**R CODE FOR PREDICTING APPLE PRICES 15 DAYS AHEAD**

Apple.Price.Jun.Sep.Model <- read.csv("D:/kamagyana/Computing/DARET/Assignments/Apple-Price-Jun-Sep-Model.csv", stringsAsFactors=FALSE)

View(Apple.Price.Jun.Sep.Model)

Apple.Price.Jun.Sep.Predict <- read.csv("D:/kamagyana/Computing/DARET/Assignments/Apple-Price-Jun-Sep-Predict.csv", stringsAsFactors=FALSE)

View(Apple.Price.Jun.Sep.Predict)

app.mod <- Apple.Price.Jun.Sep.Model

app.pred <- Apple.Price.Jun.Sep.Predict

app.mod$Date <- as.Date(app.mod$Date)

str(app.mod)

app.pred$Date <- as.Date(app.pred$Date)

str(app.pred)

modeldata <- ts(app.mod$Close)

head(modeldata)

modeldata

plot(modeldata, main = "Daily Closing Prices")

library(tseries)

model1 <- lm(modeldata~c(1:length(modeldata)))

summary(model1)

plot(resid(model1), type = l)

plot(resid(model1), type = "l")

model2 <- auto.arima(modeldata)

plot(forecast(model2, h = 15))

accuracy(model2)

adf.test(diff(modeldata))

plot(diff(modeldata))

model3 <- auto.arima(diff(modeldata))

plot(forecast(model3, h = 15))

accuracy(model3)

acf(diff(modeldata))

pacf(diff(modeldata))

model4 <- Arima(diff(modeldata),order=c(3,0,0)))

model4 <- Arima(diff(modeldata),order=c(3,0,0))

summary(model4)

plot(forecast(model4, h = 15))

accuracy(model4)

accuracy(model3)

accuracy(model2)

accuracy(model1)

model5 <- Arima(modeldata, order = c(3,1,0))

pred1 <- predict(model5, n.ahead = 15)

ts.plot(modeldata,pred1$pred)

plot(pred1$pred,app.pred$Close)

pred1$pred <- as.numeric(pred1$pred)

predact <- cbind(pred1$pred, app.pred$Close)

predact <- as.data.frame(predact)

colnames(predact) <- c("predcited", "actual")

predact$time <- c(1:15)

head(predact)

library(reshape)

plotpred <- melt(predact, id.vars = "time")

library(ggplot2)

ggplot(plotpred, aes(x = time, y = value, colour = variable)) + geom\_line()

summary(pred1)

predact$predupper <- as.numeric(c((pred1$pred + pred1$se)))

predact$predlower <- as.numeric(c((pred1$pred - pred1$se)))

head(predact)

plotpred <- melt(predact, id.vars = "time")

ggplot(plotpred, aes(x = time, y = value, colour = variable)) + geom\_line()

forecast1 <- forecast(model4, h=15)

class(forecast1)

forecast1 <- as.numeric(forecast[,c(1:5)])

forecast1 <- as.data.frame(forecast1)

library(xts)

str(forecast1)

str(modeldata)

modeldata[6,11]

modeldatamat <- as.matrix(modeldata)

modeldatamat[66,1]

lastprice <- rep((modeldatamat[66,1]),5)

lastprice

forecast1

forecast1 <- rbind(lastprice, forecast1[1:nrow(forecast1), ])

colnames(forecast1)

forecast1[,"meanprice"] <- cumsum(forecast1$`Point Forecast`)

forecast1[,"lo80price"] <- cumsum(forecast1$)

forecast1[,"lo80price"] <- cumsum(forecast1$`Lo 80`)

forecast1[,"lo95price"] <- cumsum(forecast1$`Lo 95`)

forecast1[,"Hi80price"] <- cumsum(forecast1$`Hi 80`)

forecast1[,"Hi95price"] <- cumsum(forecast1$`Hi 95`)

head(forecast1)

predappprice <- forecast1[,c(6:10)]

predappprice

predappprice <- predappprice[-1,]

predappprice

predappprice$time <- c(1:15)

predappprice

plopredappprice <- melt(predappprice, id.vars = "time")

ggplot(plopredappprice, aes(x = time, y = value, colour = variable)) + geom\_line()

cbind(predappprice,predact$actual)

predappprice <- cbind(predappprice,predact$actual)

colnames(predappprice)[7] <- c("Actual")

predappprice

plopredappprice <- melt(predappprice, id.vars = "time")

ggplot(plopredappprice, aes(x = time, y = value, colour = variable)) + geom\_line()







