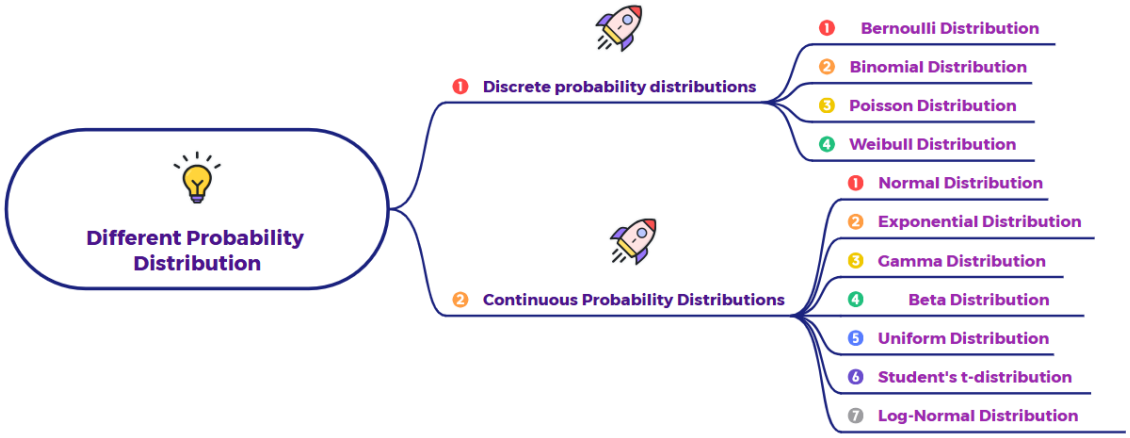
Different types of Probability Distribution?



Discrete Probability Distributions

Discrete probability distributions describe events that have a finite or countable number of outcomes. The distributions listed below are represented by bar charts in the image, where each bar represents the probability of a specific, discrete value.

- **Bernoulli Distribution:** Models a single trial with two possible outcomes (e.g., success or failure).
- **Binomial Distribution:** Models the number of successes in a fixed number of independent Bernoulli trials.
- **Poisson Distribution:** Models the number of events occurring within a fixed interval of time or space.
- **Weibull Distribution:** Often used for reliability engineering to model failure rates.

Continuous Probability Distributions

Continuous probability distributions describe events that can take any value within a given range. These are represented by smooth curves in the image, as the probability of a single, exact value is zero. The probability is instead measured over an interval.

- **Normal Distribution:** The classic "bell curve," which is a symmetrical distribution where most data points are close to the mean.
- **Exponential Distribution:** Models the time between events in a Poisson process.
- **Gamma Distribution:** A general family of distributions that includes the exponential and chi-squared distributions as special cases.
- **Beta Distribution:** Used to model probabilities, as its values are always between 0 and 1.
- **Uniform Distribution:** All values in a given range have an equal probability of occurring.
- **Student's t-distribution:** Used for hypothesis testing when the sample size is small and the population standard deviation is unknown.
- **Log-Normal Distribution:** A distribution of a random variable whose logarithm is normally distributed.