

## AUTOCARE - Refined Database Design

### Database Schema Overview

#### 1. Users Table

```
CREATE TABLE users (  
    id INT PRIMARY KEY AUTO_INCREMENT,  
    name VARCHAR(100) NOT NULL,  
    email VARCHAR(100) UNIQUE NOT NULL,  
    phone VARCHAR(20) UNIQUE NOT NULL,  
    password_hash VARCHAR(255) NOT NULL,  
    role ENUM('customer', 'owner', 'staff', 'super_admin') NOT NULL,  
    business_id INT NULL, -- NULL for customers and super_admin  
    email_verified BOOLEAN DEFAULT FALSE,  
    phone_verified BOOLEAN DEFAULT FALSE,  
    is_active BOOLEAN DEFAULT TRUE,  
    profile_image VARCHAR(255) NULL,  
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
    updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
    last_login TIMESTAMP NULL,  
    FOREIGN KEY (business_id) REFERENCES businesses(id) ON DELETE SET NULL  
);
```

#### 2. Customers Table

```
CREATE TABLE customers (  
    id INT PRIMARY KEY AUTO_INCREMENT,  
    user_id INT UNIQUE NOT NULL,  
    address TEXT NULL,  
    city VARCHAR(50) NULL,  
    postal_code VARCHAR(20) NULL,  
    date_of_birth DATE NULL,  
    gender ENUM('male', 'female', 'other') NULL,
```

```
preferred_contact ENUM('email', 'sms', 'both') DEFAULT 'both',
loyalty_points INT DEFAULT 0,
total_bookings INT DEFAULT 0,
total_spent DECIMAL(10,2) DEFAULT 0.00,
created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE
);
```

### 3. Businesses Table (Enhanced)

```
CREATE TABLE businesses (
    id INT PRIMARY KEY AUTO_INCREMENT,
    business_name VARCHAR(150) NOT NULL,
    owner_id INT NOT NULL,
    business_type ENUM('car_detailing', 'car_wash', 'garage', 'multi_service') NOT NULL,
    location TEXT NOT NULL,
    city VARCHAR(50) NOT NULL,
    postal_code VARCHAR(20) NULL,
    phone VARCHAR(20) NULL,
    email VARCHAR(100) NULL,
    description TEXT NULL,
    business_hours JSON NULL, -- Store opening hours as JSON
    service_area_radius INT DEFAULT 10, -- in kilometers for mobile services
    is_mobile BOOLEAN DEFAULT FALSE,
    is_stationary BOOLEAN DEFAULT TRUE,
    logo_url VARCHAR(255) NULL,
    business_images JSON NULL, -- Array of business photo URLs
    business_documents JSON NULL, -- Array of document URLs (licenses, certificates, etc.)
    license_number VARCHAR(100) NULL,
    license_document_url VARCHAR(255) NULL,
```

```

tax_number VARCHAR(100) NULL,
tax_certificate_url VARCHAR(255) NULL,
insurance_certificate_url VARCHAR(255) NULL,
is_active BOOLEAN DEFAULT TRUE,
is_verified BOOLEAN DEFAULT FALSE,
verification_documents JSON NULL, -- Array of verification document URLs
subscription_plan ENUM('basic', 'premium', 'enterprise') DEFAULT 'basic',
subscription_expires_at DATE NULL,
created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
FOREIGN KEY (owner_id) REFERENCES users(id) ON DELETE CASCADE
);

```

#### 4. Services Table (Enhanced)

```

CREATE TABLE services (
    id INT PRIMARY KEY AUTO_INCREMENT,
    business_id INT NOT NULL,
    name VARCHAR(100) NOT NULL,
    description TEXT NULL,
    category ENUM('detailing', 'wash', 'interior', 'protection', 'alignment', 'repair', 'polish', 'wrapping') NOT
    NULL,
    price DECIMAL(10,2) NOT NULL,
    duration_minutes INT NOT NULL, -- estimated service duration
    is_mobile BOOLEAN DEFAULT FALSE,
    is_stationary BOOLEAN DEFAULT TRUE,
    is_active BOOLEAN DEFAULT TRUE,
    requires_equipment TEXT NULL, -- JSON array of required equipment
    service_image VARCHAR(255) NULL,
    discount_percentage DECIMAL(5,2) DEFAULT 0.00,
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,

```

```
updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
FOREIGN KEY (business_id) REFERENCES businesses(id) ON DELETE CASCADE  
);
```

## 5. Staff Table (Enhanced)

```
CREATE TABLE staff (  
  id INT PRIMARY KEY AUTO_INCREMENT,  
  user_id INT UNIQUE NOT NULL,  
  business_id INT NOT NULL,  
  role ENUM('mechanic', 'detailer', 'manager', 'technician', 'general') NOT NULL,  
  specializations JSON NULL, -- Array of service categories they specialize in  
  hourly_rate DECIMAL(8,2) NULL,  
  commission_rate DECIMAL(5,2) NULL, -- percentage  
  hire_date DATE NOT NULL,  
  is_active BOOLEAN DEFAULT TRUE,  
  max_concurrent_jobs INT DEFAULT 3,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE,  
  FOREIGN KEY (business_id) REFERENCES businesses(id) ON DELETE CASCADE  
);
```

## 6. Bookings Table

```
CREATE TABLE bookings (  
  id INT PRIMARY KEY AUTO_INCREMENT,  
  booking_reference VARCHAR(20) UNIQUE NOT NULL, -- Auto-generated unique reference  
  service_id INT NOT NULL,  
  customer_id INT NOT NULL,  
  staff_id INT NULL,  
  business_id INT NOT NULL, -- Denormalized for faster queries  
  booking_date DATE NOT NULL,
```

```

booking_time TIME NOT NULL,
estimated_duration INT NOT NULL, -- in minutes
service_location TEXT NULL,
service_coordinates POINT NULL, -- GPS coordinates
original_price DECIMAL(10,2) NOT NULL,
discount_amount DECIMAL(10,2) DEFAULT 0.00,
final_price DECIMAL(10,2) NOT NULL,
status ENUM('pending', 'confirmed', 'in_progress', 'completed', 'cancelled', 'rescheduled') DEFAULT
'pending',
payment_status ENUM('pending', 'paid', 'failed', 'refunded', 'partial') DEFAULT 'pending',
customer_notes TEXT NULL,
staff_notes TEXT NULL,
cancellation_reason TEXT NULL,
confirmed_at TIMESTAMP NULL,
started_at TIMESTAMP NULL,
completed_at TIMESTAMP NULL,
cancelled_at TIMESTAMP NULL,
created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
FOREIGN KEY (service_id) REFERENCES services(id) ON DELETE RESTRICT,
FOREIGN KEY (customer_id) REFERENCES customers(id) ON DELETE CASCADE,
FOREIGN KEY (staff_id) REFERENCES staff(id) ON DELETE SET NULL,
FOREIGN KEY (business_id) REFERENCES businesses(id) ON DELETE CASCADE
);

```

## 7. Payments Table (

```

CREATE TABLE payments (
    id INT PRIMARY KEY AUTO_INCREMENT,
    booking_id INT NOT NULL,
    payment_reference VARCHAR(50) UNIQUE NOT NULL,

```

```

amount DECIMAL(10,2) NOT NULL,
currency VARCHAR(3) DEFAULT 'KES',
payment_method ENUM('mpesa', 'card', 'cash', 'bank_transfer') NOT NULL,
mpesa_transaction_id VARCHAR(50) NULL,
mpesa_phone VARCHAR(15) NULL,
mpesa_receipt_number VARCHAR(50) NULL,
payment_status ENUM('pending', 'completed', 'failed', 'cancelled', 'refunded') DEFAULT 'pending',
gateway_response JSON NULL, -- Store full gateway response
failure_reason TEXT NULL,
initiated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
completed_at TIMESTAMP NULL,
failed_at TIMESTAMP NULL,
FOREIGN KEY (booking_id) REFERENCES bookings(id) ON DELETE CASCADE
);

```

## 8. System\_Logs Table

```

CREATE TABLE system_logs (
    id BIGINT PRIMARY KEY AUTO_INCREMENT,
    log_level ENUM('debug', 'info', 'warning', 'error', 'critical') NOT NULL,
    module VARCHAR(50) NOT NULL, -- e.g., 'auth', 'booking', 'payment', 'notification'
    action VARCHAR(100) NOT NULL, -- e.g., 'user_login', 'booking_created', 'payment_processed',
    user_id INT NULL,
    business_id INT NULL,
    booking_id INT NULL,
    payment_id INT NULL,
    message TEXT NOT NULL,
    error_details JSON NULL, -- Stack trace, error codes, etc.
    request_data JSON NULL, -- Request payload (sanitized)
    response_data JSON NULL, -- Response payload (sanitized)
    ip_address VARCHAR(45) NULL, -- IPv6 compatible

```

```
user_agent TEXT NULL,  
session_id VARCHAR(255) NULL,  
request_id VARCHAR(100) NULL, -- For tracing requests across services  
execution_time_ms INT NULL,  
memory_usage_mb DECIMAL(8,2) NULL,  
created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
);
```

### 9. Support\_Tickets Table

```
CREATE TABLE support_tickets (  
    id INT PRIMARY KEY AUTO_INCREMENT,  
    ticket_number VARCHAR(20) UNIQUE NOT NULL, -- e.g., 'SUP-2025-001234'  
    user_id INT NULL, -- NULL if reported by anonymous user  
    reporter_name VARCHAR(100) NOT NULL,  
    reporter_email VARCHAR(100) NOT NULL,  
    reporter_phone VARCHAR(20) NULL,  
    business_id INT NULL, -- NULL if customer ticket  
    subject VARCHAR(200) NOT NULL,  
    description TEXT NOT NULL,  
    category ENUM('technical', 'billing', 'service', 'account', 'feature_request', 'bug_report', 'other') NOT  
NULL,  
    priority ENUM('low', 'medium', 'high', 'critical') DEFAULT 'medium',  
    status ENUM('open', 'in_progress', 'waiting_customer', 'waiting_internal', 'resolved', 'closed',  
'cancelled') DEFAULT 'open',  
    assigned_to INT NULL, -- Support staff user ID  
    resolution TEXT NULL,  
    satisfaction_rating TINYINT NULL CHECK (satisfaction_rating BETWEEN 1 AND 5),  
    customer_feedback TEXT NULL,  
    related_booking_id INT NULL,  
    related_payment_id INT NULL,
```

```
created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
first_response_at TIMESTAMP NULL,  
resolved_at TIMESTAMP NULL,  
closed_at TIMESTAMP NULL,  
FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE SET NULL,  
FOREIGN KEY (business_id) REFERENCES businesses(id) ON DELETE SET NULL,  
FOREIGN KEY (assigned_to) REFERENCES users(id) ON DELETE SET NULL,  
FOREIGN KEY (related_booking_id) REFERENCES bookings(id) ON DELETE SET NULL,  
FOREIGN KEY (related_payment_id) REFERENCES payments(id) ON DELETE SET NULL  
);
```

#### **10. Support\_Messages Table**

```
CREATE TABLE support_messages (  
    id INT PRIMARY KEY AUTO_INCREMENT,  
    ticket_id INT NOT NULL,  
    sender_id INT NULL, -- NULL if anonymous  
    sender_type ENUM('customer', 'staff', 'system') NOT NULL,  
    sender_name VARCHAR(100) NOT NULL,  
    message TEXT NOT NULL,  
    is_internal BOOLEAN DEFAULT FALSE,  
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
    FOREIGN KEY (ticket_id) REFERENCES support_tickets(id) ON DELETE CASCADE,  
    FOREIGN KEY (sender_id) REFERENCES users(id) ON DELETE SET NULL  
);
```

#### **13. Reviews Table**

```
CREATE TABLE reviews (  
    id INT PRIMARY KEY AUTO_INCREMENT,  
    booking_id INT UNIQUE NOT NULL,  
    customer_id INT NOT NULL,
```



```
business_id INT NOT NULL,  
staff_id INT NULL,  
rating TINYINT NOT NULL CHECK (rating BETWEEN 1 AND 5),  
review_text TEXT NULL,  
service_quality_rating TINYINT NULL CHECK (service_quality_rating BETWEEN 1 AND 5),  
timeliness_rating TINYINT NULL CHECK (timeliness_rating BETWEEN 1 AND 5),  
staff_friendliness_rating TINYINT NULL CHECK (staff_friendliness_rating BETWEEN 1 AND 5),  
value_for_money_rating TINYINT NULL CHECK (value_for_money_rating BETWEEN 1 AND 5),  
business_response TEXT NULL,  
business_response_date TIMESTAMP NULL,  
is_verified BOOLEAN DEFAULT TRUE,  
is_featured BOOLEAN DEFAULT FALSE,  
is_public BOOLEAN DEFAULT TRUE,  
created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
FOREIGN KEY (booking_id) REFERENCES bookings(id) ON DELETE CASCADE,  
FOREIGN KEY (customer_id) REFERENCES customers(id) ON DELETE CASCADE,  
FOREIGN KEY (business_id) REFERENCES businesses(id) ON DELETE CASCADE,  
FOREIGN KEY (staff_id) REFERENCES staff(id) ON DELETE SET NULL  
);
```