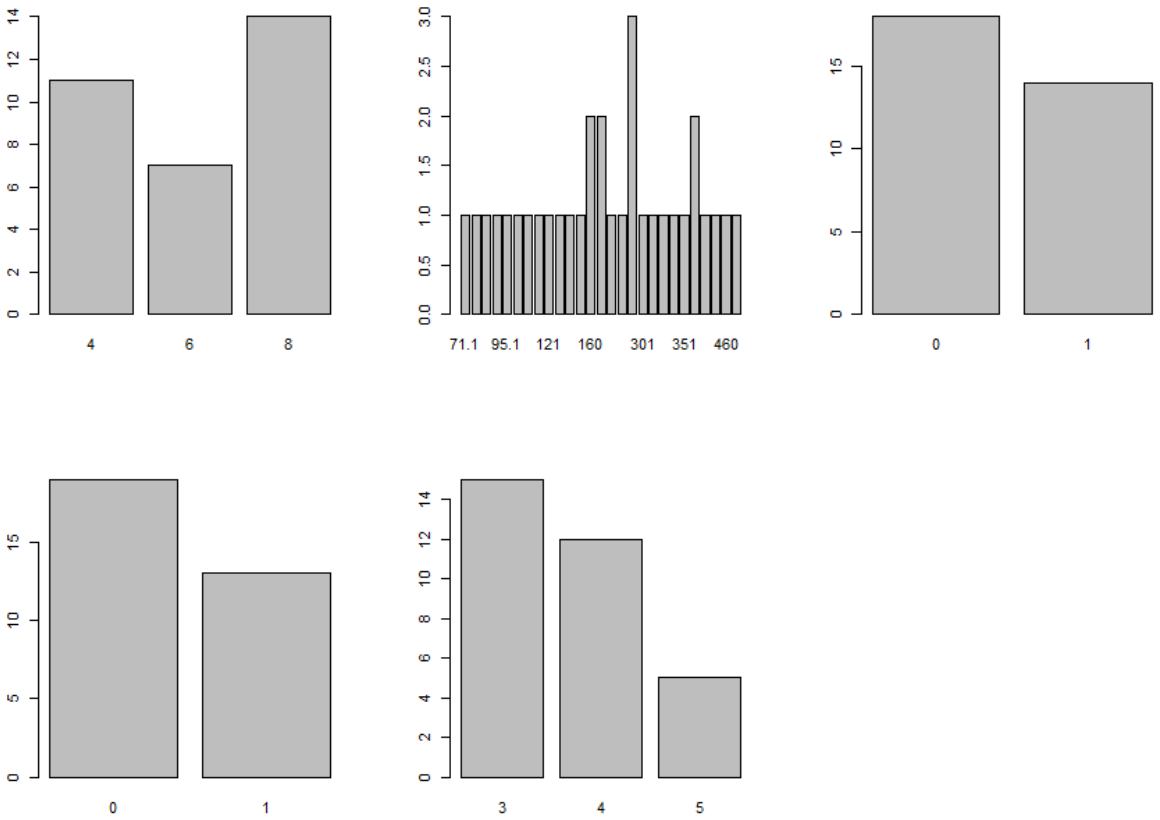
```
mtcars
str(mtcars)
# change the categorical variables to factor
library(dplyr)
mtcars1 <- mutate(mtcars,
                  cyl = as.factor(cyl),
                  disp = as.factor(disp),
                  vs = as.factor(vs),
                  am = as.factor(am),
                  gear = as.factor(gear),
                  carb = as.factor(carb))
str(mtcars1)

is.fact <- sapply(mtcars1, is.factor)  # checking the categorical variables
mtcars2 <- mtcars1[,is.fact]   # creating dataframe of only factor class of variables

str(mtcars2)                # check structure
par(mfrow= c(2,3))          # Set plot area

lapply(lapply(mtcars2[,1:5], table), barplot)  # barplots for categorical var
```

```r
mtcars
str(mtcars)
# change the categorical variables to factor
library(dplyr)
mtcars1 <- mutate(mtcars,
                  cyl = as.factor(cyl),
                  disp = as.factor(disp),
                  vs = as.factor(vs),
                  am = as.factor(am),
                  gear = as.factor(gear),
                  carb = as.factor(carb))
str(mtcars1)

is.fact <- sapply(mtcars1, is.factor)  # checking the categorical variables
mtcars2 <- mtcars1[,is.fact]   # creating dataframe of only factor class of variables

str(mtcars2)                   # check structure
par(mfrow= c(2,3))             # Set plot area

lapply(lapply(mtcars2[,1:5], table), barplot)  # barplots for categorical var
```



2. Create a scatterplot matrix by gear types in mtcars dataset.

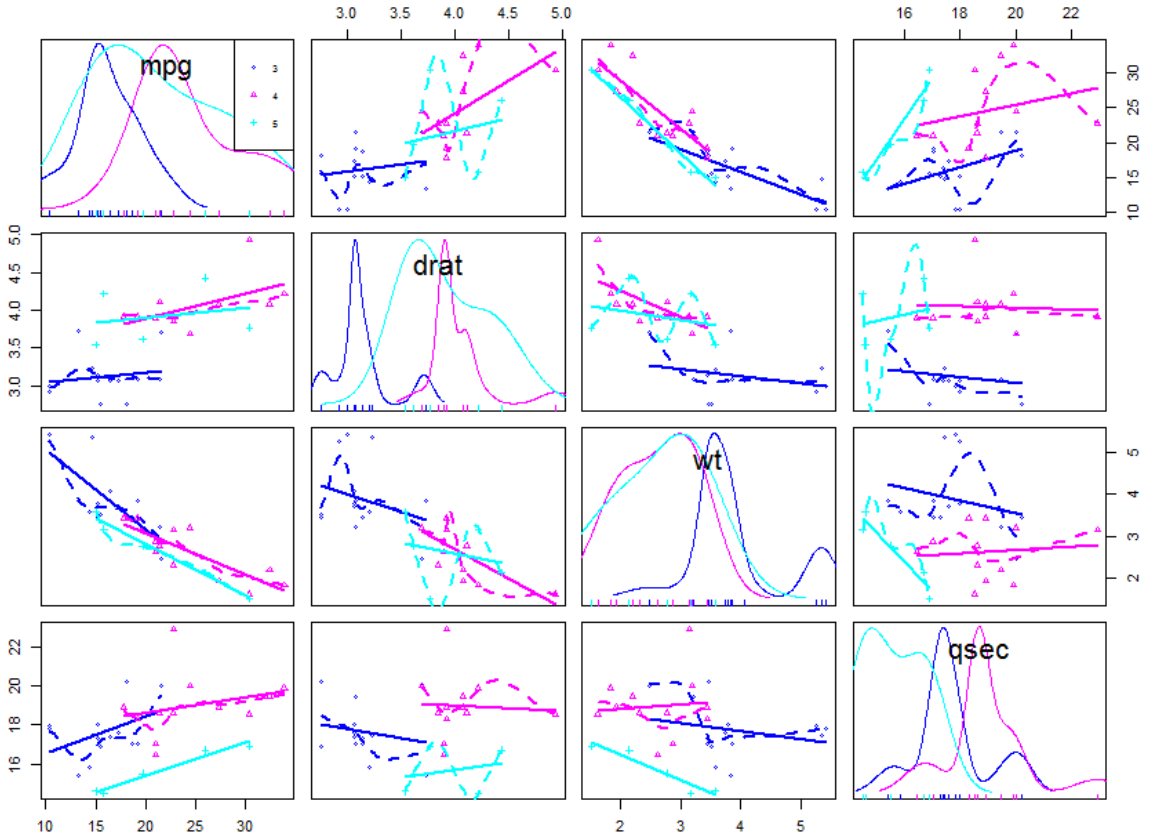
str(mtcars)

library(car)

library(ggplot2)

scatterplotMatrix(~mpg+drat+wt+qsec|gear, data=mtcars)

```r
# 2. Create a scatterplot matrix by gear types in mtcars dataset.
str(mtcars)
library(car)
library(ggplot2)
scatterplotMatrix(~mpg+drat+wt+qsec|gear, data=mtcars)
```



3. Write a program to create a plot density by class variable.

```r
par(mfrow = c(1,1))

x <- mtcars$mpg          # assign mpg to a object

h <- hist(x, breaks = 10, col = "red",

        xlab = "MPG",

        main = "Density plot of mpg")       # plot histogram of the object

xfit <- seq(min(x), max(x), length = 40)      # create 40 points on x axis

yfit <- dnorm(xfit, mean = mean(x), sd= sd(x)) # normal plot of xfit
```

yfit <- yfit*diff(h$mids[1:2]*length(x)) # mids of the histogram with changing x

lines(xfit, yfit, col="Blue", lwd = 3) # line plot for xfit and yfit

```
# 3. Write a program to create a plot density by class variable.
par(mfrow = c(1,1))
x <- mtcars$mpg          # assign mpg to a object
h <- hist(x, breaks = 10, col = "red",
          xlab = "MPG",
          main = "Density plot of mpg")        # plot histogram of the object
xfit <- seq(min(x), max(x), length = 40)       # create 40 points on x axis
yfit <- dnorm(xfit, mean = mean(x), sd= sd(x)) # normal plot of xfit
yfit <- yfit*diff(h$mids[1:2]*length(x))       # mids of the histogram with changing x
lines(xfit, yfit, col="Blue", lwd = 3)         # line plot for xfit and yfit
```