Functional Requirements

Authentication and Authorization

- The system shall allow users and administrators to register and log in using a valid email address and password, and grant access within 2 seconds after successful credential verification.
- The system shall authenticate user credentials by validating the email and password against stored records and deny access after 3 consecutive failed login attempts.
- The system shall authorize users based on their assigned role (User or Admin) to ensure that each role can access only its permitted functionalities.

User Management

- The system shall store the following user information upon registration: username, password, unique Fan ID, gender, phone number, email address, and optional interest.
- The system shall allow registered users to view a list of available events, displayed within 2 seconds of request submission.
- The system shall allow users to search for events by category and display matching results with 100% accuracy.
- The system shall allow users to purchase tickets for selected events only if tickets are available.
- The system shall allow users to select a payment method (e.g., cash, Visa) before confirming the ticket purchase.
- The system shall allow users to view all tickets purchased under their account through the “My Events” feature.

Admin (Supplier) Management

- The system shall store the following admin information: email, password, gender, and phone number.
- The system shall allow the admin to create events for a specific event by specifying ticket type and price.
- The system shall allow the admin to update or delete events for a specific event at any time.
- The system shall allow the admin to view all events related to a specific event within 2 seconds.
- The system shall allow the admin to set and modify the total number of tickets available for an event before the event date.

Event Management

- The system shall store the following event information: event ID, event name, category, total capacity, and event date.
- The system shall automatically decrease the remaining event capacity by one after each successful ticket purchase.
- The system shall prevent ticket purchases once the event capacity reaches zero.

Ticket Management

- The system shall generate a unique and random Ticket ID for every newly created ticket.
- The system shall store ticket details including Ticket ID, Event ID, ticket price, ticket type (VIP, Economic, Regular), ticket status, and Fan ID of the purchasing user.
- The system shall update the ticket status from “Available” to “Sold” immediately after a successful purchase.

Non-Functional Requirements (SMART)

Security

- The system shall store all user passwords using a secure hashing algorithm (e.g., bcrypt or SHA-256 with salt).
- The system shall restrict ticket Create, Read, Update, and Delete (CRUD) operations to Admin users only.
- The system shall ensure that each user can view only their own tickets based on their FanID.

Performance

- The system shall return event search results within 2 seconds under normal load conditions.
- The system shall complete the ticket purchase process within 3 seconds without noticeable delay.

Usability

- The system shall provide a simple and user-friendly interface that can be used without prior training.
- The system shall allow users to navigate events and categories in no more than 3 clicks.

Reliability

- The system shall prevent over-booking by disallowing ticket purchases when the event capacity reaches zero.

- The system shall process ticket purchases as atomic transactions, ensuring no partial transactions occur.

Scalability

- The system shall support at least 1,000 concurrent users without performance degradation.
- The system shall handle an increasing number of events and tickets without requiring major system redesign.

Maintainability

- The system shall be designed using a modular architecture.
- The system shall allow easy updates and new feature additions with minimal impact on existing functionality.