Hotel Price Tracker Technical Assignment

Assignment

Don't spend more than **4-6 hours** on this. This is meant as a proof of concept, so only run this on a few examples. It's ok if you are not able to complete everything, but explain shortly how you would tackle it and what you have in mind.

Background

Today, hotel search is painful and relies on out-dated filters. Understanding how hotel prices fluctuate across dates and locations is crucial for both travelers and businesses. This assignment focuses on building a robust system to track hotel listings and availability patterns.

Objective

Create a Jupyter notebook / script demonstrating a system that can scrape hotel listings from **Kayak** and display results in a simple Next.js frontend.

Core Requirements

Part 1: Hotel Search Scraper & System Design

Build a scraper that can:

- Collect hotel listings for a specific city
    - Handle search results pagination
- Extract key information for each hotel:
    - Hotel name, location, and basic details
    - Review scores and count
    - Key amenities
- For each hotel, get detailed information *if available* on the search/hotel page (don't spend time formatting it, just extract it):
    - All available room types
    - Price per room type
    - Bed configurations
    - Cancellation policies
    - Board types (breakfast included, etc.)
    - Special conditions or restrictions
- Implement appropriate rate limiting and error handling
- Store results in a structured format locally

Include a brief explanation of your potential approach to scaling this system:

- How would you handle regular updates?
- How would you store and manage the data?

Part 2: Simple Next.js Frontend

Create a basic Next.js application that uses your local data store to:

- Display hotel search results in a clean layout
- Show key information for each hotel:
    - Hotel name and basic details
    - Available room types and their prices
    - Basic filters (e.g., price range, star rating)
- Implement basic search filtering

The UI should be simple but functional - focus on displaying the data clearly rather than advanced styling.

Deliverables

Your submission should include:

1. **Scraping Script**
2. **Next.js Application**

Creative Ideas (Optional)

Share any interesting ideas you have about:
- How would you match hotels across different booking sites?
- Any cool features you'd add to make the price comparison better?
- Ways to help users find the best deals?
- Other data points that might be useful to collect?

About the scraping/UI:
- Intelligent rate limiting implementation
- Caching strategy
- Advanced analytics
- Automated testing