The Test Function

Jaidev Kutty

11/27/2018

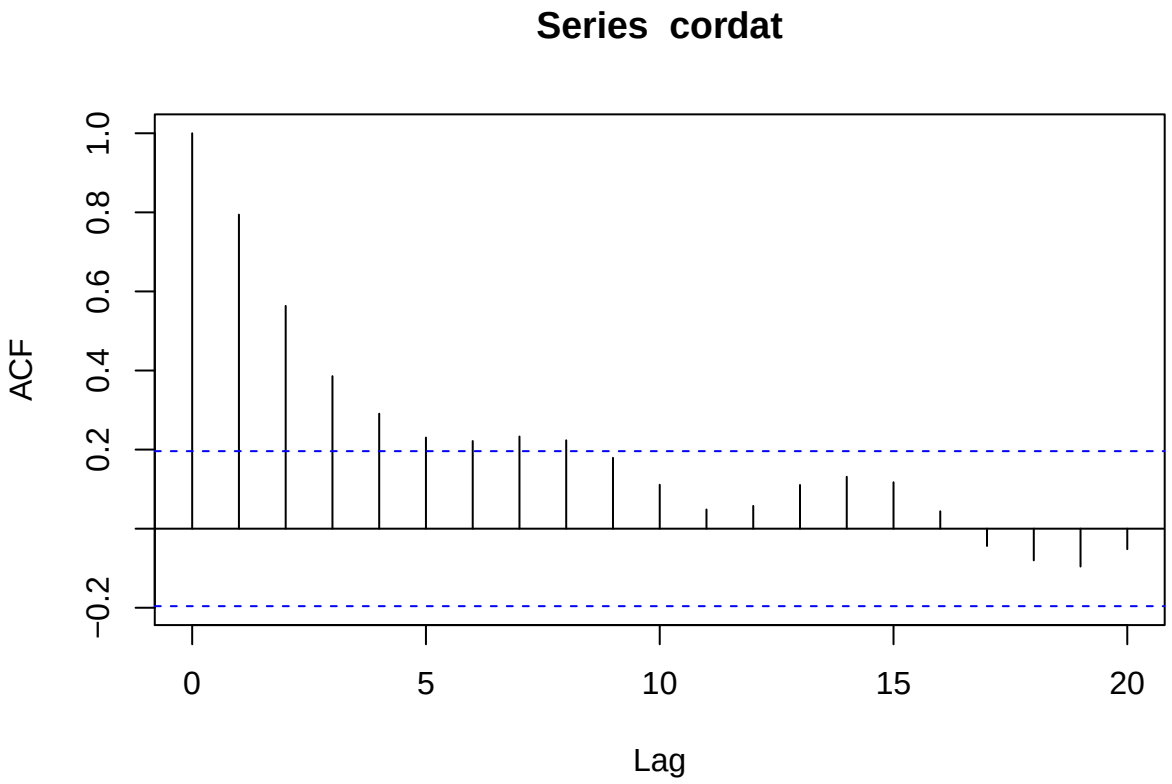
```
uniscaler<-function(x){

  x<-data.frame(x)
colnames(x)<-c("Original")
x<-x %>% mutate(scaled= (Original-min(Original))/(max(Original)-min(Original)))
y<-x$scaled
}
```

```
rho_gen<-function(y,k,i){
# k is the lag.
  # i is the starting index.
subsetter_1<-seq(from=i,to=length(y),by=k)
subsetter_2<-seq(from=i+k, to=length(y),by=k)


prathseq <- y[subsetter_1]
dwiseq <- y[subsetter_2]
dwiseq[length(dwiseq)+1]<-0
############################

# Make sure they are of the same length to make a dataframe
# difference<-length(prathseq) - length(dwiseq)

# if(difference>0){
#   abs_diff = abs(difference)
#   prathseq <- prathseq[-c(length(prathseq) - abs_diff + 1 : length(prathseq))]
# }
# else if(difference < 0){
#   abs_diff = abs(difference)
#   dwiseq <- dwiseq[-c(length(dwiseq) - abs_diff + 1 : length(dwiseq))]
# }
############################

dat <- data_frame(prathseq,dwiseq)
dat<-dat %>% mutate(prod=prathseq*dwiseq)
M<-floor(((length(y)-i)/k)-1)
rho_ik<-((sum(dat$prod))/(M+1))-0.25
sig_ik<-(sqrt((13*M)+7))/(12*(M+1))
z<-rho_ik/sig_ik

ifelse(2*(1-pnorm(abs(z)))<0.05,yes="There is autocorrelation at this lag",no="There is no autocorrelati

}
```

```
autocor_checker<-function(x,k,i){
  rho_gen(uniscaler(x),k,i)
}
```

Using the Homework6 Example

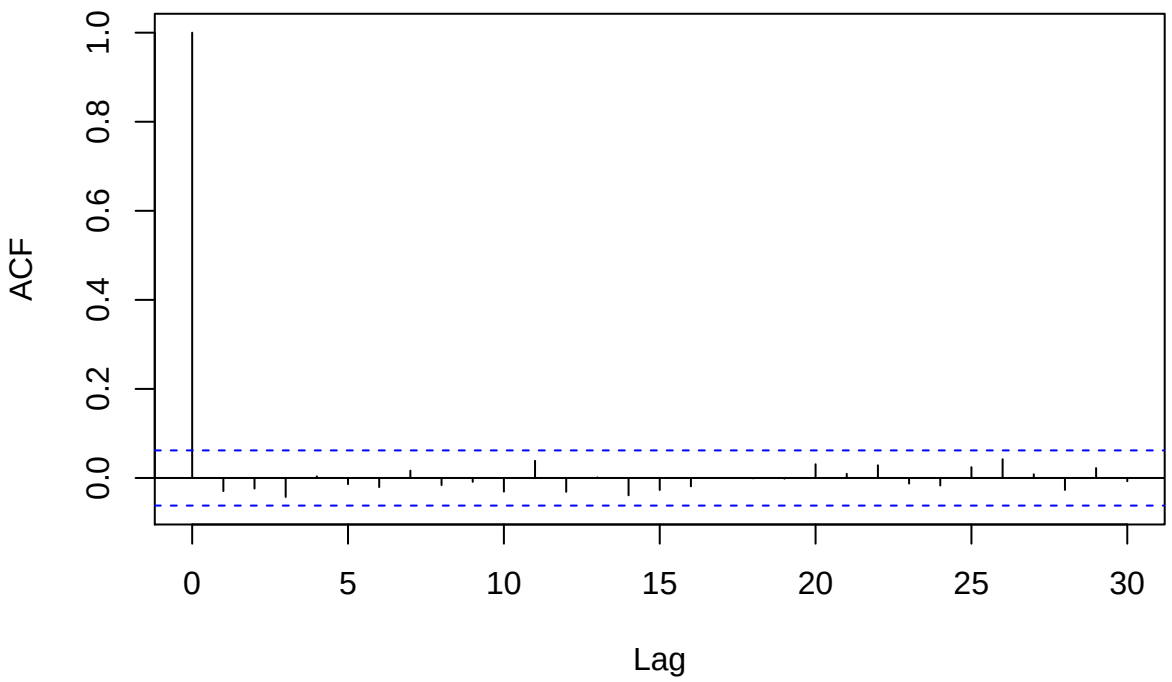
```
cordat<-arima.sim(model = list(ar=0.98),n=100)
acf(cordat)
```




```
autocor_checker(cordat,k=1,i=3)
```

```
## [1] "There is no autocorrelation at this lag"
```

```
randbin<-rbinom(n=1001,80,.50)
acf(randbin)
```




```
autocor_checker(randbin,k=3,i=10)
```

```
## [1] "There is autocorrelation at this lag"
```

```
randnorm<-rnorm(80,-1,4)
autocor_checker(randnorm,k=4,i=6)
```

```
## [1] "There is no autocorrelation at this lag"
```

```
randexp<-rexp(1000,rate = 4.5)
autocor_checker(randexp,k=2,i=6)
```

```
## [1] "There is autocorrelation at this lag"
```

```
randt<-rt(1000,350)
autocor_checker(randt,12,1)
```

```
## [1] "There is no autocorrelation at this lag"
```

```
randbeta<-rbeta(1000,4,4)
autocor_checker(randbeta,k=30,i=1)
```

```
## [1] "There is no autocorrelation at this lag"
```