DATA ANALYSIS ON IQ AND BRAIN BIOMETRICS DATASET (brain.csv)

(i) Calculate the mean, median, variance, and standard deviation for each of the variables.

```
brain = read.csv("brain.csv")
head(brain)
str(brain)
```

```
#Calculate the mean, median, variance, and standard deviation
#for each of the variables.

fsiq = brain$FSIQ
viq = brain$VIQ
piq = brain$PIQ
weight = brain$Weight
height = brain$Height
mri = brain$MRI_Count
```

```
> mean(fsiq)
[1] 113.45
> median(fsiq)
[1] 116.5
> var(fsiq)
[1] 579.9462
> sd(fsiq)
[1] 24.08207
```

```
> mean(height)
[1] 68.8125
> median(height)
[1] 68.25
> var(height)
[1] 18.83958
> sd(height)
[1] 4.340459
```

```
> mean(viq)
[1] 112.35
> median(viq)
[1] 113
> var(viq)
[1] 557.7205
> sd(viq)
[1] 23.61611
```

```
> mean(mri)
[1] 908755
> median(mri)
[1] 905399
> var(mri)
[1] 5224694598
> sd(mri)
[1] 72282.05
```

```
> mean(piq)
[1] 111.025
> median(piq)
[1] 115
> var(piq)
[1] 504.9481
> sd(piq)
[1] 22.47105
```

```
> mean(weight)
[1] 152.55
> median(weight)
[1] 147.5
> var(weight)
[1] 566.7154
> sd(weight)
[1] 23.80578
```

(ii) Get the minimum and maximum value for variable Weight and Height.

```
> #Get the minimum and maximum value for variable Weight and Height.
> min(weight)
[1] 106
> max(weight)
[1] 192
> min(height)
[1] 62
> max(height)
[1] 80
```

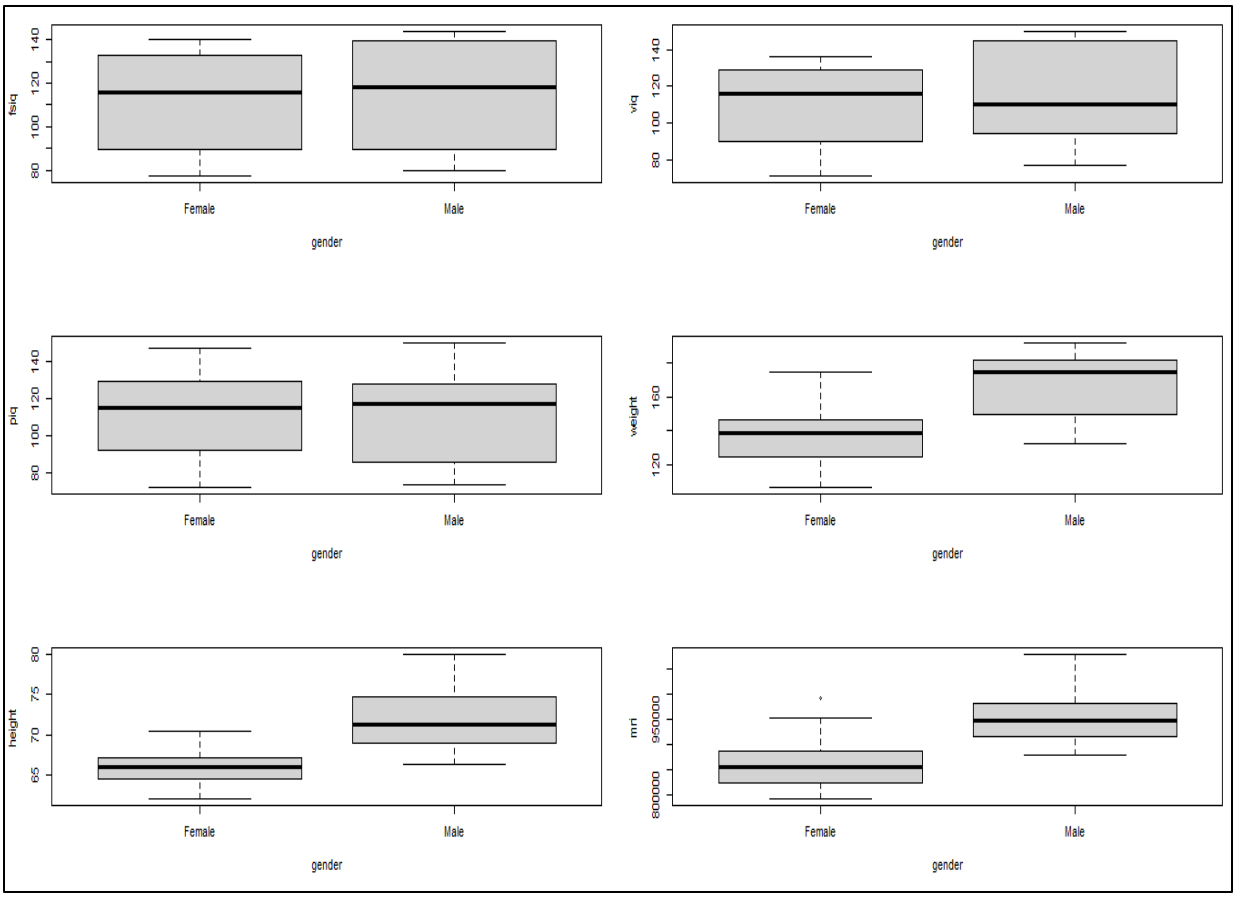
(iii) Categorize your data into male and female and show the summary statistics of your gender by using the function summary().

```
> brain_male = brain[brain$Gender == "Male", ]
> brain_female = brain[brain$Gender == "Female", ]
```

```
> summary(brain_male)
    Gender              FSIQ            VIQ            PIQ
 Length:20          Min.   : 80.00   Min.   : 77.00   Min.   : 74.0
 Class :character   1st Qu.: 89.75   1st Qu.: 95.25   1st Qu.: 86.0
 Mode  :character   Median :118.00   Median :110.50   Median :117.0
                    Mean   :115.00   Mean   :115.25   Mean   :111.6
                    3rd Qu.:139.25   3rd Qu.:145.00   3rd Qu.:128.0
                    Max.   :144.00   Max.   :150.00   Max.   :150.0
     Weight          Height        MRI_Count
 Min.   :132.0   Min.   :66.30   Min.   : 879987
 1st Qu.:150.2   1st Qu.:68.95   1st Qu.: 919529
 Median :175.0   Median :71.25   Median : 947242
 Mean   :167.9   Mean   :71.86   Mean   : 954855
 3rd Qu.:181.2   3rd Qu.:74.38   3rd Qu.: 973496
 Max.   :192.0   Max.   :80.00   Max.   :1079549
> summary(brain_female)
    Gender              FSIQ            VIQ            PIQ
 Length:20          Min.   : 77.00   Min.   : 71.0   Min.   : 72.0
 Class :character   1st Qu.: 90.25   1st Qu.: 90.0   1st Qu.: 93.0
 Mode  :character   Median :115.50   Median :116.0   Median :115.0
                    Mean   :111.90   Mean   :109.5   Mean   :110.5
                    3rd Qu.:133.00   3rd Qu.:129.0   3rd Qu.:128.8
                    Max.   :140.00   Max.   :136.0   Max.   :147.0
     Weight          Height        MRI_Count
 Min.   :106.0   Min.   :62.00   Min.   :790619
 1st Qu.:125.8   1st Qu.:64.50   1st Qu.:828062
 Median :138.5   Median :66.00   Median :855365
 Mean   :137.2   Mean   :65.77   Mean   :862655
 3rd Qu.:146.2   3rd Qu.:66.88   3rd Qu.:882669
 Max.   :175.0   Max.   :70.50   Max.   :991305
```

(iv) Use the boxplot function to compare the distribution of all the continuous variables against Gender. Fit all plots into a single figure and label all your axes.

```
#Use the boxplot function to compare the distribution
#of all the continuous variables against Gender.
#Fit all plots into a single figure and label all your axes.
gender = brain$Gender
par(mfrow = c(3,2))
boxplot(fsiq ~ gender)
boxplot(viq ~ gender)
boxplot(piq ~ gender)
boxplot(weight ~ gender)
boxplot(height ~ gender)
boxplot(mri ~ gender)
```



(v) Plot a scatter plot for all the continuous variables in the dataset using red colour.