**HRM TRACKER**

It provides functionalities for managing employees, HR personnel, departments, announcements, attendance, leaves, and user profiles. The system supports user registration, login (including Google OAuth2 login), role-based access control, file uploads (profile pictures, ID proofs, resumes), and audit logging of actions. It also features asynchronous file processing using RabbitMQ and provides dashboards tailored for different user roles (Admin, HR, Employee).

**KEY TECHNOLOGIES**

Backend---

Java 17+ (assumed from modern syntax)

Spring Boot (Web, Security, Data JPA, Scheduling)

Spring Security with OAuth2 (Google login)

Spring Data JPA with Hibernate

RabbitMQ for asynchronous file processing

Lombok for boilerplate code reduction

Thymeleaf for server-side HTML templating

Frontend---

Thymeleaf templates

CSS (custom styles)

FullCalendar.js for calendar views (announcements, attendance)

Database---

Relational database (likely MySQL or similar) accessed via Spring Data JPA

Other---

BCryptPasswordEncoder for password hashing

ConcurrentHashMap for tracking file upload progress/status

JSON message conversion for RabbitMQ messages

**TOPIC COVERED**

Spring Boot auto-configuration and bean management basics.

Spring Security with form login and OAuth2 integration.

Role-based authorization with method-level security.

RESTful API design with validation.

Asynchronous messaging with RabbitMQ.

File upload handling with async processing.

Custom OAuth2 user service and success handler.

Basic error handling with custom error controller.

User Management---

Registration with role and department selection

Login with form and Google OAuth2

Role-based access control (ADMIN, HR, EMPLOYEE)

Profile management with file uploads (profile pic, ID proof, resume)

Password encryption with BCrypt

Dashboard and UI---

Role-specific dashboards with statistics cards

Dynamic loading of employees, HRs, departments, announcements

Interactive modals for announcements CRUD

Attendance tracking with check-in/out and timer

Calendar views for announcements and attendance

File Upload Handling---

Multipart file upload with progress bar

Asynchronous processing using RabbitMQ queues

Temporary and final storage directories for files

Updating user records with relative file paths

Serving uploaded files securely

Security---

Spring Security configuration with method-level security (@PreAuthorize)

CSRF disabled for development

Custom OAuth2 user service and success handler

Password encoding and user details service implementation

Data Initialization---

Preloading default roles, departments, and announcements on startup

Audit Logging---

Logging create, update, delete actions with user and timestamp

Displaying audit logs in admin panel

Asynchronous Processing---

Configuring thread pool executor for async tasks

RabbitMQ message sending and receiving for file uploads

Error Handling---

Custom error controller and error page

Frontend Enhancements---

Loader/spinner overlays during AJAX calls

Dynamic UI updates and form validations

Use of FullCalendar for event display and interaction

**FILE STRUCTURE**

profile-demo/

├── src/

│ ├── main/

│ │ ├── java/

│ │ │ └── com/

│ │ │ └── hrmtracker/

│ │ │ ├── config/

│ │ │ │ ├── AsyncConfig.java

│ │ │ │ ├── DataInitializer.java

│ │ │ │ ├── RabbitMQConfig.java

│ │ │ │ ├── SecurityConfig.java

│ │ │ │ └── WebConfig.java

│ │ │ ├── controller/

│ │ │ │ ├── AuthController.java

│ │ │ │ ├── CustomErrorController.java

│ │ │ │ ├── DashboardController.java

│ │ │ │ └── ProfileController.java

│ │ │ ├── dto/

│ │ │ │ ├── AuditLogDTO.java

│ │ │ │ ├── DashboardStatsDTO.java

│ │ │ │ ├── EmployeeDTO.java

│ │ │ │ ├── HrDto.java

│ │ │ │ └── UserRegistrationDto.java

│ │ │ ├── entity/

│ │ │ │ ├── Announcement.java

│ │ │ │ ├── Attendance.java

│ │ │ │ ├── AuditLog.java

│ │ │ │ ├── AuthProvider.java

│ │ │ │ ├── Department.java

│ │ │ │ ├── FileUploadMessage.java

│ │ │ │ ├── Leave.java

│ │ │ │ ├── LeaveStatus.java

│ │ │ │ ├── Role.java

│ │ │ │ └── User.java

│ │ │ ├── repository/

│ │ │ │ ├── AnnouncementRepository.java

│ │ │ │ ├── AttendanceRepository.java

│ │ │ │ ├── AuditLogRepository.java

│ │ │ │ ├── DepartmentRepository.java

│ │ │ │ ├── LeaveRepository.java

│ │ │ │ ├── RoleRepository.java

│ │ │ │ └── UserRepository.java

│ │ │ ├── security/

│ │ │ │ ├── CustomOAuth2SuccessHandler.java

│ │ │ │ └── CustomOAuth2User Service.java

│ │ │ ├── service/

│ │ │ │ ├── AuditLogService.java

│ │ │ │ ├── DashboardService.java

│ │ │ │ ├── DashboardServiceImpl.java

│ │ │ │ └── FileUploadConsumer.java

│ │ │ └── HrmTrackerApplication.java

│ │ └── resources/

│ │ ├── static/

│ │ │ ├── css/

│ │ │ │ ├── style.css

│ │ │ │ └── style1.css

│ │ │ ├── images/

│ │ │ │ └── default-user.png

│ │ ├── templates/

│ │ │ ├── audit-logs.html

│ │ │ ├── dashboard-admin.html

│ │ │ ├── dashboard-employee.html

│ │ │ ├── dashboard-hr.html

│ │ │ ├── error.html

│ │ │ ├── login.html

│ │ │ ├── profile-employee.html

│ │ │ ├── profile-hr.html

│ │ │ ├── register.html

│ │ │ └── upload.html

│ │ └── application.properties

├── pom.xml