Project Theory: Ultra Car Rentals

Ultra Car Rentals is a simple full-stack web application that allows users to search for rental cars by entering pick-up and drop-off locations along with start and end dates. This project combines front-end design, user interaction, and backend data handling in Node.js.

1. Project Structure Overview

The project is organized into folders and files that serve specific purposes:

- public/ folder: Contains all front-end assets like:
  - index.html - the main webpage
  - style.css - styling rules for layout and design
  - images/car-bg.jpg - background image
  - backend.js - handles rendering car listings and capturing form interactions

- server.js: A Node.js + Express backend server that handles form submissions and logs data into a file.

- searches.txt: A text file where all submitted search entries are saved.

2. Frontend Components

HTML (index.html):

Contains:

- A header section for the website title
- A form with inputs for pickup/drop-off locations and dates
- A section to list popular cars
- A result section that dynamically shows search confirmation after submission

CSS (style.css):

Provides clean and responsive styling, including:

- Input field styling
- Button interactions
- Card design for car listings
- Background image using background: url('images/car-bg.jpg') for an attractive visual

JavaScript (backend.js):

Handles two main things:

1. Rendering popular cars from a predefined list
2. Capturing form submissions and sending them via AJAX to the backend (without page reload)

3. Backend with Node.js

The backend is built with Node.js using Express. Its responsibilities include:

- Serving static files from the public/ directory
- Parsing incoming POST requests using body-parser
- Receiving search form data via the /search route
- Logging submitted search info (e.g., pickup/dropoff locations and dates) to a local text file searches.txt
- Sending a response back to the frontend with a confirmation message

Example of saved log:

2025-05-22T14:22:33.123Z - Chennai to Bangalore, 2025-05-25 to 2025-05-30

4. Connecting All Components in VS Code

To make the system work end-to-end:

1. Place index.html, style.css, backend.js, and car-bg.jpg inside the public/ folder.
2. Run the backend using node server.js.
3. Open your browser and go to http://localhost:3000.

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5. Testing

- Fill in the form with locations and dates.
- Press Search -> you should see a confirmation message.
- Open searches.txt -> verify the data is saved correctly.
- The car listing will render automatically every time the page loads.

6. Tools & Technologies Used

- HTML/CSS/JavaScript for frontend
- Node.js and Express.js for backend
- File system (fs) module for writing to files
- Body-parser middleware for parsing form submissions

Final Thoughts

Ultra Car Rentals is a great starter project that teaches you how to:

- Build a frontend form and send data using JavaScript
- Handle form data on the backend
- Save data persistently in a local file
- Organize a full-stack web application structure in VS Code

This project lays a strong foundation for more advanced features like database integration, user login, car availability tracking, and payment integration.