

■ Badminton Tournament Manager

Match Scheduling & Court Assignment – Backend Review Tickets

****Source:**** Internal spec review (Priority-3 Scheduling Spec - Tejasvi & Soumya)

****Module:**** Backend (Spring Boot / PostgreSQL)

****Status:**** Review feedback – to be implemented

■ Critical (Must-Fix Before Release)

P3-001	Doubles & Multi-Category Conflict Detection	Conflict query must handle all participants (A1,A2,B1,B2) and cross-category matches.
P3-002	Round Dependency Enforcement	Ensure $\text{earliestStart} \geq \text{prerequisites' end} + \text{buffer}$. Prevent scheduling back-to-back rounds.
P3-003	Court Availability & Blackout Support	Respect court_availability table; skip unavailable windows; show blackout periods.
P3-004	Buffer-Aware DB Validations	Include bufferMinutes in overlap checks; reject adjacent matches if under buffer.
P3-005	Configurable Rest & Duration Settings	Read settings from tournament config; support per-category overrides.

■■ High Priority

P3-006	Topological Scheduling Order	Implement deterministic draw dependency sort to ensure stability.
P3-007	Idempotent Batch & Simulation Mode	Add /simulate and /apply endpoints with batch summary and Idempotent
P3-008	Locks & Manual Control	Add match.locked flag and lock/unlock endpoints; exclude locked matches
P3-009	Performance Optimization	Use in-memory interval maps, bulk validation, target <3s for 300 matches

■ Medium Priority

P3-010	Generated End-Time Column	Add scheduled_end_at computed column; simplify overlap query logic.
P3-011	Timezone Awareness	Switch to ZonedDateTime; ensure consistent persistence in ISO format
P3-012	Court-Balance & Rest-Margin Scoring	Introduce fairness scoring and configurable weights for balance.

■ Testing & Validation

Expand test matrix to cover doubles overlap, cross-category conflicts, dependency delays, buffer enforcement, blackout handling, partial reruns, and idempotency re-apply checks.

■ Nice to Have / Future Enhancements

P3-014	Delay Ripple API	POST /scheduling/delay adjusts downstream matches locally.
P3-015	Swap Tool	POST /scheduling/swap re-validates two match swaps.
P3-016	Metrics Dashboard	Track fill-rate, mean rest, court balance per batch.

■ **Summary Table**

Priority	Ticket	Title	Type	Status
■	P3-001 – P3-005	Critical Fixes	Bug/Feature	To Do
■■	P3-006 – P3-009	High Priority Enhancements	Feature/Tech Debt	To Do
■	P3-010 – P3-012	Medium Improvements	Optimization	To Do
■	P3-013	Expanded Test Matrix	QA	To Do
■	P3-014 – P3-016	Future Enhancements	Backlog	Pending

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