Assignment 4

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Q1

```
cat(seq(from =1.3,to =5,by = 0.3),"\n")
```

```
## 1.3 1.6 1.9 2.2 2.5 2.8 3.1 3.4 3.7 4 4.3 4.6 4.9
```

```
cat(rep(seq(from=1,to =4 ),4),"\n")
```

```
## 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
```

```
cat(seq(from=14,to=0,by=-2),"\n")
```

```
## 14 12 10 8 6 4 2 0
```

```
cat(rep(c(5,12,13,20),each=2),"\n")
```

```
## 5 5 12 12 13 13 20 20
```

Q2

```
data("iris")
head(iris)
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
## 6          5.4         3.9          1.7         0.4  setosa
```

```
str(iris)
```

```
## 'data.frame':    150 obs. of  5 variables:
##  $ Sepal.Length: num  5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
##  $ Sepal.Width : num  3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
##  $ Petal.Length: num  1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
##  $ Petal.Width : num  0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
##  $ Species     : Factor w/ 3 levels "setosa","versicolor",..: 1 1 1 1 1 1 1 1 1 1 ...
```

Species is a factor with 3 levels

Q3

```
s_setosa=subset(iris, Species == "setosa")
s_versicolor<-subset(iris, Species == "versicolor")
s_virginica<-subset(iris, Species == "virginica")


Sl.setosa<-s_setosa$Sepal.Length
Sl.versicolor<-s_versicolor$Sepal.Length
Sl.virginica<-s_virginica$Sepal.Length



cat("Setosa Species\n")
```

```
## Setosa Species
```

```
cat("Mean:-" , mean(Sl.setosa),"\n")
```

```
## Mean:- 5.006
```

```
cat("Standard Deviation:-" , sd(Sl.setosa),"\n")
```

```
## Standard Deviation:- 0.3524897
```

```
cat("Versicolor Species\n")
```

```
## Versicolor Species
```

```
cat("Mean:-" , mean(Sl.versicolor),"\n")
```

```
## Mean:- 5.936
```

```
cat("Standard Deviation:-" , sd(Sl.versicolor),"\n")
```

```
## Standard Deviation:- 0.5161711
```

```
cat("Virginica Species\n")
```

```
## Virginica Species
```

```
cat("Mean:-" , mean(Sl.virginica),"\n")
```

```
## Mean:- 6.588
```

```
cat("Standard Deviation:-" , sd(Sl.virginica),"\n")
```

```
## Standard Deviation:- 0.6358796
```

```
iris.class<-iris
v<-c()
for(i in iris.class$Sepal.Length){
    if(i<5){
    v<-c(v,"Short")
    } else{
    v<-c(v,"Long")
    }
}
iris.class$Calyx.Width=v
head(iris.class)
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species Calyx.Width
## 1          5.1         3.5          1.4         0.2  setosa        Long
## 2          4.9         3.0          1.4         0.2  setosa       Short
## 3          4.7         3.2          1.3         0.2  setosa       Short
## 4          4.6         3.1          1.5         0.2  setosa       Short
## 5          5.0         3.6          1.4         0.2  setosa        Long
## 6          5.4         3.9          1.7         0.4  setosa        Long
```

Q4

```
cyl.gt5<-subset(mtcars,cyl>=5)
print(cyl.gt5)
```

```
##                     mpg cyl  disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4          21.0   6 160.0 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag      21.0   6 160.0 110 3.90 2.875 17.02  0  1    4    4
## Hornet 4 Drive     21.4   6 258.0 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout  18.7   8 360.0 175 3.15 3.440 17.02  0  0    3    2
## Valiant            18.1   6 225.0 105 2.76 3.460 20.22  1  0    3    1
## Duster 360         14.3   8 360.0 245 3.21 3.570 15.84  0  0    3    4
## Merc 280           19.2   6 167.6 123 3.92 3.440 18.30  1  0    4    4
## Merc 280C          17.8   6 167.6 123 3.92 3.440 18.90  1  0    4    4
## Merc 450SE         16.4   8 275.8 180 3.07 4.070 17.40  0  0    3    3
## Merc 450SL         17.3   8 275.8 180 3.07 3.730 17.60  0  0    3    3
## Merc 450SLC        15.2   8 275.8 180 3.07 3.780 18.00  0  0    3    3
## Cadillac Fleetwood 10.4   8 472.0 205 2.93 5.250 17.98  0  0    3    4
## Lincoln Continental 10.4  8 460.0 215 3.00 5.424 17.82  0  0    3    4
## Chrysler Imperial  14.7   8 440.0 230 3.23 5.345 17.42  0  0    3    4
## Dodge Challenger   15.5   8 318.0 150 2.76 3.520 16.87  0  0    3    2
## AMC Javelin        15.2   8 304.0 150 3.15 3.435 17.30  0  0    3    2
## Camaro Z28         13.3   8 350.0 245 3.73 3.840 15.41  0  0    3    4
## Pontiac Firebird   19.2   8 400.0 175 3.08 3.845 17.05  0  0    3    2
## Ford Pantera L     15.8   8 351.0 264 4.22 3.170 14.50  0  1    5    4
## Ferrari Dino       19.7   6 145.0 175 3.62 2.770 15.50  0  1    5    6
## Maserati Bora      15.0   8 301.0 335 3.54 3.570 14.60  0  1    5    8
```

```
first.ten<-subset(mtcars)[1:10,]
print(first.ten)
```

```
##                    mpg cyl  disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4         21.0   6 160.0 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag     21.0   6 160.0 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710        22.8   4 108.0  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive    21.4   6 258.0 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout 18.7   8 360.0 175 3.15 3.440 17.02  0  0    3    2
## Valiant           18.1   6 225.0 105 2.76 3.460 20.22  1  0    3    1
## Duster 360        14.3   8 360.0 245 3.21 3.570 15.84  0  0    3    4
## Merc 240D         24.4   4 146.7  62 3.69 3.190 20.00  1  0    4    2
## Merc 230          22.8   4 140.8  95 3.92 3.150 22.90  1  0    4    2
## Merc 280          19.2   6 167.6 123 3.92 3.440 18.30  1  0    4    4
```

```
mtcars["Honda Civic",]
```

```
##              mpg cyl disp hp drat    wt  qsec vs am gear carb
## Honda Civic 30.4   4 75.7 52 4.93 1.615 18.52  1  1    4    2
```