Chess Platform – Master Feature Specification

This document outlines a comprehensive feature specification for a chess platform inspired by chess.com and lichess.org. It is designed as a portfolio-quality project emphasizing real-time systems, correctness, scalability, and product thinking.

Accounts & Profiles (Core)

- User accounts with email/password authentication and sessions
- Public profile pages
- Bio / About Me section
- Avatar / profile picture
- Online / offline status
- Supporter / patron badge
- Ratings displayed per time control

Gameplay (Core)

- Live real-time chess games
- Server-side legal move enforcement
- Multiple time controls (bullet, blitz, rapid)
- Increment support
- Game clocks synchronized via WebSockets
- Draw offers and resignations
- Server-validated game results

Game Lifecycle & Robustness

- Reconnect to active games after refresh or disconnect
- Resume games across devices
- Server-authoritative game state
- Immutable move history
- Game state recovery on server restart (best effort)

Game History & Replay

- Full game history saved per user
- Move-by-move replay viewer
- Clickable move list
- Last-move highlighting
- Downloadable PGN files
- Sharable game links

Clocks & Timing

- Per-player clocks
- Increment handling
- Time forfeits
- Clock pause logic on disconnect (with timeout)
- Accurate server-side time tracking

Matchmaking & Challenges

- Ranked matchmaking with similarly rated players
- Casual matchmaking
- Direct user challenges
- Open challenges
- Challenge expiration and cancellation

Spectator Mode

- Live spectating of ongoing games
- Real-time board and move list updates
- Read-only spectator permissions
- Spectator join via shared links

Social Features

- Direct messages (DMs)
- Friends / follow system
- Online friends indicator
- Direct challenges to friends

Notifications System

- Challenge notifications
- Game start notifications
- Game end notifications
- New DM notifications
- WebSocket-based delivery

Ratings & Statistics

- Elo or Glicko-style rating system
- Separate ratings per time control
- Win/loss/draw statistics
- Rating progression over time
- Performance by time control
- Win streak tracking

Fair Play & Abuse Prevention

- Server-side move validation
- Rate limiting for DMs, challenges, and logins
- Basic anti-spam protections

Monetization & Business (Phase 2)

- Supporter / patron donations
- Monthly or one-time payments
- Cosmetic-only perks (badges, themes)
- Stripe Checkout integration
- Merch page with external fulfillment
- Order confirmation and order history

Platform & UX Polish

- Dark and light themes
- Board themes and piece sets
- Keyboard shortcuts
- Sound effects
- Mobile-responsive layout
- Accessibility basics

Explicitly Out of Scope (For Now)

- Tournaments
- AI opponents
- Voice or video chat
- Mobile apps
- Full moderation dashboards