# HACKATHON 3

## DAY 04 - BUILDING DYNAMIC FRONTEND COMPONENTS

### Objective

On Day 4 the goal was to create dynamic and reusable components for my car rental website. This was a crucial step in enhancing the website's functionality and improving the user experience. The main components I focused on included a **search bar**, **product listing**, **user profile integration using Clerk authentication**, **Add to Cart** and **Checkout page**.

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### Tasks Completed

#### 1. Search Bar Component

To improve the search functionality, I built a dynamic search bar that allows users to filter car listings by name in real-time.

**Steps Taken:**

- Developed a **SearchComponent** that takes user input and filters car data dynamically.
- Used **React state** to store the search query and update the filtered results in real-time.
- Ensured the search bar is **responsive and user-friendly**, enhancing the overall UX.

**Outcome:**

- Users can now **instantly search and filter** cars, making it easier to find relevant listings.


## 2. Product Listing Component

A dynamic **product listing component** was created to display car rental options efficiently.

### Steps Taken:

- Developed a **reusable component** that maps over an array of car listings and displays them dynamically.
- Integrated the product listing with **Sanity CMS**, fetching live data.
- Ensured that each product card displays essential details like **car name, brand and price**.

### Outcome:

- The website now **dynamically displays car listings** fetched from the backend, ensuring an interactive experience for users.

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## 3. User Profile Integration (Clerk Authentication)

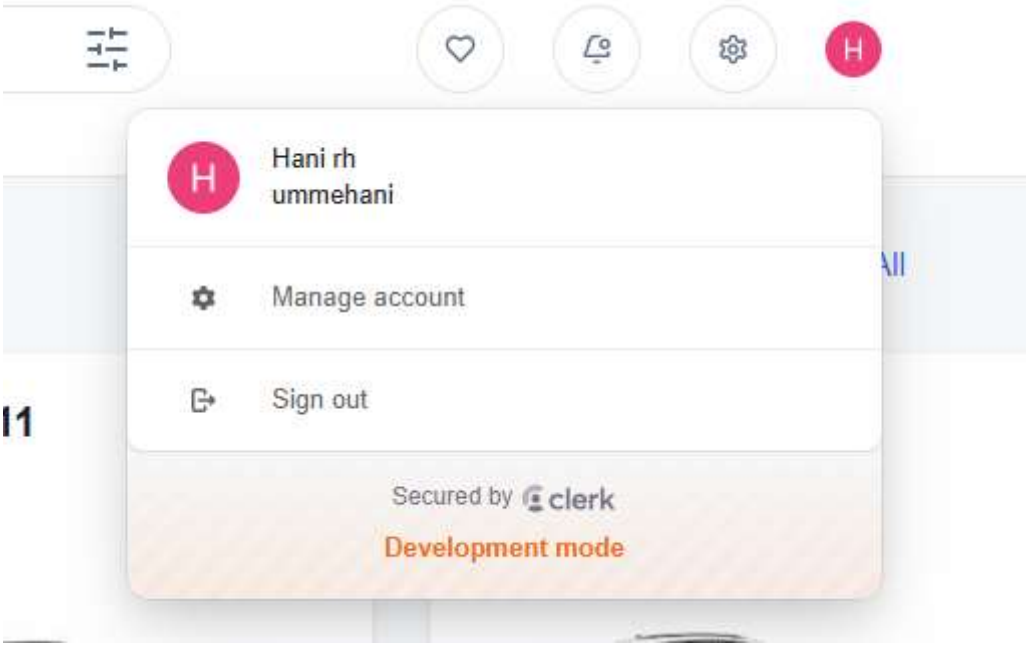
To manage user authentication and profiles, I integrated **Clerk** for seamless user management.

**Steps Taken:**

- Integrated **Clerk Authentication** into the project for user sign-up and login.
- Created a **UserProfile Component** that fetches and displays user details dynamically.
- Implemented secure **authentication and session management** using Clerk.

**Outcome:**

- Users can now **sign in, view, and manage their profiles** efficiently.
- Authentication is handled securely, improving data protection and access control.



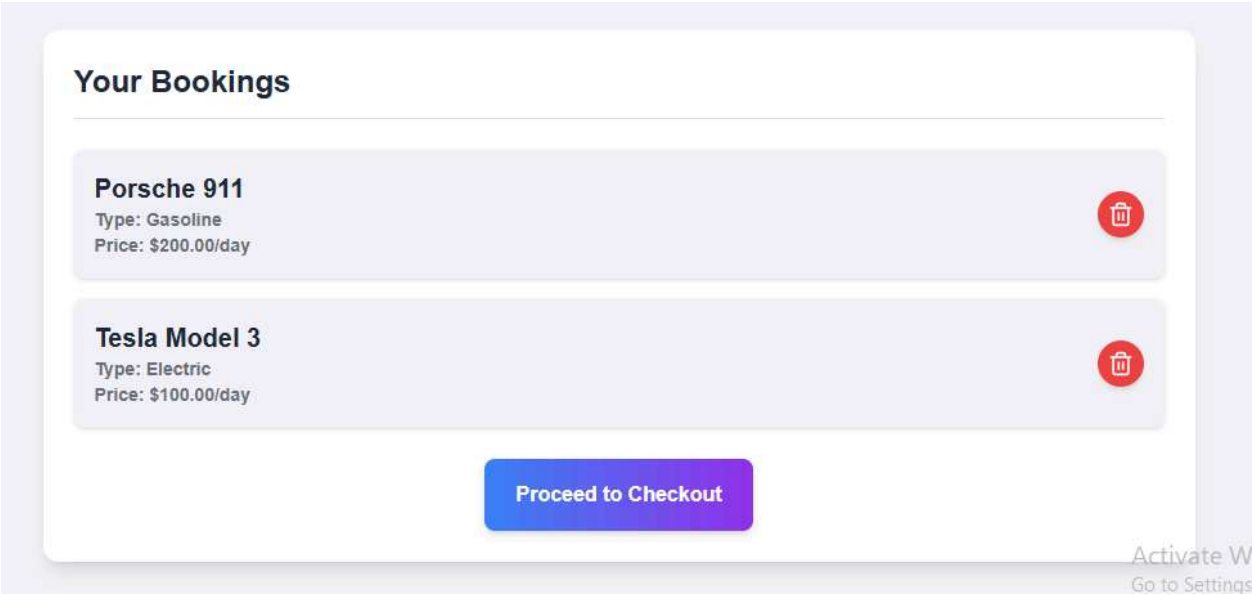
## 4. Add to Cart System

To enhance the booking experience, I implemented an **Add to Cart** feature.

**Steps Taken:**

- Developed an `AddToCart` component that allows users to select cars they want to rent.
- Created a `Cart` page where users can view selected cars, update quantities, or remove items.
- Ensured the cart maintains the selected items persistently.

**Outcome:**
Users can now add cars to their cart and review their selections before proceeding to checkout.



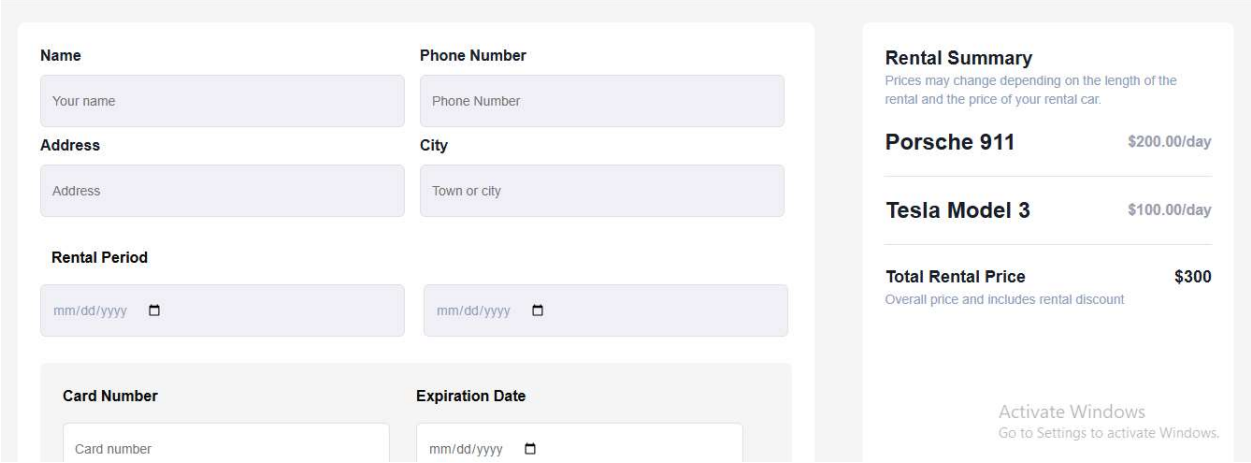
## 5. Checkout System

A smooth and secure **Checkout** system was developed to finalize car rentals.

**Steps Taken:**

- Implemented a `Checkout` component that guides users through the rental confirmation process.
- Integrated payment gateway functionality for seamless transactions.
- Ensured secure handling of user data and payments.

**Outcome:**
Users can now proceed to checkout effortlessly, making their car rental experience smooth and efficient.

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## Testing and Verification

After completing these components, I performed extensive testing to ensure **smooth performance and responsiveness**.

## Tests Conducted:

✓ Verified the search bar functionality, ensuring accurate filtering of results.
✓ Ensured that the product listing component dynamically updates based on the backend data.

✓ Tested user authentication with Clerk to confirm secure login and profile display.
✓ Checked the `Add to Cart` functionality to ensure items are correctly added and displayed in the cart.
✓ Verified that the checkout process works smoothly, allowing successful transactions.

**Results:**

- All components functioned as expected, improving website interactivity.
- Performance was optimized, ensuring a smooth user experience.

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## Conclusion

Day 4 marked a major improvement in my project, as I successfully created dynamic, reusable components to enhance the website's functionality. With a fully functional **search bar, product listing, user profile integration, add to cart, and checkout system**, my car rental website now offers a seamless and interactive experience for users.