

Railway PNR API

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1. Abstract :

An effective application programming interface (API) called the Railway PNR API for real-time train information is intended to deliver real-time updates and information regarding train status on the railway. API that are able to find passenger current location to destination, as well as we also find multiple information about passenger like his/her start and end destination, train no , delay time or accurate time of train

Key Elements of the Railway PNR API:

Real-Time Train Status: The API retrieves real-time data of trains such as current location, arrival and departure time, delays of train, stations coming during journey, source and destination of the user.

Station Information: Users may get extensive information about train stations, locations, facilities, and nearby services, to help them plan their trips more effectively.

2. Introduction:

Application Programming Interface (API) is a software interface that enables two applications to communicate without

requiring a user to get involved. It is a group of computer programs and operations. It is a software code that may be viewed or performed, enabling data exchange and communication between two software programs. While the data transport method varies based on the web service utilised, the entire request and response procedure is handled by an API. An API gives computers, or other programs access to the data and functionality of an application, whereas a graphical user interface only gives that access to humans. APIs are commonly used for data exchange between systems. This can involve sending and receiving data in various formats, such as JSON, XML, or others, depending on the API's design.

Key Features:

Live Train Status: The API retrieves real-time data of train such as current location, arrival and departure time, delays of train, stations coming during journey, source and destination of the user.

PNR Status: The PNR number helps passengers check their booking status, which includes information about their journey date, boarding and destination station, and accommodation class, such as AC, sleeper, or general. Moreover, the PNR status also helps in tracking ticket cancellations, waitlisted bookings, and refunds.

Path and Schedule: By giving passengers the ability to view a train's path or schedule, Developers can help passengers comprehend the stations and projected times of arrival at every station.

Notifications and Reminders: People can get reminders and notifications. Updates on any adjustments in train status, delays,

or other vital details.

3. Literature Survey:

A Literature survey on a Railway PNR API that offers real-time train status information from a variety of sources, including various research and review papers on the previous work. This is a survey:

1. Security Aspects of Railway Passenger Information Systems
Authors: Siim Karus, Risto Vaarandi

Published in: 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

This documentation should describe how to use the API, what data it returns, and any authentication or authorization needs. Patents and Intellectual Property Information : Search for patents and intellectual property filings related to Railway PNR APIs, as they can provide insights into innovations in this field.

2. Design and Implementation of Indian Railway Passenger Reservation System

Authors: Rajeev Kumar, Durga Prasad Mohapatra

Published in: International Journal of Computer Applications, 2012.

Investigate the technologies and protocols commonly used in implementing railway PNR APIs. Review best practices for API integration in the railway sector. Examine the various applications of railway PNR APIs, such as ticket booking, seat availability, and real-time information retrieval.

Provide examples of how these APIs are used in different railway systems. Provide case studies of railway companies that have successfully implemented PNR APIs and the outcomes of their projects. Highlight any innovative approaches or lessons learned from these implementations.

4. Problem Identification:

As we are making our project for Food Delivery in Indian Railway, after study various available API [Rapid API, CRIS API, IndianRail API, Zyla API, eRail.in etc] working procedure we find a common problem that no one give complete information like passenger source station , destination station, birth no, train coach position, Train live station and upcoming station with delay etc using a single PNR No, every time we need to access different application for different type of information, when these facilities are not available in single application, for that it is problematic for both passenger as well as Delivery agency for ordering food and delivery food.

4.1 Problem for Passenger: The passenger has no idea from where the food is going to be delivered and when in which stoppage also in his/ her time routine. Overall, according to our study we find that passengers have not much freedom to order food during his journey by train.

4.2 Problem for Delivery agency: The delivery agency wastes a lot of time to find the location of the train by browsing different available applications after taking the order, also some time miss to deliver due to lack of information like train live

information. In some cases the delivery agency gets less time for delivery or preparing food, resulting in negative feedback or missed order.

The major problem identified that requirement of such a type of a single Platform that can provide all information only with a single PNR no to both passenger and delivery agency for order and delivery food.

In our proposed Project we Identify the above said problem and make a single Platform that can provide all information only using a single PNR No by the help of our custom API.

5. Proposed Work:

Our main objective is to get all the information about passenger like his/ her current location , destination with in between station and train live information, that beneficial for both passenger and delivery agency.

For the better performance of our application we need to create an API that is able to give all information to both passenger and delivery agencies. as we can say it is the heart of our project.

The primary objective is to save time for travellers. Integrating with the PNR API allows the restaurant to know the traveller's schedule, so the food can be prepared and ready for pickup or delivery precisely when the traveller wants it. Use the traveller's location data to recommend nearby restaurants and offer delivery options based on their proximity to the transportation hub. Give the traveller real-time updates on the state of their order preparation, the anticipated time of delivery, and when their order is available for pickup.

In order to deliver the product to the

traveller without any issues, the API must be linked with the food delivery application. In the future, it may be integrated with other travel apps.

6. Methodology:

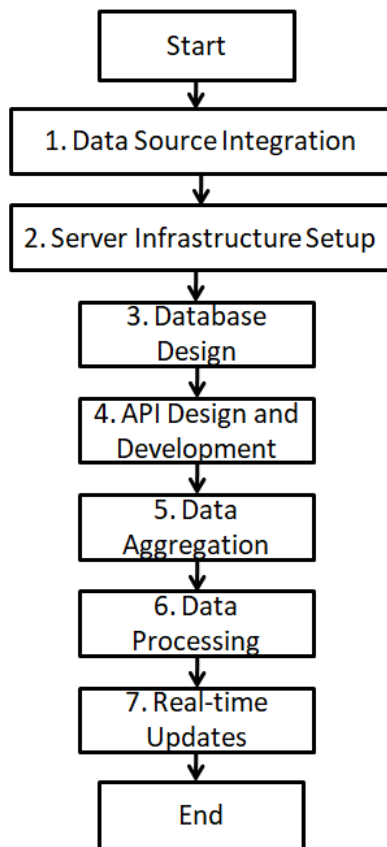


Fig 1 : Flow Chart of Project

6.1 Data Source Integration: The first stage of data source integration is to establish data sources. The ability to access official railway info is critical. Negotiation with railway administration or other relevant data sources may be required to get real-time train status data.

6.2 Database Design: Design a database that can store and manage train status details. The speed at which current data may be obtained from the above database must be maximised. It is also possible to

integrate previous information for analytics and reporting.

6.3 API Design and Development: Create an API to link users, client programs, and databases. The API should follow RESTful design guidelines and be thoroughly documented. To ensure that only authorized programmers and users can use the information.

6.4 Data Aggregation: Develop data aggregation processes to collect real-time train status data from a number of sources, including sensors and railroad databases. This might require polling data sources on a regular basis or signing up for railroad-supplied data feeds.

6.5 Data Processing: Raw data must be processed and standardised to provide consistency and simplicity of consumption for API users. Data processing entails mistake correction, filtering, and validation to ensure data accuracy.

6.6 Real-time Updates: To ensure that API consumers have the latest information, provide a system to update them at regular intervals. This could be done using Websockets and other Push Notification technologies.

6.7 Hardware Requirements:

- 2 GB RAM.
- x86 64-bit CPU (Intel / AMD architecture)
- 10 GB HDD Storage

6.8 Software Frameworks and Tools:

- Window 10 OS
- Programming Language: language for application development (e.g., Java, Python)
- Python Libraries :
 - pip install fastapi
 - pip install uvicorn

- Front-end Technologies: HTML, CSS, JavaScript, tailwind, and a front-end framework like React or Angular.
- Back-end Technologies: Frameworks like Django or Node.js

6.10 Proposed Model

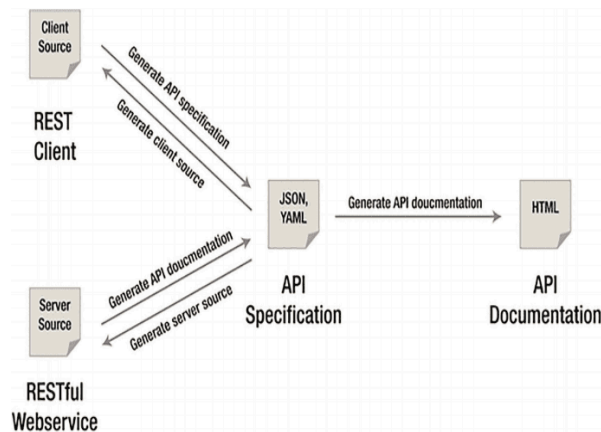


Fig 2: API Working

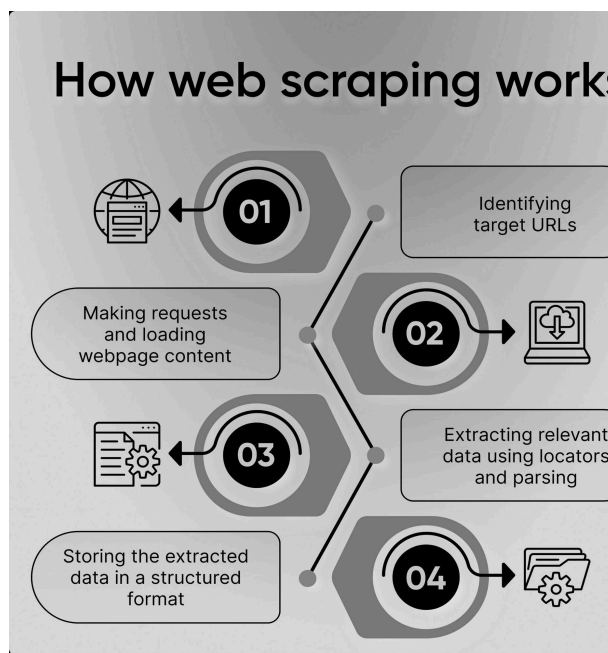


Fig 3 : Web Scraping

7. Result:

Single API is Available that can Give The Information About The Train Running Status By Using The Passenger PNR Number.

Monitoring and Analytics: Implement

tools for monitoring the API's performance and gathering analytics to understand usage patterns and user behaviour.

Integration with Third-party Services: Make the API compatible with third-party services and applications, enhancing its utility.

8. Conclusion:

The project aims to deliver a user-friendly API that can be easily integrated into various applications, websites, and platforms, making it accessible to a wide range of developers and users. We create a such API that are able to find passenger current location to destination, as well as we also find multiple information about passenger like his/her start and end destination, train no , delay time or accurate time of train. Provide up-to-the-minute information on the status of trains, including their location, delays, expected arrival times, and any schedule changes, all the upcoming stations between current and the destination station. The project claims to provide accurate and real-time information about the status of trains, including their current location, expected arrival times, and delays.

9. Future Scope:

In the future it can be integrated with various tourism applications to deliver the product to the passenger without any problem.

Expanding Coverage : Extend the API's coverage to include more railway networks, regions, and countries. Expanding to cover a broader geographical area can make the service more valuable to a larger user base.

Integration with Travel Apps : Collaborate

with travel and transportation app developers to integrate the API into their platforms. This can provide users with comprehensive travel information, including train status.

IoT and Sensor Integration : Integrate IoT (Internet of Things) devices and sensors on trains and railway infrastructure to provide even more accurate and real-time data.

10. References:

1. https://www.researchgate.net/publication/285938791_Travellers'_Attitudes_Towards_Park-and-Ride_PnR_and_Choice_of_PnR_Station_Evidence_from_Perth_Western_Australia
2. https://www.researchgate.net/publication/298187351_API_and_PNR_data_in_use_for_border_control_authorities
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4. <https://www.ijcaonline.org/archives/volume45/number7/7360-9509>
5. <https://ieeexplore.ieee.org/document/8206209>