Lab1

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1. In three or four sentences, explain why constructing a Function . in order to execute tasks, is beneficial or advantageous

It will make us easier to know the result and make it easier to do figure it out the numbers when we have to list many values or variables.And more that it could helps us to have less error results and for that we don't need to check each lines we just need to make sure we create the right function ,and we don't have to list every variable by hand. It is more efficient to deal with the question or problem.

2. Write a function (using r code and structure demonstrated in class) to calculate a z score for a given observed value, a mean, and a standard deviation value. And then use your function to find a z score for the following problem. (Research the internet to find the formula used to calculate a z score)Observed value = 25.77, mean = 23.54, standard deviation = 2.442 (z-score = (value -mean)/sd)

```
zscore  <- function(ov, m, sd) {
  z=(ov-m)/sd
  print(paste(" Z score of Observed value = 25.77,mean = 23.54,standard deviation = 2.442 is"
              ,round(z, digits = 3)))
}
 zscore(25.77, 23.54,2.442)
```

```
## [1] " Z score of Observed value = 25.77,mean = 23.54,standard deviation = 2.442 is 0.913"
```

3.Write a function (using r code and the structure demonstrated in class) to calculate the natural log of a number multiplied by the common log of the same number divided by the cube root of a given prime number.Use your function to find the answer if the number to be used for both log expressions is 32 and the given prime number is 11.Also use R code to round your answer to the nearest tenth

```
logprime <- function(n,pn) {
  numerator <- log(n)*log10(n)

  denominator <- pn^(1/3)

  logprime <- numerator/denominator

  return(round(logprime,digits = 1))
}
logprime (32,11)
```

```
## [1] 2.3
```

4. Use and show R coding to calculate the standard deviation for each variable of the data table mtcars using the "Special For Loop Method" demonstrated in the class notes.

```
head (mtcars)
```

```
##                    mpg cyl disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4         21.0   6  160 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag     21.0   6  160 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710        22.8   4  108  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive    21.4   6  258 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout 18.7   8  360 175 3.15 3.440 17.02  0  0    3    2
## Valiant           18.1   6  225 105 2.76 3.460 20.22  1  0    3    1
```

```
sdmtcars <- vector("double", ncol(mtcars))   # 1. output
for (i in seq_along(mtcars)) {               # 2. sequence
  sdmtcars[[i]] <- round(sd(mtcars[[i]]),digits = 3)        # 3. body
}
sdmtcars
```

```
##  [1]   6.027   1.786 123.939  68.563   0.535   0.978   1.787   0.504   0.499
## [10]   0.738   1.615
```