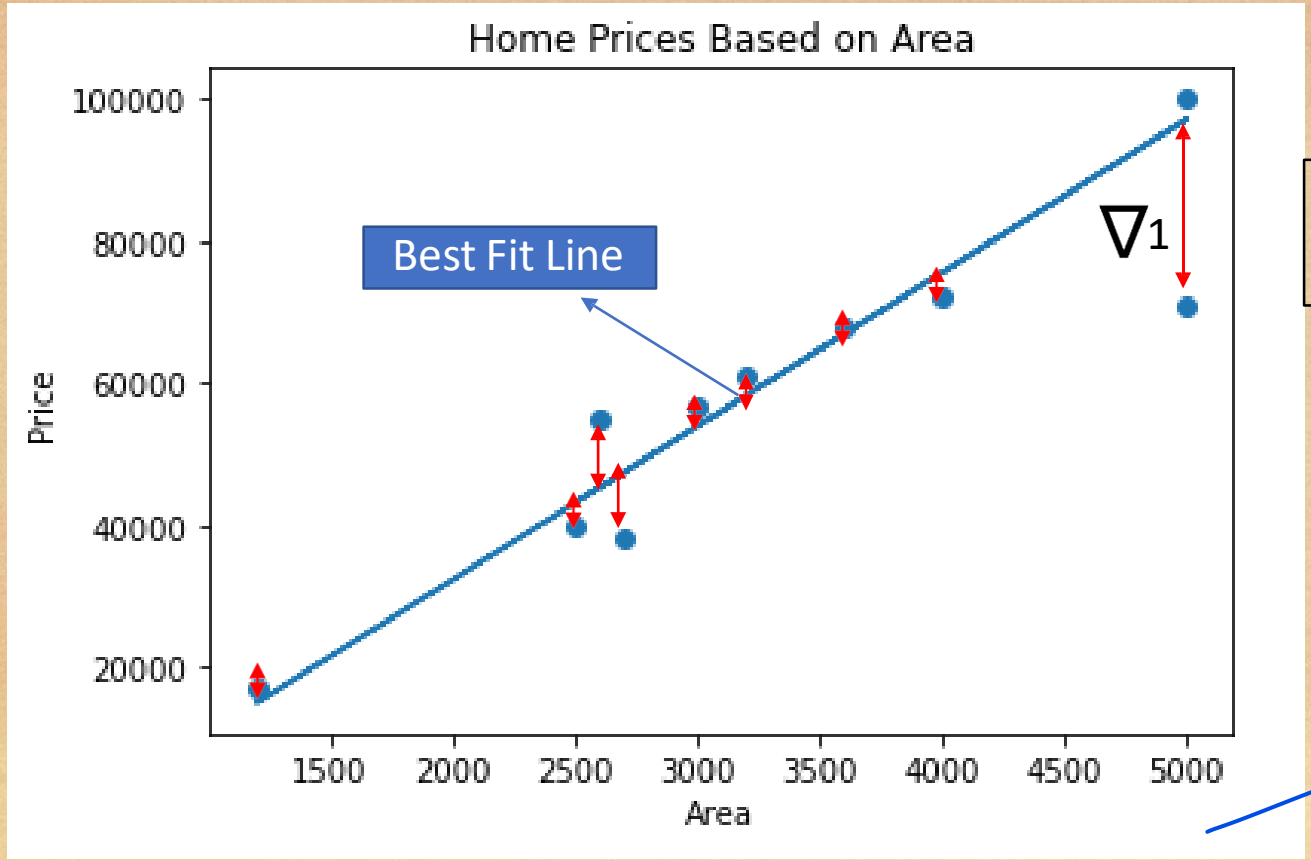
Linear Regression with Multiple Variable

Overview:

- Single Variable Linear Regression
- Multiple Variable Linear Regression
- Single vs Multiple
- Cost Function
- Gradient Decent
- Accuracy
  - R2 Value
- Implementing with Python

All about Single Linear Regression



y = mx + b ; or,
Y = 21.43* X + 4980.13

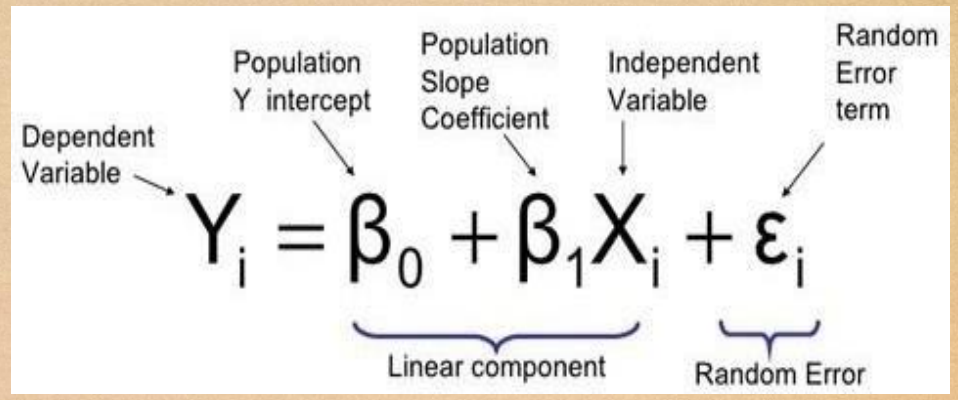
Coefficient = 21.43
Intercept = 4980.13

All about Single Linear Regression

All about Single Linear Regression

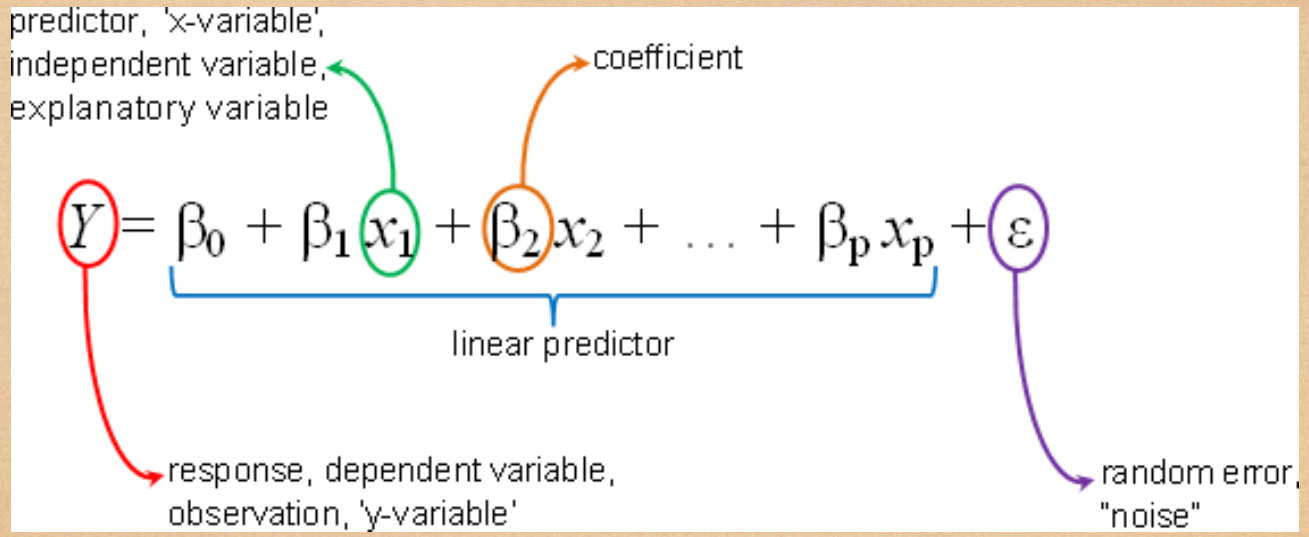
y = mx + b + error

y = b + mx + error



Linear Regression with Multiple Variable

Multiple



Linear Regression with Multiple Variable

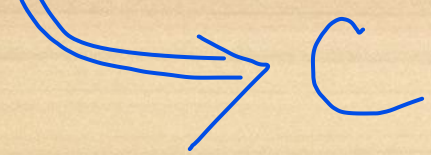
Single

Multiple

$$y = b_0 + b_1 * x_1$$

Dependent variable (DV) Independent variables (IVs)

$$y = b_0 + b_1 * x_1 + b_2 * x_2 + \ldots + b_n * x_n$$



R Squared Value

$$\text{R Squared Value} = \sum_{i=0}^{n-1} \frac{\text{Predicted Value (Yp) – Mean Value (} \overline{Y} \text{)}}{\text{Actual Value (Y) – Mean Value (} \overline{Y} \text{)}}$$

= Something * 100

Accuracy = Something %

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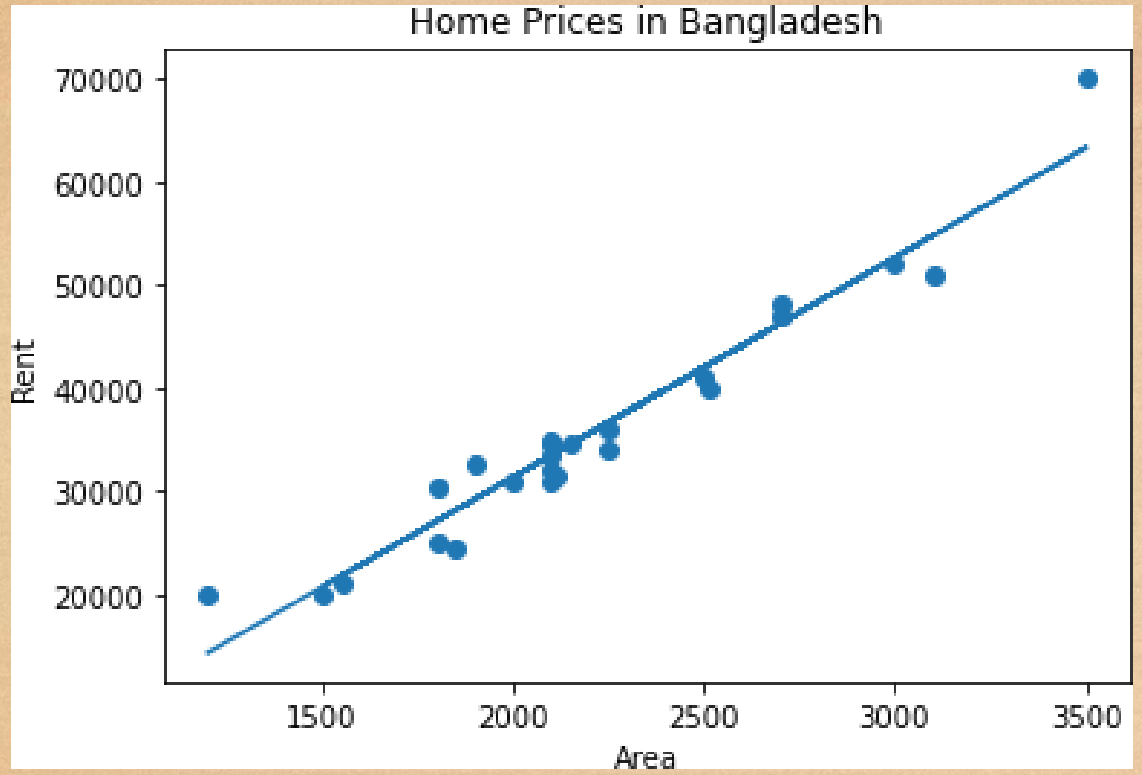


```
reg.score(xtest,ytest)
```

```
0.8296548051728814
```

Y_pred = reg.predict(xtest) **#Predicted Y**
R2 Score: from sklearn.metrics import r2_score
Score = r2_score(ytest, Y_pred)