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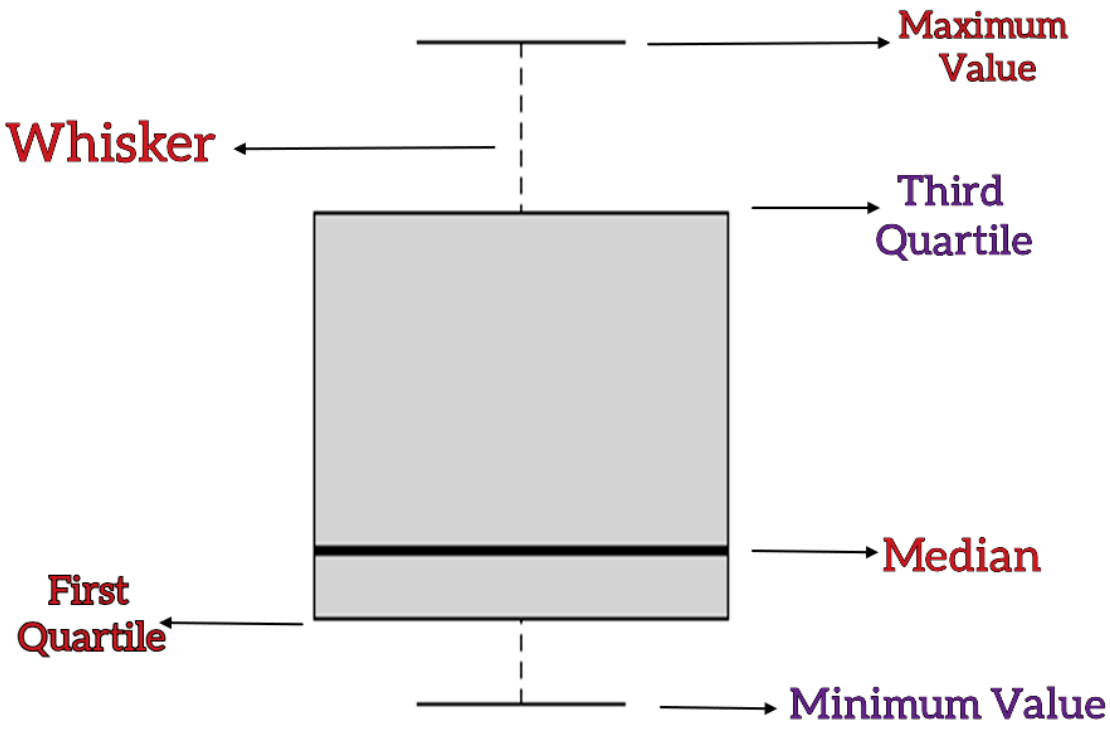
BOX-WHISKER PLOTS (OR BOX PLOT)

INTRODUCTION

- The Boxplot is also known as Box-Whisker Plot.
- The Basic form of the boxplot shows the median value, the quartiles and the maximum and minimum value.
- In general it displays differences between samples.
- The boxplot is also useful to visualize a single sample because we can show or remove outliers if we want.
- It is a useful way to visualize simple or quite complex data.
- “boxplot()” command is used to create box-whisker plots.
- We make boxplots for single as well as multiple data sets either in the form of numeric vectors or numeric columns of a data frame respectively.


Maximum Value
Whisker
Third Quartile
Median
First Quartile
Minimum Value

BASIC BOXPLOTS

EXAMPLE- Form a data frame “fruits” from the following data:

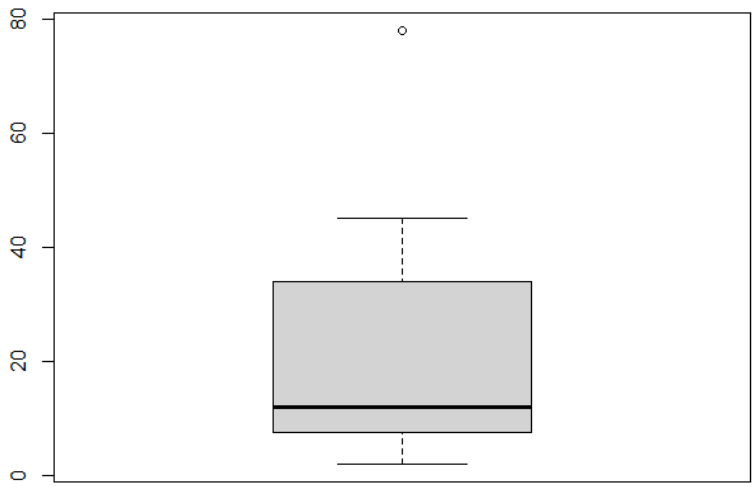
apple: 3 12 45 2 78 23 12

pineapple: 4 34 67 34 12 19 6

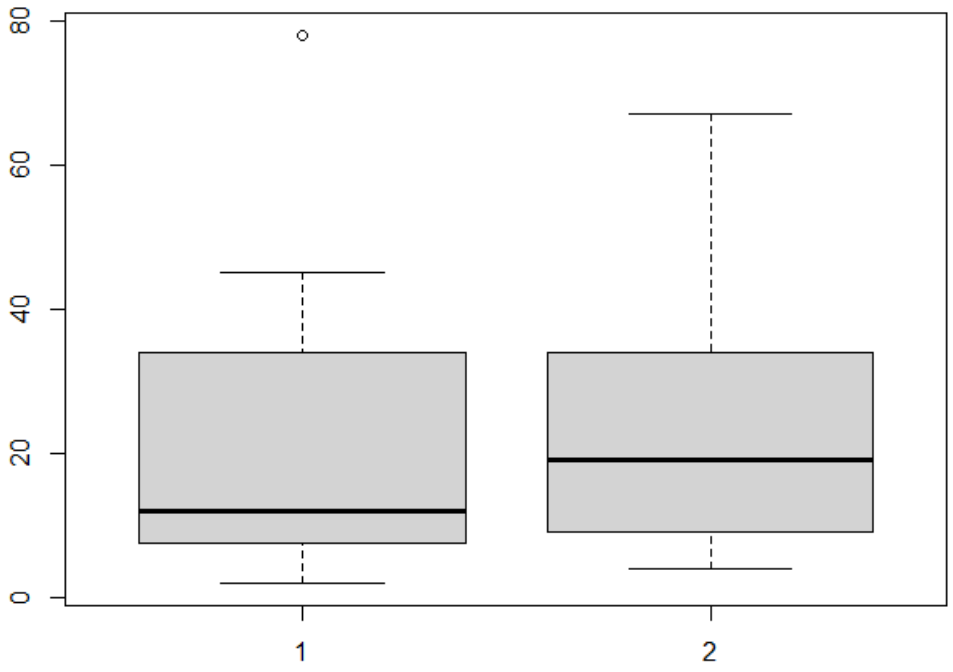
```
> apple<-c(3,12,45,2,78,23,12)
> pineapple<-c(4,34,67,34,12,19,6)
> fruits<-data.frame(apple,pineapple)
> print(fruits)
  apple pineapple
1     3         4
2    12        34
3    45        67
4     2        34
5    78        12
6    23        19
7    12         6
```

To make boxplot the data apple:

```
boxplot(fruits$apple) #to visualize one variable "apple"
```

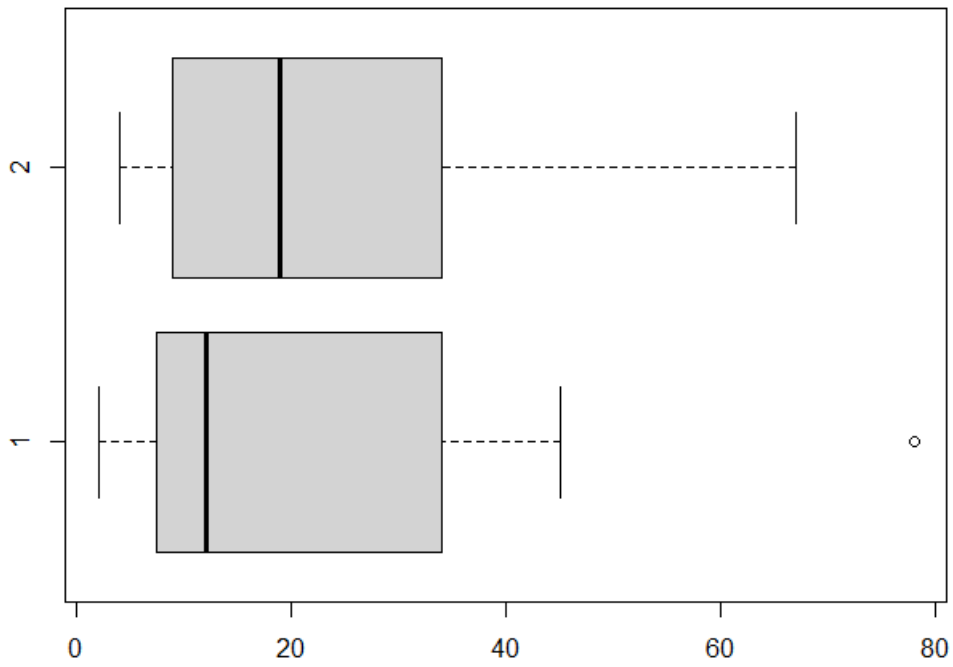


```r
# to visualize both variables
boxplot(fruits$apple,fruits$pineapple)
```



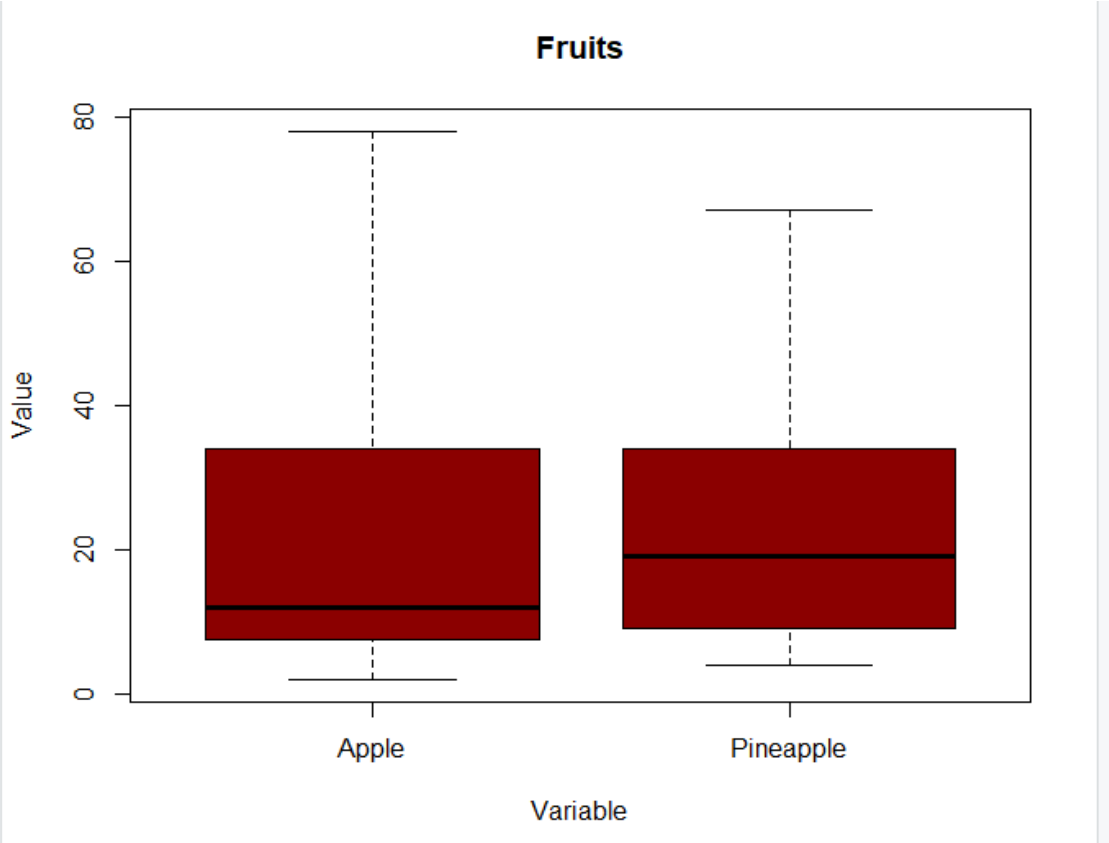
HORIZONTAL BOXPLOTS

```
#to make horizontal plots
boxplot(fruits$apple,fruits$pineapple,horizontal=TRUE)
```



CUSTOMIZING BOXPLOTS

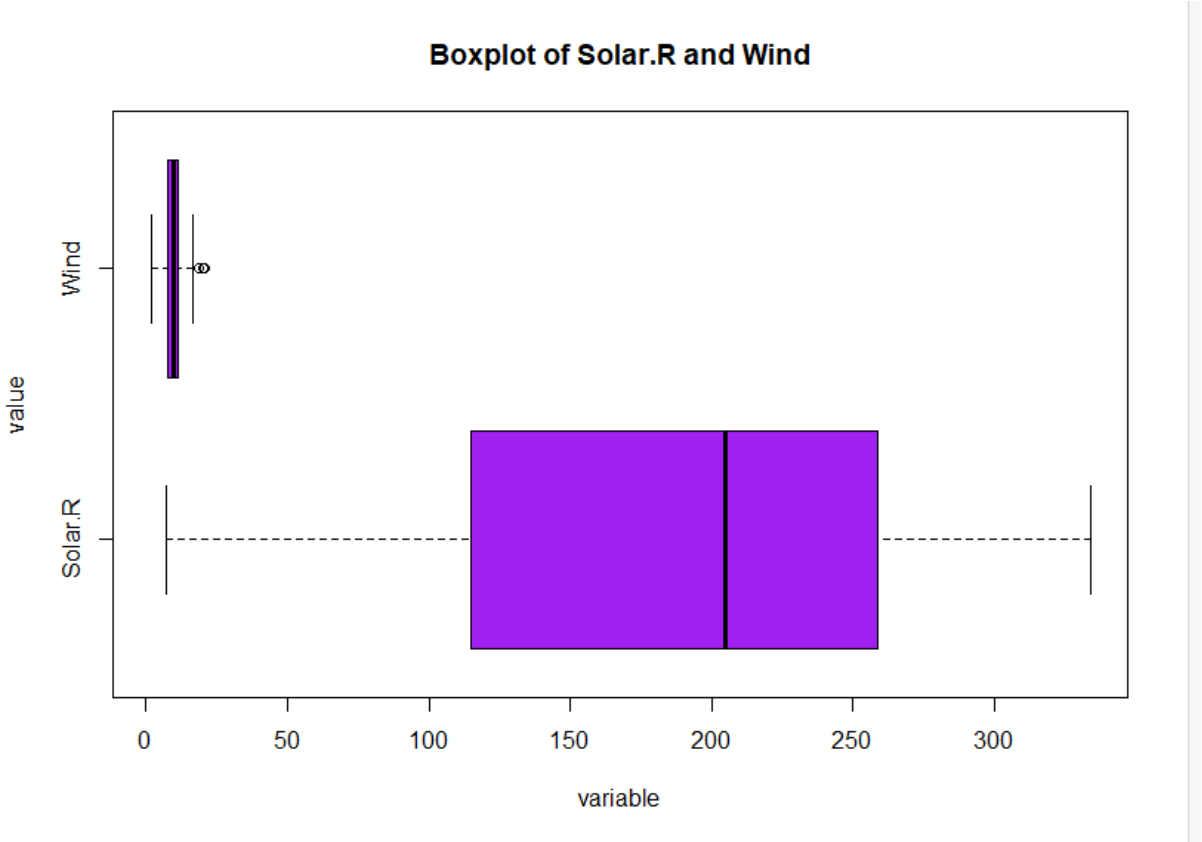
```
#to give label to the axes, we use xlab=' ' and ylab=' '
#names=c(' ',' ')  is used to set the labels of boxplot
#main=' ' is used to give title of boxplot
#col=' ' is used to give colour to the box
#range=0  is used to extend the whiskers to maximum and minimum value
boxplot(fruits$apple,fruits$pineapple,col='red4',xlab='Variable',ylab='Value',names=c('Apple','Pineapple'),range=0,main='Fruits')
```



EXAMPLE:-

Draw horizontal boxplot of Solar.R and Wind in airquality data set. Customize suitably.

```
airquality
boxplot(airquality$Solar.R,airquality$Wind,names=c('Solar.R','Wind'),horizontal=TRUE,col='purple',
        xlab='variable',ylab='value',main='Boxplot of Solar.R and Wind')
```



THANK YOU