Project Plan: MongoDB

Database II (NoSQL) — DHBW Stuttgart

Erik von Heyden Ognjen Jovanovic Kevin Kienle Simon Chasi

February 2026

Abstract. This document defines the scope, structure, responsibilities, and timeline for the course project on MongoDB. The project delivers (i) a MongoDB implementation of a migrated chat-application schema, (ii) a recorded presentation / movie, and (iii) an eBook chapter for the course NoSQL eBook.

Contents

1 Project Overview

1.1 Project Title

MongoDB Implementation of a Chat Application Schema

1.2 Goal of the Project

This project explores MongoDB as a document-oriented NoSQL database solution. We migrate and analyze a chat application database schema originally designed for relational databases to demonstrate MongoDB's capabilities, advantages, and use cases.

1.3 Context

The course deliverables are:

- A recorded presentation / movie about MongoDB.
- An eBook chapter covering MongoDB concepts, design, installation, examples, and evaluation.
- A MongoDB implementation of the migrated schema (plus a relational baseline for comparison).

1.4 Scope and Deliverables

The project implements the database of a chat application with the following logical entities:

- **Users**: user accounts and authentication data
- **Groups**: chat groups / channels
- **Group Members**: relationship between users and groups
- **Chat Messages**: messages sent within groups
- **Files**: file attachments shared in conversations

1.5 Baseline and Target Data Model

Figure 1 shows the relational schema used as baseline. Figure 2 shows the derived MongoDB schema / collection design.

2 Planned Structure of the Deliverables

2.1 Presentation / Movie Structure

1. Introduction to Document Store Databases
2. MongoDB: History and Overview
3. From SQL to NoSQL: Why Document Stores?
4. MongoDB Data Modeling
5. Practical Example: Messaging Service Migration
6. MongoDB API
7. CAP Theorem: MongoDB's Trade-offs
8. Conclusion and Recommendations
9. References (APA style)

2.2 eBook Chapter Structure

1. Introduction to Document Store Databases
2. MongoDB: History and Overview
3. From SQL to NoSQL: Why Document Stores?

4. MongoDB Data Modeling
5. Installation and Setup
6. Practical Example: Messaging Service Migration
7. MongoDB API
8. MongoDB Ecosystem and Deployment
9. CAP Theorem: MongoDB's Trade-offs
10. Conclusion and Recommendations
11. References (APA style)

3 Team and Responsibilities

Erik	• Creating the project structure and README
Simon	• Converting relational database schema to MongoDB
Ognjen	• Conducting general literature research
Kevin	• Creating the milestones / time plan for the project
To be determined	• Assignment of topics for the presentation / movie and eBook chapters • Organize filming the presentation / movie • Cutting and editing the raw material

4 Project Timeline and Milestones

Table 1 lists the agreed milestones and target dates.

Table 1: Milestones and due dates

#	Milestone	Due date	Key tasks
1	Create project structure	17.02.2026	• Take the example project structure and refine it with own ideas • Think about and discuss the topics in relation to our project
2	Define topics for the presentation / movie and eBook chapters	17.02.2026	• Select topics that are a better fit for the presentation / movie or eBook chapters
3	Convert relational database schema to MongoDB	18.02.2026	• Take a relational database schema from a former project and convert it
4	Assign topics for presentation / movie and eBook chapters to team members	20.02.2026	• Let team members choose topics based on their interests and expertise
5	Film raw material for presentation / movie	05.03.2026	• Plan and film the presentation / movie

Continued on next page

#	Milestone	Due date	Key tasks
6	Complete literature research	05.03.2026	• Search through the DHBW Stuttgart online library, google scholar and other databases and sources for scientific books and papers
7	Cut and edit raw material for presentation / movie	10.03.2026	• Take the raw material and create the final presentation / movie out of it
8	Create eBook chapters	26.03.2026	• Take the sources found in the literature research and write about the defined topics
9	Review eBook chapters	02.04.2026	• Every team member reviews the content, citation of sources and formatting of an eBook chapter of another team member • The team members can then discuss the eBook chapters

5 Schema Appendix

5.1 Relational Baseline Schema

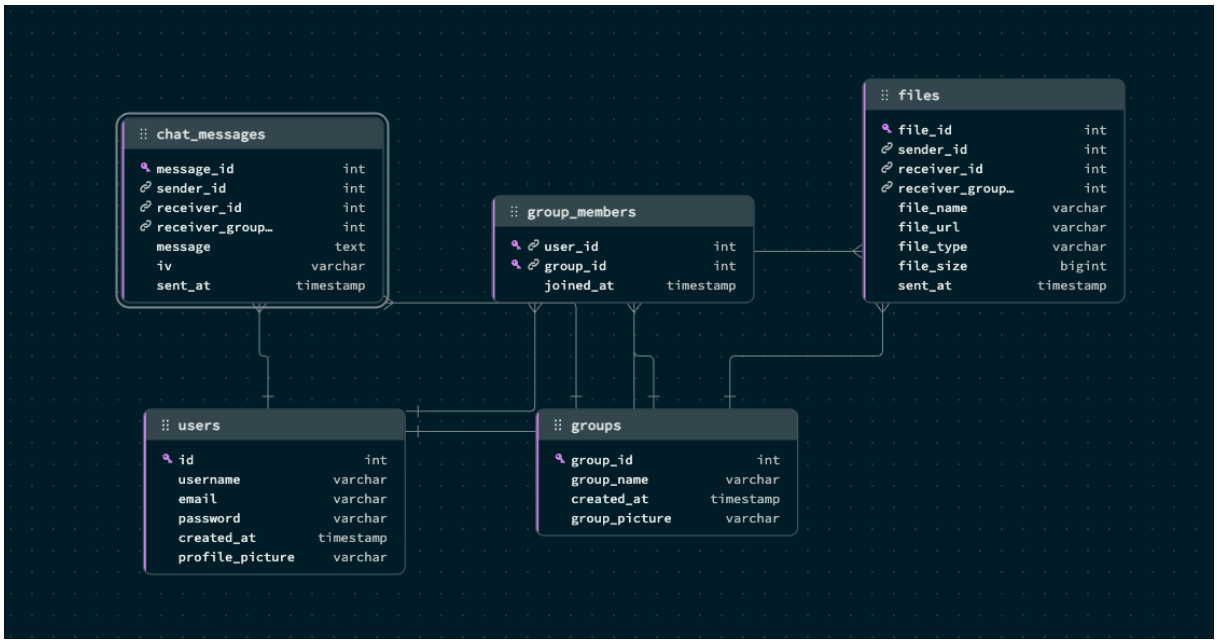

Figure 1: Relational schema used as baseline for the migration

5.2 MongoDB Collection Design

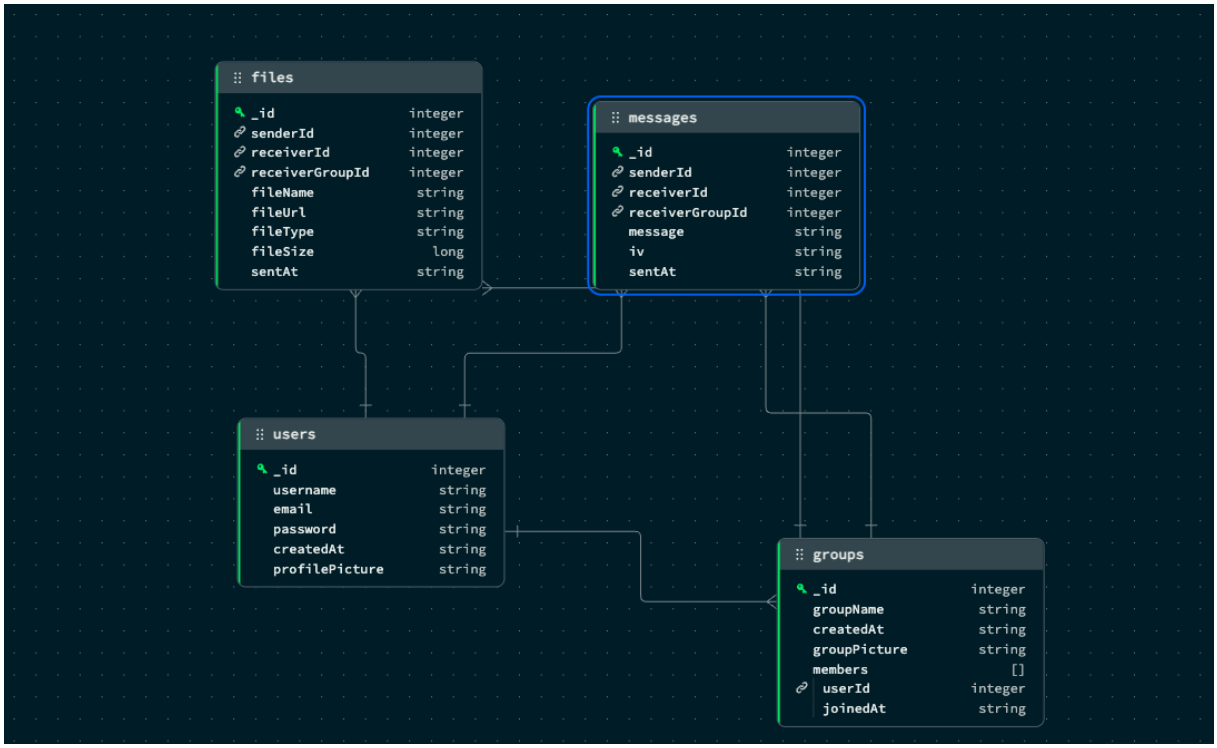

Figure 2: MongoDB schema / collection design derived from the relational baseline