

#Script Name: dilip.k.lalwani\_HW08\_Script.R

#Location: C:\Users\dilip\Google Drive\FALL 2017 CLASSES\STAT 604\HW08

#Created by Dilip Lalwani

#Creation Date: 10/07/17

#Purpose: Practice working with higher level graphics

#Last executed: 10/10/17

Sys.time()

#housekeeping

objects()

ls()

rm(list=ls())

#1 Read BBY.csv file into data frame

bbydf<-read.csv("C:/Users/dilip/Google Drive/FALL 2017 CLASSES/STAT 604/HW08/BBY.csv")

#2 Define the pdf file

pdf("C:/Users/dilip/Google Drive/FALL 2017 CLASSES/STAT  
604/HW08/dilip.k.lalwani\_HW08\_output.pdf", width=11, height=8.5)#####

#3a Define alpha and N and assign value to alpha

N <- 30

alpha<-2/(1+N)

#3b Create vector with zeroes to contain EMA values

ema<-rep(0, length(bbydf\$Adj.Close))

#3c Calculate 30 day average and assign to the 30th member of the EMA vector

```
ema[N]<-mean(bbydf$Adj.Close[1:30])
```

#3d Use a loop to run the EMA formula repetitively from day 31 to the last day

```
ca<-c((N+1):length(ema))
for(i in ca){
  ema[i]=(bbydf$Adj.Close[i] *alpha)+(ema[i-1]*(1-alpha))
}
```

#3e Set bgcolor and plot a line showing last 260 EMA values

```
par(bg = 'grey90')
plot(1:260, ema[(length(ema)-259):length(ema)], type="l", col="blue", ylim=c(0,65), main=paste(N, "Day
EMA and Daily Stock Prices"), xlab="Days", ylab="Adjusted Closing Price")
```

#3f Add the EMA formula

```
text(0, 2, bquote(paste('EMA'[i], " = ", "(",'P'[i] %*% alpha, ")", " + ", "(",'EMA'[i-1] %*% "(" ,1 - alpha, ")")
where ", alpha, " = ", frac(2,1+.(N)), sep="")), col="black", adj=0)
```

#3g Adding yellow line for actual adjusted closing prices for last 260 days

```
lines(1:260, bbydf$Adj.Close[(length(bbydf$Adj.Close)-259):length(bbydf$Adj.Close)], col="yellow")
```

#4 Create function

```
gplot<-function(vardf, N=30, ylimit=65){
  alpha<-2/(1+N)
  ema<-rep(0, length(vardf))
  ema[N]<-mean(vardf[1:30])
  ca<-c((N+1):length(ema))
  for(i in ca){
    ema[i]=(vardf[i] *alpha)+(ema[i-1]*(1-alpha))
  }
```

```

par(bg = 'grey90')

plot(1:260, ema[(length(ema)-259):length(ema)], type="l", col="blue", ylim=c(0,65), main=paste(N, "Day
EMA and Daily Stock Prices"), xlab="Days", ylab="Adjusted Closing Price")

text(0, 2, bquote(paste('EMA'[i], " = ", "(" , 'P'[i] %*% alpha, ")", " + ", "(" , 'EMA'[i-1] %*% "(" , 1 - alpha, ")")
where " , alpha, " = ", frac(2,1+.(N)), sep="")), col="black", adj=0)

lines(1:260, vardf[(length(vardf)-259):length(vardf)], col="yellow")

}

```

#5 Set margins

```

par(mfcol=c(1,2))

par(omi=c(0.5,0.5,1.5,0.5))

par(mar=c(4,4,2,0))

```

#6 Creating graphs by calling function

```

gplot(bbydf$Adj.Close)

gplot(bbydf$Adj.Close, 100)

```

#7 System time at the bottom

```

mtext(Sys.time(),adj = 0, side = 1, outer = TRUE)

dev.off()

```