# Probability and Frequency Distribution

## Probability Distribution

It describes the probability of all possible values for a random variable in a given interval range. It is of two types:

**Discrete distribution:** It describes the probability distribution for a discrete variable. For example, a toss of a coin can result in either a head or a tail.

a) *Binomial distribution*: It is applicable when the outcome of an experiment is binary, the trials involved are independent of each other and the probability of success or failure of an event is static. This distribution shows the probability of success of an event for each trial.

b) *Bernoulli's distribution*: It is applicable when an event occurs only once. Hence, the outcome is either a success or a failure.

c) *Poisson distribution*: It shows how many times an event is likely to occur in a given period of time. It is a count distribution.

**Continuous distribution:** It describes the probability distribution for a continuous variable. The random variable has an uncountable set of values within a fixed range.

a) *Normal distribution*: It is also known as Gaussian distribution. It is symmetric in nature. The mean is 0 and the standard deviation varies by 1 unit on either side of the mean.

b) *Continuous uniform distribution*: In this distribution all outcomes are equally possible.

c) *Log normal distribution*: In this distribution the logarithmic values of a random variable follows a normal distribution.

# Frequency Distribution

Frequency distribution gives the number of occurrences for each value of a random variable.

**Types:**

a) *Ungrouped frequency distribution:* Frequency distribution of a categorical variable. Count of each discrete value.

b) *Grouped frequency distribution:* Frequency of data points belonging to a particular class.

c) *Relative frequency distribution:* Proportion of observations belonging to each class interval.

d) *Cumulative frequency distribution:* Number of observation less than or equal to a particular value.