S&P 500 Volatility

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## Assignment 11

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Submit a HTML or WORD file with the github link that contains codes and markdown document, which shows the result. I will look through your HTML/Word file to check out the code and its result. Then, I will check out github link to see if you have a code(s) and markdown document

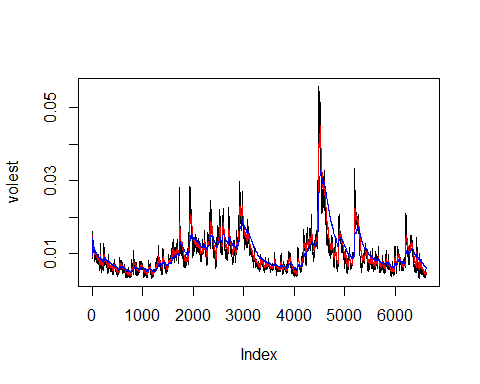
Link to GitHub page <https://github.com/tuttlen/SP500Volatility.git>

Link to RMarkdown <https://github.com/tuttlen/SP500Volatility/blob/master/NTuttle_Livesession11assignment.rmd>

source("SP500.r")

## Warning: package 'tseries' was built under R version 3.3.3

## S&P 500 (^GSPC)  
### SNP - SNP Real Time Price. Currency in USD  
  
# TODO: Download the data of SP500 '^gspc'.  
SNPdata <- get.hist.quote("^GSPC",quote="Close")  
  
# TODO: Calculate the log returns, which is the subtractration of log(lag(SNPdata)) and log(SNPdata)  
SNPret <- log(lag(SNPdata)) - log(SNPdata)  
  
# TODO: Calculate volatility measure that is to multiply sd(SNPret),sqrt(250), 100  
SNPvol <- sd(SNPret)\*sqrt(250)\*100  
  
  
# Calculate volatility over entire length of series for various three different decay factors: 10 30. 100  
  
# TODO: call getVol function with the parameters: 10,SNPret  
volest <- getVol(10,SNPret)  
  
# TODO: call getVol function with the parameters: 30,SNPret  
volest2 <- getVol(30,SNPret)  
  
# TODO: call getVol function with the parameters: 100,SNPret  
volest3 <- getVol(100,SNPret)  
  
# Plot the results, overlaying the volatility curves on the data, just as was done in the S&P example.  
plot(volest,type="l")  
  
# TODO: Add connected line segments for volest2 with the parameters: type="l",col="red"  
# hint: look at oilExerciseCode.R file at the live discussion  
lines(volest2, col="red", type="l")  
  
# TODO: Add connected line segments for volest3 with the parameters: type="l",col="blue"  
lines(volest3, col="blue", type="l")



# Discussion

In the above plot we see that with 20 degrees of decay there is very little deviation. However, for decay of 30 the blue line leads the index by a certain amount ....