**Linear Regression:**

* **Dependent variable:**

The variable which is affected by other variables

* **Independent Variable:**

The variable which is not affected by other variables

* **Regression:**

Relationship between dependent and independent variables

**Two types:**

* + Linear Regression
  + Logistic Regression
* Linear Regression is applied when the required output (dependent variable) is continuous (numeric value) in nature
* **In Linear Regression, the relationship between dependent and independent variable is of linear nature.**
* In a plane, x-axis represent the independent variable and y-axis represent the dependent variable
* **Both dependent and independent variables are directly proportional in nature**
* There are **two types** of linear Regression based on how many variables are affecting the dependent variables:
  + **Simple Linear Regression:**

When we have single independent variable affecting dependent variable

**Equation:**

Y = c + mx

* + - m is simply a slope
    - c is intercept
    - x is independent variable
    - y is dependent variable

y = (alpha)0 + (alpha)1 \* x

* + - alphas are coefficients
    - x -> independent variable
    - y -> dependent variable
  + **Multiple Linear Regression:**

When we have multiple independent variables affecting dependent variable

**Equation:**

Y = a0 + a1x1 + a2x2 + a3x3 + … + (a)m \* (x)m

* + - (a)i -> **alpha -> regression coefficient** -> tell how much related independent variable affects the dependent variable
    - (x)i -> independent variable
    - y -> dependent variable