Train Seat Reservation

Description

The train seat reservation system is designed to allow families to reserve seats in the same cabin based on the number of members in the family. The system should ensure that all family members are seated together to provide a comfortable travel experience.

Given Requirements

1. The user initiates the seat reservation process for their family.
2. The system prompts the user to enter the number of family members traveling.
3. The user enters the number of family members.
4. The system checks the availability of seats on the train.
5. If there are enough seats available in the same cabin to accommodate the family, proceed to step 7.
6. If there are not enough seats available in the same cabin, the system suggests alternative options or notifies the user that the desired number of seats is not available.
7. The system prompts the user to select their preferred cabin class (e.g., first class, second class).
8. The user selects their preferred cabin class.
9. The system retrieves the seat numbers for the selected cabin class.
10. Based on the number of family members, the system determines the number of seats required and finds a suitable arrangement to accommodate the entire family in the same cabin.
11. The system reserves the seats for the family members in the selected cabin.
12. The system generates a unique reservation ID and provides it to the user.
13. The system updates the seat availability and marks the reserved seats as occupied.
14. The system displays the reservation details, including the cabin number, seat numbers, and the total fare for the reservation.
15. The user receives reservation details and payment links.

Assumptions

1. A Train have 3 types of cabins
    a. First Class
    b. Second Class
    c. General
2. By considering the current Indian Railway system, trains usually travel on specific days in a week. For example, "*12228 – Mumbai Central Duronto Express"* on Sunday and Friday.
3. A specific type of cabin has a fixed number of seats. Consider, the first class cabin has a total of 50 seats.

4. There might be a case where a cabin is attached to a train, but available seats might be different from the cabin's original number of seats. Example, a first class cabin named A1 has a total of 50 seats, but on Sunday, only 40 seats are available for reservation and/or to use by the travelers/customers.

Use-Cases covered

1. Customer applies for *n* number of tickets for *x* cabin, and there are seats available, so reservation will be made and reservation number will be sent in response.
2. Customer applies for *n* number of tickets for *x* cabin, but there are no seats available, so a proper error message will be sent, along with *suggestions.*
   Suggestions have available coaches and available number of seats.
3. Customer applies for *n* number of tickets for *x* cabin, but there are no seats available in any of the cabin then a proper error message will be displayed.
4. Invalid train number is sent, then an error message will be displayed.
5. Invalid cabin is sent, then an error message will be displayed.
6. If the train doesn't have the specified cabin attached to it, then an error message will be displayed.
7. If the train doesn't travel on a given date, then an error message will be displayed. Example, a train runs only on Sunday, but given the date is on Saturday, then an error message will be displayed as *Train is not available on {weekday} of week.*
8. Reservation details will be sent in the details API.

Note: API responses are added in the Postman collection.

Technical Specifications

1. Backend: Python - Django and DRF Framework
2. Database: Postgres
3. Basic Database diagram