**Essentials of Statistics and Math for Data Science - Capstone 2**

**Question Please use the Data.xlsx file to investigate the effect of independent variables (price per square foot, number of bathrooms, and floor size) on the price of a high-floor, spacious 2-bedroom house with a spectacular view, available at an affordable price. The null hypothesis (H0) states that there is no significant effect of the independent variables on the price. The alternative hypothesis (H1) suggests that there is a significant effect of the independent variables on the price. The objective is to test this hypothesis using the provided data in the "Data" Excel file.**

1. **Selection of Confidence Level: A 95% confidence level is chosen to determine the range within which the true parameter value is likely to fall. A 95% confidence interval covers 95% of the normal curve, meaning that there is a 5% probability of observing a value outside of this range.**
2. **Statistical Test or Model: To test the hypothesis, a multiple regression analysis is conducted. This analysis helps determine the relationship between the dependent variable (price) and the independent variables (price per square foot, number of bathrooms, and floor size).**

Answer –

1. **PRICE** (dependent variable)

2. **PRICE\_SQFT** (independent variable)

3 **NO\_OF\_BATHROOMS** (independent variable)

4 **FLOOR\_SIZE** (independent variable)

After running the regression analysis, obtain a summary with several key outputs:

* **Coefficients**: These indicate the change in the dependent variable for a one-unit change in each independent variable, holding all other variables constant.
* **P-values**: These test the null hypothesis that each coefficient is equal to zero (no effect). A p-value less than 0.05 typically indicates that the coefficient is significantly different from zero.
* **R-squared**: This indicates the proportion of the variance in the dependent variable that is predictable from the independent variables.

**Hypothesis Testing**

 Null **Hypothesis (H0)**: The coefficients for PRICE\_SQFT, NO\_OF\_BATHROOMS, and FLOOR\_SIZE are all equal to zero (no effect on the PRICE).

 Alternative **Hypothesis (H1)**: At least one of the coefficients is not equal to zero (at least one of the independent variables has a significant effect on PRICE).