

**ca cour application**

**DATABASE SCHEMA V1.2**



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**DATABASE SCHEMA: v1.2**

**CA COUR MARKETPLACE APPLICATION**

This schema is designed for a Ca Cour application. It adheres to industry best practices, is normalized up to 3NF, and includes enhanced security, scalability, and performance optimizations.

# **MODULES**

## **Administrative Module**

#### admins

* admin\_id (PK, INT)
* username (VARCHAR, UNIQUE)
* email (VARCHAR, UNIQUE)
* password (VARCHAR)
* role (ENUM: 'superadmin', 'moderator')
* status (ENUM: 'active', 'suspended')
* created\_at (TIMESTAMP)
* updated\_at (TIMESTAMP)

#### audit\_logs

* + log\_id (PK, INT)
  + admin\_id (FK → admin\_users.admin\_id)
  + action (TEXT)
  + target\_type (ENUM: 'user', 'listing', 'order')
  + target\_id (INT, NULLABLE)
  + details (JSON)
  + timestamp (TIMESTAMP)

#### moderation\_actions

* + action\_id (PK, INT)
  + admin\_id (FK → admin\_users.admin\_id)
  + report\_id (FK → reports.report\_id)
  + action\_taken (ENUM: 'warning\_issued', 'user\_banned')
  + notes (TEXT, NULLABLE)
  + timestamp (TIMESTAMP)

## **Communication Module**

### conversations

* + conversation\_id (PK, INT)
  + listing\_id (FK → listings.listing\_id)
  + buyer\_id (FK → users.user\_id)
  + seller\_id (FK → users.user\_id)
  + created\_at (TIMESTAMP)
  + updated\_at (TIMESTAMP)

### messages

* + message\_id (PK, INT)
  + conversation\_id (FK → conversations.conversation\_id)
  + sender\_id (FK → users.user\_id)
  + message\_text (TEXT)
  + sent\_at (TIMESTAMP)
  + is\_read (BOOLEAN)

## **Delivery Module**

### delivery\_partners

* + partner\_id (PK, INT)
  + name (VARCHAR)
  + contact\_info (TEXT)
  + service\_areas (JSON)
  + rating (DECIMAL)
  + status (ENUM: 'active', 'inactive')

### deliveries

* + delivery\_id (PK, INT)
  + order\_id (FK → orders.order\_id)
  + partner\_id (FK → delivery\_partners.partner\_id)
  + pickup\_address (TEXT)
  + delivery\_address (TEXT)
  + delivery\_fee (DECIMAL)
  + status (ENUM: 'pending', 'in\_transit', 'delivered')
  + tracking\_number (VARCHAR, UNIQUE)
  + estimated\_delivery\_time (TIMESTAMP)

### delivery\_tracking

* + tracking\_id (PK, INT)
  + delivery\_id (FK → deliveries.delivery\_id)
  + status\_update (TEXT)
  + timestamp (TIMESTAMP)
  + location (TEXT, NULLABLE)

## **Listing Management Module**

### listings

* + listing\_id (PK, INT)
  + seller\_id (FK → users.user\_id)
  + title (VARCHAR)
  + description (TEXT)
  + category\_id (FK → categories.category\_id)
  + price (DECIMAL)
  + condition (ENUM: 'new', 'used')
  + location\_id (FK → locations.location\_id)
  + status (ENUM: 'active', 'sold', 'archived')
  + created\_at (TIMESTAMP)
  + updated\_at (TIMESTAMP)

listing\_images

* + image\_id (PK, INT)
  + listing\_id (FK → listings.listing\_id)
  + image\_url (TEXT)
  + is\_primary (BOOLEAN)

### categories

* + category\_id (PK, INT)
  + name (VARCHAR)
  + parent\_category\_id (FK → categories.category\_id, NULLABLE)

### favorites

* + favorite\_id (PK, INT)
  + user\_id (FK → users.user\_id)
  + listing\_id (FK → listings.listing\_id)
  + created\_at (TIMESTAMP)

## **Location Module**

### countries

* + country\_id (PK, INT)
  + name (VARCHAR)

regions

* + region\_id (PK, INT)
  + country\_id (FK → countries.country\_id)
  + name (VARCHAR)

### cities

* + city\_id (PK, INT)
  + region\_id (FK → regions.region\_id)
  + name (VARCHAR)

### locations

* + location\_id (PK, INT)
  + city\_id (FK → cities.city\_id)
  + address\_line (TEXT)
  + postal\_code (VARCHAR, NULLABLE)
  + latitude (DECIMAL)
  + longitude (DECIMAL)

## **Notification Module**

notifications

* + notification\_id (PK, INT)
  + user\_id (FK → users.user\_id)
  + type (ENUM: 'message', 'promotion', 'delivery\_update')
  + content (TEXT)
  + is\_read (BOOLEAN)
  + created\_at (TIMESTAMP)

notification\_preferences

* + preference\_id (PK, INT)
  + user\_id (FK → users.user\_id)
  + email\_notifications (BOOLEAN)
  + sms\_notifications (BOOLEAN)
  + push\_notifications (BOOLEAN)

## **Payment Module**

### payment\_methods

* + method\_id (PK, INT)
  + user\_id (FK → users.user\_id)
  + type (ENUM: 'MTN MoMo', 'Orange Money', 'Credit Card')
  + details (JSON)
  + is\_default (BOOLEAN)

### transactions

* + transaction\_id (PK, INT)
  + user\_id (FK → users.user\_id)
  + amount (DECIMAL)
  + currency (VARCHAR)
  + payment\_method\_id (FK → payment\_methods.method\_id)
  + transaction\_type (ENUM: 'subscription', 'promotion')
  + status (ENUM: 'pending', 'completed', 'failed')
  + timestamp (TIMESTAMP)

orders

* + order\_id (PK, INT)
  + buyer\_id (FK → users.user\_id)
  + listing\_id (FK → listings.listing\_id)
  + seller\_id (FK → users.user\_id)
  + delivery\_id (FK → deliveries.delivery\_id, NULLABLE)
  + total\_amount (DECIMAL)
  + status (ENUM: 'pending', 'paid', 'shipped', 'delivered')
  + created\_at (TIMESTAMP)

## **Reporting & Feedback Module**

### reports

* + report\_id (PK, INT)
  + reporter\_id (FK → users.user\_id)
  + reported\_entity\_type (ENUM: 'user', 'listing', 'message')
  + reported\_entity\_id (INT)
  + reason (TEXT)
  + description (TEXT)
  + status (ENUM: 'pending', 'reviewed', 'resolved')
  + created\_at (TIMESTAMP)

reviews

* + review\_id (PK, INT)
  + reviewer\_id (FK → users.user\_id)
  + reviewee\_id (FK → users.user\_id)
  + order\_id (FK → orders.order\_id)
  + rating (INT, CHECK: rating BETWEEN 1 AND 5)
  + comment (TEXT)
  + created\_at (TIMESTAMP)

## **Subscription & Promotion Module**

### subscriptions

* + subscription\_id (PK, INT)
  + user\_id (FK → users.user\_id)
  + start\_date (DATE)
  + end\_date (DATE)
  + status (ENUM: 'active', 'expired', 'cancelled')
  + payment\_id (FK → transactions.transaction\_id)

### promotions

* + promotion\_id (PK, INT)
  + listing\_id (FK → listings.listing\_id)
  + start\_date (DATE)
  + end\_date (DATE)
  + promotion\_type (ENUM: 'featured', 'top\_listing')
  + payment\_id (FK → transactions.transaction\_id)

referrals

* + referral\_id (PK, INT)
  + referrer\_id (FK → users.user\_id)
  + referred\_id (FK → users.user\_id)
  + referral\_code (VARCHAR)
  + bonus\_awarded (BOOLEAN)
  + created\_at (TIMESTAMP)

## **User Management Module**

### users

* + user\_id (PK, INT)
  + username (VARCHAR, UNIQUE)
  + email (VARCHAR, UNIQUE)
  + phone\_number (VARCHAR)
  + password (VARCHAR)
  + role (ENUM: 'buyer', 'seller', 'both')
  + status (ENUM: 'active', 'suspended', 'banned')
  + created\_at (TIMESTAMP)
  + updated\_at (TIMESTAMP)

user\_profiles

* + profile\_id (PK, INT)
  + user\_id (FK → users.user\_id)
  + first\_name (VARCHAR)
  + last\_name (VARCHAR)
  + profile\_picture\_url (TEXT, NULLABLE)
  + bio (TEXT, NULLABLE)
  + location\_id (FK → locations.location\_id)

### user\_verifications

* + verification\_id (PK, INT)
  + user\_id (FK → users.user\_id)
  + verification\_type (ENUM: 'email', 'phone', 'ID')
  + verification\_status (ENUM: 'pending', 'verified', 'failed')
  + verification\_date (TIMESTAMP)

### user\_sessions

* + session\_id (PK, INT)
  + user\_id (FK → users.user\_id)
  + jwt\_token (TEXT)
  + device\_info (TEXT)
  + ip\_address (VARCHAR)
  + login\_time (TIMESTAMP)
  + logout\_time (TIMESTAMP, NULLABLE)

## **Relationships Overview**

### One-to-One:

* + `users` ↔ `user\_profiles`

One-to-Many:

* + `users` ↔ `listings`
  + `listings` ↔ `listing\_images`
  + `users` ↔ `conversations` ↔ `messages`
  + `users` ↔ `orders` (as buyers and sellers)
  + `users` ↔ `subscriptions`
  + `users` ↔ `promotions`
  + `users` ↔ `reviews`
  + `users` ↔ `reports`

### Many-to-Many:

* + `users` ↔ `favorites` ↔ `listings`
  + `users` ↔ `referrals`

## Best Practices Implemented

* **Normalization:**

All tables are normalized to 3NF to eliminate redundancy and ensure data integrity.

* **Enhanced Security:**
* Sensitive data like `password` and `payment\_method.details` are encrypted.
* Scalability:
  + JSON fields for extensibility in `payment\_methods` and `delivery\_partners`.
  + Indexed frequently queried columns like `email`, `username`, and `status`.
* **Event-Driven Design:**
* Added `audit\_logs` and `delivery\_tracking` for tracking key actions and statuses.