SheCodes Hackathon Airtel

Team Name : TelSpark

College Name: Thapar Institute of Engineering and Technology

Team Leader's Name: Mohammed Ayesha Sami

Brief snippet of team (Team Leader Name Should be in Bold)

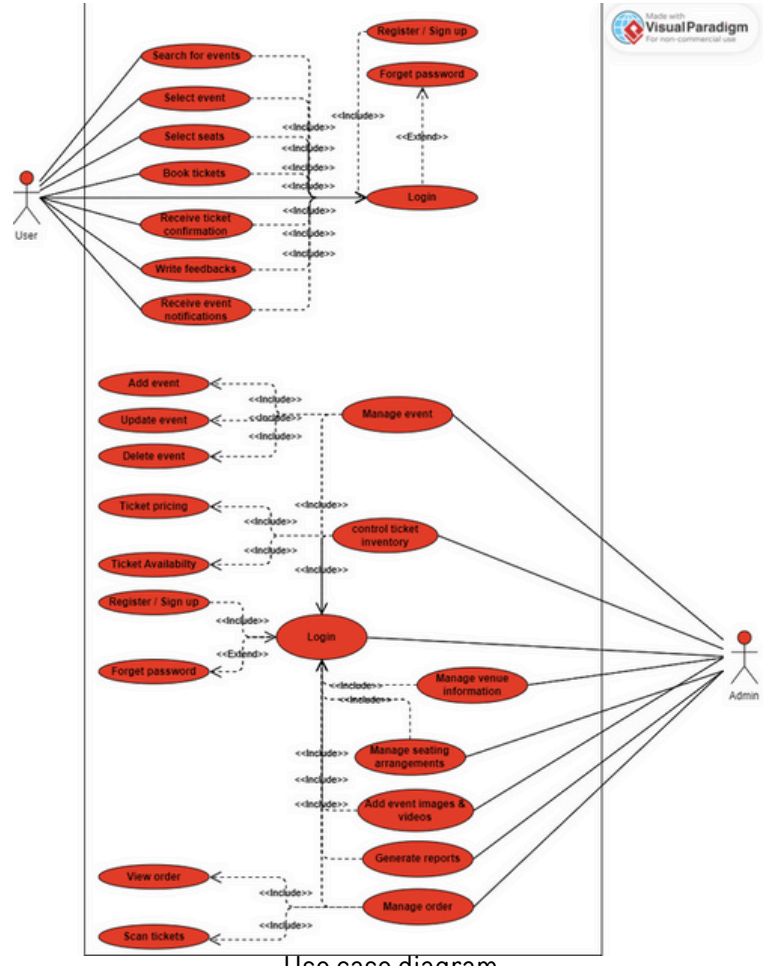
Member's Names	College Name	Email ID	Roll No.
Mohammed Ayesha Sami	TIET	msami_be21@thapar.edu	102117110
Hitakshi Hans	TIET	hhans_be21@thapar.edu	102103610
Shreya Goyal	TIET	sshreya39810@gmail.com	102103601
Shreya Bansal	TIET	sbansal4_be21@thapar.edu	102118003

Brief Summary of Project:

Which use case have you opted for, from the provided options and why?

Use case: **Event Management and Ticket Booking Platform**

Summary: The project entails developing an Event Management and Ticket Booking Platform catering to both users and administrators. We've chosen it as our project's primary use case and this decision stems from its versatility in catering to both event organizers and attendees, offering features like event creation, ticket sales management, seat selection, and comprehensive reporting. This use case enables seamless event planning, ticket booking, and attendee management. With functionalities such as location maps and parking slot information added for user convenience, the platform ensures a streamlined and enjoyable event experience for all involved.



Use case diagram

Solution approach:

Requirement analysis

1. Non Functional requirements:

Performance requirements

- Deliver prompt response time, scalable support for peak traffic, and maintain at least 99.9% uptime with efficient failover mechanisms.

Safety requirements

- Ensure encryption of all user data in transit and at rest, compliance with PCI-DSS for payment security, and implementation of RBAC for access control.

Software quality attributes

- Ensure maintainability with modular design, well-documented code, Git version control, and coding best practices, paired with user-friendly interface, intuitive navigation, and reliable operation with effective error handling and logging

2. Software/Hardware dependencies:

Operating environment:

The app will work efficiently on:

- iOS
- Android operating systems

Hardware dependencies

- For development: A computer capable of running the required software (e.g., Node.js, IDE)
- For deployment: A server or cloud infrastructure to host the application, with sufficient resources to handle expected traffic.

Solution approach:

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3. Functional requirements:

- User Registration and Login: Enable user account creation and login functionality.
- Event Creation: Allow organizers to create events with details like name, date, time, venue, tickets, pricing, and capacity.
- Ticket Purchase: Enable attendees to securely browse, select, and purchase tickets using supported payment gateways.
- Event Discovery: Enable attendees to search for events based on location, date, category, etc.
- Seat Selection: Allow attendees to choose seats from a seating chart for events with assigned seating.
- Event Management: Provide organizers with tools to manage events, update information, and monitor ticket sales.
- Ticket Scanning: Enable organizers to electronically scan tickets at event entrances for attendee validation.
- Reporting and Analytics: Generate detailed event reports for organizers, including sales, attendance, revenue, and demographics.
- User Notifications: Send users notifications for event updates and ticket purchases.
- Feedback and Ratings: Allow attendees to provide feedback and ratings for attended events.

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Use cases for attendees:

- **Event Discovery:** Users search for events based on preferences like location, date, and type.
- **Event Selection:** Users explore event details and choose tickets based on preferences.
- **Seat Selection:** Users select seats if available with a visual seating chart.
- **Ticket Booking and Payment:** Users securely book tickets and pay online.
- **Ticket Confirmation and Delivery:** Users receive in-app confirmation after booking.
- **Event Attendance:** Users present tickets for entry using electronic scanning.
- **Post-Event Feedback:** Users provide event feedback through the platform.
- **Event Updates:** Users receive notifications about upcoming events.
- **Location Maps:** Users access location maps for event venues, aiding in navigation.
- **Parking Slot Information:** Users receive information about available parking slots at the event venue.

Use cases for Admins:

- **Event Management:** Admins add, update, or remove events as necessary.
- **Ticket Management:** Admins control ticket inventory, pricing, and availability.
- **Venue Oversight:** Admins manage venue info and seating arrangements.
- **Ticket Scanning:** Admins use electronic scanning for entry validation.
- **Reporting:** Admins generate reports on attendance, sales, and demographics.
- **User Management:** Admins handle user registration, authentication, and access.
- **Marketing:** Admins promote events by adding images and videos of the event to attract attendees.
- **Feedback Analysis:** Admins analyze user feedback for event enhancement.

Solution approach:

Problem Definition:

Events are a big part of life today, but the current systems for organizing and attending them often aren't great. Organizers struggle with old, complicated systems that make it hard to create and manage events. Attendees have trouble buying tickets and getting event info. Also, organizers don't get enough data from these systems to improve future events. Current event ticketing platforms lack user-friendly features and tools, making event management challenging for organizers and creating a frustrating experience for attendees. There is a clear need for a more innovative and user-centric approach to event ticketing, one that simplifies event planning and ticket purchasing while enhancing the overall event experience.

Solution:

To address these issues, our proposed solution encompasses a user-friendly interface facilitating intuitive event creation and ticket purchasing. Secure registration and authentication mechanisms safeguard user information and prevent fraud. Event organizers are equipped with comprehensive event creation and management tools, including options to set ticket types, prices, and capacities in real-time. Flexible ticket selling and canceling mechanisms offer convenience to both organizers and attendees. Additionally, features such as ticket scanning capabilities, seat selection options, location maps, and parking slot information enhance the overall event experience, ensuring seamless navigation and accessibility. Comprehensive event reporting provides detailed analytics on ticket sales, attendance, revenue, and demographics, empowering organizers to make informed decisions and optimize future event planning strategies.

Solution approach:

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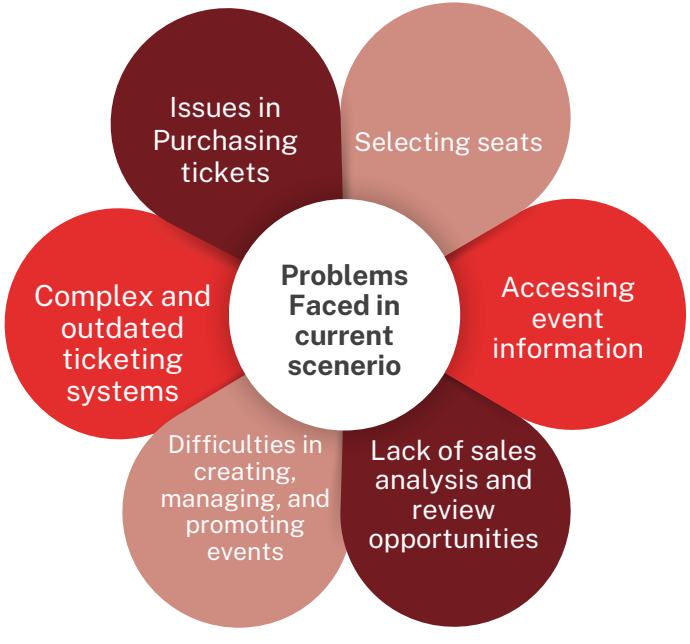
Current Landscape



Research Findings

Key Findings:

- **Complexity of Existing Platforms:** Current platforms are complex, frustrating users.
- **Limited Sales Analysis:** Organizers lack tools for understanding sales performance.
- **Inadequate Feedback**: Attendees want better feedback channels.

Pain Points:

- **Cumbersome Ticketing:** Processes are overly complex.
- **Inefficient Event Management:** Organizers struggle with event setup & promotion.
- **Reporting Limitations:** Sales data analysis is lacking.

User Feedback:

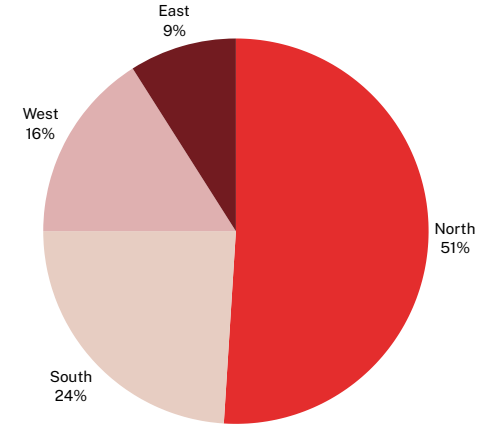
- **Streamlined Ticketing:** Users want simpler ticket purchasing.
- **Sales Analysis:** Organizers need better insights into sales.
- **Feedback Channels:** Attendees seek more effective ways to share their experiences.

Market Opportunity

- Expansion into tier 2 and tier 3 cities taps into urban population growth and entertainment events.
- Personalized recommendation algorithms enhance user engagement.
- Collaboration with organizers, promoters, and venues secures exclusive partnerships.
- Social media integration amplifies event promotion and facilitates influencer marketin

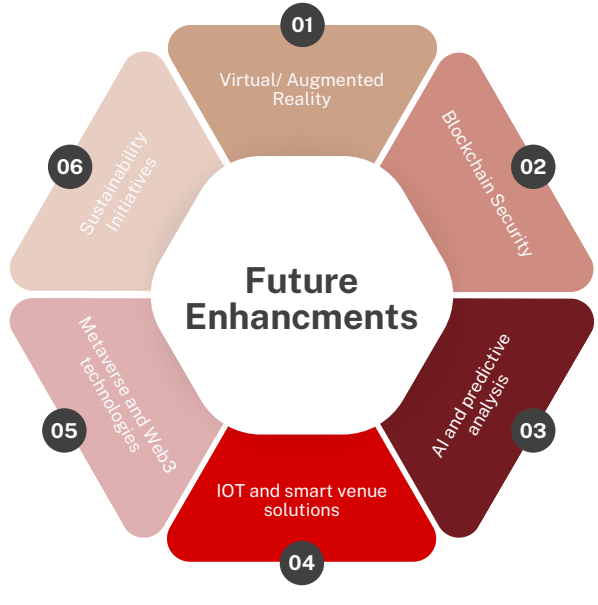
Competitive Landscape and Differentiators:

- Competitive Landscape: Ticketmaster, Eventbrite.
- Differentiators:
  - Sales Analysis: Robust analytics.
  - User-Friendly Interface: Seamless experience.
  - Feedback Mechanisms: Prioritize attendee insights.
  - Additional Features: Parking bookings, precise location selection, event images.



Trend analysis

Indian online event ticketing market size by region



Future Roadmap

- Implementation of blockchain-powered ticketing for security.
- Integration with Technologies like Virtual/Augmented Reality, AI and Predictive Analytics, IoT and Smart Venue Solutions.
- Metaverse and Web3 Technologies:
- Sustainability Initiatives

Solution Design (For organizer)

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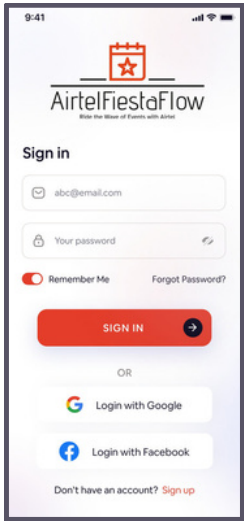

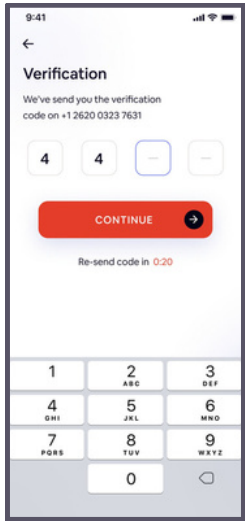

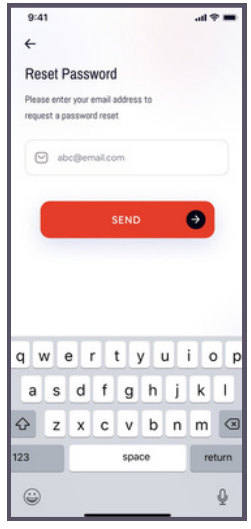

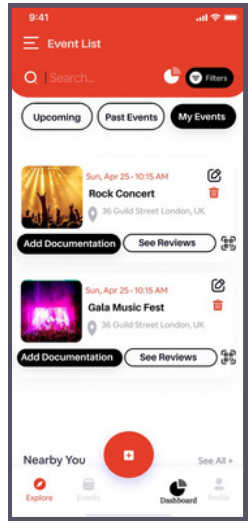

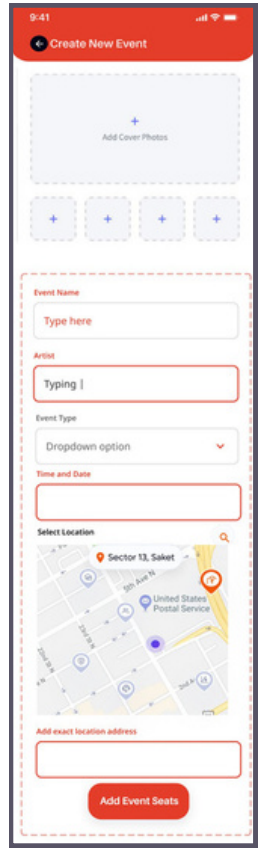

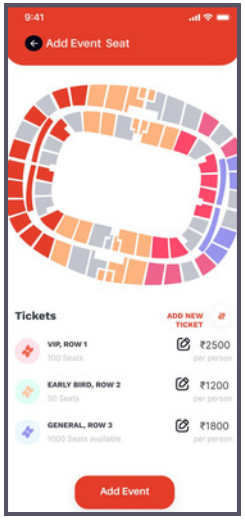

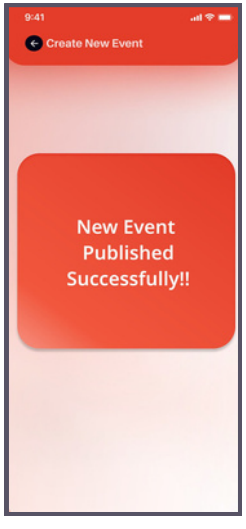

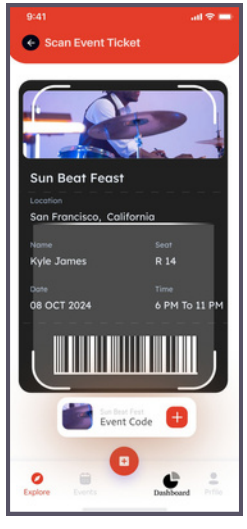

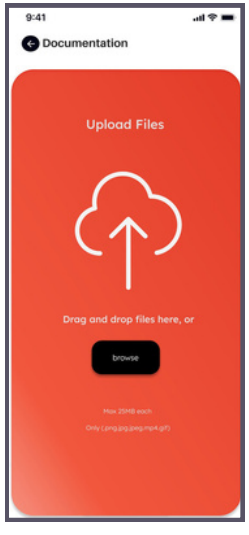

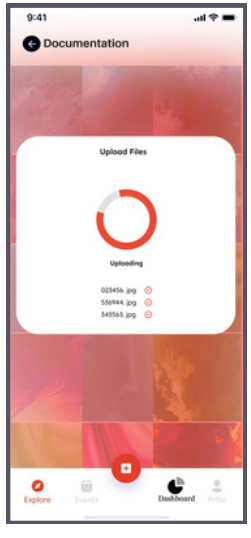

Solution Design (For attendees)

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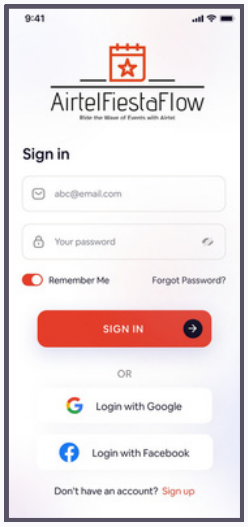
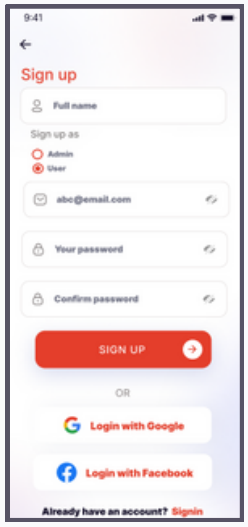
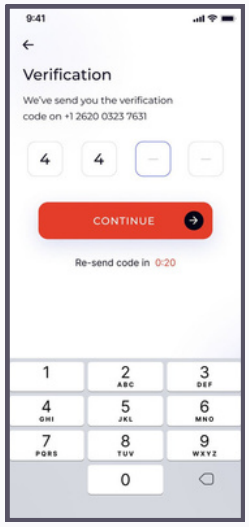
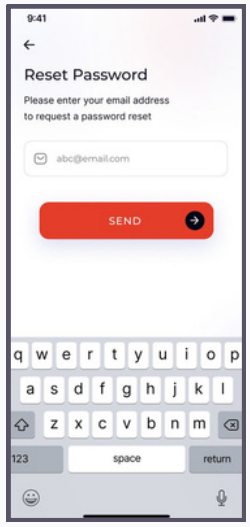
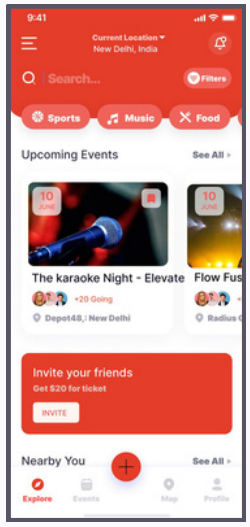
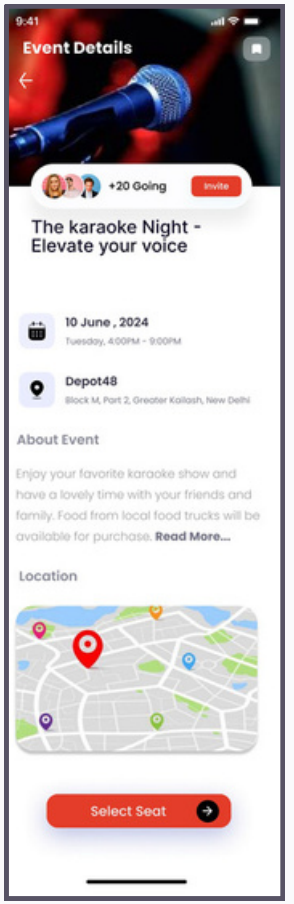


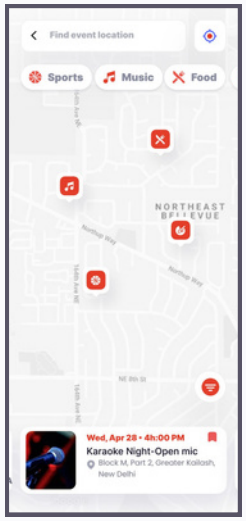


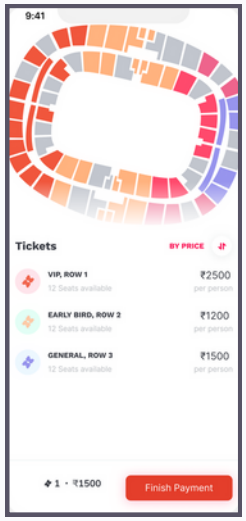


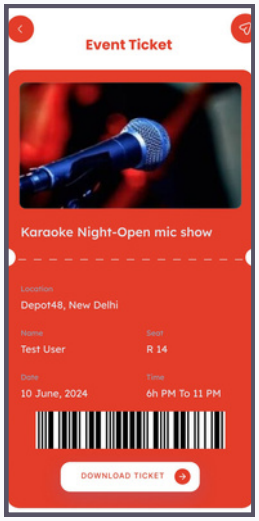


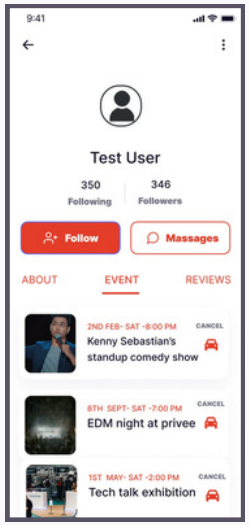


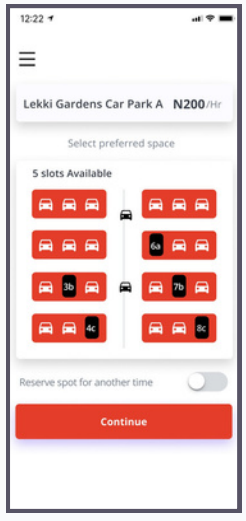








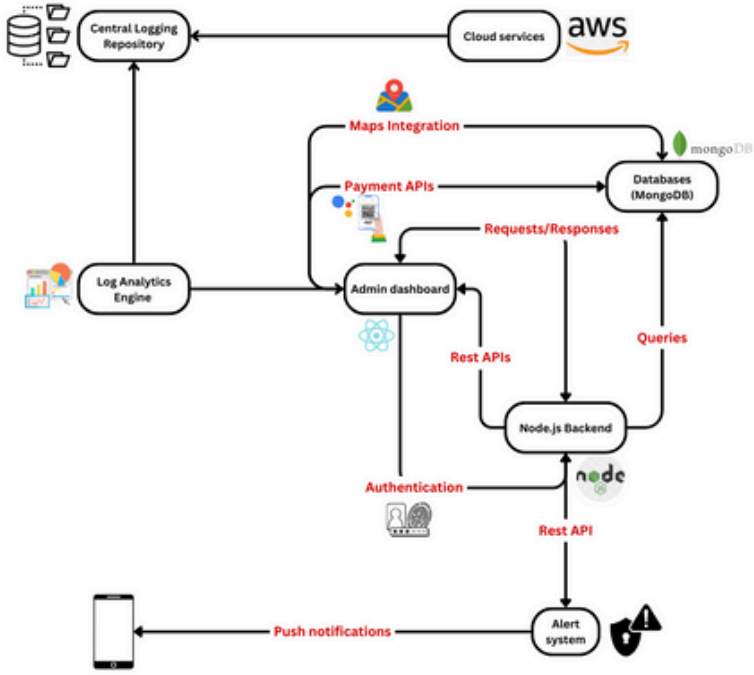




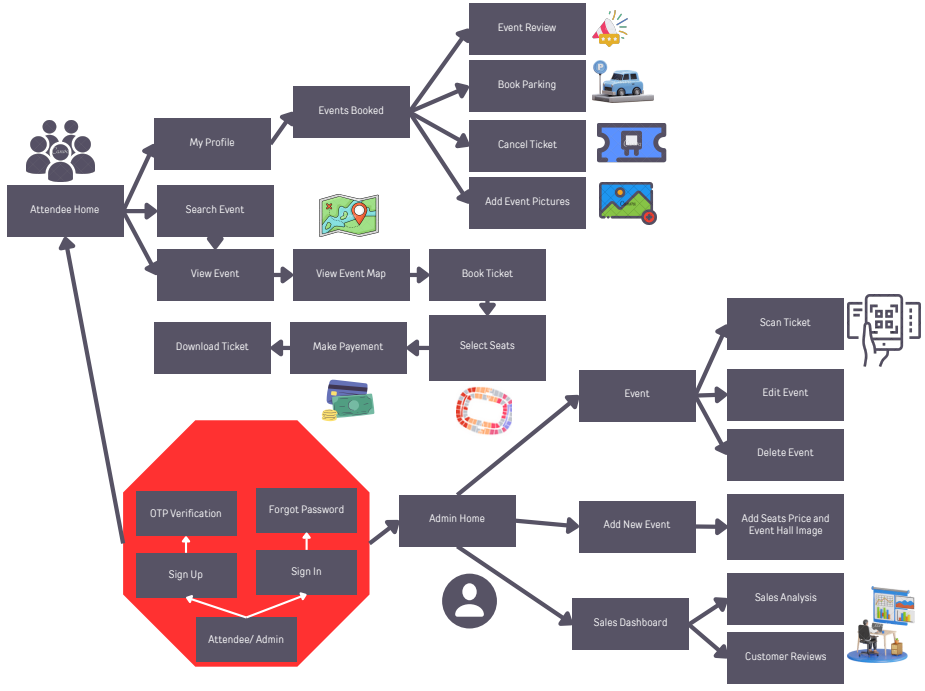
Solution approach:

Implementation: **Developed an application to implement the following features:**

1. Front-end of the app using React Native for cross-platform compatibility.
2. Back-end built with Node.js (Express.js) and MongoDB for data storage.
3. Integration of payment gateways such as Google, Paytm API for ticket purchases.
5. Using Google Maps API for maps integration to provide location and navigation features.
6. Hosting the app on AWS Platform for scalability and reliability.
7. Using Visual Studio Code for development, Git for version control, and GitHub for collaboration.
8. Deployment management with Docker for containerization and Jenkins for CI/CD.
9. Implementing analytics using Firebase Analytics or Google Analytics for user insights and performance tracking.



Implementational architecture



Process flow

Solution approach:

Show stoppers:

1. Seamless Navigation and Planning: Integration of location maps and parking slot information ensures hassle-free event navigation and planning.
2. Intuitive User Interface: An intuitive interface enables easy event creation, ticket purchasing, and seat selection.
3. Comprehensive Event Reporting: Detailed analytics provide insights on ticket sales, attendance, revenue, and demographics.
4. Secure Registration and Authentication: A secure system safeguards user information and prevents fraud.
5. Enhanced Marketing Options: Organizers can promote events effectively through images and videos, enriching event experiences and attracting attendees.

Increasing scalability by:

1. Microservices Architecture: Break down the app into smaller, independent services for easier scaling.
2. Elastic Load Balancing: Distribute traffic evenly across multiple instances for better performance.
3. Auto-Scaling: Automatically adjust the number of instances based on traffic demands.
4. Caching: Store frequently accessed data to reduce database load.
5. Horizontal Scaling: Add more instances to handle increased workload.

Technology/Tech Stack Used:

- **Front-end Development:** Framework: React Native
  Languages: JavaScript, TypeScript
- **Back-end Development:** Framework: Node.js (Express.js)
  Database: MongoDB
- **Payment Gateway Integration:** Google Pay API, Paytm, Phonepe Payment Gateway
- **Maps Integration:** Google Maps API
- **Cloud Services:** AWS (Amazon Web Services)
- **Development Tools:** IDE: Visual Studio Code
  Version Control: Git, GitHub
- **Deployment:** Docker, Jenkins
- **Analytics:** Firebase Analytics, Google Analytics

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Thank You !!!