BACS - HW1

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Read Data

```
ages = read.table('D:/Users/User/Documents/R/BACS/Homeworks/HW1/customers.txt', header=T)
ages = ages[,1]
```

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

Use index [5] to access the 5th element of the ages vector

```
ages[5]
```

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

2. What is the fifth lowest age?

First, sort the ages vector using sort()

```
ordered_ages = sort(ages)
```

Then, use index [5] to access the 5th lowest age from the sorted ages vector

```
ordered_ages[5]
```

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

3. Extract the five lowest ages together

Similar to problem 2, use index [1:5] (1 to 5) to access the lowest 5 ages

```
ordered_ages[1:5]
```

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

4. Get the five highest ages by first sorting them in decreasing order first.

Set the decreasing parameter to T (True) in order to sort the ages vector in decreasing order

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

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

5. What is the average (mean) age?

Use mean() to compute the average value of the age vector

```
mean(ages)
```

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

6. What is the standard deviation of ages?

Use sd() to compute the standard deviation of the age vector

```
sd(ages)
```

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

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

Use abs() to get the absolute value, because sometimes the age value is smaller than the mean age

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

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

It shows us how much do the ages vary from the mean age value
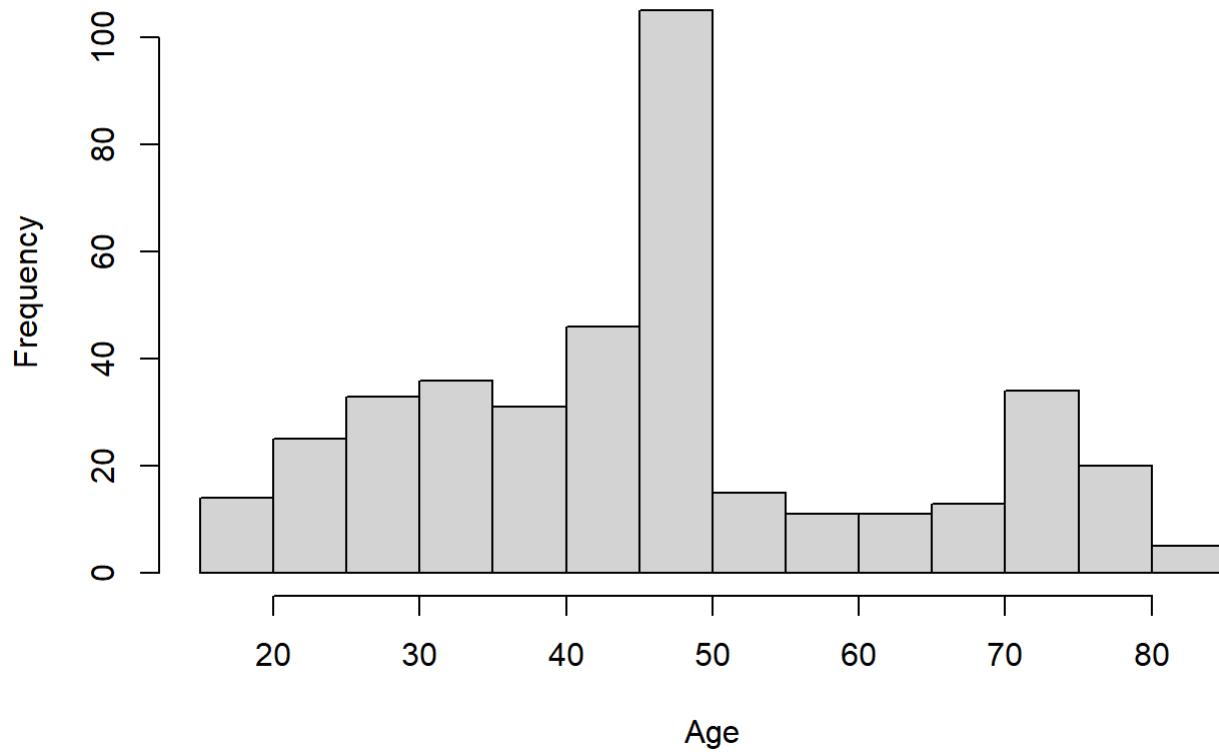
```
mean(age_diff)
```

```
## [1] 12.66948
```

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

Use hist(), plot(density()), boxplot(), and stripchart() to create each of the visualizations
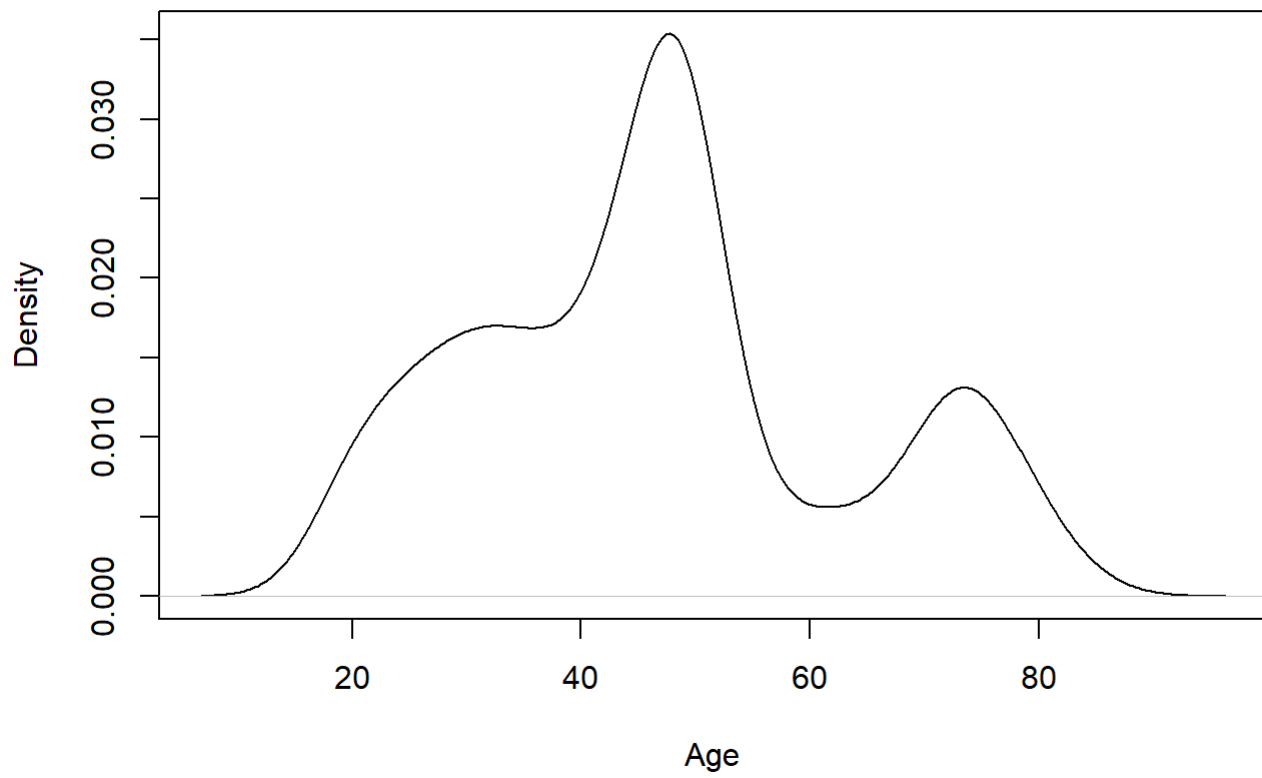
```
hist(ages, main='Histogram of Customer Ages', xlab='Age')
```
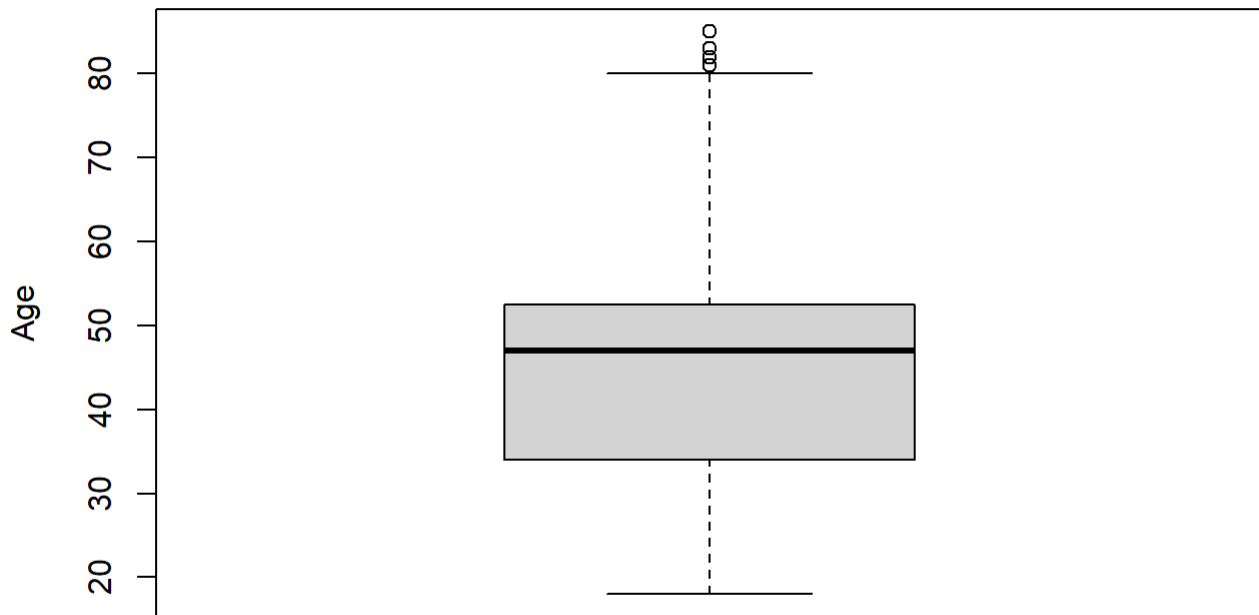
Histogram of Customer Ages


```
plot(density(ages), main='Density Plot of Customer Ages', xlab='Age')
```

Density Plot of Customer Ages


```
boxplot(ages, main='Box Plot of Customer Ages', ylab='Age')
```

Box Plot of Customer Ages


```
stripchart(ages, main='Strip Chart of Customer Ages', xlab='Age')
```

Strip Chart of Customer Ages

Age