**1. Project Outline**

* **Title**: Shanghai Housing Insights: A Price Prediction and Recommendation App for Second-Hand Properties.
* **Problem Statement**: Develop a price prediction and recommendation application for second-hand houses in Shanghai. This app will allow users to input their preferences and budget constraints while utilizing various regression techniques to estimate property prices based on key features. Additionally, it will employ a recommendation system to suggest houses that meet users' criteria, helping them make informed decisions about their potential second home.
* **Objectives**: Data Collection and Cleaning, Exploratory Data Analysis (EDA), Price Prediction Model Development, Recommendation System Implementation, User-Friendly Application Development, Model Evaluation and Optimization.

**2. Research & Data Collection**

* **Literature Review**: Summarize relevant research or existing solutions.
* **Data Sources**: List the datasets you’ll use, including where to find them (e.g., Kaggle, UCI Machine Learning Repository).

**3. Methodology**

* **Data Preprocessing**: Outline how you’ll clean and prepare your data (handling missing values, normalization, etc.).
* **Model Selection**: Describe the algorithms you plan to use (e.g., linear regression, decision trees).
* **Evaluation Metrics**: Define how you’ll measure success (accuracy, precision, recall).

**4. Implementation Plan**

* **Milestones**: Break the project into phases with deadlines.
* **Tasks**: List specific tasks for each milestone (e.g., data cleaning, model training).

**5. Testing & Validation**

* **Train/Test Split**: Explain how you’ll split your data for training and validation.
* **Cross-Validation**: If applicable, describe how you’ll use cross-validation to ensure model robustness.

**6. Results & Analysis**

* **Presentation of Results**: Plan how you’ll present your findings (charts, graphs, metrics).
* **Discussion**: Prepare a section for discussing the implications of your results and any limitations.

**7. Documentation**

* **Readme File**: Create a README file that summarizes your project, including how to run the code and dependencies.
* **Code Comments**: Ensure your code is well-commented to explain what each part does.

**8. Version Control**

* **Git**: Use Git for version control to track changes and collaborate if needed.

**9. Reflection**

* **Post-Mortem Analysis**: After completion, document what worked, what didn’t, and what you’d do differently next time.

**10. Presentation**

* **Prepare a Presentation**: Create a presentation summarizing your project for potential interviews or showcases.