Tuesday Quiz 2

```r
# Load packages
library(ggplot2)
library(dplyr)

# Use a sample to simplify visualization
set.seed(123)
diamonds_sample <- diamonds %>%
  sample_n(300)

# Fit multiple regression model
model <- lm(price ~ carat +  x + y, data = diamonds_sample)
```

```r
summary(model)
```

```
Call:
lm(formula = price ~ carat + x + y, data = diamonds_sample)

Residuals:
    Min      1Q  Median      3Q     Max
-4738.8  -636.6   -54.0   338.9  6875.0

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   4539.7     1566.0   2.899  0.00403 **
carat        12269.7      954.1  12.859  < 2e-16 ***
x            -5542.4     1766.8  -3.137  0.00188 **
y             3733.1     1793.4   2.082  0.03823 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1498 on 296 degrees of freedom
Multiple R-squared:  0.8612,    Adjusted R-squared:  0.8598
F-statistic: 612.2 on 3 and 296 DF,  p-value: < 2.2e-16
```

```r
# Omnibus test (Global F-test)
anova(model)
```

```
Analysis of Variance Table

Response: price
           Df     Sum Sq    Mean Sq   F value    Pr(>F)
carat       1 4055906320 4055906320 1807.7857 < 2.2e-16 ***
x           1   55247698   55247698   24.6248 1.177e-06 ***
y           1    9721879    9721879    4.3332   0.03823 *
Residuals 296  664098768    2243577
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```