```
## This R code is for calculation of test statistic for sign test
## also computes the p-value only if n < 20 so exact formula needs to be used
##does Not compute p-value when n>= 20 and approximate formula is used

dataset = as.matrix(read.table("folderpath/filename.extension", header = T or
 F))

n = length(dataset) ## size of dataset

print("sample size")
print(n)

## From the statement of the problem, based on objective of ToH,
## decide what H0 and H1 are
## also decide what the value of m0 should be

## specify m0
m0 =

## calculate the test statistic T
## how many obsevations are at or above m0

test_stat = length(which(dataset >= m0 ))

print(paste("test statistics T = ", test_stat, sep=""))

## if n < 20, compute p-value as below
## if n >= 20, do NOT use the following code, compute yourself as mentioned in
 classnote

print("Computing p value using exact formula")

## the formula of p-value depends on the type of H0 and H1
## run ONLY ONE of following three formulas based on the TOH objective in the
 question

## run the following formula only if H1 is of the type "m < m0"
## left tail probability of T under Bin(n,0.5) distribution
p_value = pbinom(test_stat,n,0.5,lower.tail = TRUE) ## lower tail same as left
 tail

## run the following formula only if H1 is of the type "m > m0"
## right tail probability of T under Bin(n,0.5) distribution
p_value = pbinom(test_stat,n,0.5, lower.tail = FALSE) ## upper tail same as
 right tail

## run the following formula only if H1 is of the type "m not equal to m0"
## Compute left and right tail probabilities of T under Bin(n,0.5) distribution
## find their minimum and multiply by 2
p_value = 2*min(pbinom(test_stat,n,0.5,lower.tail =
 TRUE),pbinom(test_stat,n,0.5, lower.tail = FALSE))
```