Time Series Analysis

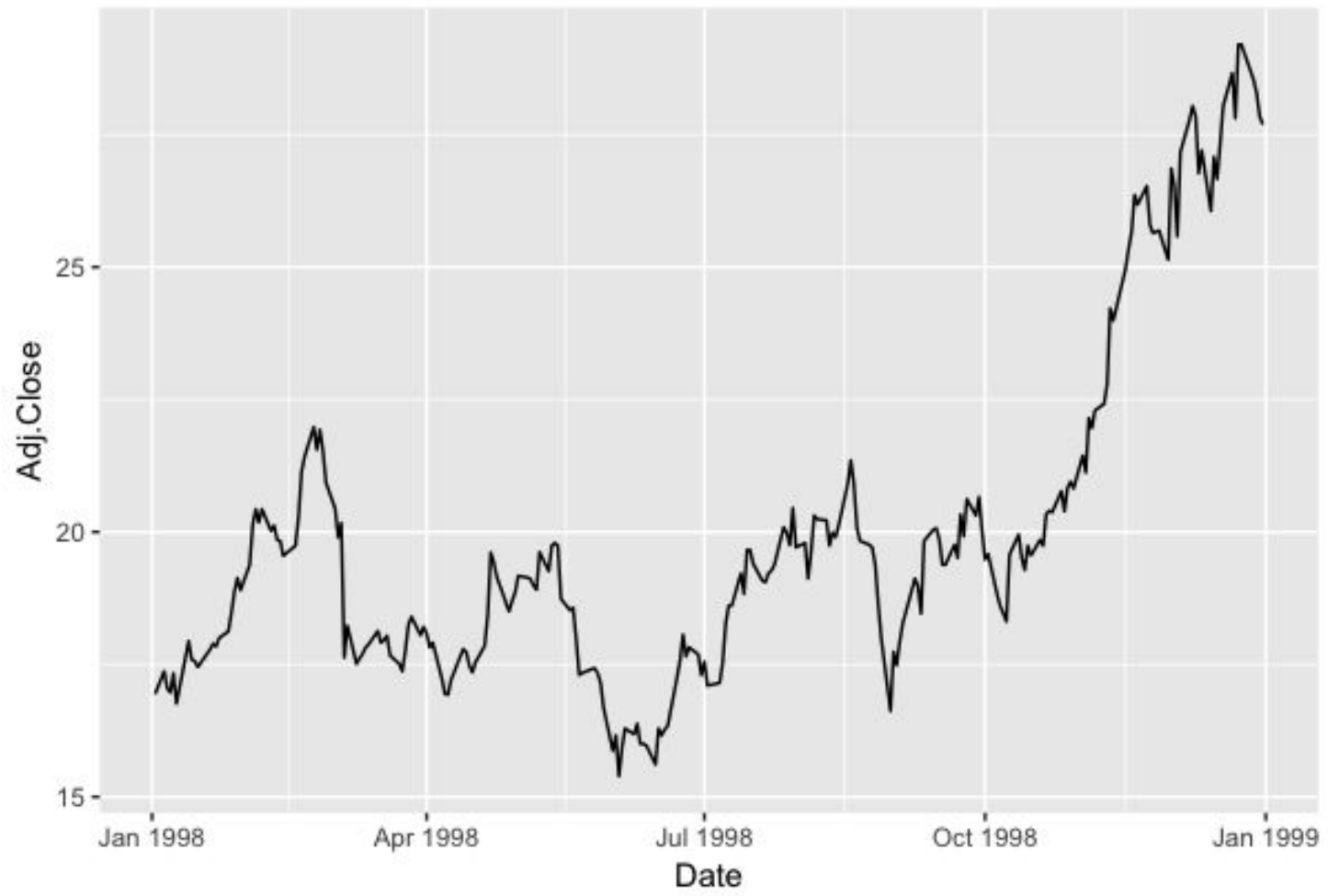
Packages

loadPkg("fBasics")

loadPkg("ggplot2")

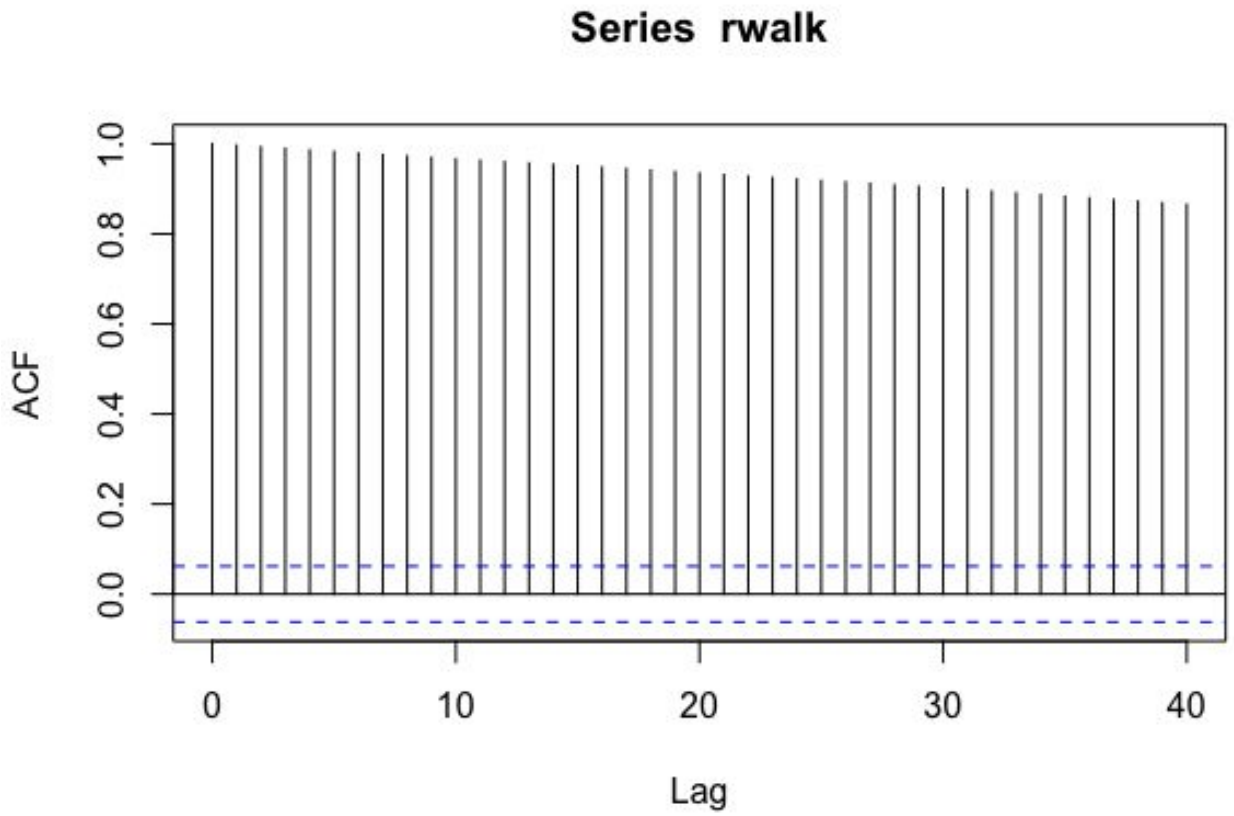
Time Plot

- intel = read.csv("intel-1998.csv")
- head(intel)
- intel$Date = as.Date(intel$Date, "%m/%d/%Y")



Lag-correlation Plot

- rwalk = cumsum(rnorm(1000, 0, .1))
- plot(rwalk, type="l")
- acf(rwalk, lag.max = 40)



Rate of Return

```
amd = read.csv("AMD.csv")

amdDiff = abs(diff(amd$Adj.Close))

amdReturns =
diff(amd$Adj.Close)/amd$Adj.Close[-length(a
md$Adj.Close)]
```

Normality Statisticst

mean(sibm)

var(sibm)

sd(sibm)

skewness(sibm)

kurtosis(sibm)

T-statistic & P Value

```
s1 = skewness(sibm)
t1 = s1/sqrt(6/9845)  # Compute t-statistic
t1
pv = 2*(1-pnorm(t1))  # compute p-value
pv
```

Log Return

libm = log(ibm + 1)

Moving Average

```
f20 = rep(1/20, 20)  # this gives us 20 entries
that are each 1/20 = .05

f20

mAve = filter(intel$Adj.Close, f20, sides=1)

mAve
```

White Noise

```
whitenoise = rnorm(1000, 0, .1)

plot(whitenoise, type="l")
```

Random Walk

```
a = rnorm(1000, 0, .1)

plot(a, pch=16, cex=.2)


rwalk = cumsum(a)

plot(rwalk, type="l")
```