Internship Progress Report – Week 2

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Internship Role: Research Intern

Duration: 9th July 2025 - 22nd July 2025

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1. Introduction

This week's work focused on expanding the capabilities of the contact management system by integrating AI-assisted development into the implementation of the 'Relationship' attribute and associated search, filter, and accessibility improvements. Building on the previously implemented 'Forgot Password' module, this phase emphasized full-stack enhancements, frontend accessibility, and error resolution.

2. Objective

To enhance the contact management platform by introducing the 'relationship' attribute using best practices and AI-generated implementation plans. This included updating the backend entity, service, and repository layers, incorporating validation and filters in the frontend, and correcting accessibility issues across HTML templates.

3. Features and Functionality Developed

- Added `Relationship` enum field to the Contact entity with allowed values (FAMILY, FRIEND, RELATIVE, etc.).

- Updated contact form (add/edit) to include a dropdown for selecting the relationship.

- Modified the contact listing to display the relationship and support filtering/searching.

- Extended the export functionality to include the relationship column.

- Resolved accessibility issues related to `label for` and `input id` mismatches.

- Fixed image loading and modal visibility errors in the frontend.

- Improved validation on forms using Spring Bean Validation annotations.

- Fixed duplicated DOM `id` elements and mismatches in modal handlers.

4. AI's Role in Development

- Designed end-to-end implementation plans for integrating the new field across layers.

- Generated Java entity, enum, repository queries, and controller logic for the Relationship field.

- Helped resolve frontend form binding issues and template parsing exceptions.

- Suggested accessibility and UX improvements like default image fallback and `label-for` fixes.

- Debugged JavaScript errors, modal mismatches, and missing `id` references in the DOM.

- Recommended clean integration patterns such as using optional chaining in JS and consistent field naming.

5. Challenges Faced

- Required a database migration for the new field to reflect changes in the entity model.

- Encountered Thymeleaf parsing exceptions due to unbound form objects and incorrectly referenced attributes.

- Had to refactor mismatched modal `id` references and unresolved image URLs.

- Managed HTML/JS consistency to ensure labels and inputs are fully matched for accessibility.

6. Outcome and Learning

This week demonstrated the effectiveness of AI tools in streamlining full-stack development, from database schema changes to frontend validation. AI guidance reduced implementation time and helped enforce code consistency and accessibility standards. It also improved my ability to debug both backend and frontend errors using AI-generated insights and code examples.