โครงการ CO-OP SHOWCASE : ก้าวแรกสู่อาชีพ ประจำปี 2567

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ผลงานสหกิจศึกษาดีเด่น
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วิทยาศาสตร์
และเทคโนโลยี

GinkgoRun: Smart Timesheet and Employee Management System

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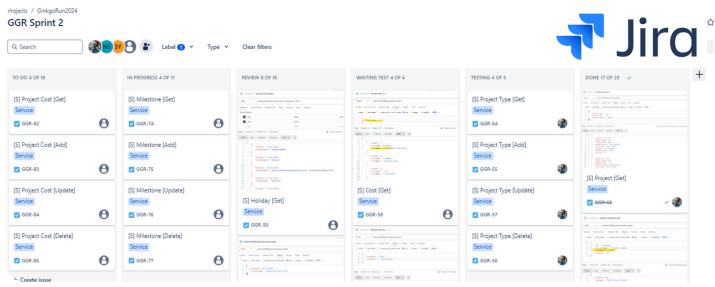
1 ABSTRACT

The GinkgoRun system is designed to address inefficiencies in workforce management by leveraging advanced automation technologies. This system, built using a Java Spring Boot backend and Angular frontend. Through intelligent task suggestions and dynamic role-based access, the platform enhances organizational workflow and accuracy. The project integrates smart automation to streamline administrative tasks, ultimately improving productivity and decision-making capabilities within the organization.

2 INTRODUCTION

In modern organizations, manual employee management systems often lead to inefficiencies, inaccuracies, and increased administrative burdens. To address these challenges, the GinkgoRun system delivers a fully integrated Timesheet and Employee Management platform. Powered by advanced technologies, including a Java Spring Boot backend and an Angular frontend, the system automates key processes: timesheet entry, leave management, and performance tracking. Through smart automation and real-time dashboard, it enhances operational efficiency, reduces errors, and provides an intuitive interface, enabling management to concentrate on strategic decision-making.
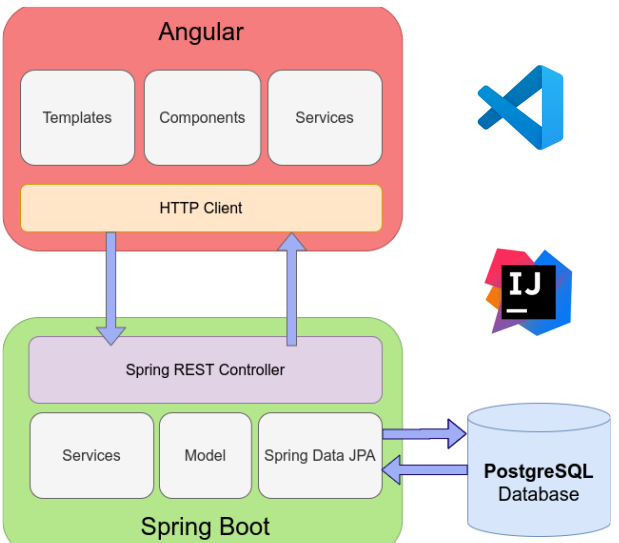
3 METHODOLOGY

- **Agile Framework**: Adopted Agile methodologies with iterative development sprints managed on Jira, enabling flexibility and responsiveness to user feedback.
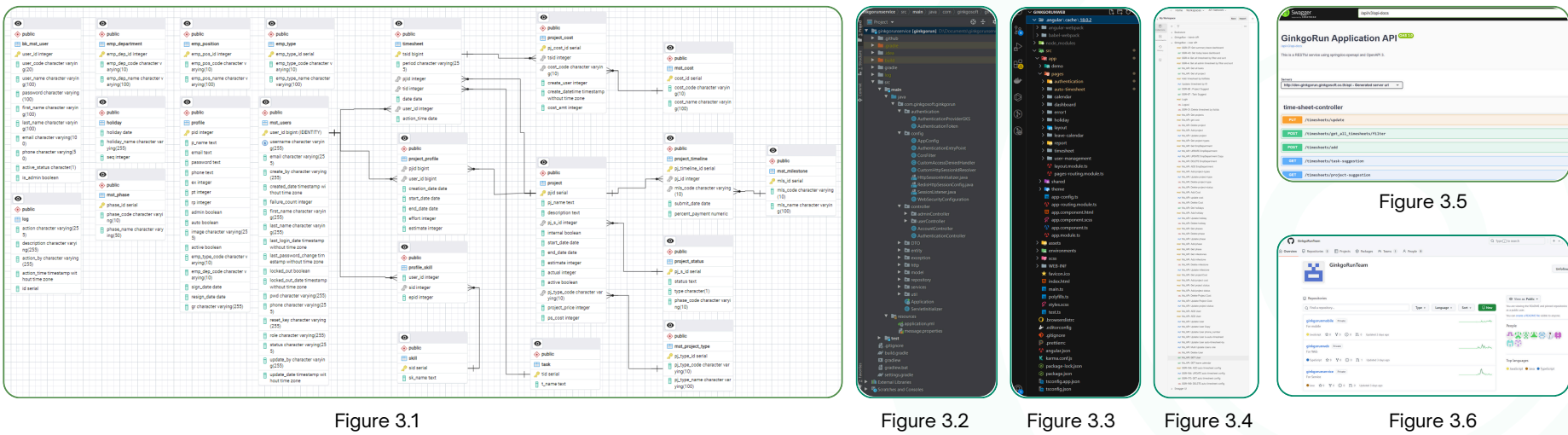
- **Technology Stack**:
  - **Backend** : Java and Spring Boot framework
  - **Frontend** : Angular framework
  - **Version control** : Git and GitHub
  - **Database** : PostgreSQL with pgAdmin tool
  - **Server communication** : FortiClient VPN
  - **API Endpoint testing** : Postman
  - **API documentation** : Swagger UI
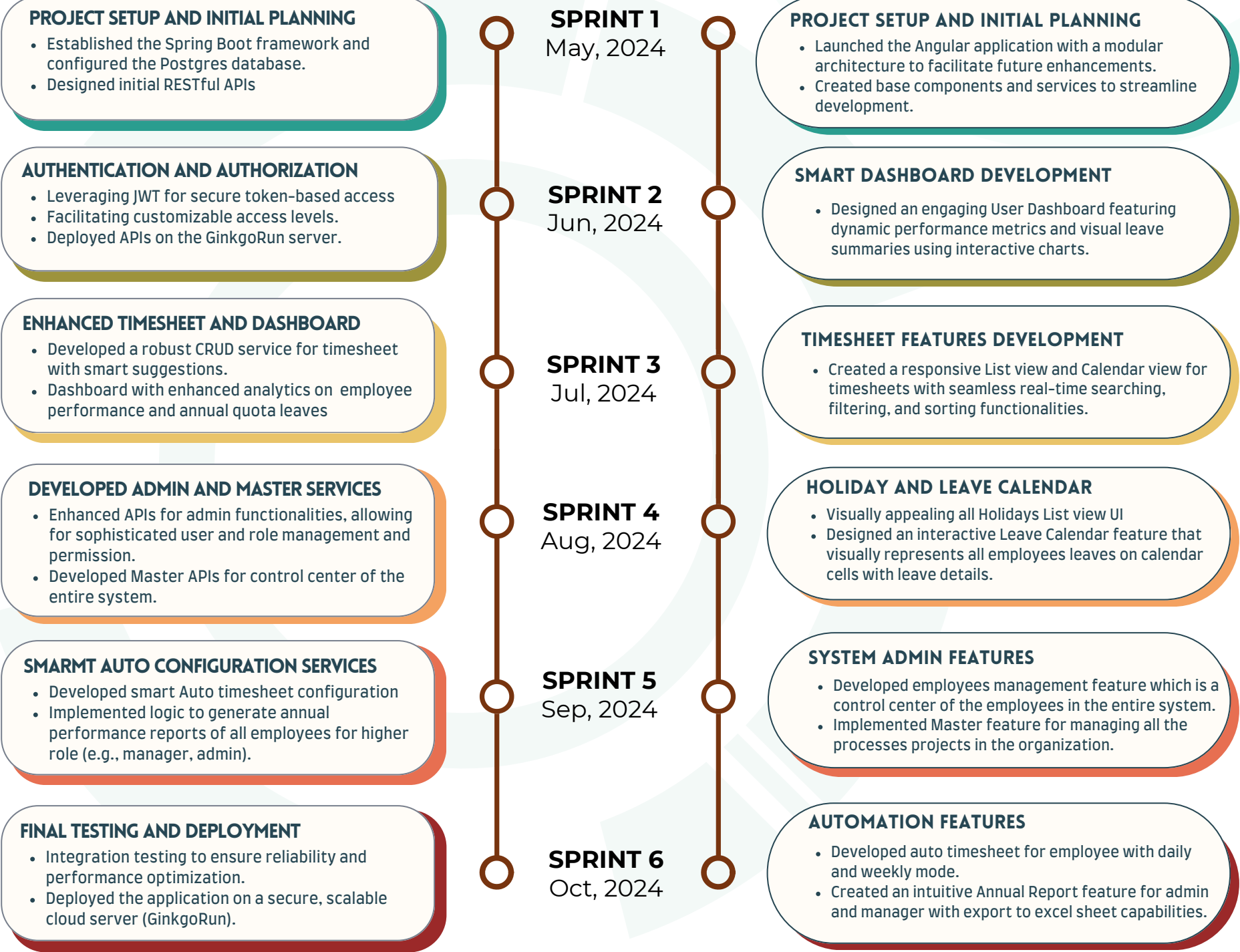 - **Deployment Server** : dev-ginkgorun

- **Project Setup**: Figure 3.1 shows the PostgreSQL ERD setup, while Figures 3.2 and 3.3 outline the project structures for Spring Boot and Angular, respectively. Figure 3.4 covers API testing with Postman, Figure 3.5 highlights API documentation using Swagger UI, and Figure 3.6 focuses on team collaboration via GitHub.

Figure 3.1
Figure 3.2
Figure 3.3
Figure 3.4
Figure 3.5
Figure 3.6

BACKEND DEVELOPMENT | 27 WEEKS | FRONTEND DEVELOPMENT

SPRINT 1 — May, 2024

PROJECT SETUP AND INITIAL PLANNING
- Established the Spring Boot framework and configured the Postgres database.
- Designed initial RESTful APIs.

PROJECT SETUP AND INITIAL PLANNING
- Launched the Angular application with a modular architecture to facilitate future enhancements.
- Created base components and services to streamline development.

SPRINT 2 — Jun, 2024

AUTHENTICATION AND AUTHORIZATION
- Leveraging JWT for secure token-based access
- Facilitating customizable access levels.
- Deployed APIs on the GinkgoRun server.

SMART DASHBOARD DEVELOPMENT
- Designed an engaging User Dashboard featuring dynamic performance metrics and visual leave summaries using interactive charts.

SPRINT 3 — Jul, 2024

ENHANCED TIMESHEET AND DASHBOARD
- Developed a robust CRUD service for timesheet with smart suggestions.
- Dashboard with enhanced analytics on employee performance and annual quota leaves

TIMESHEET FEATURES DEVELOPMENT
- Created a responsive List view and Calendar view for timesheets with seamless real-time searching, filtering, and sorting functionalities.

SPRINT 4 — Aug, 2024

DEVELOPED ADMIN AND MASTER SERVICES
- Enhanced APIs for admin functionalities, allowing for sophisticated user and role management and permission.
- Developed Master APIs for control center of the entire system.

HOLIDAY AND LEAVE CALENDAR
- Visually appealing all Holidays List view UI
- Designed an interactive Leave Calendar feature that visually represents all employees leaves on calendar cells with leave details.

SPRINT 5 — Sep, 2024

SMARMT AUTO CONFIGURATION SERVICES
- Developed smart Auto timesheet configuration
- Implemented logic to generate annual performance reports of all employees for higher role (e.g., manager, admin).

SYSTEM ADMIN FEATURES
- Developed employees management feature which is a control center of the employees in the entire system.
- Implemented Master feature for managing all the processes projects in the organization.

SPRINT 6 — Oct, 2024

FINAL TESTING AND DEPLOYMENT
- Integration testing to ensure reliability and performance optimization.
- Deployed the application on a secure, scalable cloud server (GinkgoRun).

AUTOMATION FEATURES
- Developed auto timesheet for employee with daily and weekly mode.
- Created an intuitive Annual Report feature for admin and manager with export to excel sheet capabilities.

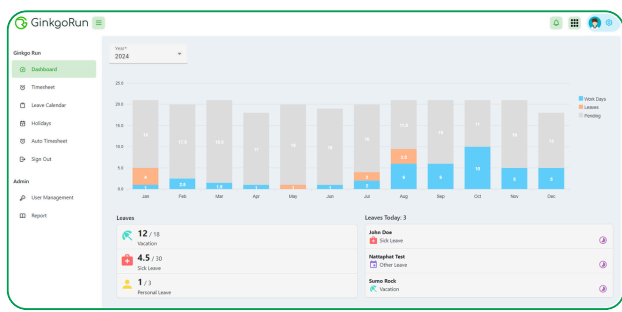## 4 RESULTS

- **Dashboard**
  Figure 4.1 highlights three key features:
  - Bar chart of monthly performance.
  - Total and used leave quota of the year.
  - Lists all employees currently on leave for the day.

- **List view and Calendar view mode of Timesheet**
  Figure 4.2 displays the timesheet in list view, while Figure 4.3 shows it in calendar view with additional features such as smart suggestions for projects and tasks (Figure 4.3.1), timesheet editing (Figure 4.3.2), and duplicate timesheet record (Figure 4.3.3).
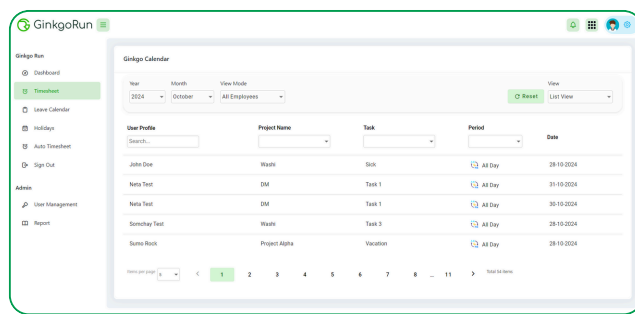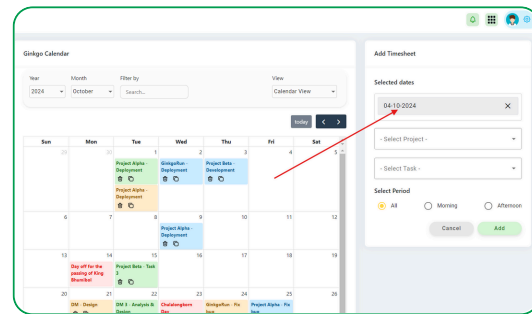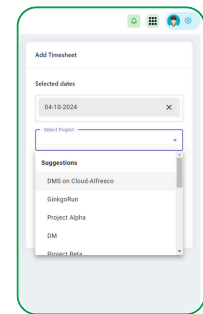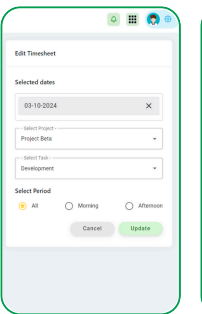
  Figure 4.2
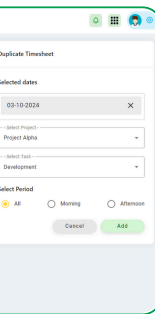 Figure 4.3
  Figure 4.3.1
  Figure 4.3.2
  Figure 4.3.3

- **Leave Calendar and Holiday List**
  - Figure 4.4: Displays all employee leaves in calendar view.
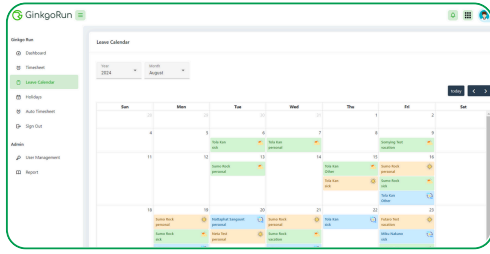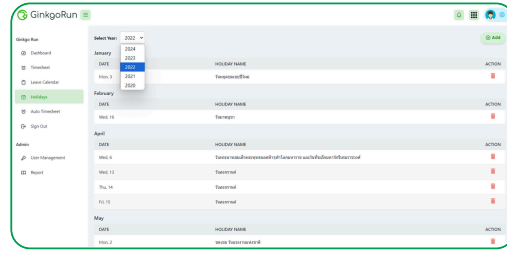 - Figure 4.5: Displays all holidays for the year.

  Figure 4.4
  Figure 4.5

- **Auto Timesheet Configuration**
  - **Weekly** : Figure 4.6 Auto weekly timesheet addition configuration, including adding the weekly timesheet (Figure 4.6.1).
  - **Daily** : Figure 4.7 Auto daily timesheet addition configuration, including adding the daily timesheet (Figure 4.7.1).
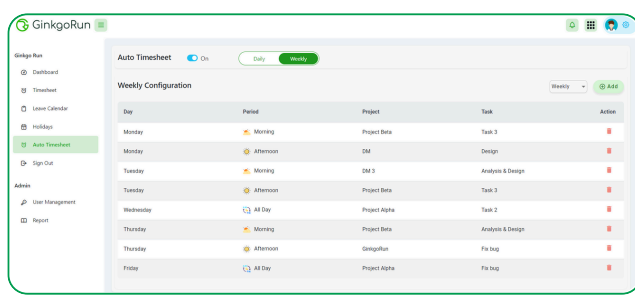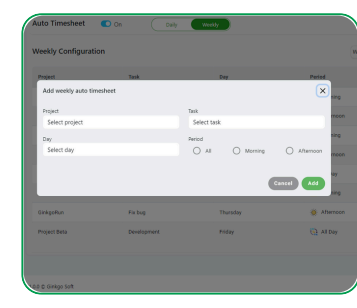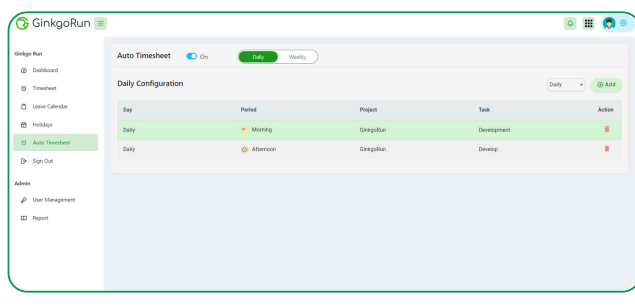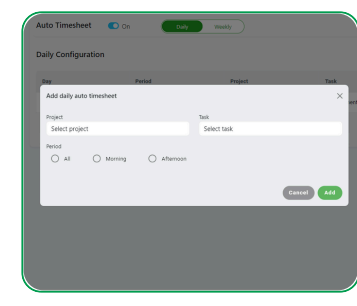
  Figure 4.6
  Figure 4.6.1
  Figure 4.7
  Figure 4.7.1

- **Admin Features:**
  - **User Management**
    - Figure 4.8: Permission tab for managing all employees role-based access.
    - Figure 4.9: User tab or Control center for managing employee credentials.
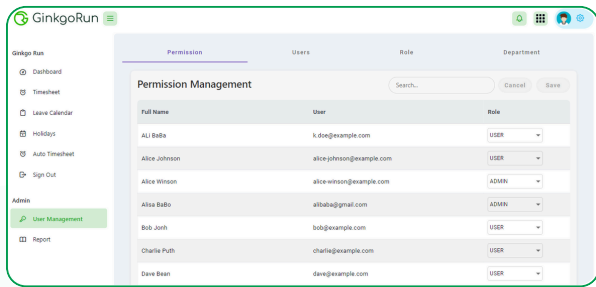   - Figure 4.10: Department tab for managing all departments in the organization.
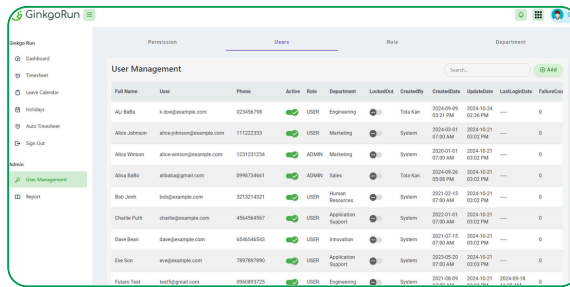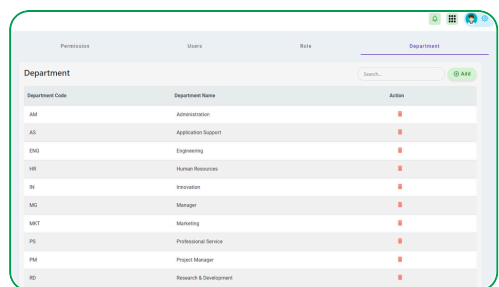
    Figure 4.8
    Figure 4.9
    Figure 4.10

  - **Report**
    - Figure 4.11 : Annual Performance Report feature for higher-level administrators and managers, including the functionality to export to an Excel sheet.
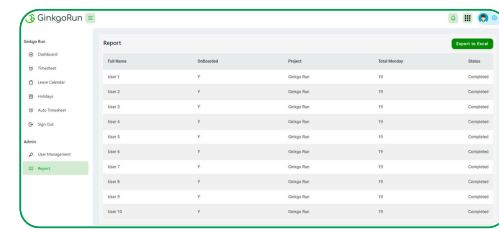
    Figure 4.11

5 BENEFITS

- Increased operational efficiency through automated processes and intelligent suggestions
- Enhanced transparency and accountability within the organization, fostering a culture of trust and collaboration
- Improved employee experience via intuitive self-service features and planning tools
- Empowered administrators with powerful analytics and management tools for data-driven decision-making.

6 REFERENCES

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