**Decision Tree:**

* Help in taking a particular decision
* **Steps:**
  + Choose target attribute
  + Calculate information gain of target attribute

I.G = (P/(P+N)) \* log(P/(P+N)) – (N/(P+N)) \* log(N/(P+N))

* + Calculate Entropy of attributes other than target attribute in order to choose the root of decision tree.

E(A) = {v (summation)i=1} (Pi + Ni)/ (P + N)) \* I(PiNi)

Entropy is the multiplication of information gain of given attribute and probability of given attribute.

* + Calculate Gain of attributes other than target attribute:

Gain = I.G of target attribute – Entropy of given attribute

Attribute having greatest gain will be selected as the root of decision tree.

All the Nodes will be selected in the same way.

* + **Important points of decision tree:**
    - Used in two places:
      * Classification (Tree structured)
      * Regression
    - Mostly used in classification (decision tree is a classifier)
    - Training dataset -> algorithm -> model / classifier
    - Two nodes in decision tree:
      * Decision node (test) -> nodes which are branching out
      * Leaf node (Classification / value) -> nodes which are not branching out
    - The action with which the dataset split into nodes is called splitting action.