Time Series Analysis :

a specific way of analyzing a sequence of data points collected over an interval of time. In time series analysis, analysts record data points at consistent intervals over a set period of time rather than just recording the data points intermittently or randomly.

In other words, time is a crucial variable because it shows how the data adjusts over the course of the data points as well as the final results. It provides an additional source of information and a set order of dependencies between the data.

Why Organizations use Time Series Analysis!

 helps organizations understand the underlying causes of trends or systemic patterns over time. Using data visualizations, business users can see seasonal trends and dig deeper into why these trends occur.

Time Series Decomposition :

1. Seasonality

A seasonal pattern exists when a time series is influenced by seasonal factors. Seasonality occurs over a fixed and known period (e.g., the quarter of the year, the month, or day of the week).

1. Trend

 A trend exists when there is a persistent increasing or decreasing direction in the data. The trend component does not have to be linear.

1. Irregularity

the irregular component (or "noise") at time *t*, which describes random, irregular influences. It represents the residuals or remainder of the time series after the other components have been removed.

1. Cycle

 reflects repeated but non-periodic fluctuations. The duration of these fluctuations depend on the nature of the time series.

Task1

Equation to find time series in Additive Model and Multiplicative Model ??!!!

1. FOR ADDITIVE MODEL:

**Yt =Tt +St +Et**

1. FOR MULTIPLICATIVE MODEL:

**Yt =Tt \*St \*Et**

Where :

Yt 🡪 time series analysis

Tt 🡪 Trend Component

St 🡪 Seasonal Component

Et 🡪 Irregular Component

Task2

What are Transformations and Adjustment !?

1. Calendar Adjustment
2. Inflation Adjustment
3. Mathematical Adjustment
4. Population Adjustment