I ❤️ Hackathon: Bengaluru Web3 Edition

Hybrid Blockchain-Powered Smart Ticket Allocation System In High-Demand Situation

Subtitle : Travel And Tourism

Team Name : THUNDERS

Mode of Participation : Offline

City Edition of Participation : Bengaluru

ABOUT THE TEAM

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THEME AND PROBLEM STATEMENT :

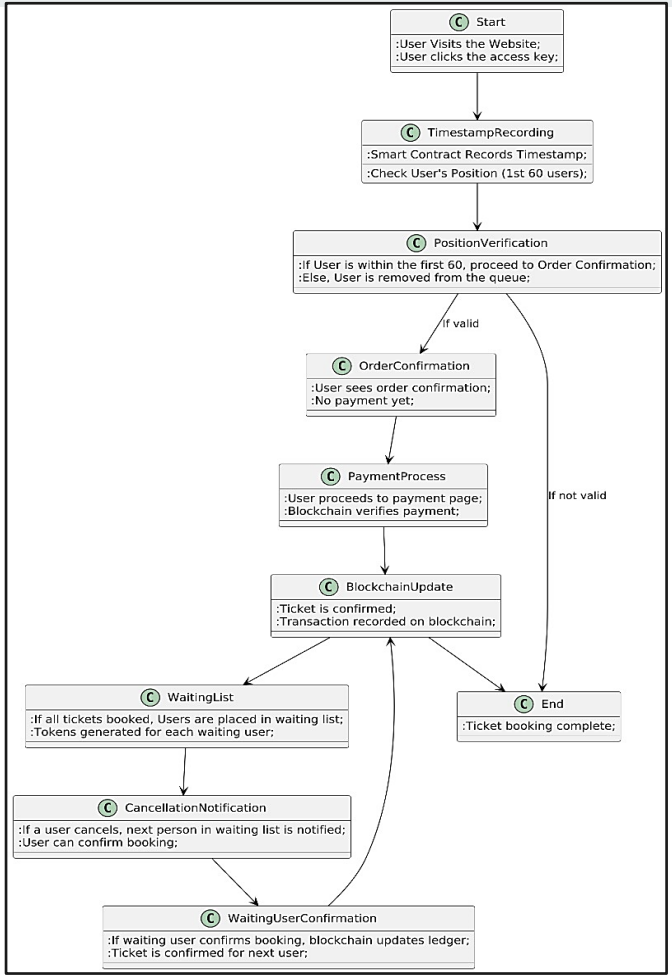
- **THEME : TRAVEL AND TOURISM**

- **PROBLEM STATEMENT :-**

In India, with a population of 135 crore, 55% rely on trains for affordable and comfortable travel. The Indian Railway allows passengers to pre-book tickets through the IRCTC portal. However, users face significant challenges during tatkal or normal ticket bookings due to frequent server crashes, leading to failed transactions and financial losses without ticket confirmation. Additionally, when tickets are fully booked, waitlisted tickets are issued. If confirmed tickets are canceled, waitlisted tickets are upgraded; otherwise, they are automatically canceled, and users are refunded with a 25% reduction. To address these issues, we propose a unique solution !!!

OUR PROPOSED SOLUTION

- After filling personal details, users click a key that triggers a smart contract.
- The smart contract records the exact time (timestamp) of the click.
- Users are ranked based on their timestamps to determine for proceeding to payment gateway.
- Eligible users within the available ticket slots are allowed to proceed to the payment page, avoiding server crashes.
- If tickets are sold out, waitlisted users receive tokens with their timestamps.
- In case of cancellations, waitlisted users are prioritized for booking based on their recorded timestamps ensuring a smooth and fair booking process.



ARCHITECTURE : USER FLOW FOR TICKET ALLOCATION (EG 60 TICKETS AVAILABLE)

- ✓ **Personal Details Page**: Users fill out their personal details and proceed.
- ✓ **Key Activation**: A keya triggers the smart contract, recording timestamps for each click and ranking users.
- ✓ **Checking Availability**: The contract checks if the user is within the first 60 clicks.
- ✓ Example: 100 users click. The first 60 users are eligible, and users 61-100 are added to the waitlist.
- ✓ **Payment Gateway**: Eligible users proceed to payment. If payment isn't completed in time, the slot is released.
- ✓ **Waitlist Management**: Waitlisted users are notified of their position. If a (#21) slot is released, the next user (e.g., #61) is notified and given a payment window.
- ✓ **Fair Allocation**: Tickets are allocated based on timestamps, ensuring fairness and avoiding crashes.

Components :

1. User Interface (UI)
2. Smart Contract
3. Blockchain Ledger
4. Payment Gateway
5. Booking Queue System
6. Notification System
7. Admin Panel

UNIQUENESS FROM EXISTING SOLUTIONS :

EXISTING SOLUTION :

- **Server Crashes**: High traffic during peak times (like tatkal reservations) often leads to server crashes, causing failed transactions and frustration for users..
- **Unfair Allocation**: Many systems prioritize users based on server speed or geographic location, not on fairness or the exact order of requests, leading to dissatisfaction.
- **Cancellations and Refunds**: If tickets are canceled or unpaid, current systems do not effectively reallocate those tickets to waitlisted users in real-time, leading to missed opportunities.

OUR PROPOSED SOLUTION :

- **Time-Sensitive Fairness**: Ensures fairness by ranking users based on click timestamp, not server speed or location.
- **Reduced Opportunity Loss**: Unpaid or canceled slots are quickly reallocated to waitlisted users, optimizing ticket usage.
- **High Traffic Management :** Avoids server overload and crashes by distributing the workload to a decentralized blockchain system.
- **Versatile Application** : Can be adapted for other use cases, such as event registration, product launches, or resource allocation scenarios.

IMPACTS OF OUR PROJECT :

1. **Improved User Experience**

Instant Confirmation of approval of tickets to consumers instead of putting them in waiting lists.

2. **Increased Efficiency**

Instant payments and automated ticket management streamlines the booking process, reducing delays and human errors.

3. **Scalability and Reliability**

The decentralized nature of blockchain ensures that the system can handle high traffic without crashes or performance issues.

4. **Future-Proof Technology**

Our system can be easily upgraded as blockchain technology evolves, making it adaptable for future needs.

5. **Better Data Privacy and Control**

Users have control over their data, with blockchain providing secure, privacy-focused storage of booking information.

THANK YOU!!