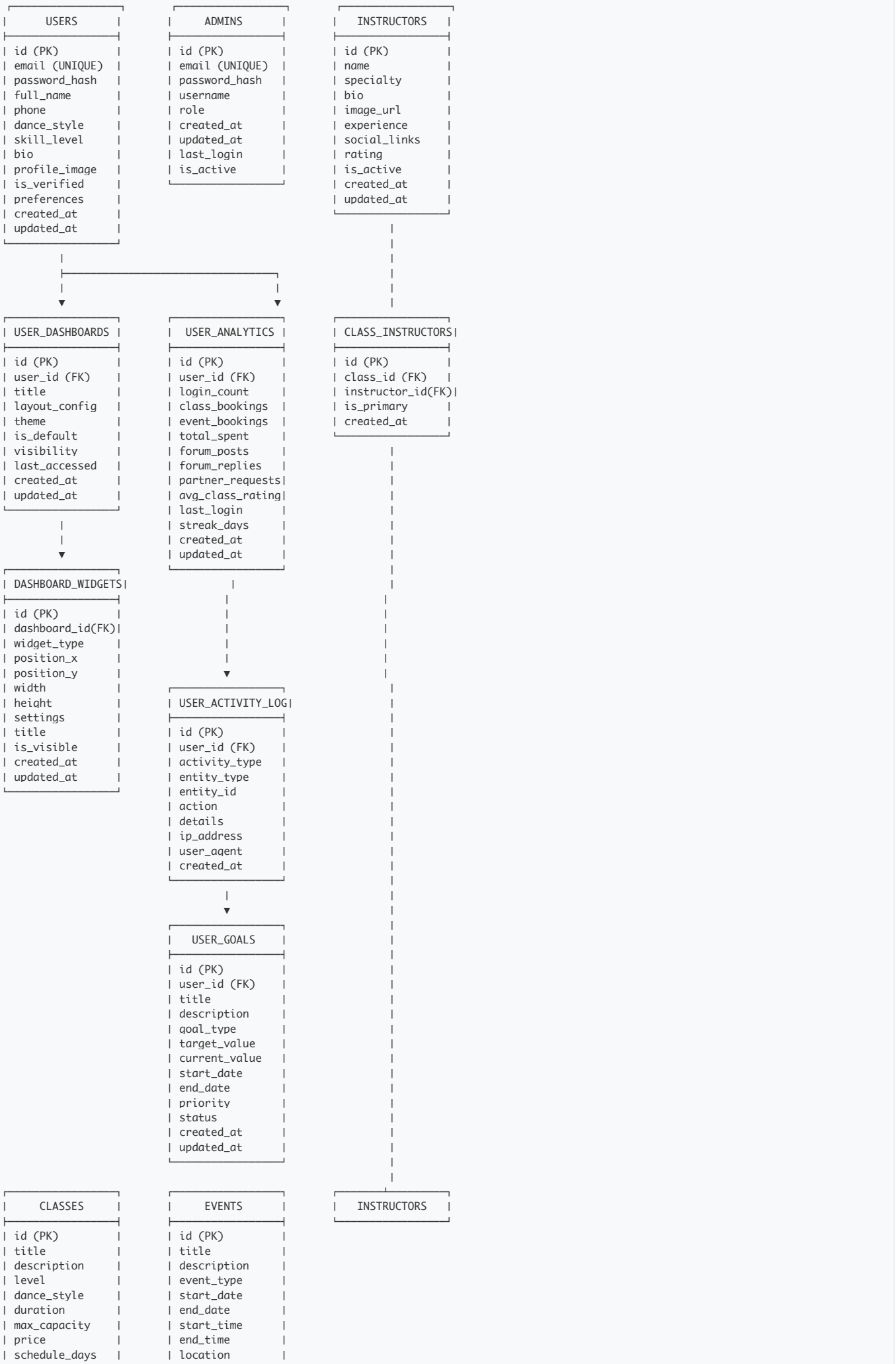
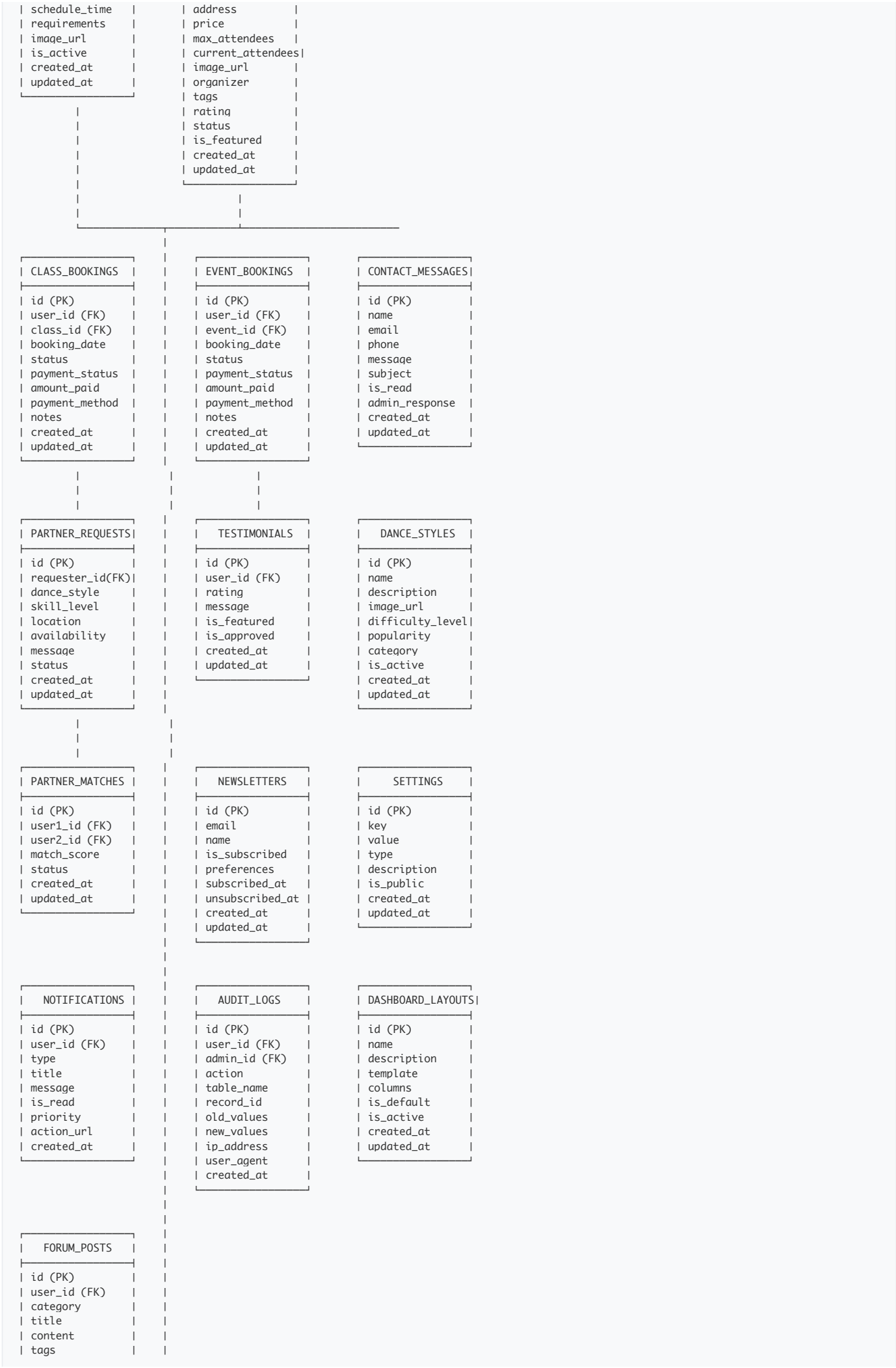
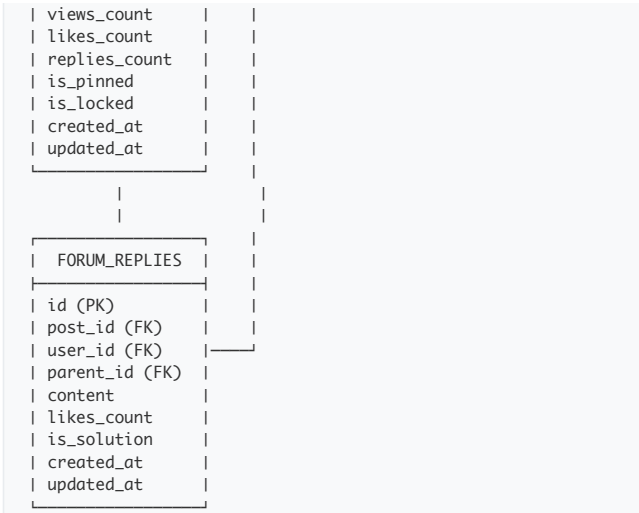
Dance Website - Entity Relationship Diagram (ERD) with User Dashboards

Database Schema Design

Core Entities and Relationships


USERS
id (PK)
email (UNIQUE)
password_hash
full_name
phone
dance_style
skill_level
bio
profile_image
is_verified
preferences
created_at
updated_at
ADMINS
id (PK)
email (UNIQUE)
password_hash
username
role
created_at
updated_at
last_login
is_active
INSTRUCTORS
id (PK)
name
specialty
bio
image_url
experience
social_links
rating
is_active
created_at
updated_at
USER_DASHBOARDS
id (PK)
user_id (FK)
title
layout_config
theme
is_default
visibility
last_accessed
created_at
updated_at
USER_ANALYTICS
id (PK)
user_id (FK)
login_count
class_bookings
event_bookings
total_spent
forum_posts
forum_replies
partner_requests
avg_class_rating
last_login
streak_days
created_at
updated_at
CLASS_INSTRUCTORS
id (PK)
class_id (FK)
instructor_id(FK)
is_primary
created_at
DASHBOARD_WIDGETS
id (PK)
dashboard_id(FK)
widget_type
position_x
position_y
width
height
settings
title
is_visible
created_at
updated_at
USER_ACTIVITY_LOG
id (PK)
user_id (FK)
activity_type
entity_type
entity_id
action
details
ip_address
user_agent
created_at
USER_GOALS
id (PK)
user_id (FK)
title
description
goal_type
target_value
current_value
start_date
end_date
priority
status
created_at
updated_at
CLASSES
id (PK)
title
description
level
dance_style
duration
max_capacity
price
schedule_days
EVENTS
id (PK)
title
description
event_type
start_date
end_date
start_time
end_time
location
INSTRUCTORS


schedule_time
requirements
image_url
is_active
created_at
updated_at
address
price
max_attendees
current_attendees
image_url
organizer
tags
rating
status
is_featured
created_at
updated_at
CLASS_BOOKINGS
id (PK)
user_id (FK)
class_id (FK)
booking_date
status
payment_status
amount_paid
payment_method
notes
created_at
updated_at
EVENT_BOOKINGS
id (PK)
user_id (FK)
event_id (FK)
booking_date
status
payment_status
amount_paid
payment_method
notes
created_at
updated_at
CONTACT_MESSAGES
id (PK)
name
email
phone
message
subject
is_read
admin_response
created_at
updated_at
PARTNER_REQUESTS
id (PK)
requester_id(FK)
dance_style
skill_level
location
availability
message
status
created_at
updated_at
TESTIMONIALS
id (PK)
user_id (FK)
rating
message
is_featured
is_approved
created_at
updated_at
DANCE_STYLES
id (PK)
name
description
image_url
difficulty_level
popularity
category
is_active
created_at
updated_at
PARTNER_MATCHES
id (PK)
user1_id (FK)
user2_id (FK)
match_score
status
created_at
updated_at
NEWSLETTERS
id (PK)
email
name
is_subscribed
preferences
subscribed_at
unsubscribed_at
created_at
updated_at
SETTINGS
id (PK)
key
value
type
description
is_public
created_at
updated_at
NOTIFICATIONS
id (PK)
user_id (FK)
type
title
message
is_read
priority
action_url
created_at
AUDIT_LOGS
id (PK)
user_id (FK)
admin_id (FK)
action
table_name
record_id
old_values
new_values
ip_address
user_agent
created_at
DASHBOARD_LAYOUTS
id (PK)
name
description
template
columns
is_default
is_active
created_at
updated_at
FORUM_POSTS
id (PK)
user_id (FK)
category
title
content
tags



Dashboard System Features

User Dashboard Entities

USER_DASHBOARDS

- **Purpose**: Each user can create multiple personalized dashboards
- **Key Features**:
- Multiple dashboard configurations per user
- Custom themes and layouts
- Privacy controls (public/private)
- Default dashboard selection

DASHBOARD_WIDGETS

- **Purpose**: Configurable widgets for dashboard customization
- **Widget Types**:
- `upcoming_classes` - Shows user's upcoming class bookings
- `progress_tracker` - Displays dance skill progress
- `goal_summary` - Shows user's dance goals and completion
- `activity_feed` - Recent user activities
- `partner_matches` - Potential dance partners
- `class_recommendations` - AI-suggested classes
- `achievement_badges` - User achievements and milestones
- `calendar_view` - Personal dance schedule
- `expense_tracker` - Spending on classes/events
- `instructor_favorites` - Favorite instructors

USER_ANALYTICS

- **Purpose**: Comprehensive user activity analytics
- **Tracked Metrics**:
- Login frequency and patterns
- Class/event booking history
- Forum participation
- Partner matching activity
- Spending patterns
- Goal completion rates
- Skill progression

USER_GOALS

- **Purpose**: Personal goal setting and tracking
- **Goal Types**:
- `skill_improvement` - Master specific dance styles
- `frequency` - Attend X classes per month
- `social` - Make X dance partner connections
- `performance` - Participate in events/competitions

- `financial` - Stay within budget limits

USER_ACTIVITY_LOG

- **Purpose**: Detailed activity tracking for insights
- **Tracked Activities**:
- Page views and navigation patterns
- Feature usage analytics
- Search behavior
- Booking patterns
- Social interactions

Relationships

One-to-Many Relationships

- **USERS** → **CLASS_BOOKINGS** (1:N)
- **USERS** → **EVENT_BOOKINGS** (1:N)
- **USERS** → **PARTNER_REQUESTS** (1:N)
- **USERS** → **TESTIMONIALS** (1:N)
- **USERS** → **NOTIFICATIONS** (1:N)
- **USERS** → **FORUM_POSTS** (1:N)
- **USERS** → **FORUM_REPLIES** (1:N)
- **USERS** → **AUDIT_LOGS** (1:N)
- **USERS** → **USER_DASHBOARDS** (1:N)
- **USERS** → **USER_ANALYTICS** (1:1)
- **USERS** → **USER_GOALS** (1:N)
- **USERS** → **USER_ACTIVITY_LOG** (1:N)
- **USER_DASHBOARDS** → **DASHBOARD_WIDGETS** (1:N)
- **CLASSES** → **CLASS_BOOKINGS** (1:N)
- **EVENTS** → **EVENT_BOOKINGS** (1:N)
- **FORUM_POSTS** → **FORUM_REPLIES** (1:N)
- **FORUM_REPLIES** → **FORUM_REPLIES** (1:N - self-referencing for nested replies)

Many-to-Many Relationships

- **CLASSES** ↔ **INSTRUCTORS** (through CLASS_INSTRUCTORS)
- **USERS** ↔ **USERS** (through PARTNER_MATCHES for partner matching)
- **USER_DASHBOARDS** ↔ **DASHBOARD_LAYOUTS** (through layout configuration)

Key Constraints

Primary Keys (PK)

- All tables have an auto-incrementing `id` as primary key

Foreign Keys (FK)

- `user_id` references USERS(id)
- `admin_id` references ADMINS(id)
- `class_id` references CLASSES(id)
- `event_id` references EVENTS(id)
- `instructor_id` references INSTRUCTORS(id)
- `post_id` references FORUM_POSTS(id)
- `parent_id` references FORUM_REPLIES(id)
- `dashboard_id` references USER_DASHBOARDS(id)

Unique Constraints

- USERS.email
- ADMINS.email
- ADMINS.username

Indexes (for performance)

- email fields (USERS, ADMINS, NEWSLETTERS)
- foreign key fields

- created_at/updated_at timestamps
- status fields
- search fields (name, title, category)
- dashboard-related fields (user_id, widget_type)

Data Types and Constraints

Common Field Types

- **id**: BIGINT AUTO_INCREMENT PRIMARY KEY
- **email**: VARCHAR(255) UNIQUE NOT NULL
- **password_hash**: VARCHAR(255) NOT NULL
- **created_at/updated_at**: TIMESTAMP DEFAULT CURRENT_TIMESTAMP
- **is_active/is_featured/is_read**: BOOLEAN DEFAULT TRUE/FALSE
- **status**: ENUM('active', 'inactive', 'pending', 'cancelled', 'completed')
- **rating**: DECIMAL(3,2) DEFAULT 0.00 (0.00 to 5.00)
- **price/amount_paid**: DECIMAL(10,2)
- **JSON fields**: preferences, social_links, tags, layout_config, settings (MySQL JSON type)

Dashboard-Specific Field Types

- **widget_type**: ENUM('upcoming_classes', 'progress_tracker', 'goal_summary', 'activity_feed', 'partner_matches', 'class_recommendations', 'achievement_badges', 'calendar_view', 'expense_tracker', 'instructor_favorites')
- **goal_type**: ENUM('skill_improvement', 'frequency', 'social', 'performance', 'financial')
- **activity_type**: ENUM('login', 'booking', 'forum_post', 'partner_request', 'goal_update', 'profile_update')
- **priority**: ENUM('low', 'medium', 'high', 'urgent')
- **visibility**: ENUM('private', 'friends', 'public')

Business Rules

1. Users can book multiple classes and events
2. Instructors can teach multiple classes
3. Classes can have multiple instructors (primary and assistant)
4. Events have capacity limits
5. Partner matching is mutual (both users must agree)
6. Forum replies can be nested (threaded discussions)
7. Admin actions are logged for audit trail
8. Soft deletes for important data (is_active flag)
9. **Each user can have multiple dashboards but only one default**
10. **Dashboard widgets are configurable and can be resized/repositioned**
11. **User analytics are automatically calculated based on user activity**
12. **User goals track progress toward specific dance achievements**
13. **Activity logs track all user interactions for analytics purposes**
14. **Dashboard layouts can be shared between users (templates)**

Dashboard Business Logic

1. **Default Dashboard Creation**: When a user registers, a default dashboard is automatically created
2. **Widget Positioning**: Widgets use grid-based positioning system (x,y coordinates with width/height)
3. **Analytics Aggregation**: User analytics are updated via database triggers or scheduled jobs
4. **Goal Progress Calculation**: Progress is automatically calculated based on related user activities
5. **Activity Logging**: All user actions are logged for analytics and dashboard insights
6. **Dashboard Sharing**: Users can share dashboard configurations as templates
7. **Widget Permissions**: Some widgets require specific user roles or subscription levels

Security Considerations for Dashboards

- Dashboard data is user-scoped (users can only access their own dashboards)
- Widget settings are validated to prevent XSS attacks
- Activity logs include IP addresses for security monitoring
- Goal data includes privacy controls
- Analytics data is anonymized for system-wide insights
- Dashboard sharing requires explicit user consent

Performance Optimizations

- Dashboard widgets use caching for expensive queries
- User analytics are pre-calculated and stored
- Activity logs are partitioned by date for performance
- Widget data is loaded asynchronously to improve page load times
- Database indexes on frequently queried dashboard fields