1. In the linear regression equation $y = \theta_0 + \theta_1 x$, θ_0 is the:

Ans – C

2. True or False: Linear Regression is a supervised learning algorithm.

Ans – A

3. In regression analysis, the variable that is being predicted is:

Ans – B

4. Generally, which of the following method(s) is used for predicting continuous dependent variables?

Ans – C

5. The coefficient of determination is:

Ans – A

6. If the slope of the regression equation is positive, then:

Ans – B

7. Linear Regression works best for:

Ans – C

8. The coefficient of determination can be in the range of:

Ans – A

9. Which of the following evaluation metrics can be used for linear regression?

Ans – B and D

10. Which of the following is true for linear regression?

Ans – A and C

11. Which of the following regularizations can be applied to linear regression?

Ans – A, B and D

12. Linear regression performs better for:

Ans – A

13. Which of the following assumptions are true for linear regression?

Ans – A, B and D

14. Explain Linear Regression?

Ans - Linear Regression is a statistical method used to model the relationship between a dependent variable and one or more independent variables. It is a simple yet powerful method for understanding the relationship between variables and making predictions about future observations.

In Linear Regression, the dependent variable is modeled as a linear function of one or more independent variables, with a set of parameters (also known as coefficients) that define the slope and intercept of the line. The goal of Linear Regression is to find the values of the coefficients that best fit the data, meaning the line that best describes the relationship between the dependent variable and the independent variable(s).

Linear Regression can be used for both simple and multiple regression. In simple regression, there is only one independent variable, while in multiple regression, there are multiple independent variables. The relationship between the dependent variable and the independent variable(s) is modeled using a linear equation of the form $y = \theta_0 + \theta_1 x_1 + \theta_2 x_2 + ... + \theta_n x_n$, where y is the dependent variable, $x_1, x_2, ..., x_n$ are the independent variables, and $\theta_0, \theta_1, \theta_2, ..., \theta_n$ are the coefficients.

Linear Regression assumes that the dependent variable is continuous and normally distributed, and that the relationship between the independent variable(s) and the dependent variable is

linear. Additionally, it assumes that the errors (the difference between the actual values and the predicted values) are normally distributed and have constant variance (homoscedasticity).

Linear Regression has many applications in various fields, including economics, finance, engineering, and social sciences. It is widely used for predicting future values of a dependent variable based on the values of the independent variable(s), and for understanding the relationships between variables

15. What is difference between simple linear and multiple linear regression?

Ans - The main difference between simple linear regression and multiple linear regression is the number of independent variables used to predict the dependent variable.

In simple linear regression, there is only one independent variable used to predict the dependent variable. The relationship between the dependent variable and the independent variable is modeled using a linear equation of the form $y = \theta 0 + \theta 1x$, where y is the dependent variable, x is the independent variable, and $\theta 0$ and $\theta 1$ are the intercept and slope coefficients, respectively.

In multiple linear regression, there are two or more independent variables used to predict the dependent variable. The relationship between the dependent variable and the independent variables is modeled using a linear equation of the form $y = \theta 0 + \theta 1x1 + \theta 2x2 + ... + \theta nxn$, where y is the dependent variable, x1, x2, ..., xn are the independent variables, and $\theta 0, \theta 1, \theta 2, ..., \theta n$ are the intercept and slope coefficients for each independent variable.

Simple linear regression is used when there is a single independent variable that is believed to be responsible for the changes in the dependent variable. It is used to model a linear relationship between two variables and to predict the value of the dependent variable based on the value of the independent variable.

Multiple linear regression, on the other hand, is used when there are multiple independent variables that are believed to be responsible for the changes in the dependent variable. It is used to model the relationship between the dependent variable and multiple independent variables, and to predict the value of the dependent variable based on the values of the independent variables.

Overall, simple linear regression is a simpler and more straightforward model, while multiple linear regression is more complex but can capture more of the complexity of real-world relationships between variables.