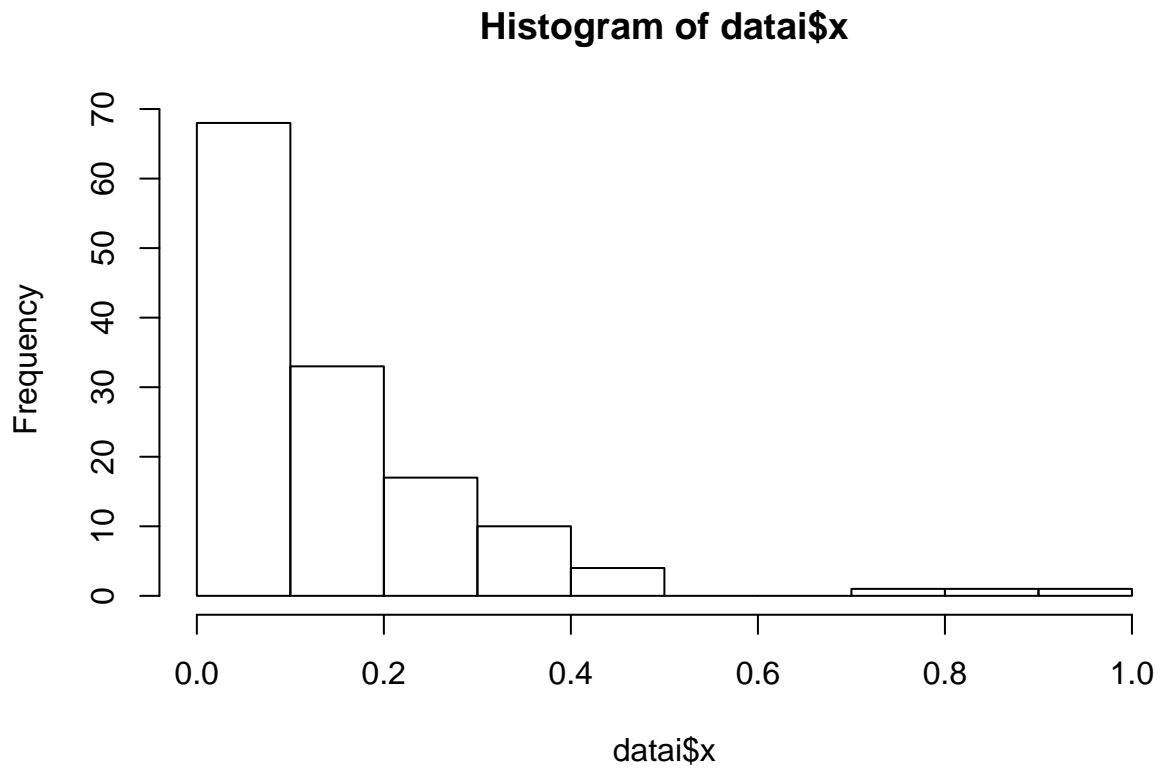


```
datai <- read.csv(file="A2_dataseti.csv", header=TRUE)
hist(datai$x)
```



```
data = sort(datai$x)
n = length(data)
l_est = 1/mean(data)
l_est
```

```
## [1] 6.646972
```

```
discrepancy = function(data){
  # data = dataset
  n = length(data)

  F_u = c(1:n)/n
  F_l = F_u - 1/n
  Fu_diff = abs(pexp(data, l_est) - F_u)
  Fl_diff = abs(pexp(data, l_est) - F_l)

  diff = c(Fu_diff, Fl_diff)
  return (max(diff))
}

d = discrepancy(data)
d
```

```
## [1] 0.06962812
KS = function(d, n, m, l) {
  # d = discrepancy
  # n = sample size
  # m = number of iterations
  # l = lambda
  ddots = NULL

  F_u = c(1:n)/n
  F_l = F_u - 1/n

  for(i in 1:m){
    newdata = sort(rexp(n,l))
    new_l = 1/mean(newdata)
    F = pexp(newdata, new_l)
    U = abs(F_u-F)
    L = abs(F_l-F)
    ddot = max(U, L)
    ddots = c(ddots, ddot)
  }

  # p-value
  p = length(ddots[ddots > d])/m
  return(p)
}

p = KS(d, n, 10000, l_est)
p

## [1] 0.2764
```