Exercise Internet Users Logged in a Server Data- Solution

There is no evidence of existence of seasonal unit root -- > D=0.

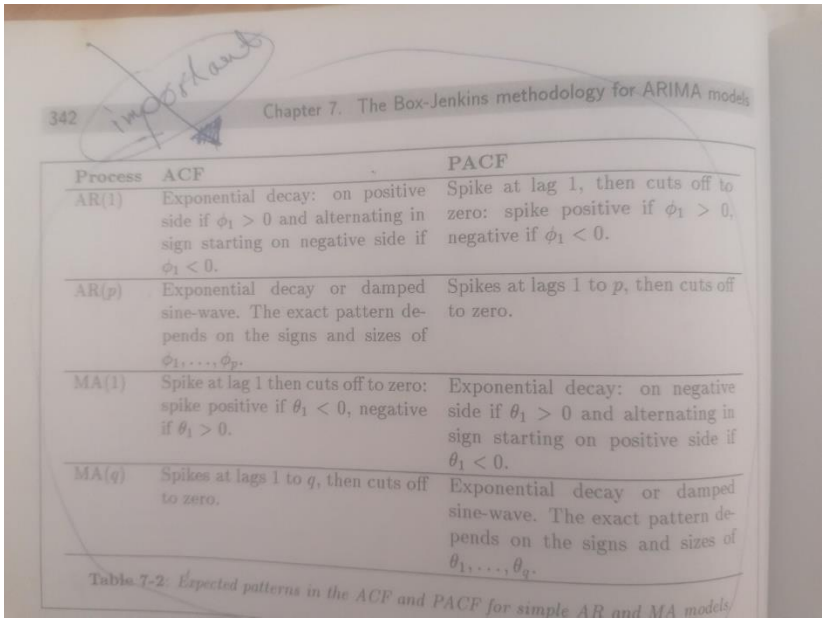
There is evidence of existence of unit root so difference -- > d=1

Better results if we difference one more so d=2 because of the unit root test (more significant if d=2).

If in first (needed) and seasonally differenced data (not needed) there is a peak in the seasonal lag in the PACF then the P=1. If there is a second peak in the 2*seasonal lag then P=2.

If in first (needed) and seasonally differenced data (not needed) there is a peak in the seasonal lag in the ACF then the Q=1. If there is a second peak in the 2*seasonal lag then Q=2.

Since D=0 no need to check the above two.



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Process	ACF	PACF
AR(1)	Exponential decay: on positive side if $\phi_1 > 0$ and alternating in sign starting on negative side if $\phi_1 < 0$.	Spike at lag 1, then cuts off to zero: spike positive if $\phi_1 > 0$, negative if $\phi_1 < 0$.
AR(p)	Exponential decay or damped sine-wave. The exact pattern depends on the signs and sizes of $\phi_1, \ldots, \phi_p$.	Spikes at lags 1 to p, then cuts off to zero.
MA(1)	Spike at lag 1 then cuts off to zero: spike positive if $\theta_1 < 0$, negative if $\theta_1 > 0$.	Exponential decay: on negative side if $\theta_1 > 0$ and alternating in sign starting on positive side if $\theta_1 < 0$.
MA(q)	Spikes at lags 1 to q, then cuts off to zero.	Exponential decay or damped sine-wave. The exact pattern depends on the signs and sizes of $\theta_1, \ldots, \theta_q$.

Table 7-2: Expected patterns in the ACF and PACF for simple AR and MA models

ACF-- > AR(p) because we have damped sign wave

PACF -- > Spikes at lag 1, 2

From the two abobve p=2 and d=2

So our model is ARIMA (2,2,0) (0,0,0)