Practice 1

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Question 1

For the following measurements

```
## 1 5 3 10 5 7 11 8 5 5 1 2 3
```

1. What is n?

```
## n = 13
```

2. Compute $x_{(5)}$.

```
## x(5) = 3
```

3. Compute $x_{(1)}$ and $x_{(n)}$.

```
## x(1) = minimum = 1
```

```
## x(n) = maximum = 11
```

4. What is mean value?

```
## mean = 5.076923
```

5. What is median value?

```
## median = 5
```

6. Compute Q_1 and Q_3.

```
## Q1 = 3
```

```
## Q3 = 7
```

7. What is IQR?

```
## IQR = 4
```
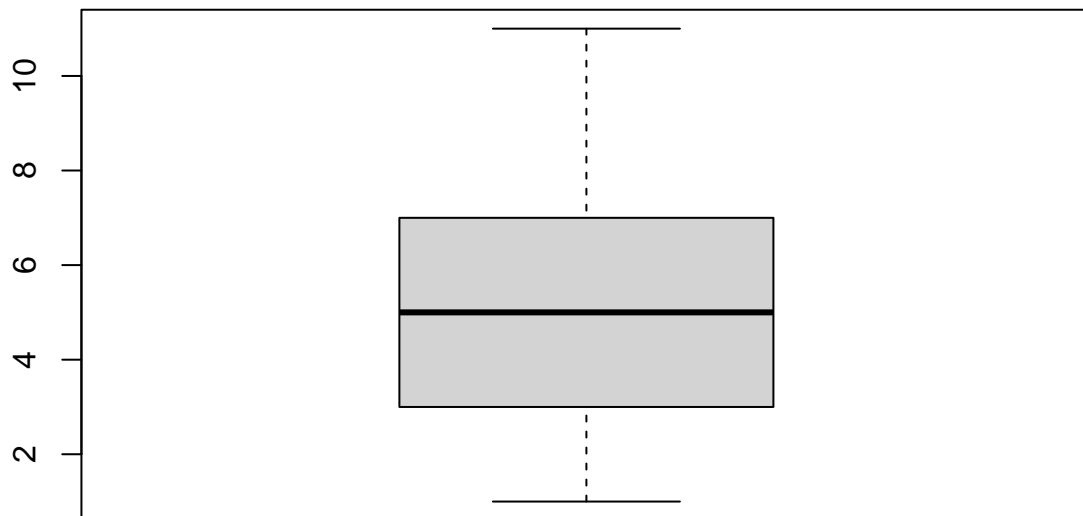
8. What is UF and LF?

```
## LF = -3
```

```
## UF = 13
```

8. Are there any outlies?

```
## 0 outliers as all points lie between LF and UF
```

9. Draw a boxplot.

Question 2

For new measurements

```
## 1 1 3 2 4 3 11 8 4 5
```

1. Repeat all computations form the previous question.

```
## n = 10
```

```
## x(5) = 3
```

```
## x(1) = minimum = 1

## x(n) = maximum = 11

## mean = 4.2

## median = 3.5

## Q1 = 2.25

## Q3 = 4.75

## IQR = 2.5

## LF = -1.5

## UF = 8.5

## 1 outlier
```
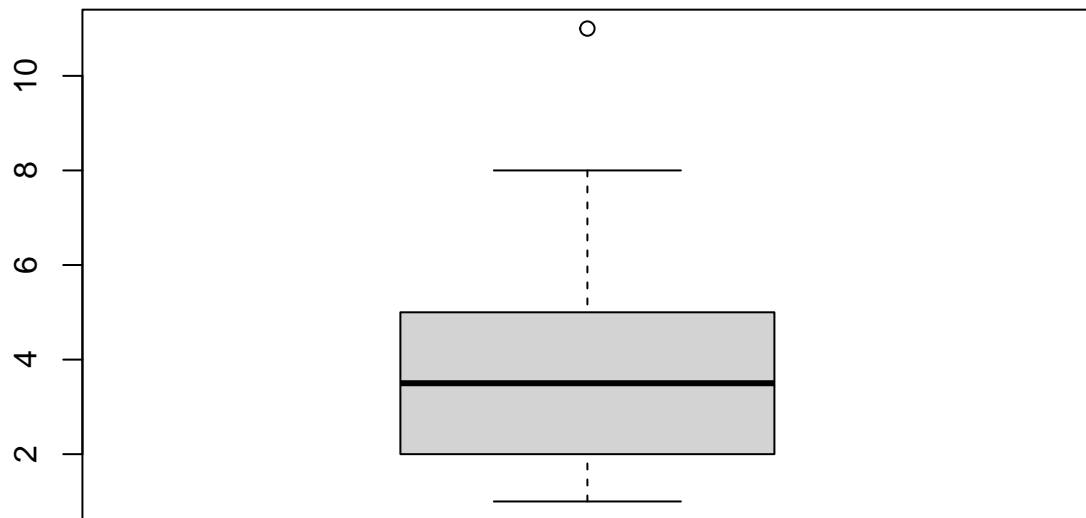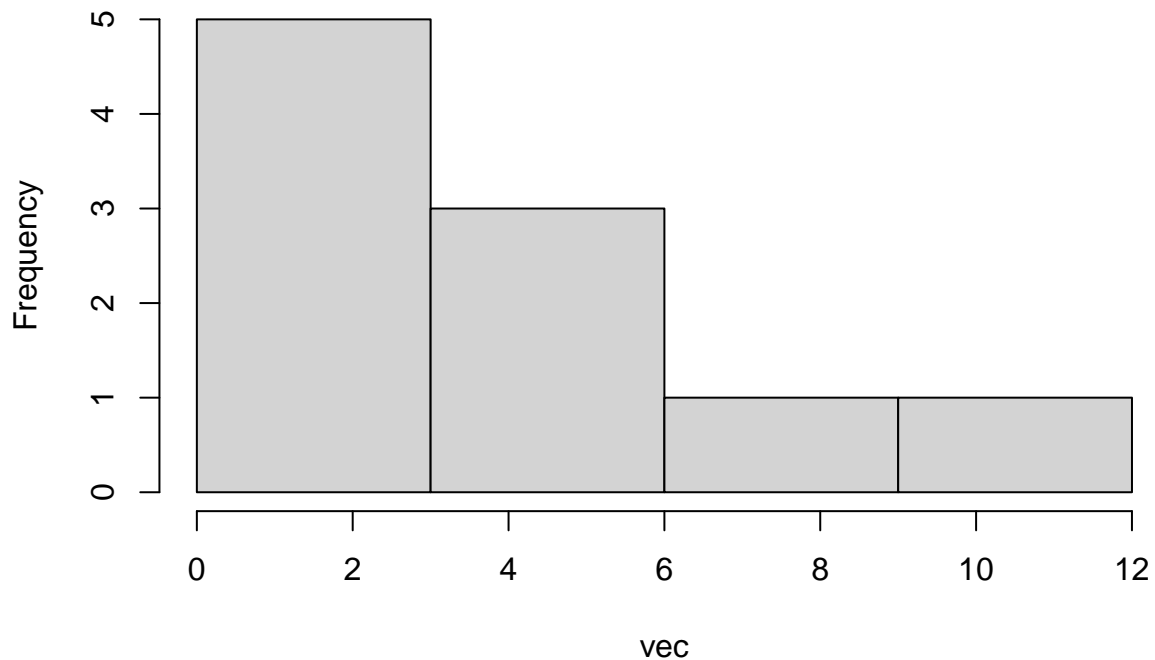
```
## range = 10
```

```
## variance = 9.955556
```

```
## sd = 3.155243
```

2. Which boxplot was harder to compute and why?

```
## second boxplot as both Q1 and Q3 require interpolation
```

Question 3

This famous (Fisher's or Anderson's) iris data set gives the measurements in centimeters of the variables sepal length and width and petal length and width, respectively, for 10 flowers from each of 3 species of iris. The species are Iris setosa, versicolor, and virginica.

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
## 6          5.4         3.9          1.7         0.4  setosa
```

```
## 7            4.6         3.4         1.4         0.3  setosa
## 8            5.0         3.4         1.5         0.2  setosa
## 9            4.4         2.9         1.4         0.2  setosa
## 10           4.9         3.1         1.5         0.1  setosa
```

1. What are the observational units?

```
## flowers
```

2. How many observations are there?

```
## 10 observations
```

3. How many variables are there?

```
## 5 variables
```

4. How many categorical and quantitative variables?

```
## 1 categorical and 4 quantitative variables
```