Time series analysis:

Steps of time series analysis:

Moving Average: The moving-average model specifies that the output variable depends [linearly](https://en.wikipedia.org/wiki/Linear_prediction) on the current and various past values of a stochastic (imperfectly predictable) term. The role of the random shocks in the MA model differs from their role in the autoregressive (AR) model in two ways. First, they are propagated to future values of the time series directly and second in the MA model a shock affects {\displaystyle X}values only for the current period and *q* periods into the future and error is average out minimizing the effects of spikes and valleys.

Considering the seven day moving average: For the weekly pattern dominating time series is n is 7.

Seasonality:

Day of week pattern: When series is influenced by seasonal factors, like the quarter for the year, the month or the day of the week. Seasonality is always of a fixed and known period. I our case Day of week pattern is dominant due to typical behavioral pattern of weekly usage. Analysis shows that , behavioral association of the two consecutive weeks. Hence while considering dow pattern, same day of the previous week is considered.

Equation: DOW = MA(woi)/MA(woi-1)\* doi(woi-1)

Where woi is week of interest, doi is day of interest

Trend : It is changing direction. Capturing the trend for series. In weekly pattern, we are using trend line which is weighted or considering only last two- day trend we are using as multiplier for forecasting.

