**Week 4**

**Purposed System**

The proposed system is an intelligent, user-friendly web application built using Streamlit, aimed at assisting users in making informed real estate decisions across major Indian cities—Gurgaon, Bangalore, Pune, and Delhi. The system integrates a combination of recommendation logic and machine learning-based price prediction to provide personalized property suggestions and estimated price insights.

Key Components:

1. City-wise Recommendation System:
   * Utilizes TF-IDF Vectorization and Cosine Similarity to recommend properties based on the user's selected preferences such as location and facilities.
   * Provides suggestions for:
     + Nearby Locations based on user input.
     + Top Facilities commonly preferred by users (e.g., parking, security, gym).
   * Each city has its own processed dataset and similarity logic to ensure accurate results.
2. Price Prediction Module:
   * Implements Random Forest Regression models, separately trained for each city, to predict house prices.
   * Input features include parameters like:
     + Bangalore/Pune: total\_sqft, bath, balcony
     + Delhi: Area, BHK, Bathroom
   * The models are saved using joblib and loaded into the app for real-time predictions.
3. User Interface:
   * Built with Streamlit, offering a clean and responsive interface for:
     + Selecting city
     + Choosing recommendation type
     + Entering features for price prediction
   * Displays recommended listings and predicted prices dynamically.
4. Additional Integration (Optional/Future Scope):
   * Google Gemini LLM for generating natural language descriptions and insights.
   * Map integration or filtering controls for enhanced user experience.

Objectives:

* Help users identify suitable properties based on location and amenities.
* Offer realistic price estimates using ML models.
* Provide an interactive and accessible platform without requiring technical expertise.