**Assignment 1**

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**Reg # FA22-BCE-028**

**Pseudo Code:**

**Algorithm**: Simple Linear Regression

**Input**: Dataset with two features (X: Years of Experience, Y: Salary)

**Output:** Linear Regression model with coefficients (slope and intercept)

1. Compute the means of X and Y:

mean\_X = average(X)

mean\_Y = average(Y)

2. Compute the slope (b1) using the formula:

numerator = Σ (Xi - mean\_X) \* (Yi - mean\_Y)

denominator = Σ (Xi - mean\_X)²

b1 = numerator / denominator

3. Compute the intercept (b0):

b0 = mean\_Y - (b1 \* mean\_X)

4. Return the linear equation: Y = b0 + b1 \* X

5. Predict values using the obtained equation.

6. Compute performance metrics:

- RMSE: sqrt(mean((Y\_actual - Y\_predicted)²))

- MAE: mean(abs(Y\_actual - Y\_predicted))

- R2 Score: 1 - (Σ(Y\_actual - Y\_predicted)² / Σ(Y\_actual - mean\_Y)²)

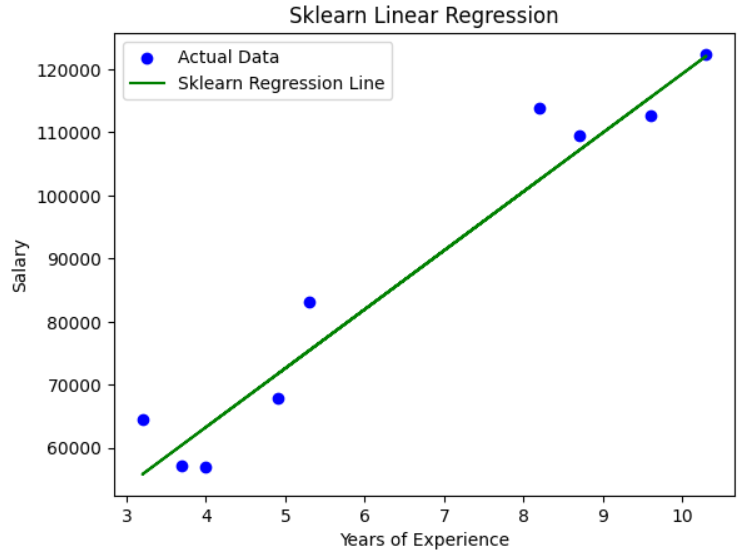
7. Plot the dataset and regression line.

**My Implemented Model:**

A red line with blue dots

AI-generated content may be incorrect.

**Built in Model (sklearn):**

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**Table:**

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| --- | --- | --- |
| **Model** | **Intercept(b0)** | **Slope(b1)** |
| **Manual Regression** | 25918.438335 | 9339.081724 |
| **Sklearn Regression** | 25918.438335 | 9339.081724 |