UNIVERSITY OF PETROLEUM & ENERGY STUDIES

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MAJOR - 1 PROJECT
SYNOPSIS REPORT

Good Samaritan Train Portal

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Project Title

Good Samaritan Train Portal

Abstract

The "Good Samaritan Train Portal" is an innovative web application developed using the MERN stack, aimed at transforming the traditional train ticketing process. This platform introduces a dynamic auction system for canceled tickets, allowing passengers on the waiting list to bid for available seats. By enabling users to compete for seats, the system promotes a more equitable distribution of tickets, potentially reducing the frustration associated with long waiting lists. Additionally, the portal offers a seat exchange feature, where passengers can swap seats with others, enhancing travel flexibility and comfort. The website incorporates an interactive and visually appealing interface, representing train coaches and berths in a user-friendly manner. This visual representation allows users to easily navigate their booking options and engage with the auction and exchange features. The Good Samaritan Train Portal is designed to improve the overall passenger experience by providing more control and choice in train travel arrangements.

Introduction

The "Good Samaritan Train Portal" is a modern web application developed using the MERN stack, designed to tackle the inefficiencies and frustrations inherent in the traditional train ticketing system. In the current system, passengers often face significant challenges, such as long waiting lists that offer little certainty or flexibility, and canceled tickets that go back into the pool without considering the preferences of those on the waiting list. This not only causes inconvenience but also wastes valuable time for passengers who need to make last-minute travel arrangements.

The primary problem is the rigid and often unfair allocation of seats, where those at the top of the waiting list automatically receive canceled seats, regardless of their urgency or willingness to pay for a confirmed berth. Additionally, passengers who might prefer to exchange seats with others for better travel comfort have no easy means to do so.

The Good Samaritan Train Portal addresses these issues by introducing an innovative bidding system that allows passengers on the waiting list to compete for canceled seats, ensuring a fairer and more efficient distribution based on user demand. Furthermore, the portal includes a seat exchange feature that lets passengers swap seats with others, adding flexibility and convenience to their travel experience. By streamlining these processes, the portal not only enhances user satisfaction but also saves passengers time, making the overall train booking experience more efficient and traveler-friendly.

Problem Statement

Traditional train reservation systems often lead to inefficiencies with long waiting lists and inflexible ticket cancellations. Passengers face frustration due to rigid seat allocation and lack of options for seat exchanges. This project aims to address these issues by introducing an auction system for canceled seats and a seat exchange feature.

Objectives

Implement an Auction System: Develop a bidding mechanism for canceled train seats, allowing passengers on the waiting list to bid for and secure available seats based on demand.

Enable Seat Exchanges: Create a feature that allows passengers to propose and accept seat exchanges with others, providing greater flexibility and comfort in travel arrangements.

Develop Interactive Visuals: Design and integrate a visual representation of train coaches and berths, enabling users to easily view and interact with seating options.

Enhance User Experience: Improve the overall booking process by offering a user-friendly interface, real-time updates, and efficient management of reservations and cancellations.

Optimize System Performance: Ensure the application performs efficiently under high traffic, with scalable backend support and responsive front-end design, to handle large volumes of users and transactions.

Methodology

- Requirements Gathering: Collect and analyze user requirements for features like bidding, seat exchange, and visual representation to ensure the system meets user needs effectively.

-System Design: Create a detailed design for the auction system, seat exchange feature, and user interface, focusing on functionality, user experience, and system performance.

-Database Setup: Set up MongoDB to store user data, ticket information, and bid details, ensuring efficient data retrieval and storage.

-Backend Development: Build the server-side using Node.js and Express.js, handling requests for seat auctions, exchanges, and bookings with secure and reliable APIs.

-Frontend Development: Develop the user interface with React.js, creating interactive components for bidding, seat selection, and visual representation of train coaches and berths.

-Auction Mechanism Implementation: Implement the auction system to allow users to place bids on canceled seats, including real-time updates on bid status and winning notifications.

-Seat Exchange Feature: Develop the seat exchange functionality, allowing users to propose and accept seat swaps, with an intuitive interface for managing and confirming exchanges.

-Visual Representation: Design and integrate interactive visuals for train coaches and berths, providing users with a clear and engaging way to view and select seating options.

-Testing and Quality Assurance: Conduct thorough testing of all features, including functionality, performance, and security, to ensure the application works correctly and meets user expectations.

-Deployment and Maintenance: Deploy the application to a live environment, monitor its performance, and perform regular updates and maintenance to address any issues and enhance functionality.

Github Link

https://github.com/Parth-Virkhade/Good-Samaritan-Train-Portal.git