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 Explorer

Explore bus routes, prices, ratings, and seat availability!

Find your perfect bus with customized filters and visual insights.

Project Overview:

This project is designed to scrape and analyze bus route data from Redbus, enabling users to filter buses based on criteria such as bus type, fare range, ratings, and seat availability. The platform allows for interactive exploration of bus options across multiple states, with visualizations to support data-driven decision-making.
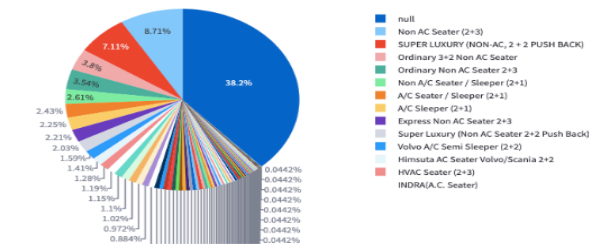
Key Technologies:

Python (Pandas, Plotly), Streamlit, MySQL, Web Scraping (Selenium), Data Visualization, SQL Database.

Overview of Bus Data
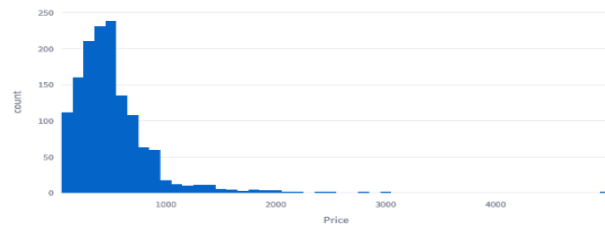
Count of Bus Routes by Route Name
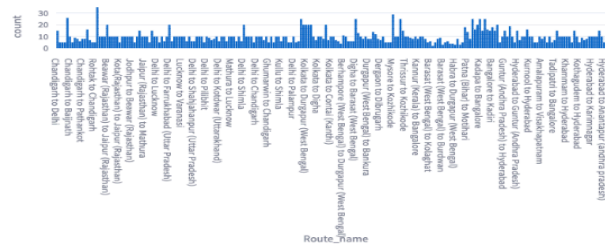
Distribution of Bus Types

Seat Availability Distribution

Price Distribution of Bus Tickets

Deploy ⋮

Select a Page
○ Home
● Filter Buses

🔧 **Bus Filters**

redBus

Select State
Kerala ▾

Select Bus Route
Bangalore to Kozhikode ▾

Select Bus Type
● sleeper
○ semi-sleeper
○ A/C
○ NON A/C
○ seater
○ others

Fare Range
1000
100   5000

Rating Range
4
1   5

Enter departure time in HH format
00:00

Seat Availability
● Available Only
○ Show All

Sort By
● price
○ departure time
○ ratings

Found 28 buses matching your criteria

	ID	Route_name	Route_link	Bus_name
0	29,212	Bangalore to Kozhikode	https://www.redbus.in/bus-tickets/bangalore-to-kozhikode	P K Travels
1	30,736	Bangalore to Kozhikode	https://www.redbus.in/bus-tickets/bangalore-to-kozhikode	P K Travels
2	32,260	Bangalore to Kozhikode	https://www.redbus.in/bus-tickets/bangalore-to-kozhikode	P K Travels
3	32,439	Bangalore to Kozhikode	https://www.redbus.in/bus-tickets/bangalore-to-kozhikode	P K Travels
4	32,618	Bangalore to Kozhikode	https://www.redbus.in/bus-tickets/bangalore-to-kozhikode	P K Travels
5	36,079	Bangalore to Kozhikode	https://www.redbus.in/bus-tickets/bangalore-to-kozhikode	P K Travels
6	37,580	Bangalore to Kozhikode	https://www.redbus.in/bus-tickets/bangalore-to-kozhikode	P K Travels
7	29,219	Bangalore to Kozhikode	https://www.redbus.in/bus-tickets/bangalore-to-kozhikode	DA Transpor
8	30,743	Bangalore to Kozhikode	https://www.redbus.in/bus-tickets/bangalore-to-kozhikode	DA Transpor
9	32,267	Bangalore to Kozhikode	https://www.redbus.in/bus-tickets/bangalore-to-kozhikode	DA Transpor

Download Data as CSV

Average Price by Bus Type

Bus Type
■ A/C Seater / Sleeper (2+1)
■ A/C Sleeper (2+1)
■ VE A/C Sleeper (2+1)

Bus Availability by Type

■ A/C Sleeper (2+1)
■ A/C Seater / Sleeper (2+1)
■ VE A/C Sleeper (2+1)

Ratings vs Price Distribution

Bus_type
● A/C Seater / Sleeper (2+1)
● A/C Sleeper (2+1)
● VE A/C Sleeper (2+1)