Projektvorschlag: StudyBuddy

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Domain & Problem

StudyBuddy is a lightweight study planner. Students need an easy way to organize courses, plan study sessions, manage tasks, and avoid scheduling conflicts or overload on a single day.

Entities & Relationships (meets ≥4, with 1:1 and 1:many)

- `StudentProfile`: name, email, locale/settings.
- `Course`: title, term, instructor; many-to-one with `StudentProfile`.
- `CoursePreference`: preferred daily workload, notification toggle; one-to-one with `Course`.
- `StudySession`: date/time, duration, location; many-to-one with `Course`.
- `Task`: reading, exercises, project steps; many-to-one with `Course`.
- `CourseNote`: free-text summary or key points; one-to-one with `Course`.

Business Logic (beyond CRUD, unit-tested)

1. Daily load check: sum study session durations per day and warn if a new session exceeds the preferred workload defined in `CoursePreference`.
2. Clash detection: detect and flag overlapping `StudySession`s for the same course.
3. Progress roll-up: aggregate completed tasks per course and compute a completion % (UI + REST).
4. Task prioritization: calculate a priority score based on due date proximity and estimated effort, then return tasks ordered by this score.

UI (Vaadin)

Course list and detail view with progress bar and course note; task board ordered by priority; study session calendar with daily workload indicator and clash warnings.

REST API

CRUD for StudentProfile, Course, CoursePreference, Task, StudySession, CourseNote.
GET `/courses/{id}/progress` for completion %.
POST `/sessions/check-load` to validate a proposed session.
POST `/sessions/check-clash` to detect overlapping sessions.
GET `/tasks?courseId=...&ordered=priority` for prioritized tasks.

Testing focus

Daily workload limits per course. Detection of overlapping study sessions. Correct progress percentage with mixed completed and uncompleted tasks. Stable task ordering given different due dates and effort values.