Math 170S Homework #4

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Contents

Read in Data

```
data(mtcars)
```

Problem 1

mpg

```
summary(mtcars$mpg)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   10.40   15.43   19.20   20.09   22.80   33.90
```

cyl

```
summary(mtcars$cyl)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   4.000   4.000   6.000   6.188   8.000   8.000
```

disp

```
summary(mtcars$disp)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##    71.1   120.8   196.3   230.7   326.0   472.0
```

hp

```
summary(mtcars$hp)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##    52.0    96.5   123.0   146.7   180.0   335.0
```

drat

```
summary(mtcars$drat)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.760   3.080   3.695   3.597   3.920   4.930
```
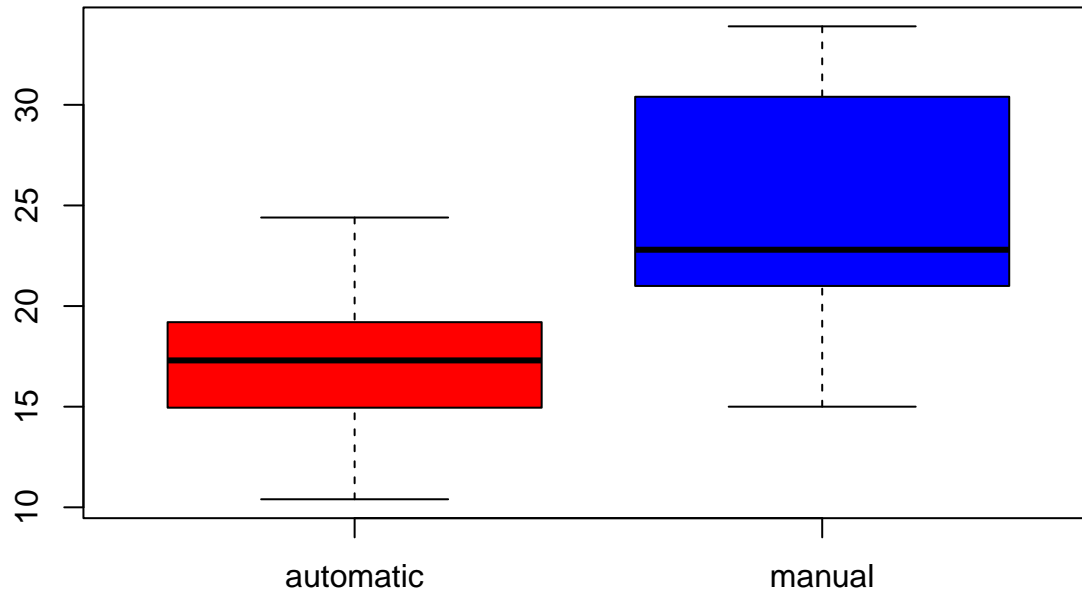
wt

```
summary(mtcars$wt)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.513   2.581   3.325   3.217   3.610   5.424
```

Problem 2

```
boxplot(mtcars$mpg[which(mtcars$am == 0)], mtcars$mpg[which(mtcars$am == 1)],
        main = "Boxplot of mpg", col = c("red", "blue"), names = c("automatic","manual"))
```
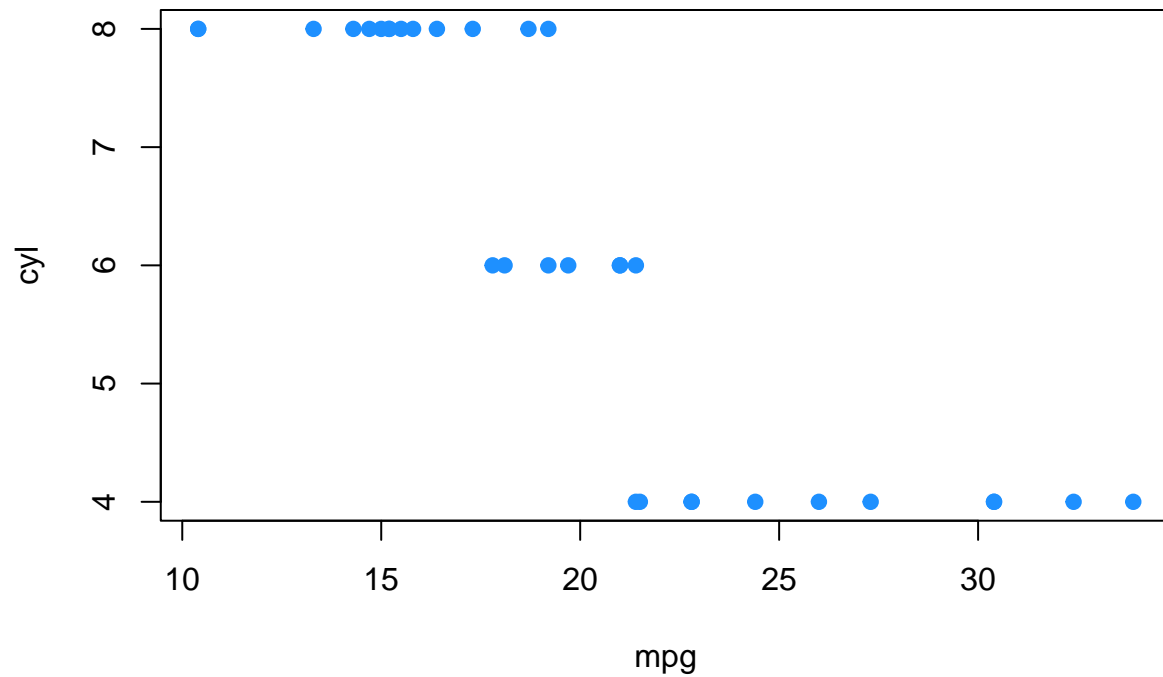
Boxplot of mpg

Problem 3

```
plot(mtcars$mpg, mtcars$cyl, xlab = "mpg", ylab = "cyl", main = "mpg vs cyl",
     col = "dodgerblue", pch=19)
```

mpg vs cyl

Problem 4

```
cor(mtcars$mpg, mtcars$cyl)
```

```
## [1] -0.852162
```

Problem 5

```
summary(lm(mtcars$mpg ~ mtcars$disp))
```

```
##
## Call:
## lm(formula = mtcars$mpg ~ mtcars$disp)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.8922 -2.2022 -0.9631  1.6272  7.2305
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) 29.599855   1.229720  24.070  < 2e-16 ***
## mtcars$disp -0.041215   0.004712  -8.747 9.38e-10 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 3.251 on 30 degrees of freedom
## Multiple R-squared:  0.7183, Adjusted R-squared:  0.709
## F-statistic: 76.51 on 1 and 30 DF,  p-value: 9.38e-10
```