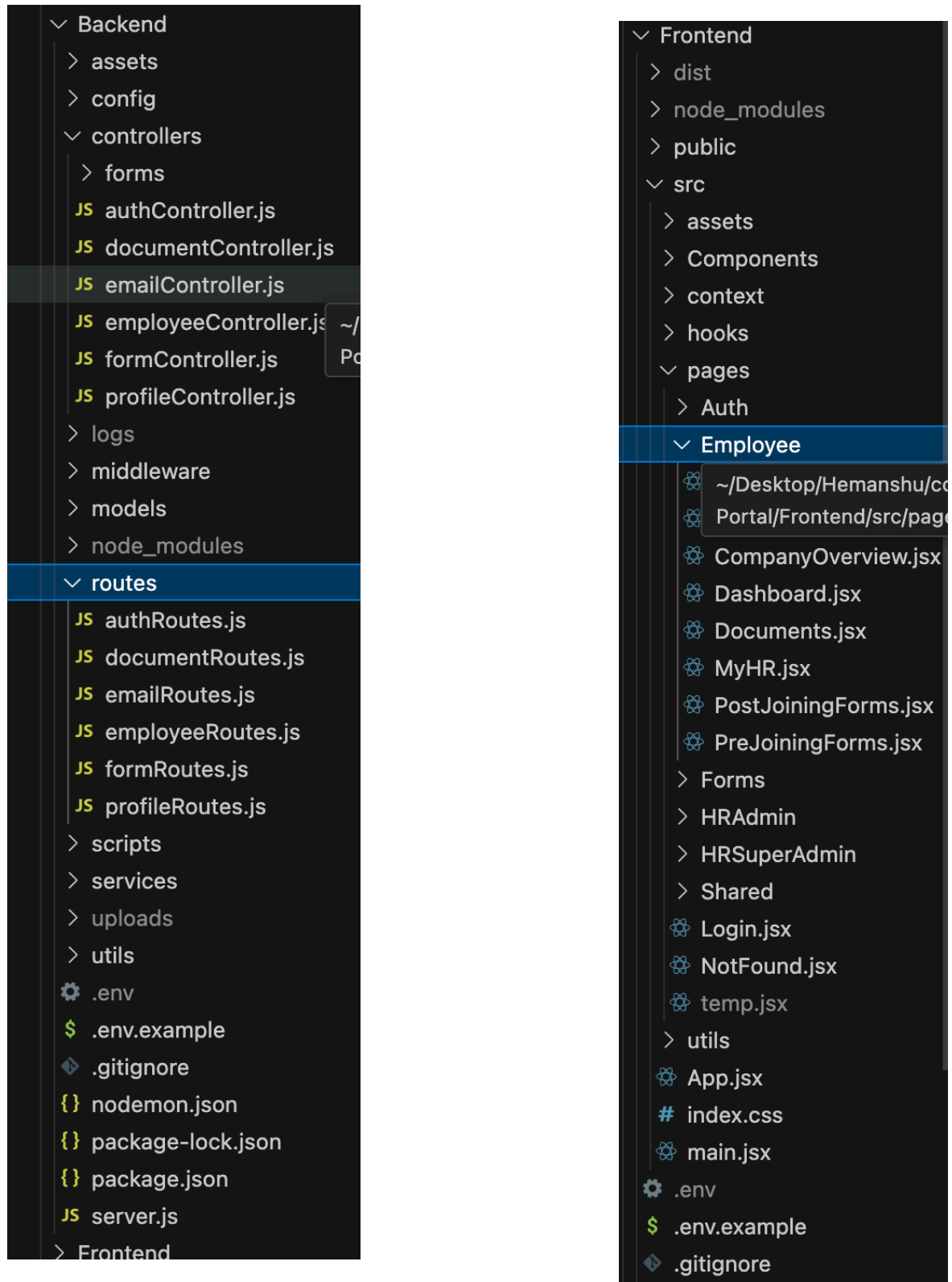
Figure 5: Folder Structure

CHAPTER 4

RESULTS AND DISCUSSION

The development of the Vakrangee Onboarding Portal has successfully transformed the traditional employee onboarding process into a structured and automated digital workflow. The system effectively replaces manual paperwork, scattered email communication, and unorganized document handling with a centralized web-based solution.

One of the key results achieved through this project is the implementation of a secure Role-Based Access Control (RBAC) system. Employees, HR Admins, and HR Super Admins can access only their authorized features, ensuring data security and operational control. The JWT-based authentication mechanism and encrypted password storage further strengthen system security.

The digital form management system has significantly improved efficiency by allowing employees to complete onboarding formalities online. Features such as draft saving, validation checks, and structured verification reduce errors and repetitive corrections. The document upload and verification module eliminates physical document handling and ensures secure storage and easy retrieval.

Another major outcome is workflow automation. The system automatically updates onboarding stages based on form and document verification status. Real-time dashboards and progress indicators provide transparency and help HR personnel monitor onboarding activities effectively. Automated email notifications further reduce manual communication and ensure timely updates.

During development, challenges such as handling form validations, managing role-based permissions, ensuring secure file uploads, and maintaining clean backend architecture were encountered. These were addressed through modular coding practices, centralized validation schemas, middleware-based authorization checks, and proper database structuring using Sequelize ORM.

Overall, the project demonstrates how modern full-stack technologies can be used to design a scalable and secure enterprise application. The onboarding portal improves operational efficiency, reduces processing time, enhances transparency, and contributes to the organization's digital transformation initiatives.

CHAPTER 5

CONCLUSION AND FUTURE SCOPE

The Vakrangee Onboarding Portal demonstrates the practical application of full-stack development in solving real-world organizational challenges. As part of my ongoing internship, the system continues to evolve with additional improvements and refinements being implemented progressively.

The system reduces onboarding time, minimizes documentation errors, and improves coordination between employees and HR personnel. Features such as dynamic form handling, document verification, real-time status tracking, and workflow automation ensure a smooth and organized onboarding experience. From a technical perspective, the project strengthened my understanding of frontend and backend integration, database design, authentication mechanisms, API development, and enterprise application architecture.

Despite its successful implementation, the system has scope for further enhancement. In the future, the portal can be expanded to include advanced analytics and reporting dashboards for HR insights. Integration with payroll systems and attendance management modules can create a more comprehensive HR management solution. Additional features such as multi-factor authentication, cloud-based document storage, and mobile application support can further improve security and accessibility. Performance optimization and scalability enhancements can also be implemented to support a larger user base.

In conclusion, this internship project has provided valuable exposure to enterprise-level software development and digital transformation practices. It has bridged the gap between academic knowledge and industry implementation while contributing meaningfully to organizational process improvement.

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