

MA 2611 Lab 1

Xin Yu Wu

2024-08-28

```
library(knitr)
```

```
{r setup, include=F knitr::opts_chunk$set(echo = TRUE)}
```

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

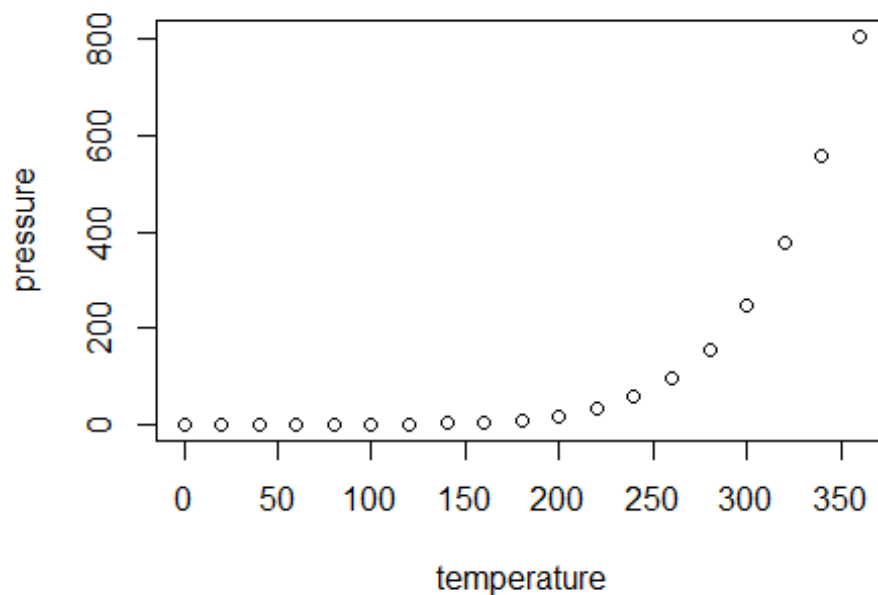
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed      dist
##  Min.   : 4.0    Min.   :  2.00
##  1st Qu.:12.0    1st Qu.: 26.00
##  Median :15.0    Median : 36.00
##  Mean   :15.4    Mean    : 42.98
##  3rd Qu.:19.0    3rd Qu.: 56.00
##  Max.   :25.0    Max.    :120.00
```

Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.

PROBLEM L.2

```
#a) & b)
points<- c(2413, 20310, 12637, 2753, 14505, 14440, 2379, 447, 345, 4784,
13803, 12668, 1235, 1257, 1671, 4041, 4145,
535, 5270, 3360, 3489, 1979, 2302, 807, 1772, 12807, 5427, 13147, 6288, 1803,
13167, 5343, 6684, 3508, 1549,
4975, 11249, 3213, 811, 3560, 7244, 6643, 8571, 13534, 4395, 5729, 14417,
4863, 1951, 13809)

summary(points)

##      Min. 1st Qu.  Median    Mean 3rd Qu.     Max.
##      345   2060   4590   6161  10580   20310

#c)
sd(points)

## [1] 5085.635

#d)
sorted_points<-sort(points)
print(sorted_points)
```

```
## [1] 345 447 535 807 811 1235 1257 1549 1671 1772 1803
1951
## [13] 1979 2302 2379 2413 2753 3213 3360 3489 3508 3560 4041
4145
## [25] 4395 4784 4863 4975 5270 5343 5427 5729 6288 6643 6684
7244
## [37] 8571 11249 12637 12668 12807 13147 13167 13534 13803 13809 14417
14440
## [49] 14505 20310

rank(sorted_points)

## [1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
24 25
## [26] 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50
```

- The height of the lowest point in the US is 345. The highest point in the US is 20310.
- The average height of the highest points in the US is 6161. The median is 4590.
- The height of the highest points in the US vary by 5085.635 feet.
- Massachusetts rank 20th place among US states for the highest point in the country.

Problem L.3

```
#a)
x <- c(seq(6, 12), rep(5.3, 3), -3, rep(c(1.2, 3.4, 5.6), 2))
print(x)

## [1] 6.0 7.0 8.0 9.0 10.0 11.0 12.0 5.3 5.3 5.3 -3.0 1.2 3.4 5.6
1.2
## [16] 3.4 5.6

#b)
x<-rev(x)
print(x)

## [1] 5.6 3.4 1.2 5.6 3.4 1.2 -3.0 5.3 5.3 5.3 12.0 11.0 10.0 9.0
8.0
## [16] 7.0 6.0

#c)
y<-c(x[1],median(x),x[length(x)])
print(y)

## [1] 5.6 5.6 6.0
```

Problem L.4

```
# Data : People I know
```

```
# Numerical data : Favorite number & Ages
```

```
# Categorical Data : Sex
```

```
daily_people<-data.frame(names=c("Grace", "Irene", "Carly", "Amanda", "Lyla",  
"Ana", "Pubert", "Nathaniel", "Sarah", "Julia"),favorite_Number =  
c(24,10,4,2,42,49,72,4,7,100), age = c(19,19,18,17,19,19,20,45,44,15), sex =  
(c("f", "f", "f", "f", "f", "f", "f", "m", "m", "f")))
```

```
print(daily_people)
```

##	names	favorite_Number	age	sex
## 1	Grace	24	19	f
## 2	Irene	10	19	f
## 3	Carly	4	18	f
## 4	Amanda	2	17	f
## 5	Lyla	42	19	f
## 6	Ana	49	19	f
## 7	Pubert	72	20	f
## 8	Nathaniel	4	45	m
## 9	Sarah	7	44	m
## 10	Julia	100	15	f