Homework #1

Group 4

5/10/2020

First, let's import the required libraries

```
library(ggplot2)
library(ggpubr)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

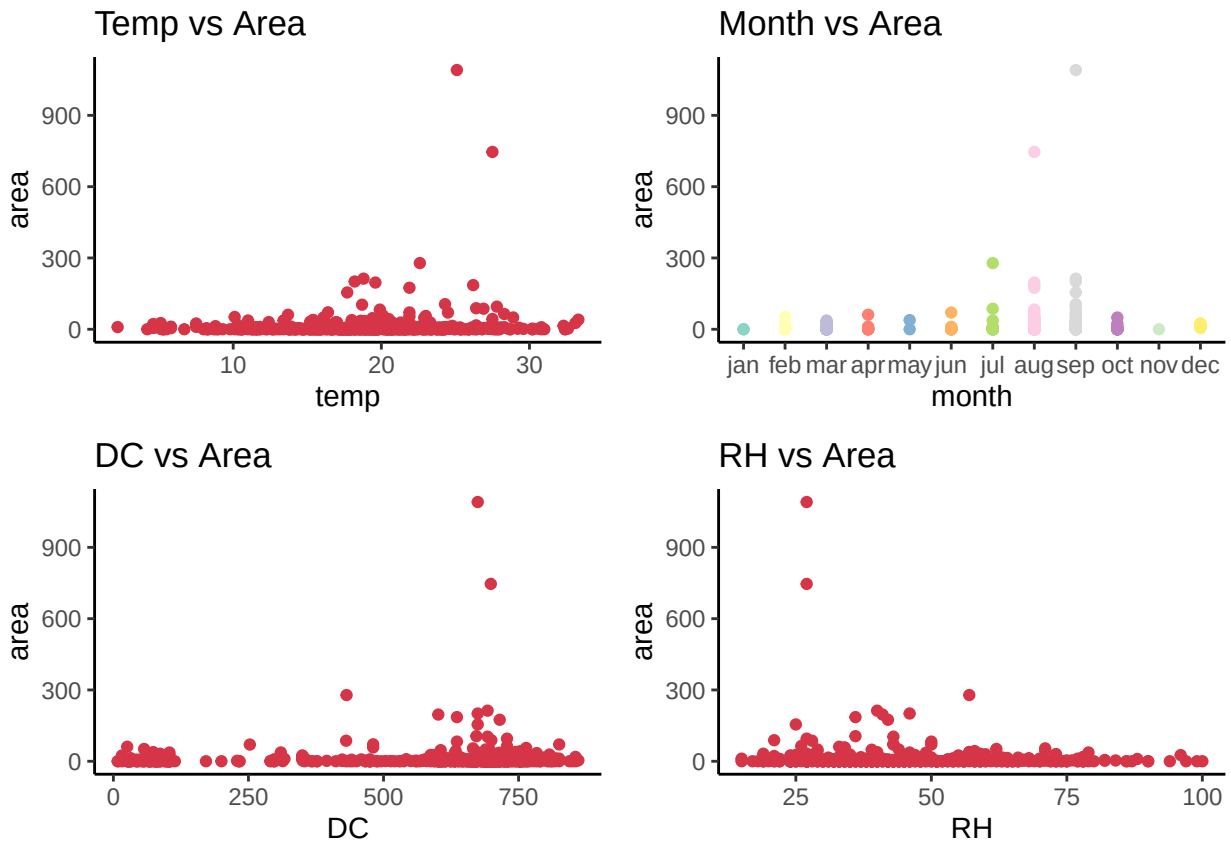
```
library(RColorBrewer)
```

Problem 1

(a) Plot area vs.temp, area vs. month, area vs. DC, area vs. RH for January through December combined in one graph. Hint: Place area on Y axis and use 2x2 matrix to place the plots adjacent to each other.

```
# Import the Dataframe
forestfires <- data.frame(read.csv("./data/forestfires.csv"), stringsAsFactors = FALSE)

# Convert the month column into factors and sort from Jan-Dec
forestfires$month <- factor(forestfires$month,
                            levels = c("jan", "feb", "mar",
                                       "apr", "may", "jun",
                                       "jul", "aug", "sep",
                                       "oct", "nov", "dec"))

# Create 4 scatter plots
p1 <- ggplot(forestfires, aes(temp, area)) + geom_point(color="#d63447") +
      ggtitle("Temp vs Area") +
      theme_classic()
p2 <- ggplot(forestfires, aes(month, area, color=month)) + geom_point() +
      scale_color_brewer(palette = "Set3") +
      theme_classic() +
      theme(legend.position = "none") +
      ggtitle("Month vs Area")
p3 <- ggplot(forestfires, aes(DC, area)) + geom_point(color="#d63447") +
```

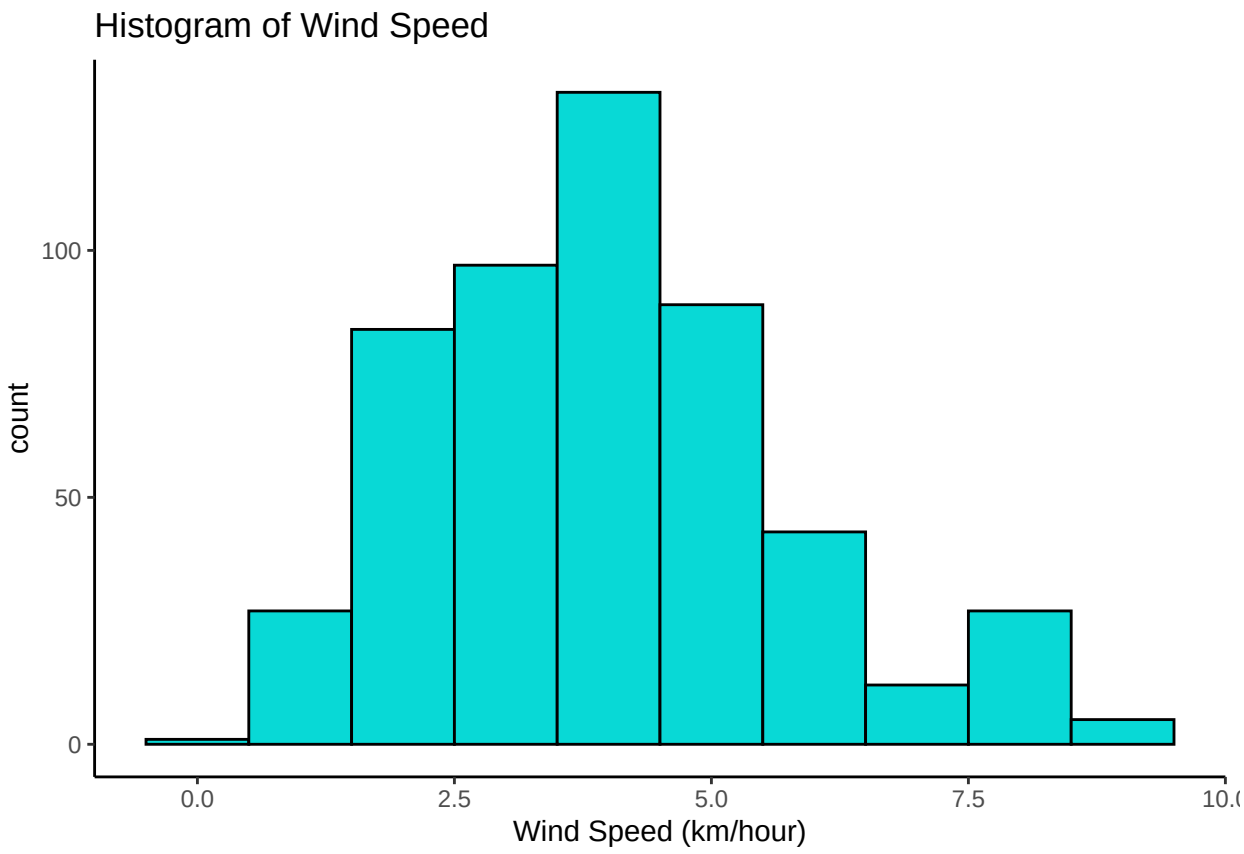
```
      ggtitle("DC vs Area") +
      theme_classic()
p4 <- ggplot(forestfires, aes(RH, area)) + geom_point(color="#d63447") +
      ggtitle("RH vs Area") +
      theme_classic()

# Arrange plots P1-P4 into a 2x2 grid
fig <- ggarrange(p1, p2, p3, p4,
                 ncol=2, nrow=2)

plot(fig)
```




```
rm(list=c("p1", "p2", "p3", "p4", "fig"))
```

(b) Plot the histogram of wind speed (km/h).

```
# Create the Wind-Historgram
wind_hist <- ggplot(forestfires, aes(wind)) +
             geom_histogram(bins=10, fill="#08d9d6", color="black") +
             theme_classic() +
             ggtitle("Histogram of Wind Speed") +
             labs(x="Wind Speed (km/hour)")

# Plot
plot(wind_hist)
```




```
rm(wind_hist)
```

(c) Compute the summery statistics (min, 1Q, mean, median, 3Q, max,) of part b.

```
quantiles <- quantile(forestfires$wind)

cat("Minimum Wind Speed is :", quantiles[[1]], "\n")
```

```
## Minimum Wind Speed is : 0.4
```

```
cat("1st Quantile of Wind Speed is :", quantiles[[2]], "\n")
```

```
## 1st Quantile of Wind Speed is : 2.7
```

```
cat("Mean Wind Speed is :", mean(forestfires$wind), "\n")
```

```
## Mean Wind Speed is : 4.017602
```

```
cat("Median Wind Speed is :", quantiles[[3]], "\n")
```

```
## Median Wind Speed is : 4
```

```
cat("3rd Quartile of Wind Speed is :", quantiles[[4]], "\n")
```

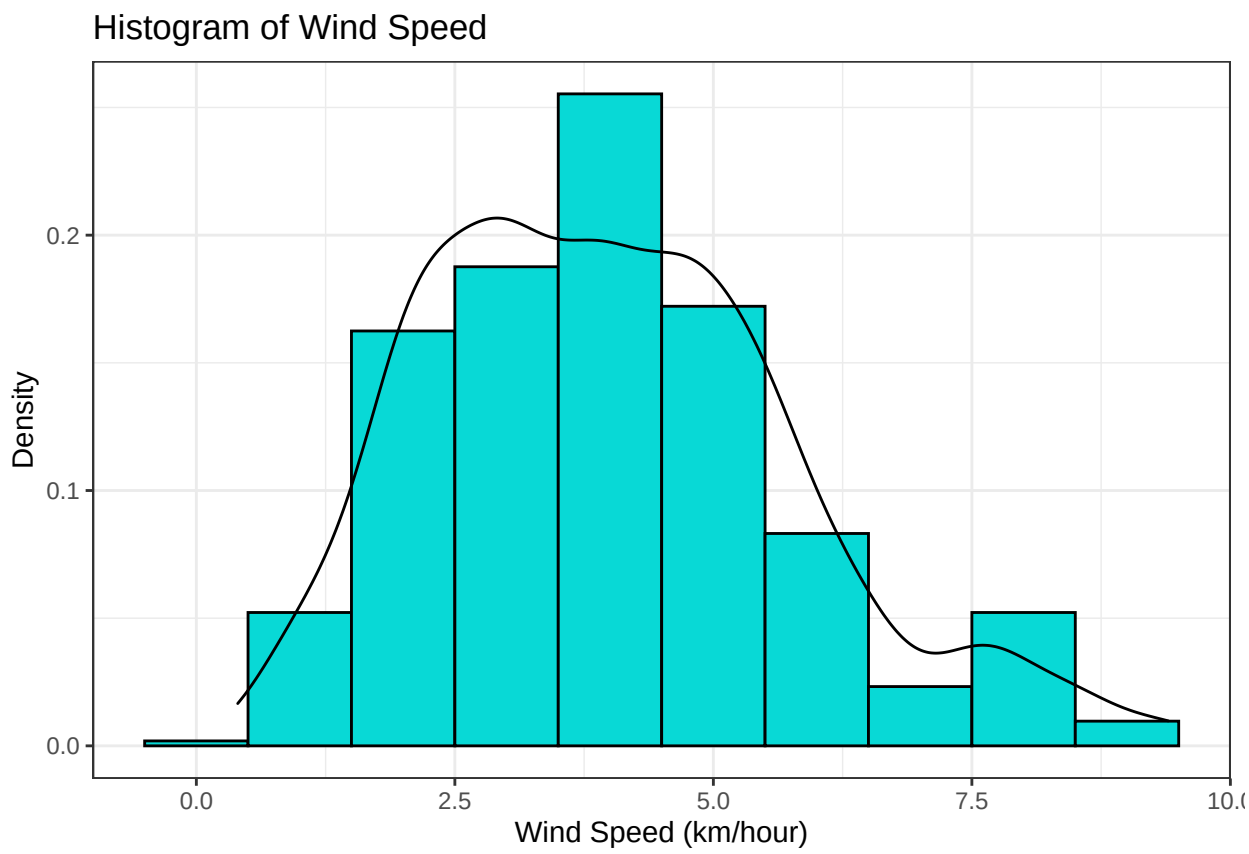
```
## 3rd Quartile of Wind Speed is : 4.9
```

```
cat("Maximum Wind Speed is :", quantiles[[5]], "\n")
```

```
## Maximum Wind Speed is : 9.4
```

(d) Add a density line to the histogram in part b.

```r
wind_hist_plus_density <- ggplot(forestfires, aes(x=wind, y=..density..)) +
                          geom_histogram(bins=10, colour="black", fill="#08d9d6") +
                          geom_density(aes(y=..density..), color="black") +
                          ylab("Density") +
                          xlab("Wind Speed (km/hour)") +
                          ggtitle("Histogram of Wind Speed") +
                          theme_bw()

plot(wind_hist_plus_density)
```




```r
rm(wind_hist_plus_density)
```