

Aggregate Boundary Rationale: Appointment-Centric Design in MongoDB

For the MongoDB migration, we selected appointment as the central aggregate boundary and embedded related information from the patient, doctor, department, billing, and medicines. This modeling approach mirrors real-world operational needs, where hospital staff must quickly access comprehensive details about a specific appointment—such as who the patient and doctor were, which department was involved, what diagnosis and prescriptions were given, and the associated billing information including the list of medicines. Embedding this information avoids the complexity of relational joins, enabling fast and efficient retrieval. This design supports operations like generating complete appointment summaries, billing breakdowns, and patient history with minimal queries. From a business standpoint, this denormalized structure aligns with the hospital's goal to streamline access to medical, billing, and prescription data in one place benefiting doctors, administrators, and patients alike. This structure enhances both operational efficiency and user experience across the healthcare ecosystem.