

## **CS5610\_Project02\_Tennis\_Buddy — Design Document**

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### **Project description**

**Tennis Buddy** — Campus Court Booking & Hitting-Partner Finder

Tennis Buddy is a Node + Express + Vanilla ES6 + Mongo (native driver) web app that helps students discover campus courts, book and cancel time slots with server-side overlap prevention, and find hitting partners by skill and availability.

Core features include a courts catalog (location, surface, hours), reservations CRUD with conflict checks, a Buddy Board where users post/respond to hitting-partner requests (skill band, time windows), and lightweight auth/profile (name, email, skill). Users can search/filter by date, court, or skill, and get clear inline guidance for usability. The backend is modular (routes/repositories/db/middleware), secrets are managed via .env, and code quality is enforced with ESLint + Prettier.

## **User Personas**

### **1) Maya Lin — First-year, New to Tennis**

Profile: 18, Biology major, beginner (2.0–2.5)

Goals: Find friendly partners at similar level; book weekend courts

Pain Points: Intimidated by advanced players; doesn't know peak hours

Behaviors: Evening/weekend availability; short sessions

Key Tasks: Browse courts → see open slots → post "Beginner buddy" request

Success Signals: Books 2 sessions/week; gets 1+ reply within 24h

### **2) Alex Rivera — Competitive Player & Team Sub**

Profile: 21, CS major, advanced (4.0+)

Goals: High-intensity hits; reliable court times

Pain Points: Double-bookings; last-minute cancellations

Behaviors: Early mornings; plans a week ahead

Key Tasks: Filter by court/surface → reserve → close buddy posts after filled

Success Signals: Zero overlap conflicts; streak of weekly bookings

### **3) Priya Shah — Busy Grad Student**

Profile: 24, MBA, intermediate (3.0–3.5), uses calendar religiously

Goals: Efficient 60-min workouts between classes

Pain Points: Wasted time scanning availability; no-shows

Behaviors: Lunchtime hits; prefers confirmed partners

Key Tasks: Search by date range → book → message/confirm via post notes

Success Signals: Finds a partner in <5 minutes; on-time start rate >90%

#### **4) Jordan Kim — Recreational Organizer**

Profile: 22, Sociology, intermediate (3.0), club officer

Goals: Set up casual ladders & meetups

Pain Points: Hard to gauge interest/skill mix; scattered signups

Behaviors: Creates recurring posts; coordinates multiple courts

Key Tasks: Post multi-slot buddy requests; filter by skill/time; manage cancellations

Success Signals: Fills 4+ slots/week; balanced skill pairings

#### **5) Sam Owens — Accessibility-Focused User**

Profile: 20, Design, beginner (2.5), prefers large text/high contrast

Goals: Low-pressure practice; clear directions to courts

Pain Points: Small tap targets; unclear error states

Behaviors: Uses mobile only; evening availability

Key Tasks: Toggle accessibility mode → view nearby courts → book/cancel

Success Signals: Completes booking without pinch-zoom; understands errors instantly

## **User stories**

### **1) CREATE — Jordan Kim (Recreational Organizer) → Buddy Post**

#### **Story:**

As Jordan (club officer, 3.0), I run casual meetups and need a quick way to create a hitting-buddy post that states skill level, time windows, and a short note so people can self-select and fill open slots without back-and-forth DMs.

#### **Acceptance:**

Given I'm logged in, when I submit skill (required), availability (required), notes ( $\leq 200$  chars), then a new post appears at the top of the Buddy Board and under My Posts with timestamp and "Open" status.

Given I submit invalid data (missing skill/availability or notes overflow), when I click submit, then I see inline errors and the form preserves inputs.

### **2) READ — Priya Shah (Busy Grad)**

#### **Story:**

As Priya, I want to browse courts and day availability to quickly find a 60-min slot at lunch.

#### **Acceptance:**

Pick date + court → see booked OR conflict

Conflict results show a friendly "Please select different time slot."

### **3) UPDATE — Alex Rivera (Competitive) → Edit Reservation Time**

#### **Story:**

As Alex (4.0+, practices daily), I occasionally need to shift my reservation (e.g., 07:00–08:00 → 08:00–09:00) when workouts run long, but the system must prevent overlaps on the same court.

#### **Acceptance:**

Given I own a reservation, when I open the edit modal and change start/end within court hours, then the update succeeds and the item re-renders with the new time.

Given the new time overlaps another booking on the same court, when I submit, then I receive 409 with "Time slot overlaps" and my inputs remain in the form.

Given I input invalid times ( $\text{end} \leq \text{start}$  or outside open hours), when I submit, then I see inline validation and no API call is made.

#### **4) DELETE — Maya Lin (Beginner)**

Story:

As Maya, I want to cancel my reservation if my partner can't come, with a brief chance to undo mistakes.

Acceptance:

Cancel → item removed from “My Reservations”; slot becomes open.

Design Mockups: (Home page)

Tennis Buddy

Home | Reservations | Board

Find courts & Hitting partners

Find available Courts

Date

DD/MM/YYYY

Court

Select court

Court 1

Court 2

Court 3

Court 4

Search Button

Hitting buddy board →

Skill level

Availability

Notes

Post Button

Link to the board page

Design Mockups: (Reservation page)

The mockup shows a web interface for 'Tennis Buddy'. At the top is a navigation bar with the app name on the left and links to 'Home', 'Reservations', and 'Board' on the right. A blue arrow points to the 'Reservations' link. Below the navigation bar is a section titled 'Find courts & Hitting partners'. Under this is a sub-section 'Book a court' containing four input fields: 'Court', 'Date', 'Start time', and 'End time'. Below the booking section is a 'Current Reservations' section. It contains a blue card with reservation details: 'Court 1', 'Oct 01, 2025 13:00 - 14:00', and 'Status: Booked'. To the right of the card are two buttons: a yellow 'Edit' button and a pink 'Cancel' button.

Tennis Buddy

Home | Reservations | Board

Find courts & Hitting partners

Book a court

Court

Date

Start time

End time

Current Reservations

Court 1

Oct 01, 2025 13:00 - 14:00

Status: Booked

Edit

Cancel

Design Mockups: (Board page)

Tennis Buddy

Home | Reservations | Board

Find courts & Hitting partners

**Post**

Skill level

Availability

Notes

Post Button

**Filter**

Skill Level

Select

Filter

**Posts**

2.5-3.0 open

Monday

Outdoor

2.5-3.0 open

Monday

Outdoor

2.5-3.0 open

Monday

Outdoor