SDE API Round - IRCTC

Statement for Candidates:

Below is the problem statement for your project.

1. Your task is to create an API that supports the requirements mentioned in Problem Statement
2. You have 24 hours to develop and submit the API. You'll need to submit the link to the repo (GitHub / bitbucket / gitlab etc) where you've pushed your commits.
3. Ensure that your repository includes a `README.md` file where you've mentioned how to setup, run and run tests (optional) for your code. When in doubt make a plausible assumption and state it explicitly in your `README.md` file.
4. You can use Google to find solutions, however, copying an existing project is not allowed.
5. Do not use ChatGPT / copilot or any tool that generates code for you, otherwise your submission will not be considered for evaluation.
6. Once completed, please make your submission here or on the link shared by the recruiter: https://forms.gle/rXYwpVAf4ofxdQQz8

Problem Statement

Hey there, Mr. X. You have been appointed to design a railway management system like IRCTC, where users can come on the platform and check if there are any trains available between 2 stations.

The app will also display how many seats are available between any 2 stations and the user can book a seat if the availability > 0 after logging in. Since this has to be real-time and multiple users can book seats simultaneously, your code must be optimized enough to handle large traffic and should not fail while doing any bookings.

If more than 1 users simultaneously try to book seats, only either one of the users should be able to book. Handle such race conditions while booking.

There is a Role Based Access provision and 2 types of users would exist :

1. Admin - can perform all operations like adding trains, updating total seats in a train, etc.
2. Login users - can check availability of trains, seat availability, book seats, get booking details, etc.

Tech Stack:

1. Any web server of your choice (Python Flask / Django, NodeJS / ExpressJS , Java/Springboot, etc)
2. Database: MySQL/PostgreSQL (Compulsory)

Requirements

1. **Register a User**
   Create an endpoint for registering a user.
2. **Login User**
   Provide the ability to the user to log into his account
3. **Add a New Train**
   An endpoint for the admin to create a new train with a source and destination
4. **Get Seat Availability**
   Create an endpoint for the users where they can enter the source and destination and fetch all the trains between that route with their availabilities
5. **Book a Seat**
   Create an endpoint for the users to book a seat on a particular train
6. **Get Specific Booking Details**
   Create an endpoint for the users to book a seat on a particular train

Mandatory requirement:

1. You need to protect all the admin API endpoints with an **API key** that will be known only to you and the admin so that no one can add false data to your system.
2. For booking a seat and getting specific booking details, you need to send the **Authorization Token** received in the login endpoint.