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# Read a file, from working directory, with labels in the first line
setwd("D:") # Careful: OK if file in drive D: (e.g. USB)
setwd("C:/Users/fabru/Desktop/cina24/files") # for me
all=read.table("cina24-walmart.txt", header=TRUE)
attach(all) # Call WMART a column of data instead of all$WMART
head(all) # Shows the first lines in the file
# Define data in WMART as time series object, starting at 2/1978
# frequency of 12 as number of observations per unit of time (year)
wmart=ts(data=WMART, start=c(1978,2),frequency=12)
ts.plot(wmart,col="blue",lwd="2",ylab="Walmart Returns",
main="Monthly Walmart Returns Feb 1978-Dec 1987")
mean(wmart); sd(wmart); 1/(sd(wmart))^2

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a=2;b=5;N=10000 # Try others, e.g. a=0;b=0
muN=rep(0,N+1) # R starts from 1; muN[1] initial value
tauN=rep(0,N+1)
tauN[1]=100 # First element cannot be 0
meanW=mean(WMART); lenW=length(WMART)
library(LaplacesDemon) # Needed for rnormp (Gaussian with precision)
for (i in 1:N) {muN[i+1]=rnormp(1,meanW,lenW*tauN[i]);
tauN[i+1]=rgamma(1,a+lenW/2, b+sum((WMART-muN[i+1])^2)/2)}
mean(muN);mean(WMART);mean(tauN);1/var(WMART)
par(mfrow=c(2,1))
hist(muN);hist(tauN)
plot(density(muN));plot(density(tauN))
meanM=rep(0,N+1);meanT=rep(0,N+1)
for (i in 1:(N+1)) {meanM[i]=mean(muN[1:i]); meanT[i]=mean(tauN[1:i])}
plot(meanM[(N/2):(N+1)],type='l');plot(meanT[(N/2):(N+1)],type='l')

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