HW 3

October 21, 2017

0.1 HW 3.1

```
In [1]: library("digest")
```

```
In [2]: digest("I learn a lot from this class when I am proper listening to the professor", "sI
```

'c16700de5a5c1961e279135f2be7dcf9c187cb6b21ac8032308c715e1ce9964c'

```
In [3]: digest("I do not learn a lot from this class when I am absent and playing on my Iphone'
```

'2533d529768409d1c09d50451d9125fdbaa6e5fd4efdeb45c04e3c68bcb3a63e'

For the first sentence,the hash number is "c16700de5a5c1961e279135f2be7dcf9c187cb6b21ac8032308c715e1ce99

For the second sentence, the hash number is "2533d529768409d1c09d50451d9125fdbaa6e5fd4efdeb45c04e3c68b

0.2 HW 3.3

```
In [4]: library(jsonlite)
```

```
In [5]: json <-
        '[
          {"Name" : "Mario", "Age" : 32, "Occupation" : "Plumber"},
          {"Name" : "Peach", "Age" : 21, "Occupation" : "Princess"},
          {},
          {"Name" : "Bowser", "Occupation" : "Koopa"}
        ]'
```

```
In [6]: data_frame <- fromJSON(json)
        data_frame
```

Name	Age	Occupation
Mario	32	Plumber
Peach	21	Princess
NA	NA	NA
Bowser	NA	Koopa

```
In [7]: data_frame$Ranking <- c(3, 1, 2, 4)
        data_frame
```

1

Name	Age	Occupation	Ranking
Mario	32	Plumber	3
Peach	21	Princess	1
NA	NA	NA	2
Bowser	NA	Koopa	4

```
In [8]: toJSON(data_frame, pretty=TRUE)

[
  {
    "Name": "Mario",
    "Age": 32,
    "Occupation": "Plumber",
    "Ranking": 3
  },
  {
    "Name": "Peach",
    "Age": 21,
    "Occupation": "Princess",
    "Ranking": 1
  },
  {
    "Ranking": 2
  },
  {
    "Name": "Bowser",
    "Occupation": "Koopa",
    "Ranking": 4
  }
]
```

```
In [9]: write_json(json,path="C:/Users/Aiqing-Jiang/1.json")
```

```
In [10]: read_json(path="C:/Users/Aiqing-Jiang/1.json",simplifyVector = FALSE)
```

1. '[{"Name" : "Mario", "Age" : 32, "Occupation" : "Plumber"}, {"Name" : "Peach", "Age" : 21,
   "Occupation" : "Princess"}, {}, {"Name" : "Bowser", "Occupation" : "Koopa"}]'

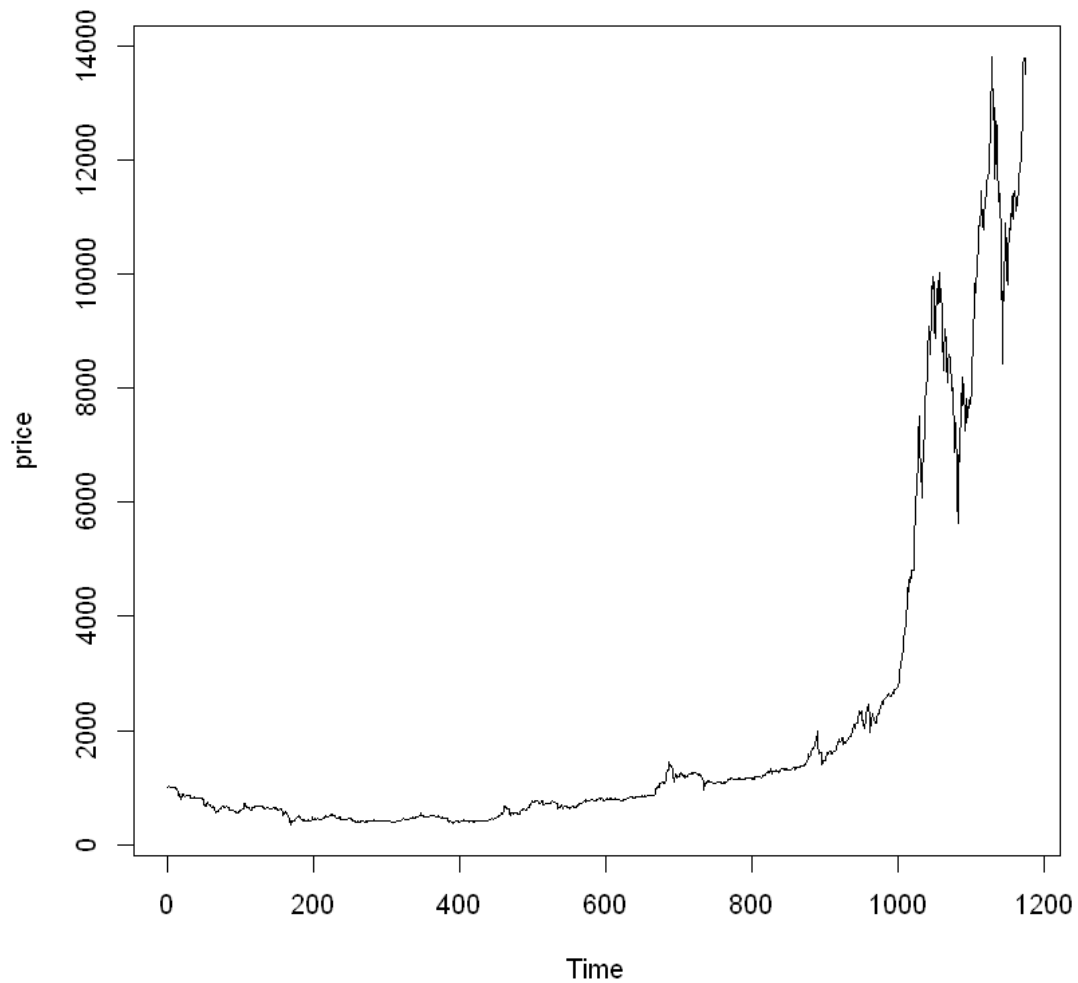## 0.3   HW 3.4

```
In [12]: library(rjson)
```

```
In [13]: json_file = "http://crix.hu-berlin.de/data/crix.json"
         json_data = fromJSON(file=json_file)
```

```
In [14]: crix_data_frame = as.data.frame(json_data)
```

```
In [15]: a <- 1:1175
         n <- 2*a
         m <- n-1
```

```
In [16]: date <- t(crix_data_frame[m])
         price <- t(crix_data_frame[n])
         crix_data <- cbind(date,price)

In [17]: ts.plot(price)
```
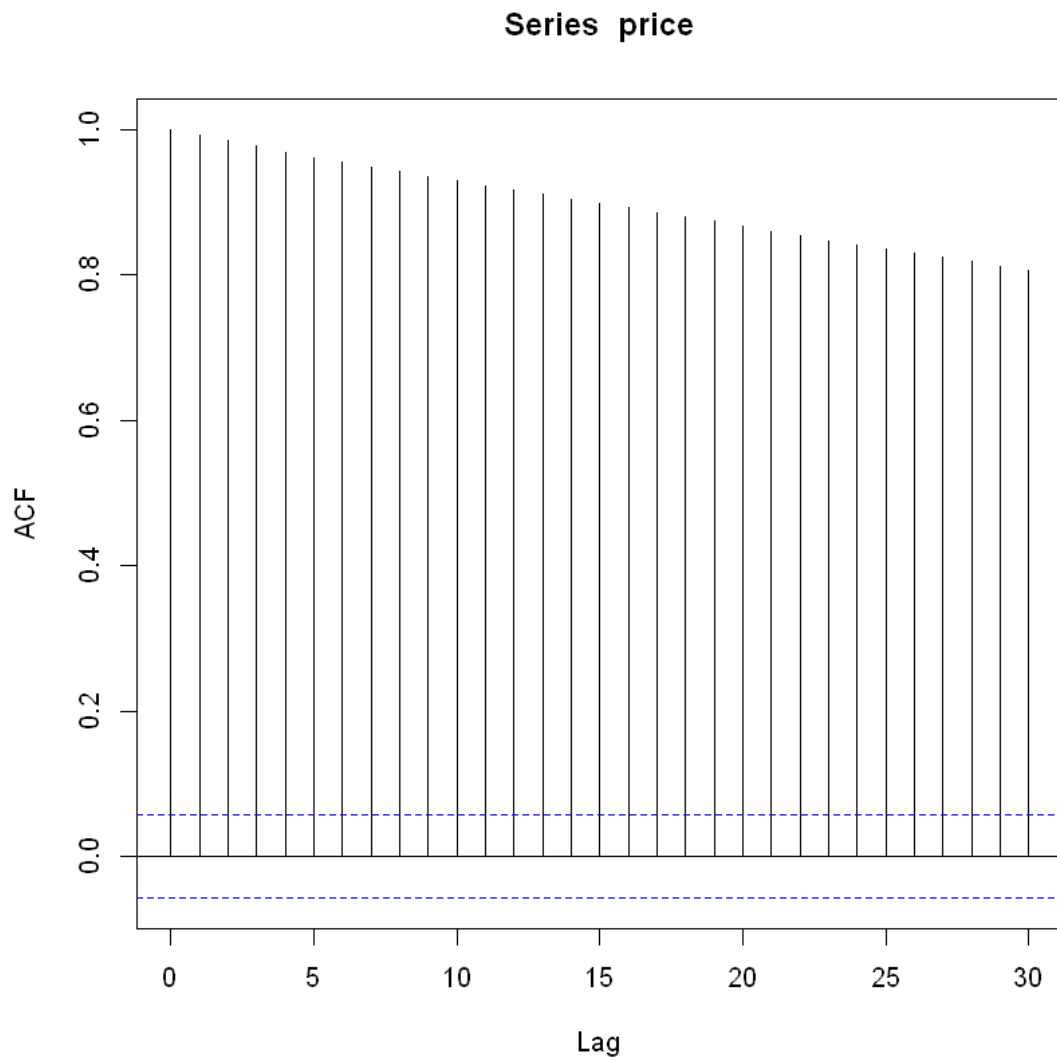


```
In [20]: library(tseries)

In [21]: adf.test(price)

Warning message in adf.test(price):
"p-value greater than printed p-value"
```
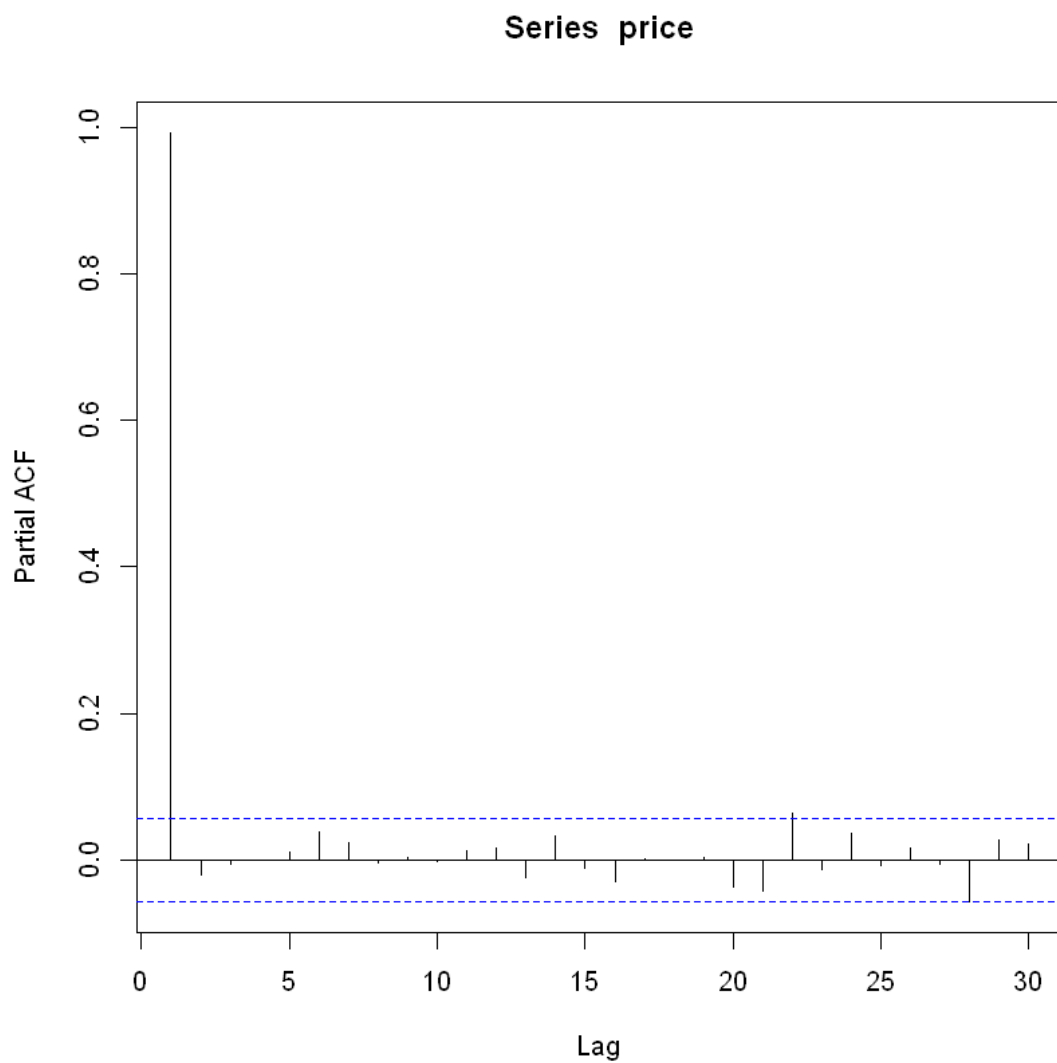
```
Augmented Dickey-Fuller Test

data:  price
Dickey-Fuller = 0.47023, Lag order = 10, p-value = 0.99
alternative hypothesis: stationary
```

In [22]: acf(price)

Series price

In [23]: pacf(price)

Series price


```
In [25]: library(forecast)

In [26]: auto.arima(price)# ARIMA(5,2,0)

Series: price
ARIMA(5,2,0)

Coefficients:
          ar1      ar2      ar3      ar4      ar5
      -0.8808  -0.7101  -0.5786  -0.4783  -0.2543
s.e.   0.0284   0.0359   0.0380   0.0362   0.0286

sigma^2 estimated as 32821:  log likelihood=-7761.48
```

AIC=15534.95   AICc=15535.02   BIC=15565.36