

# ST 551 Homework 0

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## Instructions

This assignment is due by 11:59 PM, September 26 on Canvas via Gradescope. **You should submit your assignment as a typed PDF which you can compile using the provide .Rmd (R Markdown) template.** Include your code in your solutions and indicate where the solutions for individual problems are located when uploading into Gradescope. You should also use complete, grammatically correct sentences for your solutions.

## Question 1

Read the *Brief Introduction to R* document (`RIntroduction.pdf`) which you can find on Canvas in the same folder as the homework assignment on Canvas. What I would like you to do is run through the examples in Sections 3 & 4 of the document and try modifying the values and operations. Don't be afraid to "break" things. Experiment!

In order to accomplish this task, you should install both R and Rstudio before working through the examples (You can find info on installing these pieces of software on both Canvas and also in first Section on of the *Brief Introduction to R*).

And rather than writing the code in an R Markdown document, I would like you to follow the steps in Section 2 of the document and write your code in an "R Script". R Script files are similar to R Markdown files in that you can write code in the files which are then evaluated in the **Console**. The difference between the two is that R Scripts are intended to store/run R code and that's it. While R Markdown files are intended more as a communication tool which takes code + text and combines the two together.

If your goal is to combine R code + text in order to communicate results (i.e. you're doing homework) then you'll want to use an R Markdown document. If your goal is just write just R code to prototype ideas, experiment with the language, work on a larger coding project, etc. then an R Script is your best bet.

You do not need to turn in the R Script or paste the code into this document. I'll take you at your word that you took some time to follow these directions and play around with the example code. If you run into issues at any point then you should (a) Ask the TA and I for help during office hours or maybe after class (b) Post a question in the Week 0/1 Q&A Discussion Board or even (c) Ask a fellow classmate for help!

## Question 2

For this question, I would like you to do the following tasks in the code chunk below:

1. Use the `rnorm()` function to generate a sample of  $n = 100$  observations from a Normal distribution with mean parameter = 12 and standard deviation = 3. Note: You will likely want to *assign* this sample a name such as `samp1` for the next parts.
2. Compute the sample mean of your sample using the `mean()` function.
3. Compute the standard deviation of your sample using the `sd()` function.
4. Create a histogram of your sample using the `hist()` function. Give your histogram a title, alter the bin widths so that they are of size 1, and include the `col = "steelblue"` argument to change the color of the bins.

```
# Perform steps 1 - 4 in this code chunk
```

```
samp1 = rnorm(n = 100, mean = 12, sd = 3) #getting random sample  
head(samp1) #first few values
```

```
## [1] 12.17483 13.04380 16.35426 16.88909 13.37518 13.43818
```

```
length(samp1) #length which should be n = 100
```

```
## [1] 100
```

```
mean(samp1) #mean
```

```
## [1] 11.87427
```

```
sd(samp1) #standard deviation
```

```
## [1] 2.911496
```

```
#this will be for the histogram and getting the correct number of breaks
```

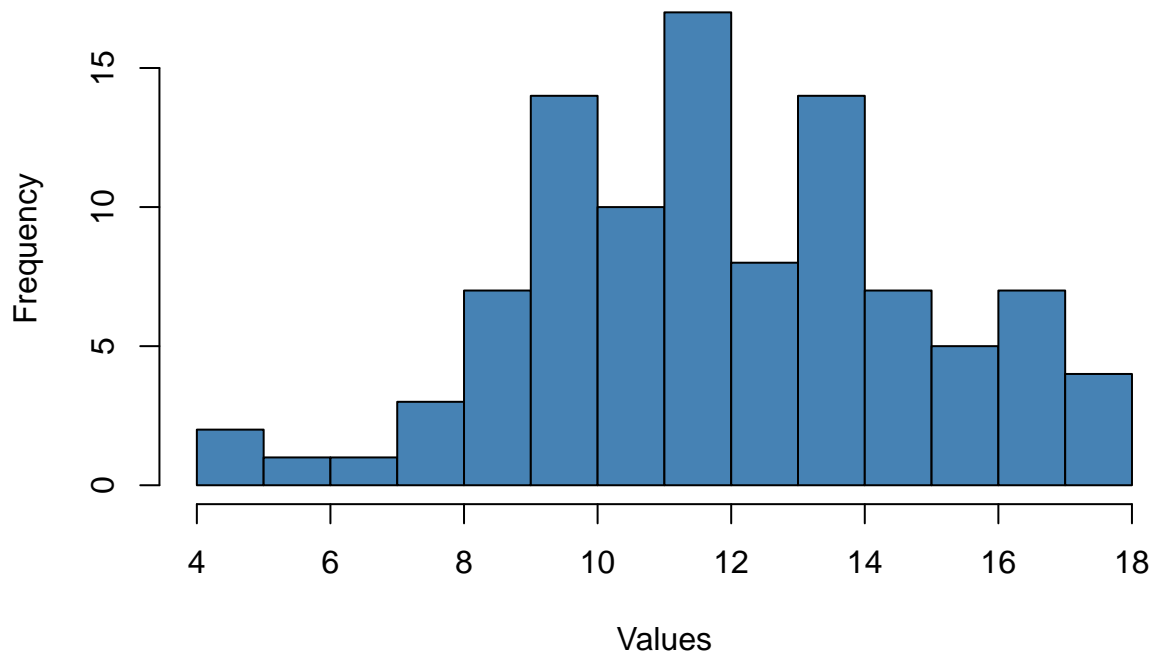
```
max = ceiling(max(samp1)) #maximum rounded up
```

```
min = floor(min(samp1)) #minimum rounded down
```

```
length = max - min
```

```
hist(x = samp1, xlab = "Values", main = "The best random sample of a distribution of all time.", col = "steelblue",  
     breaks = length)
```

### The best random sample of a distribution of all time.



If you run into trouble accomplishing steps 1 - 4, again, seek help! Ask the TA or instructor for help, visit office hours, post a question on the discussion board, try using the `help()` function, etc.

When you're done with this assignment, I would like you (1) compile or 'knit' the document and then (2) upload it into Gradescope. To upload the compiled document into Gradescope it will need to be a PDF and you will want to follow the directions to let Gradescope know which pages contain the solutions to which question.

Questions about Gradescope? Ask the TA or instructor for help!