7. Basics of graph

```
# Reference book: "Beginning R: The Statistical Programming Language"
# Author: Dr. Mark Gardener
```

Box plot chart

```r
library(RcmdrMisc)
```

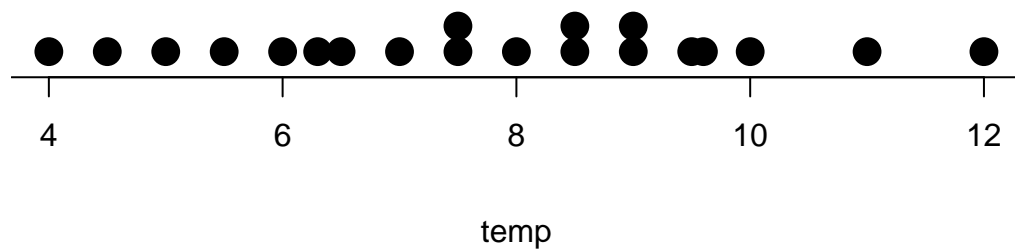Warning: package 'RcmdrMisc' was built under R version 4.0.3

Loading required package: car

Loading required package: carData

Loading required package: sandwich

Warning: package 'sandwich' was built under R version 4.0.3

```r
temp=c(4, 4.5, 5, 5.5, 6, 6.3, 6.5, 7, 7.5, 7.5, 8, 8.5, 8.5, 9, 9, 9.5, 9.6, 10, 11, 12)
#temp=scan() you can use
Dotplot(temp)
```
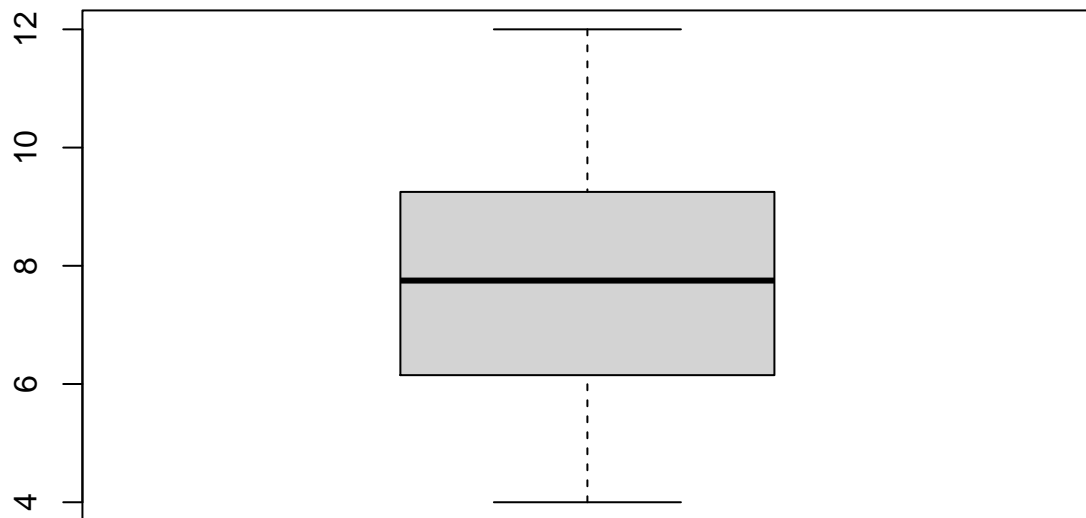
temp

```
quantile(temp)
```

```
    0%    25%    50%    75%   100%
 4.000  6.225  7.750  9.125 12.000
```

```
summary(temp)
```

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
  4.000   6.225   7.750   7.745   9.125  12.000
```
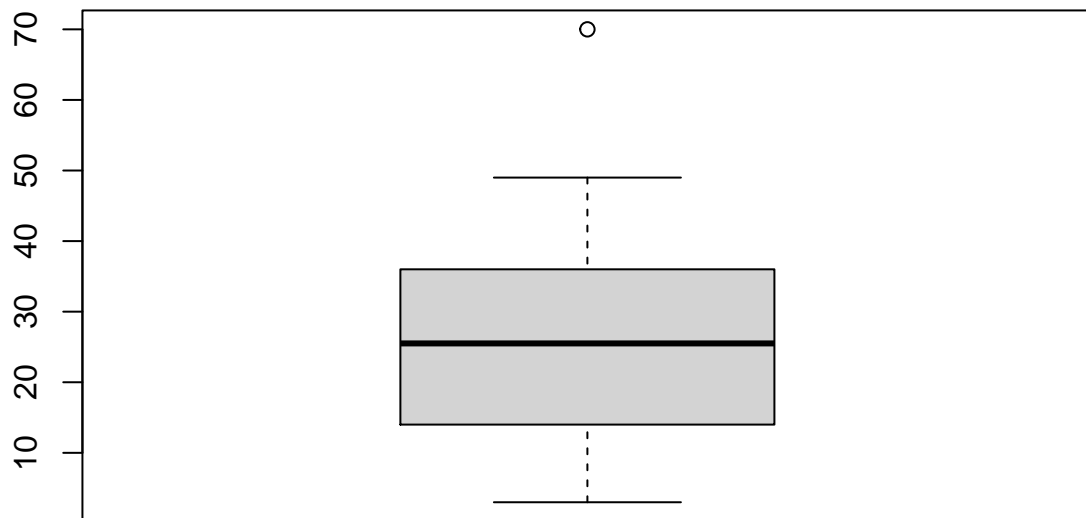
```
boxplot(temp)
```

Detecting outliers using Box plot chart

```
# Detecting outliers
# bench=Q1-1.5*IQR(data) (lower value)
# bench=Q3+1.5*IQR(data) (upper value)
t=c(3,10,14,19,22,29,32,36,49,70)
loval=quantile(t,probs=0.25)-1.5*IQR(t)
upval=quantile(t,probs=0.75)+1.5*IQR(t)
loval; upval
```

```
    25%
-14.375
```

```
    75%
64.625
```
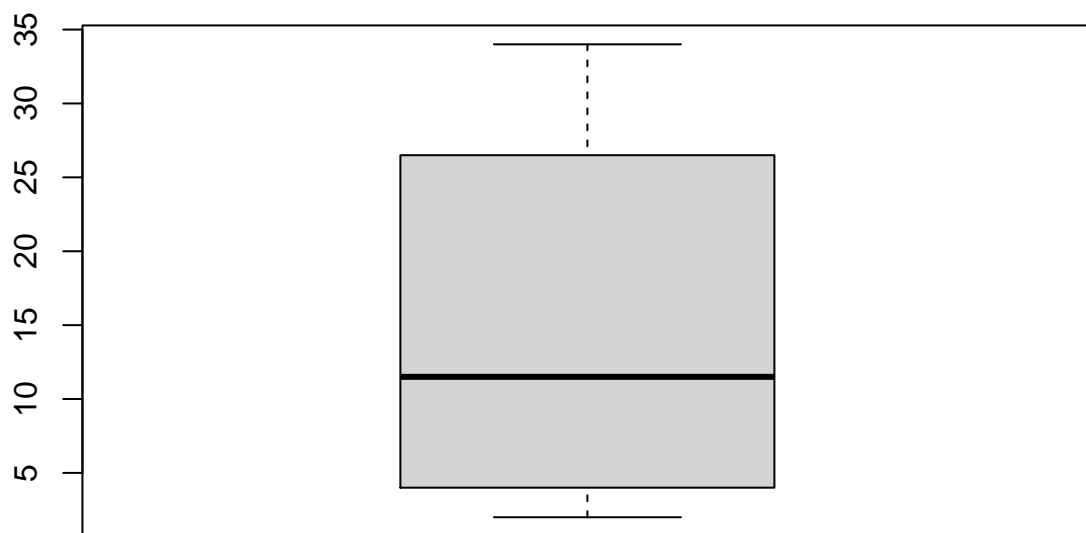
```
boxplot(t)
```

```r
# Detecting Extreme points
# bench=Q1-3*IQR(data) (lower value)
# bench=Q3+3*IQR(data) (upper value)
```
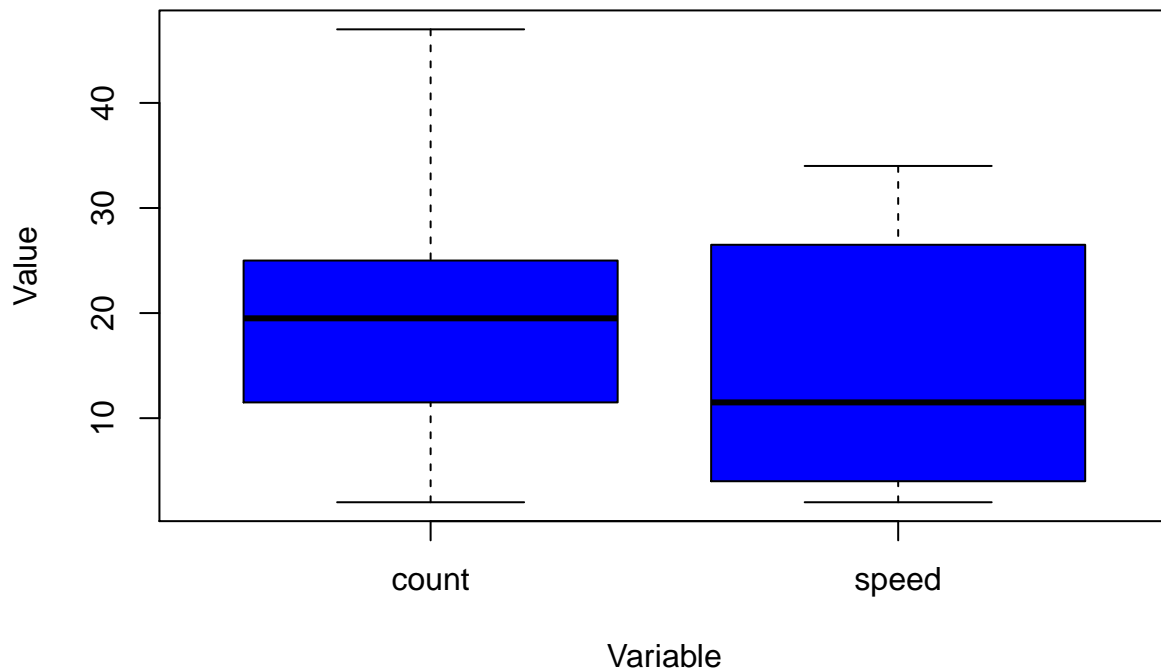
Box plot for data frame

```r
count =c(9,25,15,2,14,25,24,47)
speed=c(2,3,5,9,14,24,29,34)
fw=data.frame(count, speed)
fw
```

```
  count speed
1     9     2
2    25     3
3    15     5
4     2     9
5    14    14
6    25    24
7    24    29
8    47    34
```

```r
boxplot(fw$speed)
```

```r
boxplot(fw$count,fw$speed,names = c('count','speed'),range = 0,xlab = 'Variable',
        ylab='Value',col='Blue')
```
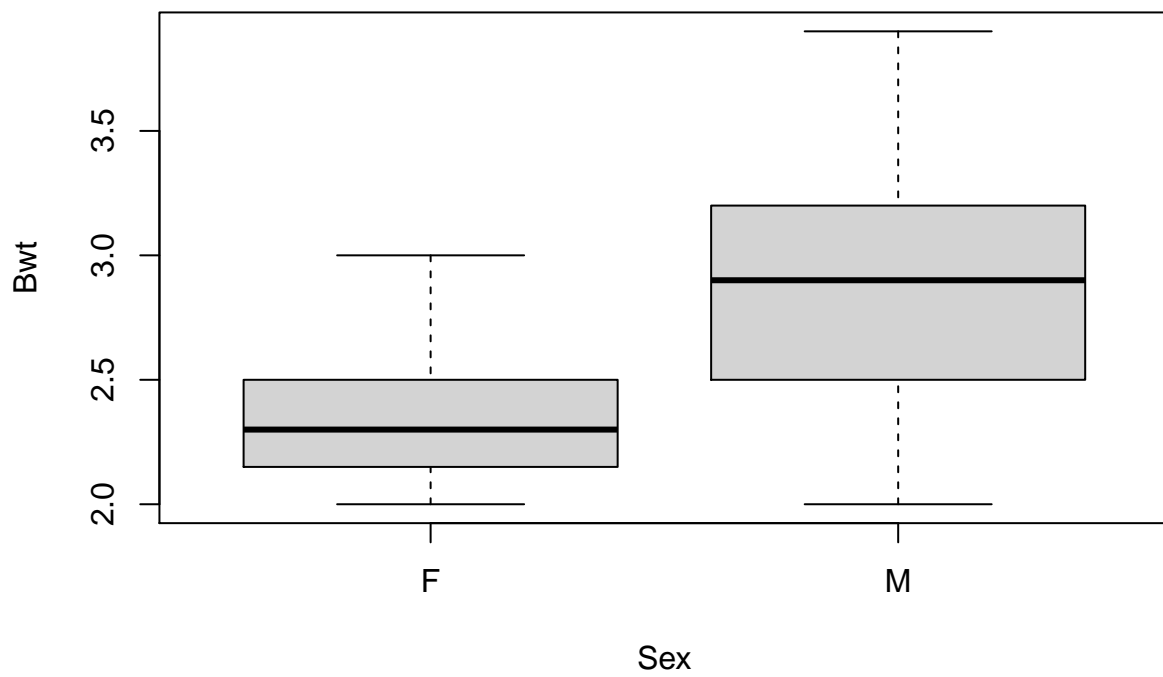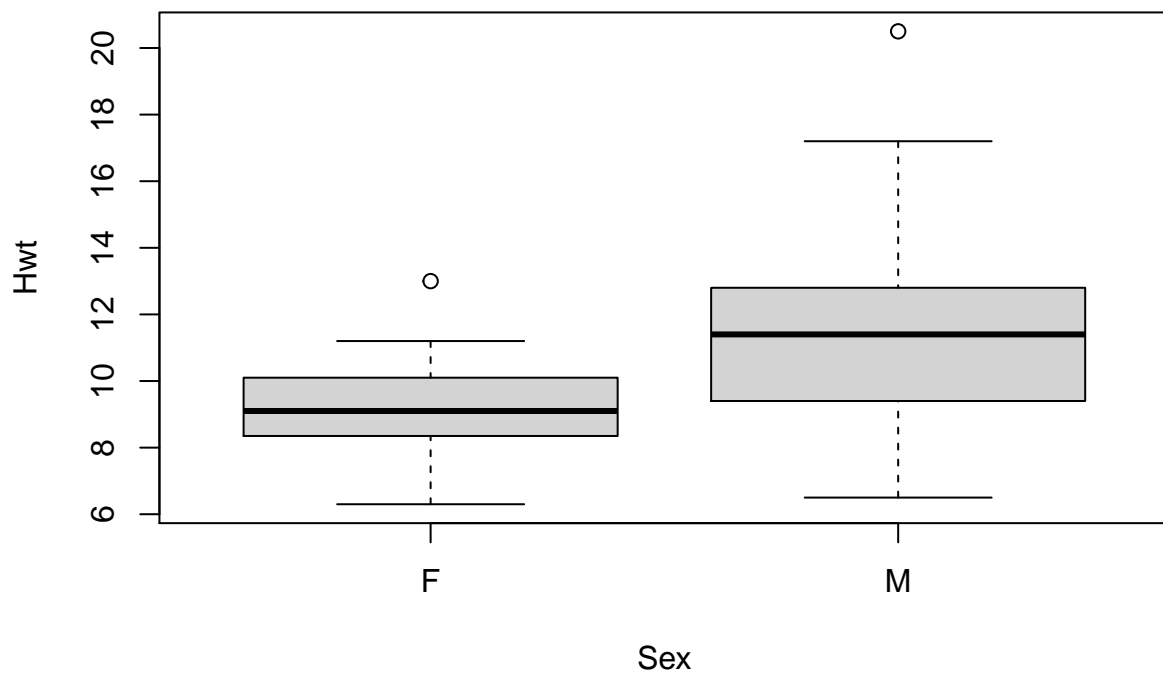
Box plot for grouping variables

```r
#one with numerical data and one containing grouping information
#boxplot(response variable(numeric) ~ respones(grouping) variable, data= dataset)
library(MASS)
head(cats)
```

```
  Sex Bwt Hwt
1   F 2.0 7.0
2   F 2.0 7.4
3   F 2.0 9.5
4   F 2.1 7.2
5   F 2.1 7.3
6   F 2.1 7.6
```

```r
attach(cats)
boxplot(Bwt~Sex) # Bwt = body weight in kg.
```

```r
boxplot(Hwt~Sex) # Hwt = heart weight in g.
```

```
detach(cats)
```

Stem and Leaf graph

```
data2 = c(3, 5, 7, 5, 3, 2, 6, 8, 5, 6, 9, 4, 5, 7, 3, 4)
table(data2)
```

```
data2
2 3 4 5 6 7 8 9
1 3 2 4 2 2 1 1
```

```
stem(data2)
```

```
  The decimal point is at the |

  2 | 0000
  4 | 000000
  6 | 0000
  8 | 00
```

```
stem(data2, scale = 2) #scale = 2 means single point
```

```
  The decimal point is at the |

  2 | 0
  3 | 000
  4 | 00
  5 | 0000
  6 | 00
  7 | 00
  8 | 0
  9 | 0
```

```
require(stats)
head(faithful)
```

```
  eruptions waiting
1     3.600      79
2     1.800      54
3     3.333      74
4     2.283      62
5     4.533      85
6     2.883      55
```

```
stem(faithful$eruptions)
```

```
  The decimal point is 1 digit(s) to the left of the |

  16 | 070355555588
  18 | 000002223333333557777777788882235777888
  20 | 00002223378800035778
  22 | 0002335578023578
  24 | 00228
  26 | 23
  28 | 080
  30 | 7
  32 | 2337
  34 | 250077
  36 | 0000823577
  38 | 2333335582225577
  40 | 000000335778888800223355557778
  42 | 0333555778800233333555577778
  44 | 0222233555778000000000233333557778888
  46 | 000023335770000023578
  48 | 00000022335800333
  50 | 0370
```