**Decision Trees**

A decision tree is a tree-like graph with nodes signifying where we pick an attribute and ask a question, edges representing the question's responses, and leaves indicating the actual output or class label. Decision trees are used for handling non-linear datasets effectively. Decision tree algorithm is considered one of the best and most used **supervised machine learning methods**.

**What does the Decision Tree algorithm do?**

Decision trees sort the instances along the tree from the root to a leaf node, with the leaf node assigning a classification to the example.

**When is it considered useful?**

1. Large datasets
2. For both discrete and continuous variables.
3. When considering non-linear datasets.

**Real-world applications of Decision Trees**

1. Assessing prospective growth opportunities for businesses using historical data
2. Using demographic data to find prospective clients.
3. Serving as a support tool in several fields such as engineering, education, law, business, healthcare, and finance. Example where decision tree algorithm was applied: <https://github.com/Jose-data/HLT/blob/main/DecisionTrees.ipynb>

**K-Nearest Neighbours (KNNs)**

The k-nearest neighbours (KNN) algorithm is a simple, easy-to-implement **supervised machine learning algorithm** that can be used to solve both classification and regression problems. It assumes that things are in proximity.

**What does K-nearest neighbour algorithm do?**

The K-NN algorithm classifies data points based on similarity or closeness measures of the stored data points.

**When is it considered useful?**

1. When we have properly labelled data
2. When data is noise-free.
3. When we have small datasets.

**Real-World application of K-Nearest neighbours**

1. Agriculture which include forecasting and estimation of soil water parameters.
2. In medicine, to predict whether a patient might have a heart attack based on demographic data.