Redbus Data Scraping with Selenium & Dynamic Filtering using Streamlit

Project Overview

This project aims to scrape bus data from Redbus, store it in a SQL database, and provide an interactive filtering interface using Streamlit. It focuses on automating the collection of travel data, analyzing it, and providing an interactive web application to filter and visualize the data.

Skills and Technologies Used

- Web Scraping: Selenium, Python
- Data Storage: SQL
- Data Analysis & Filtering: Streamlit, SQL queries
- Data Visualization: Plotly, Streamlit

Problem Statement

The goal of this project is to provide a comprehensive solution for collecting, analyzing, and visualizing bus travel data from the Redbus platform. By scraping real-time data, users can interactively filter bus routes, departure times, prices, seat availability, star ratings, and more.

Business Use Cases

This solution can be used for:

- **Travel Aggregators**: Provide real-time bus schedules and seat availability for users.
- **Market Research**: Analyze travel patterns and market preferences.
- **Customer Service**: Offer customized travel options based on filtered data.
- **Competitor Analysis**: Compare pricing and bus service quality with competitors.

Approach

Data Scraping

- Use Selenium to automate the extraction of bus-related data such as routes, schedules, prices, and seat availability from the Redbus website.

Data Storage

- Store the scraped data in a SQL database for structured storage and easy querying.

Streamlit Application

- Develop a Streamlit application to display and filter the scraped data.
- Implement various interactive filters, including bus type, route, price range, star rating, and seat availability.

Data Set

- **Source**: The data is scraped from the Redbus website.
- **Link**: [Redbus](#)
- **Required Fields**: Bus routes, bus name, bus type (Sleeper/Seater), departure time, duration,

Setup Instructions

Set up the SQL database:

Create the necessary database and tables.

Update the database connection in the file.

Run the scraping script:python sql.ipynb

Run the Streamlit app: streamlit run app.py

Open your browser and go to http://localhost:8509/ to interact with the application.

My Project

Here is a screenshot of my project

Redbus Data Scraping and Filtering with Streamlit Application

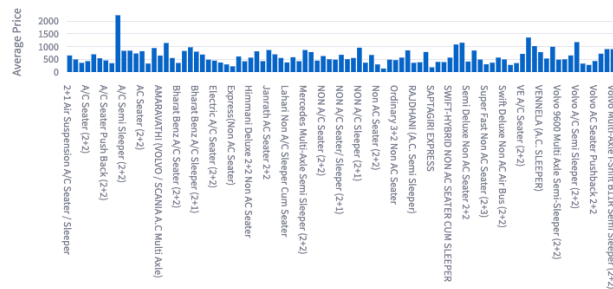Explore bus routes, prices, ratings, and seat availability in just a few clicks!

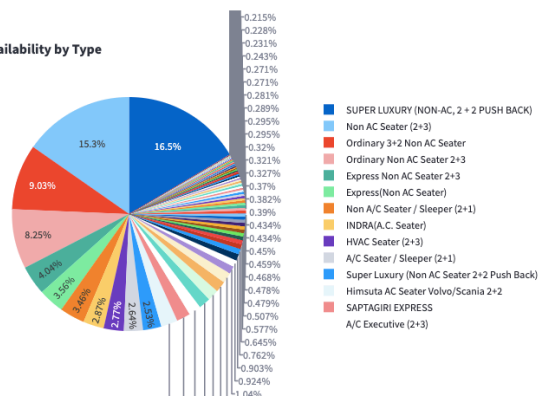*Find your perfect bus with customized filters.*

How It Works

1. Filter buses by route, price, and rating.

2. View detailed bus information, including price, availability, and timings.

3. Visualize data with easy-to-understand charts.

📊 Bus Data Overview

Average Price by Bus Type

Bus Availability by Type

Legend:
- SUPER LUXURY (NON-AC, 2 + 2 PUSH BACK)
- Non AC Seater (2+3)
- Ordinary 3+2 Non AC Seater
- Ordinary Non AC Seater 2+3
- Express Non AC Seater 2+3
- Express(Non AC Seater)
- Non A/C Seater / Sleeper (2+1)
- INDRA(A.C. Seater)
- HVAC Seater (2+3)
- A/C Seater / Sleeper (2+1)
- Super Luxury (Non AC Seater 2+2 Push Back)
- Himsuta AC Seater Volvo/Scania 2+2
- SAPTAGIRI EXPRESS
- A/C Executive (2+3)

Found 310 buses based on your filters.

Here are the buses matching your criteria:

⬇ 🔍 ⛶

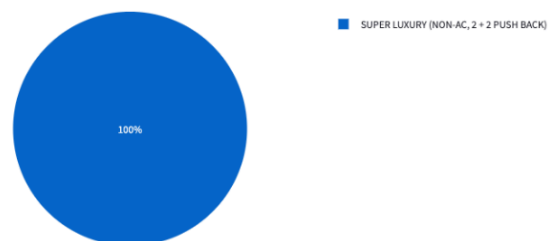|	route_name	route_link	busname
3	Vijayawada to Hyderabad	https://www.redbus.in/bus-tickets/vijayawada-to-hyderabad	APSRTC - 4052
1,717	Vijayawada to Hyderabad	https://www.redbus.in/bus-tickets/vijayawada-to-hyderabad	APSRTC - 4052
2,061	Vijayawada to Hyderabad	https://www.redbus.in/bus-tickets/vijayawada-to-hyderabad	APSRTC - 4052
24,047	Vijayawada to Hyderabad	https://www.redbus.in/bus-tickets/vijayawada-to-hyderabad	APSRTC - 4052
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3,431	Vijayawada to Hyderabad	https://www.redbus.in/bus-tickets/vijayawada-to-hyderabad	APSRTC - 4052
20,918	Vijayawada to Hyderabad	https://www.redbus.in/bus-tickets/vijayawada-to-hyderabad	APSRTC - 4052
22,656	Vijayawada to Hyderabad	https://www.redbus.in/bus-tickets/vijayawada-to-hyderabad	APSRTC - 4052
20,571	Vijayawada to Hyderabad	https://www.redbus.in/bus-tickets/vijayawada-to-hyderabad	APSRTC - 4052
19,201	Vijayawada to Hyderabad	https://www.redbus.in/bus-tickets/vijayawada-to-hyderabad	APSRTC - 4052

Download Data as CSV

📊 Data Visualization

Price Distribution of Buses

Bus Type Distribution

SUPER LUXURY (NON-AC, 2 + 2 PUSH BACK)

100%

Price vs Star Rating

bustype
● SUPER LUXURY (NON-AC, 2 + 2 PUSH BACK)

Navigate

○ Home
● Select Bus

🔧 **Bus Filters**

Select Route ⓘ

Vijayawada to Hyderabad ⌄

Select Bus Type ⓘ

SUPER LUXURY (NON-AC, 2 + 2 ... ⌄

Select Price Range ⓘ
52   5000
52   5000

Select Star Rating Range ⓘ
1   5
1   5

Sort Results By ⓘ

Price: Low to High ⌄

☐ Show only buses with available seats ⓘ

🔧 **Bus Filters**

Select Route   ⑦

| Vijayawada to Hyderabad ▼ |

Select Bus Type   ⑦

| SUPER LUXURY (NON-AC, 2 + 2 … ▼ |

Select Price Range   ⑦
52   5000
●————————————————●
52   5000

Select Star Rating Range   ⑦
1   5
●————————————————————————————●
1   5

Sort Results By   ⑦

| Price: Low to High   ▼ |

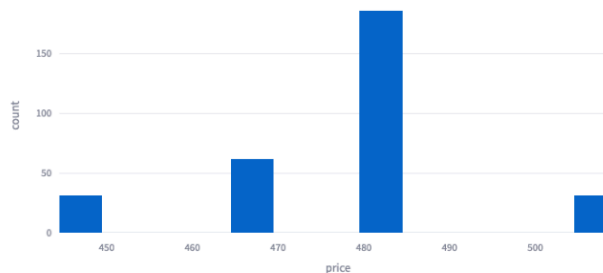| Price: Low to High |
| Price: High to Low |
| Rating: High to Low |

Deploy ⋮

Found 310 buses based on your filters.

Here are the buses matching your criteria:

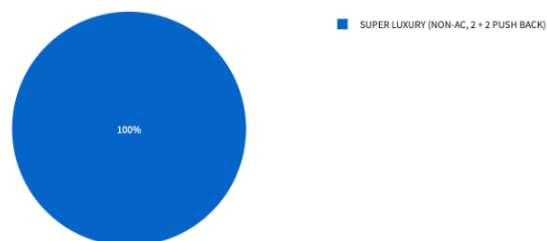|	route_name	route_link	busname
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| Download Data as CSV |

📊 **Data Visualization**

Price Distribution of Buses

Bus Type Distribution

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100%

Price vs Star Rating

bustype
● SUPER LUXURY (NON-AC, 2 + 2 PUSH BACK)