Homework 2
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Problem 1:

Copy paste and run the tribble given below.

```
library(tidyverse)
tribble( ~x,     ~y,     ~w,      ~z,
              210,   300,    220,    180,
              102,   100,    119,    187,
              176,   175,    188,    173,
              87,    95,    91,     94,
              202,   210,   234,    218,
              110,   122,   131,    128,
) -> dt
dt
```

1_a:

- Use and show a `map` function to find the "mean" of each column of the `dt` data table

1_b:

- Use and show a `map` function to find the "standard deviation" of each column of the `dt` data table.

1_c:

- Use and show a map function that will calculate the "square root" of each value of each column of the data table `dt`.

1_d:

- Use R code to find the "mean", "max", "1st Quartile", "3rd Quartile", "Median", and "Min" for each column of the `dt` data table. (Hint: You do not have to use a map function)

Problem 2:

Write a function that uses a for loop that, for each iteration, randomly draws 5 observations from an exponential distribution with "rate" parameter 1 (use `rexp()`) and calculates its "mean". It should do this 10,000 times. Choose an appropriate plot to plot the distribution of "means".

2_a:

- Repeat part 1 by using a `map_*()` function.

2_b:

- Repeat part 1 by using the `replicate()` function.

2_c:

- Use a another for loop that will print out plots for sample sizes of 5, 10, and 20 observations (instead of just 5).

Problem 3:

- Use and show R coding to calculate the "standard deviation" for each variable of the data table `mtcars` using the "Special For Loop Method".

Note:

- There are two methods. Please see a quick explanation for both methods in below:

  – Method 1:

```r
multi_return <- function() {
  my_list <- list("color" = "red", "size" = 20, "shape" = "round")
  return(my_list)
}
```

```r
a <- multi_return()
a$color
```

```
[1] "red"
```

```r
a<- multi_return()
a$shape
```

```
[1] "round"
```

```r
a<- multi_return()
a$size
```

```
[1] 20
```

- Method 2. The "Special For Loop Method"

```r
output <- vector("double", ncol(df))  # 1. output (use appropriate data frame instead of d
for (i in seq_along(df)) {             # 2. sequence
  output[[i]] <- median(df[[i]])       # 3. body
}
output
```