Project Name:

Project Duration: 4 Weeks
Project Timeline: January 15 – February 15, 2026
Project Solution Link: *To be added*
Project Brief:
This project aims to build predictive models for property valuations and future price forecasting in the real estate industry. It focuses on utilizing machine learning techniques to predict property prices, forecast future trends, and automate decision-making processes. Participants will gain hands-on experience in data preprocessing, feature selection, model training, evaluation, deployment, and monitoring.

Project Timeline Breakdown:

Week 1: Problem Definition, Data Preprocessing & Feature Selection

Objective: Define the prediction goals, preprocess data, and select relevant features.

- **Tuesday Drop-Session: Introduction to Property Valuation and Market Forecasting**
    - **Topics Covered:**
        - Overview of predictive modeling for real estate.
        - Understanding property valuation and forecasting methodologies.
        - Define the project goals (predict property valuation and forecast future prices).
    - **Milestone to be achieved:**
        - Participants will understand the objectives of the project and define clear goals for prediction (property valuation and price forecasting).
- **Friday Drop-Session: Data Preprocessing & Introduction to Feature Selection**

- **Topics Covered:**
    - Walkthrough of the data preprocessing steps: data cleaning, handling missing values, and normalization.
    - Introduction to feature selection techniques (e.g., correlation analysis, feature importance, statistical tests).
- **Milestone to be achieved:**
    - Complete data cleaning and prepare data for feature selection.
    - Begin feature identification and use feature selection techniques (e.g., correlation analysis, ANOVA).

Week 2: Model Training, Hyperparameter Tuning & Evaluation

Objective: Train and evaluate models using the preprocessed data and selected features.

- **Tuesday Drop-Session: Model Training & Hyperparameter Tuning**
    - **Topics Covered:**
        - Overview of machine learning algorithms for regression (e.g., Linear Regression, Random Forest, XGBoost).
        - Techniques for hyperparameter optimization (Grid Search, Random Search).
    - **Milestone to be achieved:**
        - Train multiple models using cross-validation on the preprocessed data.
        - Perform hyperparameter tuning to optimize the models.
- **Friday Drop-Session: Model Evaluation & Comparison**
    - **Topics Covered:**
        - Model evaluation using performance metrics such as Mean

Absolute Error (MAE), Root Mean Squared Error (RMSE), and others.

        - Comparison of multiple models to select the best-performing one.

    - **Milestone to be achieved:**

        - Evaluate models on selected performance metrics.

        - Select the best-performing model for deployment.

Week 3: Model Deployment, Monitoring & Round-Up

Objective: Deploy the model into production, set up performance monitoring, and finalize the project.

- **Tuesday Drop-Session: Model Deployment & API Setup**

    - **Topics Covered:**

        - Introduction to deployment tools: Docker for containerization and FastAPI for building inference APIs.

        - Deployment of the best-performing model into the production environment.

        - Creating an API endpoint for real-time predictions.

    - **Milestone to be achieved:**

        - Successfully deploy the best model and set up an API endpoint for inference.

- **Friday Drop-Session: Model Monitoring & Continuous Improvement**

    - **Topics Covered:**

        - Monitoring model performance in real-time using tools like MLflow.

        - Strategies for retraining and updating models based on

performance and data drift.

        - Creating a model performance dashboard using Streamlit/Gradio.

    - **Milestone to be achieved:**

        - Set up real-time monitoring and performance tracking for the deployed model.

Week 4: Round-Up & Finalizing the Project

Objective: Finalize the project, prepare the final report, and deliver the presentation.

- **Tuesday Drop-Session: Final Report Creation**
    - **Topics Covered:**
        - Developing the final project report summarizing the entire process (from problem definition to model deployment).
        - Including key insights, challenges faced, and lessons learned.
    - **Milestone to be achieved:**
        - Complete the final report, detailing the project's methodology, outcomes, and impact.
- **Friday Drop-Session: Final Presentation & Project Wrap-Up**
    - **Topics Covered:**
        - Preparing the final stakeholder presentation, showcasing the predictive model's impact on property valuation and forecasting.
        - Final discussions on potential improvements and business applications of the models.
    - **Milestone to be achieved:**

- Deliver the final project presentation to stakeholders, showcasing the results and value added to the business.