MACAGBA, JAN EDWARD F.-FA1

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```
library(e1071)
library(tinytex)

results=read.csv("C:/Users/asus/Documents/Macagba_R/data.csv",header=T)
results
```

```
##     gender arch1 prog1 arch2 prog2
## 1        m    99    98    83    94
## 2        m    NA    NA    86    77
## 3        m    97    97    92    93
## 4        m    99    97    95    96
## 5        m    89    92    86    94
## 6        m    91    97    91    97
## 7        m   100    88    96    85
## 8        f    86    82    89    87
## 9        m    89    88    65    84
## 10       m    85    90    83    85
## 11       m    50    91    84    93
## 12       m    96    71    56    83
## 13       f    98    80    81    94
## 14       m    96    76    59    84
## 15       m    73    72    91    87
## 16       m    67    82    80    77
## 17       m    80    85    94    72
## 18       m    91    76    85    84
## 19       m    89    81    77    81
## 20       m    77    81    88    91
## 21       m    71    82    59    79
## 22       m    84    81    88    77
## 23       m    95    83    92    63
## 24       m     3    87    56    76
## 25       f    95    65    63    82
## 26       f    NA    NA    91    65
## 27       m    59    79    73    82
## 28       m    95    83    49    69
## 29       m    80    80    87    72
## 30       m    97    92    98    96
## 31       m    81    89    41    57
## 32       m    77    70    51    71
## 33       m    69    74    83    68
## 34       m    82    79    57    45
## 35       f    85    66    56    67
## 36       m    87    68    56    78
## 37       m    88    76    47    61
```

```
## 38       m    83    76    41    65
## 39       m    51    67    49    79
## 40       f    76    63    57    76
## 41       m    88    64    48    53
## 42       m    61    53    54    61
## 43       m    83    60    56    49
## 44       m    90    78    81    50
## 45       m    40    67    53    68
## 46       m    92    61    47    64
## 47       m    76    69    44    59
## 48       m    72    61    62    56
## 49       f    77    53    48    60
## 50       m    58    52    50    73
## 51       m    63    62    40    48
## 52       m    48    73    74    53
## 53       m    40    75    43    52
## 54       m    40    40    48    62
## 55       m    75    67    40    45
## 56       f    49    61    49    44
## 57       m    54    47    43    52
## 58       m    56    55    44    55
## 59       m    75    40    40    51
## 60       m    64    86    50    81
## 61       f    88    40    43    83
## 62       m    82    66    51    63
## 63       m    73    64    28    54
## 64       f    59    28    60    51
## 65       m    74    57    45    61
## 66       m    45    69    35    40
## 67       m    70    52    40    43
## 68       m    74    29    44    52
## 69       m    43    25    31    14
## 70       m    49    69    40    24
## 71       m    45    29    32    25
## 72       m    74    71    40    46
## 73       m    46    56    50    28
## 74       m    56    52    42    57
## 75       m    16    33    16     9
## 76       m    21    25    26    12
## 77       m    47    56    43    16
## 78       m    77    60    47    62
## 79       m    27    40    37     6
## 80       m    74    13    40    18
## 81       f    16    14    NA    NA
## 82       m    14    31    14    20
## 83       m    23    54    48    NA
## 84       m    83    76    58    75
## 85       f    NA    15    16    NA
## 86       m    45    40    40    61
## 87       m    40    28    26     9
## 88       m    48    27    23    16
## 89       m    91    89     6    73
## 90       f    50    27    22    11
## 91       m    77    82    45    65
```

```
## 92       m    49    49    36    31
## 93       m    96    84    48    29
## 94       f    21    29    25     5
## 95       m    61    40    34    11
## 96       m    50    19    41    NA
## 97       f    68    74    30    48
## 98       m    50    40    51    56
## 99       m    69    59    25    40
## 100      m    60    36    40    28
## 101      f    43    14    NA    NA
## 102      m    43    30    40    14
## 103      m    47    68    43    34
## 104      f    60    47    40    NA
## 105      m    40    68    57    75
## 106      m    45    26    38     6
## 107      m    45    31    NA    NA
## 108      f    31    21    32     8
## 109      m    49    12    24    14
## 110      m    87    40    40    32
## 111      m    40    76    49    17
## 112      f     8    29    15    14
## 113      m    62    46    50    31
## 114      m    14    21    NA    NA
## 115      m     7    25    27     7
## 116      m    16    27    25     7
## 117      m    73    51    48    23
## 118      m    56    54    49    25
## 119      m    46    64    13    19
```

```
skewness(results$arch1, na.rm = T)
```

```
## [1] -0.5063276
```

```
skewness(results$arch2, na.rm = T)
```

```
## [1] 0.4423272
```

```
skewness(results$prog1, na.rm = T)
```

```
## [1] -0.329161
```

```
skewness(results$prog2, na.rm = T)
```

```
## [1] -0.2977574
```

In the data it would be seen that all of the examination subjects are all negative except for arch2 which is positive. It can be also seen that the prog1 and prog2 are closer to each other while arch1 is the one skewed to the very left.

```r
skew=function(x){
  mean=mean(x, na.rm = T)
  median=median(x, na.rm = T)
  sd=sd(x, na.rm = T)

  skewness=3*(mean-median)/sd

  return(skewness)
}

arch1_skewness=skew(results$arch1)
arch2_skewness=skew(results$arch2)
prog1_skewness=skew(results$prog1)
prog2_skewness=skew(results$prog2)

print(arch1_skewness)
```

```
## [1] -0.6069042
```

```r
print(arch2_skewness)
```

```
## [1] 0.5421286
```

```r
print(prog1_skewness)
```

```
## [1] -0.643229
```

```r
print(prog2_skewness)
```

```
## [1] -0.3562908
```

When using Pearsons equation, the data increased especially prog1 from a -0.329 it became a -0.643 the other data increased by 1. I would say that using Pearsons equation has risk to it because there would be inaccuracies in the data.

```r
Females=c(57,59,78,79,60,65,68,71,75,48,51,55,56,41,43,44,75,78,80,81,83,83,85)
Males=c(48,49,49,30,30,31,32,35,37,41,86,42,51,53,56,42,44,50,51,65,67,51,56,
        58,64,64,75)

stem(Females)
```

```
##
##   The decimal point is 1 digit(s) to the right of the |
##
##   4 | 1348
##   5 | 15679
##   6 | 058
##   7 | 155889
##   8 | 01335
```

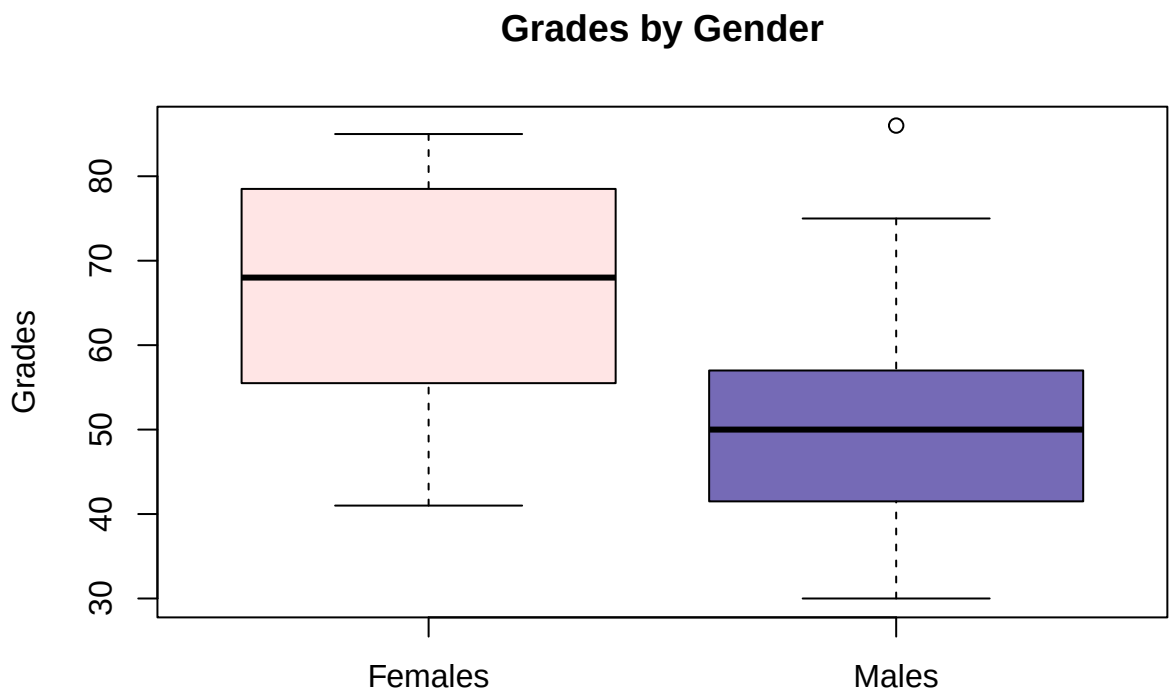
```r
stem(Males)
```

```
##
##   The decimal point is 1 digit(s) to the right of the |
##
##   3 | 001257
##   4 | 1224899
##   5 | 01113668
##   6 | 4457
##   7 | 5
##   8 | 6
```

The advantages of using the stem and leaf display is that for small data it would be much easier to find out the precise data instead of using a histogram. A stem and leaf would be easier to create than a histogram and also you would be seeing the individual data and not just different bars.

```r
Females=c(57,59,78,79,60,65,68,71,75,48,51,55,56,41,43,44,75,78,80,81,83,83,85)
Males=c(48,49,49,30,30,31,32,35,37,41,86,42,51,53,56,42,44,50,51,65,67,51,56,
        58,64,64,75)

boxplot(Females, Males, names=c("Females", "Males"), main="Grades by Gender",
        ylab="Grades",col=c("#FFE5E5","#756AB6"))
```



The finding for the boxplot is that the grades for the Female group is higher than the Male group with the median of the Female group being higher.