

HACKATHON 3

DAY 05 - TESTING ERROR HANDLING AND BACKEND INTEGRATION - MORENT

Objective

After completing dynamic and functional components on Day 4, Day 5 focus is on **testing, error handling, and backend integration refinement**. This includes ensuring smooth functionality, performance optimization, and security implementation for a **Car Rental Marketplace** that uses **Clerk for authentication**.

Key Learning Outcomes:

1. Perform **functional and security testing** for core features.
 2. Optimize the marketplace for **responsiveness and performance metrics**.
 3. Ensure **cross-browser compatibility and mobile responsiveness**.
 4. Create **professional testing documentation** that meets industry standards.
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Key Areas of Focus:

1. Functional Testing:

- **User Authentication:** Test login, signup, and role-based access using Clerk.
- **Car Listings:** Ensure cars are displayed correctly with images and prices.
- **Search and Filters:** Verify the search bar and filters for location, price, and car type.
- **Booking System:** Ensure users can book a car, select rental dates, and proceed with checkout.
- **Payment Integration:** Verify seamless payment processing with error handling.
- **Navigation & Routing:** Ensure proper navigation between different pages.

2. Error Handling:

Implementing mechanisms for error detection and user-friendly feedback:

- Handle network failures and invalid inputs.
- Provide fallback UI (e.g., “No cars available” message for empty searches).

```
if (!car) {  
  return (  
    <div className="bg-gray-100 flex items-center justify-center min-h-screen">  
      <div className="text-center">  
        <h1 className="text-8xl font-extrabold text-red-500 mb-4">404</h1>  
        <p className="text-2xl text-gray-800 mb-4">Oops! Page not found.</p>  
        <p className="text-lg text-gray-600 mb-6">  
          The page you are looking for does not exist or has been moved.  
        </p>  
        <Link  
          href="/"  
          className="bg-blue-500 text-white text-lg px-6 py-3 rounded-lg shadow-lg  
          hover:bg-blue-600 transition duration-300"  
        >  
          Go Back to Home  
        </Link>  
      </div>  
    </div>  
  );  
}
```

3. Performance Optimization:

- Use **Google Lighthouse** to analyze speed and fix unused CSS/JS.

4. Cross-Browser & Device Testing:

- Test on **Chrome, Opera and Edge**.
- Ensure responsiveness on **mobile, tablet, and desktop**.
- Fix any **alignment or layout issues**.

5. Security Testing:

- Store secret keys in **.env.local** to avoid exposure.

6. User Acceptance Testing (UAT):

- Simulate real-world usage: Searching cars, booking, modifying, and canceling rentals.
- Collect feedback and improve UI/UX.

Test Cases (CSV Format):

Test Case ID	Description	Steps	Expected Result	Actual Result	Status	Severity	Assigned to	Remarks
TC001	Verify login functionality (Clerk)	1.Open login page 2.Enter valid credent	User logs in successfully.	User logs in successfully.	Passed	Low	Ameen Alam	No issues

		ials 3.Click Login						
TC002	Validat e incorre ct login	1.Enter invalida te creden tials 2.Click login	Error messa ge display ed	Error messa ge display ed	Passed	Low	Ameen Alam	Workin g fine
TC003	Test Car Search Functionality	1.Enter car name	Releva nt cars display ed	No cars display ed	Failed	High	Ameen Alam	Search API issue
TC004	Check bookin g flow	1.Select car 2.Choo se dates 3.Confi rm bookin g	Bookin g confirm ed	Bookin g confirm ed	Passed	Mediu m	Ameen Alam	No issues
TC005	Validat e Payme nt Proces s	1.Select payme nt method 2.Enter details 3.Click pay	Payme nt succes ful	Payme nt failed	Failed	High	Ameen Alam	API integrat ion issue
TC006	Verify Respo nsiven ess	1.Open site on mobile 2.Chec k layout		Items Misalign ed	Failed	Mediu m	Ameen Alam	Needs CSS fix

Conclusion:

Successfully completed **Day 5** of the **Car Rental Marketplace**, implementing **testing, error handling, and backend refinements**. The focus was on **Clerk authentication, performance optimizations, security measures, and cross-browser/device testing**.

Next steps: Further refinements, deployment, and additional feature enhancements.

 **Onward to the final deployment phase!** 

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