**Stakeholder: Real Estate Agency**

**Business Problem: Optimizing Home Renovations for Increased Property Value**

The real estate agency aims to provide valuable advice to homeowners on how specific home renovations might impact the estimated value of their homes. The primary objective is to help homeowners make informed decisions about which renovations could potentially yield the highest return on investment in terms of increased property value.

**Dataset Features to Focus On:**

* **bedrooms:** The number of bedrooms in a house.
* **bathrooms:** The number of bathrooms in a house.
* **sqft\_living:** The total living space in square feet.
* **sqft\_lot:** The total lot size in square feet.
* **floors:** The number of floors in the house.
* **waterfront:** A binary indicator of whether the house has a waterfront view.
* **view:** An index from 0 to 4 representing the quality of the view from the property.
* **condition:** An index from 1 to 5 representing the overall condition of the house.
* **grade:** An index from 1 to 13 representing the overall grade given to the housing unit, based on King County grading system.
* **sqft\_above:** The square footage of the house apart from the basement.
* **sqft\_basement:** The square footage of the basement.
* **yr\_built:** The year the house was built.

**Target Variable:**

* **price:** The sale price of the house.

**Objective:** Build a multiple linear regression model to analyze how the selected features influence the sale price of houses. The model should help the real estate agency provide personalized recommendations to homeowners regarding renovations that are likely to have the most significant positive impact on their property values.

**Approach:**

1. **Data Preprocessing:** Handle missing data, outliers, and categorical variables.
2. **Feature Selection:** Identify the most influential features through analysis and correlation.
3. **Model Building:** Train a multiple linear regression model using the selected features.
4. **Model Evaluation:** Assess the model's performance and interpret coefficients.
5. **Recommendation System:** Develop a system to recommend specific renovations based on their predicted impact on house prices.
6. **Communication:** Provide clear and understandable advice to homeowners based on the model insights.

By addressing this business problem, the real estate agency can enhance its value proposition, strengthen customer relationships, and differentiate itself in the market by offering data-driven insights for homeowners looking to increase the value of their properties.