**ASSIGNMENT – 1**

**Simple linear Regression**

**INTERPRETATION:**

**1. Variables:**

Dependent Variable: Life Expectancy  
Independent Variable: BMI

**2. R² Score:**

* + The R² value is 0.351, indicating that the model does not fit well. This means that only 35.1% of the variation in Life Expectancy can be attributed to changes in BMI.

**3.Regression Equation:**

* 1. Intercept: 59.290
  2. Coefficient: 0.262

**The regression equation can be formulated as:**

Life Expectancy = 59.290 + 0.262 \* (BMI)

This implies that an increase in BMI is associated with a rise in Life Expectancy by approximately 0.262 years.

**Multiple linear Regression**

**INTERPRETATION:**

1. **Variables:**
   * Dependent Variable: Life Expectancy
   * Independent Variables: Adult Mortality, Infant Deaths, Alcohol Consumption, Percentage Expenditure, Hepatitis B, Measles, BMI, Under-Five Deaths, Polio, Total Expenditure, Diphtheria, HIV/AIDS, GDP, Population, Thinness (1-19 years), Thinness (5-9 years), Income Composition of Resources, Schooling
2. **R-Squared Value:**
   * The R² value is 0.843, indicating that the model is a good fit. This means that 84.3% of the variability in Life Expectancy can be attributed to the variations in the independent variables.
3. **Mean Squared Error (MSE):**
   * The MSE is 11.449, suggesting a low deviation from the actual Life Expectancy values.
4. **Regression Equation:**
   * Intercept: 56.971
   * Coefficients: [-8.33471703, 27.81201012, 0.38618859, 2.47817654, -2.81604449, 0.05806632, -0.37302702, -30.40114899, 2.7187973, 2.6584802, 5.15746618, -11.30306909, -0.99778646, 1.40731999, 2.08159109, -4.0180467, 22.54295921, -4.78988747]

**The regression equation can be expressed as:**

Life Expectancy = 56.971 - 8.334 \* (Adult Mortality) + 27.812 \* (Infant Deaths) + 0.386 \* (Alcohol) + 2.478 \* (Percentage Expenditure) - 2.816 \* (Hepatitis B) + 0.058 \* (Measles) - 0.373 \* (BMI) - 30.402 \* (Under-Five Deaths) + 2.719 \* (Polio) + 2.658 \* (Total Expenditure) + 5.157 \* (Diphtheria) - 11.303 \* (HIV/AIDS) - 0.998 \* (GDP) + 1.407 \* (Population) + 2.082 \* (Thinness 1-19 years) - 4.018 \* (Thinness 5-9 years) + 22.543 \* (Income Composition of Resources) - 4.790 \* (Schooling)

This equation illustrates the influence of each variable on Life Expectancy. Notably, there is an inverse relationship between Life Expectancy and factors such as Adult Mortality, Hepatitis B, BMI, Under-Five Deaths, HIV/AIDS, GDP, and Schooling. In contrast, other variables appear to have a positive correlation with Life Expectancy.