

Internship Progress Report – 4

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Internship Role: Research Intern

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1. Introduction

This week's focus was on integrating a QR Code generation and scanning feature into the Smart Contact Manager project. The objective was to provide users with an efficient way to share, access, and store contact details using QR codes, while ensuring the solution was secure, reliable, and consistent with the existing application design.

2. Objective

To implement QR code support for contact details in the Smart Contact Manager, enabling:

- QR code generation for individual contact records.
- QR code scanning for importing contact details into the system.
- Ensuring the feature integrates seamlessly with existing UI components and backend services.

3. Features and Functionality Developed

- Added QR code generation functionality for contact details using a Java QR code library.
- Embedded QR code generation in the contact detail view page.
- Implemented QR code scanning capability to extract and populate contact information automatically.
- Provided options for users to download QR codes as images.
- Ensured smooth integration with existing Thymeleaf templates and responsive UI.
- Applied error handling and validation for invalid or corrupted QR codes.
- Conducted testing for cross-browser compatibility and different screen sizes.

4. AI's Role in Development

- Suggested appropriate Java libraries for QR code generation and scanning.
- Generated initial code for QR code creation and embedding in Thymeleaf templates.
- Assisted in troubleshooting dependency issues during Maven integration.

- Helped design the scanning logic and handle invalid QR scenarios gracefully.
- Recommended UX improvements such as adding a download button for generated QR codes.
- Supported debugging when scanned data was not mapping correctly to contact entity fields.

5. Challenges Faced

- Dependency conflicts when integrating QR code libraries with the Spring Boot project.
- Handling edge cases where QR codes were blurred, corrupted, or incomplete.
- Aligning QR code size and positioning with existing responsive UI.
- Ensuring secure handling of encoded contact data during generation and scanning.

6. Outcome and Learning

The QR code feature was successfully implemented, allowing users to generate, share, and scan contact information in an efficient way. AI assistance streamlined the process of selecting libraries, generating code snippets, and debugging integration issues. This experience reinforced my knowledge of integrating third-party libraries into Spring Boot projects and highlighted the importance of balancing usability with security in feature development.