# Comprehensive Ticketing System Documentation

(Including Online Ticket Purchases, Payment Processing, and Event Management)

## 1. Purpose

The ticketing system enables:

* Users to purchase event tickets online via card or M-Pesa.
* Companies/Organizers to create and manage events, track sales, and issue tickets.
* Admins to oversee transactions, resolve issues, and manage system settings.

## 2. System Roles & Permissions

| Role | Permissions |
| --- | --- |
| End User | - Browse events  - Purchase tickets (card/M-Pesa)  - View/download tickets  - Request refunds |
| Company Admin | - Register company  - Create/manage events  - Set ticket types & prices  - View sales reports |
| System Admin | - Manage all users & companies  - Monitor transactions  - Resolve disputes  - Configure payment gateways |
| Support Agent | - Handle user inquiries  - Process refunds  - Assist with failed payments |

## 3. Core Features

### A. User Features

* Event Discovery: Browse/search events by category, date, or location.
* Ticket Purchase:
  + Select ticket type (VIP, General, etc.).
  + Choose payment method (Card/M-Pesa).
  + Receive confirmation & e-ticket (PDF/QR code).
* Order Management: View past purchases, cancel tickets (if allowed).

### B. Company Features

* Event Creation:
  + Set event details (name, date, venue, capacity).
  + Define ticket types & pricing.
  + Upload event images/descriptions.
* Sales & Analytics:
  + Real-time sales dashboard.
  + Export attendee lists.

### C. Admin Features

* Payment Monitoring: Track successful/failed transactions.
* Fraud Prevention: Flag suspicious purchases.
* System Settings: Configure fees, refund policies, etc.

## 4. Database Design

### Tables

| Table | Fields |
| --- | --- |
| users | id, name, email, password, role (user/company/admin) |
| companies | id, name, email, tax\_id, verified (true/false) |
| events | id, company\_id, title, date, venue, description, status (active/cancelled) |
| ticket\_types | id, event\_id, name, price, quantity\_available |
| orders | id, user\_id, event\_id, total\_amount, payment\_status (pending/paid/failed) |
| tickets | id, order\_id, ticket\_type\_id, QR\_code, status (valid/used/refunded) |
| payments | id, order\_id, method (card/mpesa), transaction\_id, amount, status |
| replies | id, ticket\_id (support), user\_id, message, created\_at |

### Relationships

* A Company can create multiple Events.
* An Event has multiple Ticket Types.
* A User can place multiple Orders.
* An Order contains multiple Tickets.
* Each Payment is linked to an Order.

## 5. Payment Processing

### A. Supported Methods

1. Card Payments (Stripe, PayPal, etc.)
   * Secure PCI-compliant transactions.
   * Supports refunds.
2. M-Pesa Integration
   * STK Push for instant payments.
   * Confirmation via SMS & email.

### B. Payment Flow

1. User selects tickets → proceeds to checkout.
2. Chooses Card or M-Pesa.
3. System processes payment:
   * Card: Redirect to payment gateway.
   * M-Pesa: Trigger STK Push to user’s phone.
4. On success:
   * Generate e-ticket (PDF/QR).
   * Send confirmation email/SMS.

### C. Failed Payments Handling

* Retry option.
* Automatic cancellation after 24 hrs if unpaid.

## 6. Ticket Status Workflow

| Status | Description |
| --- | --- |
| Available | Ticket is open for purchase. |
| Reserved | In cart but not paid yet. |
| Sold | Successfully paid. |
| Used | QR code scanned at entry. |
| Refunded | Cancelled & money returned. |

## 7. Functional Flows

### A. User Purchase Flow

1. Browse events → Select tickets → Checkout.
2. Choose payment method → Complete transaction.
3. Receive ticket via email/app.

### B. Company Event Setup Flow

1. Register company → Verify details.
2. Create event → Set ticket types.
3. Publish event → Monitor sales.

### C. Admin Oversight Flow

1. View transactions → Resolve disputes.
2. Generate financial reports.
3. Adjust system settings (fees, refund rules).

## 8. Security & Compliance

* PCI-DSS compliance for card payments.
* Encrypted user data (GDPR compliance).
* Fraud detection for bulk purchases.

## 9. API Integrations

* Payment Gateways (Stripe, M-Pesa API).
* SMS Services (Twilio, Africa’s Talking).
* Email Services (SendGrid, Mailchimp).

### Conclusion

This documentation covers the full ticketing system, including:  
✔ Online ticket sales  
✔ Multi-role access (User, Company, Admin)  
✔ Card & M-Pesa payments  
✔ Event management & analytics  
✔ Security & compliance

Would you like any section expanded or additional features included?