174-Final-Project

2023-02-25

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```
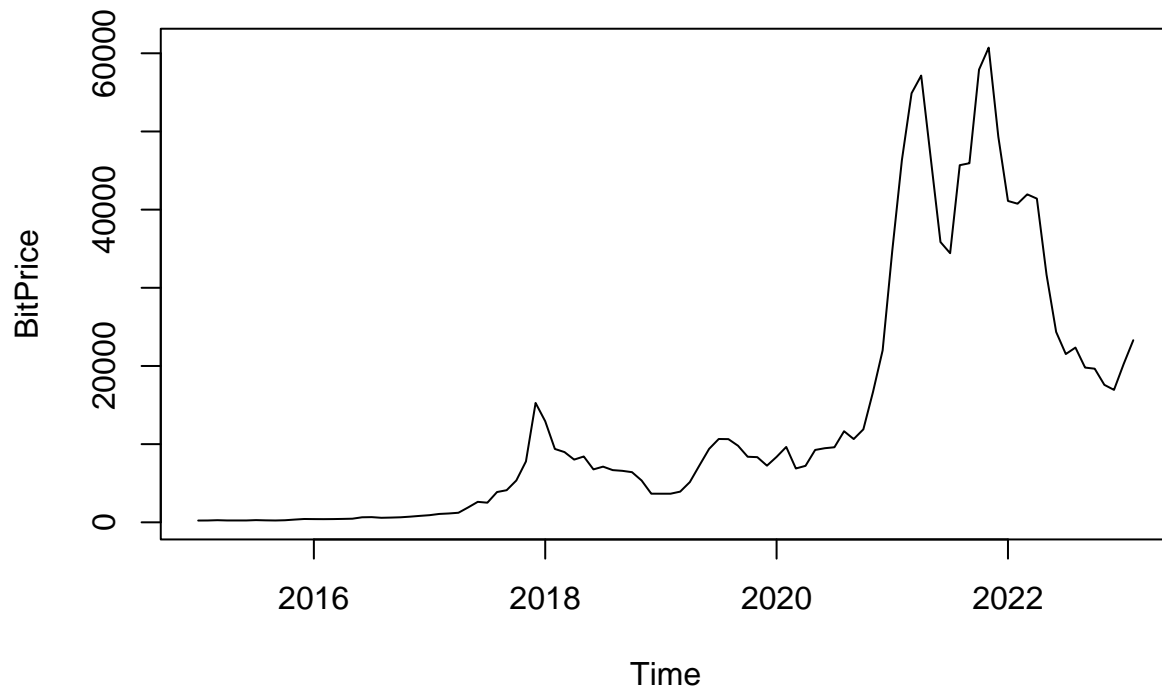
```
library(astsa)
library(timeSeries)
```

```
## Loading required package: timeDate
```
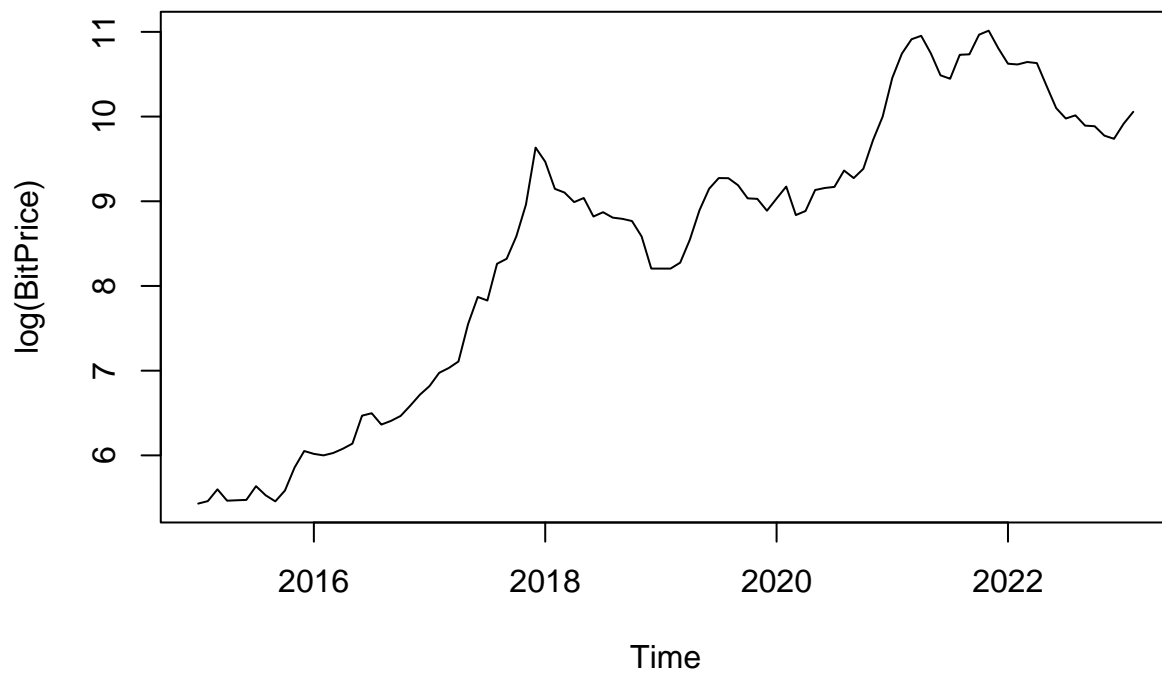
```
BitRaw <- read.csv("CBBTCUSD.csv")
BitPrice <- BitRaw$CBBTCUSD %>% ts(start=c(2015,1),frequency=12)
plot(BitPrice)
```
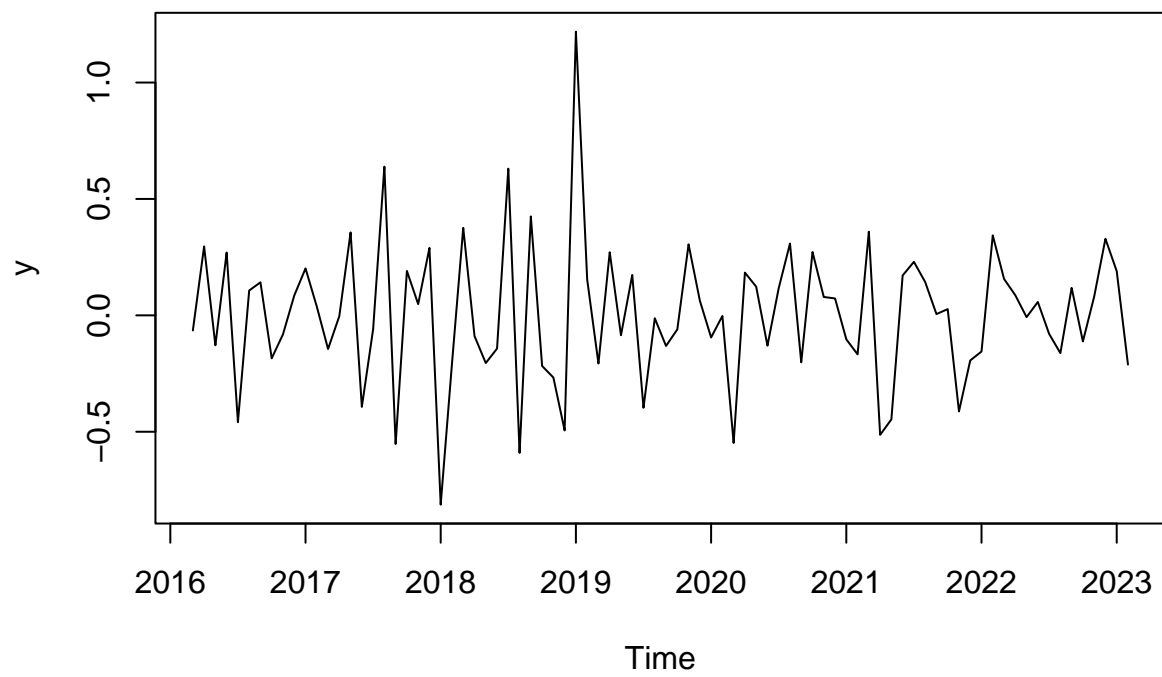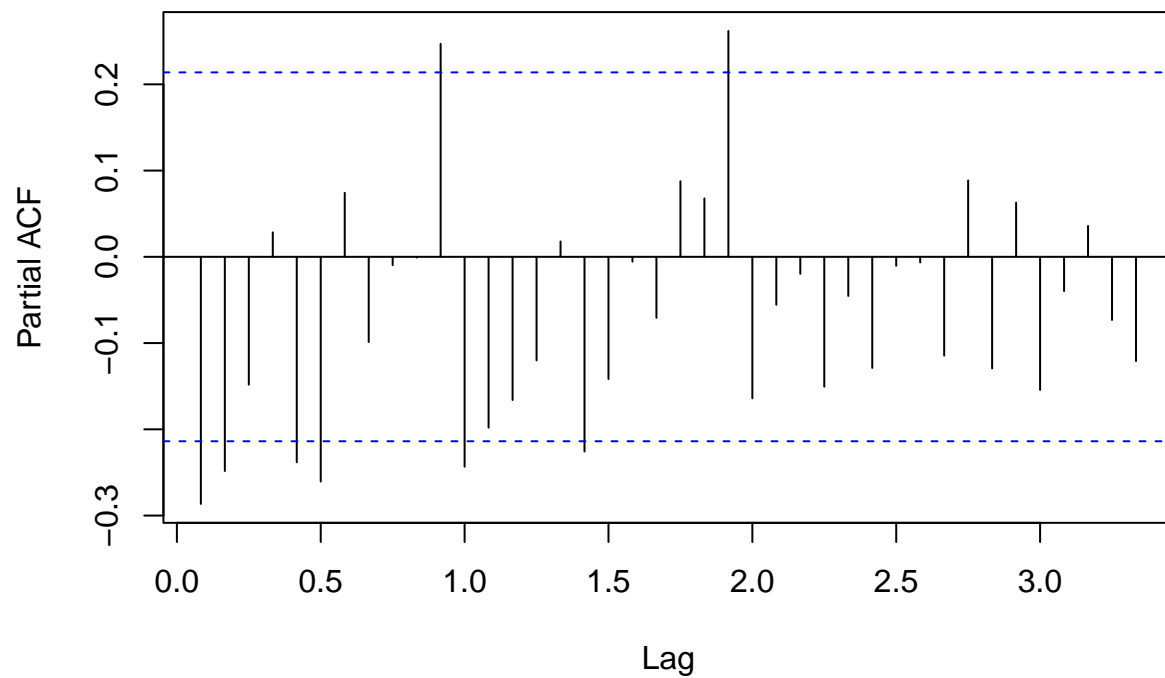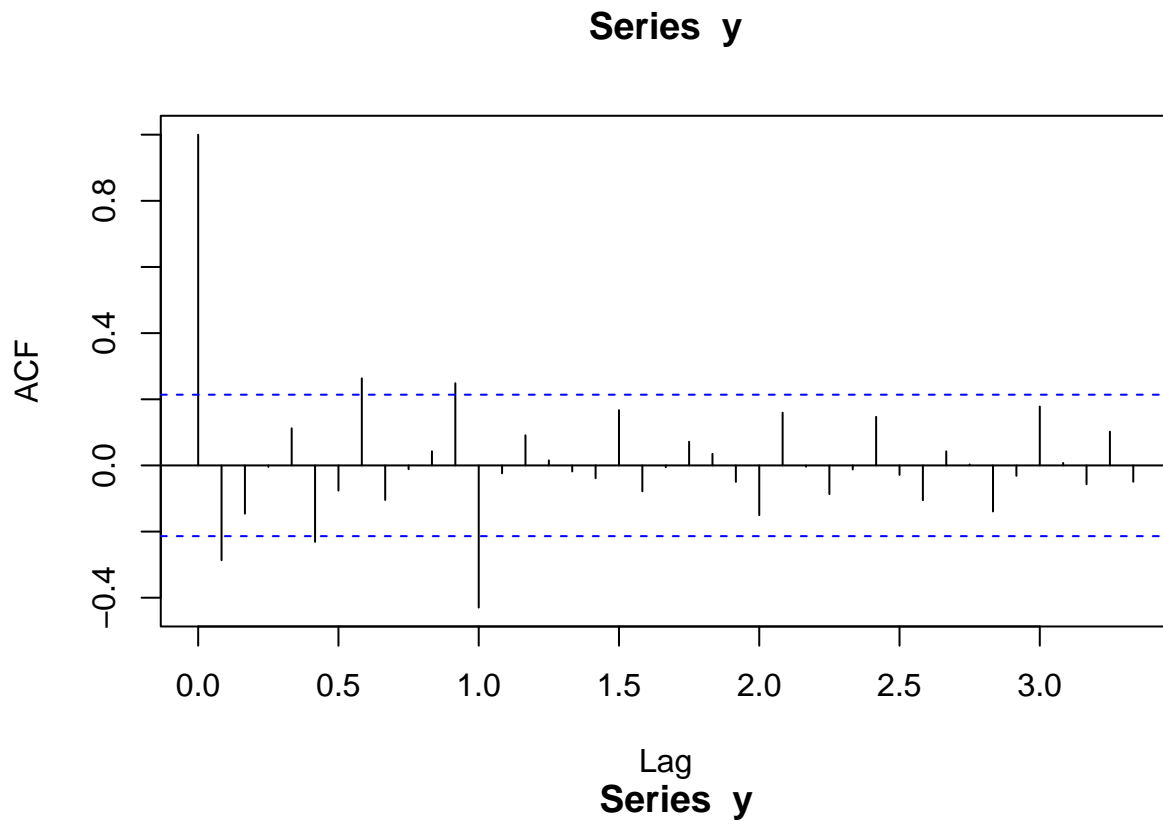


```
plot(log(BitPrice))
```

```
y = log(BitPrice) %>% diff(lag=12) %>% diff() %>% diff()
plot(y)
```
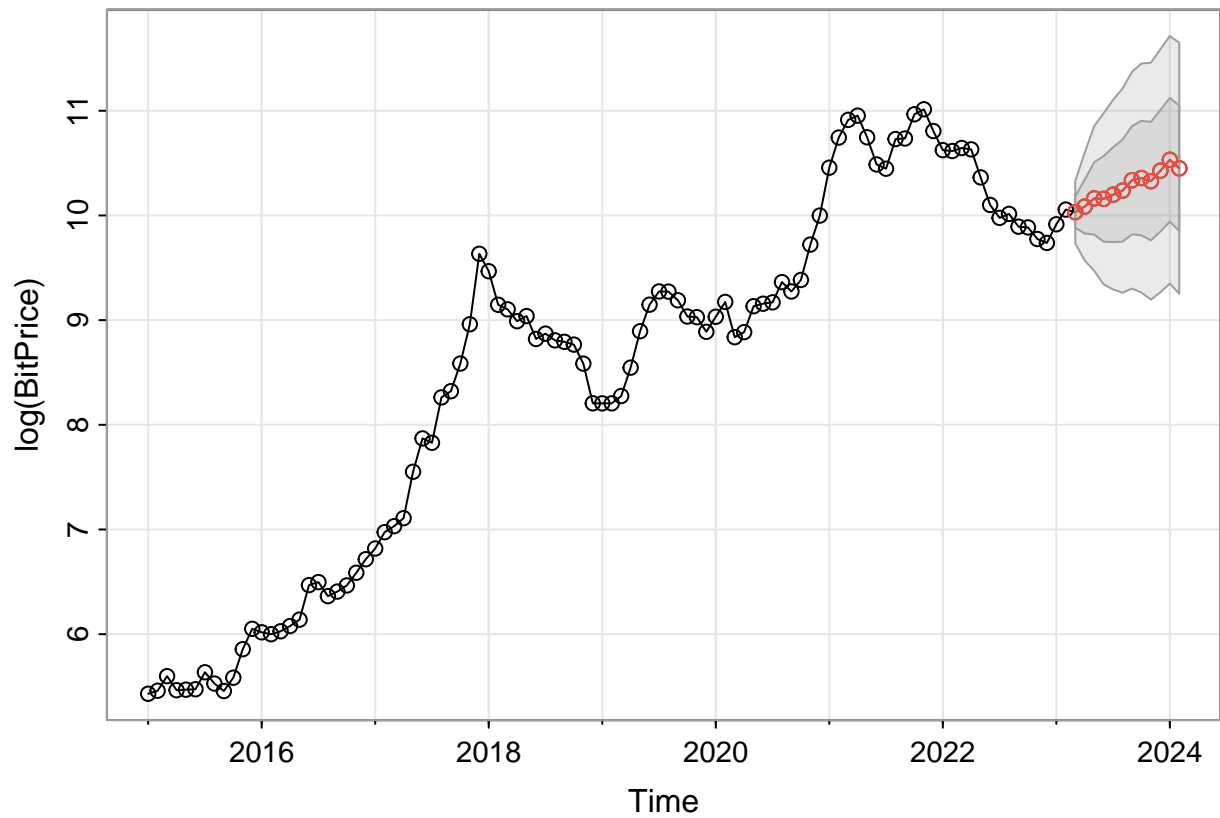


```
acf(y,40); pacf(y,40)
```

Series y

Series y

From these graphs, we can see that the model $SARIMA(11, 2, 11) \times (1, 1, 1)_{12}$ may be a good fit.

```
sarima.for(log(BitPrice), n.ahead = 12, 11,2,11, 1,1,1, 4)
```

```
## $pred
##           Jan       Feb       Mar       Apr       May       Jun       Jul       Aug
## 2023                     10.03164  10.08448  10.16314  10.15853  10.19844  10.23729
## 2024 10.53179  10.45021
##           Sep       Oct       Nov       Dec
## 2023 10.33674  10.35736  10.32736  10.42740
## 2024
##
## $se
##           Jan        Feb        Mar        Apr        May        Jun        Jul
## 2023                      0.1491468  0.2571468  0.3455307  0.4087425  0.4529659
## 2024 0.5913805  0.5992930
##           Aug        Sep        Oct        Nov        Dec
## 2023 0.4875994  0.5175648  0.5471158  0.5657913  0.5804174
## 2024
```

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