Phase Checklist

Phase 1a: Backend Foundations

**Objective: Establish a rock-solid, enterprise-ready backend.**

**Implement full CRUD for User Profile Service.**

✅ Complete **Create** and **Read** operations.

✅ Implement **Update** and **Delete** operations in both the UserController and UserService.

**DTOs + Validation (JSR-303).**

✅ Create UserDto for data transfer.

✅ Apply validation annotations (@NotBlank, @Email, @Size).

**Global Exception Handling with @ControllerAdvice.**

☐ Create a GlobalExceptionHandler to handle MethodArgumentNotValidException and return structured JSON errors.

☐ Add handlers for other exceptions like UserNotFoundException (which you'll need to create).

**Testing Rigor.**

✅ Configure **Testcontainers** for database integration tests.

✅ Set up **JaCoCo** for code coverage reporting.

☐ Refactor tests to use **MockMvc** for all API endpoint testing.

☐ Add tests to verify the new **Update**, **Delete**, and **Exception Handling** logic.

**Security.**

☐ Implement **JWT authentication** with Spring Security.

☐ Add **password hashing** using Bcrypt.

☐ Configure **role-based authorization**.

**Observability.**

☐ Implement **structured logging** with SLF4J/Logback.

☐ Add **metrics collection** with Micrometer and Prometheus.

☐ Create a **Grafana dashboard** to visualize metrics.

**API Documentation.**

☐ Add **OpenAPI/Swagger** to generate API documentation.