Assignment 12\_1

1. Perform the below given activities:

a. Take Apple Stock Prices from Yahoo Finance for last 90 days

b. Predict the Stock closing prices for next 15 days.

c. Submit your accuracy

d. After 15 days again collect the data and compare with your forecast

Answer:

df = read.csv('AAPL.csv')

df= read.csv(choose.files())

head(df)

str(df)

new\_date <- as.Date(df$Date)

new\_date

format(new\_date,format="%B %d %Y")

decompose(data) # default method is additive

decompose(data, type='multi')

par(mfrow=c(1,2))

plot(decompose(data, type='multi'))

library(forecast)

seasonplot(data)

lag(data,10)

lag.plot(data)

**# Calculation of Autocorrelation and Partial Autocorrelation**

**data**

**ac<-acf(data)**

**ac$acf**

**# data time series may not have stationarity**

**pac<-pacf(data)**

**pac$acf**

**# looking at the ACF and PACF graph we can conclude that the time series is not stationary**

**model <- lm(data~c(1:length(data)))**

**summary(model)**

**plot(resid(model),type='l')**

**tbl <- stl(data,'periodic')**

**stab<-seasadj(tbl)**

**seasonplot(stab,12)**

**library(tseries)**

**adf.test(data)**

**model2<-auto.arima(data)**

**accuracy(model2)**

**plot(forecast(model2,h=12))**

**adf.test(diff(data))**

**plot(diff(data))**

**diff(data,differences = 3)**

**#running a model on diff data**

**model3<-auto.arima(diff(data))**

**accuracy(model3)**

**acf(diff(data))**

**pacf(diff(data))**

**#taking random order**

**model4 <- Arima(diff(data),order=c(4,0,5))**

**model4**

**accuracy(model4)**

**model5 <- Arima(diff(data),order=c(4,0,4))**

**model5**

**accuracy(model5)**

**model6<-Arima(data,order=c(3,0,5))**

**model6**

**accuracy(model6)**

**model7<-Arima(diff(data),order=c(4,0,4))**

**model7**

**accuracy(model7)**

**model8<-Arima(diff(data),order=c(0,0,1))**

**model8**

**accuracy(model8)**

**model9<-Arima(diff(data),order=c(1,0,0))**

**model9**

**accuracy(model9)**

**model10<-Arima(diff(data),order=c(1,0,1))**

**model10**

**accuracy(model10)**

**model11<-Arima(diff(data),order=c(1,0,2))**

**model11**

**accuracy(model11)**

**model12<-Arima(diff(data),order=c(1,1,3))**

**model12**

**accuracy(model12)**

**# MAPE = mean absolute percentage error (should be < 10%) for a good model**

**par(mfrow=c(1,2))**

**plot(forecast(model5,h=12))**

**plot(log(data))**

**# Holt Winters Exponential Smoothing Model**

**# if series is stationary then use simple exponential smoothing model**

**model4<-HoltWinters(data,beta = F, gamma = F)**

**summary(model4)**

**model4**





