

# Supervised ML (Assignment1)

## Assignment Project

### Problem Statement

A real estate company **HomeVista Properties** operates across multiple cities and handles thousands of residential property sales every year. The company wants to automate its house pricing process.

They want to use **Machine Learning** to build an intelligent system that can **predict the market price of a house automatically** based on its physical features, location, and condition.

You are hired as a **Machine Learning Engineer** to build a regression model that can accurately predict the house price using historical property data.

Your task is to analyse the dataset, perform data preprocessing, train a **Linear Regression model**, and evaluate its performance.

### Dataset Description

Each row represents one residential house and its physical, location, and construction details.

Feature	Description
<b>Id</b>	Unique identification number for each house
<b>MSSubClass</b>	Type of dwelling involved in the sale (numerical code representing building class such as 20 = 1-Story, 60 = 2-Story, etc.)
<b>MSZoning</b>	General zoning classification of the sale (Residential Low Density, Medium Density, etc.)
<b>LotArea</b>	Lot size in square feet
<b>LotConfig</b>	Lot configuration (Inside, Corner, Cul-de-sac, etc.)
<b>BldgType</b>	Type of dwelling (1Fam, 2Fam, Duplex, Townhouse, etc.)
<b>OverallCond</b>	Overall condition rating of the house (scale 1–10)
<b>YearBuilt</b>	Original construction year
<b>YearRemodAdd</b>	Year the house was remodeled or additions were made
<b>Exterior1st</b>	Exterior covering on house (VinylSd, MetalSd, HdBoard, etc.)

Feature	Description
<b>BsmtFinSF2</b>	Type 2 finished square feet of basement
<b>TotalBsmtSF</b>	Total square feet of basement area
<b>SalePrice (Target)</b>	Final selling price of the house