1. Importing the data into a variable from the provided txt file. We proceed by:
   1. Setting up the directory,
   2. Loading the table data to the house\_price variable,
   3. Converting the table object to a vector object.

> setwd("C:/Users/Mvami N. Jonalex/Google Drive/WIU - Mathematics/2.WIU - Spring 2018/Stat 553 - Applied Statistical Methods - Dr Beth Hansen/HW/Homework 3")

> house\_price<-read.table('houseprice.txt')

> house\_price

V1 V2 V3 V4 V5

1 128000 163000 154000 151000 233000

2 108000 78000 114000 119000 120000

3 171000 151000 113000 179000 201000

4 176000 161000 71000 86000 192000

5 190000 177000 129000 112000 119000

6 94000 156000 92000 147000 91000

7 141000 165000 138000 107000 162000

8 163000 115000 123000 131000 157000

9 151000 111000 203000 163000 92000

10 93000 86000 170000 102000 48000

> house\_price<-unlist(house\_price, use.names = FALSE)

> house\_price

[1] 128000 108000 171000 176000 190000 94000 141000 163000 151000 93000

[11] 163000 78000 151000 161000 177000 156000 165000 115000 111000 86000

[21] 154000 114000 113000 71000 129000 92000 138000 123000 203000 170000

[31] 151000 119000 179000 86000 112000 147000 107000 131000 163000 102000

[41] 233000 120000 201000 192000 119000 91000 162000 157000 92000 48000

1. Calculating the mean and variance using build-in functions.

> mean\_price<-mean(house\_price)

> mean\_price

[1] 135940

> var\_price<-var(house\_price)

> var\_price

[1] 1518873878

1. Determining the smallest and largest price.

> min\_price<-min(house\_price)

> min\_price

[1] 48000

> max\_price<-max(house\_price)

> max\_price

[1] 233000

1. Calculating the kurtosis of the distribution and comparing to that of a normal distribution (which equals 3).
   1. The kurtosis is always positive due the fact that the differences in both numerator and denominator are all raised to some even powers of 4 and 2 respectively.
   2. Comparing the kurtosis of a normal distribution with the actual price distribution we obtain 3 > 2.567928. Therefor the tail of the actual price distribution is smaller than that of a normal.

> n<-length(house\_price)

> num<-(sum((house\_price-mean\_price)^4))/n

> den<-((sum((house\_price-mean\_price)^2))/n)^2

> kurtosis\_price<-num/den

> kurtosis\_price

[1] 2.567928

> 3-kurtosis\_price

[1] 0.4320725