An **Arti cial Neural Network** in the eld of **Arti cial intelligence** where it attempts to mimic the network of neurons makes up a human brain so that computers will have an option tounderstand things and makedecisions in a human-like manner. The arti cial neural networkis designed by programming computers to behave simply like interconnected brain cells.

There are around 1000 billion neurons in the human brain. Each neuron has an association point somewherein the range of 1,000 and 100,000. In the human brain, data is stored in such a manner as to be distributed,and we can extract more than one piece of this data when necessary from our memory parallelly. We can say that the human brain is made up ofincredibly amazing parallel processors.

We can understand the arti cial neural network with an example, consider an example of adigital logic gatethat takes an input and gives an output. "OR" gate, which takes two inputs. If one or both the inputs are "On," then we get "On" in output. If both the inputs are "Off," thenwe get "Off" in output. Here the outputdepends upon input. Our brain does not perform the same task. The outputs to inputs relationship keep changing because of the neurons in our brain, which are "learning."

The architecture of an artificial neural network:

To understand the concept of the architecture of an arti cial neural network, we have to understand what a neural network consists of. In order to de ne a neural network that consists of a large number of arti cial neurons, which are termed units arranged in a sequence of layers. Lets us look at various types of layers available in an arti cial neural network.

Confusion Matrix:

The confusion matrix is a matrix used to determine the performance of the classi cation models for a given set of test data. It can only be determined if the true values for test data are known. The matrix itselfcan be easily understood, but the related terminologies may beconfusing. Since it shows the errors in the model performance in the form of a matrix, hence also known as an **error matrix**. Some features of Confusion

matrix are given below:

- For the 2 prediction classes of classifiers, the matrix is of 2*2 table, for 3 classes, it is3*3 table,and so on.
- The matrix is divided into two dimensions, that are**predicted values**and**actualvalues**along with the total number of predictions.
- Predicted values are those values, which are predicted by the model, and actualvalues arethe true values for the given observations.

Need for Confusion Matrix in Machine learning

- It evaluates the performance of the classification models, when they makepredictionson test data, and tells how good our classification model is.
- It not only tells the error made by the classifiers but also the type of errors such as itis either type-I or type-II error.
- With the help of the confusion matrix, we can calculate the different parameters forthe model,such as accuracy, precision, etc.

Conclusion: In this way we build a neural network.