**Business Problem Understanding**

* *A business problem can be defined as any hurdle, situation, or variation that leads to a difference between the desired objectives and accomplished results. Some problems present themselves, while others require in-depth analysis of the Subject given.*
* *A house value is simply more than location and square footage which means There are a number of aspects or features that contributes towards the final price of the house. For example, a house which is only one floor high will obviously be cheaper*

*than a house which is three floors high. Or, even a house that has a waterfront/*

*beachfront view will obviously be priced more than a house which has none of these facilities. An antique house is always more precious and costly than a recently built building. These are only few examples of how different factors can contribute towards the price of the house.*

* *Provide the customers who are buying or selling houses with some guiding services. As people don't know the features/aspects which results in the property price, we can provide them House Buying & Selling guiding services in the area so they can buy or sell their property with most suitable price tag. Some more examples can be Real estate investors would like to find out the actual cost of the house in order to buy and sell real estate properties. They will lose money when they pay more than the current market cost or when they sell for less money according to the current market cost.*

*Banks also want to find out about the current market price of the house when they use someone’s house as collateral for loans. Sometimes the loan applicant overvalues their house to borrow maximum loan from bank. Local home buyers can also predict the price of the house to find out if a seller is asking too much. The local seller can also predict their house price and find out how much is a fair market price. Real estate is the most popular choice of investment as well because of its nature of investment and return.*

**Objective**

* *to develop a model to predict the price of the house when the specifications or features of a house are given and to find the ML algorithm that predicts the price most accurately.*

**Heat Map**

* *Top variables that determine the price are:* 
  + *Quality – Grades given to the housing unit (Grading System)*
  + *Living Measure – The size of the property*
  + *Furnished – Whether the property is furnished or not*
* *Other strong expected relationships that we can identify from the data are:*
  + *Living measure and quality*
  + *Living measure and room\_bed or room\_bath*
  + *Furnished and Quality, Furnished and Living Measure, Ceil Measure*
  + *Living Measure and Living Measure 15, Ceil Measure and Ceil Measure 15*
  + *Living Measure and Ceil Measure*

**Model Building Approach**

* *Machine learning is the study of statistical computer algos that improve automatically through data. So ML algos are not designed or programmed on which decisions to make, instead the algo infer the best approach from the data itself for which they require some reliable statistical insights from the data.*
* *Major Caveat to affective Machine Learning is good data and therefore majority of development time is spent cleaning and organising data and not implementing ML algos.*
* *Framing the Problem -> Understanding and framing the problem is the first step of the data science life cycle. This framing will help you build an effective model.*
* *Collect And Store Data -> The next step is to collect the right set of data. High-quality, targeted data—and the mechanisms to collect them—are important to obtaining meaningful results.*
* *Clean and Organise Data -> Most of the data you collect during the collection phase will be unstructured, irrelevant, and unfiltered. Bad data produces bad results, so the accuracy and efficacy of your analysis will depend heavily on the quality of your data. For Example – handling Null Values, Corrupt data, inconsistent data type, missing data etc.*
* *Exploratory Data Analysis -> At this stage we can begin conducting an exploratory data analysis (EDA). Effective EDA lets you discover valuable insights that will be useful in the next phase of the data science lifecycle i.e. Building Machine Learning Models.*
* *Machine Learning Models -> This is where you’ll use machine learning, statistical models, and algorithms to extract high-value insights and predictions. The Business Problem given to us falls under the Umbrella of Supervised Machine Learning.*

**Business Recommendations**

* *Including these factors in our model can give us more accurate results.*
* *It is recommended that the salesman proposed a price 10% more than that of predicted by the model as a buffer. In this way, the salesman will have room for negotiation.*