ProjectTracker - Entity Relationship Diagram

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DEVELOPER	į	PROJECT.
PK developerId (Long) name (String) [3-50 chars] email (String) [@Email] skills (DevSkills) • FRONTEND • BACKEND • DEVOPS • QA		PK projectId (Long) name (String) [1-255 chars] description (String) [1-255] createdAt (LocalDateTime) deadline (LocalDateTime)[@Future] status (ProjectStatus) • PLANNING • ACTIVE • ON_HOLD
		• COMPLETED
· · · · · · · · · · · · · · · · · · ·		• CANCELLED • ARCHIVED
· · · · · · · · · · · · · · · · · · ·		
	Г	TASK
		PK taskId (Long) FK project_id (Long)
		title (String)
		description (String) status (TaskStatus) • TODO
		status (TaskStatus)
		status (TaskStatus) • TODO • IN_PROGRESS • UNDER_REVIEW • DONE
1	1	status (TaskStatus) • TODO • IN_PROGRESS • UNDER_REVIEW • DONE • BLOCKED
		status (TaskStatus) • TODO • IN_PROGRESS • UNDER_REVIEW • DONE • BLOCKED

TASK_ASSIGNMENT
 PK taskAssignmentId (Long) FK task_id (Long)
 FK developer_id (Long) assignedOn (LocalDateTime) status (TaskAssignmentStatus)
ACTIVE COMPLETED REMOVED
deadline (LocalDateTime) completedOn (LocalDateTime)

AUDIT_LOG

(MongoDB Collection)

PK _id (String/ObjectId)

IDX action_type (String)

• CREATE, UPDATE, DELETE

• READ, LOGIN, LOGOUT

IDX entity_type (String)

• PROJECT, DEVELOPER

• TASK, USER

IDX entity_id (String)

IDX timestamp (LocalDateTime)

IDX actor_name (String)

payload (String/JSON)

RELATIONSHIP LEGEND:

One-to-Many relationship
One side
Many side
PK Primary Key
FK Foreign Key
IDX Indexed field
[@Constraint] Validation constraint

RELATIONSHIP DETAILS:

DEVELOPER (1) — (∞) TASK_ASSIGNMENT

 One developer can have multiple task assignments
 FK: task_assignment.developer_id → developer.developerId

 PROJECT (1) — (∞) TASK

 One project can have multiple tasks
 FK: task.project_id → project.projectId
 Cascade: ALL operations, Orphan removal: true

 TASK (1) — (∞) TASK_ASSIGNMENT

 One task can have multiple assignments (multiple developers)
 FK: task_assignment.task_id → task.taskId
 Cascade: ALL operations, Orphan removal: true

 TASK ← DEVELOPER (Many-to-Many via TASK_ASSIGNMENT)

 A task can be assigned to multiple developers
 A developer can work on multiple tasks

CIRCULAR REFERENCE PREVENTION:

• Junction table: TASK_ASSIGNMENT

- @JsonIgnore on Project.tasks and Task.taskAssignments
- @ToString.Exclude on TaskAssignment.task and TaskAssignment.developer
- @ToString(exclude = {"taskAssignments"}) on Developer

AUDIT TRAIL:

- All PostgreSQL entity changes tracked in MongoDB
- Indexed fields for efficient audit queries
- Automatic timestamp generation