stock data testing

Derien Weatherspoon

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Packages

```
library(quantmod)
library(ggplot2)
library(BatchGetSymbols)
```

```
tickers <- c('JXN', 'LNC', 'VOYA') # assign ticker symbols
getSymbols(tickers , src='yahoo') # pull from yahoo, openly available
```

```
## [1] "JXN"  "LNC"  "VOYA"
```

```
summary(`JXN`) # peek at JXN to see if read in correctly
```

```
##       Index               JXN.Open        JXN.High        JXN.Low
##  Min.   :2021-09-01   Min.   :24.00   Min.   :24.47   Min.   :22.29
##  1st Qu.:2022-04-04   1st Qu.:30.73   1st Qu.:31.75   1st Qu.:30.36
##  Median :2022-11-04   Median :35.78   Median :36.46   Median :35.13
##  Mean   :2022-11-06   Mean   :36.16   Mean   :36.89   Mean   :35.54
##  3rd Qu.:2023-06-10   3rd Qu.:40.55   3rd Qu.:41.48   3rd Qu.:39.83
##  Max.   :2024-01-12   Max.   :52.32   Max.   :53.00   Max.   :51.76
##    JXN.Close       JXN.Volume        JXN.Adjusted
##  Min.   :23.78   Min.   :  170700   Min.   :21.44
##  1st Qu.:31.07   1st Qu.:  701000   1st Qu.:28.94
##  Median :35.79   Median :  922400   Median :33.26
##  Mean   :36.23   Mean   : 1245497   Mean   :33.69
##  3rd Qu.:40.56   3rd Qu.: 1269050   3rd Qu.:37.74
##  Max.   :52.57   Max.   :15028400   Max.   :52.57
```

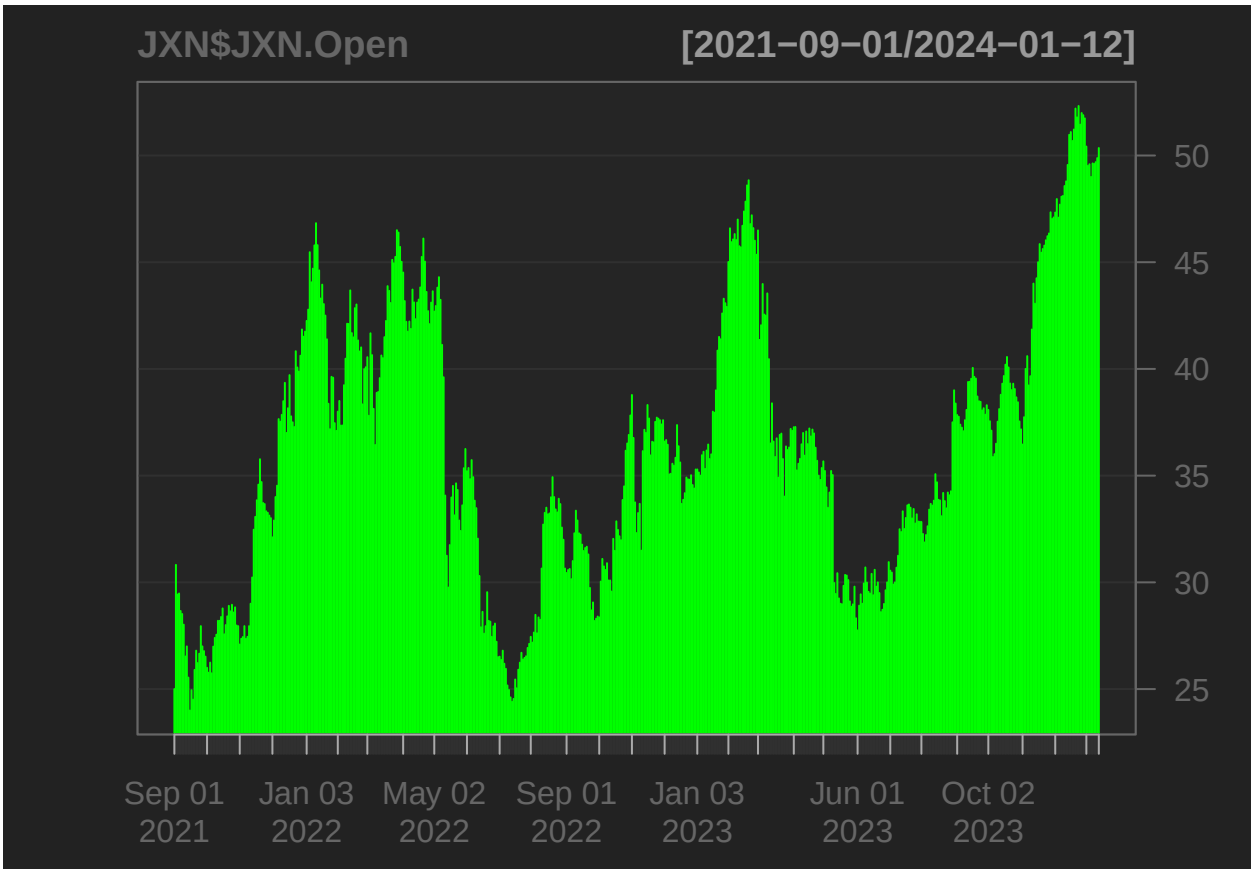
```
JXN <- as.xts(`JXN`) # make it a time series variation to use the dates
names(JXN) <- c("JXN.Open","JXN.High","JXN.Low","JXN.Close","JXN.Volume", "JXN.Adjusted") # set vector
names(JXN)
```

```
## [1] "JXN.Open"     "JXN.High"     "JXN.Low"      "JXN.Close"    "JXN.Volume"
## [6] "JXN.Adjusted"
```

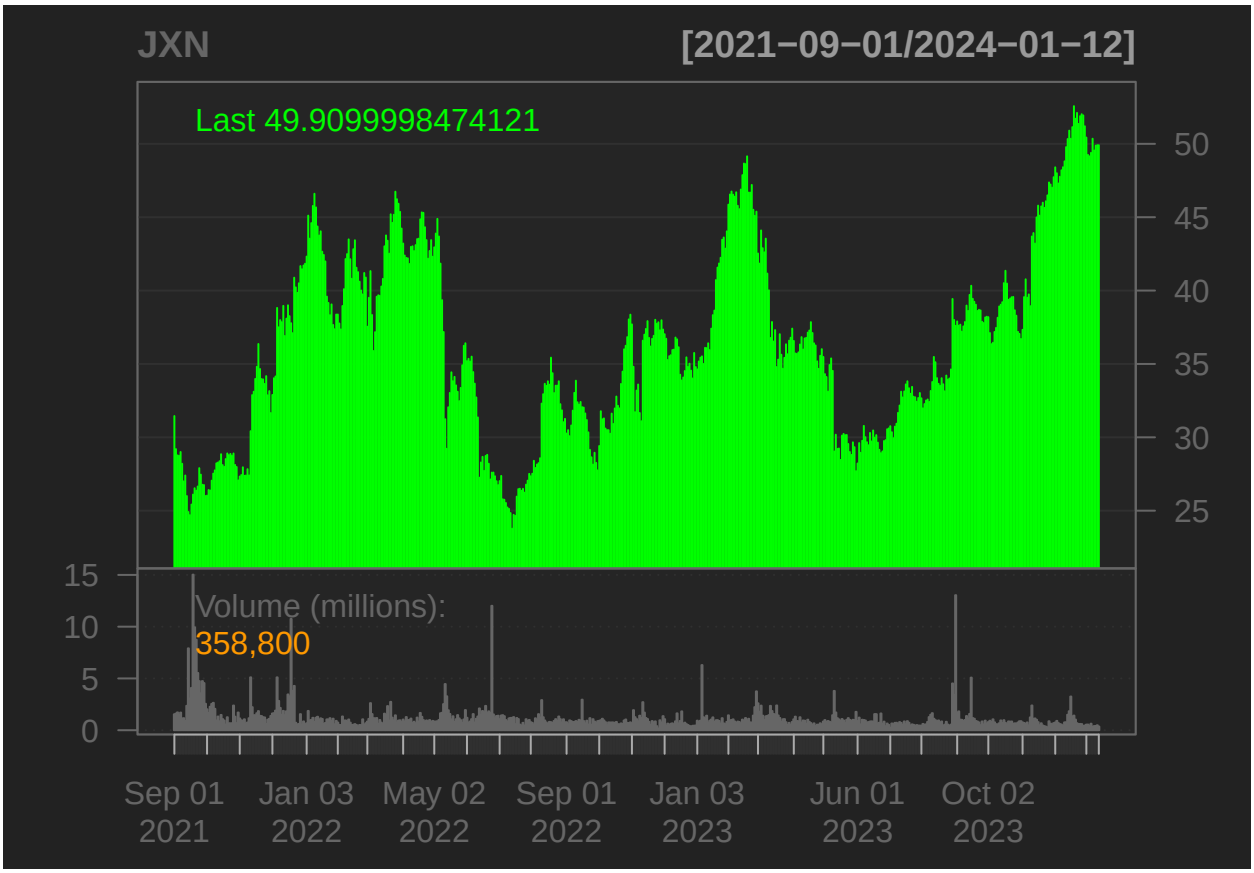
Plotting a lot of stock data

```r
plot(JXN$JXN.Open) # basic plotting of JXN.Open
```


```r
lineChart(JXN$JXN.Open, line.type = 'h', theme = 'black', TA = NULL)
```

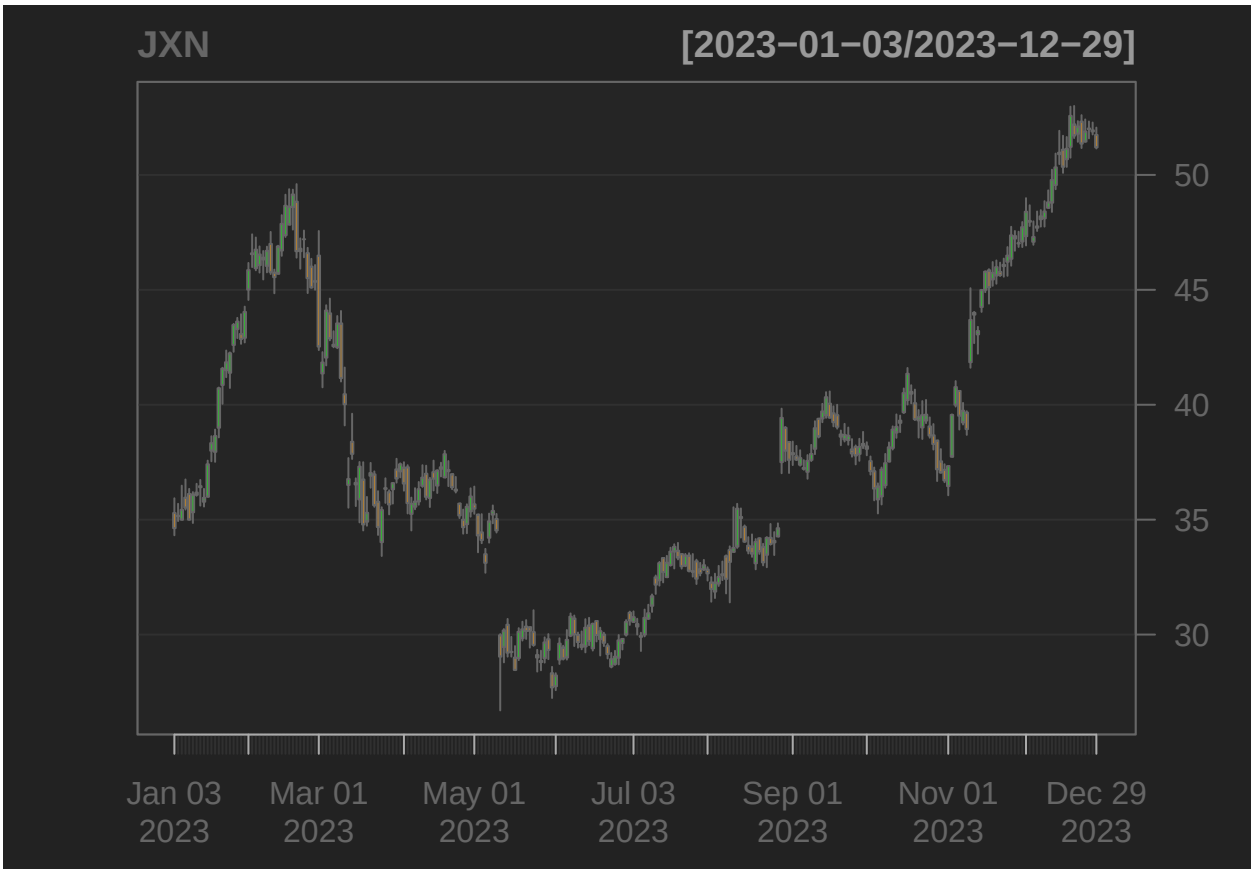



```
lineChart(JXN, line.type = 'h', theme = 'black') # showing volume
```

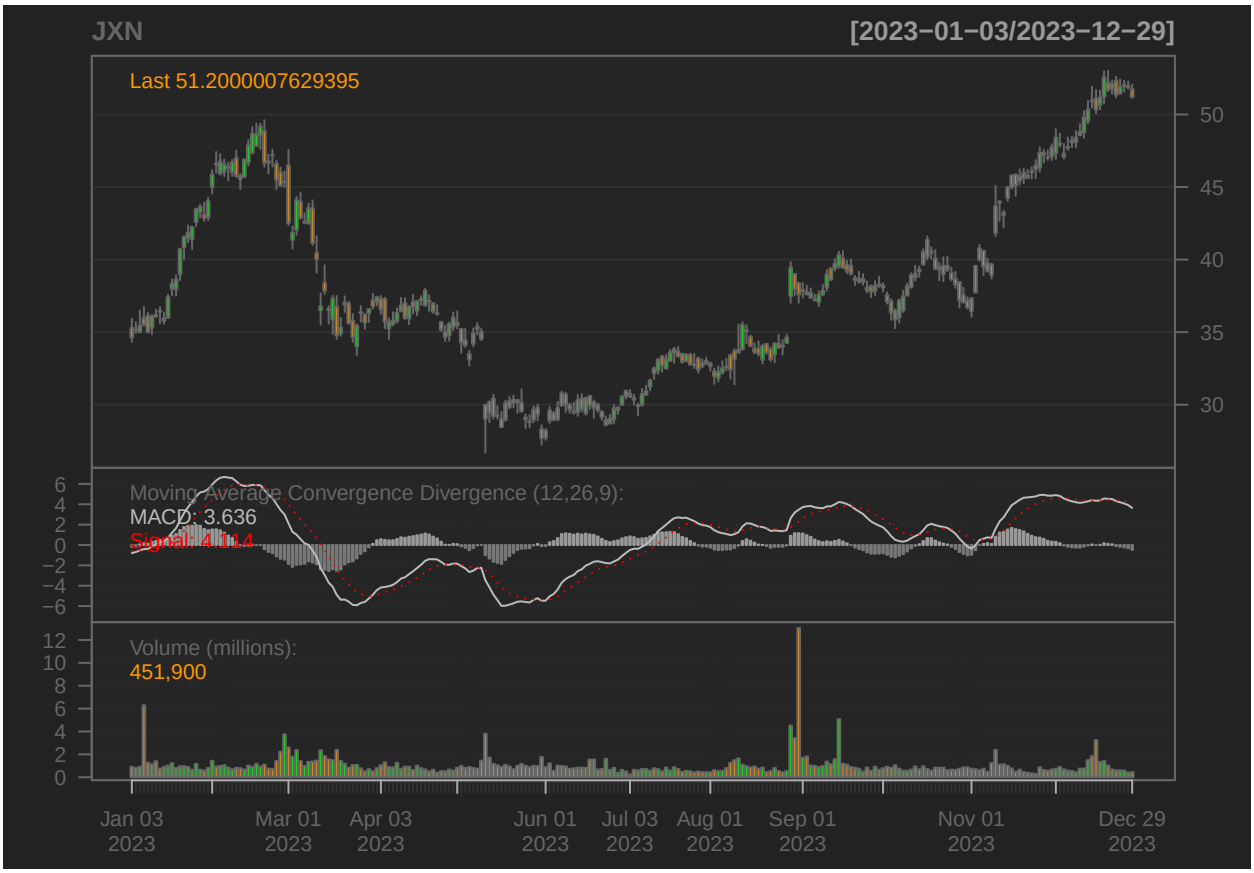



```
barChart(JXN, bar.type = 'hlc', TA = NULL) # barchart to see highs and lows for close
```


```
candleChart(JXN, TA = NULL, subset = '2023') # candle sticks, subset range from 2021 to 2023
```

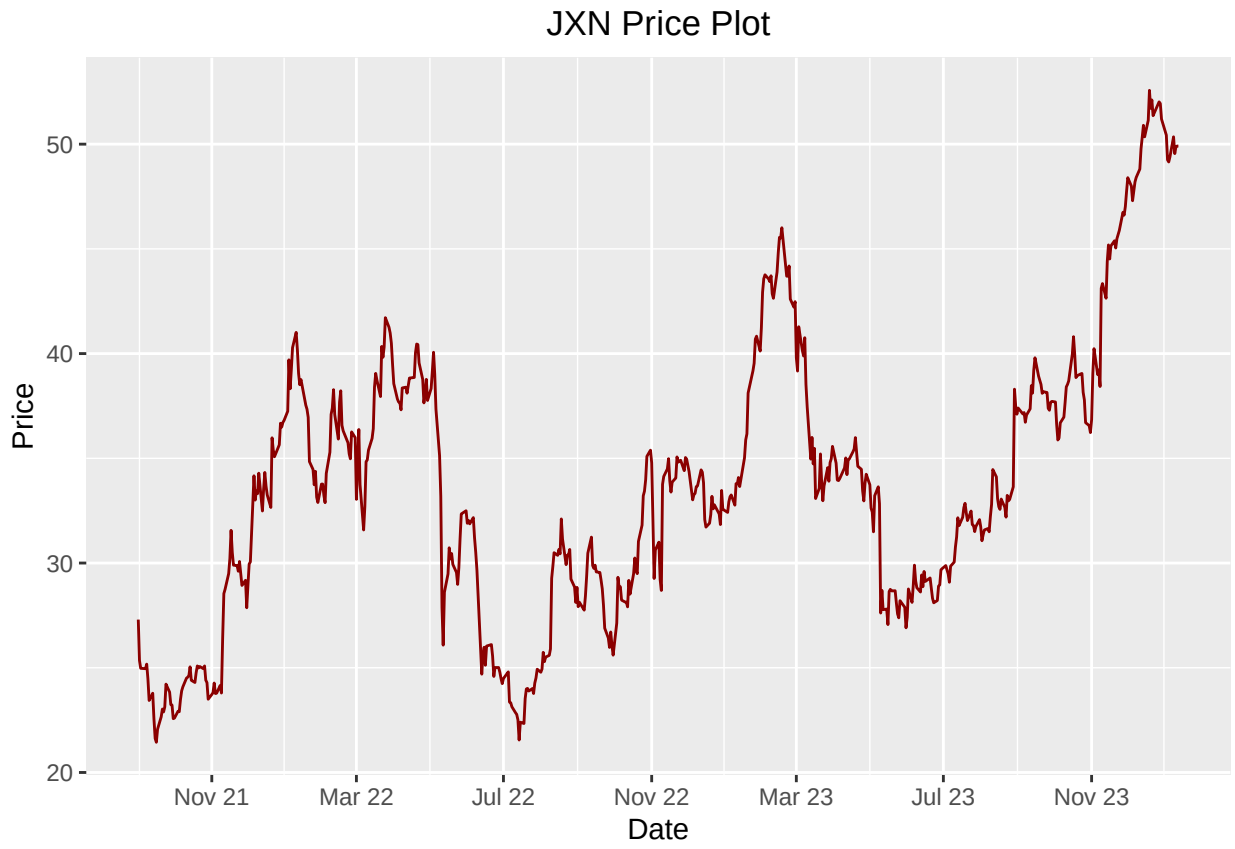



```
candleChart(JXN, TA=c(addMACD(),addVo()), subset = '2023') # showing moving average
```




```
chartSeries(JXN,
            type = c("auto", "matchsticks"),
            subset = '2023-01::',
            show.grid = TRUE,
            major.ticks='auto', minor.ticks=TRUE,
            multi.col = FALSE,
            TA=c(addMACD(),addVo(),addSMA(n=200,col = 'blue'),addSMA(n=50,col = 'red'),addSMA(n=22,col =
            addROC(n=200,col = 'blue'),addROC(n=50,col = 'red'),addROC(n=22,col = 'green'))) # rate of
```


```
ggplot(JXN, aes(x = index(JXN), y = JXN[,6])) + geom_line(color = "darkred") + ggtitle("JXN Price Plot"
```




```
jxn_rot <- diff(log(JXN[,6]))
jxn_rot <- jxn_rot[-1,]
Op(JXN)
```

```
##            JXN.Open
## 2021-09-01    25.00
## 2021-09-02    30.82
## 2021-09-03    29.43
## 2021-09-07    29.48
## 2021-09-08    28.66
## 2021-09-09    28.52
## 2021-09-10    28.02
## 2021-09-13    26.53
## 2021-09-14    27.00
## 2021-09-15    25.54
##        ...
## 2023-12-29    51.74
## 2024-01-02    50.42
## 2024-01-03    49.52
## 2024-01-04    49.59
## 2024-01-05    49.00
## 2024-01-08    49.63
## 2024-01-09    49.61
## 2024-01-10    49.69
## 2024-01-11    49.88
## 2024-01-12    50.35
```

```
Cl(JXN)
```

```
##            JXN.Close
## 2021-09-01     31.45
## 2021-09-02     29.20
## 2021-09-03     28.77
## 2021-09-07     28.75
## 2021-09-08     29.00
## 2021-09-09     28.20
## 2021-09-10     27.00
## 2021-09-13     27.40
## 2021-09-14     26.00
## 2021-09-15     24.91
##        ...
## 2023-12-29     51.20
## 2024-01-02     50.43
## 2024-01-03     49.25
## 2024-01-04     49.15
## 2024-01-05     49.39
## 2024-01-08     50.35
## 2024-01-09     49.55
## 2024-01-10     49.88
## 2024-01-11     49.91
## 2024-01-12     49.91
```

```
Ad(JXN)
```

```
##            JXN.Adjusted
## 2021-09-01     27.29928
## 2021-09-02     25.34623
## 2021-09-03     24.97298
## 2021-09-07     24.95562
## 2021-09-08     25.17263
## 2021-09-09     24.47821
## 2021-09-10     23.43658
## 2021-09-13     23.78379
## 2021-09-14     22.56856
## 2021-09-15     21.62242
##        ...
## 2023-12-29     51.20000
## 2024-01-02     50.43000
## 2024-01-03     49.25000
## 2024-01-04     49.15000
## 2024-01-05     49.39000
## 2024-01-08     50.35000
## 2024-01-09     49.55000
## 2024-01-10     49.88000
## 2024-01-11     49.91000
## 2024-01-12     49.91000
```

```
dailyReturn(JXN)
```

```
##            daily.returns
## 2021-09-01  0.2580000305
## 2021-09-02 -0.0715421286
## 2021-09-03 -0.0147260375
## 2021-09-07 -0.0006951845
## 2021-09-08  0.0086956522
## 2021-09-09 -0.0275861806
## 2021-09-10 -0.0425532174
## 2021-09-13  0.0148148007
## 2021-09-14 -0.0510948773
## 2021-09-15 -0.0419230828
##        ...
## 2023-12-29 -0.0142471676
## 2024-01-02 -0.0150390712
## 2024-01-03 -0.0233987765
## 2024-01-04 -0.0020304259
## 2024-01-05  0.0048829676
## 2024-01-08  0.0194371147
## 2024-01-09 -0.0158887639
## 2024-01-10  0.0066599765
## 2024-01-11  0.0006014190
## 2024-01-12  0.0000000000
```

```
weeklyReturn(JXN) # calculating returns by day, week, etc.
```

```
##            weekly.returns
## 2021-09-03   0.1508000183
## 2021-09-10  -0.0615224341
## 2021-09-17  -0.0585185157
## 2021-09-24   0.0975609573
## 2021-10-01  -0.0670250522
## 2021-10-08   0.0660775746
## 2021-10-15   0.0129729950
## 2021-10-22   0.0270366493
## 2021-10-29  -0.0623484964
## 2021-11-05   0.0121906142
##        ...
## 2023-11-10   0.0772626361
## 2023-11-17   0.0414390616
## 2023-11-24   0.0163970261
## 2023-12-01   0.0410840993
## 2023-12-08   0.0002065769
## 2023-12-15   0.0400743366
## 2023-12-22   0.0200596260
## 2023-12-29  -0.0031152618
## 2024-01-05  -0.0353515888
## 2024-01-12   0.0105284565
```

```
monthlyReturn(JXN)
```

```
##            monthly.returns
## 2021-09-30      0.04000000
## 2021-10-29      0.04115383
```

```
## 2021-11-30      0.16956041
## 2021-12-31      0.32122559
## 2022-01-31     -0.08271582
## 2022-02-28      0.06567632
## 2022-03-31      0.08168257
## 2022-04-29     -0.04340941
## 2022-05-31     -0.13944697
## 2022-06-30     -0.26531172
## 2022-07-29      0.02841122
## 2022-08-31      0.13631407
## 2022-09-30     -0.11228408
## 2022-10-31      0.38234236
## 2022-11-30     -0.02632957
## 2022-12-30     -0.06854077
## 2023-01-31      0.26588099
## 2023-02-28      0.03042689
## 2023-03-31     -0.17562805
## 2023-04-28     -0.03742319
## 2023-05-31     -0.23076917
## 2023-06-30      0.10505414
## 2023-07-31      0.07873243
## 2023-08-31      0.13870375
## 2023-09-29      0.01648944
## 2023-10-31     -0.03950817
## 2023-11-30      0.30019070
## 2023-12-29      0.07270063
## 2024-01-12     -0.02519533
```

```
quarterlyReturn(JXN)
```

```
##            quarterly.returns
## 2021-09-30        0.04000000
## 2021-12-31        0.60884622
## 2022-03-31        0.05737503
## 2022-06-30       -0.39520687
## 2022-09-30        0.03738318
## 2022-12-30        0.25369373
## 2023-03-31        0.07530896
## 2023-06-30       -0.18176956
## 2023-09-29        0.24861158
## 2023-12-29        0.33961275
## 2024-01-12       -0.02519533
```

```
yearlyReturn(JXN)
```

```
##            yearly.returns
## 2021-12-31     0.67320007
## 2022-12-30    -0.16830028
## 2023-12-29     0.47168725
## 2024-01-12    -0.02519533
```

```r
sd(jxn_rot)
```

```
## [1] 0.03089049
```