

Achievement System Design Document

Overview

The Achievement System is a comprehensive gamification feature for Mindful Champion that motivates users to complete training programs, practice drills, and engage deeply with the platform.

Achievement Tiers & Types

1. Drill Completion Achievements (Medals)

Individual drill completions within sections:

- **Bronze Medal:** Complete a drill 1 time
- **Silver Medal:** Complete a drill 5 times
- **Gold Medal:** Complete a drill 10 times

Example: "Serving - Bronze Medal" → "Serving - Silver Medal" → "Serving - Gold Medal"

2. Section Completion Achievements (Badges)

Complete all drills in a category:

- **Serving Master:** Complete all serving drills
- **Dinking Expert:** Complete all dinking drills
- **Third Shot Specialist:** Complete all third shot drills
- **Volley Champion:** Complete all volley drills
- **Strategy Guru:** Complete all strategy drills
- **Advanced Techniques Master:** Complete all advanced technique drills
- **Mental Game Champion:** Complete all mental game drills

3. Skill Level Achievements (Level Badges)

Complete all sections at a skill level:

- **Beginner Champion:** Complete all Beginner sections
- **Intermediate Master:** Complete all Intermediate sections
- **Advanced Expert:** Complete all Advanced sections
- **Pro Legend:** Complete all Pro sections

4. Multi-Section Achievements (Combo Badges)

Complete multiple specific categories:

- **Fundamentals Ace:** Complete Serving + Return sections
- **Kitchen Dominator:** Complete Dinking + Volley sections
- **Court Commander:** Complete Footwork + Strategy sections
- **Complete Player:** Complete all fundamental categories

5. Ultimate Achievement (Crown)

- **Mindful Champion Crown:** Complete ALL training programs across ALL skill levels

Database Schema

Updated Achievement Model

```

enum AchievementTier []
  BRONZE
  SILVER
  GOLD
  BADGE
  CROWN
}

enum AchievementCategory []
  SERVING
  RETURN_OF_SERVE
  DINKING
  THIRD_SHOT
  VOLLEY
  FOOTWORK
  STRATEGY
  MENTAL_GAME
  ADVANCED_TECHNIQUES
  SKILL_LEVEL
  MULTI_SECTION
  ULTIMATE
}

model Achievement []
  id      String          @id @default(cuid())
  achievementId String    @unique // e.g., "serving_bronze", "beginner_champion"
  name    String          // e.g., "Serving Bronze Medal"
  description String      @db.Text
  tier    AchievementTier
  category AchievementCategory
  icon    String?         // Icon name or URL
  badgeUrl String?       // Image URL for badge
  requirement Json        // Detailed requirements (see below)
  points   Int             @default(0)
  rarity   String          @default("common") // common, rare, epic, legendary
  order    Int             @default(0) // Display order
  isActive Boolean         @default(true)
  createdAt DateTime        @default(now())
  updatedAt DateTime        @updatedAt

  userAchievements UserAchievement[]
  progressTracking AchievementProgress[]
}

model UserAchievement []
  id      String          @id @default(cuid())
  userId String
  achievementId String
  unlockedAt DateTime        @default(now())
  notified Boolean         @default(false) // Whether user has seen the notification

  user     User            @relation(fields: [userId], references: [id], onDelete: Cascade)
  achievement Achievement @relation(fields: [achievementId], references: [id], onDelete: Cascade)

  @@unique([userId, achievementId])
  @@index([userId])
  @@index([unlockedAt])
}

```

```

model AchievementProgress {
    id          String      @id @default(cuid())
    userId      String
    achievementId String
    currentValue Float       @default(0) // e.g., 3 out of 10 completions
    targetValue  Float       // e.g., 10
    percentage   Float       @default(0) // 0-100
    lastUpdated  DateTime    @updatedAt

    user        User        @relation(fields: [userId], references: [id], onDelete: Cascade)
    achievement  Achievement @relation(fields: [achievementId], references: [id], onDelete: Cascade)

    @@unique([userId, achievementId])
    @@index([userId])
}

```

Requirement JSON Structure

```
{
  "type": "drill_completion" || "section_completion" || "level_completion" || "multi_section" || "ultimate",
  "criteria": {
    "drillId": "serving_basics", // For drill achievements
    "completions": 10, // For medal tiers
    "section": "serving", // For section achievements
    "skillLevel": "BEGINNER", // For level achievements
    "sections": ["serving", "return_of_serve"], // For multi-section
    "allSections": true // For ultimate
  }
}
```

Achievement Points System

Tier	Points
Bronze Medal	10
Silver Medal	25
Gold Medal	50
Section Badge	100
Level Badge	250
Multi-Section Badge	200
Ultimate Crown	1000

Achievement Engine Logic

1. Trigger Points

Achievement checks are triggered when:

- User completes a drill
- User completes a video within a training program
- User marks a training session as complete
- User finishes a training program

2. Check Flow

1. Event occurs (e.g., drill completion)
2. Update relevant progress trackers
3. Check **if** any achievements are unlocked
4. Award achievements
5. Update user's total points
6. Queue notification
7. Log achievement event

3. Progress Calculation

For each achievement type:

Drill Medals:

- Bronze: 1 completion
- Silver: 5 completions
- Gold: 10 completions

Section Badges:

- Count unique drills completed in section
- Achievement unlocked when count = total drills in section

Level Badges:

- Count sections completed at skill level
- Achievement unlocked when count = total sections at level

Multi-Section:

- Track completion of specific sections
- Achievement unlocked when all required sections complete

Ultimate Crown:

- Track completion across all levels and sections
- Achievement unlocked when everything is complete

UI Components

1. Achievement Gallery Page

- Grid layout showing all achievements
- Filter by: All, Locked, Unlocked, By Category
- Each achievement card shows:
 - Icon/Badge
 - Name

- Description
- Progress bar (for locked)
- Points earned
- Unlock date (for unlocked)
- Rarity indicator

2. Achievement Notification

Pop-up animation when achievement is earned:

- Large badge/medal display
- Confetti animation
- Achievement name and description
- Points earned
- “Share” and “View Gallery” buttons

3. Progress Indicators

- Show progress toward next achievement in relevant sections
- Mini progress bars on training pages
- “Next achievement” widget on dashboard

4. User Profile Showcase

- Display top 3-5 achievements
- Total points and rank
- Achievement completion percentage
- Recent unlocks

5. Leaderboard (Optional)

- Top users by total achievement points
- Weekly/Monthly/All-time views
- Filter by skill level

API Endpoints

GET /api/achievements

Get all achievement definitions

- Query params: category, tier, userId (to include progress)

GET /api/achievements/user/:userId

Get user's achievements and progress

- Returns: unlocked achievements, progress toward locked achievements

POST /api/achievements/check

Check for achievement unlocks

- Body: { userId, eventType, eventData }
- Returns: newly unlocked achievements

GET /api/achievements/leaderboard

Get achievement leaderboards

- Query params: period, skillLevel, limit

PATCH /api/achievements/notification/:achievementId

Mark achievement notification as seen

- Body: { userId }

Achievement Definitions

Serving Category

1. **Serving Bronze** - Complete 1 serving drill
2. **Serving Silver** - Complete 5 serving drills
3. **Serving Gold** - Complete 10 serving drills
4. **Serving Master** - Complete all serving drills

Dinking Category

1. **Dinking Bronze** - Complete 1 dinking drill
2. **Dinking Silver** - Complete 5 dinking drills
3. **Dinking Gold** - Complete 10 dinking drills
4. **Dinking Expert** - Complete all dinking drills

Third Shot Category

1. **Third Shot Bronze** - Complete 1 third shot drill
2. **Third Shot Silver** - Complete 5 third shot drills
3. **Third Shot Gold** - Complete 10 third shot drills
4. **Third Shot Specialist** - Complete all third shot drills

Volley Category

1. **Volley Bronze** - Complete 1 volley drill
2. **Volley Silver** - Complete 5 volley drills
3. **Volley Gold** - Complete 10 volley drills
4. **Volley Champion** - Complete all volley drills

Strategy Category

1. **Strategy Bronze** - Complete 1 strategy drill
2. **Strategy Silver** - Complete 5 strategy drills
3. **Strategy Gold** - Complete 10 strategy drills
4. **Strategy Guru** - Complete all strategy drills

Advanced Techniques Category

1. **Advanced Bronze** - Complete 1 advanced drill
2. **Advanced Silver** - Complete 5 advanced drills
3. **Advanced Gold** - Complete 10 advanced drills
4. **Advanced Master** - Complete all advanced drills

Mental Game Category

1. **Mental Bronze** - Complete 1 mental game drill
2. **Mental Silver** - Complete 5 mental game drills
3. **Mental Gold** - Complete 10 mental game drills
4. **Mental Champion** - Complete all mental game drills

Skill Level Badges

1. **Beginner Champion** - Complete all Beginner sections
2. **Intermediate Master** - Complete all Intermediate sections
3. **Advanced Expert** - Complete all Advanced sections
4. **Pro Legend** - Complete all Pro sections

Multi-Section Badges

1. **Fundamentals Ace** - Complete Serving + Return sections
2. **Kitchen Dominator** - Complete Dinking + Volley sections
3. **Court Commander** - Complete Footwork + Strategy sections
4. **Complete Player** - Complete all fundamental sections

Ultimate Achievement

1. **Mindful Champion Crown** - Complete ALL training programs across ALL levels

Integration Points

1. Drill Completion Hook

When user completes a drill:

```
await checkAchievements(userId, 'drill_completion', {
  drillId: drill.id,
  drillName: drill.name,
  category: drill.category,
  skillLevel: drill.skillLevel
});
```

2. Video Completion Hook

When user completes a training video:

```
await checkAchievements(userId, 'video_completion', {
  videoId: video.id,
  programId: video.programId,
  day: video.day
});
```

3. Program Completion Hook

When user completes a training program:

```
await checkAchievements(userId, 'program_completion', {
  programId: program.id,
  skillLevel: program.skillLevel
});
```

Notification Strategy

In-App Notifications

- Popup modal with animation when achievement is unlocked

- Notification bell icon with badge count
- Achievement feed on dashboard

Email Notifications (Optional)

- Weekly digest of achievements earned
- Special email for major achievements (Level badges, Crown)

Push Notifications (Future)

- Mobile app push notifications for achievement unlocks

Visual Design

Color Coding

- Bronze: #CD7F32
- Silver: #C0C0C0
- Gold: #FFD700
- Badge: #4F46E5 (Indigo)
- Crown: #9333EA (Purple) with gold accents

Icons

Use Lucide React icons:

- Medal: Trophy, Award
- Badge: Shield, Star
- Crown: Crown
- Progress: BarChart, TrendingUp

Animations

- Unlock animation: Scale + Fade + Confetti
- Progress bar: Smooth fill animation
- Badge shake on hover

Testing Strategy

Unit Tests

- Achievement engine logic
- Progress calculation
- Point calculation

Integration Tests

- Drill completion → Achievement unlock
- Multiple achievements at once
- Progress tracking accuracy

E2E Tests

- Complete user journey from drill → achievement
- Gallery display and filtering
- Notification display

Performance Considerations

Caching

- Cache achievement definitions (rarely change)
- Cache user achievement status
- Invalidate cache on new unlock

Database Indexes

- Index on userId in UserAchievement and AchievementProgress
- Index on achievementId for quick lookups
- Composite index on (userId, achievementId)

Batch Processing

- Check multiple achievements in single query
- Bulk insert for progress updates
- Queue notifications for async processing

Future Enhancements

1. Social Features

- Share achievements on social media
- Compare achievements with friends
- Achievement showcases on profile

2. Seasonal Achievements

- Limited-time special achievements
- Holiday-themed achievements
- Tournament achievements

3. Streak Achievements

- Login streaks
- Training streaks
- Consistency badges

4. Milestone Achievements

- Total drills completed
- Total training hours
- Total videos watched

5. Community Achievements

- Help other users
- Share tips
- Contribute to community

Success Metrics

Track the following to measure achievement system success:

- Achievement unlock rate by type
- Average achievements per user
- User engagement increase after achievements launch

- Training completion rate change
- Session duration change
- User retention improvement

Implementation Timeline

Phase 1: Core System (Week 1)

- Database schema
- Achievement engine
- Basic UI components

Phase 2: Integration (Week 2)

- Hook into drill completion
- Hook into training programs
- Testing and bug fixes

Phase 3: Polish (Week 3)

- Animations and visual effects
- Leaderboard
- Notification system

Phase 4: Launch (Week 4)

- Deploy to production
- Monitor metrics
- Gather user feedback