BACS-hw01-107070004

1. What is the 5th element in the original list of ages?

```
customers <- read.table('/Users/jessica/Desktop/BACS/hw1/customers.txt', header = TRUE)
ages <- customers$age
ages[5]
```

```
## [1] 45
```

2. What is the fifth lowest age?

```
sorted_ages <- sort(ages)
sorted_ages[5]
```

```
## [1] 19
```

3. Extract the five lowest ages together HINT: to get a sequence of numbers from a list, you can use: my_list[c(1,2,3,4,5)] but can you think of a shorter or clearer way of doing this?

```
sorted_ages[1:5]
```

```
## [1] 18 19 19 19 19
```

4. Get the five highest ages by first sorting them in decreasing order first. HINT: find out how to sort in decreasing order by using: help(sort) or ?sort

```
sort(ages, decreasing = TRUE)[1:5]
```

```
## [1] 85 83 82 82 81
```

5. What is the average (mean) age?

```
mean(ages)
```

```
## [1] 46.80702
```

6. What is the standard deviation of ages? (guess or google the standard deviation function in R)

```
sd(ages)
```

```
## [1] 16.3698
```

7. Make a new variable called age_diff, with the difference between each age and the mean age

```r
age_diff = ages - mean(ages)
age_diff
```

```
##   [1]   2.1929825  22.1929825  -5.8070175  26.1929825  -1.8070175  24.1929825
##   [7]   3.1929825  -3.8070175  23.1929825 -14.8070175   0.1929825  30.1929825
##  [13]  17.1929825   3.1929825   3.1929825  -1.8070175   2.1929825   0.1929825
##  [19]  15.1929825   3.1929825   0.1929825  25.1929825   0.1929825  16.1929825
##  [25] -25.8070175   2.1929825   3.1929825   1.1929825 -11.8070175  30.1929825
##  [31]   1.1929825   1.1929825   3.1929825   0.1929825 -17.8070175  -4.8070175
##  [37]  -4.8070175  38.1929825  -1.8070175   2.1929825  -1.8070175  -3.8070175
##  [43]   2.1929825  21.1929825  -4.8070175   1.1929825  25.1929825  32.1929825
##  [49]   1.1929825   3.1929825   0.1929825  -1.8070175 -16.8070175  29.1929825
##  [55] -15.8070175   2.1929825  27.1929825  25.1929825   1.1929825   2.1929825
##  [61]  26.1929825   3.1929825   0.1929825   0.1929825  36.1929825  25.1929825
##  [67]  28.1929825   3.1929825   3.1929825   2.1929825   1.1929825  -1.8070175
##  [73]   2.1929825   2.1929825   2.1929825  25.1929825   3.1929825  28.1929825
##  [79]  27.1929825  25.1929825  27.1929825  29.1929825   2.1929825   3.1929825
##  [85]  29.1929825 -10.8070175  -1.8070175 -11.8070175 -22.8070175  -1.8070175
##  [91]   3.1929825  -4.8070175 -24.8070175  13.1929825  12.1929825  -1.8070175
##  [97]   4.1929825  -0.8070175   0.1929825 -12.8070175  16.1929825  24.1929825
## [103]  -9.8070175 -25.8070175  -3.8070175 -14.8070175   0.1929825 -11.8070175
## [109]  23.1929825 -20.8070175  16.1929825   7.1929825  -1.8070175   0.1929825
## [115] -20.8070175 -11.8070175 -24.8070175 -15.8070175  23.1929825   4.1929825
## [121]  -9.8070175  -5.8070175   6.1929825 -12.8070175  -1.8070175 -12.8070175
## [127]  -3.8070175   3.1929825 -17.8070175   2.1929825  -0.8070175  -2.8070175
## [133] -20.8070175   2.1929825   1.1929825 -20.8070175 -12.8070175 -21.8070175
## [139]  -8.8070175 -21.8070175  31.1929825  -1.8070175 -15.8070175   0.1929825
## [145]  10.1929825 -18.8070175  28.1929825   2.1929825 -20.8070175   2.1929825
## [151] -12.8070175 -21.8070175   2.1929825 -12.8070175 -27.8070175 -14.8070175
## [157]   5.1929825  26.1929825  -7.8070175 -15.8070175   1.1929825  35.1929825
## [163] -13.8070175 -16.8070175  -9.8070175 -13.8070175   0.1929825 -17.8070175
## [169]   0.1929825  -9.8070175 -17.8070175  -6.8070175  15.1929825   1.1929825
## [175] -10.8070175  -5.8070175  10.1929825  10.1929825 -12.8070175 -21.8070175
## [181]  31.1929825 -23.8070175 -14.8070175  -5.8070175 -26.8070175  26.1929825
## [187]   2.1929825   3.1929825  -0.8070175   3.1929825 -19.8070175  -1.8070175
## [193] -17.8070175   9.1929825  28.1929825   6.1929825   0.1929825  -7.8070175
## [199]  31.1929825  -3.8070175  -1.8070175   5.1929825   1.1929825 -10.8070175
## [205]  31.1929825   0.1929825 -23.8070175 -12.8070175   2.1929825 -21.8070175
## [211]  -0.8070175  -6.8070175   3.1929825  -9.8070175   4.1929825 -11.8070175
## [217]  -1.8070175   2.1929825 -25.8070175  -9.8070175  -4.8070175  10.1929825
## [223]   2.1929825  -6.8070175   0.1929825   2.1929825   5.1929825  -4.8070175
## [229]   1.1929825 -18.8070175 -13.8070175   2.1929825   6.1929825 -25.8070175
## [235]  -8.8070175 -26.8070175 -14.8070175  30.1929825  -1.8070175   2.1929825
## [241] -25.8070175   1.1929825   3.1929825  15.1929825  -7.8070175  -1.8070175
## [247]  -2.8070175  -0.8070175  28.1929825  -4.8070175  -0.8070175   3.1929825
## [253]  23.1929825  -9.8070175  -8.8070175  -0.8070175 -14.8070175  -2.8070175
## [259]   3.1929825 -16.8070175  -7.8070175  -8.8070175 -19.8070175 -27.8070175
## [265]   2.1929825 -27.8070175  -6.8070175  18.1929825 -19.8070175   3.1929825
## [271]   1.1929825  -8.8070175  -2.8070175  23.1929825  17.1929825  25.1929825
## [277]   2.1929825 -14.8070175   2.1929825   2.1929825  26.1929825 -16.8070175
## [283] -16.8070175   8.1929825  -4.8070175  11.1929825  32.1929825 -18.8070175
## [289] -13.8070175 -20.8070175 -10.8070175 -15.8070175  26.1929825 -15.8070175
## [295]  24.1929825  21.1929825   3.1929825 -21.8070175  34.1929825 -22.8070175
```

```
## [301]   3.1929825 -25.8070175 -23.8070175   4.1929825  15.1929825  33.1929825
## [307]  19.1929825 -17.8070175 -16.8070175  -6.8070175 -27.8070175  24.1929825
## [313]  32.1929825  30.1929825 -14.8070175  -6.8070175   2.1929825 -20.8070175
## [319]   2.1929825  20.1929825   9.1929825 -22.8070175   0.1929825 -18.8070175
## [325]  11.1929825  -1.8070175 -27.8070175  25.1929825 -12.8070175  -0.8070175
## [331] -27.8070175 -13.8070175  33.1929825 -16.8070175  26.1929825 -26.8070175
## [337] -27.8070175  -6.8070175  29.1929825   1.1929825  -8.8070175  29.1929825
## [343]  29.1929825  -9.8070175 -11.8070175 -20.8070175 -21.8070175  20.1929825
## [349] -15.8070175 -19.8070175 -10.8070175 -25.8070175 -18.8070175  -7.8070175
## [355]   2.1929825  -1.8070175  13.1929825   1.1929825  -1.8070175   0.1929825
## [361] -19.8070175  32.1929825  -1.8070175   4.1929825 -23.8070175  27.1929825
## [367] -15.8070175 -26.8070175   3.1929825 -16.8070175  35.1929825  23.1929825
## [373]  -3.8070175 -26.8070175   3.1929825   1.1929825 -28.8070175  -1.8070175
## [379]  15.1929825  -5.8070175  24.1929825 -27.8070175  26.1929825 -20.8070175
## [385]  28.1929825  -5.8070175  -0.8070175   2.1929825   2.1929825 -23.8070175
## [391]  27.1929825   6.1929825 -23.8070175   4.1929825  24.1929825   3.1929825
## [397]   3.1929825  20.1929825  27.1929825
```

8. What is the average "difference between each age and the mean age"? HINT: think carefully why someone would want to know this, and what it implies about how to do #7

```
mean(age_diff)
```

```
## [1] -1.623275e-15
```

9. Visualize the raw data as we did in class: (a) histogram, (b) density plot, (c) boxplot+stripchart