

Project Report: Blockchain-Based Sports Event Ticketing System by Prabhat Kamti

Abstract

This report outlines the development and implementation of a blockchain-based sports event ticketing system known as "Project Tribal." The system leverages the Ethereum blockchain to provide secure, transparent, and verifiable ticketing solutions for sports events.

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1 Introduction

1.1 Project Overview

”Project Tribal” is a blockchain-based sports event ticketing system designed to revolutionize the way sports fans access and manage event tickets. It leverages the Ethereum blockchain’s capabilities to ensure secure, transparent, and verifiable ticketing processes. This system caters to both event hosts and participants, providing them with unique experiences and benefits.

1.2 Objectives

- Create a secure and transparent ticketing system for sports events.
- Allow event hosts to easily create and manage events on the blockchain.
- Enable participants to purchase and verify their ownership of event tickets.
- Facilitate the redemption of tickets at event venues, ensuring only valid ticket holders gain entry.
- Foster fan engagement and trust through blockchain technology.

2 System Architecture

2.1 Components and Technologies

- Ethereum Blockchain: For smart contracts and NFT tokenization.
- Web Development: Front-end and back-end development for user interfaces.
- Metamask: Integration for wallet and transaction management.
- QR Code Generation: For ownership verification and redemption.

2.2 Blockchain Integration

The Ethereum blockchain is the core of the system, with smart contracts governing event creation, ticket sales, and verification. ERC-721 tokens represent individual event tickets, making them non-fungible and tradable.

3 User Views

3.1 Event Host View

Event hosts can create, manage, and redeem tickets for their events. They can also generate one-time codes for ownership verification.

3.2 Participant View

Participants can search for and purchase event tickets, prove ownership using one-time codes, and redeem their tickets at event venues.

4 Key Features

4.1 Event Creation

Event hosts can create events, specifying event details, ticket prices (in wei), and the total ticket supply. Each event is represented as an ERC-721 NFT token.

4.2 Ticket Purchase

Participants can browse and purchase tickets for events hosted on the platform. Transactions are facilitated through Metamask.

4.3 Ownership Verification

Participants prove ownership of tickets by generating QR codes using one-time codes provided by event hosts.

4.4 Ticket Redemption

Event hosts can redeem tickets at event venues by verifying ownership through QR codes generated by participants.

5 Project Benefits

5.1 Enhanced Security

Blockchain technology ensures the security of ticket ownership and transactions, reducing the risk of fraud.

5.2 Transparency

All event and ticket data are transparent and immutable on the blockchain, providing trust and accountability.

5.3 Secondary Ticket Market

Tickets are represented as NFTs, allowing participants to trade them on secondary markets.

5.4 Fan Engagement

Project Tribal fosters fan engagement by offering opportunities for feedback, access to merchandise, and binding agreements through smart contracts.

6 Implementation

6.1 Smart Contracts

Smart contracts govern event creation, ticket sales, and redemption, ensuring secure and automated processes.

6.2 Metamask Integration

Metamask is integrated for wallet management, facilitating secure transactions.

6.3 QR Code Generation

QR codes are generated for ownership verification, enhancing the ticketing process's efficiency.

7 Results and Use Cases

- Successful event creation, ticket sales, and ownership verification have been demonstrated.
- Tickets have been successfully redeemed at event venues.
- Participants have enjoyed the security and transparency offered by the blockchain-based system.

8 Future Enhancements

8.1 Integration with IPFS for Multimedia Content

Expand the system's capabilities by integrating IPFS to host multimedia content related to events.

8.2 Mobile Application

Develop a dedicated mobile application for easier access and ticket management.

8.3 Enhanced Event Management

Add features such as event analytics and ticket distribution options for hosts.

9 Conclusion

9.1 Achievements

"Project Tribal" has successfully created a blockchain-based sports event ticketing system that enhances security, transparency, and fan engagement. It offers a unique solution for both event hosts and participants.

9.2 Future Prospects

The project has substantial growth potential, including expanding features, partnerships with sports organizations, and broader adoption in the sports industry. Blockchain technology continues to play a crucial role in improving ticketing processes and fan experiences.