Lab 6

2023-06-22

Question 1

Normal critical values for difference confidence interval.

```
#args are alpha and value

#(a) 80%
qt(p = .10, df = 80)
```

```
## [1] -1.292224
```

```
#(b) 85%
qt(p = 0.075 , df = 85)
```

```
## [1] -1.45266
```

```
#(c) 99%
qt(p =  0.005 , df = 99)
```

```
## [1] -2.626405
```

Question 2

Assigning a letter grade to student Henry.

```
#load the appropriate library
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
#read in the data file
grades123 <- read.csv('grades.csv')

#(a)

finalscore <- grades123 %>%
  mutate(final = midterm * .4 + exam * .6)
finalscore
```

```
##        name midterm exam final
## 1     Alice      80   85  83.0
## 2       Bob      70   80  76.0
## 3   Charlie      91   70  78.4
## 4     David      85   90  88.0
## 5     Emily      55   55  55.0
## 6     Frank      80   85  83.0
## 7     Grace      95   90  92.0
## 8     Henry      50   75  65.0
## 9    Isabel      65   85  77.0
## 10     John      75   70  72.0
## 11    Karen      80   80  80.0
## 12     Liam      85   80  82.0
## 13    Megan      90   70  78.0
## 14     Nate      75   60  66.0
## 15   Olivia      80   75  77.0
```

```
#(b)

henry_final <- 65

score <- ''
x <- finalscore[8,'final']

if(x < 60) {
  score <- 'F'
} else if (x < 70 & x >= 60) {
  score <- 'D'
} else if (x < 80 & x >= 70) {
  score <- 'C'
} else if ( x < 90 & x >= 80) {
  score <- 'B'
} else {
  score <- 'A'
}




#(c) Assigning Henry's grade.

letter.grade = score



letter.grade
```

```
## [1] "D"
```

Question 3: While loop

```
#(a)

num <- sample(1:20, 100, replace = TRUE)

num
```

```
##   [1] 16 11  3 20 19  6 14  2 16  8  5 11  9 12  1 10 14 13 16 12  9  4  1 20 15
##  [26]  4 12 16 19 11  5 17  3 10 13 19 19  4 16 15  4 12  9  7 16  2 17  7 20  3
##  [51] 14 16  4  9 11 15 13  1  7 11  5  3 15  5  5 17 15 16 13  1 15 19  2 14 14
##  [76]  2 13 14  2  6 14  2 13 12 11  7  4  5 19 20 15 20 20  5 18 11  6 13 11  3
```

```
#(b)

i <- 1

while (i <= length(num)) {
  if(num[i] == 5) {
    return(print(paste("The first 5 appears in position number", i)))
  } else if(i == length(num) & num[i] != 5) {
      print("The number 5 is not in the vector num.")
    }

  i = i + 1
}
```

```
## [1] "The first 5 appears in position number 11"
```