Assignment9.1

Aruna

28 November 2018

```
# Assignment 9.1

#1. If Z is norm (mean = 0, sd=1)
#      Find P(Z>2.64)

pnorm(2.64,0,1,lower.tail = FALSE)

## [1] 0.004145301

# we can also use standard normal distribution
pnorm(2.64,lower.tail = FALSE)

## [1] 0.004145301

#      Find P(|Z| > 1.39)

#  P(-1.39<X<1.39)  = P(X<1.39) - P(X<-1.39)
pnorm(1.39,0,1) - pnorm(-1.39,0,1)

## [1] 0.8354711

#2. Suppose p the proportion of students who are admitted to the graduate sch
ool
#   of the University of California at Berkeley, and suppose that a public re
lation
#   officer boasts that UCB has historically had a 40% acceptance rate for it
s graduate
#   school. Consider the data stored in the table UCBAdmissions from 1973. Äs
suming
#   these observations constituted a simple random sample, are they consisten
t with the
#   officerâ..s claim, or do they provide evidence that the acceptance
#   rate was significantly less than 40%?
#   Use an It 0.01 significance level


# Hypothesis
# H0 : p = 0.4 and
# H1 : p < 0.4.

# P - 0.4 / sqrt(0.4(1-0.4)/n)
#Significance Level to be used is alpha = 0.01
```

```r
View(UCBAdmissions)

dfUCB = as.data.frame(UCBAdmissions)

dim(dfUCB)
```

```
## [1] 24  4
```

```r
head(dfUCB)
```

```
##      Admit Gender Dept Freq
## 1 Admitted   Male    A  512
## 2 Rejected   Male    A  313
## 3 Admitted Female    A   89
## 4 Rejected Female    A   19
## 5 Admitted   Male    B  353
## 6 Rejected   Male    B  207
```

```r
#check the total frequency of admission
xtabs(Freq ~Admit, data = dfUCB)
```

```
## Admit
## Admitted Rejected
##     1755     2771
```

```r
#calculate the Z value for alpha = 0.01
qnorm(0.99)
```

```
## [1] 2.326348
```

```r
#2.32 for 0.99 so for 0.01 it will be -2.32

AdmitRate = 1755/(1755+2771)
TestStatistic = (AdmitRate-0.4)/sqrt(0.4*0.6/(1755+2771))
if(TestStatistic < -1*pnorm(0.99)){
  print("Reject NULL hypothesis :UCB has historically had a 40% acceptance ra
te for its graduate school is correct for alpha 0.01")
 } else print("UCB has historically had a 40% acceptance rate for its graduat
e school isn not correct for alpha 0.01")
```

```
## [1] "Reject NULL hypothesis :UCB has historically had a 40% acceptance rat
e for its graduate school is correct for alpha 0.01"
```

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.

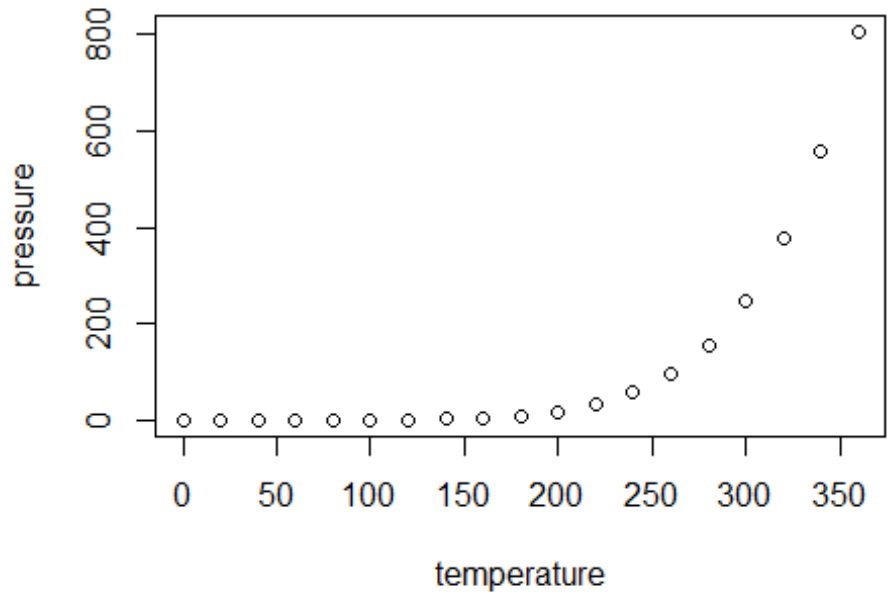
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
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.