**Project Features & Responsibilities**

**1️⃣ You (Project Lead / Full-Stack + Gradio Integration)**

* Implement **clear input box after sending** for the chat interface.
* Set up **tabs/accordions** to separate property filters vs chat interaction.
* Add **loading spinner** for API responses.
* Integrate **user-friendly warnings** for invalid inputs (negative budget, invalid bedroom numbers, empty location).
* Provide **feedback when no properties match** filters.
* Coordinate development workflow and manage deployment on Gradio.
* Merge contributions from other team members.

**2️⃣ Data Engineer / ML Engineer 1**

* Implement **data validation and preprocessing** for the property dataset (handle missing values, standardize column formats, calculate Score if not present).
* Develop **filtering logic improvements** (e.g., scoring formula, multi-feature weighting).
* Ensure API queries are fast and efficient; optimize data filtering for large datasets.

**3️⃣ Data Engineer / ML Engineer 2**

* Implement **property visualization on a map** using folium or pydeck.
  + Map should show filtered properties with markers and tooltips (title, price, key features).
* Integrate map updates with user filter selections in real-time.
* Optionally, suggest enhancements like clustering for dense areas or interactive popups.

**4️⃣ Business Analyst**

* Define **user requirements and UX expectations** for the app (filter order, layout, warnings, map interaction).
* Create **test cases** for valid and invalid inputs, edge cases, and no-match scenarios.
* Provide **recommendation evaluation criteria** (e.g., how to rank top properties, what info is most useful to users).
* Document app functionality and produce a **workflow diagram** for team reference.

**🗓️ Project Roadmap & Task Assignment**

**Phase 1: UI/UX Enhancements (1 Week)**

**You (Project Lead / Full-Stack Developer):**

* Implement input field clearing after message submission.
* Add loading spinner during API responses.
* Display user-friendly warnings for invalid inputs (e.g., negative budget, invalid bedroom numbers, empty location).
* Provide feedback when no properties match filters.
* Integrate tabs or accordions to separate property filters from chat interaction.

**Data Engineer / ML Engineer 1:**

* Assist in integrating the new UI components with the backend logic.

**Business Analyst:**

* Review and provide feedback on UI/UX changes to ensure alignment with user expectations.

**Phase 2: Data Integration & Visualization (2 Weeks)**

**Data Engineer / ML Engineer 2:**

* Research and fetch the most recent real-time housing dataset in Nigeria.
* Clean and format the dataset to match the existing schema used in data\_load.ipynb.
* Integrate the cleaned dataset into the application.

**You (Project Lead):**

* Implement property visualization using folium or pydeck to display properties on a map.
* Ensure the map updates dynamically based on user-selected filters.

**Business Analyst:**

* Validate the relevance and quality of the new dataset.
* Provide insights into how the new data can enhance the application's recommendations.

**Phase 3: Testing & Deployment (1 Week)**

**You (Project Lead):**

* Conduct end-to-end testing to ensure all features function correctly.
* Deploy the updated application on Gradio.

**Data Engineer / ML Engineers:**

* Assist in testing the integration of the new dataset and map visualization.

**Business Analyst:**

* Perform user acceptance testing to ensure the application meets business requirements.