1. Time Series data 🡪 Samples that consists of lot of observations of the same phenomenon over time. 🡪 Series of data points indexed in time order. Time Series is a sequence taken at successive equally spaced points in time.
2. Why Time Series?

* Orders of the samples matter
* Uneven lengths
* Irregular sampling Times

1. Why use Time Series Forecasting over Multi-Variate Regression Models?

* Y = a + b\*x; 🡪 Regression equation 🡪 Dependent Variable and independent variables. Yt = Yt-1 + Y 🡪 Only one variable
* Based on patterns or trends in the past you basically extrapolate over time axis

1. When not to use Time Series?

* When Values are constant i.e. f(x) = k;
* When Values can be represented using known functions such as sinx or cosx
* When your Data is not stationary
  + Conditions for Data being stationary:

1. Mean should be constant over time
2. Variance should be equal at different time intervals from the mean

You can use logarithmic function

1. Covariance should be equal as well.
2. Components of Time Series: General Trend, Seasonal and Irregular functions

* Trend: Values are increasing or decreasing
* Seasonality: A spike or peak or dip in time interval
* Irregular: Random or uncontrolled situations