Stock Market with quantmod

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For this R Notebook, I will follow the tutorial and create a visualization plot for Facebook, and we are going to compare the stock prices change for few other companies.

```
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
```

```
## Version 0.4-0 included new data defaults. See ?getSymbols.
```

```
library(magrittr)
```

```
start <- as.Date("2020-02-01")
end <- as.Date("2020-06-01")
getSymbols("FB", src = "yahoo", from = start, to = end)
```

```
## 'getSymbols' currently uses auto.assign=TRUE by default, but will
## use auto.assign=FALSE in 0.5-0. You will still be able to use
## 'loadSymbols' to automatically load data. getOption("getSymbols.env")
## and getOption("getSymbols.auto.assign") will still be checked for
## alternate defaults.
##
## This message is shown once per session and may be disabled by setting
## options("getSymbols.warning4.0"=FALSE). See ?getSymbols for details.
```

```
## [1] "FB"
```

```
class(FB)
```

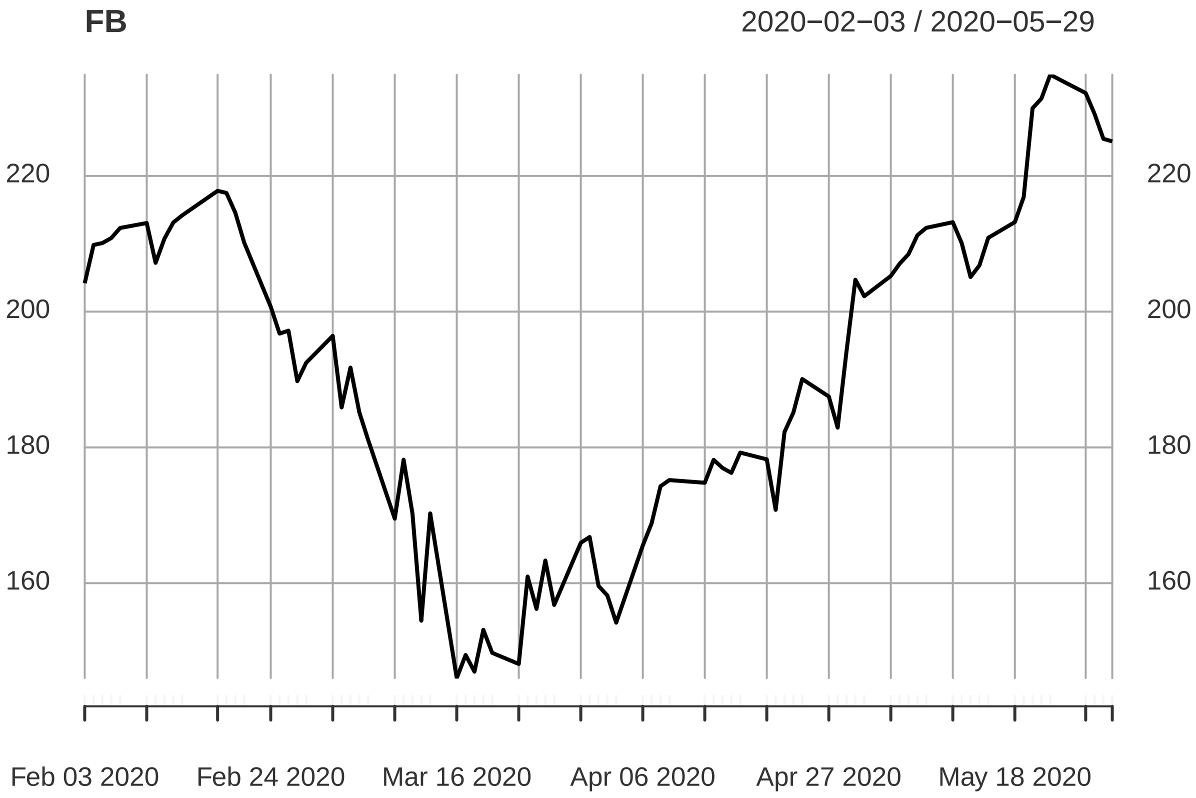
```
## [1] "xts" "zoo"
```

```
head(FB)
```

```
##            FB.Open FB.High FB.Low FB.Close FB.Volume FB.Adjusted
## 2020-02-03  203.44  205.14 202.50   204.19  15510500      204.19
## 2020-02-04  206.62  210.60 205.20   209.83  19628900      209.83
## 2020-02-05  212.51  212.73 208.71   210.11  12538200      210.11
## 2020-02-06  210.47  211.19 209.34   210.85  10567500      210.85
## 2020-02-07  210.30  212.82 209.93   212.33  12242500      212.33
## 2020-02-10  211.52  213.80 210.66   213.06  11856400      213.06
```

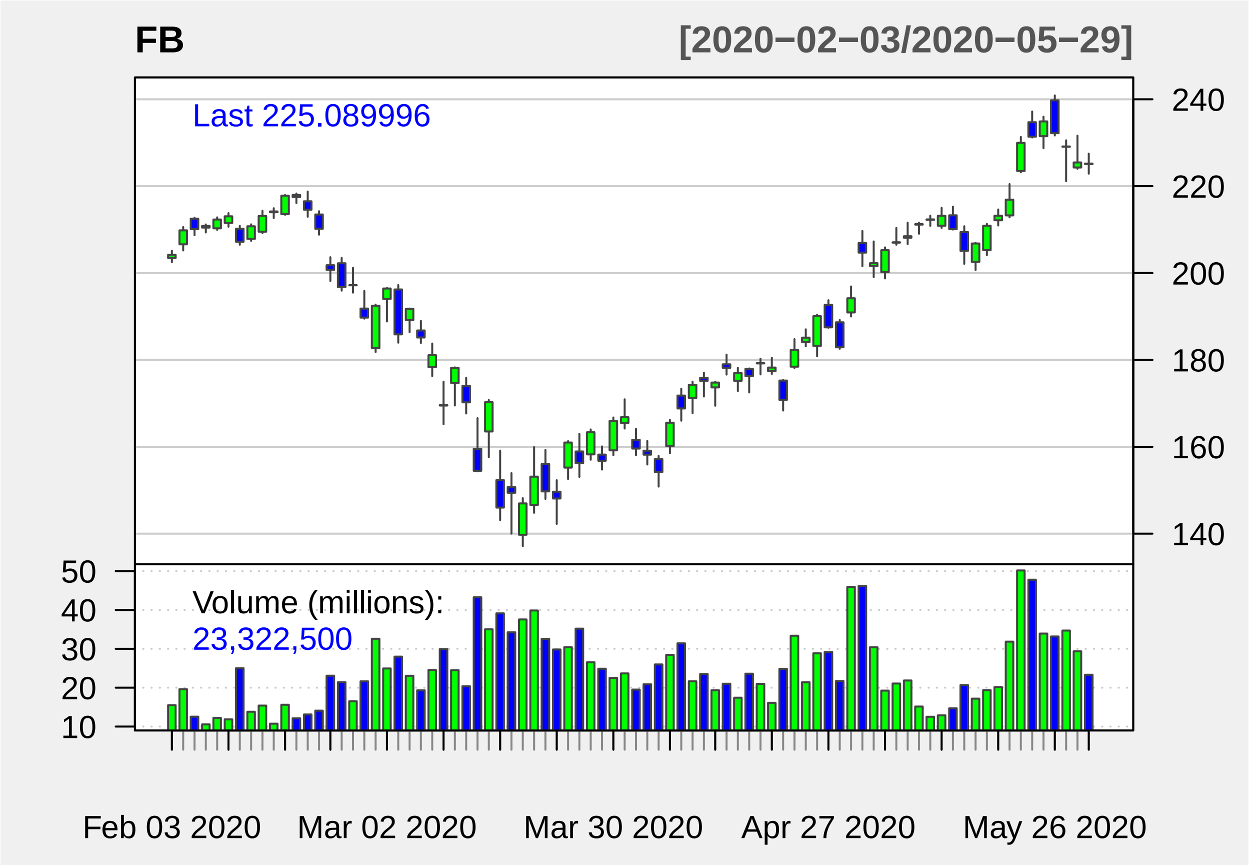
Next we need to visualize the dataset

```
plot(FB[, "FB.Close"], main = "FB")
```



Scatter plot is fine but financial data is often plotted by a Japanese candlestick plot, here we go:

```
candleChart(FB, up.col = "green", dn.col = "blue", theme = "white")
```



Then we can compare with other famous companies in the US. For instance, Boeing, Google and Amazon.

```
getSymbols(c("BA", "GOOG", "AMZN"), src = "yahoo", from = start, to = end)
```

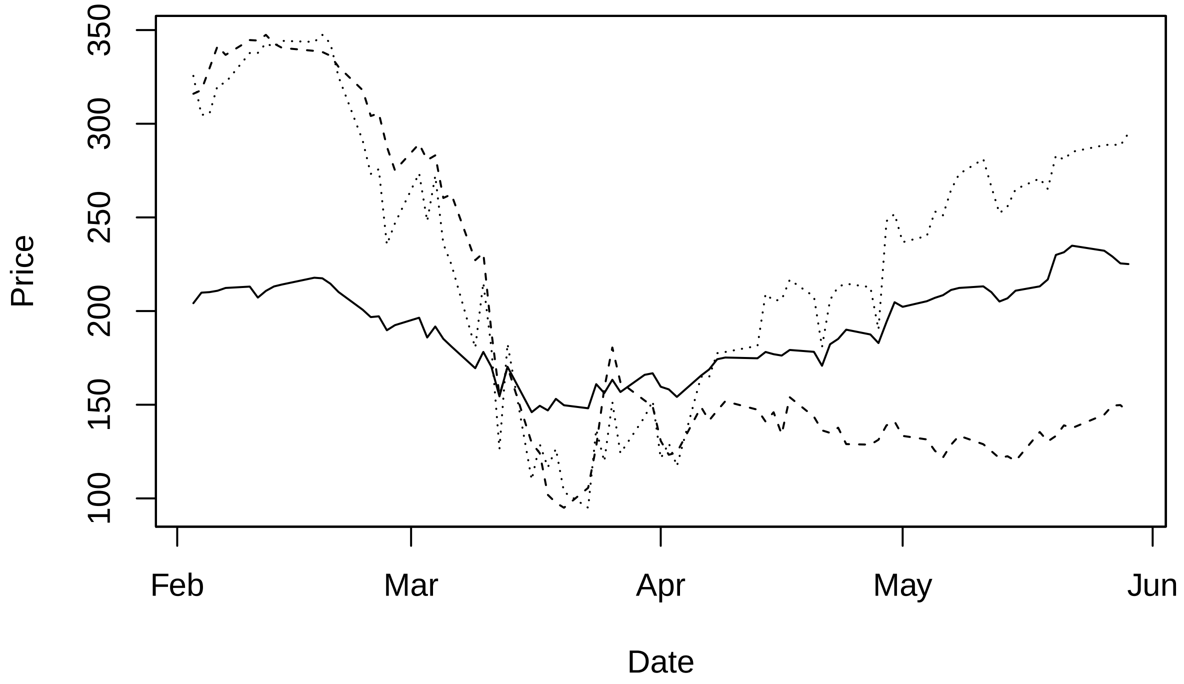
```
## [1] "BA"   "GOOG" "AMZN"
```

```
stocks <- as.xts(data.frame(FB = FB[, "FB.Close"], BA = BA[, "BA.Close"], GOOG = GOOG[, "GOOG.Close"], 
```

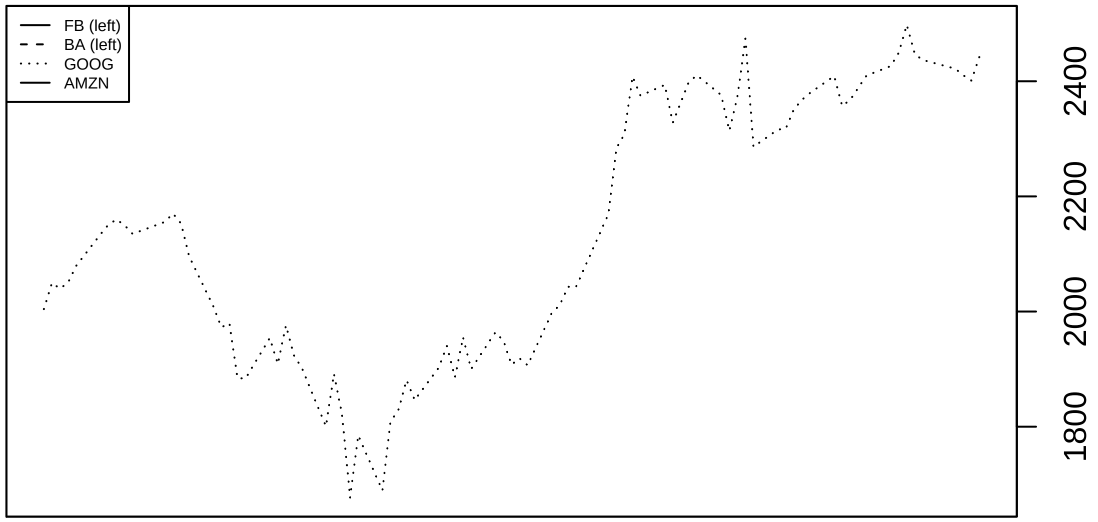
```
head(stocks)
```

```
##            FB.Close BA.Close GOOG.Close AMZN.Close
## 2020-02-03   204.19   316.00    1485.94    2004.20
## 2020-02-04   209.83   317.94    1447.07    2049.67
## 2020-02-05   210.11   329.55    1448.23    2039.87
## 2020-02-06   210.85   341.43    1476.23    2050.23
## 2020-02-07   212.33   336.75    1479.23    2079.28
## 2020-02-10   213.06   344.67    1508.68    2133.91
```

```
plot(as.zoo(stocks[, c("FB.Close", "BA.Close")]), screens = 1, lty = 1:2,
    xlab = "Date", ylab = "Price")
par(new = TRUE)
plot(as.zoo(stocks[, "GOOG.Close"]), screens = 1, lty = 3, xaxt = "n", yaxt = "n",
    xlab = "", ylab = "")
```



```
plot(as.zoo(stocks[, "AMZN.Close"]), screens = 1, lty = 3, xaxt = "n", yaxt = "n",
    xlab = "", ylab = "")
axis(4)
mtext("Price", side = 4, line = 3)
legend("topleft", c("FB (left)", "BA (left)", "GOOG", "AMZN"), lty = 1:3, cex = 0.5)
```



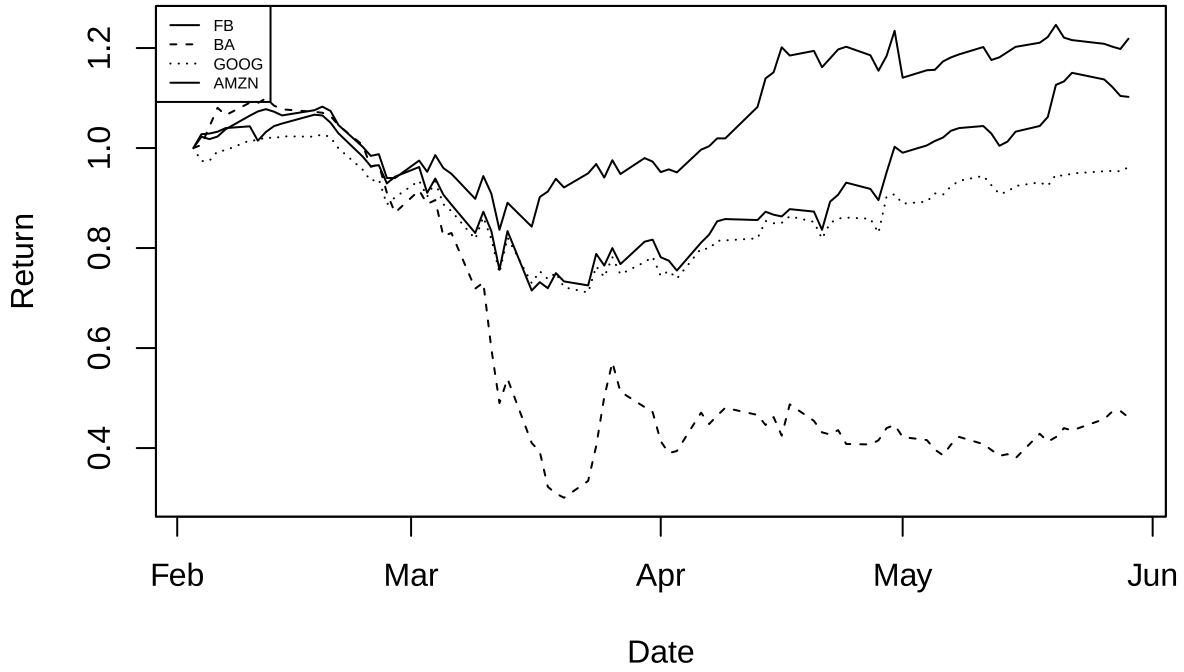
Due to Google's stock prices are way too higher than others, so R creates another graph for Google.

```
stock_return = apply(stocks, 1, function(x) {x / stocks[1,]}) %>%
                                    t %>% as.xts

head(stock_return)
```

```
##            FB.Close BA.Close GOOG.Close AMZN.Close
## 2020-02-03 1.000000 1.000000  1.0000000   1.000000
## 2020-02-04 1.027621 1.006139  0.9738415   1.022687
## 2020-02-05 1.028993 1.042880  0.9746221   1.017798
## 2020-02-06 1.032617 1.080475  0.9934654   1.022967
## 2020-02-07 1.039865 1.065665  0.9954844   1.037461
## 2020-02-10 1.043440 1.090728  1.0153035   1.064719
```

```
plot(as.zoo(stock_return), screens = 1, lty = 1:3, xlab = "Date", ylab = "Return")
legend("topleft", c("FB", "BA", "GOOG", "AMZN"), lty = 1:3, cex = 0.5)
```


FB
BA
GOOG
AMZN
Return
1.2
1.0
0.8
0.6
0.4
Feb
Mar
Apr
May
Jun
Date