part2_prob1.R

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2021-04-07

```
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(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.0 --
```

```
## v ggplot2 3.3.3     v purrr   0.3.4
## v tibble  3.1.0     v stringr 1.4.0
## v tidyr   1.1.3     v forcats 0.5.1
## v readr   1.4.0
```

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

```
data_table <- read.table("ts.tsv", header=TRUE) %>% select(2)
colnames(data_table) <- c("Yt")
tsdata <- ts(data = data_table)
tsdata
```

```
## Time Series:
## Start = 1
## End = 10
## Frequency = 1
##       Yt
##  [1,] 14
##  [2,] 19
##  [3,] 18
##  [4,] 22
##  [5,] 17
##  [6,] 28
##  [7,] 43
##  [8,] 45
##  [9,] 62
## [10,] 60
```

```
#data %>% pull(time)


# Regression for Time Series Data
#
# data %>% select(1:2)
#
# plot.ts(data)
# N=nrow(data)
# t=1:N
#
# data
#
# # fit a multiple regression model
# # ols.fit <- lm(yt~time,data=data)
# # summary(ols.fit)
# # plot(t,ols.fit$residual)
# # acf(ols.fit$residual)
# #
# # install.packages("lmtest")  #download required packages for Durbin-Watson test
# # library(lmtest)
# # dwtest(ols.fit)     #Durbin-Watson test for autocorrelation in residuals
# #
# # phi.hat=lm(ols.fit$residual[2:N]~0+ols.fit$residual[1:N-1])$coeff   #calculte phi fot the Cochrane
# # y.trans=emp_data$metal[2:N]-phi.hat*emp_data$metal[1:N-1]       #Transform y and x according to the
# # x.trans=emp_data$vendor[2:N]-phi.hat*emp_data$vendor[1:N-1]
# #
# # coch.or=lm(y.trans~x.trans)     #Fit OLS regression with transformed data
# # summary(coch.or)
# # acf(coch.or$residual)
# # dwtest(coch.or)         #Durbin-Watson test for autocorrelation in residuals after the Cochrane Met
# #
```