3. Project Title: Event Registration and Ticket Management System

Description: This project aims to develop a Java Swing application that enables users to browse upcoming events, register for events, and receive ticket confirmations. Event organizers will be able to create and manage event listings, specify seat capacities, and monitor registration statistics. Administrators will have full management control over users, events, ticket records, and reports. The system will include role-based authentication, ticket generation, event reminder notifications, and robust input validation. A relational database will be used to store event information, user accounts, seat availability, and ticket reservations, ensuring accurate and reliable data handling.

Requirements:

1. **Graphical User Interface (GUI):**

The application must be developed using **Java Swing**, employing components such as `JFrame`, `JPanel`, `JTabbedPane`, `JTable`, forms, menus, and dialog boxes. The interface should be intuitive, visually organized, and support smooth navigation between user roles and system modules.

2. **Database Integration:**

The system must use **JDBC** to connect to a **SQLite or MySQL** relational database. The database should include tables such as:

- `events` (event details: title, date, category, location, seat capacity)
- `users` (account data and role identification)
- `registrations` (user-event participation records)
- `tickets` (generated ticket IDs and status information)

3. **User Authentication and Roles:**

The system must support **three distinct user roles**:

- **Admin:** full system management capabilities
- **Event Organizer:** create and manage events and view attendee lists
- **Attendee:** view events and register for them

Passwords must be securely stored using hashing prior to database insertion.

4. **Event Browsing and Search Filters:**

Users must be able to browse and filter the event listing based on:

- Date / Time range
- Event category (e.g., workshop, seminar, concert)
- Location / Venue

Event details must display real-time seat availability.

5. **Event Registration and Seat Tracking:**

Attendees may register for available events.

The system must:

- Track seat availability dynamically
- Prevent overbooking and notify users when events are full
- Support cancellation of registrations where appropriate

6. **Ticket Generation and Notifications:**

Upon successful registration, the system must **generate a ticket** with a unique identifier. Notification options may include:

- In-app notification dialogs
- Simulated confirmation email / message display

Ticket information must be retrievable for future reference or check-in.

7. **Administrative and Organizer Dashboard:**

The system must include interfaces for managing:

- Event creation, editing, and removal
- User accounts (where applicable)
- Registration statistics and attendance reports

8. **Reports and Analytics:**

The system must generate summary reports, such as:

- Total registrations per event
- Most attended event categories
- Capacity utilization and waitlist activity

9. Validation and Exception Handling:

The system must handle and display meaningful error messages for issues such as:

- Attempting to register for a full event
- Invalid or missing form entries
- Database connectivity or query execution errors

All operations must be enclosed in structured `try/catch` blocks with user-friendly alerts (`JOptionPane`).