interLINK

A MINI PROJECT REPORT

Submitted by

Alen Sebastin (KGR22CS012)

Muhammed Rayan (KGR22CS066)

Subash M (KGR22CS090)

Tobin Tom (KGR22CS094)

to

The A P J Abdul Kalam Technological University

in partial fulfillment of the requirements for the award of the Degree

of

Bachelor of Technology

in

COMPUTER SCIENCE AND ENGINEERING

DEPT. OF COMPUTER SCIENCE & ENGINEERING

(NBA Accredited 2022-2025)

COLLEGE OF ENGINEERING KIDANGOOR

APRIL 2025

VISION AND MISSION OF COLLEGE

VISION

To be a leading engineering institution in the region, providing competent professionals, who engage in lifelong learning, driven by social values.

MISSION

To prepare engineering graduates for the development activities of the society and industry, and to prepare them for higher engineering education.

VISION AND MISSION OF THE DEPARTMENT

VISION

To become a center of excellence in Computer Science and Engineering imparting quality professional education to develop competent professionals with social values who are capable of life long learning.

MISSION

To impart quality technical education to students at undergraduate level through constant knowledge upgradation by maintaining pace with the latest sophisticated innovations , research and development and industry interaction in the field of Computer Science and Engineering with focus on lifelong learning for the well-being of the society.

Program Educational Objectives (PEO)

PEO1	Have sound knowledge and technical skills required to remain productive in the field of Computer Science and Engineering.
PEO2	Be efficient team leaders, effective communicators and successful entrepreneurs.
PEO3	Resolve technical problems with a positive outlook towards well-being of the society.
PEO4	Function in diverse environments with the ability and competence to solve challenging problems.
PEO5	Pursue lifelong learning and professional development through higher education.

Program Specific Outcomes (PSO)

PSO1 Ability to appreciate, learn and develop applications using modern programming languages, and databases.

PSO2 Ability to understand and analyze computer networks, distributed systems and computer system architectures for the designing of new systems.

PSO3 Ability to apply knowledge of domains like machine learning, cloud computing , image processing, data mining and software engineering to tackle innovative problems.

DECLARATION

We undersigned hereby declare that the project report entitled "interLink", submitted for partial fulfillment of the requirements for the award of degree of Bachelor of Technology of the APJ Abdul Kalam Technological University, Kerala is a bonafide work done by us under supervision of Ms.Alpha Mathew (Asst Prof). This submission represents our ideas in our own words and where ideas or words of others have been included, We have adequately and accurately cited and referenced the original sources. We also declare that we have adhered to ethics of academic honesty and integrity and have not misrepresented or fabricated any data or idea or fact or source in our submission. We understand that any violation of the above will be a cause for disciplinary action by the institute and/or the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained. This report has not been previously formed the basis for the award of any degree, diploma or similar title of any other University.

Kidangoor
05-04-2025

ALEN SEBASTIAN
MUHAMMED RAYAN
SUBASH M
TOBIN TOM

DEPT. OF COMPUTER SCIENCE & ENGINEERING

COLLEGE OF ENGINEERING

KIDANGOOR

2024-25

CERTIFICATE

This is to certify that the report entitled **"interLink"** submitted by **Muhammed Rayan (KGR22CS066)** to the APJ Abdul Kalam Technological University in partial fulfillment of the B.Tech. degree in Computer Science and Engineering is a bonafide record of the project work carried out by this student under our guidance and supervision. This report, in any form, has not been submitted to any other University or Institute for any purpose.

Ms. Alpha Mathew
Assistant Professor
Dept. of Computer Science & Engineering
College of Engineering Kidangoor
Project Guide

Dr. Ojus Thomas Lee
Associate Professor
Dept. of Computer Science & Engineering
College of Engineering Kidangoor
Head of the Department

Mrs. Jyothis Joseph
Assistant Professor
Dept. of Computer Science & Engineering
College of Engineering Kidangoor
Project Coordinator

Mrs. JISHA C THANKAPPAN
Assistant Professor
Dept. of Computer Science & Engineering
College of Engineering Kidangoor
Project Coordinator

ACKNOWLEDGEMENT

We take this opportunity to express our deep sense of gratitude and sincere thanks to all who helped us to complete the work successfully. Our first and foremost thanks goes to God Almighty who showered in immense blessings on our effort.

We wish to express our sincere thanks to **Dr. Indhu P Nair, Principal College of Engineering Kidangoor** for providing us with all the necessary facilities and support.

We would like to express our sincere gratitude to **Dr. Ojus Thomas Lee, Associate Professor and HOD CSE departement**, for his support and co-operation.

We wish to express our sincere thanks to **Mrs. Jisha C Thankappan and Mrs. Jyothis Joseph , Project Coordinators** for providing valuable suggestions and guidance which have been helpful in the various phases of the completion of the project.

We wish to express our sincere gratitude towards **Ms. Alpha Mathew , Project Guide** for giving advices to work with the project and complete it successfully.

We thank all the teaching and non teaching staff members of our Department for their support.

Finally we thank our parents, all our friends, near and dear ones who directly and indirectly contributed to the success of this work.

ALEN SEBASTIAN
MUHAMMED RAYAN
SUBASH M
TOBIN TOM

Abstract

InterLink is a web-based platform designed to centralize educational and technical events, including hackathons, bootcamps, and conferences. The platform enables organizers to publish event details, manage registrations, track participants, and integrate secure payment options for paid events. Participants can easily browse, filter, and register for events based on their interests, with a focus on college students and the tech community. By offering robust event management tools, automated notifications, and a user-friendly interface, InterLINK ensures efficiency, scalability, and accessibility for both organizers and participants. The platform aims to empower learners and innovators, fostering collaboration, simplifying event management, and providing seamless access to valuable learning opportunities.

Contents

List of Figures

List of Tables

Chapter 1

Introduction

In today's fast-paced world, there is a growing need for a platform that combines innovation with convenience, especially in the realm of knowledge-sharing and event management. This centralized platform enables the seamless publishing and management of bootcamps, workshops, conferences, and competitions, simplifying event discovery, registration, and participation for students, tech enthusiasts, and professionals. It empowers organizers with efficient tools for event management, payment solutions, and participant analytics, all while being designed for scalability, simplicity, and accessibility to bridge the gap between curiosity and opportunity.

Chapter 2

Problem Statement

Finding and managing tech events like workshops, bootcamps, and conferences is difficult due to scattered information and inefficient booking processes. Our interLink provides a centralized platform for organizers to list events and users to discover and book them easily , ensuring a seamless experience

Chapter 3

Literature Review

Event management systems streamline the organization, promotion, and participation in various events like hackathons and workshops. They provide essential features like event creation, ticket booking, and user dashboards for both organizers and participants. Key software engineering principles, such as modularity, security, and scalability, are crucial for building an efficient and robust platform. Modern technologies like React, Django, and secure payment integrations enhance user experience and system performance.

3.1 Firebase

: Firebase provides a comprehensive suite of tools for building web and mobile applications. It offers backend services like real-time databases, authentication, and hosting, which can significantly speed up the development of your event management platform.

3.2 Heroku

: Heroku is a cloud platform that allows developers to build, run, and scale applications quickly. It offers easy deployment of apps, integration with various databases, and support for multiple programming languages, making it ideal for hosting your platform.

3.3 Bubble

: Bubble is a no-code platform that enables you to build fully functional web applications without coding. It's perfect for rapid prototyping or developing your event management platform with a visual interface, offering features like database integration and workflows.

In summary, these Platforms like Firebase, Heroku, and Bubble can assist in creating your event management platform. Firebase offers backend services such as real-time databases and authentication,

while Heroku provides cloud hosting and easy deployment for apps. Bubble is a no-code platform that allows you to build web applications visually, making development faster and more accessible.

Chapter 4

System Analysis

This Chapter covers the current systems in early Implementation of interLINK ,detailed analysis of the proposed system and the basic requirements of the proposed system.

4.1 Existing System

- Lack of Centralization: Event details and management are scattered across multiple platforms, making it difficult for users and organizers to access everything in one place.
- Manual Management: Organizers manually handle event details and bookings, leading to errors and inefficiencies.
- Limited Discoverability: Events are hard to find due to lack of advanced search or filtering options.
- Inefficient Communication: Communication between participants and organizers is fragmented and often delayed.
- No Participant Management: Organizers lack a system to easily manage participant lists and bookings
- Inconsistent Data: Data (such as ticket availability) is not updated in real-time, leading to inaccurate event information.
- Lack of Customization for Event Listings: Event pages lack customization options to highlight unique event features like sponsors or special guests.
- Poor User Experience for Participants: The event discovery and booking process may be confusing or unintuitive for users.
- Lack of Analytics and Insights: Organizers don't have access to valuable data to optimize future events or improve attendee engagement.
- Security Issues: Without proper security measures, user data and payment information are vulnerable to breaches.

4.2 Proposed System

4.2.1 Overview

The proposed system is a centralized event management platform designed to streamline the process of discovering, booking, and managing events such as hackathons, workshops, and boot camps. It enables organizers to easily publish events, track bookings, and manage participants through a user-friendly dashboard. Viewers can browse events using advanced search filters, book tickets, and view their event history on a personalized dashboard. The system supports secure ticket booking with real-time updates and notifications. Communication between participants and organizers is facilitated through an integrated messaging system. Event listings can be customized with media, sponsors, and speaker details. Analytics and reporting tools help organizers optimize future events. The platform ensures data security, offering encrypted payment processing and secure user authentication.

4.2.2 Advantages

- **Centralized Platform:**All event details, booking information, and management tools are housed in one location for easy access and control.
- **Efficient Event Management:** Publishers can quickly create, edit, and manage events with automated systems, reducing manual effort and errors.
- **Integrated Payment System:**Secure, seamless payment processing for ticket bookings ensures convenience and safety for both organizers and participants.
- **Improved Discoverability:** Advanced search and filtering features make it easier for users to find relevant events based on preferences and criteria.
- **Automated Notification:** Real-time notifications keep users and organizers informed of updates, reminders, and event changes automatically.
- **Scalability:** The system is designed to handle increasing numbers of events and users, ensuring smooth performance as the platform grows.
- **User Roles:** Clear distinctions between user roles (viewers and publishers) provide tailored experiences, ensuring each user interacts with the system based on their needs.

4.2.3 System Architecture

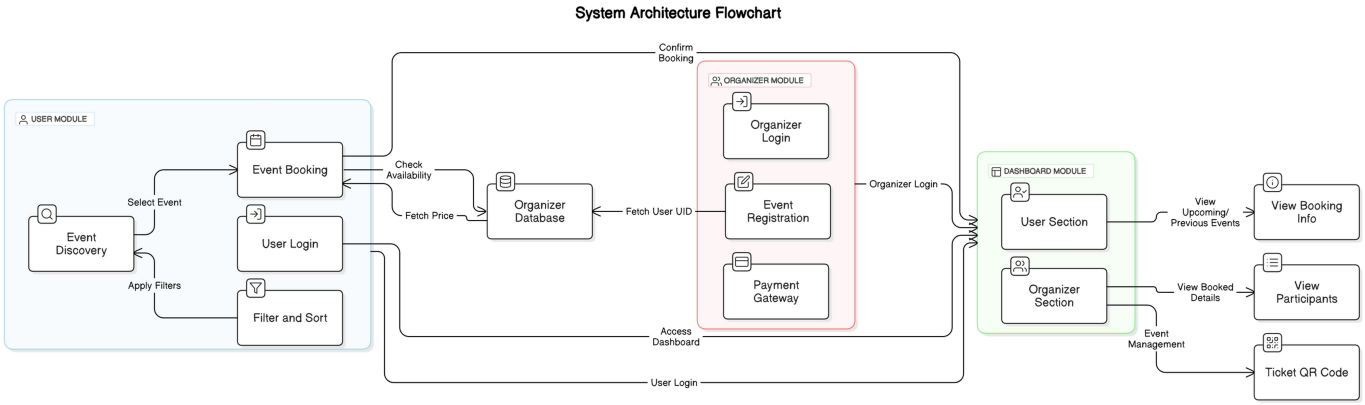


Figure 4.2.1: *System Architecture*

Chapter 5

System Design

5.1 Design Diagrams

5.1.1 Use Case Diagram

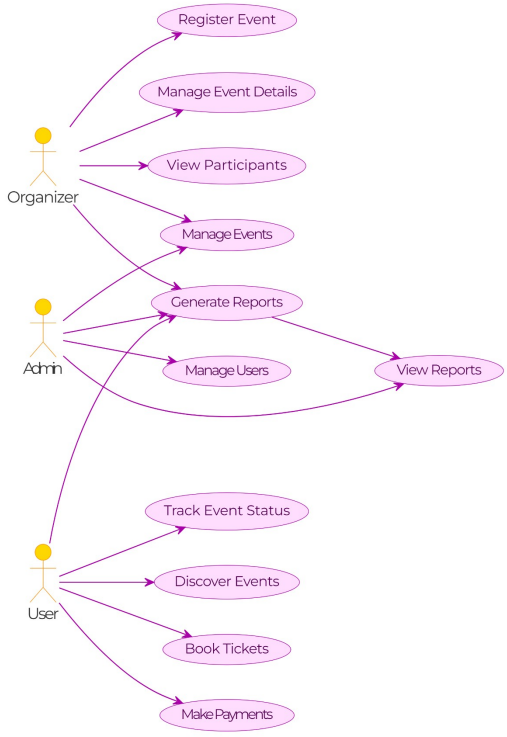


Figure 5.1.1: *Use Case diagram*

5.1.2 Sequence Diagram

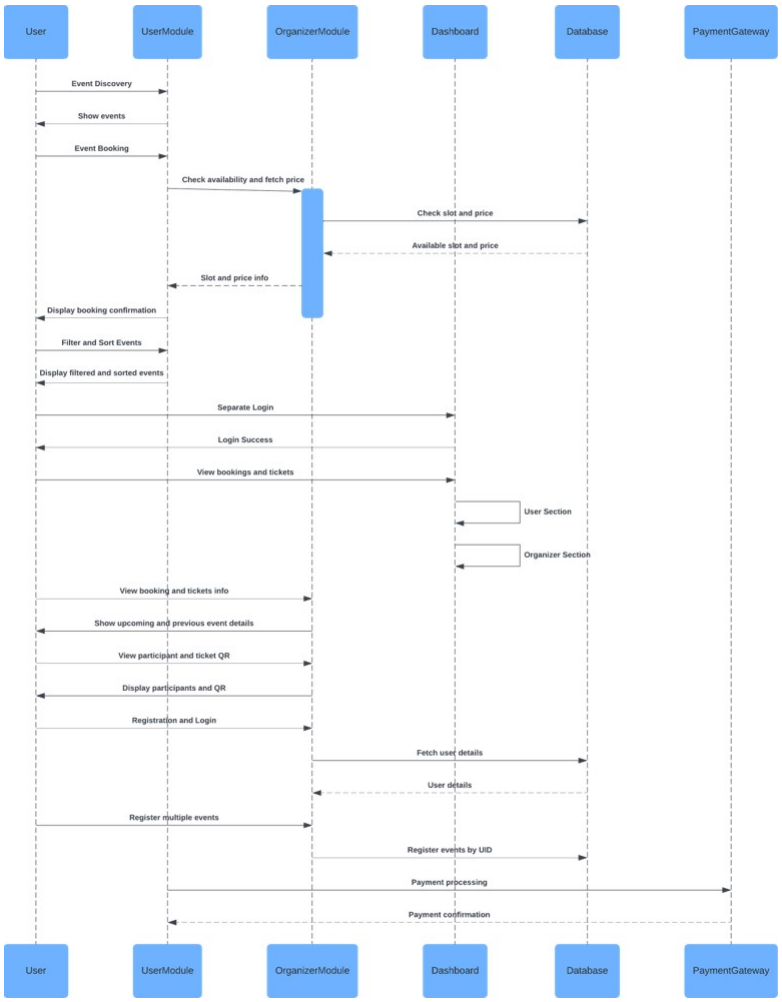


Figure 5.1.2: *Sequence Diagram*

5.1.3 Data Flow Diagram

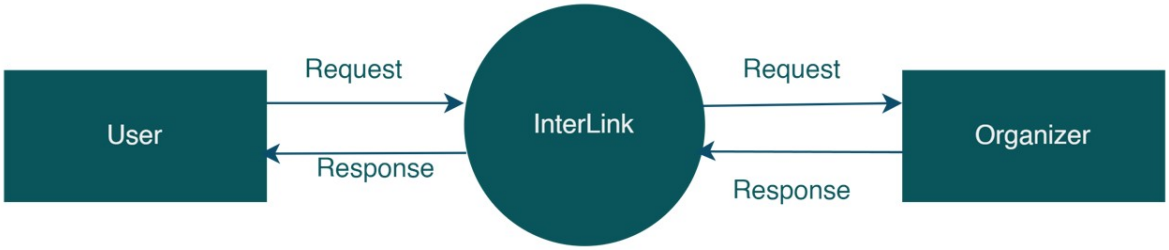


Figure 5.1.3: *LEVEL 0*

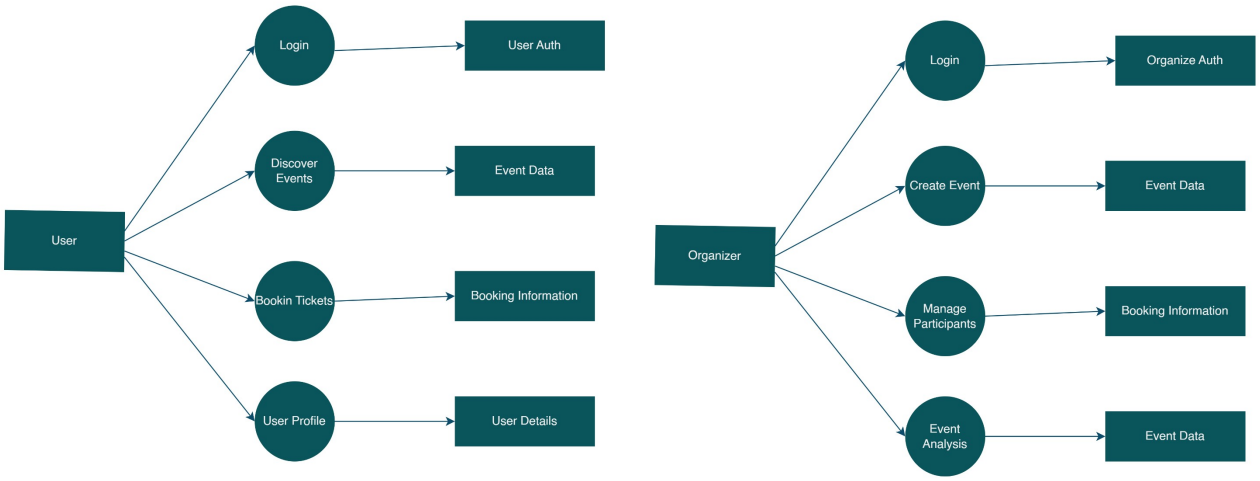


Figure 5.1.4: *LEVEL 1*

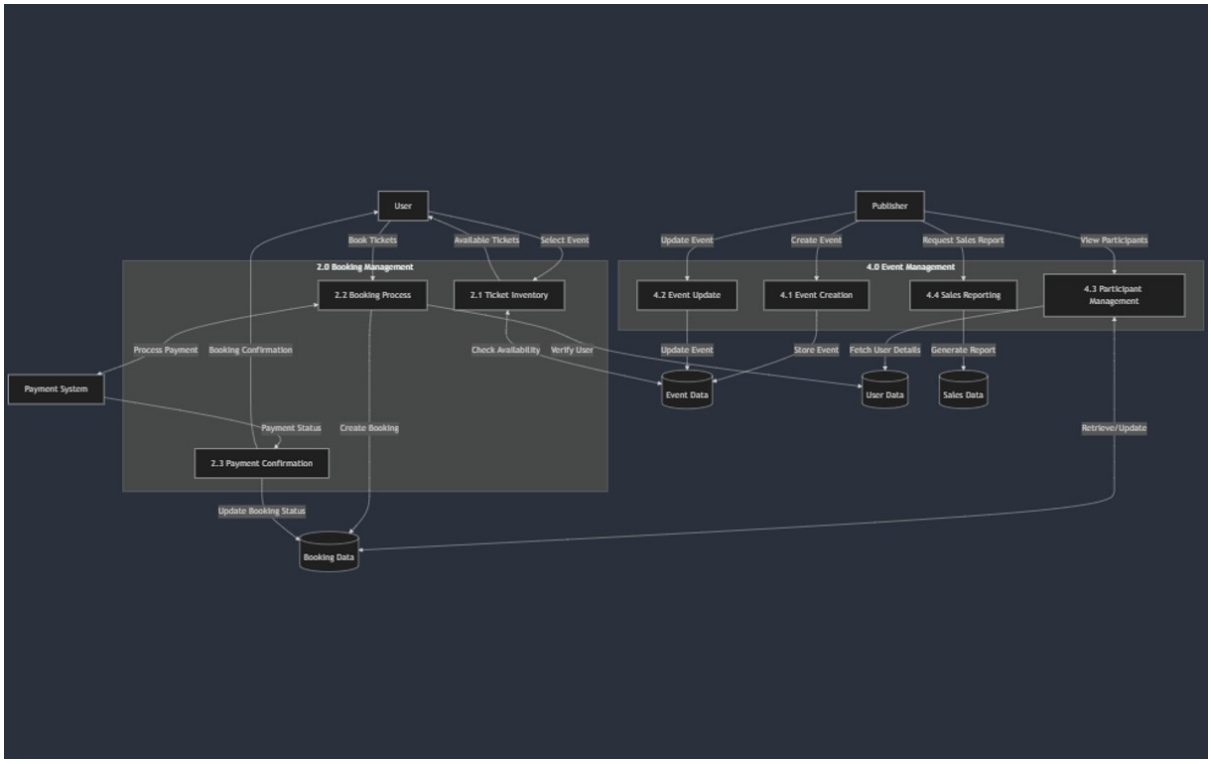


Figure 5.1.5: *LEVEL 2*

5.1.4 Activity diagram

Figure 5.1.6: *Activity diagram*

5.1.5 Class diagram

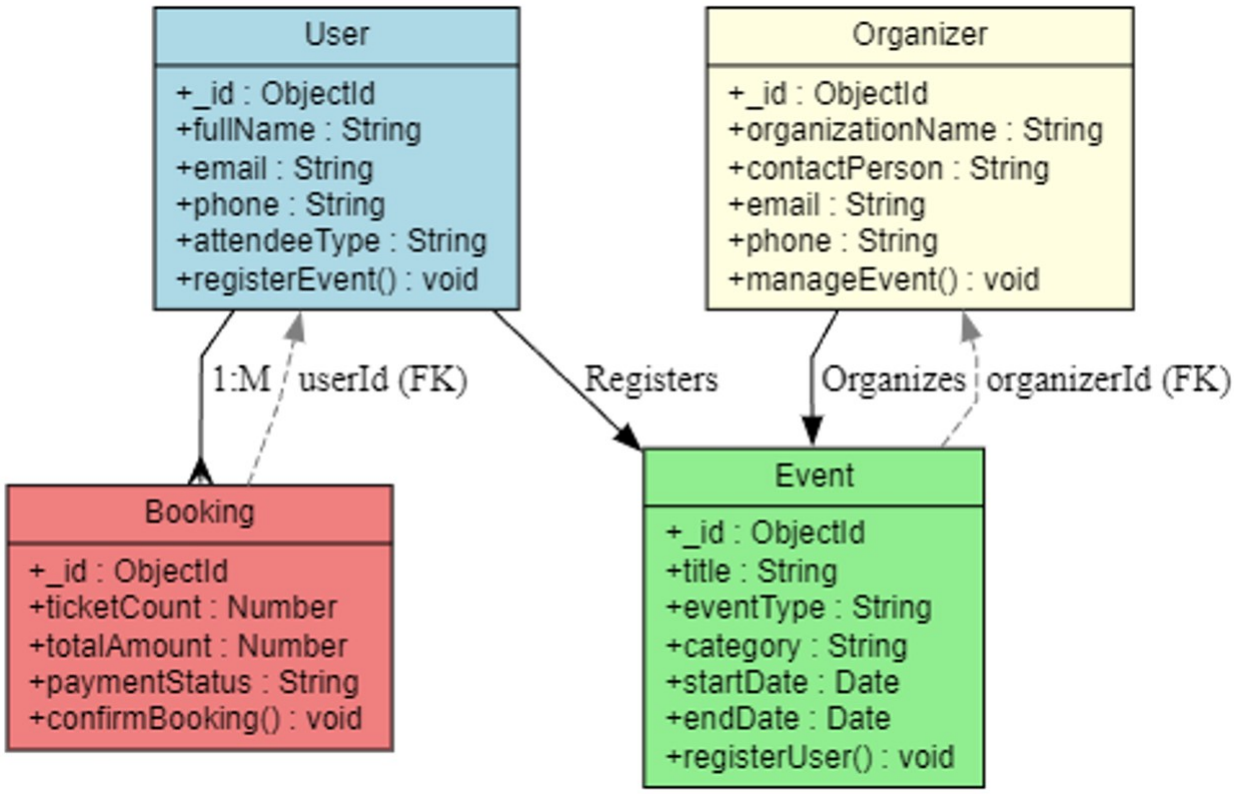


Figure 5.1.7: *Class diagram*

5.2 Functional and Nonfunctional Requirements

FUNCTIONAL REQUIREMENTS

- **R1: User Authentication and Management:**
  - Input: Users provide registration details (email, password) or login credentials.
  - Output: System returns a confirmation message, authentication token, or password reset link.
- **R2: Event Listing and Management:**
  - Input: Publishers input event details like title, date, venue, and ticket price.
  - Output: Events are listed on the platform, and booking stats are updated.
- **R3: Dashboard and Notifications:**
  - Input: Users perform actions like booking, cancellations, or event creation.
  - Output: Dashboards display relevant information, and notifications are sent for updates.
- **R4: Event Search and Filtering:**
  - Input: Users enter search queries or select filters like event type, location, or date.
  - Output: The platform displays events that match the search criteria or filter settings.
- **R5: Ticket Booking and Management:**
  - Input: Users provide booking details, including the number of tickets and payment information.
  - Output: Confirmation of ticket booking or cancellation, and payment status.
- **R6: Event Validation and Verification:**
  - Input: Publishers submit event details for validation and verification.
  - Output: Event is either approved or rejected, and a notification is sent to the publisher.
- **R7: Event Updates and Notifications:**
  - Input: Publishers modify event details, such as date or cancellation.
  - Output: Users receive notifications about the changes to the event.
- **R8: Security Features:**
  - Input: Users provide personal, registration, or payment details.
  - Output: Data is encrypted and securely stored; transactions are processed securely.
- **R9: Performance and Scalability:**
  - Input: Increased user traffic and event data.

  - Output: The platform maintains performance and scales to handle the load effectively.

- **R10: Compliance and Accessibility:**
  - Input: Users interact with the platform, and accessibility settings are applied.
  - Output: The platform meets legal compliance standards and is accessible to all users.

NON-FUNCTIONAL REQUIREMENTS

Performance: The website must load within 3 seconds to ensure a fast and smooth user experience.

Scalability: The platform should be able to handle increased user traffic and event data without performance issues.

Reliability: The website should operate reliably under normal conditions, with minimal errors and downtime.

Maintainability: The system should be easy to maintain and update, with a modular codebase and clear documentation.

Interoperability: The platform should integrate seamlessly with third-party services like payment gateways, social media, and email platforms.

Compatibility: Works on all browsers and devices.

5.3 Hardware and Software Requirements

SOFTWARE REQUIREMENTS

```
Frontend: React.js with TypeScript & Vite
Styling: Tailwind CSS
Backend: Node.js with Express.js
API Handling: Axios for HTTP requests
Database: MongoDB (Managed via MongoDB Compass)
Authentication: JWT & Role-Based Access Control
Development Tools: VS Code, GitHub, Postman(Thunder Client)
Package Manager: npm
```

HARDWARE REQUIREMENTS

```
Client Side (Developer Machine)
Processor: Intel i5 / Ryzen 5 or higher
RAM: 4GB (8GB recommended)
Storage: 50GB free (SSD preferred)
GPU: Integrated or dedicated GPU
Network: Stable internet for API & deployment
```

```
Server Side (Hosting Environment)
Processor: Intel i5 / Ryzen 7 or higher
RAM: Minimum 8GB (16GB+ for scalability)
Storage: SSD-based (50GB+ for database & files)
Network: High-speed internet with 99.9% uptime
OS: Linux (Ubuntu preferred)
```

5.4 Project Scheduling

Table 5.1: Project Time line

Task	Task Description	Time Slot
Problem Identification	Identify the specific challenges and requirements of the event publishing system.	17/12/2024
System Analysis	Analyze the creation process, user needs, and technical requirements.	08/01/2025
GUI Design	Design the user interface for the interLink platform , including layout, templates.	18/02/2025
Database Design	Design the database structure and database management system.	03/03/2025
System Implementation	Develop the frontend using React js and backend using Node js and database using Mongo DB.	10/03/2025
Testing and Refinement	Thoroughly test the interLink platform , identify and fix bugs, and refine user experience.	20/03/25
Report Preparation	Prepare the project report, documenting the entire process, system architecture, design choices.	03/04/25
Final Review	Review the project, finalize the report, and prepare for the projects's final review.	04/04/25

5.5 GUI Design

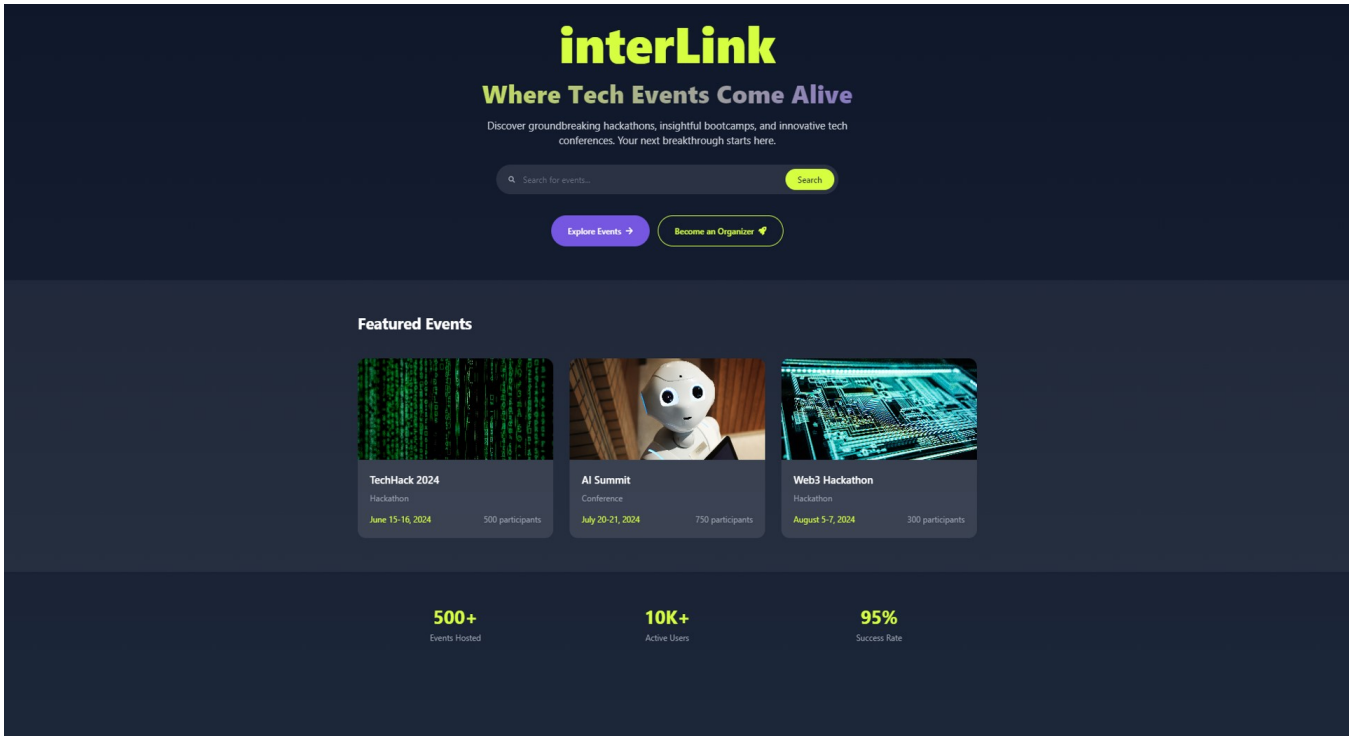


Figure 5.5.1: Home Page

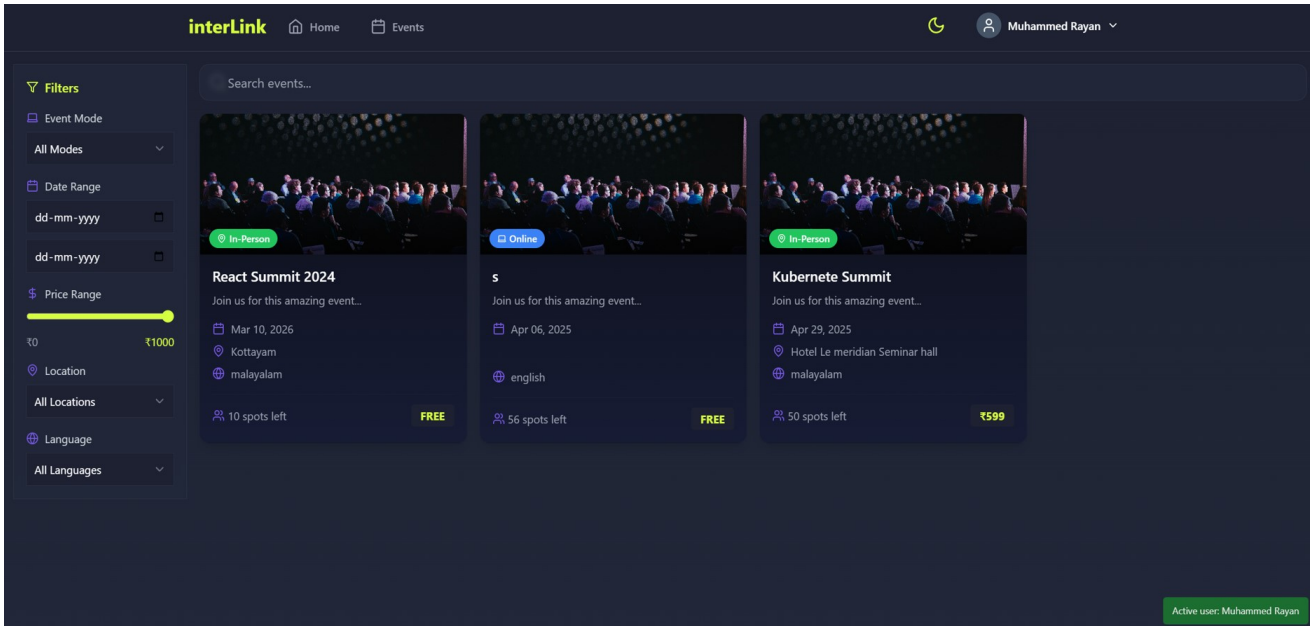


Figure 5.5.2: Event Discovery

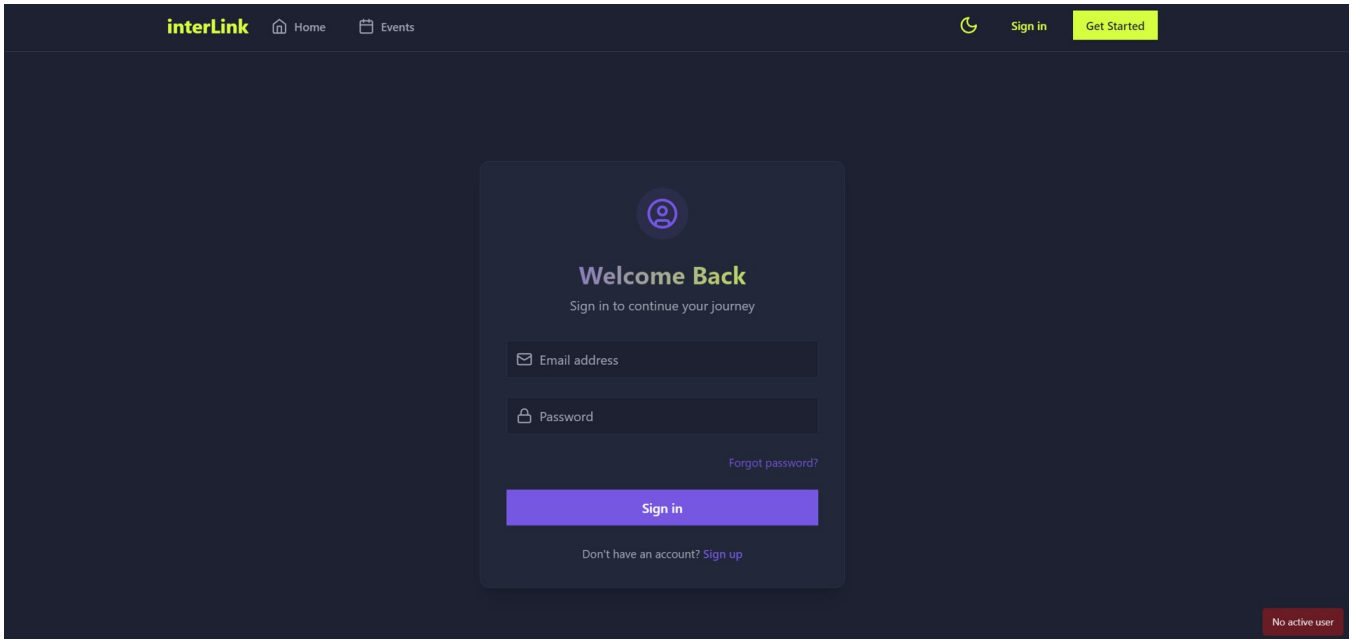


Figure 5.5.3: Sign In

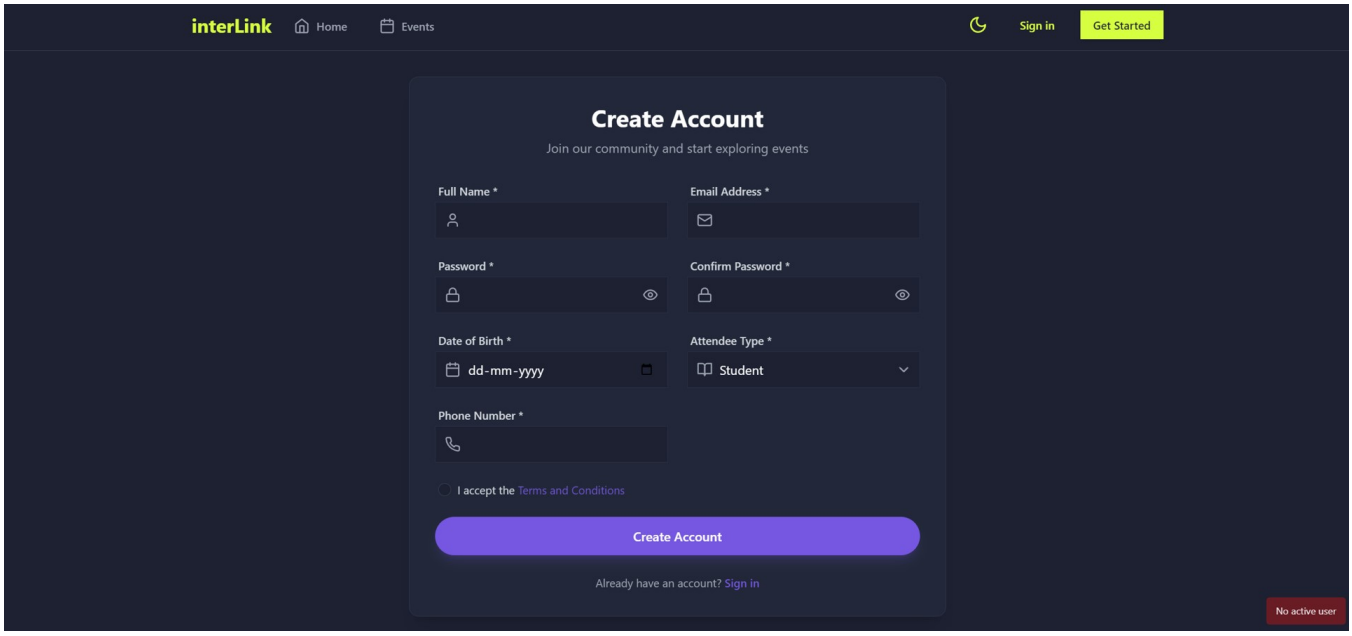


Figure 5.5.4: Sign Up

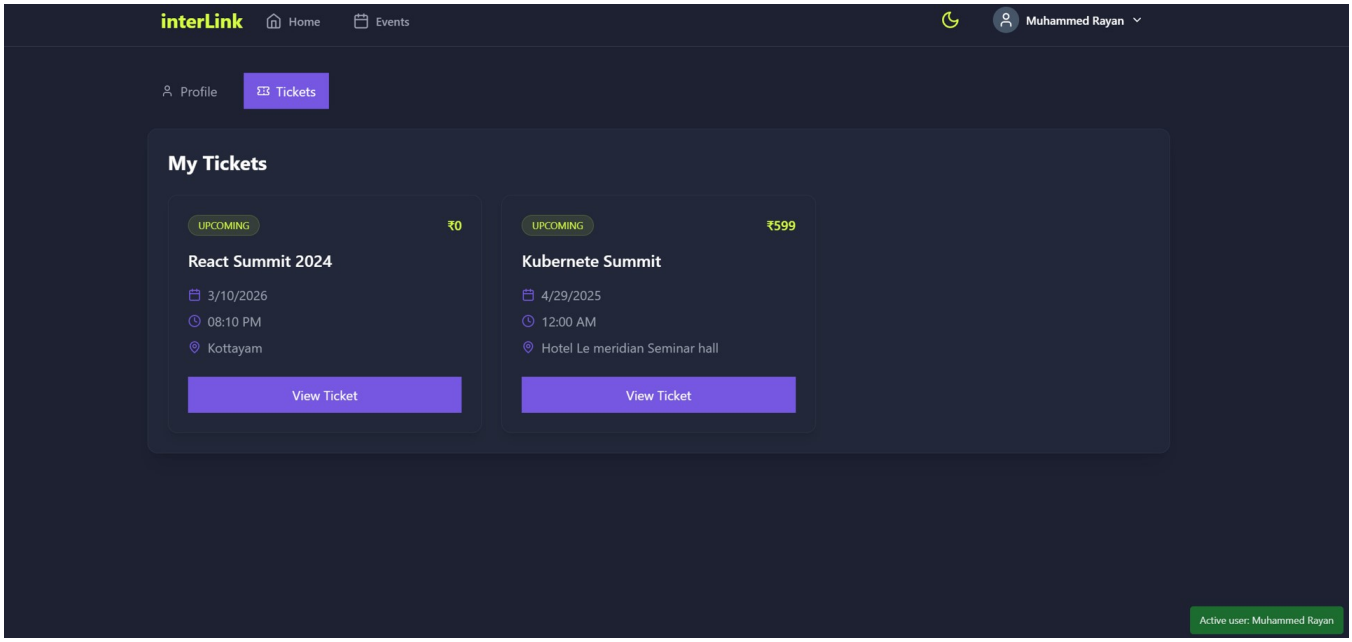


Figure 5.5.5: Ticket Track

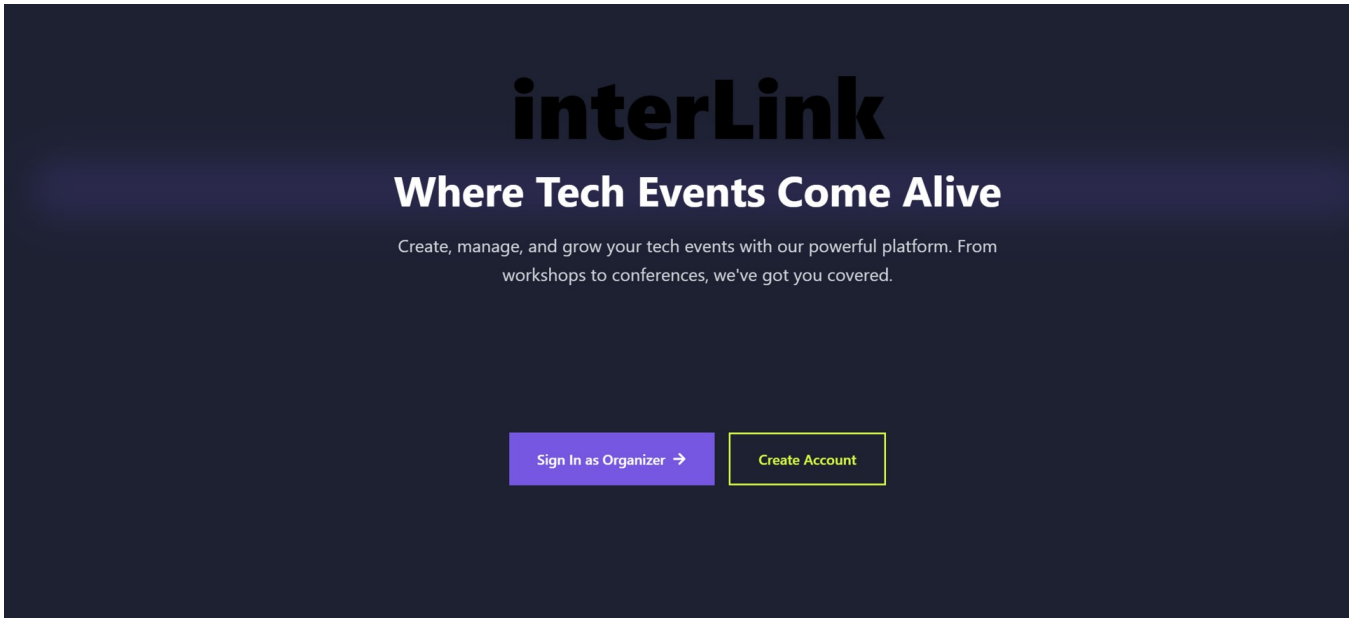


Figure 5.5.6: Organizer Home

Figure 5.5.7: Organizer Dashboard

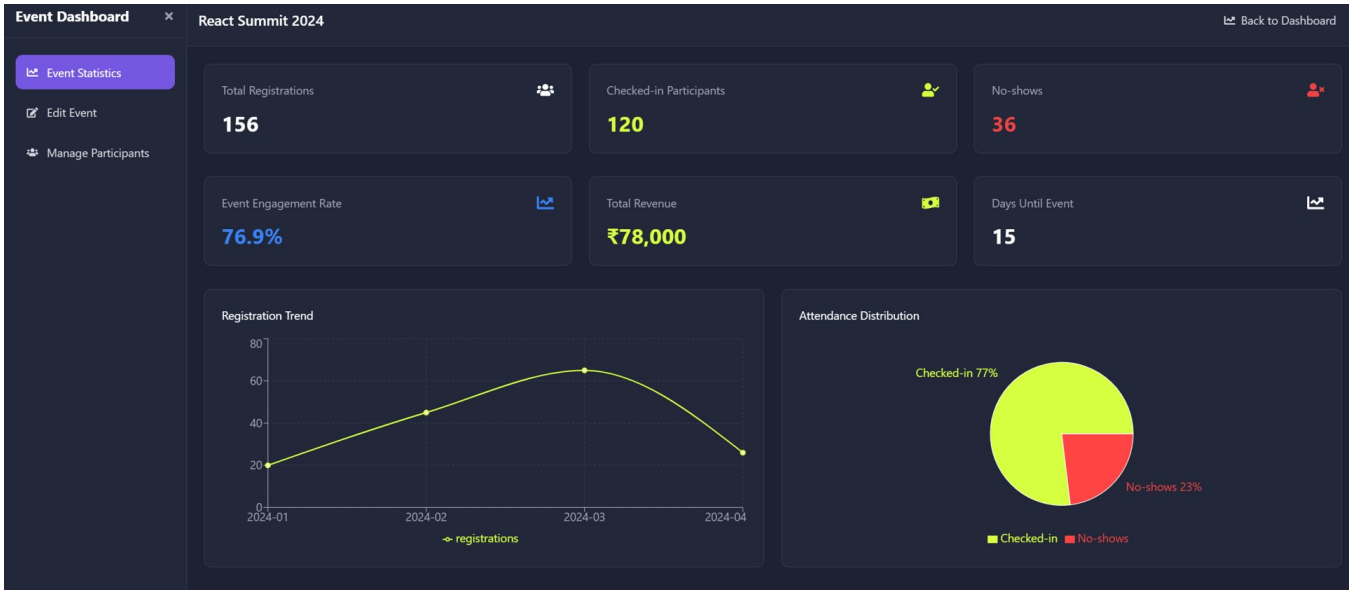


Figure 5.5.8: Organizer Event Dashboard

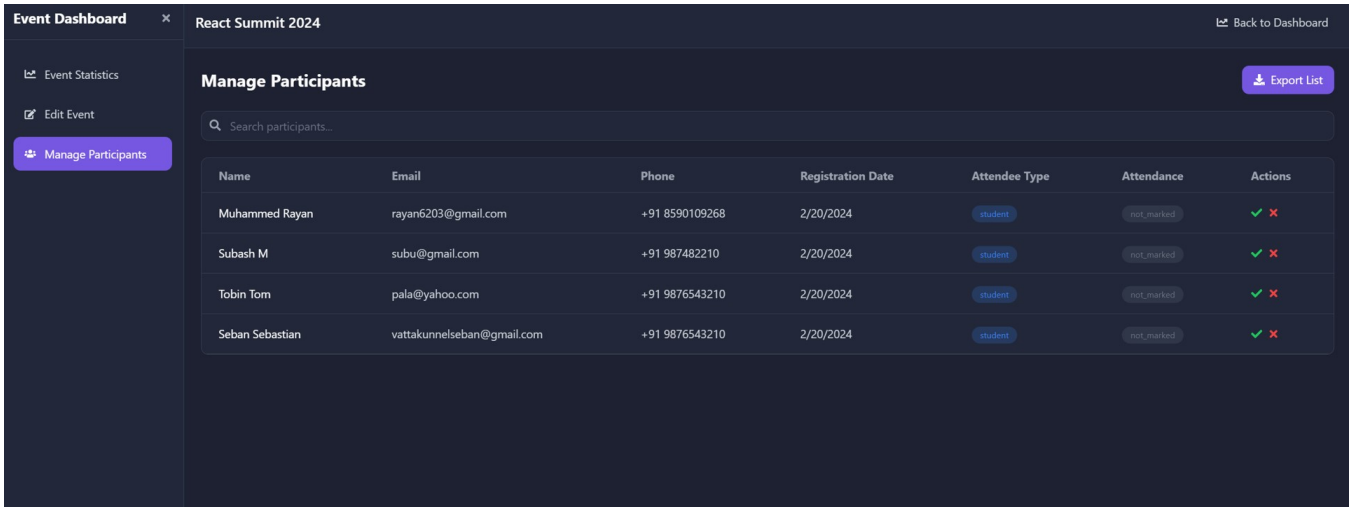
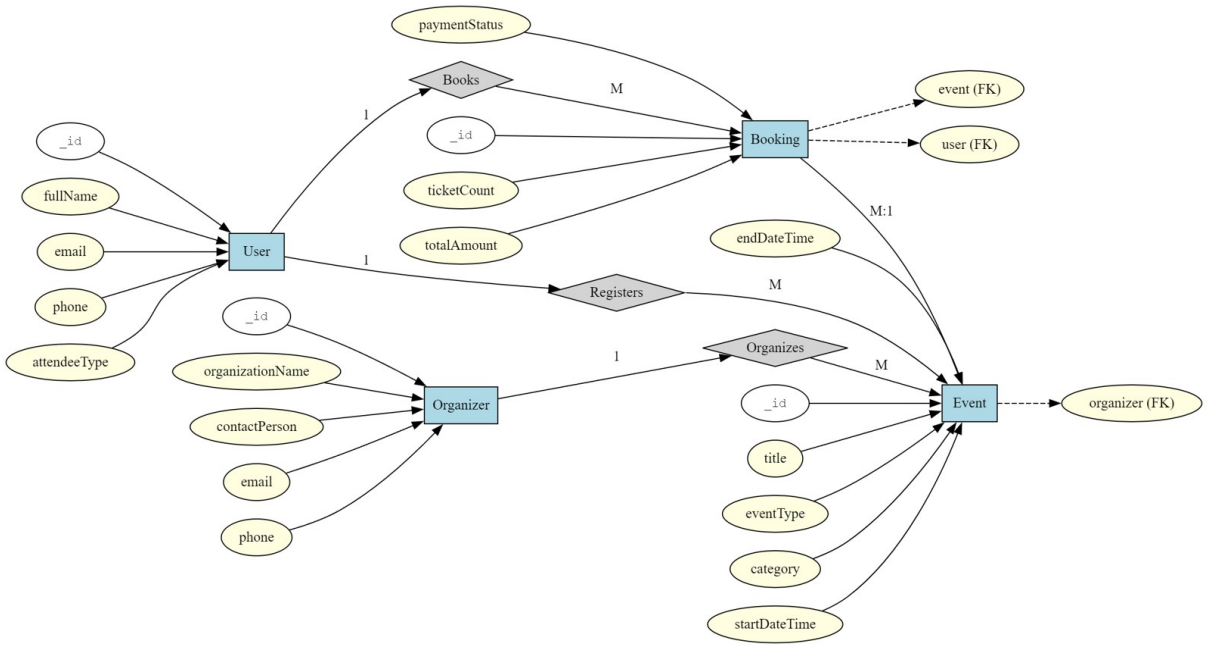


Figure 5.5.9: Organizer Event Dashboard – Manage Particpants

5.6 Database Design

5.6.1 ER Diagram



5.6.2 Tables

User

```
{
  "_id": "ObjectId",
  "fullName": "String",
  "email": "String",
  "phone": "String",
  "password": "String",
  "dob": "Date",
  "attendeeType": "String",
  "profilePicture": "String",
  "bio": "String",
  "interests": "Array",
  "eventsRegistered": "Array",
  "eventsCreated": "Array",
  "createdAt": "Date",
  "updatedAt": "Date",
  "__v": "Number"
}
```

Organizer

```
{
  "_id": "ObjectId",
  "organizationName": "String",
  "organizationType": "String",
  "website": "String",
  "contactPerson": "String",
  "email": "String",
  "phone": "String",
  "password": "String",
  "userId": "String",
  "languages": "Array",
  "eventTypes": "Array",
  "socialLinks": "Array",
  "createdAt": "Date",
  "updatedAt": "Date",
  "__v": "Number"
}
```

Event

```
{
  "_id": "ObjectId",
  "title": "String",
  "eventType": "String",
  "category": "String",
  "eventWebsite": "String",
  "organizerName": "String",
  "organizerEmail": "String",
  "organizerPhone": "String",
  "organizationName": "String",
  "startDateTime": "Date",
  "endDateTime": "Date",
  "mode": "String",
  "venue": "String",
  "languages": "Array",
  "schedules": "Array",
  "targetAudience": "Array",
  "maxParticipants": "Number",
  "registrationDeadline": "Date",
  "entryType": "String",
  "speakers": "Array",
  "aboutEvent": "String",
  "resourceUrls": "Array",
  "socialLinks": "Array",
  "status": "String",
  "createdAt": "Date",
  "updatedAt": "Date",
  "__v": "Number"
}
```

Booking

```
{
  "_id": "ObjectId",
  "user": "ObjectId",
  "event": "ObjectId",
  "name": "String",
  "email": "String",
  "phone": "String",
  "attendeeType": "String",
  "additionalParticipants": "Array",
  "ticketCount": "Number",
  "totalAmount": "Number",
  "paymentStatus": "String",
  "bookingStatus": "String",
  "createdAt": "Date",
  "updatedAt": "Date",
  "ticketId": "String",
  "__v": "Number"
}
```

Chapter 6

System Implementation

The Project has been developed using React.js for front-end and Mongodb for back-end. The project is implemented using React framework, which makes it easy to create interactive and dynamic event booking and publishing system

6.1 Modules

Project has been mainly divided into three modules.

Module 1 : User Authentication and Authorization Module

- Manages user registration, login, and JWT token generation for session management.
- Ensures role-based access (Viewer/Publisher) for different functionalities.

Module 2 : Event Management Module (Publisher)

- Allows publishers to create, edit, and manage events with detailed information.
- Tracks bookings, available seats, and provides event analytics.

Module 3 :Event Browsing and Booking Module(Viewer)

- Viewers can browse, search, and filter events by categories like location and date.
- Allows viewers to book tickets and manage their booking history.

Module 4 :Booking Management Module)

- Handles ticket booking, ensuring seat availability and confirming bookings.
- Manages booking history, including cancellation and updates.

Module 4 :Payment Gateway Integration Module)

- Integrates with third-party services (e.g., Stripe, PayPal) to process payments for event bookings.
- Manages payment confirmations, secure transactions, and refunds if needed.

Chapter 7

Conclusion and Future Scope

This platform provides a comprehensive solution for both event organizers and participants, streamlining event management and enhancing accessibility. It offers a user-friendly interface for browsing, booking, and managing events, while organizers can efficiently publish, track bookings, and manage event details. Key features like robust user management, secure payment integration, and intuitive dashboards make it a scalable platform that meets the diverse needs of the community, fostering collaboration and efficient event experiences.

Looking ahead, the platform has significant potential for growth. Future enhancements could include mobile app integration, personalized event recommendations, real-time notifications, and expanded payment options to improve accessibility and user engagement. Additionally, adding multi-lingual support, detailed analytics for organizers, and social media integration could help broaden the platform's reach, ensuring it remains adaptable and efficient for a global audience.

Bibliography

[1] Alex Banks and Eve Porcello. *Learning React*. O'Reilly Media, 2020.

[2] Ethan Brown. *Web Development with Node and Express*. O'Reilly Media, 2019.

[3] Dev.to Community. Dev.to - a community for web developers, 2025. Accessed: 2025-03-30.

[4] Node.js Foundation. Node.js documentation, 2025. Accessed: 2025-03-30.

[5] Sarah Jones. Collaborative writing tools: Enhancing team creativity. *Journal of Creative Technologies*, 15(2):112–130, 2020.

[6] Medium. Medium - articles on building platforms, 2025. Accessed: 2025-03-30.

[7] Mozilla. Mdn web docs, 2025. Accessed: 2025-03-30.

[8] Amazon Web Services. Aws s3 documentation, 2025. Accessed: 2025-03-30.

[9] John Smith. User-centered design for digital storytelling platforms. *Journal of Interactive Media*, 10(4):45–58, 2021.

[10] React Team. React official documentation, 2025. Accessed: 2025-03-30.