**Decision** **Tree**

Decision tree algorithm belongs to supervised learning algorithms. Unlike other supervised learning algorithms, the decision tree algorithm can be used for solving regression and classification problems too.

The goal of using a Decision Tree is to create a training model that can use to predict the class or value of the target variable by learning simple decision rules inferred from prior data. In Decision Trees, for predicting a class label for a record we start from the root of the tree. We compare the values of the root attribute with the record’s attribute. On the basis of comparison, we follow the branch corresponding to that value and jump to the next mode.

Decision trees classify the examples by sorting them down the tree from the root to some leaf, with the leaf providing the classification of the example. Each node in the tree acts as a test case for some attribute, and each edge descending from the node corresponds to the possible answers to the test case. This process is recursive in nature and is repeated for every subtree rooted at the new node.

Good for handling a combination of numerical and non-numerical data. Easy to define rules for example yes or no, if, then, else. Requires minimal preparation or data cleaning before use. Great way to choose between best, worst and likely case scenarios.

**Example**: We have a problem to predict whether a customer will pay his renewal premium with an insurance company(yes/no). Here we know that the income of customers is a significant variable but the insurance company does not have income details for all customers. Now, as we know this as an important variable, then we can build a decision tree to predict customer income based on occupation, product and other various factors. In this case, we are predicting values for the continuous variables.