

Pickleball Club App - Detailed Requirements

1. Multi-Tenant Architecture Requirements

1.1 Tenant Management

- **Tenant Registration:** Self-service tenant registration with club details
- **Tenant Configuration:** Each tenant can configure club-specific settings
- **Data Isolation:** Complete data separation between tenants using Row Level Security (RLS)
- **Tenant Identification:** Support subdomain-based tenant routing (e.g., club1.pickleballapp.com)
- **Tenant Dashboard:** Admin interface for tenant-level configuration

1.2 Tenant-Specific Features

- **Branding:** Custom logo, colors, and club name per tenant
- **Settings:** Club-specific rules, scoring systems, and policies
- **User Roles:** Tenant-specific admin and member roles
- **Data Export:** Tenant can export their own data
- **Billing:** Per-tenant subscription management

2. Authentication & Authorization Requirements

2.1 Single Sign-On (SSO)

- **Multi-Provider Support:** Microsoft Azure AD and Google Workspace
- **Per-Tenant Configuration:** Each tenant configures their own SSO provider
- **Dynamic Provider Selection:** Automatic detection of tenant's SSO provider
- **Fallback Authentication:** Email/password login when SSO not configured
- **User Provisioning:** Automatic user creation on first SSO login
- **Role Mapping:** Map SSO groups to application roles

2.2 Security Features

- **JWT Token Management:** Secure token generation and validation
- **Refresh Token Rotation:** Automatic token refresh for security
- **Session Management:** Proper session timeout and cleanup
- **Multi-Factor Authentication:** Optional 2FA for sensitive operations
- **Password Policy:** Configurable password requirements per tenant
- **Account Lockout:** Protection against brute force attacks

2.3 Authorization Levels

- **Super Admin:** Platform-wide administration

- **Tenant Admin:** Full access within tenant
- **Club Manager:** Event and player management
- **Member:** Limited access to own data and public events
- **Guest:** Read-only access to public information

3. Player Management Requirements

3.1 Player Profiles

- **Basic Information:** Name, email, phone, emergency contact
- **Skill Level:** Rating system (1.0-5.0+ pickleball rating)
- **Playing Preferences:** Preferred playing times, court preferences
- **Health Information:** Medical conditions, injury history (optional)
- **Profile Pictures:** Upload and manage player photos
- **Contact Preferences:** Communication preferences and opt-outs

3.2 Player Registration

- **Self-Registration:** Players can register themselves
- **Admin Registration:** Admins can add players manually
- **Bulk Import:** CSV import for existing member lists
- **Membership Status:** Active, inactive, suspended, trial members
- **Waiver Management:** Digital waiver signing and tracking
- **Payment Integration:** Membership fee processing

3.3 Player Statistics

- **Match History:** Complete record of all matches played
- **Win/Loss Record:** Statistics by opponent skill level
- **Rating Progression:** Historical skill rating changes
- **Playing Frequency:** Activity tracking and engagement metrics
- **Partner Preferences:** Track preferred playing partners
- **Performance Analytics:** Detailed performance insights

4. Match Management Requirements

4.1 Match Creation

- **Manual Match Creation:** Admins create specific matches
- **Automated Match Generation:** Algorithm-based match creation
- **Round Robin Tournaments:** Structured tournament formats
- **Ladder Tournaments:** Ongoing competitive ladders
- **Social Play:** Casual, non-competitive match organization
- **Doubles/Singles Support:** Both match formats

4.2 Match Scheduling

- **Court Assignment:** Automatic and manual court allocation

- **Time Slot Management:** Configurable time slots and durations
- **Conflict Detection:** Prevent double-booking players/courts
- **Recurring Matches:** Weekly/monthly recurring match setups
- **Weather Contingency:** Rescheduling for weather conditions
- **Calendar Integration:** Export to personal calendars

4.3 Score Tracking

- **Live Score Entry:** Real-time score updates during matches
- **Bulk Score Entry:** Post-match bulk score input
- **Score Validation:** Ensure scores follow pickleball rules
- **Match Results:** Win/loss determination and recording
- **Statistics Calculation:** Automatic stat updates from scores
- **Score History:** Complete historical score records

4.4 Match Organization Features

- **Player Skill Balancing:** Algorithm to create balanced matches
- **Court Rotation:** Fair court distribution among players
- **Partner Rotation:** Ensure players play with different partners
- **No-Show Handling:** Manage and track player absences
- **Substitute Players:** Last-minute player substitutions
- **Match Notifications:** Automated reminders and updates

5. Event Management Requirements

5.1 Event Creation

- **Event Types:** Tournaments, social play, lessons, club meetings
- **Event Templates:** Reusable event configurations
- **Multi-Day Events:** Support for extended tournaments
- **Registration Management:** Event-specific registration process
- **Capacity Limits:** Maximum participant limits
- **Event Categories:** Skill-level specific events

5.2 Event Registration

- **Online Registration:** Web-based registration system
- **Registration Deadlines:** Automatic cutoff dates
- **Waitlist Management:** Queue system when events are full
- **Registration Fees:** Payment processing for paid events
- **Team Registration:** Group registration for team events
- **Guest Registration:** Non-member participation

5.3 Event Communication

- **Event Announcements:** Broadcast messaging to participants
- **Registration Confirmations:** Automated confirmation emails
- **Event Reminders:** Scheduled reminder notifications

- **Event Updates:** Real-time updates on changes
- **Results Sharing:** Post-event results distribution
- **Photo Sharing:** Event photo galleries

6. Court Management Requirements

6.1 Court Configuration

- **Court Details:** Name, location, surface type, lighting
- **Court Availability:** Operating hours and seasonal schedules
- **Court Capacity:** Number of simultaneous matches
- **Maintenance Scheduling:** Court closure for maintenance
- **Equipment Tracking:** Net height, court condition monitoring
- **Accessibility Features:** ADA compliance and accessibility options

6.2 Court Booking

- **Reservation System:** Members can book courts
- **Booking Rules:** Time limits, advance booking restrictions
- **Priority Booking:** Member tier-based priority
- **Recurring Bookings:** Regular weekly/monthly reservations
- **Cancellation Policy:** Automated cancellation handling
- **Court Sharing:** Multiple groups sharing court time

7. Communication Requirements

7.1 Notification System

- **Email Notifications:** Comprehensive email communication
- **SMS Notifications:** Text message alerts for urgent updates
- **In-App Notifications:** Real-time notifications within the app
- **Push Notifications:** Mobile app push notifications
- **Notification Preferences:** User-controlled notification settings
- **Delivery Tracking:** Confirmation of message delivery

7.2 Communication Channels

- **Club Announcements:** Broadcast messaging to all members
- **Event-Specific Messages:** Targeted communication for events
- **Direct Messaging:** Member-to-member communication
- **Group Messages:** Team or group-specific messaging
- **Emergency Alerts:** Critical safety or weather notifications
- **Newsletter System:** Regular club newsletter distribution

8. Administrative Requirements

8.1 User Management

- **Member Directory:** Searchable member database
- **Role Assignment:** Flexible role and permission management
- **Account Management:** User account creation, modification, deletion
- **Access Control:** Granular permission settings
- **Audit Logging:** Track all administrative actions
- **Data Import/Export:** Member data portability

8.2 Club Settings

- **General Settings:** Club name, contact info, hours of operation
- **Rule Configuration:** Club-specific rules and policies
- **Scoring Systems:** Configurable scoring and rating systems
- **Season Management:** Define playing seasons and schedules
- **Fee Structure:** Membership and event fee configuration
- **Integration Settings:** Third-party service configurations

8.3 Reporting & Analytics

- **Member Reports:** Membership statistics and trends
- **Activity Reports:** Usage patterns and engagement metrics
- **Financial Reports:** Revenue, expenses, and financial tracking
- **Event Reports:** Event participation and success metrics
- **Court Utilization:** Court usage and efficiency reports
- **Custom Reports:** Configurable reporting tools

9. Technical Requirements

9.1 Performance

- **Page Load Speed:** Sub-2 second page load times
- **Concurrent Users:** Support 500+ concurrent users per tenant
- **Database Performance:** Optimized queries with proper indexing
- **Caching Strategy:** Redis caching for frequently accessed data
- **CDN Integration:** Content delivery network for static assets
- **Auto-scaling:** Automatic resource scaling based on demand

9.2 Security

- **Data Encryption:** Encryption at rest and in transit
- **SQL Injection Protection:** Parameterized queries and input validation
- **XSS Prevention:** Cross-site scripting protection
- **CSRF Protection:** Cross-site request forgery prevention
- **Rate Limiting:** API rate limiting and abuse prevention
- **Security Headers:** Comprehensive security header implementation

9.3 Monitoring & Logging

- **Application Monitoring:** Real-time application performance monitoring
- **Error Tracking:** Comprehensive error logging and alerting

- **Audit Trails:** Complete audit logs for sensitive operations
- **Usage Analytics:** User behavior and application usage tracking
- **Health Checks:** Automated system health monitoring
- **Log Aggregation:** Centralized logging with search capabilities

10. Mobile & Accessibility Requirements

10.1 Mobile Responsiveness

- **Responsive Design:** Optimized for all screen sizes
- **Touch-Friendly Interface:** Mobile-optimized user interactions
- **Offline Functionality:** Limited offline capability for core features
- **Progressive Web App:** PWA features for mobile-like experience
- **Mobile Performance:** Optimized for mobile data connections
- **App Store Presence:** Native mobile app development consideration

10.2 Accessibility

- **WCAG 2.1 AA Compliance:** Full accessibility standard compliance
- **Screen Reader Support:** Compatible with assistive technologies
- **Keyboard Navigation:** Complete keyboard accessibility
- **High Contrast Mode:** Support for high contrast displays
- **Font Size Scaling:** Adjustable text size options
- **Alt Text:** Comprehensive image descriptions

11. Integration Requirements

11.1 Payment Processing

- **Stripe Integration:** Secure payment processing
- **Subscription Management:** Recurring membership billing
- **Event Payments:** One-time event registration fees
- **Refund Processing:** Automated and manual refund handling
- **Payment History:** Complete payment transaction records
- **Tax Calculation:** Automatic tax calculation and reporting

11.2 Calendar Integration

- **Google Calendar:** Two-way calendar synchronization
- **Outlook Calendar:** Microsoft calendar integration
- **iCal Export:** Standard calendar format export
- **Event Sync:** Automatic event and match synchronization
- **Reminder Sync:** Calendar reminder integration
- **Timezone Handling:** Proper timezone management

11.3 Communication Integrations

- **Email Service:** Integration with SendGrid or similar

- **SMS Service:** Twilio integration for text messaging
- **Slack Integration:** Club communication via Slack
- **Social Media:** Facebook and Instagram integration
- **Weather API:** Weather data for event planning
- **Maps Integration:** Location services and directions

12. Data Management Requirements

12.1 Data Backup & Recovery

- **Automated Backups:** Daily automated database backups
- **Point-in-Time Recovery:** Ability to restore to specific timestamps
- **Cross-Region Backup:** Geographically distributed backup storage
- **Backup Testing:** Regular backup integrity verification
- **Disaster Recovery:** Comprehensive disaster recovery plan
- **Data Retention:** Configurable data retention policies

12.2 Data Privacy & Compliance

- **GDPR Compliance:** European data protection regulation compliance
- **CCPA Compliance:** California consumer privacy act compliance
- **Data Anonymization:** Tools for data anonymization
- **Right to Deletion:** Member data deletion capabilities
- **Privacy Controls:** Granular privacy setting controls
- **Data Processing Agreements:** Legal compliance documentation

13. Deployment & DevOps Requirements

13.1 Development Environment

- **Local Development:** Docker-based local development setup
- **CI/CD Pipeline:** Automated testing and deployment pipeline
- **Environment Parity:** Consistent dev/staging/production environments
- **Database Migrations:** Version-controlled database schema changes
- **Feature Flags:** Feature toggle system for gradual rollouts
- **Code Quality:** Automated code quality checks and linting

13.2 Production Environment

- **Cloud Hosting:** AWS/GCP/Azure cloud deployment
- **Load Balancing:** Application load balancer configuration
- **SSL/TLS:** HTTPS encryption for all communications
- **Domain Management:** Custom domain support for tenants
- **CDN Configuration:** Content delivery network setup
- **Monitoring Setup:** Production monitoring and alerting

14. User Experience Requirements

14.1 Interface Design

- **Intuitive Navigation:** Clear and logical navigation structure
- **Modern UI:** Contemporary, clean interface design
- **Consistent Branding:** Cohesive visual design system
- **Dark Mode:** Optional dark theme support
- **Loading States:** Clear feedback during loading operations
- **Error Messages:** User-friendly error messaging

14.2 User Onboarding

- **Welcome Tour:** Guided tour for new users
- **Help Documentation:** Comprehensive user guides
- **Video Tutorials:** Step-by-step video instructions
- **FAQ System:** Searchable frequently asked questions
- **Support Chat:** In-app customer support chat
- **Feedback System:** User feedback collection and processing