SESSION 7: Basic Statistics

Assignment 1

1. Histogram for all variables in a dataset mtcars.

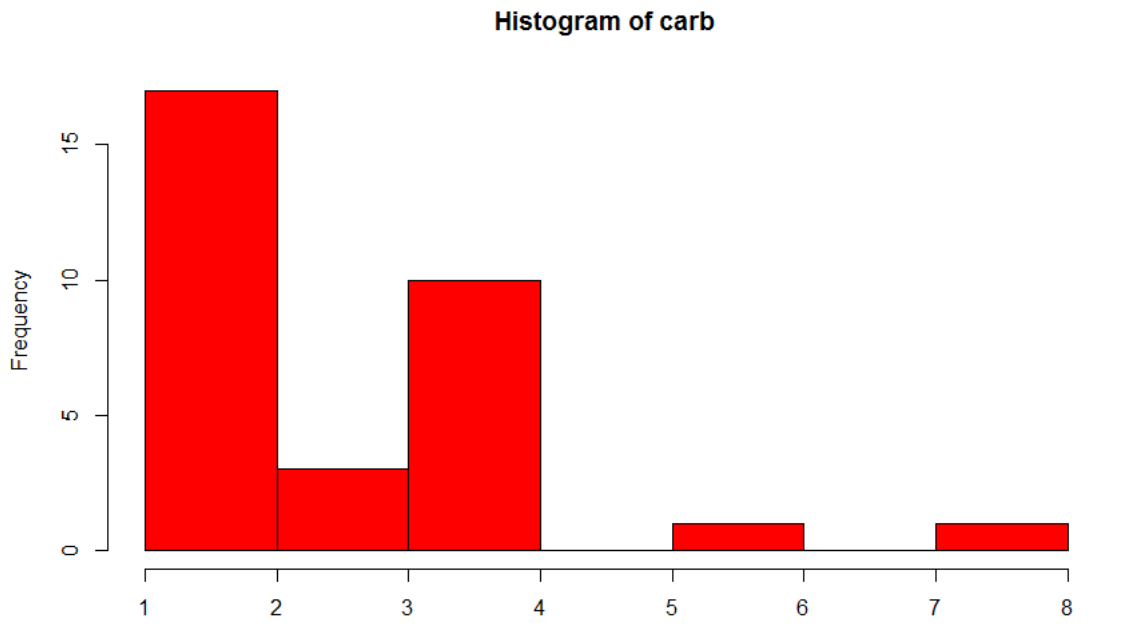
Write a program to create histograms for all columns

```
library(purrr)
library(tidyr)
library(ggplot2)

mtcars %>%
  keep(is.numeric) %>%
  gather() %>%
  ggplot(aes(value)) +
  facet_wrap(~ key,scales = "free") +
  geom_histogram()

#stat_bin is suitable only for continuous x data.
#If our x data is discrete, we probably want to use stat_count.
```

```
#or we can do individually too
#Histogram for all variables in a dataset mtcars
hist(mtcars$mpg ,xlab = "Mpg", ylab = "Frequency",main="Histogram of Mpg",col="red")
hist(mtcars$cyl ,xlab = "cyl", ylab = "Frequency",main="Histogram of cyl",col="blue")
hist(mtcars$disp ,xlab = "disp", ylab = "Frequency",main="Histogram of disp",col="yellow")
hist(mtcars$hp ,xlab = "hp", ylab = "Frequency",main="Histogram of hp",col="darkblue")
hist(mtcars$drat ,xlab = "drat", ylab = "Frequency",main="Histogram of drat",col="pink")
hist(mtcars$wt ,xlab = "wt", ylab = "Frequency",main="Histogram of wt",col="purple")
hist(mtcars$qsec ,xlab = "qsec", ylab = "Frequency",main="Histogram of qsec",col="blue")
hist(mtcars$vs ,xlab = "vs", ylab = "Frequency",main="Histogram of vs",col="green")
hist(mtcars$am ,xlab = "am", ylab = "Frequency",main="Histogram of am",col="grey")
hist(mtcars$gear ,xlab = "gear", ylab = "Frequency",main="Histogram of gear",col="blue")
hist(mtcars$carb ,xlab = "carb", ylab = "Frequency",main="Histogram of carb",col="red")
```



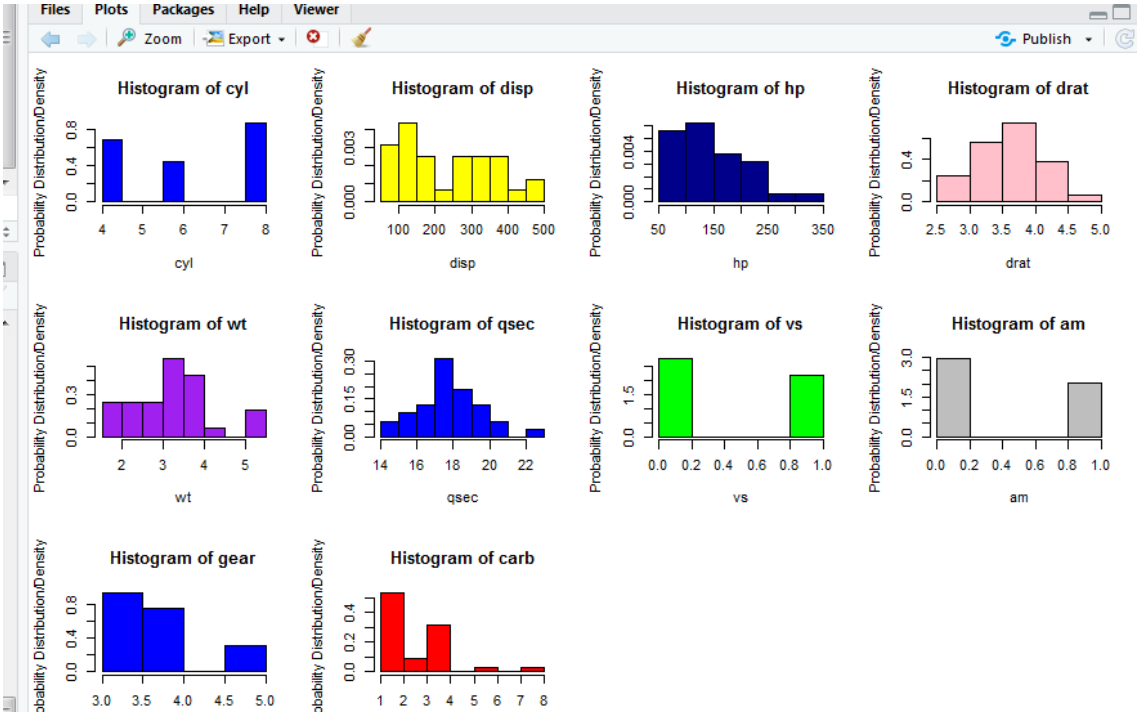
2. Check the probability distribution of all variables in **mtcars**.

```
library(ggplot2)

mtcars %>%
  keep(is.numeric) %>%
  gather() %>%
  ggplot(aes(value)) +
  facet_wrap(~ key,scales = "free") +
  stat_density()
#stat_bin is suitable only for continuous x data.
#If our x data is discrete, we probably want to use stat_count.

#we can also use geom_density function

#or like this too
#we just do freq=FALSE and we get the Probability Distribution/Density of our variables
hist(mtcars$mpg ,freq = F,xlab = "Mpg", ylab = "Probability
Distribution/Density",main="Histogram of Mpg",col="red")
hist(mtcars$cyl ,freq = F,xlab = "cyl", ylab = "Probability
Distribution/Density",main="Histogram of cyl",col="blue")
hist(mtcars$disp ,freq = F,xlab = "disp", ylab = "Probability
Distribution/Density",main="Histogram of disp",col="yellow")
hist(mtcars$hp ,freq = F,xlab = "hp", ylab = "Probability
Distribution/Density",main="Histogram of hp",col="darkblue")
hist(mtcars$drat ,freq = F,xlab = "drat", ylab = "Probability
Distribution/Density",main="Histogram of drat",col="pink")
hist(mtcars$wt ,freq = F,xlab = "wt", ylab = "Probability
Distribution/Density",main="Histogram of wt",col="purple")
hist(mtcars$qsec ,freq = F,xlab = "qsec", ylab = "Probability
Distribution/Density",main="Histogram of qsec",col="blue")
hist(mtcars$vs ,freq = F,xlab = "vs", ylab = "Probability
Distribution/Density",main="Histogram of vs",col="green")
hist(mtcars$am ,freq = F,xlab = "am", ylab = "Probability
Distribution/Density",main="Histogram of am",col="grey")
hist(mtcars$gear ,freq = F,xlab = "gear", ylab = "Probability
Distribution/Density",main="Histogram of gear",col="blue")
hist(mtcars$carb ,freq = F,xlab = "carb", ylab = "Probability
Distribution/Density",main="Histogram of carb",col="red")
```



3. Write a program to create boxplot for all variables.

```
library(ggplot2)

library(reshape)

m1 <- melt(mtcars)

ggplot(m1,aes(x = variable,y = value)) + facet_wrap(~variable) + geom_boxplot()
```

```
#or like this too individually

boxplot(mtcars$mpg ,xlab = "Box plot", ylab = "Mpg",main="Box plot of Mpg",horizontal = T,col="red")
```

```
boxplot(mtcars$cyl ,xlab = "Box plot", ylab = "cyl",main="Box plot of cyl",horizontal = T,col="blue")

boxplot(mtcars$disp ,xlab = "Box plot", ylab = "disp",main="Box plot of disp",horizontal = T,col="yellow")

boxplot(mtcars$hp ,xlab = "Box plot", ylab = "hp",main="Box plot of hp",horizontal = T,col="darkblue")

boxplot(mtcars$drat ,xlab = "Box plot", ylab = "drat",main="Box plot of drat",horizontal = T,col="pink")

boxplot(mtcars$wt ,xlab = "Box plot", ylab = "wt",main="Box plot of wt",horizontal = T,col="purple")

boxplot(mtcars$qsec ,xlab = "Box plot", ylab = "qsec",main="Box plot of qsec",horizontal = T,col="blue")

boxplot(mtcars$vs ,xlab = "Box plot", ylab = "vs",main="Box plot of vs",horizontal = T,col="green")

boxplot(mtcars$am ,xlab = "Box plot", ylab = "am",main="Box plot of am",horizontal = T,col="grey")

boxplot(mtcars$gear ,xlab = "Box plot", ylab = "gear",main="Box plot of gear",horizontal = T,col="blue")

boxplot(mtcars$carb ,xlab = "Box plot", ylab = "carb",main="Box plot of carb",horizontal = T,col="red")
```