AR and MA have signatures in the acf and pacf.

****
ARMA(p,q)

1. Choose AR, MA, or ARMA
2. Choose p and q

Integrated Model/Series:
- Have a non staionary model that becomes stationary with differencing.

x <--- time series
- This is raw series
- Suppose it is not stationary

x.diff <- diff(x)
x.diff <- is stationary

x.diff <-- arma(p,q)
x <- Arima(p,1,q)

****
Establishing white noise-ness;
1. Normally distrubyted (shapiro test)

2. Dependency structure

3. Box - Jung test; tests for independence

Arima(2,1,1)
arma(2,1) on the differenced series

#Non-seasonal is Arima(0,1,1)

Seasonal component of the AutoRegressive

x(t) = x_t-52

****
AIC, BIC

1. Examine models where AIC and BIC are minimized.

2. Examine the residuals and see if they are white noise.

3. If the simpler model produce white noise residuals, then examine an even simpler model for WN residuals.

4. Write down the values of p and q.

Repeat for P and Q

sarima(p,1,q)(P,1,Q)
examine simpler models

5. Take a few models and compare them head to head on the test data

Raw series <- is not
Differenced series <- stationary

Arima(rawseries, order = c(p,1,q))

d = 1
D = 1

Find p,q, P, Q

Non-seasonal:
--> Find models where AIC/BIC in min.

--> Find simplest model that produces "well behaved residuals"

p*, q*

Seasonal:
Repeat procudure
p*,q*, vary P and Q

--> Find models where AIC/BIC in min.

--> Find simplest model that produces "well behaved residuals"

candidate model1 <- SARIMA(p*,1,q*)(P*,1,Q*),52

Find tuning:
Select simpler models, p*-1; q*-1

Collect all of the SARIMA models that produce well behaved residulals.

Conduct out of sample tests on the test-data.

Select the model with the lowest test error.

Tie-breaker: Simplicity