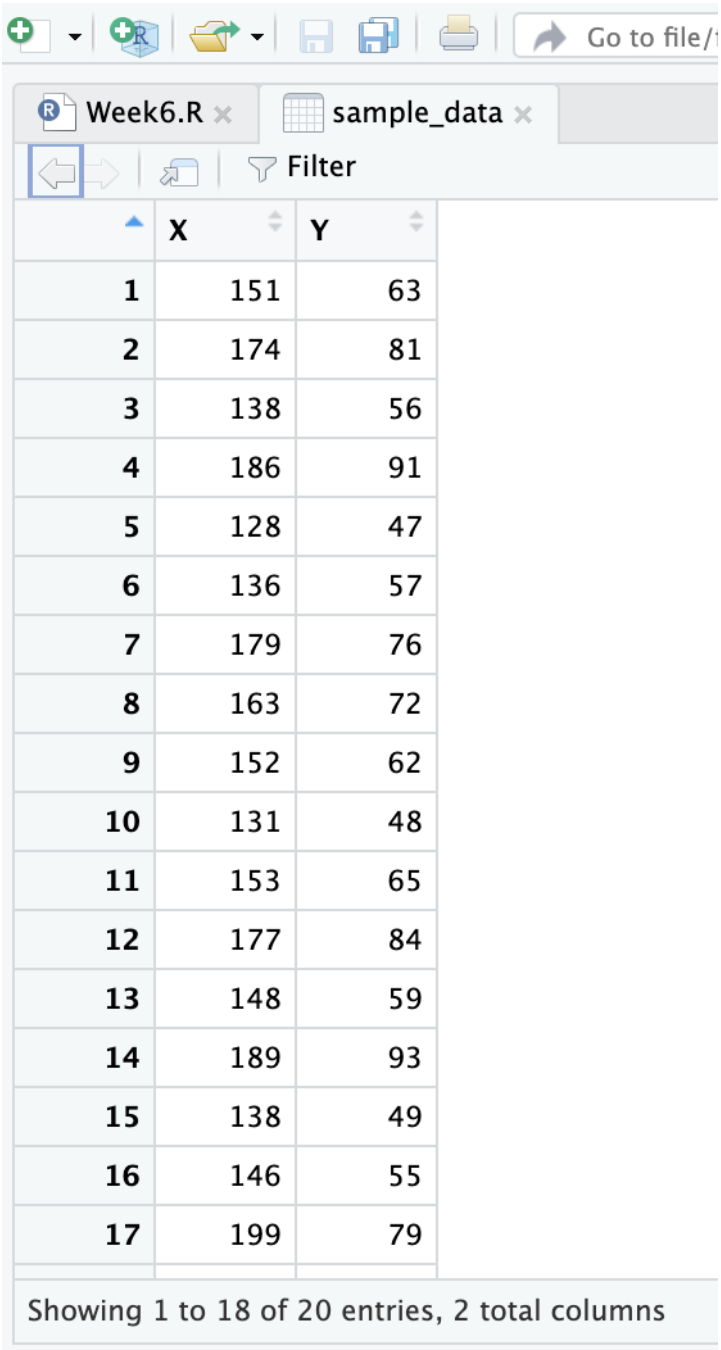
1) Uploading the data in R studio and viewing it

```
> data_file <- "/My System/simpledata.csv"
> sample_data <- read.csv(data_file)
> View(sample_data)
```



	X	Y
1	151	63
2	174	81
3	138	56
4	186	91
5	128	47
6	136	57
7	179	76
8	163	72
9	152	62
10	131	48
11	153	65
12	177	84
13	148	59
14	189	93
15	138	49
16	146	55
17	199	79

Showing 1 to 18 of 20 entries, 2 total columns

2) Summary of the dataset

```
> summary(sample_data)
```

Output:

```
> View(sample_data)
> summary(sample_data)
       X                Y
 Min.   :128.0   Min.   :47.00
 1st Qu.:138.0   1st Qu.:55.75
 Median :152.5   Median :64.00
 Mean   :156.9   Mean   :66.35
 3rd Qu.:174.8   3rd Qu.:76.75
 Max.   :199.0   Max.   :93.00
>
```

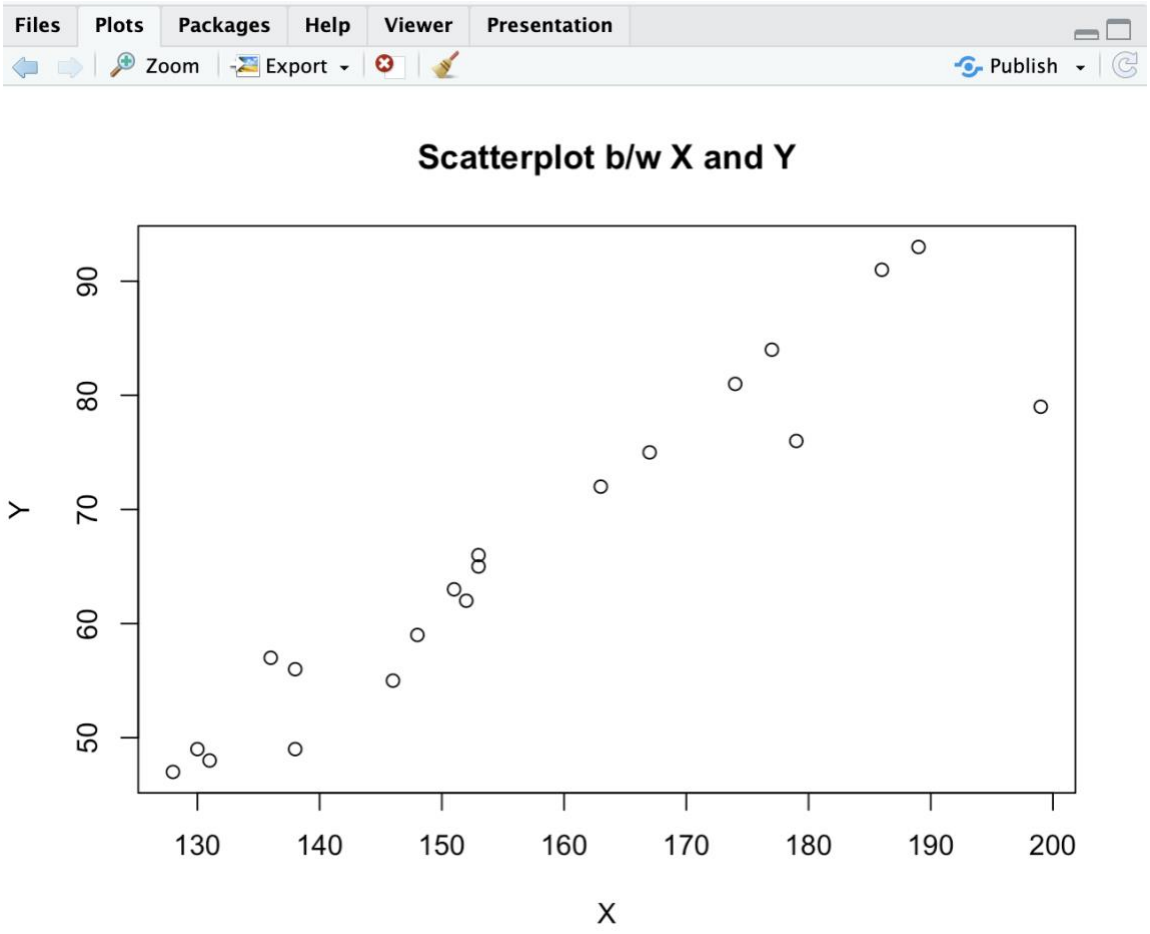
3) Structure of the dataset

```
> str(sample_data)
```

```
> str(sample_data)
'data.frame':   20 obs. of  2 variables:
 $ X: int  151 174 138 186 128 136 179 163 152 131 ...
 $ Y: int  63 81 56 91 47 57 76 72 62 48 ...
```

4) Scatterplot

```
> plot(sample_data$X, sample_data$Y, main = "Scatterplot b/w X and Y", xlab = "X", ylab = "Y")
```



5) Simple Linear regression and it's summary

```
> simple_reg <- lm(sample_data$Y ~ sample_data$X, data = sample_data)
> summary(simple_reg)
```

```
> simple_reg <- lm(sample_data$Y ~ sample_data$X, data = sample_data)
> summary(simple_reg)

Call:
lm(formula = sample_data$Y ~ sample_data$X, data = sample_data)

Residuals:
     Min       1Q   Median       3Q      Max
-14.1573  -1.7267   0.7701   2.6045   6.2102

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)   -33.55669    8.25032  -4.067 0.000723 ***
sample_data$X   0.63675    0.05213  12.215 3.79e-10 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 4.846 on 18 degrees of freedom
Multiple R-squared:  0.8924,    Adjusted R-squared:  0.8864
F-statistic: 149.2 on 1 and 18 DF,  p-value: 3.788e-10
```

6) Intercept

```
> intercept = simple_reg$coefficients[1]
> intercept
```

```
> intercept = simple_reg$coefficients[1]
> intercept
(Intercept)
  -33.55669
```

7) Slope

```
> slope <- simple_reg$coefficients[2]
> slope
```

```
> slope <- simple_reg$coefficients[2]
> slope
sample_data$X
    0.6367539
>
```

8) Linear equation, by putting value of X we can get the value of Y

```
> X <- 151
> Y <- intercept + slope*X
> Y
```

```
> X <- 151
> Y <- intercept + slope*X
> Y
(Intercept)
   62.59315
>
```

9) Correlation

```
> cor(sample_data$X, sample_data$Y)
```

```
> cor(sample_data$X, sample_data$Y)
[1] 0.944644
>
```