The Test Function

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```
autocor_checker<-function(y,k,i){
  # y is the vector for which we are keen on checking for randomness.
  # k is the lag.
  # i is the starting index.

  #The orginal test for checking if the numbers have a similar structure to a Uniform(0,1) distrubtion
  uniscaler<-function(y){

  y<-ecdf(y)(y)

  }

#I am subsetting in following way to create the two sequences as described in the test.


subsetter_1<-seq(from=i,to=length(y),by=k)
subsetter_2<-seq(from=i+k, to=length(y),by=k)


#prath is short for Pratham which means First in Sanskrit
#dwi is short for "Dwitiya" which means Second in Sanskrit

seq_1 <- uniscaler(y)[subsetter_1]
seq_2 <- uniscaler(y)[subsetter_2]

#I want both sequences to be of same length so as i can obtian a tidy dataframe.I add element '0' to se

seq_2[length(seq_2)+1]<-0

dat <- data_frame(seq_1,seq_2)

dat <- dat %>% mutate(prod=seq_1*seq_2)

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

test<-ifelse(2*(1-pnorm(abs(z)))<0.05,yes="There is some dependence at this lag",no="No dependency found
return(list(conclusion = test, p_value = 2*(1-pnorm(abs(z)))))
}
```

Using the Homework6 Example

```r
cordat<-arima.sim(model = list(ar=0.98),n=100)
autocor_checker(cordat,k=1,i=3)
```

```
## Warning: `data_frame()` is deprecated, use `tibble()`.
## This warning is displayed once per session.
```

```
## $conclusion
## [1] "There is some dependence at this lag"
##
## $p_value
## [1] 0.008004395
```

```r
randbin<-rbinom(n=1001,80,.45)
autocor_checker(randbin,k=3,i=10)
```

```
## $conclusion
## [1] "There is some dependence at this lag"
##
## $p_value
## [1] 0.04224722
```

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

```
## $conclusion
## [1] "No dependency found for this lag"
##
## $p_value
## [1] 0.4936113
```

```r
randexp <- rexp(1000,rate = 4.5)
autocor_checker(randexp,k=5,i=20)
```

```
## $conclusion
## [1] "No dependency found for this lag"
##
## $p_value
## [1] 0.529461
```

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

```
## $conclusion
## [1] "No dependency found for this lag"
##
## $p_value
## [1] 0.9570942
```

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

```
## $conclusion
## [1] "No dependency found for this lag"
##
## $p_value
## [1] 0.1568559
```