Assignment_1

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#ImportData

```
library(readr)
food_coded <- read_csv("C:\\Users\\Pavan
Chaitanya\\Documents\\ML\\food_coded.csv")

## New names:
## Rows: 125 Columns: 61
## ── Column specification
## ──────────────────────────────────────────────────────── Delimiter: ","
chr
## (14): GPA, comfort_food, comfort_food_reasons, diet_current,
eating_chan... dbl
## (47): Gender, breakfast, calories_chicken, calories_day,
calories_scone,...
## ℹ Use `spec()` to retrieve the full column specification for this data. ℹ
## Specify the column types or set `show_col_types = FALSE` to quiet this
message.
## • `comfort_food_reasons_coded` -> `comfort_food_reasons_coded...10`
## • `comfort_food_reasons_coded` -> `comfort_food_reasons_coded...12`
```

viewing the imported file in the R studio

```
View(food_coded)
```

printing the descriptive Statistics for quantitative and categorical variables

# For quantitative variables # 1 min function

```
min(food_coded$calories_chicken)

## [1] 265
```

# 2 max function

```
max(food_coded$calories_chicken)

## [1] 720
```

# 3 Mean Function

```
mean(food_coded$indian_food)

## [1] 3.152
```

# 4 Median Function

```
median(food_coded$ideal_diet_coded)

## [1] 3
```

# 5 Mode Function # there is no direct function available for mean. We have to group first then perform mean.

```
   food<-table(food_coded$vitamins)
        sort(food,decreasing = TRUE )

## 
##  2  1 
## 64 61
```

# For categorial variables # 1 Range Function

```
        range(food_coded$comfort_food)

## [1] "Broccoli, spaghetti squash, quinoa, and grilled chicken"
## [2] "wine. mac and cheese, pizza, ice cream"

        range(food_coded$food_childhood)

## [1] "Beef stroganoff, tacos, pizza"
## [2] "Tortellini and Broccoli with parmesan cheese and homemade breaded chicken with sweet potato"

 # 2 Summary Function

        summary(food_coded)

##      GPA                Gender        breakfast      calories_chicken
##  Length:125         Min.   :1.000   Min.   :1.000   Min.   :265.0   
##  Class :character   1st Qu.:1.000   1st Qu.:1.000   1st Qu.:430.0   
##  Mode  :character   Median :1.000   Median :1.000   Median :610.0   
##                     Mean   :1.392   Mean   :1.112   Mean   :577.3   
##                     3rd Qu.:2.000   3rd Qu.:1.000   3rd Qu.:720.0   
##                     Max.   :2.000   Max.   :2.000   Max.   :720.0   
##                                                                     
##   calories_day   calories_scone      coffee      comfort_food      
##  Min.   :2.000   Min.   :315.0   Min.   :1.000   Length:125        
##  1st Qu.:3.000   1st Qu.:420.0   1st Qu.:2.000   Class :character  
##  Median :3.000   Median :420.0   Median :2.000   Mode  :character  
##  Mean   :3.028   Mean   :505.2   Mean   :1.752                     
##  3rd Qu.:3.000   3rd Qu.:420.0   3rd Qu.:2.000                     
##  Max.   :4.000   Max.   :980.0   Max.   :2.000                     
##  NA's   :19      NA's   :1
##  comfort_food_reasons comfort_food_reasons_coded...10       cook
##  Length:125           Min.   :1.000                   Min.   :1.000
##  Class :character     1st Qu.:2.000                   1st Qu.:2.000
##  Mode  :character     Median :2.000                   Median :3.000
##                       Mean   :2.698                   Mean   :2.787
##                       3rd Qu.:3.000                   3rd Qu.:3.000
##                       Max.   :9.000                   Max.   :5.000
##                       NA's   :19                      NA's   :3
##  comfort_food_reasons_coded...12    cuisine      diet_current
##  Min.   :1.000                   Min.   :1.000   Length:125
##  1st Qu.:2.000                   1st Qu.:1.000   Class :character
##  Median :2.000                   Median :1.000   Mode  :character
##  Mean   :2.688                   Mean   :1.389
##  3rd Qu.:3.000                   3rd Qu.:1.000
##  Max.   :9.000                   Max.   :6.000
##                                  NA's   :17
##  diet_current_coded     drink       eating_changes
eating_changes_coded
##  Min.   :1.00       Min.   :1.000   Length:125         Min.   :1.000
##  1st Qu.:1.00       1st Qu.:1.000   Class :character   1st Qu.:1.000
##  Median :2.00       Median :2.000   Mode  :character   Median :1.000
##  Mean   :1.76       Mean   :1.561                      Mean   :1.536
##  3rd Qu.:2.00       3rd Qu.:2.000                      3rd Qu.:2.000
##  Max.   :4.00       Max.   :2.000                      Max.   :4.000
##                     NA's   :2
##  eating_changes_coded1   eating_out     employment     ethnic_food
##  Min.   : 1.000        Min.   :1.00   Min.   :1.000   Min.   :1.000
##  1st Qu.: 3.000        1st Qu.:2.00   1st Qu.:2.000   1st Qu.:3.000
##  Median : 4.000        Median :2.00   Median :2.000   Median :4.000
##  Mean   : 4.552        Mean   :2.56   Mean   :2.448   Mean   :3.744
##  3rd Qu.: 5.000        3rd Qu.:3.00   3rd Qu.:3.000   3rd Qu.:5.000
##  Max.   :13.000        Max.   :5.00   Max.   :3.000   Max.   :5.000
##                                       NA's   :9
##     exercise     father_education father_profession  fav_cuisine
##  Min.   :1.000   Min.   :1.000    Length:125         Length:125
##  1st Qu.:1.000   1st Qu.:2.000    Class :character   Class :character
##  Median :1.000   Median :4.000    Mode  :character   Mode  :character
##  Mean   :1.589   Mean   :3.484
##  3rd Qu.:2.000   3rd Qu.:4.000
##  Max.   :3.000   Max.   :5.000
##  NA's   :13      NA's   :1
##  fav_cuisine_coded    fav_food     food_childhood         fries
##  Min.   :0.000     Min.   :1.000   Length:125         Min.   :1.000
##  1st Qu.:1.000     1st Qu.:1.000   Class :character   1st Qu.:1.000
##  Median :1.000     Median :1.000   Mode  :character   Median :1.000
##  Mean   :2.424     Mean   :1.715                      Mean   :1.088
##  3rd Qu.:4.000     3rd Qu.:3.000                      3rd Qu.:1.000
##  Max.   :8.000     Max.   :3.000                      Max.   :2.000
##                    NA's   :2
##    fruit_day      grade_level      greek_food    healthy_feeling
##  Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   : 1.000  
##  1st Qu.:4.000   1st Qu.:1.000   1st Qu.:3.000   1st Qu.: 3.000  
##  Median :5.000   Median :2.000   Median :4.000   Median : 5.000  
##  Mean   :4.224   Mean   :2.376   Mean   :3.488   Mean   : 5.456  
##  3rd Qu.:5.000   3rd Qu.:3.000   3rd Qu.:5.000   3rd Qu.: 8.000  
##  Max.   :5.000   Max.   :4.000   Max.   :5.000   Max.   :10.000  
##                                                                  
##  healthy_meal        ideal_diet        ideal_diet_coded     income     
##  Length:125         Length:125         Min.   :1.000    Min.   :1.000  
##  Class :character   Class :character   1st Qu.:2.000    1st Qu.:4.000  
##  Mode  :character   Mode  :character   Median :3.000    Median :5.000  
##                                        Mean   :3.704    Mean   :4.532  
##                                        3rd Qu.:6.000    3rd Qu.:6.000  
##                                        Max.   :8.000    Max.   :6.000  
##                                                         NA's   :1      
##   indian_food     italian_food   life_rewarding   marital_status
##  Min.   :1.000   Min.   :3.000   Min.   : 1.000   Min.   :1.0   
##  1st Qu.:2.000   1st Qu.:5.000   1st Qu.: 2.000   1st Qu.:1.0   
##  Median :3.000   Median :5.000   Median : 5.000   Median :1.0   
##  Mean   :3.152   Mean   :4.728   Mean   : 5.105   Mean   :1.5   
##  3rd Qu.:5.000   3rd Qu.:5.000   3rd Qu.: 8.000   3rd Qu.:2.0   
##  Max.   :5.000   Max.   :5.000   Max.   :10.000   Max.   :4.0   
##                                  NA's   :1        NA's   :1     
##  meals_dinner_friend mother_education mother_profession  nutritional_check
##  Length:125          Min.   :1.000    Length:125         Min.   :1.000    
##  Class :character    1st Qu.:2.000    Class :character   1st Qu.:2.000    
##  Mode  :character    Median :4.000    Mode  :character   Median :3.000    
##                      Mean   :3.426                       Mean   :3.152    
##                      3rd Qu.:4.000                       3rd Qu.:4.000    
##                      Max.   :5.000                       Max.   :5.000    
##                      NA's   :3                                            
##  on_off_campus    parents_cook    pay_meal_out    persian_food  
##  Min.   :1.000   Min.   :1.000   Min.   :2.000   Min.   :1.000  
##  1st Qu.:1.000   1st Qu.:1.000   1st Qu.:3.000   1st Qu.:2.000  
##  Median :1.000   Median :1.000   Median :3.000   Median :3.000  
##  Mean   :1.323   Mean   :1.528   Mean   :3.408   Mean   :2.806  
##  3rd Qu.:1.000   3rd Qu.:2.000   3rd Qu.:4.000   3rd Qu.:4.000  
##  Max.   :4.000   Max.   :5.000   Max.   :6.000   Max.   :5.000  
##  NA's   :1                                       NA's   :1      
##  self_perception_weight      soup           sports       thai_food    
##  Min.   :1.000          Min.   :1.000   Min.   :1.00   Min.   :1.000  
##  1st Qu.:2.000          1st Qu.:1.000   1st Qu.:1.00   1st Qu.:2.000  
##  Median :3.000          Median :1.000   Median :1.00   Median :3.000  
##  Mean   :3.121          Mean   :1.218   Mean   :1.39   Mean   :3.336  
##  3rd Qu.:4.000          3rd Qu.:1.000   3rd Qu.:2.00   3rd Qu.:5.000  
##  Max.   :6.000          Max.   :2.000   Max.   :2.00   Max.   :5.000  
##  NA's   :1              NA's   :1       NA's   :2                     
##  tortilla_calories turkey_calories type_sports         veggies_day   
##  Min.   : 580.0    Min.   :345     Length:125         Min.   :1.000  
##  1st Qu.: 725.0    1st Qu.:500     Class :character   1st Qu.:3.000  
##  Median : 940.0    Median :500     Mode  :character   Median :4.000  
##  Mean   : 947.6    Mean   :555                        Mean   :4.008  
##  3rd Qu.:1165.0    3rd Qu.:690                        3rd Qu.:5.000  
##  Max.   :1165.0    Max.   :850                        Max.   :5.000  
##  NA's   :1                                                           
##     vitamins     waffle_calories    weight         
##  Min.   :1.000   Min.   : 575    Length:125        
##  1st Qu.:1.000   1st Qu.: 900    Class :character  
##  Median :2.000   Median : 900    Mode  :character  
##  Mean   :1.512   Mean   :1073                      
##  3rd Qu.:2.000   3rd Qu.:1315                      
##  Max.   :2.000   Max.   :1315                      
##
```

Tranformation of variables.

# printing the original Healthy feeling Values

```
      print(food_coded$healthy_feeling)

##   [1]  2  5  6  7  6  4  4  3  7  3  9  1  9  8  2  6  7  8  6  4  5  8  2
4  5
##  [26]  8  9  9  4  9  7  5  5  7  1  2  7  4  6  3 10  6  6  6  8  3  4  8
2  9
##  [51]  8  8  1  5 10  8  1  9  4  7  3  2  2  8  3  3  3  2  8  3  3  5  3
1  8
##  [76]  6  4  4  8  1  4  2  8  4  9  7  3  5  7  7  7  5  8  6  7 10  2  1
8  3
## [101]  2  3  7  4  9  2  7  5  6  5  8  9 10  9  7 10  5  9  5  7  5  5  6
1  3
```

# Applying the tranformation(logrithmic)

```
      healthyfealinglog<-log10(food_coded$healthy_feeling)
```

# printing the Logrithmic Healthy feeling Values

```
      print(healthyfealinglog)

##   [1] 0.3010300 0.6989700 0.7781513 0.8450980 0.7781513 0.6020600
0.6020600
##   [8] 0.4771213 0.8450980 0.4771213 0.9542425 0.0000000 0.9542425
0.9030900
##  [15] 0.3010300 0.7781513 0.8450980 0.9030900 0.7781513 0.6020600
0.6989700
##  [22] 0.9030900 0.3010300 0.6020600 0.6989700 0.9030900 0.9542425
0.9542425
##  [29] 0.6020600 0.9542425 0.8450980 0.6989700 0.6989700 0.8450980
0.0000000
##  [36] 0.3010300 0.8450980 0.6020600 0.7781513 0.4771213 1.0000000
```

```
0.7781513
##  [43] 0.7781513 0.7781513 0.9030900 0.4771213 0.6020600 0.9030900
0.3010300
##  [50] 0.9542425 0.9030900 0.9030900 0.0000000 0.6989700 1.0000000
0.9030900
##  [57] 0.0000000 0.9542425 0.6020600 0.8450980 0.4771213 0.3010300
0.3010300
##  [64] 0.9030900 0.4771213 0.4771213 0.4771213 0.3010300 0.9030900
0.4771213
##  [71] 0.4771213 0.6989700 0.4771213 0.0000000 0.9030900 0.7781513
0.6020600
##  [78] 0.6020600 0.9030900 0.0000000 0.6020600 0.3010300 0.9030900
0.6020600
##  [85] 0.9542425 0.8450980 0.4771213 0.6989700 0.8450980 0.8450980
0.8450980
##  [92] 0.6989700 0.9030900 0.7781513 0.8450980 1.0000000 0.3010300
0.0000000
##  [99] 0.9030900 0.4771213 0.3010300 0.4771213 0.8450980 0.6020600
0.9542425
## [106] 0.3010300 0.8450980 0.6989700 0.7781513 0.6989700 0.9030900
0.9542425
## [113] 1.0000000 0.9542425 0.8450980 1.0000000 0.6989700 0.9542425
0.6989700
## [120] 0.8450980 0.6989700 0.6989700 0.7781513 0.0000000 0.4771213
```

# printing the original ethnic food Values

```
      print(food_coded$ethnic_food)

##   [1] 1 4 5 5 4 4 5 2 5 5 5 5 4 5 4 1 2 4 1 3 4 3 3 5 4 2 2 3 2 5 4 5 5 4
2 2 4
##  [38] 4 4 3 4 4 3 5 5 5 4 3 4 3 2 5 4 3 5 3 5 2 5 5 5 4 2 5 4 3 3 5 4 2 5
5 4 3
##  [75] 3 5 2 1 3 5 4 4 4 5 5 3 4 3 5 5 3 2 1 5 5 4 4 3 5 3 5 5 5 5 4 4 5 4
2 2 3
## [112] 3 5 3 4 2 4 4 4 5 4 3 5 2 3
```

# Applying the tranformation(sqrt)

```
      sqrt_ethnicfood<-sqrt(food_coded$ethnic_food)
```

# printing the squared ethnic food Values

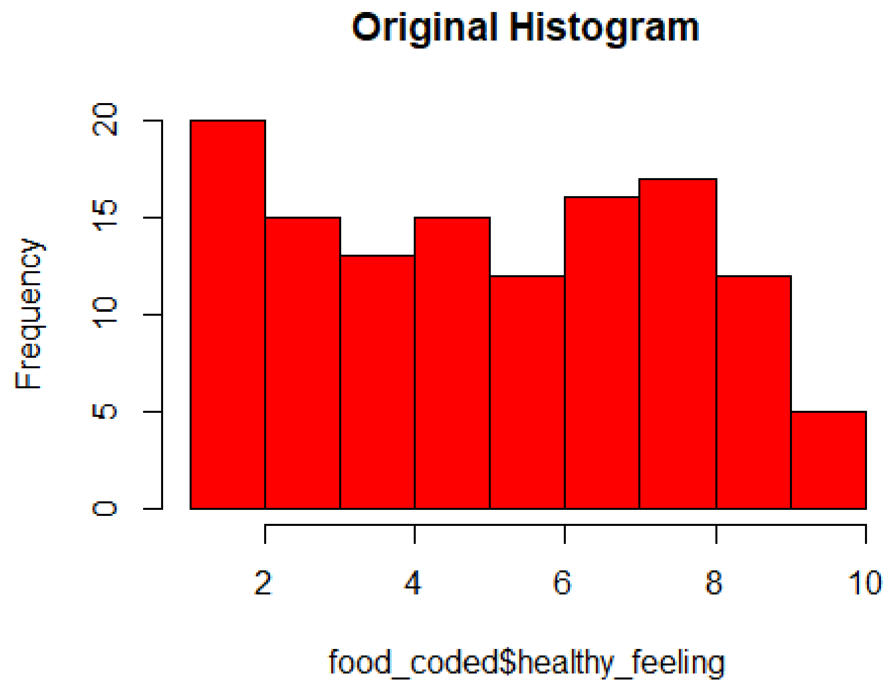
```
    print(sqrt_ethnicfood)

##   [1] 1.000000 2.000000 2.236068 2.236068 2.000000 2.000000 2.236068
1.414214
##   [9] 2.236068 2.236068 2.236068 2.236068 2.000000 2.236068 2.000000
1.000000
##  [17] 1.414214 2.000000 1.000000 1.732051 2.000000 1.732051 1.732051
2.236068
##  [25] 2.000000 1.414214 1.414214 1.732051 1.414214 2.236068 2.000000
```

```
2.236068
##  [33] 2.236068 2.000000 1.414214 1.414214 2.000000 2.000000 2.000000
1.732051
##  [41] 2.000000 2.000000 1.732051 2.236068 2.236068 2.236068 2.000000
1.732051
##  [49] 2.000000 1.732051 1.414214 2.236068 2.000000 1.732051 2.236068
1.732051
##  [57] 2.236068 1.414214 2.236068 2.236068 2.236068 2.000000 1.414214
2.236068
##  [65] 2.000000 1.732051 1.732051 2.236068 2.000000 1.414214 2.236068
2.236068
##  [73] 2.000000 1.732051 1.732051 2.236068 1.414214 1.000000 1.732051
2.236068
##  [81] 2.000000 2.000000 2.000000 2.236068 2.236068 1.732051 2.000000
1.732051
##  [89] 2.236068 2.236068 1.732051 1.414214 1.000000 2.236068 2.236068
2.000000
##  [97] 2.000000 1.732051 2.236068 1.732051 2.236068 2.236068 2.236068
2.236068
## [105] 2.000000 2.000000 2.236068 2.000000 1.414214 1.414214 1.732051
1.732051
## [113] 2.236068 1.732051 2.000000 1.414214 2.000000 2.000000 2.000000
2.236068
## [121] 2.000000 1.732051 2.236068 1.414214 1.732051
```

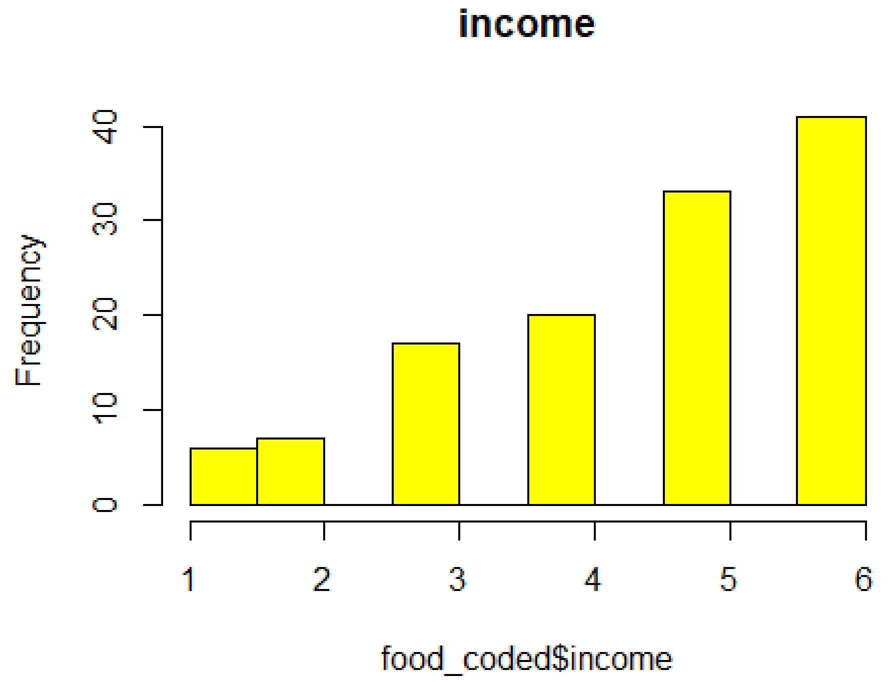
#plotting one quantitave Variable #We will be using histogram to plot the quantitative Variable # plotting the histogram for healthy feeling variable

```
      hist(food_coded$healthy_feeling, col = 'red',main = 'Original
Histogram')
```



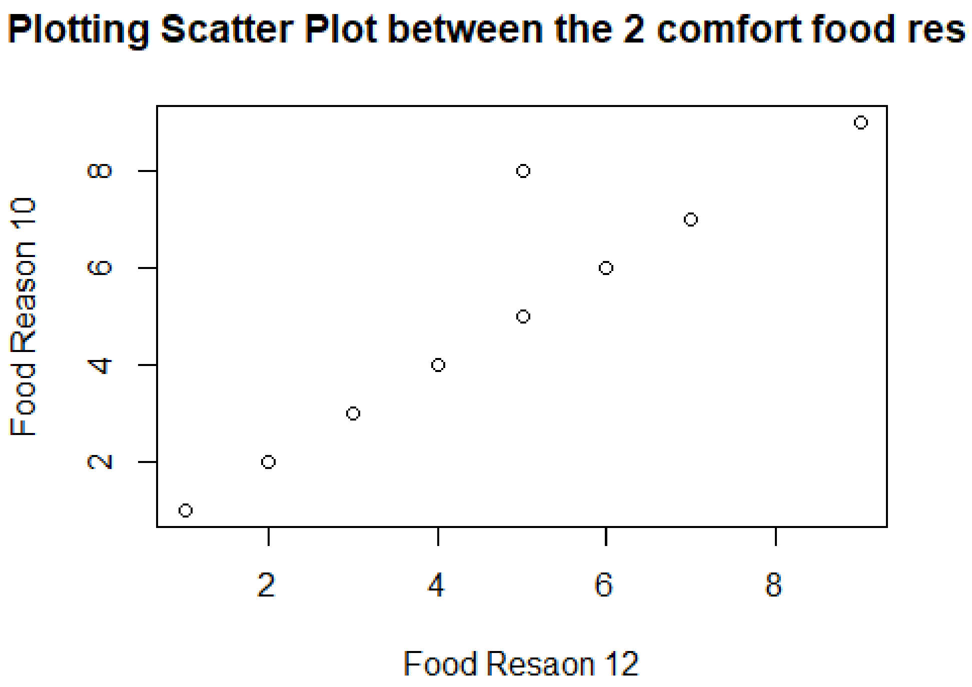
# plotting the histogram for income variable

```
      hist(food_coded$income, col = 'yellow', main = 'income')
```



#plotting the Scatter plot #plotting the scatter plot between food_reasons_coded...12 and food_reasons_coded...10

```
plot(food_coded$comfort_food_reasons_coded...12,food_coded$comfort_food_reaso
ns_coded...10,main = 'Plotting Scatter Plot between the 2 comfort food
resons',xlab = 'Food Resaon 12', ylab ='Food Reason 10' )
```


Plotting Scatter Plot between the 2 comfort food res
Food Reason 10
Food Resaon 12