514 Lab 1

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Due Date 1/26

```
library('tidyverse')
```

2. Hello World! (10 points)

```
print("Hello world!")
```

```
## [1] "Hello world!"
```

```
print("Vikas Sanil")
```

(a) Modify the code chunk below to print your name.

```
## [1] "Vikas Sanil"
```

(a) Use : to output the sequence of numbers from 3 to 12

```
3:12
```

```
seq(3,30,3)
```

(b) Use `seq()` to output the sequence of numbers from 3 to 30 in increments of 3

```
##  [1]  3  6  9 12 15 18 21 24 27 30
```

```
x <- 3:12
y <- seq(3, 30, 3)
x*y
```

(c) Save the sequence from (a) as a variable `x`, and the sequence from (b) as a variable `y`. Output their product `x*y`

```
##  [1]   9  24  45  72 105 144 189 240 297 360
```

4. Cars data (50 points)

We'll look at data frame and plotting in much more detail in later classes. For a previous of what's to come, here's a very basic example.

For this example we'll use a very simple dataset. The `cars` data comes with the default installation of R. To see the first few columns of the data, just type `head(cars)`.

```
head(cars)
```

```
##   speed dist
## 1     4    2
## 2     4   10
## 3     7    4
## 4     7   22
## 5     8   16
## 6     9   10
```

```
cat('Average of \'speed\': ', mean(cars$speed))
```

(a) Calculate the average and standard deviation of `speed` .

```
## Average of 'speed':  15.4
```

```
cat('Standard Deviation of \'speed\': ', sd(cars$speed))
```

```
## Standard Deviation of 'speed':  5.287644
```

```
cat('Average of \'dist\': ', mean(cars$dist))
```

(b) Calculate the average and standard deviation of `dist`

```
## Average of 'dist':  42.98
```

```
cat('Standard Deviation of \'dist\': ', sd(cars$dist))
```

```
## Standard Deviation of 'dist':  25.76938
```

```
qplot(speed,data=cars, bins = 5)
```

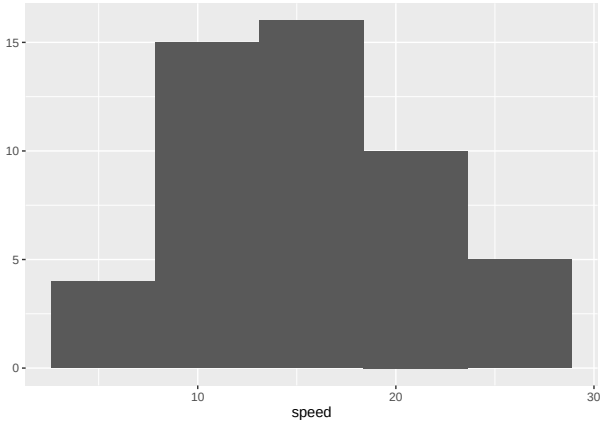

Figure 1: Histogram of speed.

(c) Produce a histogram of speed using the `qplot` function with 5 bins.

```
qplot(x=speed, y=dist, data=cars, geom = c("point", "smooth"))
```

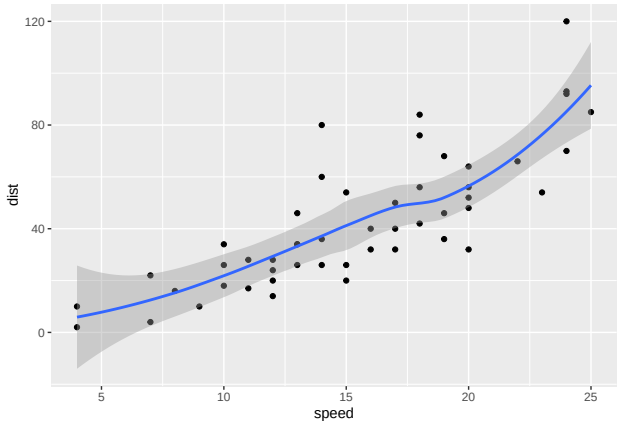

Figure 2: Scatterplot of dist against speed.

(d) Use the `qplot(x,y)` function to create a scatterplot of dist against speed.

```
boxplot(cars$speed)
abline(h = min(cars$speed), col = "Blue", )
text(min(cars$speed), paste("Minimum Speed =", min(cars$speed), sep = ' '), adj = c(0.5,-0.1) )
abline(h = max(cars$speed), col = "Yellow")
text(max(cars$speed), paste("Maximum Speed =", max(cars$speed), sep = ' '), adj = c(0.5,-0.1) )
abline(h = median(cars$speed), col = "Green")
text(median(cars$speed), paste("Median Speed =",median(cars$speed), sep = ' '), adj = c(0.5,-0.1) )
abline(h = quantile(cars$speed, c(0.25, 0.75)), col = "Red")
text(quantile(cars$speed, 0.25), paste("25th Percentile of Speed =",quantile(cars$speed, 0.25), sep = '
text(quantile(cars$speed, 0.75), paste("75th Percentile of Speed =",quantile(cars$speed, 0.75), sep = '
```

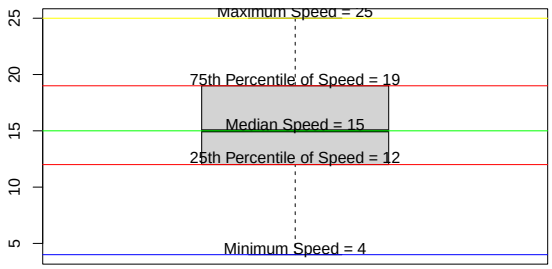

Figure 3: Boxplot of speed.

```
summary(cars$speed)
```

(e) Use the `boxplot` function to create a boxplot of speed.

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##     4.0    12.0    15.0    15.4    19.0    25.0
```