# Analyzing_Stock_Data

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## I will be analyzing stock data from googl and tsla

## R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
library(quantmod)
```

```
## Loading required package: xts
```

```
## Loading required package: zoo
```

```
##
## Attaching package: 'zoo'
```

```
## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric
```

```
## Loading required package: TTR
```

```
## Registered S3 method overwritten by 'quantmod':
##   method            from
##   as.zoo.data.frame zoo
```

```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.6     v purrr   0.3.4
## v tibble  3.1.7     v dplyr   1.0.9
## v tidyr   1.2.0     v stringr 1.4.0
## v readr   2.1.2     v forcats 0.5.1
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::first()  masks xts::first()
## x dplyr::lag()    masks stats::lag()
## x dplyr::last()   masks xts::last()
```

```
tsla <- getSymbols("TSLA", auto.assign = F)
googl <- getSymbols("Googl", auto.assign = FALSE)
head(tsla)
```

```
##            TSLA.Open TSLA.High TSLA.Low TSLA.Close TSLA.Volume TSLA.Adjusted
```

```
## 2010-06-29     3.800     5.000    3.508      4.778    93831500         4.778
## 2010-06-30     5.158     6.084    4.660      4.766    85935500         4.766
## 2010-07-01     5.000     5.184    4.054      4.392    41094000         4.392
## 2010-07-02     4.600     4.620    3.742      3.840    25699000         3.840
## 2010-07-06     4.000     4.000    3.166      3.222    34334500         3.222
## 2010-07-07     3.280     3.326    2.996      3.160    34608500         3.160
```

```
head(googl)
```

```
##            GOOGL.Open GOOGL.High GOOGL.Low GOOGL.Close GOOGL.Volume
## 2007-01-03   233.2332   238.5686  230.7858    234.0290     15397587
## 2007-01-04   234.7347   242.2172  234.4094    241.8719     15759425
## 2007-01-05   241.4915   243.9940  239.2943    243.8388     13730456
## 2007-01-08   244.0891   245.1802  241.3413    242.0320      9499291
## 2007-01-09   242.9680   244.3694  240.8408    242.9930     10752037
## 2007-01-10   242.4575   247.0220  241.2613    244.9750     11925063
##            GOOGL.Adjusted
## 2007-01-03       234.0290
## 2007-01-04       241.8719
## 2007-01-05       243.8388
## 2007-01-08       242.0320
## 2007-01-09       242.9930
## 2007-01-10       244.9750
```

### now we need to get the closing cost of each stock

```
tsla_cl <- tsla$TSLA.Close
head(tsla_cl)
```

```
##            TSLA.Close
## 2010-06-29      4.778
## 2010-06-30      4.766
## 2010-07-01      4.392
## 2010-07-02      3.840
## 2010-07-06      3.222
## 2010-07-07      3.160
```

```
googl_cl <-googl$GOOGL.Close
head(googl_cl)
```

```
##            GOOGL.Close
## 2007-01-03    234.0290
## 2007-01-04    241.8719
## 2007-01-05    243.8388
## 2007-01-08    242.0320
## 2007-01-09    242.9930
## 2007-01-10    244.9750
```

```
tsla_cl2 <-Ad(tsla)
head(tsla_cl2)
```

```
##            TSLA.Adjusted
## 2010-06-29         4.778
## 2010-06-30         4.766
## 2010-07-01         4.392
## 2010-07-02         3.840
```

```
## 2010-07-06         3.222
## 2010-07-07         3.160
```

### now we will calculate the daily percent change

```
head(Lag(tsla_cl, 2))
```

```
##            Lag.2
## 2010-06-29    NA
## 2010-06-30    NA
## 2010-07-01 4.778
## 2010-07-02 4.766
## 2010-07-06 4.392
## 2010-07-07 3.840
```

```
head(Lag(googl_cl, 2))
```

```
##               Lag.2
## 2007-01-03       NA
## 2007-01-04       NA
## 2007-01-05 234.0290
## 2007-01-08 241.8719
## 2007-01-09 243.8388
## 2007-01-10 242.0320
```

### remove scientific notation

```
options(scipen = 9999)
```

### create daily change vector

```
Daily_change_tsla <- tsla_cl/Lag(tsla_cl, 1) -1
Daily_change_googl <- googl_cl/Lag(googl_cl, 1) -1
head(Daily_change_tsla)
```

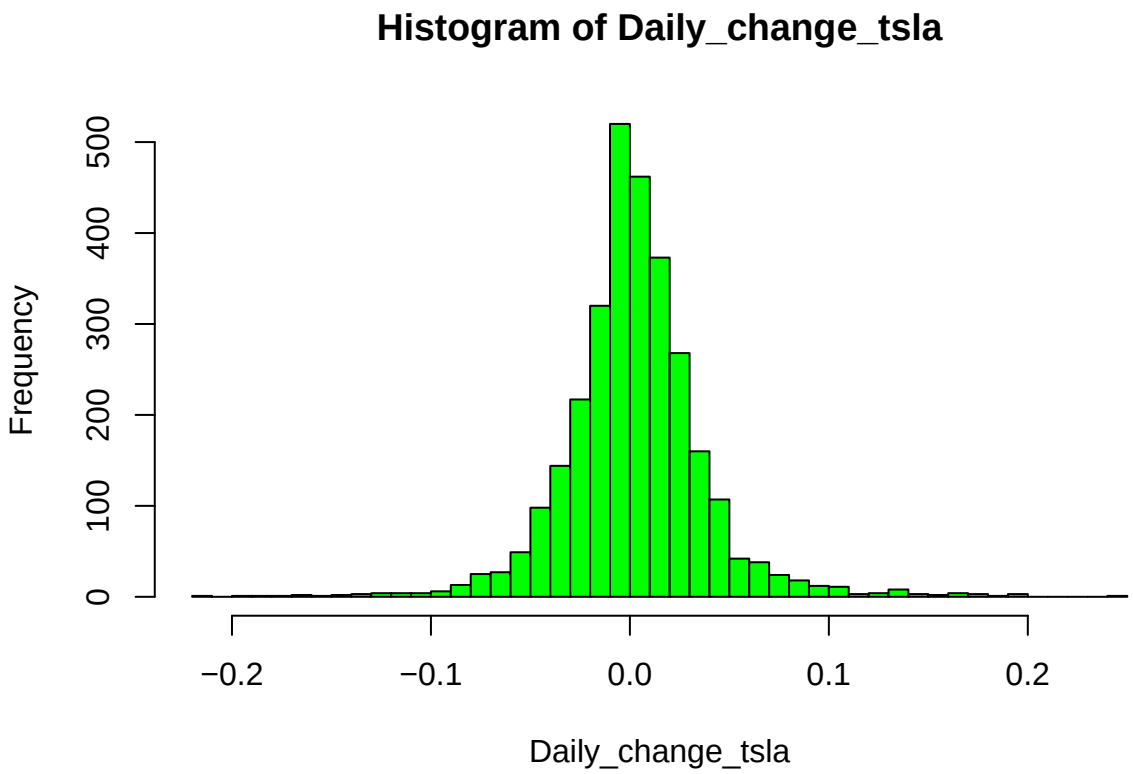
```
##              TSLA.Close
## 2010-06-29           NA
## 2010-06-30 -0.002511511
## 2010-07-01 -0.078472514
## 2010-07-02 -0.125683060
## 2010-07-06 -0.160937500
## 2010-07-07 -0.019242706
```

```
head(Daily_change_googl)
```

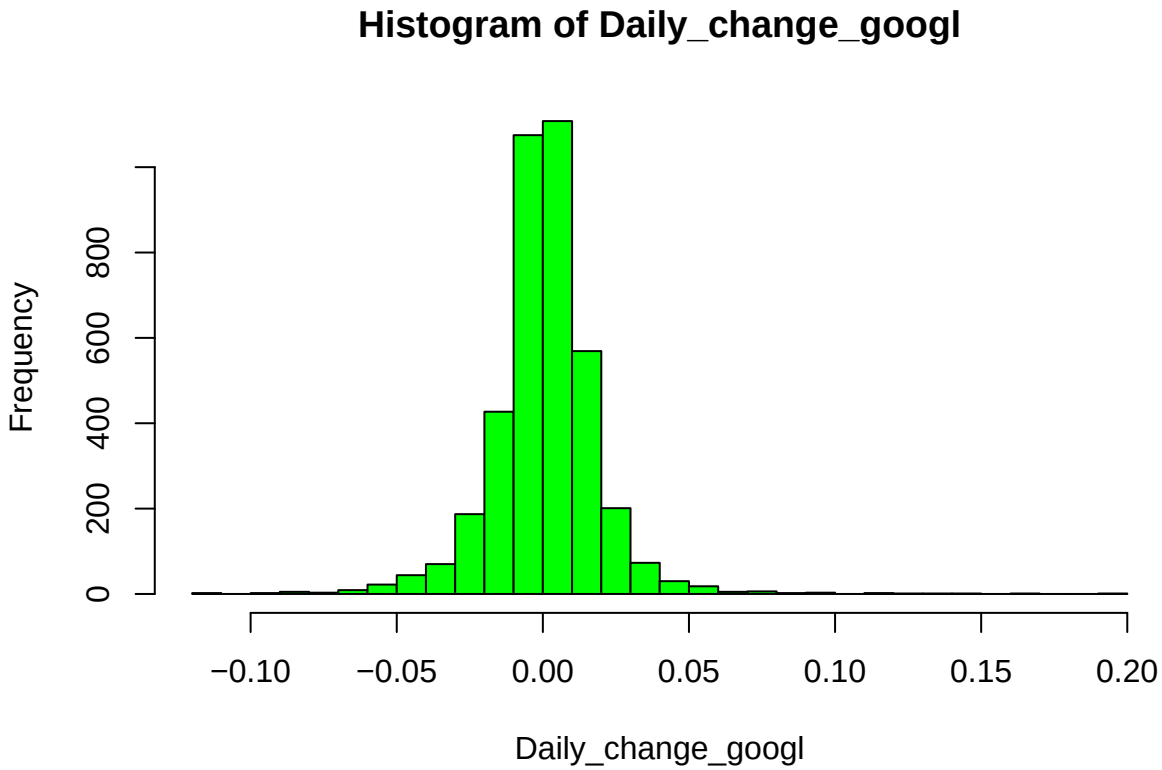
```
##             GOOGL.Close
## 2007-01-03           NA
## 2007-01-04  0.033512297
## 2007-01-05  0.008132260
## 2007-01-08 -0.007409849
## 2007-01-09  0.003970417
## 2007-01-10  0.008156531
```

**create histogram**

```
hist(Daily_change_tsla, 40, col = "green")
```




```
hist(Daily_change_googl, 40, col = "green")
```




## cre-

ate_buy signal

```
buy_signal <- .04
buy_signal2 <- .02
```

### Loop over all trading days ( except the first)

```
##buy_signal == parameter
##tsla_cl == Data
##Daily_change == % change
##signal == 1 or 0 buy/sell
signal <- c(NULL)
signalg <- c(NULL)
for(i in 2:length(googl_cl)){
  if(Daily_change_googl[i] > buy_signal2){
    signalg[i] <- 1
  } else
    signalg[i] <- 0
}

for(i in 2:length(tsla_cl)){
  if(Daily_change_tsla[i] > buy_signal){
    signal[i] <- 1
  } else
    signal[i] <- 0
}
head(signal, 40)
```

```
##  [1] NA  0  0  0  0  0  1  0  0  1  1  0  0  1  0  0  0  0  0  0  0  0  0  1  1
## [26]  0  0  0  0  0  0  0  1  0  0  0  0  0  1  0
```

```
head(signalg, 40)
```

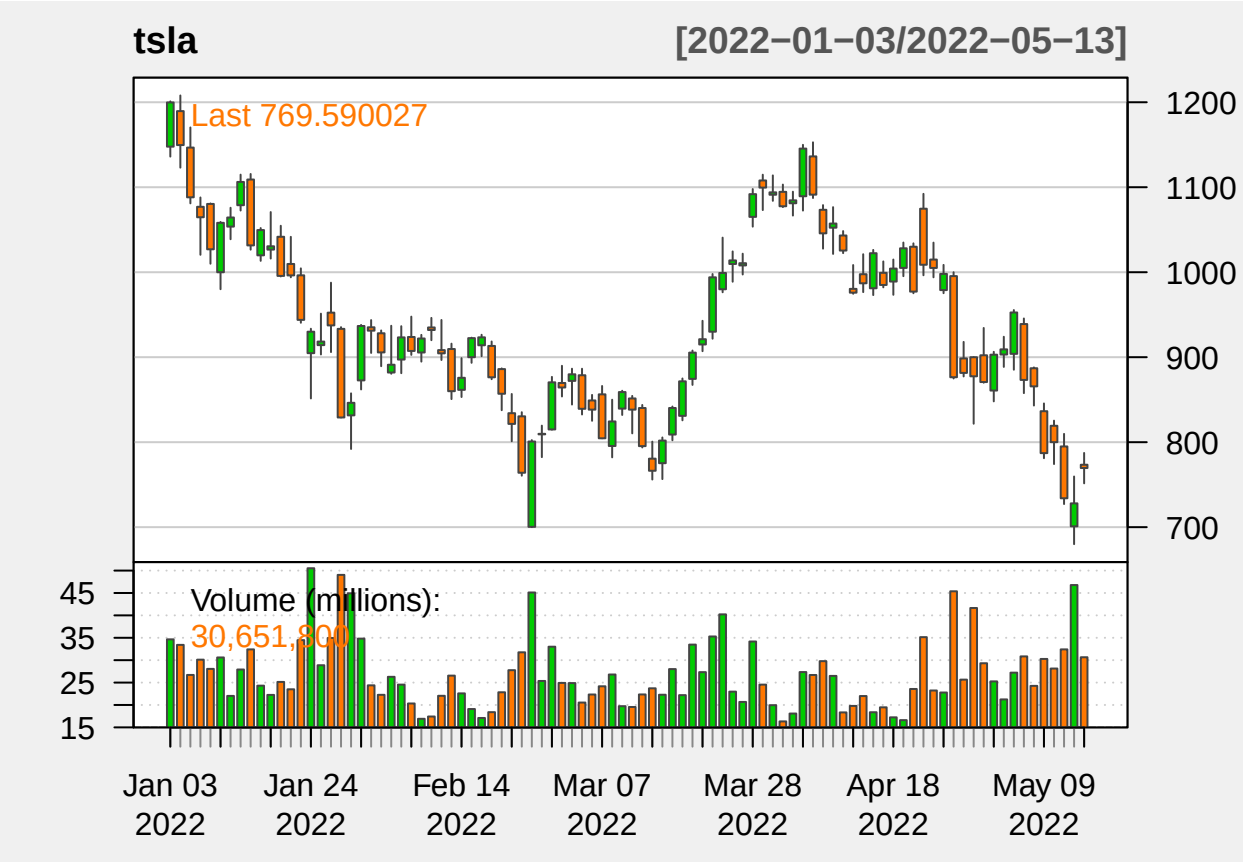
```
##  [1] NA  1  0  0  0  0  1  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0
## [26]  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

### reclassify signal to ans xts object(tying it to date)

```
signalt <- reclass(signal, tsla_cl)
head(signalt)
```

```
##            [,1]
## 2010-06-29   NA
## 2010-06-30    0
## 2010-07-01    0
## 2010-07-02    0
## 2010-07-06    0
## 2010-07-07    0
```

Stock_Charts




## Googl_chart

```
chartSeries(googl, "bar" = "line", subset = "2022-01::2022-05", theme = chartTheme("white"))
```


Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.