

Assignment 7.1

Ans 1

```
library(tidyr)

library(ggplot2)

mtcars %>% gather() %>% head()

ggplot(gather(mtcars), aes(value)) +

  geom_histogram(bins = 10) +

  facet_wrap(~key, scales = 'free_x')
```

Ans 2

```
par(mfrow = c(2, 2), mar = c(2, 3, 2, 3))

# plot1
with(mtcars, plot(hp, mpg, type = "n", main = "mpg vs. hp - by transmission
type")) # no data
with(cars_auto, points(hp, mpg, col = "red", pch = 20))
with(cars_manu, points(hp, mpg, col = "blue", pch = 20))
legend("topright", pch = 20, col = c("red", "blue"), legend = c("auto",
"manu")) # add legend
modell_auto = lm(mpg ~ hp, data = cars_auto)
modell_manu = lm(mpg ~ hp, data = cars_manu)
abline(modell_auto, col = "red", lwd = 2)
abline(modell_manu, col = "blue", lwd = 2)
abline(v = 175, lty = 2)

# plot2
with(mtcars, plot(wt, mpg, type = "n", main = "mpg vs. weight - by
transmission type")) # no data
with(cars_auto, points(wt, mpg, col = "red", pch = 20))
with(cars_manu, points(wt, mpg, col = "blue", pch = 20))
legend("topright", pch = 20, col = c("red", "blue"), legend = c("auto",
"manu")) # add legend
abline(v = 3.2, lty = 2)

# plot 3
with(mtcars, plot(drat, mpg, type = "n", main = "mpg vs. drat - by
transmission type")) # no data
with(cars_auto, points(drat, mpg, col = "red", pch = 20))
with(cars_manu, points(drat, mpg, col = "blue", pch = 20))
legend("topright", pch = 20, col = c("red", "blue"), legend = c("auto",
"manu")) # add legend
modell2_auto = lm(mpg ~ drat, data = cars_auto)
modell2_manu = lm(mpg ~ drat, data = cars_manu)
abline(modell2_auto, col = "red", lwd = 2)
abline(modell2_manu, col = "blue", lwd = 2)
abline(v = 175, lty = 2)
```

```

# plot 4
with(mtcars, plot(displacement, mpg, type = "n", main = "mpg vs. displacement - by
transmission type")) # no data
with(cars_auto, points(displacement, mpg, col = "red", pch = 20))
with(cars_manu, points(displacement, mpg, col = "blue", pch = 20))
legend("topright", pch = 20, col = c("red", "blue"), legend = c("auto",
"manu")) # add legend
labels = with(mtcars, paste(as.character(displacement), as.character(mpg), sep =
",")) # generate point labels
with(mtcars, text(displacement, mpg, labels = labels, cex = 0.7, pos = 2))
abline(v = 167.6, lty = 2)

```

Ans 3

```

boxplot(mpg ~ cyl, data = mtcars, xlab = "Number of Cylinders",
        ylab = "Miles Per Gallon", main = "Mileage Data")

boxplot(mpg ~ cyl, data = mtcars,
        xlab = "Number of Cylinders",
        ylab = "Miles Per Gallon",
        main = "Mileage Data",
        notch = TRUE,
        varwidth = TRUE,
        col = c("green", "yellow", "purple"),
        names = c("High", "Medium", "Low")
)

```